

# Catalogue 2017/2018

:hager



**Your reliable  
partner for  
intelligent  
solutions.**

# **There's plenty to do. Let's get started.**

**The time for  
renovated electrical  
installations and  
intelligent solutions  
is now.**



**Dear friends and partners,**

We all value experience. Routine helps us to be fast and reliable, which can save us time, money and hard work. Yet there are also moments when we need to leave the familiar behind and take advantage of golden opportunities just waiting to be discovered and seized.

This is one of those moments.

Renewable energy sources and innovative building technologies are creating opportunities to make more intelligent and energy-efficient homes.

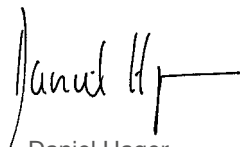
The latest studies indicate that many properties will first have to be adapted to accommodate the solar power systems, energy storage units and intelligent building controls that characterise smart homes. As of 2014, 15.3 million UK homes could benefit from improvements to aid in energy-efficient living and working. Large-scale renovation and modernisation are needed if renewable energy is to help achieve an 80 percent cut in the UK's carbon emissions by 2050.

This work requires specialists. There's plenty to do. Let's get started.

We at Hager Group will support you with the very best products, solutions and services. And we are constantly evolving and improving: we have more than 800 team members working on better products and innovative technologies to make your work easier and our customers' lives more comfortable. At the same time, we are increasing our focus on services so that we can provide you and our customers with expert support.

When it comes to change, we practice what we preach. And we rely on expert partners like you to help us set the trends for the future. This future is starting right now, and I'm looking forward to shaping it with you.

Yours sincerely,



Daniel Hager  
Hager Group CEO

# Under one roof

Members of Hager Group

**:hager**

**B.**  
Berker

**ELCOM.**

**DAITEM**


**diagral**

**EFEN** 

**B. BOCCHIOTTI**

## One family

The world is changing, and we are changing with it. As a family company, we have grown steadily over the last sixty years to become a reliable partner to expert technicians and electrical wholesalers around the world. All while remaining true to ourselves and to our values. And so we continue today, with a number of well-known brands – each with their own distinctive strengths – working together under the Hager Group umbrella.



**Hager Forum** in Obernai, France, is a place where we can work with customers and partners to shape the future. That makes it a perfect symbol of the innovative power of Hager Group.

**hagergroup**

## Your trust

As a partner and customer, you can choose from the entire range of products and services offered by every member of our brand family. Our new corporate image highlights our shared strengths even more clearly. From now on, each of our brands will be easily recognisable as a 'Member of Hager Group'. The new corporate image also involves some colour and design changes. Our core promise remains the same: we will always work with you to succeed together.

## Our strengths

We have huge opportunities ahead. The upcoming modernisation of existing buildings, intelligent building technology, digital services, new energy sources and technologies – all of this opens up new, exciting potential for you and for us. At the same time, business requirements are becoming more and more complex. That's why it's so important for you to have Hager Group specialists supporting you with all of their expertise. Together, we are stronger. Together, we will overcome the complex challenges of our time with simple, impressive solutions – just as we have been doing for the last six decades.

# E3

Global warming, a shortage of natural resources, social cohesion and the transition to renewable energy: there are many challenges facing businesses and society today. Hager Group is pursuing a variety of initiatives to promote sustainable development with its “E3” approach.

# Environ

## **E for Environment**

We work continuously to reduce our carbon footprint. Our priorities include optimising the transport of our products and cutting the amount of energy we use in production to further reduce our Carbon footprint.





# Ethics

## **E for Ethics**

We need skilled, motivated and healthy employees in order to offer our customers the best services and products. That's why we provide all our team members with a safe, healthy working environment, support their professional growth and offer them opportunities for further development. We also promote diversity and adherence to an Ethics Code throughout the company.

# ment

# Energy

## **E for Energy**

Hager Group helps its customers to save energy intelligently. We also analyse and optimise our products' environmental performance throughout development and production. By providing a detailed environmental profile for most of our products, we can be fully transparent with our customers and ourselves.

# Technology as a friend



## Hager Design turns technical products into familiar friends.

Before we start designing a new product, we think about the people it is going to serve. Will it assist or entertain, observe or protect, save time or save energy? Ideally, whatever it does, users will feel it is a reliable 'friend'. We need to know how to connect with people on an emotional level, to ensure that in return they feel connected to our products.

### **Technology for people**

Responsible design builds on an ethical foundation. At Hager, this foundation is all about respecting people and caring about their well-being. And it's not just about today – we want to inspire our customers for years to come. That's why we include them in every stage of the design process – from installer to planner, to end user.

### **An honest brand**

Hager products are world-renowned for their quality, which is visibly and tangibly unveiled in their design. The unmistakable, explicit and clear brand image tells customers straight away that these products are part of 'the family'. This is our signature, the Hager DNA, which embodies two central principles.

**Friendly, serene, balanced:** an honest, authentic design that blends naturally into everyday life, without gadgets or cheap effects.



Erwin van Handenhoven  
Hager Group Design Director

**Ingeniously simple:** our products are important, but never over-the-top. If it's not necessary, we leave it out. The essence remains. Straightforward in both form and function: simple to install, simple to use. Simply Hager!

### **Looking ahead to the future**

Hager systems are not stagnant – they are expanding, gaining more and more visibility in our customer's homes. This has implications for our present design language. We call it 'New Start'. The aim of New Start is to meet our customers where they are, and carry them with us into the future: with innovative ideas, new designs and expressive materials. The new Hager catalogue is full of 'New Starters' – along with lots of 'old friends'. Come and explore!

# An engineered solution

From pre-assembled standard distribution units to bespoke composite TP&N boards, and plug in distribution boards we can provide the solution. We will even deliver to site to an agreed deadline and to specification. All the power of an experienced design engineering team and an ISO 9001:2008 manufacturing plant is just a telephone call away.

## Here to help

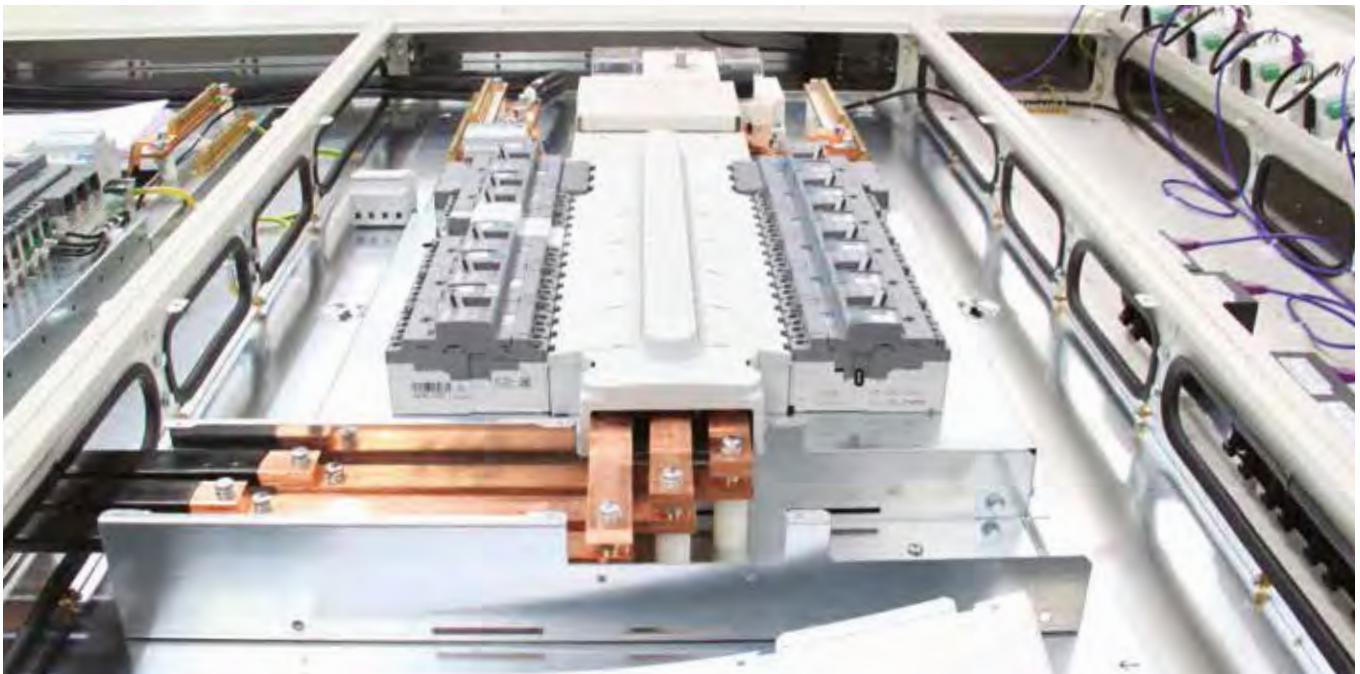
Many electrical distribution solutions require something that cannot be purchased off the shelf.

Whether it is an unusual configuration or simply speed on site, our engineered solutions supplies the answer. You give us the specification and we will deliver what you need with the peace of mind of factory assured quality to ISO 9001:2008.

## Metering

Our lighting and power meter board is a compact solution to meet the demands of energy metering. However for special applications we also offer our full-engineered solutions design and build service, providing additional features such as data logging and web connectivity for remote meter reading.





### **Pre-assembled standard distribution board**

Factory assembly of standard distribution boards with standard incoming and outgoing devices. Providing the installer with all of the products factory assembled and ready for cabling.

### **Bespoke composite system**

Factory prepared distribution boards ready for assembly on site with apertures pre-cut to allow cable access between the various enclosures, combining Panelboards and TP&N boards into bespoke composite panels.

Standard metal distribution boards designed to accommodate customer specified OEM equipment.

### **Engineered Consumer Units**

Factory assembly of non-standard consumer units, special configurations in standard enclosures or metal DIN rail enclosures. Providing an exact product that meets the requirements of your particular installation needs.

Pluggable and metered consumer units are also an option. With pluggable consumer units circuit breakers are wired to sockets fitted into the enclosure enabling final circuit cabling to be simply plugged in.

**To learn more about our engineered solutions offer, please contact us:**

**Technical Service Centre**

Call our Technical Services Centre for all your national sales enquiries.

**01952 675600**

[estimation@hager.co.uk](mailto:estimation@hager.co.uk)

**Technical Service Centre Faxline**

**01952 675557**



## 01 Commercial Distribution

**Distribution Boards** / Type A Distribution Boards / Type B Distribution Boards / Panelboards / Metering / Fuse Combination Switches / Switch Fuses / Switch Disconnectors / Enclosed MCCBs /



1.1

**Protection Devices** / MCBs / RCBOs / RCCBs / Motor Starters / Fuse Carriers / Surge Protection / Earth Fault Relays / MCCBs

## 02 Modular Devices & Enclosures

**Enclosures** / DIN Rail Enclosures / IP40 Enclosures / IP55 Enclosures / IP65 Enclosures / Enclosure Accessories



2.1

**Modular Devices** / Metering & Monitoring / Switching / Relays & Contactors / Push Buttons / Indication / Timers / Heating

## 03 Lighting, Connection & Control

**Klik** / Klik 4 Pin / Klik 7 Pin

**Controls** / Motion Detectors

**Lighting** / Outdoor Lighting



3.1

## 04 Residential Distribution

**Consumer Units** / Surface Mounted Consumer Units / Flush Mounted Consumer Units / Consumer Unit Accessories



4.1

**Protection Devices** / MCBs / RCBOs / Locking Kit / Surge Protection

## 05 Wiring Accessories

**Sollysta** / White Moulded / Decorative / Metalclad / IP66

**Junction Boxes** / Traditional Junction Boxes / Maintenance Free Junction Boxes / Downlighter Junction Boxes

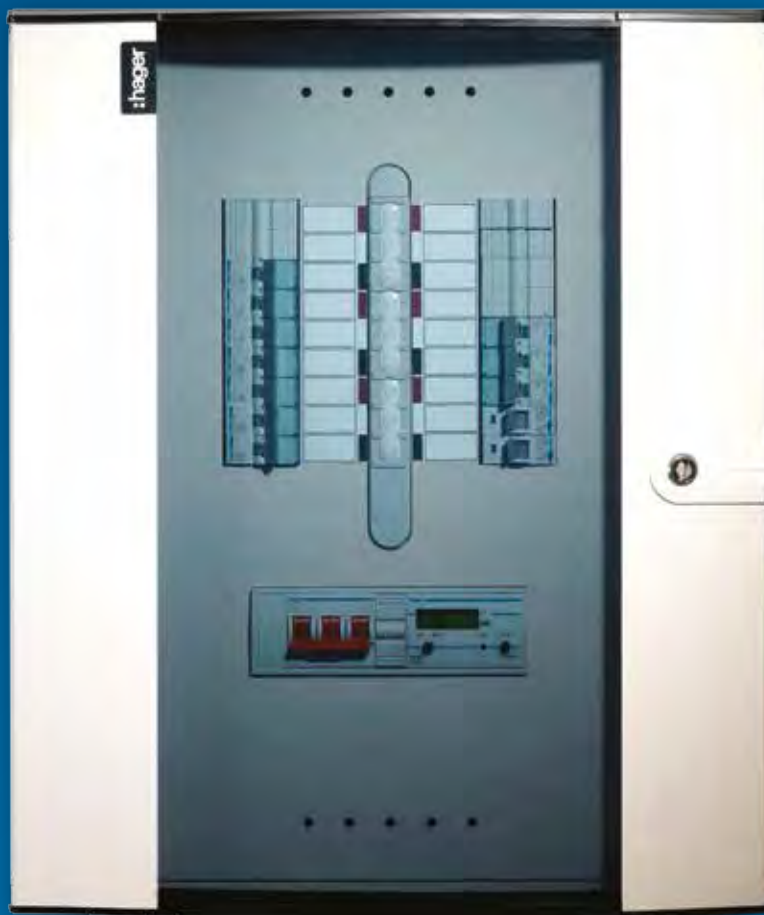
**Ceiling Accessories** / Safety Lampholders / Safety Pendants



5.1

# Commercial Distribution

Powering a building to its potential, it's what we do. We have the perfect solutions to help an office, factory or industrial site save energy and keep their occupants safe. From Panelboards to our range of enhanced TP&N boards with metering capabilities, our commercial offering will create the perfect electrical ecosystem for a building.





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**Distribution Boards**

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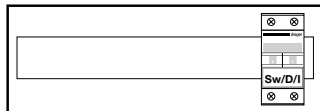


JK104

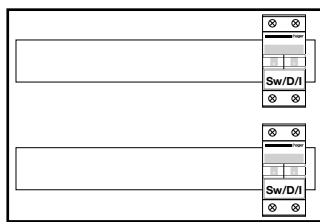
### SP&N Distribution Boards

#### Characteristics:

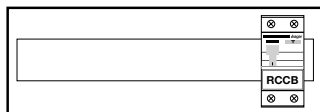
- SP&N distribution boards are available from 4-28 outgoing ways. The range comes with a choice of either 100A 2 pole switch disconnector, 63A 30mA 2 pole RCCB or 100A 30mA 2 pole RCCB, or a range of split load versions.
- Conforms to BS EN 61439-3.  $I_{nA} = 63A/100A$ ,  $I_{nC} = 63A$ ,  $I_{CC} = 10kA$
- Cable Sizes: 100A: 50mm<sup>2</sup>, 63A: 16mm<sup>2</sup>
- Ample wiring space, with provision to accept RCBO's.
- Full complement of earth and neutral terminal bars to accept up to 16mm<sup>2</sup> cable.
- Suitable for cable entry on all sides and back.
- For dimensions see page 1.47.



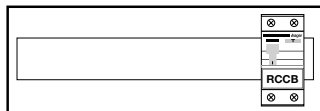
100A Switch Disconnector Incomer



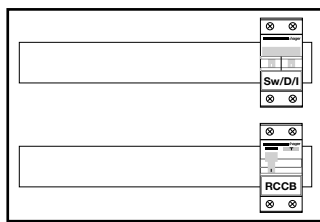
100A Switch Disconnector Incomer Dual Row



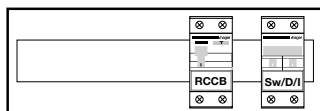
63A 30mA Switch Disconnector Incomer



100A 30mA RCCB Incomer



100A 30mA RCCB Incomer Dual Row



100A Switch Disconnector Incomer & 63A 30mA RCCB

Description	Size	Cat ref.
<b>100A Switch Disconnector Incomer</b>		
4 Way 100A Switch Disconnector Incomer	3	<b>JK104</b>
6 Way 100A Switch Disconnector Incomer	3	<b>JK106</b>
10 Way 100A Switch Disconnector Incomer	4	<b>JK110</b>
14 Way 100A Switch Disconnector Incomer	5	<b>JK114</b>
20 Way 100A Switch Disconnector Incomer	7	<b>JK120</b>
28 Way 100A Switch Disconnector Incomer Dual Row	5 (2)	<b>JK128</b>
<b>63A 30mA RCCB Incomer</b>		
4 Way 63A 30mA RCCB Incomer	3	<b>JK404H</b>
6 Way 63A 30mA RCCB Incomer	3	<b>JK406H</b>
10 Way 63A 30mA RCCB Incomer	4	<b>JK410H</b>
14 Way 63A 30mA RCCB Incomer	5	<b>JK414H</b>
20 Way 63A 30mA RCCB Incomer	7	<b>JK420H</b>
<b>100A 30mA RCCB Incomer</b>		
4 Way 100A 30mA RCCB Incomer	3	<b>JK304H</b>
6 Way 100A 30mA RCCB Incomer	3	<b>JK306H</b>
10 Way 100A 30mA RCCB Incomer	4	<b>JK310H</b>
14 Way 100A 30mA RCCB Incomer	5	<b>JK314H</b>
20 Way 100A 30mA RCCB Incomer	7	<b>JK320H</b>
28 Way 100A 30mA RCCB Incomer Dual Row	5 (2)	<b>JK328H</b>
<b>100A Switch Disconnector and 63A 30mA RCCB</b>		
6 Way Split Load Configurable 100A Switch 63A 30mA RCCB	4	<b>JK706C</b>
10 Way Split Load Configurable 100A Switch 63A 30mA RCCB	5	<b>JK710C</b>
14 Way Split Load Configurable 100A Switch 63A 30mA RCCB	7	<b>JK714C</b>
<b>100A Switch Disconnector and 100A 30mA RCCB</b>		
28 Way Split Load 14+14 100A Switch 100A 30mA RCCB Dual Row	5 (2)	<b>JK527H</b>

The relevant part of the BS EN 61439 series applies to the integration of mechanical and electrical components (switching devices, control devices, busbars, functional units, etc.), into an enclosure. Hager systems such as consumer unit, distribution board and panel board ranges are certified to the appropriate part of the BS EN 61439 series. When selecting other device / enclosure arrangements, please contact Hager technical support for guidance - 01952 675689.

### DIN Rail Enclosures

#### Characteristics:

- One, two or three row 8-66 module enclosures, fitted with DIN rails to accept any combination of Hager devices. Ample wiring space, with provision to accept RCBO's.
- Conforms to BS EN 62208.  $I_{nA} = 63A/100A$ ,  $I_{nC} = 63A$ ,  $I_{CC} = 10kA$
- Full complement of earth and neutral terminal bars to accept up to 16mm<sup>2</sup> cable.
- Suitable for cable entry on all sides and back.
- For dimensions see page 1.47.



JK008

Description	Size	Cat ref.
1 Row 8 Modues	3	<b>JK008</b>
1 Row 12 Modues	4	<b>JK012</b>
1 Row 16 Modues	5	<b>JK016</b>
1 Row 22 Modues	7	<b>JK022</b>
2 Row 24 Modues (2 x 12)	4 (2)	<b>JK024</b>
2 Row 32 Modues (2 x 16)	5 (2)	<b>JK032</b>
2 Row 44 Modues (2 x 22)	7 (2)	<b>JK044</b>
3 Row 66 Modues (3 x 22)	7 (3)	<b>JK066</b>

Commercial Distribution

### Invicta 3 SP&N Distribution Boards

#### Characteristics:

- Boards are available with 14 & 29 outgoing ways. The range comes with a 100A 2 pole switch disconnecter to accept 50mm<sup>2</sup> cable. Ample wiring space, with provision to accept RCBO's.
- Conforms to BS EN 61439-3.  $I_{nA} = 63A/100A$ ,  $I_{nC} = 63A$ ,  $I_{CC} = 10kA$
- Full complement of earth and neutral terminal bars to accept up to 16mm<sup>2</sup> cable.
- Suitable for cable entry on all sides and back.
- Enclosures are available with plain or glazed doors.
- For dimensions see page 1.47.



JK114AG

Description	Cat ref.	Cat ref.
	Plain Door	Glazed Door
1 Row, 14 Way 100A Switch Disconnecter Incomer	<b>JK114A</b>	<b>JK114AG</b>
2 Row, 29 Way 100A Switch Disconnecter Incomer	<b>JK129A</b>	<b>JK129AG</b>



JK106BG

<sup>1</sup> A **JK101SE** may be required to provide additional incoming cable space, see page 1.48.

<sup>2</sup> Full metal cover & door to comply with BS 7671 Amendment 3, where required for domestic dwelling applications.

### Invicta 3 125A TP&N Distribution Boards (125A Incoming, 63A Outgoing)

#### Characteristics:

- Surface mounted steel enclosures, IP3XD rated available with plain, glazed & Amendment 3 door options.
- Conforms to BS EN 61439-3,  $I_{nA} = 125A$ ,  $I_{nC} = 63A$ ,  $I_{CC} = 25kA$
- Supplied without incoming & outgoing devices. A Hager incomer kit must be used.
- Incoming cable sizes: 125A & 100A 50mm<sup>2</sup>, 63A 16mm<sup>2</sup>
- For dimensions see page 1.48.

Description	Cat ref. Plain door	Cat ref. Glazed door	Cat ref. Amd 3 Compliant
4 Triple Pole Ways 125A TP&N Board	<b>JK104B</b> <sup>1</sup>	<b>JK104BG</b> <sup>1</sup>	<b>JK104BA3</b> <sup>2</sup>
6 Triple Pole Ways 125A TP&N Board	<b>JK106B</b> <sup>1</sup>	<b>JK106BG</b> <sup>1</sup>	<b>JK106BA3</b> <sup>2</sup>
8 Triple Pole Ways 125A TP&N Board	<b>JK108B</b> <sup>1</sup>	<b>JK108BG</b> <sup>1</sup>	<b>JK108BA3</b> <sup>2</sup>
12 Triple Pole Ways 125A TP&N Board	<b>JK112B</b>	<b>JK112BG</b>	<b>JK112BA3</b> <sup>2</sup>
16 Triple Pole Ways 125A TP&N Board	<b>JK116B</b>	<b>JK116BG</b>	<b>JK116BA3</b> <sup>2</sup>
18 Triple Pole Ways 125A TP&N Board	<b>JK118B</b>	<b>JK118BG</b>	<b>JK118BA3</b> <sup>2</sup>
24 Triple Pole Ways 125A TP&N Board	<b>JK124B</b>	<b>JK124BG</b>	<b>JK124BA3</b> <sup>2</sup>



JKD1416PM

### 125A Dual Metered Boards

#### Characteristics:

- Boards are supplied with a dual channel meter that offers a pulsed & modbus output.
- Conforms to BS EN 61439-3,  $I_{nA} = 125A$ ,  $I_{nC} = 63A$ ,  $I_{CC} = 25kA$ .
- Provided with meter and 125A TP switch disconnector pre-fitted. Each individual pan is fully rated at 125A.
- For dimensions see page 1.51.

Description	Max cable capacity solid	Lower pan ways	Upper pan ways	Cat ref.
4+6 Way Power & Lighting Board	50mm <sup>2</sup>	4	6	<b>JKD146PM</b>
6+6 Way Power & Lighting Board	50mm <sup>2</sup>	6	6	<b>JKD166PM</b>
6+4 Way Power & Lighting Board	50mm <sup>2</sup>	6	4	<b>JKD164PM</b>
6+8 Way Power & Lighting Board	50mm <sup>2</sup>	6	8	<b>JKD168PM</b>
8+8 Way Power & Lighting Board	50mm <sup>2</sup>	8	8	<b>JKD188PM</b>
8+6 Way Power & Lighting Board	50mm <sup>2</sup>	8	6	<b>JKD186PM</b>
4+16 Way Power & Lighting Board	50mm <sup>2</sup>	4	16	<b>JKD1416PM</b>
16+4 Way Power & Lighting Board	50mm <sup>2</sup>	16	4	<b>JKD1164PM</b>
8+12 Way Power & Lighting Board	50mm <sup>2</sup>	8	12	<b>JKD1812PM</b>
12+8 Way Power & Lighting Board	50mm <sup>2</sup>	12	8	<b>JKD1128PM</b>
12+12 Way Power & Lighting Board	50mm <sup>2</sup>	12	12	<b>JKD11212PM</b>



JK106BD

### IP65 Distribution Boards (Steel version not suitable for outdoor use)

#### Characteristics:

- Suitable for three phase applications where a high IP rating is required.
- Conforms to BS EN 61439-3,  $I_{nA} = 125A$ ,  $I_{nC} = 63A$ ,  $I_{CC} = 25kA$ .
- Available with either a steel (mild steel, powder coated) or Glass Reinforced Plastic (GRP) enclosure.
- Supplied without incoming and outgoing devices. A Hager incomer kit must be used.
- Available up to 125A direct connection with outgoing distribution, rated for MCBs from 0.5A to 63A.

Description	Cat ref. Steel	Cat ref. GRP
4 Way IP65 Metal 125A TPN Board 800 x 600 x 300	<b>JK104BD</b> <sup>3</sup>	<b>JK104BF</b>
6 Way IP65 Metal 125A TPN Board 800 x 600 x 300	<b>JK106BD</b> <sup>3</sup>	<b>JK106BF</b>
8 Way IP65 Metal 125A TPN Board 800 x 600 x 300	<b>JK108BD</b> <sup>3</sup>	<b>JK108BF</b>
12 Way IP65 Metal 125A TPN Board 1250 x 850 x 300	<b>JK112BD</b> <sup>3</sup>	<b>JK112BF</b>
16 Way IP65 Metal 125A TPN Board 1250 x 850 x 300	<b>JK116BD</b> <sup>3</sup>	<b>JK116BF</b>

### MCBs & RCBOs for Invicta 3 Type B Distribution Boards - See pages 1.27-1.33 for more info

		0.5A	1A	2A	3A	4A	6A	10A
B Curve	Single Pole	-	-	-	-	-	<b>NBN106A</b>	<b>NBN110A</b>
	Triple Pole	-	-	-	-	-	<b>NBN306A</b>	<b>NBN310A</b>
C Curve	Single Pole	<b>NCN100A</b>	<b>NCN101A</b>	<b>NCN102A</b>	<b>NCN103A</b>	<b>NCN104A</b>	<b>NCN106A</b>	<b>NCN110A</b>
	Triple Pole	<b>NCN300A</b>	<b>NCN301A</b>	<b>NCN302A</b>	<b>NCN303A</b>	<b>NCN304A</b>	<b>NCN306A</b>	<b>NCN310A</b>
D Curve	Single Pole	<b>NDN100A</b>	<b>NDN101A</b>	<b>NDN102A</b>	<b>NDN103A</b>	<b>NDN104A</b>	<b>NDN106A</b>	<b>NDN110A</b>
	Triple Pole	<b>NDN300A</b>	<b>NDN301A</b>	<b>NDN302A</b>	<b>NDN303A</b>	<b>NDN304A</b>	<b>NDN306A</b>	<b>NDN310A</b>
RCBO (B)	Single Pole	-	-	-	-	-	<b>ADB106</b>	<b>ADB110</b>
RCBO (C)	Single Pole	-	-	-	-	-	<b>ADC106</b>	<b>ADC110</b>

### Incomer Kits for 125A Boards

Description	Max Cable Capacity Solid	Cat ref.
3 Pole 100A Switch Disconnecter Incomer Kit (Fits within distribution board)	50mm <sup>2</sup>	<b>JK11003S</b>
4 Pole 100A Switch Disconnecter Incomer Kit (Fits within distribution board)	50mm <sup>2</sup>	<b>JK11004S</b>
3 Pole 125A Switch Disconnecter Incomer Kit (Fits within distribution board)	50mm <sup>2</sup>	<b>JK11253S</b>
4 Pole 125A Switch Disconnecter Incomer Kit (Fits within distribution board)	50mm <sup>2</sup>	<b>JK11254S</b>
4 Pole 63A Contactor Incomer Kit includes Switch Disconnecter (fits below distribution board, 300mm high)	50mm <sup>2</sup>	<b>JK10634C</b> <sup>3</sup>
4 Pole 100A Contactor Incomer Kit includes Switch Disconnecter (fits below distribution board, 450mm high)	M8 Lug	<b>JK11004C</b> <sup>3</sup>
125A Direct Connection Kit (Fits within distribution board)	50mm <sup>2</sup>	<b>JK11254D</b>
4 Pole 63A 30mA RCCB Incomer Kit (Fits within distribution board)	25mm <sup>2</sup>	<b>JK10634RH</b>
4 Pole 100A 30mA RCCB Incomer Kit (Fits within distribution board)	50mm <sup>2</sup>	<b>JK11004RH</b>
4 Pole 100A 300mA RCCB Incomer Kit (Fits within distribution board)	50mm <sup>2</sup>	<b>JK11004RL</b>
4 Pole 100A 300mA Time Delayed RCCB Incomer Kit (Fits within distribution board)	50mm <sup>2</sup>	<b>JK11004RLD</b>
4 Pole 100A 100mA RCCB Incomer Kit (Fits within distribution board)	50mm <sup>2</sup>	<b>JK11004RM</b>
4 Pole 100A 100mA Time Delayed RCCB Incomer Kit (Fits within distribution board)	50mm <sup>2</sup>	<b>JK11004RMD</b>
125A 4 pole Changeover Incomer Kit (Fits within distribution board)	50mm <sup>2</sup>	<b>JK11254CO</b> <sup>3</sup>



JK11003S

<sup>3</sup> A 300 / 450mm space is required below the board for fitting.

Commercial Distribution

### Meter Incomer Kits for 125A Boards

#### Characteristics:

- Each meter pack contains: 125A incoming switch with M8 lug cable connection, meter, CT blocks plus all necessary connections and 125A direct connection kits for each associated TP&N board.
- Conforms to BS EN 61439-3, I<sub>n</sub>A = 125A, I<sub>nc</sub> = 63A, I<sub>cc</sub> = 25kA.
- For meter incomer kit dimensions see page 1.55.
- **Note:** Distribution boards supplied separately to be assembled on site.

Description	Connection	Cat ref.
Dual kWh Meter Pack 125A Incomer Pulsed & Modbus	M8 Lug	<b>JKD125PM</b>
Triple kWh Meter Pack 125A Incomer Pulsed & Modbus	M8 Lug	<b>JKD125TPM</b>



JKD125PM

### Meter Packs for 125A Boards

#### Characteristics:

- This kit fits into the TP&N distribution board. (When fitting a meter pack to a **JK104B(G)** & **JK106B(G)**, a **JK101SE** is required to provide additional incoming cable space).
- Each meter pack contains: meter, 3 pole CT block, 3 x fuses & carriers on DIN rail, wiring loom, incoming shroud, instructions (including torque settings for electrical connections).
- For sub billing metering applications please contact our Technical Service Centre on 01952 675 689.

Description	Cat ref.
Multifunction Meter Pack 125A Pulsed & Modbus	<b>JK140PM</b>



JK140PM

### Triple Pole RCD Add-On Blocks for MCB Devices

- For more information see page 1.29.
- For technical details see page 1.86.

Sensitivity I <sub>Δn</sub>	I <sub>n</sub> A	Width (35mm)	Cat ref.
30mA	63A	4 Mod	<b>BD163T</b>
100mA	63A	4 Mod	<b>BE163T</b>
300mA	63A	4 Mod	<b>BF163T</b>



BD163T

16A	20A	25A	32A	40A	45A	50A	63A
<b>NBN116A</b>	<b>NBN120A</b>	<b>NBN125A</b>	<b>NBN132A</b>	<b>NBN140A</b>	-	<b>NBN150A</b>	<b>NBN163A</b>
<b>NBN316A</b>	<b>NBN320A</b>	<b>NBN325A</b>	<b>NBN332A</b>	<b>NBN340A</b>	-	<b>NBN350A</b>	<b>NBN363A</b>
<b>NCN116A</b>	<b>NCN120A</b>	<b>NCN125A</b>	<b>NCN132A</b>	<b>NCN140A</b>	-	<b>NCN150A</b>	<b>NCN163A</b>
<b>NCN316A</b>	<b>NCN320A</b>	<b>NCN325A</b>	<b>NCN332A</b>	<b>NCN340A</b>	-	<b>NCN350A</b>	<b>NCN363A</b>
<b>NDN116A</b>	<b>NDN120A</b>	<b>NDN125A</b>	<b>NDN132A</b>	<b>NDN140A</b>	-	<b>NDN150A</b>	<b>NDN163A</b>
<b>NDN316A</b>	<b>NDN320A</b>	<b>NDN325A</b>	<b>NDN332A</b>	<b>NDN340A</b>	-	<b>NDN350A</b>	<b>NDN363A</b>
<b>ADB116</b>	<b>ADB120</b>	<b>ADB125</b>	<b>ADB132</b>	<b>ADB140</b>	<b>ADB145</b>	-	-
<b>ADC116</b>	<b>ADC120</b>	<b>ADC125</b>	<b>ADC132</b>	<b>ADC140</b>	-	-	-



JK206BG

<sup>1</sup> Full metal cover & door to comply with BS 7671 Amendment 3.

### Invicta 3 250A TP&N Distribution Boards (250A Incoming, 63A Outgoing)

**Characteristics:**

- Surface mounted steel enclosures, IP3XD rated, available with plain, glazed & Amendment 3 door options.
- Conforms to BS EN 61439-3.  $I_{nA} = 250A$ ,  $I_{nC} = 63A$ ,  $I_{cC} = 25kA$ .
- Supplied without incoming and outgoing devices. A Hager incoming kit must be used.
- For dimensions see page 1.48.

Description	Cat ref. Plain door	Cat ref. Glazed door	Cat ref. Amd 3 Compliant
8 Triple Pole Ways 250A TP&N Board	<b>JK208B</b>	<b>JK208BG</b>	<b>JK208BA3</b> <sup>1</sup>
12 Triple Pole Ways 250A TP&N Board	<b>JK212B</b>	<b>JK212BG</b>	<b>JK212BA3</b> <sup>1</sup>
16 Triple Pole Ways 250A TP&N Board	<b>JK216B</b>	<b>JK216BG</b>	<b>JK216BA3</b> <sup>1</sup>
18 Triple Pole Ways 250A TP&N Board	<b>JK218B</b>	<b>JK218BG</b>	<b>JK218BA3</b> <sup>1</sup>
24 Triple Pole Ways 250A TP&N Board	<b>JK224B</b>	<b>JK224BG</b>	<b>JK224BA3</b> <sup>1</sup>



JKD2884PM

### 200A Tri Metered Boards (Power, Lighting & Mechanical Services)

**Characteristics:**

- Provides separate energy information for each group of outgoing devices.
- Boards are supplied with meters that offer a pulsed & modbus output.
- Provided with a 200A incomer pre-fitted with ample cable space.
- Conforms to BS EN 61439-3.  $I_{nA} = 200A$ ,  $I_{nC} = 63A$ ,  $I_{cC} = 25kA$ .
- For dimensions see page 1.51.

Description	Max cable cap. solid	Lower pan ways	Middle pan ways	Upper pan ways	Cat ref.
8+8+4 Way Power, Lighting & Service Board	M8 Lug	8	8	4	<b>JKD2884PM</b>

### Incomer Kits for 250A Boards

Description	Connection	Cat ref.
3 Pole 250A MCCB Incomer Kit (Fits within distribution board)	M8 Lug	<b>JK22503M</b>
4 Pole 250A MCCB Incomer Kit (Fits within distribution board)	M8 Lug	<b>JK22504M</b>
3 Pole 250A Switch Disconnecter Incomer Kit (Fits within distribution board)	M8 Lug	<b>JK22503S</b>
4 Pole 250A Switch Disconnecter Incomer Kit (Fits within distribution board)	M8 Lug	<b>JK22504MCS</b>
4 Pole 250A Direct Connection Kit (Fits within distribution board)	M8 Lug	<b>JK22504D</b>
4 Pole 160A Contactor Incomer Kit includes Switch Disconnecter (fits below distribution board, 450mm high)	M8 Lug	<b>JK21604C</b>
3 Pole 125A MCCB Incomer Kit (Fits within distribution board)	M8 Lug	<b>JK21253M</b>
4 Pole 125A MCCB Incomer Kit (Fits within distribution board)	M8 Lug	<b>JK21254M</b>

### MCBs & RCBOs for Invicta 3 Type B Distribution Boards - See pages 1.27-1.33 for more info

		0.5A	1A	2A	3A	4A	6A	10A
B Curve	Single Pole	-	-	-	-	-	<b>NBN106A</b>	<b>NBN110A</b>
	Triple Pole	-	-	-	-	-	<b>NBN306A</b>	<b>NBN310A</b>
C Curve	Single Pole	<b>NCN100A</b>	<b>NCN101A</b>	<b>NCN102A</b>	<b>NCN103A</b>	<b>NCN104A</b>	<b>NCN106A</b>	<b>NCN110A</b>
	Triple Pole	<b>NCN300A</b>	<b>NCN301A</b>	<b>NCN302A</b>	<b>NCN303A</b>	<b>NCN304A</b>	<b>NCN306A</b>	<b>NCN310A</b>
D Curve	Single Pole	<b>NDN100A</b>	<b>NDN101A</b>	<b>NDN102A</b>	<b>NDN103A</b>	<b>NDN104A</b>	<b>NDN106A</b>	<b>NDN110A</b>
	Triple Pole	<b>NDN300A</b>	<b>NDN301A</b>	<b>NDN302A</b>	<b>NDN303A</b>	<b>NDN304A</b>	<b>NDN306A</b>	<b>NDN310A</b>
RCBO (B)	Single Pole	-	-	-	-	-	<b>ADB106</b>	<b>ADB110</b>
RCBO (C)	Single Pole	-	-	-	-	-	<b>ADC106</b>	<b>ADC110</b>

### Meter Incomer Kits for 250A Boards

**Characteristics:**

- Each meter pack contains: 250A incoming switch with M8 lug cable connection, a single meter for dual, and two meters on the triple, CT blocks plus all necessary connections and 250A direct connection kits for each required TP&N board.
- Conforms to BS EN 61439-3
- $I_{nA} = 250A$ ,  $I_{nC} = 63A$ ,  $I_{cC} = 25kA$
- For meter incomer kit dimensions see page 1.55.

Description	Connection	Cat ref.
Dual kWh Meter Pack 250A Incomer Pulsed	M8 Lug	<b>JKD250PM</b>
Triple kWh Meter Pack 250A Incomer Pulsed & Modbus	M8 Lug	<b>JKD250TPM</b>



JKD250PM (distribution boards are not included)

Commercial Distribution

### Meter Packs for 250A Boards

**Characteristics:**

- These kits fit into the main distribution board.
- Each meter pack contains: meter, 3 pole CT Block, 3 x fuses & carriers on DIN rail, wiring loom, incoming shroud & instructions.

Description	Cat ref.
Multifunction Meter Pack 250A Pulsed & Modbus	<b>JK240PM</b>



JK240PM

16A	20A	25A	32A	40A	45A	50A	63A
<b>NBN116A</b>	<b>NBN120A</b>	<b>NBN125A</b>	<b>NBN132A</b>	<b>NBN140A</b>	-	<b>NBN150A</b>	<b>NBN163A</b>
<b>NBN316A</b>	<b>NBN320A</b>	<b>NBN325A</b>	<b>NBN332A</b>	<b>NBN340A</b>	-	<b>NBN350A</b>	<b>NBN363A</b>
<b>NCN116A</b>	<b>NCN120A</b>	<b>NCN125A</b>	<b>NCN132A</b>	<b>NCN140A</b>	-	<b>NCN150A</b>	<b>NCN163A</b>
<b>NCN316A</b>	<b>NCN320A</b>	<b>NCN325A</b>	<b>NCN332A</b>	<b>NCN340A</b>	-	<b>NCN350A</b>	<b>NCN363A</b>
<b>NDN116A</b>	<b>NDN120A</b>	<b>NDN125A</b>	<b>NDN132A</b>	<b>NDN140A</b>	-	<b>NDN150A</b>	<b>NDN163A</b>
<b>NDN316A</b>	<b>NDN320A</b>	<b>NDN325A</b>	<b>NDN332A</b>	<b>NDN340A</b>	-	<b>NDN350A</b>	<b>NDN363A</b>
<b>ADB116</b>	<b>ADB120</b>	<b>ADB125</b>	<b>ADB132</b>	<b>ADB140</b>	<b>ADB145</b>	-	-
<b>ADC116</b>	<b>ADC120</b>	<b>ADC125</b>	<b>ADC132</b>	<b>ADC140</b>	-	-	-



JK116EG

### DIN Extension Boxes & Door Kits for 125A Primary Boards

**Characteristics:**

- Extension boxes have plain or glazed doors and a DIN rail for mounting modular devices.
- Conforms to BS EN 62208.
- Full width enclosure provided with sixteen modular ways per row.
- For dimensions see page 1.49.

Description	Cat ref. Plain door	Cat ref. Glazed door	Cat ref. Amd 3 Compliant
125A 16 Way 1 Row DIN Extension Box	<b>JK116E</b>	<b>JK116EG</b>	<b>JK116EA3</b>
125A 32 Way 2 Row DIN Extension Box	<b>JK132E</b>	<b>JK132EG</b>	<b>JK132EA3</b>
125A 16 Mod DIN Plain Spare Door Kit (Amendment 3)	-	-	<b>JK116EA3-DK</b>
125A 32 Mod DIN Plain Spare Door Kit (Amendment 3)	-	-	<b>JK132EA3-DK</b>



JK216E

### DIN Extension Boxes & Door Kits for 250A Primary Boards

Description	Cat ref. Plain door	Cat ref. Glazed door
250A 16 Way 1 Row DIN Extension Box	<b>JK216E</b>	<b>JK216EG</b>
250A 32 Way 2 Row DIN Extension Box	<b>JK232E</b>	<b>JK232EG</b>
250A 16 Way 1 Row DIN Extension Box (Amendment 3)	<b>JK216EA3</b>	-
250A 32 Way 2 Row DIN Extension Box (Amendment 3)	<b>JK232EA3</b>	-
250A 16 Mod DIN Plain Spare Door Kit (Amendment 3)	<b>JK216EA3-DK</b>	-
250A 32 Mod DIN Plain Spare Door Kit (Amendment 3)	<b>JK232EA3-DK</b>	-



JK101SE

### Cable Spreader Boxes & Door Kits for 125A & 250A Primary Boards

**Characteristics:**

- Cable spreader boxes are used for additional cabling space therefore do not require doors. Optional door kits are available.
- Conforms to BS EN 62208.
- For dimensions see page 1.49.

Description	Cat ref. Plain door	Cat ref. Glazed door
Small Cable Spreader Box (supplied without a door)	<b>JK101SE</b>	<b>JK201SE</b>
Large Cable Spreader Box (supplied without a door)	<b>JK102LE</b>	<b>JK202LE</b>
Small Cable Spreader Box Door Kit	<b>JK101DK</b>	<b>JK101DK</b>
Large Cable Spreader Box Door Kit	<b>JK102DK</b>	<b>JK102DK</b>



JK101DK



### Side DIN Boxes for Primary Boards

**Characteristics:**

- Side extension boxes allow for the installation of DIN rail mounted devices.
- Conforms to BS EN 62208.
- Can be horizontally or vertically attached to distribution boards.
- All Side DIN Boxes supplied with two removable gland plates.
- For dimensions see page 1.48.



JK104BDFG



JK208BDFG

Description	Number of rows	Cat ref. Glazed door	Cat ref. Amd 3 Compliant
<b>Side DIN Boxes for 125A Primary Boards</b>			
4 Way 32 Mod Side DIN Box for <b>JK104B(G)</b>	2	<b>JK104BDFG</b>	<b>JK104BDFA3</b>
6 Way 32 Mod Side DIN Box for <b>JK106B(G)</b>	2	<b>JK106BDFG</b>	<b>JK106BDFA3</b>
8 Way 48 Mod Side DIN Box for <b>JK108B(G)</b>	3	<b>JK108BDFG</b>	<b>JK108BDFA3</b>
12 Way 64 Mod Side DIN Box for <b>JK112B(G)</b>	4	<b>JK112BDFG</b>	<b>JK112BDFA3</b>
16 Way 80 Mod Side DIN Box for <b>JK116B(G)</b>	5	<b>JK116BDFG</b>	<b>JK116BDFA3</b>
<b>Side DIN Boxes for 250A Primary Boards</b>			
8 Way 80 Mod Side DIN Box for <b>JK208B(G)</b>	5	<b>JK208BDFG</b>	<b>JK208BDFA3</b>
12 Way 80 Mod Side DIN Box for <b>JK212B(G)</b>	5	<b>JK212BDFG</b>	<b>JK212BDFA3</b>
16 Way 96 Mod Side DIN Box for <b>JK216B(G)</b>	6	<b>JK216BDFG</b>	<b>JK216BDFA3</b>
18 Way 112 Mod Side DIN Box for <b>JK218B(G)</b>	7	<b>JK218BDFG</b>	<b>JK218BDFA3</b>
24 Way 128 Mod Side DIN Box for <b>JK224B(G)</b>	8	<b>JK224BDFG</b>	<b>JK224BDFA3</b>

Commercial Distribution

### Side Extension Boxes for 125A Primary Boards

**Characteristics:**

- Side extension boxes allow cable ways to be fitted on site.
- Conforms to BS EN 62208.
- Available in either half or full distribution board width.
- All side extension boxes supplied with two removable gland plates.
- For dimensions see page 1.49.



JK104BSF



JK104BSH

Description	Cat ref. Plain door
<b>Side Extension Boxes for 125A Primary Boards</b>	
4 Way Side Extension Box for <b>JK104B(G)</b> Full Width	<b>JK104BSF</b>
6 Way Side Extension Box for <b>JK106B(G)</b> Full Width	<b>JK106BSF</b>
8 Way Side Extension Box for <b>JK108B(G)</b> Full Width	<b>JK108BSF</b>
12 Way Side Extension Box for <b>JK112B(G)</b> Full Width	<b>JK112BSF</b>
16 Way Side Extension Box for <b>JK116B(G)</b> Full Width	<b>JK116BSF</b>
<b>Side Extension Boxes for 250A Primary Boards</b>	
8 Way Side Extension Box for <b>JK208B(G)</b> Full Width	<b>JK208BSF</b>
12 Way Side Extension Box for <b>JK212B(G)</b> Full Width	<b>JK212BSF</b>
16 Way Side Extension Box for <b>JK216B(G)</b> Full Width	<b>JK216BSF</b>
18 Way Side Extension Box for <b>JK218B(G)</b> Full Width	<b>JK218BSF</b>
24 Way Side Extension Box for <b>JK224B(G)</b> Full Width	<b>JK224BSF</b>
<b>Half Width Side Extension Boxes for 125A Primary Boards</b>	
4 Way Half Width Extension Box	<b>JK104BSH</b>
6 Way Half Width Extension Box	<b>JK106BSH</b>
8 Way Half Width Extension Box	<b>JK108BSH</b>
12 Way Half Width Extension Box	<b>JK112BSH</b>
16 Way Half Width Extension Box	<b>JK116BSH</b>
Small Half Width Filler Box	<b>JK101BSH</b>
<b>Half Width Side Extension Boxes for 250A Primary Boards</b>	
8 Way Half Width Extension Box	<b>JK208BSH</b>
12 Way Half Width Extension Box	<b>JK212BSH</b>
16 Way Half Width Extension Box	<b>JK216BSH</b>
18 Way Half Width Extension Box	<b>JK218BSH</b>
24 Way Half Width Extension Box	<b>JK224BSH</b>
Small Half Width Filler Box	<b>JK201BSH</b>



JK01B



JK222PK

### Invicta 3 125A & 250A & IP65 Distribution Board Accessories

Description	125A Accessories Cat ref.	250A Accessories Cat ref.
Door Locking Kit	<b>JK222PK</b>	<b>JK222PK</b>
Spare Label Pack - All Sizes (one pack)	<b>JKLABELPACK</b>	<b>JKLABELPACK</b>
Single Phasing Kit	<b>JK125BSP</b>	<b>JK250BSP</b>
Single Pole Busbar Blank	<b>JK01B</b>	<b>JK01B</b>
JK1/2 Horizontal or Vertical Mechanical Connection Kit	<b>JK100HK</b>	<b>JK100HK</b>
Brass Gland Plate - 2.0mm	<b>JK1PLATEB</b>	<b>JK2PLATEB</b>
100A Top Tap Off Kit	<b>JK100TAP</b>	<b>JK100TAP</b>
Additional Earth Bar Kit High Integrity - 2 x 15 Connections	<b>JK030BEB</b>	<b>JK030BEB</b>
Document Clip	<b>JK01DC</b>	<b>JK01DC</b>
Neutral Connecting Block 100A	<b>KRN190</b>	<b>KRN190</b>
JK1/2 Neutral Clear Shroud	<b>JK1/NEUTRALSHROUD</b>	<b>JK1/NEUTRALSHROUD</b>
JK1/2 Busbar Stack Top Shroud	<b>JK1/2TOPSHROUD</b>	<b>JK1/2TOPSHROUD</b>
JK1/2 Main Incomer Shroud	<b>JK1/INCOMSHROUD</b>	<b>JK2/INCOMSHROUD</b>
Spare Gland Plate Including Drill Markings - 1.2mm	<b>JK1PLATEM</b>	<b>JK2PLATEM</b>



JK106BA3-DK

### Invicta 3 125A & 250A Amendment 3 Compliant Door Kit

Description	125A Cat ref.	250A Cat ref.
4 Way TPN Plain Spare Door Kit Amendment 3	<b>JK104BA3-DK</b>	-
6 Way TPN Plain Spare Door Kit Amendment 3	<b>JK106BA3-DK</b>	-
8 Way TPN Plain Spare Door Kit Amendment 3	<b>JK108BA3-DK</b>	<b>JK208BA3-DK</b>
12 Way TPN Plain Spare Door Kit Amendment 3	<b>JK112BA3-DK</b>	<b>JK212BA3-DK</b>
16 Way TPN Plain Spare Door Kit Amendment 3	<b>JK116BA3-DK</b>	<b>JK216BA3-DK</b>
18 Way TPN Plain Spare Door Kit Amendment 3	<b>JK118BA3-DK</b>	<b>JK218BA3-DK</b>
24 Way TPN Plain Spare Door Kit Amendment 3	<b>JK124BA3-DK</b>	<b>JK224BA3-DK</b>

### Invicta 3 125A & 250A Trunking Kits & Spares



JK06TK

#### Characteristics:

- Each trunking kit contains a trunking channel, lid, lid joining brackets, connecting brackets and end caps.

Description	100mm 4" Cat ref.	150mm 6" Cat ref.
Trunking Kit for Invicta 3 TP&N	<b>JK04TK 1</b>	<b>JK06TK</b>
Spare Trunking Channel	<b>JK04TC 1</b>	<b>JK06TC</b>
Spare Lid	<b>JK04TL 1</b>	<b>JK06TL</b>
Spare End Cap	<b>JK04TE 1</b>	<b>JK06TE</b>
Spare Connecting Bracket	<b>JK04TJ 1</b>	<b>JK06TJ</b>
Spare Trunking Lid Joining Bracket	<b>JK04TP 1</b>	<b>JK06TP</b>

<sup>1</sup> 4" trunking not suitable for JKD Power & Lighting Boards.



# Engineered solutions.

From pre-assembled standard distribution units to bespoke composite TP&N boards and plug in distribution boards, we can provide the solution.

We will deliver to site to an agreed deadline and specification.  
To find out more, call our Estimation Team on 01952 675600.

**:hager**



JK104BDFG

### Invicta 3 Panelboards (250A Incoming 125A Outgoing)

#### Characteristics

- Comprises of IP3XD rated enclosure, pan assembly, twin neutral and earth bars.
- Conforms to BS EN 61439-2.  $I_{NA} = 250A$ ,  $I_{NC} = 125A$ ,  $I_{CC} = 25kA$ .
- Supplied without incoming kit, JN 250A incomer kit must be used.
- Form 3B type 2 using outgoing terminal shield (form 3A without terminal shield).
- Removable side gland plates are standard. Removable gland plates are provided top and bottom for ease of installation.
- For dimensions see page 1.56.

#### Cable Capacity Incomers & Outgoers

- Incomers: 3 and 4 pole incomers, cable capacity 150mm<sup>2</sup>, max lug width 25mm, M8 bolt, direct connection kit.
- Outgoers: 1 & 3 pole MCCB 70mm<sup>2</sup> flexible, 95mm<sup>2</sup> solid.

#### Options

- Key lock, meter pack, DIN rail, extension box, spreader box.

#### Outgoing MCCBs

- Adjustable thermal options on triple pole devices.

Description	Cat ref. Plain door	Cat ref. Glazed door
4 Triple Pole Ways 250A Panelboard	<b>JN204B</b>	<b>JN204BG</b>
6 Triple Pole Ways 250A Panelboard	<b>JN206B</b>	<b>JN206BG</b>
8 Triple Pole Ways 250A Panelboard	<b>JN208B</b>	<b>JN208BG</b>
12 Triple Pole Ways 250A Panelboard	<b>JN212B</b>	<b>JN212BG</b>
16 Triple Pole Ways 250A Panelboard	<b>JN216B</b>	<b>JN216BG</b>

### Incomer Kits

Description	Max cable capacity	Cat ref.
3 Pole 250A MCCB Incomer Kit (Adj. Thermal 0.63, 0.8, 1) 40kA (Magnetic 5, 7, 9, 11 x $I_N$ )	M8 Lug	<b>JN223BM</b>
4 Pole 250A MCCB Incomer Kit (Adj. Thermal 0.63, 0.8, 1) 40kA (Magnetic 5, 7, 9, 11 x $I_N$ )	M8 Lug	<b>JN224BM</b>
3 Pole 250A Non-Auto MCCB Incomer Kit	M8 Lug	<b>JN223BS</b>
4 Pole 250A Non-Auto MCCB Incomer Kit	M8 Lug	<b>JN224BS</b>
250A Direct Connection Kit	M8 Lug	<b>JN224BD</b>



JN11004SM



JN3003TM

### Side/Top/Bottom Meter Enclosures for JN Panelboards

#### Characteristics

- Blanking plates not included.
- For meters see page 1.21.
- For dimensions see page 1.60.

Suitable for board type / Description	Apertures for Meters	Cat ref.
<b>Side Meter Enclosures</b>		
4 Way JN Board	2 x DIN 96 Cut-Outs	<b>JN9502SM</b>
6/8 Way JN Board	4 x DIN 96 Cut-Outs	<b>JN11004SM</b>
12 Way JN Board	6 x DIN 96 Cut-Outs	<b>JN12506SM</b>
16 Way JN Board	8 x DIN 96 Cut-Outs	<b>JN15508SM</b>
<b>Top/Bottom Meter Enclosures</b>		
300mm Enclosure	3 x DIN 96 Cut-Outs	<b>JN3003TM</b>
450mm Enclosure	6 x DIN 96 Cut-Outs	<b>JN4506TM</b>
Blanking Plate	-	<b>JF96BP</b>
<b>Corner Filler Enclosures</b>		
300mm Corner Filler Side Enclosure JN	-	<b>JN300CF</b>
450mm Corner Filler Side Enclosure JN	-	<b>JN450CF</b>

### DIN Rail Extension Boxes

#### Characteristics

- Supplied with DIN Rail & without gland plate (utilise removed gland plate from panelboard)
- DIN rail extensions boxes have plain or glazed doors and DIN rail chassis.
- JK2 side extension boxes can be used with this range see page 1.10.
- For dimensions see page 1.50.



JN201BE

Description	Cat ref.	Cat ref.
	Plain Door	Glazed Door
1 Row 26 Mod (300mm Height)	<b>JN201BE</b>	<b>JN201BEG</b>
2 Row 52 Mod (450mm Height)	<b>JN203BE</b>	<b>JN203BEG</b>

### Cable Spreader Boxes & Door Kits

#### Characteristics

- Supplied without gland plates (utilise removed gland plate from panelboard)
- Cable spreader boxes are used for additional cabling space therefore do not require doors. Optional door kits are available.
- For dimensions see page 1.56.



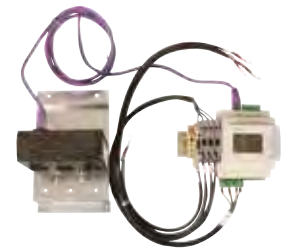
JN205BE

Description	Cat ref.
Small (300mm Height) (Door not included)	<b>JN205BE</b>
Large (450mm Height) (Door not included)	<b>JN206BE</b>
Small Cable Spreader Box Door Kit	<b>JN205DK</b>
Large Cable Spreader Box Door Kit	<b>JN206DK</b>

### Meter Pack 250A

#### Characteristics

- Comprises of a digital multi function meter, three control circuit fuse carriers, wiring harness and CTs.
- The meter pack fits directly into the main panelboard.



JN201PM

Description	Cat ref.
Multifunction Meter Pack 250A Pulsed & Modbus	<b>JN201PM</b>

### Accessories

#### Description

Description	Cat ref.
Touch Up Paint 30ml	<b>JF95A</b>
Allen Key Set	<b>JF296A</b>
Gland Plate for Invicta 3 (250A)	<b>JN2PLATE</b>
Key Lock with One Key	<b>JK222PK</b>
x125 Frame Blank (3x blanks required per triple pole way)	<b>JN001BP</b>
Multi Padlock Plate (for integral toggle lock, fits to toggle for up to 3 padlocks max ø8mm)	<b>HXA039H</b>
Neutral Barrier Kit	<b>JN201NS</b>



JN001BP

**Outgoing Devices** - See page 1.43 for more info

### MCCBs - Single Pole

Rating.	18kA Fixed Thermal	25kA Fixed Thermal
16A	<b>HDA014Z</b>	<b>HHA014Z</b>
20A	<b>HDA018Z</b>	<b>HHA018Z</b>
25A	<b>HDA023Z</b>	<b>HHA023Z</b>
32A	<b>HDA030Z</b>	<b>HHA030Z</b>
40A	<b>HDA038Z</b>	<b>HHA038Z</b>
50A	<b>HDA048Z</b>	<b>HHA048Z</b>
63A	<b>HDA061Z</b>	<b>HHA061Z</b>
80A	<b>HDA078Z</b>	<b>HHA078Z</b>
100A	<b>HDA098Z</b>	<b>HHA098Z</b>
125A	<b>HDA123Z</b>	<b>HHA123Z</b>

### MCCBs - Triple Pole Adjustable Thermal

Rating.	18kA Adjustable Thermal 0.63, 0.8, 1 x I <sub>n</sub>	25kA Adjustable Thermal 0.63, 0.8, 1 x I <sub>n</sub>
25A	<b>HDA025U</b>	<b>HHA025U</b>
40A	<b>HDA040U</b>	<b>HHA040U</b>
63A	<b>HDA063U</b>	<b>HHA063U</b>
80A	<b>HDA080U</b>	<b>HHA080U</b>
100A	<b>HDA100U</b>	<b>HHA100U</b>
125A	<b>HDA125U</b>	<b>HHA125U</b>



JF406B

### Invicta 3 Panelboards (400A Incoming 125A Outgoing)

#### Characteristics

- Comprises of IP3XD enclosure, pan assembly, neutral bar and earth bar.
- Conforms to BS EN 61439-2.  $I_{nA} = 400A$ ,  $I_{nC} = 125A$ ,  $I_{CC} = 50kA$ .
- Supplied without incoming kit, one of the incomer kits listed below must be used.
- Form 3B type 2 using outgoing terminal shield (form 3A without terminal shield).
- Removable gland plates are provided top and bottom for ease of installation.
- For dimensions see page 1.57.

#### Cable Capacity Incomers & Outgoers

- Incomers: 3 and 4 pole incomers, cable capacity: M12 bolt, direct connection kit: M10 hexagonal bolt.
- Outgoers: 1 & 3 pole MCCB: 70mm<sup>2</sup> flexible/ 95mm<sup>2</sup> solid.

#### Options

- Key lock, meter pack, DIN rail, extension box, spreader box.

#### Outgoing MCCBs

- Adjustable thermal options on triple pole.

Description	Cat ref. Plain Door	Cat ref. Glazed door
6 Triple Pole Ways 400A Panelboard	<b>JF406B</b>	<b>JF406BG</b>
8 Triple Pole Ways 400A Panelboard	<b>JF408B</b>	<b>JF408BG</b>
12 Triple Pole Ways 400A Panelboard	<b>JF412B</b>	<b>JF412BG</b>
16 Triple Pole Ways 400A Panelboard	<b>JF416B</b>	<b>JF416BG</b>
18 Triple Pole Ways 400A Panelboard	<b>JF418B</b>	<b>JF418BG</b>

### Incomer Kits for 400A Panelboards

Description	Max cable capacity solid	Cat ref.
3 Pole 400A MCCB Incomer Kit 50kA Electronic LSI MCCB, Ir adjustable 0.4 – 1.0 x $I_n$	M12 Lug	<b>JF443BM</b>
4 Pole 400A MCCB Incomer Kit 50kA Electronic LSI MCCB, Ir adjustable 0.4 – 1.0 x $I_n$	M12 Lug	<b>JF444BM</b>
3 Pole 400A Switch Disconnecter (Non-Auto MCCB) Incomer Kit	M12 Lug	<b>JF443BS</b>
4 Pole 400A Switch Disconnecter (Non-Auto MCCB) Incomer Kit	M12 Lug	<b>JF444BS</b>
400A Direct Connection Kit	M10 Lug	<b>JF444BD</b>



JF801E

### DIN Rail Extension Boxes for 400A Panelboards

#### Characteristics

- DIN rail extension boxes have plain or glazed doors and DIN rail chassis.
- Cable spreader boxes are used for additional cabling space therefore do not require doors. If doors are desired optional door kits are available.
- Supplied with DIN Rail and without gland plate (utilise removed gland plate from panelboard).
- For dimensions see page 1.57.

Description	Cat ref. Plain Door	Cat ref. Glazed Door
1 Row 34 Mod (300mm Height)	<b>JF801E</b>	<b>JF801EG</b>
2 Row 68 Mod (450mm Height)	<b>JF803E</b>	<b>JF803EG</b>

### Cable Spreader Boxes & Door Kits for 400A Panelboards

#### Characteristics

- Supplied without gland plates (utilise removed gland plate from panelboard).
- Cable spreader boxes are used for additional cabling space therefore do not require doors. Optional door kits are available.
- For dimensions see page 1.57.



JF805E

Description	Cat ref.
Small (300mm Height) (Door not included)	<b>JF805E</b>
Large (450mm Height) (Door not included)	<b>JF806E</b>
Small Cable Spreader Box Door Kit	<b>JF805DK</b>
Large Cable Spreader Box Door Kit	<b>JF806DK</b>

### Meter Pack 400A

#### Characteristics

- These meter packs fit directly into the main panelboard. Suitable for single incoming cable.

Description	Cat ref.
Multifunction Meter Pack 400A Pulsed & Modbus	<b>JF403PM</b>

### Accessories

Description	Cat ref.
Locking Kit for Incoming Device (All Ratings)	<b>HXD039H</b>
Allen Key Set	<b>JF296A</b>
Gland Plate for Invicta 3 400A Range	<b>JFPLATE</b>
Key Lock with One Key	<b>JK222PK</b>
x125 Frame 1 Pole Blank (3x blanks required per triple pole)	<b>JN001BP</b>
Outgoer Locking Kit (fits to toggle for up to 3 padlocks max ø 8mm <sup>2</sup> )	<b>HXA039H</b>
Terminal Cover x160 1 Pole Long	<b>HYA029H</b>
Terminal Cover x160 3 Pole Long	<b>HYA021H</b>



JN001BP



HXD039H

**Outgoing Devices** - See page 1.43 for more info

#### MCCBs - Single Pole

Rating.	18kA Fixed Thermal	25kA Fixed Thermal
16A	<b>HDA014Z</b>	<b>HHA014Z</b>
20A	<b>HDA018Z</b>	<b>HHA018Z</b>
25A	<b>HDA023Z</b>	<b>HHA023Z</b>
32A	<b>HDA030Z</b>	<b>HHA030Z</b>
40A	<b>HDA038Z</b>	<b>HHA038Z</b>
50A	<b>HDA048Z</b>	<b>HHA048Z</b>
63A	<b>HDA061Z</b>	<b>HHA061Z</b>
80A	<b>HDA078Z</b>	<b>HHA078Z</b>
100A	<b>HDA098Z</b>	<b>HHA098Z</b>
125A	<b>HDA123Z</b>	<b>HHA123Z</b>

#### MCCBs - Triple Pole Adjustable Thermal

Rating.	18kA Adjustable Thermal 0.63, 0.8, 1 x I <sub>n</sub>	25kA Adjustable Thermal 0.63, 0.8, 1 x I <sub>n</sub>
25A	<b>HDA025U</b>	<b>HHA025U</b>
40A	<b>HDA040U</b>	<b>HHA040U</b>
63A	<b>HDA063U</b>	<b>HHA063U</b>
80A	<b>HDA080U</b>	<b>HHA080U</b>
100A	<b>HDA100U</b>	<b>HHA100U</b>
125A	<b>HDA125U</b>	<b>HHA125U</b>



JF608B

Commercial  
Distribution

### Invicta 3 Panelboards (630A/800A Incoming 125A Outgoing)

#### Characteristics

- Comprises of IP3XD enclosure, pan assembly, neutral bar and earth bar.
- Conforms to BS EN 61439-2.  $I_{nA} = 630/800A$ ,  $I_{nC} = 125A$ ,  $I_{cC} = 50kA$ .
- Supplied without incoming kit, one of the incomer kits listed below must be used.
- Form 3B type 2 using outgoing terminal shield (form 3A without terminal shield).
- Removable gland plates are provided top and bottom for ease of installation.
- Switch Disconnecter: 630A/800A, MCCB: 400A/630A, Direct connection: 800A.
- Incoming cable lugged via M12 hexagonal bolt.
- For dimensions see page 1.57.

#### Cable Capacity Incomers & Outgoers

Incomers: 400A: 2 x 240mm<sup>2</sup>, 630A: 2 x 240mm<sup>2</sup> / 2 x 300mm<sup>2</sup>.

Outgoers: Single pole up to 125A - 70mm<sup>2</sup> flexible, 95mm<sup>2</sup> solid, Triple pole up to 250A - 150mm<sup>2</sup> flexible.

#### Outgoing MCCBs

- Adjustable thermal options on triple pole.

Description	Cat ref. Plain Door	Cat ref. Glazed door
8 Triple Pole Ways 630A Panelboard	<b>JF608B</b>	<b>JF608BG</b>
12 Triple Pole Ways 630A/800A Panelboard	<b>JF812B</b>	<b>JF812BG</b>
18 Triple Pole Ways 630A/800A Panelboard	<b>JF818B</b>	<b>JF818BG</b>

<sup>1</sup> Max allowed incomer of 630A on this panelboard.

### Invicta 3 Panelboards (630A/800A Incoming 125A/250A Outgoing)

#### Characteristics

- These boards will accept a range of MCCB frame sizes: 125A frame: 16-125A single pole/triple pole, 250A frame: 80-250A triple pole only
- $I_{nA} = 630/800A$ ,  $I_{nC} = 250A$ ,  $I_{cC} = 50kA$ .

Description	Cat ref. Plain Door	Cat ref. Glazed door
6 Triple Pole Ways Panelboard (2 x 250A ① + 4 x 125A ②)	<b>JF60204B</b> <sup>1</sup>	<b>JF60204BG</b> <sup>1</sup>
8 Triple Pole Ways Panelboard (2 x 250A ① + 6 x 125A ②)	<b>JF80206B</b>	<b>JF80206BG</b>
8 Triple Pole Ways Panelboard (4 x 250A ① + 4 x 125A ②)	<b>JF80404B</b>	<b>JF80404BG</b>
12 Triple Pole Ways Panelboard (2 x 250A ① + 10 x 125A ②)	<b>JF80210B</b>	<b>JF80210BG</b>
12 Triple Pole Ways Panelboard (4 x 250A ① + 8 x 125A ②)	<b>JF80408B</b>	<b>JF80408BG</b>
18 Triple Pole Ways Panelboard (4 x 250A ① + 14 x 125A ②)	<b>JF80414B</b>	<b>JF80414BG</b>
18 Triple Pole Ways Panelboard (6 x 250A ① + 12 x 125A ②)	<b>JF80612B</b>	<b>JF80612BG</b>

\* Select the required 630A/800A rated panelboard (e.g. **JF80206BG**) and add the suffix **800LBS** e.g. **JF80206BG800LBS**

### Incomer Kits for 630A/800A Panelboards

#### Characteristics

- A 300mm cable spreader box (**JF805E**) is required for all incomer kits.

Description	Max cable capacity	Cat ref.
4 Pole 400A Load Break Switch 25kA	M10 Lug	<b>JF844BSW</b>
4 Pole 630A Load Break Switch 25kA	M12 Lug	<b>JF864BSW</b>
4 Pole 800A Load Break Switch	M12 Lug	<b>*800LBS</b>
800A Direct Connection Kit 4 Pole	M12 Lug	<b>JF884BD</b>
3 Pole 400A MCCB Incomer Kit 50kA Electronic LSI MCCB, $I_r$ adjustable 0.4 – 1.0 x $I_n$	M12 Lug	<b>JF843BM</b>
4 Pole 400A MCCB Incomer Kit Electronic LSI MCCB, $I_r$ adjustable 0.4 – 1.0 x $I_n$	M12 Lug	<b>JF844BM</b>
3 Pole 630A MCCB Incomer Kit 50kA Electronic LSI MCCB, $I_r$ adjustable 0.4 – 1.0 x $I_n$	M12 Lug	<b>JF863BM</b>
4 Pole 630A MCCB Incomer Kit 50kA Electronic LSI MCCB, $I_r$ adjustable 0.4 – 1.0 x $I_n$	M12 Lug	<b>JF864BM</b>



### DIN Rail Extension Boxes for 630A/800A Panelboards

#### Characteristics

- DIN rail extension boxes have plain or glazed doors and DIN rail chassis.
- Cable spreader boxes are used for additional cabling space therefore do not require doors. Optional door kits are available.
- Supplied with DIN rail and without gland plate (utilise removed gland plate from panelboard).
- For dimensions see page 1.57.



JF801E

Description	Cat ref.	Cat ref.
	Plain Door	Glazed door
1 Row 34 Mod (300mm Height)	<b>JF801E</b>	<b>JF801EG</b>
2 Row 68 Mod (450mm Height)	<b>JF803E</b>	<b>JF803EG</b>

### Cable Spreader Boxes & Door Kits for 630A/800A Panelboards

#### Characteristics

- Supplied without gland plates (utilise removed gland plate from panelboard).
- Cable spreader boxes are used for additional cabling space therefore do not require doors. Optional door kits are available.
- For dimensions see page 1.57.

Description	Cat ref.
Small (300mm Height) (Door not included)	<b>JF805E</b>
Large (450mm Height) (Door not included)	<b>JF806E</b>
Small Cable Spreader Box Door Kit	<b>JF805DK</b>
Large Cable Spreader Box Door Kit	<b>JF806DK</b>

### Meter Pack for 630A/800A Panelboards

#### Characteristics

- These meter packs fit directly into the main panelboard. Spreader box required to mount CT's.
- For Meter Enclosures see page 1.21.

Description	Cat ref.
Multifunction Meter Pack 800A Pulsed & Modbus	<b>JF803PM</b>

### Outgoing Devices Thermal Magnetic - See page 1.43 - 1.45 for more info

#### 1 MCCBs x250 40kA - Triple Pole

Rating.	Adjustable Thermal & Magnetic
100A	<b>HNB100H</b>
125A	<b>HNB125H</b>
160A	<b>HNB160H</b>
200A	<b>HNB200H</b>
250A	<b>HNB250H</b>

1 & 2 - Please see left hand page for corresponding numbers.

#### 2 MCCBs - 125A 18kA Single Pole

Rating.	18kA Fixed Thermal	25kA Fixed Thermal
16A	<b>HDA014Z</b>	<b>HHA014Z</b>
20A	<b>HDA018Z</b>	<b>HHA018Z</b>
25A	<b>HDA023Z</b>	<b>HHA023Z</b>
32A	<b>HDA030Z</b>	<b>HHA030Z</b>
40A	<b>HDA038Z</b>	<b>HHA038Z</b>
50A	<b>HDA048Z</b>	<b>HHA048Z</b>
63A	<b>HDA061Z</b>	<b>HHA061Z</b>
80A	<b>HDA078Z</b>	<b>HHA078Z</b>
100A	<b>HDA098Z</b>	<b>HHA098Z</b>
125A	<b>HDA123Z</b>	<b>HHA123Z</b>

#### 2 MCCBs - 125A 25kA Triple Pole Adjustable Thermal

Rating.	18kA Adjustable Thermal 0.63, 0.8, 1 x I <sub>n</sub>	25kA Adjustable Thermal 0.63, 0.8, 1 x I <sub>n</sub>
25A	<b>HDA025U</b>	<b>HHA025U</b>
40A	<b>HDA040U</b>	<b>HHA040U</b>
63A	<b>HDA063U</b>	<b>HHA063U</b>
80A	<b>HDA080U</b>	<b>HHA080U</b>
100A	<b>HDA100U</b>	<b>HHA100U</b>
125A	<b>HDA125U</b>	<b>HHA125U</b>



JHF812B

### Invicta 3 Panelboards (800A Incoming, 125A Outgoing)

#### Characteristics

- Comprises of IP3XD enclosure, pan assembly, neutral bar and earth bar
- Conforms to BS EN 61439-2.  $I_{NA} = 800A$ ,  $I_{NC} = 125A$ ,  $I_{CC} = 50kA$ .
- Supplied without incoming kit, one of the incomer kits listed below must be used.
- Form 3B type 2 using outgoing terminal shield (form 3A without terminal shield).
- Removable gland plates are provided top and bottom for ease of installation.
- MCCB: 800A 3 or 4 pole.
- Incoming cable lugs 44mm pad with 2 x M12 hexagonal bolt.
- For dimensions see page 1.58.

#### Cable Capacity Incomers & Outgoers

Incomers: 800A MCCB: 2 x 300mm<sup>2</sup>,

Outgoers: Single pole up to 125A - 70mm<sup>2</sup> flexible, 95mm<sup>2</sup> solid, Triple pole up to 250A - 150mm<sup>2</sup> flexible.

#### Outgoing MCCBs

- Adjustable thermal options on triple pole.

Description	Cat ref. Plain Door	Cat ref. Glazed door
12 Triple Pole Ways 800A Panelboard	<b>JHF812B</b>	<b>JHF812BG</b>
18 Triple Pole Ways 800A Panelboard	<b>JHF818B</b>	<b>JHF818BG</b>



JHF80408B

### Invicta 3 Panelboards (800A Incoming 125A / 250A Outgoing)

- These boards will accept two MCCB frame sizes: 125A frame: 16 - 125A, 250A frame: 100 - 250A.
- $I_{NA} = 800A$ ,  $I_{NC} = 250A$ ,  $I_{CC} = 50kA$ .

Description	Cat ref. Plain Door	Cat ref. Glazed door
8 Triple Pole Ways 800A Panelboard (2 x 250A  + 6 x 125A )	<b>JHF80206B</b>	<b>JHF80206BG</b>
8 Triple Pole Ways 800A Panelboard (4 x 250A  + 4 x 125A )	<b>JHF80404B</b>	<b>JHF80404BG</b>
12 Triple Pole Ways 800A Panelboard (2 x 250A  + 10 x 125A )	<b>JHF80210B</b>	<b>JHF80210BG</b>
12 Triple Pole Ways 800A Panelboard (4 x 250A  + 8 x 125A )	<b>JHF80408B</b>	<b>JHF80408BG</b>
18 Triple Pole Ways 800A Panelboard (4 x 250A  + 14 x 125A )	<b>JHF80414B</b>	<b>JHF80414BG</b>
18 Triple Pole Ways 800A Panelboard (6 x 250A  + 12 x 125A )	<b>JHF80612B</b>	<b>JHF80612BG</b>

### MCCB Incomer Kits for 800A Panelboards

Description	Palm lug max (width)	Cat ref.
800A 3 Pole MCCB Incomer Auto 50kA	60mm	<b>JHF883BM</b>
800A 4 Pole MCCB Incomer Auto 50kA	60mm	<b>JHF884BM</b>



JN001BP

### Accessories

Description	Cat ref.
Locking Kit for MCCB Incoming Device (All Ratings)	<b>HXD039H</b>
Allen Key Set	<b>JF296A</b>
End Plate for Invicta 3 800A Range	<b>JFPLATE</b>
Key Lock with One Key	<b>JK222PK</b>
x125 Frame 1 Pole Blank (3x blanks required per triple pole)	<b>JN001BP</b>
x250 Frame 3 Pole Blank (1x blank required per triple pole)	<b>JF003BP</b>
Outgoer Locking Kit (fits to toggle for up to 3 padlocks max ø 8mm <sup>2</sup> )	<b>HXA039H</b>

### DIN Rail Extension Boxes for 800A Panelboards

- DIN rail extension boxes have plain or glazed doors and DIN rail chassis.
- Cable spreader boxes are used for additional cabling space therefore do not require doors. Optional door kits are available.
- Supplied with DIN rail and without gland plate (utilise removed gland plate from panelboard).
- For dimensions see page 1.57.

Description	Cat ref. Plain Door	Cat ref. Glazed door
1 Row 34 Mod (300mm Height)	<b>JF801E</b>	<b>JF801EG</b>
2 Row 68 Mod (450mm Height)	<b>JF803E</b>	<b>JF803EG</b>

### Cable Spreader Boxes for 800A Panelboards

- Supplied without gland plates (utilise removed gland plate from panelboard).
- Cable spreader boxes are used for additional cabling space therefore do not require doors. Optional door kits are available.
- For dimensions see page 1.57.

Description	Cat ref.
Small (300mm Height) (Door not included)	<b>JF805E</b>
Large (450mm Height) (Door not included)	<b>JF806E</b>
Small Cable Spreader Box Door Kit	<b>JF805DK</b>
Large Cable Spreader Box Door Kit	<b>JF806DK</b>

### Meter Pack for 800A Panelboards

- These meter packs fit directly into the main panelboard. Spreader box required to mount CT's.
- For Meter Enclosures see page 1.21.

Description	Cat ref.
Multifunction Meter Pack 800A Pulsed & Modbus	<b>JF803PM</b>

### Outgoing Devices Thermal Magnetic - See page 1.43 - 1.45 for more info.

#### 1 MCCBs x250 40kA - Triple Pole

Rating.	Adjustable Thermal & Magnetic
100A	<b>HNB100H</b>
125A	<b>HNB125H</b>
160A	<b>HNB160H</b>
200A	<b>HNB200H</b>
250A	<b>HNB250H</b>

#### 2 MCCBs - 125A 18kA Single Pole

Rating.	18kA Fixed Thermal	25kA Fixed Thermal
16A	<b>HDA014Z</b>	<b>HHA014Z</b>
20A	<b>HDA018Z</b>	<b>HHA018Z</b>
25A	<b>HDA023Z</b>	<b>HHA023Z</b>
32A	<b>HDA030Z</b>	<b>HHA030Z</b>
40A	<b>HDA038Z</b>	<b>HHA038Z</b>
50A	<b>HDA048Z</b>	<b>HHA048Z</b>
63A	<b>HDA061Z</b>	<b>HHA061Z</b>
80A	<b>HDA078Z</b>	<b>HHA078Z</b>
100A	<b>HDA098Z</b>	<b>HHA098Z</b>
125A	<b>HDA123Z</b>	<b>HHA123Z</b>

#### 2 MCCBs - 125A 25kA Triple Pole Adjustable Thermal

Rating.	18kA Adjustable Thermal 0.63, 0.8, 1 x I <sub>n</sub>	25kA Adjustable Thermal 0.63, 0.8, 1 x I <sub>n</sub>
25A	<b>HDA025U</b>	<b>HHA025U</b>
40A	<b>HDA040U</b>	<b>HHA040U</b>
63A	<b>HDA063U</b>	<b>HHA063U</b>
80A	<b>HDA080U</b>	<b>HHA080U</b>
100A	<b>HDA100U</b>	<b>HHA100U</b>
125A	<b>HDA125U</b>	<b>HHA125U</b>

Commercial Distribution



JF12504SM JF450CF



JF4508TM

### Meter Enclosures

- Blanking plates not included (utilise removed blanking plate from panelboard).
- When selecting outgoing metering, the panelboard metering system is easily configured by selecting a side, top or combination that matches the panelboard (e.g. for the **JF406** board, you can select a **JF12504SM** side mounted meter enclosure that can house 4 **JKM01** panel mounted meters). When using both side and top/bottom meter enclosures, corner filler enclosures are available.
- For help choosing your metering solution see the Method Chart on page 1.58.
- Please contact us for any non-standard requirements or assembly.
- For dimensions see page 1.60.

Suitable for board type / Description	Spaces for Meters	Cat ref.
<b>Side Meter Enclosures</b>		
6/8 Way JF Board	4 x Din 96 Cut-Outs	<b>JF12504SM</b>
12 Way JF Board	6 x Din 96 Cut-Outs	<b>JF14006SM</b>
16 Way JF Board	8 x Din 96 Cut-Outs	<b>JF15508SM</b>
18 Way JF Board	9 x Din 96 Cut-Outs	<b>JF17009SM</b>
Blanking Plate DIN 96	-	<b>JF96BP</b>
<b>Top/Bottom Meter Enclosures</b>		
300mm Enclosure	4 x DIN 96 Cut-Outs	<b>JF3004TM</b>
450mm Enclosure	8 x DIN 96 Cut-Outs	<b>JF4508TM</b>
Blanking Plate DIN 96	-	<b>JF96BP</b>
<b>Corner Filler Enclosures</b>		
300mm Corner Filler Side Enclosure	-	<b>JF300CF</b>
450mm Corner Filler Side Enclosure	-	<b>JF450CF</b>



ECM01

JKM01

### Panel & DIN Rail Meters

- No cables supplied with these meters, for meter supply cable see **JF130VMF**

Description	Cat ref.
Panel Mounted Multi-Function Meter Pulsed/Modbus DIN 96	<b>ECM01</b>
DIN Mounted Multi-Function Meter Pulsed/Modbus Single Input	<b>JKM01</b>
DIN Mounted Multi-Function Meter Pulsed/Modbus Dual Input	<b>JKM02</b>



JFA03

### Converter

Description	Cat ref.
Standard CT to plug in adapter	<b>JFA03</b>



JFS03

### 3 Phase CT Splitter Box

- This 3 Phase current transformer splitter box allows the separate monitoring of each phase of a three phase current transformer on individual energy meters.

Description	Cat ref.
3 Phase CT Splitter Box	<b>JFS03</b>

### Plug-in CTs

- No leads supplied with these CTs (RJ45 connection cable)
- For technical data see page 1.65.

Description	Cat ref.
125A Frame Size 60A 3 Phase CT	<b>EC1260CT</b>
125A Frame Size 100A 3 Phase CT	<b>EC12100CT</b>
125A Frame Size 125A 3 Phase CT	<b>EC12125CT</b>
125A Frame Size 160A 3 Phase CT	<b>EC12160CT</b>
250A Frame Size 60A 3 Phase CT	<b>EC2560CT</b>
250A Frame Size 100A 3 Phase CT	<b>EC25100CT</b>
250A Frame Size 125A 3 Phase CT	<b>EC25125CT</b>
250A Frame Size 160A 3 Phase CT	<b>EC25160CT</b>
250A Frame Size 200A 3 Phase CT	<b>EC25200CT</b>
250A Frame Size 250A 3 Phase CT	<b>EC25250CT</b>
400A Frame Size 250A 3 Phase CT	<b>EC40250CT</b>
400A Frame Size 400A 3 Phase CT	<b>EC40400CT</b>
400A Frame Size 630A 3 Phase CT	<b>EC40630CT</b>
800A Frame Size 800A 3 Phase CT	<b>EC80800CT</b>



EC1260CT

Commercial  
Distribution

### Meter Cables

Description	Cat ref.
<b>Meter Voltage Supply Cable - PVC - 1mm</b>	
1m - Voltage Supply Cable with Fuse Carrier (For JF Meter Enclosures)	<b>JF130VMF</b>
1m - Voltage Supply Cable with Fuse Carrier (For JN Meter Enclosures)	<b>JN130VMF</b>
0.30m - Hi Flex Voltage Supply Cable	<b>PGMF300</b>
0.50m - Hi Flex Voltage Supply Cable	<b>PGMF500</b>
1.00m - Hi Flex Voltage Supply Cable	<b>PGMF1000</b>
1.30m - Hi Flex Voltage Supply Cable	<b>PGMF1300</b>
2.00m - Hi Flex Voltage Supply Cable	<b>PGMF2000</b>
3.00m - Hi Flex Voltage Supply Cable	<b>PGMF3000</b>



JFA03



JFA03

### Meter to Meter Supply Cable - PVC - 1mm

0.15m - Hi Flex Meter to Meter Supply Cable	<b>PGMFT150</b>
0.30m - Hi Flex Meter to Meter Supply Cable	<b>PGMFT300</b>
0.50m - Hi Flex Meter to Meter Supply Cable	<b>PGMFT500</b>
1.00m - Hi Flex Meter to Meter Supply Cable	<b>PGMFT1000</b>
1.30m - Hi Flex Meter to Meter Supply Cable	<b>PGMFT1300</b>
2.00m - Hi Flex Meter to Meter Supply Cable	<b>PGMFT2000</b>
3.00m - Hi Flex Meter to Meter Supply Cable	<b>PGMFT3000</b>

### RJ45 Connection Cable

Description	Cat ref.
0.30m - RJ45 Connector Cable 67 7003	<b>PGRJ300</b>
0.50m - RJ45 Connector Cable 67 L7005 LSZH	<b>PGRJ500</b>
1.00m - RJ45 Connector Cable 67 L7005 LSZH	<b>PGRJ1000</b>
1.50m - RJ45 Connector Cable 67 L7005 LSZH	<b>PGRJ1500</b>
2.00m - RJ45 Connector Cable 67 L7005 LSZH	<b>PGRJ2000</b>
3.00m - RJ45 Connector Cable 67 L7005 LSZH	<b>PGRJ3000</b>



PGRJ1000

### Accessories

- Supply voltage connector plugs are for making up your own power cable looms.

Description	Cat ref.
Supply Voltage Connector Plugs Voltage IN (Male) Connector	<b>PG9523MALE</b>
Supply Voltage Connector Plugs Voltage OUT (Female) connector	<b>PG9522FEMALE</b>
CT Output and RJ45 Lead Tester	<b>JFT03</b>



JFT03



PG9522FEMALE



JF12504SM



JFG416U

### Cable Capacity

20A = 16mm <sup>2</sup>
32A = 16mm <sup>2</sup>
63A = 25mm <sup>2</sup>
100A = 95mm <sup>2</sup>
125A = 95mm <sup>2</sup>
160A = 95mm <sup>2</sup>
200A = 240mm <sup>2</sup>
250A = 240mm <sup>2</sup>
315A = 240mm <sup>2</sup>
400A = 240mm <sup>2</sup>
630A = 2 x 300mm <sup>2</sup>
800A = 2 x 300mm <sup>2</sup>

### Fuse Combination Switches 20 - 800A

#### Characteristics

- Provides individual protection and control of circuits.
- Enclosures up to 100A have been designed to provide adequate cabling space without the need for additional cable spreader boxes.
- Operation of the device is through a door mounted rotary handle which is mechanically interlocked to prevent access to live conductors when the switch is in the on position. The handle is padlockable in the off position.
- All versions will accept standard BS 88 fuse links and can be converted to switch disconnector by fitting copper links.

#### Utilisation category

- AC22B - 630 - 800A
- AC23A - 20 - 630A

#### Product features

- Conforms to: BS EN 60947-3
- Rated IP31.

**Note:** Maximum rated fuse links are fitted in all fuse combination switches.

**Note:** Copper links for conversion to isolating switches

- For dimensions see page 1.67.

- For technical information see page 1.69.

Description	Cat ref.	Cat ref. Cable extension boxes if required
<b>Fuse Combination Switches Single Pole &amp; Switched Neutral</b>		
20A Fuse Combination Switch SP&SN	<b>JFB202U</b>	-
32A Fuse Combination Switch SP&SN	<b>JFB203U</b>	-
63A Fuse Combination Switch SP&SN	<b>JFD206U</b>	-
100A Fuse Combination Switch SP&SN	<b>JFE210U</b>	<b>JZA701</b>
<b>Fuse Combination Switches Triple Pole &amp; Neutral</b>		
20A Fuse Combination Switch TP&N	<b>JFB302U</b>	-
32A Fuse Combination Switch TP&N	<b>JFB303U</b>	-
63A Fuse Combination Switch TP&N	<b>JFD306U</b>	-
100A Fuse Combination Switch TP&N	<b>JFE310U</b>	<b>JZA701</b>
125A Fuse Combination Switch TP&N	<b>JFG312U</b>	<b>JZA701</b>
160A Fuse Combination Switch TP&N	<b>JFG316U</b>	<b>JZA701</b>
200A Fuse Combination Switch TP&N	<b>JFG320U</b>	<b>JZA701</b>
250A Fuse Combination Switch TP&N	<b>JFG325U</b>	<b>JZA701</b>
315A Fuse Combination Switch TP&N	<b>JFH331U</b>	<b>JZA702</b>
400A Fuse Combination Switch TP&N	<b>JFH340U</b>	<b>JZA702</b>
630A Fuse Combination Switch TP&N	<b>JFI363U</b>	<b>JZA703</b>
800A Fuse Combination Switch TP&N	<b>JFI380U</b>	<b>JZA703</b>
<b>Fuse Combination Switches Triple Pole &amp; Switched Neutral</b>		
20A Fuse Combination Switch TP&SN	<b>JFB402U</b>	-
32A Fuse Combination Switch TP&SN	<b>JFB403U</b>	-
63A Fuse Combination Switch TP&SN	<b>JFD406U</b>	-
100A Fuse Combination Switch TP&SN	<b>JFE410U</b>	<b>JZA701</b>
125A Fuse Combination Switch TP&SN	<b>JFG412U</b>	<b>JZA701</b>
160A Fuse Combination Switch TP&SN	<b>JFG416U</b>	<b>JZA701</b>
200A Fuse Combination Switch TP&SN	<b>JFG420U</b>	<b>JZA701</b>
250A Fuse Combination Switch TP&SN	<b>JFG425U</b>	<b>JZA701</b>
315A Fuse Combination Switch TP&SN	<b>JFH431U</b>	<b>JZA702</b>
400A Fuse Combination Switch TP&SN	<b>JFH440U</b>	<b>JZA702</b>
630A Fuse Combination Switch TP&SN	<b>JFI463U</b>	<b>JZA703</b>
800A Fuse Combination Switch TP&SN	<b>JFI480U</b>	<b>JZA703</b>
<b>Copper Links</b>		
63A	<b>JC60L</b>	-
100A	<b>JC10L</b>	-
125 / 200A	<b>JC20L</b>	-
315 / 400A	<b>JC40L</b>	-
630A	<b>JC63L</b>	-

### Switch Fuses

#### Characteristics

- Amendment 3 compliant switch fuses have a full metal construction to comply with BS 7671, when used in residential applications
- For dimensions see page 1.70.

Description	Cat ref.	Cat ref. Amd 3 door
4 Module Metal Unit 1 x 100A Isolator, AC22A. Connection Capacity: 50mm <sup>2</sup> Rigid Conductor, 35mm <sup>2</sup> Flexible Conductor, 1 x 63A Fuse	<b>IU44-16</b>	<b>IU44-16D</b>
4 Module Metal Unit 1 x 100A Isolator, AC22A. Connection Capacity: 50mm <sup>2</sup> Rigid Conductor, 35mm <sup>2</sup> Flexible Conductor, 1 x 80A Fuse	<b>IU44-18</b>	<b>IU44-18D</b>
4 Module Metal Unit 1 x 100A Isolator, AC22A. Connection Capacity: 50mm <sup>2</sup> Rigid Conductor, 35mm <sup>2</sup> Flexible Conductor, 1 x 100A Fuse	<b>IU44-11</b>	<b>IU44-11D</b>



IU44-11

Commercial  
Distribution

### Switch Disconnectors 20-800A

#### Characteristics

- Designed to provide individual isolation of circuits up to 800A.
- Provides adequate cabling space without the need for additional cable spreader boxes.
- Operation of the device is through a door mounted rotary handle which is mechanically interlocked to prevent access to live conductors when the switch is in the on position. The handle is padlockable in the off position.

#### Utilisation category

- AC-21, AC-22 (page 1.71)

#### Product features

- Conforms to: BS EN 60947-3
- IP rating: IP31.
- For technical information see page 1.67 - 1.71.



JAB402B

Rating	Cat ref.	Cat ref. Cable extension boxes if required
<b>Switch Disconnectors TP&amp;N</b>		
160A	<b>JAC316</b>	<b>JZA700</b>
200A	<b>JAE320</b>	<b>JZA701</b>
250A	<b>JAE325</b>	<b>JZA701</b>
315A	<b>JAG331</b>	<b>JZA701</b>
400A	<b>JAG340</b>	<b>JZA701</b>
630A	<b>JAH363</b>	<b>JZA702</b>
800A	<b>JAH380</b>	<b>JZA702</b>

#### Cable Capacity

- 20A = 16mm<sup>2</sup>
- 32A = 16mm<sup>2</sup>
- 63A = 25mm<sup>2</sup>
- 100A = 95mm<sup>2</sup>
- 125A = 95mm<sup>2</sup>
- 160A = 95mm<sup>2</sup>
- 200A = 240mm<sup>2</sup>
- 250A = 240mm<sup>2</sup>
- 315A = 240mm<sup>2</sup>
- 400A = 240mm<sup>2</sup>
- 630A = 2 x 300mm<sup>2</sup>
- 800A = 2 x 300mm<sup>2</sup>

#### Switch Disconnectors TP&SN

20A	<b>JAB402B</b>	-
32A	<b>JAB403B</b>	-
63A	<b>JAB406B</b>	-
100A	<b>JAB410B</b>	-
125A	<b>JAC412B</b>	-
160A	<b>JAC416</b>	<b>JZA700</b>
200A	<b>JAE420</b>	<b>JZA701</b>
250A	<b>JAE425</b>	<b>JZA701</b>
315A	<b>JAG431</b>	<b>JZA701</b>
400A	<b>JAG440</b>	<b>JZA701</b>
630A	<b>JAH463</b>	<b>JZA702</b>
800A	<b>JAH480</b>	<b>JZA702</b>



JG01S

**Cable Capacity**  
 20 - 40A = 16mm<sup>2</sup>  
 63 - 100A = 35mm<sup>2</sup>

### IP65 Switch Disconnectors

- A range of enclosed switch disconnectors to IP65 for individual isolation.
- The devices are padlockable in three positions and offer plenty of cabling space. Clip on auxiliary contacts can be fitted retrospectively.

**Product features**

- Conforms to: BS EN 60947-3.
- IP65 to BS EN 60529.

**Range:** TPN 10, 16, 25, 40, 63 & 80A.

**Utilisation category**

- AC- 21.
- AC- 22.
- For technical information see page 1.70.

I <sub>n</sub> AC 21	I <sub>n</sub> AC 22	Cat ref.
20A	10A	<b>JG00S</b>
25A	16A	<b>JG01S</b>
40A	25A	<b>JG02S</b>
63A	40A	<b>JG03S</b>
80A	63A	<b>JG04S</b>
100A	80A	<b>JG05S</b>

### Auxiliary Changeover Contacts

Description	Cat ref.
1 Normally Open / 1 Normally Closed Auxiliary Contacts 16-80A	<b>JG10A</b>
2 Normally Open / 2 Normally Closed Auxiliary Contacts 16-80A	<b>JG20A</b>



JG440DC

**Cable Capacity**  
 20 - 40A = 16mm<sup>2</sup>  
 63 - 100A = 35mm<sup>2</sup>

### IP65 Switch Disconnectors - DC

- Used in applications such as photovoltaic installations where they isolate the incoming side of the inverter.
- They are supplied in grey with a black handle so that it is easy to distinguish them from the yellow/red a.c. switches used on the outgoing side of the inverter.

**Product Features**

- Conforms to: BS EN 60947-3 IP65 to BS EN 60529.
- An interlock ensures that the cover cannot be removed in both the ON and PADLOCKED OFF positions.

Rating	Utilisation Category	Cat ref.
12A at 500V DC-21B, 10A at 600V DC-21B 8A at 800V DC-21B, 6A at 440V DC-22B	DC-21B	<b>JG416DC</b>
16A at 500V DC-21B, 12A at 600V DC-21B 10A at 800V DC-21B, 6A at 440V DC-22B	DC-21B DC-22B	<b>JG425DC</b>
20A at 500V DC-21B, 16A at 600V DC-21B 12A at 800V DC-21B, 16A at 440V DC-22B	DC-21B DC-22B	<b>JG440DC</b>



### Enclosed MCCBs

- The devices are mounted in IP31 enclosures, with removable cable entry plates located on the top and bottom.
- Single & triple pole devices are equipped with fully rated neutral links.

#### Non-Auto MCCB

- Triple pole: 125A - 250A - 400A - 630A.
- Four pole: 125A - 250A - 400A - 630A.

#### Specification

- Conforms to BS EN 61439-2.

#### Cable Capacity

- 63 - 125A: Flexible cable: min 6mm<sup>2</sup>, max 70mm<sup>2</sup>, Rigid cable: min 6mm<sup>2</sup>, max 95mm<sup>2</sup>.
- RCD add-on adjustable from 0.03A, 0.1A, 0.3A, 1A, 3A, 6A.
- Time delay - Instantaneous, 60ms, 150ms, 300ms, 500ms, 1s.
- For technical details and dimensions see page 1.73.

Description	I <sub>cu</sub>	Cat ref.
<b>Enclosed MCCBs Single Pole &amp; Neutral</b>		
63A Single Pole Enclosed MCCB	18kA	<b>JG25BM</b>
100A Single Pole Enclosed MCCB	18kA	<b>JG28BM</b>
125A Single Pole Enclosed MCCB	18kA	<b>JG31BM</b>
<b>Enclosed MCCBs Triple Pole and Neutral (63-125A)</b>		
63A 3-Pole Enclosed MCCB (40A-50A 63A)	18kA	<b>JG26BM</b>
100A 3-Pole Enclosed MCCB (63A-80A-100A)	18kA	<b>JG29BM</b>
125A 3-Pole Enclosed MCCB (80A-100-125A)	18kA	<b>JG32BM</b>
125A 3-Pole Enclosed Non-Auto MCCB	Non-Auto	<b>JG34BS</b>
<b>Enclosed MCCBs Triple Pole and Neutral (160-250A)</b>		
160A 3-Pole Enclosed MCCB (Adjustable)	25kA	<b>JG36BM</b>
250A 3-Pole Enclosed MCCB (Adjustable)	25kA	<b>JG40BM</b>
250A 3-Pole Enclosed Non-Auto MCCB	Non-Auto	<b>JG42BS</b>
<b>Enclosed MCCBs Triple Pole and Neutral (400-630A)</b>		
400A 3-Pole Enclosed MCCB (Adjustable)	50kA	<b>JG44BM</b>
400A 3-Pole Enclosed Non-Auto MCCB	Non-Auto	<b>JG46BS</b>
630A 3-Pole Enclosed MCCB (Adjustable)	50kA	<b>JG48BM</b>
630A 3-Pole Enclosed Non-Auto MCCB	Non-Auto	<b>JG50BS</b>
<b>Enclosed MCCBs Four Pole (63-125A)</b>		
63A 4-Pole Enclosed MCCB (Adjustable)	18kA	<b>JG27BM</b>
63A 4-Pole Enclosed MCCB (Adjustable) + RCD Add-on	18kA	<b>JG27BR</b>
100A 4-Pole Enclosed MCCB (Adjustable)	18kA	<b>JG30BM</b>
100A 4-Pole Enclosed MCCB (Adjustable) + RCD Add-on	18kA	<b>JG30BR</b>
125A 4-Pole Enclosed MCCB (Adjustable)	18kA	<b>JG33BM</b>
125A 4-Pole Enclosed Non-Auto MCCB	Non-Auto	<b>JG35BS</b>
<b>Enclosed MCCBs Four Pole (160-250A)</b>		
160A 4-Pole Enclosed MCCB (Adjustable)	25kA	<b>JG37BM</b>
160A 4-Pole Enclosed MCCB RCD Add-on	25kA	<b>JG37BR</b>
200A 4-Pole Enclosed MCCB RCD Add-on	25kA	<b>JG38BR</b>
250A 4-Pole Enclosed MCCB (Adjustable)	25kA	<b>JG41BM</b>
250A 4-Pole Enclosed Non-Auto MCCB	Non-Auto	<b>JG43BS</b>
<b>Enclosed MCCBs Four Pole (400-630A)</b>		
400A 4-Pole Enclosed MCCB (Adjustable)	50kA	<b>JG45BM</b>
375A 4-Pole Enclosed MCCB RCD Add-on	50kA	<b>JG45BR</b>
400A 4-Pole Enclosed Non-Auto MCCB	Non-Auto	<b>JG47BS</b>
630A 4-Pole Enclosed MCCB (Adjustable)	50kA	<b>JG49BM</b>
630A 4-Pole Enclosed Non-Auto MCCB	Non-Auto	<b>JG51BS</b>



JG38BR



JG41BM



JG45BM



NCN116A

Commercial  
Distribution

### MCBs 10kA

#### Characteristics

- Provides protection against short circuits, protection against overload current, control, isolation, trip free mechanism.

#### Isolation

- The state of isolation is clearly indicated by the "OFF" mechanical position on the toggle with the green colour.
- Connection capacity: 25mm<sup>2</sup> flexible conductor, 35mm<sup>2</sup> rigid conductor.
- Conforms to: BS EN 60898-2 (10kA), BS EN 60947-2 (15kA).



Rating	Width (1 = 17.5mm)	Cat ref. "B" Curve	Cat ref. "C" Curve	Cat ref. "D" Curve
<b>Single Pole MCBs</b>				
0.5A	1 Mod	-	<b>NCN100A</b>	<b>NDN100A</b>
1A	1 Mod	-	<b>NCN101A</b>	<b>NDN101A</b>
2A	1 Mod	-	<b>NCN102A</b>	<b>NDN102A</b>
3A	1 Mod	-	<b>NCN103A</b>	<b>NDN103A</b>
4A	1 Mod	-	<b>NCN104A</b>	<b>NDN104A</b>
6A	1 Mod	<b>NBN106A</b>	<b>NCN106A</b>	<b>NDN106A</b>
10A	1 Mod	<b>NBN110A</b>	<b>NCN110A</b>	<b>NDN110A</b>
16A	1 Mod	<b>NBN116A</b>	<b>NCN116A</b>	<b>NDN116A</b>
20A	1 Mod	<b>NBN120A</b>	<b>NCN120A</b>	<b>NDN120A</b>
25A	1 Mod	<b>NBN125A</b>	<b>NCN125A</b>	<b>NDN125A</b>
32A	1 Mod	<b>NBN132A</b>	<b>NCN132A</b>	<b>NDN132A</b>
40A	1 Mod	<b>NBN140A</b>	<b>NCN140A</b>	<b>NDN140A</b>
50A	1 Mod	<b>NBN150A</b>	<b>NCN150A</b>	<b>NDN150A</b>
63A	1 Mod	<b>NBN163A</b>	<b>NCN163A</b>	<b>NDN163A</b>



Rating	Width (1 = 17.5mm)	Cat ref. "B" Curve	Cat ref. "C" Curve	Cat ref. "D" Curve
<b>Double Pole MCBs</b>				
0.5A	2 Mod	-	<b>NCN200A</b>	<b>NDN200A</b>
1A	2 Mod	-	<b>NCN201A</b>	<b>NDN201A</b>
2A	2 Mod	-	<b>NCN202A</b>	<b>NDN202A</b>
3A	2 Mod	-	<b>NCN203A</b>	-
4A	2 Mod	-	<b>NCN204A</b>	<b>NDN204A</b>
6A	2 Mod	<b>NBN206A</b>	<b>NCN206A</b>	<b>NDN206A</b>
10A	2 Mod	<b>NBN210A</b>	<b>NCN210A</b>	<b>NDN210A</b>
16A	2 Mod	<b>NBN216A</b>	<b>NCN216A</b>	<b>NDN216A</b>
20A	2 Mod	<b>NBN220A</b>	<b>NCN220A</b>	<b>NDN220A</b>
25A	2 Mod	<b>NBN225A</b>	<b>NCN225A</b>	<b>NDN225A</b>
32A	2 Mod	<b>NBN232A</b>	<b>NCN232A</b>	<b>NDN232A</b>
40A	2 Mod	<b>NBN240A</b>	<b>NCN240A</b>	<b>NDN240A</b>
50A	2 Mod	<b>NBN250A</b>	<b>NCN250A</b>	<b>NDN250A</b>
63A	2 Mod	<b>NBN263A</b>	<b>NCN263A</b>	<b>NDN263A</b>

**MCBs 10kA (Continued)**

Rating	Width (1 = 17.5mm)	Cat ref. "B" Curve	Cat ref. "C" Curve	Cat ref. "D" Curve
<b>Triple Pole MCBs</b>				
0.5A	3 Mod	-	<b>NCN300A</b>	<b>NDN300A</b>
1A	3 Mod	-	<b>NCN301A</b>	<b>NDN301A</b>
2A	3 Mod	-	<b>NCN302A</b>	<b>NDN302A</b>
3A	3 Mod	-	<b>NCN303A</b>	<b>NDN303A</b>
4A	3 Mod	-	<b>NCN304A</b>	<b>NDN304A</b>
6A	3 Mod	<b>NBN306A</b>	<b>NCN306A</b>	<b>NDN306A</b>
10A	3 Mod	<b>NBN310A</b>	<b>NCN310A</b>	<b>NDN310A</b>
16A	3 Mod	<b>NBN316A</b>	<b>NCN316A</b>	<b>NDN316A</b>
20A	3 Mod	<b>NBN320A</b>	<b>NCN320A</b>	<b>NDN320A</b>
25A	3 Mod	<b>NBN325A</b>	<b>NCN325A</b>	<b>NDN325A</b>
32A	3 Mod	<b>NBN332A</b>	<b>NCN332A</b>	<b>NDN332A</b>
40A	3 Mod	<b>NBN340A</b>	<b>NCN340A</b>	<b>NDN340A</b>
50A	3 Mod	<b>NBN350A</b>	<b>NCN350A</b>	<b>NDN350A</b>
63A	3 Mod	<b>NBN363A</b>	<b>NCN363A</b>	<b>NDN363A</b>
<b>Four Pole MCBs</b>				
0.5A	4 Mod	-	<b>NCN400A</b>	<b>NDN400A</b>
1A	4 Mod	-	<b>NCN401A</b>	<b>NDN401A</b>
2A	4 Mod	-	<b>NCN402A</b>	<b>NDN402A</b>
3A	4 Mod	-	<b>NCN403A</b>	<b>NDN403A</b>
4A	4 Mod	-	<b>NCN404A</b>	<b>NDN404A</b>
6A	4 Mod	<b>NBN406A</b>	<b>NCN406A</b>	<b>NDN406A</b>
10A	4 Mod	<b>NBN410A</b>	<b>NCN410A</b>	<b>NDN410A</b>
16A	4 Mod	<b>NBN416A</b>	<b>NCN416A</b>	<b>NDN416A</b>
20A	4 Mod	<b>NBN420A</b>	<b>NCN420A</b>	<b>NDN420A</b>
25A	4 Mod	<b>NBN425A</b>	<b>NCN425A</b>	<b>NDN425A</b>
32A	4 Mod	<b>NBN432A</b>	<b>NCN432A</b>	<b>NDN432A</b>
40A	4 Mod	<b>NBN440A</b>	<b>NCN440A</b>	<b>NDN440A</b>
50A	4 Mod	<b>NBN450A</b>	<b>NCN450A</b>	<b>NDN450A</b>
63A	4 Mod	<b>NBN463A</b>	<b>NCN463A</b>	<b>NDN463A</b>



NCN316A



NCN416A

Commercial  
Distribution

**Accessories**

Description	Cat ref.
Padlockable Locking Kit for MCB, RCCB & RCBO	<b>MZN175</b>
Padlock with 2 keys 3/4"	<b>JK25A</b>



MZN175  
(device & padlock  
not included)



BD264

### RCCB Add-On Blocks for MCB Devices

#### Characteristics

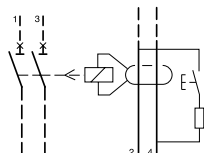
- Provide earth fault protection when associated with the 10kA (types **NBN, NCN, NDN**) range of MCBs.
- Designed to be fitted to the right hand side of 2 and 4 pole MCBs and the completed unit provides protection against overload, short circuit & earth faults.
- Protection against nuisance tripping.
- All devices have a test facility.
- Note: Not for use in fixed busbar distribution boards.

#### Technical Data

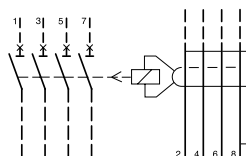
- Nominal voltage 230 - 400V.
- Selective (time delay) versions are available in 100mA & 300mA.
- Connection Capacity: 16mm<sup>2</sup> Flexible, 25mm<sup>2</sup> Rigid.
- Conforms to BS EN 61009 Appendix G



BD464



Sensitivity $I_{\Delta n}$	$I_n$ A	Width (35mm)	Cat ref.
<b>Double Pole RCCB Add-On Blocks</b>			
30mA	63A	2 Mod	<b>BD264</b>
100mA	63A	2 Mod	<b>BE264</b>
300mA	63A	2 Mod	<b>BF264</b>
Time Delayed  100mA	63A	2 Mod	<b>BN264</b>
Time Delayed  300mA	63A	2 Mod	<b>BP264</b>



Sensitivity $I_{\Delta n}$	$I_n$ A	Width (35mm)	Cat ref.
<b>Four Pole RCCB Add-On Blocks</b>			
30mA	63A	3 Mod	<b>BD464</b>
100mA	63A	3 Mod	<b>BE464</b>
300mA	63A	3 Mod	<b>BF464</b>
Time Delayed  100mA	63A	3 Mod	<b>BN464</b>
Time Delayed  300mA	63A	3 Mod	<b>BP464</b>



BD163T

### One Module Add-On Blocks for MCB Devices

#### Characteristics

- Compatible with **NBN, NCN & NDN** range of MCB devices.
- Can be used in combination with any Hager 3 pole 10kA MCB up to 63A. Requires the use of the adjacent outgoing way.
- Type A RCD provides added protection against 'pulsating d.c. current'
- 3 Phase earth leakage protection up to 63A.
- One module add-on block + MCB combinations suit all Hager distribution boards.
- BS EN 61009-1 Appendix G.
- For technical details see page 1.86.

Sensitivity $I_{\Delta n}$	$I_n$ A	Width (35mm)	Cat ref.
30mA	63A	4 Mod	<b>BD163T</b>
100mA	63A	4 Mod	<b>BE163T</b>
300mA	63A	4 Mod	<b>BF163T</b>



# Take a break

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**:hager**



HMF199T



HMF299T



HMF399T



HMF499T

### MCBs 80 - 125A

- Suitable for isolation (according to BS EN 60947-2). The isolation of the circuit breakers is indicated by a green indicator on the toggle.

#### Standards

- 10 kA: BS EN 60898-1, 10 kA BS EN 60947-2
- 15 kA: BS EN 60898-1, 15 kA BS EN 60947-2
- $I_n$  80 to 125A

#### Connection Capacity

- 35mm<sup>2</sup> flexible (50mm<sup>2</sup> possible with some cable pin lugs).
- 70mm<sup>2</sup> rigid.

#### Nominal Voltage

- 230/415 V a.c.
- Calibration setting: 30 °C
- (BS EN 60898-1)
- Insulation voltage: 500 V

#### Lockable Toggle

- MCB can be locked in "Off" position by the integrated locking facility on the toggle.
- This lock allows the insertion of a 2.5-3.5mm plastic cable tie where you can fit a warning card if necessary, allowing a safer working environment.
- Compatible with RCD Add-On Blocks.

Rating	Width (1 = 17.5mm)	Cat ref. 10kA C Curve	Cat ref. 15kA C Curve	Cat ref. 15kA D Curve
<b>Single Pole MCBs</b>				
80A	1 ½ Mod	<b>HMF180T</b>	<b>HMC180T</b>	<b>HMD180T</b>
100A	1 ½ Mod	<b>HMF190T</b>	<b>HMC190T</b>	<b>HMD190T</b>
125A	1 ½ Mod	<b>HMF199T</b>	<b>HMC199T</b>	<b>HMD199T</b>

#### Double Pole MCBs

80A	3 Mod	<b>HMF280T</b>	<b>HMC280T</b>	<b>HMD280T</b>
100A	3 Mod	<b>HMF290T</b>	<b>HMC290T</b>	<b>HMD290T</b>
125A	3 Mod	<b>HMF299T</b>	<b>HMC299T</b>	<b>HMD299T</b>

#### Triple Pole MCBs

80A	4 ½ Mod	<b>HMF380T</b>	<b>HMC380T</b>	<b>HMD380T</b>
100A	4 ½ Mod	<b>HMF390T</b>	<b>HMC390T</b>	<b>HMD390T</b>
125A	4 ½ Mod	<b>HMF399T</b>	<b>HMC399T</b>	<b>HMD399T</b>

#### Four Pole MCBs

80A	6 Mod	<b>HMF480T</b>	<b>HMC480T</b>	<b>HMD480T</b>
100A	6 Mod	<b>HMF490T</b>	<b>HMC490T</b>	<b>HMD490T</b>
125A	6 Mod	<b>HMF499T</b>	<b>HMC499T</b>	<b>HMD499T</b>



MZN130

### Terminal Covers Screw Cap

#### Description

To cover connection terminals and screws of circuit breaker. The screw covers can be sealed.

#### Cat ref.

**MZN130**



MZN131

### Phase Barrier

#### Description

1 Set of 3 Phase Separators

#### Cat ref.

**MZN131**

**RCCB Add-On Blocks Type a.c. for MCBs**

**Fixed**

- High sensitivity 30 mA instantaneous, low sensitivity 300 mA instantaneous

**Adjustable**

- Sensitivity  $I_{\Delta n}$  0.3-0.5 - 1A
- Delay  $\Delta t$  0 - 60 - 150 ms

**Adjustable Blocks**

- The setting is done by actuating dial on the front face. The setting dials are protected by a transparent sealable cover.

**Disassembly**

- The bistable latch (two positions) facilitate the assembly or disassembly by the bottom of the add-on block.
- These RCD add-on blocks exist in version AC.
- The earth fault is indicated when the handle is in the lower position (yellow colour). Test button for earth fault check.

**Connection Capacity**

- 35mm<sup>2</sup> flexible connection
- 70mm<sup>2</sup> rigid connection.

**Nominal voltage**

- 2 pole 230V, three & four pole: 230 / 400V
- Test button: 230 / 400V.
- Conforms with BS EN 61009-1 appendix G.
- Conforms with BS EN 60947-2.



BDC280E

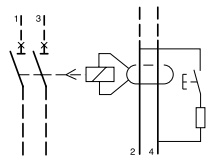


BDC380E



BDC480E

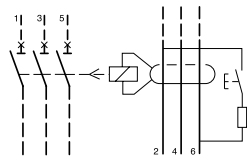
Commercial Distribution



Sensitivity Fixed / Adjustable $I_{\Delta n}$	$I_n/A$	Width (1 = 17.5mm)	Cat ref.
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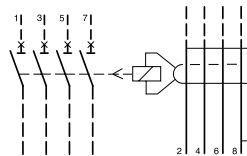
**Double Pole RCD Add-On Blocks**

Fixed 30mA	125A	6 Mod	<b>BDC280E</b>
Adjustable 0.3-0.5-1A	125A	6 Mod	<b>BTC280E</b>
Time Delayed $\Delta t$ 0-60-150ms			



**Triple Pole RCD Add-On Blocks**

Fixed 30mA	125A	6 Mod	<b>BDC380E</b>
Adjustable 0.3-0.5-1A	125A	6 Mod	<b>BTC380E</b>
Time Delayed $\Delta t$ 0-60-150ms			



**Four Pole RCD Add-On Blocks**

Fixed 30mA	125A	6 Mod	<b>BDC480E</b>
Fixed 300mA	125A	6 Mod	<b>BFC480E</b>
Adjustable 0.3-0.5-1A	125A	6 Mod	<b>BTC480E</b>
Time Delayed $\Delta t$ 0-60-150ms			

**Single Pole & Switched Neutral MCB - 6kA C Curve**

**Description**

- For protection and control of circuits against overloads and short circuits.

**Technical Data**

- Conforms to BS EN 60898
- Voltage rating - 230V a.c.

**Connection Capacity**

- Rigid 16mm<sup>2</sup>
- Flexible 10mm<sup>2</sup>
- Locking kit = Cat ref.: **MZN175**



MLN710A

Rating	Width (1 = 17.5mm)	Cat ref.
6A SPSN MCB 6kA	1 Mod	<b>MLN706A</b>
10A SPSN MCB 6kA	1 Mod	<b>MLN710A</b>
16A SPSN MCB 6kA	1 Mod	<b>MLN716A</b>
20A SPSN MCB 6kA	1 Mod	<b>MLN720A</b>
32A SPSN MCB 6kA	1 Mod	<b>MLN732A</b>
40A SPSN MCB 6kA	1 Mod	<b>MLN740A</b>

**Single Module Blank**

**Description**

Shrouds busbar and blanks spare ways

**Cat ref.**

**JK01B**



JK01B



ACB125



ADB106



AEC132

### RCBOs - Single Pole - 10kA B & C Curve

#### Characteristics

- Compact protection devices which combine the overcurrent functions of an MCB with the earth fault functions of an RCCB in a single unit.
- These devices are single pole & solid neutral.
- Locking kit = Cat ref.: **MZN175**.

#### Technical Data

- Conforms to IEC 61009-1, IEC 61009-2-2, EN 61009-1.

#### Sensitivities (fixed)

- 10mA, 30mA & 100mA.
- Flying neutral lead: 700mm.
- Terminal Capacities, 25mm<sup>2</sup> rigid, 16mm<sup>2</sup> flexible.

#### Operating Voltage

- 230V a.c.

Current rating	Width (1 Mod = 17.5mm)	Type B Cat ref.	Type C Cat ref.
<b>Sensitivity 10mA (10kA) B &amp; C Curve, Type AC</b>			
6A RCBO Single Pole 10mA 10kA	1 Mod	<b>ACB106</b>	<b>ACC106</b>
16A RCBO Single Pole 10mA 10kA	1 Mod	<b>ACB116</b>	<b>ACC116</b>
25A RCBO Single Pole 10mA 10kA	1 Mod	<b>ACB125</b>	<b>ACC125</b>
32A RCBO Single Pole 10mA 10kA	1 Mod	<b>ACB132</b>	<b>ACC132</b>
<b>Sensitivity 30mA (10kA) B &amp; C Curve, Type AC</b>			
6A RCBO Single Pole 30mA 10kA	1 Mod	<b>ADB106</b>	<b>ADC106</b>
10A RCBO Single Pole 30mA 10kA	1 Mod	<b>ADB110</b>	<b>ADC110</b>
16A RCBO Single Pole 30mA 10kA	1 Mod	<b>ADB116</b>	<b>ADC116</b>
20A RCBO Single Pole 30mA 10kA	1 Mod	<b>ADB120</b>	<b>ADC120</b>
25A RCBO Single Pole 30mA 10kA	1 Mod	<b>ADB125</b>	<b>ADC125</b>
32A RCBO Single Pole 30mA 10kA	1 Mod	<b>ADB132</b>	<b>ADC132</b>
40A RCBO Single Pole 30mA 10kA	1 Mod	<b>ADB140</b>	<b>ADC140</b>
45A RCBO Single Pole 30mA 10kA	1 Mod	<b>ADB145</b>	<b>ADC145</b>
<b>Sensitivity 100mA (10kA) C Curve, Type AC</b>			
10A RCBO Single Pole 100mA 10kA	1 Mod	-	<b>AEC110</b>
16A RCBO Single Pole 100mA 10kA	1 Mod	-	<b>AEC116</b>
20A RCBO Single Pole 100mA 10kA	1 Mod	-	<b>AEC120</b>
25A RCBO Single Pole 100mA 10kA	1 Mod	-	<b>AEC125</b>
32A RCBO Single Pole 100mA 10kA	1 Mod	-	<b>AEC132</b>
<b>Sensitivity 30mA (10kA) C Curve, Type A</b>			
6A RCBO Single Pole 30mA 10kA	1 Mod	-	<b>ADA156U</b>
10A RCBO Single Pole 30mA 10kA	1 Mod	-	<b>ADA160U</b>
16A RCBO Single Pole 30mA 10kA	1 Mod	-	<b>ADA166U</b>
20A RCBO Single Pole 30mA 10kA	1 Mod	-	<b>ADA170U</b>
32A RCBO Single Pole 30mA 10kA	1 Mod	-	<b>ADA182U</b>



**RCBOs - Single Pole & Switched Neutral - 4.5kA C Curve**

**Characteristics**

- Compact protection devices which provide MCB overcurrent protection and RCCB earth fault protection in a single unit.
- The device switches both the line and neutral conductors. All ratings have 30mA earth fault protection. The units feature indicators which show whether a trip is due to an overcurrent or earth fault.

**Technical Data**

- Breaking capacity: 4.5kA.
- Conforms to EN 61009-1.
- Operating Voltage: 230V a.c. -15% +10% 50Hz.
- Mechanical life: 20,000 operations.
- Connection Capacity: Rigid conductor 25mm<sup>2</sup>, Flexible conductor 16mm<sup>2</sup>
- **Note:** Not for use in fixed busbar consumer units or distribution boards.



ADC816F

Current rating	Width (1 Mod = 17.5mm)	C Curve Cat ref.
6A RCBO SPSN 4.5kA	2 Mod	<b>ADC806F</b>
10A RCBO SPSN 4.5kA	2 Mod	<b>ADC810F</b>
16A RCBO SPSN 4.5kA	2 Mod	<b>ADC816F</b>
20A RCBO SPSN 4.5kA	2 Mod	<b>ADC820F</b>
25A RCBO SPSN 4.5kA	2 Mod	<b>ADC825F</b>
32A RCBO SPSN 4.5kA	2 Mod	<b>ADC832F</b>

Commercial  
Distribution

**RCBOs - Single Pole & Switched Neutral - 6kA B & C Curve**

**Characteristics**

- Compact protection devices which provide MCB overcurrent protection and RCCB earth fault protection in a single unit.
- The device switches both the line and neutral conductors. All ratings have 30mA earth fault protection. The units feature indicators which show whether tripping is due to an overcurrent or earth fault.

**Technical Data**

- Breaking capacity: 6kA.
- Conforms to EN 61009-1.
- Operating Voltage: 230V a.c. +10%/-15% 50Hz.
- Mechanical life: 20,000 operations.
- Connection Capacity: Rigid conductor 25mm<sup>2</sup>, Flexible conductor 16mm<sup>2</sup>
- Neutral connection flying lead - 700mm.



ADA990U

Current rating	Width (1 Mod = 17.5mm)	B Curve Cat ref.	C Curve Cat ref.
6A RCBO SPSN 6kA	2 Mod	<b>ADA906U</b>	<b>ADA956U</b>
10A RCBO SPSN 6kA	2 Mod	<b>ADA910U</b>	<b>ADA960U</b>
16A RCBO SPSN 6kA	2 Mod	<b>ADA916U</b>	<b>ADA966U</b>
20A RCBO SPSN 6kA	2 Mod	<b>ADA920U</b>	<b>ADA970U</b>
25A RCBO SPSN 6kA	2 Mod	<b>ADA925U</b>	<b>ADA975U</b>
32A RCBO SPSN 6kA	2 Mod	<b>ADA932U</b>	<b>ADA982U</b>
40A RCBO SPSN 6kA	2 Mod	<b>ADA940U</b>	<b>ADA990U</b>

**Triple Pole RCD Add-On Blocks for MCB Devices**

**Characteristics**

- Compatible with **NBN, NCN & NDN** range of MCB devices.
- Can be used in combination with any Hager 3 pole 10kA MCB up to 63A. Requires the use of the adjacent outgoing way.
- Type A RCD provides added protection against 'pulsating d.c. current'
- 3 Phase earth leakage protection up to 63A.
- One module add-on block + MCB combinations suit all Hager distribution boards.
- BS EN 61009-1 Appendix G.
- For technical details see page 1.86.



BD163T

Sensitivity I <sub>Δn</sub>	I <sub>n</sub> A	Width (35mm)	Cat ref.
30mA	63A	4 Mod	<b>BD163T</b>
100mA	63A	4 Mod	<b>BE163T</b>
300mA	63A	4 Mod	<b>BF163T</b>



CDC225U



CFC425U

### 2 & 4 Pole RCCBs

#### Characteristics

- To open a circuit automatically in the event an earth fault between line and earth, and/or neutral and earth.

#### Technical Data

- Conforms to BS EN 61008, IEC1008  
 - Terminal capacities: 16-63A Rigid 25mm<sup>2</sup>, Flexible 16mm<sup>2</sup> / 80 & 100A Rigid 50mm<sup>2</sup>, Flexible 35mm<sup>2</sup>

#### Features

- Positive contact indication is provided by the rectangular flag indicator  
 - Red = Closed  
 - Green = Open  
 - Indication of trip is provided by the oval flag indicator  
 - Yellow = Tripped  
 - All RCCBs have trip free mechanisms and can be padlocked either on or off with the use of a **MZN175**.

#### Operating Voltage

- 2P 127- 230V a.c.  
 - 4P 230 - 400V a.c.

Sensitivity type a.c.	2 Pole Cat ref.	4 Pole Cat ref.
<b>2 Pole RCCB Sensitivity 10mA</b>		
16A RCCB 10mA	<b>CCC216U</b>	-
<b>2 &amp; 4 Pole RCCBs Sensitivity 30mA</b>		
25A RCCB 30mA	<b>CDC225U</b>	<b>CDC425U</b>
40A RCCB 30mA	<b>CDC240U</b>	<b>CDC440U</b>
63A RCCB 30mA	<b>CDC263U</b>	<b>CDC463U</b>
80A RCCB 30mA	<b>CD280U</b>	<b>CD480U</b>
100A RCCB 30mA	<b>CD284U</b>	<b>CD484U</b>
<b>2 &amp; 4 Pole RCCBs Sensitivity 100mA</b>		
25A RCCB 100mA	<b>CEC225U</b>	<b>CEC425U</b>
40A RCCB 100mA	<b>CEC240U</b>	<b>CEC440U</b>
63A RCCB 100mA	<b>CEC263U</b>	<b>CEC463U</b>
80A RCCB 100mA	<b>CE280U</b>	<b>CE480U</b>
100A RCCB 100mA	<b>CE284U</b>	<b>CE484U</b>
<b>2 &amp; 4 Pole RCCBs Sensitivity 300mA</b>		
25A RCCB 300mA	<b>CFC225U</b>	<b>CFC425U</b>
40A RCCB 300mA	<b>CFC240U</b>	<b>CFC440U</b>
63A RCCB 300mA	<b>CFC263U</b>	<b>CFC463U</b>
80A RCCB 300mA	<b>CF280U</b>	<b>CF480U</b>
100A RCCB 300mA	<b>CF284U</b>	<b>CF484U</b>
<b>Time Delayed a.c. Sensitive</b>		
100A RCCB 100mA	<b>CN284U</b>	<b>CN484U</b>
100A RCCB 300mA	<b>CP284U</b>	<b>CP484U</b>
<b>Type A DC Sensitive</b>		
16A RCCB 10mA	<b>CCA216U</b>	-
25A RCCB 30mA	<b>CDA225U</b>	<b>CDA425U</b>
40A RCCB 30mA	<b>CDA240U</b>	<b>CDA440U</b>
63A RCCB 30mA	<b>CDA263U</b>	<b>CDA463U</b>



CZN006

### Terminal Covers

Current Rating	2 Pole Cat ref.	4 Pole Cat ref.
16 - 63A	<b>CZN005</b>	<b>CZN006</b>
80 - 100A	<b>CZ007</b>	<b>CZ008</b>

**RCCB Auxiliaries**

**Auxiliary Interface**

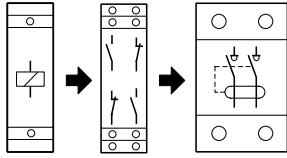
- Indicates the position of the associated RCCB on, off or tripped. Also acts as RCCB interface with standard MCB auxiliaries **MZ203-MZ206**.

**Shunt Trip**

- Allows remote tripping of the associated device, operation of the coil is indicated by a flag on the front of the device.

**Under Voltage Release**

- Allows RCCB to be closed, only when voltage is above 85% of  $U_n$ . RCCB will automatically trip when voltage falls to between 70-35% of  $U_n$  (230V). Operation of the release is indicated by a flag on the front of the device.



**MZ203** CZ001 RCCB  
to **MZ206**



CZ001



MZ203

Commercial  
Distribution

Description	Width (1 Mod = 17.5mm)	Cat ref.
<b>Auxiliary Interface</b> 2 Normally Open / 2 Normally Closed 6A a.c.1 230V	1 Mod	<b>CZ001</b>

**Auxiliaries for MCBs & RCCBs**

**Characteristics**

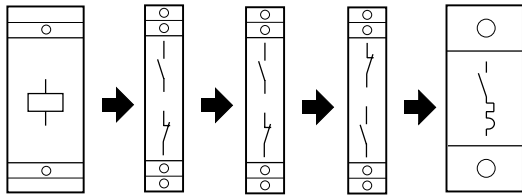
- All auxiliaries are common to both single and multi-pole 10kA circuit breakers and RCCBs.

**Connection capacity**

- 4mm<sup>2</sup> flexible, 6mm<sup>2</sup> rigid

**Shunt Trip:** Allows remote tripping of devices. Operation of the coil is indicated by a flag on the front of the device.

**Under Voltage Release:** Allows MCB to be closed only when voltage is above 85% of  $U_n$ . MCB will automatically trip when voltage falls to between 70-35% of  $U_n$ . Operation of the coil is indicated by a flag on the front of the device.



**MZ203** to + **MZ201** + **MZ201** + **MZ202** + MCB  
**MZ206** **MZ201** **MZ201** **MZ201**



MZ201



MZ202

Description	Width (1 Mod = 17.5mm)	Cat ref.
 <b>Auxiliary Contacts 5A - 230V a.c.</b> 1NO +1NC Allows remote indication of main contact status	½ Mod	<b>MZ201</b>
 <b>Auxiliary Contacts &amp; Alarm Induction</b> Allows indication of MCB status when turned off or tripped	½ Mod	<b>MZ202</b>
 <b>Shunt Trip</b> 230V - 415V a.c. 110V - 130V d.c. 24 - 48V a.c. 12 - 48V d.c.	1 Mod	<b>MZ203</b> <b>MZ204</b>
 <b>Under Voltage Release</b> 230V a.c. 48V d.c.	1 Mod	<b>MZ206</b> <b>MZ205</b>



MZ204



MM501N

### Motor Starters

- To ensure localised control and protection of single and three phase motors.

#### Technical Data

- Adjustable thermal relay
- AC 3 utilisation category

#### Connection capacity

- 2 conductors: Max size flexible 1 to 4mm<sup>2</sup>, rigid 1.5 to 6mm<sup>2</sup>

#### Options

- Conforms to IEC 947-1, IEC 947-2 (appropriate parts of)

Current setting	Standard power ratings of 3 phase motors 50/60Hz (a.c. 3 category)		Width (1 Mod = 17.5mm)	Cat ref.
	230V (kW)	400V (kW)		
0.1 - 0.16A	-	-	-	<b>MM501N</b>
0.16 - 0.25A	-	0.06	2 ½ Mod	<b>MM502N</b>
0.25 - 0.4A	0.06	0.09	2 ½ Mod	<b>MM503N</b>
0.4 - 0.6A	0.09	0.12	2 ½ Mod	<b>MM504N</b>
0.6 - 1.0A	0.09	0.12	2 ½ Mod	<b>MM505N</b>
1.0 - 1.6A	0.25	0.55	2 ½ Mod	<b>MM506N</b>
1.6 - 2.5A	0.55	0.8	2 ½ Mod	<b>MM507N</b>
2.5 - 4A	0.8	1.5	2 ½ Mod	<b>MM508N</b>
4 - 6A	1.5	2.5	2 ½ Mod	<b>MM509N</b>
6 - 10A	2.5	4	2 ½ Mod	<b>MM510N</b>
10 - 16A	4	7.5	2 ½ Mod	<b>MM511N</b>
16 - 20A	5.5	9	2 ½ Mod	<b>MM512N</b>
20 - 25A	7.5	12.5	2 ½ Mod	<b>MM513N</b>



MZ520N

### Auxiliary & Alarm Contacts for Motor Starters

- Auxiliary Contacts - Act as an indicating device to monitor the ON or OFF position.
- Alarm Contact - Mounted inside the motor starter

Characteristics	Width (1 Mod = 17.5mm)	Cat ref.
Auxiliary Contacts 1 Normally Closed + 1 Normally Open 2A AC 1 - 400V a.c.	½ Mod	<b>MZ520N</b>
Alarm Contact 1 Normally Closed 1A AC 1 - 400V a.c. / 2A AC 1 - 230V a.c.	½ Mod	<b>MZ527N</b>



MZ528N

### Under Voltage Release for Motor Starters

- To prevent automatic restarting of the controlled device

Characteristics	Cat ref.
230V a.c. 50Hz	<b>MZ528N</b>
400V a.c. 50Hz	<b>MZ529N</b>



MZ521N

### Surface Mounting Enclosure for Motor Starters

Description	Dimensions (H x W x D mm)	Cat ref.
IP55 Surface Mounting Enclosure for Motor Starter	78 x 150 x 95	<b>MZ521N</b>



MZ530N

### Emergency Stop Button

Description	Cat ref.
IP65 External Emergency Stop Button	<b>MZ530N</b>

### HRC Fuse Carriers (supplied with cartridge fuse)

#### Characteristics

- Protection and control of circuits against overloads and short-circuits.

#### Technical Data

- Suitable for fuses which fully comply with BS 88-3 (Formerly BS1361).
- Short-circuit rating: 16.5kA
- Connection Capacity: Top: 16 mm<sup>2</sup> flexible cable & busbar.

Current rating	Colour	Width (1 = 17.5mm)	Cat ref. HRC Fuse Carrier	Cat ref. HRC Spare Fuse
<b>HRC Fuse Carriers</b>				
5A 230V	White	1 Mod	<b>LB113</b>	<b>L15300</b>
15A 230V	Blue	1 Mod	<b>LB115</b>	<b>L15500</b>
20A 230V	Yellow	1 Mod	<b>LB116</b>	<b>L15600</b>
30A 230V	Red	1 Mod	<b>LB118</b>	<b>L15800</b>
Spare Fuse Holder up to 20A	-	-	<b>L14700</b>	-



LB113



L14700

Commercial  
Distribution

### SPSN Fuse Carriers (supplied without cartridge fuse)

#### Characteristics

- Protection and control of circuits against overloads and short-circuits.

#### Technical Data

- Characteristics type (fuse) gF
- Short-circuit rating: 4kA (10-20A), 6kA (25 & 32A).
- Voltage rating - 250V a.c.
- Connection Capacity: Rigid 16mm<sup>2</sup>, Flexible 10mm<sup>2</sup>

Rating	Width (1 = 17.5mm)	Cat ref. SPSN Fuse Carrier	Cat ref. Fuse Type gF
10A	1 Mod	<b>L12401</b>	<b>LF138</b>
16A	1 Mod	<b>L12501</b>	<b>LF139</b>
20A	1 Mod	<b>L12601</b>	<b>LF140</b>
25A	1 Mod	<b>L12701</b>	<b>LF141</b>
32A	1 Mod	<b>L12801</b>	<b>LF142</b>



L12401



LF140



LF138

### HRC Fuse Carriers (supplied without cartridge fuse)

#### Characteristics

- Protection and control of circuits against overloads and short-circuits.

- Suitable for fuses which comply with BS HD 60269-1 and with the standardised performance requirements for industrial fuse links specified in BS HD 60269-2 (formerly BS 88-2).

#### Technical Data

- Rating voltage: 415 V a.c., 250 V d.c.
- Rated breaking capacities: 80 kA at 415 V a.c., 40 kA at 250 V d.c.
- The LS201 HRC fuse carrier is suitable for the following type of BS 88-2 cartridge fuses:
  - 2A – 8A: with nickel-plated or silver plated caps.
  - 10A – 32A: with silver plated caps only.

Characteristics	Width (1 = 17.5mm)	Cat ref.
<b>HRC Fuse Carriers</b>		
32A max. (Supplied without fuse)	1 Mod	<b>LS201</b>



LS201

#### HRC Spare Cartridge Fuses

2A (29 x 12.7mm)	-	<b>L17100</b>
4A (29 x 12.7mm)	-	<b>L17200</b>
6A (29 x 12.7mm)	-	<b>L17300</b>
8A (29 x 12.7mm)	-	<b>L17400</b>

### Surge Protection

#### Characteristics

- SPD's protect electrical and electronic equipment against transients, originating from lightning, switching of transformers, lighting and motors. These transient voltages can cause premature ageing of equipment, downtime, or complete destruction of electronic components and materials. SPDs are strongly recommended on installations that are exposed to transient voltages, to protect sensitive and expensive electrical equipment such as TV, video, Hi-Fi, PC, alarm etc.
- The range of SPDs is separated into three types of protection:
  1. Main protection - class 1  
SPDs with higher discharge current ( $I_{max}$  10/350), to evacuate as much of the transient over-voltages associated with lightning strikes
  2. Main protection - class 2  
With a discharge current ( $I_{max}$  8/20), to evacuate as much of the transient over-voltage to earth as possible protection level ( $U_p \leq 1200V$ ).
  3. Main protection - class 3  
To cut-down the transient surge as low as possible to protect very sensitive equipment.

#### Technical Data

- Conforms to IEC61643-1.
- R Versions: reserve status indicator, signalling.
- D Versions: end of life indicator, auxiliary contact for remote indication.
- Connection Capacity (terminal blocks L, N & E): Rigid conductor: 10mm<sup>2</sup>, Flexible conductor: 6mm<sup>2</sup>.
- 230V a.c. 1A.
- 12V...10mA.

#### Installation and Connection

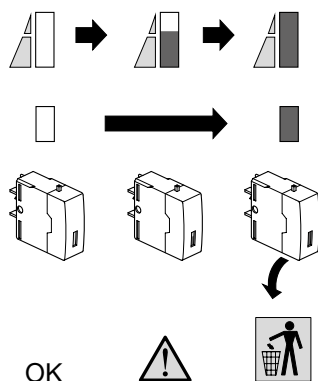
- The main protection SPDs are installed directly after the main incoming switch or RCCB
- SPDs are suitable for any supply system e.g TNCS, TNS, TT.
- Connected in parallel to the equipment to be protected.
- Protection is assured in both common and differential modes.

#### SPDs with Low Let Through Voltage Levels Type 3

- To protect very sensitive electronic equipment. This fine protection complements the main protection and can protect one or many electronic devices.
- Optimal coordination is obtained when cascaded with a main protection device.
- A green LED on the front face indicates the status of the **SP202N**, connected in series with the equipment that needs to be protected (with a maximum line current of 25A). Protection is assured in both common and differential modes.

#### Replacement Cartridges

- Allow simple replacement without the need to cut-off the power supply.
- Cartridges are available for all discharge currents (40kA and 15kA) with and without condition indication.
- A keying system exists to prevent a line cartridge being interchanged by mistake with a neutral one and visa versa. Neutral cartridges have a discharge current of 65kA.
- For technical details see page 1.89



SPN801R

#### Class 1 + 2 (Class 1 + 2 + 3 if less than 5m) (with lifetime indicator)

Poles	$I_{imp}$ L-N	$I_{imp}$ N-PE	$U_p$ kV	Single or Three Phase	Width (mm)	Cat ref.	Cat ref. with remote contact
2	12.5	25	$\leq 1.5$	Single	35	<b>SPA201</b>	-
4	12.5	50	$\leq 1.5$	Three	70	<b>SPA401</b>	-
4	25	100	$\leq 1.5$	Three	140	<b>SPN801</b>	<b>SPN801R</b>
4	25	100	$\leq 1.5$	Three	140	<b>SPN802</b>	<b>SPN802R</b>



SPN080

#### Replacement Cartridges (SPN8\* Range)

Description	Cat ref.
Phase replacement for <b>SPN801, SPN801R, SPN802, SPN802R</b>	<b>SPN080</b>
Neutral replacement for <b>SPN801, SPN801R, SPN802, SPN802R</b>	<b>SPN080N</b>



SPN415D

#### Class 2 (with lifetime indicator)

Poles	$I_n$ kA L-N	$I_n$ kA N-PE	$U_p$ kV	Single or Three Phase	Width (mm)	Cat ref.	Cat ref. with remote contact
1	5	15	$\leq 1.2$	Single	17.5	<b>SPN115D</b>	<b>SPN115R</b>
2	5	15	$\leq 1.2$	Single	35	<b>SPN215D</b>	<b>SPN215R</b>
2	15	40	$\leq 1.2$	Single	35	<b>SPN240D</b>	<b>SPN240R</b>
4	5	15	$\leq 1.5$	Three	70	<b>SPN415D</b>	<b>SPN415R</b>
4	15	40	$\leq 1.5$	Three	70	<b>SPN440D</b>	<b>SPN440R</b>

**Class 3 (Fine Protection) (with lifetime indicator)**

Poles	I <sub>n</sub> kA L-N	I <sub>n</sub> kA N-PE	U <sub>p</sub> kV	Width (mm)	Cat ref.
2	3	3	≤ 1.5	17.5	<b>SPN203N</b>

**PV Applications (DC side) (with lifetime indicator)**

Poles	I <sub>n</sub> kA L-N	I <sub>n</sub> kA N-PE	U <sub>p</sub> kV	Single or Three Phase	Width (mm)	Cat ref.
3	12.5	25	≤ 4	-	52.5	<b>SPV325</b>

**Replacement Cartridges**

Description	Cat ref.
Phase replacement for <b>SPN215D, SPN415D, SPN115D</b>	<b>SPN015D</b>
Phase replacement for <b>SPN215R, SPN415R, SPN115R</b>	<b>SPN015R</b>
Phase replacement for <b>SPN240D, SPN440D</b>	<b>SPN040D</b>
Phase replacement for <b>SPN240R, SPN44R</b>	<b>SPN040R</b>
Neutral replacement for <b>SPN215D, SPN415D, SPN215R, SPN415R</b>	<b>SPN040N</b>



SPN040D



HR500



HR510



HR520



HR440



HR441

## Earth Fault Relays

### Characteristics

- Provides monitoring of earth fault currents. When the fault current rises above the selected level, the output contacts of the product operate.
- Depending on the relay selected, it can have either fixed or adjustable sensitivity. A time delay is also available for selectivity purposes. The relays are linked with detection torroids, available in circular and rectangular variants.
- Positive safety: the relay trips in the event of a break in the relay/torroid link.
- Positive reset required after a fault is detected.
- Test button for simulation of a fault.
- Protected against nuisance tripping from transients.
- Conforms to BS EN 61008.

### Technical Data

- Type A RCD protection.
- Output: 1 C/O contact, 250V a.c. 5/6A AC1.
- Visual display of fault by red LED.

### Specific device features of HR525 & HR534.

- Display of fault current before it triggers the relay (5% to 75%).
- Extra output contact (250V 0.1A max.) to enable remote indication if fault currents over 50% of  $I_{\Delta n}$ .
- Remote test and reset (opto-coupled).

### Connection capacity

- Relay - 1.5 to 6mm<sup>2</sup>
- Relay - torroid link: 2 wires, 25m max.
- Test and remote reset link: 3 wires, 20m max.
- For enclosure selection, please consult us.

Description	Characteristics	Width	Cat ref.
<b>Earth Fault Relay with Separate Detection Torroids</b>			
Earth fault relay C/O contact 5A a.c.1	Instant trip, fixed sensitivity $I_{\Delta n} = 30\text{mA}$	1 Mod	<b>HR500</b>
Earth fault relay C/O contact 5A a.c.1	Instant trip, fixed sensitivity $I_{\Delta n} = 300\text{mA}$	1 Mod	<b>HR502</b>
Earth fault relay C/O contact 6A a.c.1	Adjustable sensitivity $I_{\Delta n} = 30\text{mA}, 100\text{mA}, 300\text{mA}$ 500mA, 1A, 3A, 10A Instant trip or time delay 0.1 - 0.3 - 0.4 - 0.5 - 1 - 3 secs	3 Mod	<b>HR510</b>
Earth fault relay C/O contact 6A a.c.1	Adjustable sensitivity $I_{\Delta n} = 30\text{mA}, 100\text{mA}, 300\text{mA}$ 500mA, 1A, 3A, 10A LED optical scale Instant trip or time delay 0.1 - 0.3 - 0.4 - 0.5 - 1 - 3 secs	3 Mod	<b>HR520</b>
Earth fault relay C/O contact 6A a.c.1	Adjustable sensitivity $I_{\Delta n} = 30\text{mA}, 100\text{mA}, 300\text{mA}$ 500mA, 1A, 3A, 10A LED optical scale Instant trip or time delay 0.1 - 0.2 - 0.25 - 0.3 - 0.4 - 0.5 secs	3 Mod	<b>HR522</b>
Earth fault relay C/O contact 6A a.c.1	Adjustable sensitivity $I_{\Delta n} = 500\text{mA}, 1\text{A}, 3\text{A}, 5\text{A},$ 10A, 20A & 30A LED optical scale Instant trip or time delay 0.1 - 0.2 - 0.25 - 0.3 - 0.4 - 0.5 secs	3 Mod	<b>HR523</b>
Earth fault relay C/O contact 6A a.c.1 Trip / reclose input feature	Adjustable sensitivity $I_{\Delta n} = 30\text{mA}, 100\text{mA}, 300\text{mA},$ 500mA, 1A, 3A, 5A, 10A & 30A LCD Display Instant trip or time delay 0.02 - 0.1 - 0.3 - 0.4 - 0.5 - 1 - 3 - 5 - 10 secs	3 Mod	<b>HR525</b>
Earth fault relay C/O contact 6A a.c.1 Solid State relay output Trip / reclose input feature	Adjustable sensitivity $I_{\Delta n} = 30\text{mA}, 100\text{mA}, 300\text{mA},$ 500mA, 1A, 3A, 5A, 10A & 30A LCD Display Instant trip or time delay 0.02 - 0.1 - 0.3 - 0.4 - 0.5 - 1 - 3 - 5 - 10 secs	3 Mod	<b>HR534</b>
<b>Earth Fault Relay with Integral Torroids</b>			
Earth fault relay with integral torroid adjustable sensitivity 25mm <sup>2</sup> max. cable size	Adjustable sensitivity $I_{\Delta n} = 30\text{mA}, 100\text{mA}, 300\text{mA},$ 500mA, 1A & 3A Instant trip or time delay 0.1 - 0.3 - 0.5 - 0.75 - 1 secs	4 Mod	<b>HR440</b>
Earth fault relay with integral torroid adjustable sensitivity 35mm <sup>2</sup> max. cable size	Adjustable sensitivity $I_{\Delta n} = 30\text{mA}, 100\text{mA}, 300\text{mA},$ 500mA, 1A & 3A Instant trip or time delay 0.1 - 0.3 - 0.5 - 0.75 - 1 secs	6 Mod	<b>HR441</b>



**Circular Section Torroids**

Characteristics	Cat ref.
ø 30mm	<b>HR700</b>
ø 35mm	<b>HR701</b>
ø 70mm	<b>HR702</b>
ø 105mm	<b>HR703</b>
ø 140mm	<b>HR704</b>
ø 210 mm	<b>HR705</b>



HR702

**Rectangular Section Torroids**

Dimensions	Cat ref.
70 x 175mm	<b>HR830</b>
115 x 305mm	<b>HR831</b>
150 x 350mm	<b>HR832</b>



HR830

**Rectangular Split Torroids**

Dimensions	Cat ref.
20 x 30mm	<b>HR820</b>
50 x 80mm	<b>HR821</b>
80 x 80mm	<b>HR822</b>
80 x 121mm	<b>HR823</b>
80 x 161mm	<b>HR824</b>



HR820



HDA125Z

**Moulded Case Circuit Breakers x160 18kA**

**Characteristics**

- Thermal magnetic trip unit, two versions: Z version: fixed thermal and fixed magnetic. U version: adjustable thermal and fixed magnetic.
- Access to mechanical test button on cover.
- Lockable cover protects MCCB settings.
- Integrated padlocking handle: Ø 4mm.
- Connection capacity: 95mm<sup>2</sup> rigid cables, 70mm<sup>2</sup> flexible cables.
- Cage terminals
- Conforms to BS EN 60947-2.
- Fixed thermal: 1 x I<sub>n</sub>
- Adjustable thermal: 0.63 - 0.8 - 1 x I<sub>n</sub>
- For technical details see table on page 1.96.

Commercial Distribution

Description	Breaking Capacity	Cat ref. 1 pole	Cat ref. 3 pole
<b>Moulded Case Circuit Breakers, 18kA, Fixed Thermal</b>			
MCCBs x160 - 16A	I <sub>CU</sub> / I <sub>CS</sub> : 18 kA	<b>HDA014Z</b>	<b>HDA016Z</b>
MCCBs x160 - 20A	I <sub>CU</sub> / I <sub>CS</sub> : 18 kA	<b>HDA018Z</b>	<b>HDA020Z</b>
MCCBs x160 - 25A	I <sub>CU</sub> / I <sub>CS</sub> : 18 kA	<b>HDA023Z</b>	<b>HDA025Z</b>
MCCBs x160 - 32A	I <sub>CU</sub> / I <sub>CS</sub> : 18 kA	<b>HDA030Z</b>	<b>HDA032Z</b>
MCCBs x160 - 40A	I <sub>CU</sub> / I <sub>CS</sub> : 18 kA	<b>HDA038Z</b>	<b>HDA040Z</b>
MCCBs x160 - 50A	I <sub>CU</sub> / I <sub>CS</sub> : 18 kA	<b>HDA048Z</b>	<b>HDA050Z</b>
MCCBs x160 - 63A	I <sub>CU</sub> / I <sub>CS</sub> : 18 kA	<b>HDA061Z</b>	<b>HDA063Z</b>
MCCBs x160 - 80A	I <sub>CU</sub> / I <sub>CS</sub> : 18 kA	<b>HDA078Z</b>	<b>HDA080Z</b>
MCCBs x160 - 100A	I <sub>CU</sub> / I <sub>CS</sub> : 18 kA	<b>HDA098Z</b>	<b>HDA100Z</b>
MCCBs x160 - 125A	I <sub>CU</sub> / I <sub>CS</sub> : 18 kA	<b>HDA123Z</b>	<b>HDA125Z</b>

**Moulded Case Circuit Breakers, 18kA, Adjustable Thermal**

MCCBs x160 - 25A	I <sub>CU</sub> / I <sub>CS</sub> : 18 kA	-	<b>HDA025U</b>
MCCBs x160 - 40A	I <sub>CU</sub> / I <sub>CS</sub> : 18 kA	-	<b>HDA040U</b>
MCCBs x160 - 63A	I <sub>CU</sub> / I <sub>CS</sub> : 18 kA	-	<b>HDA063U</b>
MCCBs x160 - 80A	I <sub>CU</sub> / I <sub>CS</sub> : 18 kA	-	<b>HDA080U</b>
MCCBs x160 - 100A	I <sub>CU</sub> / I <sub>CS</sub> : 18 kA	-	<b>HDA100U</b>
MCCBs x160 - 125A	I <sub>CU</sub> / I <sub>CS</sub> : 18 kA	-	<b>HDA125U</b>

**Moulded Case Circuit Breakers 25kA Fixed Thermal**

MCCBs x160 - 16A	I <sub>CS</sub> : 20 kA, I <sub>CU</sub> : 25 kA	<b>HHA014Z</b>	<b>HHA016Z</b>
MCCBs x160 - 20A	I <sub>CS</sub> : 20 kA, I <sub>CU</sub> : 25 kA	<b>HHA018Z</b>	<b>HHA020Z</b>
MCCBs x160 - 25A	I <sub>CS</sub> : 20 kA, I <sub>CU</sub> : 25 kA	<b>HHA023Z</b>	<b>HHA025Z</b>
MCCBs x160 - 32A	I <sub>CS</sub> : 20 kA, I <sub>CU</sub> : 25 kA	<b>HHA030Z</b>	<b>HHA032Z</b>
MCCBs x160 - 40A	I <sub>CS</sub> : 20 kA, I <sub>CU</sub> : 25 kA	<b>HHA038Z</b>	<b>HHA040Z</b>
MCCBs x160 - 50A	I <sub>CS</sub> : 20 kA, I <sub>CU</sub> : 25 kA	<b>HHA048Z</b>	<b>HHA050Z</b>
MCCBs x160 - 63A	I <sub>CS</sub> : 20 kA, I <sub>CU</sub> : 25 kA	<b>HHA061Z</b>	<b>HHA063Z</b>
MCCBs x160 - 80A	I <sub>CS</sub> : 20 kA, I <sub>CU</sub> : 25 kA	<b>HHA078Z</b>	<b>HHA080Z</b>
MCCBs x160 - 100A	I <sub>CS</sub> : 20 kA, I <sub>CU</sub> : 25 kA	<b>HHA098Z</b>	<b>HHA100Z</b>
MCCBs x160 - 125A	I <sub>CS</sub> : 20 kA, I <sub>CU</sub> : 25 kA	<b>HHA123Z</b>	<b>HHA125Z</b>

**Moulded Case Circuit Breakers 25kA Adjustable Thermal**

MCCBs x160 - 25A	I <sub>CS</sub> : 20 kA, I <sub>CU</sub> : 25 kA	-	<b>HHA025U</b>
MCCBs x160 - 40A	I <sub>CS</sub> : 20 kA, I <sub>CU</sub> : 25 kA	-	<b>HHA040U</b>
MCCBs x160 - 63A	I <sub>CS</sub> : 20 kA, I <sub>CU</sub> : 25 kA	-	<b>HHA063U</b>
MCCBs x160 - 80A	I <sub>CS</sub> : 20 kA, I <sub>CU</sub> : 25 kA	-	<b>HHA080U</b>
MCCBs x160 - 100A	I <sub>CS</sub> : 20 kA, I <sub>CU</sub> : 25 kA	-	<b>HHA100U</b>
MCCBs x160 - 125A	I <sub>CS</sub> : 20 kA, I <sub>CU</sub> : 25 kA	-	<b>HHA125U</b>

### Accessories for x160 Devices

#### Indication contacts

- 1 changeover switch (ON/OFF): indicates the position of the MCCB "open" or "close".
- 1 changeover alarm contact: indicates MCCB tripped.

#### Coil connection

- Connection capacity: 0.75 mm<sup>2</sup> flexible or rigid cables
- The cable capacity of the terminals is 0.5 to 1.25mm<sup>2</sup>.

#### Shunt trip

- Remote tripping of MCCBs
- Operating voltage: 0.7 to 1.1 x U<sub>N</sub>

#### Under voltage release

- Enables tripping of MCCBs or moulded case switches when voltage level drop between 35 and 70% of U<sub>N</sub>. Pick up voltage 0.85 x U<sub>N</sub>.
- Padlockable direct rotary handle is equipped with front cover and handle, fixing without additional screws.



HXA021H

HXA024H



HXA014H



HXA039H



HYA021H



HYA021H

Description	Cat ref.
<b>Auxiliary Contacts</b>	
1 Changeover contact (On/Off), 250V a.c. / 3A, 125V d.c. / 0.4A, 1 NO+ 1 NC	<b>HXA021H</b>
1 Changeover alarm contact, 250 V a.c. / 3A, 125 V d.c. / 0.4A, NO + 1 NC	<b>HXA024H</b>
Low level contact (On/Off), 125V a.c. , NO + 1 NC	<b>HXA025H</b>
Low Level alarm contact, 125 V a.c. , NO + 1 NC	<b>HXA026H</b>
<b>Shunt Trips</b>	
24V DC	<b>HXA001H</b>
48V DC	<b>HXA002H</b>
100-120V a.c.	<b>HXA003H</b>
200-240V a.c.	<b>HXA004H</b>
380-450V a.c.	<b>HXA005H</b>
<b>Undervoltage Releases</b>	
24V DC	<b>HXA011H</b>
100-120V a.c.	<b>HXA013H</b>
200-240V a.c.	<b>HXA014H</b>
380-450V a.c.	<b>HXA015H</b>
<b>Delayed Undervoltage Releases</b>	
24V DC	<b>HXA051H</b>
100-120V a.c.	<b>HXA053H</b>
200-240V a.c.	<b>HXA054H</b>
380-450V a.c.	<b>HXA055H</b>
<b>Accessories</b>	
Locking Device to Mount on MCCB for Handle Locking for 3 Padlock Max ø 8mm	<b>HXA039H</b>
Set of Three Extended Spreader Connections	<b>HYA014H</b>
Pair of Terminal Covers for Extended Straight Connections 1 Pole	<b>HYA029H</b>
Pair of Terminal Covers for Extended Straight Connections 3 Pole	<b>HYA021H</b>
Pair of Terminal Covers for Extended Spreader Connections	<b>HYA023H</b>

### Add-On Blocks for x160 Devices

#### Characteristics

- These devices are intended to be fixed on the right side of the devices.
- Type A RCD protection for protection against pulsating d.c.
- High Immunity reduces unexpected tripping (generated by micro-processing, electronic ballast etc.).
- Fixed version: 300 mA sensitivity and instantaneous tripping, adjustable version: adjustable sensitivity and time delay.
- Test button for electrical functioning check.
- LED fault indication and auxiliary output for remote indication - (25-50% I<sub>Δn</sub>).
- Assembly and disassembly facilitated by the drawer assembly system.
- Connection capacity: 95 mm<sup>2</sup> rigid cables, 70 mm<sup>2</sup> flexible cables.
- Sensitivity I<sub>Δn</sub>, adjustable: 0.03 - 0.1 - 0.3 - 1 - 3 - 6A
- Adjustable tripping: instantaneous or time delay: 0.06 - 0.15 - 0.3, 0.5 - 1s
- Conforms to BS EN 60947-2.



HBA125H

Description	Cat ref. 3P
Fixed Add-on Block - 125A	<b>HBA127H</b>
Adjustable Add-on Block - 125A	<b>HBA125H</b>
Adjustable Add-on Block - 160A	<b>HBA160H</b>



HDA125Z

Commercial  
Distribution

### Moulded Case Circuit Breakers x250 25kA

#### Characteristics

- Thermal magnetic trip unit, two versions: Z version: fixed thermal and fixed magnetic. H version: adjustable thermal magnetic.
- Access to mechanical test button on cover.
- Lockable cover protects MCCB settings.
- Integrated padlocking handle: Ø 4mm.
- Connection capacity: 150mm<sup>2</sup> rigid cables, palm lug max. width: 25mm
- Conforms to BS EN 60947-2
- AC 22/23A.
- For technical data see page 1.106.

#### x250 25kA

- Fixed thermal:  $1 \times I_n$
- Fixed magnetic:  $> 10 \times I_n$

#### x250 40kA

- Adjustable thermal: 0.63, 0.8,  $1 \times I_n$
- Adjustable magnetic: 6 - 8 - 10 -  $13 \times I_n$  (100 - 200A). 5 - 7 - 9 -  $11 \times I_n$  (250A).

Description	Breaking capacity	Cat ref. 3P
<b>Moulded Case Circuit Breakers 25kA - Fixed</b>		
MCCBs x250 - 100A	$I_{CS}$ : 20 kA, $I_{CU}$ : 25 kA	<b>HNB100Z</b>
MCCBs x250 - 125A	$I_{CS}$ : 20 kA, $I_{CU}$ : 25 kA	<b>HNB125Z</b>
MCCBs x250 - 160A	$I_{CS}$ : 20 kA, $I_{CU}$ : 25 kA	<b>HNB160Z</b>
MCCBs x250 - 200A	$I_{CS}$ : 20 kA, $I_{CU}$ : 25 kA	<b>HNB200Z</b>
MCCBs x250 - 250A	$I_{CS}$ : 20 kA, $I_{CU}$ : 25 kA	<b>HNB250Z</b>
<b>Moulded Case Circuit Breakers 40kA - Fixed</b>		
MCCBs x250 - 100A	$I_{CS}$ : 20 kA, $I_{CU}$ : 40 kA	<b>HNB100Z</b>
MCCBs x250 - 125A	$I_{CS}$ : 20 kA, $I_{CU}$ : 40 kA	<b>HNB125Z</b>
MCCBs x250 - 160A	$I_{CS}$ : 20 kA, $I_{CU}$ : 40 kA	<b>HNB160Z</b>
MCCBs x250 - 200A	$I_{CS}$ : 20 kA, $I_{CU}$ : 40 kA	<b>HNB200Z</b>
MCCBs x250 - 250A	$I_{CS}$ : 20 kA, $I_{CU}$ : 40 kA	<b>HNB250Z</b>
<b>Moulded Case Circuit Breakers 40kA - Adjustable</b>		
MCCBs x250 - 100A	$I_{CS}$ : 20 kA, $I_{CU}$ : 40 kA	<b>HNB100H</b>
MCCBs x250 - 125A	$I_{CS}$ : 20 kA, $I_{CU}$ : 40 kA	<b>HNB125H</b>
MCCBs x250 - 160A	$I_{CS}$ : 20 kA, $I_{CU}$ : 40 kA	<b>HNB160H</b>
MCCBs x250 - 200A	$I_{CS}$ : 20 kA, $I_{CU}$ : 40 kA	<b>HNB200H</b>
MCCBs x250 - 250A	$I_{CS}$ : 20 kA, $I_{CU}$ : 40 kA	<b>HNB250H</b>

### Accessories for x250 Devices

#### Indication contacts

- 1 changeover switch (ON/OFF): indicates the position of the MCCB "open" or "close".
- 1 changeover alarm contact: indicates MCCB tripped.

#### Coil connection

- Connection capacity: 0.75 mm<sup>2</sup> flexible or rigid cables
- The cable capacity of the terminals is 0.5 to 1.25mm<sup>2</sup>.

#### Shunt trip

- Remote tripping of MCCBs
- Operating voltage: 0.7 to 1.1 x U<sub>n</sub>

#### Under voltage release

- Enables tripping of MCCBs or moulded case switches when voltage level drop between 35 and 70% of U<sub>n</sub>. Pick up voltage 0.85 x U<sub>n</sub>
- Padlockable direct rotary handle is equipped with front cover and handle, fixing without additional screws.



HXA021H

HXA024H



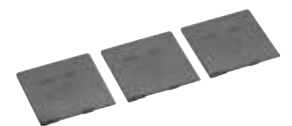
HXA014H



HXA039H



HYB010H



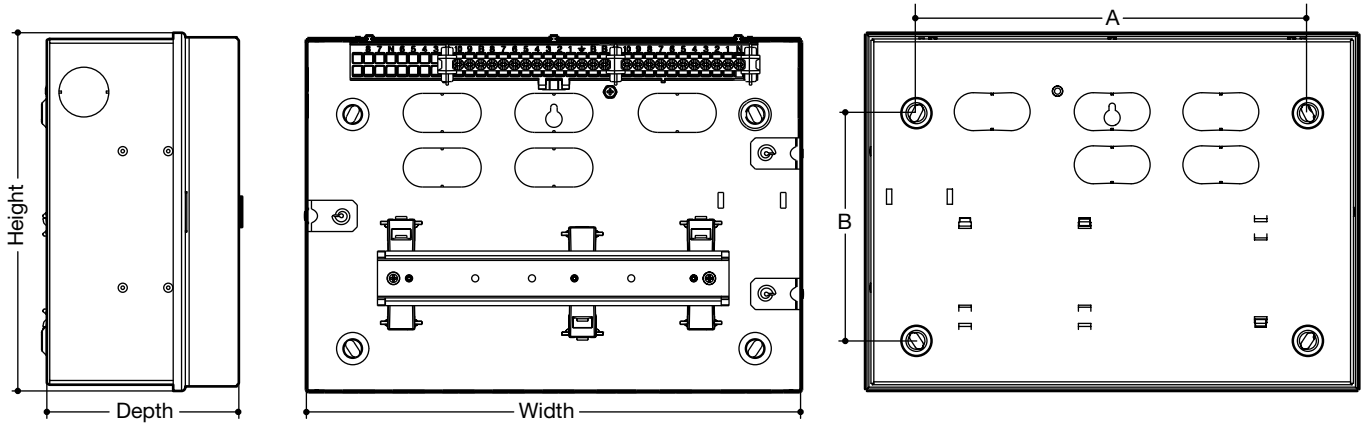
HYB019H



HYB021H

Description	Cat ref.
<b>Auxiliary Contacts</b>	
1 Changeover contact (On/Off), 250V a.c. / 3A, 125V d.c. / 0.4A, 1 NO+ 1NC	<b>HXA021H</b>
1 Changeover alarm contact, 250 V a.c. / 3A, 125 V d.c. / 0.4A, NO + 1 NC	<b>HXA024H</b>
Low level contact (On/Off), 125V a.c. , NO + 1 NC	<b>HXA025H</b>
Low Level alarm contact, 125 V a.c. , NO + 1 NC	<b>HXA026H</b>
<b>Shunt Trips</b>	
24V DC	<b>HXA001H</b>
48V DC	<b>HXA002H</b>
100-120V a.c.	<b>HXA003H</b>
200-240V a.c.	<b>HXA004H</b>
380-450V a.c.	<b>HXA005H</b>
<b>Undervoltage Releases</b>	
24V DC	<b>HXA011H</b>
100-120V a.c.	<b>HXA013H</b>
200-240V a.c.	<b>HXA014H</b>
380-450V a.c.	<b>HXA015H</b>
<b>Delayed Undervoltage Releases</b>	
24V DC	<b>HXA051H</b>
100-120V a.c.	<b>HXA053H</b>
200-240V a.c.	<b>HXA054H</b>
380-450V a.c.	<b>HXA055H</b>
<b>Accessories</b>	
Locking Device to Mount on MCCB for Handle Locking for 3 Padlock Max ø 8mm	<b>HXA039H</b>
Set of Four Extended Straight Connections	<b>HXB010H</b>
Set of Four Extended Spreader Connections	<b>HYB011H</b>
Set of Three Interphase Barriers	<b>HYB019H</b>
Pair of Terminal Covers for Extended Straight Connections	<b>HYB021H</b>
Pair of Terminal Covers for Extended Spreader Connections	<b>HYB023H</b>

Commercial  
Distribution

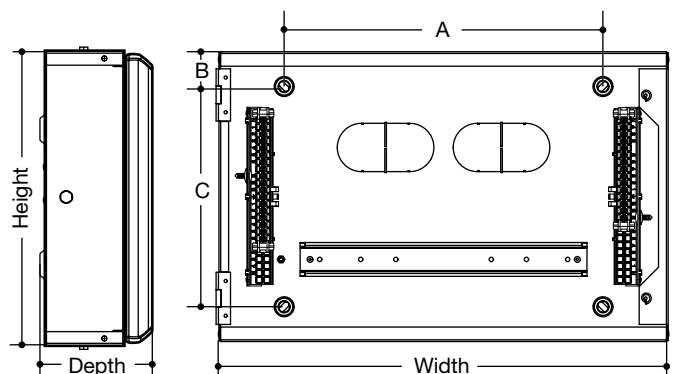


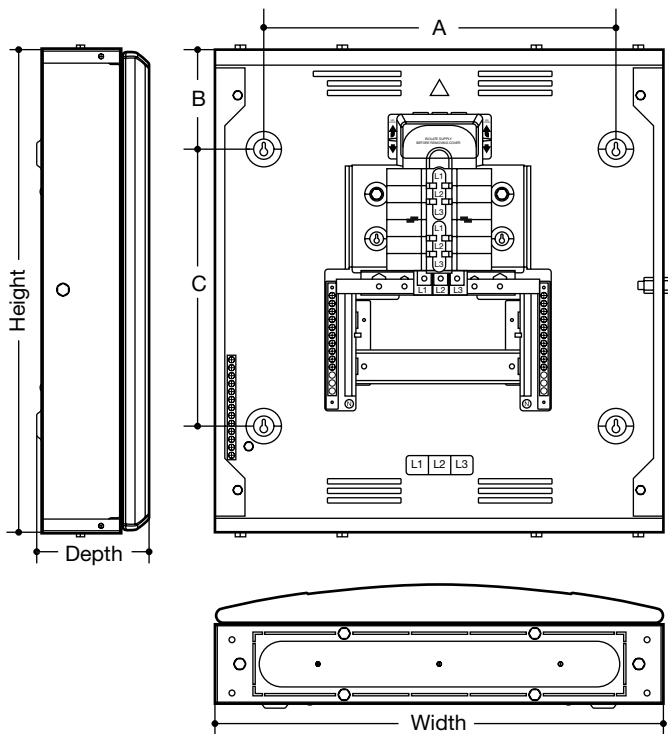
SP&N A Boards

Enclosure Size	Dimensions			Fixing Centres		Knockout Size	N° of Knockouts				
	Width	Height	Depth	A	B		Top	Bottom	Left	Right	Back
3	254	236	125	186	150	∅ 20	3	3	-	-	-
						∅ 32	1	1	1	1	-
						∅ 25	1	1	-	-	-
						25 x 50	-	-	-	-	3
4	326	236	125	258	150	∅ 20	6	6	-	-	-
						∅ 32	1	1	1	1	-
						∅ 25	1	1	-	-	-
						25 x 50	-	-	-	-	5
5	398	236	125	330	150	∅ 20	8	8	-	-	-
						∅ 32	1	1	1	1	-
						∅ 25	1	1	-	-	-
						25 x 50	-	-	-	-	7
7	505	236	125	437	150	∅ 20	11	11	-	-	-
						∅ 32	1	1	1	1	-
						∅ 25	1	1	-	-	-
						25 x 50	-	-	-	-	9
4 (2)	326	472	125	258	388	∅ 20	6	6	-	-	-
						∅ 32	1	1	2	2	-
						∅ 25	1	1	-	-	-
						25 x 50	-	-	-	-	6
5 (2)	398	472	125	330	388	∅ 20	8	8	-	-	-
						∅ 32	1	1	2	2	-
						∅ 25	1	1	-	-	-
						25 x 50	-	-	-	-	8
7 (2)	505	472	125	437	388	∅ 20	11	11	-	-	-
						∅ 32	1	1	2	2	-
						∅ 25	1	1	-	-	-
						25 x 50	-	-	-	-	10

Invicta 3 SP&N A Boards

	Dimensions (mm)			Fixing Centres (mm)		
	Height	Width	Depth	A	B	C
JK114A/AG	300	465	107.7	350	35	228
JK129A/AG	450	465	107.7	330	35	378





125A Primary Boards

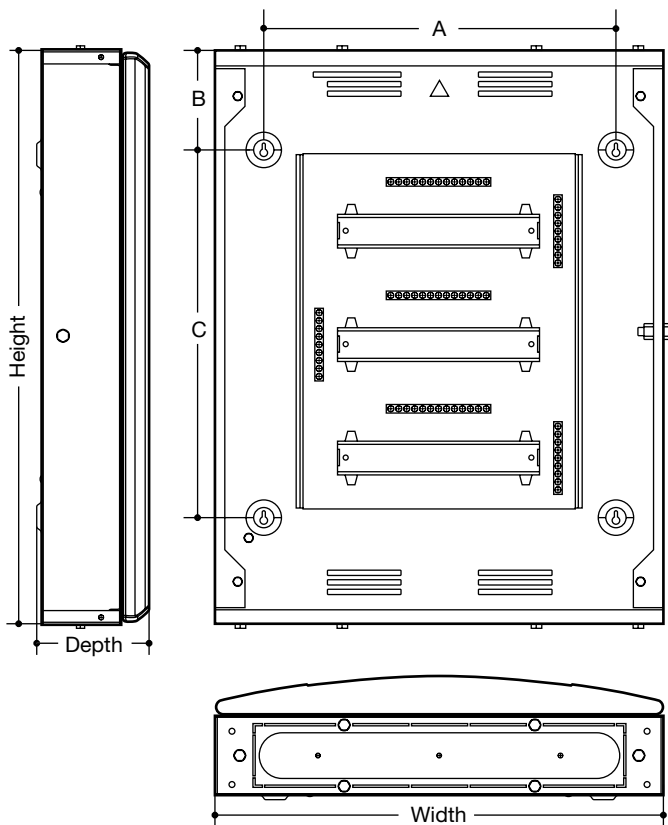
	Dimensions (mm)			Fixing Centres (mm)		
	Height	Width	Depth	A	B	C
JK104B/BG/A3	500	465	132.5	365	100	300
JK106B/BG/A3	550	465	132.5	365	100	350
JK108B/BG/A3	625	465	132.5	365	100	425
JK112B/BG/A3	850	465	132.5	365	100	650
JK116B/BG/A3	950	465	132.5	365	100	750
JK118B/BG/A3	1100	465	132.5	365	100	900
JK124B/BG/A3	1250	465	132.5	365	100	1050

250A Primary Boards

	Dimensions (mm)			Fixing Centres (mm)		
	Height	Width	Depth	A	B	C
JK208B/BG/A3	950	465	165.5	365	100	750
JK212B/BG/A3	1100	465	165.5	365	100	900
JK216B/BG/A3	1250	465	165.5	365	100	1050
JK218B/BG/A3	1400	465	165.5	365	100	1200
JK224B/BG/A3	1550	465	165.5	365	100	1350

Contactor Incomers

	Dimensions (mm)		
	Height	Width	Depth
JK10634C	300	465	165.5
JK11004C	450	465	234.5
JK21604C	450	465	234.5

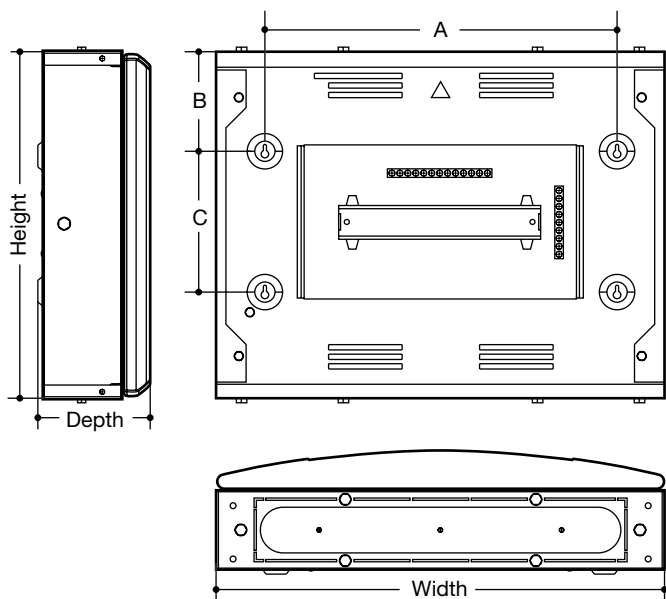


125A Side DIN Boxes

	Dimensions (mm)			Fixing Centres (mm)		
	Height	Width	Depth	A	B	C
JK104BDFG	500	465	132.5	365	100	300
JK106BDFG	550	465	132.5	365	100	350
JK108BDFG	625	465	132.5	365	100	425
JK112BDFG	850	465	132.5	365	100	650
JK116BDFG	950	465	132.5	365	100	750

250A Side DIN Boxes

	Dimensions (mm)			Fixing Centres (mm)		
	Height	Width	Depth	A	B	C
JK208BDFG	950	465	165.5	365	100	750
JK212BDFG	1100	465	165.5	365	100	900
JK216BDFG	1250	465	165.5	365	100	1050
JK218BDFG	1400	465	165.5	365	100	1200
JK224BDFG	1550	465	165.5	365	100	1350

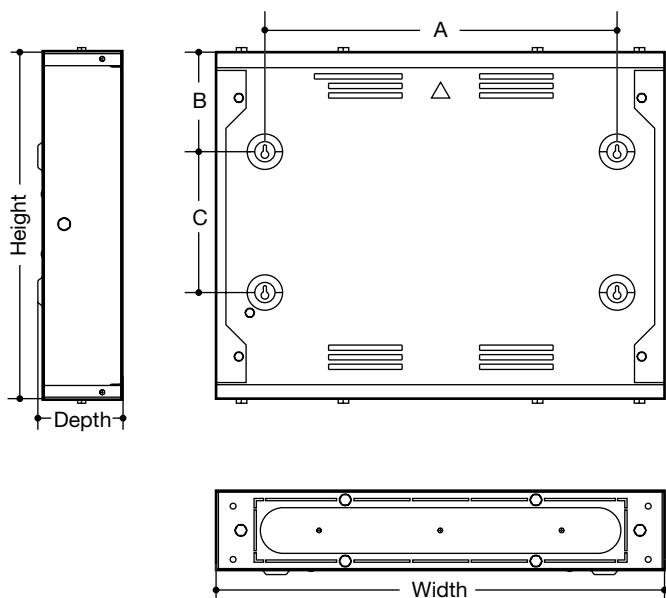


### 125A DIN Extension Boxes

	Dimensions (mm)			Fixing Centres (mm)		
	Height	Width	Depth	A	B	C
<b>JK116E/EG</b>	300	465	132.5	365	150	-
<b>JK132E/EG</b>	450	465	132.5	365	80	290

### 250A DIN Extension Boxes

	Dimensions (mm)			Fixing Centres (mm)		
	Height	Width	Depth	A	B	C
<b>JK216E/EG</b>	300	465	165.5	365	150	-
<b>JK232E/EG</b>	450	465	165.5	365	80	290



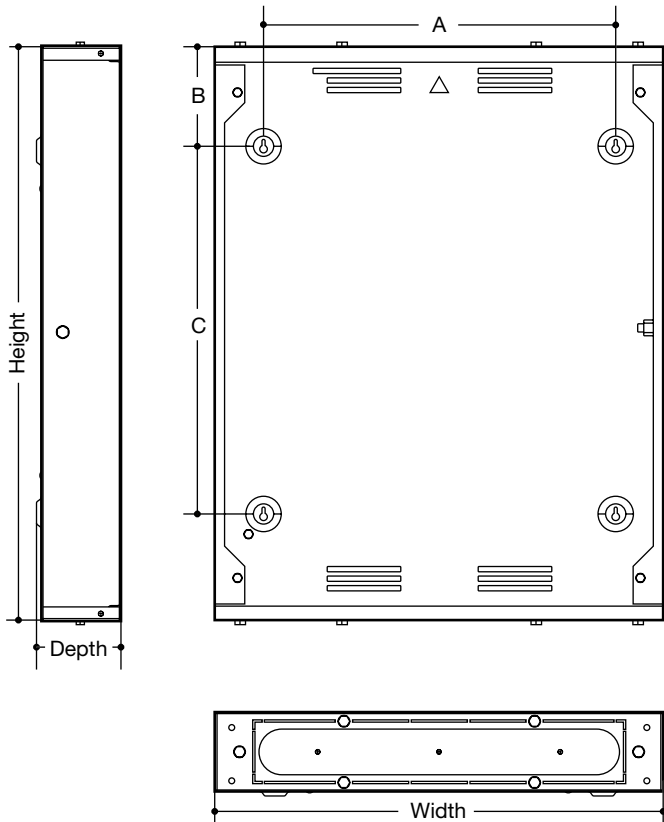
### 125A Cable Spreader Boxes

	Dimensions (mm)				Fixing Centres (mm)		
	Height	Width	Depth	Depth with optional door	A	B	C
<b>JK101SE</b>	300	465	91.5	132.5	365	150	-
<b>JK102LE</b>	450	465	91.5	132.5	365	80	290

### 250A Cable Spreader Boxes

	Dimensions (mm)				Fixing Centres (mm)		
	Height	Width	Depth	Depth with optional door	A	B	C
<b>JK201SE</b>	300	465	124.5	165.5	365	150	-
<b>JK202LE</b>	450	465	124.5	165.5	365	80	290





125A Side Extension Boxes

	Dimensions (mm)			Fixing Centres (mm)		
	Height	Width	Depth	A	B	C
<b>JK104BSF</b>	500	465	91.5	365	100	300
<b>JK106BSF</b>	550	465	91.5	365	100	350
<b>JK108BSF</b>	625	465	91.5	365	100	425
<b>JK112BSF</b>	850	465	91.5	365	100	650
<b>JK116BSF</b>	950	465	91.5	365	100	750

250A Side Extension Boxes

	Dimensions (mm)			Fixing Centres (mm)		
	Height	Width	Depth	A	B	C
<b>JK208BSF</b>	950	465	124.5	365	100	750
<b>JK212BSF</b>	1100	465	124.5	365	100	900
<b>JK216BSF</b>	1250	465	124.5	365	100	1050
<b>JK218BSF</b>	1400	465	124.5	365	100	1200
<b>JK224BSF</b>	1550	465	124.5	365	100	1350

125A Half Width Side Extension Boxes

	Dimensions (mm)			Fixing Centres (mm)		
	Height	Width	Depth	A	B	C
<b>JK104BSH</b>	500	232.5	91.5	170	100	300
<b>JK106BSH</b>	550	232.5	91.5	170	100	350
<b>JK108BSH</b>	625	232.5	91.5	170	100	425
<b>JK112BSH</b>	850	232.5	91.5	170	100	650
<b>JK116BSH</b>	950	232.5	91.5	170	100	750

250A Half Width Side Extension Boxes

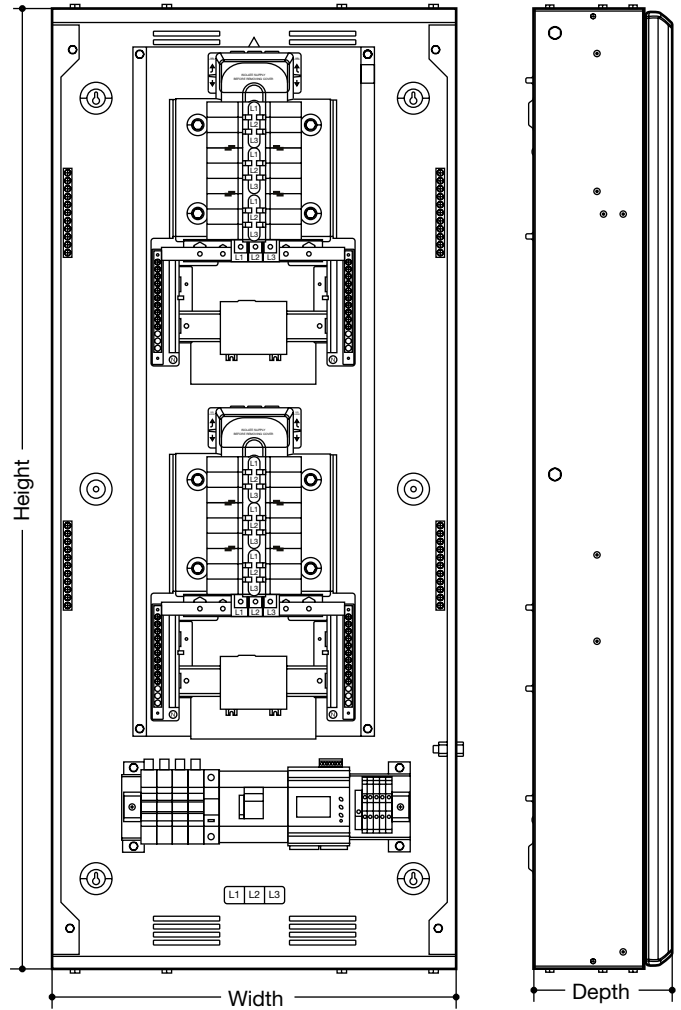
	Dimensions (mm)			Fixing Centres (mm)		
	Height	Width	Depth	A	B	C
<b>JK208BSH</b>	950	232.5	124.5	170	100	750
<b>JK212BSH</b>	1100	232.5	124.5	170	100	900
<b>JK216BSH</b>	1250	232.5	124.5	170	100	1050
<b>JK218BSH</b>	1400	232.5	124.5	170	100	1200
<b>JK224BSH</b>	1550	232.5	124.5	170	100	1350

### Dual Power & Lighting Boards

	Dimensions (mm)		
	Height	Width	Depth
<b>JKD146PM</b>	1100	465	165.5
<b>JKD166PM</b>	1100	465	165.5
<b>JKD164PM</b>	1100	465	165.5
<b>JKD168PM</b>	1250	465	165.5
<b>JKD188PM</b>	1250	465	165.5
<b>JKD186PM</b>	1250	465	165.5
<b>JKD1416PM</b>	1400	465	165.5
<b>JKD1164PM</b>	1400	465	165.5
<b>JKD1812PM</b>	1400	465	165.5
<b>JKD1128PM</b>	1400	465	165.5
<b>JKD11212PM</b>	1400	465	165.5

### Triple Power, Lighting & Services Board

	Dimensions (mm)		
	Height	Width	Depth
<b>JKD2884PM</b>	1850	465	165.5



### Meter Characteristics

Supply	60 to 300V AC, 50/60Hz (±5%)
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### Serial Communication

Interface Standard and Protocol	RS485 and MODBUS RTU
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### Input (CT)

Pluggable RJ45	Input 1/ Input 2
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### Output



Pulse Output:	Voltage Range : 24V DC max
Current Capacity :	100mA max
Pulse Duration :	Selectable Between 0.1 to 2.0sec
Pulse Weight :	Selectable between 0.01 to 9.99kWh

### Accuracy of meter

Measurement	Accuracy
Voltage VL-N	0.5% of full range
Voltage VL-L	0.5% of full range
Current A	0.5% of full range
Frequency For L-N Voltage > 20V For L-L Voltage > 35V"	0.1% of full range
Active power	1.0% of full range
Apparent Power	1.0% of full range
Reactive Power	1.0% of full range
Power Factor	±0.01% of full Range
Active Energy	1.0% of full range
Reactive Energy	1.0% of full range
Max/Min Active Power	1.0% of full range
Max/Min Reactive Power	1.0% of full range
Max Apparent Power	1.0% of full range
Power Consumption	Less than 8VA

Characteristics	JK1**	JK2**
Standards	Designed, manufactured and tested to BS EN 61439-3	Designed, manufactured and tested to BS EN 61439-3
Busbar Current Rating	125A	250A
Busbar Type	Fully shrouded copper	Fully shrouded copper
Busbar Rating	25kA Conditional	25kA Conditional
Incoming	100A Switch	250A MCS
	125A Switch	250A MCCB
	63A contactor AC3	160A contactor AC3
	100A contactor AC3	Direct connection
	Direct connection	
RCCB incomers		
Outgoing Ways	4, 6, 8, 12, 16, 18, 24 Triple pole outgoing ways	8, 12, 16, 18, 24 Triple pole way outgoing ways
Outgoing Protection	Type B MCB (6A to 63A, 1P & 3P) Type C, D MCB, (0.5A to 63A, 1P & 3P) 1Mod and 2Mod RCBO	Type B MCB (6A to 63A, 1P & 3P) Type C, D MCB, (0.5A to 63A, 1P & 3P) 1Mod and 2Mod RCBO
Voltage Rating in AC	230 / 415V	230 / 415V
IP Protection	IP3X to BS EN 60529	IP3X to BS EN 60529
Enclosure Body Type	Steel	Steel
Enclosure Paint Type	Powder Coat Grey White BS4800 00A01	Powder Coat Grey White BS4800 00A01
Cable Entry	Obround protected cable entry points	Obround protected cable entry points
<b>Terminal Connection Capacity</b>		
Incoming Line Terminal	50mm <sup>2</sup>	120mm <sup>2</sup>
Incoming Earth Terminal	M8 stud	M8 stud
Incoming Neutral Terminal	50mm <sup>2</sup> cage or M6 stud	M8 Stud
Outgoing Earth Terminals	16mm <sup>2</sup>	16mm <sup>2</sup>
Outgoing Neutral Terminals	16mm <sup>2</sup>	16mm <sup>2</sup>
Enclosure Earth Stud	M8	M8
<b>Installation</b>		
Mounting	4 x key hole fixing holes plus central top key hole for one fixing hanging / levelling Surface Wall Mount	4 x key hole fixing holes plus central top key hole for one fixing hanging / levelling Surface Wall Mount
Gland Plate	Top and bottom removable	Top and bottom removable
Integrated Locking System	Coin lock as standard, key lock as accessory	Coin lock as standard, key lock as accessory

### Torque Settings

	 Pz No.	 (mm)	Cables >1.5mm <sup>2</sup> Tightening torque (N.m)		Cables ≤1.5mm <sup>2</sup> Tightening torque (N.m)		Cable Stripping (mm)
			Single Cable	Multi Cables	Single Cable	Multi Cable	
<b>Consumer unit terminals</b>							
Earth and neutral terminal bars	2	6.5	2	2	1.5	1.5	10
<b>Isolation</b>							
SB switch disconnectors	2	6.5	3.6	3.6	3.6	3.6	15
<b>Circuit protection</b>							
MTN MCB	2	6.5	2.8	2.8	2.8	2.8	13
NBN/NCN/NDN MCB	2	6.5	2.8	2.8	2.8	2.8	13
RCBO	2	5.5	2.1	2.1	2.1	2.1	13
RCCB	2	5.5	2.8	2.8	2.8	2.8	13

Interface Characteristics	Dual Power & Lighting Boards	Triple Power, Lighting & Services Board
Rated & operational voltage ( $U_n / U_e$ )	415V a.c. 50Hz	415V a.c. 50Hz
Rated insulation voltage ( $U_i$ )	690V a.c. 50Hz	690V a.c. 50Hz
Rated impulse withstand voltage ( $U_{imp}$ )	4kV	4kV
Rated current of the Assembly ( $I_{nA}$ )	125A	200A
Rated current of pan assembly	Lower Pan ( $I_n$ ) = 125A (RDF=1) Upper Pan ( $I_n$ ) = 125A (RDF=1)	Lower Pan ( $I_n$ ) = 125A (RDF=1) Middle Pan ( $I_n$ ) = 125A (RDF=1) Upper Pan ( $I_n$ ) = 125A (RDF=1)
Rated current of an Outgoing Circuit ( $I_{nC}$ )	MCB 0.5A - 63A (marked rated current on device) RCBO 6A - 45A (marked rated current on device)	MCB 0.5A - 63A (marked rated current on device) RCBO 6A - 45A (marked rated current on device)
Rated conditional short-circuit current of the assembly ( $I_{cC}$ )	10kA with equipment and arrangements specified in Hager's technical documentation/catalogue	10kA <sup>1</sup> with equipment and arrangements specified in Hager's technical documentation/catalogue
Protection against electric shock	Equipment shall be installed in an electrical system conforming to IEC 60364 / BS 7671	Equipment shall be installed in an electrical system conforming to IEC 60364 / BS 7671
Rated Diversity Factor (RDF) / Values of assumed loading	10 way to 24 way = 0.5 Note: RDF only applies to continuously and simultaneously loaded circuits.	10 way to 24 way = 0.5 Note: RDF only applies to continuously and simultaneously loaded circuits.
Rated frequency ( $f_n$ )	50 Hz	50 Hz
Pollution degree	2	2
Types of system earthing for which the assembly is designed	TNC-S, TN-S and TT when installed in an electrical system conforming to BS 7671	TNC-S, TN-S and TT when installed in an electrical system conforming to BS 7671
Intended locations	Indoor use only	Indoor use only
<b>Stationary Assembly</b>		
Degree of protection	IP3XD with Door Closed IP2XC with Door Open	IP3XD with Door Closed IP2XC with Door Open
Intended use	Distribution boards intended to be operated by ordinary persons (DBO)	Distribution boards intended to be operated by ordinary persons (DBO)
Electromagnetic compatibility (EMC) classification	EMC Environment B	EMC Environment B
External design	Wall-mounted, surface type, enclosed assembly.	Wall-mounted, surface type, enclosed assembly.
Mechanical impact protection	IK05	IK05
The type of construction	Fixed parts	Fixed parts
DBO Type	Type B DBO	Type B DBO
Incoming Line Terminal	70mm <sup>2</sup> (switch disconnecter)	70mm <sup>2</sup> (switch disconnecter)
Incoming Neutral Terminal	50mm <sup>2</sup> Cage	50mm <sup>2</sup> Cage
Enclosure Earth Stud	M8	M8
Standards	BS EN 61439-3	BS EN 61439-3

Interface Characteristics	JKD125PM	JKD125TPM	JKD250PM	JKD250TPM
Rated & operational voltage ( $U_N / U_E$ )	415V a.c. 50Hz	415V a.c. 50Hz	415V a.c. 50Hz	415V a.c. 50Hz
Rated insulation voltage ( $U_i$ )	690V a.c. 50Hz	690V a.c. 50Hz	690V a.c. 50Hz	690V a.c. 50Hz
Rated impulse withstand voltage ( $U_{imp}$ )	4kV	4kV	4kV	4kV
Rated current of the Assembly ( $I_{NA}$ )	125A Right Side Pan Assembly ( $I_N$ ) 125A Left Side Pan Assembly ( $I_N$ ) 125A	125A Right Side Pan Assembly ( $I_N$ ) 125A Middle Pan Assembly ( $I_N$ ) 125A Left Side Pan Assembly ( $I_N$ ) 125A	250A Right Side Pan Assembly ( $I_N$ ) 250A Left Side Pan Assembly ( $I_N$ ) 250A	250A Right Side Pan Assembly ( $I_N$ ) 200A Middle Pan Assembly ( $I_N$ ) 200A Left Side Pan Assembly ( $I_N$ ) 200A
Rated conditional short-circuit current of the assembly ( $I_{CC}$ )	10kA with equipment and arrangements specified in Hager's technical documentation/catalogue	10kA with equipment and arrangements specified in Hager's technical documentation/catalogue	10kA with equipment and arrangements specified in Hager's technical documentation/catalogue	10kA with equipment and arrangements specified in Hager's technical documentation / catalogue
Protection against electric shock	Equipment shall be installed in an electrical system conforming to IEC 60364 / BS 7671	Equipment shall be installed in an electrical system conforming to IEC 60364 / BS 7671	Equipment shall be installed in an electrical system conforming to IEC 60364 / BS 7671	Equipment shall be installed in an electrical system conforming to IEC 60364 / BS 7671
Rated frequency ( $f_N$ )	50 Hz	50 Hz	50 Hz	50 Hz
Pollution degree	2	2	2	2
Types of system earthing for which the ASSEMBLY is designed	TNC-S, TN-S and TT when installed in an electrical system conforming to BS 7671	TNC-S, TN-S and TT when installed in an electrical system conforming to BS 7671	TNC-S, TN-S and TT when installed in an electrical system conforming to BS 7671	TNC-S, TN-S and TT when installed in an electrical system conforming to BS 7671
Intended locations	Indoor use only	Indoor use only	Indoor use only	Indoor use only
Degree of protection	IP3XD with Door Closed IP2XC with Door Open	IP3XD with Door Closed IP2XC with Door Open	IP3XD with Door Closed IP2XC with Door Open	IP3XD with Door Closed / IP2XC with Door Open
Intended use	Distribution boards intended to be operated by ordinary persons (DBO)	Distribution boards intended to be operated by ordinary persons (DBO)	Distribution boards intended to be operated by ordinary persons (DBO)	Distribution boards intended to be operated by ordinary persons (DBO)
Electromagnetic compatibility (EMC) classification	EMC Environment B	EMC Environment B	EMC Environment B	EMC Environment B
External design	Wall-mounted, surface type, enclosed assembly.	Wall-mounted, surface type, enclosed assembly.	Wall-mounted, surface type, enclosed assembly.	Wall-mounted, surface type, enclosed assembly.
Mechanical impact protection	IK05	IK05	IK05	IK05
The type of construction	Fixed parts	Fixed parts	Fixed parts	Fixed parts
Incoming Line Terminal	M8	M8	M8	M8
Incoming Neutral Terminal	M8 Lug	M8 Lug	M8 Lug	M8 Lug
Enclosure Earth Stud	M8	M8	M8	M8

### Meter Characteristics

Supply	60 to 300V AC, 50/60Hz (±5%)
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### Serial Communication

Interface Standard and Protocol	RS485 and MODBUS RTU
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### Input (CT)

Pluggable RJ45	Input 1/ Input 2
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### Output

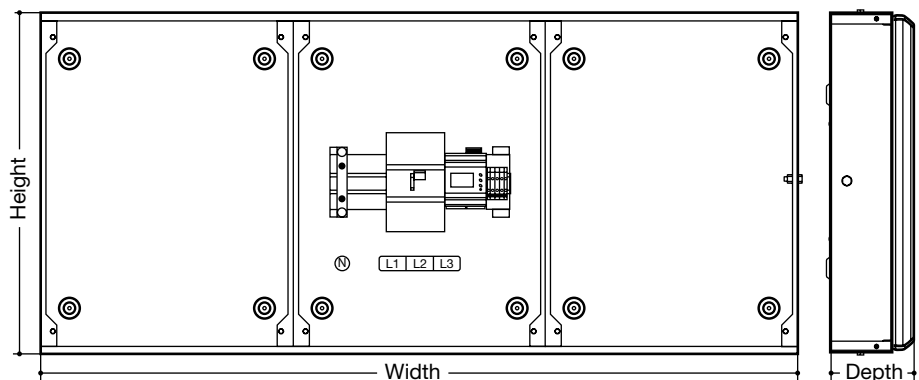
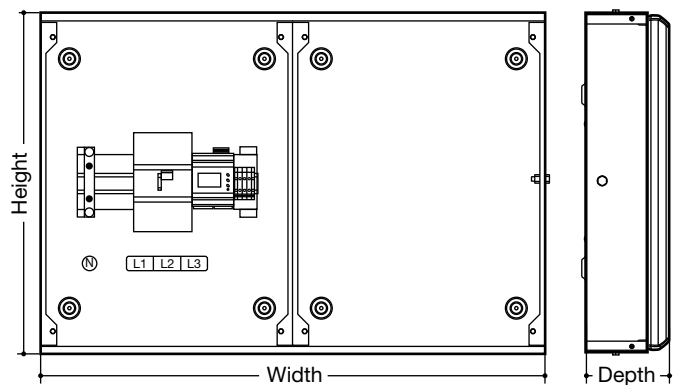
Pulse Output:	Voltage Range : 24V DC max
Current Capacity :	100mA max
Pulse Duration :	Selectable Between 0.1 to 2.0sec
Pulse Weight :	Selectable between 0.01 to 9.99kWh

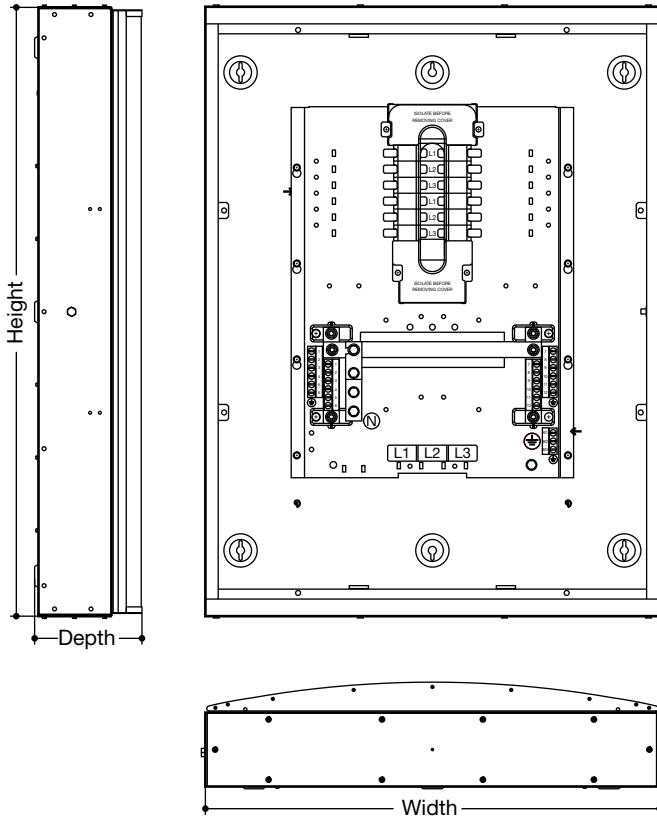
### Accuracy of meter

Measurement	Accuracy
Voltage VL-N	0.5% of full range
Voltage VL-L	0.5% of full range
Current A	0.5% of full range
Frequency For L-N Voltage >20V For L-L Voltage >35V"	0.1% of full range
Active power	1.0% of full range
Apparent Power	1.0% of full range
Reactive Power	1.0% of full range
Power Factor	±0.01% of full Range
Active Energy	1.0% of full range
Reactive Energy	1.0% of full range
Max/Min Active Power	1.0% of full range
Max/Min Reactive Power	1.0% of full range
Max Apparent Power	1.0% of full range
Power Consumption	Less than 8VA

### Dual & Triple Meter Incomers

	Dimensions (mm)		
	Height	Width	Depth
<b>JKD125PM</b>	625	930	132.5
<b>JKD125TPM</b>	625	1395	132.5
<b>JKD250PM</b>	625	930	132.5
<b>JKD250TPM</b>	625	1395	132.5





**Primary Boards**

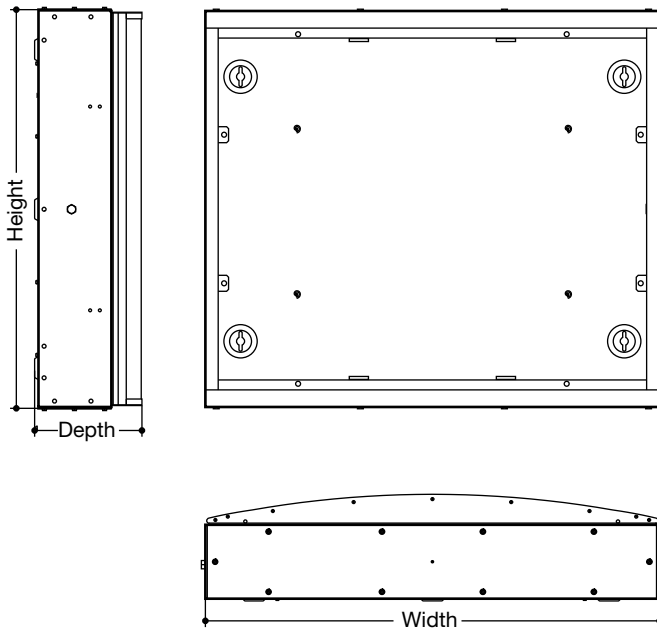
	Dimensions (mm)		
	Height	Width	Depth
JN204B/G	950	710	160
JN206B/G	1100	710	160
JN208B/G	1100	710	160
JN212B/G	1250	710	160
JN216B/G	1550	710	160

**Terminals**

Neutral	Earth	Bond
2 x 6 x 50mm	2 x 6 x 50mm	1 x 3 x 50mm
2 x 9 x 50mm	2 x 9 x 50mm	1 x 3 x 50mm
2 x 12 x 50mm	2 x 12 x 50mm	1 x 3 x 50mm
2 x 18 x 50mm	2 x 18 x 50mm	1 x 3 x 50mm
2 x 24 x 50mm	2 x 24 x 50mm	1 x 3 x 50mm

Cables outgoing ways:  
25 - 50mm<sup>2</sup> CSA Flex  
25 - 70mm<sup>2</sup> CSA Solid

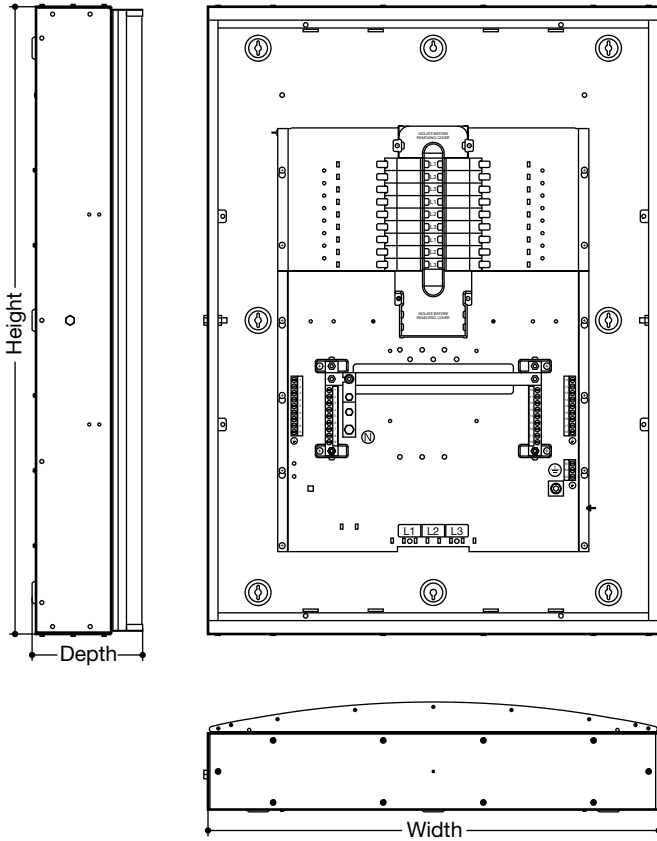
MCCB Connections M8  
Earth M8  
Neutral M8



**Extension Boxes**

	Dimensions (mm)		
	Height	Width	Depth
JN201BE/G	300	710	160
JN203BE/G	450	710	160
JN205BE	300	710	125
JN206BE	450	710	125

Commercial Distribution



### Primary Boards

	Dimensions (mm)		
	Height	Width	Depth
JF406B/G	1250	900	220
JF408B/G	1250	900	220
JF412B/G	1400	900	220
JF416B/G	1550	900	220
JF418B/G	1700	900	220
JF808B/G	1250	900	220
JF812B/G	1400	900	220
JF818B/G	1700	900	220
JF60204B/G	1250	900	220
JF80206B/G	1250	900	220
JF80404B/G	1250	900	220
JF80210B/G	1400	900	220
JF80408B/G	1400	900	220
JF80414B/G	1700	900	220
JF80612B/G	1700	900	220

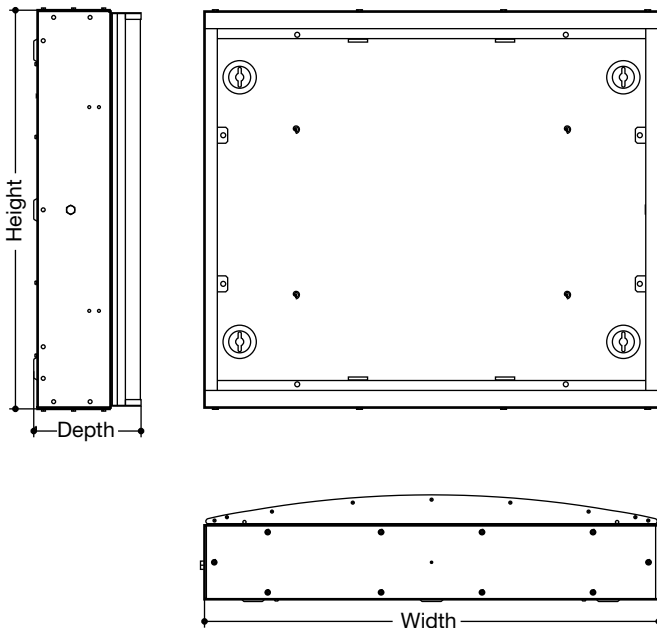
### Terminals

Neutral		Earth	Bond
2 x 9 x 50mm		2 x 9 x 50mm	1 x 3 x 50
2 x 12 x 50mm		2 x 12 x 50mm	1 x 3 x 50
2 x 18 x 50mm		2 x 18 x 50mm	1 x 3 x 50
2 x 24 x 50mm		2 x 24 x 50mm	1 x 3 x 50
2 x 12 x 50mm		2 x 12 x 50mm	1 x 3 x 50
2 x 18 x 50mm		2 x 18 x 50mm	1 x 3 x 50
2 x 27 x 50mm		2 x 27 x 50mm	1 x 3 x 50
2 x 6 x 50mm		2 x M8 Bolt	2 x 9 x 50mm
2 x 9 x 50mm	2 x M8 Bolt	2 x 12 x 50mm	1 x 3 x 50
2 x 6 x 50mm	4 x M8 Bolt	2 x 12 x 50mm	1 x 3 x 50
2 x 15 x 50mm	2 x M8 Bolt	2 x 18 x 50mm	1 x 3 x 50
2 x 12 x 50mm	4 x M8 Bolt	2 x 18 x 50mm	1 x 3 x 50
2 x 21 x 50mm	4 x M8 Bolt	2 x 27 x 50mm	1 x 3 x 50
2 x 18 x 50mm	6 x M8 Bolt	2 x 27 x 50mm	1 x 3 x 50

Cables outgoing ways:  
 25 - 50mm<sup>2</sup> CSA Flex  
 25 - 70mm<sup>2</sup> CSA Solid

MCCB Connections:  
 400A M10  
 630A M12

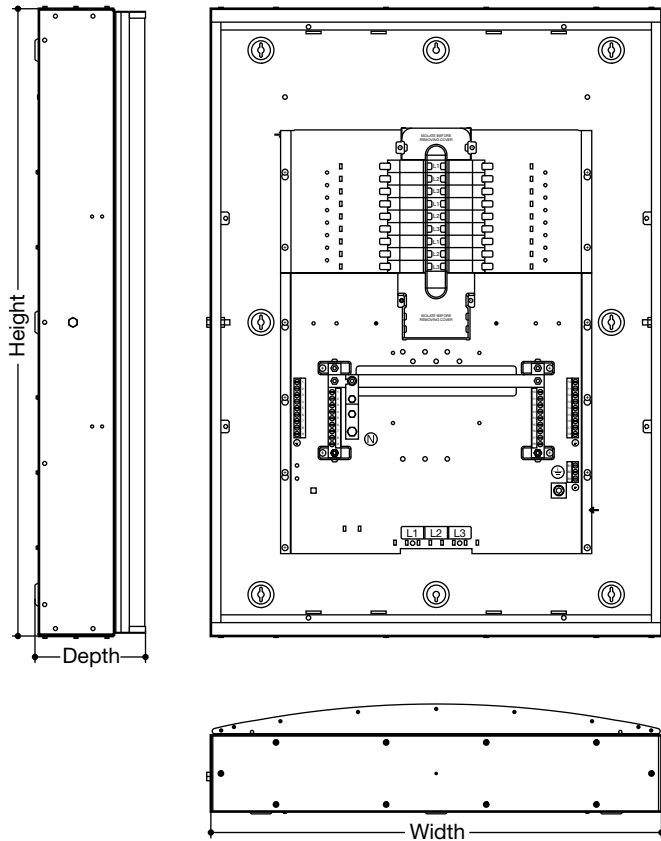
Earth:  
 400A M10  
 630A M10



### Extension Boxes

	Dimensions (mm)		
	Height	Width	Depth
JF801E/G	300	900	220
JF803E/G	450	900	220
JF805E	300	900	158
JF806E	450	900	158





**Primary Boards**

	Dimensions (mm)		
	Height	Width	Depth
<b>JHF812B/G</b>	2050	900	220
<b>JHF818B/G</b>	2200	900	220
<b>JHF80206B/G</b>	1900	900	220
<b>JHF80404B/G</b>	1900	900	220
<b>JHF80210B/G</b>	2050	900	220
<b>JHF80408B/G</b>	2050	900	220
<b>JHF80414B/G</b>	2200	900	220
<b>JHF80612B/G</b>	2200	900	220

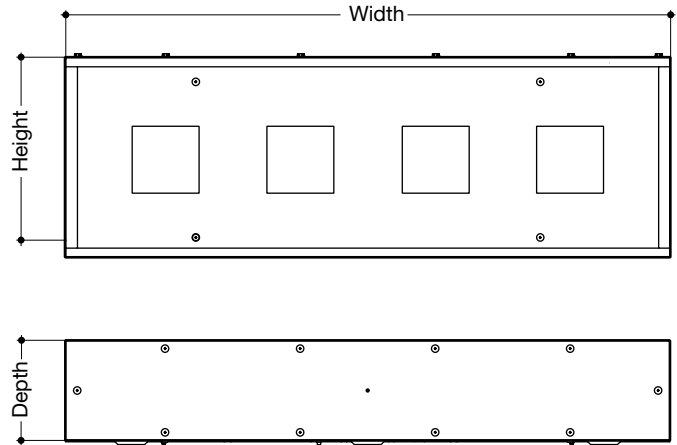
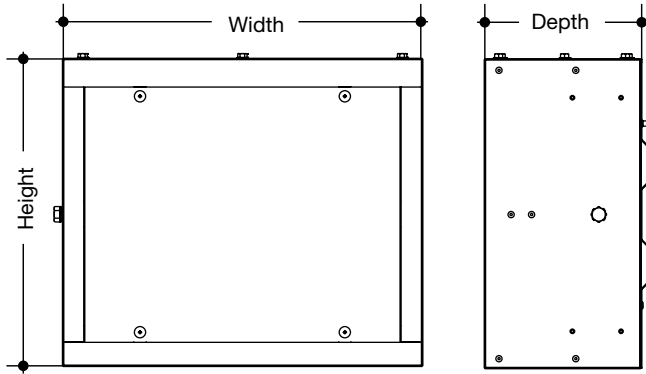
Commercial Distribution

**Invicta 3 Panelboard Metering Method Chart**

Use the process below to aid you in selecting the appropriate Invicta 3 Panelboard, side extension boxes, meters, meter supply cables and CT's.

Step	Selection method	Catalogue page	Order code	Qty
1	Select panelboard eg. 6 way with glazed door <b>(JN206BG)</b>	250A Page 1.13. 400A Page 1.15. 630A/800A Page 1.17. 800A Page 1.19.	<b>JN206BG</b>	1
2	Identify quantity of meters required eg. 4 metered ways modbus <b>(ECM01)</b>	Page 1.21.	<b>ECM01</b>	4
3	Select position for meter enclosure (Top or side) eg. Top - 450mm enclosure 6xDIN 96 Cut- Outs or Side - 6/8 Way JN Board 4xDIN 96 Cut-Outs	For JN Page 1.13. For JF Page 1.21.	<b>JN4506TM</b> <b>JN11004SM</b>	1 1
4	Number of blanking plates required eg. Top - 450mm enclosure 6xDIN 96 Cut- Outs or Side - 6/8 Way JN Board 4xDIN 96 Cut-Outs	Page 1.21.	<b>JF96BP</b>	2 0
5	Meter voltage supply including fuses. (1st meter only includes incoming) e.g. <b>JN130VMF</b>	Page 1.22.	<b>JN130VMF</b>	1
6	Supply cable for remaining meters (Link meter to meter) e.g. <b>PGMFT150</b>	Page 1.22.	<b>PGMFT150</b>	3
7	Identify which CT's are required eg. 60 Amp Qty 1 eg. 100 Amp Qty 2 eg. 125A Qty 1	Page 1.22.	<b>JF1260CT</b> <b>JF12100CT</b> <b>JF12125CT</b>	1 2 1

Characteristics	250A	400A	630 / 800A	800A
Series	JN2**	JF4**	JF6**/JF8**	JHF8**
Busbar current rating	250A	400A	800A	800A (for 800A MCCB only)
Busbar type	Type B Fully Shrouded Copper			
Busbar rated short-time withstand current	25kA for 1 sec	35kA for 1 sec	35kA for 1 sec	35kA for 1 sec
Internal separation	Form 3A			
Incoming	Up to 250A MCCB, MCS	Up to 400A MCCB, MCS	Up to 630A MCCB, 800A LBS	800A MCCB
Outgoing	16 - 125A max.	16 - 125A max.	16 - 125A 100A - 250A	16 - 125A 100A - 250A
Voltage rating in a.c.	415V	415V	415V	415V
IP Protection	IP30			
Enclosure body type	Steel			
Enclosure paint type	Powder coat Grey White BS 4800 00A01			
Cable entry	Via Gland Plates			
<b>Terminal Connection capacity</b>				
Incoming earth terminal	M8	M10	M10	M10
Incoming neutral terminal	M8	M12	M12	M12
Outgoing earth terminals	Up to 50mm <sup>2</sup>	Up to 50mm <sup>2</sup>	Up to 50mm <sup>2</sup>	Up to 50mm <sup>2</sup>
Outgoing neutral terminals	Up to 50mm <sup>2</sup>	Up to 50mm <sup>2</sup>	16A - 125A: Up to 50mm <sup>2</sup> 100A - 250A: M8 Stud	16A - 125A: Up to 50mm <sup>2</sup> 100A - 250A: M8 Stud
Enclosure earth stud	M8	M10	M10	M10
<b>Installation</b>				
Mounting	Surface (Wall)			



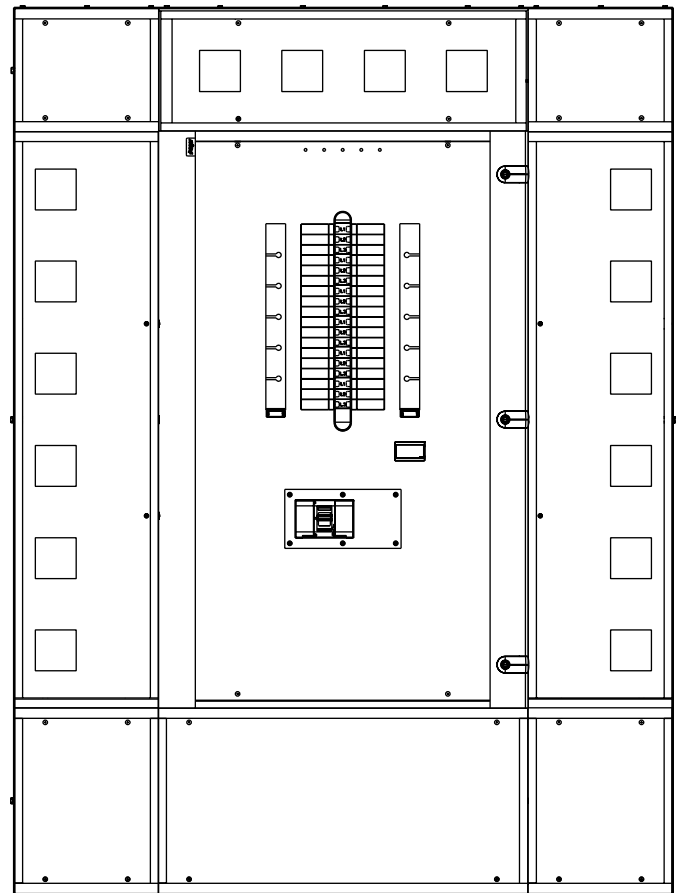
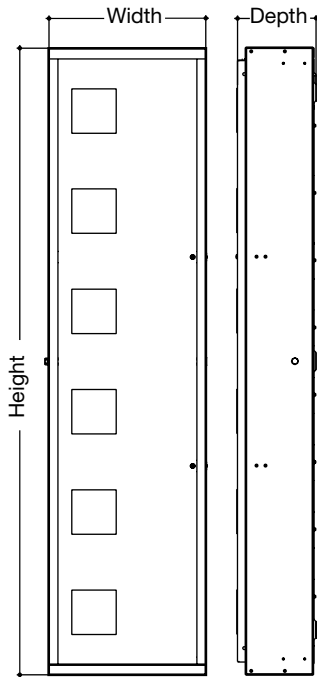
Commercial  
Distribution

**Corner Filler Enclosures**

	Dimensions (mm)		
	Width	Height	Depth
<b>JF300CF</b>	350	300	160
<b>JF450CF</b>	350	450	160

**Top/Bottom Enclosures**

	Dimensions (mm)		
	Width	Height	Depth
<b>JF3004TM</b>	900	300	160
<b>JF4508TM</b>	900	450	160

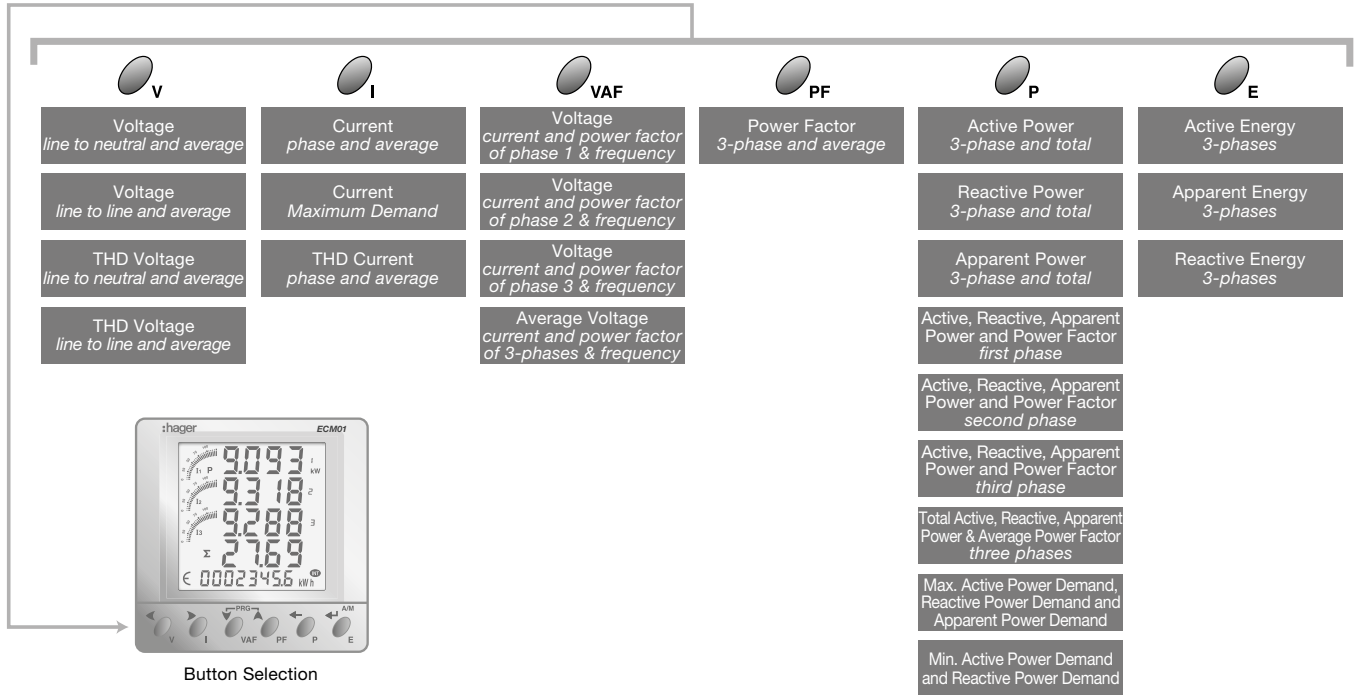


**Side Enclosures**

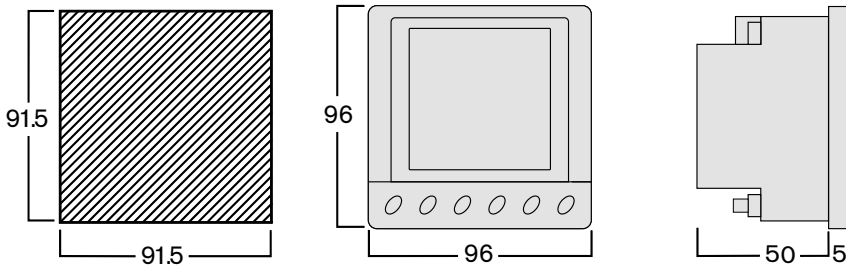
	Dimensions (mm)		
	Width	Height	Depth
<b>JF12504SM</b>	350	1250	160
<b>JF14006SM</b>	350	1400	160
<b>JF15508SM</b>	350	1550	160
<b>JF17009SM</b>	350	1700	160

- 96 x 96mm Flush mounting
- Single phase or 3 phase (4 wire) network balanced or unbalanced load
- Built in energy pulsed output or with pulsed output and RS485 (modbus)
- Backlit LCD display with bargraph current indication on every page
- Automatic or manual scrolling display
- 330mV current transformer input
- Active energy class 1 (EN62053-21)
- Reactive energy class 2 (EN62053-23)
- Programmable VT ratio
- 3-phase: 140...460Vac measured voltage
- Single phase: 80...265Vac measured voltage
- THD up to 31<sup>st</sup> harmonic for voltage and current
- Self supplied auxiliary
- Programmable CT ratio 5 to 10,000A
- Frequency 45/65Hz
- Wide range of measured parameters (see table below)
- Selectable CT phase correction allows reversal of L1 and L3
- Weight 230g

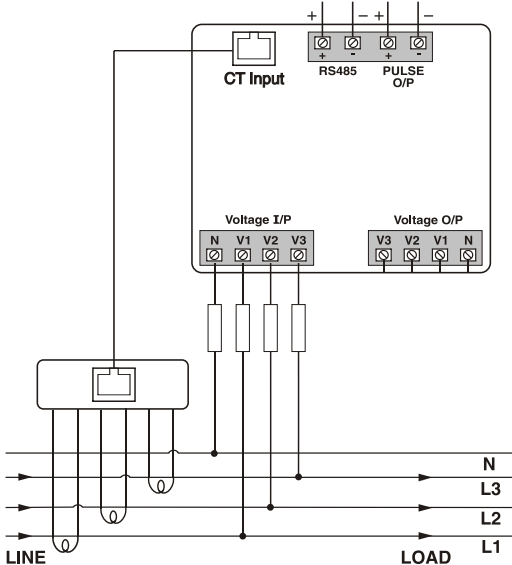
### Function Diagram



### Dimensions Diagram (mm)

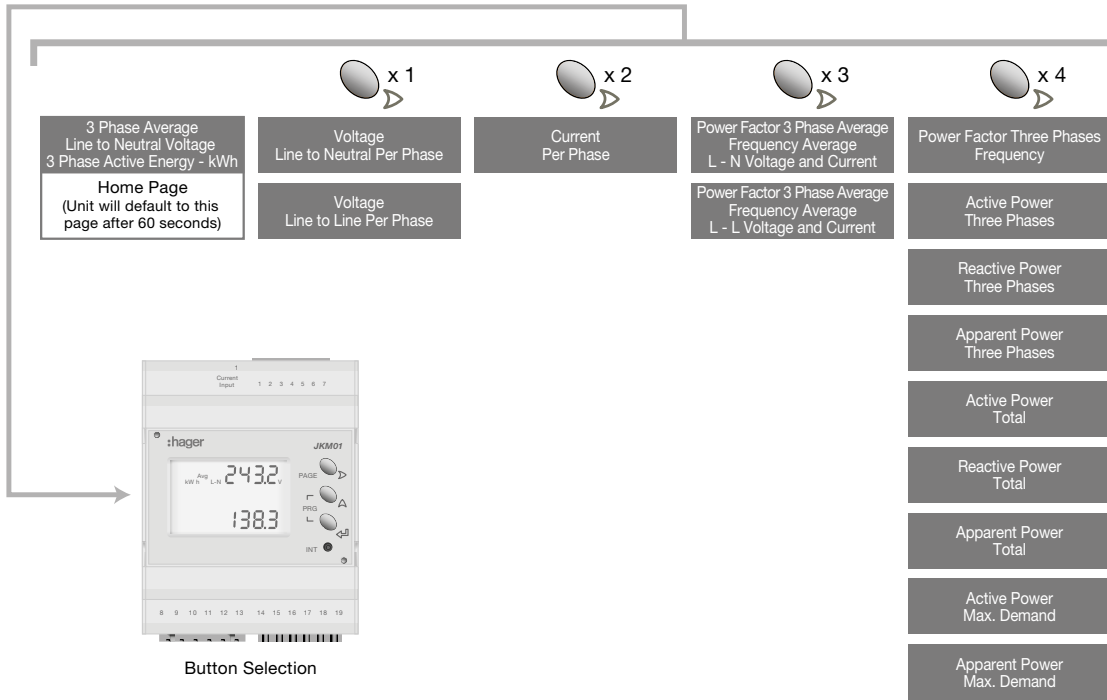


Please allow space at the rear of the meter for cable connections.

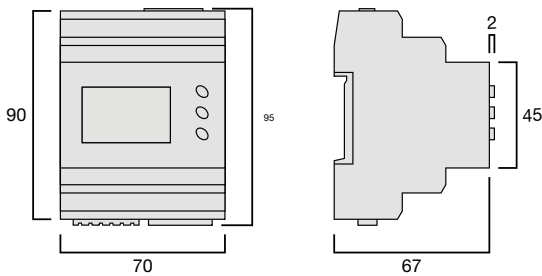


- 4 Module DIN rail mounting
- Single phase or 3 phase (4 wire) network balanced or unbalanced load
- Built-in energy pulse output and RS485 MODBUS communication
- Wide range of measured parameters (see table below)
- High quality backlit LCD display
- 330mV current transformer input
- Active energy class 1 (EN62053-21)
- Reactive energy class 2 (EN62053-23)
- THD up to 31st harmonic for voltage and current
- 3-phase: 140...460Vac measured voltage
- Single phase: 80...265Vac measured voltage
- Self supplied auxiliary
- Programmable CT ratio 5...10,000A
- Programmable VT ratio
- Frequency 45/65Hz
- Selectable CT phase correction allows reversal of L1 and L3
- Weight 190g

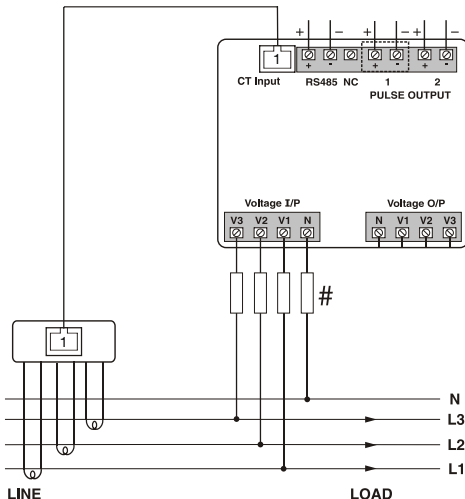
**Function Diagram**



**Dimension Diagrams (mm)**

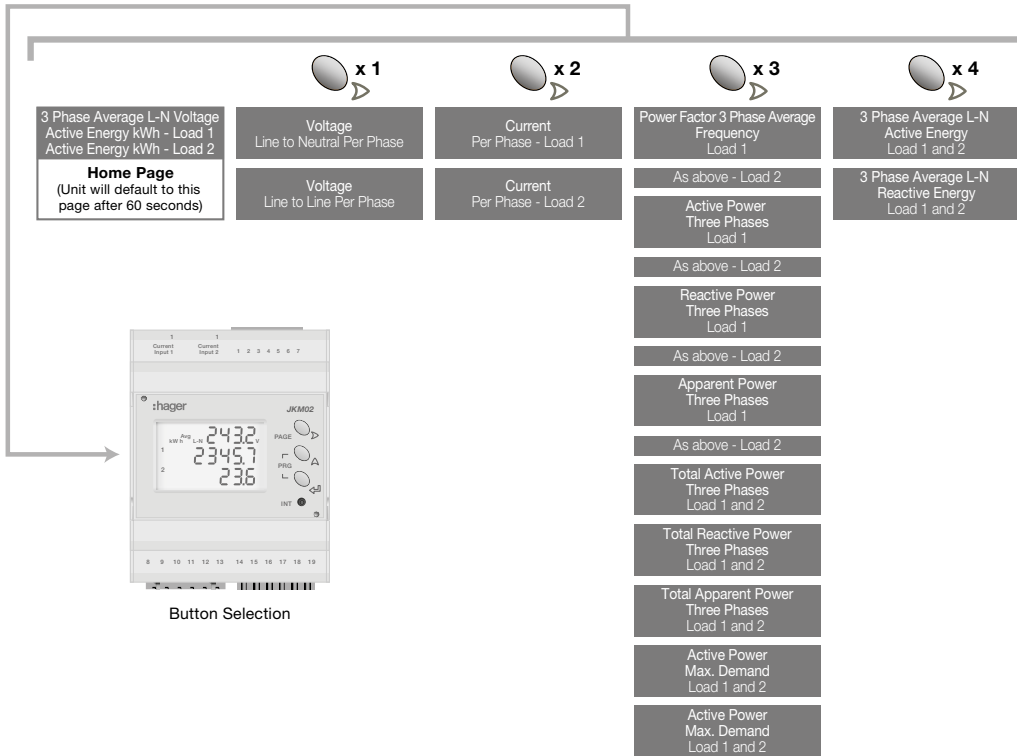


Please allow space above and below the meter for cable connections.

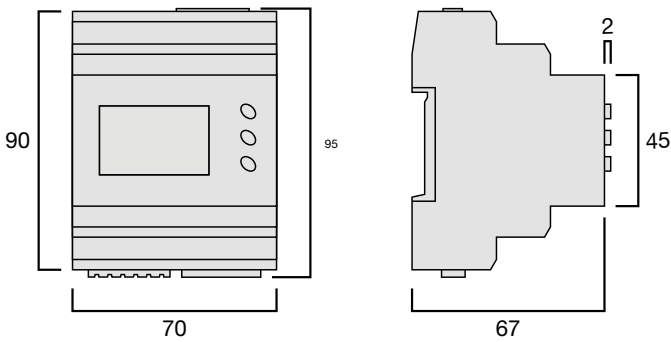


- Split Load, Dual CT input meter
- 4 Module DIN rail mounting
- Single phase or 3 phase (4 wire) network balanced or unbalanced load
- Built-in dual energy pulse output, one for each load and RS485 MODBUS communication
- Wide range of measured parameters (see table below)
- High quality backlit LCD display
- 330mV current transformer input
- Active energy class 1 (EN62053-21)
- Reactive energy class 2 (EN62053-23)
- THD up to 31st harmonic for voltage and current
- 3-phase: 140...460Vac measured voltage
- Single phase: 80...265Vac measured voltage
- Self supplied auxiliary
- Programmable CT ratio 5...10,000A per load
- Programmable VT ratio
- Frequency 45/65Hz
- Selectable CT phase correction allows reversal of L1 and L3
- Weight 200g

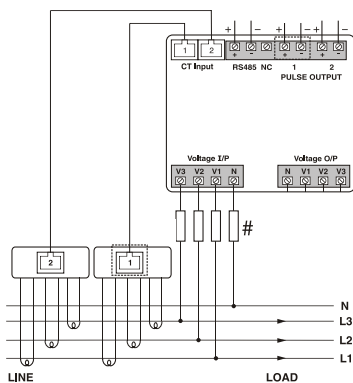
### Function Diagram



### Dimension Diagrams (mm)



Please allow space above and below the meter for cable connections.



- Connect up to three standard or split core CT's (1A or 5A secondaries)
- Integrated protection circuitry

**Standard CT to plug-in Adaptor**

The **JFA03** converter allows for the connection of up to three standard current transformers, or standard split-core current transformers (with 1A or 5A secondary's), to the plug-in system.

The unit has integrated protection circuitry allowing for disconnection from meter under load conditions for maintenance.

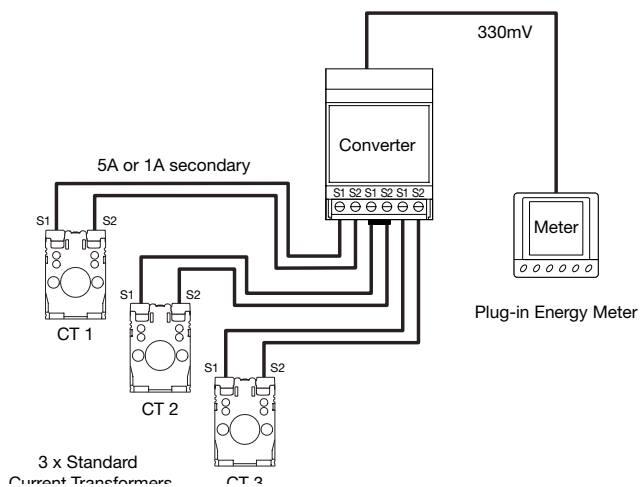
**Important Note**

This converter does not provide electrical isolation. Current transformer secondaries may not be earthed and should be wired as shown.

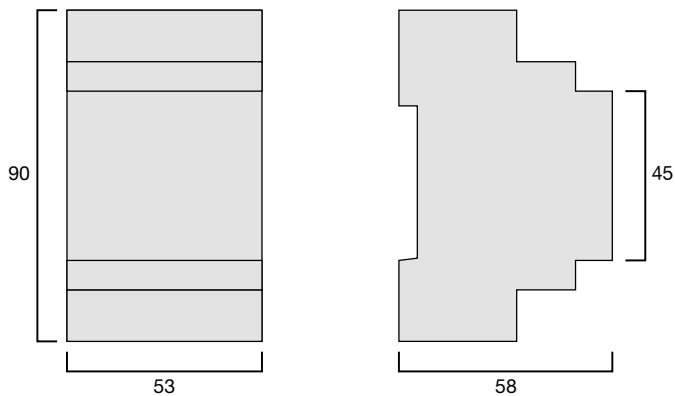
**Technical Specification**

Burden:	<2VA per channel (5A Version) <0.5VA per channel (1A Version)
Accuracy:	0.4%
Suggested Cable Size: (CT to Adaptor)	1.5mm <sup>2</sup> or 2.5mm <sup>2</sup> (2.5mm <sup>2</sup> Max.)
Mounting:	DIN rail 35mm
Termination:	CT to adaptor - Rising clamp screw terminals Adaptor to Meter - RJ45 Patch Cable
Operating Temperature:	-10°C...+45°C
Storage Temperature:	-25°C...+70°C

Commercial Distribution



**Dimension Diagrams (mm)**



### Description

Designed for use with Hager x160 MCCBs and the plug-in multifunction power meters.

Internal safety circuitry is provided which limits the output voltage to a safe level, allowing the transformer secondary to be left disconnected under load.

### Installation

The CT uses plug-in technology allowing much faster installation, saving you time and money. Additionally, all our three phase current transformers have been designed with hole centres and apertures to fit most standard industrial circuit breakers.

Commercial Distribution

	EC1260CT, EC12100CT, EC12125CT, EC12160CT	EC2560CT, EC25100CT, EC2512CT, EC25160CT, EC25200CT, EC25250CT	EC40250CT, EC40400CT, EC40630CT	EC80800CT
Accuracy Class	1	1	1	1
Aperture	3 @ 15.5 x 30mm	3 @ 21 x 25mm	3 @ 31 x 31mm	3 @ 54 x 50mm
Width	75mm	105mm	140mm	215mm
Primary Current	60 to 160A	60 to 250A	250 to 630A	800A
Hole Centres	25mm	35mm	45mm	70mm
Housing Material	Self extinguishing Nylon IEC185 classification VO according to UL-94			
Reference Standard	EN6004-8			
Weight	500g	550g	680g	1200g

#### EC1260CT, EC12100CT, EC12125CT, EC12160CT

#### EC2560CT, EC25100CT, EC2512CT, EC25160CT, EC25200CT, EC25250CT

#### EC40250CT, EC40400CT, EC40630CT

#### EC80800CT

#### Current Transformer Ratios

Primary Current	Output	
60	330	<b>060</b>
100	330	<b>100</b>
125	330	<b>125</b>
160	330	<b>160</b>

330mV Secondary

#### Current Transformer Ratios

Primary Current	Output	
60	330	<b>060</b>
100	330	<b>100</b>
125	330	<b>125</b>
160	330	<b>160</b>
200	330	<b>200</b>
250	330	<b>250</b>

330mV Secondary

#### Current Transformer Ratios

Primary Current	Output	
250	330	<b>250</b>
400	330	<b>400</b>
630	330	<b>630</b>

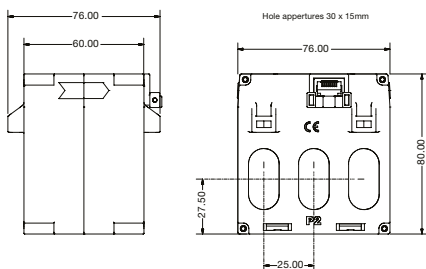
330mV Secondary

#### Current Transformer Ratios

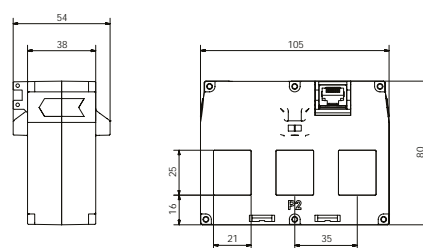
Primary Current	Output	Code
A	mV	
800	330	<b>800</b>

330mV Secondary

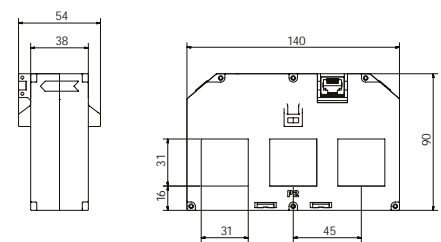
#### EC1260CT, EC12100CT, EC12125CT, EC12160CT



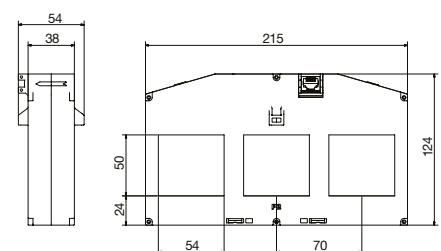
#### EC2560CT, EC25100CT, EC2512CT, EC25160CT, EC25200CT, EC25250CT



#### EC40250CT, EC40400CT, EC40630CT



#### EC80800CT



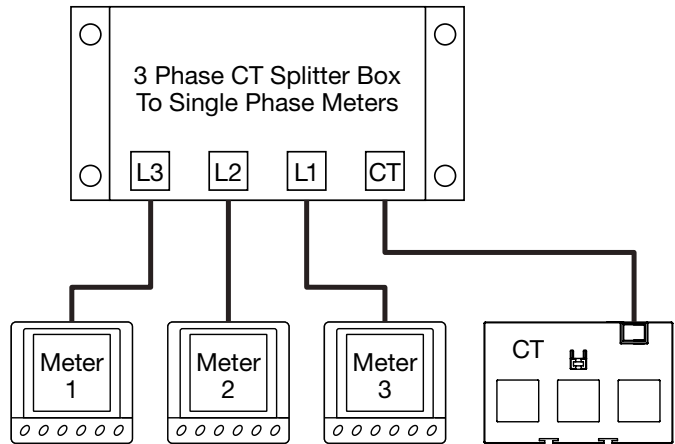


**CT Output and RJ45 Lead Tester**

This device makes it possible to test the RJ45 patch lead used to connect the current transformer to the meter. It also enables a standard electricians multimeter to measure the individual secondary outputs of the current transformer. To test the RJ45 patch lead, simply disconnect the lead from the meter and current transformer. Plug one end into socket 1 and the other end into socket 2 on the test box. Press the test button - the Green LED will light to indicate the lead is OK or the Red LED will light to indicate a faulty lead. When the lead is proven to be OK you can then check the individual secondary outputs of the current transformer. To measure the secondary output plug one end of the RJ45 patch lead into the current transformer and the other end into socket 2 on the test box. You can now use a standard multimeter to test the secondaries using the test points on the front of the test box. The output measured for each phase should be between 0 and 330mV a.c.  
Model Reference: **JFT03**

**3 Phase CT Splitter Box**

This 3 Phase CT Splitter Box allows the separate monitoring of each phase of a three phase current transformer on individual energy meters.  
Model Reference: **JFS03**



Commercial  
Distribution

**Meter Voltage Supply Cable**

Our high quality Meter Voltage Supply Cables are fitted with a plug at one end and insulated bootlace ferrules at the other and provide power to the plug-in meter from your mains supply.

**Meter to Meter Supply Cable**

Our high quality Meter to Meter Voltage Supply Cables are fitted with a plug at one end and socket at the other. This allows multiple plug-in meters to be energised from a common supply. Up to 32 meters can be powered in a 'daisy chain' arrangement using this method.

**RJ45 Connection Cable**

The high quality low loss Category 5e RJ45 Connection Cable provides secondary connection between the plug-in current transformer and meter.

Two type of cable material are available:- LSZH (Low Smoke Zero Halogen).

### Fuse Combination Switches

All dimensions are in mm and exclude the handle.  
Add 45mm to the depth to allow for the handle (110mm for 630 / 800A)

SPSN	Description	Dimensions (mm)		
		Width	Height	Depth
JFB202U	20A SPSN	200	250	150
JFB203U	32A SPSN	200	250	150
JFD206U	63A SPSN	300	325	150
JFE210U	100A SPSN	375	400	200

TPN	Description	Dimensions (mm)		
		Width	Height	Depth
JFB302U	20A TPN	200	250	150
JFB303U	32A TPN	200	250	150
JFD306U	63A TPN	300	325	150
JFE310U	100A TPN	375	400	200
JFG312U	125A TPN	375	500	200
JFG316U	160A TPN	375	500	200
JFG320U	200A TPN	375	500	200
JFG325U	250A TPN	375	500	200
JFH331U	315A TPN	500	650	300
JFH340U	400A TPN	500	650	300
JFI363U	630A TPN	600	800	350
JFI380U	800A TPN	600	800	350

TPSN	Description	Dimensions (mm)		
		Width	Height	Depth
JFB402U	20A TPSN	200	250	150
JFB403U	32A TPSN	200	250	150
JFD406U	63A TPSN	300	325	150
JFE410U	100A TPSN	375	400	200
JFG412U	125A TPSN	375	500	200
JFG416U	160A TPSN	375	500	200
JFG420U	200A TPSN	375	500	200
JFG425U	250A TPSN	375	500	200
JFH431U	315A TPSN	500	650	300
JFH440U	400A TPSN	500	650	300
JFI463U	630A TPSN	600	800	350
JFI480U	800A TPSN	600	800	350

### Cable Extension Boxes for Fuse Combination Switches

	Rating	Dimensions (mm)		
		Width	Height	Depth
JZA701	125 / 250A	375	200	200
JZA702	315 / 400A	500	250	300
JZA703	630 / 800A	600	300	350

### Switch Disconnectors

All dimensions are in mm and exclude the handle.

3 Pole	Description	Dimensions (mm)			
		Width	Height	Depth	Handle Depth
JAC316	160A TPN	250	300	150	195
JAE320	200A TPN	375	400	200	245
JAE325	250A TPN	375	400	200	245
JAG331	315A TPN	375	500	200	245
JAG340	400A TPN	375	500	200	245
JAH363	630A TPN	500	650	300	345
JAH380	800A TPN	500	650	300	345

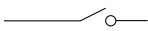
4 Pole	Description	Dimensions (mm)			
		Width	Height	Depth	Handle Depth
JAB402B	20A TPSN	175	232	65	78
JAB403B	32A TPSN	175	232	65	78
JAB406B	63A TPSN	175	232	65	81
JAB410B	100A TPSN	200	300	80	97
JAC412B	125A TPSN	200	300	80	97
JAC416	160A TPSN	250	300	150	195
JAE420	200A TPSN	375	400	200	245
JAE425	250A TPSN	375	400	200	245
JAG431	315A TPSN	375	500	200	245
JAG440	400A TPSN	375	500	200	245
JAH463	630A TPSN	500	650	300	345
JAH480	800A TPSN	500	650	300	345

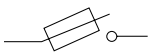
Thermal current $I_{th}$ (40°C)	20A		32A		63A		100A		125A		160A		200A	
Fuse size: BS	A1		A1		A2-A3		A4		B1-B2		B1-B2		B1-B3	
<b>Rated insulated voltage</b>														
$U_i$ (V)	800		800		800		800		800		800		800	
Impulse voltages $U_{imp}$	8000	8000	8000	8000	8000	8000	8000	8000	8000	8000	8000	12000	12000	-
Operational current $I_e$ (A)	A	B	A	B	A	B	A	B	A	B	A	B	A	B
415V ac AC-22A/AC-23B	20	20	32	32	63	63	100	100	125	125	160	160	200	200
Motor power (kW) 400V ac	9		15		30		51		63		80		100	
Reactive power 400V ac (kVAR)	15		45		25		45		55		60		75	
<b>Overload capacity</b>														
Short-circuit with fuses (kA Rms)	50		50		50		50		50		50		50	
Fuse rating (A) BS 88	20		32		63		100		125		160		200	
<b>Making &amp; Breaking Capacity</b>														
Breaking capacity 400V AC-23B (A RMS)	160		256		500		800		1000		1280		1600	
Making capacity 400V AC-22 (A RMS)	200		320		630		1000		1250		1600		2000	
Withstand mechanical (number of operations)	20,000		20,000		10,000		10,000		10,000		10,000		10,000	
Tightening torque	2		2		6		9		9		9		20	
<b>Connection (mm<sup>2</sup>)</b>														
Minimum Cu cable section	2.5		2.5		10		25		35		50		70	
Maximum Cu cable section	16		16		25		95		95		95		240	
Fuse types	NIT20		NIT32		TIS63		TCP100		TF125		TF160		TF200	

Thermal current $I_{th}$ (40°C)	250A		315A		400A		630A		800A	
Fuse size: BS	B1-B3		B1-B4		B1-B4		C1-C2		C1-C2-C3	
Rated insulated voltage $U_i$ (V)	800		800		800		1000		1000	
Operational current $I_e$ (A)										
A = Frequent operation										
B = Infrequent operation	A	B	A	B	A	B	A	B	A	B
415V a.c. AC-22A/AC-23B	250	250	315	315	400	400	630	630	800	800
Motor power (kW) 400V a.c.	-		160	160	220	220	355	355	-	
Reactive power 400V a.c. (kVAR)	-		125		150		2 x 125		-	
<b>Overload capacity</b>										
Short-circuit with fuses (kA Rms)	50		50		50		50		50	
Fuse rating (A) BS 88	250		315		400		630		800	
<b>Making &amp; Breaking Capacity</b>										
Breaking capacity 400V AC-23B (A R.M.S)	2000		2520		3200		-		-	
Making capacity 400V AC-23B (A R.M.S)	2500		3150		4000		-		-	
Withstand mechanical (number of operations)	10,000		10,000		10,000		8000		8000	
Tightening torque (Nm)	-		20		20		40		40	
<b>Connection (mm<sup>2</sup>)</b>										
Minimum Cu cable section	70		185		185		2 x 150		2 x 150	
Maximum Cu cable section	240		240		240		2 x 300		2 x 300	
Fuse types	TKF250		TKF315		TMF400		TTM630		TLM800	

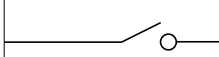
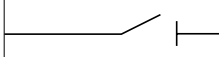
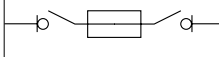



### Fuse - Combination Units - BS EN 60947-3

Many people are attracted to fuse-combination units by their simplicity in application and their reliability in operation. They are particularly useful for use on very high prospective fault level systems where the high energy limiting characteristic of the HRC fuse can be effectively utilised. In the past fuse-combination units came in two forms:

**Switch Fuse**  A switch in which one or more poles have a fuse in series.

**Fuse Switch**  A switch in which one or more poles have a fuse carrier/link which forms the moving contact.

The definitions of these two basic types of fuse combination units have now been extended to include units suitable for making, breaking and isolation and units which are only suitable for providing isolation for maintenance work.

Definition	Symbol	Function
Switch Fuse		Making and breaking current
Disconnecter Fuse		Isolating
Switch Disconnecter Fuse		Making, breaking and isolating
Fuse Switch		Making and breaking current
Fuse Disconnecter		Isolating
Fuse Switch Disconnecter		Making, breaking and isolating

However, in order to keep the selection of fuse-combination units as simple as possible, Hager offer a range of high performance double break switch-fuses, which also satisfy the isolating requirement of the British standard. These are correctly shown as and defined as a Fuse Combination Switch.

**Switch disconnectors - BS EN 60947-3.** A range of switch disconnectors (isolators) are available for use on lower current ratings from 20A to 125A. These switches are rated at AC-22 and provide a cost effective alternative to the fuse combination switch, especially where the utilisation category AC-23 is not required. ie; mixed resistive and inductive loads.

### Utilisation categories

Utilisation categories are not new but they are important because they help the designer or specifier identify the correct unit for a particular application.

The designation of the utilisation category is made up of three parts:

1. The prefix AC or DC, which indicates the nature of the current.
2. The two digit number, which indicates the type of application the unit is suitable for:
  - 20 Connecting and disconnecting under no-load.
  - 21 Switching of resistive loads.
  - 22 Switching of mixed resistive and inductive loads.
  - 23 Switching of highly inductive loads.
3. The suffix A or B, which indicates whether the unit is suitable for frequent or infrequent operation.
  - A Frequent operation
  - B Infrequent operation.

For example a fuse-combination unit feeding a 400V AC circuit of mixed resistive and inductive loads which would need to be operated frequently would require a minimum utilisation category of AC-22A.

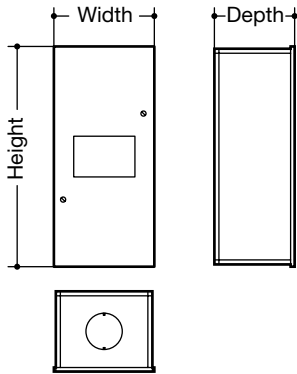
If the load was highly inductive, i.e. motor loads, then the minimum utilisation category would be AC-23A.

Generally, category AC-23 does not cover the switching of capacitors. Usually this is the subject of agreement between manufacturer and user.

### Motor Power Circuit Protection

Fuse-combination units can be used very effectively for motor power circuit protection, the energy limiting HRC fuse offering very good protection to its associated starter. Category AC-23A should be specified for this duty. Special motor circuit protection fuse links are available which eliminate the need to fit a larger bodied fuse just to take care of the starting current of the motor.

The protection of motor power circuits should not be confused with the direct switching of a single motor. If a fuse-combination unit is required to perform this function then it must comply with the requirements of Appendix A of BS EN 60947-3 which makes provision for different utilisation categories for this application.



### Switch Fuses

	Dimensions (mm)				
	Width	Height	Depth	Depth with Door	Knockouts
<b>IU44-16</b>	115	187	61.5	-	2 x 25mm
<b>IU44-18</b>	125	312	73.5	-	None
<b>IU44-11</b>	125	312	73.5	-	None
<b>IU44-16-D</b>	125	312	74	96	None
<b>IU44-18-D</b>	125	312	74	96	None
<b>IU44-11-D</b>	125	312	74	96	None

### IP65 Enclosed Isolating Switch

All dimensions are in mm and exclude the handle.  
Add 27mm to the depth to allow for the handle on 10-25A products.  
Add 32mm to the depth to allow for the handle on 40-80A products.

Description	Dimensions (mm)		
	Width	Height	Depth
<b>JG00S</b> 10A TPN	100	136	74
<b>JG01S</b> 16A TPN	100	136	105
<b>JG02S</b> 25A TPN	100	136	105
<b>JG03S</b> 40A TPN	136	201	105
<b>JG04S</b> 63A TPN	136	201	118
<b>JG05S</b> 80A TPN	136	201	118

Enclosed thermal current $I_{the}$	16	25	40	63	80
Rated insulation voltage $U_i$ (V)	690	690	690	690	690
Rated thermal current $I_{the}$ (A)	25	40	63	80	100
<b>Rated operational current</b>					
AC21 400V $I_e$ (A)	25	40	63	80	100
AC22 400V	16	25	40	63	100
AC22 400V $\cos \phi$ 0.65	16	20	32	63	100
AC23 400V	16	20	32	63	100
AC23 400V $\cos \phi$ 0.35	16	15	25	40	63
<b>Rated operational power</b>					
AC23 230V (kW)	4	5.5	7.5	11	15
AC23 400V	7.5	11	15	22	30
<b>Rated fused short circuit current</b>					
Back-up fuse (A)	63	63	63	80	100
R.M.S value $I_k$ (kA)	50	50	50	50	50
Peak value (kA)	5.4	6.6	7.2	8.3	8.7
Rated short circuit making capacity ( $I_{cm}$ ) (kA) 690V	2.5	2.5	2.5	3.3	3.3
Rated short time withstand current ( $I_{cw}$ ) (kA) 690V (1s)	1	1.1	1.6	1.7	2.3
<b>Rated breaking capacity <math>I_{cn}</math> (A) AC23</b>					
400V $\cos \phi$ 0.35	250	270	320	480	504
Electrical endurance (number of operations)	3000	3000	3000	3000	-
Mechanical endurance (number of operations)	50,000	50,000	50,000	50,000	-
Terminals mm <sup>2</sup>	1.5 - 16	1.5 - 16	1.5 - 16	2.5 - 35	2.3 - 35
Max. thermal torque (Nm)	1.8	1.8	1.8	2.5	2.5

Enclosed thermal current $I_{the}$	20	32	63	100	125	160	200	250	315	400	630	800
Rated insulation voltage $U_i$ (V)	800	800	800	800	800	800	800	800	800	800	1000	1000
Rated thermal current $I_{the}$ (A)	20	32	63	100	125	160	200	250	315	400	630	800
<b>Rated operational current</b>												
AC21A 500VAC	20	32	63	100	125	160	160	250	250	250	630	800
AC22A 500VAC	20	32	63	100	125	125	125	250	250	250	500	800
AC21A 690VAC	20	32	63	100	125	160	160	200	200	200	500	800
AC22A 690VAC	20	32	63	100	125	125	125	125	125	125	315	800
<b>Overload capacity</b>												
l <sub>cw</sub> rated short time withstand value (kA/s)	1.26	1.26	1.5	1.5	7	7	7	9	9	9	13	26
R.M.S value (kA)	0.16	0.256	0.504	0.64	1	1.28	1.28	2	2	2	5.04	6.4
Peak withstand value (kA)	-	-	-	-	20	20	18	30	23	23	45	55
Rated short circuit making capacity (kA)	1.8	1.8	2.1	2.1	11.9	11.9	11.9	15.3	15.3	15.3	26	54.6
Rated impulse withstand voltage $U_{imp}$ (kV)	8	8	8	8	8	8	8	8	8	8	12	12
Mechanical endurance (number of operations)	100,000	100,000	100,000	100,000	10,000	10,000	10,000	10,000	10,000	5,000	5,000	5,000
Maximum cable size	16	16	50	50	50	95	95	150	185	240	2 x 300	2 x 300
Tightening torque (Nm)	2	2	4	4	9	9	9	20	20	20	20	-

Product Reference	JAB402B	JAB403B	JAB406B	JAB410B	JAC412B
Thermal Current $I_n$	20A	32A	63A	100A	125A
Switch	3PSN	3PSN	3PSN	3PSN	3PSN
Rated Insulation Voltage $U_i$	800V	800V	800V	800V	800V
Rated Impulse Voltage $U_{imp}$	8kV	8kV	8kV	8kV	8kV

<b>Dimensions</b>					
Height (mm)	232		232		300
Width (mm)	175		175		200
Depth (mm)	81		81		83

<b>Operational Current <math>I_e</math> (A)</b>					
415V AC - AC21A / AC21B	20/20		32/32		125/125
415V AC - AC22A / AC22B	20/20		32/32		125/125
415V AC - AC23A / AC23B	20/20		32/32		125/125
500V AC - AC21A / AC21B	20/20		32/32		125/125
500V AC - AC22A / AC22B	20/20		32/32		125/125
500V AC - AC23A / AC23B	20/20		25/25		100/100
690V AC - AC21A / AC21B	20/20		32/32		125/125
690V AC - AC22A / AC22B	20/20		32/32		100/126
690V AC - AC23A / AC23B	20/20		25/25		63/63

<b>Operational Power in AC-23 (kW)</b>					
At 415V AC	9		15		55
At 500V AC	9		15		55
At 690V AC	11		15		55

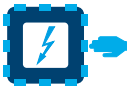

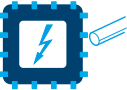
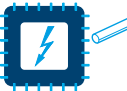


<b>Overload Capacity</b>					
Fuse rating	20		32		125
Fused $I_{cc}$	50		50		25
$I_{CW}$ (kA)	2.5 / 0.3s		2.5 / 0.3s		5.0 / 0.3s
$I_{pk}$ (kA)	6		6		12

<b>Cable Connection</b>					
Max Cu cable CSA mm <sup>2</sup>	16		16		70

The IP rating for all low voltage enclosures up to 1000 V a.c. and 1500 V d.c. is defined in identical fashion by the standards EN 60529 - IEC 529. It comprises the letters IP followed by two character numerals and or additional/ supplementary letters.

**The first character numeral** indicates the degree of protection provided by the enclosure against access to hazardous parts by preventing or limiting the ingress of a part of the human body or an object held by a person and ingress of solid foreign objects.

**The first character numeral:**  
Protection against foreign objects









IP	Description	
0		Non-protected
1		Protected against solid objects $\geq$ than 50mm
2		Protected against solid objects $\geq$ than 12.5mm
3		Protected against solid objects $\geq$ than 2.5mm
4		Protected against solid objects $\geq$ than 1.0mm
5		Dust-protected
6		Dust-tight

**Additional letter (optional)**  
Protection of people against access to hazardous parts

	Description
A	Protected against access to hazardous parts with the back of the hand
B	Protected against access to hazardous parts with a finger
C	Protected against access to hazardous parts with a tool - $\phi$ 2.5mm
D	Protected against access to hazardous parts with a tool - $\phi$ 1mm

**The second character numeral** indicates the degree of protection provided by the enclosure with respect to harmful effects on the equipment due to the ingress of water. An X signifies that the tests are not applicable to the product.

**The second character numeral:**  
Protection against ingress of water with harmful effects

IP	Description	
0		Non-protected
1		Protected against dripping water
2		Protected against dripping water when tilted up to 15°
3		Protected against spraying water
4		Protected against splashing water
5		Protected against jetting
6		Protected against powerful jetting
7		Protected against the effect of temporary immersion
8		Protected against continuous immersion

**Additional letter (optional)**  
Specific information on the product

	Description
H	High voltage apparatus
M	Motion during water test
S	Stationary during water test
W	Weather conditions

Interface Characteristics	JG44BM, JG45BM, JG46BS, JG47BS	JG48BM, JG50BS, JG49BM, JG51BS	JG36BM, JG37BM, JG40BM, JG42BS, JG41BM, JG43BS	JG37BR, JG38BR	JG45BR
Rated & operational voltage ( $U_n / U_e$ )	415V a.c. 50Hz				
Rated insulation voltage ( $U_i$ )	690V a.c. 50Hz				
Rated impulse withstand voltage ( $U_{imp}$ )	6kV				
Rated current of the Assembly ( $I_{nA}$ )	400A	630A	JG36BM, JG37BMM -160A JG40BM, JG42BS, JG41BM, JG43BS - 250A	JG37BR - 160A JG38BR - 200A	375A
Rated conditional short-circuit current of the assembly ( $I_{CC}^*$ )	50kA		25kA		50kA
Rated peak withstand current ( $I_{pk}$ )	105kA		52.5kA		105kA
Standards - Enclosed MCCB assembly	BS EN 61439-2				
Standards - MCCB only	BS EN 60947-2				
Rated frequency (fn)	50 Hz				
Pollution degree	3				
Types of system earthing for which the ASSEMBLY is designed	TNC-S, TN-S and TT when installed in an electrical system conforming to BS 7671				
Intended locations	Indoor use only				
Stationary assembly external design	Wall mounted				
Degree of protection	IP30 with cover fitted				
Intended use	Skilled persons only				
Electromagnetic compatibility (EMC) classification	EMC Environment B				
External design	Wall-mounted, surface type, enclosed assembly.				
Mechanical impact protection	IK05				
Form of separation	Form 2a				
Connection of functional unit: Incoming/outgoing circuit protection	F (fixed)				
Incoming Line Terminal(s)	M10 Bolt	M12 Bolt	M8 Socket Cap Screw		M10 Bolt
Incoming Neutral Terminal	M10 Bolt		JG37BM, JG41BM, JG43BS - M8 Socket Cap Screw JG36BM, JG40BM, JG42BS - M10 Bolt	M8 Socket Cap Screw	M10 Bolt
Enclosure Earth Stud	M10	M12	M8		M10

### Enclosed MCCB (63A - 125A)

#### Characteristics

Series	JG25BM, JG26BM, JG27BM, JG27BR, JG28BM, JG29BM, JG30BM, JG31BM, JG32BM, JG33BM, JG30BR, JG34BS, JG35BS
MCCB	63A to 125A MCCB
MCCB + RCCB Add on block	63A & 100A
Voltage rating in AC	240 / 415 V
IP Protection	IP3X
Enclosure body type	Steel
Enclosure paint type	Powder coat Grey white BS 4800 00A01

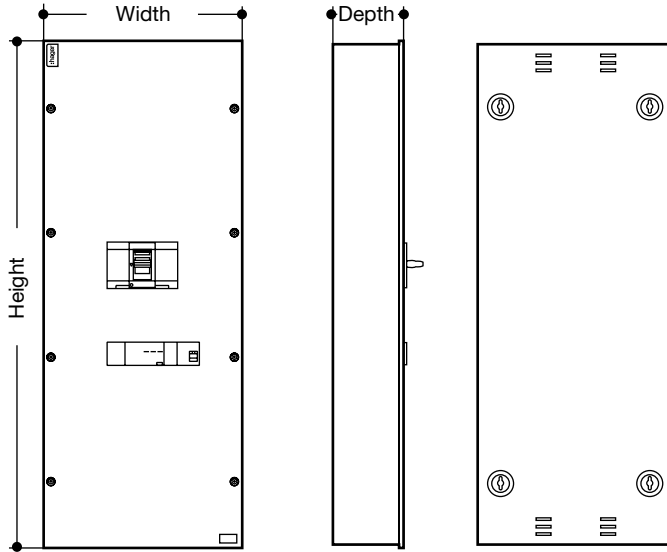
#### Terminal Connection capacity

Maximum terminal capacity	95mm <sup>2</sup>
Enclosure earth stud	M8

#### Installation

Mounting	Wall
----------	------





	Dimensions (mm)			(kg)
	Height	Depth	Width	Weight
JG25BM	420	106	200	3.9
JG26BM	420	106	200	4.5
JG27BM	420	106	200	4.5
JG27BR	420	106	300	20
JG28BM	420	106	200	3.9
JG29BM	420	106	200	4.5
JG30BM	420	106	200	4.5
JG31BM	420	106	200	3.9
JG32BM	420	106	200	4.5
JG33BM	420	106	200	4.5
JG30BR	420	106	300	8
JG34BS	420	106	200	4.5
JG35BS	420	106	200	4.5
JG44BM	900	151	400	21.9
JG46BS	900	151	400	21.9
JG45BM	900	151	400	23.2
JG47BS	900	151	400	23.2
JG48BM	1130	153	500	29.6
JG50BS	1130	153	500	29.6
JG49BM	1130	153	500	32.1
JG51BS	1130	153	500	32.1
JG36BM	660	135	260	10.5
JG37BM	660	135	260	10.5
JG40BM	660	135	260	10.5
JG42BS	660	135	260	10.5
JG41BM	660	135	260	10.5
JG43BS	660	135	260	10.5
JG37BR	865	120	260	11.5
JG38BR	865	120	260	11.5
JG45BR	1019	151	400	21.9

### Torque settings

M8	13Nm
M10	22Nm
M12	45-65Nm

### Electrical Characteristics

	MLN	MTN	NBN	NCN	NDN	HMF*	HMC*	HMD*
Poles	SP+SN	SP	SP DP TP 4P	SP DP TP 4P	SP DP TP 4P	SP DP TP 4P		
Rated Operational Voltage $U_e$ (V)	230	230	230 / 400	230 / 400	230 / 400	230/400		
Nominal Current	6 - 40A	6 - 63A	6 - 63A	0.5 - 63A	0.5 - 63A	80 - 125A		
Breaking Capacity ( $I_{CN}$ ) to BS EN 60898	6kA	6kA	10kA	10kA	10kA	10kA		15kA
Breaking Capacity ( $I_{CS}$ ) to BS EN 60898	6kA	6kA	7.5kA	7.5kA	7.5kA	7.5kA	7.5kA	
Breaking Capacity ( $I_{CU}$ ) to BS EN 60947 Part 2	N/A	N/A	15kA	15kA	15kA	N/A		15kA
Breaking Capacity ( $I_{CS}$ ) to BS EN 60947 Part 2	N/A	N/A	7.5kA	7.5kA	7.5kA	N/A		7.5kA
Rated Insulation Voltage $U_i$ (V)	500V	500V	500V	500V	500V	500V		
Rated Impulse Voltage $U_{imp}$ (kV)	4kV	4kV	6kV	6kV	6kV	6kV		
Electrical Endurance	10,000 cycles	10,000 cycles						
Connection of Auxiliaries	No		Yes					

**Table 1**

\*Din rail mount only, not for use in fixed busbar distribution boards.

### Power Loss

The power loss of MCB's is closely controlled by the standards and is calculated on the basis of the voltage drop across the main terminals measured at rated current. The power loss of our circuit breakers is very much lower than that required by the British Standard, so in consequences run cooler and are less affected when mounted together.

The table below gives the watts loss per pole at rated current.

MCB Rated current (A)	0.5	1	2	3	4	6	10	13	16	20	25	32	40	50	63
Watts loss per pole	1.2	1.3	1.5	2.0	1.8	1.4	1.9	2.1	2.5	2.8	3.2	3.8	4.0	4.5	5.1

### For use with DC

Because of their quick make and break design and excellent arc quenching capabilities, our circuit breakers are suitable for DC applications.

The following parameters must be considered:

1. System voltage:  
Determined by the number of poles connected in series (see **Table 14**).

2. Short circuit current:  
(See **Table 14**).

3. Tripping Characteristics:  
If the thermal trip remains unchanged the magnetic trip will become less sensitive requiring derating by  $\sqrt{2}$  the ac value (See **Table 14**).

No. of poles	1 pole		2 poles in series	
Range	max voltage	breaking capacity L/R=15ms	Max voltage	breaking capacity L/R=15ms
MTN	60V	6kA	125V	6kA
NBC NCN NDN	60V	10kA	125V	10kA

**Table 13**

Characteristic curve	B		C		D	
	50Hz	dc	50Hz	dc	50Hz	dc
I <sub>rm1</sub>	3I <sub>n</sub>	4.5 I <sub>n</sub>	5I <sub>n</sub>	7.5 I <sub>n</sub>	10 I <sub>n</sub>	15 I <sub>n</sub>
I <sub>rm2</sub>	5I <sub>n</sub>	7.5 I <sub>n</sub>	10I <sub>n</sub>	15 I <sub>n</sub>	20 I <sub>n</sub>	30 I <sub>n</sub>

**Table 14**

### Connection

The circuit breaker can have the line/load connected to either the top or bottom terminals

### Temperature Derating

MCBs are designed and calibrated to carry their rated current and to operate within their designated thermal time/current zone at 30°C. Testing is carried out with the breaker mounted singly in a vertical plane in a controlled environment. Therefore if the circuit breaker is required to operate in conditions which differ from the reference conditions, certain factors have to be applied to the standard data.

I <sub>n</sub> (A)	-25°C	-20°C	-15°C	-10°C	-5°C	0°C	5°C	10°C	15°C	20°C	25°C	30°C	35°C	40°C	45°C	50°C	55°C	60°C
0.5	0.72	0.7	0.68	0.66	0.64	0.62	0.6	0.58	0.56	0.54	0.52	0.5	0.48	0.46	0.44	0.42	-	-
1	1.44	1.4	1.36	1.32	1.28	1.24	1.2	1.16	1.12	1.08	1.04	1	0.96	0.92	0.88	0.84	0.8	0.76
2	2.88	2.8	2.72	2.64	2.56	2.48	2.4	2.32	2.24	2.16	2.08	2	1.92	1.84	1.76	1.68	1.6	1.52
3	4.32	4.2	4.08	3.96	3.84	3.72	3.6	3.48	3.36	3.24	3.12	3	2.88	2.76	2.64	2.52	2.4	2.28
4	5.76	5.6	5.44	5.28	5.12	4.96	4.8	4.64	4.48	4.32	4.16	4	3.84	3.68	3.52	3.36	3.2	3.04
6	8.64	8.4	8.16	7.92	7.68	7.44	7.2	6.96	6.72	6.48	6.24	6	5.76	5.52	5.28	5.04	4.8	4.56
10	14.4	14	13.6	13.2	12.8	12.4	12	11.6	11.2	10.8	10.4	10	9.6	9.2	8.8	8.4	8	7.6
13	18.7	18.2	17.7	17.2	16.6	16.1	15.6	15.1	14.6	14.0	13.5	13	12.5	12	11.4	10.9	10.4	9.9
15	21.6	21	20.4	19.8	19.2	18.6	18	17.4	16.8	16.2	15.6	15	14.4	13.8	13.2	12.6	12	11.4
16	23	22.4	21.8	21.1	20.5	19.8	19.2	18.6	17.9	17.3	16.6	16	15.4	14.7	14.1	13.4	12.8	12.2
20	28.8	28	27.2	26.4	25.6	24.8	24	23.2	22.4	21.6	20.8	20	19.2	18.4	17.6	16.8	16	15.2
25	36	35	34	33	32	31	30	29	28	27	26	25	24	23	22	21	20	19
32	46.1	44.8	43.5	42.2	41	39.7	38.4	37.1	35.8	34.6	33.3	32	30.7	29.4	28.2	26.9	25.6	24.3
40	57.6	56	54.4	52.8	51.2	49.6	48	46.4	44.8	43.2	41.6	40	38.4	36.8	35.2	33.6	32	30.4
50	-	-	-	-	-	62	60	58	56	54	52	50	48	46	44	42	40	38
63	-	-	-	-	-	-	-	-	-	-	-	63	60.5	58	55.4	52.9	50.4	47.9

Commercial Distribution

### Diversity Factor - Commercial Distribution boards to BS EN 61439-3

Consideration should be given to the proximity heating effect of the breakers when fully loaded and mounted together in groups.

Adjacent circuit breakers having a load 'on' time exceeding 30 minutes or where the load not exceeding 30 minutes has an 'off' time less than the 'on' time, will need to have the rated diversity factor applied.

No. of Outgoing Circuits	Assumed Loading Factor
2 and 3	0.8
4 and 5	0.7
6 to 9 inclusive	0.6
10 and above	0.5

### Frequency

Circuit breakers are designed to operate at a frequency of 50-60Hz. Should the supply differ from this then the following factors should be applied

Thermal – unchanged

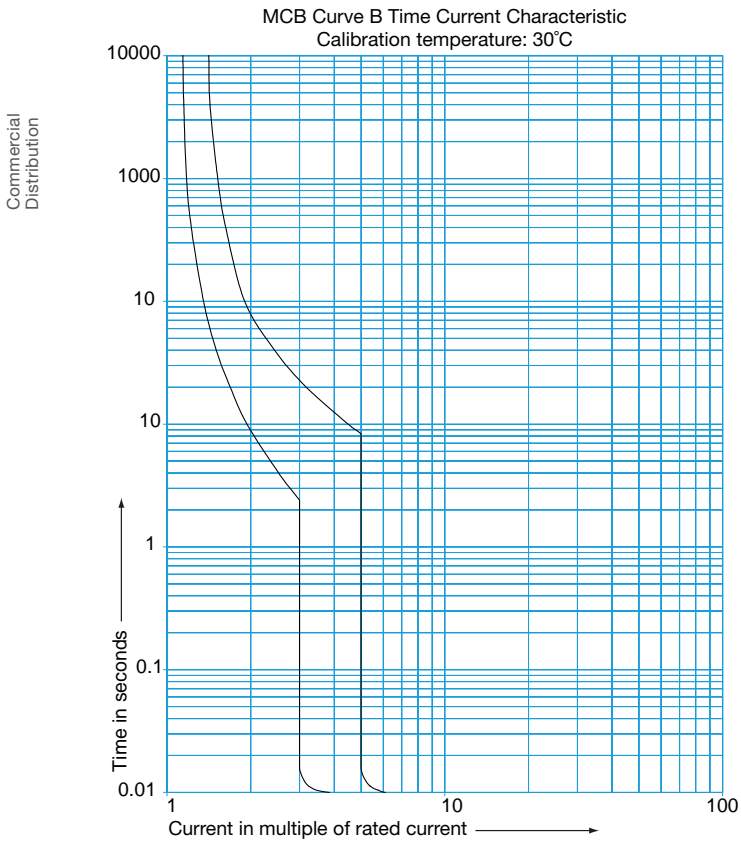
Magnetic – value multiplied by coefficient K

F (Hz)	17Hz - 60Hz	100Hz	200Hz	400Hz
K	1	1.1	1.2	1.5

Consideration should be given to the proximity heating effect of the breakers when fully loaded and mounted together in groups. (continuously & simultaneously loaded).

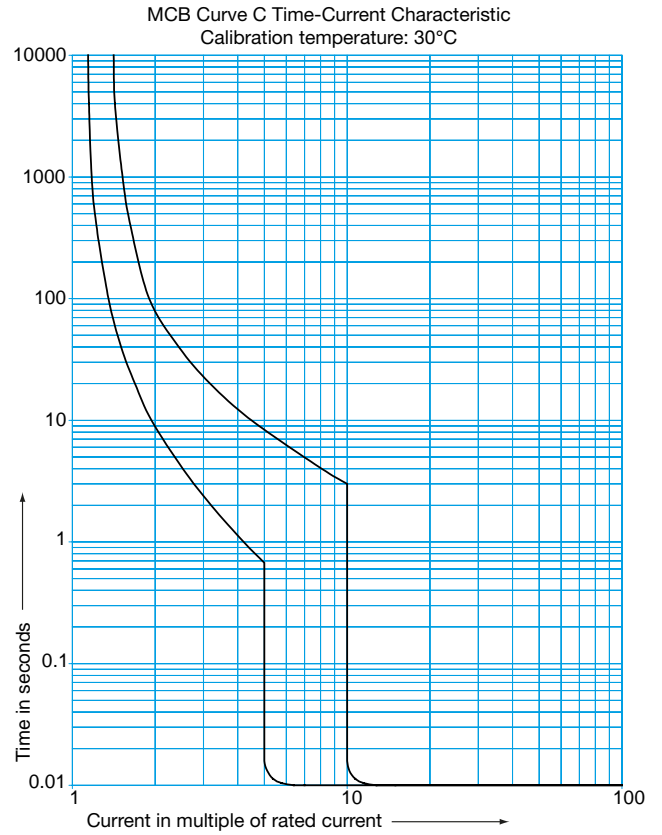
### B Curve (BS EN 60898)

MCBs: MTN rated 6 - 63A  
NBN rated 6 - 63A



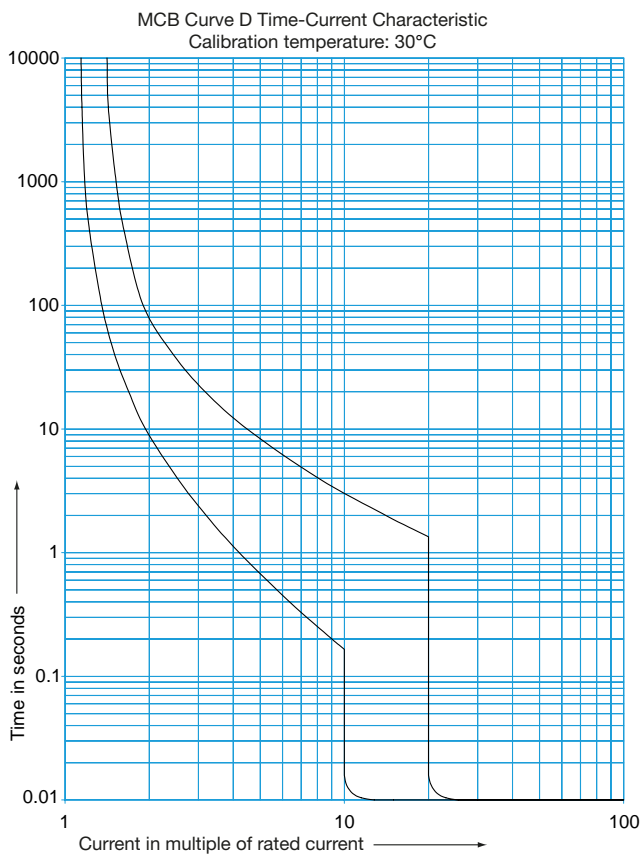
### C Curve (BS EN 60898)

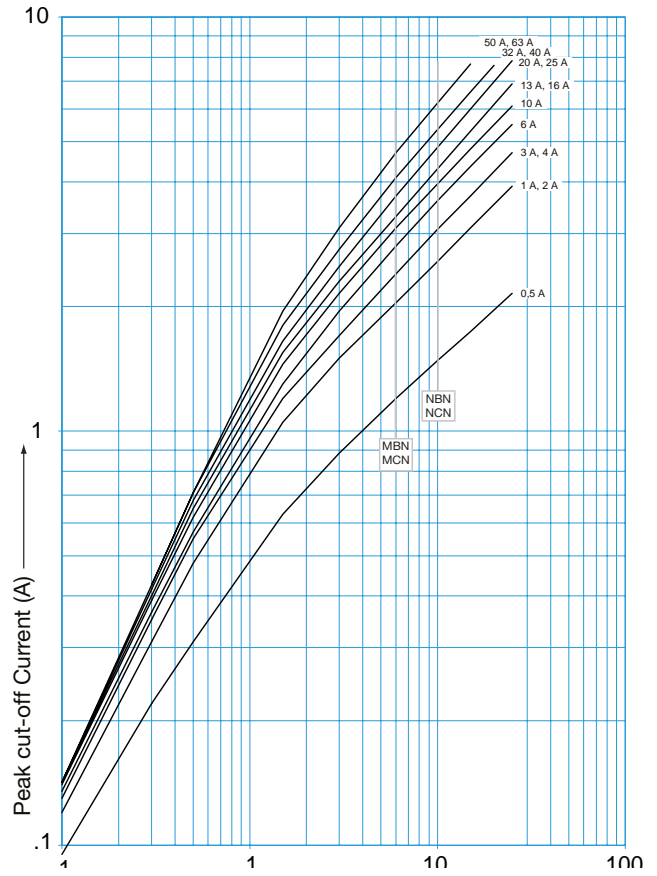
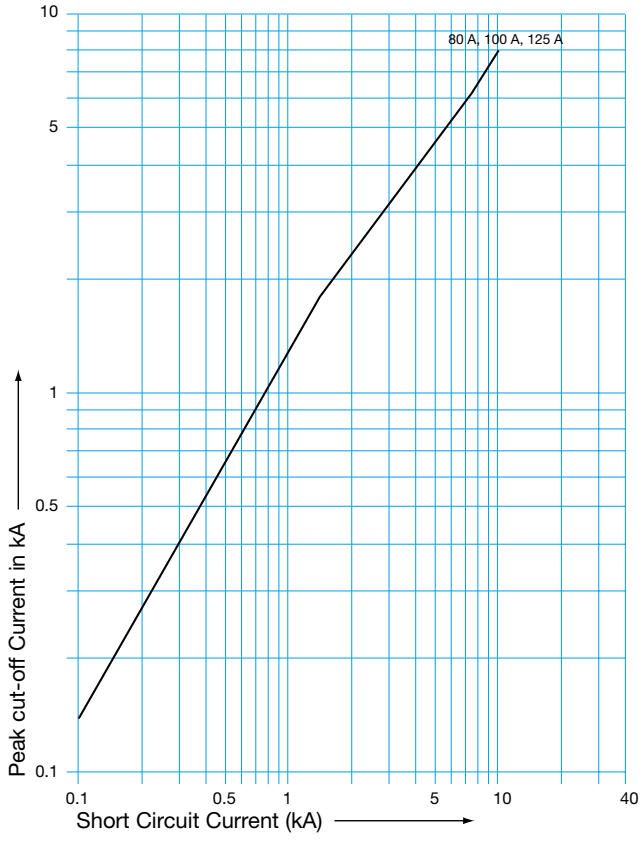
MCBs: NCN rated 0.5 - 63A  
MLN rated 2 - 32A  
HMF/HMC rated 80 - 125A



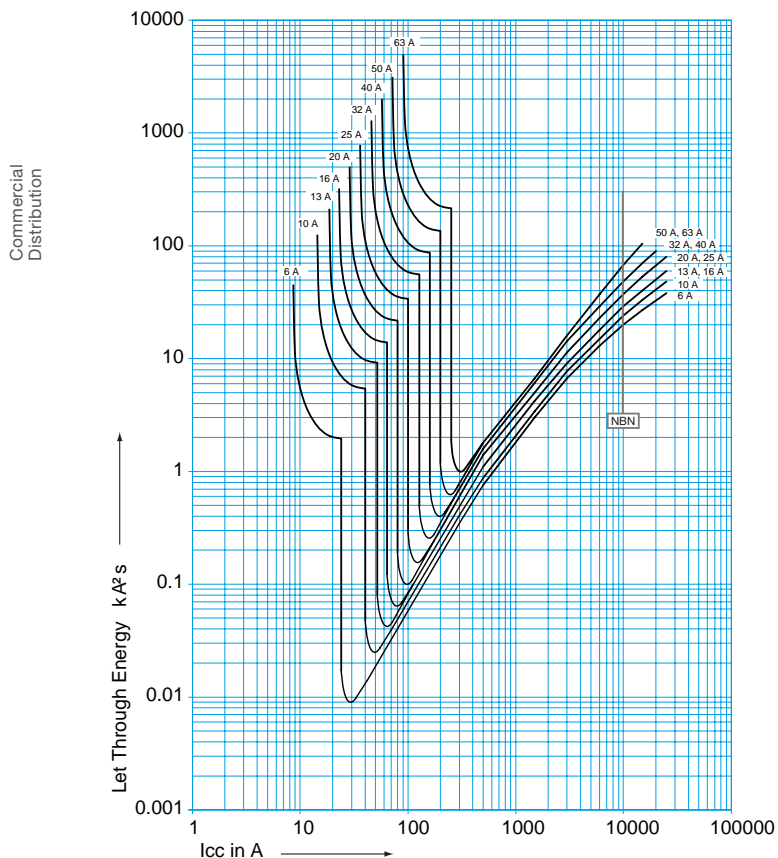
### D Curve (BS EN 60898)

MCBs: NDN rated 6 - 63A  
HMD rated 80 - 125A

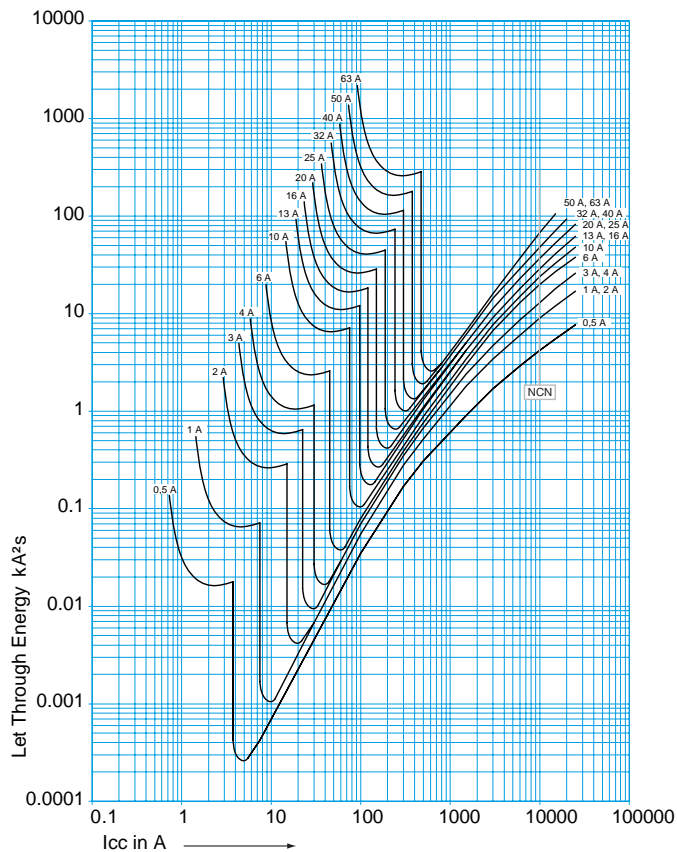




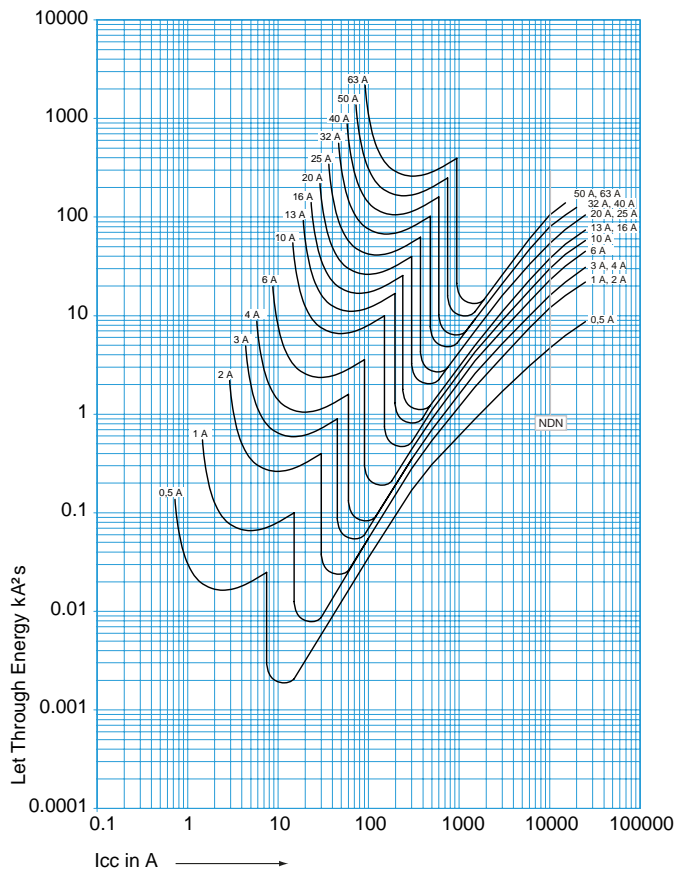
**B Curve**



**C Curve**



**D Curve**



**Functions**

Tripping and indication auxiliary contacts are common to the range of multi-pole 10kA MCBs, and RCCBs. They should be mounted on the left hand side of the device.

**Auxiliary Contact MZ201 (Fig 9)**

Allows remote indication of the status of the device contacts to which it is associated.

**Auxiliary Contact and Alarm Contact MZ202**

This accessory has two separate functions. Like the MZ201 auxiliary contact, however the alarm contact will provide indication if the breaker trips under fault conditions.

**Wiring Diagram**

MZ201 Auxiliary Contact and Alarm Contract

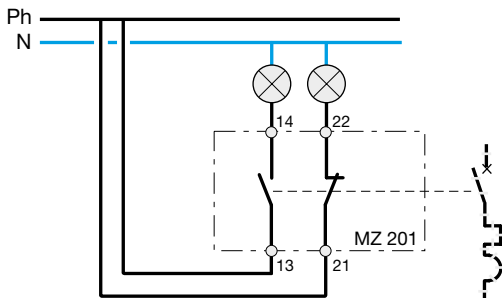


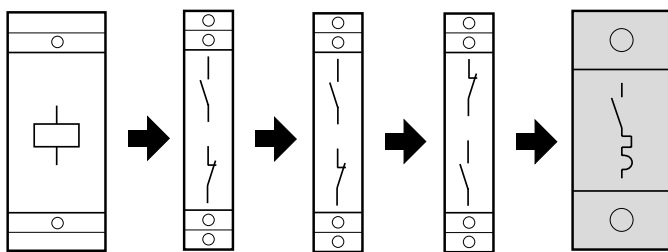
Fig. 9

Electrical Characteristics

MZ201/MZ206	MZ203	MZ206
1 x O 1 x C Contact 230V ~ 6A AC-1		
	230 - 415 ~ 110 - 130...	230V ~ 50Hz

**Grouping / Combination of Several Auxiliaries**

On 2, 3 and 4 pole MCBs it is possible to associate 3 auxiliaries – 2 indication auxiliaries and 1 release auxiliary. In this case, it is important to first fix the indication auxiliary (MZ201 and MZ202) and then the release auxiliary (MZ203 and MZ206).



MZ203 to MZ206 + MZ201 to MZ201 + MZ201 to MZ201 + MZ202 to MZ201 + MCB

Fig. 11

**MZ203 Shunt Trip\***

Allows tripping of the device by feeding the coil. The contacts also allow for remote indication of operation.

**MZ206 Under Voltage Release\* (Fig 10)**

Allows the MCB to trip when the voltage drops or by pressing a remote off switch (i.e. emergency stop).

\* Indication that the product has tripped due to the voltage release is provided by a flag on the product.

**MZ206 Under Voltage Release**

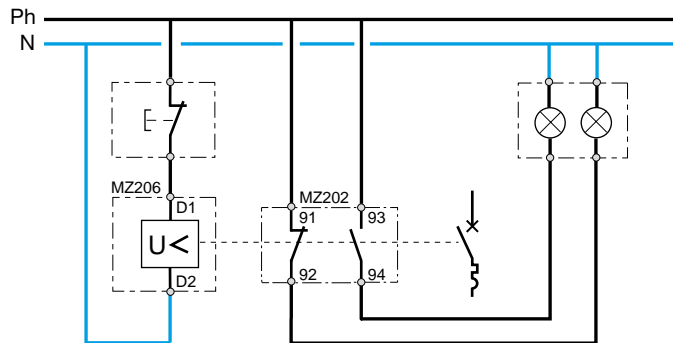


Fig. 10

**Electrical connection**

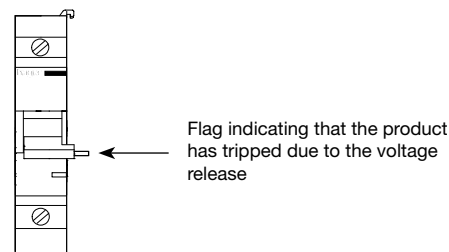
By terminal fitted with fixed clamp screws wiring capacity.  
Flexible : 2 x 1.5mm<sup>2</sup>  
Rigid : 2 x 1.5mm<sup>2</sup>

**MZ203**

Power - 8VA  
tolerance : -15% of U<sub>n</sub>

**MZ206**

Latching voltage is between 35 and 70% of U<sub>n</sub> 230V ~  
Coil consumption 3VA



MZ203 to MZ206

Fig. 12

Commercial Distribution

Max. Values (kA)		Upstream										
		B curve										
		$I_n$ (A)	6	10	13	16	20	25	32	40	50	63
		Downstream	B Curve	6	-	0.04	0.06	0.07	0.09	0.12	0.15	0.19
10	-			-	0.06	0.07	0.09	0.11	0.15	0.19	0.24	0.30
13	-			-	-	0.07	0.09	0.11	0.15	0.18	0.23	0.30
16	-			-	-	-	0.09	0.11	0.14	0.18	0.23	0.29
20	-			-	-	-	-	0.11	0.14	0.18	0.22	0.28
25	-			-	-	-	-	-	0.14	0.18	0.22	0.28
32	-			-	-	-	-	-	-	0.17	0.21	0.27
40	-			-	-	-	-	-	-	-	0.21	0.27
50	-			-	-	-	-	-	-	-	-	0.26
63	-			-	-	-	-	-	-	-	-	-
C Curve	0.5		0.05	0.13	0.21	0.30	0.45	0.71	1.32	2.99	7.52	T
	1		0.03	0.05	0.07	0.09	0.11	0.15	0.19	0.25	0.33	0.43
	2		0.03	0.05	0.07	0.09	0.11	0.14	0.19	0.25	0.32	0.41
	3		0.03	0.05	0.06	0.08	0.10	0.12	0.16	0.21	0.26	0.34
	4		0.03	0.05	0.06	0.08	0.10	0.12	0.16	0.20	0.25	0.33
	6		-	0.04	0.06	0.07	0.09	0.12	0.15	0.19	0.24	0.31
	8		-	0.04	0.06	0.07	0.09	0.11	0.15	0.19	0.24	0.30
	10		-	-	0.06	0.07	0.09	0.11	0.15	0.18	0.23	0.30
	13		-	-	-	0.07	0.09	0.11	0.14	0.18	0.23	0.29
	16		-	-	-	-	0.09	0.11	0.14	0.18	0.23	0.29
	20		-	-	-	-	-	0.11	0.14	0.17	0.22	0.28
	25		-	-	-	-	-	-	0.14	0.17	0.21	0.27
	32		-	-	-	-	-	-	-	0.17	0.21	0.26
	40		-	-	-	-	-	-	-	-	0.20	0.25
	50		-	-	-	-	-	-	-	-	-	0.25
63	-		-	-	-	-	-	-	-	-	-	
D Curve	0.5		0.04	0.09	0.13	0.18	0.25	0.35	0.51	1.27	T	T
	1		0.03	0.05	0.07	0.09	0.11	0.14	0.19	0.25	0.32	0.41
	2		0.03	0.05	0.07	0.09	0.11	0.15	0.19	0.25	0.33	0.43
	3		0.03	0.05	0.06	0.08	0.10	0.12	0.16	0.20	0.26	0.33
	4		0.03	0.05	0.06	0.08	0.10	0.12	0.16	0.20	0.26	0.33
	6		-	0.04	0.06	0.07	0.09	0.11	0.15	0.19	0.24	0.30
	10		-	-	0.06	0.07	0.09	0.11	0.15	0.18	0.23	0.30
	13	-	-	-	0.07	0.09	0.11	0.14	0.18	0.22	0.28	
	16	-	-	-	-	0.09	0.11	0.14	0.17	0.22	0.28	
	20	-	-	-	-	-	0.11	0.14	0.17	0.21	0.27	
	25	-	-	-	-	-	-	0.13	0.16	0.21	0.26	
	32	-	-	-	-	-	-	-	0.16	0.20	0.25	
	40	-	-	-	-	-	-	-	-	0.20	0.25	
	50	-	-	-	-	-	-	-	-	-	0.25	
	63	-	-	-	-	-	-	-	-	-	-	



Upstream

<b>C curve</b>															
0.5	1	2	3	4	6	8	10	13	16	20	25	32	40	50	63
-	-	-	-	-	-	0.07	0.09	0.11	0.14	0.18	0.23	0.29	0.37	0.47	0.59
-	-	-	-	-	-	-	-	0.11	0.14	0.17	0.22	0.29	0.36	0.46	0.57
-	-	-	-	-	-	-	-	-	0.14	0.17	0.22	0.28	0.35	0.45	0.56
-	-	-	-	-	-	-	-	-	-	0.17	0.21	0.28	0.35	0.44	0.55
-	-	-	-	-	-	-	-	-	-	-	0.21	0.27	0.34	0.43	0.54
-	-	-	-	-	-	-	-	-	-	-	-	0.27	0.33	0.42	0.53
-	-	-	-	-	-	-	-	-	-	-	-	-	0.32	0.41	0.51
-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.40	0.51
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.48
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	0.01	0.02	0.05	0.08	0.16	0.27	0.40	0.67	1.11	2.32	5.59	T	T	T	T
-	-	0.02	0.03	0.04	0.06	0.08	0.10	0.14	0.18	0.23	0.30	0.40	0.53	0.74	1.22
-	-	-	0.03	0.04	0.06	0.08	0.10	0.14	0.18	0.23	0.30	0.39	0.51	0.72	1.13
-	-	-	-	0.03	0.05	0.07	0.09	0.12	0.15	0.19	0.25	0.32	0.41	0.52	0.67
-	-	-	-	-	0.05	0.07	0.09	0.12	0.15	0.19	0.24	0.31	0.39	0.50	0.66
-	-	-	-	-	-	0.07	0.09	0.11	0.14	0.18	0.22	0.29	0.37	0.46	0.58
-	-	-	-	-	-	-	0.08	0.11	0.14	0.17	0.22	0.29	0.36	0.46	0.57
-	-	-	-	-	-	-	-	0.11	0.14	0.17	0.22	0.28	0.35	0.45	0.56
-	-	-	-	-	-	-	-	-	0.13	0.17	0.21	0.28	0.35	0.44	0.55
-	-	-	-	-	-	-	-	-	-	0.17	0.21	0.27	0.34	0.43	0.54
-	-	-	-	-	-	-	-	-	-	-	0.20	0.26	0.33	0.41	0.52
-	-	-	-	-	-	-	-	-	-	-	-	0.26	0.32	0.41	0.51
-	-	-	-	-	-	-	-	-	-	-	-	-	0.31	0.39	0.49
-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.37	0.47
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.46
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
-	0.01	0.02	0.04	0.06	0.10	0.16	0.22	0.34	0.46	0.77	7.50	T	T	T	T
-	-	0.02	0.03	0.04	0.06	0.08	0.10	0.14	0.18	0.23	0.30	0.39	0.51	0.73	1.19
-	-	-	0.03	0.04	0.06	0.08	0.10	0.14	0.18	0.23	0.30	0.40	0.53	0.74	1.15
-	-	-	-	0.03	0.05	0.07	0.09	0.12	0.15	0.19	0.24	0.31	0.40	0.51	0.67
-	-	-	-	-	0.05	0.07	0.09	0.12	0.15	0.19	0.24	0.32	0.40	0.51	0.67
-	-	-	-	-	-	0.07	0.08	0.11	0.14	0.18	0.22	0.29	0.36	0.46	0.58
-	-	-	-	-	-	-	-	0.11	0.14	0.17	0.22	0.28	0.35	0.45	0.56
-	-	-	-	-	-	-	-	-	0.13	0.17	0.21	0.27	0.34	0.43	0.54
-	-	-	-	-	-	-	-	-	-	0.16	0.21	0.26	0.33	0.42	0.53
-	-	-	-	-	-	-	-	-	-	-	0.20	0.26	0.32	0.41	0.51
-	-	-	-	-	-	-	-	-	-	-	-	0.25	0.31	0.39	0.49
-	-	-	-	-	-	-	-	-	-	-	-	-	0.30	0.37	0.47
-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.37	0.47
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.47
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Commercial Distribution

Max. Values (kA)		Upstream															
		D curve															
Downstream	$I_n$ (A)	0.5	1	2	3	4	6	10	13	16	20	25	32	40	50	63	
	Commercial Distribution	B Curve	6	-	-	-	-	-	-	0.14	0.19	0.23	0.29	0.37	0.48	0.60	0.74
10			-	-	-	-	-	-	-	0.18	0.23	0.29	0.36	0.47	0.58	0.71	0.95
13			-	-	-	-	-	-	-	-	0.22	0.28	0.35	0.46	0.57	0.69	0.90
16			-	-	-	-	-	-	-	-	-	0.28	0.35	0.45	0.56	0.68	0.86
20			-	-	-	-	-	-	-	-	-	-	0.34	0.44	0.54	0.67	0.84
25			-	-	-	-	-	-	-	-	-	-	-	0.43	0.54	0.66	0.83
32			-	-	-	-	-	-	-	-	-	-	-	-	0.52	0.65	0.81
40			-	-	-	-	-	-	-	-	-	-	-	-	-	0.63	0.79
50			-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.78
63		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
C Curve		0.5	-	0.01	0.05	0.11	0.18	0.37	1.11	2.70	6.17	T	T	T	T	T	T
		1	-	-	0.03	0.05	0.06	0.10	0.18	0.24	0.31	0.40	0.53	0.76	1.26	2.91	8.59
		2	-	-	-	0.04	0.06	0.10	0.18	0.24	0.30	0.39	0.51	0.74	1.17	2.41	6.80
		3	-	-	-	-	0.06	0.09	0.15	0.20	0.25	0.32	0.41	0.54	0.69	0.95	1.53
		4	-	-	-	-	-	0.09	0.15	0.20	0.24	0.31	0.39	0.52	0.67	0.92	1.42
		6	-	-	-	-	-	-	0.14	0.18	0.23	0.29	0.37	0.48	0.59	0.73	1.00
		8	-	-	-	-	-	-	0.14	0.18	0.23	0.29	0.36	0.47	0.58	0.71	0.95
		10	-	-	-	-	-	-	-	0.18	0.22	0.28	0.35	0.46	0.57	0.71	0.94
		13	-	-	-	-	-	-	-	-	0.22	0.28	0.35	0.45	0.56	0.69	0.89
		16	-	-	-	-	-	-	-	-	-	0.27	0.34	0.44	0.55	0.68	0.87
		20	-	-	-	-	-	-	-	-	-	-	0.33	0.42	0.53	0.66	0.84
		25	-	-	-	-	-	-	-	-	-	-	-	0.42	0.52	0.64	0.80
		32	-	-	-	-	-	-	-	-	-	-	-	-	0.50	0.63	0.79
		40	-	-	-	-	-	-	-	-	-	-	-	-	-	0.61	0.78
		50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.77
63		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
D Curve		0.5	-	0.01	0.04	0.07	0.11	0.21	0.46	0.99	9.81	T	T	T	T	T	T
		1	-	-	0.03	0.04	0.06	0.10	0.18	0.24	0.30	0.39	0.51	0.76	1.24	2.66	7.44
		2	-	-	-	0.05	0.06	0.10	0.18	0.24	0.31	0.40	0.53	0.76	1.19	2.46	7.61
		3	-	-	-	-	0.06	0.09	0.15	0.20	0.25	0.31	0.40	0.52	0.68	0.92	1.35
		4	-	-	-	-	-	0.09	0.15	0.20	0.25	0.32	0.40	0.53	0.69	0.91	1.26
		6	-	-	-	-	-	-	0.14	0.18	0.23	0.29	0.36	0.47	0.59	0.74	1.01
		10	-	-	-	-	-	-	-	0.18	0.22	0.28	0.35	0.46	0.57	0.71	0.94
		13	-	-	-	-	-	-	-	-	0.21	0.27	0.34	0.44	0.55	0.68	0.89
		16	-	-	-	-	-	-	-	-	-	0.26	0.33	0.43	0.54	0.67	0.86
		20	-	-	-	-	-	-	-	-	-	-	0.32	0.42	0.52	0.64	0.81
	25	-	-	-	-	-	-	-	-	-	-	-	0.40	0.49	0.63	0.80	
	32	-	-	-	-	-	-	-	-	-	-	-	-	0.48	0.61	0.78	
	40	-	-	-	-	-	-	-	-	-	-	-	-	-	0.60	0.77	
	50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.76	
	63	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	

### Earth Fault Loop impedance ( $Z_s$ ) values for MCBs and MCCBs

Below are the maximum permissible values of  $Z_s$  to obtain disconnection for compliance with BS 7671:2008 Amendment 3

$I_n$	Max Let-Through Energy (kA <sup>2</sup> s) at PSCC			Max $Z_s$ (ohms)	
	3kA	6kA	10kA	0.2 - 1s sec	5 sec
<b>MTN/NBN (B Curve)</b>					
6	5.9	10.5	15	7.28	7.28
10	6.5	12.2	21.5	4.37	4.37
16	8.0	17.5	30	2.73	2.73
20	8.8	19.5	34	2.19	2.19
25	10	21	38	1.75	1.75
32	11	24	42	1.37	1.37
40	12.5	29	50	1.09	1.09
50	15	34	61	0.87	0.87
63	16	38	72	0.69	0.69
<b>NCN/HM (C Curve)</b>					
0.5	0.01	0.01	0.01	43.7	62.43
1	4.0	7.0	10	21.85	31.21
2	4.0	7.0	10	10.93	15.61
3	5.0	10.0	15	7.28	10.40
4	5.9	10.5	15	5.46	7.80
6	5.9	10.5	15	3.64	5.20
10	6.5	12.2	21.5	2.19	3.12
16	8.0	17.5	30	1.37	1.95
20	8.8	19.5	34	1.09	1.56
25	10	21	38	0.87	1.25
32	11	24	42	0.68	0.98
40	12.5	29	50	0.55	0.78
50	15	34	61	0.44	0.62
63	16	38	72	0.35	0.50
80	-	-	-	1.27	0.39
100	-	-	-	0.22	0.31
125	-	-	-	0.1	0.25
<b>NDN (D Curve)</b>					
0.5	0.01	0.01	0.01	21.85	62.43
1	4.0	7.0	10	10.93	31.21
2	4.0	7.0	10	5.46	15.61
3	5.0	10.0	15	3.64	10.40
4	5.9	10.5	15	2.73	7.80
6	5.9	10.5	15	1.82	5.20
10	6.5	12.2	21.5	1.09	3.12
16	8.0	17.5	30	0.68	1.95
20	8.8	19.5	34	0.55	1.56
25	10	21	38	0.44	1.25
32	11	24	42	0.34	0.98
40	12.5	29	50	0.27	0.78
50	15	34	61	0.22	0.62
63	16	38	72	0.17	0.50
80				0.14	0.39
100				0.11	0.31
125				0.09	0.25

### Residual Current Devices

A residual current device (RCD) is the generic term for a device which simultaneously performs the functions of detection of the residual current, comparison of this value with the rated residual operating value and opening the protected circuit when the residual current exceeds this value. These devices can take several different forms i.e. Residual Current Circuit Breaker (RCCB), Residual Current Circuit Breaker with integral Overload protection (RCBO), or a residual current device incorporated within a socket outlet or other accessory (SRCD)

Residual current circuit breakers (RCCB) protect against earth faults only and not short circuits. They are usually therefore used in conjunction with overcurrent protective devices.

#### MCB/RCCB Co-ordination

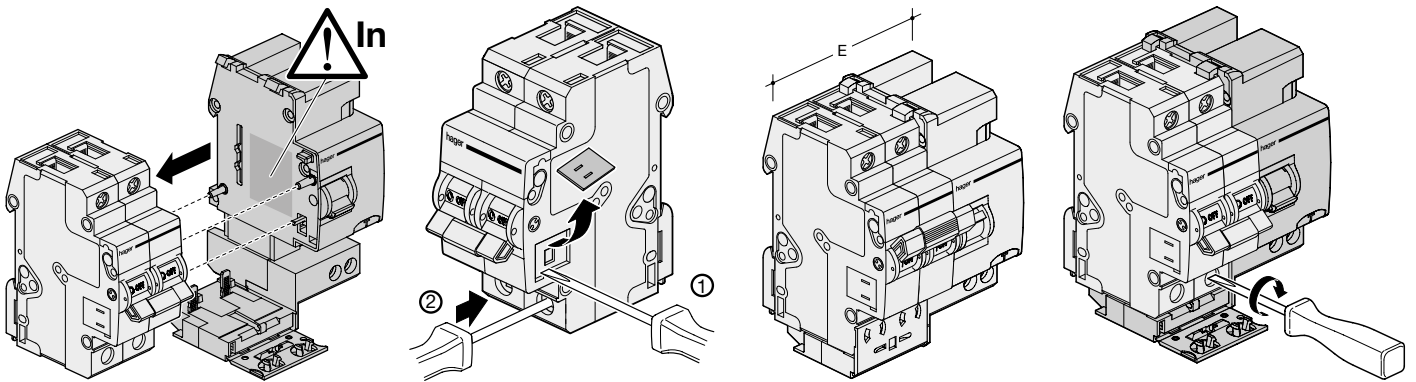
Short circuit capacity of the RCCB | With MCB's only

RCCB		MTN 6-63A B	NBN 6-63A B	NCN 6-63A C	NDN 6-63A D
<b>2 poles</b>					
16A	1500A	6kA	10kA	10kA	6kA
25A	1500A	6kA	10kA	10kA	6kA
40A	1500A	6kA	10kA	10kA	6kA
63A	1500A	6kA	10kA	10kA	6kA
80A	1500A	6kA	10kA	10kA	6kA
100A	1500A	6kA	10kA	10kA	6kA
<b>4 poles</b>					
16A	1500A	6kA	6kA	6kA	4.5kA
25A	1500A	6kA	6kA	6kA	4.5kA
40A	1500A	6kA	6kA	6kA	4.5kA
63A	1500A	6kA	6kA	6kA	4.5kA
80A	1500A	6kA	6kA	6kA	4.5kA
100A	1500A	6kA	6kA	6kA	4.5kA

	Double Pole RCCB Add-on Block			Four Pole RCCB Add-on Block			3 Phase Earth Leakage Protection		
$I_n$	≤63A								
Sensitivity	30mA	100mA	300mA	30mA	100mA	300mA	30mA	100mA	300mA
Cat ref. (Standard)	<b>BD264</b>	<b>BE264</b>	<b>BF264</b>	<b>BD464</b>	<b>BE464</b>	<b>BF464</b>	<b>BD163T</b>	<b>BE163T</b>	<b>BF163T</b>
Cat ref. (Time Delayed)	<b>BN264</b>	<b>BP264</b>		<b>BN464</b>	<b>BP464</b>				
<b>MCB Suitability</b>									
NBN	6-63A	6-63A	6-63A	6-63A	6-63A	6-63A	6-63A	6-63A	6-63A
NCN	0.5-63A	0.5-63A	0.5-63A	0.5-63A	0.5-63A	0.5-63A	0.5-63A	0.5-63A	0.5-63A
NDN	0.5-63A	0.5-63A	0.5-63A	0.5-63A	0.5-63A	0.5-63A	0.5-63A	0.5-63A	0.5-63A
Width when combined with MCB	4 Module 70mm			7 Module 122.5mm			4 Module 70mm		

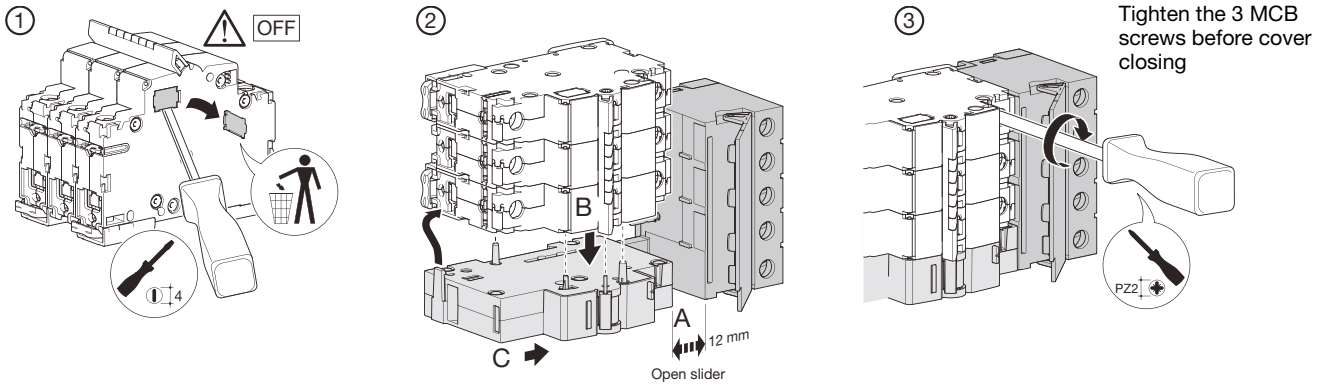
**Mounting**

**Double Pole RCCB Add-on Block**



**Mounting**

**Three Pole RCCB Add-on Block**



## Transformer Protection

Tables 19 & 20 show the recommended MCB's for the protection of single phase (230V) and three phase (400V) transformers.

### Single Phase 230V

Transformer Rating (VA)	Primary Current	Recommended MCB		
		NBN	NCN	NDN
50	0.22	-	1	6
100	0.43	-	2	6
200	0.87	-	3	6
250	1.09	6	4	6
300	1.30	10	4	6
400	1.74	10	6	6
500	2.17	16	10	6
750	3.26	16	10	6
1000	4.35	25	16	10
2500	10.87	63	40	20
5000	21.74	-	63	32
7500	32.60	-	-	50
10000	43.48	-	-	63

### Three Phase 400V

Transformer Rating (VA)	Primary Current	Recommended MCB		
		NBN	NCN	NDN
500	0.72	-	3	6
750	1.08	6	4	6
1000	1.44	10	6	6
2000	2.88	16	10	6
3000	4.33	25	16	10
4000	5.77	32	20	10
5000	7.21	40	25	16
7500	10.82	63	32	20
10000	14.43	-	50	25
15000	21.64	-	63	32
20000	28.86	-	-	50
25000	36.07	-	-	63

## Motor Circuit Protection

Tables 28,29,30 and 31 give general recommendations for the selection of circuit breakers and HRC fuses for the protection of motor power circuits and are based on the assumptions shown in Table 28 for a cage motor running at approximately 1400 Rev/Min.

Motor Rating	DOL Starting Conditions	Assisted Start Conditions
Up to 0.75kW	5 x FLC for 6 secs	2.5 x FLC for 15 secs
1.1 to 7.5kW	6 x FLC for 10 secs	2.5 x FLC for 15 secs
11 to 75kW	7 x FLC for 10 secs	2.5 x FLC for 15 secs
90 to 160kW	6 x FLC for 15 secs	2.5 x FLC for 20 secs

### 1 Phase 230V DOL Starting

kW	hp	FLC A	Recommended Circuit Breaker			
			(A) NBN	(A) NCN	(A) NDN	Fuse (A)
0.18	0.25	2.8	16	10	10	10
0.25	0.33	3.2	16	10	10	16
0.37	0.5	3.5	16	10	10	16
0.55	0.75	4.8	20	16	16	16
0.75	1.0	6.2	25	20	20	20
1.1	1.5	8.7	40	25	25	25
1.5	2.0	11.8	50	32	32	32
2.2	3.0	17.5	-	50	50	40
3.0	4.0	20	-	63	63	50
3.75	5.0	24	-	-	-	63
5.5	7.5	36	-	-	-	80
7.5	10	47	-	-	-	100

### 3 Phase 400V Assisted Starting Star-Delta

kW	hp	FLC A	Recommended Circuit Breaker		
			(A) NCN	(A) NDN	HRC Fuse (A)
3	4	6.3	16	10	16
4	5.5	8.2	20	10	16
5.5	7.5	11.2	32	16	20
7.5	10	14.4	40	25	25
11	15	21	50	32	32
15	20	27	-	40	35
18.5	25	32	-	50	40
22	30	38	-	63	50
30	40	51	-	-	63
37	50	63	-	-	80
45	60	76	-	-	80
55	75	91	-	-	100
75	100	124	-	-	160
90	125	154	-	-	200
110	150	183	-	-	200
132	175	219	-	-	250
150	200	240	-	-	315
160	220	257	-	-	315

3 Phase 400V DOL Starting

kW	hp	FLC A	Recommended Circuit Breaker			
			(A) <b>NBN</b>	(A) <b>NCN</b>	(A) <b>NDN</b>	HRC Fuse (A)
0.18	0.25	0.87	-	2	-	4
0.25	0.33	1.17	-	3	-	4
0.37	0.5	1.2	-	3	-	4
0.55	0.75	1.8	-	4	-	6
0.75	1.0	2.0	10	6	6	6
1.1	1.5	2.6	16	10	6	10
1.5	2.0	3.5	16	10	10	16
2.2	3.0	4.4	20	16	16	16
3.0	4.0	6.3	25	20	20	20
4.0	5.5	8.2	32	25	25	25
5.5	7.5	11.2	50	40	40	32
7.5	10	14.4	63	50	50	40
11	15	21	-	-	-	63
15	20	27	-	-	-	80
18.5	25	32	-	-	-	80
22	30	38	-	-	-	80
30	40	51	-	-	-	100
37	50	63	-	-	-	125
45	60	76	-	-	-	125
55	75	91	-	-	-	160
75	100	124	-	-	-	200
90	125	154	-	-	-	250
110	150	183	-	-	-	315
132	175	219	-	-	-	355
150	200	240	-	-	-	355
160	220	257	-	-	-	355

		SPN801 / SPN801R	SPN802 / SPN802R
Tested to		EN 61643-11 (VDE0675-6-11) 2002-12	EN 61643-11 (VDE0675-6-11) 2002-12
		L1/L2/L3/N => PE	L1/L2/L3 => N N => PE
SPD type / class		Type 1 + Type 2 / I / B	
Type of connection		Parallel connection	
Type of power supply system		TN-S - System	TT - System
Type of protection		Common modes	Common and differential modes
Nominal voltage	$U_N$	230V / 400V ac	
Rated voltage	$U_C$	255V ac	
Voltage protection level	$U_p$	$\leq 1.5kV$	255V ac
TOV-voltage	$U_T$	440V / 5s	1200V / 200ms
Rated load current	$I(L)$	315A	
	$I(L-L)$	125A	
Follow current interrupting rating	$I_{fi}$	50 kA	100kA
Nominal discharge current (8/20)	$I_n$	100kA	25kA 100kA
Impulse current (10/350)	$I_{imp}$	100kA	25kA 100kA
Residual current	$I_{PE}$	$\leq 100mA$	
Max. rating of overcurrent protection	fuse	125A gL / gG serial or 315A parallel	
	MCCB	125A serial or 160A parallel	
Short-circuit withstand capability with max. overcurrent protection	fuse	50kA ac	25kA ac
	MCCB	50kA ac	25kA ac
Response time	$t_A$	$< 100ns$	
Operating temperature range		$- 40^\circ C \dots + 60^\circ C$	
Indication of SPD disconnecter		Green - red on L1, L2, L3, N	
Cross sectional area	min	10mm <sup>2</sup> solid / flexible	
L1, L2, L3, PE	max	50mm <sup>2</sup> multi-stranded / 35mm <sup>2</sup> flexible	
Tightening torque for terminals		7.0 Nm	
Mounting on		35mm DIN rail in accordance with EN 60715	
Enclosure material		grey thermoplastic, UL 94V-0	
Degree of protection		IP20	
Modular width		6	8
Weight		1260 g	1272 g
Approval marking		VDE	



	SPA201		SPA401
Tested to	EN 61643-11 2002-12		
SPD type / class	Type 1 + Type 2 / Class I		
Energy-coordinated protection effect on terminal equipment	Type 1 + Type 2		
Energy-coordinated protection effect on terminalequipment ≤ 5 m	Type 1 + Type 2 + Type 3		
Type of connection	Parallel connection		
Type of power supply system	TT / TN system		
Type of protection	common and differential modes		
Nominal voltage	$U_N$	230V/400V ac	
Rated voltage	$U_c$	255V ac	
Voltage protection level	$U_p$	≤ 1.5kV	
TOV Voltage	$U_T$	440V / 5s 1200V / 200ms	
Rated load current	I(L)	n/a	
	I(L-L)	n/a	
Follow current interrupting rating	$I_{fi}$	25kA rms 100A rms	
Nominal discharge current (8/20)	$I_n$	12.5kA 25kA	12.5kA 50kA
	$I_{imp}$	12.5kA 25kA	12.5kA 50kA
Max. rating of overcurrent protection	fuse	160A gL / gG	
	MCCB	n/a	160A
Short-circuit withstand capability with max. overcurrent protection	fuse	25kA rms	
	MCB	n/a	
Response time	$t_A$	≤ 100ns	
Operating temperature range	- 40°C ....+ 80°C		
Indication of SPD disconnecter	Green/Red flag on L and N		Green/Red flag on L1, L2, L3 and N
Cross sectional area	min	1,5mm <sup>2</sup> solid / flexible	
	max	35mm <sup>2</sup> stranded / 25mm <sup>2</sup> flexible	
Tightening torque for terminals	4 Nm		
Mounting on	35mm DIN rail in accordance with EN 60715		
Enclosure material	grey thermoplastic, UL 94V-0		
Degree of protection	IP20		
Modular width	2		4
Weight	275 g		480 g
Approval marking	KEMA		

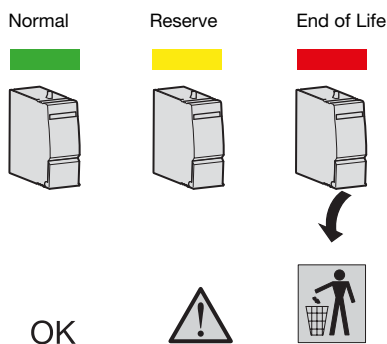
		SPN215D/R	SPN415D/R	SPN440D/R
Tested to		EN 61643-11 (VDE0675-6-11) 2002-12		
SPD type		Type 2 according to EN 61643-11		
SPD class		Class II according to IEC 61643-1		
Type of connection		Parallel connection		
Maximum continuous operating voltage $U_c$	Line / Neutral	$\leq 255V$		
	Neutral/ PE	$\leq 275V$		
Voltage protection level	$U_p$	$\leq 1kV$	$\leq 1kV$	$\leq 1.2kV$
Nominal discharge current (8/20 $\mu s$ ) [(DC+/DC-) --> PE]	$I_n$	5kA	5kA	15kA
Max. discharge current (8/20 $\mu s$ ) [(DC+/DC-) --> PE]	$I_{max}$	15kA	15kA	40kA
Short-circuit withstand capability with max. overcurrent protection		10kA - 32A	10kA - 32A	20kA - 32A
Operating temperature range		- 40°C ....+ 80°C		
Indication of SPD disconnecter		Green - Yellow - Red		
Cross sectional area	min	1,5mm <sup>2</sup> solid / flexible		
	max	35mm <sup>2</sup> multi-stranded / 25mm <sup>2</sup> flexible		
Tightening torque for terminals		4.0 Nm		
Mounting on		35mm DIN rail in accordance with EN 60715		
Enclosure material		grey thermoplastic, UL 94V-0		
Degree of protection		IP20		
Modular width (DIN 43880)		2	2	4
Auxiliary contact. Voltage/ nominal current (only applicable on the R suffix products)		230V/ 0.5A 12Vdc 10mA		

		SPV325
Tested to		EN 61643-11 (VDE0675-6-11) 2002-12
SPD type		Type 2 according to EN 61643-11
SPD class		Class II according to IEC 61643-1
Type of connection		Parallel connection
Maximum continuous operating voltage	$U_{cPV}$	$\leq 1000V$
Voltage protection level	$U_p$	$\leq 4kV$
Voltage protection level for 5kA	$U_p$	$\leq 3,5kV$
Total discharge current (8/20 $\mu s$ )	$I_{total}$	40kA
Nominal discharge current (8/20 $\mu s$ ) [(DC+/DC-) --> PE]	$I_n$	12.5kA
Max. discharge current (8/20 $\mu s$ ) [(DC+/DC-) --> PE]	$I_{max}$	25kA
Short-circuit withstand capability with max. overcurrent protection	$I_{scwPV}$	50 A / 1000 V DC
Response time	$t_A$	$\leq 25ns$
Operating temperature range		- 40°C ....+ 80°C
Indication of SPD disconnecter		green - red
Cross sectional area	min	1.5mm <sup>2</sup> solid / flexible
	max	35mm <sup>2</sup> multi-stranded / 25mm <sup>2</sup> flexible
Tightening torque for terminals		4.0 Nm
Mounting on		35mm DIN rail in accordance with EN 60715
Enclosure material		Grey thermoplastic, UL 94V-0
Degree of protection		IP20
Installation width		3 modules, DIN 43880
Weight		316g

Characteristics		
Tested to		EN 61643-11 (VDE0675-6-11) 2007-08
SPD type / class		Type 3 / III
Ports		one port
Type of connection		Parallel connection
Type of power supply system		TT / TN system
Nominal voltage	$U_N$	230V ac
Rated voltage	$U_C$	255V ac
Voltage protection level ( L - N)	$U_p$	$\leq 1.25kV$
Voltage protection level (L/N - PE)	$U_p$	$\leq 1.5kV$
TOV - Characteristic (L - N)	$U_T$	335V / 5s
TOV - Characteristic (L/N - PE) (I)	$U_T$	400V / 5s
TOV - Characteristic (L/N - PE) (II)	$U_T$	1200V / 200 ms
Rated load current	$I_L$	16 Aeff
Nominal discharge current (8/20)	$I_n$	3kA
Maximal discharge current (8/20)	$I_{max}$	5kA
Combination wave (1,2/50 - 8/20) (L - N)	$U_{oc}$	6 kV
Combination wave (1,2/50 - 8/20) (L/N - PE)	$U_{oc}$	10 kV
Residual current	IPE	$\leq 5\mu A$
Replacement cartridge		NO
Maximal rating of overcurrent protection	fuse	16 A gL / gG
	MCB	16A B curve
Short-circuit withstand capability with max. overcurrent protection	fuse	6kA eff ac
	MCB	1kA eff ac
Response time	$t_A$	$\leq 25ns$
Operating temperature range		- 25°C ....+ 40°C
Indication of SPD disconnector		NO
Remote signalisation contact		Green light off
Cross sectional area	min	1.5mm <sup>2</sup> solid / flexible
	max	10mm <sup>2</sup> stranded / 6mm <sup>2</sup> flexible
Tightening torque for terminals		1.2 Nm
Mounting on		35mm DIN rail in accordance with EN 60715
Enclosure material		Grey thermoplastic, UL 94V-2
Degree of protection		IP20
Installation width		2 modules, DIN 43880

### Reserve Indicator Light

Neutral cartridges cannot be put into spares reserved for phase cartridges and visa versa.



	Non-Adjustable		Adjustable						
	HR500	HR502	HR510	HR520	HR522	HR523	HR525/HR534	HR440	HR441
Supply Voltage ~50/60Hz	220-240V								
Residual Voltage ~50/60Hz	500V Maximum								
Power Absorbed	3VA	5VA							
Output	Volt Free Contacts								
Contact Rating	6A / 250V AC-1								
Sensitivity $I_{\Delta n}$	30mA	300mA	30mA / 100mA / 300mA / 500mA / 1A / 3A / 10A		500mA / 1A / 3A / 5A / 10A / 20A / 30A		30mA / 100mA / 300mA / 500mA / 1A / 3A / 5A / 10A / 30A		30mA / 100mA / 300mA
Instantaneous / Time Delay	Instantaneous		Instantaneous or Time Delay 0.1 - 0.3 - 0.4 - 0.5 - 1 - 3 seconds		Instantaneous or Time Delay 0.1 - 0.2 - 0.25 - 0.3 - 0.4 - 0.5 seconds		Instantaneous or Time Delay 0.02 - 0.1 - 0.3 - 0.4 - 0.5 - 1 - 3 - 5 - 10 seconds		Instantaneous or Time Delay 0.1 - 0.3s - 0.5s - 0.75s - 1s
Torroid Withstand Capacity	50kA / 0.2s								
Distance between Torroid and Relay	50 Meter Maximum								
Relay Cable Connection • Rigid • Flexible	1.5mm <sup>2</sup> to 10mm <sup>2</sup> 1mm <sup>2</sup> to 6mm <sup>2</sup>								
Torroid Cable Connection • Rigid • Flexible	1.5mm <sup>2</sup> to 4mm <sup>2</sup> 1mm <sup>2</sup> to 2.5mm <sup>2</sup>								
Relay • Working Temperature • Storage Temperature	-10°C to +55°C -25°C to +40°C		-5°C to +55°C -25°C to +40°C						
Torroid • Working Temperature • Storage Temperature	-10°C to +70°C -40°C to +70°C		-10°C to +70°C -40°C to +70°C						

### Main Characteristics

#### “Reset” Button

When pressed, the output remains switched and return to normal is obtained by either: by pressing the “reset” clear pushbutton or cutting off the power supply. If the “reset” button is not pressed the device remains in the fault position.

#### Test Button

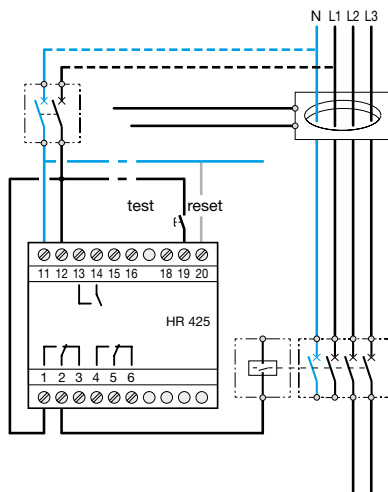
Pressing the test button allows a fault simulation which operates the relay and the output contacts. The fault level display is shown by an LED on the front of the product.

#### $I_{\Delta n}$ Selector

Sensitivity setting: 0.03A instantaneous  
0.1A/0.3A/1A and 3A time delay

#### Time Delay Selector

Adjustable time setting - instantaneous / 0.13s / 0.3s / 1s and 3s



### Sealable Settings

A sealable cover prevents interference once the settings have been made.

#### Standard Output (1 C/O contact)

Switching to state 1 on:

- Failure of the core/relay connection
- Fault current in the monitored installation

#### Positive Safety Outlet (1 C/O contact)

Switching to state 1: Switching on the power

Switching to state 0: Failure of the core/relay connection  
fault current in the monitored installation  
failure of relay supply  
internal failure of relay

Optical scale display by 5 LEDs of the fault in % of  $I_{\Delta n}$

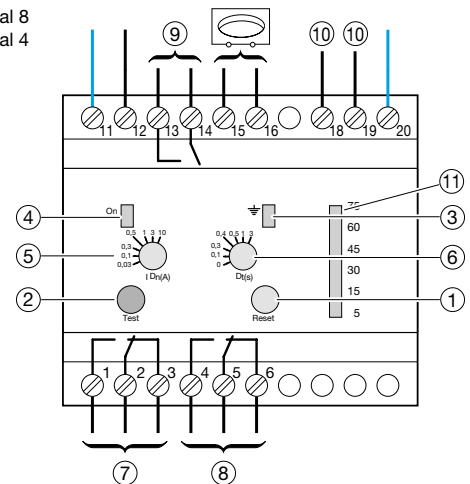
Optical scale display by (5 LEDs) of the fault in % of  $I_{\Delta n}$

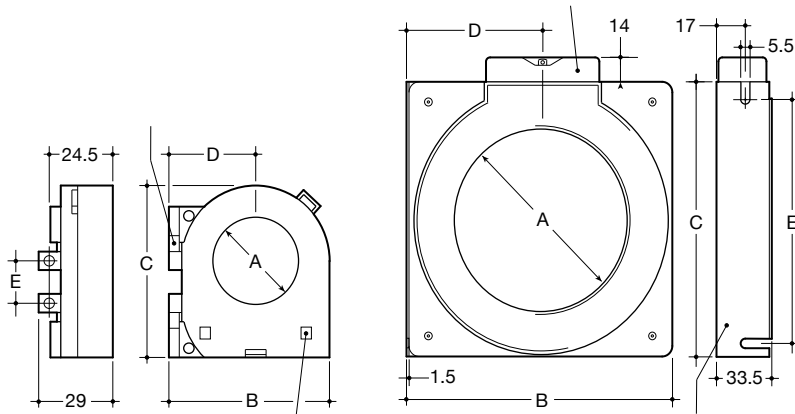
Common pin 6:

State 1 : output terminal 8

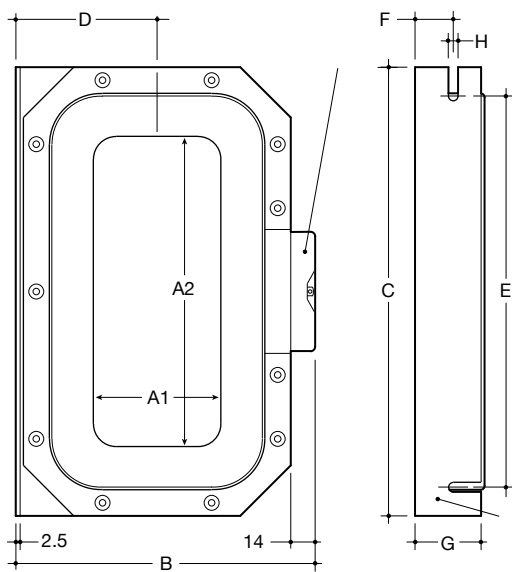
State 0 : output terminal 4

1. Reset push button
2. Test push button
3. Fault signal LED
4. Device on indicator
5. Sensitivity setting
6. Time delay setting
7. Standard output
8. Safety output
9. Prealarm output
10. Remote reset
11. Optical scale

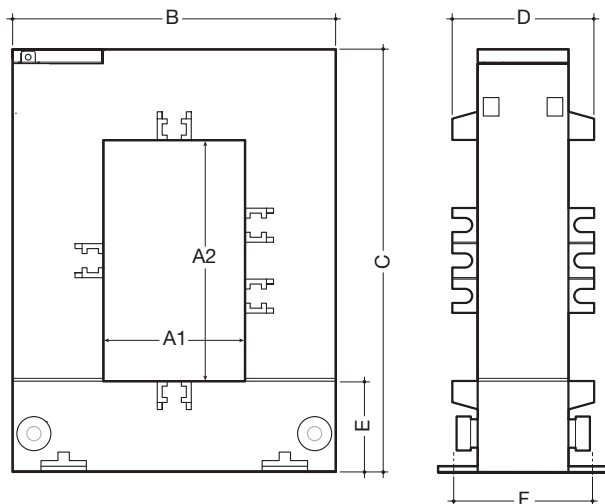




Cat ref.	Dimensions (mm)				
	A	B	C	D	E
HR700	30	70	70	30	-
HR701	35	92	86	43.5	74
HR702	70	115	118	60.5	97
HR703	105	158	162.5	84.5	140
HR704	140	218	200	103.5	183
HR705	210	290	295	150	265

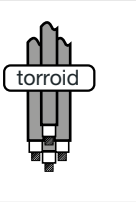
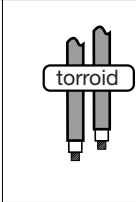
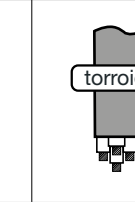
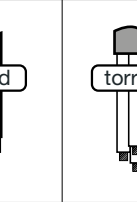
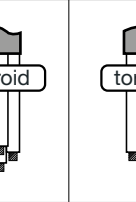
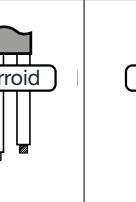
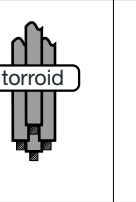


Cat ref.	Type	Dimensions (mm)								
		A1	A1	B	C	D	E	F	G	H
HR830	70x175	70	175	176	260	85	225	22	40	7.5
HR831	115x305	115	305	239	400	116	360	25	50	8.5
HR832	150x350	150	350	284	460	140	415	28	50	8.5



Cat ref.	Dimensions (mm)						
	A1	A1	B	C	D	E	F
HR820	20	30	89	110	41	32	46
HR821	50	80	114	145	50	32	46
HR822	80	80	145	145	50	32	46
HR823	80	121	145	185	50	32	46
HR824	80	161	184	244	70	37	46

## Mounting of Circular Torroids

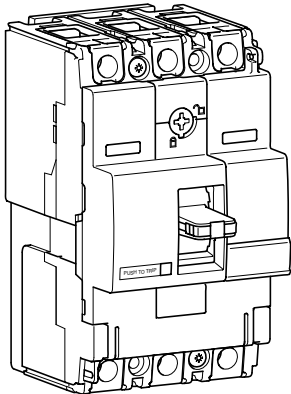
		With Cables						
		U 1000 R2V Single Pole	U 1000 R2V Single Pole	U 1000 R2V Multi Pole	U 1000 R2V Multi Pole	U 1000 R2V Multi Pole	H07 V - U Single Pole	H07 V - U Single Pole
Ø	Type of Torroids							
30	<b>HR700</b>	4 x 16mm <sup>2</sup>	2 x 50mm <sup>2</sup>	35mm <sup>2</sup>	35mm <sup>2</sup>	50mm <sup>2</sup>	4 x 35mm <sup>2</sup>	2 x 70mm <sup>2</sup>
35	<b>HR701</b>	4 x 25mm <sup>2</sup>	2 x 70mm <sup>2</sup>	50mm <sup>2</sup>	35mm <sup>2</sup>	70mm <sup>2</sup>	4 x 50mm <sup>2</sup>	2 x 95mm <sup>2</sup>
70	<b>HR702</b>	4 x 185mm <sup>2</sup>	2 x 400mm <sup>2</sup> or 4 x 150mm <sup>2</sup>	240mm <sup>2</sup>	35mm <sup>2</sup>	300mm <sup>2</sup>	4 x 240mm <sup>2</sup>	2 x 400 or 4 x 185mm <sup>2</sup>
105	<b>HR703</b>	4 x 500mm <sup>2</sup>	2 x 630mm <sup>2</sup> or 4 x 185mm <sup>2</sup>	300mm <sup>2</sup>	35mm <sup>2</sup>	300mm <sup>2</sup>	4 x 400mm <sup>2</sup>	2 x 400 or 4 x 240mm <sup>2</sup>
140	<b>HR704</b>	4 x 630mm <sup>2</sup>	2 x 630mm <sup>2</sup> or 4 x 240mm <sup>2</sup>	300mm <sup>2</sup>	35mm <sup>2</sup>	300mm <sup>2</sup>	4 x 400mm <sup>2</sup>	2 x 400 or 4 x 240mm <sup>2</sup>
210	<b>HR705</b>	4 x 630mm <sup>2</sup>	2 x 630mm <sup>2</sup> or 4 x 240mm <sup>2</sup>	300mm <sup>2</sup>	35mm <sup>2</sup>	300mm <sup>2</sup>	4 x 400mm <sup>2</sup>	2 x 400 or 4 x 240mm <sup>2</sup>
70 x 175	<b>HR830</b>	4 x 630mm <sup>2</sup>	2 x 630mm <sup>2</sup> or 4 x 240mm <sup>2</sup>	300mm <sup>2</sup>	35mm <sup>2</sup>	300mm <sup>2</sup>	4 x 400mm <sup>2</sup>	2 x 400 or 4 x 240mm <sup>2</sup>
115 x 305	<b>HR831</b>	4 x 630mm <sup>2</sup>	2 x 630mm <sup>2</sup> or 4 x 240mm <sup>2</sup>	300mm <sup>2</sup>	35mm <sup>2</sup>	300mm <sup>2</sup>	4 x 400mm <sup>2</sup>	2 x 400 or 4 x 240mm <sup>2</sup>
150 x 350	<b>HR832</b>	4 x 630mm <sup>2</sup>	2 x 630mm <sup>2</sup> or 4 x 240mm <sup>2</sup>	300mm <sup>2</sup>	35mm <sup>2</sup>	300mm <sup>2</sup>	4 x 400mm <sup>2</sup>	2 x 400 or 4 x 240mm <sup>2</sup>
20 x 30	<b>HR820</b>	4 x 16mm <sup>2</sup>	2 x 70mm <sup>2</sup>	10mm <sup>2</sup>	35mm <sup>2</sup>	16mm <sup>2</sup>	4 x 10mm <sup>2</sup>	2 x 35mm <sup>2</sup>
50 x 80	<b>HR821</b>	4 x 240mm <sup>2</sup>	2 x 630mm <sup>2</sup> or 4 x 185mm <sup>2</sup>	120mm <sup>2</sup>	35mm <sup>2</sup>	150mm <sup>2</sup>	4 x 185mm <sup>2</sup>	2 x 240mm <sup>2</sup>
80 x 80	<b>HR822</b>	4 x 500mm <sup>2</sup>	2 x 630mm <sup>2</sup> or 4 x 185mm <sup>2</sup>	300mm <sup>2</sup>	35mm <sup>2</sup>	300mm <sup>2</sup>	4 x 400mm <sup>2</sup>	2 x 400 or 4 x 240mm <sup>2</sup>
80 x 120	<b>HR823</b>	4 x 630mm <sup>2</sup>	2 x 630mm <sup>2</sup> or 4 x 240mm <sup>2</sup>	300mm <sup>2</sup>	35mm <sup>2</sup>	300mm <sup>2</sup>	4 x 400mm <sup>2</sup>	2 x 400 or 4 x 240mm <sup>2</sup>
80 x 160	<b>HR824</b>	4 x 630mm <sup>2</sup>	2 x 630mm <sup>2</sup> or 4 x 240mm <sup>2</sup>	300mm <sup>2</sup>	35mm <sup>2</sup>	300mm <sup>2</sup>	4 x 400mm <sup>2</sup>	2 x 400 or 4 x 240mm <sup>2</sup>

Frame	x160				x250		
Product	MCS Switch	MCCB			MCS Switch	MCCB	
Reference	HCA	HDA	HHA	HNA	HCB	HHB	HNB
Number of poles	[No.] 3-4	1-2-3-4	1-2-3-4	3-4	3-4		
<b>Electrical characteristics</b>							
Rated current	$I_n$ [A]	160			250		
Current rated range	[A]	125-160	16-125 (1P), 16-160 (2, 3, 4P)		250	100-250	
Rated service voltage, (AC)	$U_e$ [V]	220-440			220-440		
Frequency	F [Hz]	50/60			50/60		
Rated insulation voltage	$U_i$ [V]	690			800		
Rated impulse withstand voltage	$U_{imp}$ [kV]	8			8		
Rated ultimate short-circuit breaking capacity, ( $I_{cu}$ )							
(AC) 50-60 Hz 220/230 V	$I_{cu}$ [kA]	-	25	35	85	-	35
(AC) 50-60 Hz 380/415 V	$I_{cu}$ [kA]	-	18	25	40	-	25
(AC) 50-60 Hz 480/500/525 V	$I_{cu}$ [kA]	-	6	7.5	12.5	-	-
(AC) 50-60 Hz 660/690 V	$I_{cu}$ [kA]	-	-	-	6	-	-
(DC) 250 V - 2 poles in series	$I_{cu}$ [kA]	-	12.5	20	25	-	25
Rated service short-circuit breaking capacity, ( $I_{cs}$ )							
(AC) 50-60 Hz 220/230 V	$I_{cs}$ [kA]	-	25	25	40	-	25
(AC) 50-60 Hz 380/415 V	$I_{cs}$ [kA]	-	18	20	20	-	20
(AC) 50-60 Hz 480/500/525 V	$I_{cs}$ [kA]	-	3	4	7.5	-	-
(AC) 50-60 Hz 660/690 V	$I_{cs}$ [kA]	-	-	-	3	-	-
(DC) 250 V - 2 poles in series	$I_{cs}$ [kA]	-	7	10	13	-	13
Rated short-circuit making capacity	$I_{cm}$ [kA]	2.8	-	-	-	6	-
Rated short-time withstand current for 1s	$I_{cw}$ [kA]	2	-	-	-	3	-
Category of use (EN 60947-2)		-	A	-	-	-	A
Calibration temperature		-	50°C	-	-	-	50°C
Derating 40°C		-	100%	-	-	-	100%
	50°C	-	100%	-	-	-	100%
	55°C	-	95%	-	-	-	94%
	60°C	-	93%	-	-	-	91%
	65°C	-	90%	-	-	-	88%
Suitability for isolation		ok				ok	
Electric endurance in number of cycles		10000				10000	
Mechanical endurance in number of operations		20000				20000	
Operating temperature		-25 to +70°C			-25 to +70°C		
Storage temperature		-35 to +70°C			-35 to +70°C		
Power loss (at $I_n$ for 3P)	[W]	39			60		
Reference standard		IEC 60947-3	IEC 60947-2		IEC 60947-3	IEC 60947-2	
Releases: switch		ok	-		ok	-	
Releases: TM (thermomagnetic)		-	ok		-	ok	
T fixed, M fixed		-	ok (1P)		-	ok	
T adjustable, M fixed		-	ok		-	-	
T adjustable, M adjustable		-	-		-	ok	
Thermal adjustment value		-	0.63 to 1 x $I_n$		-	0.63 to 1 x $I_n$	
Magnetic adjustment value		-	-		-	6-8-10-13 x $I_n$ (200A) 5-7-9-11 $I_n$ (250A)	
Releases: LSI (electronic)		-	-		-	-	
Long delay		-	-		-	-	
Short delay		-	-		-	-	
Time delay		-	-		-	-	
<b>Terminations</b>							
Standard terminal type		cage			lugs		
Maximum terminal capacity		95 mm <sup>2</sup>			185 mm <sup>2</sup> (cage)		
Terminal width	mm	-			25		
Terminal shields		ok			ok		
Cage terminal		integrated			ok		
Extended connections		ok			ok		
Rear connections		no			ok		
<b>Dimensions</b>							
Height	mm	130			165		
Width	1P mm	-	25	-	-	-	-
	2P mm	-	50	-	-	-	-
	3P mm	75			105		
	4P mm	100			140		
Depth	mm	68			68		
Weight	1P kg	-	0.29	-	-	-	-
	2P kg	-	0.48	-	-	-	-
	3P kg	0.715			1.3		
	4P kg	0.95			1.6		

Product Frame	Add-on blocks			
	x160	x160	x160	x250
Number of poles	3, 4	3, 4	3, 4	4
Tripping Access	mechanical	mechanical	mechanical	mechanical
Standards CEI/EN 60947-2 appendix B	✓	✓	✓	✓
<b>Electrical Characteristics</b>				
Max rated current (40) $I_n$ A	$I_n$	125A	125 - 160A	160 - 250A
Rated service voltage $U_e$ V AC (50/60Hz)	$U_e$	240 - 415V	240 - 415V	240 - 415V
<b>Mechanical Characteristics</b>				
Top and bottom supply		✓	✓	✓
For tripping, no additional external electrical sources		✓	✓	✓
Possible operating with two active phases		✓	✓	✓
<b>Settings</b>				
Sensitivity $I_{\Delta n}$	$I_{\Delta n}$ (A)	300mA	0.03, 0.1, 0.3, 1, 3, 6A	0.03, 0.1, 0.3, 1, 3, 6A
Time delay $\Delta t$	$\Delta t$ (s)	inst.	inst., 0.06, 0.15, 0.3, 0.5, 1	inst., 0.06, 0.15, 0.3, 0.5, 1
Max. opening time	ms	10	10	10
Delay add-on block is not possible if $I_{\Delta n} = 30mA$		-	✓	✓
Selective product		-	✓	✓
Mechanical test button		✓	✓	✓
Isolating test without cable removal		✓	✓	✓
Electrical test button		✓	✓	✓
Reset button		✓	✓	✓
Sealable setting button		-	✓	✓
Isolation level signaling by led 25 and 50%		-	✓	✓
$I_n$ running signalisation by led		-	✓	✓
Residual default signaling contact		✓	✓	✓
Signaling contact 50% $I_{dn}$		-	✓	✓
Anti-transient	type AC	✓	✓	✓
Pulsating DC current	type A	✓	✓	✓
High immunity	type HI	✓	✓	✓
-25°C		✓	✓	✓
<b>Accessories and connection</b>				
Steel terminal cage (x3/x4)		✓	✓	accessories
Connection by lugs		-	-	✓
Extended connections (x4)		✓	✓	✓
Spreaders (x4)		✓	✓	✓
Terminal covers (3P/4P)		-	-	✓
Interphase barriers (x3)		✓	✓	✓
Rigid cables connection capacity mm <sup>2</sup>		4 - 95	4 - 95	35 - 185
Flexible cables connection capacity mm <sup>2</sup>	(with terminal)	4 - 70	4 - 70	35 - 150
Tightening torque Nm		6	6	12
Copper bar (width) in mm		-	-	25
<b>Mounting</b>				
Clips on DIN rail		✓	✓	-
Fixed on mounting plate		-	-	✓
Fixation type		side	side	bottom
Mounting by customer		✓	✓	✓
<b>Dimensions and weight</b>				
Dimensions (WxHxD) in mm Side mounted 4P	W	100	100	140
	H	165	165	107.5
	D	95	95	85
Weight	3P	1.4	1.4	-
	4P	1.55	1.55	1.2



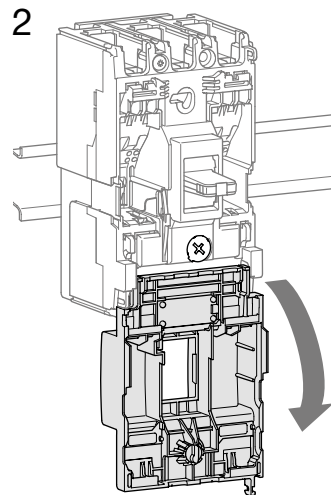
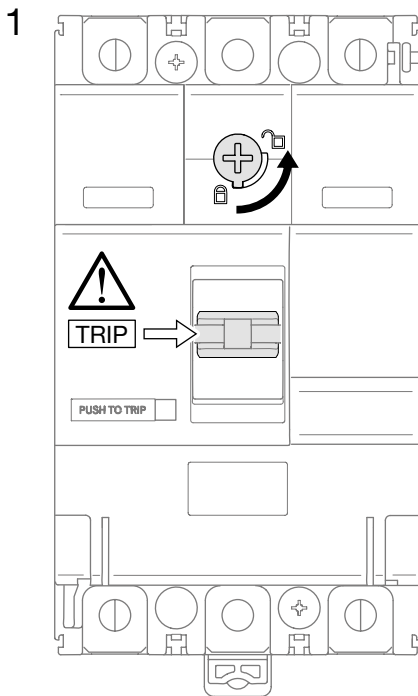
MCCBs



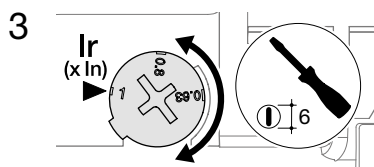
		220/240V AC IEC 60 947-2	380/415V AC IEC 60 947-2
<b>HDA</b>	$I_{cu}$	25 kA	18 kA
	$I_{cs}$	25 kA	18 kA
<b>HHA</b>	$I_{cu}$	35 kA	25 kA
	$I_{cs}$	25 kA	20 kA
<b>HCA</b>	$I_{cm}$	-	2.8 kA
	$I_{cw}$	-	2 kA - 1s

Commercial  
Distribution

Thermal settings



For DIN rail mounting, use **HYA033H**.



Thermal adjustment from 0.63 to  $1 \times I_n$

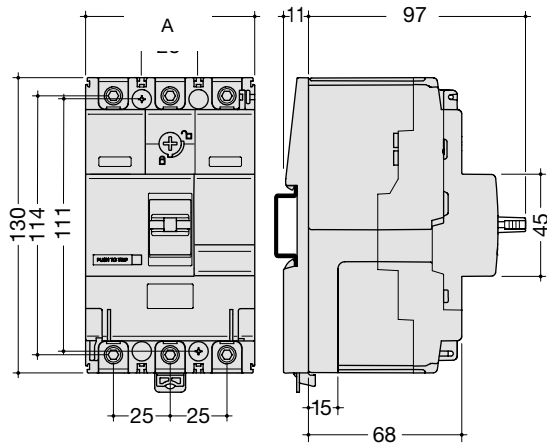
Magnetic adjustment fixed  $> 10 \times I_n$

$I_n$	16 - 50 A	63 - 80 A	100 - 125 A	160 A
$I_{mag}$	600 A	1000 A	1500 A	1600 A

Dimensions

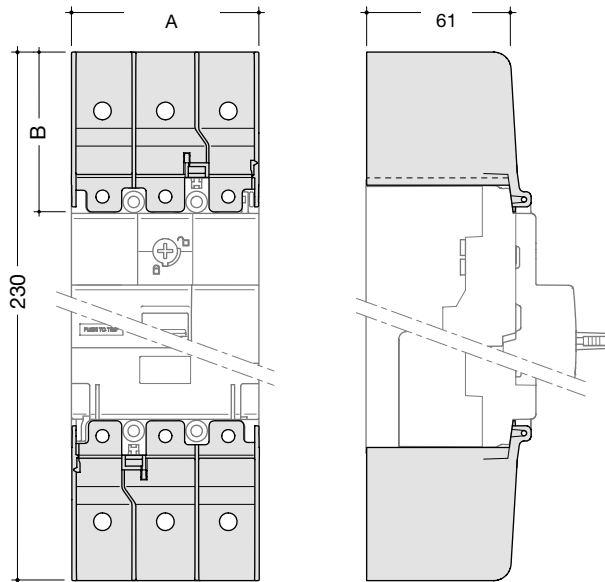
MCCB x160

Commercial  
Distribution



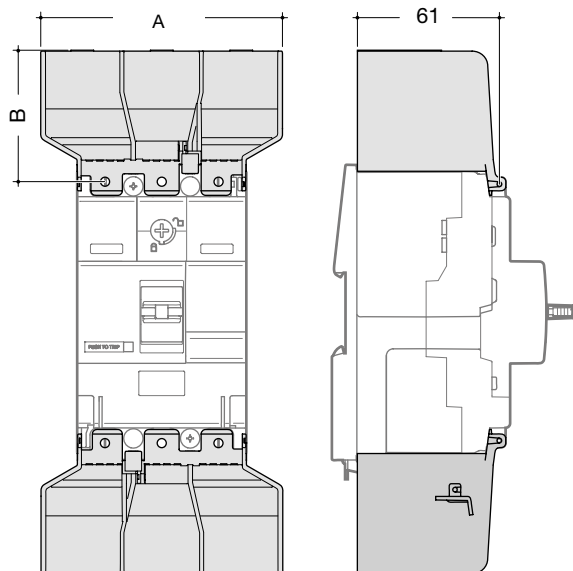
	A (mm)
1P	24.8
3P	74.5
4P	99.5

Terminal covers for extended straight connections



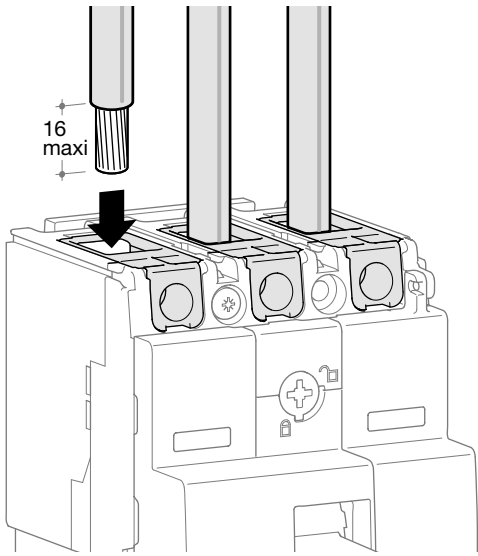
	A (mm)
1P	24.4
3P	74.5
4P	99.5

Terminal cover for extended spreader connections



	A (mm)
3P	106.5
4P	141.5

Connection with terminals



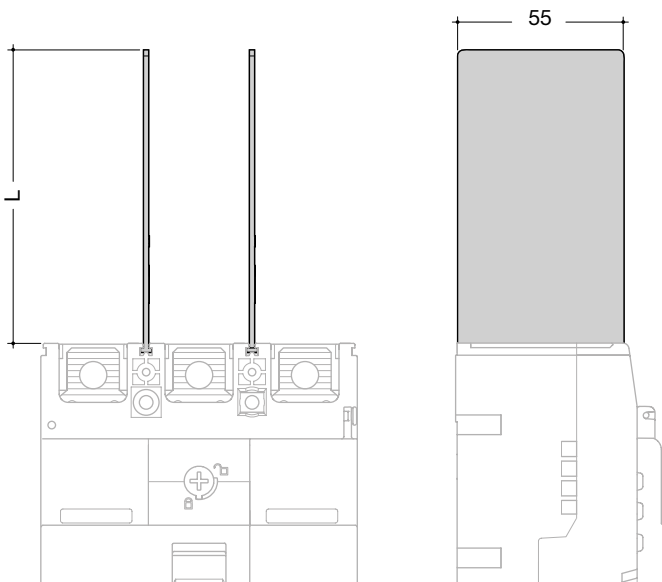
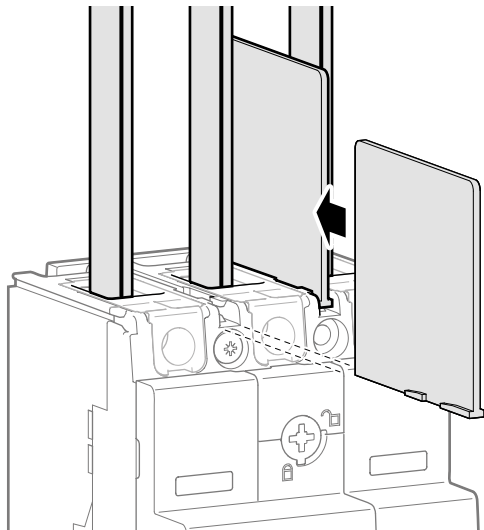
Terminals for copper conductors (standard)

	min. 6 mm <sup>2</sup>	max. 70 mm <sup>2</sup>
	min. 6 mm <sup>2</sup>	max. 95 mm <sup>2</sup>
	6 Nm	

Terminals for aluminium / copper conductors (accessory)  
**HYA005H, HYA006H**

	min. 35 mm <sup>2</sup>	max. 70 mm <sup>2</sup>
	10 Nm	

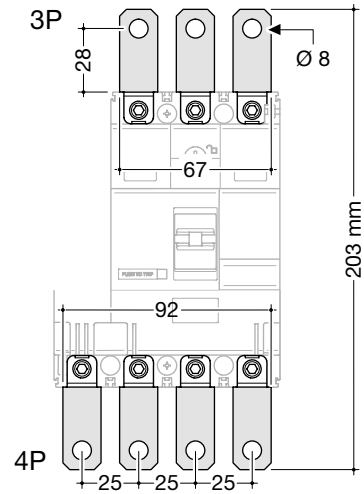
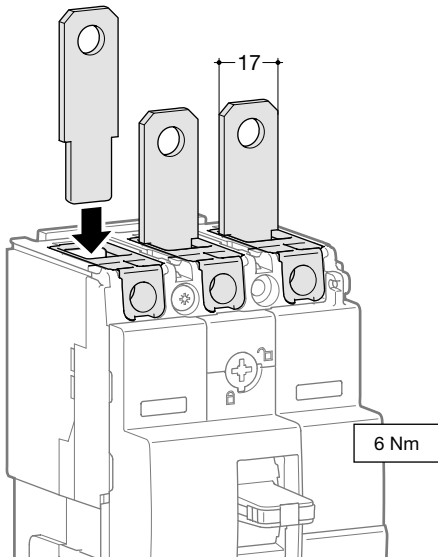
Interphase barriers



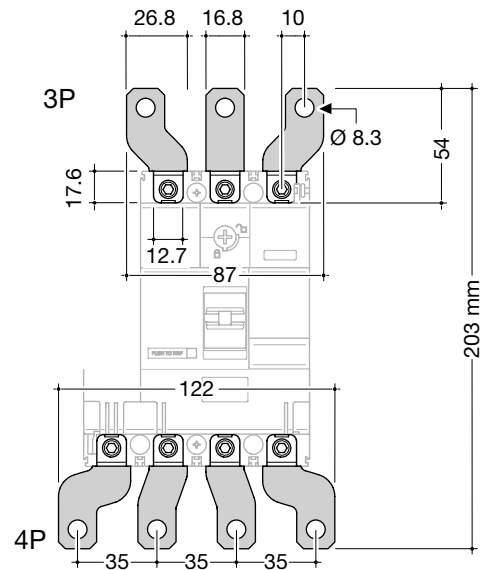
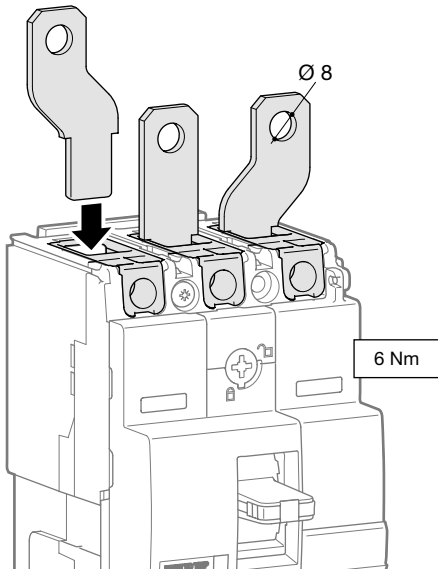
	L (mm)
<b>HYA019H</b>	50
<b>HYB019H</b>	97

Extended straight connections

Commercial  
Distribution

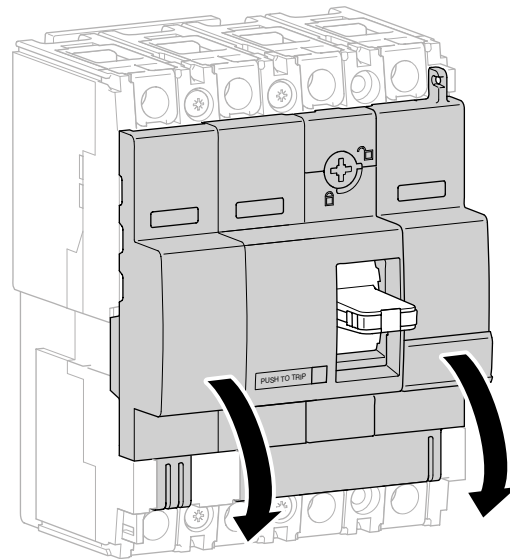
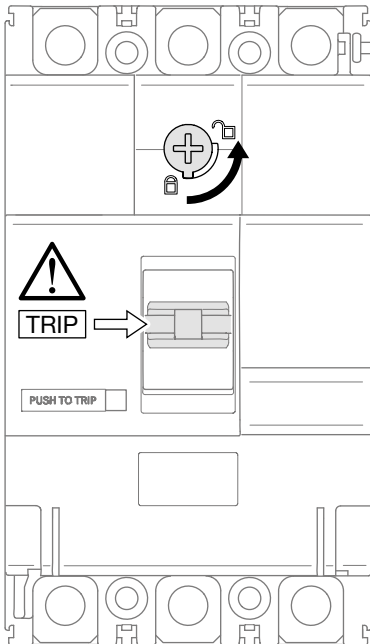


Extended spreader connections



Auxiliaries

Auxiliaries for MCCBs and moulded case switches

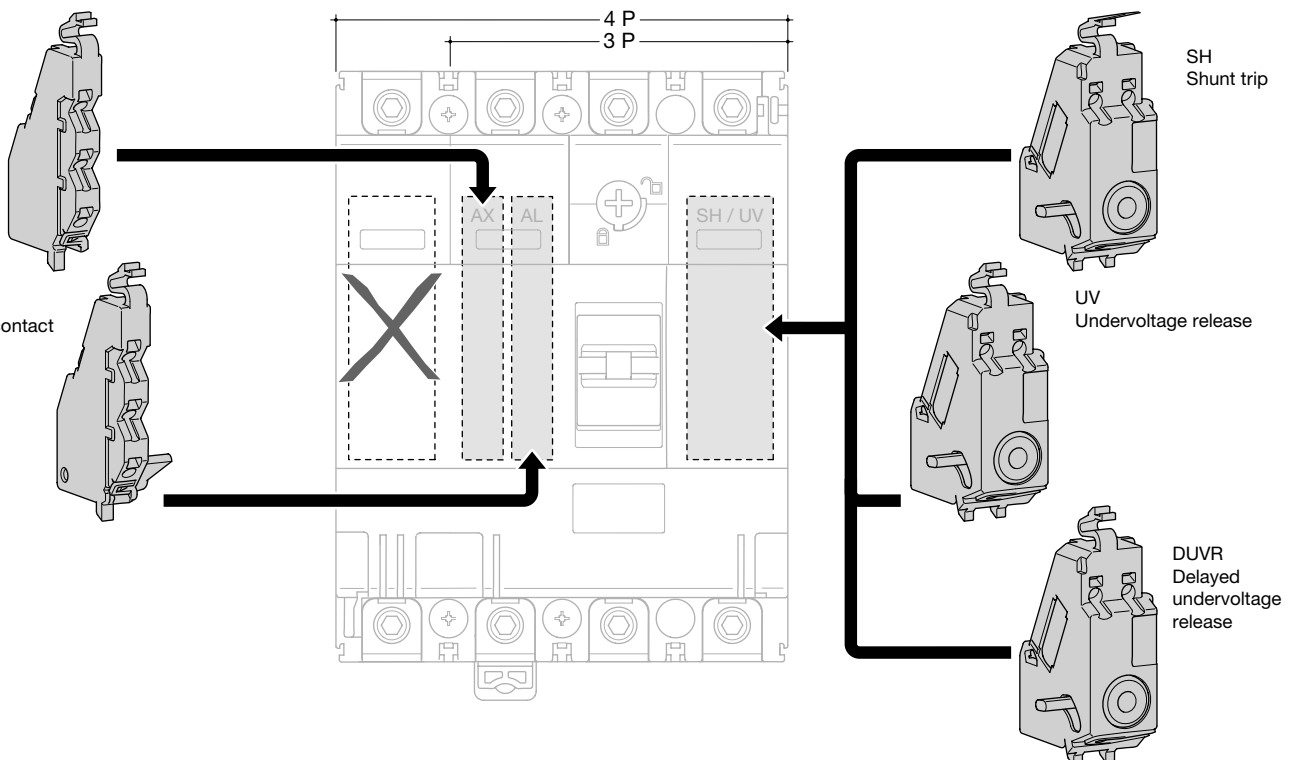


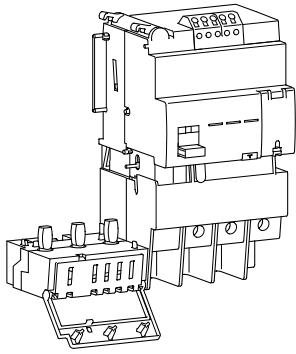
Commercial  
Distribution

Mounting combination for auxiliaries and releases

AX  
Auxiliary contact

AL  
Alarm contact





When associated with MCCB, the add-on block provides an earth fault protection and protects against electrical shocks by direct or indirect contact.

The add-on blocks are protected against nuisance tripping caused by transient voltages. It's able to detect sinusoidal alternating currents and residual pulsating direct currents (A type ). It also avoids miss tripping (HI type - High Immunity).

### Characteristics

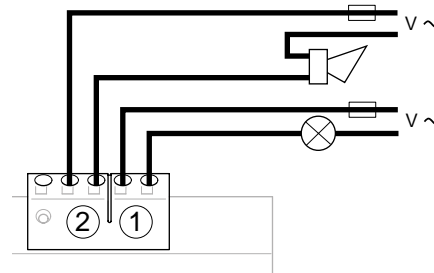
**Reset button :**  
Signals add-on block tripping and must be reset before switching on the installation.

**Test button for RCD function :**  
Checks the electrical operating of the MCCB / Add-on block association.

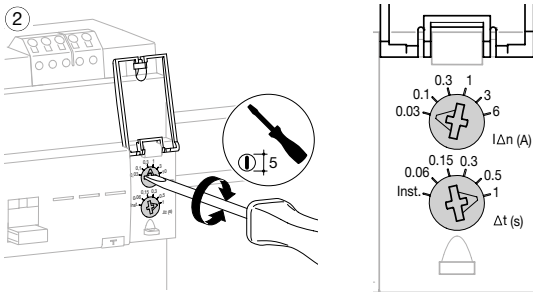
**Mechanical test button :**  
Checks the mechanical operating of the MCCB / Add-on block association.

**LED signaling residual current level in the installation:**  
25% (orange) and 50% (red)  $I_{\Delta n}$ ; green light to signal correct operating.

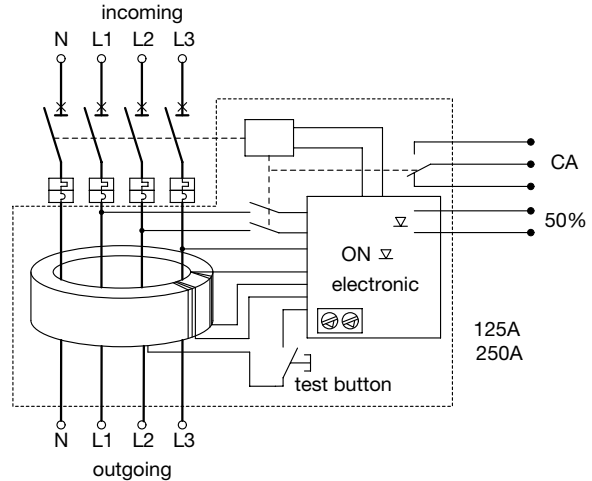
**Remote tripping and advanced warning (50%  $I_{\Delta n}$ ) signaling thanks to these contacts:**



### Earth leakage current ( $I_{\Delta n}$ ) and delay ( $\Delta t$ ) setting

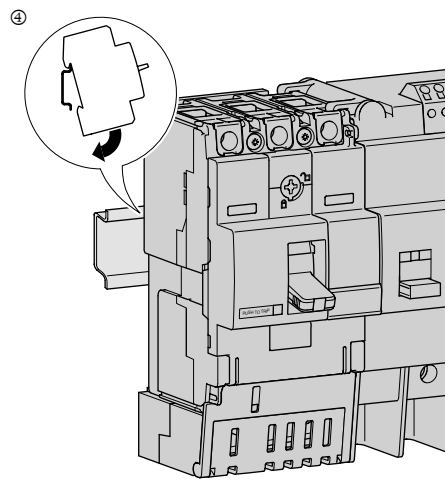
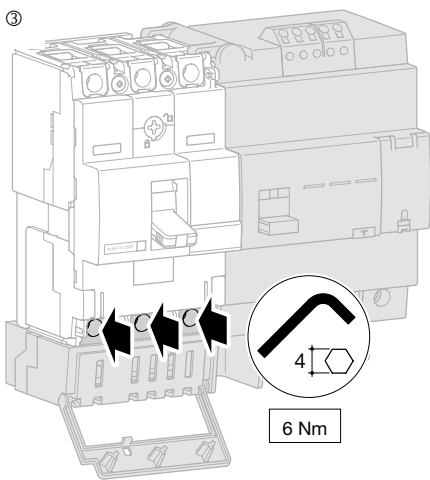
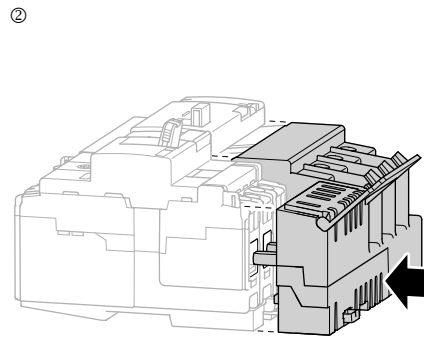
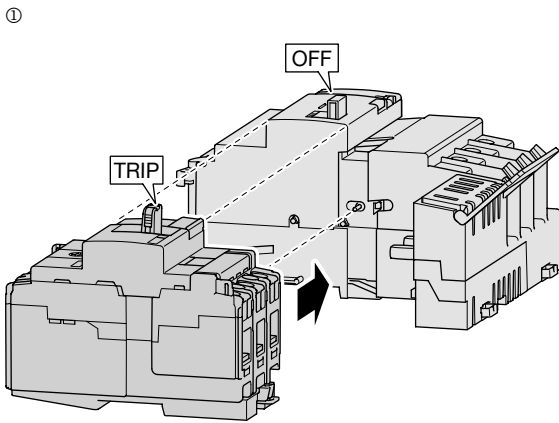


### Add-on block operating



		A ( $I_{\Delta n}$ )					
		0.03	0.1	0.3	1	3	6
( $I_{\Delta n}$ ) S	Inst.	OK	OK	OK	OK	OK	OK
	0.06	no	OK	OK	OK	OK	OK
	0.15	no	OK	OK	OK	OK	OK
	0.3	no	OK	OK	OK	OK	OK
	0.5	no	OK	OK	OK	OK	OK
	1	no	OK	OK	OK	OK	OK

Add-on block mounting

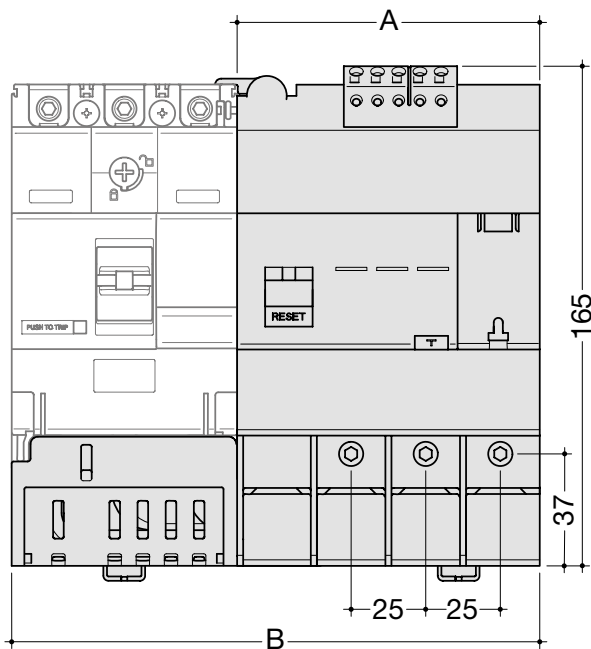


Exclusive drawer assembly system allows quick mounting and makes MCCB and add-on block association a complete monoblock unit.

Reinforced insulation connection (class II)

System avoids the omission of terminal tightening

Dimensions

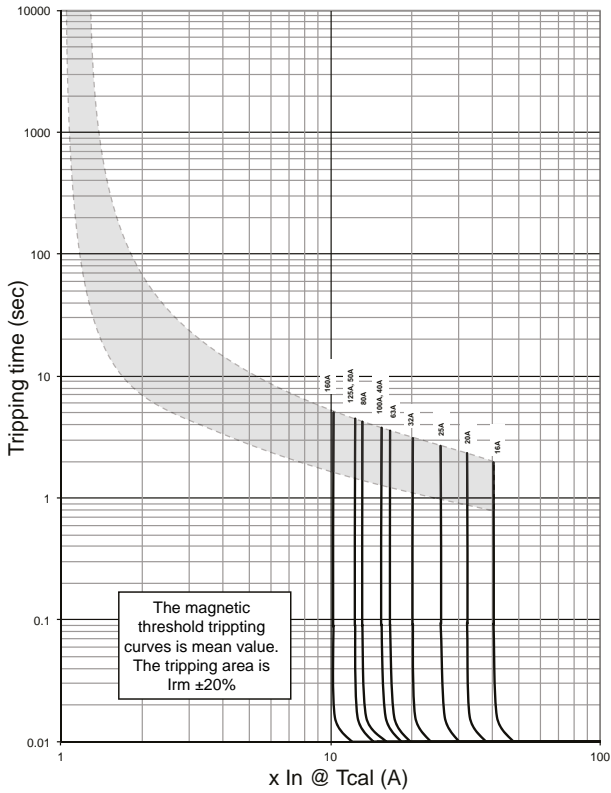


	3P	4P
A (mm)	100	100
B (mm)	174.5	199.5

Tripping curve

MCCB x160

Commercial Distribution



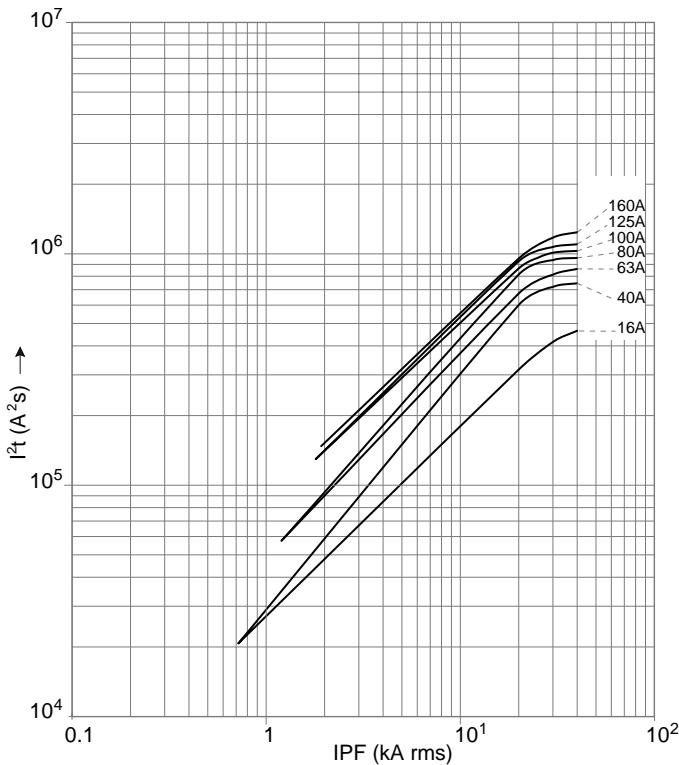
The earth fault loop impedance requirements for larger devices can be calculated by the formula given in BS7671:2008

$$Z_s \leq 230 \times C_{min}$$

Where  $I_a = I_n$  of MCCB x Mag setting x 1.2

Thermal constraint curve at 400V (Let-through energy)

MCCB x160



MCCB Disconnection Data

Earth Fault Loop Impedance Data

Disconnection time 0.2s, 0.4s, 1s

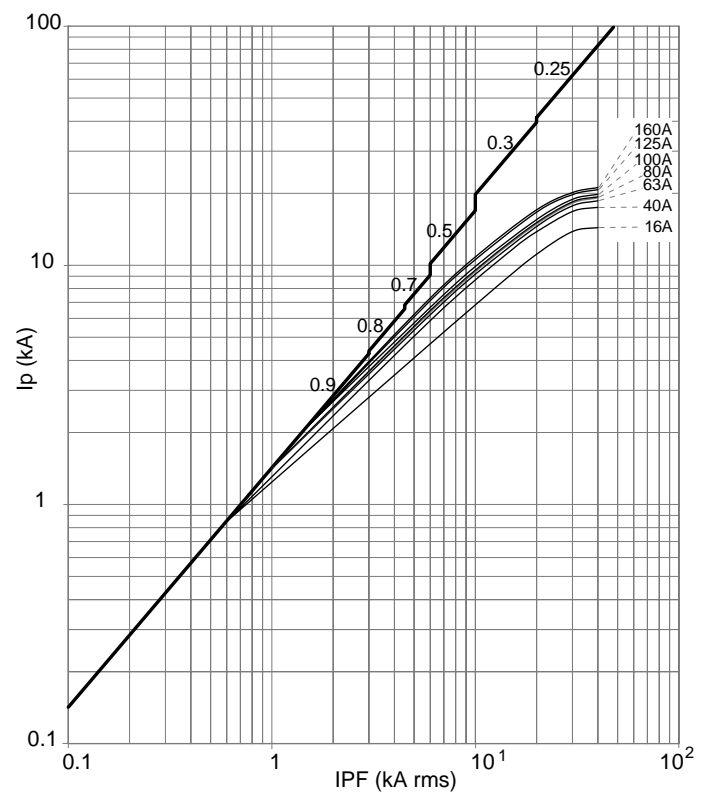
Device rating (A)	Instantaneous trip ( $xI_n$ )	Instantaneous trip (A)	add 20% tolerance ( $I_a$ )	$Z_s = (230 \times 0.95) / I_a$
16	40.3	644.8	773.8	0.28
20	32.2	644.0	773	0.28
25	25.7	643	771	0.28
32	20.13	644.2	773.0	0.28
40	15.0	600.0	720.0	0.30
50	12.0	600.0	720.0	0.30
63	16.6	1045.8	1255.0	0.17
80	13.1	1048.0	1258	0.17
100	15.4	1540.0	1848.0	0.12
126	12.3	1538	1845.0	0.12
160	10.22	1635.2	1962.2	0.11

Disconnection time 5s

Device rating (A)	trip ( $xI_n$ )	$I_a$ (A)	$Z_s = (230 \times 0.95) / I_a$
16	10	160	1.37
20	10	200	1.09
25	10	250	0.87
32	10	320	0.68
40	10	400	0.55
50	10	500	0.44
63	10	630	0.35
80	10	800	0.27
100	10	1000	0.22
125	10	1250	0.17
160	10	1600	0.14

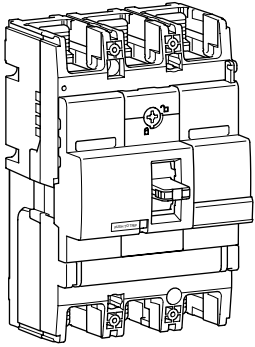
Current limiting curve at 400V (Let-through peak current)

MCCB x160





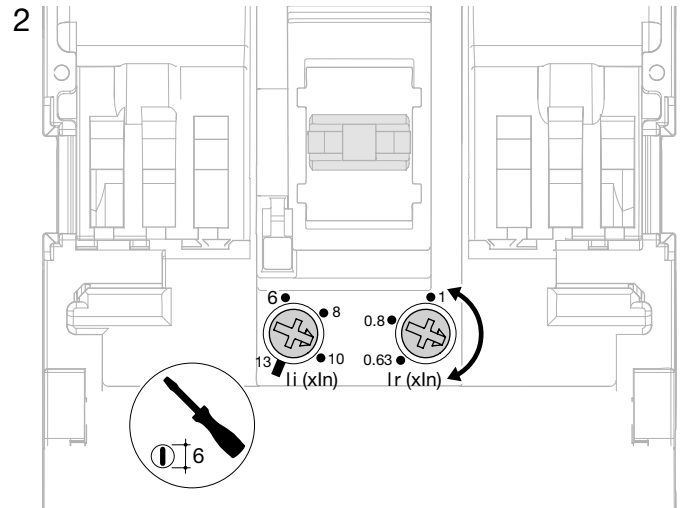
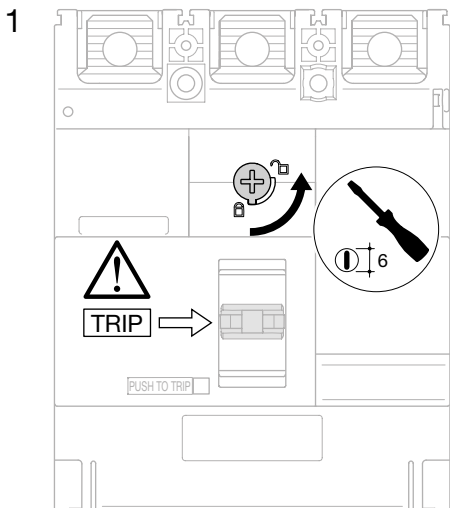
### MCCBs



		220/240V AC IEC 60 947-2	380/415V AC IEC 60 947-2
<b>HHB</b>	l <sub>cu</sub>	35 kA	25 kA
	l <sub>cs</sub>	25 kA	20 kA
<b>HNB</b>	l <sub>cu</sub>	85 kA	40 kA
	l <sub>cs</sub>	40 kA	20 kA
<b>HCB</b>	l <sub>cm</sub>	-	9 kA
	l <sub>cw</sub>	-	3 kA - 1s

Commercial Distribution

### Magnetic and thermal settings

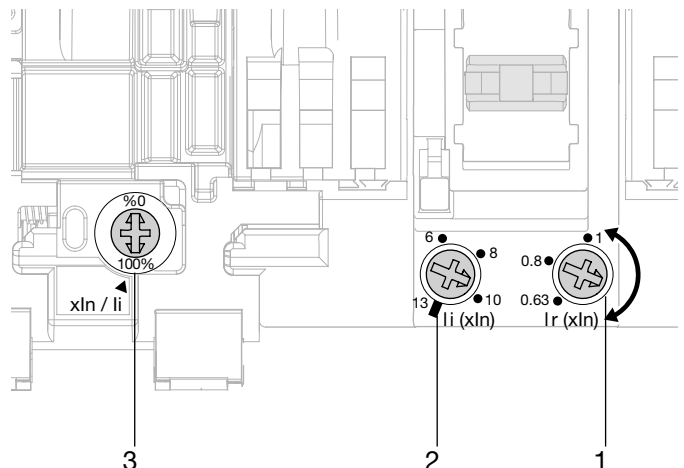


Thermal adjustment from 0.63, 0.8, 1 x I<sub>n</sub>

Magnetic adjustment from 6 to 13 x I<sub>n</sub> (100 - 200A)

from 5 to 11 x I<sub>n</sub> (250A)

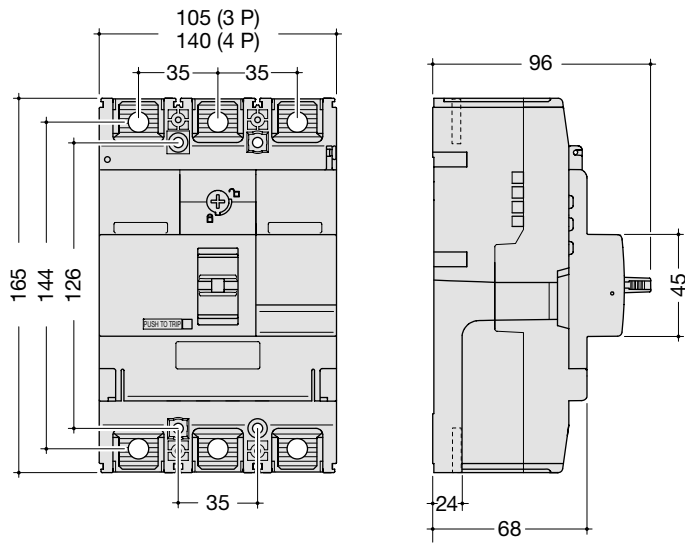
	100 - 200A	250A
I <sub>r</sub> (x I <sub>n</sub> ) 1	0.63 - 0.8 - 1 x I <sub>n</sub>	
I <sub>i</sub> (x I <sub>n</sub> ) 2	6 - 8 - 10 - 13 x I <sub>n</sub>	5 - 7 - 9 - 11 x I <sub>n</sub>
x I <sub>n</sub> /I <sub>i</sub> 3	0 - 100%	
	0 - 60%	



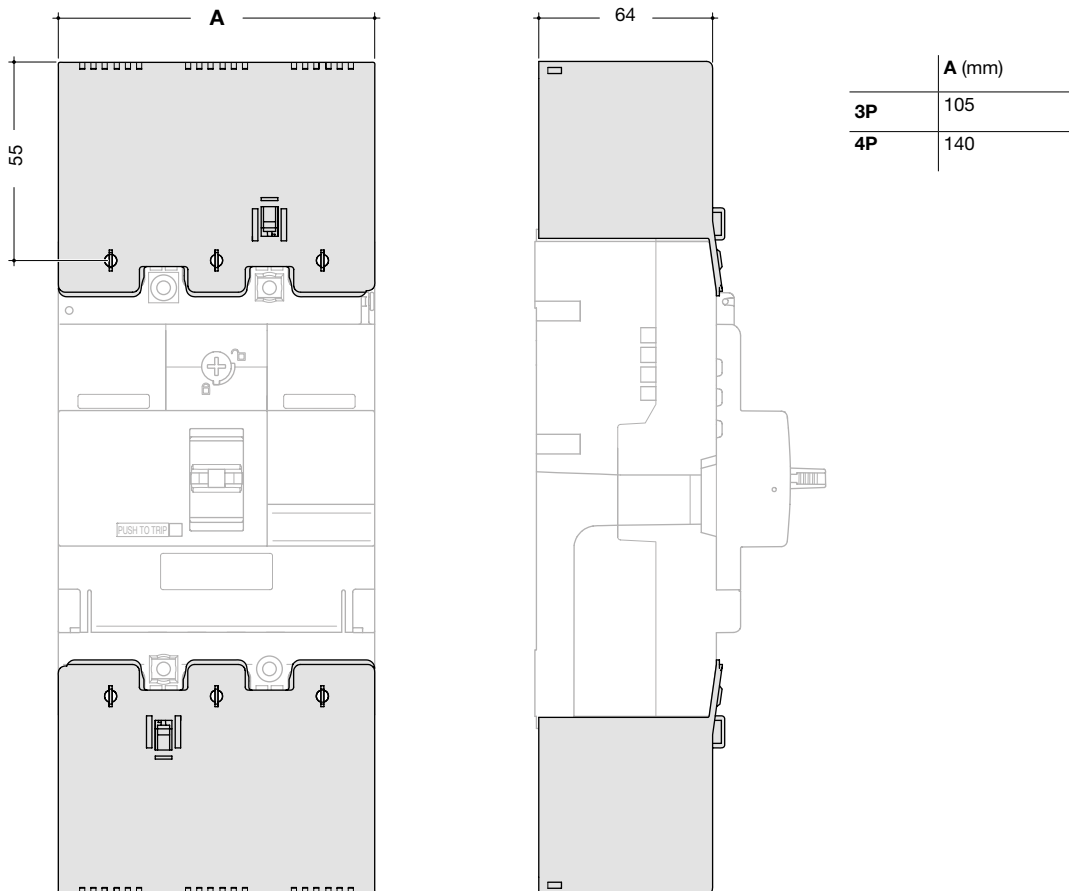
Dimensions

MCCB x250

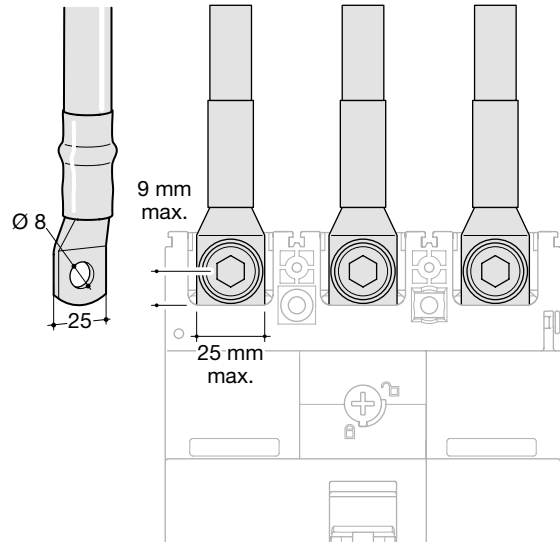
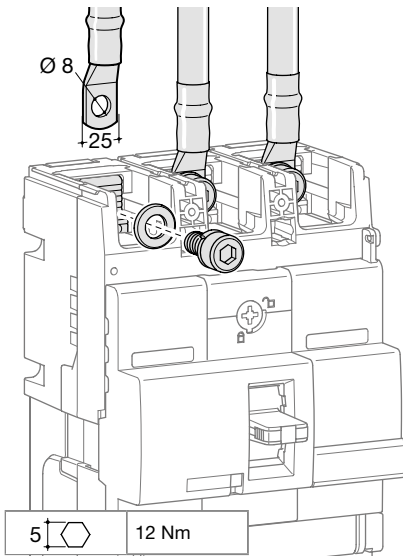
Commercial  
 Distribution



Terminal covers for extended straight connections

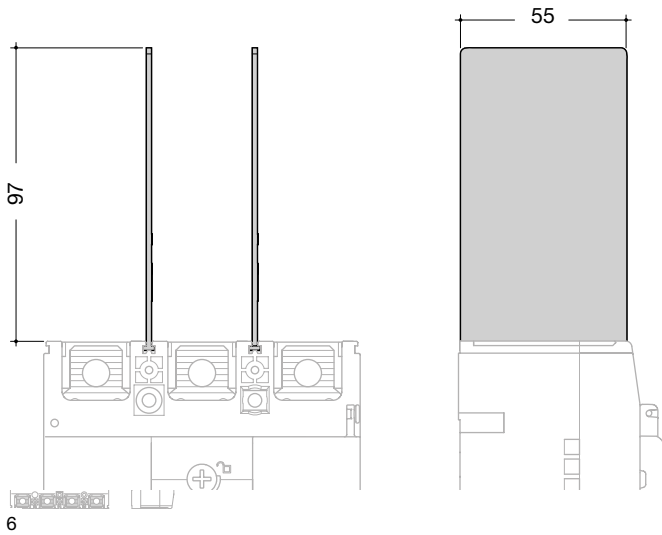


Connection with end lugs



Commercial  
Distribution

Interphase barriers

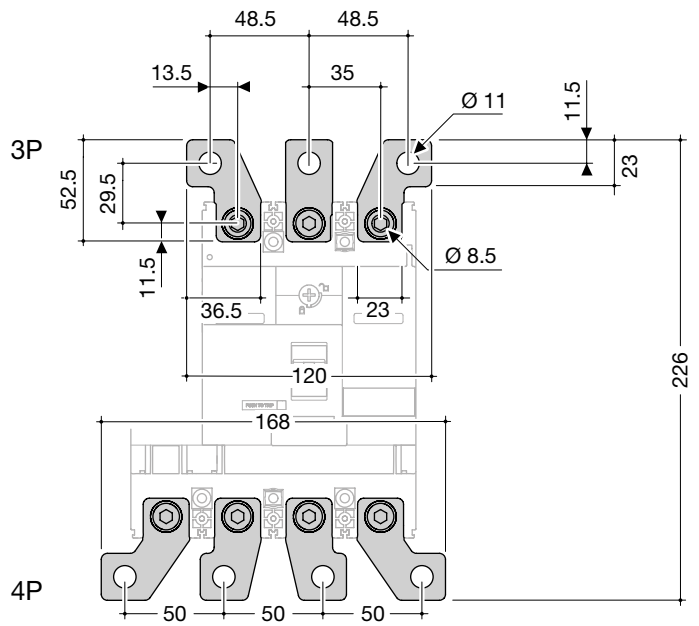
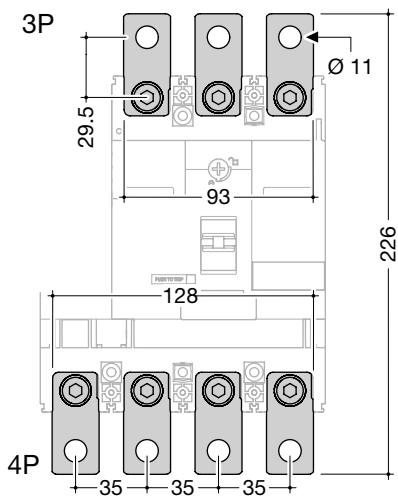
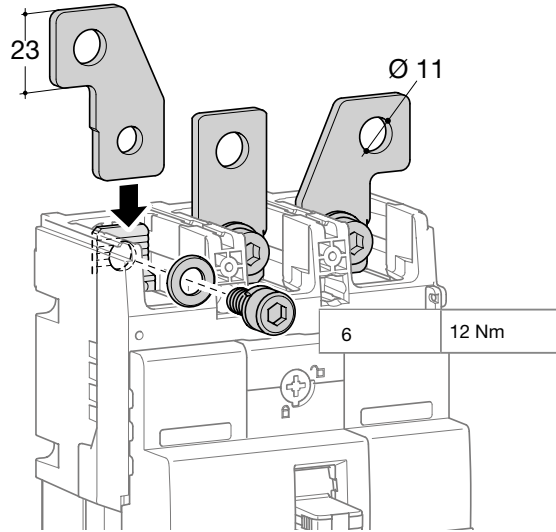
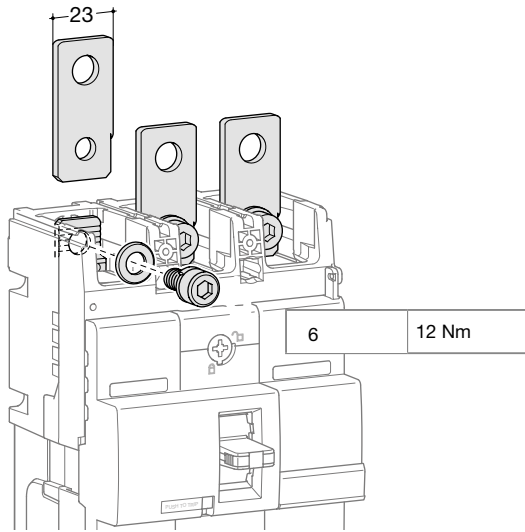


6

Connection

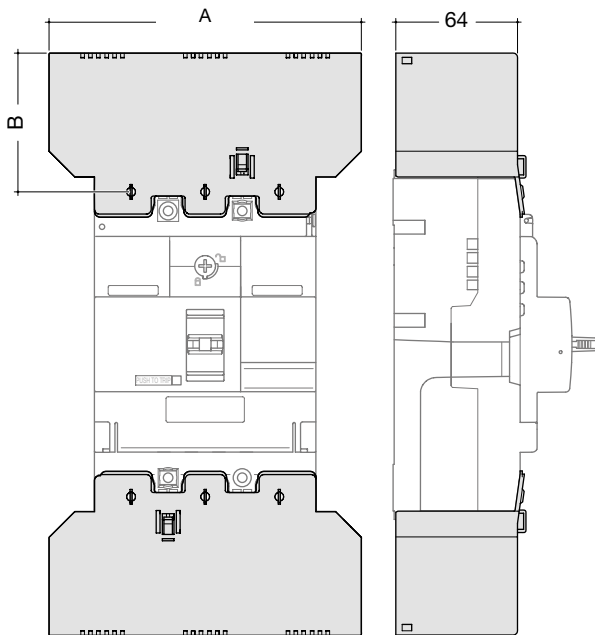
Extended straight and spreader connections

Commercial  
 Distribution



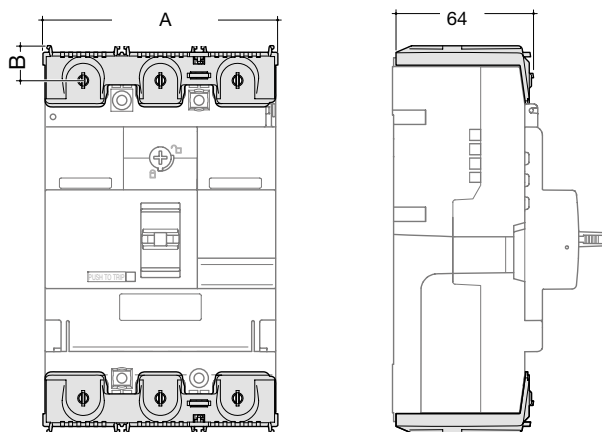
Accessories

Terminal cover for extended spreader connections



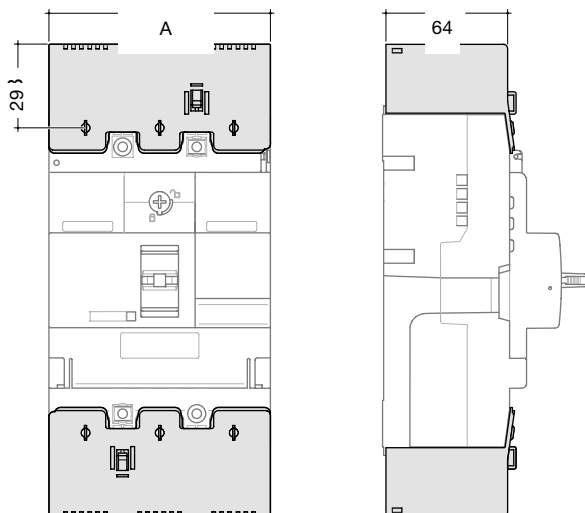
	A (mm)	B (mm)	C (mm)
3P	147.5	54.5	64
4P	196	54.5	64

Terminal cover for rear connections



	A (mm)
3P	105
4P	140

Terminal covers for collar terminals

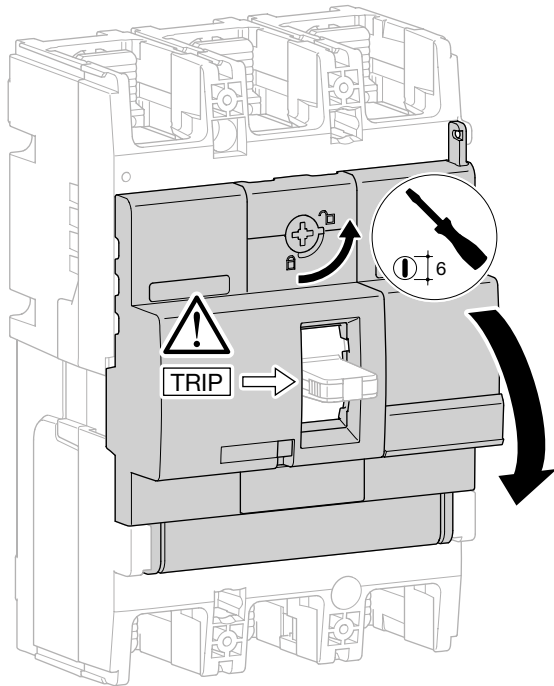


	A (mm)
3P	105
4P	140

Auxiliaries

Auxiliaries for MCCBs and moulded case switches

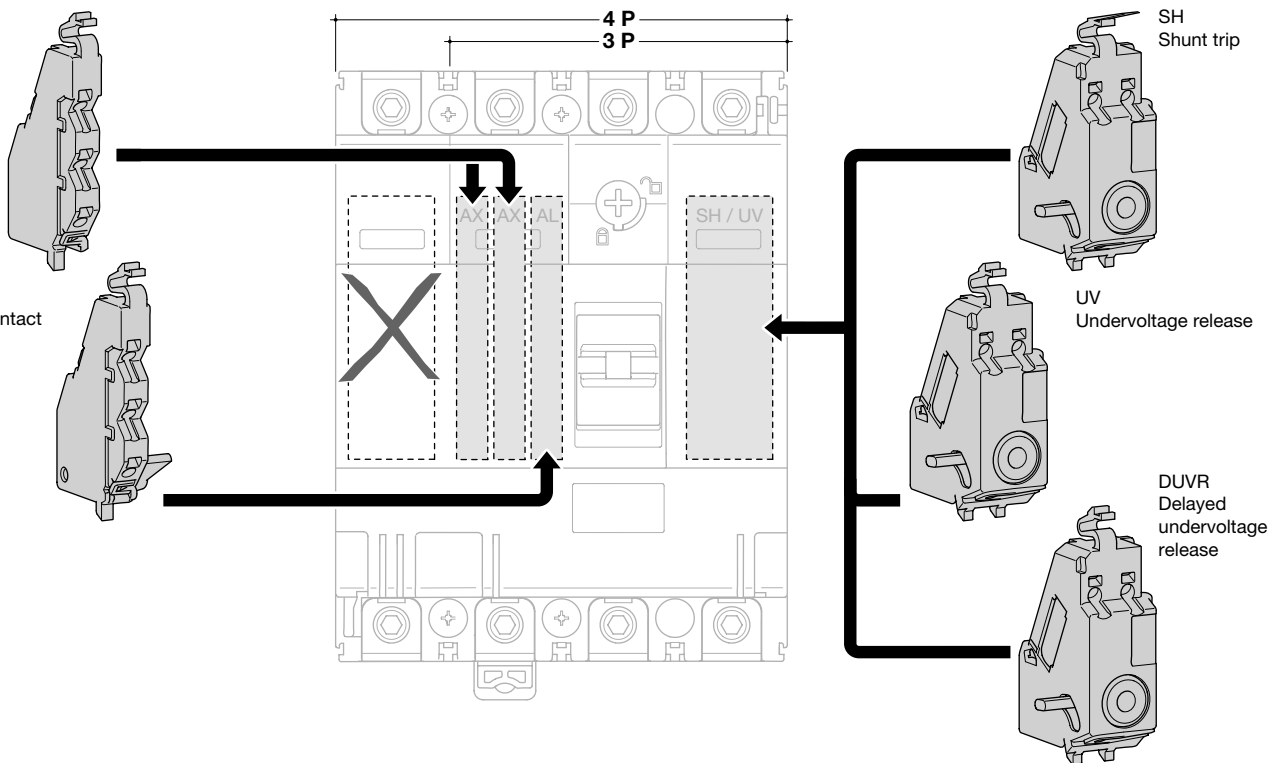
Commercial  
Distribution



Mounting combination for auxiliaries and releases

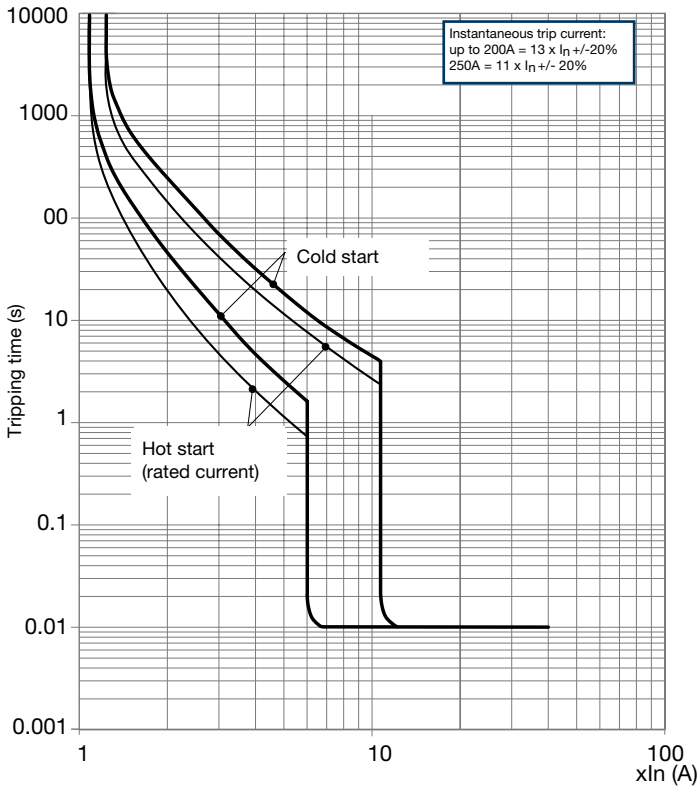
AX  
Auxiliary contact

AL  
Alarm contact



Tripping curve

MCCB x250

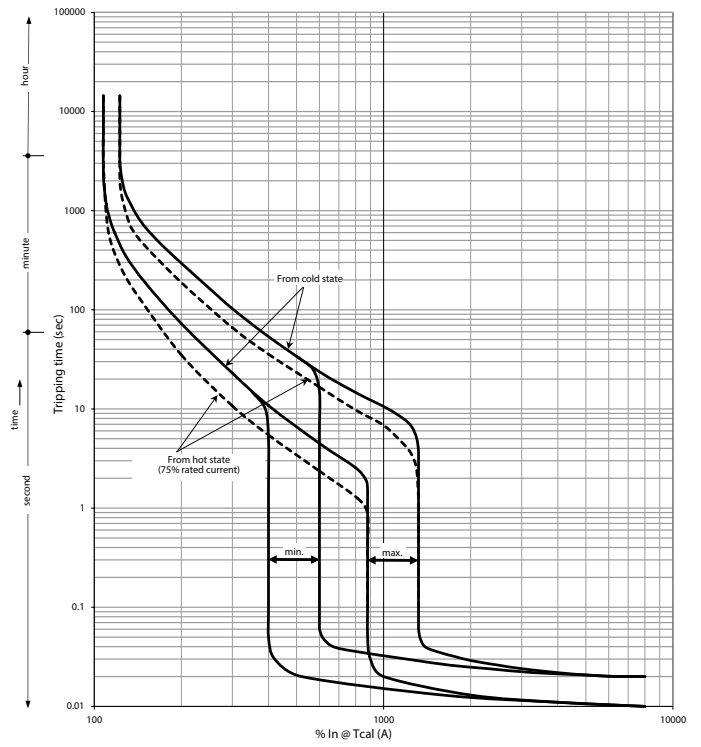


Earth fault loop impedance ( $Z_s$ ) can be calculated from the formula  $Z_s \leq \frac{230}{I_a} \times 0.95$

Where  $I_a = I_n$  of MCCB x mag setting x 1.2

Tripping curve

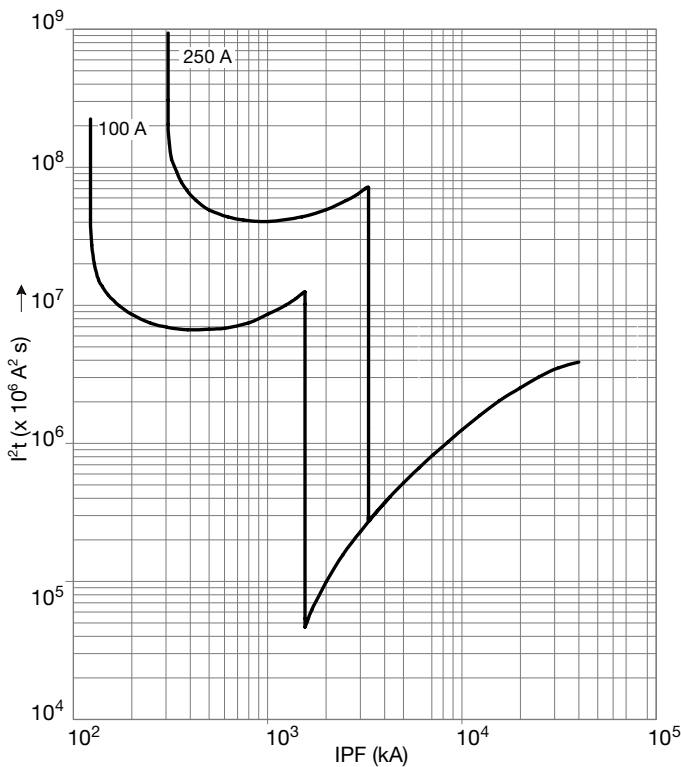
MCCB h250 TM



Commercial Distribution

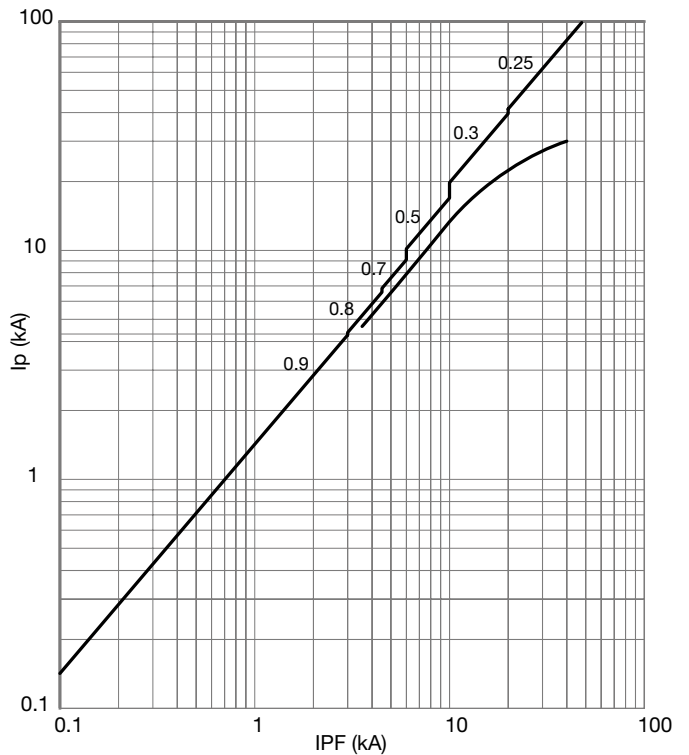
Thermal constraint curve at 400V (Let-through energy)

MCCB x250



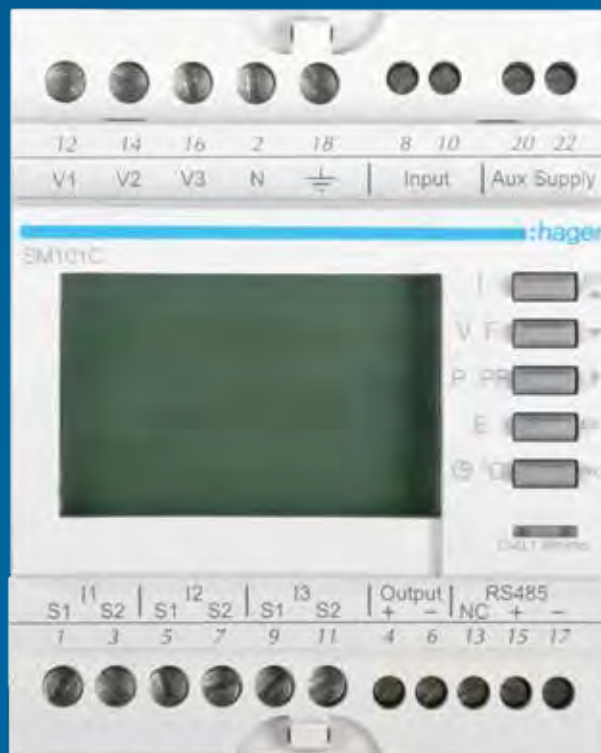
Current limiting curve at 400V (Let-through peak current)

MCCB x250



# Modular Devices & Enclosures

Dimmers, time switches, meters and thermostats are among our varied range of devices, and they can all be perfectly housed in our expansive range of enclosures to tailor a building's energy to an individual's style. It's just like a home, miniaturised.





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Enclosures	
DIN Rail Enclosures	2.3
IP40 Enclosures	2.6
IP55 Enclosures	2.7
IP65 Enclosures	2.8
Enclosure Accessories	2.10
Devices	
Metering & Monitoring	2.13
Switching	2.22
Relays & Contactors	2.26
Push Buttons	2.28
Indication	2.29
Timers	2.31
Heating	2.34
Technical Pages	2.35

The relevant part of the BS EN 61439 series applies to the integration of mechanical and electrical components (switching devices, control devices, busbars, functional units, etc.), into an enclosure. Hager systems such as consumer unit, distribution board and panel board ranges are certified to the appropriate part of the BS EN 61439 series. When selecting other device / enclosure arrangements, please contact Hager technical support for guidance - 01952 675689.

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VM004

### DIN Rail Enclosure - Design 30

**Characteristics:**

- Metal DIN rail enclosures, 1 row from 4 to 22 modules.
- Design 30 enclosures come supplied with a full metal DIN rail, full complement of earth and neutral terminals along with marking labels, instructions & cable protector plate for rear knockouts.
- Optional health & safety padlock bracket & keylock available (see page: 4.11).
- Conforms to BS EN 62208.
- For dimensions see page 2.35.

Description	Size	Cat ref.	Cat ref. with Knockouts
4 Module DIN Rail Enclosure	2	<b>VM004</b>	<b>VM004K</b>
8 Module DIN Rail Enclosure	3	<b>VM008</b>	<b>VM008K</b>
12 Module DIN Rail Enclosure	4	<b>VM012</b>	<b>VM012K</b>
16 Module DIN Rail Enclosure	5	<b>VM016</b>	<b>VM016K</b>
18 Module DIN Rail Enclosure	6	<b>VM018</b>	<b>VM018K</b>
22 Module DIN Rail Enclosure	7	<b>VM022</b>	<b>VM022K</b>



VML004

### DIN Rail Enclosure - Design 10

**Characteristics:**

- Metal DIN rail enclosures, 1 row from 4 to 22 modules.
- Design 10 enclosures come supplied with a full metal DIN rail, full complement of earth and neutral terminals along with marking labels & instructions.
- Conforms to BS EN 62208.
- For dimensions see page 2.35.

Description	Size	Cat ref.
4 Module DIN Rail Enclosure	2	<b>VML004</b>
8 Module DIN Rail Enclosure	3	<b>VML008</b>
12 Module DIN Rail Enclosure	4	<b>VML012</b>
16 Module DIN Rail Enclosure	5	<b>VML016</b>
18 Module DIN Rail Enclosure	6	<b>VML018</b>
22 Module DIN Rail Enclosure	7	<b>VML022</b>



GD102E

### Mini Gamma

**Characteristics:**

- Insulated enclosures 1 row from 2 to 10 modules.
  - Surface mounted enclosures with a rigid chassis, housing a DIN rail, IP30 Rated.
  - Supplied with earth terminals (except **GD102E**), marking labels and sealing grommets.
- Options:** Keylock, plain or transparent door, terminals and terminal supports.
- For dimensions see page 2.36.

Description	Cat ref.
2 Modules Empty Enclosure	<b>GD102E</b>
4 Modules E: 2 x 16mm <sup>2</sup> + 2 x 10mm <sup>2</sup> (capacity to fit an additional 4 hole terminal bar on existing support)	<b>GD104E</b>
6 Modules E: 2 x 16mm <sup>2</sup> + 2 x 10mm <sup>2</sup> (capacity to fit an additional two 4 hole terminal bars or one 7 hole terminal bar on existing support)	<b>GD106E</b>
8 Modules E: 3 x 16mm <sup>2</sup> + 4 x 10mm <sup>2</sup> (capacity to fit an additional two 4 hole terminal bars or one 7 hole terminal bar on existing support)	<b>GD108E</b>
10 Modules E: 3 x 16mm <sup>2</sup> + 4 x 10mm <sup>2</sup> (capacity to fit an additional three 4 hole terminal bars or two 7 hole terminal bars on existing support)	<b>GD110E</b>



GD106E

**Mini Gamma Plain Doors**

**Characteristics:**

- Plain door with integrated handle (use of door increases IP rating to IP40).

Description	Cat ref.
Plain Door for <b>GD102E</b>	<b>GP102P</b>
Plain Door for <b>GD104E</b>	<b>GP104P</b>
Plain Door for <b>GD106E</b>	<b>GP106P</b>
Plain Door for <b>GD108E</b>	<b>GP108P</b>
Plain Door for <b>GD110E</b>	<b>GP110P</b>



GP108P

**Mini Gamma Transparent Doors**

**Characteristics:**

- Transparent door with integrated handle (use of door increases IP rating to IP40).

Description	Cat ref.
Transparent Door for <b>GD102E</b>	<b>GP102T</b>
Transparent Door for <b>GD104E</b>	<b>GP104T</b>
Transparent Door for <b>GD106E</b>	<b>GP106T</b>
Transparent Door for <b>GD108E</b>	<b>GP108T</b>
Transparent Door for <b>GD110E</b>	<b>GP110T</b>



GP110T

**Terminal Support**

**Characteristics:**

- Terminals not included.

Description	Cat ref.
Terminal Support for <b>GD104E</b>	<b>GZ104S</b>
Terminal Support for <b>GD106E</b>	<b>GZ106S</b>
Terminal Support for <b>GD108E</b>	<b>GZ108S</b>
Terminal Support for <b>GD110E</b>	<b>GZ110S</b>



GZ108S

**Terminals (63A Rating)**

Cable Capacity	Cat ref. Neutral (Blue)	Cat ref. Earth (Green)
Cable Capacity: 2 x 16mm <sup>2</sup> + 2 x 10mm <sup>2</sup>	<b>GZ04N</b>	<b>GZ04E</b>
Cable Capacity: 3 x 16mm <sup>2</sup> + 4 x 10mm <sup>2</sup>	<b>GZ07N</b>	<b>GZ07E</b>



GZ04E

**Keylock**

Description	Cat ref.
Keylock for Plain or Transparent Door	<b>VZ313</b>



VZ313



IU41

## IU Enclosures

### Characteristics:

- 1 row boxes 1-5 modules.
- Ideally suited for the installation of individual modular devices. (RCCBs, MCBs, RCBOs, switch disconnectors etc).
- Available without door, with plain door or with glazed door.
- Where larger cables need to be accommodated (for switch disconnectors etc.) extra cabling space is provided in the extended height versions (Recommended maximum cable size: extended height = 35mm<sup>2</sup>, all other references = 6mm<sup>2</sup>).
- All boxes from 2-5 modules are fitted with an earth bar as standard and for those with doors the catch can be replaced with the optional key locking facility.
- For dimensions see page 2.36.

Description	Cat ref. Without Door	Cat ref. Plain Door	Cat ref. Glazed Door
2 Modules	<b>IU2</b>	<b>IU2/D</b>	<b>IU2/GD</b>
3 Modules	<b>IU3</b>	<b>IU3/D</b>	-
4 Modules	<b>IU4</b>	<b>IU4/D</b>	-
1 Module Extended Height	<b>IU41</b>	<b>IU41-D</b>	-
2 Modules Extended Height	<b>IU42</b>	<b>IU42/D</b>	-
4 Modules Extended Height	<b>IU44</b>	<b>IU44/D</b>	<b>IU44/GD</b>
5 Modules Extended Height	<b>IU45</b>	-	-

## Accessories for IU Enclosures

Description	Cat ref.
Keylock with 2 Keys Suitable for All <b>IU</b> Enclosures Fitted with Door	<b>IKL1</b>

## Vega Enclosures

### Characteristics:

- Insulated enclosure rated IP40, 1 to 3 rows, 18 to 54 modules (RAL 9010) available with transparent or plain doors.
- **VB118\*\*** & **VB218\*\*** - 90A max. total load. **VB318\*\*** & **VB418\*\*** - 125A max. total load.
- Features a removable chassis with DIN rails for ease of installation.
- Top and bottom cable entry plates are removable and interchangeable. The door is also reversible with an integral flush handle.

### Options:

- Door lock
- Note:** Not suitable for single module RCBO's.
- For dimensions see page 2.36.



VB118PT

Description	Quick Connect Earth Terminals	Cat ref. Plain Door	Cat ref. Glazed Door
1 Row, 18 Module Surface Mounted Enclosure	4 x 25mm <sup>2</sup> , 14 x 4mm <sup>2</sup>	<b>VB118PP</b>	<b>VB118TP</b>
2 Rows, 36 Module Surface Mounted Enclosure	6 x 25mm <sup>2</sup> , 20 x 4mm <sup>2</sup>	<b>VB218PP</b>	<b>VB218TP</b>
3 Rows, 54 Module Surface Mounted Enclosure	9 x 25mm <sup>2</sup> , 31 x 4mm <sup>2</sup>	<b>VB318PP</b>	<b>VB318TP</b>
4 Rows, 72 Module Surface Mounted Enclosure	12 x 25mm <sup>2</sup> , 40 x 4mm <sup>2</sup>	<b>VB418PP</b>	<b>VB418TP</b>

## Accessories

Description	Pack quantity	Cat ref.
Key Lock for Vega Type 1242E White	1	<b>VZ310PVB</b>
Key Lock for Vega Type 1242E Transparent	1	<b>VZ310TVB</b>
Key Lock for Vega Type 405E White	1	<b>VZ311PVB</b>
Key Lock for Vega Type 405E Transparent	1	<b>VZ311TVB</b>
Door White, Vega, 18 Module	1	<b>VZ118P</b>
Door Transparent, Vega, 18 Module	1	<b>VZ118T</b>
Door White, Vega, 36 Module	1	<b>VZ218P</b>
Door Transparent, Vega, 36 Module	1	<b>VZ218T</b>
Door White, Vega, 54 Module	1	<b>VZ318P</b>
Door Transparent, Vega, 54 Module	1	<b>VZ318T</b>
Door White, Vega, 72 Module	1	<b>VZ418P</b>
Door Transparent, Vega, 72 Module	1	<b>VZ418T</b>
Door Hinges for Vega	2	<b>VZ004VB</b>
Brass Terminal Support VF/VS 18/22 M	1	<b>VZ704N</b>
QC Terminal Support VF/VS 18/22 M	1	<b>VZ708N</b>
Slider for Trunking, Vega	1	<b>VZ001VB</b>
Labeling Set for Vega 18 Module	4	<b>VZ011VB</b>
Kit for Horizontal Junction of 2 Enclosure	1	<b>VZ005VB</b>
Kit for Vertical Junction of 2 Enclosure	1	<b>VZ006VB</b>
Clip for Circuit Designation Table	1	<b>VZ535</b>



VZ004VB



VZ708N

Modular Devices  
& Enclosures

## Terminal Blocks

Description	Length (mm)	No. Quick connect Terminals (4mm <sup>2</sup> )	No. Screw Terminals 25mm <sup>2</sup>	Cat ref. Neutral	Cat ref. Earth
6 Connection Terminal Block	30	5	1	<b>KN06N</b>	<b>KN06E</b>
10 Connection Terminal Block	45	8	2	<b>KN10N</b>	<b>KN10E</b>
14 Connection Terminal Block	60	11	3	<b>KN14N</b>	<b>KN14E</b>
18 Connection Terminal Block	75	14	4	<b>KN18N</b>	<b>KN18E</b>
22 Connection Terminal Block	90	17	5	<b>KN22N</b>	<b>KN22E</b>
26 Connection Terminal Block	105	20	6	<b>KN26N</b>	<b>KN26E</b>
Pack of 10 Terminal Inter-connectors	-	-	-	<b>KN99N</b>	<b>KN99E</b>



KN14E



KN10N



VE212U

### Vector II Enclosures

**Characteristics:**

- Insulated IP55 rated enclosure, 1 to 3 rows, 3 to 36 modules (RAL 7035).
- 63A max. total load.
- Features an adjustable depth DIN rail (except **VE103U**).
- Supplied with sealing plugs to re-instate IP rating after fixing.
- 3-10 modules - vertically hinged, retainable in open position at 90°.
- 12-36 modules - horizontal hinged, can be reversed left or right.

**Options:** Door lock

**Note:** Not suitable for single module RCBO's.  
- For dimensions see page 2.36.

Description	Moulded Blanks (in front cover)	Cat ref.
1 Row 3 Module IP55 Surface Mount, Transparent Door	2 x 1/2	<b>VE103U</b>
1 Row 6 Module IP55 Surface Mount, Transparent Door	2 x 1	<b>VE106U</b>
1 Row 10 Module IP55 Surface Mount, Transparent Door	2 x 1	<b>VE110U</b>
1 Row 12 Module IP55 Surface Mount, Transparent Door	-	<b>VE112U</b>
2 Row 24 Module IP55 Surface Mount, Transparent Door	-	<b>VE212U</b>
3 Row 36 Module IP55 Surface Mount, Transparent Door	-	<b>VE312U</b>

Modular Devices  
& Enclosures



VZ428



VZ403



VZ744

### Terminal Support Assembly

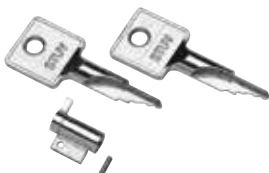
**Characteristics Single Phase:**

- 2 x (3 x 16mm<sup>2</sup> + 4 x 10mm<sup>2</sup>) 270mm wide
- Maximum current (I<sub>n</sub>): 63A
- To fit 12 module wide enclosure only

**Characteristics Three Phase:**

- 3 x (3 x 16mm<sup>2</sup> + 2 x 10mm<sup>2</sup>) 270mm wide
- Neutral: 1 x (5 x 16mm<sup>2</sup> + 6 x 10mm<sup>2</sup>)
- Maximum current (I<sub>n</sub>): 63A
- To fit 12 module wide enclosure only.
- **VZ744** - For fixing of additional terminal supports in bottom part of enclosure (**VE112U** and above)

Description	Cat ref.
Single Phase Connector Assembly for Vector II Enclosures (Requires <b>VZ744</b> )	<b>VZ403</b>
Three Phase Connector Assembly for Vector II Enclosures (Requires <b>VZ744</b> )	<b>VZ428</b>
Mounting Support for <b>VZ403</b> & <b>VZ428</b> (1 Set = 2 Supports)	<b>VZ744</b>



VZ311

### Key Lock

Description	Cat ref.
For All Vector Enclosures with 2 Keys	<b>VZ311</b>

## Orion - Steel Enclosures

### Characteristics:

- Steel (1.5mm) IP65 rated enclosure, insulation class: I (RAL 7035).
- Mounting plates and modular chassis' are required for the installation of devices, see page 2.9.
- 2 removable gland plates for cable entry on top and bottom.
- IP65 with door closed, complies with BS EN 60529.
- Earth studs on both body and door.
- Plain, easily removable door equipped with one or two locks with triangular 8mm bit centres.

**Options:** Key lock, wall fixing brackets, mounting plate, equipment kits for modular devices.

**Note:** Not suitable for outdoor use.  
- For full dimensions see page 2.37.



FL110A

Description	Dimensions (H x W x D mm)	No. of locks	Cat ref. Plain Door	Cat ref. Glazed Door
IP65 Surface Mount Enclosure	300 x 250 x 160	1	<b>FL102A</b>	-
IP65 Surface Mount Enclosure	350 x 300 x 160	1	<b>FL104A</b>	<b>FL154A</b>
IP65 Surface Mount Enclosure	350 x 300 x 200	1	<b>FL105A</b>	<b>FL155A</b>
IP65 Surface Mount Enclosure	500 x 300 x 200	1	<b>FL110A</b>	<b>FL160A</b>
IP65 Surface Mount Enclosure	500 x 400 x 200	1	<b>FL112A</b>	<b>FL162A</b>
IP65 Surface Mount Enclosure	650 x 400 x 200	2	<b>FL117A</b>	<b>FL167A</b>
IP65 Surface Mount Enclosure	650 x 400 x 250	2	<b>FL118A</b>	<b>FL168A</b>
IP65 Surface Mount Enclosure	650 x 500 x 250	2	<b>FL120A</b>	<b>FL170A</b>
IP65 Surface Mount Enclosure	800 x 600 x 300	2	<b>FL124A</b>	<b>FL174A</b>
IP65 Surface Mount Enclosure	950 x 600 x 300	2	<b>FL126A</b>	<b>FL176A</b>
IP65 Surface Mount Enclosure	950 x 800 x 300	2	<b>FL128A</b>	<b>FL178A</b>

## Orion - GRP Enclosures

### Characteristics:

- GRP IP65 rated enclosure, (RAL 7035). Door made of glass reinforced polyester (GRP).
- Mounting plates and modular chassis' are required for the installation of devices, see page 2.9.
- IP65 with door closed, complies with BS EN 60529.
- Earth studs on both body and door.
- Plain, easily removable door equipped with one or two locks with triangular 8mm bit centres.

**Options:** Key lock, wall fixing brackets, mounting plate, equipment kits for modular devices.

**Note:** Not suitable for outdoor use.  
- **FL201B** made of polycarbonate.  
- For full dimensions see page 2.38.



FL216B

Description	Dimensions (H x W x D mm)	No. of locks	Cat ref. Plain Door	Cat ref. Glazed Door
IP65 Surface Mount Enclosure	350 x 300 x 160	1	<b>FL204B</b>	<b>FL254B</b>
IP65 Surface Mount Enclosure	500 x 300 x 200	2	<b>FL209B</b>	<b>FL259B</b>
IP65 Surface Mount Enclosure	500 x 400 x 200	2	<b>FL213B</b>	<b>FL263B</b>
IP65 Surface Mount Enclosure	650 x 400 x 200	2	<b>FL216B</b>	<b>FL266B</b>
IP65 Surface Mount Enclosure	650 x 500 x 250	2	<b>FL221B</b>	<b>FL271B</b>
IP65 Surface Mount Enclosure	800 x 600 x 300	2	<b>FL229B</b>	<b>FL279B</b>
IP65 Surface Mount Enclosure	1200 x 850 x 300	1	<b>FL327B</b>	<b>FL527B</b>

## Orion Accessories

Description	Cat ref.
Key lock to be mounted on the triangular lock, supplied with 2 keys no 427 for h ≤ 800	<b>FL96Z</b>
Key lock to be mounted on the triangular lock, supplied with 2 keys no 427 for h ≤ 1150	<b>FL98Z</b>
Replacement lock 1 set of 2 locks with male square 8mm with 1 key	<b>FL81Z</b>
Replacement lock 1 set of locks double-bar 3mm with 1 key	<b>FL97Z</b>
Plastic wall fixing brackets delivered with fixing screws M 6x12 on enclosure set of 4 pieces	<b>FL863Z</b>
Depth adjustment slide for enclosures 300mm	<b>FL672E</b>



FL96Z



FL80Z



FL95Z



FL408A

### Plain Mounting Plates for Orion Enclosures

**Characteristics:**

- Steel sheet, zinc plated, 2mm thickness.
- Fixed directly to the back or sides of the enclosure allowing adjustable depth setting (Fixing Bracket - **FL450A**).
- For dimensions see page 2.37.

For Enclosure	Dimensions (H x W x D mm)	Cat ref. Glazed Door
<b>FL102A, FL152A</b>	300 x 250	<b>FL402A</b>
<b>FL104A, FL105A, FL204B, FL154A, FL155A, FL254B</b>	350 x 300	<b>FL404A</b>
<b>FL110A, FL209B, FL160A, FL259B</b>	500 x 300	<b>FL407A</b>
<b>FL112A, FL213B, FL162A, FL263B</b>	500 x 400	<b>FL408A</b>
<b>FL117A, FL118A, FL216B, FL167A, FL168A, FL266B</b>	650 x 400	<b>FL412A</b>
<b>FL120A, FL221B, FL170A, FL271B</b>	650 x 500	<b>FL413A</b>
<b>FL124A, FL229B, FL174A, FL279B</b>	800 x 600	<b>FL415A</b>
<b>FL126A, FL176A</b>	900 x 600	<b>FL416A</b>
<b>FL128A, FL178A</b>	950 x 800	<b>FL417A</b>
<b>FL327B, FL527B</b>	1150 x 850	<b>FL522E</b>
Adjustable Depth Fixing Bracket	-	<b>FL450A</b>



FL981A

### Functional Frames for Orion Enclosures

- Mounted to enclosure only for **FL980A** and **FL981A**.

**On Chassis**

- Comprises of: DIN rails (slide length 44mm) assembled on chassis and adjustable in depth (of front plates with slide).

**On Vertical Rail**

- Comprises of: 2 vertical rails, DIN rail (slide length 44mm), front plates with slit and a cross-rail allowing for the assembly of bars on to the base and slides.

For Enclosure	Rows (modules)	Cat ref. Glazed Door
<b>FL102A, FL104A, FL105A, FL154A, FL155A</b>	2 rows (24)	<b>FL979A</b>
<b>FL204B, FL254B</b>	2 rows (24)	<b>FL980A</b>
<b>FL110A, FL209B, FL160A, FL259B</b>	3 Rows (36)	<b>FL981A</b>
<b>FL112A, FL213B, FL162A, FL162A, FL263B</b>	3 rows (48)	<b>FL992A</b>
<b>FL117A, FL118A, FL216B, FL167A, FL168A, FL266B</b>	4 rows (64)	<b>FL993A</b>
<b>FL120A, FL221B, FL170A, FL271B</b>	4 rows (88)	<b>FL994A</b>
<b>FL124A, FL229B, FL174A, FL279B</b>	5 rows (130)	<b>FL996A</b>
<b>FL126A, FL176A</b>	6 rows (156)	<b>FL997A</b>
<b>FL128A, FL178A</b>	6 rows (222)	<b>FL998A</b>



FL992A



### Brass Terminals ≤ 60A With Support

#### Characteristics

- Brass terminals with or without support for neutral/earth/phase connections.

#### Colour Coded Supports

- Neutral = Blue, Earth = Green/Yellow, Phase = Brown.

- Insulated support can be fitted on DIN rail with **KZ060** rail clip or flat bar 12 x 2mm.



KM04L



KM13N

Connections: number + section	Neutral Cat ref.	Earth Cat ref.	Phase Cat ref.
2 x 16 + 2 x 10mm <sup>2</sup> 4 Connections Length 30mm	-	-	<b>KM04L</b>
3 x 16 + 4 x 10mm <sup>2</sup> 7 Connections Length 49mm	<b>KM07N</b>	<b>KM07E</b>	<b>KM07L</b>
5 x 16 + 5 x 10mm <sup>2</sup> 10 Connections Length 67mm	<b>KM10D</b>	<b>KM10F</b>	-
5 x 16 + 6 x 10mm <sup>2</sup> 11 Connections Length 73mm	<b>KM11N</b>	<b>KM11E</b>	<b>KM11L</b>
2 x 16 (Double Drive) + 8 x 10mm <sup>2</sup> 10 Connections Length 69mm	<b>KM10N</b>	<b>KM10E</b>	-
6 x 16 + 7 x 10mm <sup>2</sup> 13 Connections Length 85mm	<b>KM13N</b>	<b>KM13E</b>	-
1 x 25 + 5 x 16 + 5 x 10mm <sup>2</sup> 11 Connections Length 85mm	-	<b>KM11B</b>	-
1 x 25 + 8 x 16 + 8 x 10mm <sup>2</sup> 17 Connections Length 121mm	<b>KM17N</b> (2 supports)	<b>KM17E</b>	-
1 x 25 + 11 x 16 + 13 x 10mm <sup>2</sup> 25 Connections Length 169mm	<b>KM25N</b>	<b>KM25E</b>	-

### Brass Terminals ≤ 60A Without Support

Connections: number + section	Cat ref.
2 x 16 + 2 x 10mm <sup>2</sup> 4 Connections Length 30mm	<b>K140</b>
3 x 16 + 4 x 10mm <sup>2</sup> 7 Connections Length 49mm	<b>K142</b>
5 x 16 + 5 x 10mm <sup>2</sup> 10 Connections Length 67mm	<b>K143</b>
5 x 16 + 6 x 10mm <sup>2</sup> 11 Connections Length 73mm	<b>K144</b>
2 x 16 (Double Drive) + 8 x 10mm <sup>2</sup> 10 Connections Length 69mm	<b>K145</b>
6 x 16 + 7 x 10mm <sup>2</sup> 13 Connections Length 85mm	<b>K148</b>
1 x 25 + 5 x 16 + 5 x 10mm <sup>2</sup> 11 Connections Length 85mm	<b>K151</b>
1 x 25 + 8 x 16 + 8 x 10mm <sup>2</sup> 17 Connections Length 121mm	<b>K156</b>
1 x 25 + 11 x 16 + 13 x 10mm <sup>2</sup> 25 Connections Length 169mm	<b>K158</b>
1 x 25 + 8 x 16 + 29 x 10mm <sup>2</sup> Long Length Terminals Length 242mm	<b>K159</b>
1 x 25 + 16 x 16 + 61 x 10mm <sup>2</sup> Fixing on Flat Bar 12 x 2 with Supports Length 482mm	<b>K160F</b>



K144

### Terminal Supports (For K140 - K160, terminals insulating material M4 x 8 fixing screws)

Description	Cat ref.
Blue Support for Neutral	<b>KZ012</b>
Green / Yellow Support for Earth	<b>KZ013</b>
Beige Support	<b>KZ014</b>



KZ012

### Rail Clip (For fixing terminals on DIN Rails, not for: KM04L, KM10D, KM10F, KM10N, KM10E)

Description	Cat ref.
Mounts on DIN Rail Width 50mm	<b>KZ060</b>



KZ060

### Neutral Assembly

Description	Cat ref.
DIN Rail Mounted 5 x 16mm <sup>2</sup> and 9 x 10mm <sup>2</sup>	<b>KM14N</b>



KXA02LH

### Feed Through Rail Mounted Terminals

#### Description

- To prewire incoming & outgoing circuits in distribution boards.

#### Colour Code

- Neutral = Blue
- Earth = Green / Yellow
- Phase = Beige

Phase	Rated Current	Neutral	Rated Current
<b>KXA02LH</b>	24A	<b>KXA02NH</b>	24A
<b>KXA04LH</b>	32A	<b>KXA04NH</b>	32A
<b>KXA06LH</b>	41A	<b>KXA06NH</b>	41A
<b>KXA10L</b>	57A	<b>KXA10N</b>	57A
<b>KXA16L</b>	76A	<b>KXA16N</b>	76A
<b>KXA35L</b>	125A	<b>KXA35N</b>	125A
<b>KXB70LH</b>	192A	<b>KXB70NH</b>	192A

Nominal	Min-Max	Rated Voltage	Phase Cat ref.	Neutral Cat ref.	Earth Cat ref.
2.5mm <sup>2</sup>	(0.5mm <sup>2</sup> - 4mm <sup>2</sup> )	800V	<b>KXA02LH</b>	<b>KXA02NH</b>	<b>KXA02E</b>
4mm <sup>2</sup>	(0.5mm <sup>2</sup> - 6mm <sup>2</sup> )	800V	<b>KXA04LH</b>	<b>KXA04NH</b>	<b>KXB04E</b>
6mm <sup>2</sup>	(0.5mm <sup>2</sup> - 10mm <sup>2</sup> )	1000V	<b>KXA06LH</b>	<b>KXA06NH</b>	<b>KXB06E</b>
10mm <sup>2</sup>	(1.5mm <sup>2</sup> - 16mm <sup>2</sup> )	400V	<b>KXA10L</b>	<b>KXA10N</b>	<b>KXA10E</b>
16mm <sup>2</sup>	(1.5mm <sup>2</sup> - 25mm <sup>2</sup> )	400V	<b>KXA16L</b>	<b>KXA16N</b>	<b>KXA16E</b>
35mm <sup>2</sup>	(6mm <sup>2</sup> - 50mm <sup>2</sup> )	400V	<b>KXA35L</b>	<b>KXA35N</b>	<b>KXB35E</b>
70mm <sup>2</sup>	(16mm <sup>2</sup> - 95mm <sup>2</sup> )	1000V	<b>KXB70LH</b>	<b>KXB70NH</b>	<b>KXB70E</b>

### Beige End Plates

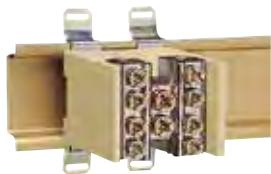
Description	Width in mm	Cat ref.
For <b>KXA02LH</b> & <b>KXA04LH</b>	1.5	<b>KWE01G</b>
For <b>KXA10L</b> & <b>KXA16L</b>	-	<b>KWE04G</b>
For <b>KXA35L</b>	1.5	<b>KWE03G</b>



KWB01

### End Stops

Description	Width in mm	Cat ref.
Insulated material	8.5	<b>KWB01</b>



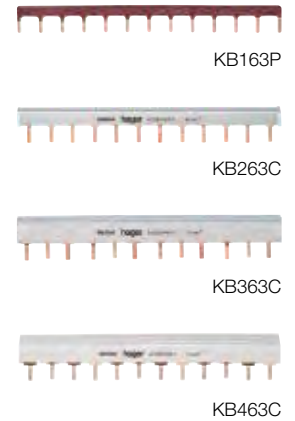
K037

### 125A Single Pole Connection Blocks

Description	Width in mm	Cat ref.
Incoming 2 x 25mm <sup>2</sup> , Outgoing 4 x 16mm <sup>2</sup>	2.5	<b>K018</b>
Incoming 2 x 35mm <sup>2</sup> , Outgoing 4 x 25mm <sup>2</sup>	2.5	<b>K037</b>

### Insulated Busbars - Prong

Description	Cat ref.
<b>Insulated Double Pole Busbars</b>	
63A 13 Modules Single Pole Brown Insulation (Phase)	<b>KB163P</b>
63A 13 Modules Single Pole Blue Insulation (Neutral)	<b>KB163N</b>
100A 24 Modules Single Pole	<b>K171UK</b>
10 Endcaps for Single Pole Busbars	<b>KZ021</b>
<b>Insulated Double Pole Busbars</b>	
63A 24 Modules Double Pole	<b>KB263C</b>
80A 56 Modules Double Pole	<b>KB280B</b>
10 Endcaps for Double Pole Busbars	<b>KZ023A</b>
<b>Insulated Triple Pole Busbars</b>	
63A 24 Modules Triple Pole	<b>KB363C</b>
80A 57 Modules Triple Pole	<b>KB380B</b>
10 Endcaps for Triple Pole Busbars	<b>KZ023A</b>
<b>Insulated Four Pole Busbars</b>	
63A 24 Modules Four Pole	<b>KB463C</b>
80A 56 Modules Four Pole	<b>KB480B</b>
10 Endcaps for Four Pole Busbars	<b>KZ024</b>



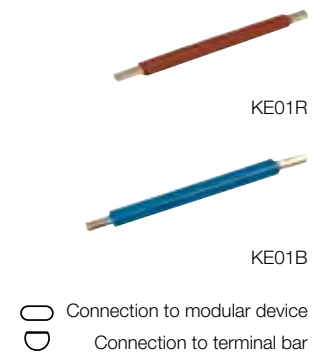
### Insulated Busbars - Fork

Description	Cat ref.
100A 57 Modules Single Pole (Section: 20mm <sup>2</sup> )	<b>KD190B</b>
63A 24 Modules Double Pole (Section: 10mm <sup>2</sup> )	<b>KDN263B</b>
63A 57 Modules Triple Pole (Section: 10mm <sup>2</sup> )	<b>KDN363B</b>
63A 56 Modules Four Pole (Section 10mm <sup>2</sup> )	<b>KDN463B</b>



### Insulated Flexible Links 100A Rating

Ends of connectors	Colour	Length	Cat ref.
○ ○	Brown	122mm	<b>KE01R</b>
○ ○	Blue	122mm	<b>KE01B</b>
○ ◐	Brown	236mm	<b>KE02R</b>
○ ◐	Blue	236mm	<b>KE02B</b>
○ ◐	Brown	330mm	<b>KE03R</b>
○ ◐	Blue	300mm	<b>KE03B</b>
○ ◐	Blue	355mm	<b>KE04B</b>
○ ○	Brown	500mm	<b>KE06R</b>
○ ○	Blue	550mm	<b>KE07B</b>



### Insulating Strip

Description	Cat ref.
Insulation Strip for Shrouding Forked Busbars 5 Modules	<b>KZ059</b>



### Cable Connectors

Description	Cat ref.
Connection terminal - Cable connection up to 50mm <sup>2</sup> Direct busbar connection 160A/ 690V	<b>KF50SB</b>
Prong Type Connection from the Top for Cables 25mm <sup>2</sup>	<b>KF81A</b>
Prong Type Connection from the Top for Cables 16mm <sup>2</sup>	<b>KF82A</b>
Prong Type Connection from the Side for Cables 35mm <sup>2</sup>	<b>KF83D</b>
Fork Type Connection from the Side for Cables 25mm <sup>2</sup>	<b>KF84A</b>





EC050

### Single Phase kWh Meters

**Description:**

- Energy meters are used to measure the active energy consumed by an installation. They allow the user to understand the real cost of an installation and to identify the consumption between the different appliances.

**Characteristics:**

- Complies with EN 50470-3.
- Class B
- Accuracy  $\pm 1\%$ .
- Energy readout: 7 digits.
- Backlit display.
- Indication of instantaneous power consumption.
- Total / partial counter.
- Pulsed output.
- Unlimited saving of measurements.
- LED flashes according to consumption.
- Display indication in case of incorrect wiring.
- Voltage 230V a.c. 50Hz.
- Direct connection.
- Current = 320mA - 32A.
- For technical data, see page 2.39.

**Note:**

- Use of heat dissipation inserts (cat ref. **LZ060**) are recommended on each side of direct connection meters.

Description	Width (1 Mod =17.5mm)	Cat ref.
Total counter, non resettable counter	1 Mod	<b>EC050</b>
Total counter, non resettable counter, pulsed output 1 pulse = 100Wh	1 Mod	<b>EC051</b>

Modular Devices & Enclosures



EC150

### Single Phase kWh Meters - Direct 63A

**Description:**

- Energy meters are used to measure the active energy consumed by an installation. They allow the user to understand and control the real cost of an installation and to divide the consumption between the different appliances.
- MID approval for sub billing on **EC154M**.

**Characteristics:**

- Fully compliant with the European standard EN 50470-3.
- Class B
- Accuracy  $\pm 1\%$ .
- Energy readout: 7 digits.
- Backlit display.
- Indication of instantaneous power consumption.
- Total / partial counter (expected MID references).
- Pulsed output.
- Unlimited saving of measurements.
- LED flashes according to consumption.
- Tariff 1/ tariff 2 options.
- Display indication in case of incorrect wiring.
- Voltage 230V a.c. 50/60Hz.
- Current = 40mA - 63A.
- Max cable size = 16mm.
- For technical data, see page 2.39.

**Note:**

- Use of heat dissipation inserts (cat ref. **LZ060**) are recommended on each side of direct connection meters.



EC154M

Description	Width (1 Mod =17.5mm)	Cat ref.
Energy meter with pulsed output and total/partial counter	3 Mod	<b>EC150</b>
Energy meter with pulsed output - total/partial counter and 2 tariffs	3 Mod	<b>EC152</b>
Energy meter with pulsed output - with MID approval	3 Mod	<b>EC154M</b>

## Three Phase kWh Meters - Direct 63A

### Description:

- Energy meters are used to measure the active energy consumed by an installation. They allow the user to understand and control the real cost of an installation and to divide the consumption between the different appliances.

### Characteristics

- Fully compliant with the European standard EN 50470-3
- Class B
- Accuracy  $\pm 1\%$
- Energy readout: 7 digits
- Backlit display
- Indication of instantaneous power consumption
- Total / partial counter (expected MID references)
- Pulsed output
- Unlimited saving of measurements
- LED flashes according to consumption
- Option: tariff 1 / tariff 2
- Three phase energy meters are adapted to all kind of networks
- Display indication in case of incorrect wiring
- Voltage 230/400V a.c. 50/60Hz
- Operating Current: 0.04 A to 63 A
- Max cable size = 16mm
- For technical data, see page 2.39.

### Note:

- Use of heat dissipation inserts (cat ref. **LZ060**) are recommended on each side of direct connection meters.



EC350

Description	Width (1 Mod =17.5mm)	Cat ref.
Energy meter with pulsed output and total / partial counter	4 Mod	<b>EC350</b>
Energy meter with pulsed output - total / partial counter and 2 tariffs	4 Mod	<b>EC352</b>

## Three Phase kWh Meters - Direct 100A

### Description:

- Energy meters are used to measure the active energy consumed by an installation. They allow the user to understand and control the real cost of an installation and to divide the consumption between the different appliances.
- MID approval for sub billing on **EC364M**.

### Characteristics

- Fully compliant with the European standard EN 50470-3
- Class B
- Accuracy  $\pm 1\%$
- Energy readout: 7 digits
- Backlit display
- Indication of instantaneous power consumption
- Total / partial counter (expected MID references)
- Pulsed output
- Unlimited saving of measurements
- LED flashes according to consumption
- Option: tariff 1 / tariff 2
- Three phase energy meters are adapted to all kind of networks
- Display indication in case of incorrect wiring
- Voltage 230/400V a.c. 50/60Hz
- Operating Current: 0.08 A to 100 A
- Max cable size = 35mm
- For technical data, see page 2.39.

### Note:

- Use of heat dissipation inserts (cat ref. **LZ060**) are recommended on each side of direct connection meters.



EC364M

Description	Width (1 Mod =17.5mm)	Cat ref.
Energy meter with pulsed output and total / partial counter	7 Mod	<b>EC360</b>
Energy meter with pulsed output - total / partial counter and 2 tariffs	7 Mod	<b>EC362</b>
Energy meter with pulsed output - with MID approval	7 Mod	<b>EC364M</b>
Energy meter with bidirectional counter	7 Mod	<b>EC365B</b>
Energy meter with KNX output	7 Mod	<b>TE360</b>



EC370

### Three Phase kWh Meters - Connection via Current Transformers

**Description:**

- Energy meters are used to measure the active energy consumed by an installation. They allow the user to understand and control the real cost of an installation and to divide the consumption between the different appliances.

**Characteristics**

- Fully compliant with the European standard EN 50470-3
- Class B
- Accuracy  $\pm 1\%$
- Energy readout: 7 digits
- Backlit display
- Indication of instantaneous power consumption
- Total / partial counter (expected MID references)
- Pulsed output
- Unlimited saving of measurements
- LED flashes according to consumption
- Option: tariff 1/ tariff 2
- Three phase energy meters are adapted to all kind of networks
- Display indication in case of incorrect wiring
- To be connected to CT with 5A on the secondary
- Voltage 230/400V a.c. 50/60Hz
- Starting current = 10mA
- Max current on CT secondary = 6A
- For technical data, see page 2.39.

**Note:**

- Use of heat dissipation inserts (cat ref. **LZ060**) are recommended on each side of direct connection meters.

Description	Width (1 Mod =17.5mm)	Cat ref.
Energy meter with pulsed output and total / partial counter	4 Mod	<b>EC370</b>
Energy meter with pulsed output - total / partial counter and 2 tariffs	4 Mod	<b>EC372</b>
Energy meter with KNX output	4 Mod	<b>TE370</b>

Modular Devices  
& Enclosures



SRA00505

### Current Transformers (CT)

**Characteristics:**

- Current transformers are used to feed analogue and digital ammeters and kilowatt hour meters.
- The current on the secondary circuit (0 - 5A) is proportional to the current on primary circuit class: 1.
- Suitable for use with copper bar or cable.
- Can be mounted on a DIN rail (up to 600A CT).
- For complete list of dimensions see page 2.40.

Description	Ratio	Cat ref.
DIN Rail Mountable CT, 50A	50:5	<b>SRA00505</b>
DIN Rail Mountable CT, 100A	100:5	<b>SRA01005</b>
DIN Rail Mountable CT, 150A	150:5	<b>SRA01505</b>
DIN Rail Mountable CT, 200A	200:5	<b>SRA02005</b>
DIN Rail Mountable CT, 250A	250:5	<b>SRA02505</b>
DIN Rail Mountable CT, 300A	300:5	<b>SRI03005</b>
DIN Rail Mountable CT, 400A	400:5	<b>SRC04005</b>
DIN Rail Mountable CT, 600A	600:5	<b>SRC06005</b>
CT, 800A	800:5	<b>SRD08005</b>
CT, 1000A	1000:5	<b>SRD10005</b>
CT, 1500A	1500:5	<b>SRD15005</b>
CT, 2000A	2000:5	<b>SRE20005</b>
DIN Rail Mounting for CTs up to 600A.	-	<b>SRZH01</b>

## Multifunction Meter

Functions		SM101E	SM101C
Current (3P <sub>I</sub> and I <sub>N</sub> )	Inst	✓	✓
	Max	✓	✓
	THD		✓
Voltage (L-L)	Inst	✓	✓
	THD		✓
Voltage (L-N)	Inst	✓	✓
	THD		✓
Frequency (F)	Inst	✓	✓
Power (3P, 3Q, 3S)	Inst	✓	✓
Power (ΣP, ΣQ, ΣS)	Inst	✓	✓
	Max	✓	✓
Power Factor (3PF, ΣPF)	Inst	✓	✓
Energy	+kWh		✓
	+kVar		✓
Hours counter	h	✓	✓
Internal temperature	°C		✓

### Description:

- Dedicated to monitoring and reporting of electrical networks (balanced or unbalanced – 1, 2, 3 or 4 wires) The meters are connected through a CT to the network and measure all the parameters (TRMS).
- Allows communication via pulsed output and/or RS485 Jbus/Modbus.
- For technical data, see page 2.41.

### Standards

- IEC 61557-12.
- IEC 62053-22 (class 0,5s).
- IEC 62053-23 (class 2).
- Connection solid & stranded 4mm<sup>2</sup> (power).
- 2.5mm<sup>2</sup> (communication).

Description	Width (1 Mod =17.5mm)	Cat ref.
Multifunction Meter	4 Mod	<b>SM101E</b>
Multifunction Meter with Communication Pulsed output, RS485 Jbus/Modbus communication	4 Mod	<b>SM101C</b>



SM101E



SM101C



ECM01

### Panel & DIN Rail Meters

- No cables supplied with these meters
- Meter supply cable - **JF130VMF**
- For technical data, see page 2.42 - 2.44.

Description	Cat ref.
Panel Mounted Multi-Function Meter Pulsed/Modbus DIN 96	<b>ECM01</b>
DIN Mounted Multi-Function Meter Pulsed/Modbus Single Input	<b>JKM01</b>
DIN Mounted Multi-Function Meter Pulsed/Modbus Dual Input	<b>JKM02</b>



JKM01



JFA03

### Converter

- For technical data, see page 2.45.

Description	Cat ref.
Standard CT to plug in adapter	<b>JFA03</b>



### Plug-in CTs

- No leads supplied with these CTs (RJ45 connection cable)
- For technical data, see page 2.46.



EC1260CT

Description	Cat ref.
125A Frame Size 60A 3 Phase CT	<b>EC1260CT</b>
125A Frame Size 100A 3 Phase CT	<b>EC12100CT</b>
125A Frame Size 125A 3 Phase CT	<b>EC12125CT</b>
125A Frame Size 160A 3 Phase CT	<b>EC12160CT</b>
250A Frame Size 60A 3 Phase CT	<b>EC2560CT</b>
250A Frame Size 100A 3 Phase CT	<b>EC25100CT</b>
250A Frame Size 125A 3 Phase CT	<b>EC25125CT</b>
250A Frame Size 160A 3 Phase CT	<b>EC25160CT</b>
250A Frame Size 200A 3 Phase CT	<b>EC25200CT</b>
250A Frame Size 250A 3 Phase CT	<b>EC25250CT</b>
400A Frame Size 250A 3 Phase CT	<b>EC40250CT</b>
400A Frame Size 400A 3 Phase CT	<b>EC40400CT</b>
400A Frame Size 630A 3 Phase CT	<b>EC40630CT</b>
800A Frame Size 800A 3 Phase CT	<b>EC80800CT</b>

### 3 Phase CT Splitter Box

- This 3 Phase CT Splitter Box allows the separate monitoring of each phase of a three phase current transformer on individual energy meters.
- For technical data, see page 2.47.



JFS03

Description	Cat ref.
3 Phase CT Splitter Box	<b>JFS03</b>

### Meter Voltage Supply Cable - Low Smoke Zero Halogen - 1mm

Description	Cat ref.
1m - Voltage Supply Cable with Fuse Carrier (For JF Meter Enclosures)	<b>JF130VMF</b>
1m - Voltage Supply Cable with Fuse Carrier (For JN Meter Enclosures)	<b>JN130VMF</b>



PGM500

### Meter Voltage Supply Cable - PVC - 1mm

Description	Cat ref.
0.30m - Hi Flex Voltage Supply Cable	<b>PGMF300</b>
0.50m - Hi Flex Voltage Supply Cable	<b>PGMF500</b>
1.00m - Hi Flex Voltage Supply Cable	<b>PGMF1000</b>
1.30m - Hi Flex Voltage Supply Cable	<b>PGMF1300</b>
2.00m - Hi Flex Voltage Supply Cable	<b>PGMF2000</b>
3.00m - Hi Flex Voltage Supply Cable	<b>PGMF3000</b>

### Meter to Meter Supply Cable - PVC - 1mm

Description	Cat ref.
0.15m - Hi Flex Meter to Meter Supply Cable	<b>PGMFT150</b>
0.30m - Hi Flex Meter to Meter Supply Cable	<b>PGMFT300</b>
0.50m - Hi Flex Meter to Meter Supply Cable	<b>PGMFT500</b>
1.00m - Hi Flex Meter to Meter Supply Cable	<b>PGMFT1000</b>
1.30m - Hi Flex Meter to Meter Supply Cable	<b>PGMFT1300</b>
2.00m - Hi Flex Meter to Meter Supply Cable	<b>PGMFT2000</b>
3.00m - Hi Flex Meter to Meter Supply Cable	<b>PGMFT3000</b>



PGRJ1000

### Meter to Meter Supply Cable - PVC - 1mm

Description	Cat ref.
0.30m - RJ45 Connector Cable 67 7003	<b>PGRJ300</b>
0.50m - RJ45 Connector Cable 67 L7005 LSZH	<b>PGRJ500</b>
1.00m - RJ45 Connector Cable 67 L7005 LSZH	<b>PGRJ1000</b>
1.50m - RJ45 Connector Cable 67 L7005 LSZH	<b>PGRJ1500</b>
2.00m - RJ45 Connector Cable 67 L7005 LSZH	<b>PGRJ2000</b>
3.00m - RJ45 Connector Cable 67 L7005 LSZH	<b>PGRJ3000</b>



PG9522FEMALE

### Supply Voltage Connector Plugs

#### Characteristics:

- For those who want to make up their own power cable looms

Description	Cat ref.
Voltage IN (Male) Connector	<b>PG9523MALE</b>
Voltage OUT (Female) connector	<b>PG9522FEMALE</b>



JFT03

### CT Output & RJ45 Lead Tester

Description	Cat ref.
CT Output and RJ45 Lead Tester	<b>JFT03</b>

### Hour Counter

**Characteristics:**

- To measure the total operating time of any circuit/load non resettable.
- For technical data, see page 2.48.

**Application Example:**

- Total time of plant running.
- Connection in parallel with contactor coil.
- Recording of lighting hours for relamping purposes.

Voltage	Width (1 Mod =17.5mm)	Cat ref.
230V - 50Hz	2 Mod	<b>EC100</b>



EC100

### Analogue Voltmeters

**Characteristics:**

- Single phase: direct connection.
- Three phase: use of a voltmeter selector switch **SK602** (see page 2.21).
- Frequency: 50 Hz.
- Accuracy:  $\pm 2\%$ .
- For technical data, see page 2.48.

**Connection Capacity**

- Rigid conductor 10mm<sup>2</sup>.
- Flexible conductor 6mm<sup>2</sup>.

Consumption	Width (1 Mod =17.5mm)	Cat ref.
2.5VA	4 Mod	<b>SM500</b>



SM500

### Analogue Ammeters

**Characteristics:**

- For domestic and commercial installations.
- Indirect reading via current transformers: 50-100-150-250-400A.
- Accuracy:  $\pm 2\%$ .
- Connection via a current transformer (CT).
- For technical data, see page 2.48.

Scale	Width (1 Mod =17.5mm)	Cat ref.
0 - 50A	4 Mod	<b>SM050</b>
0 - 100A	4 Mod	<b>SM100</b>
0 - 150A	4 Mod	<b>SM150</b>
0 - 250A	4 Mod	<b>SM250</b>
0 - 400A	4 Mod	<b>SM400</b>



SM050

### Digital Voltmeters

**Characteristics:**

- Three phase: use of a voltmeter selector switch **SK602** (see page 2.21).
- Voltage rating: 220/230V; 50/60Hz.
- Accuracy:  $\pm 2\%$ .
- Consumption: 4 VA.
- For technical data, see page 2.49.

Scale	Width (1 Mod =17.5mm)	Cat ref.
0-500V	4 Mod	<b>SM501</b>



SM501

### Digital Ammeters

**Characteristics:**

- **SM151, SM401, SM601**: reading via a current transformer (see below).
- Voltage rating: 220/230V; 50/60Hz.
- Accuracy:  $\pm 1\%$ .
- Consumption: 4 VA.
- For technical data, see page 2.49.

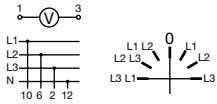
Description	Scale	Width (1 Mod =17.5mm)	Cat ref.
Reading via CT 150/5 (SRA01505)	0 - 150A	4 Mod	<b>SM151</b>
Reading via CT 400/5 (SRC04005)	0 - 400A	4 Mod	<b>SM401</b>
Reading via CT 600/5 (SRC06005)	0 - 600A	4 Mod	<b>SM601</b>



SM401



SK602



### Voltmeter Selector

**Characteristics:**

- For use with Voltmeters.
- Complies with IEC 947-3, BS EN 60947-3
- Isolating voltage 500V a.c.
- Nominal current 10-20A
- 3 Ph&N
- 3 Readings between phases
- 3 Readings between phase & neutral
- Null position (no reading)

**Terminal Capacity**

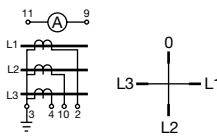
- 1 - 6mm<sup>2</sup> Flexible
- 1.5 - 10mm<sup>2</sup> Rigid

Description  
20A 400V a.c.

Width  
(1 Mod =17.5mm) 3 Mod **SK602**



SK603



### Ammeter Selector

**Characteristics:**

- For use with Ammeters.
- Complies with IEC 947-3, BS EN 60947-3
- Isolating voltage 500V a.c.
- Nominal current 10-20A
- 4 Positions
- Use in 3 Ph&N
- Reading by phase
- Null position (no reading)
- Should be used with Current Transformer (see page 2.48)

**Terminal Capacity**

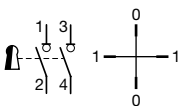
- 1 - 6mm<sup>2</sup> Flexible
- 1.5 - 10mm<sup>2</sup> Rigid

Description  
20A 400V a.c.

Width  
(1 Mod =17.5mm) 3 Mod **SK603**



SK606



### Lockable Rotary Switch

**Characteristics:**

- For use with Voltmeters and Ammeters.
- Complies with IEC 947-3, BS EN 60947-3
- Isolating voltage 500V a.c.
- Nominal current 10-20A
- On / Off (4 Positions)

**Terminal Capacity**

- 1 - 6mm<sup>2</sup> Flexible
- 1.5 - 10mm<sup>2</sup> Rigid

Description  
10A 400V a.c.

Width  
(1 Mod =17.5mm) 3 Mod **SK606**

Modular Devices & Enclosures

## Switch Disconnectors

### I<sub>n</sub>: 25 -32A

- Shrouded cable terminal.
- Connection capacity: 16mm<sup>2</sup> rigid conductor, 10mm<sup>2</sup> flexible conductor.

### I<sub>n</sub>: 40 - 63A

- Shrouded cable terminal.
- Connection capacity: 25mm<sup>2</sup> rigid conductor, 16mm<sup>2</sup> flexible conductor.

### I<sub>n</sub>: 80 - 125A

- Shrouded cable terminal.
- Connection capacity: 50mm<sup>2</sup> rigid conductor, 35mm<sup>2</sup> flexible conductor.

### Characteristics

- Complies with BS EN 60947-3 all ratings.
- On position "I" in red & Off position "0" in green giving positive contact indication.
- For technical details see 2.50.



SBN140



SBN240



SBN340



SBN440

Modular Devices  
& Enclosures

	Description	Width (1 Mod =17.5mm)	Cat ref.
	<b>Single Pole Switch Disconnector</b>		
	1x 25A 250V	1 Mod	<b>SBN125</b>
	1x 25A 250V Indicator Light	1 Mod	<b>SBB125</b>
	1x 32A 250V	1 Mod	<b>SBN132</b>
	1x 32A 250V Indicator Light	1 Mod	<b>SBB132</b>
	1x 40A 250V	1 Mod	<b>SBN140</b>
	1x 63A 250V	1 Mod	<b>SBN163</b>
	1x 80A 250V	1 Mod	<b>SBN180</b>
	1x 100A 250V	1 Mod	<b>SBN190</b>
	<b>Double Pole Switch Disconnector</b>		
	2x 25A 250V	1 Mod	<b>SBN225</b>
	2x 25A 250V Indicator Light	1 Mod	<b>SBB225</b>
	2x 32A 400V	1 Mod	<b>SBN232</b>
	2x 32A 250V Indicator Light	1 Mod	<b>SBB232</b>
	2x 40A 400V a.c.	2 Mod	<b>SBN240</b>
	2x 63A 400V a.c.	2 Mod	<b>SBN263</b>
	2x 80A 400V a.c.	2 Mod	<b>SBN280</b>
	2x 100A 400V a.c.	2 Mod	<b>SBN290</b>
	<b>Triple Pole Switch Disconnector</b>		
	3x 25A 400V a.c.	2 Mod	<b>SBN325</b>
	3x 32A 400V a.c.	2 Mod	<b>SBN332</b>
	3x 40A 400V a.c.	3 Mod	<b>SBN340</b>
	3x 63A 400V a.c.	3 Mod	<b>SBN363</b>
	3x 80A 400V a.c.	3 Mod	<b>SBN380</b>
	3x 100A 400V a.c.	3 Mod	<b>SBN390</b>
	3x 125A 400V a.c.	3 Mod	<b>SBN399</b>
	<b>Four Pole Switch Disconnector</b>		
	4x 25A 400V Neutral Left	2 Mod	<b>SBN425</b>
	4x 32A 400V Neutral Left	2 Mod	<b>SBN432</b>
	4x 40A 400V Neutral Left	4 Mod	<b>SBN440</b>
	4x 63A 400V Neutral Left	4 Mod	<b>SBN463</b>
	4x 80A 400V Neutral Left	4 Mod	<b>SBN480</b>
	4x 100A 400V Neutral Left	4 Mod	<b>SBN490</b>
	4x 125A 400V Neutral Left	4 Mod	<b>SBN499</b>



SFH125



SFT225



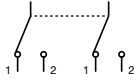

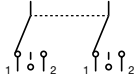
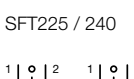
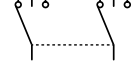
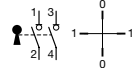


SK606

### Changeover Switches

#### Characteristics

- Complies with BS EN 60947-3.
- For technical details see page 2.51.

Description	Width (1 Mod = 17.5mm)	Cat ref.
 <b>2 Way Single Pole</b> 1 x 25A 1P 250V a.c.	1 Mod	<b>SFH125</b>
 <b>1 NO x 1 NC Double Pole</b> 2 x 25A NO/NC 1P 250V a.c.	1 Mod	<b>SFM125</b>
 <b>2 Way Double Pole</b> 2 x 25A 2P 250V a.c.	2 Mod	<b>SFH225</b>
 <b>Centre-off Changeover Single Pole</b> 1 x 25A 1P 250V a.c.	1 Mod	<b>SFT125</b>
 <b>Centre-off Changeover Double Pole</b> 2 x 25A 2P 250V a.c. 2 x 40A 2P 400V a.c. SFT225 / 240 2 x 63A 2P 400V a.c.	2 Mod	<b>SFT225</b>
 2 Mod <b>SFT240</b>	2 Mod	<b>SFT240</b>
 2 Mod <b>SF263</b>	2 Mod	<b>SF263</b>
 <b>Lockable Rotary Switch On/Off (4 Positions)</b> 10A 400V a.c.	3 Mod	<b>SK606</b>

**Light Sensitive Switch**

**Characteristics**

- A photo-electric cell measures the light level and in conjunction with the relay provides on/off control of a circuit.
- This device controls lighting circuits in relation to ambient light, based on user settings.
- Sealable front cover.
- Outputs: 1 changeover AC1 contact 16A - 230V a.c.
- Maximum distance: 50m between photocell and controller

**Application Example:**

- Street lighting, display lighting, illuminated signs etc.

**Connection**

- Capacity: Rigid: 1.5 to 10mm<sup>2</sup>, Flexible: 1 to 6mm<sup>2</sup>.
- On board LED shows status of changeover contact.

**Technical Data**

- 4 position override switch allowing: auto, on, off, test
- 2 sensitivity ranges: 5 to 50 lux, 50 to 2000 lux.
- Supplied with a separate surface-mounted photo-electric cell **EE003**.
- Must be used in conjunction with a suitably rated contactor where load conditions demand.
- For technical data, see page 2.52.



EE100

Description	Width (1 Mod =17.5mm)	Cat ref.
Light Sensitive Switch	1 Mod	<b>EE100</b>

**Light Sensitive Programmer**

**Characteristics**

- To control the lighting installation in relation to time and ambient light.
- A weekly programmer associated with a light sensitive switch.
- Outputs: 1 changeover AC1 contact 16A - 230V a.c.
- Maximum distance: 50m between photocell and controller.

**Working Principle**

- The user programmes both on/off periods and a desired light level. The cell measures the light level within the on period. Depending on the light level (below or above the programmed threshold) the output will be switched on/off.
- 20 program steps, 1 minute switching increments.

**Programming Function**

- Programming by keys and display on LCD screen.
- On/off override facility, permanent working.
- Display and control of the programme.
- Test setting for easy adjustment.
- 2 sensitivity ranges: 5 to 50 lux, 50 to 2000 lux.
- Supplied with a separate surface-mounted photo-electric cell **EE003**.
- Must be used in conjunction with a suitably rated contactor where load conditions demand.
- For technical data, see page 2.52.



EE171

Description	Width (1 Mod =17.5mm)	Cat ref.
Light Sensitive Programmer	3 Mod	<b>EE171</b>

**Replacement Photo Electric Cell**

Description	For Cat ref.	Pack qty.	Cat ref.
Flush-mounted Photo Electric Cell	<b>EE100, EE171</b>	1	<b>EE002</b>
Surface-mounted Photo Electric Cell	<b>EE100, EE171</b>	1	<b>EE003</b>



EE002



EE003

**Emergency Lighting Module**

**Application**

- For both residential and commercial applications.
- Installed in a consumer unit or distribution board. Can be configured to provide emergency lighting.
- It can also be withdrawn from it's base, to act as a mini torch with an operating duration of 1 hour 30 mins.

Description	Width (1 Mod =17.5mm)	Cat ref.
Emergency Lighting Module	3 Mod	<b>EE960</b>



EE960

Modular Devices  
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EVN011



EVN004

Modular Devices  
& Enclosures

### Universal Dimmers

Functional Characteristics Load	EVN011	EVN012	EVN002	EVN004
230V Incandescent/halogen lamps	300W	300W	500W	500W
ELV Halogen lamps via fermagnetic transformer (transformer shall not be used under 75% of its nominal load)	300VA	300VA	500VA	500VA
ELV halogen & dimmable ELV LED via electronic transformer (maximum number of lamps allowed shall be calculated based on transformers output)	300VA	300VA	500VA	500VA
Dimmable compact fluorescent	60W	60W	100W	100W
230V dimmable LED lamps	60W	60W	100W (10 lamps)	100W (10 lamps)
No load consumption	0.2W	0.2W	0.2W	0.2W

### Characteristics

- Controls the lighting level of all types of light source: incandescent, LV halogen, ELV halogen with electronic or ferromagnetic transformer, LED lamps, ELV LED lamps with electronic transformer, fluorescent with electronic ballast.
- The EVN 300W and 500W dimmers also allow lighting level adjustment for dimmable CFL and dimmable LED lamps.
- Dimming controlled by push button: start / stop by short press, increasing / decreasing by maintaining pressure.
- Automatic load recognition.
- Soft start (progressive start) to increase the working life of lamps.
- Remembers previous dimming level.
- Protection against overheating.
- 3 modes for load learning: auto, advanced, expert (comfort version).
- Can replace a latching relay, with light level function.
- Push button (line or neutral).
- Comfort version includes scene setting by two short presses on the push button, progressive switch-off & night light.

Description	Width (1 Mod =17.5mm)	Cat ref.
300W Standard Version	1	<b>EVN011</b>
300W Comfort Version	1	<b>EVN012</b>
500W Standard Version	2	<b>EVN002</b>
500W Comfort Version	2	<b>EVN004</b>



### Latching Relays

#### Description

- Operate when impulsed by a signal voltage.
- The impulse can be provided via a pushbutton or pushswitch. The first pulse operates the relay and latches it to its set (opposite) state, the next operation of the pushbutton returns the relay to its reset (original) state.
- Auxiliary contacts (**EPN050, EPN051**).
- Are available for remote signalling and centralised control applications and can be easily combined with the latching relays.
- Connection: 10mm<sup>2</sup> flexible, 6mm<sup>2</sup> rigid.
- For technical details see page 2.54.

	Coil	Power Circuit AC1	Width (1 Mod =17.5mm)	Cat ref.
	<b>Latching Relay 1 NO</b>			
	230V 50Hz	16A - 250V a.c.	1 Mod	<b>EPN510</b>
	24V 50Hz	16A - 250V a.c.	1 Mod	<b>EPN513</b>
	<b>Latching Relay 2 NO</b>			
	230V 50Hz	16A - 250V a.c.	1 Mod	<b>EPN520</b>
	24V 50Hz	16A - 250V a.c.	1 Mod	<b>EPN524</b>
	12V 50Hz	16A - 250V a.c.	1 Mod	<b>EPN521</b>
	<b>Latching Relay 1 NC + 1 NO</b>			
	230V 50Hz	16A - 250V a.c.	1 Mod	<b>EPN515</b>
	24V 50Hz	16A - 250V a.c.	1 Mod	<b>EPN518</b>
	12V 50Hz	16A - 250V a.c.	1 Mod	<b>EPN519</b>
	<b>Latching Relay 2 NC + 2 NO</b>			
	230V 50Hz	16A - 250V a.c.	2 Mod	<b>EPN525</b>
	24V 50Hz	16A - 250V a.c.	2 Mod	<b>EPN528</b>
	12V 50Hz	16A - 250V a.c.	2 Mod	<b>EPN529</b>
	<b>Latching Relay 4 NO</b>			
	230V 50Hz	16A - 400V a.c.	2 Mod	<b>EPN540</b>
	24V 50Hz	16A - 400V a.c.	2 Mod	<b>EPN541</b>



EPN510



EPN520



EPN518

Modular Devices  
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### Auxiliary Contacts

Description	Power Circuit	Width (1 Mod =17.5mm)	Cat ref.
Auxiliary Contact	2A - 250V a.c.	½ Mod	<b>EPN051</b>
Auxiliary Contacts for Centralised Control	110-230V a.c.	½ Mod	<b>EPN050</b>



EPN050

### Relays

#### Characteristics

- To provide control of low power circuits max 16A; associated with switches, time switches etc for remote control applications.
- The relays will accept an auxiliary contact for remote signalling applications (**ESC080**).
- For the command of ELV circuits use interface relays **EN145** and **EN146**.
- For the command of high power circuits (20, 40 & 63 Amps) use contactors as shown on page 2.27.

Coil AC Voltage	Power Circuit AC1	Width (1 Mod =17.5mm)	Cat ref.
<b>Relays 1 NC + 1 NO</b>			
230V 50Hz	16A - 250V~	1 Mod	<b>ERC218</b>
24V 50Hz	16A - 250V~	1 Mod	<b>ERD218</b>
8/12V 50Hz	16A - 250V~	1 Mod	<b>ERL218</b>
<b>Relays 2 NC + 2 NO</b>			
230V 50Hz	16A - 250V~	2 Mod	<b>ERC418</b>
24V 50Hz	16A - 250V~	2 Mod	<b>ERD418</b>
8/12V 50Hz	16A - 250V~	1 Mod	<b>ERL418</b>



ERD218



ESC225S

### Low Noise Contactors

#### Description

- For the remote switching and control of power circuits where noise may be a concern i.e. hotel bedrooms etc.

#### Technical Data

- The choice of contactor depends upon a number of parameters, e.g. The nature of the supply, the power it is switching, the characteristics of the load, the control voltage required & number of operations.

- All contactor ratings are for AC1 loads only – if the load differs from AC1 the contactor may need de-rating

- The use of **LZ060** (heat dissipation inserts) between all contactors installed or between contactors and adjacent devices is required.

- For technical data, see page 2.55.

#### Options

- Contact choice: Normally open (NO), Normally closed (NC).



ESC463S

Description	Coil AC Voltage	Power Circuit	Width (1 Mod =17.5mm)	Cat ref.
25A 2NO	230V 50Hz	25A - 400V a.c.	1 Mod	<b>ESC225S</b>
40A 2NO	230V 50Hz	40A - 400V a.c.	3 Mod	<b>ESC240S</b>
63A 2NO	230V 50Hz	63A - 400V a.c.	3 Mod	<b>ESC263S</b>
25A 3NO	230V 50Hz	25A - 400V a.c.	2 Mod	<b>ESC325S</b>
40A 3NO	230V 50Hz	40A - 400V a.c.	3 Mod	<b>ESC340S</b>
25A 3NO + 1NC	230V 50Hz	25A - 400V a.c.	2 Mod	<b>ESC428S</b>
25A 4NO	230V 50Hz	25A - 400V a.c.	2 Mod	<b>ESC425S</b>
40A 4NO	230V 50Hz	40A - 400V a.c.	3 Mod	<b>ESC440S</b>
63A 4NO	230V 50Hz	63A - 400V a.c.	3 Mod	<b>ESC463S</b>
25A 4NC	230V 50Hz	25A - 400V a.c.	2 Mod	<b>ESC426S</b>



ESC001

### Auxiliaries & Accessories

Description	Power Circuit	Width (1 Mod =17.5mm)	Cat ref.
Heat Dissipation Insert	-	½ Mod	<b>LZ060</b>
Sealable Terminal Cover for 1 Module Contactors	-	-	<b>ESC001</b>
Sealable Terminal Cover for 2 Module Contactors	-	-	<b>ESC002</b>
Sealable Terminal Cover for 3 Module Contactors	-	-	<b>ESC003</b>
1NO + 1NC Auxiliary Contact	6A - 250V a.c.	½ Mod	<b>ESC080</b>



ESC002



ESC080

**Impulse & Latching**

**Description**

- Modular pushbuttons to actuate loads either directly or via contactors etc.

**Terminal Capacity**

- 10mm<sup>2</sup> rigid conductor.
- 6mm<sup>2</sup> flexible conductor.
- BS EN 60947-5-1

Characteristics	Width (1 Mod =17.5mm)	Cat ref.
<b>Pushbuttons (Impulse) 16A - 250V a.c. Without Indicator Light</b>		
Contacts: 1 NO	1 Mod	<b>SVN311</b>
Contacts: 2 NO	1 Mod	<b>SVN331</b>
Contacts: 2 NO, Double Pushbutton	1 Mod	<b>SVN371</b>
Contacts: 1 NC	1 Mod	<b>SVN321</b>
Contacts: 2 NC	1 Mod	<b>SVN341</b>
Contacts: 1 NO + 1 NC	1 Mod	<b>SVN351</b>
Contacts: 1 NO + 1 NC, Double Pushbutton	1 Mod	<b>SVN391</b>

<b>Pushbuttons (Impulse) 16A - 250V a.c. With Indicator Light</b>		
Contacts: 1 NO : Green	1 Mod	<b>SVN411</b>
Contacts: 2 NO : Red	1 Mod	<b>SVN432</b>
Contacts: 1 NC : Red	1 Mod	<b>SVN422</b>
Contacts: 2 NC : Green	1 Mod	<b>SVN441</b>
Contacts: 1 NO + 1 NC	1 Mod	<b>SVN452</b>

<b>Pushbuttons (Latching) 16A - 250V a.c. Without Indicator Light</b>		
Contacts: 1 NO	1 Mod	<b>SVN312</b>
Contacts: 2 NO	1 Mod	<b>SVN332</b>
Contacts: 1 NC	1 Mod	<b>SVN322</b>
Contacts: 2 NC	1 Mod	<b>SVN342</b>
Contacts: 1 NO + 1 NC	1 Mod	<b>SVN352</b>

<b>Pushbuttons (Latching) 16A - 250V a.c. With Indicator Light</b>		
Contacts: 1 NO : Green	1 Mod	<b>SVN413</b>
Contacts: 2 NO : Green	1 Mod	<b>SVN433</b>



SVN311



SVN411



SVN312



SVN413

Modular Devices  
& Enclosures



SVN121

### Indicator Lights

#### Characteristics

- Available with red, green, orange, blue & transparent lens.

#### Light Technology

- LED.

#### Options

- DIN rail mountable.

#### Connection

- Cage terminals.

#### Capacity

- 10mm<sup>2</sup> rigid conductor.
- 6mm<sup>2</sup> flexible conductor.
- BS EN 62094-1.



SVN127

Description	Width (1 Mod =17.5mm)	Cat ref.
<b>Indicator Lights 230V a.c.</b>		
Indicator Colour: Green	1 Mod	<b>SVN121</b>
Indicator Colour: Red	1 Mod	<b>SVN122</b>
Indicator Colour: Orange	1 Mod	<b>SVN123</b>
Indicator Colour: Blue	1 Mod	<b>SVN124</b>
Indicator Colour: Transparent	1 Mod	<b>SVN125</b>
Indicator Colour: Red & Green (Double Indicator)	1 Mod	<b>SVN126</b>
Indicator Colour: Red x3 (Triple Indicator)	1 Mod	<b>SVN127</b>

### Indicator Lights 12/48V

Indicator Colour: Green	1 Mod	<b>SVN131</b>
Indicator Colour: Red	1 Mod	<b>SVN132</b>

### Safety Transformers



ST313

#### Characteristics

- Provide Separated Extra Low Voltage (SELV) 8, 12, 24V a.c.

#### Technical Data

- Secondary voltages: 8V, 12V, 24V a.c.
- Cable capacities: 6mm<sup>2</sup>
- For technical data, see page 2.60.

#### Note:

- The transformers have a higher no load voltage. The stated voltages correspond to the voltages on nominal load.

Description	Width (1 Mod =17.5mm)	Cat ref.
230V/12-24V a.c. 50Hz, 25VA 50/60 Hz	4 Mod	<b>ST312</b>
230V/12-24V a.c. 50Hz, 16VA 50/60 Hz	4 Mod	<b>ST313</b>
230V/12-24V a.c. 50Hz, 40VA 50/60 Hz	4 Mod	<b>ST314</b>
230V/12-24V a.c. 50Hz, 63VA 50/60 Hz	6 Mod	<b>ST315</b>

### Bell Transformers



ST301

#### Characteristics

- Provide Separated Extra Low Voltage (SELV) 8, 12, 24V a.c.

#### Technical Data

- Secondary voltages: 8V, 12V, 24V a.c.
- Cable capacities: 6mm<sup>2</sup>.
- Bell transformers are short-circuit protected.
- For technical data, see page 2.60.

#### Note:

- When a bell transformer is installed in an enclosure with mains voltage equipment, 230V cable should be used on the secondary side of the transformer or extra low voltage cable should be sheathed within the enclosure.

Description	Width (1 Mod =17.5mm)	Cat ref.
230V/8V a.c. 50/60 Hz, 8-12V, 4VA	2	<b>ST301</b>
230V/8-12V a.c. 50/60 Hz, 8-12V, 8VA	2	<b>ST303</b>
230V/8-12V a.c. 50/60 Hz, 8-12V, 16VA	3	<b>ST305</b>

**Bells**

**Technical Data**

- Cable capacities: 6mm<sup>2</sup>
- Bells: Max. continuous duty ≤ 30 minutes.

**Output**

- Bells: 85 dBA.

Description	Width (1 Mod =17.5mm)	Cat ref.
8/12V a.c., 5VA - 0.33A	1 Mod	<b>SU212</b>
230V a.c., 6.5VA - 0.03A	1 Mod	<b>SU213</b>



SU212

**Buzzers**

**Technical Data**

- Cable capacities: 6mm<sup>2</sup>.
- Buzzers: Max. continuous duty ≤ 30 minutes.

**Output**

- Buzzers: 78dBA.

Description	Width (1 Mod =17.5mm)	Cat ref.
8/12V a.c., 4VA - 0.33A	1 Mod	<b>SU214</b>
230V a.c., 6.5VA - 0.03A	1 Mod	<b>SU215</b>



SU214



EH010



EH171

### Electromechanical Time Switches

#### Characteristics

- For hourly, daily or weekly programming.
- To control lighting, heating, ventilation, household appliances etc. to save energy and to improve comfort.

#### Technical Data

- Programming by captive segments.
- Manual override for 1 module products: Automatic, Permanent ON.
- Manual override for 3 module products: Automatic, Permanent ON, Permanent OFF.
- Minimum Switching Time: 15 min for daily dial, 2h for weekly dial.
- Supply failure reserve where applicable 200 hours, after being connected for 120 hours.
- For a selection chart see page 2.62, for technical data see page 2.61.

#### Connection

- 1-4mm<sup>2</sup>.

Description	Voltage Supply	Width (1 Mod =17.5mm)	Cat ref.
<b>1 Channel Time Switches without Supply Failure Reserve</b>			
Daily Dial, 1 Changeover Contact, 16A 250V a.c. AC1	230V a.c. 50Hz	1 Mod	<b>EH010</b>
Daily Dial, 1 NO Contact, 16A 250V a.c. AC1	230V a.c. 50Hz	3 Mod	<b>EH110</b>
<b>1 Channel Time Switches with Supply Failure Reserve</b>			
Daily Dial, 1 Changeover Contact, 16A 250V a.c. AC1	230V a.c. 50/60Hz	1 Mod	<b>EH011</b>
Daily Dial, 1 NO Contact, 16A 250V a.c. AC1	230V a.c. 50/60Hz	3 Mod	<b>EH111</b>
Weekly Dial, 1 NO Contact, 16A 250V a.c. AC1	230V a.c. 50/60Hz	3 Mod	<b>EH171</b>



EG071



EG103



EG203

### Digital Time Switches

#### Characteristics

- For the control of lighting, heating, household appliances, shop windows, signage etc. to improve comfort and to save energy.

#### EG103 and EG203 (Basic Version)

- Automatic change of summer / winter time.

#### EG103E/V and EG203E (Advanced Version)

- Automatic change of summer / winter time.
- Holiday mode: forcing ON or OFF between two dates, presence simulation with random switching.
- Backlit screen.
- Impulse programming capability (1s to 30 min).

#### Programming Key

- To allow easy back up and re-installation of the program to allow permanent program overrides.
- Programming per day or group of days.
- 56 ON / OFF programme steps.
- Permanent ON/OFF overrides.
- Temporary ON/OFF overrides bar graph indication showing the daily profile.
- Ability to disable device button controls with **EG004**.
- Programming can be completed without the need to be energised.

#### Connection

- **EG010 / EG071**: 0.5 to 4mm<sup>2</sup>.
- **EG103 and EG203/E**: 1 to 6mm<sup>2</sup> Flexible, 1.5 to 10mm<sup>2</sup> Rigid.

#### Operating Voltage

- 230 a.c. 50/60 Hz (except **EG103V** - 12/24V AC/DC).
- For a selection chart see page 2.62, for technical data see pages 2.61 - 2.65.

Description	Width (1 Mod =17.5mm)	Cat ref.
<b>1 Channel Digital Time Switch (not compatible with program key)</b>		
Daily Cycle, 5 Adjustable pre-recorded programs 6 Switchings per day (3 on and 3 off), Output: 1 changeover contact 16A - 250V a.c. AC 1, 3 year reserve	1 Mod	<b>EG010</b>
Weekly Cycle, Capacity 20 program steps Output: 1 changeover contact 16A - 250V a.c. AC 1, 3 year reserve	1 Mod	<b>EG071</b>
<b>1 Channel Digital Time Switch</b>		
Weekly Cycle (Basic Version), Output: 1 changeover contact 16A - 250V a.c. AC 1, Delivered with key <b>EG005</b>	2 Mod	<b>EG103</b>
Weekly Cycle (Advanced Version), Output: 1 changeover contact 16A - 250V a.c. AC 1, Delivered with key <b>EG005</b>	2 Mod	<b>EG103E</b>
<b>2 Channel Digital Time Switch</b>		
Weekly Cycle (Basic Version), Output: 2 changeover contact 16A - 250V a.c. AC 1, Delivered with key <b>EG005</b>	2 Mod	<b>EG203</b>
Weekly Cycle (Advanced Version), Output: 2 changeover contact 16A - 250V a.c. AC 1, Delivered with key <b>EG005</b>	2 Mod	<b>EG203E</b>

**4 Channel Digital Time Switches**

**Weekly and Annual Cycle**

- In commercial premises timed programming often requires the use of multi-circuit equipment with large programming capacities for a weekly or annual cycle.

**Applications**

- Command of lighting circuits, control of heating, ventilation control, bells, alarms.

**Functions**

- Summer/winter time pre-programmed.
- External input for override (permanent, temporary, timed)
- The output can be defined as ON/OFF, impulse or cycle.
- 4 different cycles can be defined.
- Calculates automatically all dates linked with Easter.
- Programming for holiday period, including random mode.
- 10 specific weekly programs.
- Hour counter on each channel.
- Ability to disable device button controls with PIN code.

**Connection**

- Quick connect terminals.
- Capacity: 0.75 to 2.5mm<sup>2</sup>.
- For a selection chart see page 2.62.



EG493E

Description	Cat ref.
4 Channel Yearly Time Switch	<b>EG493E</b>
Spare grey programming key for timers <b>EG493E</b>	<b>EG007</b>
USB interface between PC & key interface module, with software on CD	<b>EG003G</b>

**Astronomical Time Switches**

**Characteristics**

- Programming of lighting loads, with automatic change of winter / summer time.
- Expert program with individual astronomical program steps.
- Programming for day or group of days.
- Weekly programming.
- Permanent or temporary override.
- Programming for holiday period.
- Can be programmed via the PC software and the associated interface (**EG003**).
- For technical information see page 2.65.



EE180

Description	Width (1 Mod =17.5mm)	Cat ref.
<b>1 Channel Astronomical Time Switch</b>		
Weekly Cycle, 230V a.c., 50Hz Changeover Contact 16A AC1, Operating reserve lithium battery 5 years, Delivered with key <b>EG005</b>	2 Mod	<b>EE180</b>
<b>2 Channel Astronomical Time Switch</b>		
Weekly Cycle, 230V a.c., 50Hz 2 Changeover Contact 16A AC1, Operating reserve lithium battery 5 years, Delivered with key <b>EG005</b>	2 Mod	<b>EE181</b>



EE181

**PC Interface & Software Tools**

Description	Pack qty.	Cat ref.
USB interface between PC & key interface module, with software on CD	1	<b>EG003G</b>
Yellow locking key to prevent unauthorised re-programming of all EG time clocks (except <b>EG010, EG071</b> )	1	<b>EG004</b>
Spare grey programming key for timers <b>EG103, EG103V, EG203, EG103E, EG203E</b>	1	<b>EG005</b>
DIN rail storage module for <b>EG004</b> or <b>EG005</b>	1	<b>EG006</b>



EG003G



EG005

Modular Devices & Enclosures



EMN001

### Time Lag Switches

#### Characteristics

- Provides control of lighting circuits with automatic switch-off after a pre-set time.
- Compact design with a 2 position switch, permanent / timed lighting control facility.

#### Basic Staircase Time Lag Switches

- Adjustable time delay setting 30 sec. to 10 minutes.

#### Multifunction Staircase Time Lag Switches

- Incorporates a pre-warning of switch OFF improving safety.
- Double delay function: 30 sec. to 10 min. 1 hour on override by pressing the push-button for more than 3 seconds. Double delay with pre-warning mode.
- For technical data see page 2.66.

Description	Pack qty.	Cat ref.
<b>Basic Staircase Time Lag Switches</b> Supply voltage 230V a.c. 50/60Hz 16A - 250V AC1 2300W incandescent halogen and fluorescent	1 Mod	<b>EMN001</b>
<b>Multifunction Staircase Time Lag Switches</b> Supply voltage 230V a.c. 50/60Hz 16A - 250V AC1 2300W incandescent halogen and fluorescent	1 Mod	<b>EMN005</b>



EMN005



EZN001

### Delay Timers

#### Characteristics

- For timing and automation in domestic and commercial premises. The input signal can be via various switching devices (pushbutton, latching switch, timeclock etc.) and the timed output used to control the application.

#### Applications

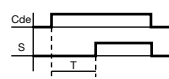
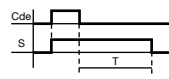
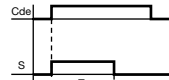
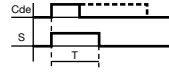
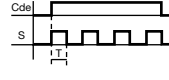
- To provide all types of automatic control i.e. lighting, ventilation, watering, machine pre-heating, cycle control etc. with automatic switch off / on after preset time.

#### Terminal Capacity

- 6mm<sup>2</sup> max flexible.
- 1.5 - 10mm<sup>2</sup> rigid.

#### Technical Data

- Voltage range: 12 to 48V DC, 12 to 230V AC.
- Adjustable: Time delay from 0.1s to 10hrs.
- Complies with BS EN 60669-2-1.
- For technical data see page 2.67 - 2.68.

Description	Pack qty.	Cat ref.
 <p><b>Delay On</b> 1 changeover contact 10A / 230V a.c. AC1 Time delay T:0.1s to 10hr</p>	1 Mod	<b>EZN001</b>
 <p><b>Delay Off</b> 1 changeover contact 10A / 230V a.c. AC1 Time delay T:0.1s to 10hr</p>	1 Mod	<b>EZN002</b>
 <p><b>Adjustable Time On</b> 1 changeover contact 10A / 230V a.c. AC1 Time delay T:0.1s to 10hr</p>	1 Mod	<b>EZN003</b>
 <p><b>Timer</b> 1 changeover contact 10A / 230V a.c. AC1 Time delay T:0.1s to 10hr</p>	1 Mod	<b>EZN004</b>
 <p><b>Symmetrical Flasher</b> 1 changeover contact 10A / 230V a.c. AC1 Time delay T:0.1s to 10hr</p>	1 Mod	<b>EZN005</b>
<p><b>Delay On / Off, Adjustable Time On / Off, Timer, Symmetrical Flasher</b> 1 changeover contact 10A / 230V a.c. AC1 Time delay T:0.1s to 10hr</p>	1 Mod	<b>EZN006</b>

EZN002



EZN004



**Multi-range Thermostats**

**Description**

- Electronic thermostats for any application requiring temperature control (from cold rooms to steam rooms).

**Characteristics**

- 3 working modes are possible (selected by wiring): permanent off, permanent on, cyclic operation.
- Output status is indicated via an LED.

**Technical Data**

- Requires sensor head, **EK081** or **EK083**.
- Voltage rating: 230V a.c. - 50/60 Hz.
- Output: 1 changeover contact, 2A AC1 - 230V a.c.
- 4 ranges: -30 to 0°C, 0 to +30°C, 30 to +60°C, 60 to +90°C.
- For technical data see page 2.69.



EK186

Description	Width (1 Mod =17.5mm)	Cat ref.
Multi-range Thermostat (Requires sensor head, <b>EK081</b> or <b>EK083</b> )	3 Mod	<b>EK186</b>

**Multi-Channel Thermostats**

**Description**

- Electronic thermostats for any application requiring temperature control (from cold rooms to steam rooms).

**Characteristics**

- 3 working modes are possible (selected by wiring): permanent off, permanent on, cyclic operation
- Output status is indicated via an LED.

**Technical Data**

- Two adjustable temperature levels are selected by external signals (operation by time switch or digital programmer).
- Additionally there is an adjustable low level temperature for frost protection etc. In the event of probe disconnection the heating system is switched on one minute in every four.
- Accuracy ±0.2°C, Voltage rating: 230V a.c. - 50/60 Hz.
- Output: 1 changeover contact, 2A AC1 - 230V a.c.
- Temperature Level 1 (Comfort) Adjustable 5 - 30°C.
- Temperature Level 2 (Night setting) Adjustable 2 - 8°C less than Level 1 setting.
- Temperature Level 3 (Frost setting) Adjustable 5 - 30°C.
- For technical data see page 2.70.



EK187

Description	Width (1 Mod =17.5mm)	Cat ref.
Multi-channel Thermostat (Requires sensor head, <b>EK081</b> or <b>EK083</b> )	3 Mod	<b>EK187</b>

**Sensor Head for Electronic Thermostats**

**Description**

- Sensor to provide temperature reading to electronic thermostat.
- Can be associated with: **EK186**, **EK187** thermostats.
- For technical data see page 2.71.

Description	Cat ref.
Fixed Ambient Sensor Head	<b>EK081</b>
Adjustable Ambient Sensor Head	<b>EK082</b>
Universal Sensor Head	<b>EK083</b>



EK081

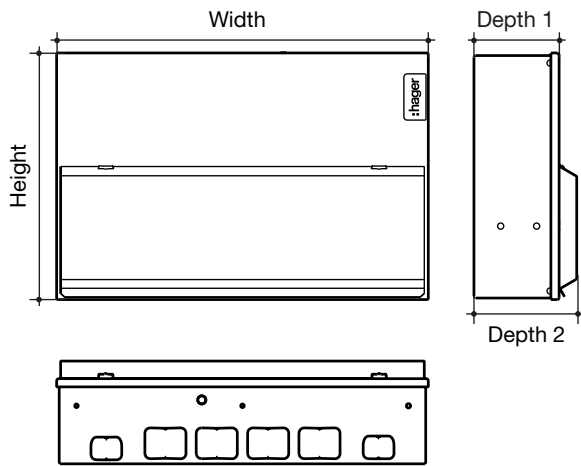


EK082



EK083

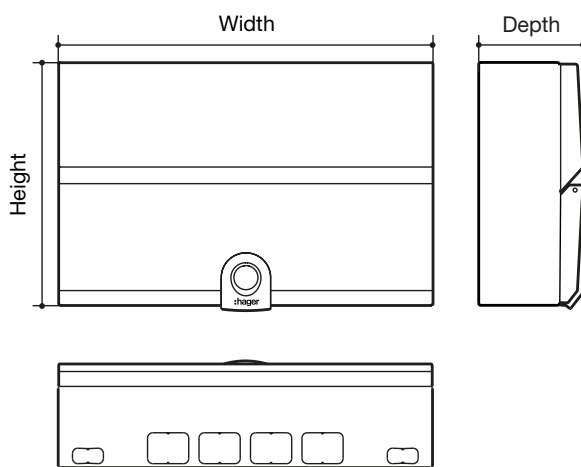
Modular Devices  
& Enclosures



**Design 10 Dimensions (mm)**

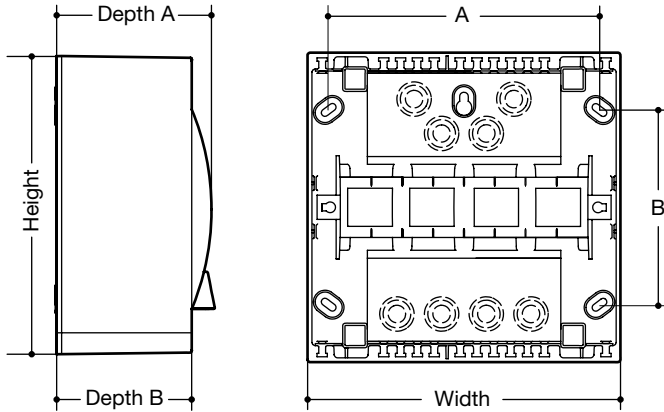
	Enclosure Size					
	2	3	4	5	6	7
A	147	219	290	362	398	470
B	240	240	240	240	240	240
C	83	83	83	83	83	83
D	100	100	100	100	100	100

Modular Devices  
& Enclosures



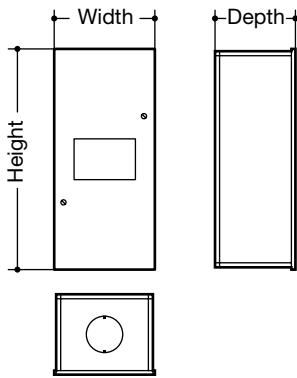
**Design 30 Dimensions (mm)**

	Enclosure Size					
	2	3	4	5	6	7
A	168	220	290	360	400	480
B	240	240	240	240	240	240
C	102	102	102	102	102	102



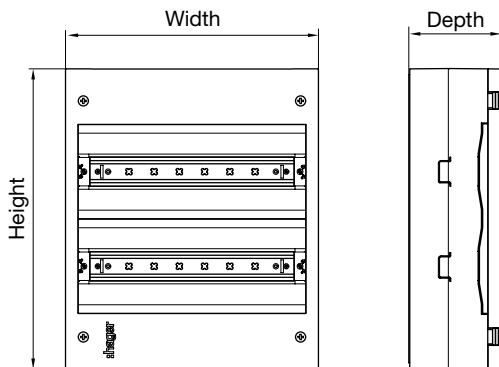
**Mini Gamma Dimensions (mm)**

	GD102E	GD104E	GD106E	GD108E	GD110E
Width	55	110	146	182	218
Height	160	180	180	180	180
Depth A	94	94	94	94	94
Depth B	82	82	82	82	82
A	-	86	122	159	195
B	-	114	114	114	114



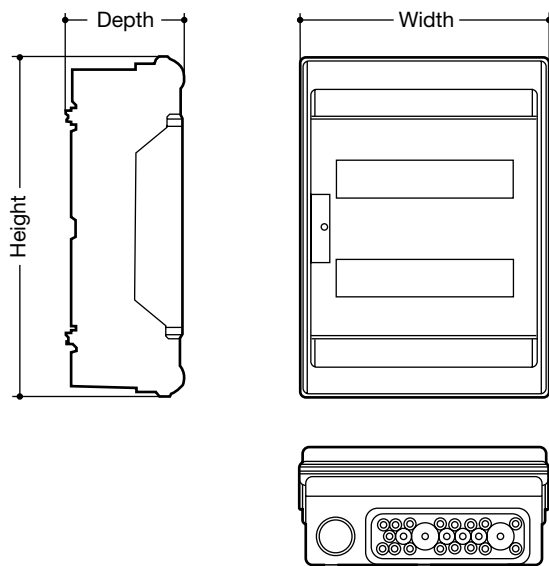
**IU Enclosures Dimensions (mm)**

	IU41	IU2 IU3	IU2/D IU2/GD IU3/D	IU42	IU42/D	IU4	IU4/D	IU44 IU45	IU44/D IU44/GD
Width	50	80	80	80	80	115	115	125	125
Height	152	152	152	312	312	187	187	312	312
Depth	61.5	61.5	87.5	61.5	100	61.5	87.5	73.5	99.5
Connection	EARTH ONLY								
Knockouts	2 x 20mm							None	



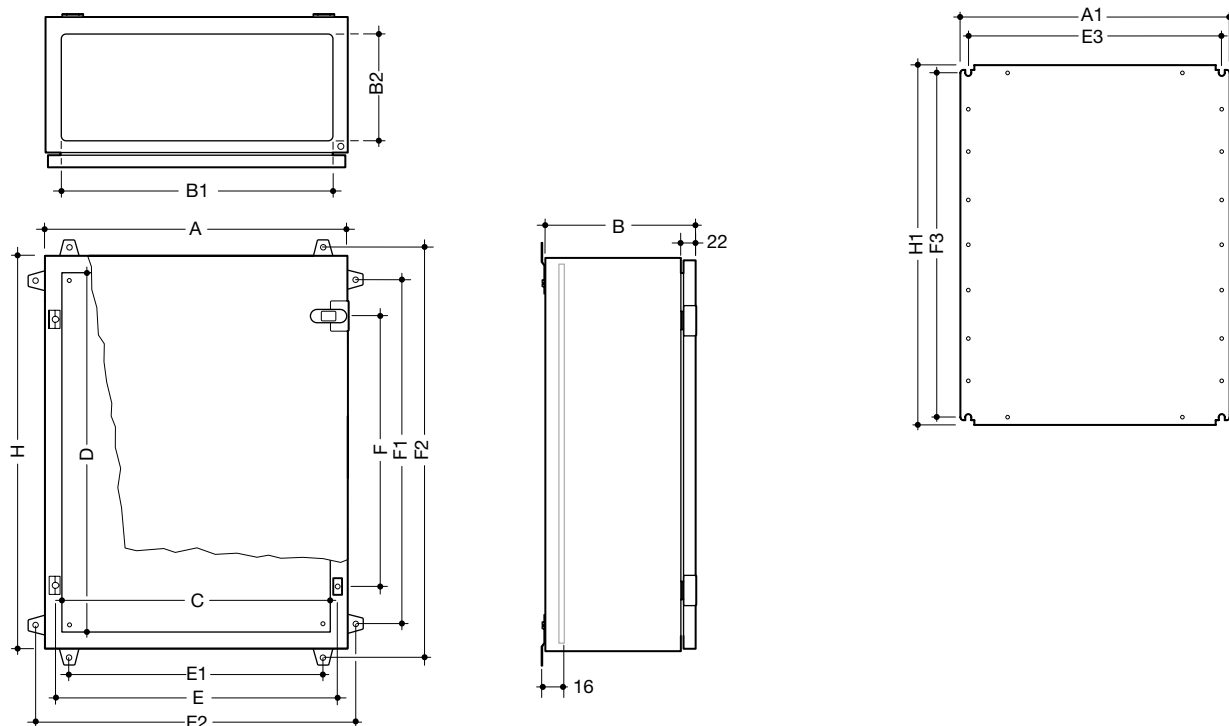
**Vega Dimensions (mm)**

	VB118TP VB118PP	VB218TP VB218PP	VB318TP VB318PP	VB418TP VB418PP
Width	400	400	400	400
Height	325	475	625	775
Depth	146	146	146	146
DIN Rail Distance	150	150	150	150



**Vector II Dimensions (mm)**

	VE103U	VE106U	VE110U	VE112U	VE212U	VE312U
Width	110	164	236	310	310	310
Height	175	190	210	302	427	552
Depth	93	113	114	151	151	151

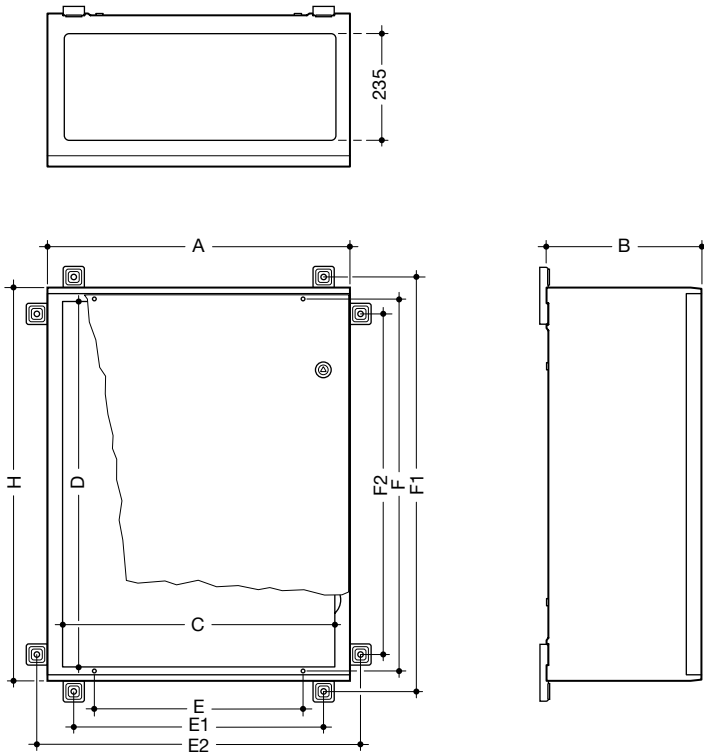


### Steel Enclosures Dimensions

Cat ref. Plain Door	Cat ref. Glazed Door	Rows	Dimensions (mm)							Outside Fixing				Inside Fixing	
			A	H	B	B1	B2	C	D	E1	E2	F1	F2	E	F
FL104A	-	-	250	300	160	195	80	200	250	210	320	220	332	169	208
FL104A	FL154A	2	300	350	160	245	80	250	300	260	370	272	382	219	258
FL105A	FL155A	2	300	350	200	245	120	250	300	260	370	272	382	219	258
FL110A	FL160A	3	300	500	200	245	120	250	450	260	370	422	532	219	408
FL112A	FL162A	3	400	500	200	345	120	350	450	360	470	422	532	319	408
FL117A	FL167A	4	400	650	200	345	120	350	600	360	470	572	682	319	558
FL118A	FL168A	4	400	650	250	345	170	350	600	360	470	572	682	319	558
FL120A	FL170A	4	500	650	250	445	170	450	600	460	570	572	682	419	558
FL124A	FL174A	5	600	800	300	545	220	550	750	560	670	722	832	519	708
FL126A	FL176A	6	600	950	300	545	220	550	900	560	670	872	982	519	858
FL128A	FL178A	6	800	950	300	745	220	750	900	760	870	872	982	719	858

### Mounting Plate Dimensions

Cat ref.	For enclosures	Plate dimensions (mm)		Fixing points (mm)	
		A1	H1	E3	F3
FL402A	FL102A	193	280	169	208
FL404A	FL104A, FL105A, FL204B	243	330	219	258
FL407A	FL110A, FL209B	243	480	219	258
FL408A	FL112A, FL213B	343	480	219	408
FL412A	FL117A, FL118A, FL216B	343	630	319	408
FL413A	FL120A, FL221B	443	630	319	558
FL415A	FL123A, FL124A, FL229B	543	780	319	558
FL416A	FL125A, FL126A	543	930	419	558
FL417A	FL127A, FL128A	743	930	419	558
FL522E	FL327B, FL527B	693	1080	719	858



GRP Enclosure Dimensions

Cat ref. Plain Door	Cat ref. Glazed Door	Rows	Dimensions (mm)						Inside Fixing		Outside Fixing		
			A	H	B	C	D	E	F	E1	E2	F1	F2
FL204B	FL254B	2	300	350	160	250	300	219	258	339	339	269	389
FL209B	FL259B	3	300	500	200	250	450	219	408	339	339	419	539
FL213B	FL263B	3	400	500	200	350	450	319	408	439	439	419	539
FL216B	FL266B	4	400	650	200	350	600	319	558	439	439	569	689
FL221B	FL271B	4	500	650	250	450	600	419	558	539	539	569	689
FL229B	FL279B	5	600	800	300	550	750	519	708	639	639	719	839
FL327B	FL527B	-	850	1200	300	750	1050	-	-	-	-	-	-

Torque Settings

	Pz No.	(mm)	Cables >1.5mm <sup>2</sup> Tightening torque (N.m)		Cables ≤1.5mm <sup>2</sup> Tightening torque (N.m)		Cable Stripping (mm)
			Single Cable	Multi Cables	Single Cable	Multi Cable	
<b>Consumer unit terminals</b>							
Earth and neutral terminal bars	2	6.5	2	2	1.5	1.5	10
<b>Isolation</b>							
SB switch disconnectors	2	6.5	3.6	3.6	3.6	3.6	15
<b>Circuit protection</b>							
MTN MCB	2	6.5	2.8	2.8	2.8	2.8	13
NBN/NCN/NDN MCB	2	6.5	2.8	2.8	2.8	2.8	13
RCBO	2	5.5	2.1	2.1	2.1	2.1	13
RCCB	2	5.5	2.8	2.8	2.8	2.8	13

# kWh Meters

## Electrical Characteristics

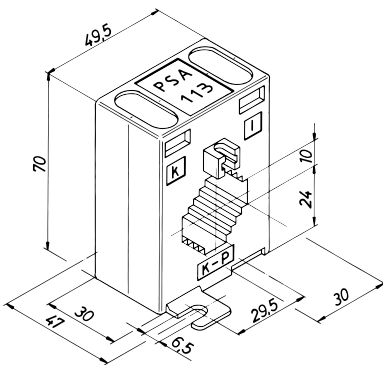
	EC150	EC152	EC154M	EC350	EC352	EC360	EC362	EC364M	EC365B	TE360	EC370	EC372	TE370
<b>Electrical Characteristics</b>													
Voltage	230V~ ±15%						230V~ ±15%			400V~ ±15%			
Frequency	50/60Hz						50/60Hz						
Consumption	< 10VA and 1W						< 10 VA and 3W						
<b>Data</b>													
Connection	Direct									Via current transformer			
Display	Digital - 7 digits												
Accuracy	± 1% - Class B according to EN 50470-3												
I <sub>max</sub>	63A						100A			6A on CT secondary			
I <sub>starting</sub>	40mA						80mA			10mA on CT secondary			
Base current	10A						20A			5A			
<b>LED</b>													
	1000 blinking per kWh						500 blinking per kWh			1000 blinking per kWh			
<b>Pulsed Output</b>													
	1 pulse = 100Wh / 100ms / 27V DC max (excepted on KNX meters)												
<b>Tariff</b>													
	1	2	2	1	2	1	2	2	1	2	1	2	2
<b>Mechanical Characteristics</b>													
Width	3 Modules			4 Modules			7 Modules			4 Modules			
Protection degree	IP20 - IP51 (front part)												
Temperature	Storage temperature: -20°C to +70°C, Operating temperature: -10°C to +55°C												
Connection capacity	Rigid: 1.5 to 16mm <sup>2</sup> Flexible: 1 to 16mm <sup>2</sup>						Rigid: 1.5 to 35mm <sup>2</sup> Flexible: 1 to 35mm <sup>2</sup>			Rigid: 1.5 to 10mm <sup>2</sup> Flexible: 1 to 6mm <sup>2</sup>			

### Technical Data (to EN/IEC60044-1)

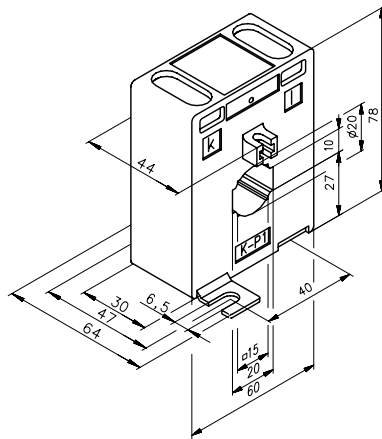
Primary rated current	50 A - 2000 A
Rated secondary current	5 A
Rated frequency	50 - 60 Hz
Highest voltage for equipment $U_m$	720 V
Rated power-frequency withstand voltage (r.m.s.)	3 kV
Instrument security factor (FS)	FS 5
Rated continuous thermal current	$1,2 \times I_n$
current rating	120 %
Rated short time thermal current	$I_{th} = 60 \times I_n$ (max 50 kA)
Rated dynamic current:	$I_{dyn} = 2,5 \times I_{th}$ (max 120 kA)
Permissible ambient temperature	-40 °C to + 40 °C
Class of insulation in accordance with IEC 60085	E
Degree of protection DIN/EN 60529 / VDE 0470 T1	IP 20
Recommended tightening torque secondary terminals	1,5 - 2 Nm

	Prim. [A]	Sec. [A]	Power [VA]	Accuracy class	Dimensions	Max. Busbar and cable Size
<b>SRA01005</b>	100	5	2.5	1	70 x 49,5 x 30 mm	30 x 10 mm 25 x 15 mm 20 x 20 mm
<b>SRA01505</b>	150	5	2.5	1		
<b>SRA02005</b>	200	5	2.5	1		
<b>SRA02505</b>	250	5	2.5	1		
<b>SRC04005</b>	400	5	5	1		
<b>SRC06005</b>	600	5	5	1		
<b>SRA00505</b>	50	5	1.5	1	78 x 60 x 30 mm	20 x 10 mm 15 x 15 mm Ø 20 mm
<b>SRI03005</b>	300	5	5	1	78 x 60 x 30 mm	40 x 12 mm Ø 28 mm
<b>SRD08005</b>	800	5	5	1	108 x 85 x 30 mm	60 x 10 mm 50 x 30 mm Ø 45 mm
<b>SRD10005</b>	1000	5	5	1		
<b>SRD15005</b>	1500	5	5	1		
<b>SRE20005</b>	2000	5	15	1	122 x 100 x 40 mm	80 x 10 mm 60 x 30 mm Ø 60 mm

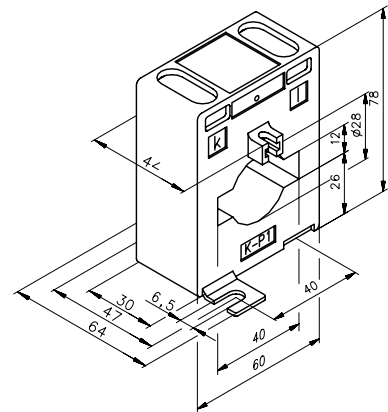
**SRA01005, SRA01505, SRA02005, SRA02505, SRC04005, SRC06005**



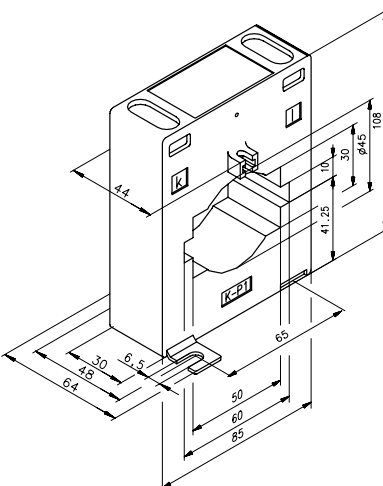
**SRA00505**



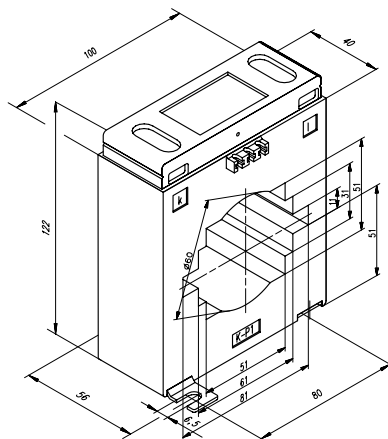
**SRI03005**



**SRD08005, SRD10005, SRD15005**



**SRE20005**



	SM101E	SM101C
<b>Current (TRMS)</b>		
I (1 <sup>st</sup> CT)	5A...9999A	
I (2 <sup>nd</sup> CT)	5A	
I <sub>n</sub>	Calculated	
Minimum measuring current (2 <sup>nd</sup> CT)	5mA	
Input consumption	<0.6VA per phase	
Permanent overload (2 <sup>nd</sup> CT)	6A	
Accuracy	±0.2%	
THD		±1%
Update period	1s	
<b>Voltage (TRMS)</b>		
U	50V a.c....520V a.c. (Ph-Ph) 28V a.c....300V a.c. (Ph-N)	
Input consumption	<0.1VA per phase	
Permanent overload (2 <sup>nd</sup> CT)	760V a.c.	
Accuracy	±0.2%	
THD		±1%
Update period	1s	
<b>Power</b>		
Accuracy (P,Q)	±0.5%	
Accuracy (S)	±1%	
Accuracy (PF)	±0.02%	
Update period	1s	
<b>Energy</b>		
Accuracy (Ea)		Class 0.5s
Accuracy (Er)		Class 2
Update period		1s
<b>Frequency</b>		
F	45Hz...65Hz	
Accuracy	±0.1%	
Update period	1s	
<b>Supply</b>		
Voltage	200V a.c....277V a.c. ±15%	
Frequency	50/60Hz	
Consumption	<5VA	
<b>Environment</b>		
Protection degree	IP51 (front panel) IP20 (case)	
Operating temperature	-10°C to +55°C	
Storage temperature	-20°C to +70°C	
Insulation category	III (300V a.c. Ph-Ph)	
Degree of pollution	PD2	
<b>Communication</b>		
Metrological LED	N/A	0.1Wh / pulse
Pulse output	N/A	30V d.c. / 27mA Max
Communication	N/A	RS485 2/3 wires half duplex Jbus/Modbus 2,400bds...38,400bds Parity (no,odd,even) 1 or 2 Stop bytes
<b>Connection</b>		
Network	1BL 2BL 3BL/3NBL 4BL/4NBL	
Current/Voltage input	4mm <sup>2</sup> (solid or stranded)	
Others	2.5mm <sup>2</sup> (solid or stranded)	
Max torque	0.6Nm	
<b>Shape</b>		
Weight	205g	215g
Size	4M, 73mm x 90mm x 67mm	

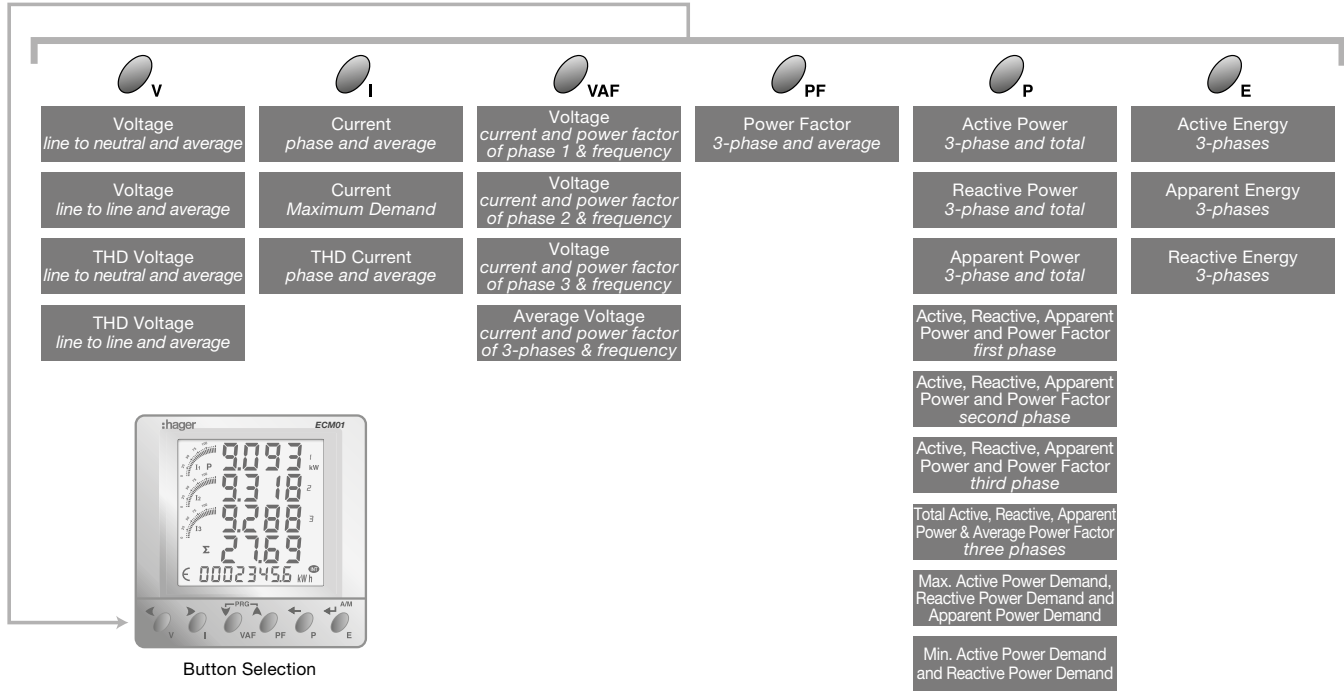


- 96 x 96mm Flush mounting
- Single phase or 3 phase 4 wire network balanced or unbalanced load
- Built in energy pulsed output or with pulsed output and RS485 (modbus)
- Backlit LCD display with bargraph current indication on every page
- Automatic or manual scrolling display
- 330mV current transformer input

- Active energy class 1 (EN62053-21)
- Reactive energy class 2 (EN62053-23)
- Programmable VT ratio
- 3-phase: 140...460Vac measured voltage
- Single phase: 80...265Vac measured voltage
- THD up to 31st harmonic for voltage and current
- Self supplied auxiliary
- Programmable CT ratio 5 to 10,000A
- Frequency 45/65Hz

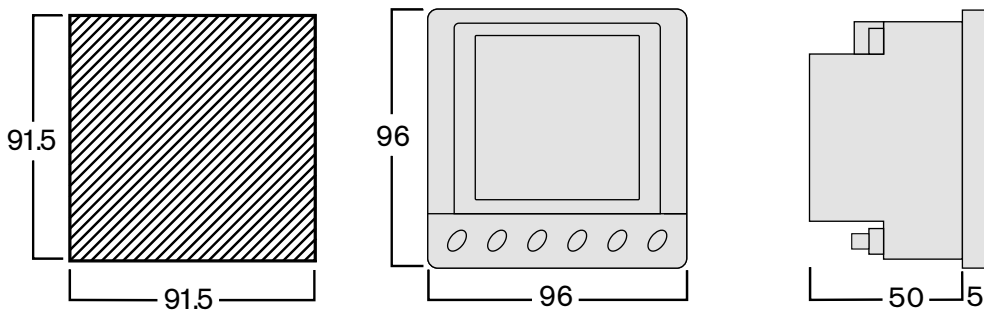
- Wide range of measured parameters (see table below)
- Selectable CT phase correction allows reversal of L1 and L3
- Single CT Connection
- Weight 230g

### Function Diagram

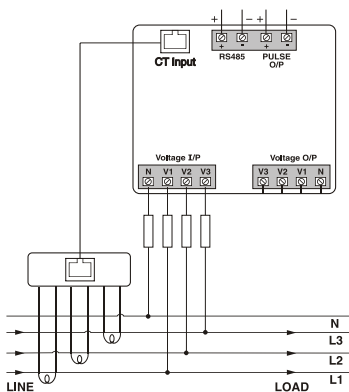


Modular Devices & Enclosures

### Dimensions Diagram (mm)

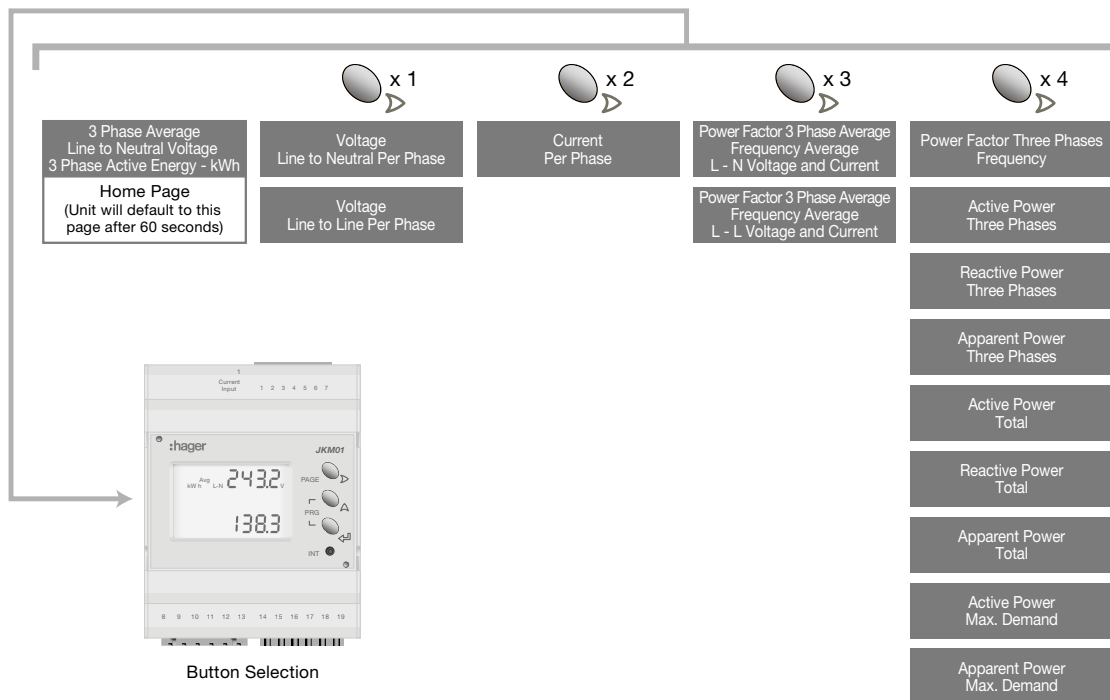


Please allow space at the rear of the meter for cable connections.

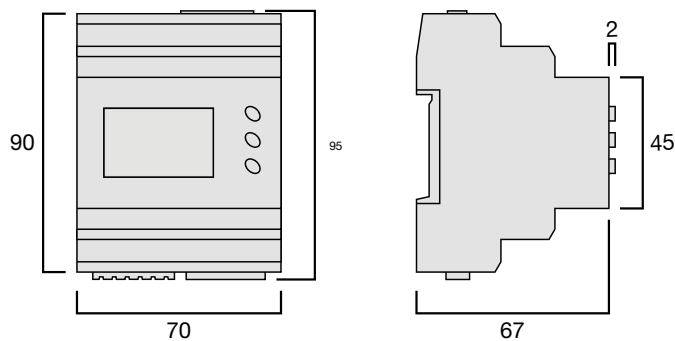


- 4 Module DIN rail mounting
- Single phase or 3 phase (4 wire) network balanced or unbalanced load
- Built-in energy pulse output and RS485 MODBUS communication
- Wide range of measured parameters (see table below)
- High quality backlit LCD display
- 330mV current transformer input
- Active energy class 1 (EN62053-21)
- Reactive energy class 2 (EN62053-23)
- THD up to 31st harmonic for voltage and current
- 3-phase: 140...460Vac measured voltage
- Single phase: 80...265Vac measured voltage
- Self supplied auxiliary
- Programmable CT ratio 5...10,000A
- Programmable VT ratio
- Frequency 45/65Hz
- Selectable CT phase correction allows reversal of L1 and L3
- Single CT Connection
- Weight 190g

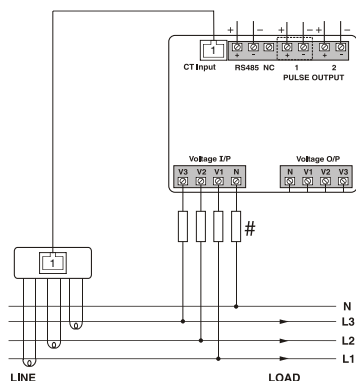
### Function Diagram



### Dimension Diagrams (mm)



Please allow space above and below the meter for cable connections.

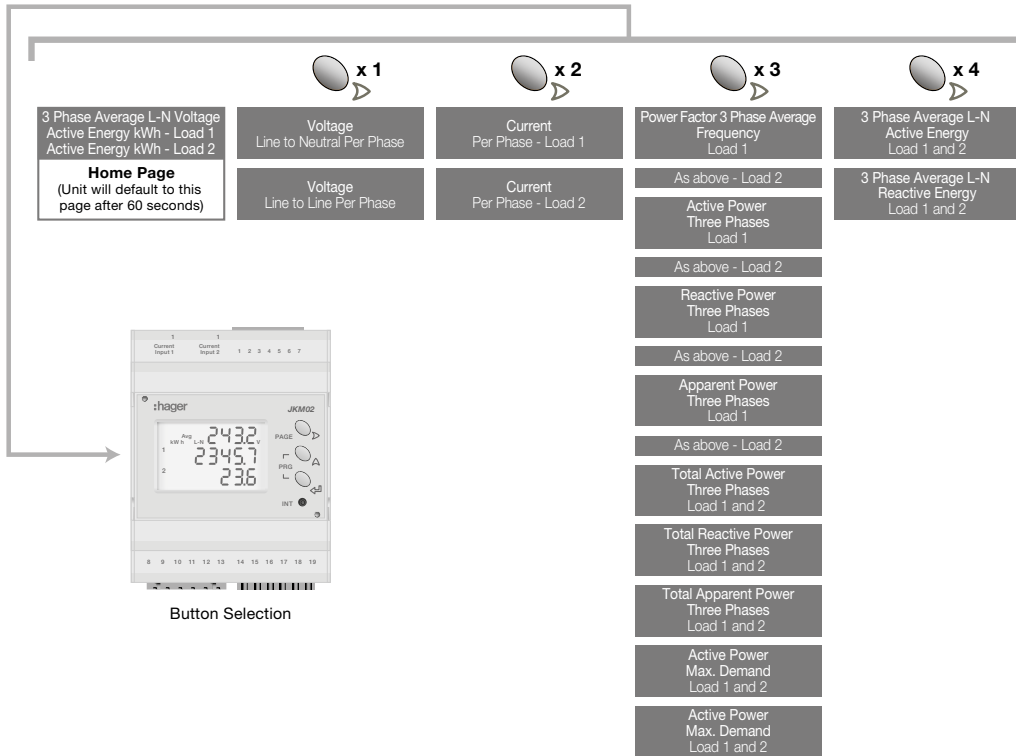


- Split Load, Dual CT input meter
- 4 Module DIN rail mounting
- Single phase or 3 phase (4 wire) network balanced or unbalanced load
- Built-in dual energy pulse output, one for each load and RS485 MODBUS communication
- Wide range of measured parameters (see table below)

- High quality backlit LCD display
- 330mV current transformer input
- Active energy class 1 (EN62053-21)
- Reactive energy class 2 (EN62053-23)
- THD upto 31st harmonic for voltage and current
- Three-phase: 140...460Vac measured voltage
- Single phase: 80...265Vac measured voltage
- Self supplied auxiliary

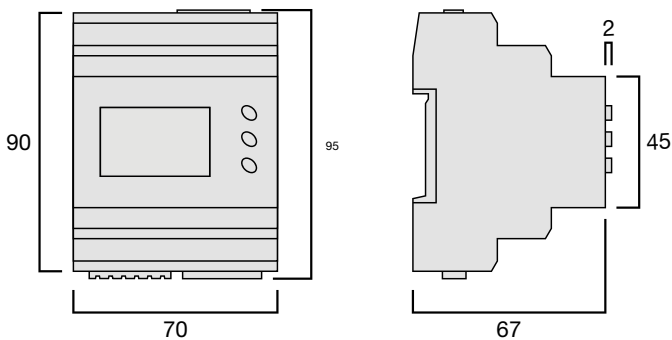
- Programmable CT ratio 5...10,000A per load
- Programmable VT ratio
- Frequency 45/65Hz
- Selectable CT phase correction allows reversal of L1 and L3
- Weight 200g

### Function Diagram

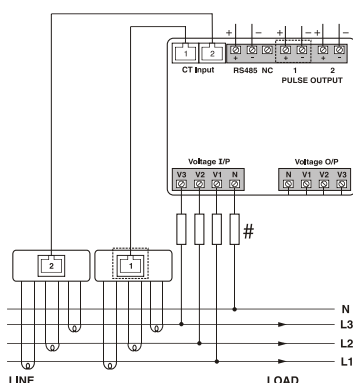


Modular Devices & Enclosures

### Dimension Diagrams (mm)



Please allow space above and below the meter for cable connections.



- Connect up to 3 standard or split core CT's (1A or 5A secondaries)
- Integrated protection circuitry

### Standard CT to plug-in Adaptor

The JFA03 converter allows for the connection of up to three standard current transformers, or standard split-core current transformers (with 1A or 5A secondary's), to the plug-in system.

The unit has integrated protection circuitry allowing for disconnection from meter under load conditions for maintenance.

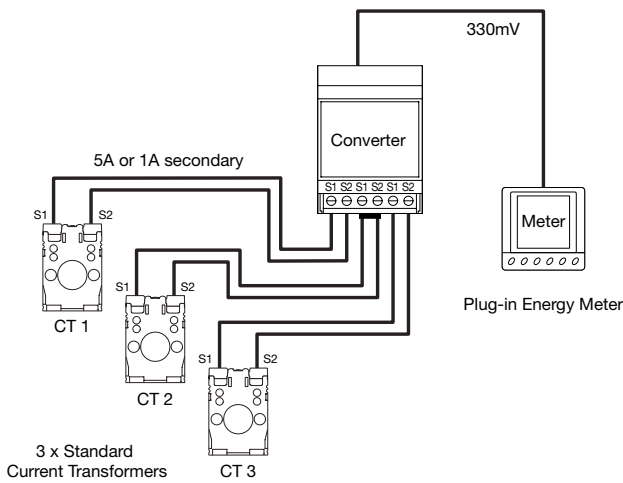
### Important Note

This converter does not provide electrical isolation. Current transformer secondaries may not be earthed and should be wired as shown.

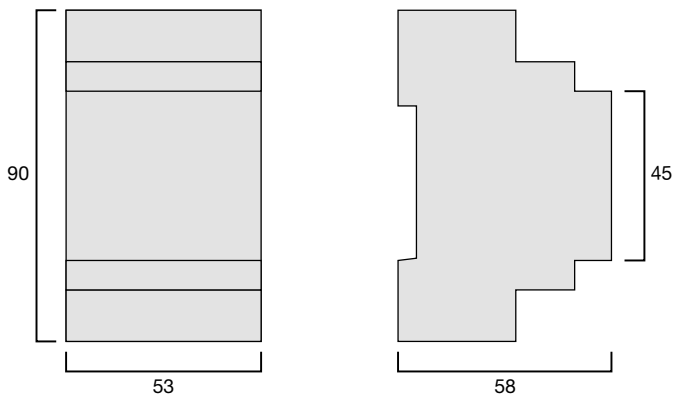
### Technical Characteristics

Burden:	<2VA per channel (5A Version) <0.5VA per channel (1A Version)
Accuracy:	0.4%
Suggested Cable Size: (CT to Adaptor)	1.5mm <sup>2</sup> or 2.5mm <sup>2</sup> (2.5mm <sup>2</sup> Max.)
Mounting:	DIN rail 35mm
Termination:	CT to adaptor - Rising clamp screw terminals Adaptor to Meter - RJ45 Patch Cable
Operating Temperature:	-10°C...+45°C
Storage Temperature:	-25°C...+70°C

Modular Devices & Enclosures



### Dimension Diagrams (mm)



**Description**

Designed for use with Hager x160 MCCBs and the plug-in multifunction power meters.

Internal safety circuitry is provided which limits the output voltage to a safe level, allowing the transformer secondary to be left disconnected under load.

**Installation**

The CT uses plug-in technology allowing much faster installation saving you time and money. Additionally, all our three phase current transformers have been designed with hole centres and apertures to fit most standard industrial circuit breakers.

	<b>EC1260CT, EC12100CT, EC12125CT, EC12160CT</b>	<b>EC2560CT, EC25100CT, EC2512CT, EC25160CT, EC25200CT, EC25250CT</b>	<b>EC40250CT, EC40400CT, EC40630CT</b>	<b>EC80800CT</b>
Accuracy Class	1	1	1	1
Aperture	3 @ 15.5 x 30mm	3 @ 21 x 25mm	3 @ 31 x 31mm	3 @ 54 x 50mm
Width	75mm	105mm	140mm	215mm
Primary Current	60 to 160A	60 to 250A	250 to 630A	800A
Hole Centres	25mm	35mm	45mm	70mm
Housing Material	Self extinguishing Nylon IEC185 classification VO according to UL-94			
Reference Standard	EN6004-8			
Weight	500g	550g	680g	1200g

**EC1260CT, EC12100CT, EC12125CT, EC12160CT**

**EC2560CT, EC25100CT, EC2512CT, EC25160CT, EC25200CT, EC25250CT**

**EC40250CT, EC40400CT, EC40630CT**

**EC80800CT**

**Current Transformer Ratios**

Primary Current	Output	
60	330	<b>060</b>
100	330	<b>100</b>
125	330	<b>125</b>
160	330	<b>160</b>

330mV Secondary

**Current Transformer Ratios**

Primary Current	Output	
60	330	<b>060</b>
100	330	<b>100</b>
125	330	<b>125</b>
160	330	<b>160</b>
200	330	<b>200</b>
250	330	<b>250</b>

330mV Secondary

**Current Transformer Ratios**

Primary Current	Output	
250	330	<b>250</b>
400	330	<b>400</b>
630	330	<b>630</b>

330mV Secondary

**Current Transformer Ratios**

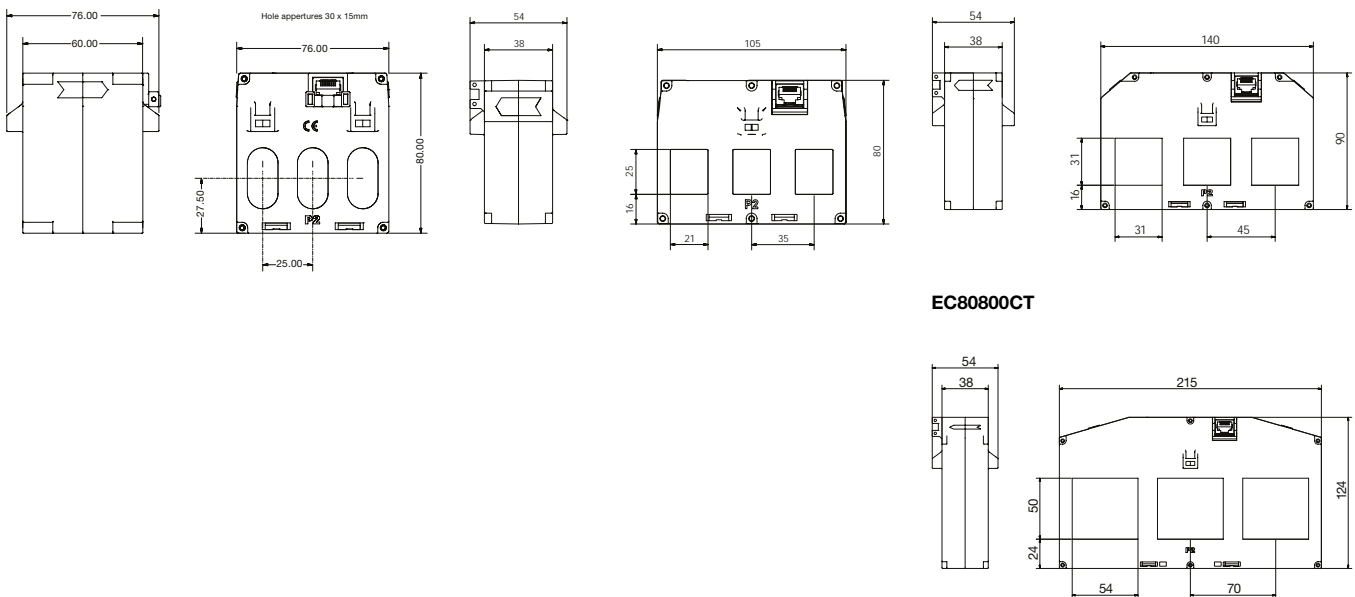
Primary Current	Output	
A	mV	Code
800	330	<b>800</b>

330mV Secondary

**EC1260CT, EC12100CT, EC12125CT, EC12160CT**

**EC2560CT, EC25100CT, EC2512CT, EC25160CT, EC25200CT, EC25250CT**

**EC40250CT, EC40400CT, EC40630CT**



### CT Output and RJ45 Lead Tester

This device makes it possible to test the RJ45 patch lead used to connect the current transformer to the meter. It also enables a standard electricians multimeter to measure the individual secondary outputs of the current transformer.

To test the RJ45 patch lead, simply disconnect the lead from the meter and current transformer. Plug one end into socket 1 and the other end into socket 2 on the test box. Press the test button - the Green LED will light to indicate the lead is OK or the Red LED will light to indicate a faulty lead. When the lead is proven to be OK you can then check the individual secondary outputs of the current transformer.

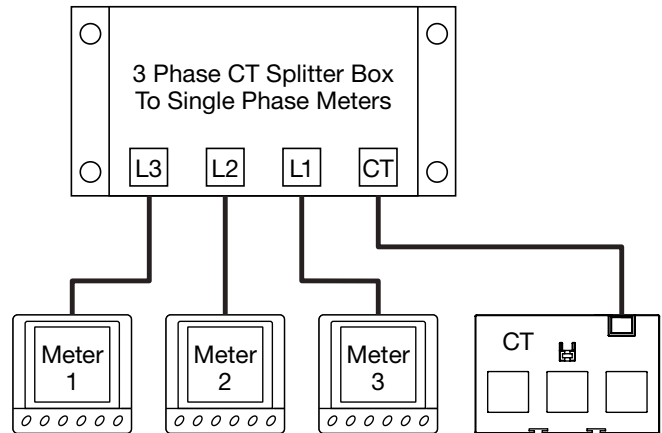
To measure the secondary output plug one end of the RJ45 patch lead into the current transformer and the other end into socket 2 on the test box. You can now use a standard multimeter to test the secondaries using the test points on the front of the test box. The output measured for each phase should be between 0 and 330mV a.c.

Cat ref. **JFT03**

### 3 Phase CT Splitter Box

This 3 Phase CT Splitter Box allows the separate monitoring of each phase of a three phase current transformer on individual energy meters.

Cat ref. **JFS03**



### Meter Voltage Supply Cable

Our high quality Meter Voltage Supply Cables are fitted with a plug at one end and insulated bootlace ferrules at the other and provide power to the plug-in meter from your mains supply.

Cable type: PVC

### Meter to Meter Supply Cable

Our high quality Meter to Meter Voltage Supply Cables are fitted with a plug at one end and socket at the other. This allows multiple plug-in meters to be energised from a common supply. Up to 32 meters can be powered in a 'daisy chain' arrangement using this method.

Cable type: PVC

### RJ45 Connection Cable

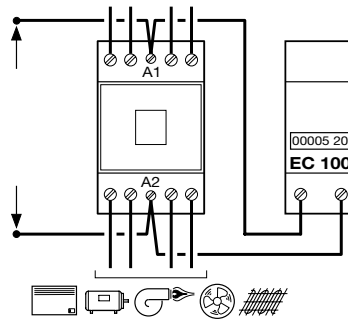
The high quality low loss Category 5e RJ45 Connection Cable provides secondary connection between the plug-in current transformer and meter.

### Hours Counter Technical Specifications

**Electrical Characteristics**  
Working voltage: 230V~

**Electrical Connection**  
Connection in parallel on the command of the receiver (contactor coil)

### Electrical Connection



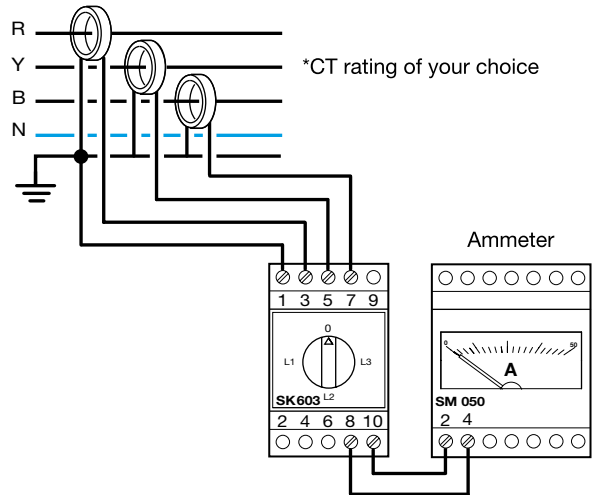
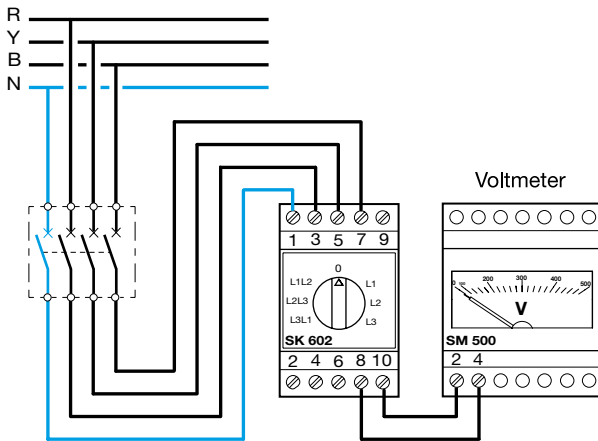
### Technical Specification

**Environment**  
Working Temperature: -25 to +50 °C  
Storage Temperature: -40 to +80 °C

**Connection**  
Flexible: 1 to 6mm<sup>2</sup>  
Rigid: 1.5 to 10mm<sup>2</sup>

Cat ref.	Product	Range	Consump.	Accuracy %	Ref Temp °C	Accuracy Variation °C	Maximum Continuous	Momentary Maximum	Frequency Hz	Isolating Voltage
SM500	Voltmeter	500V	≤3 VA	1.5	23 ± 2°C	± 0.03% / °C	1.2 U <sub>n</sub>	2U <sub>n</sub> / 5 sec	45 - 65	2kV/50H z-1min
SM050	Ammeter with CT	0-50A	≤1.1 VA	1.5	23 ± 2°C	± 0.03% / °C	1.2 U <sub>n</sub>	10U <sub>n</sub> / 5 sec	45 - 65	2kV/50H z-1min
SM100		0-100A								
SM150		0-150A								
SM250		0-250A								
SM400		0-400A								

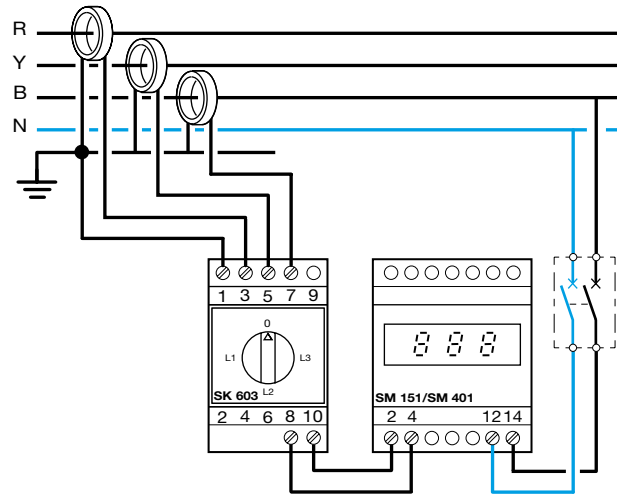
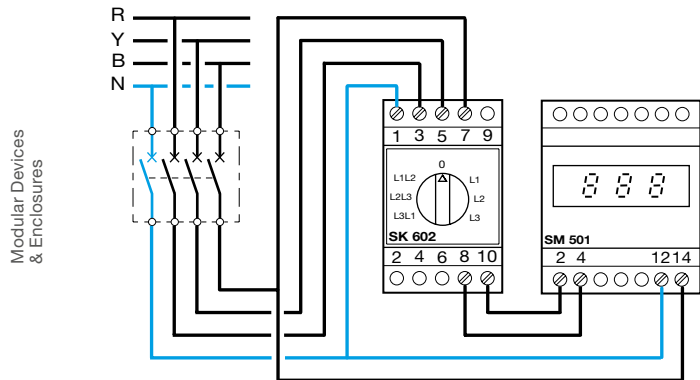
### Electrical Connection



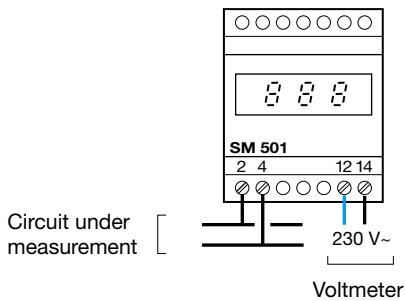
- Technical Specification
- Working voltage : 230 V~ 50/60 Hz - resolution : 1 unit
- Update of the display: 3 / seconds
- Input impedance > 1 MV for the voltmeter SM501
- Isolating resistance : 10 MV
- Maximum voltage: 660 V - number of digits : 3
- Connection
- Flexible: 6mm<sup>2</sup>, Rigid: 10mm<sup>2</sup>
- Environment
- Working temperature: -10 to +55 °C
- Storage temperature : -40 to +70 °C

Cat ref.	Product	Range	Consump.	Accuracy %	Ref Temp °C	Accuracy Variation °C	Maximum Continuous	Momentary Maximum	Frequency Hz	Isolating Voltage
SM501	Voltmeter	500V	≤4.5 VA	±1	23 ± 1°C	± 0.03% / °C	1.2 U <sub>n</sub>	2 U <sub>n</sub> / 5 sec.	45-65	2kV/50Hz - 1 min
SM151 SM401	Ammeter with CT	0-150A 0-400A	≤1 VA	±1	23 ± 1°C	± 0.03% / °C	2 I <sub>n</sub>	10 I <sub>n</sub> / 5 sec.	45-65	2kV/50Hz - 1 min

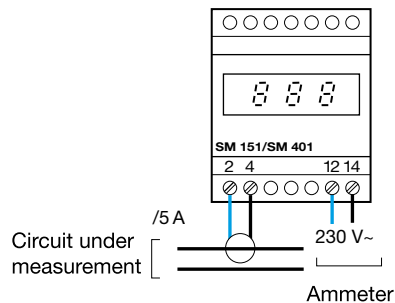
### Electrical Connection



### Electrical Connection SM501



### SM151, SM401





### Electrical Characteristics

Family	SB								
Number of poles	1P - 2P - 3P - 4P								
Frame size	Frame size 1			Frame size 2		Frame size 3			
Thermal current I <sub>th</sub> (40°C)	16A	25A	32A	40A	63A	80A	100A	125A	
Operational frequency	50 / 60 Hz	50 / 60 Hz	50 / 60 Hz	50 / 60 Hz	50 / 60 Hz	50 / 60 Hz	50 / 60 Hz	50 / 60 Hz	50 / 60 Hz
Rated insulation voltage (U <sub>i</sub> )	500 V	500 V	500 V	500 V	500 V	500 V	500 V	500 V	500 V
Rated impulse withstand voltage U <sub>imp</sub>	3 kV	3 kV	3 kV	6 kV	6 kV	6 kV	6 kV	6 kV	6 kV
Protection degree	2	2	2	3	3	3	3	3	3
Working temperature	-20 to 50°C	-20 to 50°C	-20 to 50°C	-20 to 50°C	-20 to 50°C	-20 to 50°C	-20 to 50°C	-20 to 50°C	-20 to 50°C
Storage temperature	-40 to 80°C	-40 to 80°C	-40 to 80°C	-40 to 80°C	-40 to 80°C	-40 to 80°C	-40 to 80°C	-40 to 80°C	-40 to 80°C

### Operational Currents I<sub>e</sub>

Rated voltage		Load duty category								
Single Phase	Multi Phase									
230V AC	400V AC	AC 21A	16A	25A	32A	40A	63A	80A	100A	125A
230V AC	400V AC	AC 22B	16A	25A	32A	40A	63A	80A	100A	125A
230V AC	400V AC	AC 22A	16A	25A	32A	40A	63A	80A	100A	125A
230V AC	400V AC	AC 23A	TBA	TBA	TBA	TBA	TBA	TBA	TBA	TBA

### Short circuit characteristic

Rated short time withstand current 1s I <sub>CW</sub> (rms)	IEC 60947-3	480A / 1sec			945A / 1 sec		1500A / 1sec		
Prospective short circuit current (rms)	EN 60669	3kA	3kA	3kA	6kA	6kA	n/a	n/a	n/a
Associated fuse links (gG)		16A	25A	32A	40A	63A	n/a	n/a	n/a

### Mechanical characteristic

Rigid cable section	16 mm <sup>2</sup>	16 mm <sup>2</sup>	16 mm <sup>2</sup>	25 mm <sup>2</sup>	25 mm <sup>2</sup>	50 mm <sup>2</sup>	50 mm <sup>2</sup>	50 mm <sup>2</sup>
flexible cable section	10 mm <sup>2</sup>	10 mm <sup>2</sup>	10 mm <sup>2</sup>	16 mm <sup>2</sup>	16 mm <sup>2</sup>	35 mm <sup>2</sup>	35 mm <sup>2</sup>	35 mm <sup>2</sup>
Tightening torque	1.8 Nm	1.8 Nm	1.8 Nm	2.8 Nm	2.8 Nm	3.6 Nm	3.6 Nm	3.6 Nm
IP protection degree	20	20	20	20	20	20	20	20
Mechanical endurance (number of cycle)	100,000	100,000	100,000	30,000	30,000	20,000	20,000	20,000
Electrical endurance @ AC22 (number of cycles)	25,000	25,000	25,000	5,000	5,000	2,500	2,500	2,500

### Overall dimension

Width (mm)	1P	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5
	2P	17.5	17.5	17.5	35	35	35	35	35
	3P	35	35	35	52.5	52.5	52.5	52.5	52.5
	4P	35	35	35	70	70	70	70	70
Height (mm)		83	83	83	83	83	83	83	83
Depth (mm)		72	72	72	72	72	72	72	72

### Electrical Characteristics

Family	SF						
Modular size	1 module			2 module			4 module
Cat ref.	<b>SFH125</b>	<b>SFM125</b>	<b>SFT125</b>	<b>SFH225</b>	<b>SFT225</b>	<b>SFT240</b>	<b>SF263</b>
Thermal current I <sub>th</sub> (40°C)	25A	25A	25A	25A	25A	40A	63A
Operational frequency	50 / 60 Hz	50 / 60 Hz	50 / 60 Hz	50 / 60 Hz	50 / 60 Hz	50 / 60 Hz	50 / 60 Hz
Rated operation voltage in AC	230V						
Rated insulation voltage (U <sub>i</sub> )	440V	440V	440V	440V	440V	440V	500V
Rated impulse withstand voltage U <sub>imp</sub>	4 KV	4 KV	3 KV	6 KV	6 KV	6 KV	4 KV
Protection degree	2	2	2	3	2	2	2
Working temperature	-20 to 50°C	-20 to 50°C	-20 to 50°C	-20 to 50°C	-20 to 50°C	-20 to 50°C	-20 to 50°C
Storage temperature	-40 to 80°C	-40 to 80°C	-40 to 80°C	-40 to 80°C	-40 to 80°C	-40 to 80°C	-40 to 80°C

### Operational Currents I<sub>e</sub>

Rated voltage	Load duty category							
400V AC	AC 22A	25A	25A	25A	25A	25A	40A	63A
400V AC	AC 22B	25A	25A	25A	25A	25A	40A	63A

### Short circuit characteristic

Rated short time withstand current 1s I <sub>cw</sub> (rms)	IEC 60947-3	375A / 1sec					600A / 1sec	4.5kA cond.
Prospective short circuit current (rms)	EN 60669	3kA	3kA	3kA	6kA	6kA	n/a	n/a

### Mechanical characteristic

Rigid cable section	35 mm <sup>2</sup>						
flexible cable section	10 mm <sup>2</sup>						
Tightening torque	1.8 Nm						
IP protection degree	20						
Mechanical endurance (number of cycle)	200,000	200,000	200,000	200,000	200,000	200,000	100,000
Electrical endurance @ AC22 (number of cycles)	25,000	25,000	25,000	5,000	5,000	2,500	5,000

### Overall dimension

Width (mm)	17.5	17.5	17.5	35	35	35	71.5
Height (mm)	83	83	83	83	83	83	90
Depth (mm)	68	68	68	68	68	70	68

**Light Sensitive Switches**

Using light sensitive switches can prevent the unnecessary use of lighting circuits where sufficient daylight exists. The benefit of modular devices is the facility to set the ambient lighting level at which the device will operate, and as the device is fitted at the distribution point prevent unauthorised tampering. The remote photocell unit can be mounted up to a distance of 50 metres from the device. Two devices are available the standard **EE100** light sensitive switch and an enhanced programmable version the **EE171** that also allows time clock control.

**Principle of Operation**

Both devices control lighting systems according to natural illumination;

- The user sets the working level:
- The photo cell measures the external light level

The output of the **EE100** is:

- ON, when the measured level is lower than the pre-set light level
- OFF, when the measured level is higher than the pre-set light level

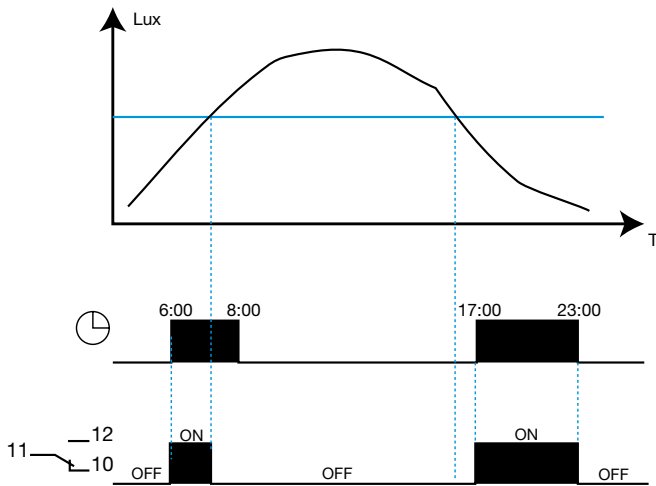
The output of the **EE171** during the programmed ON time period is:

- ON, when the measured level is lower than the pre-set light level
- OFF, when the measured level is higher than the pre-set light level

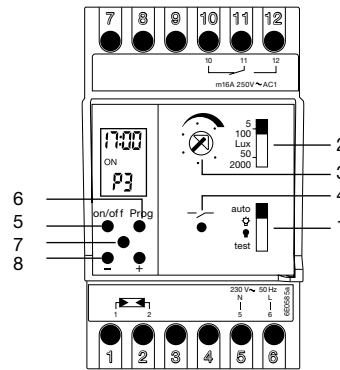
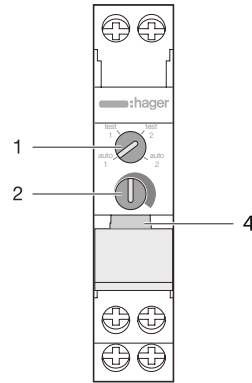
The output of the **EE171** during the programmed off time period is:

- OFF, regardless of the lighting level

The light sensitive switches include a built in time delay which avoids unnecessary switching due to temporary factors such as car headlight beams etc...



**Description**



The programmable light sensitive switch **EE171** has two main functions:

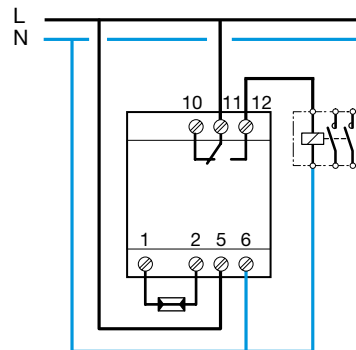
Light sensitive switch comprising

1. Override selector switch to allow permanent ON or OFF, auto or test mode
2. Lighting range selector
3. Potentiometer to set light level
4. Indicator to show output switching status

A programmer to establish the automatic operating cycle

The programmer comprises 4 keys:

5. **ON / OFF** to choose whether the circuit is on or off.
6. **Prog** to set the program and scroll program steps
7. **Reset**
8. **+ and -** to change settings



### Mounting the Cell

To ensure correct operation of the light sensitive switch, the cell must not be influenced by artificial light or direct solar radiation and should be sheltered from dust and humidity. In case of disconnection of the link between the cell and the light sensitive switch, the output of the device will be switched on. Make sure the light sensitive switch is unplugged before connecting the cell.

	EE002	EE003
Type	Flush Mounting	Surface Mounting
Dimensions (mm)	89 x 48 x 32	25 x 25 x 20 Hole 25mm
Connection	Cable 1m 2 x 0.75mm <sup>2</sup>	0.75 to 4mm <sup>2</sup>
Protection Class	IP54	IP54
Working & Storage Temperature	-30°C to +60°C	-30°C to +60°C

### Adjustment of the Working Level

The test position of the override selector 1 makes setting the preset level easier by removing the ON and OFF delay.

Select the sensitivity range which suits your application (selector 1)  
5 to 100 lux (low light level) application examples; public lighting, shop windows, signals...

50 to 2000 lux (high light level) application examples; controls of shades

At the appropriate moment of the day, put the selector 1 in test position; turn the potentiometer 2 up to the switching point (the indicator 4 lights); put the selector back to position 'auto' the normal operating mode of the device.

### Technical Specification

#### Electrical Specification

Voltage Rating	230V +10 -15% 50Hz
Consumption	1.5VA Max
Output	1 Voltage Free Changeover Contact
Max Breaking Capacity	AC1 16A 250V~
Incandescent Lamp	2000W 230V~
Halogen Lamp	1000W 230V~
Fluorescent Lamp Uncompensated	1000W 230V~
Compensated in Series (10µF)	1000W 230V~
// Compensated (15µF)	200W 230V~
Duo	1000W 230V~

#### Functional Characteristics

Sensitivity Range	5 to 100 lux, 50 to 2000 lux
Cycle	Weekly
Programs	8 Pre-defined Program
Program Setting	1 Minute Increments*
Accuracy	+6min / annum*
Operating Reserve	Lithium Battery Total of 3 Years Supply Failure*
On and Off Delay	15 to 60s
Working Temperature	-30°C to +60°C (cell) -10°C to +50°C (modular device)
Storage Temperature	-20°C to +60°C
Protection Class (cell)	IP54
Insulation Class	II

#### Connection Capacity

Modular Device	0.5 to 4mm <sup>2</sup>
Cell	0.75 to 2.5mm <sup>2</sup>
Max Length between Cell and Modular Device	50m
Mounting of the Cell with 2 Screws	2.5mm

\* EE171 only

Technical Characteristics

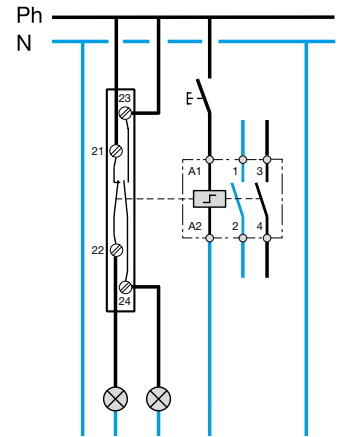
	EPN510 EPN515 EPN520	EPN513 EPN518 EPN524	EPN519 EPN521	EPN525 EPN540	EPN528 EPN541	EPN529
Voltage	230V	24V	12V	230V	24V	12V
Start Consumption	24VA	24VA	24VA	48VA	47VA	TBC
Contact Rating	AC1	-	16A 250V~ <sup>1</sup>	-	-	-
Electrical Endurance AC1 - 16A	150,000 Operations					
Mechanical Endurance	500,000 Operations					
Current in Open Position	8 mA					
Max Duration of Voltage Supply to Coil	1h					
Min Duration of Current Supply to Coil	0.1s					
Working Temperature	-5 to +40°C					
Storage Temperature	-40 to +80°C					
Connections						
Coil:						
Flexible	0.5 to 4mm <sup>2</sup>					
Rigid	1 to 6mm <sup>2</sup>					
Power:						
Flexible	1 to 6mm <sup>2</sup>					
Rigid	1.5 to 10mm <sup>2</sup>					

<sup>1</sup> 400~ for EPN540 and EPN541.

Modular Devices  
& Enclosures

Auxiliary Contacts (EPN051)

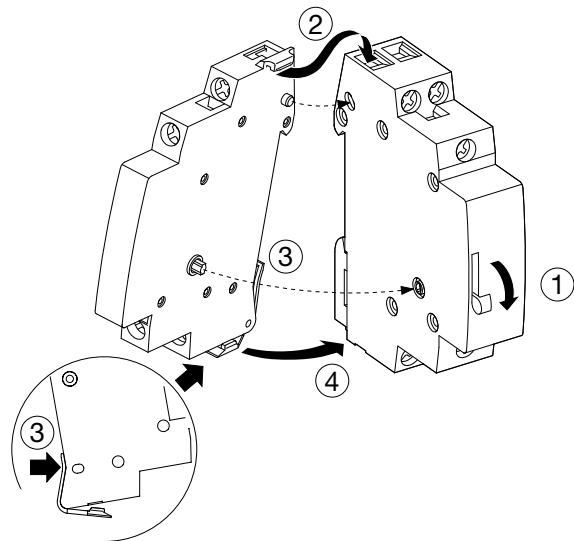
The range of latching relays have been designed for use with an auxiliary contact. The devices simply clip on the side of the relay.



Technical Characteristics

	EPN051
Voltage	-
Contact Rating	2A / 250V
Imin / 230V	15mA

<sup>1</sup> Voltage dependant on associated relay



### Heating

The choice of the contactor depends on the mechanical endurance (number of operations) and on the electrical heating load i.e. resistive elements, infra-red element, convectors.

### Choice of Contactors

The choice of contactor is dependant upon many parameters i.e. operating voltage, size of contacts, number of operations, ambient temperature, type of load supplied etc.

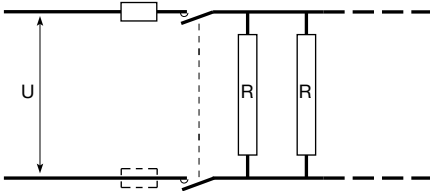
### Type of Load

Loads are categorised into various AC ratings, (AC1, AC2, AC3 etc.) and the higher the AC rating the more inductive the load becomes. All Hager contactor ratings are given at AC1, therefore they must be de-rated if used on other types of AC load.

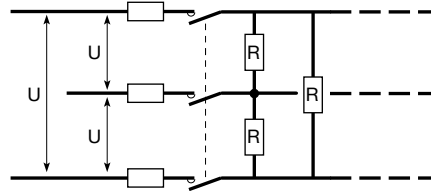
### Heat Dissipation Inserts

The ambient temperature around a contactor can affect its life expectancy, therefore, we strongly recommend that heat dissipation inserts (**LZ060**) are fitted between all contactors and adjacent devices.

### Single Phase



### Three Phase

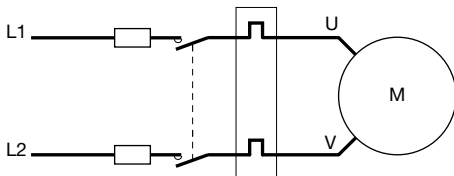


Modular Devices & Enclosures

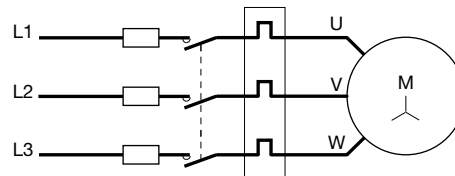
		Number of operations					
		100,000	150,000	200,000	500,000	1,000,000	
Max. load in kW	230V	16A	3	2.5	1.9	0.85	0.7
		25A	4.6	4	3	1.35	1
		40A	7.3	6.3	4.7	2.2	1.6
		63A	11.6	10	7.5	3.5	2.5
	400V	16A	8.9	8	5.8	2.8	2
		25A	13.8	12	8.6	4.3	3
		40A	22	18.5	14.385	6.3	5
		63A	35	30	22.6	10.2	7.6

### Contactor selection when using with motors

#### Single Phase 230V (AC3 or AC7b)



#### Three Phase 400V (AC3 or AC7b)



Maximum load in kW	Single Phase with Capacitor 230V	Three Phase (AC3 or AC7) 400V	Choice of Contactor According to control diagram	
			2 Wires	3 Wires
0.88			2 pole 25A	
2.6			2 pole 40A	
		2.6		3 pole 25A
		7.8		3 pole 40A
		10		3 pole 63A

### Requirements of Use

#### Influence of Working Temperature

Derating factor between 40°C and 50°C : 0.9

Example: Heating with convector

The maximum load of **ESC225** is 4.6kW for 50,000 operations and for a temperature <40°C.

between 40°C and 50°C, the load is 4.6 x 0.9 i.e. 4.14kW

### Close Fitting

It is necessary to put a heat dissipation insert (reference **LZ060**) between each contactor.

Description	Modular contact						Auxiliary contact
	Relay	Contactor	Relay	Contactor	Contactor	Contactor	Contactor
Standard conformity	EN 61095						
Approvals	NF - VDE- IMQ - KEMA - RMC / CCC						
Number of modules	1		2		3		½
Thermal current I <sub>th</sub> (40°C)	16A	25A	16A	25A	40A	63A	6A
Rated frequency	50 - 60 Hz	50 - 60 Hz	50 - 60 Hz	50 - 60 Hz	50 - 60 Hz	50 - 60 Hz	50 - 60 Hz
Rated insulation voltage (U <sub>i</sub> )	250V	250V	440V	440V	440V	440V	250V
Rated impulse withstand voltage (U <sub>imp</sub> )	4kV	4kV	4kV	4kV	4kV	4kV	4kV
Protection Degree	2	2	2	2	2	2	2

### Rated Operating currents and power ratings in AC

AC-1 / AC-7a	Rated operational currents I <sub>e</sub>	16A	16A	16A	25A	40A	63A	-
	Rated operational power 230V	3kW	4.6kW	3kW	4.6kW	7.3kW	11.6kW	-
	400V	-	-	8.9kW	13.8kW	22kW	35kW	-
AC-3 / AC-7b	Rated operational currents I <sub>e</sub>	5.5A	8.5A	5.5A	8.5A	25A	32A	-
	Rated operational power 230V	570W	880W	570W	880W	2.6kW	3.3kW	-
	400V	-	-	1.7kW	2.6kW	7.8kW	10kW	-
AC-12	Rated operational currents i.e. @ 230V	-	-	-	-	-	-	6A
AC-15	Rated operational currents i.e. @ 230V	-	-	-	-	-	-	2A

### Mechanical and Electrical Endurances

Mechanical endurance	Number of operations	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000
Electrical endurance @ I <sub>e</sub> AC7a (AC12 for aux contact)	Number of operations	60,000	60,000	60,000	60,000	60,000	60,000	60,000

### MCB Protected short-circuit withstand

Prospected short-circuit current	rms	1kA	3kA	1kA	3kA	3kA	3kA	1kA
Associated protection		MCB C16-6kA	MCB C25-6kA	MCB C16-6kA	MCB C25-6kA	MCB C40-10kA	MCB C63-10kA	6A 10x38 gG Fuse

### Power dissipation

Power dissipation per current path	1W	1.5W	1W	1.5W	3.2W	5W	0.4W
------------------------------------	----	------	----	------	------	----	------

### Magnetic system for Eco and standard contactor

Pick-up	2.2W	2.2W	2.8W	2.8W	5W	5W	-
Coil consumption	2.2W	2.2W	2.8W	2.8W	5W	5W	-
Closing delay	25ms	25ms	25ms	25ms	25ms	25ms	-
Opening delay	15ms	15ms	15ms	15ms	20ms	20ms	-

### Connection

Main contact cable section	Rigid	1...10mm <sup>2</sup>	1...10mm <sup>2</sup>	1...10mm <sup>2</sup>	1...10mm <sup>2</sup>	4...25mm <sup>2</sup>	4...25mm <sup>2</sup>	1...6mm <sup>2</sup>
	Flexible	1...6mm <sup>2</sup>	1...6mm <sup>2</sup>	1...6mm <sup>2</sup>	1...6mm <sup>2</sup>	4...16mm <sup>2</sup>	4...16mm <sup>2</sup>	1...6mm <sup>2</sup>
Main contact connection screw	Type	M3.4	M3.4	M3.4	M3.4	M5	M5	M3.4
	Posidrive	PZ2	PZ2	PZ2	PZ2	PZ2	PZ2	PZ2
	Max. tight. torque	1.2Nm	1.2Nm	1.2Nm	1.2Nm	2Nm	2Nm	1.2Nm
Coil connection cable section	Rigid	1...10mm <sup>2</sup>	1...10mm <sup>2</sup>	1...10mm <sup>2</sup>	1...10mm <sup>2</sup>	1...10mm <sup>2</sup>	1...10mm <sup>2</sup>	-
	Flexible	1...6mm <sup>2</sup>	1...6mm <sup>2</sup>	1...6mm <sup>2</sup>	1...6mm <sup>2</sup>	1...6mm <sup>2</sup>	1...6mm <sup>2</sup>	-
Coil connection screw	Type	M3.5	M3.5	M3.5	M3.5	M4	M4	-
	Posidrive	PZ2	PZ2	PZ2	PZ2	PZ2	PZ2	-
	Max. tight. torque	1.2Nm	1.2Nm	1.2Nm	1.2Nm	1.5Nm	1.5Nm	-

### Working temperature

	-10°C to +50°C
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### Storage temperature

	-40°C to +80°C
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Lighting systems with electronic ballasts cause inrush current peaks. Therefore we recommend you use the chart below to determinate the maximum amount of lamps that can be connected to a Hager contactor: The chart gives the maximum amount of lamps per contact. In 2014 the performances of the contactors in combination with lights increased. The products identified on the front face with the '+' can accept a higher number of lamps. For these products, see the figures in the column with the '+' in the header.

	Lamp Power	16A	25A	16A +	25A +	40A	63A	
<b>Compact fluo lamps</b>								
Compact fluo lamp with external electronic ballast	5W	11	15	17	27	49	76	
	7W	11	15	17	27	49	76	
	9W	9	13	16	26	40	63	
	11W	9	13	16	26	40	63	
	15W	7	11	14	22	36	57	
	18W	7	11	14	22	36	57	
	20W	7	11	14	22	36	57	
	23W	7	11	14	22	36	57	
Compact fluo lamp with integrated electronic ballast	5W	17	27	34	54	86	135	
	7W	17	27	34	54	86	135	
	9W	17	27	34	54	86	135	
	11W	17	27	34	54	86	135	
	15W	17	27	34	54	86	135	
	18W	13	20	25	40	63	100	
	20W	13	20	25	40	63	100	
	23W	13	20	25	40	63	100	
26W	13	20	25	40	63	100		
	<b>Incandescent lamps</b>							
	Tungsten & halogen lamps 230V	40W	32	50	36	57	76	120
		60W	21	33	28	45	67	105
		75W	17	27	24	38	63	100
		100W	13	20	17	28	41	65
		150W	8	13	11	18	29	45
		200W	6	9	8	14	22	35
300W		4	7	6	10	15	23	
500W		2	3	3	6	9	14	
1000W	0	0	1	2	4	7		
	Tungsten & halogen lamps 12 ou 24V	20W	13	20	25	40	139	218
		35W	8	13	16	26	82	129
		50W	6	9	11	18	60	94
		75W	4	6	7	12	52	82
		100W	2	3	3	6	35	55
		150W	1	2	2	4	20	31
	<b>LED</b>							
LED 230V with integrated electronic ballast - non dimmable	4W	17	27	34	54	86	135	
	4.5W	17	27	34	54	86	135	
	6W	17	27	34	54	86	135	
	7W	17	27	34	54	86	135	
	8W	17	27	34	54	86	135	
	12W	17	27	34	54	86	135	
	17W	13	20	25	40	63	101	
	18W	13	20	25	40	63	101	
	22W	13	20	25	40	63	101	
	30W	9	14	17	28	44	70	
	34W	9	14	17	28	44	70	
	40W	9	14	17	28	44	70	
	50W	7	11	14	22	35	55	
	LED 230V with integrated electronic ballast - dimmable	4W	38	60	76	120	159	250
		5.5W	38	60	76	120	159	250
6W		38	60	76	120	159	250	
7W		38	60	76	120	159	250	
8W		38	60	76	120	159	250	
12W		38	60	76	120	159	250	
17W		28	44	56	88	118	185	
18W		28	44	56	88	118	185	
22W		28	44	56	88	118	185	
30W		20	31	39	62	82	130	
34W		20	31	39	62	82	130	
40W		20	31	39	62	82	130	
50W		16	24	30	48	65	102	
LED 230V headlight with integrated electronic ballast		100W	-	-	3	5	6	9
		150W	-	-	1	3	4	6
	200W	-	-	1	2	4	6	
LED 12V with separated transformer - dimmable	1W	38	60	76	120	180	220	
	2.5W	38	60	76	120	180	220	
	4W	38	60	76	120	180	220	
	5W	38	60	76	120	180	220	
	7W	38	60	76	120	160	200	
	10W	38	60	76	120	160	200	
	15W	28	44	56	88	160	200	

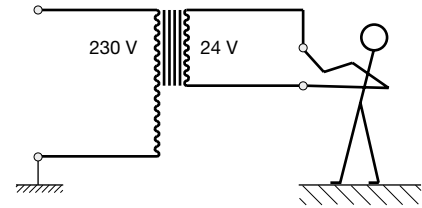


	Lamp Power	16A	25A	16A +	25A +	40A	63A	
<b>Fluorescent tubes</b>								
T5 double - uncompensated	2 x 18W	13	20	25	40	50	78	
	2 x 20W	12	19	24	38	50	78	
	2 x 36W	12	15	19	30	44	69	
	2 x 40W	10	13	16	26	40	63	
	2 x 42W	9	12	15	24	40	63	
	2 x 58W	7	9	11	18	27	42	
	2 x 65W	6	8	10	16	27	42	
	2 x 80W	5	7	8	14	22	35	
	2 x 115W	4	5	6	10	16	25	
T5 double - serie compensation	2 x 18W	7	11	14	22	34	53	
	2 x 20W	7	11	14	22	29	45	
	2 x 36W	6	10	12	20	27	42	
	2 x 40W	6	10	12	20	27	42	
	2 x 42W	6	10	12	20	27	42	
	2 x 58W	6	10	12	20	25	39	
	2 x 65W	5	7	8	14	23	36	
	2 x 80W	5	7	8	14	20	31	
	2 x 115W	4	5	6	10	17	25	
T5 single - electronic ballast	15W	7	11	14	22	36	57	
	18W	7	11	14	22	36	57	
	20W	7	11	14	22	36	57	
	36W	7	11	14	22	34	53	
	40W	7	11	14	22	29	45	
	42W	7	11	14	22	29	45	
	58W	6	10	12	20	27	42	
	65W	6	10	12	20	27	42	
	80W	6	10	12	20	27	42	
	115W	6	10	12	20	25	39	
	T5 double - electronic ballast	2 x 18W	7	11	14	22	34	53
2 x 20W		7	11	14	22	29	45	
2 x 36W		6	10	12	20	27	42	
2 x 40W		6	10	12	20	27	42	
2 x 42W		6	10	12	20	27	42	
2 x 58W		6	10	12	20	25	39	
2 x 65W		5	7	8	14	23	36	
2 x 80W		5	7	8	14	20	31	
2 x 115W		4	5	6	10	17	25	
<b>Fluorescent tubes</b>								
T5 single - uncompensated	15W	13	20	19	30	70	100	
	18W	13	20	19	30	70	100	
	20W	12	19	19	30	70	100	
	36W	12	15	17	28	60	90	
	40W	10	13	16	26	60	90	
	42W	9	12	15	24	55	83	
	58W	7	9	10	17	35	56	
	65W	6	8	10	17	35	56	
	80W	5	7	9	15	30	48	
	115W	4	5	6	10	20	32	
	140W	3	5	6	10	16	26	
	T5 single - paralell compensation	15W	7	11	12	20	36	57
		18W	7	11	12	20	36	57
		20W	7	11	12	20	36	57
36W		7	11	12	20	34	53	
40W		7	11	12	20	29	45	
42W		7	11	12	20	29	45	
58W		6	10	9	15	27	42	
65W		6	10	9	15	27	42	
80W		6	10	9	15	27	42	
115W		6	10	9	15	25	39	

	Lamp Power	16A	25A	16A +	25A +	40A	63A
<b>Discharge lamps</b>							
High-pressure mercury-vapor lamps - without compensation	50W	9	14	17	28	32	50
	80W	6	9	11	18	24	37
	125W	3	5	6	10	18	28
	250W	2	3	3	6	10	15
	400W	1	1	1	2	6	9
	700W	0	0	0	0	4	5
High-pressure mercury-vapor lamps - parallell compensation	50W	7	11	14	22	26	40
	80W	5	8	10	16	22	34
	125W	3	5	6	10	15	23
	250W	2	3	3	6	9	14
	400W	1	1	1	2	5	8
	700W	0	0	0	0	3	5
	1000W	0	0	0	0	2	3
Low pressure sodium lamps - without compensation	18W	8	10	8	12	17	23
	35W	4	6	7	9	14	20
	55W	3	6	7	9	14	20
	90W	2	4	5	6	9	14
	135W	1	3	3	4	6	8
	180W	1	2	2	4	6	8
Low pressure sodium lamps - parallell compensation	18W	5	7	5	8	12	24
	35W	4	6	4	7	10	23
	55W	3	5	3	5	10	19
	90W	2	3	3	4	8	16
	135W	1	2	1	2	5	7
	180W	1	2	1	2	5	6
High pressure sodium lamps - without compensation	35W	11	14	15	24	30	50
	50W	9	12	10	15	22	34
	70W	8	9	8	12	18	28
	110W	6	8	6	10	14	22
	150W	4	7	5	8	10	16
	250W	2	4	3	5	6	10
	400W	0	1	1	2	4	6
	1000W	0	1	1	1	2	3
	1000W	0	1	1	1	2	3
High pressure sodium-vapour lamps - electronic ballast or parallel compensation	35W	6	9	11	18	31	50
	50W	6	9	11	18	22	35
	70W	4	6	7	12	16	25
	110W	3	5	6	8	13	21
	150W	3	5	4	6	8	13
	250W	2	3	3	4	7	11
	400W	1	1	1	2	5	8
	1000W	0	0	0	1	2	3
Metal halide lamps - without compensation	35W	12	24	19	30	42	55
	70W	10	15	12	17	26	36
	150W	6	7	8	12	14	20
	250W	3	5	5	8	9	14
	400W	1	2	2	4	6	9
	1000W	0	0	0	0	3	5
Metal halide lamps - electronic ballast or parallel compensation	35W	6	10	12	18	22	39
	70W	5	8	10	13	22	39
	150W	3	5	6	8	12	22
	250W	3	5	6	7	9	16
	400W	1	1	1	2	5	7
	1000W	0	0	0	1	2	3

### Safety Transformers

These transformers are designed to ensure personal safety, their primary winding are electrically separated from their secondary windings and they are intended to feed separated extra low voltage circuits  $U \leq 50V$ . A thermal overload, in the primary windings, ensures that if a short circuit or an overload occurs in the output it will not damage the device.



### Bell Transformers

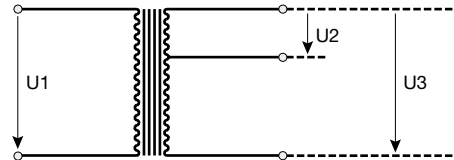
Bell transformers are similar to safety transformers but the secondary voltages do not exceed 24 volts, they are also similarly protected against short circuits and overloads, by thermal protection in the primary winding.

### Compliance with the Standards

The bell and safety transformers conform with BS EN 61558. Where transformers are to be used in a common enclosure with other devices heat dissipation inserts LZ060 should be used.

### Recommendation of Use

- To link only one secondary (never link both simultaneously)
- Do not connect (in series or in parallel) secondaries of different transformers



### Technical Specification

	ST301	ST303	ST305	ST312	ST313	ST314	ST315
Nominal Power	4VA	8VA	16VA	25VA	16VA	40VA	63VA
Designation	Bell	Bell	Bell	Safety	Safety	Safety	Safety
Primary Voltage	230 Volts	230 Volts	230 Volts	230 Volts	230 Volts	230 Volts	230 Volts
Secondary Voltage	U2	8 Volts	8 Volts	8 Volts	12 Volts	12 Volts	12 Volts
		$I_n = 0.5A$	$I_n = 1A$	$I_n = 2A$	$I_n = 2.08A$	$I_n = 1.33A$	$I_n = 5.25A$
	U3	12 Volts	12 Volts	12 Volts	24 Volts	24 Volts	24 Volts
		$I_n = 0.33A$	$I_n = 0.67A$	$I_n = 1.33A$	$I_n = 1.04A$	$I_n = 0.67A$	$I_n = 2.63A$
No Load	U2	12 Volts	15 Volts	12 Volts	14 Volts	16 Volts	14 Volts
Secondary Voltage	U3	18 Volts	22 Volts	19 Volts	29 Volts	30 Volts	27 Volts
Galvanic Insulation	4kV	4kV	4kV	4kV	4kV	4kV	4kV
Max Functional Temperature	35°C	35°C	35°C	35°C	35°C	35°C	35°C
Overload and S/C Protection	Thermal cut out in the primary winding						
Insulation Class	H	H	B	B	B	B	H

### Technical Specifications

	EH011	EH010	EH111	EH110	EH171	EG103	EG103E	EG203	EG203E	EG493E
<b>Version</b>	Daily					Weekly				
Voltage Supply	230V 50/60Hz	230V 50Hz	230V 50/60Hz	230V 50Hz	230V 50/60Hz	230V AC 50/60Hz	230V AC 50/60Hz	230V AC 50/60Hz	230V AC 50/60Hz	230V AC 50/60Hz
Consumption	0.5VA	0.5VA	0.5VA	0.5VA	0.5VA	6VA	6VA	6VA	6VA	6VA
Output	1 NO Contact Volt Free	1 NO Contact Volt Free	1 C/O Contact Volt Free	1 C/O Contact Volt Free	1 C/O Contact Volt Free	1 Volt Free Change- over Contact	1 Volt Free Change- over Contact	2 Volt Free Change- over Contacts	2 Volt Free Change- over Contacts	2 Volt Free 2 NO Changeover Contact Contacts

### Switching Capacity

AC 1	16A / 250V	16A / 250V	16A / 250V	16A / 250V	16A / 250V	16A AC 1 / 250V 4A DC 1 / 12V	16A AC 1 / 250V 4A DC 1 / 12V	16A AC 1 / 250V 4A DC 1 / 12V	16A AC 1 / 250V 4A DC 1 / 12V	10A AC 1 / 250V
Inductive Load cos 0.6	4A / 250V	4A / 250V	4A / 250V	4A / 250V	2.5A / 250V	10A / 250V	10A / 250V	10A / 250V	10A / 250V	10A / 250V
Incandescent Lamp	900W	900W	900W	900W	900W	2300W	2300W	2300W	2300W	1500W
Halogen Lighting 230V	-	-	-	-	-	2300W	2300W	2300W	2300W	1500W
Compensated Fluorescent Tubes (max 45µF)	-	-	-	-	-	400W	400W	400W	400W	400W
Non Compensated Fluorescent Tubes Compensated in Series	-	-	-	-	-	1000W	1000W	1000W	1000W	800W
Compact Fluorescent Tubes	-	-	-	-	-	500W	500W	500W	500W	400W
Minimum Current AC 1	-	-	-	-	-	100mA / 250V	100mA / 250V	100mA / 250V	100mA / 250V	100mA / 250V
Minimum Current DC 1	-	-	-	-	-	-	-	-	-	-
Galvanic Insulation Between Power Supply and Output	-	-	-	-	-	< 4 kV	< 4 kV	< 4 kV	< 4 kV	< 4 kV

### Characteristics

Technology	Quartz	Quartz	Quartz	Quartz	Quartz	-	-	-	-	-
Dial	24hrs	24hrs	24hrs	24hrs	7 days	-	-	-	-	-
Minimum Switching	5min	5min	5min	5min	2h	-	-	-	-	-
Programming Capacity	-	-	-	-	-	56 Steps	56 Steps	56 Steps	56 Steps	300 Steps
Minimum Time Between 2 Steps	-	-	-	-	-	1min	1min	1min	1min	1min
Working Accuracy	1sec per day	1sec per day	1sec per day	1sec per day	1sec per day	±1.5sec / 24h	±1.5sec / 24h	±1.5sec / 24h	±1.5sec / 24h	±0.2sec / 24h
Supply Failure Reserve	200hrs	No	200hrs	No	200hrs	5 years lithium battery	5 years lithium battery	5 years lithium battery	5 years lithium battery	5 Years Lithium Battery
Reached in	120h	120h	120h	120h	120h	-	-	-	-	-
Manual Switch Type	On Auto On	Off Auto On	Off Auto On	Off Auto On	Off Auto On	-	-	-	-	-
Protection Degree	-	-	-	-	-	IP20	IP20	IP20	IP20	IP20

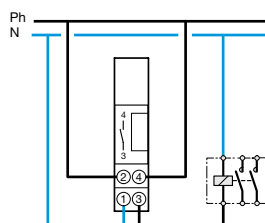
### Environment

Working Temperature	-10°C to +45°C	-10°C to +45°C	-10°C to +45°C	-10°C to +45°C	-10°C to +45°C	-5°C to +45°C	-5°C to +45°C	-5°C to +45°C	-5°C to +45°C	-10°C to +45°C
Storage Temperature	-100°C to +50°C	-100°C to +50°C	-100°C to +50°C	-100°C to +50°C	-100°C to +50°C	-20°C to +70°C	-20°C to +70°C	-20°C to +70°C	-20°C to +70°C	-20°C to +70°C

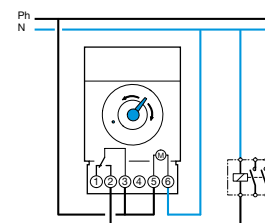
### Connection

Flexible	0.5 to 4mm <sup>2</sup>	0.5 to 4mm <sup>2</sup>	0.5 to 4mm <sup>2</sup>	0.5 to 4mm <sup>2</sup>	0.5 to 4mm <sup>2</sup>	1.5 to 10mm <sup>2</sup>	1.5 to 10mm <sup>2</sup>	1.5 to 10mm <sup>2</sup>	1.5 to 10mm <sup>2</sup>	1 to 4mm <sup>2</sup>
Rigid	-	-	-	-	-	1 to 6mm <sup>2</sup>	1 to 6mm <sup>2</sup>	1 to 6mm <sup>2</sup>	1 to 6mm <sup>2</sup>	1.5 to 6mm <sup>2</sup>







**EH010 / EH011**  
230 VM ±10% 50/60Hz



**EH110 / EH111 / EH171**  
230 VM ±10% 50/60Hz



**Time Clocks/Switches Selection Chart**

	Electromechanical Time Clocks		Digital Time Clocks			
	1 Channel		1 Channel		2 Channels	4 Channels
						
	1 Modules	3 Modules	1 Modules	2 Modules	2 Modules	4 Modules
	<b>EH010</b> <b>EH011</b>	<b>EH110</b> <b>EH111</b> <b>EH171</b>	<b>EG071</b> <b>EG010</b>	<b>EG103</b> <b>EG103E</b>	<b>EG203</b> <b>EG203E</b>	<b>EG493E</b>
Programming Cycle	Electromechanical		Digital			
	1 Channel 1 Module	3 Modules	1 Channel 1 Modules	2 Modules	2 Channels 2 Modules	4 Channels 4 Modules
24 Hours	<b>EH010</b> <b>EH011</b>	<b>EH110</b> <b>EH111</b>	<b>EG010</b>			
7 Days		<b>EH171</b>	<b>EG071</b>	<b>EG103</b> <b>EG103E</b>	<b>EG203</b> <b>EG203E</b>	
Annual						<b>EG493E</b>

### Technical Characteristics - EG010

#### Electrical Characteristics

Voltage Supply	230V ±10% 50/60Hz
Consumption	1VA
Output	1 Changeover contact 16A - 250V AC 1 3A - 250V cosφ = 0.6 1000W Incandescent lighting

#### Functional Characteristics

Number of programs	5 Adjustable Pre-recorded Programs
Accuracy	±6min per year
Supply Failure Reserve	Total of 3 years

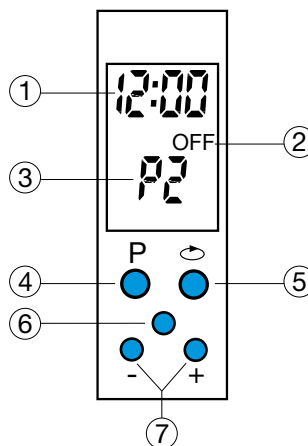
#### Environment

Working Temperature	-10°C to +50°C
Storage Temperature	-10°C to +60°C
Cable Capacity	1 to 4mm <sup>2</sup>
Main Characteristics	Easy to program: 5 programs are pre-recorded. The user just has to select the program which corresponds to its use and modify time switches if necessary.

The 5 pre-registered programs are as follows:

P	Prog
P0	OFF
P1	ON
P2	6.00 — 23.00
P3	6.00 — 8.00      17.00 — 23.00
P4	6.00 — 8.00      11.00 — 13.00      17.00 — 23.00

### Product Presentation



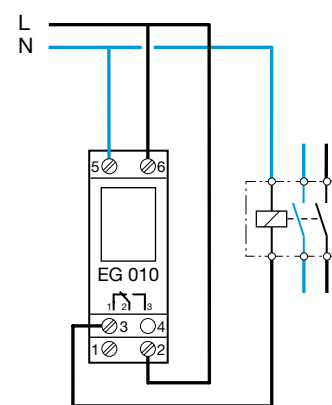
#### Display

1. Time
2. Circuit Status
3. Program Selection

#### Buttons

4. P to select the program to apply
5. Reset
6. ↻ to scroll program steps
7. + and - : to input time

### Electrical Connection



### Technical Characteristics - EG071

#### Electrical Characteristics

Voltage Supply	230V ±10% 50/60Hz
Consumption	1VA
Output	1 Changeover contact 16A - 250V AC 1 3A - 250V cosφ = 0.6 1000W Incandescent lighting

#### Functional Characteristics

Number of programs	20 Program Steps (each program step can be applied to one of several days)
Accuracy	±6min per year
Supply Failure Reserve	Total of 3 years

#### Environment

Working Temperature	-10°C to +50°C
Storage Temperature	-10°C to +60°C
Cable Capacity	1 to 4mm <sup>2</sup>

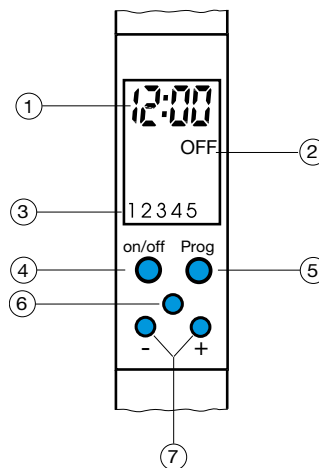
### Product Presentation

#### Display

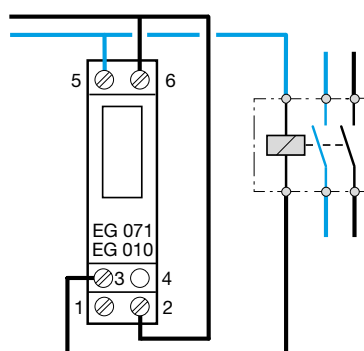
1. Time
2. Circuit Status
3. Days of the week

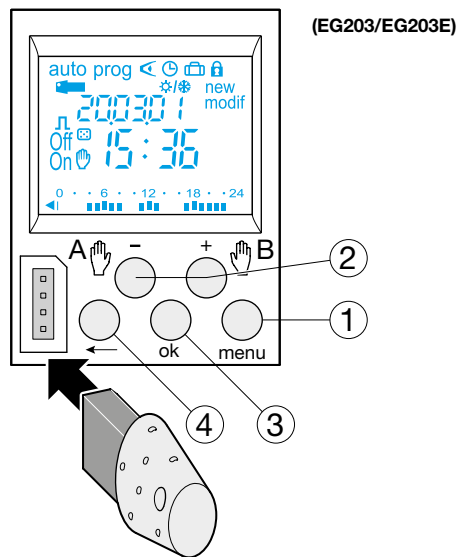
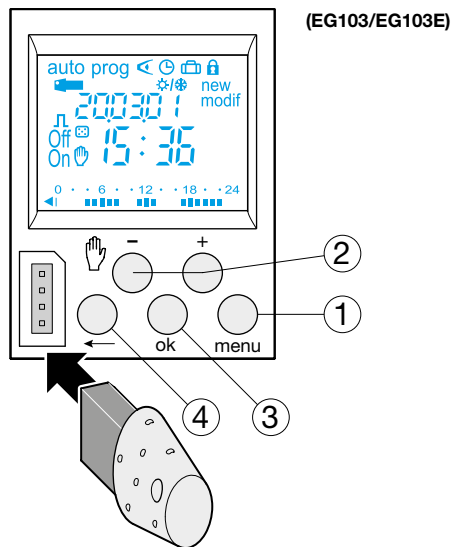
#### Buttons

4. ON / OFF : to select the circuit status
5. Reset
6. Prog: to program the device and scroll program steps
7. To input time and day



### Electrical Connection





**Keys**

1.	Menu	Selection of operating mode
	Auto	Mode of running according to the program selected
	Prog	New for programming mode
	Prog	To modify an existing program
	←	Checking of the program
	🕒	Modification of time, date and selection of the winter/summer time change mode.
	📅	Holidays
2.	+ / -	Navigation or setting of values
	👤	In auto, mode, selection of overrides, waivers or random operation
3.	OK	To validate flashing information on display
4.	←	To return to the previous step

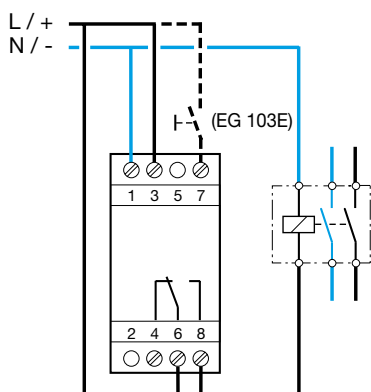
You may return into auto mode at any moment using menu.  
If no action is taken for 1 min, the switch returns to auto mode.

**Major Characteristics**

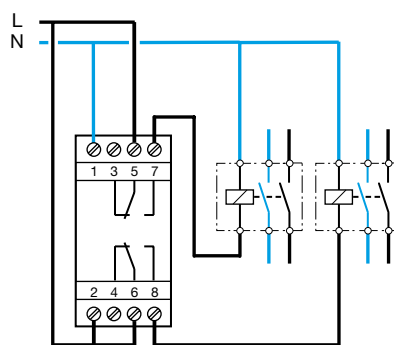
- Product delivered with current time and date set
- Automatic change of winter / summer time 🕒/🕒
- Programming key 🗑️
  - For permanent waivers
  - For program copy or save
- Programming for day or group of days
- 56 program steps On, Off
- Impulses ⏏ (1 sec to 30 min)\*
- Permanent overrides On or Off (👤 permanent light on)
- Temporary overrides On or Off (👤 flashing)
- Holiday mode 📅 : overrides On or Off between two dates\*
- Simulation of presence 🏠 \*
- Display bar graph of daily profile
- Keyboard locking possible 🔒
- Programmable with power off
- Back lit display\*

\* Evolution models E or V only

**Connection Diagram EG103\***



**Connection Diagram EG203\***

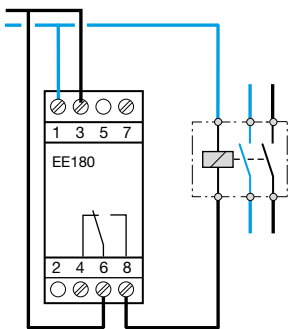


### Technical Characteristics

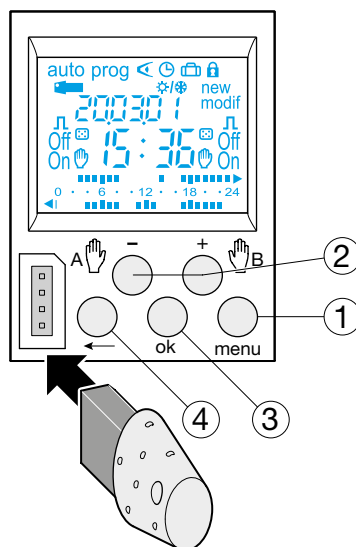
	EE180 (1 Channel)	EE181 (2 Channel)
Width in 17.5mm Modules	2	2
Supply Voltage	230V AC (+10 % / -15%, 50/60Hz)	
Number of Outputs	1	2
Characteristics of Relay	Change over contact 16A C 1 250V /10A cos phi = 0.6	
Incandescent	2300W	
230V Halogen	2300W	
Standards	CE + CTICK and CEI 60-669	
<b>Connection</b>		
Flexible	1 to 6mm <sup>2</sup>	
Rigid	1.5 to 10mm <sup>2</sup>	
<b>Environment</b>		
Storage Temperature	-20°C to +60°C	
Working Temperature	-10°C to +55°C	
IP	IP20	
<b>Functional Characteristics</b>		
Display LCD	Without backlight screen	
Operating reserve	Lithium battery 5 years	
Precision	+/- 1.5s/day	
Programming Key	Yes	
Automatic change of winter / summer time	Yes	
Functions available in free programming	Weekly programming / permanent override / temporary override	
<b>Astro Functions</b>		
Astro mode	Yes	Independent programming for each channel
Programming of the lighting interruption	Yes (if channel Astro)	
Temporary override	15 / 30 / 60min	
Maintained ON	Adjustment common to the 2 channels	
Anticipation ON	Adjustment common to the 2 channels	

Modular Devices &amp; Enclosures

### Electrical Connection EE180 : 1 Channel



### Product Presentation

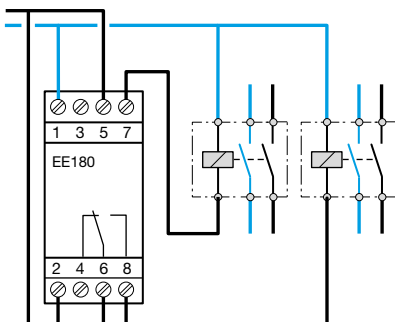


### Keys

- |         |  |
|---------|--|
| 1. Menu | Selection of operating mode  |
| Auto    | Mode of running according to the program selected                              |
| Prog    | New for programming mode   |
| Prog    | To modify an existing program  |
| ↶       | Checking of the program  |
| 🕒       | Modification of time, date and selection of the winter/summer time change mode |
| Astro   | Astronomical mode  |
| ★       | Indicated that the channel is in astronomical mode                             |
| 2. +/-  | Navigation or setting of values  |
| A 🖐     | In auto, mode, selection of overrides, waiver or random operation              |
| B 🖐     | operation  |
| 3. OK   | To validate flashing information on display                                    |
| 4. ↶    | To return to the previous step   |

You may return into auto mode at any moment using menu.  
If no action is taken for 1 min, the switch returns to auto mode.

### EE181 : 2 Channels





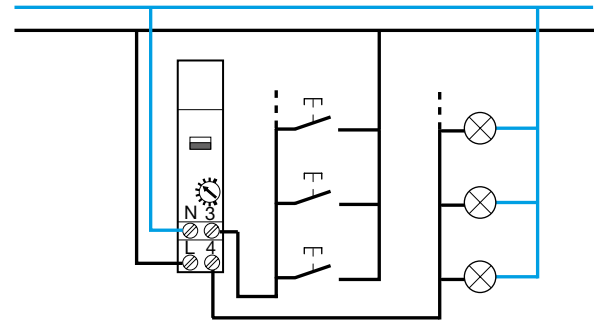
### Time Lag Switches

A common area where time delay devices are used is stairways and corridors in multi occupancy buildings where they provide a level of energy efficiency. The EMN001 device provides basic time lag control.

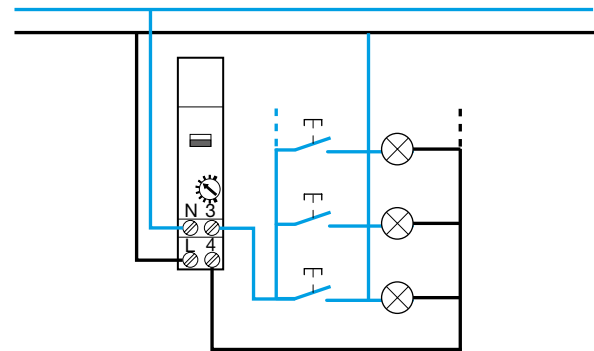
### Technical Specification

	EMN001	EMN002	EMN005
<b>Electrical Characteristics</b>			
Supply voltage	230V +10 -15% 50/60Hz	230V +10 -15% 50/60Hz	230V +10 -15% 50/60Hz
Consumption	1VA	0.5W Permanent 8W Max.	1VA
Size (Module)	1	-	1
<b>Breaking Capacity</b>			
AC1	16A 230V AC	4A 230V~	16A
Incandescent	2300W	1000W	2300W
Halogen 230V	2300W	1000W	2300W
Ferro Magnetic Transformer	1600W	-	-
Parallel Compensated	Capacitor 112µF	-	-
Fluorescent Lamps	1000W	-	1000W
Series Compensated	3600W	-	1000W
Electronic Transformer	2300W	-	-
Compact Fluorescent Lamps with Electronic Ballast	60 x 7W or 40 x 11W or 32 x 15W or 20 x 23W 23000W	-	-
with Conventional Ballast	-	-	-
<b>Functional Characteristics</b>			
Time Delay	30s to 10min	24s	30s to 10min
Retrigger	Yes	-	-
Max. Current in Rest Position	100mA	-	-
Automatic 3/4 Recognition	Yes	-	-
Local Command	Automatic / Override On	-	Automatic / Override On
<b>Environment</b>			
Working Temperature	-10 to +55°C	-15 to +55°C	-10 to +55°C
Storage Temperature	-20 to +60°C	-25 to +70°C	-20 to +60°C
<b>Connection</b>			
Flexible	1 to 6mm <sup>2</sup>	1 to 6mm <sup>2</sup>	1 to 6mm <sup>2</sup>
Rigid	1.5 to 10mm <sup>2</sup>	1.5 to 10mm <sup>2</sup>	1.5 to 10mm <sup>2</sup>
Connection <b>EM001/EM002</b>	-	2 wires 1.5	-

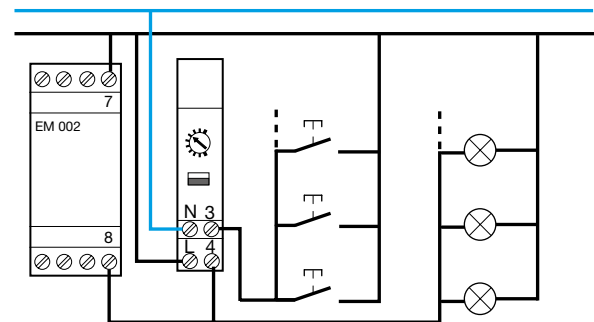
### Wiring Diagrams 4-Wire



### 3-Wire



### Combination EMN002 with EMN001



### A: Basic Mode

Press push button to switch ON the light. After a set time (Adjustable "T"), the light will switch OFF automatically.

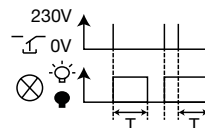
### B: Prewarning Mode

A signal (blink) will appear before the end of the lighting period.

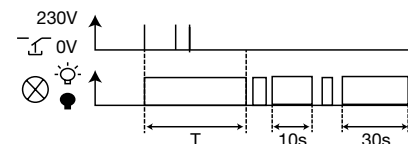
### C: Double delay mode

Press push button to switch light ON. After a set time (Adjustable "T"), the light will switch OFF automatically. If you press the button for more than 3 seconds, a time lag of one hour begins.

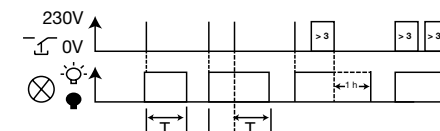
A



B



C



### Delay Timers

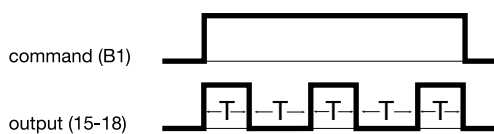
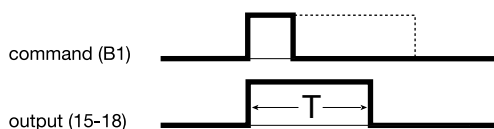
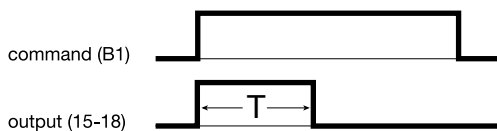
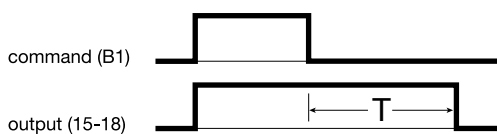
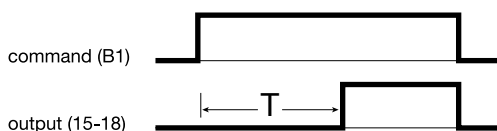
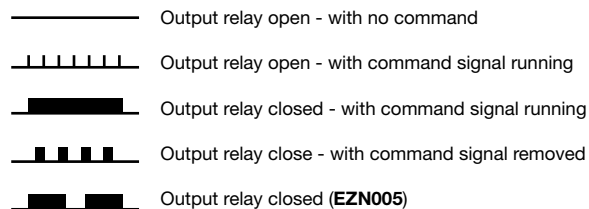
Delay timer devices are used to control a variety of processes where the requirement is for switching circuits on, off or delaying the on or off switching for a pre-set period of time. Typical device types are:

- **Delay on** - intended to delay the starting or switching of a circuit for a set period of time following the command signal e.g. to delay the starting of motor loads where a large number of motors are to be started by the same switch to reduce the effects of the starting currents.
- **Delay off** - intended to delay the stopping or switching off of a circuit for a set period of time following the removal of the command signal e.g. to overrun an extractor following the switching off of a process that creates fumes.
- **Adjustable time on** - intended to switch on for a set period, the command signal must remain on throughout the set period e.g. to switch on two sets of heaters with one set (the boost) switching off after the set period.
- **Impulse timer** - intended to switch on for a set period, the command signal length is not important e.g. to boost a time clock controlled circuit such as a water storage heater.
- **Symmetrical timer** - intended to toggle a circuit on and off in regular time patterns e.g. to run an extractor intermittently.

### Multifunction Timer - 6 Individual Functions

- A** = Timer.
- B** = Delay off (output relay opens either at end of command or after set time period - whichever is shorter).
- C** = Delay off.
- D** = Delay on.
- E** = Delay on (output relay closes either at end of command or after set time period - whichever is shorter).
- F** = Symmetrical timer.

On selection - contact permanently closed  
Off selection - contact permanently open

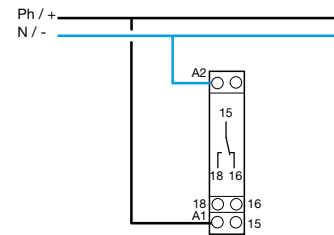


### Technical Specifications

EZN001, EZN002, EZN003, EZN004, EZN005, EZN006	
<b>Electrical Characteristics</b>	
Supply Voltage	24-28 Vdc 12-48 Vdc (+10%) Terminals A1 & A2 12-230 Vac (+10%) Terminals A3 & A2
Output	1 Volt Free C/O Contact
<b>Life Expectancy</b>	
Max Load AC 1	8A / 230V~ 50,000 Cycles
Incandescent	450W~ 500,000 Cycles
Fluorescent Non Comp.	600W~ 50,000 Cycles
Inductive Load 0.6pf	5A / 230V~ 100,000 Cycles
<b>Min Power</b>	
AC	100mA at 230V
DC	100mA at 12V
Galvanic Isolation	2kV
Standard / Norm	BS EN 60669-2-1
<b>Functional Characteristics</b>	
Timer Range	0.1s - 10 hours
<b>Min. Command Period</b>	
AC	50ms
DC	30ms
<b>Operating Temperature</b>	
Working	-20°C to +50°C
Storage	-40°C to +50°C
<b>Connection Capacity</b>	
Flexible	1 to 6mm <sup>2</sup>
Rigid	1.5 to 10mm <sup>2</sup>

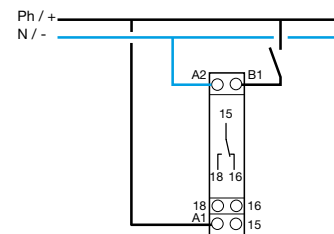
### Functional characteristics EZN001, EZN003, EZN005, EZN006 (functions D,E,F)

CD : Command.  
O : Output.  
T : Time delay.



### EZN002, EZN004, EZN006 (functions A,B,C)

indicator light (for versions with NO contact).  
ON  
OFF



### Technical Specifications

#### Electrical Characteristics

Voltage Supply	230V +10 -15% 50/60Hz
Consumption	1.5VA
Output	1 Changeover Contact 2A 230V AC1

#### Functional Characteristics

4 Temperature Ranges	-30 to 0°C 0 to +30°C +30 to +60°C +60°C to +90°C (Varying accuracy)
----------------------	--

#### Environment

Working Temperature	-10 to +50°C
Storage Temperature	-20 to +70°C

#### Connection Capacity

Flexible	1 to 6mm <sup>2</sup>
Rigid	1.5 to 10mm <sup>2</sup>
Probe	Maximum Distance 50m

### Main Characteristics

#### Multiple Applications

A single device to solve all your problems of regulation or temperature control, from cold room to incubator.

#### Varying Accuracy

The accuracy can be adapted according to the application. e.g.: low for ambient temperature regulation, high for incubator regulation.

#### Safety Feature for Probe Failure

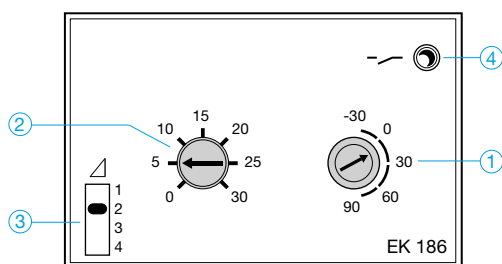
To protect the installation in case of disconnection from the probe. Various connections can be made so the thermostat will be:

- Permanent OFF
- Permanent ON
- Cyclical operation: output ON 1 minute in every 4

#### Display

State of output.

### Product Presentation



1. Selection of the range
2. Adjustment of the temperature setting
3. Selection of temperature range
4. Display of state of output

#### Working Principle

The **EK186** regulates the temperature according to all or nothing principle, it can be associated with different probes, according to the application the accuracy is a function of the temperature range and is selected by a slide switch.

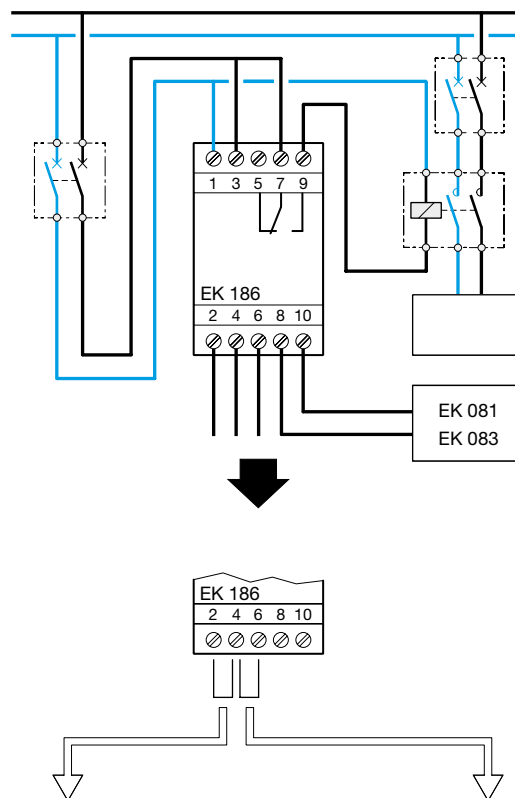
Position on Slide Switch	Temperature range °C			
	-30 to 0	0 to 30	30 to 60	60 to 90
1	± <b>2.15</b>	± 2.54	± 2.98	± 3.43
2	± 0.15	± <b>0.18</b>	± 0.21	± 0.24
3	± 0.38	± 0.45	± <b>0.53</b>	± 0.61
4	± 1.23	± 1.45	± 1.70	± <b>1.96</b>

**Bold** - Preferential accuracies for each temperature range.

#### Example of Choice of Accuracy

- Regulation of ambient temperature  
Range: 0 to +30°C  
Accuracy: ± 0.18°C = 2
- Control of hot water outgoing circuit  
Range: 30 to +60°C  
Accuracy: ± 0.53°C = 3

### Electrical Connection Caution



When the temperature ranges 30 to 60°C and 60 to 90°C are selected and the temperature measured by the probe is below 30°C, the safety feature for probe failure must be "permanent on", until the measured temperature reaches the minimum temperature corresponding to the range (i.e. 30°C for the range 30°C to 60°C and 60°C for the range 60°C to 90°C).

**Technical Specifications**

**Electrical Characteristics**

Voltage Supply	230V +10 -15% 50/60Hz
Consumption	1.5VA
Output	1 Changeover Contact 2A 230V AC1

**Functional Characteristics**

3 Temperature Ranges Controllable by External Setting	Comfort: Adjustable from +5 to +30°C Reduced: Decrease 2 to 8°C in Comparison with Comfort Setting Frost setting: Adjustable from +5 to +30°C Accuracy ±0.2°C
--	--

**Environment**

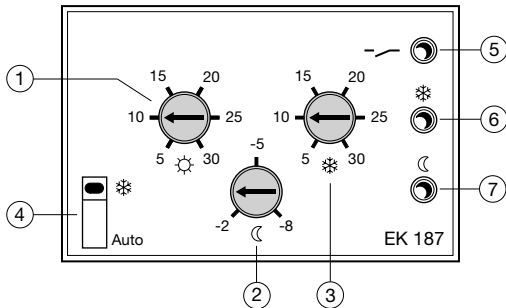
Working Temperature	-10 to +50°C
Storage Temperature	-20 to +70°C

**Connection Capacity**

Flexible	1 to 6mm <sup>2</sup>
Rigid	1.5 to 10mm <sup>2</sup>
Probe	Maximum Distance 50m

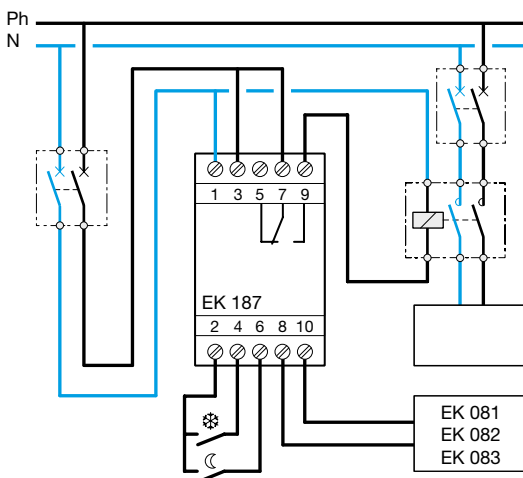
**Product Presentation**

1. Reference setting: comfort TO
2. Decrease in comparison with reference setting: reduced to TO
3. Frost setting
4. Frost setting override



5. Display of state of output i.e. contact position
6. LED indicating the frost override is on.
7. LED indicating the regulation in comparison with a reduced setting

**Electrical Connection**



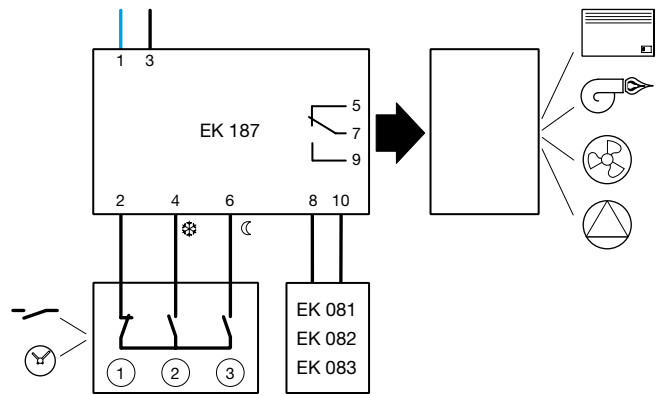
**Main Characteristics**

- **Temperature settings controllable by external setting** when associating a digital time switch, it is possible to regulate the heating in relation with a program established by the user.
- **2 wires link** between the probe and the unit, enables the easy replacement of the ambient thermostats of an existing installation.
- **Safety feature for "probe failure"** in case of probe disconnection, the output will be switched 1 minute in every 4; so that in case of disconnection during winter, it will protect the installation from frost.
- **Display** of state of the output and of the setting.

**Working Principle**

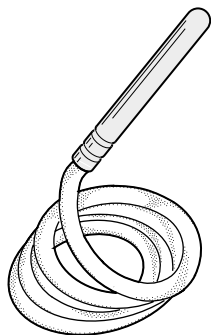
**EK187** adjusts the temperature under the "all or nothing" principle it is associated to an ambient probe and thus works in closed loop the temperature settings are selected by external settings (contacts free of potential).

**EK187** is thus generally associated to a time switch or a digital time switch in the case of absence of external signal, EK187 regulates the heating in comparison with the reference setting, a switch enables the override of the dispensation setting.



①								
②								
③								

### EK083 Universal Probe



- To associate with **EK186** thermostat
- To associate with **EK187** thermostat and **EK618** time programmable thermostat (for those applications insert in series with the probe a resistance of 1500Ω)

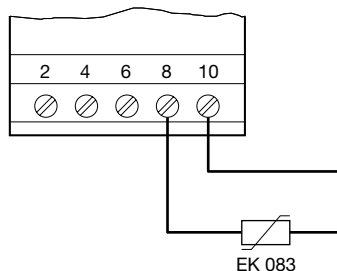
**EK083:** 10 kOhms at 25°C  
cable length: 4m

#### Environment

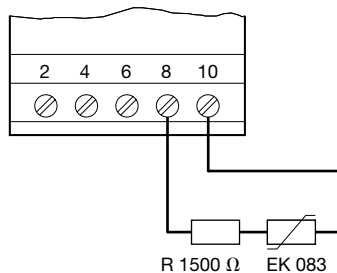
- Working temperature: -30 to +90°C
- Storage temperature: -30 to +100°C

### Electrical Connection

- Associated with **EK186**



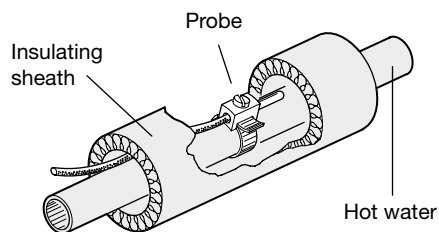
- Associated with **EK187 - EK618**



### Examples of Applications

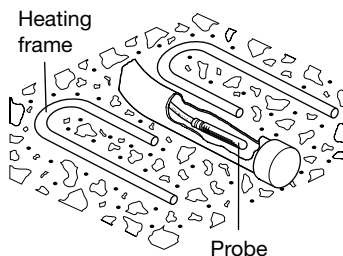
#### Use with the clamp collar

- For the control of hot water

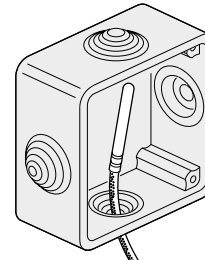


#### Use with the clamp collar

- Protected by a sheath for the control of floor temperature



- Used as an external probe in a weatherproof box.



### Resistance of Probes According to Temperature

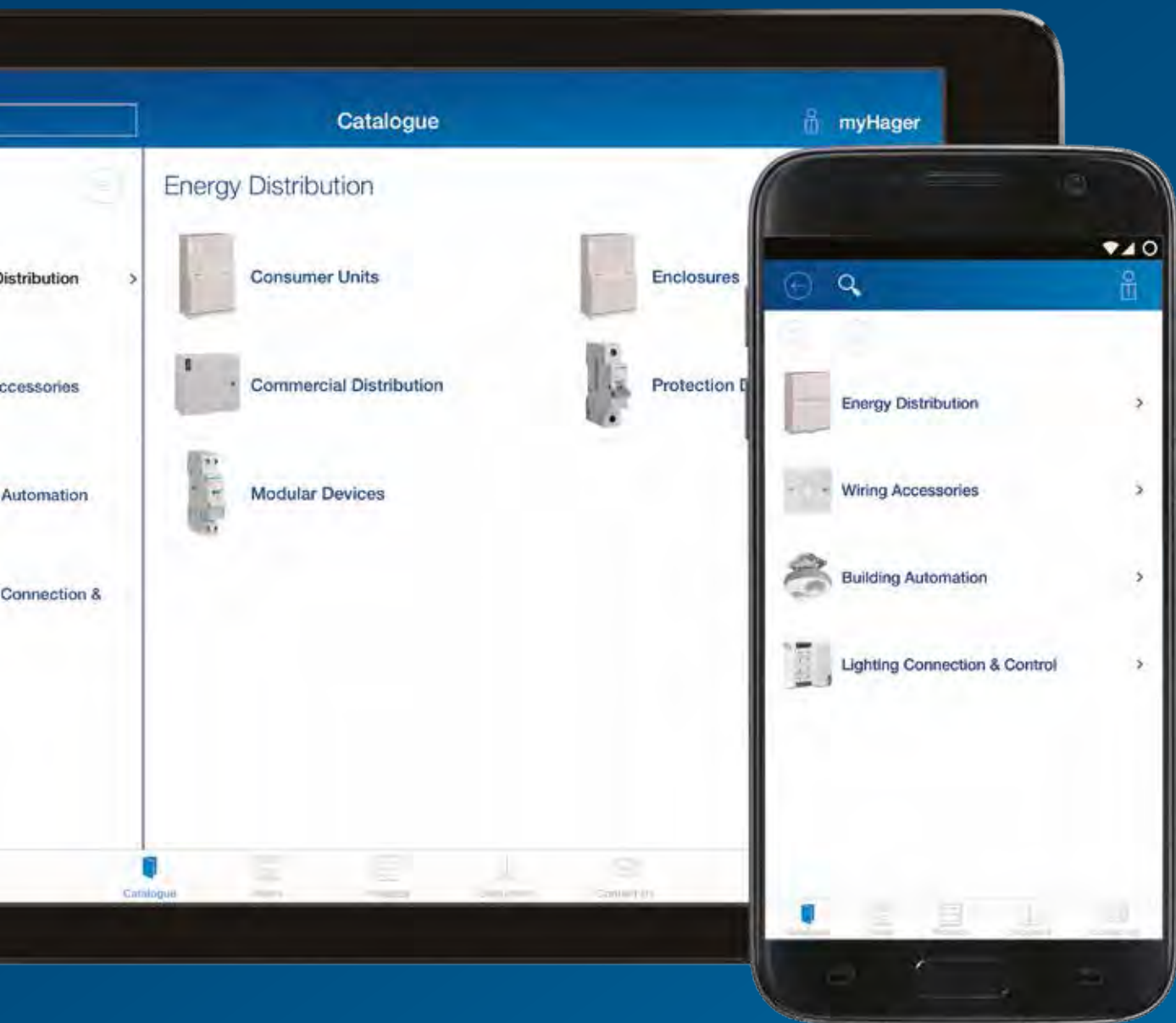
Temperature °C	EK083 R (KΩ)	EK081* R (KΩ)	EK081** EK082 R (KΩ)
+90	0.91	On a wall	-
+80	1.25	1.25	2.83
+70	1.75	1.75	3.33
+50	3.60	3.60	5.18
+30	8.06	8.06	9.64
+25	10	10	11.58
+20	12.49	12.49	14.07
+15	15.71	15.71	17.28
+10	19.90	19.90	21.48
+5	25.39	25.39	26.98
+0	32.65	32.65	34.23

Temperature °C	EK083 R (KΩ)	EK081* R (KΩ)	EK081** EK082 R (KΩ)
-5		42.31	-
-10	55.29	-	-
-15	72.89	-	-
-20	96.97	-	-
-25	130.24	-	-
-30	176.68	-	-

Face value at 25°C

Note: \*Association with **EK186**

\*\*Association with **EK187** and **EK618**



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**:hager**

# Lighting, Connection & Control

Lighting creates an impression. Klik, our lighting connection and control system provides the roots to a buildings lighting, system allowing it to adapt and grow. Controls, including occupancy sensors, ensure that light is only available when needed and tailored to a users desires. Our lighting offer also extends to our new range of LED lights and IP55 outdoor sensors, which will brighten up the night and secure your surroundings.





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**Klik**

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Klik 4 Pin	3.3
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Klik 7 Pin	3.7
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**Controls**

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Motion Detectors	3.15
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**Lighting**

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Outdoor Lighting	3.17
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Technical Pages	3.19
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KLDS4

### Marshalling Boxes

#### Characteristics:

- Klik marshalling boxes are used in conjunction with Klik 3 and 4 pin plugs to connect luminaires within an area. The Klik marshalling box can be separated into two independently switched circuits. These circuits can be controlled via wall switch or occupancy sensor.
- Complies with BS 5733:2010.
- Main terminal rating: 16 Amps.
- Socket outlet rating: 6 Amps.
- Separate terminals for flexible conductors, rating: 10 Amps.
- Short circuit tested 1500A conditional rating.
- Socket outlets accept either Klik lighting (3 pin) plugs, Klik auxiliary (4 pin) plugs.



KLDS12

#### Description

4 Way Klik Lighting Distribution Unit
6 Way Klik Lighting Distribution Unit
8 Way Klik Lighting Distribution Unit
10 Way Klik Lighting Distribution Unit
12 Way Klik Lighting Distribution Unit

#### Cat ref.

<b>KLDS4</b>
<b>KLDS6</b>
<b>KLDS8</b>
<b>KLDS10</b>
<b>KLDS12</b>



EEK510B

### Occupancy Sensors

#### Characteristics:

- Comes complete with integral photocell and the facility for wall switch override.
- Can be programmed for absence or presence.
- Range 7m diameter for large movements, 5m diameter for small movements.
- Factory presets, lux = 400, time = 20 min, presence detection.
- **EEK001** programming tool is easy to use with 2 memory settings to enable repeatability.
- **EEK002** remote control comes with a wall mounting bracket for storage and allows room occupant to have control of lighting output.
- **EE883** The detection range diameter is adjustable from 1 to 8 metres. The hyper frequency sensor allows for detection of movement through partitions (drywall, wood, glass) independent of temperature detection. 360° Detection area. IP54 rated. 230V AC. Complies with EN 60669-1, EN 60669-2-1, EN 301489-1, EN 301489-3, EN 300440-1, EN 300440-2.
- **EE880** Infra-red corridor motion detector for surface mounting. 230V AC. IP54 rated. Detection zone of 4m x 20m. Overrun timer from 5 seconds to 15 minutes. Complies with EN 60669-1 & EN 60669-2-1.
- **EE810** - one channel detector. Provides direct control of a light load or can be used as a slave with **EE811** for enlargement of detection area. Lux level and ON delay (duration or pulse) defined via potentiometers. Test mode in order to set lux level and the detection pattern.
- **EE811** - two channels detector. Lux level and ON delay adjustable via potentiometers. Input for slave (**EE810**) and/or remote push button. 230V wall switch override. Complies with EN 60669-1 & EN 60669-2-1.



EE883

#### Description

Standard Occupancy Sensor, Pre-Wired 3m
Standard Occupancy Sensor (without cable)
Surface Mount Kit
Programming Tool
Remote Control
360° Hyper Frequency Sensor
PIR Corridor Motion Detector
Presence Detector 1 Channel
Presence Detector 2 Channel
Surface Mounting Box for <b>EE810</b> and <b>EE811</b>

#### Cat ref.

<b>EEK513W</b>
<b>EEK510B</b>
<b>EEK005</b>
<b>EEK001</b>
<b>EEK002</b>
<b>EE883</b>
<b>EE880</b>
<b>EE810</b>
<b>EE811</b>
<b>EE813</b>



EEK001

EEK002

### 3 Pin Plug-in Ceiling Rose & Cover

#### Characteristics:

- The 6A plug-in ceiling rose is used to offer a pluggable connection for luminaires. The luminaire can be connected and disconnected under load.
- Complies with BS 5733:2010.
- Sockets have 4 terminations: line, neutral, CPC and loop-in.
- Plugs have 3 terminations: line, neutral and CPC.
- Fixing: 50.8mm Standard Diagonal (BESA).



PCR2000

#### Description

3 Pin Plug-in Ceiling Rose White
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#### Quantity

10
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#### Cat ref.

<b>PCR2000</b>
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## 4 Pin (including Auxiliary) Plug-in Ceiling Rose & Cover

### Characteristics:

- Klik 6A pre-wired plug-in ceiling roses are used to connect luminaires to a fixed wiring installation. Auxiliary contact available, a typical use is for emergency lighting.
- Complies with BS 6972 and BS 5733:2010.
- Sockets have 5 terminations: line, neutral, CPC, auxiliary and loop-in.
- Plugs have 4 terminations: line, neutral, CPC and auxiliary.

Description	Quantity	Cat ref.
4 Pin Plug-in Ceiling Rose White	10	<b>CR64AX</b>
4 Pin Plug-in Ceiling Rose Red	10	<b>CR64AX/R</b>



CR64AX/R

## Spare Ceiling Rose Cover

Description	Quantity	Cat ref.
Ceiling Rose Cover White	10	<b>A1</b>
Ceiling Rose Cover Red	10	<b>A1/R</b>



A1/R

## 3 Pin Pre-wired 6A Plug-in Ceiling Rose

### Characteristics:

- 6A pre-wired plug-in ceiling roses are used to connect luminaires to a fixed wiring installation.
- Complies with BS 6972 and BS 5733:2010.
- PVC flexible cord complies with BS EN 50525-2-11.
- Low smoke zero halogen flexible cord, complies with BS EN 50525-3-11.
- All leads have prepared ends.

Description	Box Quantity	PVC Cat ref.	LSZH Cat ref.
<b>6A Plug-in Ceiling Rose with 0.75mm<sup>2</sup> Flexible Cord</b>			
1 Metre	10	<b>PCR2000/1.0</b>	<b>PCR2000/LSF/1.0</b>
2 Metre	10	<b>PCR2000/2.0</b>	<b>PCR2000/LSF/2.0</b>
3 Metre	5	<b>PCR2000/3.0</b>	<b>PCR2000/LSF/3.0</b>
4 Metre	5	<b>PCR2000/4.0</b>	<b>PCR2000/LSF/4.0</b>



PCR2000/1.0

### 6A Plug-in Ceiling Rose with 1mm<sup>2</sup> Flexible Cord

2 Metre	10	<b>PCR2000/1.0PVC/2</b>	<b>PCR2000/1.0LSF/2</b>
3 Metre	5	<b>PCR2000/1.0PVC/3</b>	<b>PCR2000/1.0LSF/3</b>
4 Metre	5	<b>PCR2000/1.0PVC/4</b>	<b>PCR2000/1.0LSF/4</b>
5 Metre	5	<b>PCR2000/1.0PVC/5</b>	<b>PCR2000/1.0LSF/5</b>

## 4 Pin (Including Auxiliary) Pre-wired 6A Plug-in Ceiling Rose

### Characteristics:

- Auxiliary 6A pre-wired plug-in ceiling roses are used to connect luminaires to a fixed wiring installation.
- Complies with BS 6972 and BS 5733:2010.
- PVC flexible cord complies with BS EN 50525-2-11.
- Low smoke zero halogen flexible cord, complies with BS EN 50525-3-11.
- All leads have prepared ends.

Description	Box Quantity	PVC Cat ref.	LSZH Cat ref.
<b>6A Pre-wired Ceiling Rose with 0.75mm<sup>2</sup> Flexible Cord</b>			
1 Metre	10	<b>CR64AX/1.0</b>	<b>CR64AX/LSF/1.0</b>
2 Metre	10	<b>CR64AX/2.0</b>	<b>CR64AX/LSF/2.0</b>
3 Metre	5	<b>CR64AX/3.0</b>	<b>CR64AX/LSF/3.0</b>
4 Metre	5	<b>CR64AX/4.0</b>	<b>CR64AX/LSF/4.0</b>



CR64AX/1.0

### 6A Pre-wired Ceiling Rose with 1mm<sup>2</sup> Flexible Cord

2 Metre	10	<b>CR64AX/1.0PVC/2</b>	<b>CR64AX/1.0LSF/2</b>
3 Metre	5	<b>CR64AX/1.0PVC/3</b>	<b>CR64AX/1.0LSF/3</b>
4 Metre	5	<b>CR64AX/1.0PVC/4</b>	<b>CR64AX/1.0LSF/4</b>
5 Metre	5	<b>CR64AX/1.0PVC/5</b>	<b>CR64AX/1.0LSF/5</b>



P22

### 3 Pin Plug

#### Characteristics:

- Klik 3 pin plugs are used to connect into a Klik socket giving a pluggable connection to luminaires.
- Complies with BS 6972 and BS 5733:2010.
- Suitable for use with any Klik 3 or 4 pin socket.
- **P22** plug is supplied in a plug-in ceiling rose, cat ref. **PCR2000**.
- Plugs have 3 terminations: line, neutral and CPC.

**Warning:** Plugs must not be fitted on the supply side of any installation - they must be connected to the load / fitting / appliance side of the installation.

Description	Quantity	Cat ref.
3 Pin Plug White	10	<b>P22</b>



P64AX

### 4 Pin (Including Auxiliary) Plug

#### Characteristics:

- Klik plugs with auxiliary pin are used to connect into the Klik sockets giving a pluggable connection to luminaires.
- Complies with BS 6972 and BS 5733:2010.
- Suitable for use with any Klik 4 pin sockets.
- **P64AX** plug is supplied in a plug-in ceiling rose, Cat. ref. **CR64AX**.
- Plugs have 4 terminations: line, neutral, CPC and auxiliary.

**Warning:** Plugs must not be fitted on the supply side of any installation - they must be connected to the load / fitting / appliance side of the installation.

Description	Quantity	Cat ref.
4 Pin Plug White	10	<b>P64AX</b>
4 Pin Plug Red	10	<b>P64AX/R</b>



P22/1.0

### 3 Pin Pre-wired 6A Plugs

#### Characteristics:

- 6A pre-wired plugs are used to connect luminaires to a Klik ceiling rose or marshalling box. All leads have prepared ends.
- Complies with BS 6972 and BS 5733:2010.
- PVC flexible cord complies with BS EN 50525-2-11.
- Low smoke zero halogen flexible cord, complies with BS EN 50525-3-11.

Description	Quantity	PVC Cat ref.	LSZH Cat ref.
<b>6A Pre-wired Plugs with 0.75mm<sup>2</sup> Flexible Cord</b>			
1 Metre	10	<b>P22/1.0</b>	<b>P22/LSF/1.0</b>
2 Metre	10	<b>P22/2.0</b>	<b>P22/LSF/2.0</b>
3 Metre	5	<b>P22/3.0</b>	<b>P22/LSF/3.0</b>
4 Metre	5	<b>P22/4.0</b>	<b>P22/LSF/4.0</b>
<b>6A Pre-wired Plugs with 1mm<sup>2</sup> Flexible Cord</b>			
2 Metre	10	<b>P22/1.0PVC/2</b>	<b>P22/1.0LSF/2</b>
3 Metre	5	<b>P22/1.0PVC/3</b>	<b>P22/1.0LSF/3</b>
4 Metre	5	<b>P22/1.0PVC/4</b>	<b>P22/1.0LSF/4</b>
5 Metre	5	<b>P22/1.0PVC/5</b>	<b>P22/1.0LSF/5</b>



P64AX/1.0

### 4 Pin (Including Auxiliary) Pre-wired 6A Plugs - White

#### Characteristics:

- Klik auxiliary 6A pre-wired plugs are used to connect luminaires to a Klik ceiling rose or marshalling box.
- Complies with BS 6972 and BS 5733:2010.
- PVC flexible cord complies with BS EN 50525-2-11.
- Low smoke zero halogen flexible cord, complies with BS EN 50525-3-11.
- All leads have prepared ends.

Description	Quantity	PVC Cat ref.	LSZH Cat ref.
<b>6A Pre-wired Plugs with 0.75mm<sup>2</sup> Flexible Cord</b>			
1 Metre	10	<b>P64AX/1.0</b>	<b>P64AX/LSF/1.0</b>
2 Metre	10	<b>P64AX/2.0</b>	<b>P64AX/LSF/2.0</b>
3 Metre	5	<b>P64AX/3.0</b>	<b>P64AX/LSF/3.0</b>
4 Metre	5	<b>P64AX/4.0</b>	<b>P64AX/LSF/4.0</b>
<b>6A Pre-wired Plugs with 1mm<sup>2</sup> Flexible Cord</b>			
2 Metre	10	<b>P64AX/1.0PVC/2</b>	<b>P64AX/1.0LSF/2</b>
3 Metre	5	<b>P64AX/1.0PVC/3</b>	<b>P64AX/1.0LSF/3</b>
4 Metre	5	<b>P64AX/1.0PVC/4</b>	<b>P64AX/1.0LSF/4</b>
5 Metre	5	<b>P64AX/1.0PVC/5</b>	<b>P64AX/1.0LSF/5</b>

## 4 Pin (Including Auxiliary) Pre-wired 6A Plugs - Red

### Characteristics:

- Klik auxiliary 6A pre-wired plugs are used to connect luminaires to a Klik ceiling rose or marshalling box.
- Complies with BS 6972 and BS 5733:2010.
- PVC flexible cord complies with BS EN 50525-2-11.
- Low smoke zero halogen flexible cord, complies with BS EN 50525-3-11.
- All leads have prepared ends.

Description	Quantity	PVC Cat ref.	LSZH Cat ref.
<b>6A Pre-wired Plugs with 0.75mm<sup>2</sup> Flexible Cord</b>			
1 Metre	10	<b>P64AXR/1.0</b>	<b>P64AXR/LSF/1.0</b>
2 Metre	10	<b>P64AXR/2.0</b>	<b>P64AXR/LSF/2.0</b>
3 Metre	5	<b>P64AXR/3.0</b>	<b>P64AXR/LSF/3.0</b>
4 Metre	5	<b>P64AXR/4.0</b>	<b>P64AXR/LSF/4.0</b>



P64AXR/1.0

### 6A Pre-wired Plugs with 1mm<sup>2</sup> Flexible Cord

2 Metre 1.00mm <sup>2</sup> Flexible Cord	10	<b>P64AXR/1.0PVC/2</b>	<b>P64AXR/1.0LSF/2</b>
3 Metre 1.00mm <sup>2</sup> Flexible Cord	5	<b>P64AXR/1.0PVC/3</b>	<b>P64AXR/1.0LSF/3</b>
4 Metre 1.00mm <sup>2</sup> Flexible Cord	5	<b>P64AXR/1.0PVC/4</b>	<b>P64AXR/1.0LSF/4</b>
5 Metre 1.00mm <sup>2</sup> Flexible Cord	5	<b>P64AXR/1.0PVC/5</b>	<b>P64AXR/1.0LSF/5</b>

## 3 Pin Plug Socket Outlets

### Characteristics:

- 6A socket outlets are used in conjunction with 6A plugs to provide a pluggable connection to luminaires.
- Complies with BS 6972 and BS 5733:2010.
- Suitable for use with standard Klik 3 pin plug.
- S27 socket is supplied in plug-in ceiling rose, Cat. Ref. **PCR2000**.
- **S27** socket will accept **A1** cover.
- **S26/TC** socket is an **S26** architrave socket pre-assembled with a trunking clamp.

Description	Quantity	Cat ref.
Ultra Flush Socket White	10	<b>S21</b>
Architrave Socket White	10	<b>S26</b>
Architrave Socket comes with Trunking Clamp	10	<b>S26/TC</b>
3 Pin Round Socket White	10	<b>S27</b>
Ultra Flush Round Socket White	10	<b>S28</b>



S27

## 4 Pin (Including Auxiliary) Plug Socket Outlets

### Characteristics:

- Klik auxiliary 6A socket outlets are used in conjunction with Klik auxiliary 6A plugs to provide a pluggable connection to luminaires.
- Complies with BS 6972 and BS 5733:2010.
- Suitable for use with standard Klik 4 pin plug.
- **S64AX** socket is supplied in plug-in ceiling rose, Cat. Ref. **PCR2000**.
- **S64AX** socket will accept **A1** cover.
- **S65AX** socket is a square variant.
- All sockets have 5 terminations: line, neutral, CPC, auxiliary and loop-in.
- Can be used with Klik 3 or 4 pin plug.

Description	Quantity	Cat ref.
4 Pin Round Socket White	10	<b>S64AX</b>
4 Pin Square Socket White	10	<b>S65AX</b>



S64AX



S65AX

## Moulded Mounting Boxes

Description	Quantity	Cat ref.
Round Surface Box White	10	<b>MB2</b>



MB2



KLMB4W

## Lighting Marshalling Boxes - Wire In, Plug Out

### Characteristics:

- The KLMB marshalling box allows the connection and control of multiple luminaires. The marshalling box utilises a robust extruded aluminium body.
- 7 Pole.
- 4, 6, 8, 10 & 12 outlets.
- 16A Rated BS 5733:2010 .
- Short circuit tested: 1500A conditional rating.

Description	Cat ref.
<b>Lighting Marshalling Box, Single Supply, Wire In, Plug Out</b>	
4 Way	<b>KLMB4W</b>
6 Way	<b>KLMB6W</b>
8 Way	<b>KLMB8W</b>
10 Way	<b>KLMB10W</b>
12 Way	<b>KLMB12W</b>
<b>Lighting Marshalling Box, Dual Channel, Wire In, Plug Out</b>	
8 Way, 4/4	<b>KLMB244W</b>
10 Way, 5/5	<b>KLMB255W</b>
12 Way, 6/6	<b>KLMB266W</b>



KLMB5P

## Lighting Marshalling Boxes - Plug In, Plug Out

### Characteristics:

- The KLMB marshalling box allows the connection and control of multiple luminaires. The marshalling box utilises a robust extruded aluminium body.
- 7 Pole.
- 5, 7, 9 & 11 outlets.
- 16A Rated BS 5733:2010 .
- Short circuit tested: 1500A conditional rating.

Description	Cat ref.
<b>Lighting Marshalling Box, Single Supply, Plug In, Plug out</b>	
5 Way	<b>KLMB5P</b>
7 Way	<b>KLMB7P</b>
9 Way	<b>KLMB9P</b>
11 Way	<b>KLMB11P</b>
<b>Lighting Marshalling Box, Dual Supply, Plug In, Plug Out</b>	
10 Way, 1 in 5 out	<b>KLMB255DSP</b>
14 Way, 1 in 7 out	<b>KLMB277DSP</b>
<b>Lighting Marshalling Box, Dual Supply Digital Link Plug In, Plug Out</b>	
10 Way, 1 in 5 out	<b>KLMB255DSP/DL</b>
14 Way, 1 in 7 out	<b>KLMB277DSP/DL</b>



EEK513P

## Standard & Digital Occupancy Sensors

### Characteristics:

- Hager occupancy sensors come complete with integral photocell and the facility for wall switch override.
- Can be programmed for absence or presence.
- Range: 7m diameter for large movements, 5m diameter for small movements.
- Factory presets, lux = 400, time = 20 min, presence detection.
- **EEK001** programming tool is easy to use with two memory settings to enable repeatability.
- **EEK002** remote control comes with a wall mounting bracket for storage and allows room occupant to have control of lighting output.

Description	Cat ref.
Standard Relay Sensor Complete with 3m Lead and Plug LSZH	<b>EEK513P</b>
Standard Relay Sensor Complete with 5m Lead and Plug LSZH	<b>EEK515P</b>
Digital Sensor Complete with 3m Lead and Plug LSZH	<b>EEK523P</b>
Digital Sensor Complete with 5m Lead and Plug LSZH	<b>EEK525P</b>
Programming Tool	<b>EEK001</b>
Remote Control	<b>EEK002</b>
Surface Mount Kit	<b>EEK005</b>

**Standard & Digital Occupancy Sensors - Continued**

**Characteristics:**

- **EE883** The detection range diameter is adjustable from one to eight metres. The hyper frequency sensor allows for detection of movement through partitions (drywall, wood, glass) independent of temperature detection. 360° Detection area. IP54 rated. 230V AC. Complies with EN 60669-1, EN 60669-2-1, EN 301489-1, EN 301489-3, EN 300440-1, EN 300440-2.
- **EE880** Infra-red corridor motion detector for surface mounting. 230V AC. IP54 rated. Detection zone of 4m x 20m. Overrun timer from 5 seconds to 15 minutes. Complies with EN 60669-1 & EN 60669-2-1.
- **EE810** - one channel detector. Provides direct control of a light load or can be used as a slave with **EE811** for enlargement of detection area. Lux level and ON delay (duration or pulse) defined via potentiometers. Test mode in order to set lux level and the detection pattern.
- **EE811** - two channels detector. Lux level and ON delay adjustable via potentiometers. Input for slave (**EE810**) and/or remote push button. 230V wall switch override. Complies with EN 60669-1 & EN 60669-2-1.

**Note:** These devices need to be wired and can only be used with 'wire in' type boxes.



EE883

Description	Cat ref.
360° Hyper Frequency Sensor	<b>EE883</b>
PIR Corridor Motion Detector	<b>EE880</b>
Presence Detector 1 Channel	<b>EE810</b>
Presence Detector 2 Channel	<b>EE811</b>
Surface Mounting Box for <b>EE810</b> and <b>EE811</b>	<b>EE813</b>

**KNX Occupancy Sensors**

**Characteristics:**

- Hager occupancy sensors come complete with integral photocell and the facility for wall switch override.
- Can be programmed for absence or presence.
- Range 7m: diameter for large movements, 5m diameter for small movements.
- Factory presets, lux = 400, time = 20 min, presence detection.
- **EEK001** programming tool is easy to use with two memory settings to enable repeatability.
- **EEK002** remote control comes with a wall mounting bracket for storage and allows room occupant to have control of lighting output.



TKK513P

Description	Cat ref.
KNX Relay Sensor with 3m Lead and Plug - LSZH	<b>TKK513PE</b>
KNX Relay Sensor with 5m Lead and Plug - LSZH	<b>TKK515PE</b>
KNX Digital Sensor with 3m Lead and Plug - LSZH	<b>TKK523PE</b>
KNX Digital Sensor with 5m Lead and Plug - LSZH	<b>TKK525PE</b>
KNX Occupancy Sensor (KNX only, without cable)	<b>TCC510S</b>
Programming Tool	<b>EEK001</b>
Remote Control	<b>EEK002</b>
Surface Mount Kit	<b>EEK005</b>



KLCM413W

### Lighting Control Module with KlikLink

**Characteristics:**

- The KLCM allows connection and control of multiple luminaires with four separate channels.
- Switching, dimming (DSI & DALI), corridor hold, partition switching, daylight switching & dimming, scene settings, integral emergency test times, reset profiles, light level offset (channel to channel).

Description	Cat ref.
12 Way 4 Channel LCM Plug in, Plug out	<b>KLCM412P</b>
13 Way 4 Channel LCM Wire in, Plug out	<b>KLCM413W</b>
KlikLink iPad App	<b>Search KlikLink in iPad App Store</b>



KLCM-OS

### Lighting Control Module Occupancy Sensors

**Characteristics:**

- Klik LCM occupancy sensors come complete with a 10m RJ11 lead and have integrated daylight sensing.
- Sensing options are selected via the Kliklink app (e.g. presence/absence).
- **KLCM-3OS** is designed for use as a corridor sensor.
- **KLCM-5OS** is designed for use as a whole room sensor.



KLCM-5OS

Description	Cat ref.
Klik LCM Occupancy Sensor with 1 Sensor Head	<b>KLCM-OS</b>
Klik LCM Corridor Sensor with 3 Sensor Heads	<b>KLCM-3OS</b>
Klik LCM Wide Area Sensor with 5 Sensor Heads	<b>KLCM-5OS</b>



KLO15RJ45G

### Lighting Control Module Switch Drop Leads (Grey)

**Characteristics:**

- RJ45 to switch (wire-in) lead available in a variety of lengths.
  - SELV.
  - Cables supplied standard with RJ45 plug on both ends.
- Note:** for retractable wall switch, please see page 5.3, for grid versions see page 5.12.

Description	Cat ref.
<b>RJ45 SELV Switch Drop Lead</b>	
5m	<b>KLO5RJ45G</b>
10m	<b>KLO10RJ45G</b>
15m	<b>KLO15RJ45G</b>
20m	<b>KLO20RJ45G</b>
30m	<b>KLO30RJ45G</b>
40m	<b>KLO40RJ45G</b>
50m	<b>KLO50RJ45G</b>



KLO15RJ45R

### Lighting Control Module Link Leads (Red)

**Characteristics:**

- RJ45 to switch (wire-in) lead available in a variety of lengths.
- SELV.
- Cables supplied standard with RJ45 plug on both ends.

Description	Cat ref.
<b>RJ45 SELV Link Lead</b>	
5m	<b>KLO5RJ45R</b>
10m	<b>KLO10RJ45R</b>
15m	<b>KLO15RJ45R</b>
20m	<b>KLO20RJ45R</b>
30m	<b>KLO30RJ45R</b>
40m	<b>KLO40RJ45R</b>
50m	<b>KLO50RJ45R</b>
RJ45 Splitter	<b>KLORJ45CON</b>



## Klik Lighting Marshalling Box (KLMB) Link Leads

### Characteristics:

- The link leads are used to connect KLMB to KLMB. All leads are low smoke zero halogen and are factory connected and tested. Note: to ensure correct link lead selection see the connection key on page .
- 1.5mm<sup>2</sup> CSA.
- 3m, 5m & 10m lengths.
- Standard, Digital and Emergency Luminaires.
- 16A Rated.
- BS 5733:2010, BS EN 61535.
- Short circuit tested: 1500A conditional rating.
- Cable standard BS 6500 & BS 7211.
- For core identification see page 3.28.

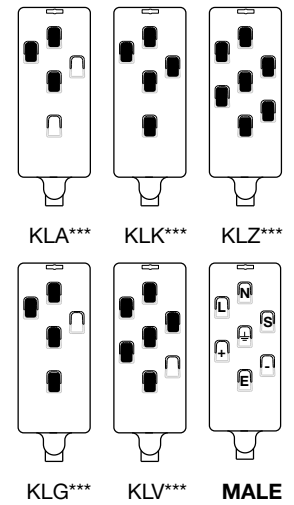


KLA/3/1-5P

Description	Cat ref.
<b>Supply Link 16A, 1.5mm<sup>2</sup> 3 Core Link Lead, Plug to Plug</b>	
3m	<b>KLA/3/1-5P</b>
5m	<b>KLA/5/1-5P</b>
10m	<b>KLA/10/1-5PX*</b>
<b>Supply Link 16A, 1.5mm<sup>2</sup> 4 Core Link Lead, Plug to Plug</b>	
3m	<b>KLG/3/1-5P</b>
5m	<b>KLG/5/1-5P</b>
10m	<b>KLG/10/1-5PX*</b>
<b>Supply Link 16A, 1.5mm<sup>2</sup> 5 Core Link Lead, Plug to Plug</b>	
3m	<b>KLK/3/1-5P</b>
5m	<b>KLK/5/1-5P</b>
10m	<b>KLK/10/1-5PX*</b>
<b>Supply Link 16A, 1.5mm<sup>2</sup> 6 Core Link Lead, Plug to Plug</b>	
3m	<b>KLV/3/1-5P</b>
5m	<b>KLV/5/1-5P</b>
10m	<b>KLV/10/1-5PX*</b>
<b>Supply Link 16A, 1.5mm<sup>2</sup> 7 Core Link Lead, Plug to Plug</b>	
3m	<b>KLZ/3/1-5P</b>
5m	<b>KLZ/5/1-5P</b>
10m	<b>KLZ/10/1-5PX*</b>

\*Special lengths are available to order (not stocked) which include 2.5mm<sup>2</sup> and 4mm<sup>2</sup> variants.

### Link Lead Identification Chart



**KLA\*\*\*** L, N, CPC  
**KLG\*\*\*** L, N, E, CPC  
**KLK\*\*\*** L, N, S, E, CPC  
**KLV\*\*\*** L, N, S, E, DA+, CPC  
**KLZ\*\*\*** L, N, S, E, DA+, DA-, CPC

Key	
N	Neutral
L	Permanent Line
S	Switched Line
CPC	Circuit Protective Conductor
+	DA+
-	DA-
E	Emergency Line



KLB/1/0-75W



KLJ/1/0-75W

## Luminare Leads

### Characteristics:

- Connections to the luminaire are made via a pre-wired plug and lead. All leads are low smoke zero halogen and are factory connected and tested.
- Standard, digital and emergency luminaires.
- Short circuit tested: 1500A conditional rating.
- Cable standard BS 7211.

Description	Cat ref.
<b>Standard 6A, 0.75mm<sup>2</sup> 3 Core Luminaire Lead Plug to Wire</b>	
1m	<b>KLB/1/0-75W</b>
2m	<b>KLB/2/0-75W</b>
3m	<b>KLB/3/0-75W</b>
4m	<b>KLB/4/0-75W</b>
5m	<b>KLB/5/0-75W</b>
<b>Standard 10A, 1mm<sup>2</sup> 3 Core Luminaire Lead Plug to Wire</b>	
1m	<b>KLB/1/1W</b>
2m	<b>KLB/2/1W</b>
3m	<b>KLB/3/1W</b>
4m	<b>KLB/4/1W</b>
5m	<b>KLB/5/1W</b>
<b>Standard 16A, 1.5mm<sup>2</sup> 3 Core Luminaire Lead Plug to Wire</b>	
1m	<b>KLB/1/1-5W</b>
2m	<b>KLB/2/1-5W</b>
3m	<b>KLB/3/1-5W</b>
4m	<b>KLB/4/1-5W</b>
5m	<b>KLB/5/1-5W</b>
<b>Standard 6A, 0.75mm<sup>2</sup> 4 Core Luminaire Lead Plug to Wire with Emergency</b>	
1m	<b>KLJ/1/0-75W</b>
2m	<b>KLJ/2/0-75W</b>
3m	<b>KLJ/3/0-75W</b>
4m	<b>KLJ/4/0-75W</b>
5m	<b>KLJ/5/0-75W</b>
<b>Standard 10A, 1mm<sup>2</sup> 4 Core Luminaire Lead Plug to Wire with Emergency</b>	
1m	<b>KLJ/1/1W</b>
2m	<b>KLJ/2/1W</b>
3m	<b>KLJ/3/1W</b>
4m	<b>KLJ/4/1W</b>
5m	<b>KLJ/5/1W</b>
<b>Standard 16A, 1.5mm<sup>2</sup> 4 Core Luminaire Lead Plug to Wire with Emergency</b>	
1m	<b>KLJ/1/1-5W</b>
2m	<b>KLJ/2/1-5W</b>
3m	<b>KLJ/3/1-5W</b>
4m	<b>KLJ/4/1-5W</b>
5m	<b>KLJ/5/1-5W</b>
<b>Digital 6A, 0.75mm<sup>2</sup> 5 Core Luminaire Lead Plug to Wire</b>	
1m	<b>KLP/1/0-75W</b>
2m	<b>KLP/2/0-75W</b>
3m	<b>KLP/3/0-75W</b>
4m	<b>KLP/4/0-75W</b>
5m	<b>KLP/5/0-75W</b>

**Luminare Leads - Continued**

Description	Cat ref.
<b>Digital 10A, 1mm<sup>2</sup> 5 Core Luminaire Lead Plug to Wire</b>	
1m	<b>KLP/1/1W</b>
2m	<b>KLP/2/1W</b>
3m	<b>KLP/3/1W</b>
4m	<b>KLP/4/1W</b>
5m	<b>KLP/5/1W</b>
<b>Digital 16A, 1.5mm<sup>2</sup> 5 Core Luminaire Lead Plug to Wire</b>	
1m	<b>KLP/1/1-5W</b>
2m	<b>KLP/2/1-5W</b>
3m	<b>KLP/3/1-5W</b>
4m	<b>KLP/4/1-5W</b>
5m	<b>KLP/5/1-5W</b>
<b>Digital 6A, 0.75mm<sup>2</sup> 6 Core Luminaire Lead Plug to Wire with Emergency</b>	
1m	<b>KLT/1/0-75W</b>
2m	<b>KLT/2/0-75W</b>
3m	<b>KLT/3/0-75W</b>
4m	<b>KLT/4/0-75W</b>
5m	<b>KLT/5/0-75W</b>
<b>Digital 10A, 1mm<sup>2</sup> 6 Core Luminaire Lead Plug to Wire with Emergency</b>	
1m	<b>KLT/1/1W</b>
2m	<b>KLT/2/1W</b>
3m	<b>KLT/3/1W</b>
4m	<b>KLT/4/1W</b>
5m	<b>KLT/5/1W</b>
<b>Digital 16A, 1.5mm<sup>2</sup> 6 Core Luminaire Lead Plug to Wire with Emergency</b>	
1m	<b>KLT/1/1-5W</b>
2m	<b>KLT/2/1-5W</b>
3m	<b>KLT/3/1-5W</b>
4m	<b>KLT/4/1-5W</b>
5m	<b>KLT/5/1-5W</b>
<b>16A Emergency Light Lead, 1.5mm<sup>2</sup> 3 Core Luminaire Lead Plug to Wire</b>	
3m	<b>KLE/3/1-5W</b>
5m	<b>KLE/5/1-5W</b>



KLT/3/0-75W



KLL/5/1-5W

## Switch Drop Leads (not for use with LCM)

### Characteristics:

- The switch drop pre-wired lead allows plug in switch to KLMB connection. All leads are low smoke zero halogen and are factory connected and tested.
- Standard, Digital and Emergency Luminaires.
- 16A Rated.
- Short circuit tested: 1500A conditional rating.
- Cable standard BS 7211.

Description	Cat ref.
<b>5m 3 Core 1.5mm<sup>2</sup> Switch Drop Lead, Plug to Wire (Retractive N/O switch absence or override off for OS)</b>	
5m	<b>KLL/5/1-5W</b>
10m	<b>KLL/10/1-5W</b>
15m	<b>KLL/15/1-5W</b>
<b>3 Core 1.5mm<sup>2</sup> Switch Drop Lead, Plug to Wire (1-gang 1-way or retractive N/O for digital OS wall dimming)</b>	
5m	<b>KLD/5/1-5W</b>
10m	<b>KLD/10/1-5W</b>
15m	<b>KLD/15/1-5W</b>
<b>4 Core 1.5mm<sup>2</sup> Switch Drop Lead, Plug to Wire (2-gang 1-way plus emergency key)</b>	
5m	<b>KLH/5/1-5W</b>
10m	<b>KLH/10/1-5W</b>
15m	<b>KLH/15/1-5W</b>
<b>4 Core 1.5mm<sup>2</sup> Switch Drop Lead, Plug to Wire (1-gang 2-way)</b>	
5m	<b>KLM/5/1-5W</b>
10m	<b>KLM/10/1-5W</b>
15m	<b>KLM/15/1-5W</b>
<b>5 Core 1.5mm<sup>2</sup> Switch Drop Lead, Plug to Wire (2-gang 2-way plus emergency key)</b>	
5m	<b>KLR/5/1-5W</b>
10m	<b>KLR/10/1-5W</b>
15m	<b>KLR/15/1-5W</b>
<b>3 Core 1.5mm<sup>2</sup> Switch Drop Lead, Plug to Wire (Emergency Key)</b>	
5m	<b>KLC/5/1-5W</b>
10m	<b>KLC/10/1-5W</b>
15m	<b>KLC/15/1-5W</b>

**Ceiling Roses**

**Characteristics:**

- 7 Pole conduit box / surface connector to allow the easy connection of digital lighting within traditional fixed wire installations. The connector is fitted directly to trunking or conduit allowing the luminaire to be connected / disconnected via the pluggable luminaire lead.
- 7 Pole.
- 16A Rated.
- Standards: BS 5733:2010.
- Short circuit tested: 1500A conditional rating.



KLPCR/7

Description	Cat ref.
16A 7 Pin Plug-in Ceiling Rose	<b>KLPCR/7</b>

**Connectors**

Description	Cat ref.
16A 7 pin Tee Connector LMB Pluggable	<b>KL/T</b>
16A 7 pin 2-Way Switch Block	<b>KL/2</b>

**Sockets**

Description	Cat ref.
<b>16A Panel Mount Socket</b>	
3 Pin	<b>KLPB/3</b>
4 Pin	<b>KLPJ/4</b>
5 Pin	<b>KLPP/5</b>
6 Pin	<b>KLPT/6</b>



KLPB/3



EE820

### Outdoor IP55 Motion Detectors

- These devices are made for automatic control of lighting.
- Detection head with fresnel lenses and PIR detectors.

**Features:**

- Available with a variety of detection zones.
- Enhanced versions include a secondary detection zone directly beneath the sensor head.
- Time, lux and sensitivity can be adjusted locally via potentiometers.
- The enhanced range can be set with a remote control providing speed and convenience when setting final adjustments.
- Detectors can be mounted in corners or to ceilings, utilising the relevant mounting accessory.

**Power Supply:**

- Basic detector: 230V AC (50/60Hz)
- Switching capacity: 10A AC1 relay and cut phase.
- Enhanced detector: 230V AC Output: 16A AC1 relay potential free.
- Complies with EN 60669-1 & EN 60669-2-1.



EE861

Description	Cat ref.
Basic Motion Detector 140° White	<b>EE820</b>
Basic Motion Detector 360° White	<b>EE840</b>
Enhanced Motion Detector Comfort 220° White	<b>EE860</b>
Enhanced Motion Detector Comfort 220° Anthracite	<b>EE861</b>
Enhanced Motion Detector Comfort 220/360° White	<b>EE870</b>
Enhanced Motion Detector Comfort 220/360° Anthracite	<b>EE871</b>
Remote Control for Motion Detector Comfort <b>EE85./86./87.</b>	<b>EE806</b>
Ceiling Mounting Accessory for Motion Detector White <b>EE820/830</b>	<b>EE827</b>
Corner Bracket for Motion Detector White <b>EE820/830</b>	<b>EE825</b>
Corner Bracket for Motion Detector Comfort White <b>EE840/850/860/870</b>	<b>EE855</b>
Corner Bracket for Motion Detector Comfort Anthracite <b>EE841/851/861/871</b>	<b>EE856</b>



EE806

Lighting, Connection & Control



EE883

### Hyper Frequency Detector

- The detection range diameter is adjustable from one to eight metres. The hyper frequency sensor allows for detection of movement through partitions (drywall, wood, glass) independent of temperature detection.
- **Features**
- 230V AC.
- IP54 rated.
- Detection area 360°.
- Complies with EN 60669-1, EN 60669-2-1, EN 301489-1, EN 301489-3, EN 300440-1, EN 300440-2.

Description	Cat ref.
360° Hyper Frequency Sensor	<b>EE883</b>
Protection Basket for Hyper Frequency Sensor	<b>EEK006</b>



EE880

### Corridor Motion Detector

- Infra-red corridor motion detector for surface mounting.
- **Features**
- 230V AC.
- IP54 rated.
- Detection zone of 4m x 20m.
- Overrun timer from 5 seconds to 15 minutes.
- Complies with EN 60669-1 & EN 60669-2-1.

Description	Cat ref.
PIR Corridor Motion Detector	<b>EE880</b>

**Semi-Recessed Occupancy Sensor**

- The presence area is especially suitable in offices, where there may be notional corridors.
- **EE810** - 1 channel detector
- Provides direct control of a light load or can be used as a slave with **EE811** for enlargement of detection area.
- Lux level and ON delay (duration or pulse) defined via potentiometers.
- Test mode in order to set lux level and the detection pattern.
- **EE811** - 2 channels detector
- Lux level and ON delay adjustable via potentiometers.
- Input for slave (**EE810**) and/or remote push button.
- 230V wall switch override.
- Complies with EN 60669-1 & EN 60669-2-1.



EE810

Description	Cat ref.
Presence Detector 1 Channel	<b>EE810</b>
Presence Detector 2 Channel	<b>EE811</b>
Surface Mounting Box for <b>EE810</b> and <b>EE811</b>	<b>EE813</b>

**Flush Mounting Occupancy Sensor**

- **EEK510B** - detector ON/OFF
- Direct control of a light load.
- Lux level and ON delay adjustable via potentiometers or **EEK001** remote control.
- 230V wall switch override.
- Presence or absence detection available.
- **EEK520B** - detector for control of digital (DSI/DALI) luminaires
- Direct control of a light load.
- Lux level and ON delay adjustable via potentiometers or **EEK001** remote control.
- DALI/DSI bus output accommodates up to 24 ballasts.
- 230V wall switch override.
- Presence or absence detection available.
- **EEK001** - IR programming tool
- Installer remote control to commission settings.
- **EEK002** - IR remote control
- Customer remote control for override operation.
- Complies with EN 60669-1 & EN 60669-2-1.



EEK510B

Description	Cat ref.
Flush Mount PIR Occupancy Sensor	<b>EEK510B</b>
Flush Mount Digital PIR Occupancy Sensor	<b>EEK520B</b>
Programming Tool	<b>EEK001</b>
Remote Control for the End User	<b>EEK002</b>
Backbox Accessory for Surface BESA Detectors	<b>EEK005</b>



EEK001



EE600

### LED Lamp & Floodlight

#### Characteristics:

- LED lights with a built-in infra-red sensor to ensure automatic operation of lighting.
- LED energy saving technology.
- 140° or 220/360° detection up to 12m.
- IP55 rated.
- Settings can be adjusted locally or with the **EE806** PIR remote control.

#### Description

LED Floodlight with PIR 220/360° White

#### Cat ref.

**EE600**

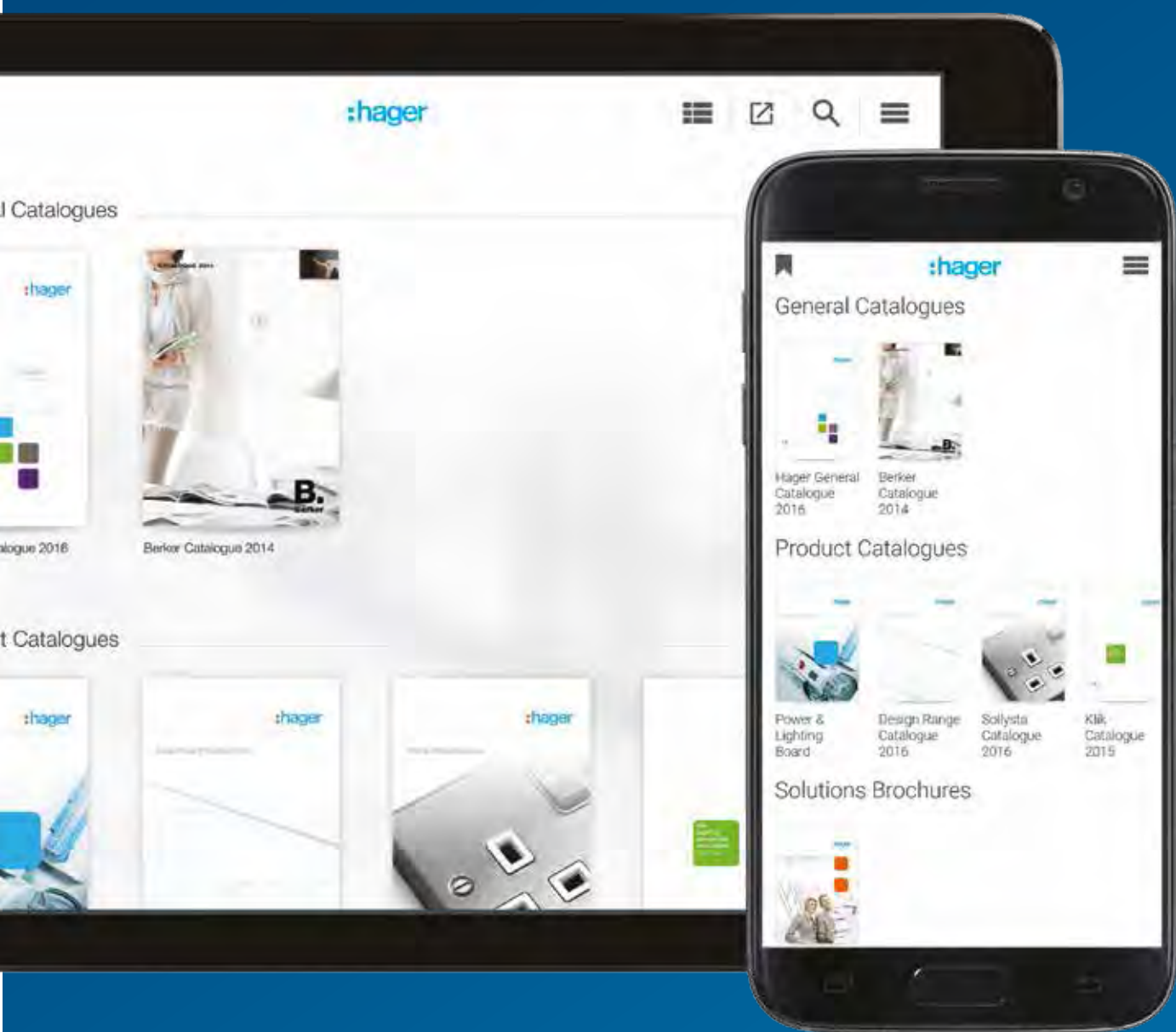
LED Decorative Lamp with PIR Detector White

**EE610**



EE610





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Product Description	Klik Product identification	BS number	Description
<b>Klik Lighting Distribution System</b>	KLDS	BS 5733:2010	General requirements for Electrical Accessories
<b>Occupancy Sensor</b>	EEK*W	IEC 60669-1, IEC 60669-2-1	Switches for household & similar fixed electrical installations Part 2-1 for Electronic switches.
<b>Mounting Boxes</b>	MB	BS 5733:2010	General requirements for Electrical Accessories
<b>Klik Ceiling Roses, Plugs, Outlets &amp; Pre-Wired Leads</b>	S, P, PCR	BS 5733:2010 BS 6972:1988	General requirements for Electrical Accessories General requirements for Luminaire supporting couplers for domestic, light industrial & commercial use
<b>PVC Flexible Cord</b>	PVC	BS 6500:2000	Flexible cords rated to 300/350V for use with appliances & equipment intended for domestic, office & similar environments.
<b>LSF Flexible Cord</b>	LSF	BS 6500:2000 BS 7211:1998	Flexible cords rated to 300/350V for use with appliances & equipment intended for domestic, office & similar environments.

### Product Materials

Klik plugs and sockets feature solid brass terminals and phosphor bronze contacts for good conductivity. Moulded components are manufactured from high quality thermoplastics.

### Klik Terminal Capacities

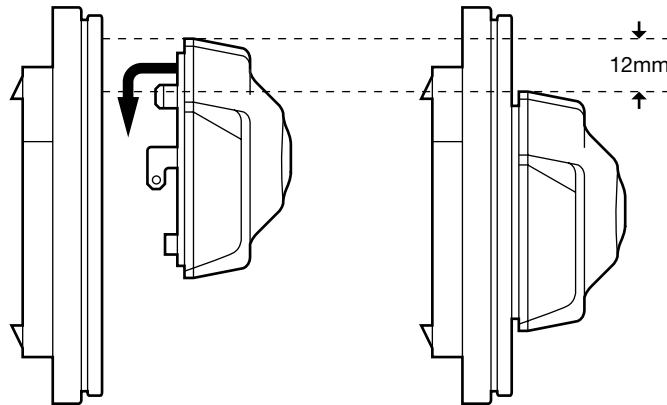
	Number of Conductors				
	0.75mm <sup>2</sup>	1.0mm <sup>2</sup>	1.5mm <sup>2</sup>	2.5mm <sup>2</sup>	4.0mm <sup>2</sup>
<b>Socket Outlets</b>	-	5	4	3	2
<b>Plugs P22, P64X, P26</b>	1	1	-	-	-

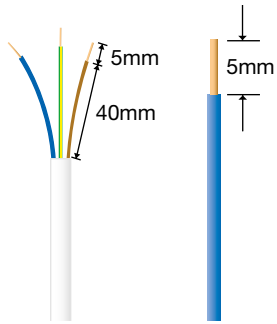
### Cables for Klik Plugs

	0.75mm <sup>2</sup> PVC / LSF 3 Core	0.75mm <sup>2</sup> PVC / LSF 4 Core	1.0mm <sup>2</sup> PVC / LSF 3 Core	1.0mm <sup>2</sup> PVC / LSF 4 Core
<b>P22</b>	Y	-	Y	-
<b>P64AX</b>	Y	Y	Y	Y

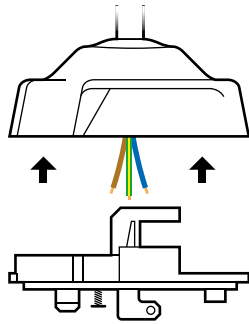
### Application Notes

The mating face of each interface module must be mounted 0.1mm minimum proud of its proposed surround. Engaged plug sits centrally on socket but a minimum of 12mm extra clearance should be maintained north of the upper load grip to allow plug travel.

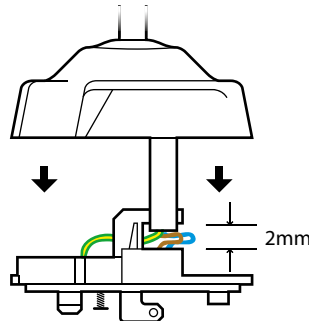




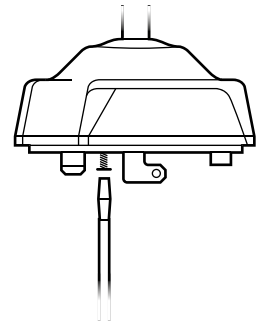
1. Strip cable as above -  
**Note:** Trim cable tails to double over for better terminal contact.



2. Remove plug cover.  
3. Pass cable through plug cover centre hole.



4. Terminate conductors into terminals.  
5. Push outer sheath of cable firmly into jaws of sheath grip, making sure that at least 2mm of sheath protrudes below the grip.



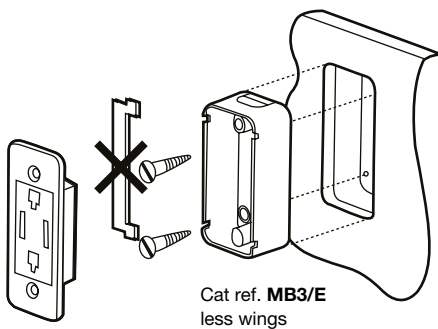
6. Refit cover.

**Klik Mounting Box Installation**

Cable entry through spout in base of box for maximum wiring space.

**MB2** knockouts in base and sides. Supplied with M4 x 20mm long fixing screws.

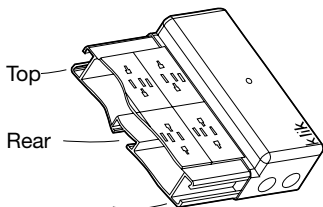
**Flush Mounting for Solid Walls**



Cat ref. S21

**Mounting Methods**

- Hanging from ceiling suspension system with Caddy Clips™
- Direct fixing to lighting trunking
- Direct fixing to ceiling or wall with No. 8 screws



Drop rods on sides

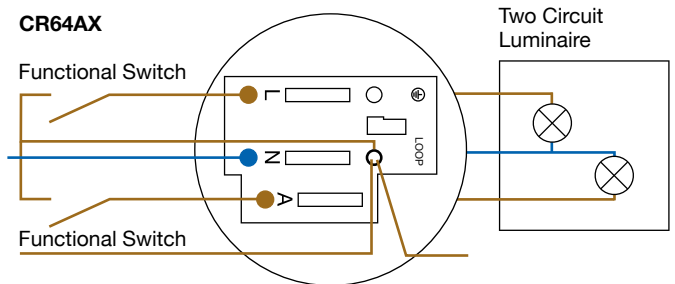
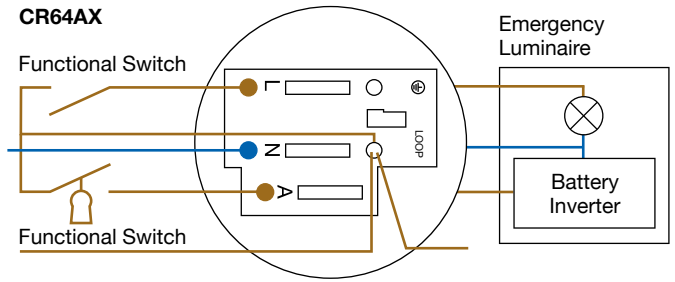
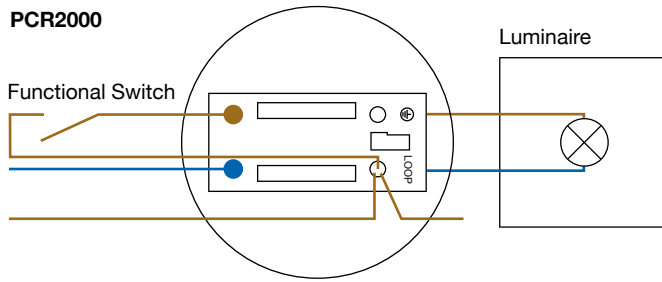


Screw to surface



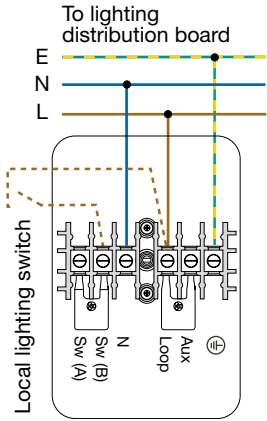
Drop rods on rear



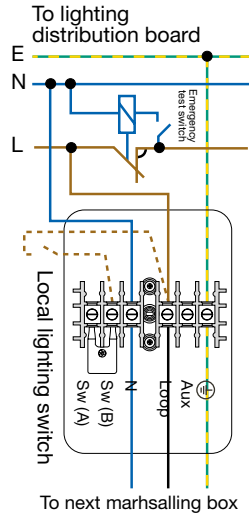


Note: earth connections omitted for clarity

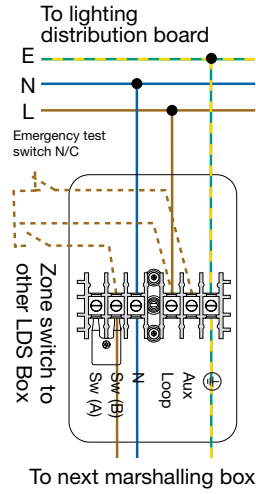
**Local Lighting Switch Control**  
Permanent emergency feed



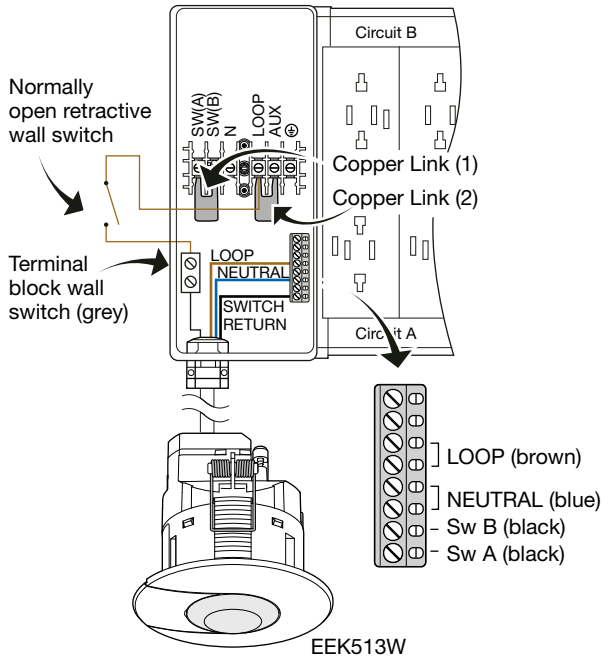
**Local Lighting Switch Control**  
Centralised emergency test via keyswitch



**Zone Lighting Control**  
Local emergency test control

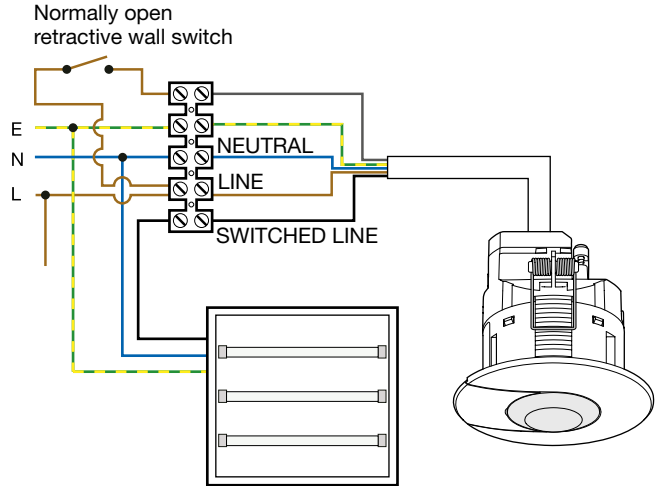


**All ways switched by a single Hager EEK513W occupancy sensor**



Switch wire to be connected as required.

**Connected directly to a single luminaire**

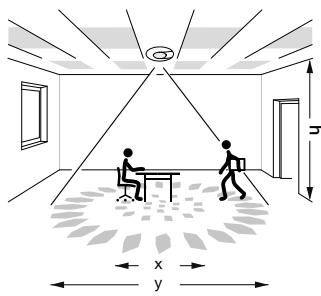


## Technical Characteristics

	EEK513W / EEK515W	KLOS6LR
Detection range	Motion area: diameter 7m (product installed at 2½m height) presence area: diameter 5m (product installed at 2½m height)	Primary Zone 10m Secondary zone 15m to 25m
Supply voltage	230 V AC + 10% -15%	230VAC
Frequency	50/60 Hz	
Local lux threshold setting	5 to 1000 lux	30 to 1000 Lux
Local time setting	1 min to 1hr	10 seconds to 40 minutes
Commissioning via installer remote control	EEK001 for power up, absence / presence mode, timer active / passive cell	
Control with IR user remote control	EEK002 for ON / OFF override	
Output	16A AC1 relay output (cut live): - 2300W incandescent or 230V halogen: > 26000 cycles - 1500W VLV halogen lamps with ferromagnetic or electronic transformer: > 35000 cycles - 1000W / 130 µF parallel compensated fluo tube: > 50000 cycles - 23 x 23W fluo-compact with electronic ballast: > 20000 cycles	
Push button input	Phase input for absence / presence detection (semi-automatic / automatic mode) same phase as power supply.	
Terminals	For 1.5mm <sup>2</sup> rigid / flexible wires	
Power dissipation	300mW	
Isolation class	II	II
Protection	IP41 / IK03	IP41
Operating temperature	-10°C to +45°C	-20°C to +50°C
Storage temperature	-20°C to +60°C	-35°C to +70°C
Standards	IEC 60669-1, IEC 60669-2-1	

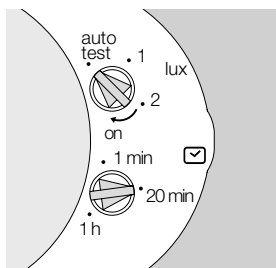
Lighting, Connection &amp; Control

### Detection areas

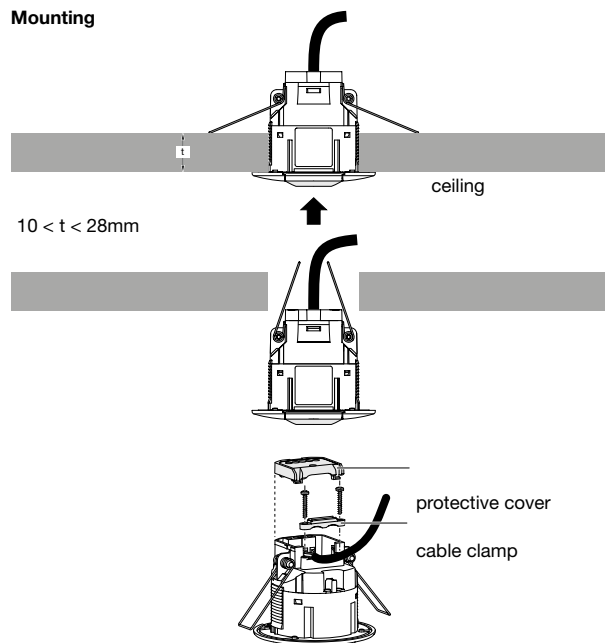


H	2.5m	3m	3.5m
X	5m	5m	5m
Y	7m	8m	9m

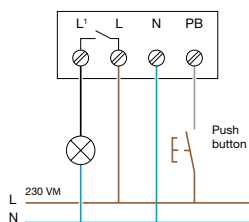
### Settings EEK513W/EEK515W



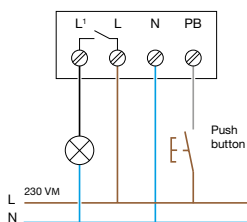
### Mounting

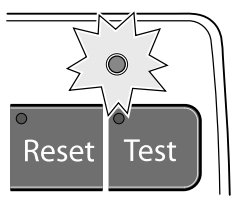
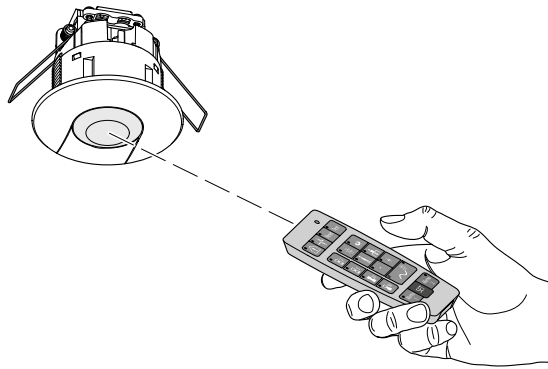
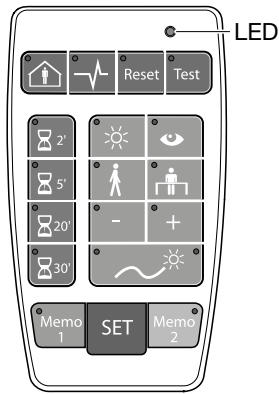


### Wiring diagram EEK510B (no cable supplied)



### EEK513W (Cable supplied connected to OS)





The acknowledgment LED blinks during the sending of the IR message.

**Technical specification**  
Power supply: 1x 3V CR2032  
Shelf life of battery: 2½ years  
Protection index: IP 30

**Use**

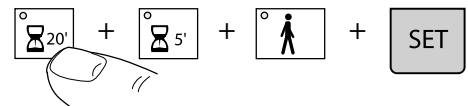
The remote control allows the user to set or modify presence detector settings. When the potentiometer is on auto test it allows single and multiple settings. The SET key is used to send the IR messages to the occupancy sensors. Multiple settings can be stored in Memo 1 and Memo 2 and re-called to set several devices.

**Single setting**  
Example: reset



**Multiple settings**

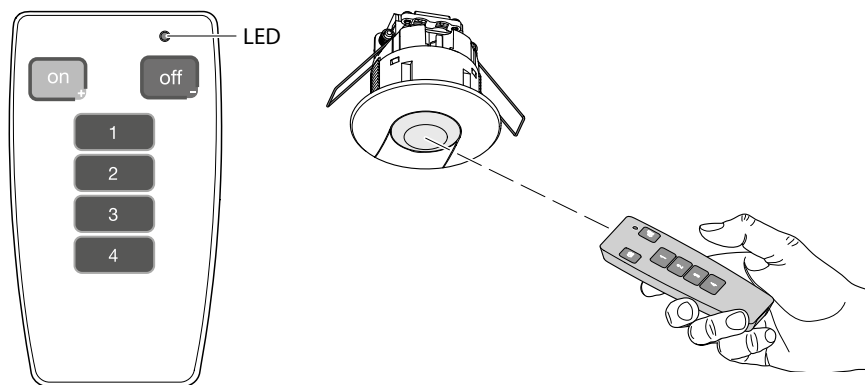
Define the parameters to be changed and press SET to send.  
Example: for 25 minutes and corridor use, press 20', 5' and corridor.



In the case of 2 opposite states the green LED denotes ON and red LED denotes OFF (except Presence / Absence).  
When no function is selected all LED's are OFF.

**Settings available**

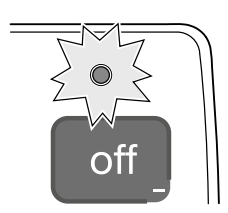
Key	Meaning	Indication	Function
	Presence	Green LED on	Presence on (automation mode)
	Absence	Red LED on	Absence on (semi automatic mode)
	Power Up	Green LED on	The light is automatically switched on for 30 seconds after power up
		Red LED on	During warm up phase, the light output is off
Reset	Reset	LED on	To return to factory settings (Lux = 400, time = 20 min, presence on, power up off and cell active)
Test	Test	LED on	To validate the detection area
	Time	LED on	To set the time It is possible to add times together e.g. press 2' and 5' for a time value of 7'
	Day level 1000 Lux	LED on	To set the value to 1000 Lux
	Learn	LED on	To learn the current Lux level
	Corridor 200 Lux	LED on	To set the value to 200 Lux
	Office 400 Lux	LED on	To set the value to 400 Lux
+	Lux +	LED on	To increase the Lux level (+100)
-	Lux -	LED on	To decrease the Lux level (-100)
	Active cell	Green LED on	The light is continuously measured
	Passive cell	RED LED on	The sensor will not switch the light off even if the ambient luminosity is sufficient
<b>Memo and set Key</b>	<b>Meaning</b>	<b>Indication</b>	<b>Function</b>
Memo 1	Press	LED is on until a setting is changed	To load/unload Memo 1
	Long press	LED is on for 5s, then will blink until released. After release, the LED goes off in case of setting change	To save the current setting as Memo 1
Memo 2	Press	LED is on until a setting is changed	To load/unload Memo 2
	Long press	LED is on for 5s, then will blink until released. After release, the LED goes off in case of setting change	To save the current setting as Memo 2
SET	Short press (<5s)	LED flashes	To send an IR message of the current setting
	Long press (>5s but <10s) only available if no setting active	LED blinks until release press	To toggle automatic mode on DALI/DSI



### Use

The remote control allows the user to set or modify settings on the presence detectors **EEK513W** and **EEK510B**.

Each button corresponds to a command.



The acknowledgment LED blinks during the sending of the IR message.

### Technical specification

Power supply: 1x 3V CR2032  
Shelf life of battery: 3½ years  
Protection index: IP 30

### Settings available

Key	Action	Function	Product Type
on +	Short Press (< 5s.)	On	<b>EEK513W / EEK510B</b>
	Long Press (> 5s.)	Dim up	<b>EEK513W / EEK510B</b>
off -	Short Press	Off	<b>EEK513W / EEK510B</b>
	Long Press (> 5s.)	Dim down	<b>EEK513W / EEK510B</b>
1	Short Press	To start scene 1	
	Long Press (> 5s.)	To start scene 1	
2	Short Press	To start scene 2	
	Long Press (> 5s.)	To start scene 2	
3	Short Press	To start scene 3	
	Long Press (> 5s.)	To start scene 3	
4	Short Press	To start scene 4	
	Long Press (> 5s.)	To start scene 4	

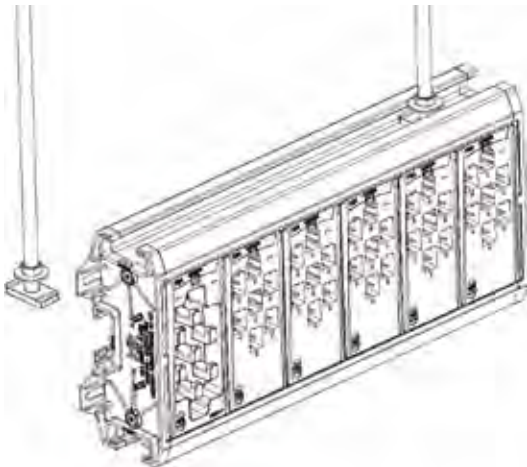


Product Description	Klik Product identification	BS number	Description
Klik 7 pin Marshalling Boxes	KLMB*W	BS 5733:2010	General Requirements for Electrical Accessories.
Occupancy Sensor	EEK*	IEC 60669-1, IEC 60669-2-1	Switches for household & similar fixed electrical installations Part 2-1 for Electronic switches.
Conduit Box / Surface Connector	KLPCR/7	BS 5733:2010	General requirements for Luminaire supporting couplers for domestic, light industrial & commercial use.
Luminaire Leads	KLB*, KLJ*, KLP*, KLT*	BS 5733:2010 BS EN 61535	General Requirements for Electrical Accessories. Installation couplers intended for permanent connection in fixed installations.
LSZH Flexible Cord	Supplied with luminaire lead	BS 6500:2000 BS 7211:1998	Flexible cords rated to 300/350V for use with appliances & equipment intended for domestic, office & similar environments.
Klik Lighting Control Module	KLCM	BS 5733:2010 F <sub>pr</sub> EN 60669-2-5  BS EN 61335:2009	General Requirements for Electrical Accessories. Switches for household and similar fixed electrical installations - Part 2-5: Particular requirements - Switches for related accessories for use in home and building electronic systems  Installation couplers intended for permanent connection in fixed installations. Excluding classes 10.1 & 10.3 are to aluminium enclosures

**Mounting Options for Drop Rod**

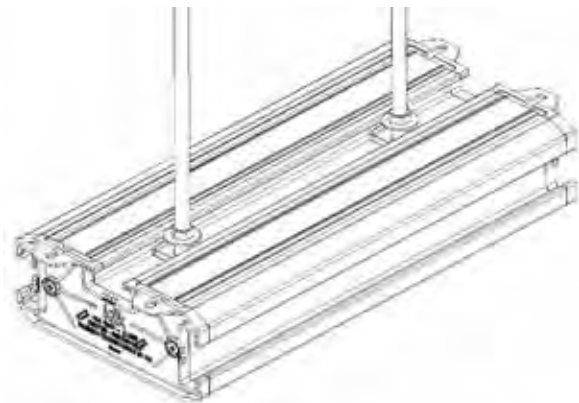
**Option 1.**

Klik 7 Pin LMB features open ends to allow you to slide the box into position before tightening for easier installation, or push the box up on to the nut and rotate to locate and tighten to secure.



**Option 2.**

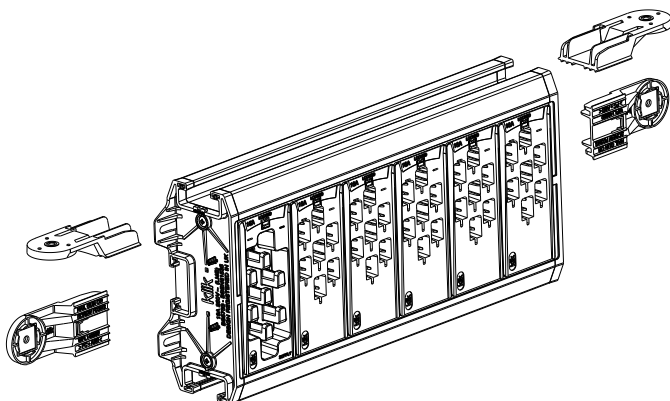
Single sided LMB can be mounted from the top as option 1 or from the rear as shown. Note: Double sided LMBs can only be mounted with option 1.



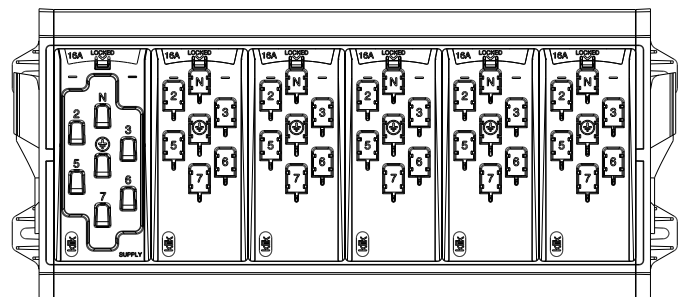
**Mounting Options for Wall & Ceiling**

Klik 7 Pin LMB includes the Klik mounting accessory, this makes it much easier to mount LMB with Nail Guns or traditional fixings. 2 accessories are included with each LMB. Mounting Accessory can be clipped into the rear or top channel slot. It can be easily removed by inserting a screwdriver in the RELEASE slot.

**Note: Double sided LMB can only be mounted on top channel slot.**



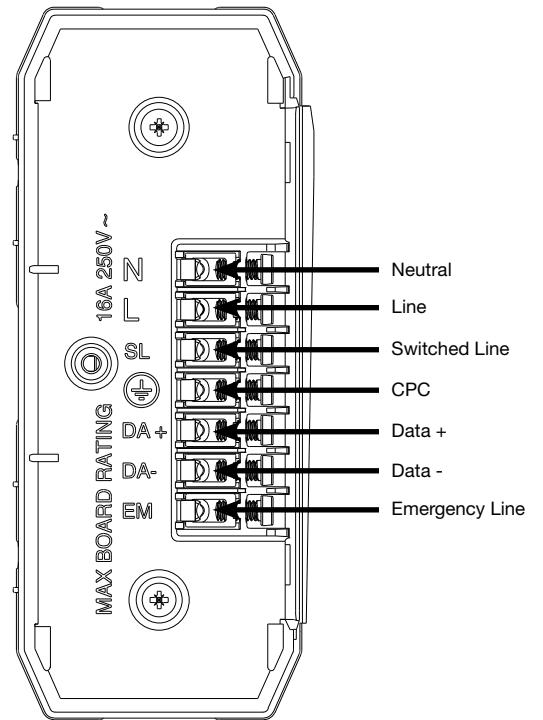
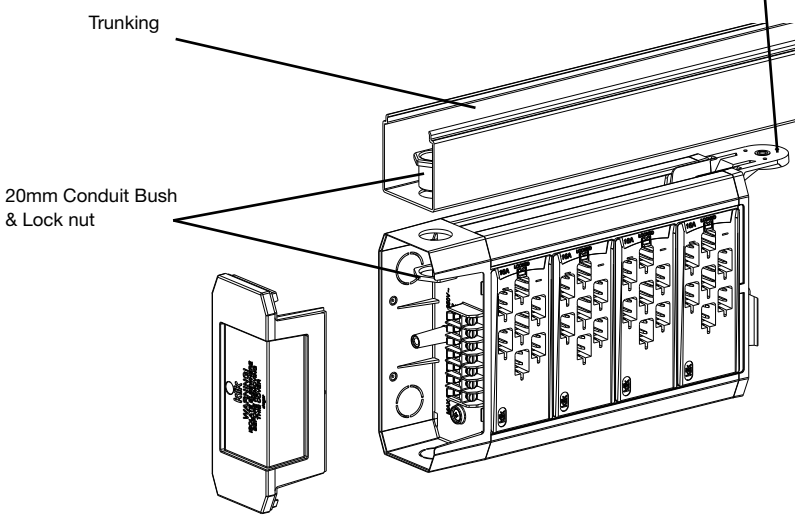
Screw mounting tabs (x4)



### Mounting Options for Trunking

Mounting Accessory can be clipped into the rear or top channel slot. It can be easily removed by inserting a screwdriver in the RELEASE slot.

Use a machine screw and nut to secure to trunking using Mounting Accessory



### Fixed Wiring Connection

Klik 7 Pin LMB has seven screw terminals available to the installer and are arranged in the end cap as per diagram. DA+/DA- connections can be used for DALI/DSI control.

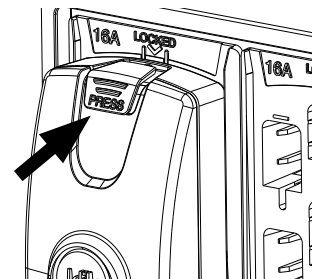
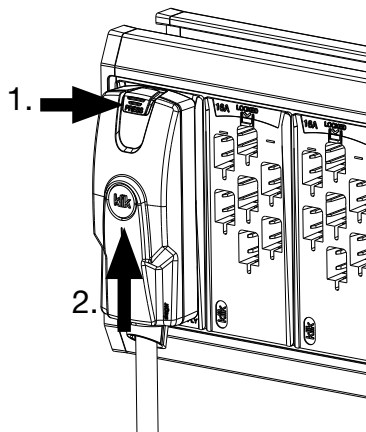
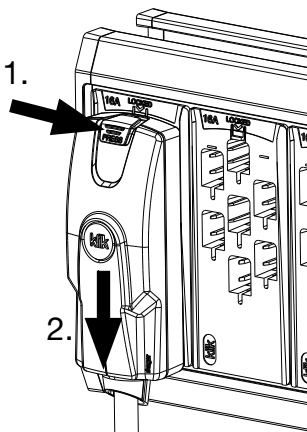
Lighting, Connection & Control

### Making a Connection

To connect, locate plug in socket and push down to connect and lock

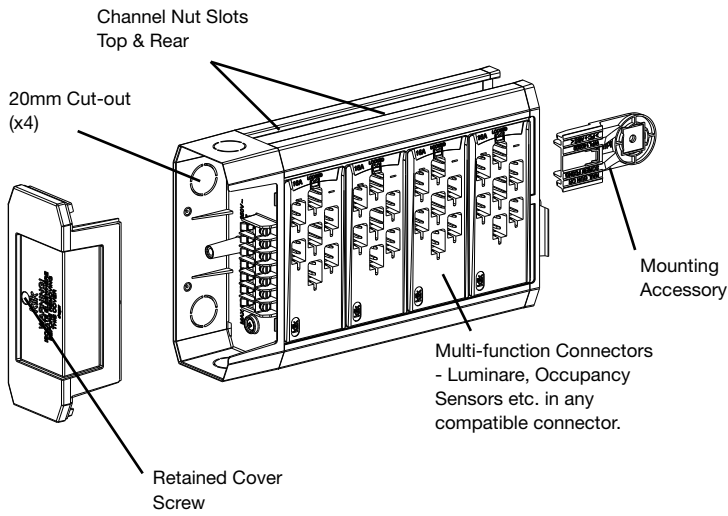
To disconnect, press button to unlock and push up to remove.

Plug type is identifiable by the colour of the button

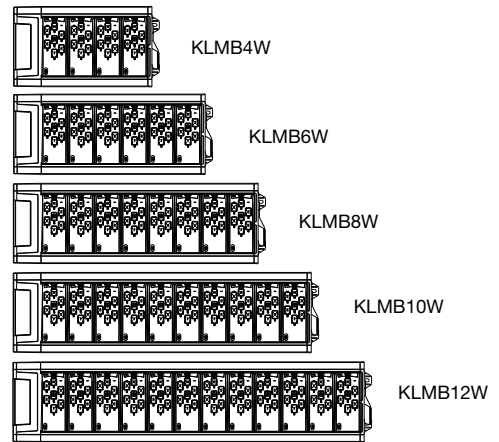


- White:** Luminaire Lead
- Red:** Luminaire + Emergency
- Black:** Link Lead
- Blue:** Switching (OS, Wall)

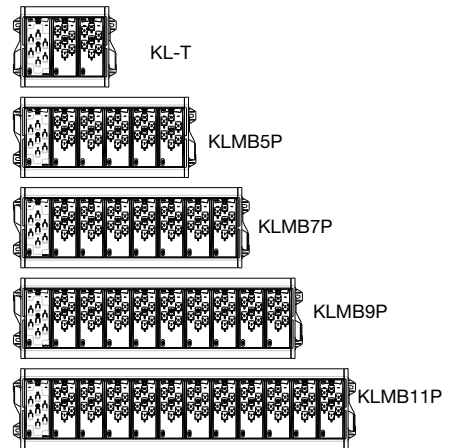
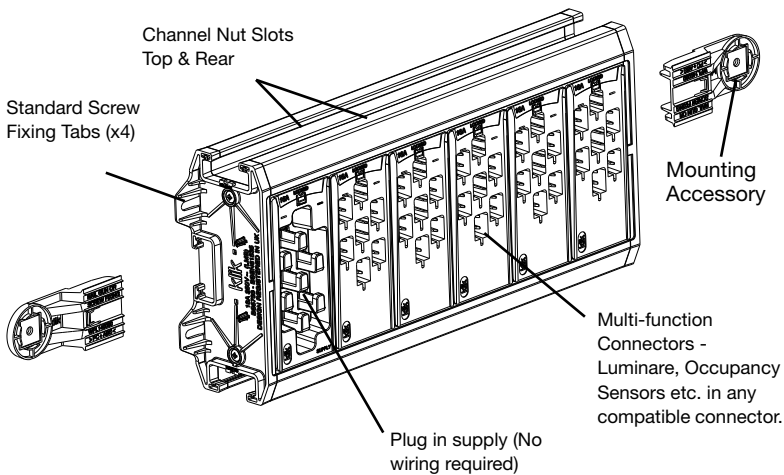
**Lighting Marshalling Boxes (LMB) - Fixed Wiring**  
16A Rated LMB Complying to BS 5733:2010



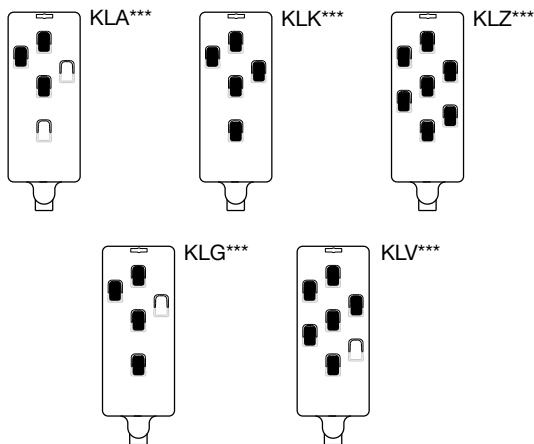
**Hard Wire LMB Range**



**Lighting Marshalling Boxes (LMB) - Pluggable**  
16A Rated LMB Complying to BS 5733:2010

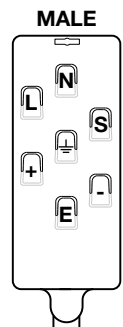


**Link leads**

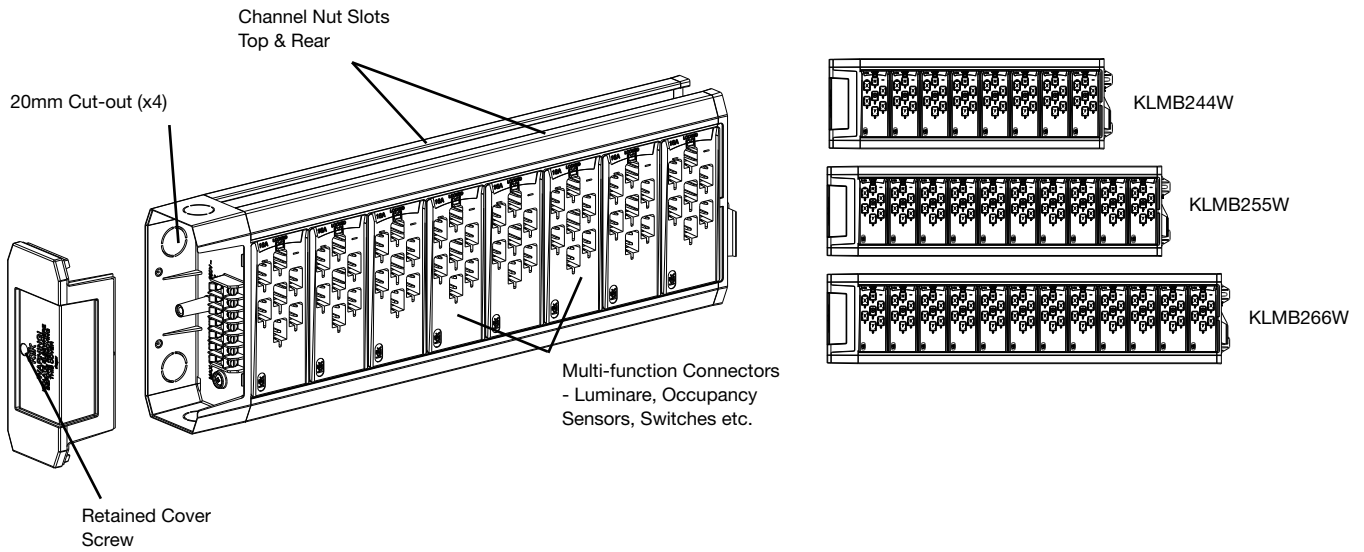


- KLA\*\*\* L, N, CPC
- KLK\*\*\* L, N, E, CPC
- KLK\*\*\* L, N, S, E, CPC
- KLV\*\*\* L, N, S, E, DA+, CPC
- KLZ\*\*\* L, N, S, E, DA+, DA-, CPC

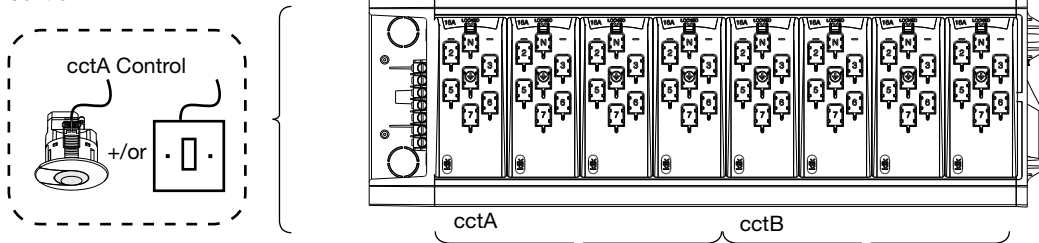
Key	
N	Neutral
L	Permanent Line
S	Switched Line
CPC	Circuit Protective Conductor
+	DA+
-	DA-
E	Emergency Line



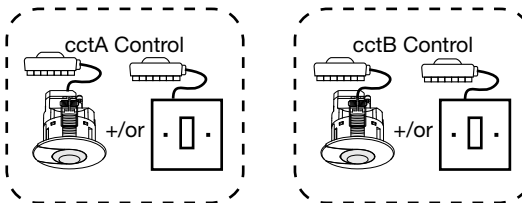
## Dual Channel Lighting Marshalling Boxes (LMB) - Fixed Wiring 16A Rated LMB complying to BS 5733:2010



### Control



1. cctA can be controlled by using pluggable sensors and/or pluggable switch. Alternatively hard wired sensors and/or switches can be used.
2. cctB must use pluggable sensors and/or switches for control.

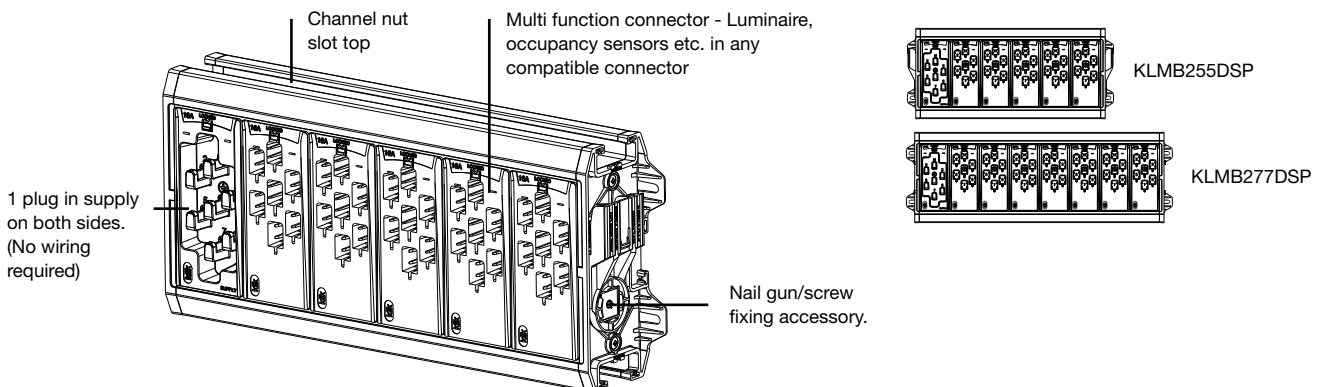


## Dual Supply Lighting Marshalling Boxes (LMB) - Pluggable. 2 x 16A Rated LMB Complying to BS 5733:2010

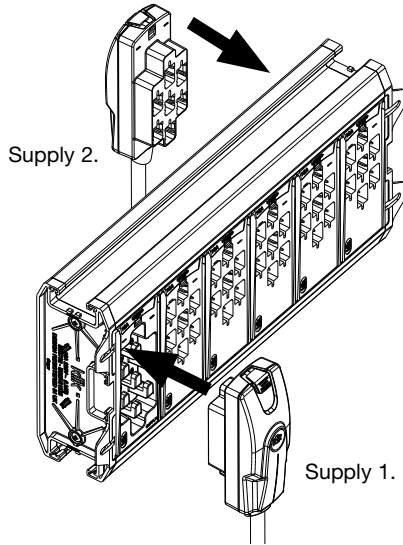
Designed for use with dual supply where independent control of each supply is required.

- Dual supply - Essential & Non-essential from one box.
- Independent control of each supply
- Wall switch\* override & dimming

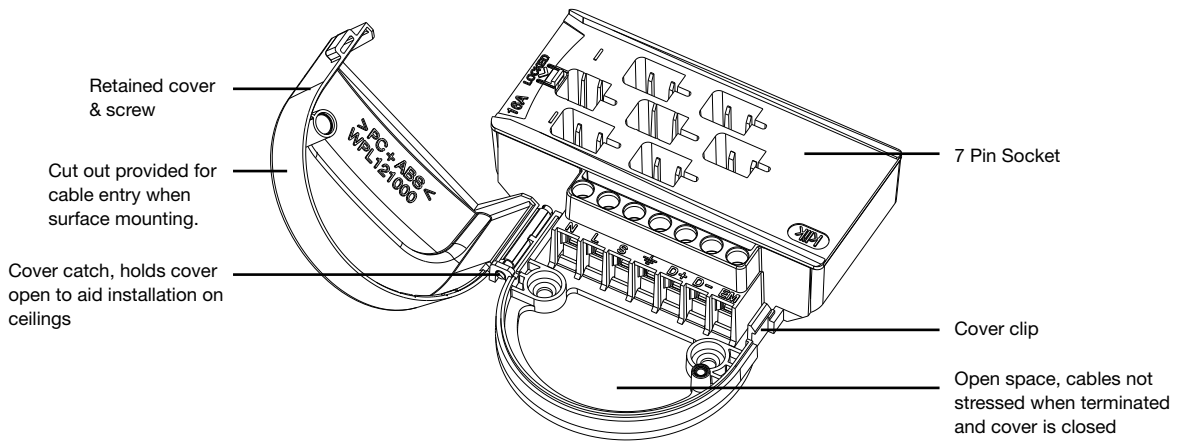
\*When wall switch is used it must be connected on the same side as the sensor.



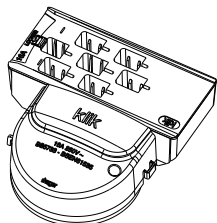
**Dual Channel Lighting Marshalling Boxes (LMB) - Fixed Wiring**  
16A Rated LMB Complying to BS 5733:2010



**KLPCR Surface Mount Connector**



PCR can be mounted in two ways, firstly on to conduit box or secondly direct on to a surface.



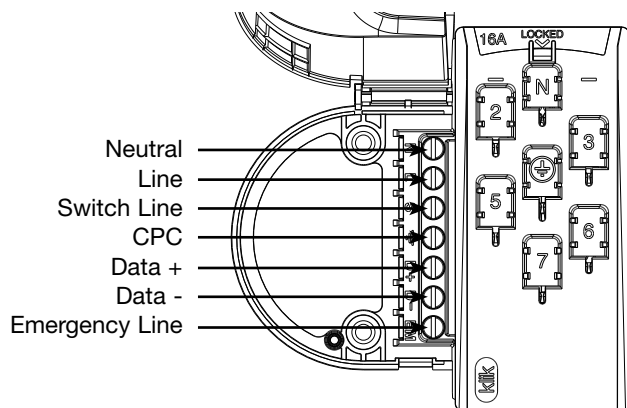
**KLPCR/7**

Terminating cables.

Terminal screws are retained in pockets.

Max Terminal Capacity 2x4mm<sup>2</sup>

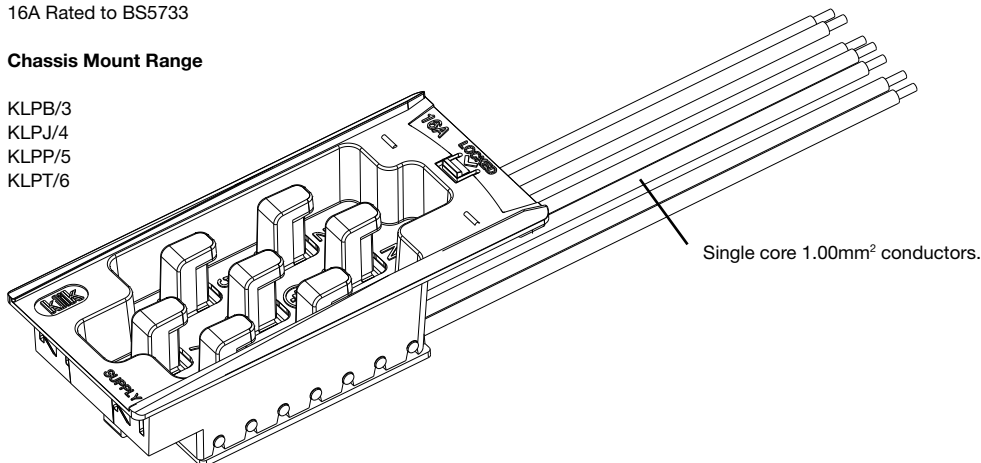
Conductor strip length: 10mm.



16A Rated to BS5733

### Chassis Mount Range

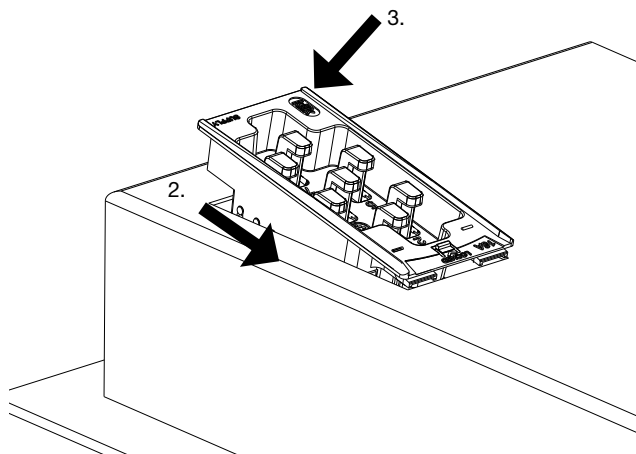
KLPB/3  
KLPJ/4  
KLPP/5  
KLPT/6



### Installation:

Create aperture in Luminaire if not already existing.

1. Insert cables through aperture
  2. Locate fixed clips of socket in position at one end of aperture and push in.
  3. Push down bottom end of connector until it clips down onto luminaire
- Aperture Size: 97mmx42mm (≤1.2mm wall)



### Terminating Cables:

#### KLPB/3 (Standard)

Brown - Switched line  
Blue - Natural  
Green/Yellow - CPC

#### KLPP/5 (Digital)

Brown - Line  
Blue - Neutral  
Green/Yellow - CPC  
Orange - DA+  
White - DA-

#### KLPT/6 (Digital + Emergency)

Brown - Line  
Blue - Neutral  
Green/Yellow - CPC  
Orange - DA+  
White - DA-  
Black - Emergency Line

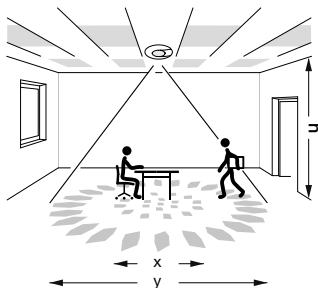
#### KLPJ/4 (Standard + Emergency)

Brown - Switched Line  
Blue - Neutral  
Green/Yellow - CPC  
Black - Emergency Line

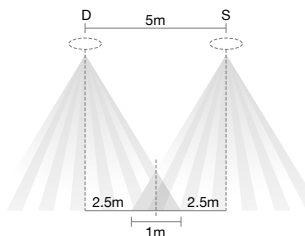
## Technical Characteristics

	EEK513P / EEK515P	EEK523P / EEK525P
Detection range	Motion area: diameter 7m (product installed at 2½m height) Presence area: diameter 5m (product installed at 2½m height)	
Supply voltage	230 V AC + 10% -15%	
Frequency	50/60 Hz	
Local lux threshold setting	5 to 1000 lux	3 modes available
Local time setting	1 min to 1hr	
Commissioning via installer remote control	EEK001 for power up, absence / presence mode, timer active / passive cell	
Control with IR user remote control	EEK002 for ON / OFF override	EEK002 for ON / OFF override and dimming up / down
Output	16A AC1 relay output (cut live): - 2300W incandescent or 230V halogen: > 26000 cycles - 1500W VLV halogen lamps with ferromagnetic or electronic transformer: > 35000 cycles - 1000W / 130 µF parallel compensated fluo tube: > 50000 cycles -23 x 23W fluo-compact with electronic ballast: > 20000 cycles	14V / 50mA (for a DALI bus with 24 ballasts) - No isolation between the mains and the DALI bus
Push button input	Phase input for absence / presence detection (semi-automatic / automatic mode) same phase as power supply.	To dim up / down and absence / presence detection (semi-automatic / automatic mode) same phase as power supply.
Terminals	for 1.5mm² rigid / flexible wires	
Power dissipation	300mW	60mW
Isolation class	II	
Protection	IP41 / IK03	
Operating temperature	-10°C to +45°C	
Storage temperature	-20°C to +60°C	
Standards	IEC 60669-1, IEC 60669-2-1	

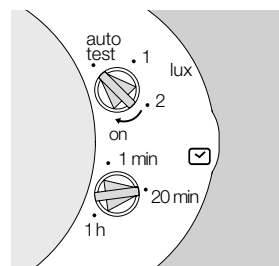
### Detection areas



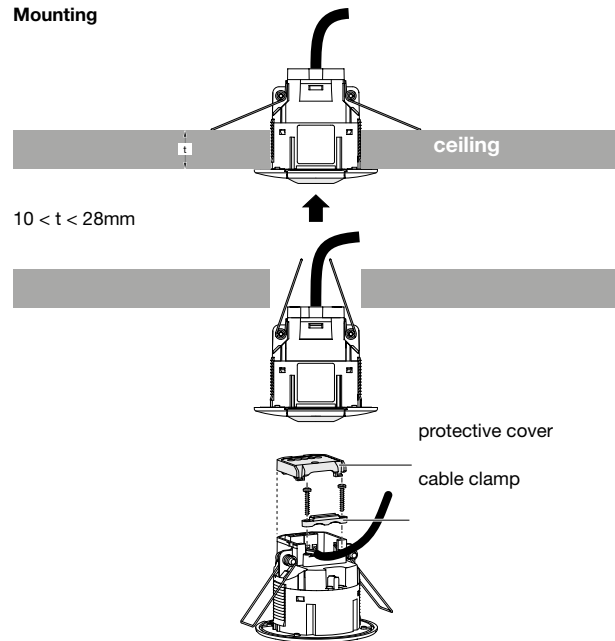
H	2.5m	3m	3.5m
X	5m	5m	5m
Y	7m	8m	9m



### Settings EEK513P/EEK515P EEK523P/EEK525P

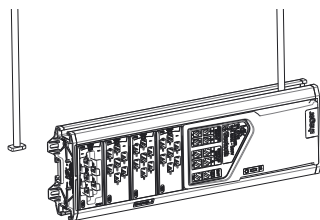


### Mounting

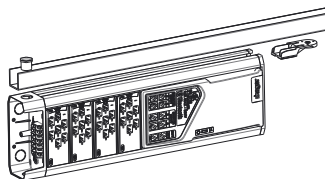


For programming and control see page 3.24.

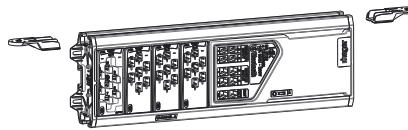
## Fixing Methods



Drop Rods

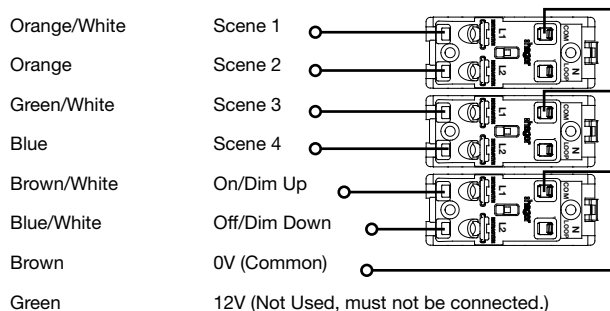


Trunking  
(Not possible for plug-in **KLCM412P**)



Direct: e.g. nail gun or screw fixing  
(not possible for hard-wire **KLCM413W**)

## Switch inputs - 1 to 4 (retractive wall switch ref: WMGS13R)



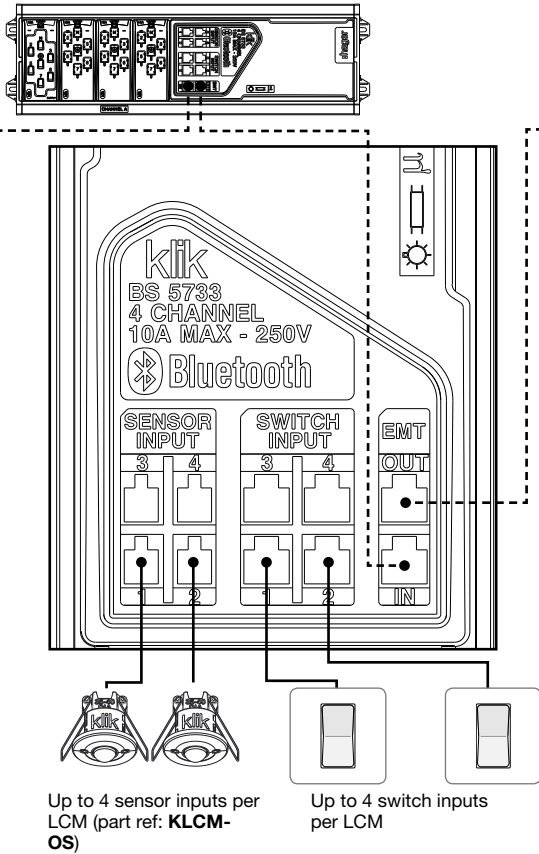
## Emergency test in & out

Orange/White	Override - All Outputs On
Orange	Override - All Outputs Off
Green/White	Corridor Hold Line
Blue	Emergency Test (Timer 1)
Blue/White	Emergency Test (Timer 2)
Green	Emergency Test (Timer 3)
Brown	Common
Brown/White	Not Used.

## Occupancy Sensor Technical Characteristics

Technical Characteristics	KLCM-OS	KLCM-3OS	KLCM-5OS
Supply Voltage	12V DC	SELV (12VDC)	SELV (12VDC)
Detection Area	Motion area: diameter 6m (product installed at 2½m height) presence area: diameter 6m (product installed at 2½m height)	360° 5m to 15m	360° 15m
Receiver Class	2	2	2
Parasitic Power		.672mW	1.044mW
Duration of lighting output operation	Via KlikLink App & LCM	Via KlikLink App & LCM	Via KlikLink App & LCM
Luminosity threshold	Via KlikLink App & LCM	Via KlikLink App & LCM	Via KlikLink App & LCM
Recommended installation height	2.5m	2.5m	2.5m
Operating temperature	-20C to +60C	-20°C to +50°C	-20°C to +50°C
Storage temperature	-2-C to +70C	-35°C to +70°C	-35°C to +70°C
Insulation class	II	II	II
Protection rating	IP41	IP41	IP41
Standards	BS EN 55015:2013	BS EN55015:2013, BS EN61547:2009	BS EN55015:2013, BS EN61547:2009
Maximum installation altitude	2000m	2000m	2000m
Polution degree	2	2	2
Connection	RJ11	RJ11 6P4C	RJ11 6P4C
Dimensions		High: 70mm, Diameter: 101mm	High: 70mm, Diameter: 101mm
Weight		110 grams	110 grams
Mounting hole diameter		85mm	85mm





- Plug-in sensor and switch control
- Any port can be configured via the KlikLink App.
- Grouping LCMs via RJ45 leads for corridor hold and groups for emergency test
- Programmed via the KlikLink app. Download from the App Store.

**Wiring accessories from the Sollysta Grid range**

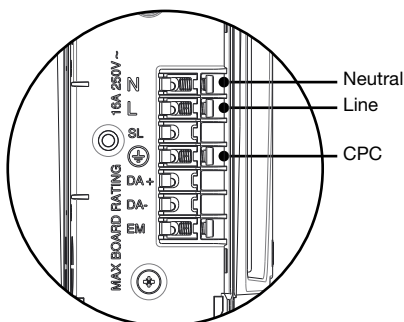
Centre off retractive switch module	<b>WMGS13R</b>
White moulded Grid Plates	<b>WMGPx</b> (1,2,3,4,6 & 8) G
Grid Frames	<b>WMGFx</b> (1,2 & 3/4) G

**Technical Characteristics**

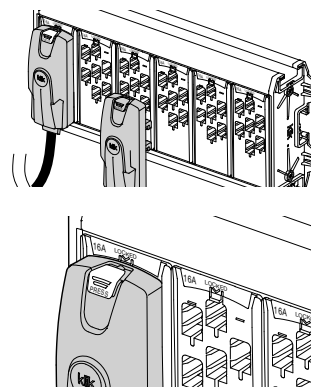
Number of channels	4			
Number of outputs per channel	3 (hard wired LCM has 4 outputs on channel A)			
Number of sensor inputs	4 ( <b>KLCM-OS</b> )			
Number of switch inputs	4			
Supply Voltage	230V AC 50Hz			
Rated current	10A (total load)			
Rated current each connector	10A			
Complies with	BS 5733:2010, BS EN 60669-2-5 BS EN 61535:2009 - (Excluding clauses 10.1 and 10.3 due to Aluminium enclosure)			
IP protection	IP20			
Connection for programming	Bluetooth Smart (Bluetooth 4) (only available on Apple iPad)			
Dimensions	Height 145mm	Width 440mm	Depth 58mm	Weight 1.9kg

**Supply input connection**

**Hard wired**



**Pluggable**



- Connecting the supply lead: plug in and push down
- Disconnecting the supply lead: press button and push up.

**Plug colour coding**  
White: Luminaire Lead  
Red: Luminaire & Emergency  
Black: Link Lead

### LCM Functions (via the KlikLink App)

#### Lighting Configuration Profiles.

The KLCM KlikLink App is pre-loaded with the most common room type configuration profiles. These are selected in the File Manager section of the KlikLink App and are provided to speed up the LCM set-up.

#### Switching - On/Off.

Each channel is capable of being switched via one of four switch inputs. This is an on/ off state utilised for standard luminaires.

#### Presence and Absence Sensing.

Each output channel can be set to Absence or Presence and can be different on each channel. Absence detection will give the best energy efficiencies by minimising unwanted activations, whilst Presence gives an immediate response to occupation in an area.

#### Sensor with integral lux sensor.

This allows daylight dimming and switch utilising any natural light available

#### Dimming – DSI, DALI (Broadcast).

The LCM takes information from the sensor and broadcasts a signal on the required channel to all connected luminaires and can be controlled via a retractive wall switch or utilising the daylight dimming function. The protocol for this broadcast is selected during programming.

#### Scene Setting.

Four lighting scenes are possible (plus global Up/Down-On/Off) and can be achieved with via centre off two pole retractive grid switch modules (three grid modules to control all inputs) The LCM can be configured during programming to have two separate scene profiles.

#### Partition Switch Function.

This allows the control of a room with a partition and switch fitted. If a partitioned room has individual wall switches controlling each section, when the partition is removed, both sets of switches could control the whole area. This can be used in conjunction with profiles.

#### Corridor Hold Function.

This is achieved by linking a series of LCMs together with an RJ45 lead and assigning certain channels with the attributes of a corridor. If there is any area occupied, the associated corridor lighting will be held ON.

#### Variable burn in up to 250 hrs.

Allows dimmable luminaires to be set at 100% output for the required burn in time period (Dimming is disabled during this period) This may be beneficial to the life of the lamps. After the burn in time, the LCM will return to any programmes set (e.g. dimming)

#### Integral Emergency Test Timers.

This allows the emergency test to be carried out via an emergency test switch. The timers can be set for up to five hours within the App. Whilst on test the other luminaires will dim to a pre-set value.

#### Light Level Offset between Channels.

This function allows the levels from different channels to set as a percentage of the lead channel. For example when a number of different dimming levels are set within an area as a scene set, the lighting levels can be adjusted universally across all channels, whilst maintaining the relationship between channels.

#### 3 Level Timeout.

Allows the lighting to turn Off or Down in three stages. When no presence has been detected for the timeout period, the lighting can be turned down to the first set level. After a further period the lighting can be reduced further and after the final time period the luminaires can be turned off or driven to a minimum value set during programming.

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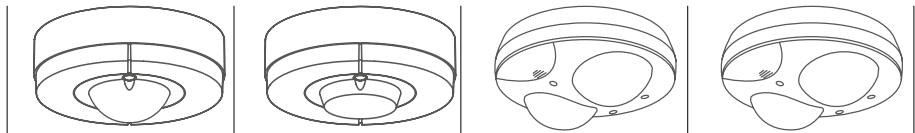
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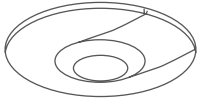
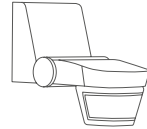
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**IR Corridor Motion Detector**      **Circulation Sensor HF**      **Presence Detector 1 Channel**      **Presence Detector 2 Channel**

Technical characteristics	EE880	EE883	EE810	EE811
Supply voltage	230V~ 50Hz	230V~ 50Hz	230V~ 50Hz	230V~ 50Hz
Detection type	Motion	Motion	Presence	Presence
Parasitic power	1W	1W	1.2W	1.2W
Detection (Length)	20m	1m to 8m	15.5m	15.5m
Detection (Width)	4m	1m to 8m	8m	8m
Detection angle	360°	360°	360°	360°
Detection frequency	-	5.8 Ghz ± 0.075 Ghz	-	-
Receiver class	-	2	-	-
Standby consumption	1W	1W	1.2W	1.2W
Duration of lighting output operation (S1)	5sec to 15 min	5sec to 15 min	1min to 30min	1min to 30min
Duration of time delay (S2)	-	-	30sec to 60min	30sec to 60min
Luminosity threshold	2 to 2000 lux	2... 2000 lux	5 to 1200Lux	5 to 1200Lux
Recommended installation height	3 m	2.5 m	3 m	3 m
Operating temperature	20°C to +50°C	20°C to +50°C	0°C to +45°C	0°C to +45°C
Storage temperature	35°C to +70°C	35°C to +70°C	10°C to +60°C	10°C to +60°C
Insulation class	II	II	II	II
Protection rating	IP54	IP54	IP41	IP41
Standards	EN 60669-1 EN 60669-2-1	EN 60669-2-1 EN 300 440-1 V1.3.1	EN 60669-1 EN 60669-2-1	EN 60669-1 EN 60669-2-1
Pollution degree	2	2	2	2
Connection stranded	Max 1.5mm <sup>2</sup>	Max 1.5mm <sup>2</sup>	1mm <sup>2</sup> to 4mm <sup>2</sup>	1mm <sup>2</sup> to 4mm <sup>2</sup>
Connection solid	Max 1.5mm <sup>2</sup>	Max 1.5mm <sup>2</sup>	1mm <sup>2</sup> to 4mm <sup>2</sup>	1mm <sup>2</sup> to 4mm <sup>2</sup>
Switching channel	1	1	1	1      2
Lighting loads 230V~ AC1	10A	10A	16A	16A      2A
Switching capacity (Incandescent)	2300W	2300W	2300W	2300W
Halogen lamps LV	2300W	2300W	-	-
Halogen ELV (12 or 24V) via ferromagnetic or electronic transformer	1500VA	1500VA	1500W	1500W
Compact fluorescent	20 x 20W	20 x 20W	20 X 18W	20 X 18W
LED	20 x 20W	20 x 20W	20 X 18W	20 X 18W
Parallel compensated fluorescent tubes	1000W/C=110µf	1000W/C=110µf	290W/C=32µf	290W/C=32µf
Fluorescent tubes non-compensated	1200W	1200W	-	-
Electronic ballast	580W	580W	580W	1000W
DSI/DALI ballast	-	-	-	-
Remote programming	x	x	x	x
Remote control	x	x	x	x
Adjustable shutters (supplied)	x	x	x	x
Dimensions (L*W*H)	125 x 125 x 60mm		110 x 110 x 70mm	110 x 110 x 70mm

					
PIR Occupancy Sensor	Digital PIR Occupancy Sensor	Basic Motion Detector 140°	Basic Motion Detector 360°	Enhanced Motion Detector 220° White & Anthracite	Enhanced Motion Detector 220/360° White & Anthracite
EEK510B	EEK520B	EE820	EE840	EE860 / EE861	EE870 / EE871
230V~ 50Hz	230V~ 50Hz	230V~ 50Hz	230V~ 50Hz	230V~ 50Hz	230V~ 50Hz
Presence	Presence	Motion	Motion	Motion	Motion
270mW	60mW	-	-	-	-
7m	7m	16m	12m	16m	16m
7m	7m	12m	12m	16m	16m
360°	360°	140°	360°	220°	220°/360°
-	-	-	-	-	-
-	-	-	-	-	-
2.4VA/270mW	60mW	1.2W	1.2W	1.2W	1.2W
1min to 1hour	1min to 1hour	5 s... 15 min	5 s... 15 min	5secs to 30min	5secs to 30min
-	-	-	-	-	-
5 to 1000 Lux	5 to 1000 Lux	5... 1000 lux	5... 1000 lux	5... 1000 lux	5... 1000 lux
2.5m	2.5m	2.5m (2m-4m)	2.5m (2m-4m)	2.5m (2m-4m)	2.5m (2m-4m)
-10°C to +45°C	-10°C to +45°C	20°C to +55°C	20°C to +55°C	20°C to +55°C	20°C to +55°C
-20°C to +60°C	-20°C to +60°C	20°C to +60°C	20°C to +60°C	20°C to +60°C	20°C to +60°C
II	II	II	II	II	II
IP41	IP41	IP55	IP55	IP55	IP55
EN 60669-1 EN 60669-2-1	EN 60669-1 EN 60669-2-1	EN 60669-1 EN 60669-2-1	EN 60669-1 EN 60669-2-1	EN 60669-1 EN 60669-2-1	EN 60669-1 EN 60669-2-1
2	2	2	2	2	2
0.5mm <sup>2</sup> to 1.5mm <sup>2</sup>	0.5mm <sup>2</sup> to 1.5mm <sup>2</sup>	Max 1.5mm <sup>2</sup>	Max 1.5mm <sup>2</sup>	Max 1.5mm <sup>2</sup>	Max 1.5mm <sup>2</sup>
0.5mm <sup>2</sup> to 1.5mm <sup>2</sup>	0.5mm <sup>2</sup> to 1.5mm <sup>2</sup>	Max 1.5mm <sup>2</sup>	Max 1.5mm <sup>2</sup>	Max 1.5mm <sup>2</sup>	Max 1.5mm <sup>2</sup>
1	1	1	1	1	1
16A	-	10A	10A	10A	10A
2300W	-	1500W	2300W	2300W	2300W
-	-	-	-	-	-
1500W	-	1500VA	1500VA	1500VA	1500VA
23 X 23W	-	10 X 20W	20 x 20W	20 x 20W	20 x 20W
20 X20W	-		20 x 20W	20 x 20W	20 x 20W
1000W	-	290W/C=32µf	400W/C=45µf	400W/C=45µf	400W/C=45µf
1000W	-	-	-	-	-
-	-	580W	580W	580W	580W
-	24	-	-	-	-
EEK001	EEK001	✘	✘	EE806	EE806
EEK002	EEK002	✘	✘	✘	✘
✘	✘	✓	✘	✓	✓
80 x 80 x 70mm	80 x 80 x 70mm	127 x 83 x 97mm	127 x 83 x 97mm	127 x 83 x 97mm	127 x 83 x 97mm

1 - Requires EEK005 surface mount box, not supplied with sensor

2 - Requires S64AX surface mount socket and to be fitted to a conduit box, not supplied with sensor

3 - Requires mounting in a separate enclosure for surface mounting, not supplied with sensor

4 - Cable will be required, not supplied with sensor

5 - Mounts into a Klik-AX socket S64AX, not supplied with sensor

6 - Only when used with Klik LCM

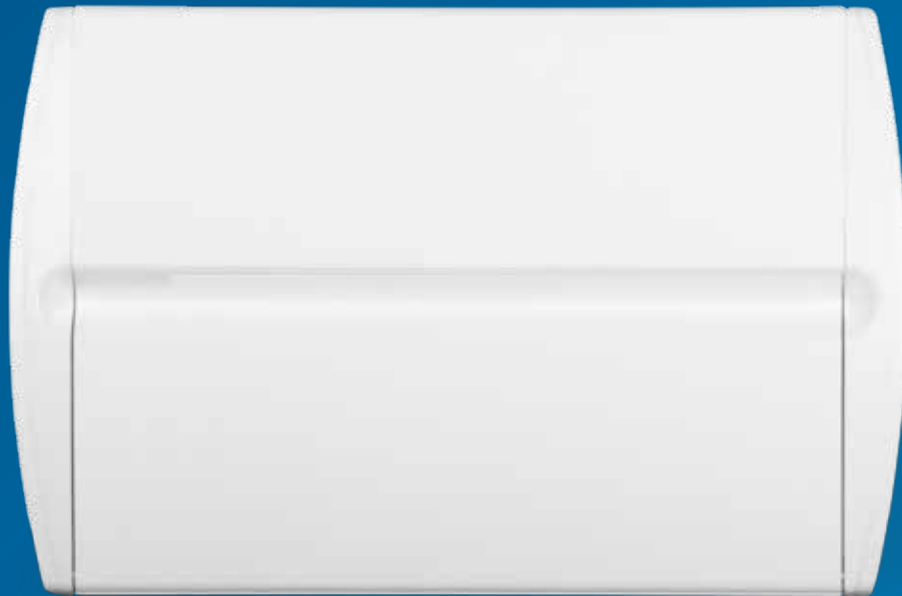
### Hardwired Sensors

Switch Modules	Ceiling mounted PIR occupancy switch (very high sensitivity)	Ceiling mounted PIR occupancy switch (corridor)	Ceiling mounted Hyper Frequency occupancy switch	Ceiling mounted (flush or surface) PIR occupancy switch (high sensitivity) Note: without cable
WWMPIR05X WWMPIR10X	EE801 EE811	EE810	EE883	EEK510B
				
Output to control lighting	Standard on / off	Standard on / off	Standard on / off	Standard on / off
Switching / dimming method	Relay	Relay	Relay	Relay
<b>Mouting method</b>				
Surface Mount	Fits to Euro plate.	✓	✓	✓
Flush mount		✗	✗	✗
<b>Klik integration</b>				
Can be used with klik 4 pin (cable may be required)	✓ <sup>4</sup>	✓ <sup>4</sup>	✓ <sup>4</sup>	✓ <sup>4</sup>
Can be used with klik 7 pin	✓ <sup>4</sup>	✓ <sup>4</sup>	✓ <sup>4</sup>	✓ <sup>4</sup>
Only used with Klik LCM	✗	✗	✗	✗
<b>Office</b>				
Reception areas				✓
Corridors			✓	
Individual offices		✓		✓
Open plan offices		✓		✓
Meeting rooms				✓
Break rooms				✓
Stairwells			✓	✓
Toilets			✓	✓
(semi)-covered parking			✓	
Plant room	✓			✓
Storage areas, racking aisles	✓			✓
<b>Education</b>				
Entrance hall				✓
Corridors			✓	
Admin offices				✓
Classrooms				✓
Staff rooms				✓
Locker rooms			✓	✓
Toilets			✓	✓
Plant room	✓			✓
<b>Multi-residential / Retirement complex</b>				
Reception areas				✓
Corridors, stairs, access to apartments			✓	
Plant room	✓			✓
Dining room				✓
Common room				✓



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**Consumer Units**

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Surface Mounted Consumer Units	4.3
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Flush Mounted Consumer Units	4.9
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Consumer Unit Accessories	4.11
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**Protection Devices**

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MCBs	4.13
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RCBOs	4.13
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Locking Kit	4.13
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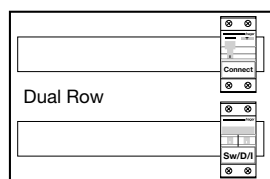
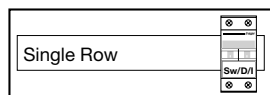
Surge Protection	4.14
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Technical Pages	4.15
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VM202



### Switch Disconnector Incomer

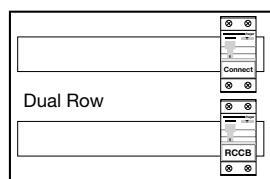
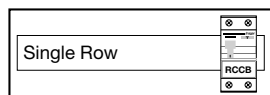
#### Characteristics:

- Metal switch disconnector incomer consumer units, single row from 2 to 20 and dual row from 6+6 to 20+20 outgoing ways.
- All consumer units contain rear cable entry. Boards with knockouts also contain top & bottom knockouts - see page 4.15.
- Supplied with a full metal DIN rail, 63A or 100A switch disconnector incomer and a full complement of earth and neutral terminals along with marking labels, busbar, instructions, rear cable protector plate and meter tail clamp.
- Conforms to BS EN 61439-3 Including Annex ZB (16kA rating).
- For accessories see page 4.11.
- For dimensions see page 4.15, refer to board sizes below.

Description	Size	Cat ref.	Cat ref. With Knockouts
2 Way 63A Switch Disconnector Incomer	2	<b>VM202</b>	<b>VM202K</b>
6 Way 63A Switch Disconnector Incomer	3	<b>VM206</b>	<b>VM206K</b>
6 Way 100A Switch Disconnector Incomer	3	<b>VM106</b>	<b>VM106K</b>
10 Way 100A Switch Disconnector Incomer	4	<b>VM110</b>	<b>VM110K</b>
14 Way 100A Switch Disconnector Incomer	5	<b>VM114</b>	<b>VM114K</b>
20 Way 100A Switch Disconnector Incomer	7	<b>VM120</b>	<b>VM120K</b>
6+6 Way 100A Switch Disconnector Incomer Dual Row	3 (2)	<b>VM10606</b>	<b>VM10606K</b>
10+10 Way 100A Switch Disconnector Incomer Dual Row	4 (2)	<b>VM11010</b>	<b>VM11010K</b>
14+14 Way 100A Switch Disconnector Incomer Dual Row	5 (2)	<b>VM11414</b>	<b>VM11414K</b>
20+20 Way 100A Switch Disconnector Incomer Dual Row	7 (2)	<b>VM12020</b>	<b>VM12020K</b>



VM310H



### RCCB Incomer

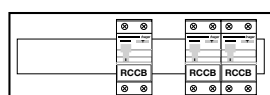
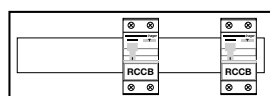
#### Characteristics:

- Metal RCCB incomer consumer units, single row from 2 to 14 and dual row contains 6+6 outgoing ways.
- All consumer units contain rear cable entry. Boards with knockouts also contain top & bottom knockouts - see page 4.15.
- Supplied with a full metal DIN rail, 40A, 63A or 100A 30mA RCCB incomer and a full complement of earth and neutral terminals along with marking labels, busbar, instructions, rear cable protector plate and meter tail clamp.
- Conforms to BS EN 61439-3 Including Annex ZB (16kA rating).
- For accessories see page 4.11.
- For dimensions see page 4.15, refer to board sizes below.

Description	Size	Cat ref.	Cat ref. With Knockouts
2 Way 40A 30mA RCCB Incomer	2	<b>VM402H</b>	<b>VM402HK</b>
6 Way 63A 30mA RCCB Incomer	3	<b>VM406H</b>	<b>VM406HK</b>
6 Way 100A 30mA RCCB Incomer	3	<b>VM306H</b>	<b>VM306HK</b>
10 Way 63A 30mA RCCB Incomer	4	<b>VM410H</b>	<b>VM410HK</b>
10 Way 100A 30mA RCCB Incomer	4	<b>VM310H</b>	<b>VM310HK</b>
14 Way 100A 30mA RCCB Incomer	5	<b>VM314H</b>	<b>VM314HK</b>
6+6 Way 100A 30mA RCCB Incomer Dual Row	3 (2)	<b>VM30606H</b>	<b>VM30606HK</b>



VM712TG



### Time Delayed RCCB Incomer

#### Characteristics:

- Metal RCCB incomer consumer units, single row 12 outgoing ways.
- All consumer units contain rear cable entry. Boards with knockouts also contain top & bottom knockouts - see page 4.15.
- Supplied with a full metal DIN rail 100A 100mA time delayed incomer, 63A 30mA RCCB incomers and a full complement of earth and neutral terminals along with marking labels, busbar, instructions, rear cable protector plate and meter tail clamp.
- Recommended for use with TT systems (meter tail clamp included).
- Conforms to BS EN 61439-3 Including Annex ZB (16kA rating).
- For accessories see page 4.11.
- For dimensions see page 4.15, refer to board sizes below.

Description	Size	Cat ref.	Cat ref. With Knockouts
12 Way Configurable 100A 100mA Time Delay RCCB 63A 30mA RCCB	5	<b>VM712TG</b>	<b>VM712TGK</b>
12 Way 100A 100mA Time Delay RCCB 2 x 63A 30mA RCCB	6	<b>VM766TG</b>	<b>VM766TGK</b>

### Split Load

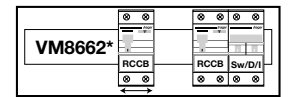
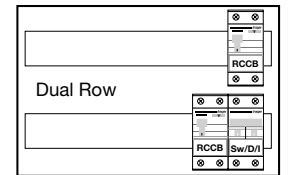
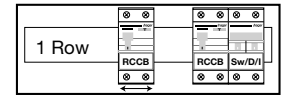
#### Characteristics:

- Metal split load and configurable consumer units, single row from 6 to 16 and dual row from 4+6 to 18+20 outgoing ways.
- All consumer units contain rear cable entry. Boards with knockouts also contain top & bottom knockouts - see page 4.15.
- Supplied with a full metal DIN rail, 100A switch disconnecter incomer, 2 RCCBs and a full complement of earth and neutral terminals along with marking labels, busbar, instructions, rear cable protector plate and meter tail clamp.
- Conforms to BS EN 61439-3 Including Annex ZB (16kA rating).
- For accessories see page 4.11.
- For dimensions see page 4.15, refer to board sizes below.



VM755H

Description	Size	Cat ref.	Cat ref. With Knockouts
6 Way Split Load 3+3 100A Switch 2x63A 30mA RCCB	4	<b>VM733H</b>	<b>VM733HK</b>
10 Way Split Load 5+5 100A Switch 2x63A 30mA RCCB	5	<b>VM755H</b>	<b>VM755HK</b>
12 Way Split Load 6+6 100A Switch 2x63A 30mA RCCB	6	<b>VM766H</b>	<b>VM766HK</b>
10 Way Split Load Configurable 100A Switch 2x 63A 30mA RCCB	5	<b>VM710C</b>	<b>VM710CK</b>
16 Way Split Load Configurable 100A Switch 2x 63A 30mA RCCB	7	<b>VM716C</b>	<b>VM716CK</b>
10 Way Split Load 5+5 100A Switch 2x80A 30mA RCCB	5	<b>VM855H</b>	<b>VM855HK</b>
12 Way Split Load 6+6 100A Switch 2x80A 30mA RCCB	6	<b>VM866H</b>	<b>VM866HK</b>
10 Way Split Load Configurable 100A Switch 2x 80A 30mA RCCB	5	<b>VM810C</b>	<b>VM810CK</b>
16 Way Split Load Configurable 100A Switch 2x80A 30mA RCCB	7	<b>VM816C</b>	<b>VM816CK</b>
14 Way Split Load 6+6+2 100A Switch 2x 80A 30mA RCCB plus 1x 40A 30mA RCCB	7	<b>VM8662</b>	<b>VM8662K</b>
4+6 Way 100A Switch 2x63A 30mA RCCB Dual Row	3 (2)	<b>VM746H</b>	<b>VM746HK</b>
8+10 Way 100A Switch 2x63A 30mA RCCB Dual Row	4 (2)	<b>VM70810H</b>	<b>VM70810HK</b>
12+14 Way 100A Switch 2x63A 30mA RCCB Dual Row	5 (2)	<b>VM71214H</b>	<b>VM71214HK</b>
18+20 Way 100A Switch 2x63A 30mA RCCB Dual Row	7 (2)	<b>VM71820H</b>	<b>VM71820HK</b>
4+6 Way 100A Switch 2x80A 30mA RCCB Dual Row	3 (2)	<b>VM846H</b>	<b>VM846HK</b>
8+10 Way 100A Switch 2x80A 30mA RCCB Dual Row	4 (2)	<b>VM80810H</b>	<b>VM80810HK</b>
12+14 Way 100A Switch 2x80A 30mA RCCB Dual Row	5 (2)	<b>VM81214H</b>	<b>VM81214HK</b>
18+20W 100A Switch 2x80A 30mA RCCB Dual Row	7 (2)	<b>VM81820H</b>	<b>VM81820HK</b>



### High Integrity

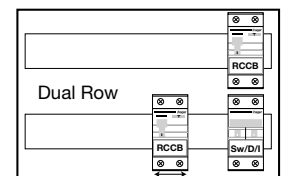
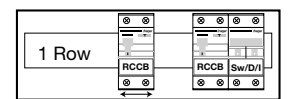
#### Characteristics:

- Metal split load and configurable consumer units with ability to protect selected circuits with RCBOs and the remainder of circuits split across two RCCBs. Single row from 10 to 16 and dual row from 8+10 to 18+20 outgoing ways.
- All consumer units contain rear cable entry. Boards with knockouts also contain top & bottom knockouts - see page 4.15.
- Supplied with a full metal DIN rail, 100A switch disconnecter incomer, 2 RCCBs and a full complement of earth and neutral terminals along with marking labels, busbar, instructions, rear cable protector plate and meter tail clamp.
- Conforms to BS EN 61439-3 Including Annex ZB (16kA rating).
- For accessories see page 4.11.
- For dimensions see page 4.15, refer to board sizes below.



VM712TG

Description	Size	Cat ref.	Cat ref. With Knockouts
10 Way High Integrity Split Load Configurable 100A Switch 2x 63A 30mA RCCB	5	<b>VM710CU</b>	<b>VM710CUK</b>
16 Way High Integrity Split Load Configurable 100A Switch 2x 63A 30mA RCCB	7	<b>VM716CU</b>	<b>VM716CUK</b>
10 Way High Integrity Split Load Configurable 100A Switch 2x 80A 30mA RCCB	5	<b>VM810CU</b>	<b>VM810CUK</b>
16 Way High Integrity Split Load Configurable 100A Switch 2x 80A 30mA RCCB	7	<b>VM816CU</b>	<b>VM816CUK</b>
10 Way High Integrity Split Load 5+4+1 100A Switch 2x 63A 30mA RCCB + 6A RCBO	5	<b>VM754R</b>	<b>VM754RK</b>
16 Way High Integrity Split Load 7+8+1 100A Switch 2x 63A 30mA RCCB + 6A RCBO	7	<b>VM778R</b>	<b>VM778RK</b>
10 Way High Integrity Split Load 5+4+1 100A Switch 2x 80A 30mA RCCB + 6A RCBO	5	<b>VM854R</b>	<b>VM854RK</b>
16 Way High Integrity Split Load 7+8+1 100A Switch 2x 80A 30mA RCCB + 6A RCBO	7	<b>VM878R</b>	<b>VM878RK</b>
8+10 Way High Integrity Configurable 100A Switch 2x63A Dual Row	4 (2)	<b>VM70810CU</b>	<b>VM70810CUK</b>
12+14 Way High Integrity Configurable 100A Switch 2x63A Dual Row	5 (2)	<b>VM71214CU</b>	<b>VM71214CUK</b>
18+20 Way High Integrity Configurable 100A Switch 2x63A Dual Row	7 (2)	<b>VM71820CU</b>	<b>VM71820CUK</b>
8+10 Way High Integrity Configurable 100A Switch 2x80A Dual Row	4 (2)	<b>VM80810CU</b>	<b>VM80810CUK</b>
12+14 Way High Integrity Configurable 100A Switch 2x80A Dual Row	5 (2)	<b>VM81214CU</b>	<b>VM81214CUK</b>
18+20 Way High Integrity Configurable 100A Switch 2x80A Dual Row	7 (2)	<b>VM81820CU</b>	<b>VM81820CUK</b>



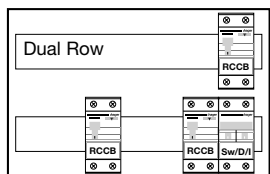
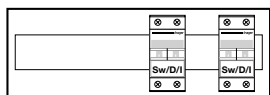


VM712TG

### Multi Tariff

#### Characteristics:

- Metal switch disconnecter incomer consumer units, single row 12 or 18 and dual row 10+14 outgoing ways.
- All consumer units contain rear cable entry. Boards with knockouts also contain top & bottom knockouts - see page 4.15.
- Supplied with a full metal DIN rail, multiple switch disconnecter incomers and a full complement of earth and neutral terminals along with marking labels, busbar, instructions, rear cable protector plate and meter tail clamp.
- Conforms to BS EN 61439-3 Including Annex ZB (16kA rating).
- For accessories see page 4.11.
- For dimensions see page 4.15, refer to board sizes below..



Description	Size	Cat ref.	Cat ref. With Knockouts
18 Way Twin Tariff Configurable 2x100A Switch	7	<b>VM918C</b>	<b>VM918CK</b>
12 Way Multi Tariff 6+5+1 2x100A 1x63A Switch	6	<b>VM9651</b>	<b>VM9651K</b>
10 Way Split Load 5+5 100A Switch 2x63A RCCB 1x63A RCCB Incomer 14 Ways Dual Row	4 (2)	<b>VM755714H</b>	<b>VM755714HK</b>



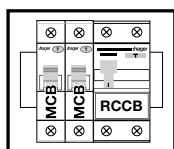
VM24H

### Garage Board

#### Characteristics:

- Consumer unit comes complete with 40A 30mA RCCB Incomer, 32A MCB and 6A MCB, earth & neutral connections, busbar, cable protector plate, grommet strip, meter tail clamp, marking labels & instructions.
- All consumer units contain rear cable entry. Boards with knockouts also contain top & bottom knockouts - see page 4.15.
- For dimensions see page 4.15, refer to board sizes below.

Description	Size	Cat ref.	Cat ref. With Knockouts
2 Way 40A 30mA RCCB with 1x32A & 1x6A MCB	2	<b>VM24H</b>	<b>VM24HK</b>



### Switch Disconnecter Incomer

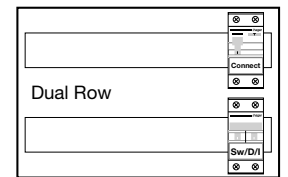
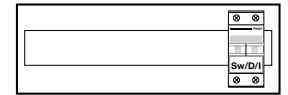
**Characteristics:**

- Metal switch disconnecter incomer consumer units, single row from 2 to 20 and dual row from 6+6 to 20+20 outgoing ways.
- All Design 10 consumer units contain top, bottom & rear knockouts - see page 4.15.
- Supplied with a full metal DIN rail, 63A or 100A switch disconnecter incomer and a full complement of earth and neutral terminals along with marking labels, busbar and instructions.
- Recommended for use with TT systems when utilising RCBO on outgoing circuits.
- We also recommend the use of cable clamp (**VA10MT**) for use on TT systems, available as an accessory.
- Conforms to BS EN 61439-3 Including Annex ZB (16kA rating).
- For accessories see page 4.11.
- For dimensions see page 4.15, refer to board sizes below.



VML206

Description	Size	Cat ref.
2 Way 63A Switch Disconnecter Incomer	2	<b>VML202</b>
6 Way 63A Switch Disconnecter Incomer	3	<b>VML206</b>
6 Way 100A Switch Disconnecter Incomer	3	<b>VML106</b>
10 Way 100A Switch Disconnecter Incomer	4	<b>VML110</b>
14 Way 100A Switch Disconnecter Incomer	5	<b>VML114</b>
20 Way 100A Switch Disconnecter Incomer	7	<b>VML120</b>
6+6 Way 100A Switch Disconnecter Dual Row	3 (2)	<b>VML10606</b>
10+10 Way 100A Switch Disconnecter Dual Row	4 (2)	<b>VML11010</b>
14+14 Way 100A Switch Disconnecter Dual Row	5 (2)	<b>VML11414</b>
20+20 Way 100A Switch Disconnecter Dual Row	7 (2)	<b>VML12020</b>



### RCCB Incomer

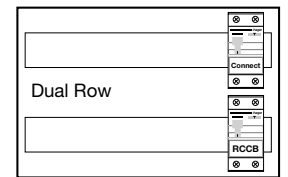
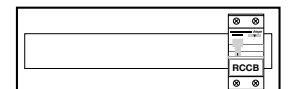
**Characteristics:**

- Metal RCCB incomer consumer units, single row from 2 to 14 and dual row 6+6 outgoing ways.
- All Design 10 consumer units contain top, bottom & rear knockouts - see page 4.15.
- Supplied with a full metal DIN rail, 40A, 63A or 100A 30mA RCCB incomer and a full complement of earth and neutral terminals along with marking labels, busbar and instructions.
- Conforms to BS EN 61439-3 Including Annex ZB (16kA rating).
- For accessories see page 4.11.
- For dimensions see page 4.15, refer to board sizes below.



VML310H

Description	Size	Cat ref.
2 Way 40A 30mA RCCB Incomer	2	<b>VML402H</b>
6 Way 63A 30mA RCCB Incomer	3	<b>VML406H</b>
6 Way 100A 30mA RCCB Incomer	3	<b>VML306H</b>
10 Way 63A 30mA RCCB Incomer	4	<b>VML410H</b>
10 Way 100A 30mA RCCB Incomer	4	<b>VML310H</b>
14 Way 100A 30mA RCCB Incomer	5	<b>VML314H</b>
6+6 Way 100A 30mA RCCB Incomer Dual Row	3 (2)	<b>VML30606H</b>



### Time Delayed RCCB Incomer

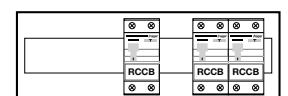
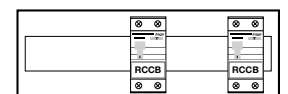
**Characteristics:**

- Metal RCCB incomer consumer units, single row 12 outgoing ways.
- All Design 10 consumer units contain top, bottom & rear knockouts - see page 4.15.
- Supplied with a full metal DIN rail 100A 100mA time delayed incomer and 63A 30mA RCCB incomers and a full complement of earth and neutral terminals along with marking labels, busbar, meter tail clamp and instructions.
- Recommended for use with TT systems (meter tail clamp included).
- Conforms to BS EN 61439-3 Including Annex ZB (16kA rating).
- For accessories see page 4.11.
- For dimensions see page 4.15, refer to board sizes below.



VML712TG

Description	Size	Cat ref.
12 Way Configurable 100A 100mA Time Delay RCCB 63A 30mA RCCB	5	<b>VML712TG</b>
12 Way 100A 100mA Time Delay RCCB 2x63A 30mA RCCB	6	<b>VML766TG</b>



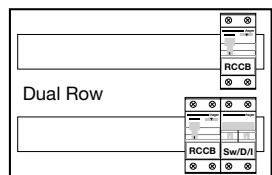
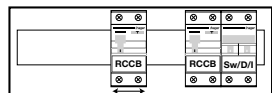


VM716C

### Split Load

#### Characteristics:

- Metal split load and configurable consumer units, single row from 6 to 16 and dual row from 4+6 to 18+20 outgoing ways.
- All Design 10 consumer units contain top, bottom & rear knockouts - see page 4.15.
- Supplied with a full metal DIN rail, 100A switch disconnecter incomer and 2 RCCBs and a full complement of earth and neutral terminals along with marking labels, busbar and instructions.
- Conforms to BS EN 61439-3 Including Annex ZB (16kA rating).
- For accessories see page 4.11.
- For dimensions see page 4.15.



Description	Size	Cat ref.
6 Way Split Load 3+3 100A Switch 2x63A 30mA RCCB	4	<b>VML733H</b>
10 Way Split Load 5+5 100A Switch 2x63A 30mA RCCB	5	<b>VML755H</b>
12 Way Split Load 6+6 100A Switch 2x63A 30mA RCCB	6	<b>VML766H</b>
10 Way Split Load Configurable 100A Switch 2x 63A 30mA RCCB	5	<b>VML710C</b>
16 Way Split Load Configurable 100A Switch 2x 63A 30mA RCCB	7	<b>VML716C</b>
10 Way Split Load 5+5 100A Switch 2x80A 30mA RCCB	5	<b>VML855H</b>
12 Way Split Load 6+6 100A Switch 2x80A 30mA RCCB	6	<b>VML866H</b>
10 Way Split Load Configurable 100A Switch 2x80A 30mA RCCB	5	<b>VML810C</b>
16 Way Split Load Configurable 100A Switch 2x80A 30mA RCCB	7	<b>VML816C</b>
14 Way Split Load 6+6+2 100A Switch 2x80A 30mA RCCB + 40A 30mA RCCB	7	<b>VML8662</b>
4+6 Way 100A Switch 2x63A 30mA RCCB Dual Row	3 (2)	<b>VML746H</b>
8+10W 100A Switch 2x63A 30mA RCCB Dual Row	4 (2)	<b>VML70810H</b>
12+14W 100A Switch 2x63A 30mA RCCB Dual Row	5 (2)	<b>VML71214H</b>
18+20W 100A Switch 2x63A 30mA RCCB Dual Row	7 (2)	<b>VML71820H</b>
4+6 Way 100A Switch 2x80A 30mA RCCB Dual Row	3 (2)	<b>VML846H</b>
8+10W 100A Switch 2x80A 30mA RCCB Dual Row	4 (2)	<b>VML80810H</b>
12+14W 100A Switch 2x80A 30mA RCCB Dual Row	5 (2)	<b>VML81214H</b>
18+20W 100A Switch 2x80A 30mA RCCB Dual Row	7 (2)	<b>VML81820H</b>

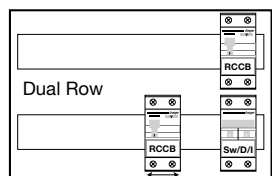
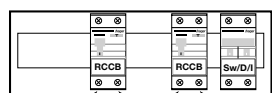


VML878R

### High Integrity

#### Characteristics:

- Metal split load and configurable consumer units with the ability to protect selected circuits with RCBOs and the remainder of circuits split across two RCCBs. Single row from 10 to 16 and dual row from 8+10 to 18+20 outgoing ways.
- All Design 10 consumer units contain top, bottom & rear knockouts - see page 4.15.
- Supplied with a full metal DIN rail, 100A switch disconnecter incomer, 2 RCCBs and a full complement of earth and neutral terminals along with marking labels, busbar and instructions.
- Conforms to BS EN 61439-3 Including Annex ZB (16kA rating).
- For accessories see page 4.11.
- For dimensions see page 4.15.



Description	Size	Cat ref.
10 Way High Integrity Split Load Configurable 100A Switch 2x63A 30mA RCCB	5	<b>VML710CU</b>
12 Way High Integrity Split Load Configurable 100A Switch 2x63A 30mA RCCB	6	<b>VML712CU</b>
16 Way High Integrity Split Load Configurable 100A Switch 2x63A 30mA RCCB	7	<b>VML716CU</b>
10 Way High Integrity Split Load Configurable 100A Switch 2x80A 30mA RCCB	5	<b>VML810CU</b>
16 Way High Integrity Split Load Configurable 100A Switch 2x80A 30mA RCCB	7	<b>VML816CU</b>
10 Way High Integrity 5+4+1 100A Switch 2x63A 30mA RCCB + 6A RCBO	5	<b>VML754R</b>
16 Way High Integrity 7+8+1 100A Switch 2x63A 30mA RCCB + 6A RCBO	7	<b>VML778R</b>
10 Way High Integrity 5+4+1 100A Switch 2x80A 30mA RCCB + 6A RCBO	5	<b>VML854R</b>
16 Way High Integrity 7+8+1 100A Switch 2x80A 30mA RCCB + 6A RCBO	7	<b>VML878R</b>
8+10 Way High Integrity Configurable 100A Switch 2x63A Dual Row	4 (2)	<b>VML70810CU</b>
12+14 Way High Integrity Configurable 100A Switch 2x63A Dual Row	5 (2)	<b>VML71214CU</b>
18+20 Way High Integrity Configurable 100A Switch 2x63A Dual Row	7 (2)	<b>VML71820CU</b>
8+10 Way High Integrity Configurable 100A Switch 2x80A Dual Row	4 (2)	<b>VML80810CU</b>
12+14 Way High Integrity Configurable 100A Switch 2x80A Dual Row	5 (2)	<b>VML81214CU</b>
18+20 Way High Integrity Configurable 100A Switch 2x80A Dual Row	7 (2)	<b>VML81820CU</b>

**Multi Tariff**

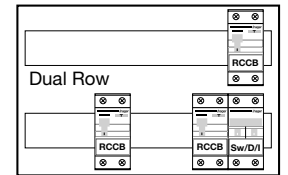
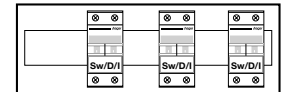
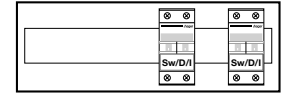
**Characteristics:**

- Metal switch disconnecter incomer consumer units, single row 12 or 18 and dual row 10+14 outgoing ways.
- All Design 10 consumer units contain top, bottom & rear knockouts - see page 4.15.
- Supplied with a full metal DIN rail, multiple switch disconnecter incomers and a full complement of earth and neutral terminals along with marking labels, busbar and instructions.
- Conforms to BS EN 61439-3 Including Annex ZB (16kA rating).
- For accessories see page 4.11.
- For dimensions see page 4.15.



VML918C

Description	Size	Cat ref.
18 Way Twin Tariff Configurable 2x100A Switch	7	<b>VML918C</b>
12 Way Multi Tariff 6+5+1 2x100A 1x63A Switch	6	<b>VML9651</b>
10 Way Split Load 5+5 100A Switch 2x63A RCCB 1x63A RCCB Incomer 14 Ways Dual Row	4 (2)	<b>VML755714H</b>



**Garage Boards**

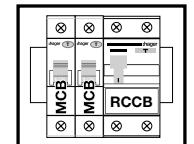
**Characteristics:**

- Consumer unit comes complete with 40A 30mA RCCB Incomer, 32A MCB and 6A MCB, earth & neutral connections, busbar, grommet strip, marking labels & Instructions.
- All Design 10 consumer units contain top, bottom & rear knockouts - see page 4.15.
- Cable protector plate for rear knockouts is available as an accessory. (**VM02CE**)
- For dimensions see page 4.15.



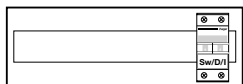
VML24H

Description	Size	Cat ref.
2 Way 40A 30mA RCCB with 1x32A & 1x6A MCB	2	<b>VML24H</b>





VSR114



### Switch Disconnecter Incomer

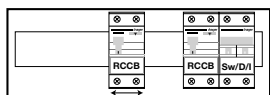
#### Characteristics:

- Metal switch disconnecter incomer consumer units, single row from 10 to 20 outgoing ways.
- All consumer units contain rear cable entry, along with top & bottom knockouts.
- Supplied with a full metal DIN rail, 100A switch disconnecter incomer and a full complement of earth and neutral terminals along with marking labels, busbar, instructions, rear cable protector plate and meter tail clamp.
- Recommended for use with TT systems when utilising RCBO on outgoing circuits.
- Conforms to BS EN 61439-3 including Annex ZB (16kA rating).
- Adjustable depth in wall 72mm-92mm.
- For dimensions see page 4.15.

Description	Size	Cat ref.
10 Way 100A Switch Disconnecter Incomer	4	<b>VSR110</b>
14 Way 100A Switch Disconnecter Incomer	5	<b>VSR114</b>
20 Way 100A Switch Disconnecter Incomer	7	<b>VSR120</b>



VSR710C



### Split Load

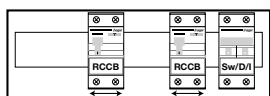
#### Characteristics:

- Metal split load and configurable consumer units, single row from 10 to 16 outgoing ways.
- All consumer units contain rear cable entry, along with top & bottom knockouts.
- Supplied with a full metal DIN rail, 100A switch disconnecter incomer and 2 RCCBs and a full complement of earth and neutral terminals along with marking labels, busbar, instructions, rear cable protector plate and meter tail clamp.
- Conforms to BS EN 61439-3 including Annex ZB (16kA rating).
- Adjustable depth in wall 72mm-92mm.
- For dimensions see page 4.15.

Description	Size	Cat ref.
10 Way Configurable 100A Switch 2*63A 30mA RCCB	5	<b>VSR710C</b>
12 Way Configurable 100A Switch 2*63A 30mA RCCB	6	<b>VSR712C</b>
16 Way Configurable 100A Switch 2*63A 30mA RCCB	7	<b>VSR716C</b>
10 Way Configurable 100A Switch 2*80A 30mA RCCB	5	<b>VSR810C</b>
12 Way Configurable 100A Switch 2*80A 30mA RCCB	6	<b>VSR812C</b>
16 Way Configurable 100A Switch 2*80A 30mA RCCB	7	<b>VSR816C</b>



VSR710C



### High Integrity

#### Characteristics:

- Metal split load and configurable consumer units with the ability to protect selected circuits with RCBOs and the remainder of circuits split across two RCCBs. Single row from 10 to 16 outgoing ways.
- All consumer units contain rear cable entry, along with top & bottom knockouts.
- Supplied with a full metal DIN rail, 100A switch disconnecter incomer and 2 RCCBs and a full complement of earth and neutral terminals along with marking labels, busbar, instructions, rear cable protector plate and meter tail clamp.
- Conforms to BS EN 61439-3 Including Annex ZB (16kA rating).
- Adjustable depth in wall 72mm-92mm.
- For dimensions see page 4.15.

Description	Size	Cat ref.
10 Way High Integrity Split Load Configurable 100A Switch 2x 63A 30mA RCCB	5	<b>VSR710CU</b>
12 Way High Integrity Split Load Configurable 100A Switch 2x 63A 30mA RCCB	6	<b>VSR712CU</b>
16 Way High Integrity Split Load Configurable 100A Switch 2x 63A 30mA RCCB	7	<b>VSR716CU</b>
10 Way High Integrity Split Load Configurable 100A Switch 2x 80A 30mA RCCB	5	<b>VSR810CU</b>
12 Way High Integrity Split Load Configurable 100A Switch 2x 80A 30mA RCCB	6	<b>VSR812CU</b>
16 Way High Integrity Split Load Configurable 100A Switch 2x 80A 30mA RCCB	7	<b>VSR816CU</b>



VSRHBL

### Design 50 Accessories

Description	Cat ref.
Design 50 Safety Lock (Pack of 6, Supplied without Padlock)	<b>VSRHBL</b>
Padlock (Accessory for Design 50 Safety Lock, Sold Individually)	<b>JK25A</b>
Design 50 Door Locking Device	<b>VSRLOCK</b>



### Switch Disconnecter Incomer

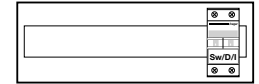
**Characteristics:**

- Metal switch disconnecter incomer consumer units, single row from 10 to 20 outgoing ways.
- All consumer units contain rear cable entry, along with top & bottom knockouts.
- Supplied with a full metal DIN rail, 100A switch disconnecter incomer and a full complement of earth and neutral terminals along with marking labels, busbar, instructions, rear cable protector plate and meter tail clamp.
- Recommended for use with TT systems when utilising RCBO on outgoing circuits.
- Conforms to BS EN 61439-3 including Annex ZB (16kA rating).
- Adjustable depth in wall 72mm-92mm.
- For dimensions see page 4.16.

Description	Size	Cat ref.
10 Way Flush 100A Switch Disconnecter Incomer	4	<b>VMLF110</b>
14 Way Flush 100A Switch Disconnecter Incomer	5	<b>VMLF114</b>
20 Way Flush 100A Switch Disconnecter Incomer	7	<b>VMLF120</b>



VMLF110



### Split Load

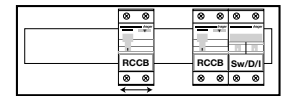
**Characteristics:**

- Metal split load and configurable consumer units, single row from 10 to 16 outgoing ways.
- All consumer units contain rear cable entry, along with top & bottom knockouts.
- Supplied with a full metal DIN rail, 100A switch disconnecter incomer and 2 RCCBs and a full complement of earth and neutral terminals along with marking labels, busbar, instructions, rear cable protector plate and meter tail clamp.
- Conforms to BS EN 61439-3 including Annex ZB (16kA rating).
- Adjustable depth in wall 72mm-92mm.
- For dimensions see page 4.16.

Description	Size	Cat ref.
10 Way Flush 100A Switch 2x63A 30mA RCCB	5	<b>VMLF710C</b>
12 Way Flush 100A Switch 2x63A 30mA RCCB	6	<b>VMLF712C</b>
16 Way Flush 100A Switch 2x63A 30mA RCCB	7	<b>VMLF716C</b>
10 Way Flush 100A Switch 2x80A 30mA RCCB	5	<b>VMLF810C</b>
12 Way Flush 100A Switch 2x80A 30mA RCCB	6	<b>VMLF812C</b>
16 Way Flush 100A Switch 2x80A 30mA RCCB	7	<b>VMLF816C</b>



VMLF710C



### High Integrity

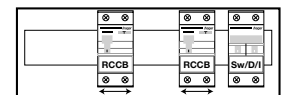
**Characteristics:**

- Metal split load and configurable consumer units with ability to protect selected circuits with RCBOs and the remainder of circuits split across two RCCBs. Single row from 10 to 16 outgoing ways.
- All consumer units contain rear cable entry, along with top & bottom knockouts.
- Supplied with a full metal DIN rail, 100A switch disconnecter incomer and 2 RCCBs and a full complement of earth and neutral terminals along with marking labels, busbar, instructions, rear cable protector plate and meter tail clamp.
- Conforms to BS EN 61439-3 Including Annex ZB (16kA rating).
- Adjustable depth in wall 72mm-92mm.
- For dimensions see page 4.16.

Description	Size	Cat ref.
10 Way Flush High Integrity 100A Switch 2x63A 30mA RCCB	5	<b>VMLF710CU</b>
12 Way Flush High Integrity 100A Switch 2x63A 30mA RCCB	6	<b>VMLF712CU</b>
16 Way Flush High Integrity 100A Switch 2x63A 30mA RCCB	7	<b>VMLF716CU</b>
10 Way Flush High Integrity 100A Switch 2x80A 30mA RCCB	5	<b>VMLF810CU</b>
12 Way Flush High Integrity 100A Switch 2x80A 30mA RCCB	6	<b>VMLF812CU</b>
16 Way Flush High Integrity 100A Switch 2x80A 30mA RCCB	7	<b>VMLF816CU</b>



VMLF710CU





VM02CE

### Cable Protector Plate

**Characteristics:**

- Provides a safe and smooth entry for cables into the rear of the consumer unit.
- Designed to fit into the aperture left by the removal of a rear knockout on the Design 10 or Design 30 Consumer Unit. (Included as standard with Design 30 consumer units)
- **VM01CE:** Simply insert protector plate and bend over tabs inside board.
- **VM02CE:** Break away sections as required and simply push into place.

Description	Quantity	Cat ref.
Cable Protector Plate (Metal)	1	<b>VM01CE</b>
Cable Protector Plate (Insulated)	5	<b>VM02CE</b>



VM10MT

### Cable Clamp

**Characteristics:**

- Secures supply cables on entry to main incoming device, eliminating any movement of the cables being transmitted to the terminals.
- Simply insert supply cables through clamp into incoming device & secure with fixing provided.
- (Included as standard with Design 30 consumer units)

Description	Cat ref.
Cable Clamp for Meter Tails	<b>VA10MT</b>



VMHBL

### Health & Safety Lock

**Characteristics:**

- Provides the ability to lock the consumer unit during the installation process.
- Can only be used with Design 30 consumer units.

Description	Cat ref.
Health & Safety Padlock Bracket	<b>VMHBL</b>
Padlock	<b>JK25A</b>



VMLOCK

### Key Lock

**Characteristics:**

- Allows door to be lockable. Simply remove the centre of the lock surround and the knockout behind, and fit lock.
- Can only be used with Design 30 consumer units.

Description	Cat ref.
Design 30 Door Locking Kit	<b>VMLOCK</b>



VMGROM

### Grommets & Grommet Strip

**Characteristics:**

- Grommet for protecting against sharp edges on knockouts.

Description	Quantity	Cat ref.
Grommet strip 5 metres	1 Strip	<b>VM05GS</b>
38mm open grommet for use with VMLF* back boxes	10	<b>VMGROM</b>

### Other Accessores

Description	Cat ref.
1 Module Busbar Blank	<b>JK01B</b>
Neutral Link	<b>VAN00</b>
Dual Tariff Link Kit	<b>VAK0D</b>
Split Load Link Kit	<b>VAK0S</b>
Triple Tariff Link Kit	<b>VAK0T</b>
8 Module Busbar	<b>VAB08</b>
12 Module Busbar	<b>VAB12</b>
16 Module Busbar	<b>VAB16</b>
21 Module Busbar	<b>VAB21</b>
Spare Terminal Bar Support Clips (Quantity - 5)	<b>VAT00</b>
Terminal Bar 2 Way with Two Support Clips	<b>VAT02</b>
Terminal Bar 3 Way with Two Support Clips	<b>VAT03</b>
Terminal Bar 4 Way with Two Support Clips	<b>VAT04</b>
Terminal Bar 5 Way with Two Support Clips	<b>VAT05</b>
Terminal Bar 6 Way with Two Support Clips	<b>VAT06</b>
Terminal Bar 7 Way with Two Support Clips	<b>VAT07</b>
Terminal Bar 8 Way with Two Support Clips	<b>VAT08</b>
Terminal Bar 9 Way with Two Support Clips	<b>VAT09</b>
Terminal Bar 10 Way with Two Support Clips	<b>VAT10</b>
Terminal Bar 11 Way with Two Support Clips	<b>VAT11</b>
Terminal Bar 12 Way with Two Support Clips	<b>VAT12</b>
Terminal Bar 13 Way with Two Support Clips	<b>VAT13</b>
Terminal Bar 14 Way with Two Support Clips	<b>VAT14</b>
Terminal Bar 15 Way with Two Support Clips	<b>VAT15</b>
Terminal Bar 16 Way with Two Support Clips	<b>VAT16</b>
Terminal Bar 17 Way with Two Support Clips	<b>VAT17</b>
Terminal Bar 18 Way with Two Support Clips	<b>VAT18</b>
Terminal Bar 19 Way with Two Support Clips	<b>VAT19</b>
Terminal Bar 20 Way with Two Support Clips	<b>VAT20</b>
Terminal Bar 21 Way with Two Support Clips	<b>VAT21</b>
Terminal Bar 22 Way with Two Support Clips	<b>VAT22</b>
Terminal Bar 23 Way with Two Support Clips	<b>VAT23</b>
Terminal Bar 24 Way with Two Support Clips	<b>VAT24</b>
Label Pack	<b>VAP00</b>



JK01B



VAB08



VAN00



MTN106

### MCBs

#### Characteristics:

- Protection and control of circuits against overloads and short circuits for use in domestic installations.
- Complies with BS EN 60898.
- Breaking capacity: 6kA
- B Curve
- Single Pole
- Voltage rating: 230V
- Current rating: 6 - 63A
- Connection capacity: Rigid = 25mm<sup>2</sup>, Flexible = 16mm<sup>2</sup>
- Calibration temperature: 30°C
- Electrical operations: 20,000

Description	Width (1 Mod =17.5mm)	Cat ref.
6A	1 Mod	<b>MTN106</b>
10A	1 Mod	<b>MTN110</b>
16A	1 Mod	<b>MTN116</b>
20A	1 Mod	<b>MTN120</b>
25A	1 Mod	<b>MTN125</b>
32A	1 Mod	<b>MTN132</b>
40A	1 Mod	<b>MTN140</b>
50A	1 Mod	<b>MTN150</b>
63A	1 Mod	<b>MTN163</b>



ADN120

### RCBOs

#### Characteristics:

- Protection devices which combine the overcurrent functions of an MCB with the earth fault functions of an RCCB.
- Complies with BS EN 61009, IEC 61009-2-2
- Sensitivity: 30mA
- Current rating: 6 - 45A
- Connection capacity: Rigid = 16mm<sup>2</sup>, Flexible = 10mm<sup>2</sup>
- Flying neutral lead: 200mm
- Single pole & solid neutral
- Type AC (AC Sensitive), Type A (AC & DC Sensitive)
- Operational Voltage: 127-230V AC
- Electrical operations: 1000

Description	Width (1 Mod =17.5mm)	Cat ref.
6A, 30mA, 6kA, B Curve, Type AC	1 Mod	<b>ADN106</b>
10A, 30mA, 6kA, B Curve, Type AC	1 Mod	<b>ADN110</b>
16A, 30mA, 6kA, B Curve, Type AC	1 Mod	<b>ADN116</b>
20A, 30mA, 6kA, B Curve, Type AC	1 Mod	<b>ADN120</b>
32A, 30mA, 6kA, B Curve, Type AC	1 Mod	<b>ADN132</b>
40A, 30mA, 6kA, B Curve, Type AC	1 Mod	<b>ADN140</b>
45A, 30mA, 6kA, B Curve, Type AC	1 Mod	<b>ADN145</b>
6A, 30mA, 10kA, C Curve, Type A	1 Mod	<b>ADA156U</b>
10A, 30mA, 10kA, C Curve, Type A	1 Mod	<b>ADA160U</b>
16A, 30mA, 10kA, C Curve, Type A	1 Mod	<b>ADA166U</b>
20A, 30mA, 10kA, C Curve, Type A	1 Mod	<b>ADA170U</b>
32A, 30mA, 10kA, C Curve, Type A	1 Mod	<b>ADA182U</b>



ADA156U

### Locking Kit

#### Characteristics:

- Allows MCBs, RCCBs and RCBOs to be locked in the off position.
- Will accept two padlocks with hasps of 4.75mm diameter max (supplied without padlock).

Description	Cat ref.
Padlockable locking kit for MCB, RCCB & RCBO (Padlock not included)	<b>MZN175</b>
Padlock with 2 keys 3/4"	<b>JK25A</b>



MZN175

## Surge Protection

### Characteristics

- SPD's protect electrical and electronic equipment against transients, originating from lightning, switching of transformers, lightning and motors. These transient voltages can cause premature ageing of equipment, downtime, or complete destruction of electronic components and materials. SPDs are strongly recommended on installations that are exposed to transient voltages, to protect sensitive and expensive electrical equipment such as TV, video, Hi-Fi, PC, alarm etc.
- The range of SPDs is separated into 3 types of protection:
  - 1. Main protection - class 1** - SPDs with higher discharge current ( $I_{max}$  10/350), to evacuate as much of the transient over-voltages associated with lightning strikes
  - 2. Main protection - class 2** - With a discharge current ( $I_{max}$  8/20), to evacuate as much of the transient over-voltage to earth as possible protection level ( $U_p \leq 1000V$ ).
  - 3. Main protection - class 3** - To cut-down the transient surge as low as possible to protect very sensitive equipment.

### Technical Data

- Complies with IEC61643-1.
- D Versions: end of life indicator, auxiliary contact for remote indication.
- R Versions: reserve status indicator, signalling.
- Connection Capacity (terminal blocks L, N & E): Rigid conductor: 10mm<sup>2</sup>, Flexible conductor: 6mm<sup>2</sup>.
- 230V a.c. 1A. 12V...10mA.

### Installation and Connection

- The main protection SPDs are installed directly after the main incoming switch or RCCB
- Connected in parallel to the equipment to be protected.
- Protection is assured in both common and differential modes.

### SPDs with Low Let Through Voltage Levels Type 3

- To protect very sensitive electronic equipment. This fine protection complements the main protection and can protect one or many electronic devices.
- Optimal coordination is obtained when cascaded with a main protection device.
- A green LED on the front face indicates the status of the **SP202N**, connected in series with the equipment that needs to be protected (with a maximum line current of 25A). Protection is assured in both common and differential modes.

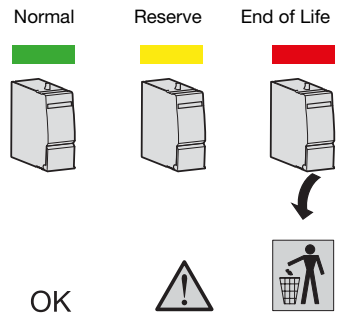
### Replacement Cartridges

- Allow simple replacement without the need to cut-off the power supply.
- Cartridges are available for all discharge currents, (40kA and 15kA) with and without condition indication.
- A keying system exists to prevent a line cartridge being interchanged by mistake with a neutral one and visa versa neutral cartridges have a discharge current of 65kA.
- For technical details see page



### Reserve Indicator Light

Neutral cartridges cannot be put into spares reserved for phase cartridges and visa versa.



## Surge Protection Devices

### Class 1 + 2 (Class 1 + 2 + 3 if less than 5m) (with lifetime indicator)

$I_n$ kA L-N	$I_n$ kA N-PE	$I_{imp}$ L-N	$I_{imp}$ N-PE	$U_p$ kV	Width (mm)	Cat ref.	Cat ref. with remote contact
-	-	12.5	25	$\leq 1.5$	35	<b>SPA201</b>	-

### Class 2 (with lifetime indicator)

5	15	-	-	$\leq 1.2$	17.5	<b>SPN115D</b>	<b>SPN115R</b>
5	15	-	-	$\leq 1.2$	35	<b>SPN215D</b>	<b>SPN215R</b>
15	40	-	-	$\leq 1.2$	35	<b>SPN240D</b>	<b>SPN240R</b>

### Class 3 (Fine Protection) (with lifetime indicator)

3	3	-	-	$\leq 1.5$	17.5	<b>SPN203N</b>	-
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### PV Applications (DC side) (with lifetime indicator)

12.5	25			$\leq 4$	52.5	<b>SPV325</b>	-
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SPN240R

## Replacement Cartridges

Description	Cat ref.
Phase replacement for <b>SPN215D</b>	<b>SPN015D</b>
Phase replacement for <b>SPN215R</b>	<b>SPN015R</b>
Phase replacement for <b>SPN240D</b>	<b>SPN040D</b>
Phase replacement for <b>SPN240R</b>	<b>SPN040R</b>
Neutral replacement for <b>SPN215D</b> , <b>SPN215R</b>	<b>SPN040N</b>

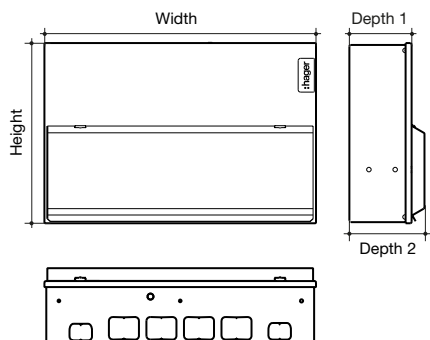


SPN040D

## Consumer Unit Kit Type 2 SPD with SPN215D (with lifetime indicator)

- Consists of: Neutral terminal bar, 3x 20mm neutral link bar 370mm, 300mm & 200mm lengths, 4mm<sup>2</sup> neutral, live & earth cables, 2 connector busbar, 4 way terminal bar, terminal bar clip, 1x Double Pole SPD's, 32A MCB

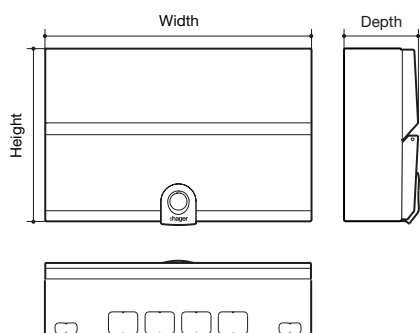
Poles	$I_n$ kA L-N	$I_n$ kA N-PE	$U_p$ kV	Width (mm)	Cat ref.
2	5	15	$\leq 1.2$	35	<b>VA02SPD</b>



### Design 10 Dimensions (mm)

	Enclosure Size					
	2	3	4	5	6	7
Height	246	246	246	246	246	246
Width	155	227	299	370	406	478
Depth 1	83	83	83	83	83	83
Depth 2	100	100	100	100	100	100

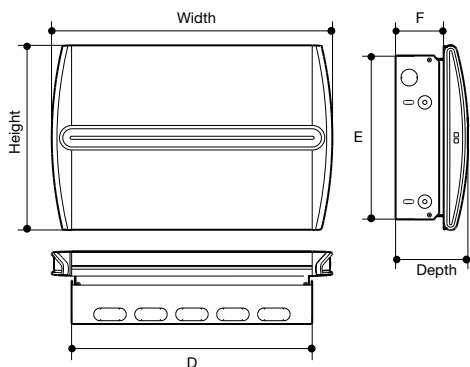
	Number of Knockouts					
	2	3	4	5	6	7
Top Face 30 x 25 (mm)	2	2	2	2	2	2
Top Face 40 x 30 (mm)	0	2	4	4	6	6
Back 100 x 50 (mm)	1	1	1	3	3	3
Bottom Face 30 x 15 (mm)	2	3	4	4	5	5



### Design 30 Dimensions (mm)

	Enclosure Size					
	2	3	4	5	6	7
Height	240	240	240	240	240	240
Width	149	221	293	364	400	472
Depth	102.5	102.5	102.5	102.5	102.5	102.5

	Number of Knockouts					
	2	3	4	5	6	7
Top Face 30 x 25 (mm)	2	2	2	2	2	2
Top Face 40 x 30 (mm)	0	2	4	4	6	6
Back 100 x 50 (mm)	1	1	1	3	3	3
Bottom Face 30 x 15 (mm)	2	3	4	4	5	5

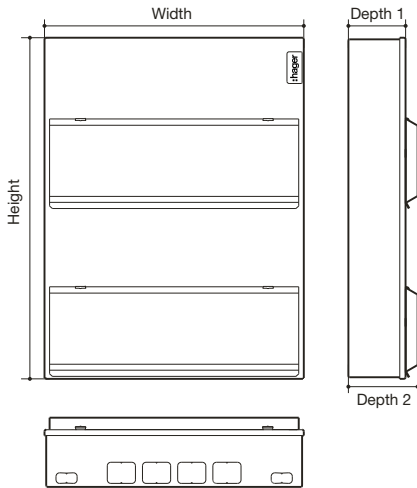


### Design 50 Dimensions (mm)

	Enclosure Size			
	4	5	6	7
Height	284	284	284	284
Width	359	431	467	539
Depth	105	105	105	105
D	298	370	406	478
E	252	252	252	252
F	72	72	72	72

#### Adjustable Depth Base

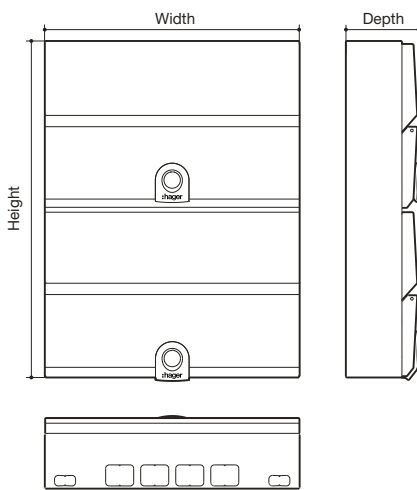
The base assembly is adjustable from 72mm to 92mm. At 72mm this allows for a 60mm studwork and 12mm of plasterboard.



Dual Row Design 10 Dimensions (mm)

	Enclosure Size				
	3 (2)	4 (2)	5 (2)	6 (2)	7 (2)
Height	486	486	486	486	486
Width	227	299	370	406	478
Depth 1	83	83	83	83	83
Depth 2	100	100	100	100	100

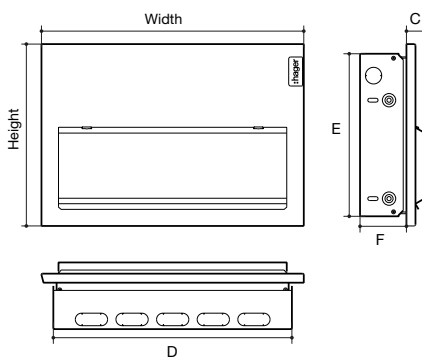
	Number of Knockouts				
	3 (2)	4 (2)	5 (2)	6 (2)	7 (2)
Top Face 30 x 25 (mm)	2	2	2	2	2
Top Face 40 x 30 (mm)	2	4	4	6	6
Back 100 x 50 (mm)	2	2	6	6	6
Bottom Face 30 x 25 (mm)	3	4	4	5	5



Dual Row Design 30 Dimensions (mm)

	Enclosure Size				
	3 (2)	4 (2)	5 (2)	6 (2)	7 (2)
Height	480	480	480	480	480
Width	221	293	364	400	472
Depth	102.5	102.5	102.5	102.5	102.5

	Number of Knockouts				
	3 (2)	4 (2)	5 (2)	6 (2)	7 (2)
Top Face 30 x 25 (mm)	2	2	2	2	2
Top Face 40 x 30 (mm)	2	4	4	6	6
Back 100 x 50 (mm)	2	2	6	6	6
Bottom Face 30 x 25 (mm)	3	4	4	5	5



Flush Design 10 Dimensions (mm)

	Enclosure Size			
	4	5	6	7
Height	282	282	282	282
Width	335	407	443	515
C	32	32	32	32
D	298	370	406	478
E	252	252	252	252
F	72	72	72	72

	Number of Knockouts			
	4	5	6	7
Top Face 50 x 20 (mm)	4	5	6	7
Bottom Face 50 x 20 (mm)	4	5	6	7
Back 100 x 50 (mm)	2	2	2	3
Left Face 20.8 (mm)	1	1	1	1

### Torque Settings

	Pz No.	(mm)	Cables >1.5mm <sup>2</sup> Tightening torque (N.m)		Cables ≤1.5mm <sup>2</sup> Tightening torque (N.m)		Cable Stripping (mm)
			Single Cable	Multi Cables	Single Cable	Multi Cable	
<b>Consumer unit terminals</b>							
Earth and neutral terminal bars	2	6.5	2	2	1.5	1.5	10
<b>Isolation</b>							
SB switch disconnectors	2	6.5	3.6	3.6	3.6	3.6	15
<b>Circuit protection</b>							
MTN MCB	2	6.5	2.8	2.8	2.8	2.8	13
NBN/NCN/NDN MCB	2	6.5	2.8	2.8	2.8	2.8	13
RCBO	2	5.5	2.1	2.1	2.1	2.1	13
RCCB	2	5.5	2.8	2.8	2.8	2.8	13

### MTN Electrical Characteristics.

Poles	Rated Operational Voltage U <sub>e</sub> (V)	Nominal Current	Breaking Capacity (I <sub>cn</sub> ) to BS EN 60898	Breaking Capacity (I <sub>cs</sub> ) to BS EN 60898	Rated Insulation Voltage U <sub>i</sub> (V)	Rated Impulse Voltage U <sub>imp</sub> (kV)	Electrical Endurance	Connection of Auxiliaries
Single Pole	230	6 - 63A	6kA	6kA	500V	4kV	10,000 cycles	No

### Power Loss

The power loss of MCB's is closely controlled by the standards and is calculated on the basis of the voltage drop across the main terminals measured at rated current. The power loss of hager circuit breakers is very much lower than that required by the British Standard, so in consequences run cooler and are less affected when mounted together.

The table below gives the watts loss per pole at rated current.

MCB Rated current (A)	0.5	1	2	3	4	6	10	13	16	20	25	32	40	50	63
Watts loss per pole	1.2	1.3	1.5	2.0	1.8	1.4	1.9	2.1	2.5	2.8	3.2	3.8	4.0	4.5	5.1



**Connection**

The circuit breaker can have the line/load connected to either the top or bottom terminals

**Temperature Derating**

MCBs are designed and calibrated to carry their rated current and to operate within their designated thermal time/current zone at 30°C. Testing is carried out with the breaker mounted singly in a vertical plane in a controlled environment. Therefore if the circuit breaker is required to operate in conditions which differ from the reference conditions, certain factors have to be applied to the standard data.

<b>I<sub>n</sub> (A)</b>	<b>-25°C</b>	<b>-20°C</b>	<b>-15°C</b>	<b>-10°C</b>	<b>-5°C</b>	<b>0°C</b>	<b>5°C</b>	<b>10°C</b>	<b>15°C</b>	<b>20°C</b>	<b>25°C</b>	<b>30°C</b>	<b>35°C</b>	<b>40°C</b>	<b>45°C</b>	<b>50°C</b>	<b>55°C</b>	<b>60°C</b>
6	8.64	8.4	8.16	7.92	7.68	7.44	7.2	6.96	6.72	6.48	6.24	6	5.76	5.52	5.28	5.04	4.8	4.56
10	14.4	14	13.6	13.2	12.8	12.4	12	11.6	11.2	10.8	10.4	10	9.6	9.2	8.8	8.4	8	7.6
16	23	22.4	21.8	21.1	20.5	19.8	19.2	18.6	17.9	17.3	16.6	16	15.4	14.7	14.1	13.4	12.8	12.2
20	28.8	28	27.2	26.4	25.6	24.8	24	23.2	22.4	21.6	20.8	20	19.2	18.4	17.6	16.8	16	15.2
25	36	35	34	33	32	31	30	29	28	27	26	25	24	23	22	21	20	19
32	46.1	44.8	43.5	42.2	41	39.7	38.4	37.1	35.8	34.6	33.3	32	30.7	29.4	28.2	26.9	25.6	24.3
40	57.6	56	54.4	52.8	51.2	49.6	48	46.4	44.8	43.2	41.6	40	38.4	36.8	35.2	33.6	32	30.4
50	-	-	-	-	-	62	60	58	56	54	52	50	48	46	44	42	40	38
63	-	-	-	-	-	-	-	-	-	-	-	63	60.5	58	55.4	52.9	50.4	47.9

### SPA201 Technical Characteristics

		SPA201
Tested to		EN 61643-11 2002-12
SPD type / class		Type 1 + Type 2 / Class I
Energy-coordinated protection effect on terminal equipment		Type 1 + Type 2
Energy-coordinated protection effect on terminalequipment ≤ 5 m		Type 1 + Type 2 + Type 3
Type of connection		Parallel connection
Type of power supply system		TT / TN system
Type of protection		common and differential modes
Nominal voltage	$U_N$	230V/400V ac
Rated voltage	$U_C$	255V ac
Voltage protection level	$U_p$	≤ 1.5kV
TOV Voltage	$U_T$	440V / 5s 1200V / 200ms
Rated load current	I(L)	n/a
	I(L-L)	n/a
Follow current interrupting rating	$I_{fi}$	25kA rms 100A rms
Nominal discharge current (8/20)	$I_n$	12.5kA 25kA
	$I_{imp}$	12.5kA 25kA
Max. rating of overcurrent protection	fuse	160A gL / gG
	MCCB	n/a
Short-circuit withstand capability with max. overcurrent protection	fuse	25kA rms
	MCB	n/a
Response time	$t_A$	≤ 100ns
Operating temperature range		- 40°C ....+ 80°C
Indication of SPD disconnecter		Green/Red flag on L and N
Cross sectional area	min	1,5mm <sup>2</sup> solid / flexible
	max	35mm <sup>2</sup> stranded / 25mm <sup>2</sup> flexible
Tightening torque for terminals		4 Nm
Mounting on		35mm DIN rail in accordance with EN 60715
Enclosure material		grey thermoplastic, UL 94V-0
Degree of protection		IP20
Modular width		2
Weight		275 g
Approval marking		KEMA

### SPN215D/R Technical Characteristics

		SPN215D/R
Tested to		EN 61643-11 (VDE0675-6-11) 2002-12
SPD type		Type 2 according to EN 61643-11
SPD class		Class II according to IEC 61643-1
Type of connection		Parallel connection
Maximum continuous operating voltage $U_C$	Line / Neutral	≤ 255V
	Neutral/ PE	≤ 275V
Voltage protection level	$U_p$	≤ 1kV
Nominal discharge current (8/20 μs) [(DC+/DC-) --> PE]	$I_n$	5kA
Max. discharge current (8/20 μs) [(DC+/DC-) --> PE]	$I_{max}$	15kA
Short-circuit withstand capability with max. overcurrent protection		10kA - 32A
Operating temperature range		- 40°C ....+ 80°C
Indication of SPD disconnecter		Green - Yellow - Red
Cross sectional area	min	1,5mm <sup>2</sup> solid / flexible
	max	35mm <sup>2</sup> multi-stranded / 25mm <sup>2</sup> flexible
Tightening torque for terminals		4.0 Nm
Mounting on		35mm DIN rail in accordance with EN 60715
Enclosure material		grey thermoplastic, UL 94V-0
Degree of protection		IP20
Modular width (DIN 43880)		2
Auiliary contact. Voltage/ nominal current (only applicable on the R suffix products)		230V/ 0.5A 12Vdc 10mA

### SPV325 Technical Characteristics

		SPV325
Tested to		EN 61643-11 (VDE0675-6-11) 2002-12
SPD type		Type 2 according to EN 61643-11
SPD class		Class II according to IEC 61643-1
Type of connection		Parallel connection
Maximum continuous operating voltage	$U_{cPV}$	$\leq 1000V$
Voltage protection level	$U_p$	$\leq 4kV$
Voltage protection level for 5kA	$U_p$	$\leq 3,5kV$
Total discharge current (8/20 $\mu s$ )	$I_{total}$	40kA
Nominal discharge current (8/20 $\mu s$ ) [(DC+/DC-) --> PE]	$I_n$	12.5kA
Max. discharge current (8/20 $\mu s$ ) [(DC+/DC-) --> PE]	$I_{max}$	25kA
Short-circuit withstand capability with max. overcurrent protection	$I_{scwPV}$	50 A / 1000 V DC
Response time	$t_A$	$\leq 25ns$
Operating temperature range		- 40°C ....+ 80°C
Indication of SPD disconnecter		green - red
Cross sectional area	min	1.5mm <sup>2</sup> solid / flexible
	max	35mm <sup>2</sup> multi-stranded / 25mm <sup>2</sup> flexible
Tightening torque for terminals		4.0 Nm
Mounting on		35mm DIN rail in accordance with EN 60715
Enclosure material		Grey thermoplastic, UL 94V-0
Degree of protection		IP20
Installation width		3 modules, DIN 43880
Weight		316g

### SP202N Technical Characteristics

		SP202N
Tested to		EN 61643-11 (VDE0675-6-11) 2007-08
SPD type / class		T3 / III
Ports		one port
Type of connection		Parallel connection
Type of power supply system		TT / TN system
Nominal voltage	$U_N$	230V ac
Rated voltage	$U_c$	255V ac
Voltage protection level (L - N)	$U_p$	$\leq 1.25kV$
Voltage protection level (L/N - PE)	$U_p$	$\leq 1.5kV$
TOV - Characteristic (L - N)	$U_T$	335V / 5s
TOV - Characteristic (L/N - PE) (I)	$U_T$	400V / 5s
TOV - Characteristic (L/N - PE) (II)	$U_T$	1200V / 200 ms
Rated load current	$I_L$	16 Aeff
Nominal discharge current (8/20)	$I_n$	3kA
Maximal discharge current (8/20)	$I_{max}$	5kA
Combination wave (1,2/50 - 8/20) (L - N)	$U_{oc}$	6 kV
Combination wave (1,2/50 - 8/20) (L/N - PE)	$U_{oc}$	10 kV
Residual current	IPE	$\leq 5\mu A$
Replacement cartridge		NO
Maximal rating of overcurrent protection	fuse	16 A gL / gG
	MCB	16A B curve
Short-circuit withstand capability with max. overcurrent protection	fuse	6kA eff ac
	MCB	1kA eff ac
Response time	$t_A$	$\leq 25ns$
Operating temperature range		- 25°C ....+ 40°C
Indication of SPD disconnecter		NO
Remote signalisation contact		Green light off
Cross sectional area	min	1.5mm <sup>2</sup> solid / flexible
	max	10mm <sup>2</sup> stranded / 6mm <sup>2</sup> flexible
Tightening torque for terminals		1.2 Nm
Mounting on		35mm DIN rail in accordance with EN 60715
Enclosure material		Grey thermoplastic, UL 94V-2
Degree of protection		IP20
Installation width		2 modules, DIN 43880

# Wiring Accessories

Our innovative range of Sollysta wiring accessories, include decorative, IP66, Metalclad and USB connectivity. Connect wires securely with our Junction Boxes and dazzle from up high with our range of ceiling accessories. All that's left to do is connect, plug-in and go.



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**Sollysta**

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**Junction Boxes**

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**Ceiling Accessories**

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WMPS11

## Wall Switches

### Characteristics:

- Unique patented loop terminal allows neutral looping at the switch.
- Complies with BS EN 60669-1, a.c only.
- 'X' rated - No need to derate for fluorescent loads.
- Clear terminal markings: 1-way L1, 2-way L2
- Capacity of each terminal - 2 x 4.0mm<sup>2</sup> conductors.
- For mounting boxes see selection chart on page 5.43.
- For multigang switches use of a 25mm mounting box will provide increased wiring space.
- Supplied with M3.5 x 20mm long fixing screws.

### Description

### Cat ref.

#### 10AX Wall Switches

1 Gang 1 Way	<b>WMPS11</b>
1 Gang 1 Way Printed 'Fan'	<b>WMPS11/FAN</b>
1 Gang 2 Way	<b>WMPS12</b>
2 Gang 2 Way	<b>WMPS22</b>
3 Gang 2 Way	<b>WMPS32</b>
4 Gang 2 Way	<b>WMPS42</b>
6 Gang 2 Way	<b>WMPS62</b>
1 Gang 2 Way Wide Rocker	<b>WMPS12W</b>
2 Gang 2 Way Wide Rocker	<b>WMPS22W</b>



WMPS16

## Intermediate Switches

### Characteristics:

- Unique patented loop terminal allows neutral looping at the switch.
- Complies with BS EN 60669-1, a.c only.
- 'X' rated - No need to derate for fluorescent loads.
- Clear terminal markings: 1-way L1, 2-way L2
- Capacity of each terminal - 2 x 4.0mm<sup>2</sup> conductors.
- For mounting boxes see selection chart on page 5.43.
- For multigang switches use of a 25mm mounting box will provide increased wiring space.
- Supplied with M3.5 x 20mm long fixing screws.

### Description

### Cat ref.

Intermediate Switch

**WMPS16**



WMPS12W

## Push Switches

### Characteristics:

- Unique patented loop terminal allows neutral looping at the switch.
- Complies with BS EN 60669-1, a.c only.
- 'X' rated - No need to derate for fluorescent loads.
- Clear terminal markings: 1-way L1, 2-way L2
- Capacity of each terminal - 2 x 4.0mm<sup>2</sup> conductors.
- For mounting boxes see selection chart on page 5.43.
- For multigang switches use of a 25mm mounting box will provide increased wiring space.
- Supplied with M3.5 x 20mm long fixing screws.

### Description

### Cat ref.

#### Push Switches

With Retractive Switch	<b>WMPS12R</b>
With Bell Symbol	<b>WMPS12RB</b>
With Wide Rocker	<b>WMPS12RW</b>

## Push Button Dimmer Switches

### Characteristics:

- Stylish flush button with quick press for on/off and hold button down to dim or brighten light level.
- Leading edge.
- Soft start feature prolongs lamp life.
- Suitable for dimming mains and dimmable transformer extra low voltage lamps.
- Complies with BS EN 60669-2-1 (including BS EN 55015).
- Automatic switch off in event of transformer instability, protects the dimmer and the transformer.
- Supplied with M3.5 x 30mm long fixing screws.



WMDS1

Description	Cat ref.
<b>Push Button Dimmer Switches</b>	
1 Gang 400W	<b>WMDS1</b>
2 Gang 250W	<b>WMDS2</b>
3 Gang 250W	<b>WMDS3</b>
4 Gang 250W	<b>WMDS4</b>
Resistive Load for LED Applications	<b>WMRESLOAD</b>

## Rotary Push Button Dimmer Switches

### Characteristics:

- Quick press for on/off with rotary dimming control.
- 1 or 2 way switching.
- Supplied with M3.5 x 30mm long fixing screws.
- Suitable for mains halogen lamps without the need for derating.
- Not suitable for fluorescent, LED or inductive loads.
- Complies with BS EN 60669-2-1 (excluding clause 26 EMC requirements).



WMDR1/400R

Description	Cat ref.
<b>Rotary Push Button Dimmer Switches</b>	
1 Gang 400W	<b>WMDR1/400R</b>
2 Gang 250W	<b>WMDR2/250R</b>

## Isolator Switches

### Characteristics:

- Complies with BS EN 60669-2-4
- Rated conditional short circuit current ( $I_{nc}$ ) 1500A tested with Hager **MTN110** 6kA B curve MCB.
- Capacity of each terminal 2 x 4.0mm<sup>2</sup> conductors.
- For mounting boxes see selection chart on page 5.43.
- Supplied with M3.5 x 20mm long fixing screws.



WMPS3PIF

Description	Cat ref.
<b>3 Pole Isolator Switches</b>	
Isolator Switch	<b>WMPS3PI</b>
Isolator Switch with Fan Symbol	<b>WMPS3PIF</b>



WMSS82



WMS51



WMSS82USB

## Switched & Unswitched Socket Outlets (13A)

### Characteristics:

- Unique patented three part safety shutter.
- Complies with BS 1363-2, a.c only.
- Double pole switching mechanism on switched sockets.
- Twin socket comes with twin earth as standard.
- All terminal screws grouped in-line and upward facing for ease of installation.
- Clear printed and engraved terminal markings.
- Capacity of each terminal: 5 x 2.5mm<sup>2</sup> conductors switched; 4 x 2.5mm<sup>2</sup> unswitched (for other sized conductors see terminal capacities on page 5.44).
- **WMSS82USB(S) - Warning:** To avoid possible damage to the product or spurious insulation readings, please disconnect the product before carrying out insulation resistance testing.
- For mounting boxes see selection chart on page 5.43.
- Supplied with M3.5 x 30mm long fixing screws.

Description	Cat ref.
<b>Switched Socket Outlets</b>	
13A 1 Gang Double Pole	<b>WMSS81</b>
13A 2 Gang Double Pole Dual Earth	<b>WMSS82</b>
13A 2 Gang Double Pole Dual Earth & Two USB Ports	<b>WMSS82USB</b>
13A 2 Gang Double Pole Dual Earth & Two USB Ports & 10mm Spacer	<b>WMSS82USBS</b>
10mm Spacer for 2 Gang Sockets	<b>WMUSBS</b>
13A 2 Gang Double Pole Dual Earth Outboard Rockers	<b>WMSS82O</b>
13A 1 Gang Double Pole with LED Indicator	<b>WMSS81N</b>
13A 2 Gang Double Pole Dual Earth with LED Indicator	<b>WMSS82N</b>
13A 2 Gang Double Pole Dual Earth Outboard Rockers & LED Indicator	<b>WMSS82ON</b>
15A 1 Gang	<b>WMSS115</b>
<b>Unswitched Socket Outlets</b>	
13A 1 Gang	<b>WMS81</b>
13A 2 Gang Dual Earth	<b>WMS82</b>
5A 1 Gang	<b>WMS51</b>



WMCC50



WMCC50N

## Cooker Control Unit

### Characteristics:

- Complies with BS 4177.
- Switch and socket are double pole.
- Twin earth as standard.
- Main switch is suitable for isolation.
- All terminals are upward facing for ease of installation.
- Clearly printed terminal marking.
- Capacity of terminals: 2 x 6.0mm<sup>2</sup>, 1 x 16.0mm<sup>2</sup>.
- For mounting boxes see selection chart on page 5.43.
- Supplied with M3.5 x 30mm long fixing screws.

Description	Cat ref.
45A Cooker Control Unit	<b>WMCC50</b>
45A Cooker Control Unit with LED Indicator	<b>WMCC50N</b>

## Outlet Plates

### Characteristics:

- Complies with BS 5733
- Terminal capacity: 20A 2 x 6.0mm<sup>2</sup>, 45A 2 x 10.0mm<sup>2</sup> conductors
- 20A plate features 2 separate terminals for each of Line, Neutral and Earth so flexible and fixed wiring do not occupy the same terminal.
- Single screw fast fix cable clamp.
- Supplied with M3.5 x 30mm long fixing screws.
- 45A features large open brass terminals for ease of installation.
- Protective red washer must be used under cable clamp to prevent damage to cable.



WMP2FO

Description	Cat ref.
<b>Outlet Plates</b>	
20A Flex Outlet Plate	<b>WMP2FO</b>
45A Cooker Cable Outlet with Terminals	<b>WMP50FO</b>



## Unswitched & Switched Fused Connection Units (13A)

### Characteristics:

- Complies with BS 1363-4.
- Single screw fast fix cable clamp, accommodates up to 1.5mm<sup>2</sup> flexible cord.
- All terminals are upward facing with clearly printed terminal markings for ease of installation.
- Capacity of each terminal 2 x 6.0mm<sup>2</sup> conductors.
- Supplied with M3.5 x 30mm long fixing screws.
- For mounting boxes see selection chart on page 5.43.
- We also offer a bespoke printing service for your individual requirements. Please contact our Estimation Team on 01952 675594 for further details.



WMSSU83

Description	Cat ref.
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### 13A Unswitched Fused Connection Units

FCU	WMSU83
With Flex Outlet	WMSU83FO

### 13A Switched Fused Connection Units

FCU	WMSSU83
FCU With Flex Outlet	WMSSU83FO
FCU With LED Indicator	WMSSU83N
FCU With LED Indicator & Flex Outlet	WMSSU83FON
FCU With 3A Fuse	WMSSU83/3A



WMSSU83N

### 13A Switched Fused Connection Units - Printed Text

Printed 'Boiler'	WMSSU83/BO
Printed 'Central Heating'	WMSSU83/CTLHTG
Printed 'Dishwasher'	WMSSU83/DW
Printed 'Extract Fan'	WMSSU83/EF
Printed 'Fan'	WMSSU83/FAN
Printed 'Fridge Freezer'	WMSSU83/FF
Printed 'Freezer'	WMSSU83/FRE
Printed 'Fridge'	WMSSU83/FRI
Printed 'Heating'	WMSSU83/HTG
Printed 'Heater'	WMSSU83/HTR
Printed 'Shower Pump'	WMSSU83/SHWRPUMP
Printed 'Socket Below'	WMSSU83/SKTBELOW
Printed 'Tumble Dryer'	WMSSU83/TD
Printed 'Washing Machine'	WMSSU83/MM

### 13A Switched Fused Connection Units with Flex Outlet - Printed Text

Printed 'Boiler'	WMSSU83FO/BO
Printed 'Dishwasher'	WMSSU83FO/DW
Printed 'Extractor Fan'	WMSSU83FO/EF
Printed 'Fridge Freezer'	WMSSU83FO/FF
Printed 'Freezer'	WMSSU83FO/FRE
Printed 'Fridge'	WMSSU83FO/FRI
Printed 'Heating'	WMSSU83FO/HTG
Printed 'Heater'	WMSSU83FO/HTR
Printed 'Tumble Dryer'	WMSSU83FO/TD
Printed 'Washing Machine'	WMSSU83FO/MM

### 13A Switched Fused Connection Units with LED Indicator & Flex Outlet - Printed Text

Printed 'Boiler'	WMSSU83FON/BO
Printed 'Dishwasher'	WMSSU83FON/DW
Printed 'Extractor Fan'	WMSSU83FON/EF
Printed 'Fan'	WMSSU83FON/FAN
Printed 'Freezer'	WMSSU83FON/FRE
Printed 'Fridge'	WMSSU83FON/FRI
Printed 'Hob'	WMSSU83FON/HB
Printed 'Heating'	WMSSU83FON/HTG
Printed 'Tumbledryer'	WMSSU83FON/TD
Printed 'Washing Machine'	WMSSU83FON/MM

Continued overleaf

### Unswitched & Switched Fused Connection Units (13A) - Continued

#### Characteristics:

- Complies with BS 1363-4.
- Single screw fast fix cable clamp accommodates up to 1.5mm<sup>2</sup> flexible cord.
- All terminals are upward facing with clearly printed terminal markings for ease of installation.
- Capacity of each terminal 2 x 6.0 mm<sup>2</sup> conductors.
- For mounting boxes see selection chart on page 5.43.
- Supplied with M3.5 x 30mm long fixing screws.
- We also offer a bespoke printing service for your individual requirements. Please contact our Estimation Team on 01952 675594 for further details.

Description	Cat ref.
<b>13A Switched Fused Connection Units with LED Indicator - Printed Text</b>	
Printed 'Boiler'	WMSSU83N/BO
Printed 'Dishwasher'	WMSSU83N/DW
Printed 'Extractor Fan'	WMSSU83N/EF
Printed 'Fan'	WMSSU83N/FAN
Printed 'Freezer'	WMSSU83N/FRE
Printed 'Fridge'	WMSSU83N/FRI
Printed 'Hob'	WMSSU83N/HB
Printed 'Heating'	WMSSU83N/HTG
Printed 'Tumble Dryer'	WMSSU83N/TD
Printed 'Washing Machine'	WMSSU83N/WM



WMDP84FON

### Double Pole Switches (20A)

#### Characteristics:

- Complies with BS EN 60669-1, a.c. only.
- Single screw fast fix cable clamp, accommodates up to 1.5mm<sup>2</sup> flexible cord.
- All terminals are upward facing with clearly printed terminal markings for ease of installation.
- Capacity of each terminal 2 x 6.0mm<sup>2</sup> conductors.
- For mounting boxes see selection chart on page 5.43.
- Supplied with M3.5 x 30mm long fixing screws.
- We also offer a bespoke printing service for your individual requirements. Please contact our Estimation Team on 01952 675594 for further details.

Description	Cat ref.
<b>20A Double Pole Switches</b>	
20A Double Pole Switch	WMDP84
With Flex Outlet	WMDP84FO
With LED Indicator	WMDP84N
With LED Indicator & Flex Outlet	WMDP84FON
<b>20A Double Pole Switched - Printed Text</b>	
Printed 'Dishwasher'	WMDP84DW
Printed 'Freezer'	WMDP84/FRE
Printed 'Fridge'	WMDP84/FRI
Printed 'Tumble Dryer'	WMDP84/TD
Printed 'Washing Machine'	WMDP84/WM
<b>20A Double Pole Switches with Flex Outlet - Printed Text</b>	
Printed 'Freezer'	WMDP84FO/FRE
Printed 'Fridge'	WMDP84FO/FRI
Printed 'Tumble Dryer'	WMDP84FO/TD
Printed 'Washing Machine'	WMDP84FO/WM

## Double Pole Switches (20A) (Continued)

### 20A Double Pole Switches with LED Indicator & Flex Outlet - Printed Text

Printed 'Dishwasher'	<b>WMDP84FON/DW</b>
Printed 'Fan'	<b>WMDP84FON/FAN</b>
Printed 'Freezer'	<b>WMDP84FON/FRE</b>
Printed 'Fridge'	<b>WMDP84FON/FRI</b>
Printed 'Tumble Dryer'	<b>WMDP84FON/TD</b>
Printed 'Washing Machine'	<b>WMDP84FON/WM</b>
Printed 'Waterheater'	<b>WMDP85FON</b>



WMDP85N

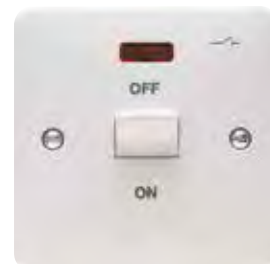
### 20A Double Pole Switches with LED Indicator - Printed Text

Printed 'Dishwasher'	<b>WMDP84N/DW</b>
Printed 'Fan'	<b>WMDP84N/FAN</b>
Printed 'Freezer'	<b>WMDP84N/FRE</b>
Printed 'Fridge'	<b>WMDP84N/FRI</b>
Printed 'Tumble Dryer'	<b>WMDP84N/TD</b>
Printed 'Washing Machine'	<b>WMDP84N/WM</b>
Printed 'Waterheater'	<b>WMDP85N</b>

## Double Pole Switches (50A)

### Characteristics:

- Complies with BS EN 60669-2-4.
- Rated conditional short circuit current ( $I_{nc}$ ) 1500A tested with Hager **MTN150** 6kA B curve MCB.
- All terminal screws upward facing for ease of installation.
- Clearly printed terminal marking.
- Capacity of each terminal: 2 x 6mm<sup>2</sup>, 1 x 10mm<sup>2</sup>.
- For mounting boxes see selection chart on page 5.43.
- Supplied with M3.5 x 30mm long fixing screws.
- We also offer a bespoke printing service for your individual requirements. Please contact our Estimation Team on 01952 675594 for further details.



WMDP50N

Description	Cat ref.
<b>50A Double Pole Switches</b>	
With LED Indicator (1 Gang)	<b>WMDP50N</b>
Vertical with LED Indicator (2 Gang)	<b>WMDP50VN</b>

### 50A Double Pole Switches with LED Indicator - Printed Text

Printed 'Cooker'	<b>WMDP50N/CK</b>
Printed 'Hob'	<b>WMDP50N/HB</b>
Printed 'Oven'	<b>WMDP50N/OV</b>
Printed 'Shower'	<b>WMDP50N/SH</b>

### 50A Double Pole Vertical Switches with LED Indicator - Printed Text

Printed 'Cooker' (2 Gang)	<b>WMDP50VN/CK</b>
Printed 'Hob' (2 Gang)	<b>WMDP50VN/HB</b>
Printed 'Oven' (2 Gang)	<b>WMDP50VN/OV</b>



WMSO100

### Shaver Socket

#### Characteristics:

- Complies with BS EN 61558-2-5.
- Capacity of each terminal 2 x 2.5mm<sup>2</sup> conductors.
- Designed for use in bathrooms and shower rooms and incorporates a double wound transformer for an earth free supply.
- Designed to supply electric shavers, toothbrushes, and similar appliances rated 50 VA or less.
- Input 230V a.c. output dual voltage 230V a.c. and 115V a.c. outlets. Rating 20VA on either voltage.
- Primary circuit protected by a self resetting thermal overload device.
- Insertion of shaver plug automatically switches on the transformer.
- Supplied with M3.5 x 30mm long fixing screws.

Description	Cat ref.
Shaver Socket 115/230 Volt	<b>WMSO100</b>



WMBTM

### Telephone & Data

#### Characteristics:

- BT sockets comply with BS 6312-2.
- Supplied with fitted cable tie.
- Quick connection with insulation displacement terminals.
- **WMRJ11** has tool-less quick connect terminals.
- Clearly printed terminal marking.
- Supplied with M3.5 x 20mm long fixing screws.

Description	Cat ref.
<b>Telephone &amp; Data</b>	
BT Master Telephone Outlet	<b>WMBTM</b>
BT Secondary Telephone Outlet	<b>WMBTS</b>
RJ11 Socket	<b>WMRJ11</b>
RJ45 Socket	<b>WMRJ45</b>
IDC Tools (bag of 10)	<b>IDCTOOL</b>



WMQX

### TV & Satellite

#### Characteristics:

- TV outlets comply with BS 3041.
- Satellite outlets comply with BS EN 50083-2.
- Fully screened.
- DAB compatible.
- Supplied with M3.5 x 20mm fixing screws.

Description	Cat ref.
<b>TV &amp; Satellite</b>	
Single F Type Satellite Outlet Screened	<b>WMSAT</b>
Single Co-Ax TV Socket Outlet Male	<b>WMTVM</b>
Single Co-Ax TV Socket Outlet Female	<b>WMTVF</b>
Double TV & FM/DAB Co-Ax Socket Outlet	<b>WMDX</b>
Triplexer TV, FM/DAB & Satellite Outlet	<b>WMTX</b>
Quadplexer TV, FM/DAB, Satellite 1 & Satellite 2 Outlet	<b>WMQX</b>



XH9001

### Hotel Key Card Switch

#### Characteristics:

- Includes indicator light to aid locating which is switched off when the card is inserted.
- Complies with BS EN 60669-1.
- Supplied with M3.5 x 25mm long fixing screws.

Description	Quantity	Cat ref.
Key Tag Switch with Key Card (time delay 60s)	5	<b>XH9001</b>

## Euro Style Accommodation Plates

### Characteristics:

- Carrier plates facilitate installation of industry standard modules.
- Easy to configure for all applications.
- Robust retention of modules in operation.
- Quick release of modules for maintenance.

Description	Cat ref.
<b>Euro Style Accommodation Plates</b>	
1 Module	<b>WMP1EU</b>
2 Modules	<b>WMP2EU</b>
4 Modules	<b>WMP4EU</b>



WMP2EU

## Euro Style Modules

### Characteristics:

- Please note: these euro modules are industry standard units and are not colour matched to Sollysta plates.

Description	Mod Width	Cat ref. (White)	Cat ref. (Black)
<b>Euro Style Modules</b>			
BT Telephone Master	1	<b>WMMBTM</b>	<b>WMMBTMB</b>
BT Telephone Secondary	1	<b>WMMBTS</b>	<b>WMMBTSB</b>
RJ11 - Modem	1	<b>WMMRJ11</b>	<b>WMMRJ11B</b>
RJ45 - Cat 6 UTP	1	<b>WMMRJ45</b>	<b>WMMRJ45B</b>
Phono Plugs - Red/Black - Gold Plated	1	<b>WMMPP</b>	-
Speaker Terminal Posts - Gold Plated	1	<b>WMMSP</b>	-
Single IEC Female Non Isolated	1	<b>WMMTVF</b>	<b>WMMTVFB</b>
Single IEC Male Non Isolated	1	<b>WMMTVM</b>	<b>WMMTVMB</b>
Single Satellite F Connector	1	<b>WMSAT</b>	<b>WMSATB</b>
Single Blank	1	<b>WMMB</b>	<b>WMMBB</b>
PIR Occupancy Sensor 5m	1	<b>WMMPIR05X</b>	-
PIR Occupancy Sensor 10m	1	<b>WMMPIR10X</b>	-
HDMI	2	<b>WMMHDMI</b>	<b>WMMHDMIB</b>
USB with Twin USB	2	<b>WMMUSB</b>	<b>WMMUSBB</b>
Diplexer - TV & FM Radio	2	<b>WMMDX</b>	<b>WMMDXB</b>
Triplexer - TV, Satellite & FM Radio	2	<b>WMMTX</b>	<b>WMMTXB</b>
Quadplexer - TV, Satellite, FM Radio & Return	2	<b>WMMQX</b>	<b>WMMQXB</b>



WMMBTM

WMSAT



WMMQXB



WMCS11

## Light Switches

### Characteristics:

- Complies with BS EN 60669-1.
- 'X' rated - no need to de-rate for fluorescent loads.
- Earth terminal in base.
- Switch will operate at up to an angle of 45°.
- Pull cords 1.5m long.
- Capacity of each terminal: 2 x 1.5mm<sup>2</sup> conductors.

Description

Cat ref.

### 6A Ceiling Switch

1 Way

**WMCS11**

2 Way

**WMCS12**



WMCS3PIF

## Fan Isolator Switches

### Characteristics:

- Complies with BS EN 60669-2-4.
- Terminal capacity: 3 x 1.5mm<sup>2</sup>.
- Supplied with M3.5 x 30mm long fixing screws.

Description

Cat ref.

### 10A 3 Pole Ceiling Switch

Printed with Fan Symbol & 'Isolator'

**WMCS3PIF**

Printed 'Isolator'

**WMCS3PI**

Printed with Fan Symbol

**WMCS3PF**



WMCS50N

## Shower Switches

### Characteristics:

- Complies with BS EN 60669-2-4.
- Rated conditional short circuit current ( $I_{nc}$ ) 1500A tested with Hager **MTN150** 6kA B Curve MCB.
- Suitable for use with showers up to 11.5kW.
- Position of the contacts shown by flag indicator.
- Supplied with M3.5 x 30mm fixing screws.
- Capacity of each terminal: 1 x 16mm<sup>2</sup> conductors.

Description

Cat ref.

50A 2 Pole Isolating with LED Indicator

**WMCS50N**

## Accessories for Ceiling Switches

Description

Cat ref.

Single Spare Pull Cord

**PULLCORD**

## Grid Plates

Description	Cat ref.
<b>Grid Plates</b>	
1 Gang	<b>WMGP1</b>
2 Gang	<b>WMGP2</b>
3 Gang	<b>WMGP3</b>
4 Gang	<b>WMGP4</b>
6 (2 x 3) Gang	<b>WMGP6</b>
8 (2 x 4) Gang Grid Plate	<b>WMGP8</b>
1 Gang Grid Plate Grey	<b>WMGP1G</b>
2 Gang Grid Plate Grey	<b>WMGP2G</b>
3 Gang Grid Plate Grey	<b>WMGP3G</b>
4 Gang Grid Plate Grey	<b>WMGP4G</b>
6 (2 x 3) Gang Grid Plate Grey	<b>WMGP6G</b>
8 (2 x 4) Gang Grid Plate Grey	<b>WMGP8G</b>



WMGP2

## Grid Frames

Description	Cat ref.
1 Gang	<b>WMGF1</b>
2 Gang	<b>WMGF2</b>
3/4 Gang	<b>WMGF34</b>



WMGF34

## Grid Switches

### Characteristics:

- Complies with BS EN 606691-1 switches, BS 5733 fuse carrier.
- Shallowest switch modules which clip in from the front for ease of installation and maintenance.
- Terminal screw can be accessed with modules clipped into frames.
- Frames locate to finished wall level.
- Frames clip together to ease alignment for 6 gang and 8 gang applications.
- We also offer a bespoke printing service for your individual requirements. Please contact our Sales Service Centre on 01952 675612 for further details.

Description	Cat ref. White Insert	Cat ref. Black Insert
<b>Grid Switches</b>		
Blank Module	<b>WMGB1</b>	-
20AX 2 Way Single Pole Switch	<b>WMGS12</b>	-
20A Intermediate Switch	<b>WMGS16</b>	-
20A 2 Way Retractive Switch	<b>WMGS22R</b>	-
20A 1 Way Double Pole Switch	<b>WMGSDP2</b>	-
20A Double Pole Key Switch	<b>WMGKS</b>	<b>WMGKSB</b>
20A Double Pole Key Switch Printed 'Emergency Lighting Test'	<b>WMGKS/EL</b>	-
13A Fuse Carrier	<b>WMGFU13</b>	-
Dimmer Slave Switch	<b>WMGSD1S</b>	<b>WMGSD1SB</b>
Dimmer Switch Leading Edge	<b>WMGSD1L</b>	<b>WMGSD1LB</b>
Dimmer Switch Trailing Edge	<b>WMGSD1T</b>	<b>WMGSD1TB</b>
Red Indicator	<b>WMINDRED</b>	-
2 Way & Centre Off Latching Switch	<b>WMGS13L</b>	<b>WMGS13LB</b>
2 Way & Centre Off Latching Switch Red Rocker	<b>WMGS13LR</b>	-
2 Way & Centre Off Retractive Switch	<b>WMGS13R</b>	<b>WMGS13RB</b>
2 Way & Centre Off Retractive Switch Red Rocker	<b>WMGS13RR</b>	-
13A Fused Connection Unit Unswitched with LED Indicator	<b>WMGSU83N</b>	-



WMGKS



WMGB1



WMINDRED



WMGSDP2/CHD



WMGSDP2/EF

## Grid Switches (Continued)

### Characteristics:

- Complies with BS EN 606691-1 switches, BS 5733 fuse carrier.
- Shallowest switch modules which clip in from the front for ease of installation and maintenance.
- Terminal screw can be accessed with modules clipped into frames.
- Frames locate to finished wall level.
- Frames clip together to ease alignment for 6 gang and 8 gang applications.
- We also offer a bespoke printing service for your individual requirements. Please contact our Sales Service Centre on 01952 675612 for further details.

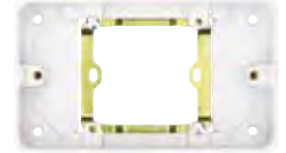
Description	Cat ref. White Insert	Cat ref. Black Insert
<b>20A 1 Way Double Pole Grid Switches - Printed</b>		
Printed 'Cooker Hood'	<b>WMGSDP2/CHD</b>	<b>WMGSDP2B/CHD</b>
Printed 'Dishwasher'	<b>WMGSDP2/DW</b>	<b>WMGSDP2B/DW</b>
Printed 'Extract Fan'	<b>WMGSDP2/EF</b>	<b>WMGSDP2B/EF</b>
Printed 'Fridge Freezer'	<b>WMGSDP2/FF</b>	<b>WMGSDP2B/FF</b>
Printed 'Freezer'	<b>WMGSDP2/FRE</b>	<b>WMGSDP2B/FRE</b>
Printed 'Fridge'	<b>WMGSDP2/FRI</b>	<b>WMGSDP2B/FRI</b>
Printed 'Hob'	<b>WMGSDP2/HB</b>	<b>WMGSDP2B/HB</b>
Printed 'Heating'	<b>WMGSDP2/HTG</b>	<b>WMGSDP2B/HTG</b>
Printed 'Microwave'	<b>WMGSDP2/MW</b>	<b>WMGSDP2B/MW</b>
Printed 'Tumble Dryer'	<b>WMGSDP2/TD</b>	<b>WMGSDP2B/TD</b>
Printed 'Waste Disposal'	<b>WMGSDP2/WD</b>	<b>WMGSDP2B/WD</b>
Printed 'Washing Machine'	<b>WMGSDP2/WM</b>	<b>WMGSDP2B/WM</b>
Printed 'Oven'	<b>WMGSDP2/OV</b>	<b>WMGSDP2B/OV</b>
Printed 'Wine Cooler'	<b>WMGSDP2/WC</b>	<b>WMGSDP2B/WC</b>
Printed 'Hot Water'	<b>WMGSDP2/HW</b>	<b>WMGSDP2B/HW</b>
Printed 'Coffee Maker'	<b>WMGSDP2/CM</b>	<b>WMGSDP2B/CM</b>
Printed 'Hot Drawer'	<b>WMGSDP2/HD</b>	<b>WMGSDP2B/HD</b>
Printed 'Fan Boost'	<b>WMGSDP2/FB</b>	<b>WMGSDP2B/FB</b>
Printed 'Boiler'	<b>WMGSDP2/BOI</b>	-
Printed 'Outside Light'	<b>WMGSDP2/OL</b>	-
Printed 'Plinth Heater'	<b>WMGSDP2/PH</b>	-
<b>20A 1 Way Double Pole Grid Switches with LED Indicator - Printed</b>		
Printed 'Cooker Hood'	<b>WMGSDP2N/CHD</b>	<b>WMGSDP2NB/CHD</b>
Printed 'Dishwasher'	<b>WMGSDP2N/DW</b>	<b>WMGSDP2NB/DW</b>
Printed 'Extract Fan'	<b>WMGSDP2N/EF</b>	<b>WMGSDP2NB/EF</b>
Printed 'Fridge Freezer'	<b>WMGSDP2N/FF</b>	<b>WMGSDP2NB/FF</b>
Printed 'Freezer'	<b>WMGSDP2N/FRE</b>	<b>WMGSDP2NB/FRE</b>
Printed 'Fridge'	<b>WMGSDP2N/FRI</b>	<b>WMGSDP2NB/FRI</b>
Printed 'Hob'	<b>WMGSDP2N/HB</b>	<b>WMGSDP2NB/HB</b>
Printed 'Heating'	<b>WMGSDP2N/HTG</b>	<b>WMGSDP2NB/HTG</b>
Printed 'Microwave'	<b>WMGSDP2N/MW</b>	<b>WMGSDP2NB/MW</b>
Printed 'Tumble Dryer'	<b>WMGSDP2N/TD</b>	<b>WMGSDP2NB/TD</b>
Printed 'Waste Disposal'	<b>WMGSDP2N/WD</b>	<b>WMGSDP2NB/WD</b>
Printed 'Washing Machine'	<b>WMGSDP2N/WM</b>	<b>WMGSDP2NB/WM</b>
Printed 'Oven'	<b>WMGSDP2N/OV</b>	-
Printed 'Outside Light'	<b>WMGSDP2N/OL</b>	-
Printed 'Plinth Heater'	<b>WMGSDP2N/PH</b>	-



**Patress Boxes**

**Characteristics:**

- Complies with BS EN 60670-1.
- Depth quoted is internal depth.
- Colour and footprint match all Sollysta White Moulded wiring accessories.



WMPB2/20

Description	Cat ref.
Single 20mm Deep Moulded Box	<b>WMPB1/20</b>
Single 28mm Deep Moulded Box	<b>WMPB1/28</b>
Single 46mm Deep Moulded Box	<b>WMPB1/46</b>
Twin 28mm Deep Moulded Box	<b>WMPB2/28</b>
Twin 46mm Deep Moulded Box with Cable Clamps	<b>WMPB2/46CC</b>
46mm Deep Moulded Shaver Box	<b>WMPB2/46</b>
20mm Single to Twin Converter Frame	<b>WMPB2/20</b>
Single 14mm Deep Spacer for Base Flex Outlet	<b>WMPB1/BFO</b>

**Accessories**

Description	Cat ref.
Single Spare Pull Cord	<b>PULLCORD</b>
Pack of 100 Push Fit Screw Covers	<b>SCREWCOVER</b>
IDC Tools (bag of 10)	<b>IDCTOOL</b>
Single Blank Plate	<b>WMP1</b>
Twin Blank Plate	<b>WMP2</b>



PULLCORD



WMS820G



WMPS12WG

## Part M Wiring Accessories

### Characteristics:

- Designed to satisfy Buildings Regulations Approved Document M (referred to as Part M)
- All products comply with their relevant British Standards
- Switches have wide rockers and dark face plates for clear visibility and ease of actuation
- Sockets have outboard rockers to ensure correct switching of appliances and dark face plates for ease of identification of switch position
- Grid modules can be found on page 5.12. Euro modules can be found on page 5.10.

Description	Cat ref. (Grey Faceplate)
<b>Wall Switches</b>	
10AX 1 Gang 2 Way Wide Rocker	<b>WMPS12WG</b>
10AX 2 Gang 2 Way Wide Rocker	<b>WMPS22WG</b>
<b>Intermediate Switch</b>	
Wide Rocker	<b>WMPS16WG</b>
<b>Push Switches</b>	
Wide Rocker	<b>WMPS12RWG</b>
Wide Rocker Printed 'Fan Boost'	<b>WMPS12RWG/FB</b>
<b>Double Pole Switched Socket Outlets</b>	
13A 1 Gang	<b>WMSS81G</b>
13A 2 Gang with Outboard Rockers	<b>WMSS82OG</b>
<b>Switched Fused Connection Units</b>	
13A with LED Indicator	<b>WMSSU83NG</b>
13A with LED Indicator Printed 'Extract Hood'	<b>WMSSU83NG/EH</b>
13A with LED Indicator Printed 'Panel Heater'	<b>WMSSU83NG/PH</b>
<b>Double Pole Switches</b>	
20A 1 Gang with LED Indicator	<b>WMDP84NG</b>
50A 2 Gang with LED Indicator	<b>WMDP50NG</b>
50A 2 Gang with LED Indicator Printed 'Cooker'	<b>WMDP50NG/CK</b>
<b>Grid Plates</b>	
1 Gang Grid Plate	<b>WMGP1G</b>
2 Gang Grid Plate	<b>WMGP2G</b>
3 Gang Grid Plate	<b>WMGP3G</b>
4 Gang Grid Plate	<b>WMGP4G</b>
6 Gang Grid Plate (2 x 3)	<b>WMGP6G</b>
8 Gang Grid Plate (2 x 4)	<b>WMGP8G</b>
<b>Euro Style Accommodation Plates</b>	
1 Module	<b>WMP1EUG</b>
2 Modules	<b>WMP2EUG</b>
4 Modules	<b>WMP4EUG</b>

### Specific Equipment Wiring Accessories

#### Characteristics:

- Red rockers aid ease of identification for safe switching of specific equipment
- Red face plates ensure products are easy to locate
- A range of printed options is available for specific functions

Description	Cat ref. (White Faceplate, Red Rocker)	Cat ref. (Red Faceplate, Red Rocker)
<b>Double Pole Switched Socket Outlets</b>		
13A 1 Gang	<b>WMSS81R</b>	<b>WMSS81RR</b>
13A 2 Gang	<b>WMSS82R</b>	<b>WMSS82RR</b>
13A 2 Gang with Outboard Rockers	<b>WMSS82OR</b>	<b>WMSS82ORR</b>
13A 2 Gang Switched Socket Printed 'Cleaners Supply'	<b>WMSS82R/CS</b>	-
13A 2 Gang Switched Socket Printed 'Emergency Supply'	<b>WMSS82R/ES</b>	-
13A 2 Gang Switched Socket Printed 'Do Not Switch Off'	<b>WMSS82R/DNS</b>	-
13A 2 Gang Switched Socket Printed 'UPS Protected'	<b>WMSS82R/UPS</b>	-
<b>Switched Fused Connection Units</b>		
13A Fused Connection Unit Switched	<b>WMSSU83R</b>	-
13A Fused Connection Unit Red Face (White Fuse Cover)	<b>WMSSU83R</b>	-
13A Fused Connection Unit Switched	-	<b>WMSSU83RR</b>



WMSS82R/CS



WMSS82ORR



WMSSU83RR



WRPS12PSB



WRPS12BSB



WRPS12PBW



WRPS12BNB



## Wall Switches Raised Plate

### Characteristics:

- Unique patented LOOP terminal to allow neutral looping at the switch.
- Complies with BS EN 60669-1, a.c only.
- 'X' rated - No need to de-rate for fluorescent loads.
- Capacity of each terminal 2 x 4.0mm<sup>2</sup> conductors.
- For mounting boxes see selection chart on page 5.43.
- For multi-gang switches, use of a 25mm mounting box will provide increased wiring space.
- Supplied with M3.5 x 20mm long fixing screws.

Description	Cat ref. White Insert	Cat ref. Black Insert
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### Raised Plate 10AX 1 Gang 2 Way

Polished Steel	<b>WRPS12PSW</b>	<b>WRPS12PSB</b>
Brushed Steel	<b>WRPS12BSW</b>	<b>WRPS12BSB</b>
Polished Brass	<b>WRPS12PBW</b>	<b>WRPS12PBB</b>
Black Nickel	-	<b>WRPS12BNB</b>

### Raised Plate 10AX 2 Gang 2 Way

Polished Steel	<b>WRPS22PSW</b>	<b>WRPS22PSB</b>
Brushed Steel	<b>WRPS22BSW</b>	<b>WRPS22BSB</b>
Polished Brass	<b>WRPS22PBW</b>	<b>WRPS22PBB</b>
Black Nickel	-	<b>WRPS22BNB</b>

### Raised Plate 10AX 3 Gang 2 Way

Polished Steel	<b>WRPS32PSW</b>	<b>WRPS32PSB</b>
Brushed Steel	<b>WRPS32BSW</b>	<b>WRPS32BSB</b>
Polished Brass	<b>WRPS32PBW</b>	<b>WRPS32PBB</b>
Black Nickel	-	<b>WRPS32BNB</b>

### Raised Plate 10AX 4 Gang 2 Way

Polished Steel	<b>WRPS42PSW</b>	<b>WRPS42PSB</b>
Brushed Steel	<b>WRPS42BSW</b>	<b>WRPS42BSB</b>
Polished Brass	<b>WRPS42PBW</b>	<b>WRPS42PBB</b>
Black Nickel	-	<b>WRPS42BNB</b>

### Raised Plate 10AX 1 Gang 2 Way Wide Rocker

Polished Steel	<b>WRPS12WPSW</b>	<b>WRPS12WPSB</b>
Brushed Steel	<b>WRPS12WBSW</b>	<b>WRPS12WBSB</b>
Polished Brass	<b>WRPS12WPBW</b>	<b>WRPS12WPBB</b>
Black Nickel	-	<b>WRPS12WBNB</b>

### Raised Plate 10AX 2 Gang 2 Way Wide Rocker

Polished Steel	<b>WRPS22WPSW</b>	<b>WRPS22WPSB</b>
Brushed Steel	<b>WRPS22WBSW</b>	<b>WRPS22WBSB</b>
Polished Brass	<b>WRPS22WPBW</b>	<b>WRPS22WPBB</b>
Black Nickel	-	<b>WRPS22WBNB</b>

### Raised Plate Intermediate Switch

Polished Steel	<b>WRPS16PSW</b>	<b>WRPS16PSB</b>
Brushed Steel	<b>WRPS16BSW</b>	<b>WRPS16BSB</b>
Polished Brass	<b>WRPS16PBW</b>	<b>WRPS16PBB</b>
Black Nickel	-	<b>WRPS16BNB</b>

## Wall Switches Flat Plate

### Characteristics:

- Unique patented LOOP terminal to allow neutral looping at the switch.
- Complies with BS EN 60669-1, a.c only.
- 'X' rated - No need to de-rate for fluorescent loads.
- Capacity of each terminal 2 x 4.0mm<sup>2</sup> conductors.
- For mounting boxes see selection chart on page 5.43.
- For multi-gang switches use of a 25mm mounting box will provide increased wiring space.
- Supplied with M3.5 x 20mm long fixing screws.

Description	Cat ref. White Insert	Cat ref. Black Insert
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### Flat Plate 10AX 1 Gang 2 Way

Polished Steel	<b>WFPS12PSW</b>	<b>WFPS12PSB</b>
Brushed Steel	<b>WFPS12BSW</b>	<b>WFPS12BSB</b>
Polished Brass	<b>WFPS12PBW</b>	<b>WFPS12PBB</b>
Black Nickel	-	<b>WFPS12BNB</b>



WFPS22PSW

### Flat Plate 10AX 2 Gang 2 Way

Polished Steel	<b>WFPS22PSW</b>	<b>WFPS22PSB</b>
Brushed Steel	<b>WFPS22BSW</b>	<b>WFPS22BSB</b>
Polished Brass	<b>WFPS22PBW</b>	<b>WFPS22PBB</b>
Black Nickel	-	<b>WFPS22BNB</b>



WFPS22WBSW

### Flat Plate 10AX 3 Gang 2 Way

Polished Steel	<b>WFPS32PSW</b>	<b>WFPS32PSB</b>
Brushed Steel	<b>WFPS32BSW</b>	<b>WFPS32BSB</b>
Polished Brass	<b>WFPS32PBW</b>	<b>WFPS32PBB</b>
Black Nickel	-	<b>WFPS32BNB</b>



WFPS12PBW

### Flat Plate 10AX 4 Gang 2 Way

Polished Steel	<b>WFPS42PSW</b>	<b>WFPS42PSB</b>
Brushed Steel	<b>WFPS42BSW</b>	<b>WFPS42BSB</b>
Polished Brass	<b>WFPS42PBW</b>	<b>WFPS42PBB</b>
Black Nickel	-	<b>WFPS42BNB</b>



WFPS12BNB

### Flat Plate 10AX 1 Gang 2 Way Wide Rocker

Polished Steel	<b>WFPS12WPSW</b>	<b>WFPS12WPSB</b>
Brushed Steel	<b>WFPS12WBSW</b>	<b>WFPS12WBSB</b>
Polished Brass	<b>WFPS12WPBW</b>	<b>WFPS12WPBB</b>
Black Nickel	-	<b>WFPS12WBNB</b>

### Flat Plate 10AX 2 Gang 2 Way Wide Rocker

Polished Steel	<b>WFPS22WPSW</b>	<b>WFPS22WPSB</b>
Brushed Steel	<b>WFPS22WBSW</b>	<b>WFPS22WBSB</b>
Polished Brass	<b>WFPS22WPBW</b>	<b>WFPS22WPBB</b>
Black Nickel	-	<b>WFPS22WBNB</b>

### Flat Plate Intermediate Switch

Polished Steel	<b>WFPS16PSW</b>	<b>WFPS16PSB</b>
Brushed Steel	<b>WFPS16BSW</b>	<b>WFPS16BSB</b>
Polished Brass	<b>WFPS16PBW</b>	<b>WFPS16PBB</b>
Black Nickel	-	<b>WFPS16BNB</b>





WRDS2BN



WRDS2BS



WRDS3PS

## Dimmers Raised Plate

### Characteristics:

- Quick press for ON/OFF, hold button down to dim or brighten light level.
- Leading edge.
- Soft start feature prolongs lamp life.
- Suitable for dimming mains and dimmable transformer extra low voltage lamps.
- Automatic switch off in the case of transformer instability, protects the dimmer and the transformer.
- WR references supplied with M3.5 x 30mm long fixing screws.
- WF references supplied with M3.5 x 20mm long fixing screws.

Description	Cat. ref.
<b>Raised Plate 1 Gang Dimmer 400W</b>	
Polished Steel	<b>WRDS1PS</b>
Brushed Steel	<b>WRDS1BS</b>
Polished Brass	<b>WRDS1PB</b>
Black Nickel	<b>WRDS1BN</b>
<b>Raised Plate 2 Gang Dimmer 250W</b>	
Polished Steel	<b>WRDS2PS</b>
Brushed Steel	<b>WRDS2BS</b>
Polished Brass	<b>WRDS2PB</b>
Black Nickel	<b>WRDS2BN</b>
<b>Raised Plate 3 Gang Dimmer 250W</b>	
Polished Steel	<b>WRDS3PS</b>
Brushed Steel	<b>WRDS3BS</b>
Polished Brass	<b>WRDS3PB</b>
Black Nickel	<b>WRDS3BN</b>
<b>Raised Plate 4 Gang Dimmer 250W</b>	
Polished Steel	<b>WRDS4PS</b>
Brushed Steel	<b>WRDS4BS</b>
Polished Brass	<b>WRDS4PB</b>
Black Nickel	<b>WRDS4BN</b>



WFDS1PB



WFDS1PS

## Dimmers Flat Plate

Description	Cat. ref.
<b>Flat Plate 1 Gang Dimmer 400W</b>	
Polished Steel	<b>WFDS1PS</b>
Brushed Steel	<b>WFDS1BS</b>
Polished Brass	<b>WFDS1PB</b>
Black Nickel	<b>WFDS1BN</b>
<b>Flat Plate 2 Gang Dimmer 250W</b>	
Polished Steel	<b>WFDS2PS</b>
Brushed Steel	<b>WFDS2BS</b>
Polished Brass	<b>WFDS2PB</b>
Black Nickel	<b>WFDS2BN</b>
<b>Flat Plate 3 Gang Dimmer 250W</b>	
Polished Steel	<b>WFDS3PS</b>
Brushed Steel	<b>WFDS3BS</b>
Polished Brass	<b>WFDS3PB</b>
Black Nickel	<b>WFDS3BN</b>
<b>Flat Plate 4 Gang Dimmer 250W</b>	
Polished Steel	<b>WFDS4PS</b>
Brushed Steel	<b>WFDS4BS</b>
Polished Brass	<b>WFDS4PB</b>
Black Nickel	<b>WFDS4BN</b>

## Isolator Switches Raised Plate

### Characteristics:

- Complies with BS EN 60669-2-4.
- Capacity of each terminal 2 x 4.0mm<sup>2</sup> conductors.
- For mounting boxes see selection chart on page 5.43.
- WR references supplied with M3.5 x 30mm long fixing screws.
- WF references supplied with M3.5 x 20mm long fixing screws.

Description	Cat ref. White Insert	Cat ref. Black Insert
<b>Raised Plate 3 Pole Fan Isolator Switch</b>		
Polished Steel	<b>WRPS3PIPSW</b>	<b>WRPS3PIPSB</b>
Brushed Steel	<b>WRPS3PIBSW</b>	<b>WRPS3PIBSB</b>
Polished Brass	<b>WRPS3PIPBW</b>	<b>WRPS3PIPBB</b>
Black Nickel	-	<b>WRPS3PIBNB</b>



WRPS3PIPSW

## Isolator Switches Flat Plate

Description	Cat ref. White Insert	Cat ref. Black Insert
<b>Flat Plate 3 Pole Fan Isolator Switch</b>		
Polished Steel	<b>WFPS3PIPSW</b>	<b>WFPS3PIPSB</b>
Brushed Steel	<b>WFPS3PIBSW</b>	<b>WFPS3PIBSB</b>
Polished Brass	<b>WFPS3PIPBW</b>	<b>WFPS3PIPBB</b>
Black Nickel	-	<b>WFPS3PIBNB</b>



WFPS3PIBNB

## Socket Outlets Raised Plates

### Characteristics:

- Unique patented three part safety shutter.
- Complies with BS 1363 Part 2, a.c only.
- Double pole switching mechanism on switched sockets.
- Twin socket comes with twin earth as standard.
- All terminals are upward facing with clearly printed terminal markings for ease of installation.
- Capacity of each terminal: 5 x 2.5mm<sup>2</sup> conductors, switched; 4 x 2.5mm<sup>2</sup> unswitched (for other sized conductors see terminal capacities on page 5.44).
- For mounting boxes see selection chart on page 5.43.
- WR references supplied with M3.5 x 30mm long fixing screws.
- WF references supplied with M3.5 x 20mm long fixing screws.

Description	Cat ref. White Insert	Cat ref. Black Insert
<b>Raised Plate 1 Gang Double Pole Switched Socket</b>		
Polished Steel	<b>WRSS81PSW</b>	<b>WRSS81PSB</b>
Brushed Steel	<b>WRSS81BSW</b>	<b>WRSS81BSB</b>
Polished Brass	<b>WRSS81PBW</b>	<b>WRSS81PBB</b>
Black Nickel	-	<b>WRSS81BNB</b>



WRSS81PBW

### Raised Plate 2 Gang Double Pole Switched Socket Dual Earth

Description	Cat ref. White Insert	Cat ref. Black Insert
Polished Steel	<b>WRSS82PSW</b>	<b>WRSS82PSB</b>
Brushed Steel	<b>WRSS82BSW</b>	<b>WRSS82BSB</b>
Polished Brass	<b>WRSS82PBW</b>	<b>WRSS82PBB</b>
Black Nickel	-	<b>WRSS82BNB</b>



WRSS81BNB

### Raised Plate 5A 1 Gang Unswitched Socket

Description	Cat ref. White Insert	Cat ref. Black Insert
Polished Steel	<b>WRS51PSW</b>	<b>WRS51PSB</b>
Brushed Steel	<b>WRS51BSW</b>	<b>WRS51BSB</b>
Polished Brass	<b>WRS51PBW</b>	<b>WRS51PBB</b>
Black Nickel	-	<b>WRS51BNB</b>



WFSS81BSW



WFSS82PBW

### Socket Outlets Flat Plates

Description	Cat ref. White Insert	Cat ref. Black Insert
<b>Flat Plate 1 Gang Double Pole Switched Socket</b>		
Polished Steel	<b>WFSS81PSW</b>	<b>WFSS81PSB</b>
Brushed Steel	<b>WFSS81BSW</b>	<b>WFSS81BSB</b>
Polished Brass	<b>WFSS81PBW</b>	<b>WFSS81PBB</b>
Black Nickel	-	<b>WFSS81BNB</b>

### Flat Plate 2 Gang Double Pole Switched Socket Dual Earth

Polished Steel	<b>WFSS82PSW</b>	<b>WFSS82PSB</b>
Brushed Steel	<b>WFSS82BSW</b>	<b>WFSS82BSB</b>
Polished Brass	<b>WFSS82PBW</b>	<b>WFSS82PBB</b>
Black Nickel	-	<b>WFSS82BNB</b>

### Flat Plate 5A 1 Gang Unswitched Socket

Polished Steel	<b>WFS51PSW</b>	<b>WFS51PSB</b>
Brushed Steel	<b>WFS51BSW</b>	<b>WFS51BSB</b>
Polished Brass	<b>WFS51PBW</b>	<b>WFS51PBB</b>
Black Nickel	-	<b>WFS51BNB</b>



WRCC50NPSB



WRCC50NBNB

### Cooker Control Unit Raised Plate

#### Characteristics:

- Complies with BS 4177.
- Switch and socket are double pole with twin earth as standard.
- Main switch is suitable for isolation.
- All terminals are upward facing with clearly printed terminal markings for ease of installation.
- Capacity of terminals 2 x 6.0mm<sup>2</sup>, 1 x 16.0mm<sup>2</sup>.
- For mounting boxes see selection chart on page 5.43.
- WR references supplied with M3.5 x 30mm long fixing screws.
- WF references supplied with M3.5 x 20mm long fixing screws.

Description	Cat ref. White Insert	Cat ref. Black Insert
<b>Raised Plate 45A Cooker Control Unit</b>		
Polished Steel	<b>WRCC50NPSW</b>	<b>WRCC50NPSB</b>
Brushed Steel	<b>WRCC50NBSW</b>	<b>WRCC50NBSB</b>
Polished Brass	<b>WRCC50NPBW</b>	<b>WRCC50NPBB</b>
Black Nickel	-	<b>WRCC50NBNB</b>



WFCC50NPSW

### Cooker Control Unit Flat Plate

Description	Cat ref. White Insert	Cat ref. Black Insert
<b>Flat Plate 45A Cooker Control Unit</b>		
Polished Steel	<b>WFCC50NPSW</b>	<b>WFCC50NPSB</b>
Brushed Steel	<b>WFCC50NBSW</b>	<b>WFCC50NBSB</b>
Polished Brass	<b>WFCC50NPBW</b>	<b>WFCC50NPBB</b>
Black Nickel	-	<b>WFCC50NBNB</b>



**Fused Connection Units Raised Plate**

**Characteristics:**

- Complies with BS 1363-4.
- Single screw fast fix cable clamp accommodates up to 1.5mm<sup>2</sup> flexible cord.
- All terminals are upward facing with clearly printed terminal markings for ease of installation.
- Capacity of each terminal 2 x 6.0 mm<sup>2</sup> conductors.
- For mounting boxes see selection chart on page 5.43.
- WR references supplied with M3.5 x 30mm long fixing screws.
- WF references supplied with M3.5 x 20mm long fixing screws.

Description	Cat ref. White Insert	Cat ref. Black Insert
-------------	-----------------------	-----------------------

**Raised Plate 13A FCU Switched**

Polished Steel	<b>WRSSU83PSW</b>	<b>WRSSU83PSB</b>
Brushed Steel	<b>WRSSU83BSW</b>	<b>WRSSU83BSB</b>
Polished Brass	<b>WRSSU83PBW</b>	<b>WRSSU83PBB</b>
Black Nickel	-	<b>WRSSU83BNB</b>



WRSSU83FOBSW

**Raised Plate 13A FCU Switched with Flex Outlet**

Polished Steel	<b>WRSSU83FOPSW</b>	<b>WRSSU83FOPSB</b>
Brushed Steel	<b>WRSSU83FOBSW</b>	<b>WRSSU83FOBSB</b>
Polished Brass	<b>WRSSU83FOPBW</b>	<b>WRSSU83FOPBB</b>
Black Nickel	-	<b>WRSSU83FOBNB</b>



WRSSU83PBB

**Raised Plate 13A FCU Unswitched**

Polished Steel	<b>WRSU83PSW</b>	<b>WRSU83PSB</b>
Brushed Steel	<b>WRSU83BSW</b>	<b>WRSU83BSB</b>
Polished Brass	<b>WRSU83PBW</b>	<b>WRSU83PBB</b>
Black Nickel	-	<b>WRSU83BNB</b>

**Fused Connection Units Flat Plate**

Description	Cat ref. White Insert	Cat ref. Black Insert
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**Flat Plate 13A FCU Switched**

Polished Steel	<b>WFSSU83PSW</b>	<b>WFSSU83PSB</b>
Brushed Steel	<b>WFSSU83BSW</b>	<b>WFSSU83BSB</b>
Polished Brass	<b>WFSSU83PBW</b>	<b>WFSSU83PBB</b>
Black Nickel	-	<b>WFSSU83BNB</b>



WFSU83BSW

**Flat Plate 13A FCU Switched with Flex Outlet**

Polished Steel	<b>WFSSU83FOPSW</b>	<b>WFSSU83FOPSB</b>
Brushed Steel	<b>WFSSU83FOBSW</b>	<b>WFSSU83FOBSB</b>
Polished Brass	<b>WFSSU83FOPBW</b>	<b>WFSSU83FOPBB</b>
Black Nickel	-	<b>WFSSU83FOBNB</b>



WFSSU83FOBNB

**Flat Plate 13A FCU Unswitched**

Polished Steel	<b>WFSU83PSW</b>	<b>WFSU83PSB</b>
Brushed Steel	<b>WFSU83BSW</b>	<b>WFSU83BSB</b>
Polished Brass	<b>WFSU83PBW</b>	<b>WFSU83PBB</b>
Black Nickel	-	<b>WFSU83BNB</b>



WRDP84PBW



WRDP84BNB

## Double Pole Switches Raised Plate (20A)

### Characteristics:

- Complies with BS EN 60699-2-4 a.c. only.
- Single screw fast fix cable clamp accommodates up to 1.5mm<sup>2</sup> flexible cord.
- All terminals are upward facing with clearly printed terminal markings for ease of installation.
- Capacity of each terminal 2 x 6.0mm<sup>2</sup> conductors.
- For mounting boxes see selection chart on page 5.43.
- WR references supplied with M3.5 x 30mm long fixing screws.
- WF references supplied with M3.5 x 20mm long fixing screws.

Description	Cat ref. White Insert	Cat ref. Black Insert
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### Raised Plate 20A Double Pole Switch

Polished Steel	<b>WRDP84PSW</b>	<b>WRDP84PSB</b>
Brushed Steel	<b>WRDP84BSW</b>	<b>WRDP84BSB</b>
Polished Brass	<b>WRDP84PBW</b>	<b>WRDP84PBB</b>
Black Nickel	-	<b>WRDP84BNB</b>

### Raised Plate 20A Double Pole Switch with Flex Outlet

Polished Steel	<b>WRDP84FOPSW</b>	<b>WRDP84FOPSB</b>
Brushed Steel	<b>WRDP84FOBSW</b>	<b>WRDP84FOBSB</b>
Polished Brass	<b>WRDP84FOPBW</b>	<b>WRDP84FOPBB</b>
Black Nickel	-	<b>WRDP84FOBNB</b>

### Raised Plate 20A Double Pole Switch with LED Indicator

Polished Steel	<b>WRDP84NPSW</b>	<b>WRDP84NPSB</b>
Brushed Steel	<b>WRDP84NBSW</b>	<b>WRDP84NBSB</b>
Polished Brass	<b>WRDP84NPBW</b>	<b>WRDP84NPBB</b>
Black Nickel	-	<b>WRDP84NB NB</b>



WFDP84FOPSW



WFDP84BSW

## Double Pole Switches Flat Plate (20A)

Description	Cat ref. White Insert	Cat ref. Black Insert
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### Flat Plate 20A Double Pole Switch

Polished Steel	<b>WFDP84PSW</b>	<b>WFDP84PSB</b>
Brushed Steel	<b>WFDP84BSW</b>	<b>WFDP84BSB</b>
Polished Brass	<b>WFDP84PBW</b>	<b>WFDP84PBB</b>
Black Nickel	-	<b>WFDP84BNB</b>

### Flat Plate 20A Double Pole Switch with Flex Outlet

Polished Steel	<b>WFDP84FOPSW</b>	<b>WFDP84FOPSB</b>
Brushed Steel	<b>WFDP84FOBSW</b>	<b>WFDP84FOBSB</b>
Polished Brass	<b>WFDP84FOPBW</b>	<b>WFDP84FOPBB</b>
Black Nickel	-	<b>WFDP84FOBNB</b>

### Flat Plate 20A Double Pole Switch with LED Indicator

Polished Steel	<b>WFDP84NPSW</b>	<b>WFDP84NPSB</b>
Brushed Steel	<b>WFDP84NBSW</b>	<b>WFDP84NBSB</b>
Polished Brass	<b>WFDP84NPBW</b>	<b>WFDP84NPBB</b>
Black Nickel	-	<b>WFDP84NB NB</b>

## Double Pole Switches Raised Plate (50A)

### Characteristics:

- Complies with BS EN 60669-2-4.
- Rated conditional short circuit current ( $I_{nc}$ ) 1500A tested with Hager **MTN150** 6kA B curve MCB.
- All terminals are upward facing with clearly printed terminal markings for ease of installation.
- Capacity of each terminal 2 x 6mm<sup>2</sup>, 1 x 10mm<sup>2</sup>.
- For mounting boxes see selection chart on page 5.43.
- WR references supplied with M3.5 x 30mm long fixing screws.
- WF references supplied with M3.5 x 20mm long fixing screws.

Description	Cat ref. White Insert	Cat ref. Black Insert
<b>Raised Plate 50A Double Pole Switch 1 Gang with LED Indicator</b>		
Polished Steel	<b>WRDP50NPSW</b>	<b>WRDP50NPSB</b>
Brushed Steel	<b>WRDP50NBSW</b>	<b>WRDP50NBSB</b>
Polished Brass	<b>WRDP50NPBW</b>	<b>WRDP50NPBB</b>
Black Nickel	-	<b>WRDP50NBNB</b>



WRDP50NPBB

## Double Pole Switches Flat Plate (50A)

Description	Cat ref. White Insert	Cat ref. Black Insert
<b>Flat Plate 50A Double Pole Switch 1 Gang with LED Indicator</b>		
Polished Steel	<b>WFDP50NPSW</b>	<b>WFDP50NPSB</b>
Brushed Steel	<b>WFDP50NBSW</b>	<b>WFDP50NBSB</b>
Polished Brass	<b>WFDP50NPBW</b>	<b>WFDP50NPBB</b>
Black Nickel	-	<b>WFDP50NBNB</b>



WFDP50NPSB

## Shaver Socket Raised Plate

### Characteristics:

- Complies with BS EN 61558-2-5.
- Capacity of each terminal 2 x 2.5mm<sup>2</sup> conductors.
- Designed for use in bath/shower rooms & incorporates a double wound transformer for an earth free supply.
- Designed to supply electric shavers, toothbrushes, and similar appliances rated 50 VA or less.
- Input 230V a.c. output dual voltage 230V a.c. and 115V a.c. outlets.
- Rating 20VA on either voltage.
- Primary circuit protected by a self resetting thermal overload device.
- Insertion of shaver plug automatically switches on the transformer.
- WR references supplied with M3.5 x 30mm long fixing screws.
- WF references supplied with M3.5 x 20mm long fixing screws.

Description	Cat ref. White Insert	Cat ref. Black Insert
<b>Raised Plate 115/230V Shaver Socket</b>		
Polished Steel	<b>WRSO100PSW</b>	<b>WRSO100PSB</b>
Brushed Steel	<b>WRSO100BSW</b>	<b>WRSO100BSB</b>
Polished Brass	<b>WRSO100PBW</b>	<b>WRSO100PBB</b>
Black Nickel	-	<b>WRSO100BNB</b>



WRSO100PSW

## Shaver Socket Flat Plate

Description	Cat ref. White Insert	Cat ref. Black Insert
<b>Flat Plate 115/230V Shaver Socket</b>		
Polished Steel	<b>WFSO100PSW</b>	<b>WFSO100PSB</b>
Brushed Steel	<b>WFSO100BSW</b>	<b>WFSO100BSB</b>
Polished Brass	<b>WFSO100PBW</b>	<b>WFSO100PBB</b>
Black Nickel	-	<b>WFSO100BNB</b>



WFSO100PSW



WRBTMBSW



WRBTMPBW

## Telephone & Data Raised Plate

### Characteristics:

- BT sockets comply with BS 6312-2.
- Supplied with fitted cable tie.
- Quick connection with insulation displacement terminals.
- Clearly printed terminal marking.
- WR references supplied with M3.5 x 30mm long fixing screws.
- WF references supplied with M3.5 x 20mm long fixing screws.

Description	Cat ref. White Insert	Cat ref. Black Insert
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### Raised Plate BT Master Telephone Outlet

Polished Steel	<b>WRBTMPSW</b>	<b>WRBTMPSB</b>
Brushed Steel	<b>WRBTMBSW</b>	<b>WRBTMBSB</b>
Polished Brass	<b>WRBTMPBW</b>	<b>WRBTMPBB</b>
Black Nickel	-	<b>WRBTMBNB</b>

### Raised Plate BT Secondary Telephone Outlet

Polished Steel	<b>WRBTSPSW</b>	<b>WRBTSPSB</b>
Brushed Steel	<b>WRBTSBSW</b>	<b>WRBTSBSB</b>
Polished Brass	<b>WRBTSPBW</b>	<b>WRBTSPBB</b>
Black Nickel	-	<b>WRBTSBNB</b>

### Raised Plate RJ45 Socket

Polished Steel	<b>WRRJ45PSW</b>	<b>WRRJ45PSB</b>
Brushed Steel	<b>WRRJ45BSW</b>	<b>WRRJ45BSB</b>
Polished Brass	<b>WRRJ45PBW</b>	<b>WRRJ45PBB</b>
Black Nickel	-	<b>WRRJ45BNB</b>



WFBTMBNB



WFBTMPSW

## Telephone & Data Flat Plate

Description	Cat ref. White Insert	Cat ref. Black Insert
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### Flat Plate BT Master Telephone Outlet

Polished Steel	<b>WFBTMPSW</b>	<b>WFBTMPSB</b>
Brushed Steel	<b>WFBTMBSW</b>	<b>WFBTMBSB</b>
Polished Brass	<b>WFBTMPBW</b>	<b>WFBTMPBB</b>
Black Nickel	-	<b>WFBTMBNB</b>

### Flat Plate BT Secondary Telephone Outlet

Polished Steel	<b>WFBTSPSW</b>	<b>WFBTSPSB</b>
Brushed Steel	<b>WFBTSBSW</b>	<b>WFBTSBSB</b>
Polished Brass	<b>WFBTSPBW</b>	<b>WFBTSPBB</b>
Black Nickel	-	<b>WFBTSBNB</b>

### Flat Plate RJ45 Socket

Polished Steel	<b>WFRJ45PSW</b>	<b>WFRJ45PSB</b>
Brushed Steel	<b>WFRJ45BSW</b>	<b>WFRJ45BSB</b>
Polished Brass	<b>WFRJ45PBW</b>	<b>WFRJ45PBB</b>
Black Nickel	-	<b>WFRJ45BNB</b>

**TV & Satellite Raised Plate**

**Characteristics:**

- TV outlets comply with BS 3041.
- Satellite outlets comply with BS EN 50083-2.
- Fully screened.
- DAB compatible.
- WR references supplied with M3.5 x 30mm long fixing screws.
- WF references supplied with M3.5 x 20mm long fixing screws.

Description	Cat ref. White Insert	Cat ref. Black Insert
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**Raised Plate Single F Type Satellite Outlet Screened**

Polished Steel	<b>WRSATPSW</b>	<b>WRSATPSB</b>
Brushed Steel	<b>WRSATBSW</b>	<b>WRSATBSB</b>
Polished Brass	<b>WRSATPBW</b>	<b>WRSATPBB</b>
Black Nickel	-	<b>WRSATBNB</b>



WRSATBSW

**Raised Plate Single CO-AX TV Outlet Female**

Polished Steel	<b>WRTVPSW</b>	<b>WRTVPSB</b>
Brushed Steel	<b>WRTVBSW</b>	<b>WRTVBSB</b>
Polished Brass	<b>WRTVPBW</b>	<b>WRTVPBB</b>
Black Nickel	-	<b>WRTVBNB</b>



WRSATPSW

**Raised Plate Double TV & FM/DAB CO-AX Socket Outlet**

Polished Steel	<b>WRDXPSW</b>	<b>WRDXPSB</b>
Brushed Steel	<b>WRDXBSW</b>	<b>WRDXBSB</b>
Polished Brass	<b>WRDXPBW</b>	<b>WRDXPBB</b>
Black Nickel	-	<b>WRDXBNB</b>



WRDXPBW

**Raised Plate Triplexer TV, FM/DAB & Satellite Outlet**

Polished Steel	<b>WRTXPSW</b>	<b>WRTXPSB</b>
Brushed Steel	<b>WRTXBSW</b>	<b>WRTXBSB</b>
Polished Brass	<b>WRTXPBW</b>	<b>WRTXPBB</b>
Black Nickel	-	<b>WRTXBNB</b>

**Raised Plate Quadplexer TV, FM/DAB, Satellite 1 & Satellite 2 Outlet**

Polished Steel	<b>WRQXPSW</b>	<b>WRQXPSB</b>
Brushed Steel	<b>WRQXBSW</b>	<b>WRQXBSB</b>
Polished Brass	<b>WRQXPBW</b>	<b>WRQXPBB</b>
Black Nickel	-	<b>WRQXBNB</b>



WRTXBNB

**TV & Satellite Flat Plate**

Description	Cat ref. White Insert	Cat ref. Black Insert
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**Flat Plate Single F Type Satellite Outlet Screened**

Polished Steel	<b>WFSATPSW</b>	<b>WFSATPSB</b>
Brushed Steel	<b>WFSATBSW</b>	<b>WFSATBSB</b>
Polished Brass	<b>WFSATPBW</b>	<b>WFSATPBB</b>
Black Nickel	-	<b>WFSATBNB</b>



WFTVBSW

**Flat Plate Single CO-AX TV Outlet Female**

Polished Steel	<b>WFTVPSW</b>	<b>WFTVPSB</b>
Brushed Steel	<b>WFTVBSW</b>	<b>WFTVBSB</b>
Polished Brass	<b>WFTVPBW</b>	<b>WFTVPBB</b>
Black Nickel	-	<b>WFTVBNB</b>



WFDXBSW

## TV & Satellite Flat Plate Continued

Description	Cat ref. White Insert	Cat ref. Black Insert
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### Flat Plate Double TV & FM/DAB CO-AX Socket Outlet

Polished Steel	<b>WFDXPSW</b>	<b>WFDXPSB</b>
Brushed Steel	<b>WFDXBSW</b>	<b>WFDXBSB</b>
Polished Brass	<b>WFDXPBW</b>	<b>WFDXPBB</b>
Black Nickel	-	<b>WFDXBNB</b>

### Flat Plate Triplexer TV, FM/DAB & Satellite Outlet

Polished Steel	<b>WFTXPSW</b>	<b>WFTXPSB</b>
Brushed Steel	<b>WFTXBSW</b>	<b>WFTXBSB</b>
Polished Brass	<b>WFTXPBW</b>	<b>WFTXPBB</b>
Black Nickel	-	<b>WFTXBNB</b>

### Flat Plate Quadplexer TV, FM/DAB, Satellite 1 & Satellite 2 Outlet

Polished Steel	<b>WFQXPSW</b>	<b>WFQXPSB</b>
Brushed Steel	<b>WFQXBSW</b>	<b>WFQXBSB</b>
Polished Brass	<b>WFQXPBW</b>	<b>WFQXPBB</b>
Black Nickel	-	<b>WFQXBNB</b>



WRP1EUPBW

## Euro Frontplates Raised Plate

### Characteristics:

- Carrier plates facilitate installation of industry standard modules.
- Easy to configure for all applications.
- Quick release of modules for maintenance.
- WR references supplied with M3.5 x 30mm long fixing screws.
- WF references supplied with M3.5 x 20mm long fixing screws.

Description	Cat ref. White Insert	Cat ref. Black Insert
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### Raised Plate 1 Module

Polished Steel	<b>WRP1EUPSW</b>	<b>WRP1EUPSB</b>
Brushed Steel	<b>WRP1EUBSW</b>	<b>WRP1EUBSB</b>
Polished Brass	<b>WRP1EUPBW</b>	<b>WRP1EUPBB</b>
Black Nickel	-	<b>WRP1EUBNB</b>

### Raised Plate 2 Modules

Polished Steel	<b>WRP2EUPSW</b>	<b>WRP2EUPSB</b>
Brushed Steel	<b>WRP2EUBSW</b>	<b>WRP2EUBSB</b>
Polished Brass	<b>WRP2EUPBW</b>	<b>WRP2EUPBB</b>
Black Nickel	-	<b>WRP2EUBNB</b>

### Raised Plate 4 Modules

Polished Steel	<b>WRP4EUPSW</b>	<b>WRP4EUPSB</b>
Brushed Steel	<b>WRP4EUBSW</b>	<b>WRP4EUBSB</b>
Polished Brass	<b>WRP4EUPBW</b>	<b>WRP4EUPBB</b>
Black Nickel	-	<b>WRP4EUBNB</b>



WRP1EUPSB



WRP1EUPSB

## Euro Frontplates Flat Plate

### Characteristics:

- Carrier plates facilitate installation of industry standard modular data outlets.
- Easy to configure for all applications.
- Quick release of modules for maintenance.
- WR references supplied with M3.5 x 30mm long fixing screws.
- WF references supplied with M3.5 x 20mm long fixing screws.

Description	Cat ref. White Insert	Cat ref. Black Insert
<b>Flat Plate 1 Module</b>		
Polished Steel	<b>WFP1EUPSW</b>	<b>WFP1EUPSB</b>
Brushed Steel	<b>WFP1EUBSW</b>	<b>WFP1EUBSB</b>
Polished Brass	<b>WFP1EUPBW</b>	<b>WFP1EUPBB</b>
Black Nickel	-	<b>WFP1EUBNB</b>
<b>Flat Plate 2 Modules</b>		
Polished Steel	<b>WFP2EUPSW</b>	<b>WFP2EUPSB</b>
Brushed Steel	<b>WFP2EUBSW</b>	<b>WFP2EUBSB</b>
Polished Brass	<b>WFP2EUPBW</b>	<b>WFP2EUPBB</b>
Black Nickel	-	<b>WFP2EUBNB</b>
<b>Flat Plate 4 Modules</b>		
Polished Steel	<b>WFP4EUPSW</b>	<b>WFP4EUPSB</b>
Brushed Steel	<b>WFP4EUBSW</b>	<b>WFP4EUBSB</b>
Polished Brass	<b>WFP4EUPBW</b>	<b>WFP4EUPBB</b>
Black Nickel	-	<b>WFP4EUBNB</b>



WFP1EUBSB



WFP1EUBNB

## Euro Style Modules

Description	Mod Width	Cat ref. (White)	Cat ref. (Black)
BT Telephone Master Euromodule	1	<b>WMMBTM</b>	<b>WMMBTMB</b>
BT Telephone Secondary Euromodule	1	<b>WMMBTS</b>	<b>WMMBTSB</b>
RJ11 - Modem Euromodule	1	<b>WMMRJ11</b>	<b>WMMRJ11B</b>
RJ45 - Cat 6 UTP Euromodule	1	<b>WMMRJ45</b>	<b>WMMRJ45B</b>
Phono Plugs - Red/Black - Gold Plated Euromodule	1	<b>WMMPP</b>	-
Speaker Terminal Posts - Gold Plated Euromodule	1	<b>WMMSP</b>	-
Single IEC Female Non Isolated Euromodule	1	<b>WMMTVF</b>	<b>WMMTVFB</b>
Single IEC Male Non Isolated Euromodule	1	<b>WMMTVM</b>	<b>WMMTVMB</b>
Single Satellite F Connector Euromodule	1	<b>WMMSAT</b>	<b>WMMSATB</b>
Single Blank Euromodule	1	<b>WMMB</b>	<b>WMMBB</b>
PIR Occupancy Sensor Euromodule 5m	1	<b>WMMPIR05X</b>	-
PIR Occupancy Sensor Euromodule 10m	1	<b>WMMPIR10X</b>	-
HDMI Module	2	<b>WMMHDMI</b>	<b>WMMHDMIB</b>
USB Euromodule with Twin USB	2	<b>WMMUSB</b>	<b>WMMUSBB</b>
Diplexer - TV & FM Radio Euromodule	2	<b>WMMDX</b>	<b>WMMDXB</b>
Triplexer - TV, Satellite & FM Radio Euromodule	2	<b>WMMTX</b>	<b>WMMTXB</b>
Quadplexer - TV, Satellite, FM Radio & Return Euromodule	2	<b>WMMQX</b>	<b>WMMQXB</b>



WMMBTM WMMBTS



WMMQXB



WFTVLPPSW

### Euro Lounge Plates

Description	Cat ref. White Insert	Cat ref. Black Insert
<b>Flat Plate Lounge Plate for TV, Power &amp; Data</b>		
Polished Steel	<b>WFTVLPPSW</b>	<b>WFTVLPPSB</b>
Brushed Steel	<b>WFTVLPBSW</b>	<b>WFTVLPBSB</b>
Black Nickel	-	<b>WFTVLPNB</b>
White Metal	<b>WFTVLPWW</b>	-
<b>Raised Plate Lounge Plate for TV, Power &amp; Data</b>		
White Metal	<b>WRTVLPWW</b>	-
<b>Lounge Plate Back Box</b>		
Steel	<b>WFTVBOX</b>	-



WRGP1PB

### Grid Plates Raised Plate

Description	Cat ref.
<b>Raised Plate 1 Gang Grid Plate</b>	
Polished Steel	<b>WRGP1PS</b>
Brushed Steel	<b>WRGP1BS</b>
Polished Brass	<b>WRGP1PB</b>
Black Nickel	<b>WRGP1BN</b>



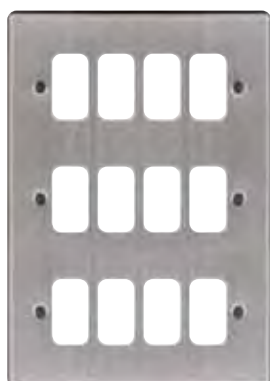
WFGP1PS

### Raised Plate 2 Gang Grid Plate

Polished Steel	<b>WRGP2PS</b>
Brushed Steel	<b>WRGP2BS</b>
Polished Brass	<b>WRGP2PB</b>
Black Nickel	<b>WRGP2BN</b>

### Raised Plate 3 Gang Grid Plate

Polished Steel	<b>WRGP3PS</b>
Brushed Steel	<b>WRGP3BS</b>
Polished Brass	<b>WRGP3PB</b>
Black Nickel	<b>WRGP3BN</b>



WRGP12BS

### Raised Plate 4 Gang Grid Plate

Polished Steel	<b>WRGP4PS</b>
Brushed Steel	<b>WRGP4BS</b>
Polished Brass	<b>WRGP4PB</b>
Black Nickel	<b>WRGP4BN</b>

### Raised Plate 6 Gang (3 x 2) Grid Plate

Polished Steel	<b>WRGP6PS</b>
Brushed Steel	<b>WRGP6BS</b>
Polished Brass	<b>WRGP6PB</b>
Black Nickel	<b>WRGP6BN</b>

### Raised Plate 8 Gang (4 x 2) Grid Plate

Polished Steel	<b>WRGP8PS</b>
Brushed Steel	<b>WRGP8BS</b>
Polished Brass	<b>WRGP8PB</b>
Black Nickel	<b>WRGP8BN</b>

### Raised Plate 12 Gang (4 x 3) Grid Plate

Polished Steel	<b>WRGP12PS</b>
Brushed Steel	<b>WRGP12BS</b>
Polished Brass	<b>WRGP12PB</b>
Black Nickel	<b>WRGP12BN</b>



**Grid Plates Flat Plate**

Description	Cat ref.
<b>Flat Plate 1 Gang Grid Plate</b>	
Polished Steel	<b>WFGP1PS</b>
Brushed Steel	<b>WFGP1BS</b>
Polished Brass	<b>WFGP1PB</b>
Black Nickel	<b>WFGP1BN</b>
<b>Flat Plate 2 Gang Grid Plate</b>	
Polished Steel	<b>WFGP2PS</b>
Brushed Steel	<b>WFGP2BS</b>
Polished Brass	<b>WFGP2PB</b>
Black Nickel	<b>WFGP2BN</b>
<b>Flat Plate 3 Gang Grid Plate</b>	
Polished Steel	<b>WFGP3PS</b>
Brushed Steel	<b>WFGP3BS</b>
Polished Brass	<b>WFGP3PB</b>
Black Nickel	<b>WFGP3BN</b>
<b>Flat Plate 4 Gang Grid Plate</b>	
Polished Steel	<b>WFGP4PS</b>
Brushed Steel	<b>WFGP4BS</b>
Polished Brass	<b>WFGP4PB</b>
Black Nickel	<b>WFGP4BN</b>
<b>Flat Plate 6 Gang (3 x 2) Grid Plate</b>	
Polished Steel	<b>WFGP6PS</b>
Brushed Steel	<b>WFGP6BS</b>
Polished Brass	<b>WFGP6PB</b>
Black Nickel	<b>WFGP6BN</b>
<b>Flat Plate 8 Gang (4 x 2) Grid Plate</b>	
Polished Steel	<b>WFGP8PS</b>
Brushed Steel	<b>WFGP8BS</b>
Polished Brass	<b>WFGP8PB</b>
Black Nickel	<b>WFGP8BN</b>
<b>Flat Plate 12 Gang (4 x 3) Grid Plate</b>	
Polished Steel	<b>WFGP12PS</b>
Brushed Steel	<b>WFGP12BS</b>
Polished Brass	<b>WFGP12PB</b>
Black Nickel	<b>WFGP12BN</b>



WFGP1PS



WFGP2BS



WFGP3PB

**Grid Frames**

Description	Cat ref.
<b>Frames for White Moulded and Decorative Raised Plate ranges</b>	
1 Gang Frame	<b>WMGF1</b>
2 Gang Frame	<b>WMGF2</b>
3/4 Gang Frame	<b>WMGF34</b>
<b>Frames for Decorative Flat Plate ranges</b>	
1 Gang Frame	<b>WFGF1</b>
2 Gang Frame	<b>WFGF2</b>
3/4 Gang Frame	<b>WFGF34</b>



WMGF34



WMGKS



WMGB1



WMINDRED



WMGSDP2/CHD



WMGSDP2/EF

## Grid Switches

### Characteristics:

- Complies with BS EN 606691-1 switches, BS 5733 fuse carrier.
- Shallowest switch modules which clip in from the front for ease of installation and maintenance.
- Terminal screw can be accessed with modules clipped into frames.
- Frames locate to finished wall level.
- Frames clip together to ease alignment for 6 gang and 8 gang applications.
- We also offer a bespoke printing service for your individual requirements. Please contact our Sales Service Centre on 01952 675612 for further details.

Description	Cat ref. White Insert	Cat ref. Black Insert
<b>Grid Switches</b>		
Blank Module	<b>WMGB1</b>	-
20AX 2 Way Single Pole Switch	<b>WMGS12</b>	-
20A Intermediate Switch	<b>WMGS16</b>	-
20A 2 Way Retractive Switch	<b>WMGS22R</b>	-
20A 1 Way Double Pole Switch	<b>WMGSDP2</b>	-
20A Double Pole Key Switch	<b>WMGKS</b>	<b>WMGKSB</b>
20A Double Pole Key Switch Printed 'Emergency Lighting Test'	<b>WMGKS/EL</b>	-
13A Fuse Carrier	<b>WMGFU13</b>	-
Dimmer Switch	<b>WMGSD1S</b>	<b>WMGSD1SB</b>
Dimmer Switch Leading Edge	<b>WMGSD1L</b>	<b>WMGSD1LB</b>
Dimmer Switch Trailing Edge	<b>WMGSD1T</b>	<b>WMGSD1TB</b>
Red Indicator	<b>WMINDRED</b>	-
2 Way & Centre Off Latching Switch	<b>WMGS13L</b>	<b>WMGS13LB</b>
2 Way & Centre Off Latching Switch Red Rocker	<b>WMGS13LR</b>	-
2 Way & Centre Off Retractive Switch	<b>WMGS13R</b>	<b>WMGS13RB</b>
2 Way & Centre Off Retractive Switch Red Rocker	<b>WMGS13RR</b>	-
13A Fused Connection Unit Unswitched with LED	<b>WMGSU83N</b>	-

### 20A Grid Switches - Printed

20A 1 Way Double Pole Switch Printed 'Cooker Hood'	<b>WMGSDP2/CHD</b>	<b>WMGSDP2B/CHD</b>
20A 1 Way Double Pole Switch Printed 'Dishwasher'	<b>WMGSDP2/DW</b>	<b>WMGSDP2B/DW</b>
20A 1 Way Double Pole Switch Printed 'Extract Fan'	<b>WMGSDP2/EF</b>	<b>WMGSDP2B/EF</b>
20A 1 Way Double Pole Switch Printed 'Fridge Freezer'	<b>WMGSDP2/FF</b>	<b>WMGSDP2B/FF</b>
20A 1 Way Double Pole Switch Printed 'Freezer'	<b>WMGSDP2/FRE</b>	<b>WMGSDP2B/FRE</b>
20A 1 Way Double Pole Switch Printed 'Fridge'	<b>WMGSDP2/FRI</b>	<b>WMGSDP2B/FRI</b>
20A 1 Way Double Pole Switch Printed 'Hob'	<b>WMGSDP2/HB</b>	<b>WMGSDP2B/HB</b>
20A 1 Way Double Pole Switch Printed 'Heating'	<b>WMGSDP2/HTG</b>	<b>WMGSDP2B/HTG</b>
20A 1 Way Double Pole Switch Printed 'Microwave'	<b>WMGSDP2/MW</b>	<b>WMGSDP2B/MW</b>
20A 1 Way Double Pole Switch Printed 'Tumble Dryer'	<b>WMGSDP2/TD</b>	<b>WMGSDP2B/TD</b>
20A 1 Way Double Pole Switch Printed 'Waste Disposal'	<b>WMGSDP2/WD</b>	<b>WMGSDP2B/WD</b>
20A 1 Way Double Pole Switch Printed 'Washing Machine'	<b>WMGSDP2/WM</b>	<b>WMGSDP2B/WM</b>
20A 1 Way Double Pole Switch Printed 'Oven'	<b>WMGSDP2/OV</b>	<b>WMGSDP2B/OV</b>
20A 1 Way Double Pole Switch Printed 'Wine Cooler'	<b>WMGSDP2/WC</b>	<b>WMGSDP2B/WC</b>
20A 1 Way Double Pole Switch Printed 'Hot Water'	<b>WMGSDP2/HW</b>	<b>WMGSDP2B/HW</b>
20A 1 Way Double Pole Switch Printed 'Coffee Maker'	<b>WMGSDP2/CM</b>	<b>WMGSDP2B/CM</b>
20A 1 Way Double Pole Switch Printed 'Hot Drawer'	<b>WMGSDP2/HD</b>	<b>WMGSDP2B/HD</b>
20A 1 Way Double Pole Switch Printed 'Fan Boost'	<b>WMGSDP2/FB</b>	<b>WMGSDP2B/FB</b>
20A 1 Way Double Pole Switch Printed 'Boiler'	<b>WMGSDP2/BOI</b>	-
20A 1 Way Double Pole Switch Printed 'Outside Light'	<b>WMGSDP2/OL</b>	-
20A 1 Way Double Pole Switch Printed 'Plinth Heater'	<b>WMGSDP2/PH</b>	-

## Grid Switches - Printed

### Characteristics:

- Complies with BS EN 606691-1 switches, BS 5733 fuse carrier.
- Shallowest switch modules which clip in from the front for ease of installation and maintenance.
- Terminal screw can be accessed with modules clipped into frames.
- Frames locate to finished wall level.
- Frames clip together to ease alignment for 6 gang and 8 gang applications.
- We also offer a bespoke printing service for your individual requirements. Please contact our Sales Service Centre on 01952 675612 for further details.

Description	Cat ref. White Insert	Cat ref. Black Insert
<b>20A Grid Switches with LED - Printed</b>		
20A 1 Way Double Pole Switch with LED Indicator Printed 'Cooker Hood'	<b>WMGSDP2N/CHD</b>	<b>WMGSDP2NB/CHD</b>
20A 1 Way Double Pole Switch with LED Indicator Printed 'Dishwasher'	<b>WMGSDP2N/DW</b>	<b>WMGSDP2NB/DW</b>
20A 1 Way Double Pole Switch with LED Indicator Printed 'Extract Fan'	<b>WMGSDP2N/EF</b>	<b>WMGSDP2NB/EF</b>
20A 1 Way Double Pole Switch with LED Indicator Printed 'Fridge Freezer'	<b>WMGSDP2N/FF</b>	<b>WMGSDP2NB/FF</b>
20A 1 Way Double Pole Switch with LED Indicator Printed 'Freezer'	<b>WMGSDP2N/FRE</b>	<b>WMGSDP2NB/FRE</b>
20A 1 Way Double Pole Switch with LED Indicator Printed 'Fridge'	<b>WMGSDP2N/FRI</b>	<b>WMGSDP2NB/FRI</b>
20A 1 Way Double Pole Switch with LED Indicator Printed 'Hob'	<b>WMGSDP2N/HB</b>	<b>WMGSDP2NB/HB</b>
20A 1 Way Double Pole Switch with LED Indicator Printed 'Heating'	<b>WMGSDP2N/HTG</b>	<b>WMGSDP2NB/HTG</b>
20A 1 Way Double Pole Switch with LED Indicator Printed 'Microwave'	<b>WMGSDP2N/MW</b>	<b>WMGSDP2NB/MW</b>
20A 1 Way Double Pole Switch with LED Indicator Printed 'Tumble Dryer'	<b>WMGSDP2N/TD</b>	<b>WMGSDP2NB/TD</b>
20A 1 Way Double Pole Switch with LED Indicator Printed 'Waste Disposal'	<b>WMGSDP2N/WD</b>	<b>WMGSDP2NB/WD</b>
20A 1 Way Double Pole Switch with LED Indicator Printed 'Washing Machine'	<b>WMGSDP2N/WM</b>	<b>WMGSDP2NB/WM</b>
20A 1 Way Double Pole Switch with LED Indicator Printed 'Oven'	<b>WMGSDP2N/OV</b>	-
20A 1 Way Double Pole Switch with LED Indicator Printed 'Outside Light'	<b>WMGSDP2N/OL</b>	-
20A 1 Way Double Pole Switch with LED Indicator Printed 'Plinth Heater'	<b>WMGSDP2N/PH</b>	-

## Blank Plates Raised Plate

### Characteristics:

- WR references supplied with M3.5 x 30mm long fixing screws.
- WF references supplied with M3.5 x 20mm long fixing screws.

Description	Cat ref.
<b>Raised Plate Switch Blank Plate</b>	
Polished Steel	<b>WRP1PS</b>
Brushed Steel	<b>WRP1BS</b>
Polished Brass	<b>WRP1PB</b>
Black Nickel	<b>WRP1BN</b>



WRP1PS

<b>Raised Plate Twin Blank Plate</b>	
Polished Steel	<b>WRP2PS</b>
Brushed Steel	<b>WRP2BS</b>
Polished Brass	<b>WRP2PB</b>
Black Nickel	<b>WRP2BN</b>



WRP2PB

## Blank Plates Flat Plate

Description	Cat ref.
<b>Flat Plate Switch Blank Plate</b>	
Polished Steel	<b>WFP1PS</b>
Brushed Steel	<b>WFP1BS</b>
Polished Brass	<b>WFP1PB</b>
Black Nickel	<b>WFP1BN</b>



WFP1BS

<b>Flat Plate Twin Blank Plate</b>	
Polished Steel	<b>WFP2PS</b>
Brushed Steel	<b>WFP2BS</b>
Polished Brass	<b>WFP2PB</b>
Black Nickel	<b>WFP2BN</b>



WPPS12W



WPPS12



## Metalclad Wall Switches

### Characteristics:

- Unique patented LOOP terminal to allow neutral looping at the switch.
- Complies with BS EN 60669-1, a.c only.
- 'X' rated - No need to de-rate for fluorescent loads.
- Capacity of each terminal 2 x 4.0mm<sup>2</sup> conductors.
- Available as plate only for installation with standard wall box.

Description	Cat ref. Plate Only	Cat ref. With Backbox Without Knockouts	Cat ref. With Backbox With Knockouts
<b>Wall Switches White</b>			
50A Double Pole Switch 1 Gang with LED Indicator	<b>WPDP50NW</b>	<b>WPDP50NBW</b>	<b>WPDP50NBKOW</b>
20A Double Pole Switch with Flex Outlet	<b>WPDP84FOW</b>	<b>WPDP84FOBW</b>	<b>WPDP84FOBKOW</b>
20A Double Pole Switch with LED Indicator & Flex Outlet	<b>WPDP84FONW</b>	<b>WPDP84FONBW</b>	<b>WPDP84FONBKOW</b>
10AX 1 Gang 2 Way Wall Switch	<b>WPPS12W</b>	<b>WPPS12BW</b>	<b>WPPS12BKOW</b>
10AX 2 Gang 2 Way Wall Switch	<b>WPPS22W</b>	<b>WPPS22BW</b>	<b>WPPS22BKOW</b>
10AX 3 Gang 2 Way Wall Switch	<b>WPPS32W</b>	<b>WPPS32BW</b>	<b>WPPS32BKOW</b>
10AX Push Switch	<b>WPPS12RW</b>	<b>WPPS12RBW</b>	<b>WPPS12RBKOW</b>

### Wall Switches Grey

50A Double Pole Switch 1 Gang with LED Indicator	<b>WPDP50N</b>	<b>WPDP50NB</b>	<b>WPDP50NBKO</b>
20A Double Pole Switch with Flex Outlet	<b>WPDP84FO</b>	<b>WPDP84FOB</b>	<b>WPDP84FOBKO</b>
20A Double Pole Switch with LED Indicator & Flex Outlet	<b>WPDP84FON</b>	<b>WPDP84FONB</b>	<b>WPDP84FONBKO</b>
10AX 1 Gang 2 Way Wall Switch	<b>WPPS12</b>	<b>WPPS12B</b>	<b>WPPS12BKO</b>
10AX 2 Gang 2 Way Wall Switch	<b>WPPS22</b>	<b>WPPS22B</b>	<b>WPPS22BKO</b>
10AX 3 Gang 2 Way Wall Switch	<b>WPPS32</b>	<b>WPPS32B</b>	<b>WPPS32BKO</b>
10AX Push Switch	<b>WPPS12R</b>	<b>WPPS12RB</b>	<b>WPPS12RBKO</b>

## Metalclad Socket Outlets

### Characteristics:

- Unique patented three part safety shutter.
- Complies with BS 1363-2, a.c only.
- Double pole switching mechanism on switched sockets.
- Twin socket comes with twin earth as standard.
- Terminal screws grouped in-line and upward facing for ease of installation with clear printed and engraved terminal markings.
- Capacity of each terminal: 5 x 2.5mm<sup>2</sup> conductors switched; 4 x 2.5mm<sup>2</sup> unswitched (for other sized conductors see terminal capacities on page 5.44).
- Available as plate only for installation with standard wall box.



W PSS81W



W PSS81

Description	Cat ref. Plate Only	Cat ref. With Backbox Without Knockouts	Cat ref. With Backbox With Knockouts
<b>Socket Outlets White</b>			
1 Gang Double Pole Switch Socket	<b>WPSS81W</b>	<b>WPSS81BW</b>	<b>WPSS81BKOW</b>
1 Gang Double Pole Switch Socket with LED Indicator	<b>WPSS81NW</b>	<b>WPSS81NBW</b>	<b>WPSS81NBKOW</b>
2 Gang Double Pole Switch Socket	<b>WPSS82W</b>	<b>WPSS82BW</b>	<b>WPSS82BKOW</b>
2 Gang Double Pole Switch Socket with LED Indicator	<b>WPSS82NW</b>	<b>WPSS82NBW</b>	<b>WPSS82NBKOW</b>
2 Gang Double Pole Switch Socket Outboard Rockers	<b>WPSS82OW</b>	<b>WPSS82OBW</b>	<b>WPSS82OBKOW</b>
<b>Socket Outlets Grey</b>			
1 Gang Double Pole Switch Socket	<b>WPSS81</b>	<b>WPSS81B</b>	<b>WPSS81BKO</b>
1 Gang Double Pole Switch Socket with LED Indicator	<b>WPSS81N</b>	<b>WPSS81NB</b>	<b>WPSS81NBKO</b>
2 Gang Double Pole Switch Socket	<b>WPSS82</b>	<b>WPSS82B</b>	<b>WPSS82BKO</b>
2 Gang Double Pole Switch Socket with LED Indicator	<b>WPSS82N</b>	<b>WPSS82NB</b>	<b>WPSS82NBKO</b>
2 Gang Double Pole Switch Socket Outboard Rockers	<b>WPSS82O</b>	<b>WPSS82OB</b>	<b>WPSS82OBKO</b>

## Metalclad Fuse Connection Units

### Characteristics:

- Complies with BS 1363-4.
- Single screw fast fix cable clamp accommodates up to 1.5mm<sup>2</sup> flexible cord.
- All terminals are upward facing with clearly printed terminal markings for ease of installation.
- Capacity of each terminal 2 x 6.0 mm<sup>2</sup> conductors.
- Available as plate only for installation with standard wall box.

Description	Cat ref. Plate Only	Cat ref. With Backbox Without Knockouts	Cat ref. With Backbox With Knockouts
<b>Fuse Connection Units White</b>			
13A FCU Unswitched with Flex Outlet	<b>WPSU83FOW</b>	<b>WPSU83FOBW</b>	<b>WPSU83FOBKOW</b>
13A FCU Switched with Flex Outlet	<b>WPSSU83FOW</b>	<b>WPSSU83FOBW</b>	<b>WPSSU83FOBKOW</b>
13A FCU Switched with LED Indicator & Flex Outlet	<b>WPSSU83FONW</b>	<b>WPSSU83FONBW</b>	<b>WPSSU83FONBOW</b>



WPSSU83FOW

### Fuse Connection Units Grey

13A FCU Unswitched with Flex Outlet	<b>WPSU83FO</b>	<b>WPSU83FOB</b>	<b>WPSU83FOBKO</b>
13A FCU Switched with Flex Outlet	<b>WPSSU83FO</b>	<b>WPSSU83FOB</b>	<b>WPSSU83FOBKO</b>
13A FCU Switched with LED Indicator & Flex Outlet	<b>WPSSU83FON</b>	<b>WPSSU83FONB</b>	<b>WPSSU83FONBKO</b>



WPSSU83FON

## Metalclad Grid Plates

Description	Cat ref. Plate Only	Cat ref. With Backbox Without Knockouts	Cat ref. With Backbox With Knockouts
<b>Grid Plates White</b>			
Grid plate 1 Gang	<b>WPGP1W</b>	<b>WPGP1BW</b>	<b>WPGP1BKOW</b>
Grid plate 2 Gang	<b>WPGP2W</b>	<b>WPGP2BW</b>	<b>WPGP2BKOW</b>
Grid plate 3 Gang	<b>WPGP3W</b>	<b>WPGP3BW</b>	<b>WPGP3BKOW</b>
Grid plate 4 Gang	<b>WPGP4W</b>	<b>WPGP4BW</b>	<b>WPGP4BKOW</b>
Grid plate 6 Gang	<b>WPGP6W</b>	<b>WPGP6BW</b>	<b>WPGP6BKOW</b>
Grid plate 8 Gang	<b>WPGP8W</b>	<b>WPGP8BW</b>	<b>WPGP8BKOW</b>



WPGP1W

### Grid Plates Grey

Grid plate 1 Gang	<b>WPGP1</b>	<b>WPGP1B</b>	<b>WPGP1BKO</b>
Grid plate 2 Gang	<b>WPGP2</b>	<b>WPGP2B</b>	<b>WPGP2BKO</b>
Grid plate 3 Gang	<b>WPGP3</b>	<b>WPGP3B</b>	<b>WPGP3BKO</b>
Grid plate 4 Gang	<b>WPGP4</b>	<b>WPGP4B</b>	<b>WPGP4BKO</b>
Grid plate 6 Gang	<b>WPGP6</b>	<b>WPGP6B</b>	<b>WPGP6BKO</b>
Grid plate 8 Gang	<b>WPGP8</b>	<b>WPGP8B</b>	<b>WPGP8BKO</b>



WPGP1



WPGP3



WPGP2



WPP1EUW



WPP1EU

### Metalclad Euro Plates

#### Characteristics:

- Carrier plates facilitate installation of industry standard modular data outlets.
- Easy to configure for all applications.
- Quick release of modules for maintenance.
- Available as plate only for installation with standard wall box.

Description	Cat ref. Plate Only	Cat ref. With Backbox Without Knockouts	Cat ref. With Backbox With Knockouts
<b>Euro Plates White</b>			
1 Module Euro Plate	<b>WPP1EUW</b>	<b>WPP1EUBW</b>	<b>WPP1EUBKOW</b>
2 Module Euro Plate	<b>WPP2EUW</b>	<b>WPP2EUBW</b>	<b>WPP2EUBKOW</b>
4 Module Euro Plate	<b>WPP4EUW</b>	<b>WPP4EUBW</b>	<b>WPP4EUBKOW</b>
<b>Euro Plates Grey</b>			
1 Module Euro Plate	<b>WPP1EU</b>	<b>WPP1EUB</b>	<b>WPP1EUBKO</b>
2 Module Euro Plate	<b>WPP2EU</b>	<b>WPP2EUB</b>	<b>WPP2EUBKO</b>
4 Module Euro Plate	<b>WPP4EU</b>	<b>WPP4EUB</b>	<b>WPP4EUBKO</b>



WMMBTM

WMMSAT



WMMQXB

### Euro Style Modules

Description	Mod Width	Cat ref. (White)	Cat ref. (Black)
BT Telephone Master Euromodule	1	<b>WMMBTM</b>	<b>WMMBTMB</b>
BT Telephone Secondary Euromodule	1	<b>WMMBTS</b>	<b>WMMBTSB</b>
RJ11 - Modem Euromodule	1	<b>WMMRJ11</b>	<b>WMMRJ11B</b>
RJ45 - Cat 6 UTP Euromodule	1	<b>WMMRJ45</b>	<b>WMMRJ45B</b>
Phono Plugs - Red/Black - Gold Plated Euromodule	1	<b>WMMPP</b>	-
Speaker Terminal Posts - Gold Plated Euromodule	1	<b>WMMSP</b>	-
Single IEC Female Non Isolated Euromodule	1	<b>WMMTVF</b>	<b>WMMTVFB</b>
Single IEC Male Non Isolated Euromodule	1	<b>WMMTVM</b>	<b>WMMTVMB</b>
Single Satellite F Connector Euromodule	1	<b>WMMSAT</b>	<b>WMMSATB</b>
Single Blank Euromodule	1	<b>WMMB</b>	<b>WMMBB</b>
PIR Occupancy Sensor Euromodule 5m	1	<b>WMMPIR05X</b>	-
PIR Occupancy Sensor Euromodule 10m	1	<b>WMMPIR10X</b>	-
HDMI Module	2	<b>WMMHDMI</b>	<b>WMMHDMIB</b>
USB Euromodule with Twin USB	2	<b>WMMUSB</b>	<b>WMMUSBB</b>
Diplexer - TV & FM Radio Euromodule	2	<b>WMMDX</b>	<b>WMMDXB</b>
Triplexer - TV, Satellite & FM Radio Euromodule	2	<b>WMMTX</b>	<b>WMMTXB</b>
Quadplexer - TV, Satellite, FM Radio & Return Euromodule	2	<b>WMMQX</b>	<b>WMMQXB</b>

**Metalclad Accessories**

Description	Cat ref. Plate Only	Cat ref. With Backbox Without Knockouts	Cat ref. With Backbox With Knockouts
<b>Accessories White</b>			
Single Backbox	-	<b>WPB140W</b>	<b>WPB140KOW</b>
Twin Backbox	-	<b>WPB240W</b>	<b>WPB240KOW</b>
Two Row Twin Backbox	-	<b>WPB6840W</b>	<b>WPB6840KOW</b>
Single Blank Plate	<b>WPP1W</b>	<b>WPP1BW</b>	<b>WPP1BKOW</b>
Twin Blank Plate	<b>WPP2W</b>	<b>WPP2BW</b>	<b>WPP2BKOW</b>
<b>Accessories Grey</b>			
Single Backbox	-	<b>WPB140</b>	<b>WPB140KO</b>
Twin Backbox	-	<b>WPB240</b>	<b>WPB240KO</b>
Two Row Twin Backbox	-	<b>WPB6840</b>	<b>WPB6840KO</b>
Single Blank Plate	<b>WPP1</b>	<b>WPP1B</b>	<b>WPP1BKO</b>
Twin Blank Plate	<b>WPP2</b>	<b>WPP2B</b>	<b>WPP2BKO</b>



WPB140W



WPB140KO



WXPPS12

**Wall Switches**

**Characteristics:**

- IP66 rating conforms to BS EN 60529 : 1992.
- Functional products tested and certified to BS EN 60669-1, a.c. only.
- Robust and rugged enclosures designed to withstand the elements.
- Cable entries: 90 x 90 = 4x20, 1x20 & 1x25

Description	Dimensions (mm)	
	(W x H)	Cat ref.
10AX 1 Gang 2 Way Switch	90 x 90	<b>WXPPS12</b>
10AX 2 Gang 2 Way Switch	90 x 90	<b>WXPPS22</b>
20AX Double Pole 1 Gang 1 Way Switch	90 x 90	<b>WXPPD84</b>
10A 1 Gang Bell Push Switch	90 x 90	<b>WXPPS12B</b>



WXPSS82

**Socket Outlets**

**Characteristics:**

- IP66 rating conforms to BS EN 60529 : 1992.
- Functional products tested and certified to BS 1363 Part 2, a.c. only.
- Robust and rugged enclosures designed to withstand the elements.
- Unique double hinge allows lid to open a full 180 degrees.
- Fixing point for padlock.
- Cable entries: 103 x 116.5 = 4x20, 1x20 & 1x25  
164 x 116.5 = 6x20, 1x20 & 1x25

Description	Dimensions (mm)	
	(W x H)	Cat ref.
13A 1 Gang Double Pole Unswitched Socket	103 x 116.5	<b>WXPS81</b>
13A 1 Gang Double Pole Switched Socket	103 x 116.5	<b>WXPSS81</b>
13A 2 Gang Double Pole Unswitched Socket	164 x 116.5	<b>WXPS82</b>
13A 2 Gang Double Pole Switched Socket	164 x 116.5	<b>WXPSS82</b>



WXPSSU83FO

**Fused Connection Units**

**Characteristics:**

- IP66 rating conforms to BS EN 60529 : 1992.
- Functional products tested and certified to BS 1363-4.
- Robust and rugged enclosures designed to withstand the elements.
- Unique double hinge allows lid to open a full 180 degrees.
- Fixing point for padlock.
- Cable entries: 103 x 116.5 = 4x20, 1x20 & 1x25

Description	Dimensions (mm)	
	(W x H)	Cat ref.
13A Double Pole Fused Connect Unit with Flex Outlet	103 x 116.5	<b>WXPSSU83FO</b>





# Printed

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J501

### Traditional Junction Box

**Characteristics:**

- Complies with BS EN 60670-22.
- Slot terminals are ideal for taking spurs off uncut ring or loop circuit cables.
- Solid machined brass terminals.
- Junction box covers secured by single centre screws.
- Junction box selection chart see page 5.46.

Description	Terminal capacity (mm <sup>2</sup> )	Pack qty.	Cat ref.
Knockout Slot Terminal Junction Box 20A 4 Terminal	3 x 1.5	10	<b>J201</b>
Selective Entry Slot Terminal Junction Box 20A 4 Terminal	3 x 1.5	10	<b>J301</b>
Selective Entry Slot Terminal Junction Box 30A 3 Terminal	4 x 2.5	10	<b>J401</b>
Selective Entry Slot Terminal Junction Box 20A 6 Terminal	3 x 1.5	10	<b>J601</b>



J804

### Maintenance Free Junction Box

**Characteristics:**

- Complies with BS EN 60670-22.
- Suitable for use in inaccessible areas.
- Spring fit terminals do not relax over time.
- Four separate cable terminations per connector.
- Comes complete with incoming and outgoing cable clamps.
- Junction box selection chart see page 5.46.

Description	Terminal capacity	Pack qty.	Cat ref.
Maintenance Free 32A - 3 Terminals	3 x 4mm <sup>2</sup> x (0.5 - 4.0)	10	<b>J803</b>
Maintenance Free 20A - 4 Terminals	4 x 4mm <sup>2</sup> x (0.5 - 4.0)	10	<b>J804</b>



J501

### Downlighter Junction Box

**Characteristics:**

- Comes complete with incoming and outgoing cable clamps to prevent strain on terminations.
- Three plate terminals with separate terminals for flexible cords.
- Complies with BS EN 60670-22.
- Fits through a 58mm diameter hole.
- 3 plate terminal style with captive terminal screws.
- Separate terminals for flexible cords.
- Current rating: 16 Amp.
- Junction box selection chart see page 5.46.

Description	Terminal capacity	Pack qty.	Cat ref.
Downlighter Junction Box	3 x (3 x 1.5mm <sup>2</sup> ) 1 x (2 x 1.5mm <sup>2</sup> )	10	<b>J501</b>



J701/TB

### Junction / Adaptable Box

**Characteristics:**

- Junction box cover secured by two screws
- Accepts 16mm x 16mm and/or 16mm x 25mm mini-trunking.
- Junction box selection chart see page 5.46.

Description	Terminal capacity	Pack qty.	Cat ref.
No Terminals	-	10	<b>J701</b>
With Terminal Block, Cable Ties & Related Wiring Card	4 x 1.5mm <sup>2</sup>	10	<b>J701/TB</b>



# Light up your life.

Our range of LED lights with integral PIR sensors are here to light up your life.

With our LED Lamp and LED Floodlight, you will benefit from our innovative installation technique of using pin-contacts, and our LED lights can be set at convenience via a remote control.

Brighten your world and save energy with our LED lights.

**:hager**



SEL212

### Safety Lampholders

#### Characteristics:

- Complies with BS EN 7895.
- T2 heat resistance rating: 210°C.
- Automatically disconnect power at the contacts when the lamp is removed.
- 50.8mm fixing centres for non-access versions. Use with mounting blocks **MB326E/MT**.
- Body angle of angled battens set at 30°.
- Access lampholders have integral **RL624** ceiling rose base and heat resisting PVC tails.
- All pendants incorporate automatic cord grips and sleeve caps for ease of flexible cord stripping.

Description	Pack qty.	Cat ref.
<b>Safety Bayonet Cap Cord Grip Lampholders</b>		
Safety Cord Grip Lampholders - Short Skirt	20	<b>SEL212</b>
Safety Cord Grip Lampholders - Home Office Shield	20	<b>SEL214</b>



SEL354

#### Safety Straight Batten Lampholders

Three Terminal - Home Office Shield	20	<b>SEL354</b>
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#### Safety Access Batten Lampholders

Straight 2 Terminal Body, 3 Terminal and Earth Base - Home Office Shield	10	<b>SEL96T</b>
Angled 2 Terminal Body, 3 Terminal and Earth Base - Home Office Shield	10	<b>SEL106T</b>



SEL96T



624SEL212/6

### Safety Pendants Sets with Access to Ceiling Rose

#### Characteristics:

- Pendant set complies with BS EN 60598-1.
- Capacity of each terminal: 3 x 1.00mm<sup>2</sup> conductor.
- Barriers between terminals.
- Flexible pendant cord restraining hooks.
- Fixing centres 50.8mm.
- Feet on base to aid mounting on uneven surfaces.
- Three separate knockouts accept 1, 2 or 3 x 1.5mm<sup>2</sup> conductors.
- Optional halo **RL602**.

Description	Pack qty.	Cat ref.
Safety Pendant Set 6" - Short Skirt	10	<b>624SEL212/6</b>
Safety Pendant Set 9" - Short Skirt	10	<b>624SEL212/9</b>
Safety Pendant Set 12" - Short Skirt	10	<b>624SEL212/12</b>
Safety Shield Pendant Set 6"- Home Office Shield	10	<b>624SEL214/6</b>
Safety Pendant Set 6" with Safety Cover	10	<b>624SEL212SC6</b>

### Super Access Terminal Bank Type Ceiling Rose

**Characteristics:**

- Pendant set complies with BS EN 60598-1.
- Capacity of each terminal: 3 x 1.00mm<sup>2</sup> conductor
- Common base with 'access' batten lampholders.
- Barriers between terminals.
- Flexible pendant cord restraining hooks.
- Fixing centres 50.8mm.
- Feet on base to aid mounting on uneven surfaces.
- Three separate knockouts accept 1, 2 or 3 x 1.5mm<sup>2</sup> conductors.
- Optional halo **RL602** (see below)

Description	Dimensions	Pack qty.	Cat ref.
Three Terminals	81 Diameter x 26 (halo = 108mm diameter)	10	<b>RL624</b>

### Low Energy Pendant

Description	Pack qty.	Cat ref.
Low Energy Pendant to accommodate GU10-L1 lamp	1	<b>LEL212/6</b>



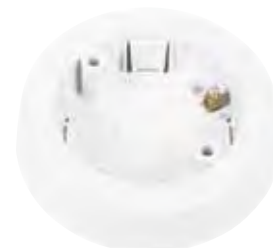
LEL212/6

### Mounting Blocks

**Characteristics:**

- Capacity of earth terminal for mounting blocks: 3 x 1.5mm<sup>2</sup>.
- Cable knockout entries: **MB326E/MT** - centrally in base. Four on periphery will accept 16mm x 16mm or 16mm x 25mm mini trunking.

Description	Dimensions	Pack qty.	Cat ref.
Round Mounting Box with Earth Terminal	81 x 19	20	<b>MB326E/MT</b>
Round Surface Box 30mm Deep	84 x 30	10	<b>MB2</b>



MB326E/MT

### Lampholder Skirts (Home Office Shield and Shade Ring)

**Characteristics:**

- Suitable for use with any lampholder or batten lampholder.

Description	Pack qty.	Cat ref.
Short Skirts	50	<b>HAL70</b>
Home Office Shield	50	<b>HAL72</b>

### Halo

Description	Pack qty.	Cat ref.
Halo (108mm Diameter)	20	<b>RL602</b>



RL602

Product Reference	Product Description	Standard Surface Box Reference	Deep Surface Box Reference
WMBTM	BT Master Telephone Outlet	WMPB1/28	WMPB1/46
WMBTS	BT Secondary Telephone Outlet	WMPB1/28	WMPB1/46
WMCC50	50A Cooker Control Unit	WMPB2/46CC	N/A
WMCC50N	50A Cooker Control Unit with LED Indicator	WMPB2/46CC	N/A
WMDP50N	50A Double Pole Switch 1 Gang with LED Indicator	WMPB1/46	N/A
WMDP50VN	50A Double Pole Switch 2 Gang Vertical with LED Indicator	WMPB2/46	N/A
WMDP84	20A Double Pole Switch	WMPB1/28	WMPB1/46
WMDP84FO	20A Double Pole Switch with Flex Outlet	WMPB1/28	WMPB1/46
WMDP84FON	20A Double Pole Switch with LED Indicator & Flex Outlet	WMPB1/28	WMPB1/46
WMDP84N	20A Double Pole Switch with LED Indicator	WMPB1/28	WMPB1/46
WMDP85FON	20A Double Pole Switch with LED Indicator & Flex Outlet Printed Water Heater	WMPB1/28	WMPB1/46
WMDP85N	20A Double Pole Switch with LED Indicator Printed Water Heater	WMPB1/28	WMPB1/46
WMDS1	1 Gang Dimmer	WMPB1/28	WMPB1/46
WMDS2	2 Gang Dimmer	WMPB1/28	WMPB1/46
WMDS3	3 Gang Dimmer	WMPB2/28	WMPB2/46
WMDS4	4 Gang Dimmer	WMPB2/28	WMPB2/46
WMDX	Double TV & FM/DAB CO-AX Socket Outlet	WMPB1/28	WMPB1/46
WMP1	Single Blank Plate	WMPB1/20	WMPB1/28
WMP2	Twin Blank Plate	WMPB2/28	N/A
WMP2FO	Flex Outlet Plate 20A	WMPB1/20	WMPB1/28
WMP50FO	Cooker Cable Outlet with Terminals	WMPB1/46	N/A
WMPS11	10AX 1 Gang 1 Way Wall Switch	WMPB1/20	WMPB1/28
WMPS12	10AX 1 Gang 2 Way Wall Switch	WMPB1/20	WMPB1/28
WMPS12R	Push Switch	WMPB1/20	WMPB1/28
WMPS12RB	Push Switch with Bell Symbol	WMPB1/20	WMPB1/28
WMPS12W	10AX 1 Gang 2 Way Wall Switch Wide Rocker	WMPB1/20	WMPB1/28
WMPS16	Intermediate Switch	WMPB1/20	WMPB1/28
WMPS22	10AX 2 Gang 2 Way Wall Switch	WMPB1/20	WMPB1/28
WMPS22W	10AX 2 Gang 2 Way Wall Switch Wide Rocker	WMPB1/20	WMPB1/28
WMPS32	10AX 3 Gang 2 Way Wall Switch	WMPB1/20	WMPB1/28
WMPS3PI	3 Pole Isolator Switch	WMPB1/20	WMPB1/28
WMPS3PIF	3 Pole Isolator Switch with Fan Symbol	WMPB1/20	WMPB1/28
WMPS42	10AX 4 Gang 2 Way Wall Switch	WMPB2/28	WMPB2/28
WMQX	Quadplexer TV & FM/DAB & SAT1 & SAT2	WMPB1/28	WMPB1/46
WMRJ11	RJ11 Socket	WMPB1/28	WMPB1/46
WMRJ45	RJ45 Socket	WMPB1/28	WMPB1/46
WMS51	5A 1 Gang Unswitched Socket	WMPB1/28	WMPB1/46
WMS81	13A 1 Gang Unswitched Socket	WMPB1/28	WMPB1/46
WMS82	13A 2 Gang Unswitched Socket Dual Earth	WMPB2/28	WMPB2/46
WMSAT	Single F Type Satellite Outlet Screened	WMPB1/28	WMPB1/46
WMSO100	115/230V Shaver Outlet	WMPB2/46	N/A
WMSS81	1 Gang Double Pole Switched Socket	WMPB1/28	WMPB1/46
WMSS82	2 Gang Double Pole Switched Socket Dual Earth	WMPB2/28	WMPB2/46
WMSS82O	2 Gang Double Pole Switched Outlet Outboard Rockers	WMPB2/28	WMPB2/46
WMSSU83	13A Fused Connection Unit Switched	WMPB1/28	WMPB1/46
WMSSU83FO	13A Fused Connection Unit Switched with Flex Outlet	WMPB1/28	WMPB1/46
WMSSU83FON	13A Fused Connection Unit Switched with LED Indicator & Flex Outlet	WMPB1/28	WMPB1/46
WMSSU83N	13A Fused Connection Unit Switched with LED Indicator	WMPB1/28	WMPB1/46
WMSU83	13A Fused Connection Unit Unswitched	WMPB1/28	WMPB1/46
WMSU83FO	13A Fused Connection Unit Unswitched with Flex Outlet	WMPB1/28	WMPB1/46
WMTVF	Single CO-AX TV Socket Outlet Female	WMPB1/28	WMPB1/46
WMTVM	Single CO-AX TV Socket Outlet Male	WMPB1/28	WMPB1/46
WMTX	TriplexerTV & FM/DAB & SAT Outlet	WMPB1/28	WMPB1/46

Accessory Type	Rating	Maximum number of conductors per terminal (Solid or Stranded conductors BS 6004)						
		1.0 mm <sup>2</sup>	1.5 mm <sup>2</sup>	2.5 mm <sup>2</sup>	4.0 mm <sup>2</sup>	6.0 mm <sup>2</sup>	10.0 mm <sup>2</sup>	16.0 mm <sup>2</sup>
Plate & Ceiling Accessories	10AX	4	4	3	2	-	-	-
Dimmer Switches	10AX	4	3	-	-	-	-	-
BS 546 Socket Outlet	5A	3	3	3	2	2	-	-
Shaver Socket	10A	4	3	2	-	-	-	-
Fused Connection Units	13A	-	-	3	2	2	-	-
BS 1363 Socket Outlets	13A	-	-	3	3	2	-	-
BS546 Socket Outlet	15A	-	-	3	3	2	-	-
Flex Outlet Plates	20A	5	4	3	2	2	-	-
Double Pole Switches	20A	-	-	3	2	2	1	-
Double Pole Switches	45/50A	-	-	-	3	2	1	1
Cooker Control Unit	45A	-	-	-	3	2	1	1
Cooker Connection Outlet	45A	-	-	-	2	3	-	-
Grid Switches	20AX	4	4	3	2	-	-	-

**Printed Products**

Many of our Sollysta wiring accessories are available with printed options, such as Washing Machine, Dishwasher etc.

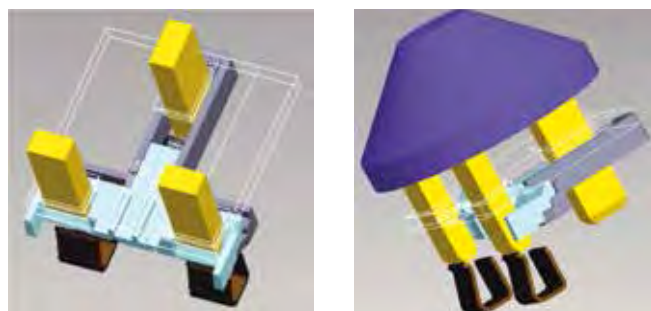
For a full list of products generally available from stock please go to [www.hager.co.uk/printedproducts](http://www.hager.co.uk/printedproducts)

We also offer a bespoke printing service for your individual requirements. Please contact our Sales Service Centre on 01952 675612 for further details.

**Unique Safety Shutter**

Socket outlets have apertures for plug pins and therefore will have a shutter mechanism that prevents access to live parts unless the earth pin is also present and has been inserted first. This however can be either intentionally or inadvertently defeated by inserting something into the earth pin aperture.

All Sollysta sockets have a unique patented three pin shutter system that not only requires the earth pin to be inserted first, but the simultaneous insertion of the live and neutral pins as well, before the shutter mechanism is activated. This enhances the safety by making it more difficult to defeat the mechanism and therefore reducing the risk of electric shock.



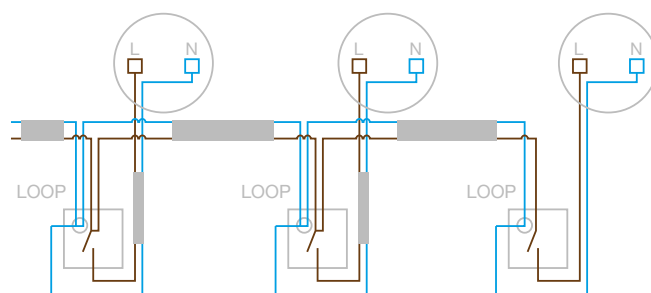
**Neutral Loop Terminal**

Today it is increasingly likely that there is a decorative light fitting or even downlighters fitted in place of a standard pendant. These fittings are rarely provided with a neutral loop terminal.

It has also become more popular to make the loop connection at the switch. This has the advantage of the connections being accessible and at a more convenient working height.

However, this leaves the problem of terminating the neutral conductor.

One solution is to connect the neutral to a connector block inside the wall box, which takes up extra space. Another is to use the Sollysta light switch which has a unique neutral loop terminal.



The IP rating for all low voltage enclosures up to 1000 V a.c. and 1500 V d.c. is defined in identical fashion by the standards EN 60529 - IEC 529. It comprises the letters IP followed by two character numerals and or additional/supplementary letters.

The first character numeral indicates the degree of protection provided by the enclosure against access to hazardous parts by preventing or limiting the ingress of a part of the human body or an object held by a person and ingress of solid foreign objects.

The first character numeral:  
Protection against foreign objects

IP	Description	
0		Non-protected
1		Protected against solid objects $\geq$ than 50mm
2		Protected against solid objects $\geq$ than 12.5mm
3		Protected against solid objects $\geq$ than 2.5mm
4		Protected against solid objects $\geq$ than 1.0mm
5		Dust-protected
6		Dust-tight

The second character numeral indicates the degree of protection provided by the enclosure with respect to harmful effects on the equipment due to the ingress of water. An X signifies that the tests are not applicable to the product.

The second character numeral:  
Protection against ingress of water with harmful effects

IP	Description	
0		Non-protected
1		Protected against vertically falling water drops
2		Protected against vertically falling water drops when enclosure tilted up to 15°
3		Protected against spraying water
4		Protected against splashing water
5		Protected against water jets
6		Protected against powerful water jets
7		Protected against the effect of temporary immersion in water
8		Protected against continuous immersion in water

**Additional letter (in option)**  
Protection of people against access to hazardous parts

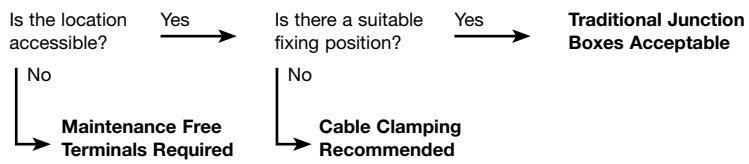
	Description
A	Protected against access to hazardous parts with the back of the hand
B	Protected against access to hazardous parts with a finger
C	Protected against access to hazardous parts with a tool - $\phi$ 2.5mm
D	Protected against access to hazardous parts with a wire - $\phi$ 1mm

**Additional letter (in option)**  
Specific information on the product

	Description
H	High voltage apparatus
M	Motion during water test
S	Stationary during water test
W	Weather conditions



**Junction Box Selection Chart**



Description	N° of Terminals	Terminal Rating	Reference	Benefits / Considerations
Downlighter Junction Box	3 x 3 x 1.5mm <sup>2</sup> 1 x 2 x 1.5mm <sup>2</sup>	16A	J501	Provided with cable clamps and separate terminals for flex
Maintenance Free Junction Box	3 x 4 x (0.5-4.0mm <sup>2</sup> )	32A	J803	Suitable for use in inaccessible locations
	4 x 4 x (0.5 - 4.0mm <sup>2</sup> )	20A	J804	
Traditional Junction Boxes	4	20A	J201	Acceptable for locations which are accessible
	4	20A	J301	
	3	30A	J401	
	6	20A	J601	

# Conterfeiting: A plague gaining ground



The conterfeiting of products is gaining ground around the world. Counterfeiting does not only concern luxury items, but also covers electrical products where peoples safety is endangered.

Counterfeit products do not bring any guarantee of safety or quality. These products can be dangrous, contain inappropriate materials or be of poor quality. In certain cases only the external appearance is preserved and the vital functions are removed to reduce the costs.



# check.hager.com

## **Authentication Process**

All of our circuit breakers, switches and earth leakage circuit breakers have been assigned a unique identification number which can be located on the side of the product. The identification number from each product is then stored in a protected data base. If it doesn't have a number, then please contact us immediately.

## **Dedicated Website**

Our customers can access this database to check the authenticity of a hager product by going to [check.hager.com](http://check.hager.com). the website will immediately check the validity of the identification number on the product and confirm if it is authentic or a suspected counterfeit.

## **Action Plan**

If you think you have a counterfeit product, contact Hager on 01952 675612 along with the details of the wholesaler from which the product was purchased. We will then take all the appropriate information and collect the product for analysis. if necessary we will take appropriate legal action.

## **Ethical Charter**

As a manufacturer we commit to:

- Providing our customers with the means to check the authenticity of our products
- To communicate the results of any investigations

Our distributors commit:

- To make sure that products purchased are not counterfeit.
- To inform the manufacturers of any offers to counterfeit products
- To support the actions of manufacturers.

**To ensure customers can check the authenticity of our products we have set up a simple and rapid procedure called: [check.hager.com](http://check.hager.com)**

<b>#</b>		<b>B</b>		CR64AX/LSF/1.0	3.4	EG006	2.32
624SEL212/6	5.41	BD163T	1.6, 1.29, 1.34	CR64AX/LSF/2.0	3.4	EG007	2.32
624SEL212/9	5.41	BD264	1.29	CR64AX/LSF/3.0	3.4	EG010	2.31
624SEL212/12	5.41	BD464	1.29	CR64AX/LSF/4.0	3.4	EG071	2.31
624SEL212SC6	5.41	BDC280E	1.32	CZ001	1.36	EG103	2.31
624SEL214/6	5.41	BDC380E	1.32	CZ007	1.35	EG103E	2.31
		BDC480E	1.32	CZ008	1.35	EG203	2.31
<b>A</b>		BE163T	1.6, 1.29, 1.34	CZN005	1.35	EG203E	2.31
A1	3.4	BE264	1.29	CZN006	1.35	EG493E	2.32
ACB106	1.33	BE464	1.29	<b>E</b>		EH010	2.31
ACB116	1.33	BF163T	1.6, 1.29, 1.34	EC050	2.13	EH011	2.31
ACB125	1.33	BF264	1.29	EC051	2.13	EH110	2.31
ACB132	1.33	BF464	1.29	EC100	2.20	EH111	2.31
ACC106	1.33	BFC480E	1.32	EC150	2.13	EH171	2.31
ACC116	1.33	BN264	1.29	EC152	2.13	EK081	2.34
ACC125	1.33	BN464	1.29	EC154M	2.13	EK082	2.34
ACC132	1.33	BP264	1.29	EC350	2.14	EK083	2.34
ADA156U	1.33, 4.13	BP464	1.29	EC352	2.14	EK186	2.34
ADA160U	1.33, 4.13	BTC280E	1.32	EC360	2.14	EK187	2.34
ADA166U	1.33, 4.13	BTC380E	1.32	EC362	2.14	EMN001	2.33
ADA170U	1.33, 4.13	BTC480E	1.32	EC364M	2.14	EMN005	2.33
ADA182U	1.33, 4.13	<b>C</b>		EC362	2.14	EPN050	2.26
ADA906U	1.34	CCA216U	1.35	EC365B	2.14	EPN051	2.26
ADA910U	1.34	CCC216U	1.35	EC370	2.15	EPN510	2.26
ADA916U	1.34	CD280U	1.35	EC372	2.15	EPN513	2.26
ADA920U	1.34	CD284U	1.35	EC1260CT	1.22, 2.18	EPN515	2.26
ADA925U	1.34	CD480U	1.35	EC2560CT	1.22, 2.18	EPN518	2.26
ADA940U	1.34	CD484U	1.35	EC12100CT	1.22, 2.18	EPN519	2.26
ADA956U	1.34	CDA225U	1.35	EC12125CT	1.22, 2.18	EPN520	2.26
ADA960U	1.34	CDA240U	1.35	EC12160CT	1.22, 2.18	EPN521	2.26
ADA966U	1.34	CDA263U	1.35	EC25100CT	1.22, 2.18	EPN522	2.26
ADA970U	1.34	CDA425U	1.35	EC25125CT	1.22, 2.18	EPN524	2.26
ADA975U	1.34	CDA440U	1.35	EC25160CT	1.22, 2.18	EPN525	2.26
ADA982U	1.34	CDA463U	1.35	EC25200CT	1.22, 2.18	EPN528	2.26
ADA990U	1.34	CDC225U	1.35	EC25250CT	1.22, 2.18	EPN529	2.26
ADB106	1.33	CDC240U	1.35	EC40250CT	1.22, 2.18	EPN540	2.26
ADB110	1.33	CDC263U	1.35	EC40400CT	1.22, 2.18	EPN541	2.26
ADB116	1.33	CDC425U	1.35	EC40630CT	1.22, 2.18	ERC218	2.26
ADB120	1.33	CDC440U	1.35	EC80800CT	1.22, 2.18	ERC418	2.26
ADB125	1.33	CDC463U	1.35	ECM01	1.21, 2.17	ERD218	2.26
ADB132	1.33	CE280U	1.35	EE002	2.24	ERD418	2.26
ADB140	1.33	CE284U	1.35	EE003	2.24	ERL218	2.26
ADB145	1.33	CE480U	1.35	EE171	2.24	ERL418	2.26
ADC106	1.33	CE484U	1.35	EE180	2.32	ESC001	2.27
ADC110	1.33	CEC225U	1.35	EE181	2.32	ESC002	2.27
ADC116	1.33	CEC240U	1.35	EE600	3.17	ESC003	2.27
ADC120	1.33	CEC263U	1.35	EE610	3.17	ESC080	2.27
ADC125	1.33	CEC425U	1.35	EE806	3.15	ESC225S	2.27
ADC132	1.33	CEC440U	1.35	EE810	3.3, 3.8, 3.16	ESC240S	2.27
ADC140	1.33	CEC463U	1.35	EE811	3.3, 3.8, 3.16	ESC263S	2.27
ADC145	1.33	CF280U	1.35	EE813	3.3, 3.8, 3.16	ESC325S	2.27
ADC806F	1.34	CF284U	1.35	EE820	3.15	ESC340S	2.27
ADC810F	1.34	CF480U	1.35	EE825	3.15	ESC425S	2.27
ADC816F	1.34	CF484U	1.35	EE827	3.15	ESC426S	2.27
ADC820F	1.34	CFC225U	1.35	EE840	3.15	ESC428S	2.27
ADC825F	1.34	CFC240U	1.35	EE855	3.15	ESC440S	2.27
ADC832F	1.34	CFC263U	1.35	EE856	3.15	ESC463S	2.27
ADN106	4.13	CFC425U	1.35	EE860	3.15	EVN002	2.25
ADN110	4.13	CFC440U	1.35	EE861	3.15	EVN004	2.25
ADN116	4.13	CFC463U	1.35	EE870	3.15	EVN011	2.25
ADN120	4.13	CN284U	1.35	EE871	3.15	EVN012	2.25
ADN132	4.13	CN484U	1.35	EE880	3.3, 3.8, 3.15	EZN001	2.33
ADN140	4.13	CP284U	1.35	EE883	3.3, 3.8, 3.15	EZN002	2.33
ADN145	4.13	CP484U	1.35	EE960	2.24	EZN003	2.33
AEC110	1.33	CR64AX	3.4	EEK001	3.3, 3.7, 3.8, 3.16	EZN004	2.33
AEC116	1.33	CR64AX/1.0	3.4	EEK002	3.3, 3.7, 3.8, 3.16	EZN005	2.33
AEC120	1.33	CR64AX/1.0LSF/2	3.4	EEK005	3.3, 3.7, 3.8, 3.16	EZN006	2.33
AEC125	1.33	CR64AX/1.0LSF/3	3.4	EEK006	3.15	<b>F</b>	
AEC132	1.33	CR64AX/1.0LSF/4	3.4	EEK510B	3.3, 3.16	FL81Z	2.8
		CR64AX/1.0LSF/5	3.4	EEK513P	3.7	FL96Z	2.8
		CR64AX/1.0PVC/2	3.4	EEK513W	3.3	FL97Z	2.8
		CR64AX/1.0PVC/3	3.4	EEK515P	3.7	FL98Z	2.8
		CR64AX/1.0PVC/4	3.4	EEK520B	3.16	FL102A	2.8
		CR64AX/1.0PVC/5	3.4	EEK523P	3.7	FL104A	2.8
		CR64AX/2.0	3.4	EEK525P	3.7	FL105A	2.8
		CR64AX/3.0	3.4	EEN100	2.24	FL110A	2.8
		CR64AX/4.0	3.4	EG003G	2.32	FL117A	2.8
				EG004	2.32	FL118A	2.8
				EG005	2.32	FL120A	2.8



JF444BD	1.15	JG03S	1.25	JK022	1.4	JK124BA3-DK	1.11
JF444BM	1.15	JG04S	1.25	JK024	1.4	JK124BG	1.5
JF444BS	1.15	JG05S	1.25	JK25A	1.28, 4.9, 4.11, 4.13	JK125BSP	1.11
JF450CF	1.21	JG10A	1.25	JK030BEB	1.11	JK128	1.3
JF608B	1.17	JG20A	1.25	JK032	1.4	JK129A	1.4
JF608BG	1.17	JG25BM	1.26	JK044	1.4	JK129AG	1.4
JF801E	1.15, 1.18	JG26BM	1.26	JK066	1.4	JK132E	1.9
JF801EG	1.15, 1.18	JG27BM	1.26	JK100HK	1.11	JK132EA3	1.9
JF803E	1.15, 1.18	JG27BR	1.26	JK100TAP	1.11	JK132EA3-DK	1.9
JF803EG	1.15, 1.18	JG28BM	1.26	JK101BSH	1.10	JK132EG	1.9
JF803PM	1.18	JG29BM	1.26	JK101DK	1.9	JK140PM	1.6
JF805DK	1.16, 1.18	JG30BM	1.26	JK101SE	1.9	JK201BSH	1.10
JF805E	1.16, 1.18	JG30BR	1.26	JK102DK	1.9	JK201SE	1.9
JF806DK	1.16, 1.18	JG31BM	1.26	JK102LE	1.9	JK202LE	1.9
JF806E	1.16, 1.18	JG32BM	1.26	JK104	1.3	JK208B	1.7
JF812B	1.17	JG33BM	1.26	JK104B	1.5	JK208BA3	1.7
JF812BG	1.17	JG34BS	1.26	JK104BA3	1.5	JK208BA3-DK	1.11
JF818B	1.17	JG35BS	1.26	JK104BA3-DK	1.11	JK208BDFFA3	1.10
JF818BG	1.17	JG36BM	1.26	JK104BD	1.5	JK208BDFG	1.10
JF843BM	1.17	JG37BM	1.26	JK104BDFFA3	1.10	JK208BG	1.7
JF844BM	1.17	JG37BR	1.26	JK104BDFG	1.10	JK208BSF	1.10
JF844BSW	1.17	JG38BR	1.26	JK104BF	1.5	JK208BSH	1.10
JF863BM	1.17	JG40BM	1.26	JK104BG	1.5	JK212B	1.7
JF864BM	1.17	JG41BM	1.26	JK104BSF	1.10	JK212BA3	1.7
JF864BSW	1.17	JG42BS	1.26	JK104BSH	1.10	JK212BA3-DK	1.11
JF884BD	1.17	JG43BS	1.26	JK106	1.3	JK212BDFFA3	1.10
JF3004TM	1.21	JG44BM	1.26	JK106B	1.5	JK212BDFG	1.10
JF4508TM	1.21	JG45BM	1.26	JK106BA3	1.5	JK212BG	1.7
JF12504SM	1.21	JG45BR	1.26	JK106BA3-DK	1.11	JK212BSF	1.10
JF14006SM	1.21	JG46BS	1.26	JK106BD	1.5	JK212BSH	1.10
JF15508SM	1.21	JG47BS	1.26	JK106BDFFA3	1.10	JK216B	1.7
JF17009SM	1.21	JG48BM	1.26	JK106BDFG	1.10	JK216BA3	1.7
JF60204B	1.17	JG49BM	1.26	JK106BF	1.5	JK216BA3-DK	1.11
JF60204BG	1.17	JG50BS	1.26	JK106BG	1.5	JK216BDFFA3	1.10
JF80206B	1.17	JG51BS	1.26	JK106BSF	1.10	JK216BDFG	1.10
JF80206BG	1.17	JG416DC	1.25	JK106BSH	1.10	JK216BG	1.7
JF80210B	1.17	JG425DC	1.25	JK108B	1.5	JK216BSF	1.10
JF80210BG	1.17	JG440DC	1.25	JK108BA3	1.5	JK216BSH	1.10
JF80404B	1.17	JHF812B	1.19	JK108BA3-DK	1.11	JK216E	1.9
JF80404BG	1.17	JHF812BG	1.19	JK108BD	1.5	JK216EA3	1.9
JF80408B	1.17	JHF818B	1.19	JK108BDFFA3	1.10	JK216EA3-DK	1.9
JF80408BG	1.17	JHF818BG	1.19	JK108BDFG	1.10	JK216EG	1.9
JF80414B	1.17	JHF883BM	1.19	JK108BF	1.5	JK218B	1.7
JF80414BG	1.17	JHF884BM	1.19	JK108BG	1.5	JK218BA3	1.7
JF80612B	1.17	JHF80206B	1.19	JK108BSF	1.10	JK218BA3-DK	1.11
JF80612BG	1.17	JHF80206BG	1.19	JK108BSH	1.10	JK218BDFFA3	1.10
JFA03	1.21, 2.17	JHF80210B	1.19	JK110	1.3	JK218BDFG	1.10
JFB202U	1.23	JHF80210BG	1.19	JK112B	1.5	JK218BG	1.7
JFB203U	1.23	JHF80404B	1.19	JK112BA3	1.5	JK218BSF	1.10
JFB302U	1.23	JHF80404BG	1.19	JK112BA3-DK	1.11	JK218BSH	1.10
JFB303U	1.23	JHF80408B	1.19	JK112BD	1.5	JK222PK	1.11, 1.14, 1.16, 1.19
JFB402U	1.23	JHF80408BG	1.19	JK112BDFFA3	1.10	JK224B	1.7
JFB403U	1.23	JHF80414B	1.19	JK112BDFG	1.10	JK224BA3	1.7
JFD206U	1.23	JHF80414BG	1.19	JK112BF	1.5	JK224BA3-DK	1.11
JFD306U	1.23	JHF80612B	1.19	JK112BG	1.5	JK224BDFFA3	1.10
JFD406U	1.23	JHF80612BG	1.19	JK112BSF	1.10	JK224BDFG	1.10
JFE210U	1.23	JK1/2TOPSHROUD	1.11	JK112BSH	1.10	JK224BG	1.7
JFE310U	1.23	JK01B	1.11, 1.32	JK114	1.3	JK224BSF	1.10
JFE410U	1.23	JK01DC	1.11	JK114A	1.4	JK224BSH	1.10
JFG312U	1.23	JK1/INCOMSHROUD	1.11	JK114AG	1.4	JK232E	1.9
JFG316U	1.23	JK1/NEUTRALSHROUD	1.11	JK116B	1.5	JK232EA3	1.9
JFG320U	1.23	JK1PLATEB	1.11	JK116BA3	1.5	JK232EA3-DK	1.9
JFG325U	1.23	JK1PLATEM	1.11	JK116BA3-DK	1.11	JK232EG	1.9
JFG412U	1.23	JK2/INCOMSHROUD	1.11	JK116BD	1.5	JK240PM	1.8
JFG416U	1.23	JK2PLATEB	1.11	JK116BDFFA3	1.10	JK250BSP	1.11
JFG420U	1.23	JK2PLATEM	1.11	JK116BDFG	1.10	JK304H	1.3
JFG425U	1.23	JK04TC	1.11	JK116BF	1.5	JK306H	1.3
JFH331U	1.23	JK04TE	1.11	JK116BG	1.5	JK310H	1.3
JFH340U	1.23	JK04TJ	1.11	JK116BSF	1.10	JK314H	1.3
JFH431U	1.23	JK04TK	1.11	JK116BSH	1.10	JK320H	1.3
JFH440U	1.23	JK04TL	1.11	JK116E	1.9	JK328H	1.3
JFI363U	1.23	JK04TP	1.11	JK116EA3	1.9	JK404H	1.3
JFI380U	1.23	JK06TC	1.11	JK116EA3-DK	1.9	JK406H	1.3
JFI463U	1.23	JK06TE	1.11	JK116EG	1.9	JK410H	1.3
JFI480U	1.23	JK06TJ	1.11	JK118B	1.5	JK414H	1.3
JFPLATE	1.16, 1.19	JK06TK	1.11	JK118BA3	1.5	JK420H	1.3
JFS03	1.21, 2.18	JK06TL	1.11	JK118BA3-DK	1.11	JK527H	1.3
JFT03	1.22, 2.19	JK06TP	1.11	JK118BG	1.5	JK706C	1.3
JG00S	1.25	JK008	1.4	JK120	1.3	JK710C	1.3
JG01S	1.25	JK012	1.4	JK124B	1.5	JK714C	1.3
JG02S	1.25	JK016	1.4	JK124BA3	1.5	JK10634C	1.6

JK10634RH	1.6			KLH/10/1-5W	3.10	KLR/15/1-5W	3.13
JK11003S	1.6			KLH/5/1-5W	3.13	KL/T	3.14
JK11004C	1.6			KLH/10/1-5W	3.13	KLT/1/0-75W	3.12
JK11004RH	1.6			KLH/15/1-5W	3.13	KLT/1/1-5W	3.12
JK11004RL	1.6			KLJ/1/0-75W	3.11	KLT/1/1W	3.12
JK11004RLD	1.6			KLJ/1/1-5W	3.11	KLT/2/0-75W	3.12
JK11004RM	1.6			KLJ/1/1W	3.11	KLT/2/1-5W	3.12
JK11004RMD	1.6			KLJ/2/0-75W	3.11	KLT/2/1W	3.12
JK11004S	1.6			KLJ/2/1-5W	3.11	KLT/3/0-75W	3.12
JK11253S	1.6			KLJ/2/1W	3.11	KLT/3/1-5W	3.12
JK11254CO	1.6			KLJ/3/0-75W	3.11	KLT/3/1W	3.12
JK11254D	1.6			KLJ/3/1-5W	3.11	KLT/4/0-75W	3.12
JK11254S	1.6			KLJ/3/1W	3.11	KLT/4/1-5W	3.12
JK21253M	1.7			KLJ/4/0-75W	3.11	KLT/4/1W	3.12
JK21254M	1.7			KLJ/4/1-5W	3.11	KLT/5/0-75W	3.12
JK21604C	1.7			KLJ/4/1W	3.11	KLT/5/1-5W	3.12
JK22503M	1.7			KLJ/5/0-75W	3.11	KLV/5/1-5P	3.10
JK22503S	1.7			KLJ/5/1-5W	3.11	KLZ/10/1-5PX*	3.10
JK22504D	1.7			KLJ/5/1W	3.11	KLZ/3/1-5P	3.10
JK22504M	1.7			KLK/3/1-5P	3.10	KLZ/5/1-5P	3.10
JK22504MCS	1.7			KLK/5/1-5P	3.10	KLZ/10/1-5PX*	3.10
JKD125PM	1.6			KLK/10/1-5PX*	3.10	KM04L	2.10
JKD125TPM	1.6			KLL/5/1-5W	3.13	KM07E	2.10
JKD146PM	1.5			KLL/10/1-5W	3.13	KM07L	2.10
JKD164PM	1.5			KLL/15/1-5W	3.13	KM07N	2.10
JKD166PM	1.5			KLM/5/1-5W	3.13	KM10D	2.10
JKD168PM	1.5			KLM/10/1-5W	3.13	KM10E	2.10
JKD186PM	1.5			KLM/15/1-5W	3.13	KM10F	2.10
JKD188PM	1.5			KLMB4W	3.7	KM10N	2.10
JKD250PM	1.8			KLMB5P	3.7	KM11B	2.10
JKD250TPM	1.8			KLMB6W	3.7	KM11E	2.10
JKD1128PM	1.5			KLMB7P	3.7	KM11L	2.10
JKD1164PM	1.5			KLMB8W	3.7	KM11N	2.10
JKD1416PM	1.5			KLMB9P	3.7	KM13E	2.10
JKD1812PM	1.5			KLMB10W	3.7	KM13N	2.10
JKD2884PM	1.7			KLMB11P	3.7	KM14N	2.10
JKD11212PM	1.5			KLMB12W	3.7	KM17E	2.10
JKLABELPACK	1.11			KLMB244W	3.7	KM17N	2.10
JKM01	1.21, 2.17			KLMB255DSP	3.7	KM25E	2.10
JKM02	1.21, 2.17			KLMB255DSP/DL	3.7	KM25N	2.10
JN001BP	1.14, 1.16, 1.19			KLMB255W	3.7	KN06E	2.6
JN2PLATE	1.14			KLMB266W	3.7	KN06N	2.6
JN130VMF	1.22, 2.18			KLMB277DSP	3.7	KN10E	2.6
JN201BE	1.14			KLMB277DSP/DL	3.7	KN10N	2.6
JN201BEG	1.14			KLO5RJ45G	3.9	KN14E	2.6
JN201NS	1.14			KLO5RJ45R	3.9	KN14N	2.6
JN201PM	1.14			KLO10RJ45G	3.9	KN18E	2.6
JN203BE	1.14			KLO10RJ45R	3.9	KN18N	2.6
JN203BEG	1.14			KLO15RJ45G	3.9	KN22E	2.6
JN204B	1.13			KLO15RJ45R	3.9	KN22N	2.6
JN204BG	1.13			KLO20RJ45G	3.9	KN26E	2.6
JN205BE	1.14			KLO20RJ45R	3.9	KN26N	2.6
JN205DK	1.14			KLO30RJ45G	3.9	KN99E	2.6
JN206B	1.13			KLO30RJ45R	3.9	KN99N	2.6
JN206BE	1.14			KLO40RJ45G	3.9	KRN190	1.11
JN206BG	1.13			KLO40RJ45R	3.9	KWB01	2.11
JN206DK	1.14			KLO50RJ45G	3.9	KWE01G	2.11
JN208B	1.13			KLO50RJ45R	3.9	KWE03G	2.11
JN208BG	1.13			KLORJ45CON	3.9	KWE04G	2.11
JN212B	1.13			KLP/1/0-75W	3.11	KXA02E	2.11
JN212BG	1.13			KLP/1/1-5W	3.12	KXA02LH	2.11
JN216B	1.13			KLP/1/1W	3.12	KXA02NH	2.11
JN216BG	1.13			KLP/2/0-75W	3.11	KXA04LH	2.11
JN223BM	1.13			KLP/2/1-5W	3.12	KXA04NH	2.11
JN223BS	1.13			KLP/2/1W	3.12	KXA06LH	2.11
JN224BD	1.13			KLP/3/0-75W	3.11	KXA06NH	2.11
JN224BM	1.13			KLP/3/1-5W	3.12	KXA10E	2.11
JN224BS	1.13			KLP/3/1W	3.12	KXA10L	2.11
JN300CF	1.13			KLP/4/0-75W	3.11	KXA10N	2.11
JN450CF	1.13			KLP/4/1-5W	3.12	KXA16E	2.11
JN3003TM	1.13			KLP/4/1W	3.12	KXA16L	2.11
JN4506TM	1.13			KLP/5/0-75W	3.11	KXA16N	2.11
JN9502SM	1.13			KLP/5/1-5W	3.12	KXA35L	2.11
JN11004SM	1.13			KLP/5/1W	3.12	KXA35N	2.11
JN12506SM	1.13			KLPP/3	3.14	KXB04E	2.11
JN15508SM	1.13			KLPP/4	3.14	KXB06E	2.11
JP015	2.6			KLPP/5	3.14	KXB35E	2.11
JZA700	1.24			KLPT/6	3.14	KXB70E	2.11
JZA701	1.23, 1.24			KLR/5/1-5W	3.13	KXB70LH	2.11
JZA702	1.23, 1.24			KLR/10/1-5W	3.13	KXB70NH	2.11
JZA703	1.23					KZ012	2.10

KZ013	2.10	MZ530N	1.37	NCN325A	1.28	P22/1.0LSF/3	3.5
KZ014	2.10	MZN130	1.31	NCN332A	1.28	P22/1.0LSF/4	3.5
KZ021	2.12	MZN131	1.31	NCN340A	1.28	P22/1.0LSF/5	3.5
KZ023A	2.12	MZN175	1.28, 4.13	NCN350A	1.28	P22/1.0PVC/2	3.5
KZ024	2.12			NCN363A	1.28	P22/1.0PVC/3	3.5
KZ059	2.12	<b>N</b>		NCN400A	1.28	P22/1.0PVC/4	3.5
KZ060	2.10			NCN401A	1.28	P22/1.0PVC/5	3.5
		NBN106A	1.27	NCN402A	1.28	P22/2.0	3.5
<b>L</b>		NBN110A	1.27	NCN403A	1.28	P22/3.0	3.5
		NBN116A	1.27	NCN404A	1.28	P22/4.0	3.5
L12401	1.38	NBN120A	1.27	NCN406A	1.28	P22/LSF/1.0	3.5
L12501	1.38	NBN125A	1.27	NCN410A	1.28	P22/LSF/2.0	3.5
L12601	1.38	NBN132A	1.27	NCN416A	1.28	P22/LSF/3.0	3.5
L12701	1.38	NBN140A	1.27	NCN420A	1.28	P22/LSF/4.0	3.5
L12801	1.38	NBN150A	1.27	NCN425A	1.28	P031F	2.6
L14700	1.38	NBN163A	1.27	NCN432A	1.28	P032F	2.6
L15300	1.38	NBN206A	1.27	NCN440A	1.28	P64AX	3.5
L15500	1.38	NBN210A	1.27	NCN450A	1.28	P64AX/1.0	3.5
L15600	1.38	NBN216A	1.27	NCN463A	1.28	P64AX/1.0LSF/2	3.5
L15800	1.38	NBN220A	1.27	NDN100A	1.27	P64AX/1.0LSF/3	3.5
L17100	1.38	NBN225A	1.27	NDN101A	1.27	P64AX/1.0LSF/4	3.5
L17200	1.38	NBN232A	1.27	NDN102A	1.27	P64AX/1.0LSF/5	3.5
L17300	1.38	NBN240A	1.27	NDN103A	1.27	P64AX/1.0PVC/2	3.5
L17400	1.38	NBN250A	1.27	NDN104A	1.27	P64AX/1.0PVC/3	3.5
LB113	1.38	NBN263A	1.27	NDN106A	1.27	P64AX/1.0PVC/4	3.5
LB115	1.38	NBN306A	1.28	NDN110A	1.27	P64AX/1.0PVC/5	3.5
LB116	1.38	NBN310A	1.28	NDN116A	1.27	P64AX/2.0	3.5
LB118	1.38	NBN316A	1.28	NDN120A	1.27	P64AX/3.0	3.5
LEL212/6	5.42	NBN320A	1.28	NDN125A	1.27	P64AX/4.0	3.5
LF138	1.38	NBN325A	1.28	NDN132A	1.27	P64AX/LSF/1.0	3.5
LF139	1.38	NBN332A	1.28	NDN140A	1.27	P64AX/LSF/2.0	3.5
LF140	1.38	NBN340A	1.28	NDN150A	1.27	P64AX/LSF/3.0	3.5
LF141	1.38	NBN350A	1.28	NDN163A	1.27	P64AX/LSF/4.0	3.5
LF142	1.38	NBN363A	1.28	NDN200A	1.27	P64AX/R	3.5
LS201	1.38	NBN406A	1.28	NDN201A	1.27	P64AXR/1.0	3.6
LZ060	2.27	NBN410A	1.28	NDN202A	1.27	P64AXR/1.0LSF/2	3.6
		NBN416A	1.28	NDN204A	1.27	P64AXR/1.0LSF/3	3.6
<b>M</b>		NBN420A	1.28	NDN206A	1.27	P64AXR/1.0LSF/4	3.6
		NBN425A	1.28	NDN210A	1.27	P64AXR/1.0LSF/5	3.6
MB2	3.6, 5.42	NBN432A	1.28	NDN216A	1.27	P64AXR/1.0PVC/2	3.6
MB326E/MT	5.42	NBN440A	1.28	NDN220A	1.27	P64AXR/1.0PVC/3	3.6
MLN706A	1.32	NBN450A	1.28	NDN225A	1.27	P64AXR/1.0PVC/4	3.6
MLN710A	1.32	NBN463A	1.28	NDN232A	1.27	P64AXR/1.0PVC/5	3.6
MLN716A	1.32	NCN100A	1.27	NDN240A	1.27	P64AXR/2.0	3.6
MLN720A	1.32	NCN101A	1.27	NDN250A	1.27	P64AXR/3.0	3.6
MLN732A	1.32	NCN102A	1.27	NDN263A	1.27	P64AXR/4.0	3.6
MLN740A	1.32	NCN103A	1.27	NDN300A	1.28	P64AXR/LSF/1.0	3.6
MM501N	1.37	NCN104A	1.27	NDN301A	1.28	P64AXR/LSF/2.0	3.6
MM502N	1.37	NCN106A	1.27	NDN302A	1.28	P64AXR/LSF/3.0	3.6
MM503N	1.37	NCN110A	1.27	NDN303A	1.28	P64AXR/LSF/4.0	3.6
MM504N	1.37	NCN116A	1.27	NDN304A	1.28	PCR2000	3.3
MM505N	1.37	NCN120A	1.27	NDN306A	1.28	PCR2000/1.0	3.4
MM506N	1.37	NCN125A	1.27	NDN310A	1.28	PCR2000/1.0LSF/2	3.4
MM507N	1.37	NCN132A	1.27	NDN316A	1.28	PCR2000/1.0LSF/3	3.4
MM508N	1.37	NCN140A	1.27	NDN320A	1.28	PCR2000/1.0LSF/4	3.4
MM509N	1.37	NCN150A	1.27	NDN325A	1.28	PCR2000/1.0LSF/5	3.4
MM510N	1.37	NCN163A	1.27	NDN332A	1.28	PCR2000/1.0PVC/2	3.4
MM511N	1.37	NCN200A	1.27	NDN340A	1.28	PCR2000/1.0PVC/3	3.4
MM512N	1.37	NCN201A	1.27	NDN350A	1.28	PCR2000/1.0PVC/4	3.4
MM513N	1.37	NCN202A	1.27	NDN363A	1.28	PCR2000/1.0PVC/5	3.4
MTN106	4.13	NCN203A	1.27	NDN400A	1.28	PCR2000/2.0	3.4
MTN110	4.13	NCN204A	1.27	NDN401A	1.28	PCR2000/3.0	3.4
MTN116	4.13	NCN206A	1.27	NDN402A	1.28	PCR2000/4.0	3.4
MTN120	4.13	NCN210A	1.27	NDN403A	1.28	PCR2000/LSF/1.0	3.4
MTN125	4.13	NCN216A	1.27	NDN404A	1.28	PCR2000/LSF/2.0	3.4
MTN132	4.13	NCN220A	1.27	NDN406A	1.28	PCR2000/LSF/3.0	3.4
MTN140	4.13	NCN225A	1.27	NDN410A	1.28	PCR2000/LSF/4.0	3.4
MTN150	4.13	NCN232A	1.27	NDN416A	1.28	PG9522FEMALE	1.22, 2.19
MTN163	4.13	NCN240A	1.27	NDN420A	1.28	PG9523MALE	1.22, 2.19
MZ201	1.36	NCN250A	1.27	NDN425A	1.28	PGMF300	1.22, 2.18
MZ202	1.36	NCN263A	1.27	NDN432A	1.28	PGMF500	1.22, 2.18
MZ203	1.36	NCN300A	1.28	NDN440A	1.28	PGMF1000	1.22, 2.18
MZ204	1.36	NCN301A	1.28	NDN450A	1.28	PGMF1300	1.22, 2.18
MZ205	1.36	NCN302A	1.28	NDN463A	1.28	PGMF2000	1.22, 2.18
MZ206	1.36	NCN303A	1.28			PGMF3000	1.22, 2.18
MZ520N	1.37	NCN304A	1.28	<b>P</b>		PGMFT150	1.22, 2.18
MZ521N	1.37	NCN306A	1.28			PGMFT300	1.22, 2.18
MZ527N	1.37	NCN310A	1.28	P22	3.5	PGMFT500	1.22, 2.18
MZ528N	1.37	NCN316A	1.28	P22/1.0	3.5	PGMFT1000	1.22, 2.18
MZ529N	1.37	NCN320A	1.28	P22/1.0LSF/2	3.5	PGMFT1300	1.22, 2.18
						PGMFT2000	1.22, 2.18





VM70810HK	4.4	VML80810H	4.7	WFDP84BNB	5.23	WFP1PB	5.32
VM71214CU	4.4	VML81214CU	4.7	WFDP84BSW	5.23	WFP1PS	5.32
VM71214CUK	4.4	VML81214H	4.7	WFDP84FOBNB	5.23	WFP2BN	5.32
VM71214H	4.4	VML81820CU	4.7	WFDP84FOBSB	5.23	WFP2BS	5.32
VM71214HK	4.4	VML81820H	4.7	WFDP84FOBSW	5.23	WFP2EUBNB	5.28
VM71820CU	4.4	VML755714H	4.8	WFDP84FOPBB	5.23	WFP2EUBSB	5.28
VM71820CUK	4.4	VMLF110	4.10	WFDP84FOPBW	5.23	WFP2EUBSW	5.28
VM71820H	4.4	VMLF114	4.10	WFDP84FOPSB	5.23	WFP2EUPBB	5.28
VM71820HK	4.4	VMLF120	4.10	WFDP84FOPSW	5.23	WFP2EUPSB	5.28
VM80810CU	4.4	VMLF710C	4.10	WFDP84NBNB	5.23	WFP2EUPSW	5.28
VM80810CUK	4.4	VMLF710CU	4.10	WFDP84NBSB	5.23	WFP2PB	5.32
VM80810H	4.4	VMLF712C	4.10	WFDP84NBSW	5.23	WFP2PS	5.32
VM80810HK	4.4	VMLF712CU	4.10	WFDP84NPBB	5.23	WFP4EUBNB	5.28
VM81214CU	4.4	VMLF716C	4.10	WFDP84NPBW	5.23	WFP4EUBSB	5.28
VM81214CUK	4.4	VMLF716CU	4.10	WFDP84NPSB	5.23	WFP4EUBSW	5.28
VM81214H	4.4	VMLF810C	4.10	WFDP84NPSW	5.23	WFP4EUPBB	5.28
VM81214HK	4.4	VMLF810CU	4.10	WFDP84PBW	5.23	WFP4EUPBW	5.28
VM81820CU	4.4	VMLF812C	4.10	WFDP84PSW	5.23	WFP4EUPSB	5.28
VM81820CUK	4.4	VMLF812CU	4.10	WFDS1BN	5.19	WFP4EUPSW	5.28
VM81820H	4.4	VMLF816C	4.10	WFDS1BS	5.19	WFPS3PIBNB	5.20
VM81820HK	4.4	VMLF816CU	4.10	WFDS1PB	5.19	WFPS3PIBSB	5.20
VM755714H	4.5	VMLOCK	4.11	WFDS1PS	5.19	WFPS3PIBSW	5.20
VM755714HK	4.5	VSR110	4.9	WFDS2BN	5.19	WFPS3PIPBB	5.20
VMGROM	4.11	VSR114	4.9	WFDS2BS	5.19	WFPS3PIPBW	5.20
VMHBL	4.11	VSR120	4.9	WFDS2PB	5.19	WFPS3PIPSB	5.20
VML004	2.3	VSR710C	4.9	WFDS2PS	5.19	WFPS3PIPSW	5.20
VML008	2.3	VSR710CU	4.9	WFDS3BN	5.19	WFPS12BNB	5.18
VML012	2.3	VSR712C	4.9	WFDS3BS	5.19	WFPS12BSB	5.18
VML016	2.3	VSR712CU	4.9	WFDS3PB	5.19	WFPS12BSW	5.18
VML018	2.3	VSR716C	4.9	WFDS3PS	5.19	WFPS12PBB	5.18
VML022	2.3	VSR716CU	4.9	WFDS4BN	5.19	WFPS12PBW	5.18
VML24H	4.8	VSR810C	4.9	WFDS4BS	5.19	WFPS12PSB	5.18
VML106	4.6	VSR810CU	4.9	WFDS4PB	5.19	WFPS12PSW	5.18
VML110	4.6	VSR812C	4.9	WFDS4PS	5.19	WFPS12WBNB	5.18
VML114	4.6	VSR812CU	4.9	WFDXBNB	5.27	WFPS12WBSB	5.18
VML120	4.6	VSR816C	4.9	WFDXBBS	5.27	WFPS12WBSW	5.18
VML202	4.6	VSR816CU	4.9	WFDXBSW	5.27	WFPS12WPBB	5.18
VML206	4.6	VSRHBL	4.9	WFDXPBB	5.27	WFPS12WPBW	5.18
VML306H	4.6	VSRLOCK	4.9	WFDXPBW	5.27	WFPS12WPSB	5.18
VML310H	4.6	VZ310	2.6	WFDXPSB	5.27	WFPS12WPSW	5.18
VML314H	4.6	VZ311	2.7	WFDXPSW	5.27	WFPS16BNB	5.18
VML402H	4.6	VZ313	2.4	WFGF1	5.30	WFPS16BSB	5.18
VML406H	4.6	VZ403	2.7	WFGF2	5.30	WFPS16BSW	5.18
VML410H	4.6	VZ428	2.7	WFGF34	5.30	WFPS16PBB	5.18
VML710C	4.7	VZ703	2.6	WFGP1BN	5.30	WFPS16PBW	5.18
VML710CU	4.7	VZ706	2.6	WFGP1BS	5.30	WFPS16PSB	5.18
VML712CU	4.7	VZ707	2.6	WFGP1PB	5.30	WFPS16PSW	5.18
VML712TG	4.6	VZ708	2.6	WFGP1PS	5.30	WFPS22BNB	5.18
VML716C	4.7	VZ709	2.6	WFGP2BN	5.30	WFPS22BSB	5.18
VML716CU	4.7	VZ744	2.7	WFGP2BS	5.30	WFPS22BSW	5.18
VML733H	4.7			WFGP2PB	5.30	WFPS22PBB	5.18
VML746H	4.7	<b>W</b>		WFGP2PS	5.30	WFPS22PBW	5.18
VML754R	4.7			WFGP3BN	5.30	WFPS22PSB	5.18
VML755H	4.7	WFBTMBNB	5.25	WFGP3BS	5.30	WFPS22PSW	5.18
VML766H	4.7	WFBTMBSB	5.25	WFGP3PB	5.30	WFPS22WBNB	5.18
VML766TG	4.6	WFBTMBSW	5.25	WFGP3PS	5.30	WFPS22WBSB	5.18
VML778R	4.7	WFBTMPBB	5.25	WFGP4BN	5.30	WFPS22WBSW	5.18
VML810C	4.7	WFBTMPBW	5.25	WFGP4BS	5.30	WFPS22WPBB	5.18
VML810CU	4.7	WFBTMPBS	5.25	WFGP4PB	5.30	WFPS22WPBW	5.18
VML816C	4.7	WFBTMPSW	5.25	WFGP4PS	5.30	WFPS22WPSB	5.18
VML816CU	4.7	WFBTSBNB	5.25	WFGP6BN	5.30	WFPS22WPSW	5.18
VML846H	4.7	WFBTSBSB	5.25	WFGP6BS	5.30	WFPS32BNB	5.18
VML854R	4.7	WFBTSBSW	5.25	WFGP6PB	5.30	WFPS32BSB	5.18
VML855H	4.7	WFBTSPBB	5.25	WFGP6PS	5.30	WFPS32BSW	5.18
VML866H	4.7	WFBTSPBW	5.25	WFGP8BN	5.30	WFPS32PBB	5.18
VML878R	4.7	WFBTSPBS	5.25	WFGP8BS	5.30	WFPS32PBW	5.18
VML918C	4.8	WFBTSPSW	5.25	WFGP8PB	5.30	WFPS32PSB	5.18
VML8662	4.7	WFCC50NBNB	5.21	WFGP8PS	5.30	WFPS32PSW	5.18
VML9651	4.8	WFCC50NBSB	5.21	WFGP12BN	5.30	WFPS42BNB	5.18
VML10606	4.6	WFCC50NBSW	5.21	WFGP12BS	5.30	WFPS42BSB	5.18
VML11010	4.6	WFCC50NPBB	5.21	WFGP12PB	5.30	WFPS42BSW	5.18
VML11414	4.6	WFCC50NPBW	5.21	WFGP12PS	5.30	WFPS42PBB	5.18
VML12020	4.6	WFCC50NPSB	5.21	WFP1BN	5.32	WFPS42PBW	5.18
VML30606H	4.6	WFCC50NPSW	5.21	WFP1BS	5.32	WFPS42PSB	5.18
VML70810CU	4.7	WFDP50NBNB	5.24	WFP1EUBNB	5.28	WFPS42PSW	5.18
VML70810H	4.7	WFDP50NBSB	5.24	WFP1EUBSW	5.28	WFQXBNB	5.27
VML71214CU	4.7	WFDP50NBSW	5.24	WFP1EUBSB	5.28	WFQXBSB	5.27
VML71214H	4.7	WFDP50NPBB	5.24	WFP1EUPBB	5.28	WFQXBSW	5.27
VML71820CU	4.7	WFDP50NPBW	5.24	WFP1EUPBW	5.28	WFQXPBB	5.27
VML71820H	4.7	WFDP50NPSB	5.24	WFP1EUPSB	5.28	WFQXPBW	5.27
VML80810CU	4.7	WFDP50NPSW	5.24	WFP1EUPSW	5.28	WFQXPSB	5.27

WFQXPSW	5.27	WFTXPBB	5.27	WMGS13L	5.12, 5.31	WMGSU83N	5.12, 5.31
WFRJ45BNB	5.25	WFTXPBW	5.27	WMGS13LB	5.12, 5.31	WMINDRED	5.12, 5.31
WFRJ45BSB	5.25	WFTXPSB	5.27	WMGS13LR	5.12, 5.31	WMMB	5.10, 5.28, 5.35
WFRJ45BSW	5.25	WFTXPSW	5.27	WMGS13R	5.12, 5.31	WMMBB	5.10, 5.28, 5.35
WFRJ45PBB	5.25	WMBTM	5.9	WMGS13RB	5.12, 5.31	WMMBTM	5.10, 5.28, 5.35
WFRJ45PBW	5.25	WMBTS	5.9	WMGS13RR	5.12, 5.31	WMMBTMB	5.10, 5.28, 5.35
WFRJ45PSB	5.25	WMCC50	5.5	WMGS16	5.12, 5.31	WMMBTS	5.10, 5.28, 5.35
WFRJ45PSW	5.25	WMCC50N	5.5	WMGS22R	5.12, 5.31	WMMBTSB	5.10, 5.28, 5.35
WFS51BNB	5.21	WMCS3PF	5.11	WMGSD1L	5.12, 5.31	WMMDX	5.10, 5.28, 5.35
WFS51BSB	5.21	WMCS3PI	5.11	WMGSD1LB	5.12, 5.31	WMMDXB	5.10, 5.28, 5.35
WFS51BSW	5.21	WMCS3PIF	5.11	WMGSD1S	5.12, 5.31	WMMHDMI	5.10, 5.28, 5.35
WFS51PBB	5.21	WMCS11	5.11	WMGSD1SB	5.12, 5.31	WMMHDMIB	5.10, 5.28, 5.35
WFS51PBW	5.21	WMCS12	5.11	WMGSD1T	5.12, 5.31	WMMPIR05X	5.10, 5.28, 5.35
WFS51PSB	5.21	WMCS50N	5.11	WMGSD1TB	5.12, 5.31	WMMPIR10X	5.10, 5.28, 5.35
WFS51PSW	5.21	WMDP50N	5.8	WMGSDP2	5.12, 5.31	WMMPP	5.10, 5.28, 5.35
WFSATBNB	5.26	WMDP50N/CK	5.8	WMGSDP2B/CHD	5.13, 5.31	WMMQX	5.10, 5.28, 5.35
WFSATBSB	5.26	WMDP50NG	5.15	WMGSDP2B/CM	5.13, 5.31	WMMQXB	5.10, 5.28, 5.35
WFSATBSW	5.26	WMDP50NG/CK	5.15	WMGSDP2B/DW	5.13, 5.31	WMMRJ11	5.10, 5.28, 5.35
WFSATPBB	5.26	WMDP50N/HB	5.8	WMGSDP2B/EF	5.13, 5.31	WMMRJ11B	5.10, 5.28, 5.35
WFSATPBW	5.26	WMDP50N/OV	5.8	WMGSDP2B/FB	5.13, 5.31	WMMRJ45	5.10, 5.28, 5.35
WFSATPSB	5.26	WMDP50N/SH	5.8	WMGSDP2B/FF	5.13, 5.31	WMMRJ45B	5.10, 5.28, 5.35
WFSATPSW	5.26	WMDP50VN	5.8	WMGSDP2B/FRE	5.13, 5.31	WMMSAT	5.10, 5.28, 5.35
WFSO100BNB	5.24	WMDP50VN/CK	5.8	WMGSDP2B/FRI	5.13, 5.31	WMMSATB	5.10, 5.28, 5.35
WFSO100BSB	5.24	WMDP50VN/HB	5.8	WMGSDP2B/HB	5.13, 5.31	WMMSP	5.10, 5.28, 5.35
WFSO100BSW	5.24	WMDP50VN/OV	5.8	WMGSDP2B/HD	5.13, 5.31	WMMTVF	5.10, 5.28, 5.35
WFSO100PBB	5.24	WMDP84	5.7	WMGSDP2B/HTG	5.13, 5.31	WMMTVFB	5.10, 5.28, 5.35
WFSO100PBW	5.24	WMDP84DW	5.7	WMGSDP2B/HW	5.13, 5.31	WMMTVM	5.10, 5.28, 5.35
WFSO100PSB	5.24	WMDP84FO	5.7	WMGSDP2B/MW	5.13, 5.31	WMMTVMB	5.10, 5.28, 5.35
WFSO100PSW	5.24	WMDP84FO/FRE	5.7	WMGSDP2/BOI	5.13, 5.31	WMMTX	5.10, 5.28, 5.35
WFS81BNB	5.21	WMDP84FO/FRI	5.7	WMGSDP2B/OV	5.13, 5.31	WMMTXB	5.10, 5.28, 5.35
WFS81BSB	5.21	WMDP84FON	5.7	WMGSDP2B/TD	5.13, 5.31	WMMUSB	5.10, 5.28, 5.35
WFS81BSW	5.21	WMDP84FON/DW	5.8	WMGSDP2B/WC	5.13, 5.31	WMMUSBB	5.10, 5.28, 5.35
WFS81PBB	5.21	WMDP84FON/FAN	5.8	WMGSDP2B/WD	5.13, 5.31	WMP1	5.14
WFS81PBW	5.21	WMDP84FON/FRE	5.8	WMGSDP2B/WM	5.13, 5.31	WMP1EU	5.10
WFS81PSB	5.21	WMDP84FON/FRI	5.8	WMGSDP2/CHD	5.13, 5.31	WMP1EUG	5.15
WFS81PSW	5.21	WMDP84FON/TD	5.8	WMGSDP2/CM	5.13, 5.31	WMP2	5.14
WFS82BNB	5.21	WMDP84FON/WM	5.8	WMGSDP2/DW	5.13, 5.31	WMP2EU	5.10
WFS82BSB	5.21	WMDP84FO/TD	5.7	WMGSDP2/EF	5.13, 5.31	WMP2EUG	5.15
WFS82BSW	5.21	WMDP84FO/WM	5.7	WMGSDP2/FB	5.13, 5.31	WMP2FO	5.5
WFS82PBB	5.21	WMDP84/FRE	5.7	WMGSDP2/FF	5.13, 5.31	WMP4EU	5.10
WFS82PBW	5.21	WMDP84/FRI	5.7	WMGSDP2/FRE	5.13, 5.31	WMP4EUG	5.15
WFS82PSB	5.21	WMDP84N	5.7	WMGSDP2/FRI	5.13, 5.31	WMP50FO	5.5
WFS82PSW	5.21	WMDP84N/DW	5.8	WMGSDP2/HB	5.13, 5.31	WMPB1/20	5.14
WFS83BNB	5.22	WMDP84N/FAN	5.8	WMGSDP2/HD	5.13, 5.31	WMPB1/28	5.14
WFS83BSB	5.22	WMDP84N/FRE	5.8	WMGSDP2/HTG	5.13, 5.31	WMPB1/46	5.14
WFS83BSW	5.22	WMDP84N/FRI	5.8	WMGSDP2/HW	5.13, 5.31	WMPB1/BFO	5.14
WFS83FOBNB	5.22	WMDP84NG	5.15	WMGSDP2/MW	5.13, 5.31	WMPB2/20	5.14
WFS83FOBSB	5.22	WMDP84N/TD	5.8	WMGSDP2NB/CHD	5.13, 5.32	WMPB2/28	5.14
WFS83FOBSW	5.22	WMDP84N/WM	5.8	WMGSDP2NB/DW	5.13, 5.32	WMPB2/46	5.14
WFS83FOPBB	5.22	WMDP84/TD	5.7	WMGSDP2NB/EF	5.13, 5.32	WMPB2/46CC	5.14
WFS83FOPBW	5.22	WMDP84/WM	5.7	WMGSDP2NB/FF	5.13, 5.32	WMP3PI	5.4
WFS83FOPSB	5.22	WMDP85FON	5.8	WMGSDP2NB/FRE	5.13, 5.32	WMP3PIF	5.4
WFS83FOPSW	5.22	WMDP85N	5.8	WMGSDP2NB/FRI	5.13, 5.32	WMP311	5.3
WFS83PBB	5.22	WMDR1/400R	5.4	WMGSDP2NB/HB	5.13, 5.32	WMP311/FAN	5.3
WFS83PBW	5.22	WMDR2/250R	5.4	WMGSDP2NB/HTG	5.13, 5.32	WMP312	5.3
WFS83PSB	5.22	WMDS1	5.4	WMGSDP2NB/MW	5.13, 5.32	WMP312R	5.3
WFS83PSW	5.22	WMDS2	5.4	WMGSDP2NB/TD	5.13, 5.32	WMP312RB	5.3
WFSU83BNB	5.22	WMDS3	5.4	WMGSDP2NB/WD	5.13, 5.32	WMP312RW	5.3
WFSU83BSB	5.22	WMDS4	5.4	WMGSDP2NB/WM	5.13, 5.32	WMP312RWG	5.15
WFSU83BSW	5.22	WMDX	5.9	WMGSDP2N/CHD	5.13, 5.32	WMP312RWG/FB	5.15
WFSU83PBB	5.22	WMGB1	5.12, 5.31	WMGSDP2N/DW	5.13, 5.32	WMP312W	5.3
WFSU83PBW	5.22	WMGF1	5.12, 5.30	WMGSDP2N/EF	5.13, 5.32	WMP312WG	5.15
WFSU83PSB	5.22	WMGF2	5.12, 5.30	WMGSDP2N/FF	5.13, 5.32	WMP316	5.3
WFSU83PSW	5.22	WMGF34	5.12, 5.30	WMGSDP2N/FRE	5.13, 5.32	WMP316WG	5.15
WFTVBOX	5.29	WMGFU13	5.12, 5.31	WMGSDP2N/FRI	5.13, 5.32	WMP322	5.3
WFTVBNB	5.26	WMGKS	5.12, 5.31	WMGSDP2N/HB	5.13, 5.32	WMP322W	5.3
WFTVFBSB	5.26	WMGKSB	5.12, 5.31	WMGSDP2N/HTG	5.13, 5.32	WMP322WG	5.15
WFTVFBSW	5.26	WMGKS/EL	5.12, 5.31	WMGSDP2N/MW	5.13, 5.32	WMP332	5.3
WFTVFPBB	5.26	WMGP1	5.12	WMGSDP2N/OL	5.13, 5.32	WMP342	5.3
WFTVFPBW	5.26	WMGP1G	5.12, 5.15	WMGSDP2N/OV	5.13, 5.32	WMP362	5.3
WFTVFPBSB	5.26	WMGP2	5.12	WMGSDP2N/PH	5.13, 5.32	WMQX	5.9
WFTVFPBW	5.26	WMGP2G	5.12, 5.15	WMGSDP2N/TD	5.13, 5.32	WMRESLOAD	5.4
WFTVLPBNB	5.29	WMGP3	5.12	WMGSDP2N/WD	5.13, 5.32	WMRJ11	5.9
WFTVLPBSB	5.29	WMGP3G	5.12, 5.15	WMGSDP2N/WM	5.13, 5.32	WMRJ45	5.9
WFTVLPBSW	5.29	WMGP4	5.12	WMGSDP2/OL	5.13, 5.31	WMS51	5.5
WFTVLPBSW	5.29	WMGP4G	5.12, 5.15	WMGSDP2/OV	5.13, 5.31	WMS81	5.5
WFTVLPBSW	5.29	WMGP6	5.12	WMGSDP2/PH	5.13, 5.31	WMS82	5.5
WFTVLPWW	5.29	WMGP6G	5.12, 5.15	WMGSDP2/TD	5.13, 5.31	WMSAT	5.9
WFTXBNB	5.27	WMGP8	5.12	WMGSDP2/WC	5.13, 5.31	WMSO100	5.9
WFTXBSB	5.27	WMGP8G	5.12, 5.15	WMGSDP2/WD	5.13, 5.31	WMSS81	5.5
WFTXBSW	5.27	WMGS12	5.12, 5.31	WMGSDP2/WM	5.13, 5.31	WMSS81G	5.15

WMSS81N	5.5	WPB140KO	5.36	WPP2BW	5.36	WPSU83FOB	5.34
WMSS81R	5.16	WPB140KOW	5.36	WPP2EU	5.35	WPSU83FOBKO	5.34
WMSS81RR	5.16	WPB140W	5.36	WPP2EUB	5.35	WPSU83FOBKOW	5.34
WMSS82	5.5	WPB240	5.36	WPP2EUBKO	5.35	WPSU83FOBW	5.34
WMSS82N	5.5	WPB240KO	5.36	WPP2EUBKOW	5.35	WPSU83FOW	5.34
WMSS82O	5.5	WPB240KOW	5.36	WPP2EUBW	5.35	WRBTMBNB	5.25
WMSS82OG	5.15	WPB240W	5.36	WPP2EUW	5.35	WRBTMBSB	5.25
WMSS82ON	5.5	WPB6840	5.36	WPP2W	5.36	WRBTMBSW	5.25
WMSS82OR	5.16	WPB6840KO	5.36	WPP4EU	5.35	WRBTMPBB	5.25
WMSS82ORR	5.16	WPB6840KOW	5.36	WPP4EUB	5.35	WRBTMPBW	5.25
WMSS82R	5.16	WPB6840W	5.36	WPP4EUBKO	5.35	WRBTMPBSB	5.25
WMSS82R/CS	5.16	WPDP50N	5.33	WPP4EUBKOW	5.35	WRBTMPSPW	5.25
WMSS82R/DNS	5.16	WPDP50NB	5.33	WPP4EUBW	5.35	WRBTSBNB	5.25
WMSS82R/ES	5.16	WPDP50NBKO	5.33	WPP4EUW	5.35	WRBTSBSB	5.25
WMSS82RR	5.16	WPDP50NBKOW	5.33	WPPS12	5.33	WRBTSBSW	5.25
WMSS82R/UPS	5.16	WPDP50NBW	5.33	WPPS12B	5.33	WRBTSPBB	5.25
WMSS82USB	5.5	WPDP50NW	5.33	WPPS12BKO	5.33	WRBTSPBW	5.25
WMSS82USBS	5.5	WPDP84FO	5.33	WPPS12BKOW	5.33	WRBTSPBS	5.25
WMSS115	5.5	WPDP84FOB	5.33	WPPS12BW	5.33	WRBTSPSW	5.25
WMSSU83	5.6	WPDP84FOBKO	5.33	WPPS12R	5.33	WRCC50NBNB	5.21
WMSSU83/3A	5.6	WPDP84FOBKOW	5.33	WPPS12RB	5.33	WRCC50NBSB	5.21
WMSSU83/BO	5.6	WPDP84FOBW	5.33	WPPS12RBKO	5.33	WRCC50NBSW	5.21
WMSSU83/CTLHTG	5.6	WPDP84FON	5.33	WPPS12RBKOW	5.33	WRCC50NPBB	5.21
WMSSU83/DW	5.6	WPDP84FONB	5.33	WPPS12RBW	5.33	WRCC50NPBW	5.21
WMSSU83/EF	5.6	WPDP84FONBKO	5.33	WPPS12RW	5.33	WRCC50NPSB	5.21
WMSSU83/FAN	5.6	WPDP84FONBKOW	5.33	WPPS12W	5.33	WRCC50NPSW	5.21
WMSSU83/FF	5.6	WPDP84FONBW	5.33	WPPS22	5.33	WRDP50NBNB	5.24
WMSSU83FO	5.6	WPDP84FONW	5.33	WPPS22B	5.33	WRDP50NBSB	5.24
WMSSU83FO/BO	5.6	WPDP84FOW	5.33	WPPS22BKO	5.33	WRDP50NBSW	5.24
WMSSU83FO/DW	5.6	WPGP1	5.34	WPPS22BKOW	5.33	WRDP50NPBB	5.24
WMSSU83FO/EF	5.6	WPGP1B	5.34	WPPS22BW	5.33	WRDP50NPBW	5.24
WMSSU83FO/FF	5.6	WPGP1BKO	5.34	WPPS22W	5.33	WRDP50NPSB	5.24
WMSSU83FO/FRE	5.6	WPGP1BKOW	5.34	WPPS32	5.33	WRDP50NPSW	5.24
WMSSU83FO/FRI	5.6	WPGP1BW	5.34	WPPS32B	5.33	WRDP84BNB	5.23
WMSSU83FO/HTG	5.6	WPGP1W	5.34	WPPS32BKO	5.33	WRDP84BSB	5.23
WMSSU83FO/HTR	5.6	WPGP2	5.34	WPPS32BKOW	5.33	WRDP84BSW	5.23
WMSSU83FON	5.6	WPGP2B	5.34	WPPS32BW	5.33	WRDP84FOBNB	5.23
WMSSU83FON/BO	5.6	WPGP2BKO	5.34	WPPS32W	5.33	WRDP84FOBSB	5.23
WMSSU83FON/DW	5.6	WPGP2BKOW	5.34	WPSS81	5.33	WRDP84FOBSW	5.23
WMSSU83FON/EF	5.6	WPGP2BW	5.34	WPSS81B	5.33	WRDP84FOPBB	5.23
WMSSU83FON/FAN	5.6	WPGP2W	5.34	WPSS81BKO	5.33	WRDP84FOPBW	5.23
WMSSU83FON/FRE	5.6	WPGP3	5.34	WPSS81BKOW	5.33	WRDP84FOPBS	5.23
WMSSU83FON/FRI	5.6	WPGP3B	5.34	WPSS81BW	5.33	WRDP84FOPSW	5.23
WMSSU83FON/HB	5.6	WPGP3BKO	5.34	WPSS81N	5.33	WRDP84NBNB	5.23
WMSSU83FON/HTG	5.6	WPGP3BKOW	5.34	WPSS81NB	5.33	WRDP84NBSB	5.23
WMSSU83FON/TD	5.6	WPGP3BW	5.34	WPSS81NBKO	5.33	WRDP84NBSW	5.23
WMSSU83FON/WM	5.6	WPGP3W	5.34	WPSS81NBKOW	5.33	WRDP84NPBB	5.23
WMSSU83FO/TD	5.6	WPGP4	5.34	WPSS81NBW	5.33	WRDP84NPBW	5.23
WMSSU83FO/WM	5.6	WPGP4B	5.34	WPSS81NW	5.33	WRDP84NPSB	5.23
WMSSU83/FRE	5.6	WPGP4BKO	5.34	WPSS81W	5.33	WRDP84NPSW	5.23
WMSSU83/FRI	5.6	WPGP4BKOW	5.34	WPSS82	5.33	WRDP84PBB	5.23
WMSSU83/HTG	5.6	WPGP4BW	5.34	WPSS82B	5.33	WRDP84PBW	5.23
WMSSU83/HTR	5.6	WPGP4W	5.34	WPSS82BKO	5.33	WRDP84PSB	5.23
WMSSU83N	5.6	WPGP6	5.34	WPSS82BKOW	5.33	WRDP84PSW	5.23
WMSSU83N/BO	5.7	WPGP6B	5.34	WPSS82BW	5.33	WRDS1BN	5.19
WMSSU83N/DW	5.7	WPGP6BKO	5.34	WPSS82N	5.33	WRDS1BS	5.19
WMSSU83N/EF	5.7	WPGP6BKOW	5.34	WPSS82NB	5.33	WRDS1PB	5.19
WMSSU83N/FAN	5.7	WPGP6BW	5.34	WPSS82NBKO	5.33	WRDS1PS	5.19
WMSSU83N/FRE	5.7	WPGP6W	5.34	WPSS82NBKOW	5.33	WRDS2BN	5.19
WMSSU83N/FRI	5.7	WPGP8	5.34	WPSS82NBW	5.33	WRDS2BS	5.19
WMSSU83NG	5.15	WPGP8B	5.34	WPSS82NW	5.33	WRDS2PB	5.19
WMSSU83NG/EH	5.15	WPGP8BKO	5.34	WPSS82O	5.33	WRDS2PS	5.19
WMSSU83NG/PH	5.15	WPGP8BKOW	5.34	WPSS82OB	5.33	WRDS3BN	5.19
WMSSU83N/HB	5.7	WPGP8BW	5.34	WPSS82OBKO	5.33	WRDS3BS	5.19
WMSSU83N/HTG	5.7	WPGP8W	5.34	WPSS82OBKOW	5.33	WRDS3PB	5.19
WMSSU83N/TD	5.7	WPP1	5.36	WPSS82OBW	5.33	WRDS3PS	5.19
WMSSU83N/WM	5.7	WPP1B	5.36	WPSS82OW	5.33	WRDS4BN	5.19
WMSSU83R	5.16	WPP1BKO	5.36	WPSS82W	5.33	WRDS4BS	5.19
WMSSU83RR	5.16	WPP1BKOW	5.36	WPSSU83FO	5.34	WRDS4PB	5.19
WMSSU83/SHWRPUMP	5.6	WPP1BW	5.36	WPSSU83FOB	5.34	WRDS4PS	5.19
WMSSU83/SKTBELOW	5.6	WPP1EU	5.35	WPSSU83FOBKO	5.34	WRDXBNB	5.26
WMSSU83/TD	5.6	WPP1EUB	5.35	WPSSU83FOBKOW	5.34	WRDXBSB	5.26
WMSSU83/WM	5.6	WPP1EUBKO	5.35	WPSSU83FOBW	5.34	WRDXBSW	5.26
WMSU83	5.6	WPP1EUBKOW	5.35	WPSSU83FONB	5.34	WRDXPBB	5.26
WMSU83FO	5.6	WPP1EUBW	5.35	WPSSU83FONBKO	5.34	WRDXPBW	5.26
WMSU83R	5.16	WPP1EUW	5.35	WPSSU83FONBKOW	5.34	WRDXPSB	5.26
WMTVF	5.9	WPP1W	5.36	WPSSU83FONBKOW	5.34	WRDXPSW	5.26
WMTVM	5.9	WPP2	5.36	WPSSU83FONBW	5.34	WRGP1BN	5.29
WMTX	5.9	WPP2B	5.36	WPSSU83FONW	5.34	WRGP1BS	5.29
WMUSBS	5.5	WPP2BKO	5.36	WPSSU83FOW	5.34	WRGP1PB	5.29
WPB140	5.36	WPP2BKOW	5.36	WPSU83FO	5.34	WRGP1PS	5.29



1. In these Terms the following expressions shall have the following meanings:
  - 1.1 "Buyer" the purchaser of the Goods from the Seller.
  - 1.2 "Seller" Hager Limited.
  - 1.3 "Contract" the contract for the sale and purchase of the Goods made pursuant to these Terms.
  - 1.4 "Delivery" delivery of the Goods in accordance with these Terms.
  - 1.5 "Delivery Address" the location for Delivery agreed by the Seller and the Buyer (save where it is agreed that the Buyer shall collect the Goods from the Seller's premises).
  - 1.6 "Delivery Date" the date for Delivery agreed by the Seller and the Buyer.
  - 1.7 "Force Majeure" any circumstances beyond the reasonable control of the Seller.
  - 1.8 "Goods" the products which the Seller has agreed to supply to the Buyer pursuant to these Terms.
  - 1.9 "Loss" all actions claims demands losses (direct, indirect, consequential or otherwise) expenses costs actions and proceedings.
  - 1.10 "Payment Terms" the terms of payment in respect of the Price (and where relevant any delivery order or handling charges) which unless otherwise agreed by the Buyer and the Seller shall require payment not later than the last day of the month following that in which the Seller notifies the Buyer that the Goods are ready for despatch or have been dispatched.
  - 1.11 "Price" the price of the Goods as set out in the Seller's current price list at the date of despatch.
  - 1.12 "Quotation" includes any quotation, estimate, or tender given or made by the Seller.
  - 1.13 "Terms" the terms and conditions set out herein including any special terms and conditions agreed in writing by the Seller and the Buyer.
  - 1.14 "Product Lifetime" is the reasonable lifetime of a wiring accessory product in this catalogue and is taken to be 25 years from the date of manufacture.
2. All orders are accepted and all contracts are made subject to the Terms which shall prevail and be effective notwithstanding any variations or additions contained in any order or other document submitted by the Buyer including without limitation any standard conditions of purchase of the Buyer. No modification, of these Terms shall be binding upon the Seller unless made in writing by a duly authorised employee of the Seller.
3. A Quotation does not constitute an offer by the Seller to supply Goods and every acceptance of any Quotation by the Buyer shall be deemed an offer by the Buyer to purchase Goods from the Seller and will not be binding on the Seller until the Seller has given written acknowledgement or acceptance of such order.
4. The Seller reserves the right by giving notice to the Buyer at any time before Delivery to increase the price of the Goods or any installment of the Goods to reflect any increase in their cost of production, delivery, provision or otherwise which is due to Force Majeure, including but not by way of limitation any fluctuations in the cost of raw materials.
5. Unless otherwise agreed by the Buyer and the Seller, the Price shall be for Delivery to the Delivery Address. The Price shall include carriage and transit insurance costs to the Delivery Address. The Price is exclusive of any VAT (which will be applied in accordance with the legislation in force at the tax point date) for which the Buyer will be additionally liable.
6. In addition to the price, an order charge of £10 shall be payable by the buyer on orders under the value of £250 (per order number). The Seller reserves the right to charge the Buyer a reasonable handling charge for special deliveries made at the Buyer's request.
7. The Seller shall be entitled to send the invoice for the Goods to the Buyer immediately the Goods have been dispatched or when they are ready for despatch but are prevented or delayed from being dispatched due to Force Majeure.
8. The Buyer shall pay the Price plus any VAT strictly in accordance with the Payment Terms. The Seller will afford the Buyer a 2.5% discount on the Price if payment is made on or before the due date. Non-compliance with the Seller's terms of payment shall constitute default without reminder. In case of default the Seller may without prejudice to any other of its rights under these Terms charge interest to accrue on a daily basis at the rate of 3% per month from the date upon which payment falls due to the actual date of payment such interest to be paid monthly. Except where insolvency laws provide otherwise the Buyer shall not be entitled to withhold or set off payment for Goods for any reason whatsoever.
9. If the Buyer shall fail to fulfil the Payment Terms in respect of any invoice of the Seller the Seller may demand payment of all outstanding balances from the Buyer whether due or not and/or cancel all outstanding orders and/or decline to make further deliveries except upon receipt of cash or satisfactory securities.
10. In addition to any right or lien to which the Seller may by law be entitled the Seller shall in the event of the Buyer's insolvency or the Buyer failing to render payment for any Goods supplied by the Seller when due be entitled to a general lien on all goods of the Buyer in the Seller's possession for the unpaid price of any Goods sold and delivered by the Seller under the same or any other contract.
11. In addition and without prejudice to its other rights the Seller may on 14 days notice to the Buyer sell any goods of the Buyer on which the Seller has a lien and shall be deemed the Buyer's agent for the purposes of effecting such sale. The Seller may apply the proceeds of sale towards the satisfaction of sums due from the Buyer without prejudice to the Seller's right to recover the balance thereof from the Buyer.
12. Any date or period set out in a Quotation or the Seller's acceptance of order or which is otherwise agreed by the Seller and the Buyer for the delivery of the Goods or any part of them is approximate only and time shall not be of the essence of such delivery. If the Seller is prevented from delivering any Goods at the time provided for delivery by reason of Force Majeure then the period for delivery shall in any event be extended by the time lost due to such Force Majeure.
13. Delivery shall be made by the Seller supplying the Goods to the Delivery Address and the Buyer shall be responsible for the unloading of the Goods at the Delivery Address and the cost thereof. Where the Seller and the Buyer agree in writing that the Buyer shall collect the Goods from the Seller's premises the Buyer shall arrange at its expense unless otherwise agreed in writing for the carriage of the Goods (including cost of insurance in transit) and the Goods shall be deemed to have been delivered upon their loading upon the carrier and for the purpose of these Terms "Delivery" shall be construed accordingly.
14. Should the Buyer fail to take Delivery on or before the Delivery Date the Seller shall be entitled:
  - 14.1 If it has not already done so to invoice such Goods forthwith and to take the invoice into account;
  - 14.2 To treat the Contract as repudiated by the Buyer and without prejudice to any other right it may have against the Buyer the Seller shall be entitled to resell the Goods and shall be entitled to be indemnified by the Buyer for any Loss which it suffers.
15. The Seller reserves the right to deliver the Goods by installments and where it does so each delivery shall constitute a separate contract and any failure by the Seller to deliver any one or more of the installments in accordance with these Terms or any claim by the Buyer in respect of any one or more installments shall not entitle the Buyer to treat the Contract as a whole as repudiated.
16. The Buyer shall store and transport the Goods in conditions that will preserve the Goods in good condition. The Buyer shall comply with all reasonable requests made by the Seller with regard to the conditions in which the Goods are to be stored and transported.
17. Packing cases and cartons in which the Goods are supplied are non-returnable and provided free of charge.
18.
  - 18.1 If the Goods are to be manufactured by the Seller in accordance with a specification submitted by the Buyer, the Buyer shall indemnify the Seller against all Loss suffered by the Seller in connection with any claim by a third party that the manufacture and/or supply of the Goods to such specification infringes the rights of any third party.
  - 18.2 Unless otherwise agreed in writing all copyright and design rights in any drawings created by the Seller in the performance of the Contract shall vest in the Seller and remain the property of the Seller notwithstanding the purchase of the Goods by the Buyer.
19.
  - 19.1 Subject as expressly provided for herein all warranties, conditions, or other terms implied by statute or common law are excluded to the fullest extent permitted by law and the Seller shall have no liability to the Buyer other than as expressly set out herein.
  - 19.2 The Seller makes no warranty as to the accuracy of all general drawings including weights and dimensions issued by the Seller and such drawings and any descriptions and illustrations contained in any catalogue, price list or other advertising material are for information only and are a general description of the Goods and do not form part of the Contract.
  - 19.3 The Buyer shall be deemed to have inspected and quantified the Goods upon Delivery and the Seller shall have no liability to the Buyer in relation to short delivery or damage to the Goods in transit which was apparent on inspection or which would have been apparent on reasonable inspection unless such short delivery or damage is notified to the Seller and the carriers in writing within 3 days of Delivery specifying (in such detail as the Supplier shall reasonably require) the shortage in or damage to the Goods.
  - 19.4 The Seller shall have no liability to the Buyer in relation to non-delivery of the Goods unless such non-delivery is notified to the Seller in writing within 10 days of the Delivery Date.
  - 19.5 Where any valid claim in respect of short delivery or non-delivery of or damage to the Goods is notified to the Seller in accordance with these Terms, the Seller shall be entitled to supply goods to remedy any short delivery or non-delivery or damage free of charge or, at the Seller's discretion refund to the Buyer the price of the relevant Goods but the Seller shall have no further liability to the Buyer except in the case of death or personal injury caused by the negligence of the Seller.
  - 19.6 Where the Seller does not manufacture the Goods or any part thereof the Seller shall have no liability in relation to any defect in or failing of the Goods other than to use its reasonable endeavours to pass to the Buyer the benefit of any guarantee given in respect of the Goods or part thereof by their manufacturer.
  - 19.7.1 The company undertakes to replace or repair at its discretion products should they become inoperable within the time periods as outlined in the following table:

Brand	Product Lifetime	10 Years	2 Years
Hager Wiring Accessories	✓		
Metalclad ranges		✓	
Dimmer Switches, Shaver Units, Portable Lamps			✓
Klik	✓		
Occupancy Sensors			✓
Hager			✓

- 19.7.2 In all cases defects shall be taken as arising solely from faulty materials and or workmanship and the defective goods must always be returned to Hager Ltd and Hager Ltd must be notified of the defect or suspected defect immediately the same became known to the Buyer. The Guarantee will be invalidated if the product has not been installed or maintained in accordance with the Company's instructions, has not been used appropriately or if any attempt has been made to rectify, dismantle or alter the product in any way.
- 19.8 The Seller shall not be liable to repair or replace defective Goods or part thereof if the Goods or part thereof have been subject to any misuse, unauthorised repair replacement modification or alteration.
- 19.9 The Seller shall not be liable for any Loss suffered by the Buyer due to the Seller's failure to meet its obligations under the Contract due to Force Majeure.
- 19.10 Except in respect of death or personal injury caused by the Seller's negligence, the Seller shall have no liability to the Buyer for any loss of profit, business, contracts, revenues or anticipated savings or for any special indirect or consequential damage or loss of any nature whatsoever and whether caused by the negligence of the Seller or its employees, or agents) which arises out of or in connection with the supply of the Goods and/or their use or resale by the Buyer, except as may otherwise be expressly provided for in these Terms.
- 19.11 For the avoidance of doubt nothing herein contained shall be deemed to exclude or restrict the Seller's liability for death or personal injury arising due to the Seller's negligence.
20. The risk in the Goods shall pass to the Buyer immediately upon Delivery.
21. The Buyer shall indemnify the Seller against all Loss (including without limitation the Price in respect of Goods completed, costs incurred by the Seller in respect of partially completed Goods, reasonable cancellation charges incurred by the Seller due to any subcontracts entered into to perform the Contract and estimated profits on the Goods under the Contract on which work by the Seller has not been started) suffered by the Seller which arises as a result of the cancellation of the Contract by the Buyer, the breach by the Buyer of any provision of the Contract or the negligence of the Buyer or any of its representatives.
22. Until payment by the Buyer in full of the Price of the Goods and any other monies due to the Seller in respect of all other products supplied or agreed to be sold by the Seller to the Buyer (including but without limitation any costs of delivery):
- 22.1 The property in the Goods shall remain in the Seller and the Buyer shall hold the same as the fiduciary agent of and bailee for the Seller;
- 22.2 The Buyer shall store the Goods separately from other products in a manner which makes them readily identifiable as being the property of the Seller and shall keep them protected and insured but shall be entitled to resell or use the Goods in the ordinary course of its business.
23. Until such time as property in the Goods has passed to the Buyer (and provided that the Goods are still in existence and have not been resold) the Seller shall be entitled at any time to require the Buyer to deliver up the Goods to the Seller and if the Buyer fails to do so forthwith the Seller or its agents may enter the premises of the Buyer and take possession of any Goods in which property remains in the Seller and remove and dispose of them as the Seller thinks fit. The Seller shall apply the proceeds of disposal (after deduction of all expenses) in discharge of the amount unpaid by the Buyer.
- 24.
- 24.1 Save as may be otherwise agreed in writing between the Seller and the Buyer where Goods are supplied for export from the United Kingdom they shall be charged for and delivered FOB the air or sea port of shipment and the Seller shall not be obliged to give the Buyer the notice specified in Section 32(3) of the Sale of Goods Act 1979.
- 24.2 The Buyer shall be responsible for complying with any legislation or regulations governing the importation of the Goods into the country of destination and for the payment of any duties thereon. In particular, if any licence or consent of any government or other authority shall be required for the acquisition, carriage or use of the Goods by the Buyer the Buyer shall obtain the same at its own expense and if necessary produce evidence of the same to the Seller on demand. Failure to do so shall not entitle the Buyer to withhold or delay payment of the Price. Any additional expenses or charges incurred by the Seller resulting from such failure shall be for the Buyer's account.
- 24.3 The seller supplies the goods to the buyer on the sole basis that goods are on-sold by the buyer to suitably qualified, professional installers only.

25. If the Buyer:
- 25.1 Shall default in or commit any breach of any of its obligations to the Seller under these Terms; or
- 25.2 Shall be involved in any legal proceedings in which its solvency is in question; or
- 25.3 Being a company shall present a petition or have a petition presented for its winding up or convene a meeting to pass a resolution for voluntary winding up or have a receiver appointed over all or any part of its assets or call a meeting of or enter into any composition or arrangement with its creditors or being an individual shall be presented with a bankruptcy petition; or
- 25.4 Shall cease or threaten to cease to trade or if in the opinion of the Seller serious doubts arise as to the Buyer's solvency then in any such case the Seller shall immediately become entitled (without prejudice to its other claims and rights under the Contract) to suspend further performance of the Contract for such time as it shall in its absolute discretion think fit or (whether or not notice of such a suspension shall have been given) to treat the Contract as wrongfully repudiated by the Buyer and forthwith terminate the Contract (either with or without notice to the Buyer) and if the Goods have been delivered but not paid for the Price shall become immediately due and payable notwithstanding any previous agreement to the contrary.
26. All Contracts shall be governed by English Law and the English Courts shall have nonexclusive jurisdiction for the hearing of any dispute between the parties.
27. These Terms supersede all previous Conditions of Sale of the Seller.
28. The Seller shall be entitled to assign or sub-contract all or any of its rights and obligations hereunder. The Buyer shall not be entitled to assign transfer sub-contract or otherwise delegate any of its rights or obligations hereunder.
29. It is a condition of any sale under these terms and conditions that both parties shall abide by the principles of The Electrical Installation Industry Charter adopted by the major electrical industry trade bodies and consequently shall avoid the distribution of counterfeit and/or non-compliant electrical products.

### Conditions of Use

The products listed in this publication should be installed by suitably qualified professional personnel in accordance with the company's instructions, requirements of relevant legislation, regulations (including IEE Wiring Regulations) and the accepted practice in the industry



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