ZUCCHINI XCP BUSBAR

FOR POWER DISTRIBUTION SYSTEMS

POWERED BY SPECIALISTS

Global strength

built on local knowledge

Legrand is the global specialist in electrical and digital building infrastructures. Innovation is the driving force behind its development.

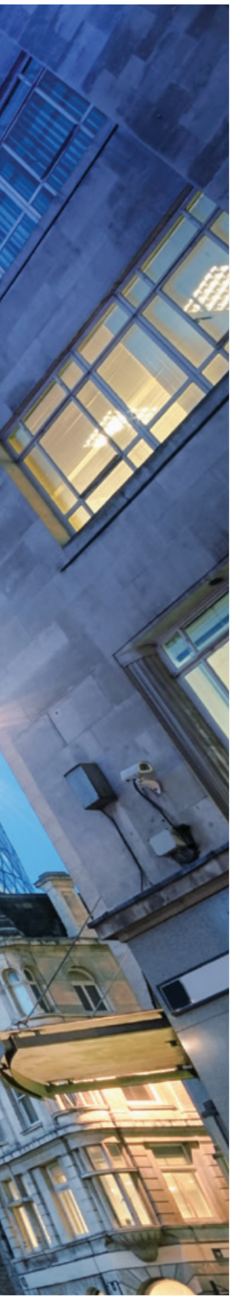
With an increasing investment in research and development (circa 5% of sales) and more than 4,000 active patents, the Legrand Group is focused on maintaining a high rate of new product launches that present innovative solutions to the market.

CORPORATE SOCIAL RESPONSIBILITY

Legrand's CSR roadmap is a natural extension to the governance and sustainable development approach in which the company has been engaged for many years. The CSR roadmap firmly asserts Legrand's ongoing commitment to sustainable development.

LEGRAND'S POWER DISTRIBUTION BUSINESS UNIT

From Legrand transformers, through high power distribution and rising main busbar to Electrak powertrack, desk modules and lighting control, Legrand's power distribution business unit provides market leading solutions to the increasing demands of today's buildings.



LEGRAND ENERGY EFFICIENCY

Legrand has long been committed to an initiative to protect the environment.
We are dedicated to ensuring that everyone can use electricity in a sustainable way. By working together we can create solutions that deliver less carbon to the environment.

Look out for the green leaf which identifies our range of energy efficient busbars.

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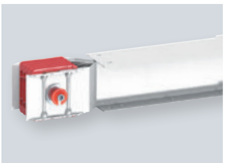


XCP OVERVIEW

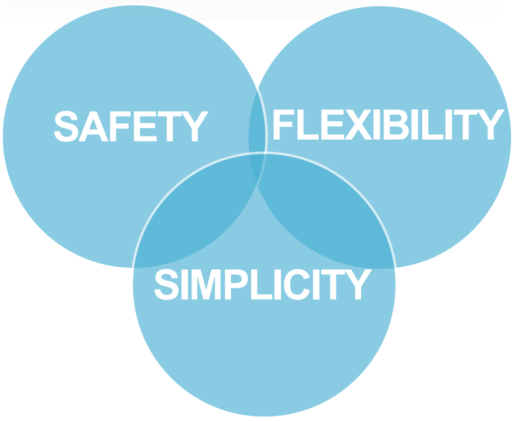
SELECTION GUIDE

OPERATING INFORMATION

*BTS = busway trunking system

XCP IP 55
busbar trunking

XCP is the new Zucchini busbar trunking system ranging from 630 A to 6300 A with an IP 55* degree of protection. It is the most suitable solution for the transport and distribution of energy in industrial, commercial and service sector installations. The main benefits of the range are SAFETY, FLEXIBILITY and SIMPLICITY.



CERTIFICATION AND TESTING

The busbar trunking has been tested and approved according to IEC 61439-6 Low voltage switchgear and controlgear assemblies. Part 6 refers to busbar trunking systems (busways).

Typical applications

- Industry
- Riser end feed units
- Commercial and service sector buildings (banks, hospitals, data centres, business centres)

*The standard degree of protection is IP 55. IP 65 is available on request for transport of energy

Safety

Fire resistance

In installations where there is a high risk of fire, the XCP busbar trunking system can provide technical advantages. Thanks to the low fire load of the busbar, XCP has been fire resistance tested in accordance with IEC 60331-1.

Insulation technology

In order to achieve superior quality and safety, XCP conductor bars are wrapped by two PET sheets, each of which is individually sufficient to ensure the full required dielectric level. PET is a non-hygroscopic thermoplastic polymer resin and therefore preserves its performance whatever the level of humidity. For more information on the material characteristics see page 45.

Maximum strength

The XCP range has been designed and manufactured for heavy industrial environments.
The busbar is self-contained within its own casing, with the degree of impact resistance being IK 10 which is the maximum stated in IEC EN 60068-2-62.

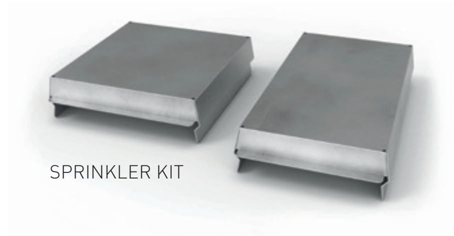
Electromagnetic emission

The ferromagnetic structure of the casing, and the compactness of the bars, significantly reduce the electromagnetic field emitted. The magnetic induction, measured at 1 m from the XCP busbar, is much lower than 3μT which typically represents the quality objective of several countries.

Sprinkler proof

It is possible to accessorise XCP with a sprinkler kit that provides resistance to the sprinkler test. The sprinkler kit is available on request.

Tests under sprinkler conditions are available. For more information please contact us on +44 (0) 370 608 9020



Resistance to seismic events

All busbar systems and their supports are laboratory tested and guarantee (if the product is installed in accordance with the manufacturer's instructions) resistance to seismic events in the local territory.
The XCP-S and XCP-HP ranges and related tap-off boxes, have passed seismic tests at a value of ZPA 1.5g * in accordance with IEEE Std 693-2018. Considering that : ZPA 1.5g = 1.5 x 9.81 m/s² = 14.71 m/s² . The maximum acceleration value obtained corresponds to extremely intense earthquakes.

Flexibility

By using the outlet windows located on the straight lengths of the busbar, XCP provides high flexibility, both when planning and installing the system. It is ideal for frequently changing requirements of the electric system during the life of the building.

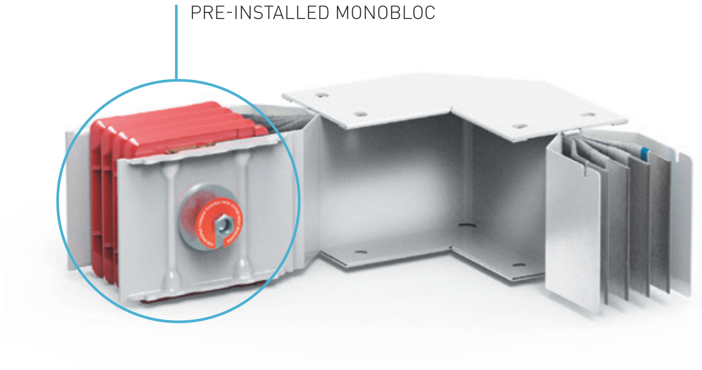
The XCP range provides all the necessary components needed for the installation of rising mains.
This is an excellent solution for all high-rise buildings such as residential or commercial blocks, hospitals and office blocks which have power distribution on every floor.

Simplicity

With **XCP**, the design and installation of the power distribution line becomes quick and simple.

In order to facilitate and reduce the installation time, the elements are supplied with a monobloc which is pre-installed at the factory and the connections between them are keyed, which ensures that the installation of the components is in the correct position.

PRE-INSTALLED MONOBLOC

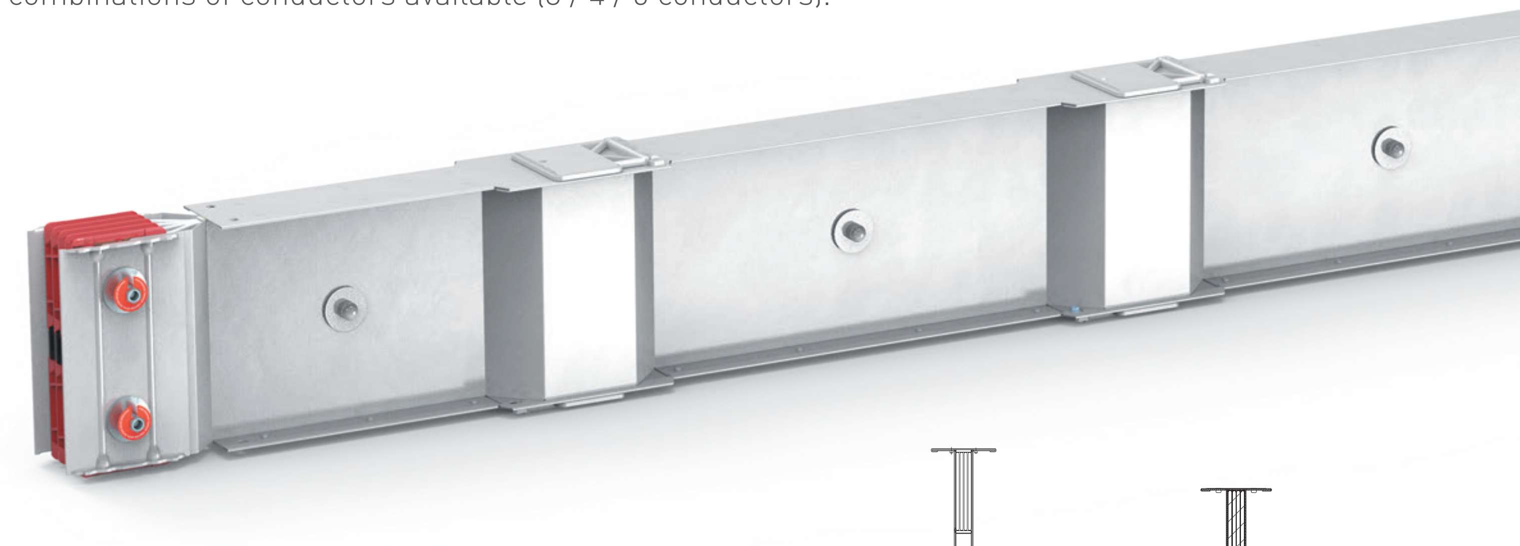


*g=9·81m/s² (gravitational acceleration)

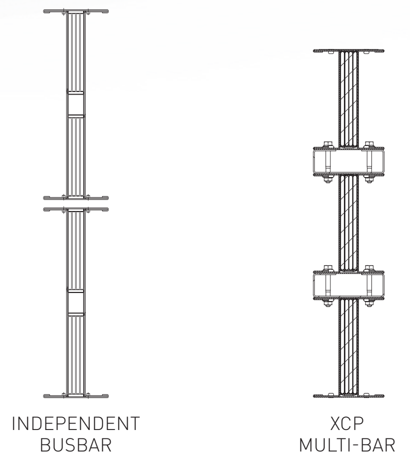
RANGE features

Xtra-compact design

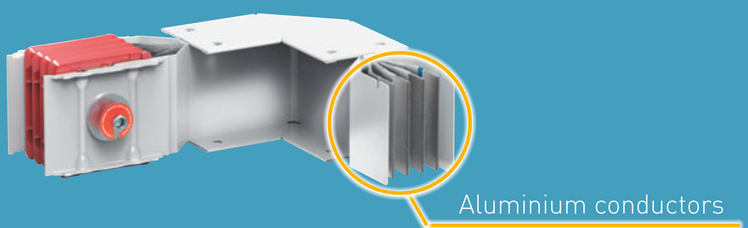
XCP is available with aluminium or copper conductors and has a smart and extra-compact design.
The external dimensions do not change based on the number of conductors.
The length and height change with the rating, but are the same for all three combinations of conductors available (3 / 4 / 5 conductors).

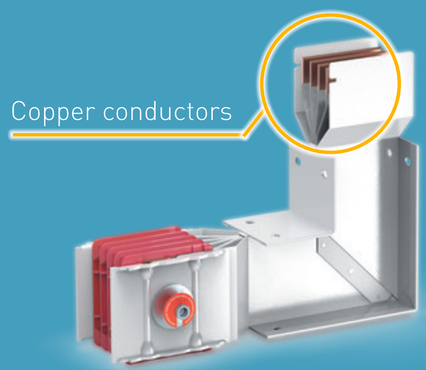


Often, for the transport and distribution of high power (5000 A Al /6300 A Cu rated current), the energy distribution consists of two independent busbars in parallel.
With XCP multi-bar, the product is always supplied in a single structure so is simpler to install compared to independent busbar designs.
This also ensures that the system has been fully tested to achieve the desired rating rather than relying on the individual rating of each independent busbar.



XCP is available in aluminium versions (630 - 5000 A) or with copper conductors (800 - 6300 A)





XCP-S and XCP-HP

The XCP range of busbars consists of two different product lines :

- XCP-S
- XCP-HP

While maintaining the same basic characteristics (such as the range of rated current, the construction materials and the accessories available), XCP-S and XCP-HP have different properties that make them able to satisfy all market sector demands.

XCP-S is the optimised solution for the most common performance requirements.
The optimised sections of internal conductors allow this busbar to be lighter and more compact than XCP-HP, making it the best choice for standard applications.

LIGHTER

SMALLER

FOR STANDARD APPLICATIONS

XCP-HP is the busbar system designed to offer a higher performance in terms of energy saving and short circuit withstand. It is designed to work at an ambient temperature of 50°C.
Thanks to these features, XCP-HP is the ideal solution for heavy duty applications, higher temperature environments and installations where high energy efficiency is required.

HIGHER PERFORMANCE

FOR HEAVY DUTY APPLICATIONS

NUMBER OF INTERNAL BARS OF XCP-S AND XCP-HP

RATED CURRENT	630 A	800 A	1000 A	1250 A	1600 A	2000 A	2500 A	3200 A	4000 A	5000 A	6300 A
XCP-S ALUMINIUM	SINGLE BAR configuration						DOUBLE BAR configuration			*	
XCP-S COPPER		SINGLE BAR configuration					DOUBLE BAR configuration				*

RATED CURRENT	630 A	800 A	1000 A	1250 A	1600 A	2000 A	2500 A	3200 A	4000 A	5000 A	6300 A
XCP-HP ALUMINIUM	SINGLE BAR configuration						DOUBLE BAR configuration			*	
XCP-HP COPPER		SINGLE BAR configuration						DOUBLE BAR configuration			*

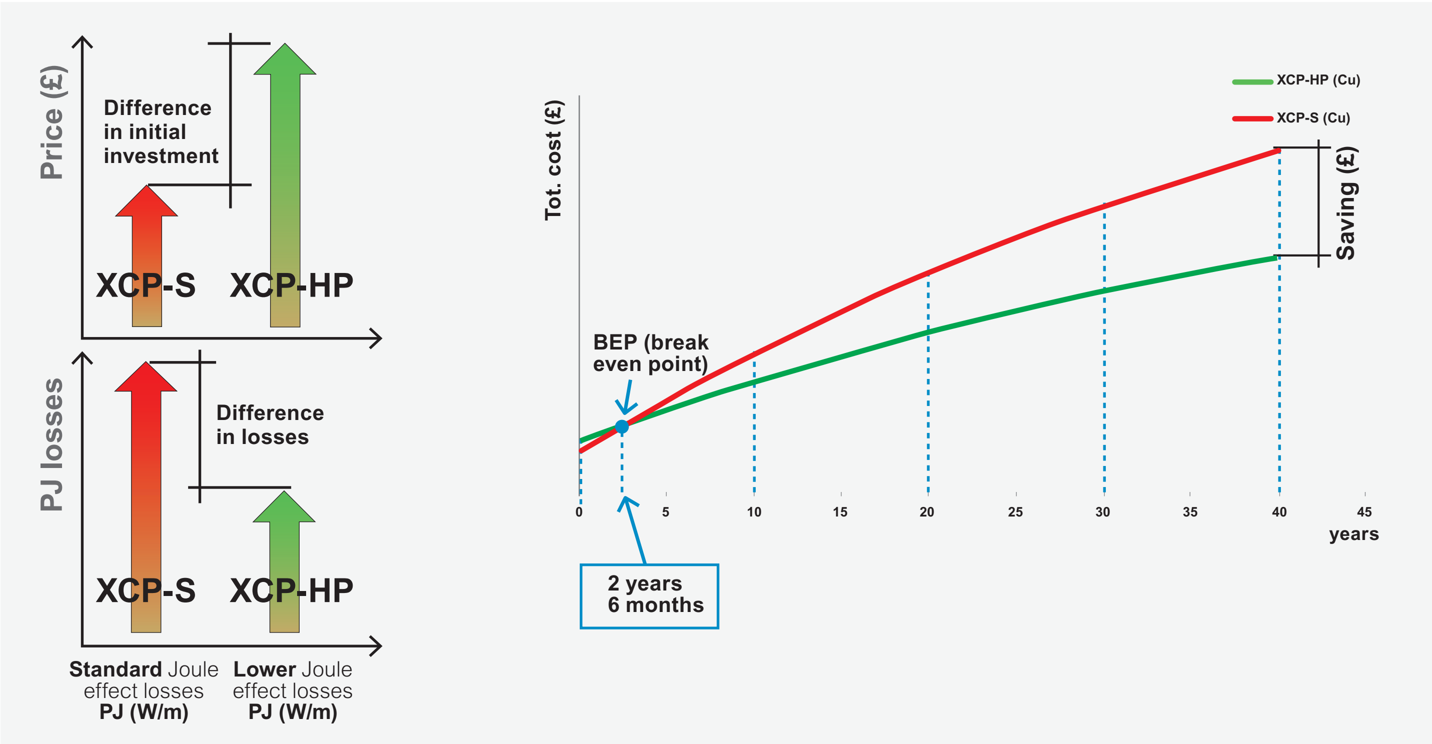
* Triple bar

XCP-S and XCP-HP

Energy saving (Total cost of ownership)

The two busbar ranges, XCP-S and XCP-HP, also differ in loss values due to the Joule effect. XCP-HP has lower Joule losses compared to XCP-S and this feature means that, in a relatively short time, it will be possible to recover the additional cost invested in the purchase of a low loss busbar system compared to the cost of a standard loss busbar system.

In the graph below you can see an indicative example of the possible economic savings in relation to the loss values of the busbar system.



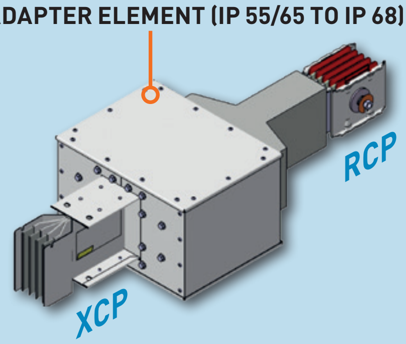
Note : The time required to reach the break even point changes depending on energy costs in the country in which the analysis is conducted.

TOTAL COST OF OWNERSHIP = PURCHASE COST + OPERATING COST OF THE BUSBAR

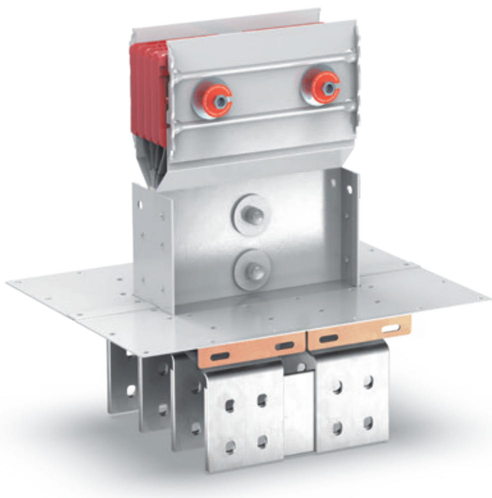
XCP can be connected to RCP resin busbar thanks to an adapter element.

This solution allows XCP to be used in hybrid systems where different degrees of protection are required.
It is possible to transition from the inside to the outside of a building by connecting the IP 55 XCP busbar trunking with IP 68 RCP resin busbar trunking using the adapter element.

ADAPTER ELEMENT (IP 55/65 TO IP 68)



RANGE composition



The **XCP** range includes all the necessary components to enable any path for the busbar run that the project requires.

The range is composed of :

STRAIGHT LENGTHS :
for transport and distribution (with tap-off outlets) of high-power energy

ELBOWS :
able to meet any change of direction and orientation with standard or bespoke dimensions

TAP-OFF BOXES :
for connecting and energising electric loads. Available in plug-in and bolt-on versions

CONNECTION INTERFACES :
for connecting the busbar to the electric board or transformer

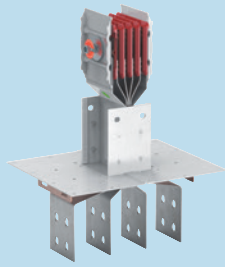
ADDITIONAL COMPONENTS :
able to meet any installation requirement (fire barrier, phase inversion...)

FIXING SUPPORTS :
for fixing the busbar to the structure of the building, for horizontal and vertical installations and special applications (seismic areas)

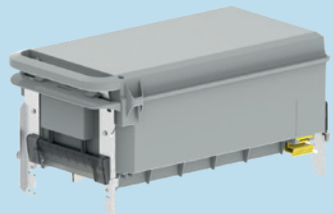
STRAIGHT LENGTHS WITH TAP OFF OUTLETS FOR DISTRIBUTION

HORIZONTAL ELBOW WITH DOUBLE BAR

VERTICAL ELBOW WITH DOUBLE BAR



CONNECTION INTERFACES



PLASTIC TAP-OFF BOXES PLUG-IN TYPE

DIFFERENT VARIATIONS ARE AVAILABLE ON REQUEST. SEE EXAMPLES BELOW.
FOR MORE INFORMATION PLEASE CONTACT US ON +44 (0) 370 608 9020.

Reference	Version description
64280102P	**standard** 4 conductors (3Ph + N + PE casing)
64280102P-R5	4 conductors RAL painted on request
64240102P	5 conductors (3Ph + N + FE + PE casing)
64250102P	double neutral
64280102P-3W	3 conductors (3Ph + PE casing)
64280102PF	Class F insulation (155 °C)
64280102P-RL	PEN conductor
64280102P-R3	with aluminum extra-ground (reinforced PE) (PE3)
64280102P-R4	with copper extra-ground (reinforced PE) (PE2)

Conductor versions

4 conductors + PE casing : with full neutral
4 conductors + PE casing : with double neutral with respect to the phase section for applications with high values of third order harmonics (THD%)
5 conductors + PE casing : 3 phases + full neutral + FE functional earth + PE

Versions of PE:

PE1 : with casing used as earth conductor (standard)
PE2 : with additional earth in copper plate
PE3 : with additional earth in aluminium plate

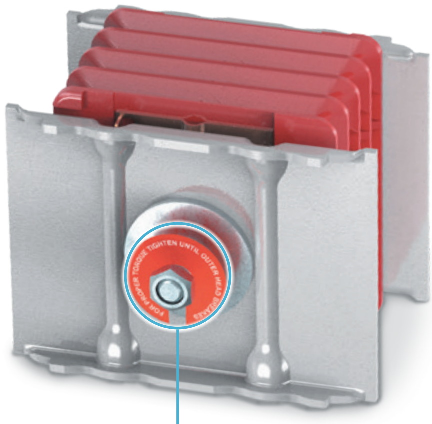
PRODUCT
additional features

End feed unit for rising mains

Feed units are used at the start of riser mains lines, when the busbar must be placed against the wall and powered using cables.
These feed units allow the product to be installed at a minimum distance of 40 mm from the wall.

New monobloc

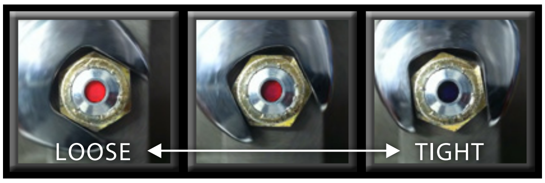
XCP is equipped with a new monobloc covered by a Legrand patent. This new monobloc ensures a better connection of the junction with less contact resistance.
The insulation part of the monobloc is made by thermo-set Class F (155°C) insulation material and for each conductor there are two plates that assure the continuity between each conductor. A system of Belleville® washers ensure the correct pressure during thermal expansion of the conductors. A double head nut breaks when it reaches the nominal torque (85 Nm). In the double/triple configurations, the monobloc ensures the current balancing on the same conductors.

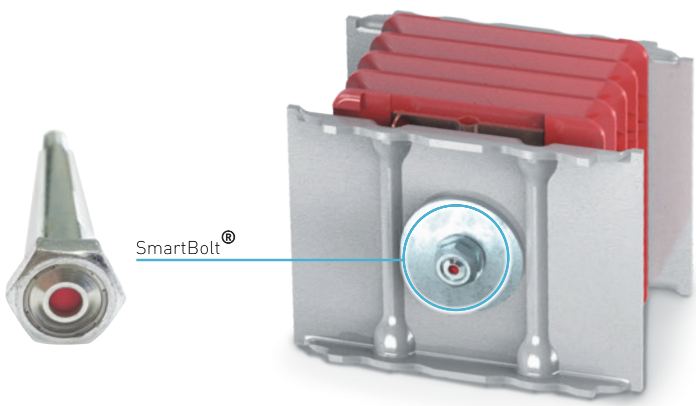


DOUBLE HEAD NUT THAT BREAKS
AT NOMINAL TORQUE (85 Nm)
DURING 1st INSTALLATION

SmartBolts®

SmartBolts® are available on request. These bolts are equipped with a visual indication system that turns from red to black when you reach the right tightening torque (85 Nm).
They are also useful after installation and during checks and maintenance operations as they allow you to see at a glance if a bolt has lost the right torque by turning back to red.





DTI (Direct Tension Indicating) SmartBolts® are fasteners with a built-in indicator that shows the tension has been achieved when the bolt is installed.

TAP-OFF BOXES
GRP* and metal

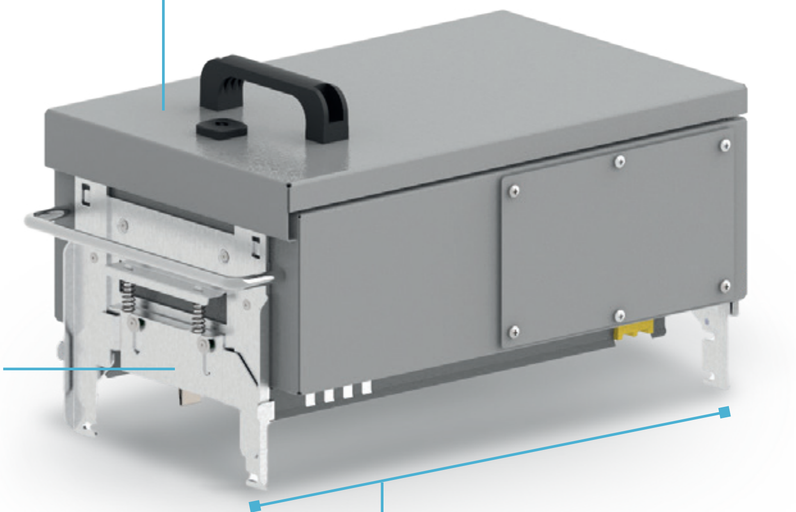
XCP distribution bars are equipped with outlets suitable for the **range of dedicated tap-off boxes.**
The tap-off boxes are available in two different construction materials:

- GRP* composite with rating up to 250 A, plug-in type (to be installed on outlets)
- painted steel enclosure with rating up to 630 A for plug-in type (to be installed on outlets) and up to 1250 A for bolt-on type (to be installed on the junction)

They are **universal** and therefore **can be used on both (XCP-S and XCP-HP) product lines.**

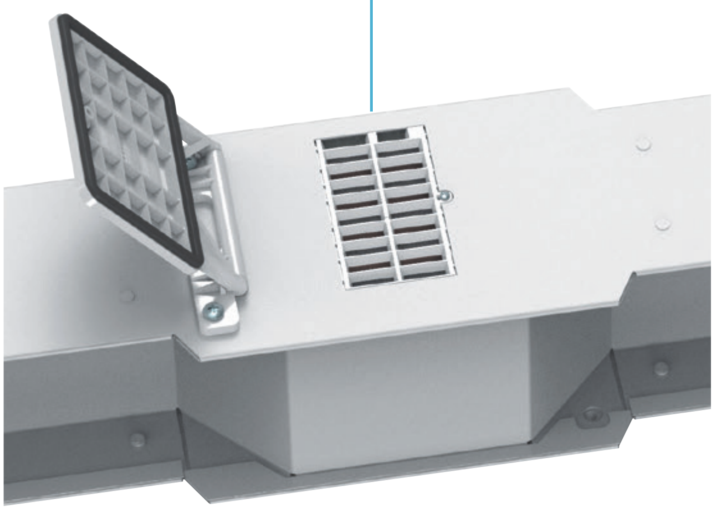
The new tap-off boxes guarantee:

- **Safety**
- **Optimised dimensions**
- **Reduced maintenance costs**
- **Pre-fitted for MCB/MCCB circuit breakers**



The design of the outlets enables the installation of GRP* tap-off boxes in addition to the painted steel version.

The degree of protection of the outlets and the system is IP 2x with the cover open and IP 55 with the cover closed or with tap-off unit installed.



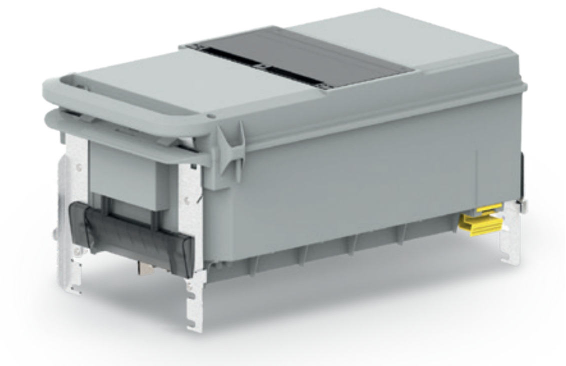
* GRP = glass reinforced plastic

Tap-off boxes for XCP are available in two different materials: **GRP* and metal,** both characterised by a simple installation and fast connection thanks to the new layout of hooks that offer safety and speed of assembly.

Tap-off boxes can be installed and removed when the busbar is energised and it can be assembled with DPX³ moulded case circuit breakers.

GRP* version:

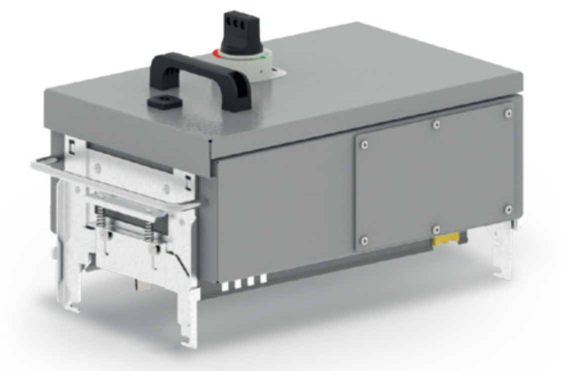
- **Range from 32 A to 250 A**
- **Optimised installation of Legrand circuit breakers (MCB/MCCB)**
- **Optimised for P17 Tempra Pro CEE sockets**
- **Ready for data centre applications**
- **Empty or with fuse carrier version available**
- **Total insulation**
- **Plug-in / plug-out under live voltage**



GRP VERSION FROM 32 A TO 250 A

Painted steel version:

- **Range from 63 A to 630 A**
- **Optimised installation of Legrand circuit breakers (MCCB)**
- **Optimised for P17 Tempra Pro CEE sockets**
- **Ready for data centre applications**
- **Empty or with fuse carrier version available**
- **Equipped with :**
  - **anti-manoeuvre security system**
  - **anti-accidental closing and opening of the box**
  - **guard for open covering**
  - **safer vertical installation (the cover remains in an open position)**
- **Plug-in / plug-out under live voltage**



PAINTED STEEL VERSION FROM 63 A TO 630 A

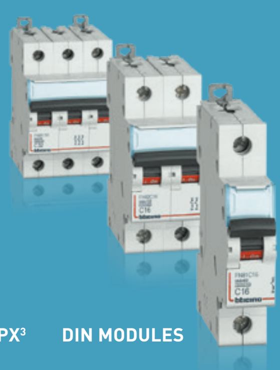
*GRP = glass reinforced plastic

Other devices available on request
Contact us on +44 (0) 370 608 9020

Tap-off boxes: accessories

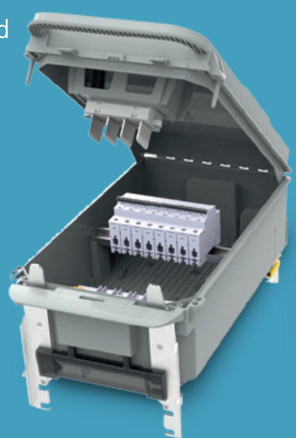
Tap-off boxes are ready to be assembled with Legrand circuit breakers and industrial sockets**

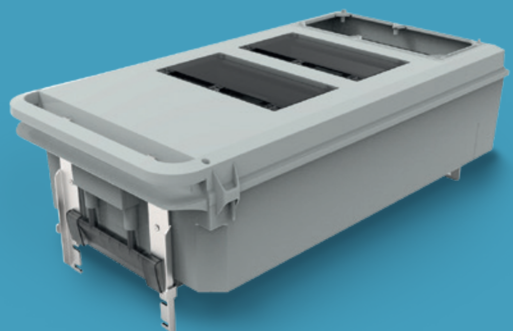
DPX³



DIN MODULES

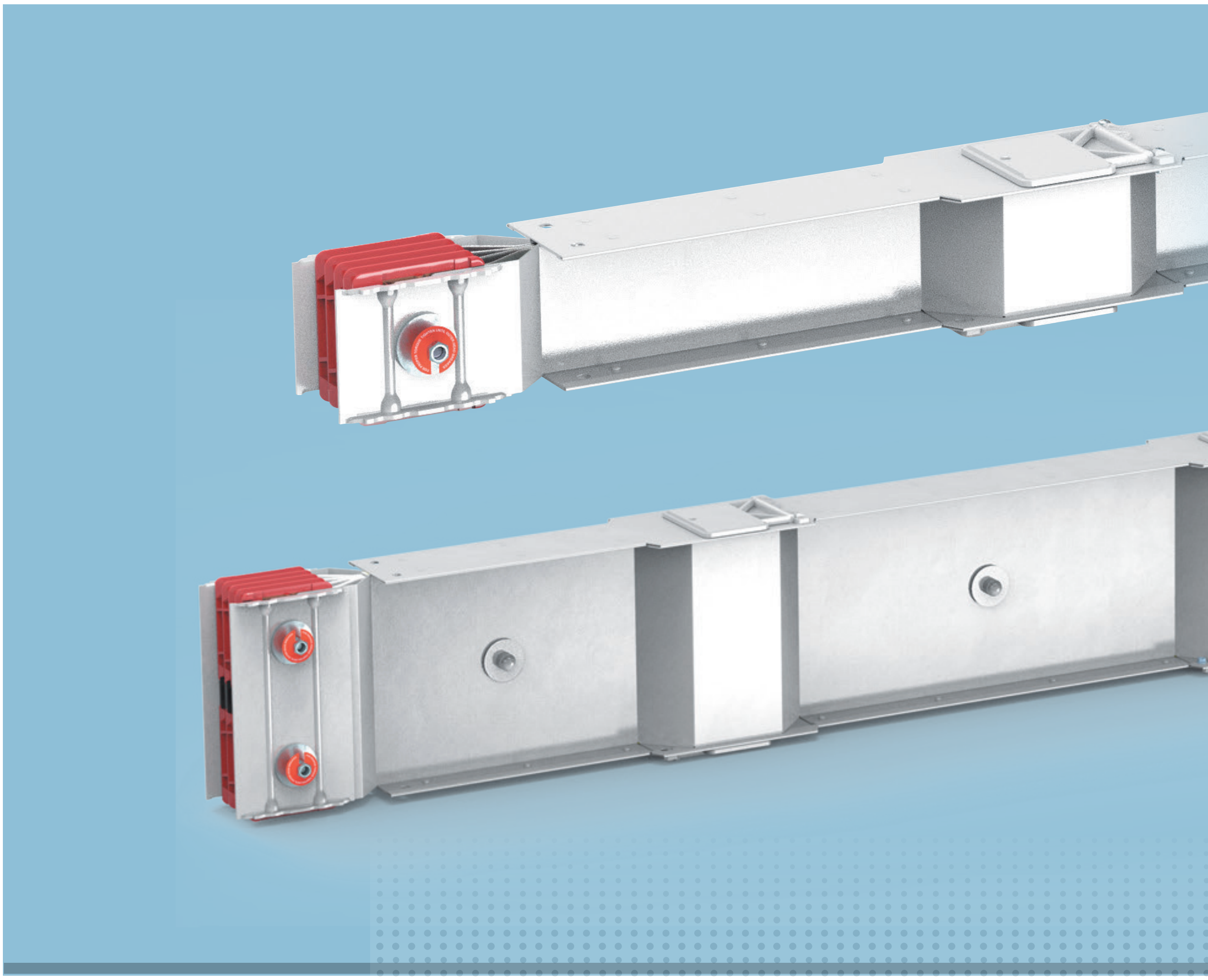
P17 SOCKETS





** Accessories not supplied. To be purchased separately.

SELECTION GUIDE



CONTENTS

Selection of the busbar based on the rated transformer data

During the design stage of the power supply system, it is necessary to consider all the technical specifications and standards for the equipment selected
The designer not only needs to specify the technical requirements but the economical performance of the system
Each element of the electrical system (transformer, switchboards, protection devices and busbar) should be sized accordingly to support the peak loads and the short circuit current in the event of a fault
The table below shows popular transformer ratings with their rated current and their peak short circuit current

RATED CURRENTS AND SHORT CIRCUIT CURRENTS OF STANDARD TRANSFORMERS						
	Rated voltage Un					
	400 V, 50 Hz			690 V, 50 Hz		
	Rated short circuit voltage Uk			Rated short circuit voltage Uk		
		4%	6%		4%	6%
Rated power [kVA]	Rated current In [A]	Short circuit current Ik [kA]		Rated current In [A]	Short circuit current Ik [kA]	
400	577	14·4	9·6	335	8·4	5·6
500	722	18·0	12·0	418	10·5	7·0
630	909	22·7	15·2	527	13·2	8·8
800	1155	28·9	19·2	669	16·7	11·2
1000	1443	36·1	24·1	837	20·9	13·9
1250	1804	45·1	30·1	1046	26·1	17·4
1600	2309	57·7	38·5	1339	33·5	22·3
2000	2887	72·2	48·1	1673	41·8	27·9
2500	3608	90·2	60·1	2092	52·3	34·9
3150	4547	113·7	75·8	2636	65·9	43·9
4000	5774	144·3	96·2	3347	83·7	55·8

$$I_n = \frac{P}{\sqrt{3} \cdot U_n} \leftrightarrow P = I_n \cdot \sqrt{3} \cdot U_n \qquad I_k = \frac{I_n}{U_k} \leftrightarrow I_n \cdot I_k = I_k \cdot U_n$$

Using the above table, a designer can cross reference their load requirements and select a busbar trunking system suited to their design

The first selection criteria for the appropriate busbar is based on the transformers rated current (In). The busbar rating should exceed the transformers rated current. The second selection criteria is based upon the short circuit current. The designer should select a busbar rating that exceeds the Ik when compared to the busbar's peak current (Ipk)
Note: The above applies to standalone transformers. For transformers in parallel, ring or mesh networks, the short circuit current (Ik) will increase (i.e for transformers in parallel the Ik would be double)

Selection example:

Using the following transformer :

P = 1000 kVA
Uk = 6%
Un = 400 V

and the calculation and table above,

$$I_n = \frac{P}{\sqrt{3} \cdot U_n} \rightarrow I_n = \frac{1000000}{\sqrt{3} \cdot 400} = 1443 \text{ A} ;$$

$$I_k = \frac{I_n}{U_k} \rightarrow I_k = \frac{1443}{6\% \cdot 1000} = 24{,}05 \text{ kA}$$

The choices are :
- XCP-S (50 Hz, Al, 4C) having In=1600 A and short-circuit rating Icw = 42 kA
- XCP-HP (50 Hz, Al, 4C) having In=1600 A and short circuit rating Icw = 70 kA

To select other system trunking paths (not just the main units at the transformer output), you need to consider and calculate the parameters on the following pages

Temperature impact on the rating of the busbar system

The ambient temperature where the busbar trunking system is installed impacts on its rating
During the design stages, it will be necessary to multiply the rating value at the reference temperature by a correction coefficient referred to the final operating temperature

All Legrand products have been sized and tested for an average ambient temperature specific for each line. For installation in environments with different average daily temperatures, the rated current of the busbar must be multiplied by a k1 factor, which gives the correct value to consider

$$I_z = I_z0 \cdot Kt$$

Where:

- **I_z0** is the current that the busbar trunking system can carry for an indefinite time at its reference temperature
- **Kt** is the correction coefficient for ambient temperature values other than the reference temperature, as shown in the following table

KT CORRECTION COEFFICIENT FOR AMBIENT TEMPERATURE

XCP-S

Ambient temperature [°C]

-5	0	5	10	15	20	25	30	35	40	45	50
1·24	1·21	1·18	1·15	1·12	1·09	1·06	1·03	1	0·97	0·93	0·90

kt thermal correction factor

XCP-HP (Al)

Ambient temperature [°C]

-5	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70
1·38	1·34	1·31	1·28	1·25	1·21	1·18	1·15	1·11	1·07	1·04	1	0·96	0·92	0·88	0·84

kt thermal correction factor

XCP-HP (Cu)

Ambient temperature [°C]

-5	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70
1·43	1·40	1·37	1·33	1·30	1·26	1·23	1·19	1·16	1·12	1·08	1·04	1	0·96	0·92	0·87

kt thermal correction factor

Joule effect losses in busbar

Losses due to the Joule effect are caused by the electrical resistance of the busbar
Lost energy is transformed into heat and contributes to the heating of the conduit within the environment
The calculation of power loss is required to allow the correct sizing of the building air conditioning system

• Three phase regime losses are :

$$Pj = \frac{3 \cdot Rt \cdot Ib^2 \cdot L}{1000}$$

• In single phase regime :

$$Pj = \frac{2 \cdot Rt \cdot Ib^2 \cdot L}{1000}$$

• Where :

I_b = utilisation current (A)

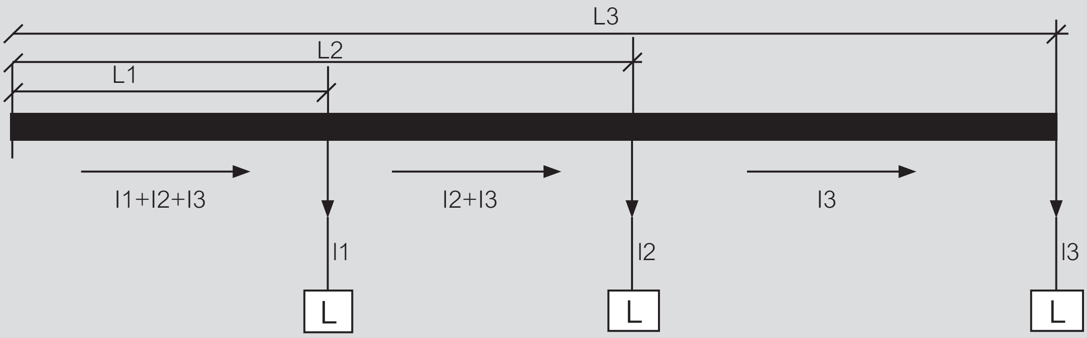
R_t = phase resistance for unit of length of the busbar trunking system, measured at thermal regime (mΩ/m)

L = busbar length (m)

For an accurate calculation of distribution busbar, losses must be assessed based on the distribution load, taking into account the reduction in current, for example, in the case of the distribution of the loads represented in the table below

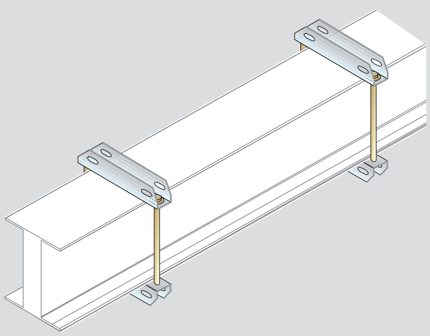
	Length	Transiting current	Losses
1st tap-off point	L1	I1+I2+I3	$P1 = 3R_t L1\ (I1+I2+I3)^2$
2nd tap-off point	L2-L1	I2+I3	$P2 = 3R_t\ (L2-L1)\ (I2+I3)^2$
3rd tap-off point	L3-L2	I3	$P3 = 3R_t\ (L3-L2)\ (I3)^2$

Total losses in the busbar trunking system Pt = P1+P2+P3

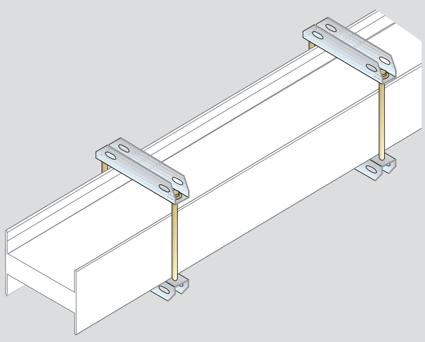


Losses based on the installation method

Thermal dispersion, rating and IP protection degree are independent from the type of installation (edgeways, flat, vertical)
This means that it is possible to install the XCP busbar trunking system as preferred, without having to consider a possible system downgrade



Edgeways



Flat

Busbar trunking system selection based on voltage drop

It will be necessary to check the value of the voltage drop
For systems with power factor (cosφm) no lower than 0·8, the voltage loss can be calculated using the following formulas :

THREE PHASE SYSTEM

$$\Delta v = \frac{b \cdot \sqrt{3} \cdot I_b \cdot L \cdot (R_t \cdot \cos\varphi m + x \cdot \sin\varphi m)}{1000}$$

SINGLE PHASE SYSTEM

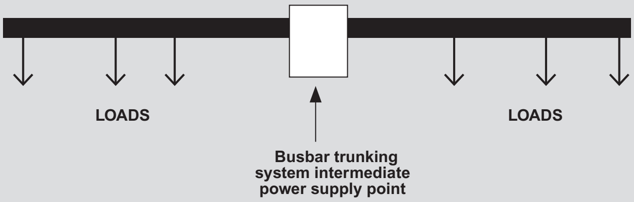
$$\Delta v = \frac{b \cdot 2 \cdot I_b \cdot L \cdot (R_t \cdot \cos\varphi m + x \cdot \sin\varphi m)}{1000}$$

The percentage voltage drop can be obtained from :

$$\Delta v\% = \frac{\Delta v}{Vr} \cdot 100$$

Where Vr is the system rated voltage

In order to limit the voltage drop in case of very long busbar trunking systems, it is possible to allow for a power supply at an intermediate position, rather than at the terminal point



Calculation of the voltage drop with loads not evenly distributed

In cases where the load cannot be considered evenly distributed, the voltage drop may be determined more accurately using the relationships shown below
For the distribution of three phase loads, the voltage drop can be calculated using the following formula, on the assumption (generally verified) that the section of the busbar trunking system is consistent :

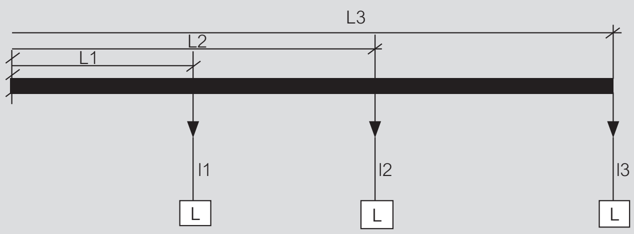
$$\Delta v = \sqrt{3}\,[Rt\,(I1L1\cos\varphi 1 + I2L2\cos\varphi 2 + I3L3\cos\varphi 3) + x\,(I1L1\sin\varphi 1 + I2L2\sin\varphi 2 + I3L3\sin\varphi 3)]$$

In general terms this becomes :

$$\Delta v = \frac{\sqrt{3}(R_t \cdot \sum Ii \cdot Li \cdot \cos\varphi mi + x \cdot \sum Ii \cdot Li \cdot \sin\varphi mi)}{1.000}$$

If the three phase system and the power factor are not lower than cosφ = 0·7, the voltage loss may be calculated using the voltage drop coefficient shown in table 1

$$\Delta v\% = 2b \cdot \frac{k \cdot Ib \cdot L}{Vn} \cdot 100$$



Calculation of the voltage drop with loads not evenly distributed (continued)

The current distribution factor 'b' depends on how the circuit is fed and on the distribution of the electric loads along the busbar :

Table 1 - The distribution factor of the current 'b'

b = 1	Supplies at one end and load at the other end of the line
b = 1/2	Supplies at one end and with load evenly distributed
b = 1/4	Supplies at both ends and with load evenly distributed
b = 1/4	Central supply with loads at both ends
b = 1/8	Central supply with load distributed evenly

Example : XCP 2000 A Al for riser mains feed

I_b	=	1600 A operating current
b	=	1/2 load evenly distributed
k	=	27·3 (XCP 2000 A Al cosφ = 0·85)
cosφ	=	0·85
L	=	100 m line length
Vn	=	400 V operating voltage

$$\Delta v\% = \frac{27{\cdot}3 \cdot 10^{-6} \cdot 1600 \cdot 100}{400} \cdot 100 = 1{\cdot}09\%$$

Legend :

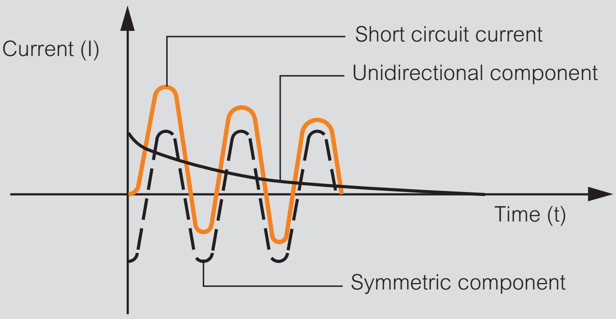
I_b	=	the current that supplies the busbar [A]
Vn	=	the voltage power supply of the busbar [V]
L	=	the length of the busbar [m]
Δv%	=	the voltage drop percentage
b	=	the distribution factor of the current
k	=	corresponding voltage drop factor a cosφ [V/m/A]
cosφ m	=	Average power factor of the loads
x	=	phase reactance by unit of length of the busbar (mΩ/m)
R_t	=	phase resistance by unit of length of the busbar (mΩ/m)
cosφ mi	=	i-th load average power factor
Ii	=	i-th load current (A)
Li	=	distance of the i-th load from the origin of the busbar trunking system

Short circuit withstand

The BS 7671 standard indicates that, for the protection of the circuits of the system, it is necessary to allow for devices aimed at interrupting short circuit currents before these become dangerous due to the thermal and mechanical effects generated in the conductors and the connections. In order to size the electric system and the protection devices correctly, it is necessary to know the value of the estimated short circuit current at the point where this is to be created. This value enables selection of the correct protection devices based on their own tripping and closing powers, and to check the resistance to electro-dynamic stress of the busbar supports installed in control panels, and/ or of the busbar trunking system

Characterisation of short circuit current

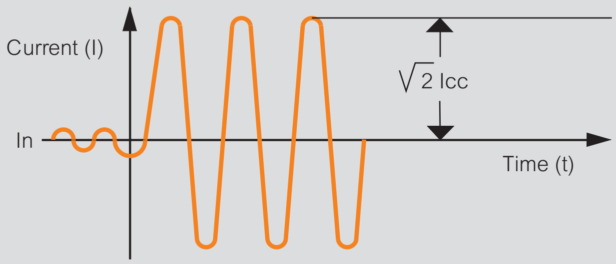
The estimated short circuit current at a point of the user system is the current that would occur if in the considered point a connection of negligible resistance was created between conductors under voltage
The magnitude of this current is an estimated value that represents the worst possible condition (null fault impedance, tripping time long enough to enable the current to reach the maximum theoretical values)
In reality, the short circuit always occurs with significantly lower effective current values



The intensity of the estimated short circuit current essentially depends on the following factors :
• Power of the cabin transformer, meaning that the higher the power, the higher the current
• length of the line upstream the fault, in the sense that the longer the line, the lower the fault

In three phase circuits with neutral it is possible to have three different types of short circuit :

- phase-phase
- phase-neutral
- balanced three phase (most demanding condition)

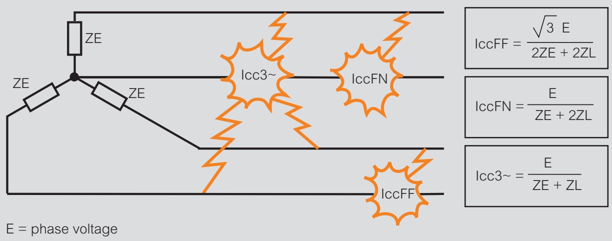


The formula for the calculation of the symmetric component is :

$$\overline{Icc} = \frac{\overline{E}}{\overline{ZE}+\overline{ZL}}$$

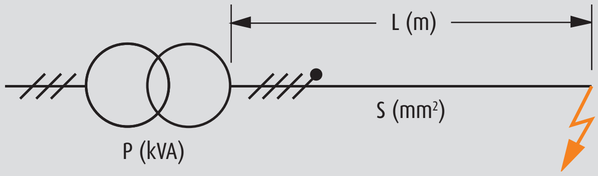
Where :

- **E** is the phase voltage
- **ZE** is the secondary equivalent impedance of the transformer measured between the phase and the neutral
- **ZL** is the impedance of the phase conductor only



Analytical determination of short circuit currents

In order to calculate the value of the estimated short circuit current at any point of the circuit, it is sufficient to apply the formulas shown below, knowing the impedance calculated at the origin of the system up to the point being assessed
In the formulas shown below, the value of the short circuit power is considered infinite and the short circuit impedance is equal to 0
This makes it possible to define short circuit current values higher than the actual ones



Line resistance **RL = r • L**	**RL** = resistance of the line upstream (m) **r** = specific line resistance (m/m) **L** = upstream line length (m)
Line reactance **XL = x • L**	**XL** = upstream line reactance (m) **x** = specific line reactance (m/m)
Transformer resistance $RE = \frac{1000\ Pcu}{3In^2}$	**RE** = transformer secondary equivalent resistance (m) **Pcu** = transformer copper losses (W) **In** = transformer rated current (A)
Transformer impedance $ZE = \frac{Vcc\%\ V^2c}{100\ P}$	**ZE** = transformer secondary equivalent impedance (m) **Vc** = phase voltage (V) **Vcc%** = percentage short circuit voltage **P** = transformer power (kVA)
Transformer reactance $XE = \sqrt{ZE^2 - RE^2}$	**XE** = transformer secondary equivalent reactance (m)
Short circuit impedance $Zcc = \sqrt{(RL + RE)^2 + (XL + XE)^2}$	**Zcc** = total short circuit impedance (m)
Estimated short circuit current $Icc = \frac{Vcc}{\sqrt{3} \cdot Zcc}$	**Icc** = symmetric component of the short circuit current (kA)

XCP-S 4C (AL)											
Rated current	In [A]	630	800	1000	1250	1600	2000	2500	3200	4000	5000
Rated short-time current (1 s)	Icw [kA]rms	25*	25*	36	42	42	50	65	80	100	120
Peak current	Ipk [kA]	53	53	76	88	88	105	143	176	220	264
Rated short-time current of the neutral bar (1 s)	Icw [kA]rms	15*	15*	22	25	25	30	39	48	60	72
Peak current of the neutral bar	Ipk [kA]	30	30	46	53	53	63	82	101	132	158

XCP-S 4C (CU)											
Rated current	In [A]	800	1000	1250	1600	2000	2500	3200	4000	5000	6300
Rated short-time current (1 s)	Icw [kA]rms	25	36	42	42	50	65	80	100	120	150
Peak current	Ipk [kA]	53	78	88	88	105	143	176	220	264	330
Rated short-time current of the neutral bar (1 s)	Icw [kA]rms	15	22	25	25	30	39	48	60	72	90
Peak current of the neutral bar	Ipk [kA]	30	46	53	53	63	82	101	132	158	198

* Icw value at 0·5 s.

XCP-HP 4C (AL)											
Rated current	In [A]	630	800	1000	1250	1600	2000	2500	3200	4000	5000
Rated short-time current (1 s)	Icw [kA]rms	36	36	50	70	70	85	120	120	150	150
Peak current	Ipk [kA]	76	76	105	154	154	187	264	264	330	330
Rated short-time current of the neutral bar (1 s)	Icw [kA]rms	22	22	30	42	42	51	72	72	90	90
Peak current of the neutral bar	Ipk [kA]	45	45	63	88	88	112	158	158	198	198

XCP-HP 4C (CU)											
Rated current	In [A]	800	1000	1250	1600	2000	2500	3200	4000	5000	6300
Rated short-time current (1 s)	Icw [kA]rms	36	50	70	70	85	120	120	150	150	150
Peak current	Ipk [kA]	76	105	154	154	187	264	264	330	330	330
Rated short-time current of the neutral bar (1 s)	Icw [kA]rms	22	30	42	42	51	72	72	90	90	90
Peak current of the neutral bar	Ipk [kA]	45	63	88	88	112	158	158	198	198	198

Harmonics

In a distribution system, currents and voltages should have a perfectly sinusoidal shape. However, in practice the equipment contains electric devices such as changeover switches or dimmers that make the load not linear

The currents absorbed, although at regular intervals and with frequencies equal to that of the rated voltage, sometimes have a non-sinusoidal wave form, which has the following negative effects :

- worsening of the power factor
- heating of the neutral
- additional losses in electric machinery (transformers and motors)
- unstable operation of the protection elements (thermal magnetic and earth leakage circuit breakers)

In industrial buildings these conditions have been occurring for a long time. However, they are now occurring more and more in service sector distribution systems where, from backbone distribution (which uses three phase lines), single phase loads are often distributed, and which contributes to increasing the unbalance of the electric system

The overall waveform may contain multiple harmonic waveforms called harmonic components

A deformed current at a frequency of 50 Hz, like the example represented by the magenta line in the figure, consists of many sinusoidal currents with frequency of 50 Hz (fundamental), 100 Hz (second harmonic components), 150 Hz (third harmonics) and so on

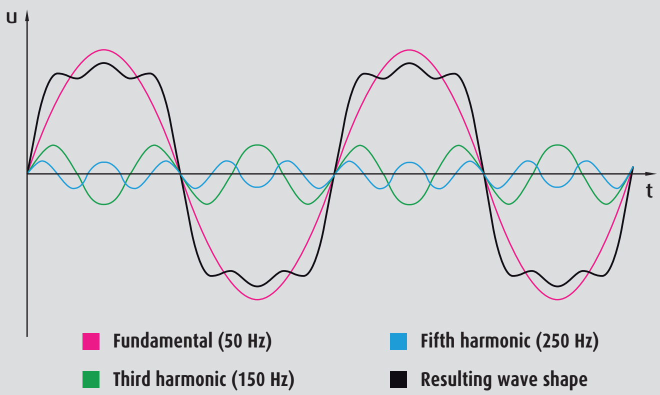
The presence of current harmonics represents an important problem, causing overload conditions both on phase conductors, and on any neutral conductor, and results in the reduction of the conductor's permitted load

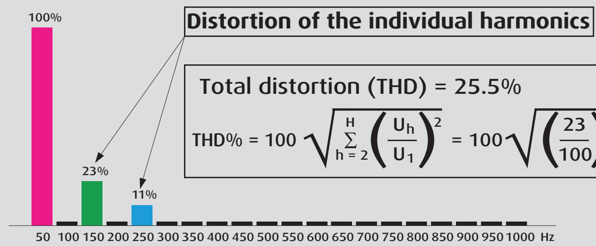
Choice of the rating when in the presence of harmonics

When in the presence of harmonics, and when using the chosen Int rated current, the XCP busbar to be used has the rating specified in the table below

Rated current [A]	630	800	1000	1250	1600	2000	2500	3200	4000	5000	6300
	XCP busbar to be used :										
THD ≤ 15%	630	800	1000	1250	1600	2000	2500	3200	4000	5000	6300
15% < THD ≤ 33%	800	1000	1250	1600	2000	2500	3200	4000	5000	6300	-
THD > 33%	1000	1250	1600	2000	2500	3200	4000	5000	6300	-	-

Measurement of harmonic distortion carried out with a network analyser





Total distortion (THD) = 25.5%

$$THD\% = 100\sqrt{\sum_{h=2}^{H}\left(\frac{U_h}{U_1}\right)^2} = 100\sqrt{\left(\frac{23}{100}\right)^2+\left(\frac{11}{100}\right)^2} = 25.5\ \%$$

Note :
200% neutral versions are available for systems with harmonics present on the neutral

XCP-S

BUSBAR FROM 630 TO 6300 A

Compact power solution, optimised for standard applications

XCP-S is an extra compact and light busbar trunking system. It is the range used for transport and distribution of high power, including rising mains. Applications include all industrial, commercial and service sector buildings such as factories, banks, trade and business centres, hospitals and data centres etc.

Xtra Compact (XCP-S)

technical information

General features

XCP-S is available in the following configurations : from **630 A to 5000 A with aluminum alloy conductors** and **from 800 A to 6300 A with copper conductors**

The extra compact dimensions of the XCP-S enhance **its resistance to short circuit stresses**. In addition, they can reduce the impedance of the circuit by controlling the voltage drops and allowing for the installation of high power electrical systems, even in extremely confined spaces

XCP-S is available with **a wide selection of tap-off boxes that range from 32 A up to 1250 A**, thus allowing you to locally protect and feed different types of loads by housing protective devices such as fuses, MCBs, MCCBs and motorised switches

XCP-S is not only in **compliance with** the harmonised **standards, IEC EN 61439-6,** but also answers specifically to many clients' needs for more severe conditions

Thus **the rated current** of Legrand's busbar trunking systems is **referred to the average ambient temperature of 35 °C**

The nominal range of all XCP-S is guaranteed both for horizontal installations (flat and edgeways) and for vertical installations without derating

XCP-S busbar trunking systems are designed so that they can be relatively **maintenance-free**, except for the periodic and compulsory inspections required by the standard BS 7671

The tightening torque inspection of the junction can be carried out by qualified personnel, even when the busbar is energised

Structural features

The outer casing of the XCP-S line consists of four C-ribbed section bars, bordered and riveted (thickness 1·5 mm), **with excellent mechanical, electric** and **heat loss efficiency**

The sheet metal is made of galvanised steel, treated according to UNI EN10327 and **painted with RAL7035 resins** with a **high resistance to chemical agents**

The standard degree of protection is IP 55 (IP 65 on request for transport of energy only). With certain accessories it can also be connected to Legrand RCP busbar for external installation

The busbar conductors have a rectangular cross section with rounded corners. There are two versions available :

- **Electrolytic copper ETP 99.9 UNI EN 13601**
- **Aluminum alloy** treated over the entire surface with **5 galvanic processes** (copper plating and tin plating)

The insulation between bars is ensured by a **double sheath made with a polyester film** and a total thickness of 2 x 0·19 mm for **class B (130°C)**, or **class F (155°C)** thermal resistance with a total thickness of 2 x 0·23 mm (available on request). All plastic components have a **V1 self-extinguishing degree**. They are fire retardant and comply with the glow-wire test according to standards

The XCP-S line is halogen free

In order to facilitate storage operations, and to reduce the installation time, the straight lengths, trunking components and all other **components** of the XCP-S line are **supplied with a monobloc pre-installed at the factory**

The junction contact is ensured by using **tin plated aluminium for XCP-S Al** and **copper for XCP-S Cu for each phase**, insulated with red **class F thermosetting plastic material**

The **monobloc** has **shearhead bolts** thus after tightening the nuts with a standard wrench, the outer head will break at the correct torque value, giving you the certainty that the connection has been made properly and guarantees safety and maximum performance over time

Finally, in order to completely verify the insulation level, every finished product undergoes an **insulation test** (phase-phase, phase-PE) at the factory with a test voltage of 3500 Vac for 1·5 seconds

The test is performed on the finished product, completely assembled

IP 55 and IP 65 is intended for internal use only, for outdoor applications RCP resin IP 68 busbar is available

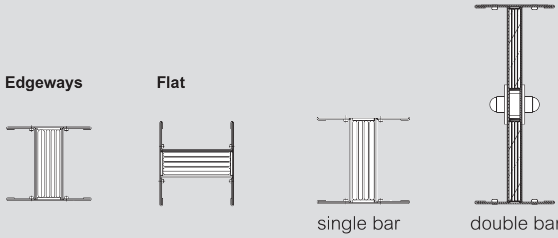
RATED CURRENT OF XCP-S BARS (A)

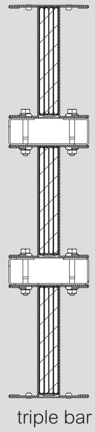
Al	**630**	**800**	**1000**	**1250**	**1600**	**2000**	**2500**	**3200**	**4000**	**5000**	
	Single bar						Double bar			Triple bar	
Cu		**800**	**1000**	**1250**	**1600**	**2000**	**2500**	**3200**	**4000**	**5000**	**6300**
	Single bar						Double bar				Triple bar

Standard versions

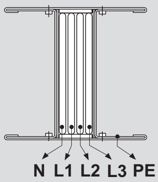
XCP-S line with 4 conductors
3P+N+PE, 3P+PE, 3P+FE+PE, 3L+PE, 3L+N+FE+PE

PE : Protection earth (casing)
FE : Functional earth (clean earth)





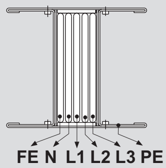
Phase sequence



XCP-S 5 line with 5 conductors
3P+N+FE+PE

PE : Protection earth (casing)
FE : Functional earth (clean earth)

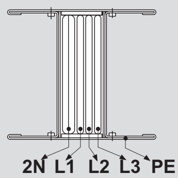
Phase sequence



XCP-S 2N 200% neutral line
3P+2N+PE

PE : Protection earth (casing)
2N : 200% neutral

Phase sequence



GENERAL CORRECTION FACTOR FOR AMBIENT TEMPERATURES (Kt)
XCP-S (AL - CU)

Daily avg ambient temperature	**-5°C**	**0°C**	**5°C**	**10°C**	**15°C**	**20°C**	**25°C**	**30°C**	**35°C**	**40°C**	**45°C**	**50°C**
Kt factor	**1·24**	**1·21**	**1·18**	**1·15**	**1·12**	**1·09**	**1·06**	**1·03**	**1**	**0·97**	**0·93**	**0·90**

Special versions are available on request, contact us on +44 (0) 370 608 9020

Xtra Compact (XCP-S)

technical data

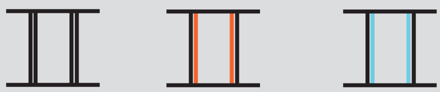
XCP-S Al (4 conductors)

3P+N+PE		SINGLE BAR						DOUBLE BAR			TRIPLE BAR
Rated current	**In [A]**	**630**	**800**	**1000**	**1250**	**1600**	**2000**	**2500**	**3200**	**4000**	**5000**
Overall dimension of the busbars	L x H [mm]	120 x 130	120 x 130	120 x 130	120 x 170	120 x 200	120 x 220	120 x 380	120 x 440	120 x 480	120 x 590
Rated operational voltage	Ue [V]	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
Rated insulation voltage	Ui [V]	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
Frequency	f [Hz]	50	50	50	50	50	50	50	50	50	50
Rated short-time current (1 s)	I_{cw} [kA]$_{rms}$	25***	25***	36	42	42	50	65	80	100	120
Peak current	I_{pk} [kA]	53	53	76	88	88	105	143	176	220	264
Allowable specific energy for three phase fault	I^2t [MA²s]	312	312	1296	1764	1764	2500	4225	6400	10000	14400
Rated short-time current of the neutral bar (1 s)	I_{cw} [kA]$_{rms}$	15***	15***	22	25	25	30	39	48	60	72
Peak current of the neutral bar	I_{pk} [kA]	30	30	46	53	53	63	82	101	132	158
Rated short-time current of the protective circuit (1 s)	I_{cw} [kA]$_{rms}$	15***	15***	22	25	25	30	39	48	60	72
Peak current of the protective circuit	I_{pk} [kA]	30	30	46	53	53	63	82	101	132	158
Phase resistance at 20°C	R_{20} [mΩ/m]	0·140	0·092	0·077	0·057	0·041	0·029	0·029	0·021	0·014	0·011
Phase reactance (50hz)	X [mΩ/m]	0·023	0·017	0·017	0·016	0·015	0·014	0·011	0·007	0·006	0·005
Phase impedance	Z [mΩ/m]	0·142	0·094	0·079	0·060	0·044	0·032	0·031	0·022	0·016	0·012
Phase resistance at thermal conditions	R_t [mΩ/m]	0·185	0·122	0·104	0·080	0·058	0·040	0·041	0·030	0·021	0·015
Phase impedance at thermal conditions	Z [mΩ/m]	0·186	0·123	0·105	0·081	0·059	0·043	0·042	0·031	0·022	0·016
Neutral resistance	R_{20} [mΩ/m]	0·140	0·092	0·077	0·057	0·041	0·029	0·029	0·021	0·014	0·011
Resistance of the protective bar (PE 1)	R_{PE} [mΩ/m]	0·132	0·132	0·132	0·119	0·110	0·106	0·078	0·071	0·067	0·040
Resistance of the protective bar (PE 2)	R_{PE} [mΩ/m]	0·049	0·049	0·049	0·038	0·032	0·025	0·021	0·017	0·016	0·013
Resistance of the protective bar (PE 3)	R_{PE} [mΩ/m]	0·084	0·084	0·084	0·064	0·054	0·049	0·035	0·029	0·026	0·021
Reactance of the protective bar	X_{PE} [mΩ/m]	0·080	0·078	0·078	0·048	0·039	0·028	0·020	0·015	0·016	0·014
Resistance of the fault loop (PE 1)	R_o [mΩ/m]	0·272	0·224	0·208	0·176	0·152	0·135	0·107	0·092	0·082	0·051
Resistance of the fault loop (PE 2)	R_o [mΩ/m]	0·190	0·142	0·126	0·095	0·073	0·054	0·049	0·038	0·030	0·023
Resistance of the fault loop (PE 3)	R_o [mΩ/m]	0·224	0·176	0·161	0·121	0·096	0·078	0·064	0·050	0·040	0·032
Reactance of the fault loop (50hz)	X_o [mΩ/m]	0·10	0·10	0·10	0·06	0·05	0·04	0·03	0·02	0·02	0·02
Impedance of the fault loop (PE 1)	Z_o [mΩ/m]	0·291	0·243	0·229	0·188	0·161	0·142	0·111	0·094	0·085	0·054
Impedance of the fault loop (PE 2)	Z_o [mΩ/m]	0·216	0·171	0·158	0·115	0·091	0·069	0·058	0·044	0·037	0·030
Impedance of the fault loop (PE 3)	Z_o [mΩ/m]	0·247	0·200	0·187	0·137	0·110	0·089	0·071	0·054	0·046	0·037
Zero-sequence short circuit average resistance phase - N	R_o [mΩ/m]	0·187	0·123	0·102	0·077	0·055	0·039	0·038	0·028	0·019	0·014
Zero-sequence short circuit average reactance phase - N	X_o [mΩ/m]	0·031	0·023	0·023	0·021	0·020	0·019	0·015	0·009	0·008	0·007
Zero-sequence short circuit average impedance phase - N	Z_o [mΩ/m]	0·189	0·125	0·105	0·080	0·059	0·043	0·041	0·029	0·021	0·016
Zero-sequence short circuit average resistance phase - PE	R_o [mΩ/m]	0·178	0·162	0·157	0·138	0·124	0·116	0·088	0·078	0·072	0·044
Zero-sequence short circuit average reactance phase - PE	X_o [mΩ/m]	0·031	0·023	0·023	0·021	0·020	0·019	0·015	0·009	0·008	0·007
Zero-sequence short circuit average impedance phase - PE	Z_o [mΩ/m]	0·181	0·164	0·159	0·140	0·126	0·117	0·089	0·079	0·073	0·044
Voltage drop with distributed load ΔV [V/(m*A)]10^{-6}	cosφ = 0·70	126·3	84·4	73·4	58·1	44·1	33·2	31·5	22·4	16·3	12·4
	cosφ = 0·75	133·3	88·9	77·1	60·8	45·9	34·3	32·8	23·3	17·0	12·9
	cosφ = 0·80	140·1	93·3	80·7	63·4	47·6	35·3	34·0	24·2	17·6	13·3
	cosφ = 0·85	146·6	97·5	84·1	65·9	49·2	36·1	35·1	25·1	18·1	13·6
	cosφ = 0·90	152·8	101·5	87·3	68·0	50·5	36·8	36·0	25·8	18·5	13·9
	cosφ = 0·95	158·4	104·9	90·0	69·8	51·4	37·0	36·5	26·4	18·8	14·0
	cosφ = 1·00	160·2	105·6	89·9	68·9	49·8	35·0	35·3	25·8	18·0	13·3
Weight (PE 1)	p [kg/m]	14·3	15·6	1·0	18·9	22·5	27·4	34·1	41·5	50·4	88·3
Weight (PE 2)	p [kg/m]	17·6	18·9	19·3	23·3	27·7	33·9	42·1	51·0	61·0	101·4
Weight (PE 3)	p [kg/m]	15·4	16·7	17·1	20·3	24·2	29·2	36·7	44·6	54·0	92·6
Fire load	[kWh/m]	4·5	5·5	5·5	6·0	8·5	10·5	16·0	19·0	21·0	21·0
Degree of protection	IP	55*	55*	55*	55*	55*	55*	55*	55*	55*	55*
Insulation material thermal resistance class		B**	B**	B/F**	B**	B**	B**	B**	B**	B**	B**
Losses for the Joule effect at nominal current	P [W/m]	220	234	311	373	442	485	765	914	1000	1154
Ambient temperature min/ MAX (daily average)	[°C]	-5/+50	-5/+50	-5/+50	-5/+50	-5/+50	-5/+50	-5/+50	-5/+50	-5/+50	-5/+50

* IP 65 for feeder lines is available on request
** Class F is available on request
*** Icw value at 0·5 s

For temperatures over 35°C it will be necessary to derate the busbar and for ambient temperatures under -5°C please contact technical support on +44 (0) 370 608 9020

The data on this page refers to the 50 Hz frequency. For 60 Hz please contact technical support on +44 (0) 370 608 9020



PE 1 Standard version

PE 2 Extra earth - COPPER

PE 3 Extra earth - ALUMINUM XCP Al 3L+N+50%PE (available on request)

Xtra Compact (XCP-S)

technical data

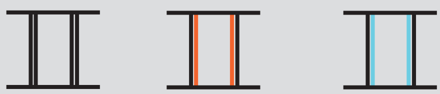
XCP-S Al (5 conductors - clean earth)

3P+N+PE+FE		SINGLE BAR						DOUBLE BAR			TRIPLE BAR
Rated current	**In [A]**	**630**	**800**	**1000**	**1250**	**1600**	**2000**	**2500**	**3200**	**4000**	**5000**
Overall dimension of the busbars	L x H [mm]	120 x 130	120 x 130	120 x 130	120 x 170	120 x 200	120 x 220	120 x 380	120 x 440	120 x 480	120 x 590
Rated operational voltage	Ue [V]	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
Rated insulation voltage	Ui [V]	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
Frequency	f [Hz]	50	50	50	50	50	50	50	50	50	50
Rated short-time current (1 s)	I_{cw} [kA]$_{rms}$	25***	25***	36	42	42	50	65	80	100	120
Peak current	I_{pk} [kA]	53	53	76	88	88	105	143	176	220	264
Allowable specific energy for three phase fault	I^2t [MA^2s]	312	312	1296	1764	1764	2500	4225	6400	10000	14400
Rated short-time current of the neutral bar (1 s)	I_{cw} [kA]$_{rms}$	15***	15***	22	25	25	30	39	48	60	72
Peak current of the neutral bar	I_{pk} [kA]	30	30	46	53	53	63	82	101	132	158
Rated short-time current of the protective circuit (1 s)	I_{cw} [kA]$_{rms}$	15***	15***	22	25	25	30	39	48	60	72
Peak current of the protective circuit	I_{pk} [kA]	30	30	46	53	53	63	82	101	132	158
Phase resistance at 20°C	R_{20} [mΩ/m]	0·140	0·092	0·077	0·057	0·041	0·029	0·029	0·021	0·014	0·011
Phase reactance (50hz)	X [mΩ/m]	0·023	0·017	0·017	0·016	0·015	0·014	0·011	0·007	0·006	0·005
Phase impedance	Z [mΩ/m]	0·142	0·094	0·079	0·060	0·044	0·032	0·031	0·022	0·016	0·012
Phase resistance at thermal conditions	R_t [mΩ/m]	0·185	0·122	0·104	0·080	0·058	0·040	0·041	0·030	0·021	0·015
Phase impedance at thermal conditions	Z [mΩ/m]	0·186	0·123	0·105	0·081	0·059	0·043	0·042	0·031	0·022	0·016
Neutral resistance	R_{20} [mΩ/m]	0·140	0·092	0·077	0·057	0·041	0·029	0·029	0·021	0·014	0·011
Functional Earth resistance (FE)	R_{20} [mΩ/m]	0·140	0·092	0·077	0·057	0·041	0·029	0·029	0·021	0·014	0·011
Functional Earth reactance (FE)	X [mΩ/m]	0·023	0·017	0·017	0·016	0·015	0·014	0·011	0·007	0·006	0·005
Resistance of the protective bar (PE 1)	R_{PE} [mΩ/m]	0·132	0·132	0·132	0·119	0·110	0·106	0·078	0·071	0·067	0·040
Resistance of the protective bar (PE 2)	R_{PE} [mΩ/m]	0·049	0·049	0·049	0·038	0·032	0·025	0·021	0·017	0·016	0·013
Resistance of the protective bar (PE 3)	R_{PE} [mΩ/m]	0·084	0·084	0·084	0·064	0·054	0·049	0·035	0·029	0·026	0·021
Reactance of the protective bar	X_{PE} [mΩ/m]	0·080	0·078	0·078	0·048	0·039	0·028	0·020	0·015	0·016	0·014
Resistance of the fault loop (PE 1)	R_o [mΩ/m]	0·208	0·146	0·125	0·096	0·071	0·052	0·050	0·037	0·026	0·019
Resistance of the fault loop (PE 2)	R_o [mΩ/m]	0·177	0·124	0·107	0·080	0·059	0·042	0·041	0·030	0·022	0·016
Resistance of the fault loop (PE 3)	R_o [mΩ/m]	0·193	0·136	0·117	0·088	0·065	0·047	0·044	0·033	0·024	0·018
Reactance of the fault loop (50hz)	X_o [mΩ/m]	0·10	0·10	0·10	0·06	0·05	0·04	0·03	0·02	0·02	0·02
Impedance of the fault loop (PE 1)	Z_o [mΩ/m]	0·232	0·174	0·157	0·116	0·089	0·067	0·059	0·043	0·034	0·027
Impedance of the fault loop (PE 2)	Z_o [mΩ/m]	0·205	0·156	0·143	0·103	0·080	0·060	0·051	0·037	0·031	0·025
Impedance of the fault loop (PE 3)	Z_o [mΩ/m]	0·218	0·166	0·151	0·109	0·084	0·063	0·054	0·039	0·032	0·026
Zero-sequence short circuit average resistance phase - N	R_o [mΩ/m]	0·187	0·123	0·102	0·077	0·055	0·039	0·038	0·028	0·019	0·014
Zero-sequence short circuit average reactance phase - N	X_o [mΩ/m]	0·031	0·023	0·023	0·021	0·020	0·019	0·015	0·009	0·008	0·007
Zero-sequence short circuit average impedance phase - N	Z_o [mΩ/m]	0·189	0·125	0·105	0·080	0·059	0·043	0·041	0·029	0·021	0·016
Zero-sequence short circuit average resistance phase - PE	R_o [mΩ/m]	0·187	0·123	0·102	0·077	0·055	0·039	0·038	0·028	0·019	0·014
Zero-sequence short circuit average reactance phase - PE	X_o [mΩ/m]	0·031	0·023	0·023	0·021	0·020	0·019	0·015	0·009	0·008	0·007
Zero-sequence short circuit average impedance phase - PE	Z_o [mΩ/m]	0·189	0·125	0·105	0·080	0·059	0·043	0·041	0·029	0·021	0·016
Voltage drop with distributed load ΔV [V/(m*A)]10^{-6}	cosφ = 0·70	126·3	84·4	73·4	58·1	44·1	33·2	31·5	22·4	16·3	12·4
	cosφ = 0·75	133·3	88·9	77·1	60·8	45·9	34·3	32·8	23·3	17·0	12·9
	cosφ = 0·80	140·1	93·3	80·7	63·4	47·6	35·3	34·0	24·2	17·6	13·3
	cosφ = 0·85	146·6	97·5	84·1	65·9	49·2	36·1	35·1	25·1	18·1	13·6
	cosφ = 0·90	152·8	101·5	87·3	68·0	50·5	36·8	36·0	25·8	18·5	13·9
	cosφ = 0·95	158·4	104·9	90·0	69·8	51·4	37·0	36·5	26·4	18·8	14·0
	cosφ = 1·00	160·2	105·6	89·9	68·9	49·8	35·0	35·3	25·8	18·0	13·3
Weight (PE 1)	p [kg/m]	15·3	17·0	17·6	20·9	25·2	31·1	38·3	47·1	58·0	98·2
Weight (PE 2)	p [kg/m]	18·6	20·3	20·9	25·3	30·3	37·6	46·3	56·6	68·6	111·3
Weight (PE 3)	p [kg/m]	16·4	18·0	18·7	22·3	26·9	33·0	40·9	50·2	61·5	102·5
Fire load	[kWh/m]	5·6	6·9	6·9	7·5	10·6	13·1	20·0	23·8	26·3	27·3
Degree of protection	IP	55*	55*	55*	55*	55*	55*	55*	55*	55*	55*
Insulation material thermal resistance class		B**	B**	B**	B**	B**	B**	B**	B**	B**	B**
Losses for the Joule effect at nominal current	P [W/m]	220	234	311	373	442	485	765	914	1000	1154
Ambient temperature min/ MAX (daily average)	[°C]	-5/+50	-5/+50	-5/+50	-5/+50	-5/+50	-5/+50	-5/+50	-5/+50	-5/+50	-5/+50

* IP 65 for feeder lines is available on request
** Class F is available on request
*** Icw value at 0·5 s

For temperatures over 35°C it will be necessary to derate the busbar and for ambient temperatures under -5°C please contact technical support on +44 (0) 370 608 9020

The data on this page refers to the 50 Hz frequency. For 60 Hz please contact technical support on +44 (0) 370 608 9020



PE 1 Standard version

PE 2 Extra earth - COPPER

PE 3 Extra earth - ALUMINUM XCP Al 3L+N+50%PE (available on request)

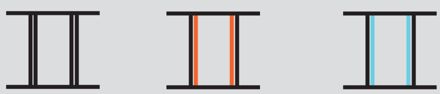
XCP-S Al (5 conductors - double neutral)

3P+2N+PE		SINGLE BAR						DOUBLE BAR			TRIPLE BAR
Rated current	**In [A]**	**630**	**800**	**1000**	**1250**	**1600**	**2000**	**2500**	**3200**	**4000**	**5000**
Overall dimension of the busbars	L x H [mm]	120 x 130	120 x 130	120 x 130	120 x 170	120 x 200	120 x 220	120 x 380	120 x 440	120 x 480	120 x 590
Rated operational voltage	Ue [V]	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
Rated insulation voltage	Ui [V]	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
Frequency	f [Hz]	50	50	50	50	50	50	50	50	50	50
Rated short-time current (1 s)	I_{cw} [kA]$_{rms}$	25***	25***	36	42	42	50	65	80	100	120
Peak current	I_{pk} [kA]	53	53	76	88	88	105	143	176	220	264
Allowable specific energy for three phase fault	I^2t [MA²s]	312	312	1296	1764	1764	2500	4225	6400	10000	14400
Rated short-time current of the neutral bar (1 s)	I_{cw} [kA]$_{rms}$	15***	15***	22	25	25	30	39	48	60	72
Peak current of the neutral bar	I_{pk} [kA]	30	30	46	53	53	63	82	101	132	158
Rated short-time current of the protective circuit (1 s)	I_{cw} [kA]$_{rms}$	15***	15***	22	25	25	30	39	48	60	72
Peak current of the protective circuit	I_{pk} [kA]	30	30	46	53	53	63	82	101	132	158
Phase resistance at 20°C	R_{20} [mΩ/m]	0·140	0·092	0·077	0·057	0·041	0·029	0·029	0·021	0·014	0·011
Phase reactance (50hz)	X [mΩ/m]	0·023	0·017	0·017	0·016	0·015	0·014	0·011	0·007	0·006	0·005
Phase impedance	Z [mΩ/m]	0·142	0·094	0·079	0·060	0·044	0·032	0·031	0·022	0·016	0·012
Phase resistance at thermal conditions	R_t [mΩ/m]	0·185	0·122	0·104	0·080	0·058	0·040	0·041	0·030	0·021	0·015
Phase impedance at thermal conditions	Z [mΩ/m]	0·186	0·123	0·105	0·081	0·059	0·043	0·042	0·031	0·022	0·016
Neutral resistance	R_{20} [mΩ/m]	0·070	0·046	0·038	0·029	0·021	0·014	0·014	0·010	0·007	0·005
Resistance of the protective bar (PE 1)	R_{PE} [mΩ/m]	0·132	0·132	0·132	0·119	0·110	0·106	0·078	0·071	0·067	0·040
Resistance of the protective bar (PE 2)	R_{PE} [mΩ/m]	0·049	0·049	0·049	0·038	0·032	0·025	0·021	0·017	0·016	0·013
Resistance of the protective bar (PE 3)	R_{PE} [mΩ/m]	0·084	0·084	0·084	0·064	0·054	0·049	0·035	0·029	0·026	0·021
Reactance of the protective bar	X_{PE} [mΩ/m]	0·080	0·078	0·078	0·048	0·039	0·028	0·020	0·015	0·016	0·014
Resistance of the fault loop (PE 1)	R_o [mΩ/m]	0·272	0·224	0·208	0·176	0·152	0·135	0·107	0·092	0·082	0·051
Resistance of the fault loop (PE 2)	R_o [mΩ/m]	0·190	0·142	0·126	0·095	0·073	0·054	0·049	0·038	0·030	0·023
Resistance of the fault loop (PE 3)	R_o [mΩ/m]	0·224	0·176	0·161	0·121	0·096	0·078	0·064	0·050	0·040	0·032
Reactance of the fault loop (50hz)	X_o [mΩ/m]	0·10	0·10	0·10	0·06	0·05	0·04	0·03	0·02	0·02	0·02
Impedance of the fault loop (PE 1)	Z_o [mΩ/m]	0·291	0·243	0·229	0·188	0·161	0·142	0·111	0·094	0·085	0·054
Impedance of the fault loop (PE 2)	Z_o [mΩ/m]	0·216	0·171	0·158	0·115	0·091	0·069	0·058	0·044	0·037	0·030
Impedance of the fault loop (PE 3)	Z_o [mΩ/m]	0·247	0·200	0·187	0·137	0·110	0·089	0·071	0·054	0·046	0·037
Zero-sequence short circuit average resistance phase - N	R_o [mΩ/m]	0·117	0·077	0·064	0·048	0·034	0·024	0·024	0·017	0·012	0·009
Zero-sequence short circuit average reactance phase - N	X_o [mΩ/m]	0·019	0·014	0·014	0·013	0·013	0·012	0·009	0·006	0·005	0·004
Zero-sequence short circuit average impedance phase - N	Z_o [mΩ/m]	0·118	0·078	0·066	0·050	0·037	0·027	0·026	0·018	0·013	0·010
Zero-sequence short circuit average resistance phase - PE	R_o [mΩ/m]	0·178	0·162	0·157	0·138	0·124	0·116	0·088	0·078	0·072	0·044
Zero-sequence short circuit average reactance phase - PE	X_o [mΩ/m]	0·031	0·023	0·023	0·021	0·020	0·019	0·015	0·009	0·008	0·007
Zero-sequence short circuit average impedance phase - PE	Z_o [mΩ/m]	0·181	0·164	0·159	0·140	0·126	0·117	0·089	0·079	0·073	0·044
Voltage drop with distributed load ΔV [V/(m*A)]10^{-6}	cosφ = 0·70	126·3	84·4	73·4	58·1	44·1	33·2	31·5	22·4	16·3	12·4
	cosφ = 0·75	133·3	88·9	77·1	60·8	45·9	34·3	32·8	23·3	17·0	12·9
	cosφ = 0·80	140·1	93·3	80·7	63·4	47·6	35·3	34·0	24·2	17·6	13·3
	cosφ = 0·85	146·6	97·5	84·1	65·9	49·2	36·1	35·1	25·1	18·1	13·6
	cosφ = 0·90	152·8	101·5	87·3	68·0	50·5	36·8	36·0	25·8	18·5	13·9
	cosφ = 0·95	158·4	104·9	90·0	69·8	51·4	37·0	36·5	26·4	18·8	14·0
	cosφ = 1·00	160·2	105·6	89·9	68·9	49·8	35·0	35·3	25·8	18·0	13·3
Weight (PE 1)	p [kg/m]	15·3	17·0	17·6	20·9	25·2	31·1	38·3	47·1	58·0	98·2
Weight (PE 2)	p [kg/m]	18·6	20·3	20·9	25·3	30·3	37·6	46·3	56·6	68·6	111·3
Weight (PE 3)	p [kg/m]	16·4	18·0	18·7	22·3	26·9	33·0	40·9	50·2	61·5	102·5
Fire load	[kWh/m]	5·6	6·9	6·9	7·5	10·6	13·1	20·0	23·8	26·3	27·3
Degree of protection	IP	55*	55*	55*	55*	55*	55*	55*	55*	55*	55*
Insulation material thermal resistance class		B**	B**	B**	B**	B**	B**	B**	B**	B**	B**
Losses for the Joule effect at nominal current	P [W/m]	220	234	311	373	442	485	765	914	1000	1154
Ambient temperature min/ MAX (daily average)	[°C]	-5/+50	-5/+50	-5/+50	-5/+50	-5/+50	-5/+50	-5/+50	-5/+50	-5/+50	-5/+50

* IP 65 for feeder lines is available on request
** Class F is available on request
*** Icw value at 0·5 s

For temperatures over 35°C it will be necessary to derate the busbar and for ambient temperatures under -5°C please contact technical support on +44 (0) 370 608 9020

The data on this page refers to the 50 Hz frequency. For 60 Hz please contact technical support on +44 (0) 370 608 9020



PE 1 Standard version

PE 2 Extra earth - COPPER

PE 3 Extra earth - ALUMINUM XCP Al 3L+N+50%PE (available on request)

Xtra Compact (XCP-S)

technical data

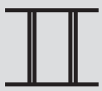
XCP-S CU (4 conductors)

3P+N+PE		SINGLE BAR					DOUBLE BAR				TRIPLE BAR
Rated current	**In [A]**	**800**	**1000**	**1250**	**1600**	**2000**	**2500**	**3200**	**4000**	**5000**	**6300**
Overall dimension of the busbars	L x H [mm]	120 x 130	120 x 130	120 x 130	120 x 170	120 x 200	120 x 300	120 x 380	120 x 440	120 x 480	120 x 590
Rated operational voltage	Ue [V]	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
Rated insulation voltage	Ui [V]	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
Frequency	f [Hz]	50	50	50	50	50	50	50	50	50	50
Rated short-time current (1 s)	I_{cw} [kA]rms	25	36	42	42	50	65	80	100	120	150
Peak current	I_{pk} [kA]	53	76	88	88	105	143	176	220	264	330
Allowable specific energy for three phase fault	I^2t [MA²s]	625	1296	1764	1764	2500	4225	6400	10000	14400	22500
Rated short-time current of the neutral bar (1 s)	I_{cw} [kA]rms	15	22	25	25	30	39	48	60	72	90
Peak current of the neutral bar	Ipk [kA]	30	46	53	53	63	82	101	132	158	198
Rated short-time current of the protective circuit (1 s)	I_{cw} [kA]rms	15	22	25	25	30	39	48	60	72	90
Peak current of the protective circuit	I_{pk} [kA]	30	46	53	53	63	82	101	132	158	198
Phase resistance at 20°C	R_{20} [mΩ/m]	0·077	0·058	0·045	0·034	0·024	0·021	0·017	0·012	0·008	0·0062
Phase reactance (50hz)	X [mΩ/m]	0·023	0·017	0·017	0·015	0·014	0·011	0·007	0·006	0·006	0·0050
Phase impedance	Z [mΩ/m]	0·080	0·061	0·048	0·037	0·028	0·024	0·018	0·014	0·010	0·0079
Phase resistance at thermal conditions	R_t [mΩ/m]	0·100	0·081	0·061	0·045	0·034	0·029	0·024	0·017	0·011	0·0085
Phase impedance at thermal conditions	Z [mΩ/m]	0·103	0·082	0·063	0·048	0·036	0·031	0·025	0·018	0·012	0·0099
Neutral resistance	R_{20} [mΩ/m]	0·077	0·058	0·045	0·034	0·024	0·021	0·017	0·012	0·008	0·0062
Resistance of the protective bar (PE 1)	R_{PE} [mΩ/m]	0·132	0·132	0·132	0·119	0·110	0·090	0·078	0·071	0·067	0·0402
Resistance of the protective bar (PE 2)	R_{PE} [mΩ/m]	0·049	0·049	0·049	0·038	0·032	0·025	0·021	0·017	0·016	0·0125
Resistance of the protective bar (PE 3)	R_{PE} [mΩ/m]	0·084	0·084	0·084	0·064	0·054	0·042	0·035	0·029	0·026	0·0213
Reactance of the protective bar	X_{PE} [mΩ/m]	0·054	0·054	0·054	0·044	0·044	0·032	0·022	0·017	0·016	0·0140
Resistance of the fault loop (PE 1)	R_o [mΩ/m]	0·209	0·190	0·176	0·153	0·135	0·111	0·095	0·083	0·075	0·0464
Resistance of the fault loop (PE 2)	R_o [mΩ/m]	0·126	0·108	0·094	0·072	0·056	0·046	0·038	0·029	0·023	0·0187
Resistance of the fault loop (PE 3)	R_o [mΩ/m]	0·161	0·143	0·129	0·098	0·079	0·063	0·052	0·041	0·033	0·0275
Reactance of the fault loop (50hz)	X_o [mΩ/m]	0·08	0·07	0·07	0·06	0·06	0·04	0·03	0·02	0·02	0·02
Impedance of the fault loop (PE 1)	Z_o [mΩ/m]	0·222	0·203	0·190	0·164	0·147	0·119	0·099	0·087	0·078	0·0501
Impedance of the fault loop (PE 2)	Z_o [mΩ/m]	0·148	0·129	0·118	0·093	0·081	0·063	0·047	0·037	0·032	0·0267
Impedance of the fault loop (PE 3)	Z_o [mΩ/m]	0·179	0·159	0·147	0·114	0·098	0·076	0·059	0·047	0·040	0·0334
Zero-sequence short circuit average resistance phase - N	R_o [mΩ/m]	0·103	0·078	0·060	0·045	0·033	0·028	0·023	0·016	0·010	0·0082
Zero-sequence short circuit average reactance phase - N	X_o [mΩ/m]	0·031	0·023	0·023	0·020	0·019	0·015	0·009	0·008	0·008	0·0067
Zero-sequence short circuit average impedance phase - N	Z_o [mΩ/m]	0·107	0·081	0·064	0·050	0·038	0·032	0·025	0·018	0·013	0·0106
Zero-sequence short circuit average resistance phase - PE	R_o [mΩ/m]	0·157	0·151	0·147	0·130	0·118	0·097	0·084	0·075	0·070	0·0423
Zero-sequence short circuit average reactance phase - PE	X_o [mΩ/m]	0·062	0·060	0·060	0·049	0·049	0·036	0·024	0·019	0·018	0·0157
Zero-sequence short circuit average impedance phase - PE	Z_o [mΩ/m]	0·169	0·163	0·158	0·139	0·128	0·103	0·087	0·078	0·072	0·0451
Voltage drop with distributed load ΔV [V/(m*A)]10^{-6}	cosφ = 0·70	75·1	59·5	47·2	36·7	29·0	24·5	19·2	14·1	10·3	8·3
	cosφ = 0·75	78·4	62·2	49·1	37·9	29·9	25·3	19·9	14·6	10·5	8·4
	cosφ = 0·80	81·5	64·8	50·8	39·1	30·6	25·9	20·6	15·0	10·7	8·5
	cosφ = 0·85	84·4	67·2	52·3	40·1	31·1	26·5	21·2	15·4	10·7	8·6
	cosφ = 0·90	86·9	69·3	53·6	40·9	31·5	26·9	21·7	15·6	10·7	8·5
	cosφ = 0·95	88·8	71·0	54·4	41·2	31·4	27·0	22·0	15·7	10·6	8·4
	cosφ = 1·00	86·9	69·9	52·4	39·1	29·1	25·3	21·2	14·8	9·4	7·4
Weight (PE 1)	p [kg/m]	21·2	23·8	26·9	33·5	42·5	51·0	63·0	80·9	114·9	165·1
Weight (PE 2)	p [kg/m]	24·5	27·1	30·2	37·8	47·6	57·7	71·0	90·4	125·4	178·2
Weight (PE 3)	p [kg/m]	22·3	24·9	28·0	34·9	44·2	53·2	65·6	84·0	118·4	169·3
Fire load	[kWh/m]	4·5	5·5	5·5	8·0	8·2	10·5	16·0	19·0	21·0	22·0
Degree of protection	IP	55*	55*	55*	55*	55*	55*	55*	55*	55*	55*
Insulation material thermal resistance class		B**	B**	B**	B**	B**	B**	B**	B**	B**	B**
Losses for the Joule effect at nominal current	P [W/m]	193	242	284	347	403	547	752	823	816	1015
Ambient temperature min/ MAX (daily average)	[°C]	-5/+50	-5/+50	-5/+50	-5/+50	-5/+50	-5/+50	-5/+50	-5/+50	-5/+50	-5/+50

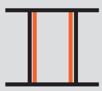
* IP 65 for feeder lines is available on request
** Class F is available on request

For temperatures over 35°C it will be necessary to derate the busbar and for ambient temperatures under -5°C please contact technical support on +44 (0) 370 608 9020

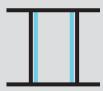
The data on this page refers to the 50 Hz frequency. For 60 Hz please contact technical support on +44 (0) 370 608 9020



PE 1
Standard version



PE 2
Extra earth - COPPER
XCP Cu 3L+N+50%PE
(tinned copper conductors available on request)



PE 3
Extra earth - ALUMINUM

Xtra Compact (XCP-S)

technical data

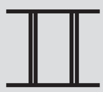
XCP-S CU (5 conductors - clean earth)

3P+N+PE+FE		SINGLE BAR					DOUBLE BAR				TRIPLE BAR
Rated current	**In [A]**	**800**	**1000**	**1250**	**1600**	**2000**	**2500**	**3200**	**4000**	**5000**	**6300**
Overall dimension of the busbars	L x H [mm]	120 x 130	120 x 130	120 x 130	120 x 170	120 x 200	120 x 300	120 x 380	120 x 440	120 x 480	120 x 590
Rated operational voltage	Ue [V]	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
Rated insulation voltage	Ui [V]	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
Frequency	f [Hz]	50	50	50	50	50	50	50	50	50	50
Rated short-time current (1 s)	I_{cw} [kA]$_{rms}$	25	36	42	42	50	65	80	100	120	150
Peak current	I_{pk} [kA]	53	76	88	88	105	143	176	220	264	330
Allowable specific energy for three phase fault	I^2t [MA^2s]	625	1296	1764	1764	2500	4225	6400	10000	14400	22500
Rated short-time current of the neutral bar (1 s)	I_{cw} [kA]$_{rms}$	15	22	25	25	30	39	48	60	72	90
Peak current of the neutral bar	I_{pk} [kA]	30	46	53	53	63	82	101	132	158	198
Rated short-time current of the protective circuit (1 s)	I_{cw} [kA]$_{rms}$	15	22	25	25	30	39	48	60	72	90
Peak current of the protective circuit	I_{pk} [kA]	30	46	53	53	63	82	101	132	158	198
Phase resistance at 20°C	R_{20} [mΩ/m]	0·077	0·058	0·045	0·034	0·024	0·021	0·017	0·012	0·008	0·0062
Phase reactance (50hz)	X [mΩ/m]	0·023	0·017	0·017	0·015	0·014	0·011	0·007	0·006	0·006	0·0050
Phase impedance	Z [mΩ/m]	0·080	0·061	0·048	0·037	0·028	0·024	0·018	0·014	0·010	0·0079
Phase resistance at thermal conditions	R_t [mΩ/m]	0·100	0·081	0·061	0·045	0·034	0·029	0·024	0·017	0·011	0·0085
Phase impedance at thermal conditions	Z [mΩ/m]	0·103	0·082	0·063	0·048	0·036	0·031	0·025	0·018	0·012	0·0099
Neutral resistance	R_{20} [mΩ/m]	0·077	0·058	0·045	0·034	0·024	0·021	0·017	0·012	0·008	0·0062
Functional Earth resistance (FE)	R_{20} [mΩ/m]	0·077	0·058	0·045	0·034	0·024	0·021	0·017	0·012	0·008	0·0062
Functional Earth reactance (FE)	X [mΩ/m]	0·023	0·017	0·017	0·015	0·014	0·011	0·007	0·006	0·006	0·0050
Resistance of the protective bar (PE 1)	R_{PE} [mΩ/m]	0·133	0·133	0·133	0·120	0·111	0·090	0·079	0·072	0·068	0·0412
Resistance of the protective bar (PE 2)	R_{PE} [mΩ/m]	0·049	0·049	0·049	0·038	0·032	0·025	0·021	0·017	0·016	0·0125
Resistance of the protective bar (PE 3)	R_{PE} [mΩ/m]	0·084	0·084	0·084	0·064	0·054	0·042	0·035	0·029	0·026	0·0213
Reactance of the protective bar	X_{PE} [mΩ/m]	0·054	0·054	0·054	0·044	0·044	0·032	0·022	0·017	0·016	0·0140
Resistance of the fault loop (PE 1)	R_o [mΩ/m]	0·126	0·099	0·078	0·060	0·045	0·038	0·031	0·023	0·015	0·0115
Resistance of the fault loop (PE 2)	R_o [mΩ/m]	0·107	0·085	0·068	0·052	0·038	0·032	0·026	0·019	0·013	0·0103
Resistance of the fault loop (PE 3)	R_o [mΩ/m]	0·117	0·093	0·074	0·056	0·041	0·035	0·028	0·021	0·014	0·0109
Reactance of the fault loop (50hz)	X_o [mΩ/m]	0·077	0·071	0·071	0·059	0·058	0·043	0·029	0·023	0·022	0·0190
Impedance of the fault loop (PE 1)	Z_o [mΩ/m]	0·147	0·122	0·106	0·084	0·073	0·058	0·042	0·032	0·026	0·0222
Impedance of the fault loop (PE 2)	Z_o [mΩ/m]	0·132	0·111	0·098	0·079	0·070	0·054	0·039	0·030	0·025	0·0216
Impedance of the fault loop (PE 3)	Z_o [mΩ/m]	0·140	0·117	0·102	0·081	0·071	0·056	0·041	0·031	0·026	0·0219
Zero-sequence short circuit average resistance phase - N	R_o [mΩ/m]	0·103	0·078	0·060	0·045	0·033	0·028	0·023	0·016	0·010	0·0082
Zero-sequence short circuit average reactance phase - N	X_o [mΩ/m]	0·031	0·023	0·023	0·020	0·019	0·015	0·009	0·008	0·008	0·0067
Zero-sequence short circuit average impedance phase - N	Z_o [mΩ/m]	0·107	0·081	0·064	0·050	0·038	0·032	0·025	0·018	0·013	0·0106
Zero-sequence short circuit average resistance phase - PE	R_o [mΩ/m]	0·103	0·078	0·060	0·045	0·033	0·028	0·023	0·016	0·010	0·0082
Zero-sequence short circuit average reactance phase - PE	X_o [mΩ/m]	0·031	0·023	0·023	0·020	0·019	0·015	0·009	0·008	0·008	0·0067
Zero-sequence short circuit average impedance phase - PE	Z_o [mΩ/m]	0·107	0·081	0·064	0·050	0·038	0·032	0·025	0·018	0·013	0·0106
Voltage drop with distributed load ΔV [V/(m*A)]10^{-6}	cosφ = 0·70	75·1	59·5	47·2	36·7	29·0	24·5	19·2	14·1	10·3	8·3
	cosφ = 0·75	78·4	62·2	49·1	37·9	29·9	25·3	19·9	14·6	10·5	8·4
	cosφ = 0·80	81·5	64·8	50·8	39·1	30·6	25·9	20·6	15·0	10·7	8·5
	cosφ = 0·85	84·4	67·2	52·3	40·1	31·1	26·5	21·2	15·4	10·7	8·6
	cosφ = 0·90	86·9	69·3	53·6	40·9	31·5	26·9	21·7	15·6	10·7	8·5
	cosφ = 0·95	88·8	71·0	54·4	41·2	31·4	27·0	22·0	15·7	10·6	8·4
	cosφ = 1·00	86·9	69·9	52·4	39·1	29·1	25·3	21·2	14·8	9·4	7·4
Weight (PE 1)	p [kg/m]	23·7	27·1	31·0	38·9	49·9	59·9	74·1	96·0	138·1	193·1
Weight (PE 2)	p [kg/m]	27·1	30·4	34·4	43·3	55·1	66·5	82·1	105·5	148·6	206·2
Weight (PE 3)	p [kg/m]	24·8	28·1	32·1	40·3	51·6	62·0	76·7	99·1	141·6	197·4
Fire load	[kWh/m]	5·6	6·9	6·9	10·0	10·3	13·1	20·0	23·8	26·3	27·3
Degree of protection	IP	55*	55*	55*	55*	55*	55*	55*	55*	55*	55*
Insulation material thermal resistance class		B**	B**	B**	B**	B**	B**	B**	B**	B**	B**
Losses for the Joule effect at nominal current	P [W/m]	193	242	284	347	403	547	752	823	816	1015
Ambient temperature min/ MAX (daily average)	[°C]	-5/+50	-5/+50	-5/+50	-5/+50	-5/+50	-5/+50	-5/+50	-5/+50	-5/+50	-5/+50

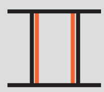
* IP 65 for feeder lines is available on request
** Class F is available on request

For temperatures over 35°C it will be necessary to derate the busbar and for ambient temperatures under -5°C please contact technical support on +44 (0) 370 608 9020

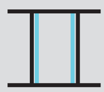
The data on this page refers to the 50 Hz frequency. For 60 Hz please contact technical support on +44 (0) 370 608 9020



PE 1
Standard version



PE 2
Extra earth - COPPER
XCP Cu 3L+N+50%PE
(tinned copper conductors available on request)



PE 3
Extra earth - ALUMINUM

Xtra Compact (XCP-S)

technical data

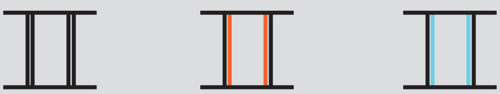
XCP-S CU (5 conductors - double neutral)

3P+2N+PE		SINGLE BAR					DOUBLE BAR				TRIPLE BAR
Rated current	**In [A]**	**800**	**1000**	**1250**	**1600**	**2000**	**2500**	**3200**	**4000**	**5000**	**6300**
Overall dimension of the busbars	L x H [mm]	120 x 130	120 x 130	120 x 130	120 x 170	120 x 200	120 x 300	120 x 380	120 x 440	120 x 480	120 x 590
Rated operational voltage	Ue [V]	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
Rated insulation voltage	Ui [V]	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
Frequency	f [Hz]	50	50	50	50	50	50	50	50	50	50
Rated short-time current (1 s)	I_{cw} [kA]rms	25	36	42	42	50	65	80	100	120	150
Peak current	I_{pk} [kA]	53	76	88	88	105	143	176	220	264	330
Allowable specific energy for three phase fault	I^2t [MA²s]	625	1296	1764	1764	2500	4225	6400	10000	14400	22500
Rated short-time current of the neutral bar (1 s)	I_{cw} [kA]rms	15	22	25	25	30	39	48	60	72	90
Peak current of the neutral bar	I_{pk} [kA]	30	46	53	53	63	82	101	132	158	198
Rated short-time current of the protective circuit (1 s)	I_{cw} [kA]rms	15	22	25	25	30	39	48	60	72	90
Peak current of the protective circuit	I_{pk} [kA]	30	46	53	53	63	82	101	132	158	198
Phase resistance at 20°C	R_{20} [mΩ/m]	0·077	0·058	0·045	0·034	0·024	0·021	0·017	0·012	0·008	0·0062
Phase reactance (50hz)	X [mΩ/m]	0·023	0·017	0·017	0·015	0·014	0·011	0·007	0·006	0·006	0·0050
Phase impedance	Z [mΩ/m]	0·080	0·061	0·048	0·037	0·028	0·024	0·018	0·014	0·010	0·0079
Phase resistance at thermal conditions	R_t [mΩ/m]	0·100	0·081	0·061	0·045	0·034	0·029	0·024	0·017	0·011	0·0085
Phase impedance at thermal conditions	Z [mΩ/m]	0·103	0·082	0·063	0·048	0·036	0·031	0·025	0·018	0·012	0·0099
Neutral resistance	R_{20} [mΩ/m]	0·038	0·029	0·022	0·017	0·012	0·011	0·008	0·006	0·004	0·0031
Resistance of the protective bar (PE 1)	R_{PE} [mΩ/m]	0·133	0·133	0·133	0·120	0·111	0·090	0·079	0·072	0·068	0·0412
Resistance of the protective bar (PE 2)	R_{PE} [mΩ/m]	0·049	0·049	0·049	0·038	0·032	0·025	0·021	0·017	0·016	0·0125
Resistance of the protective bar (PE 3)	R_{PE} [mΩ/m]	0·084	0·084	0·084	0·064	0·054	0·042	0·035	0·029	0·026	0·0213
Reactance of the protective bar	X_{PE} [mΩ/m]	0·054	0·054	0·054	0·044	0·044	0·032	0·022	0·017	0·016	0·0140
Resistance of the fault loop (PE 1)	R_o [mΩ/m]	0·210	0·192	0·178	0·154	0·135	0·111	0·096	0·084	0·076	0·0473
Resistance of the fault loop (PE 2)	R_o [mΩ/m]	0·126	0·108	0·094	0·072	0·056	0·046	0·038	0·029	0·023	0·0187
Resistance of the fault loop (PE 3)	R_o [mΩ/m]	0·161	0·143	0·129	0·098	0·079	0·063	0·052	0·041	0·033	0·0275
Reactance of the fault loop (50hz)	X_o [mΩ/m]	0·077	0·071	0·071	0·059	0·058	0·043	0·029	0·023	0·022	0·0190
Impedance of the fault loop (PE 1)	Z_o [mΩ/m]	0·224	0·204	0·191	0·165	0·147	0·119	0·100	0·087	0·079	0·0510
Impedance of the fault loop (PE 2)	Z_o [mΩ/m]	0·148	0·129	0·118	0·093	0·081	0·063	0·047	0·037	0·032	0·0267
Impedance of the fault loop (PE 3)	Z_o [mΩ/m]	0·179	0·159	0·147	0·114	0·098	0·076	0·059	0·047	0·040	0·0334
Zero-sequence short circuit average resistance phase - N	R_o [mΩ/m]	0·064	0·049	0·037	0·028	0·020	0·018	0·014	0·010	0·006	0·0051
Zero-sequence short circuit average reactance phase - N	X_o [mΩ/m]	0·019	0·014	0·014	0·013	0·012	0·009	0·006	0·005	0·005	0·0042
Zero-sequence short circuit average impedance phase - N	Z_o [mΩ/m]	0·067	0·051	0·040	0·031	0·024	0·020	0·015	0·011	0·008	0·0066
Zero-sequence short circuit average resistance phase - PE	R_o [mΩ/m]	0·157	0·151	0·147	0·130	0·118	0·097	0·084	0·075	0·070	0·0423
Zero-sequence short circuit average reactance phase - PE	X_o [mΩ/m]	0·062	0·060	0·060	0·049	0·049	0·036	0·024	0·019	0·018	0·0157
Zero-sequence short circuit average impedance phase - PE	Z_o [mΩ/m]	0·169	0·163	0·158	0·139	0·128	0·103	0·087	0·078	0·072	0·0451
Voltage drop with distributed load ΔV [V/(m*A)]10^{-6}	cosφ = 0,70	75·1	59·5	47·2	36·7	29·0	24·5	19·2	14·1	10·3	8·3
	cosφ = 0,75	78·4	62·2	49·1	37·9	29·9	25·3	19·9	14·6	10·5	8·4
	cosφ = 0,80	81·5	64·8	50·8	39·1	30·6	25·9	20·6	15·0	10·7	8·5
	cosφ = 0,85	84·4	67·2	52·3	40·1	31·1	26·5	21·2	15·4	10·7	8·6
	cosφ = 0,90	86·9	69·3	53·6	40·9	31·5	26·9	21·7	15·6	10·7	8·5
	cosφ = 0,95	88·8	71·0	54·4	41·2	31·4	27·0	22·0	15·7	10·6	8·4
	cosφ = 1,00	86·9	69·9	52·4	39·1	29·1	25·3	21·2	14·8	9·4	7·4
Weight (PE 1)	p [kg/m]	23·7	27·1	31·0	38·9	49·9	59·9	74·1	96·0	138·1	193·1
Weight (PE 2)	p [kg/m]	27·1	30·4	34·4	43·3	55·1	66·5	82·1	105·5	148·6	206·2
Weight (PE 3)	p [kg/m]	24·8	28·1	32·1	40·3	51·6	62·0	76·7	99·1	141·6	197·4
Fire load	[kWh/m]	5·6	6·9	6·9	10·0	10·3	13·1	20·0	23·8	26·3	27·3
Degree of protection	IP	55*	55*	55*	55*	55*	55*	55*	55*	55*	55*
Insulation material thermal resistance class		B**	B**	B**	B**	B**	B**	B**	B**	B**	B**
Losses for the Joule effect at nominal current	P [W/m]	193	242	284	347	403	547	752	823	816	1015
Ambient temperature min/ MAX (daily average)	[°C]	-5/+50	-5/+50	-5/+50	-5/+50	-5/+50	-5/+50	-5/+50	-5/+50	-5/+50	-5/+50

* IP 65 for feeder lines is available on request
** Class F is available on request

For temperatures over 35°C it will be necessary to derate the busbar and for ambient temperatures under -5°C please contact technical support on +44 (0) 370 608 9020

The data on this page refers to the 50 Hz frequency. For 60 Hz please contact technical support on +44 (0) 370 608 9020



PE 1 Standard version — PE 2 Extra earth - COPPER XCP Cu 3L+N+50%PE (tinned copper conductors available on request) — **PE 3** Extra earth - ALUMINUM

XCP-HP

BUSBAR FROM 630 TO 6300 A

The high performance power solution for industrial and service sector applications

XCP-HP is a busbar trunking system characterised by high performance and low losses due to the Joule effect.
Used for transport and distribution of high power, including rising mains. Applications include all industrial, commercial and service sector buildings such as factories, banks, trade and business centres, hospitals and data centres etc.

Xtra Compact (XCP-HP)

technical information

General features

XCP-HP is available in the following configurations :
From **630 A to 5000 A with aluminum alloy** conductors and **from 800 A to 6300 A with copper conductors**
The extra-compact dimensions of XCP-HP enhance **its resistance to short circuit stresses**. In addition, it can reduce the impedance of the circuit by controlling the voltage drops and allowing for the installation of high power electrical systems, even in extremely confined spaces
XCP-HP is available with **a wide selection of tap-off boxes that range from 32 A up to 1250 A**, thus allowing you to locally protect and feed different types of loads by housing protective devices such as fuses, MCBs, MCCBs and motorised switches
XCP-HP is not only in **compliance with** the harmonised **standards, IEC EN 61439-6,** but also answers specifically to many clients' needs for more severe conditions

Thus **the rated current** of Legrand's busbar trunking systems is **referred to the average ambient temperature of 50°C for aluminium and 55°C for copper**
The nominal range of all XCP-HP is guaranteed both for horizontal installations (flat and edgeways) and for vertical installations without derating
XCP-HP busbar trunking systems are designed so that they can **be relatively maintenance-free**, except for the periodic and compulsory inspections required by the standard BS 7671
The tightening torque inspection of the junction can be carried out by qualified personnel, even when the busbar is energised

Structural features

The outer casing of the XCP-HP line consists of four C-ribbed section bars, bordered and riveted (thickness 1·5mm), **with excellent mechanical, electric** and **heat loss efficiency**
The sheet metal is made of galvanised steel, treated according to UNI EN10327 and painted with **RAL7035 resins** with a **high resistance to chemical agents**
The standard degree of protection is IP 55 (IP 65 on request for transport of energy only). With certain accessories it can also be connected to Legrand RCP busbar for external installation
The busbar conductors have a rectangular cross section with rounded corners. There are two versions available :
- **Electrolytic copper ETP 99.9 UNI EN 13601**
- **Aluminum alloy** treated over the entire surface with **5 galvanic processes** (copper plating and tin plating)

The insulation between bars is ensured by a **double sheath made with a polyester film** and a total thickness of 2 x 0·19 mm for **class B (130°C)**, or **class F (155°C)** thermal resistance with a total thickness of 2 x 0·23 mm (available on request). All plastic components have a **V1 self-extinguishing degree**. They are fire retardant and comply with the glow-wire test according to standards
The XCP-HP line is **halogen free**
In order to facilitate storage operations, and to reduce the installation time, the straight lengths, trunking **components** and all other components of the XCP-HP line are **supplied with a monobloc pre-installed at the factory**
The junction contact is ensured by using **tin plated aluminium for XCP-HP Al** and **copper for XCP-HP Cu for each phase**, insulated with **red class F thermosetting plastic material**
The **monobloc** has **shearhead bolts** thus after tightening the nuts with a standard wrench, the outer head will break at the correct torque value, giving you the certainty that the connection has been made properly and guarantees safety and maximum performance over time
Finally, in order to completely verify the insulation level, every finished product undergoes an **insulation test** (phase-phase, phase-PE) at the factory with a test voltage of 3500 Vac for 1·5 seconds. The test is performed on the finished product, completely assembled.
IP 55 and IP 65 is intended for internal use only, for outdoor applications RCP resin IP 68 busbar is available

RATED CURRENT OF XCP-HP BARS (A)

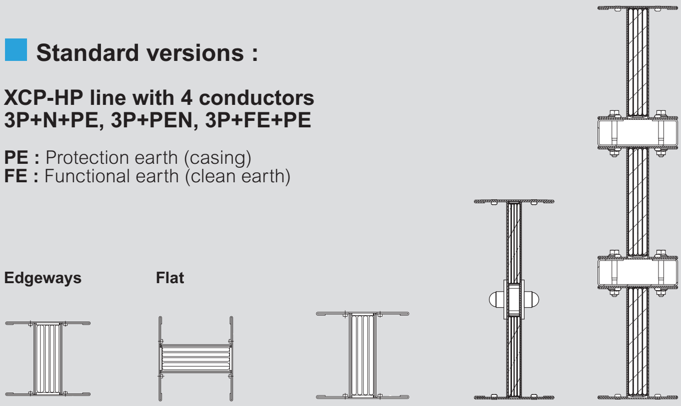
Al	630	800	1000	1250	1600	2000	2500	3200	4000	5000	
	Single bar						Double bar			Triple bar	
Cu		800	1000	1250	1600	2000	2500	3200	4000	5000	6300
	Single bar						Double bar				Triple bar

Standard versions :

XCP-HP line with 4 conductors
3P+N+PE, 3P+PEN, 3P+FE+PE

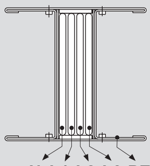
PE : Protection earth (casing)
FE : Functional earth (clean earth)

Edgeways **Flat**



single bar double bar triple bar

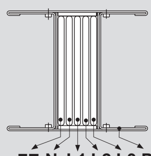
Phase sequence



XCP-HP 5 line with 5 conductors
3P+N+FE+PE

PE : Protection earth (casing)
FE : Functional earth (clean earth)

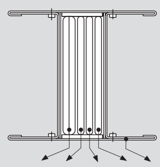
Phase sequence



XCP-HP 2N 200% neutral line
3P+2N+PE

PE : Protection earth (casing)
2N : 200% neutral

Phase sequence



GENERAL CORRECTION FACTOR FOR AMBIENT TEMPERATURES (Kt)

XCP-HP (AL)

Daily avg ambient temperature	-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	65°C	70°C
Kt factor	1·38	1·34	1·31	1·28	1·25	1·21	1·18	1·15	1·11	1·07	1·04	1	0·96	0·92	0·88	0·84

XCP-HP (CU)

Daily avg ambient temperature	-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	65°C	70°C
Kt factor	1·43	1·40	1·37	1·33	1·30	1·26	1·23	1·19	1·16	1·12	1·08	1·04	1	0·96	0·92	0·87

Special versions are available on request, contact us on +44 (0) 370 608 9020

Xtra Compact (XCP-HP)

technical data

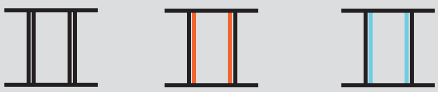
XCP-HP Al (4 conductors)

3P+N+PE		SINGLE BAR						DOUBLE BAR			TRIPLE BAR
Rated current	**In [A]**	**630**	**800**	**1000**	**1250**	**1600**	**2000**	**2500**	**3200**	**4000**	**5000**
Overall dimension of the busbars	L x H [mm]	125 x 130	125 x 130	125 x 130	125 x 130	125 x 200	125 x 220	125 x 380	125 x 440	125 x 480	125 x 740
Rated operational voltage	Ue [V]	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
Rated insulation voltage	Ui [V]	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
Frequency	f [Hz]	50	50	50	50	50	50	50	50	50	50
Rated short-time current (1 s)	I_{cw} [kA]$_{rms}$	36	36	50	70	70	85	120	120	150	150
Peak current	I_{pk} [kA]	76	76	105	154	154	187	264	264	330	330
Allowable specific energy for three phase fault	I^2t [MA^2s]	1296	1296	2500	4900	4900	7225	14400	14400	22500	22500
Rated short-time current of the neutral bar (1 s)	I_{cw} [kA]$_{rms}$	22	22	30	42	42	51	72	72	90	90
Peak current of the neutral bar	I_{pk} [kA]	45	45	63	88	88	112	158	158	198	198
Rated short-time current of the protective circuit (1 s)	I_{cw} [kA]$_{rms}$	22	22	30	42	42	51	72	72	90	90
Peak current of the protective circuit	I_{pk} [kA]	45	45	63	88	88	112	158	158	198	198
Phase resistance at 20°C	R_{20} [mΩ/m]	0·077	0·077	0·056	0·045	0·031	0·025	0·022	0·015	0·012	0·010
Phase reactance (50hz)	X [mΩ/m]	0·023	0·017	0·017	0·015	0·014	0·011	0·006	0·006	0·006	0·005
Phase impedance	Z [mΩ/m]	0·080	0·079	0·059	0·047	0·034	0·027	0·023	0·017	0·014	0·011
Phase resistance at thermal conditions	R_t [mΩ/m]	0·101	0·102	0·076	0·062	0·043	0·035	0·032	0·022	0·018	0·014
Phase impedance at thermal conditions	Z [mΩ/m]	0·104	0·103	0·078	0·064	0·045	0·037	0·032	0·023	0·019	0·015
Neutral resistance	R_{20} [mΩ/m]	0·077	0·077	0·056	0·045	0·031	0·025	0·022	0·015	0·012	0·010
Resistance of the protective bar (PE 1)	R_{PE} [mΩ/m]	0·132	0·132	0·132	0·133	0·111	0·106	0·078	0·072	0·068	0·035
Resistance of the protective bar (PE 2)	R_{PE} [mΩ/m]	0·049	0·049	0·049	0·049	0·032	0·029	0·019	0·016	0·014	0·010
Resistance of the protective bar (PE 3)	R_{PE} [mΩ/m]	0·084	0·084	0·084	0·084	0·054	0·049	0·032	0·027	0·025	0·016
Reactance of the protective bar	X_{PE} [mΩ/m]	0·080	0·078	0·078	0·048	0·039	0·028	0·020	0·015	0·016	0·014
Resistance of the fault loop (PE 1)	R_o [mΩ/m]	0·208	0·208	0·188	0·178	0·142	0·131	0·101	0·087	0·080	0·045
Resistance of the fault loop (PE 2)	R_o [mΩ/m]	0·126	0·126	0·106	0·094	0·063	0·054	0·041	0·031	0·027	0·019
Resistance of the fault loop (PE 3)	R_o [mΩ/m]	0·161	0·161	0·140	0·129	0·085	0·074	0·054	0·043	0·037	0·026
Reactance of the fault loop (50hz)	X_o [mΩ/m]	0·10	0·10	0·10	0·06	0·05	0·04	0·03	0·02	0·02	0·02
Impedance of the fault loop (PE 1)	Z_o [mΩ/m]	0·232	0·229	0·210	0·189	0·151	0·137	0·104	0·089	0·083	0·049
Impedance of the fault loop (PE 2)	Z_o [mΩ/m]	0·163	0·158	0·142	0·114	0·082	0·067	0·049	0·038	0·035	0·027
Impedance of the fault loop (PE 3)	Z_o [mΩ/m]	0·191	0·187	0·169	0·144	0·100	0·084	0·060	0·047	0·043	0·032
Zero-sequence short-circuit average resistance phase - N	R_o [mΩ/m]	0·102	0·102	0·075	0·060	0·041	0·033	0·030	0·021	0·017	0·013
Zero-sequence short circuit average reactance phase - N	X_o [mΩ/m]	0·031	0·023	0·023	0·020	0·019	0·015	0·008	0·008	0·008	0·007
Zero-sequence short circuit average impedance phase - N	Z_o [mΩ/m]	0·107	0·105	0·078	0·063	0·045	0·036	0·031	0·022	0·018	0·014
Zero-sequence short circuit average resistance phase - PE	R_o [mΩ/m]	0·157	0·157	0·150	0·148	0·121	0·115	0·086	0·077	0·072	0·039
Zero-sequence short circuit average reactance phase - PE	X_o [mΩ/m]	0·088	0·084	0·084	0·053	0·044	0·032	0·022	0·017	0·018	0·016
Zero-sequence short circuit average impedance phase - PE	Z_o [mΩ/m]	0·180	0·178	0·172	0·157	0·129	0·119	0·088	0·079	0·074	0·042
Voltage drop with distributed load ΔV [V/(m*A)]10^{-6}	cosφ = 0·70	75·6	72·1	56·5	47·0	34·7	27·9	23·0	17·2	14·6	11·5
	cosφ = 0·75	79·0	75·7	59·0	49·0	36·0	28·9	24·1	17·9	15·1	11·9
	cosφ = 0·80	82·1	79·2	61·3	50·9	37·1	29·9	25·1	18·5	15·6	12·2
	cosφ = 0·85	85·1	82·6	63·5	52·7	38·1	30·7	26·1	19·1	16·0	12·5
	cosφ = 0·90	87·7	85·6	65·5	54·2	38·8	31·3	27·0	19·6	16·3	12·7
	cosφ = 0·95	89·6	88·2	66·9	55·3	39·2	31·7	27·8	19·9	16·4	12·8
	cosφ = 1·00	87·7	88·0	65·6	53·9	37·3	30·2	27·5	19·3	15·6	12·0
Weight (PE 1)	p [kg/m]	16·0	16·0	17·8	19·3	25·4	29·4	37·7	47·3	54·3	91·0
Weight (PE 2)	p [kg/m]	19·3	19·3	21·1	22·6	30·5	35·0	46·4	57·6	65·7	108·0
Weight (PE 3)	p [kg/m]	17·1	17·1	18·9	20·3	27·1	31·2	40·5	50·7	58·0	96·5
Fire load	[kWh/m]	4·5	5·5	5·5	6·0	8·5	10·5	16·0	19·0	21·0	21·0
Degree of protection	IP	55*	55*	55*	55*	55*	55*	55*	55*	55*	55*
Insulation material thermal resistance class		B**	B**	B**	B**	B**	B**	B**	B**	B**	B**
Losses for the Joule effect at nominal current	P [W/m]	121	195	227	292	330	418	596	683	863	1042
Ambient temperature min/ MAX (daily average)	[°C]	-5/+70	-5/+70	-5/+70	-5/+70	-5/+70	-5/+70	-5/+70	-5/+70	-5/+70	-5/+70

* IP 65 for feeder lines is available on request
** Class F is available on request

Data measured in accordance with IEC 61439-6
For temperatures over 50°C it will be necessary to derate the busbar and for ambient temperatures under -5°C contact the technical support on +44 (0) 370 608 9020

The data on this page refers to the 50 Hz frequency. For 60 Hz, please contact technical support on +44 (0) 370 608 9020



PE 1 Standard version

PE 2 Extra earth - COPPER

PE 3 Extra earth - ALUMINUM XCP Al 3L+N+50%PE (available on request)

Xtra Compact (XCP-HP)

technical data

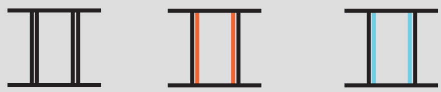
XCP-HP Al (5 conductors - clean earth)

3P+N+PE+FE		SINGLE BAR						DOUBLE BAR			TRIPLE BAR
Rated current	**In [A]**	**630**	**800**	**1000**	**1250**	**1600**	**2000**	**2500**	**3200**	**4000**	**5000**
Overall dimension of the busbars	L x H [mm]	125 x 130	125 x 130	125 x 130	125 x 130	125 x 200	125 x 220	125 x 380	125 x 440	125 x 480	125 x 740
Rated operational voltage	Ue [V]	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
Rated insulation voltage	Ui [V]	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
Frequency	f [Hz]	50	50	50	50	50	50	50	50	50	50
Rated short-time current (1 s)	I_{cw} [kA]$_{rms}$	36	36	50	70	70	85	120	120	150	150
Peak current	I_{pk} [kA]	76	76	105	154	154	187	264	264	330	330
Allowable specific energy for three phase fault	I^2t [MA^2s]	1296	1296	2500	4900	4900	7225	14400	14400	22500	22500
Rated short-time current of the neutral bar (1 s)	I_{cw} [kA]$_{rms}$	22	22	30	42	42	51	72	72	90	90
Peak current of the neutral bar	I_{pk} [kA]	45	45	63	88	88	112	158	158	198	198
Rated short-time current of the protective circuit (1 s)	I_{cw} [kA]$_{rms}$	22	22	30	42	42	51	72	72	90	90
Peak current of the protective circuit	I_{pk} [kA]	45	45	63	88	88	112	158	158	198	198
Phase resistance at 20°C	R_{20} [mΩ/m]	0·077	0·077	0·056	0·045	0·031	0·025	0·022	0·015	0·012	0·010
Phase reactance (50hz)	X [mΩ/m]	0·023	0·017	0·017	0·015	0·014	0·011	0·006	0·006	0·006	0·005
Phase impedance	Z [mΩ/m]	0·080	0·079	0·059	0·047	0·034	0·027	0·023	0·017	0·014	0·011
Phase resistance at thermal conditions	R_t [mΩ/m]	0·101	0·102	0·076	0·062	0·043	0·035	0·032	0·022	0·018	0·014
Phase impedance at thermal conditions	Z [mΩ/m]	0·104	0·103	0·078	0·064	0·045	0·037	0·032	0·023	0·019	0·015
Neutral resistance	R_{20} [mΩ/m]	0·077	0·077	0·056	0·045	0·031	0·025	0·022	0·015	0·012	0·010
Functional Earth resistance (FE)	R_{20} [mΩ/m]	0·077	0·077	0·056	0·045	0·031	0·025	0·022	0·015	0·012	0·010
Functional Earth reactance (FE)	X [mΩ/m]	0·023	0·017	0·017	0·015	0·014	0·011	0·006	0·006	0·006	0·005
Resistance of the protective bar (PE 1)	R_{PE} [mΩ/m]	0·133	0·133	0·266	0·266	0·222	0·213	0·156	0·143	0·136	0·035
Resistance of the protective bar (PE 2)	R_{PE} [mΩ/m]	0·049	0·049	0·049	0·049	0·032	0·029	0·019	0·016	0·014	0·010
Resistance of the protective bar (PE 3)	R_{PE} [mΩ/m]	0·084	0·084	0·084	0·084	0·054	0·049	0·032	0·027	0·025	0·016
Reactance of the protective bar	X_{PE} [mΩ/m]	0·080	0·078	0·078	0·048	0·039	0·028	0·020	0·015	0·016	0·014
Resistance of the fault loop (PE 1)	R_o [mΩ/m]	0·125	0·125	0·102	0·083	0·058	0·047	0·042	0·029	0·024	0·017
Resistance of the fault loop (PE 2)	R_o [mΩ/m]	0·107	0·107	0·082	0·069	0·047	0·038	0·033	0·023	0·019	0·014
Resistance of the fault loop (PE 3)	R_o [mΩ/m]	0·117	0·117	0·090	0·074	0·051	0·042	0·036	0·025	0·021	0·016
Reactance of the fault loop (50hz)	X_o [mΩ/m]	0·10	0·10	0·10	0·06	0·05	0·04	0·03	0·02	0·02	0·02
Impedance of the fault loop (PE 1)	Z_o [mΩ/m]	0·162	0·157	0·140	0·105	0·079	0·061	0·049	0·036	0·032	0·026
Impedance of the fault loop (PE 2)	Z_o [mΩ/m]	0·148	0·143	0·126	0·093	0·071	0·055	0·042	0·031	0·029	0·024
Impedance of the fault loop (PE 3)	Z_o [mΩ/m]	0·156	0·151	0·131	0·097	0·073	0·057	0·044	0·033	0·030	0·025
Zero-sequence short circuit average resistance phase - N	R_o [mΩ/m]	0·102	0·102	0·075	0·060	0·041	0·033	0·030	0·021	0·017	0·013
Zero-sequence short circuit average reactance phase - N	X_o [mΩ/m]	0·031	0·023	0·023	0·020	0·019	0·015	0·008	0·008	0·008	0·007
Zero-sequence short circuit average impedance phase - N	Z_o [mΩ/m]	0·107	0·105	0·078	0·063	0·045	0·036	0·031	0·022	0·018	0·014
Zero-sequence short circuit average resistance phase - PE	R_o [mΩ/m]	0·102	0·102	0·075	0·060	0·041	0·033	0·030	0·021	0·017	0·013
Zero-sequence short circuit average reactance phase - PE	X_o [mΩ/m]	0·031	0·023	0·023	0·020	0·019	0·015	0·008	0·008	0·008	0·007
Zero-sequence short circuit average impedance phase - PE	Z_o [mΩ/m]	0·107	0·105	0·078	0·063	0·045	0·036	0·031	0·022	0·018	0·014
Voltage drop with distributed load ΔV [V/(m*A)]10^{-6}	cosφ = 0·70	75·6	72·1	56·5	47·0	34·7	27·9	23·0	17·2	14·6	11·5
	cosφ = 0·75	79·0	75·7	59·0	49·0	36·0	28·9	24·1	17·9	15·1	11·9
	cosφ = 0·80	82·1	79·2	61·3	50·9	37·1	29·9	25·1	18·5	15·6	12·2
	cosφ = 0·85	85·1	82·6	63·5	52·7	38·1	30·7	26·1	19·1	16·0	12·5
	cosφ = 0·90	87·7	85·6	65·5	54·2	38·8	31·3	27·0	19·6	16·3	12·7
	cosφ = 0·95	89·6	88·2	66·9	55·3	39·2	31·7	27·8	19·9	16·4	12·8
	cosφ = 1·00	87·7	88·0	65·6	53·9	37·3	30·2	27·5	19·3	15·6	12·0
Weight (PE 1)	p [kg/m]	17·5	17·5	19·7	21·7	28·8	33·6	42·8	54·4	62·9	102·2
Weight (PE 2)	p [kg/m]	20·8	20·8	23·0	25·0	34·0	39·3	51·5	64·7	74·2	119·2
Weight (PE 3)	p [kg/m]	21·0	18·6	20·8	22·7	30·5	35·5	45·6	57·7	66·6	107·8
Fire load	[kWh/m]	5·6	6·9	6·9	7·5	10·6	13·1	20·0	23·8	26·3	27·3
Degree of protection	IP	55*	55*	55*	55*	55*	55*	55*	55*	55*	55*
Insulation material thermal resistance class		B**	B**	B**	B**	B**	B**	B**	B**	B**	B**
Losses for the Joule effect at nominal current	P [W/m]	121	195	227	292	330	418	596	683	863	1042
Ambient temperature min/ MAX (daily average)	[°C]	-5/+70	-5/+70	-5/+70	-5/+70	-5/+70	-5/+70	-5/+70	-5/+70	-5/+70	-5/+70

* IP 65 for feeder lines is available on request
** Class F is available on request

Data measured in accordance with IEC 61439-6
For temperatures over 50°C it will be necessary to derate the busbar and for ambient temperatures under -5°C please contact technical support on +44 (0) 370 608 9020

The data on this page refers to the 50 Hz frequency. For 60 Hz please contact technical support on +44 (0) 370 608 9020



PE 1 Standard version

PE 2 Extra earth - COPPER

PE 3 Extra earth - ALUMINUM XCP Al 3L+N+50%PE (available on request)

Xtra Compact (XCP-HP)

technical data

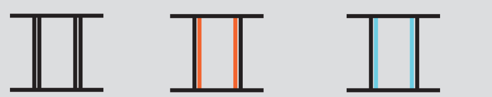
XCP-HP Al (5 conductors - double neutral)

3P+2N+PE		SINGLE BAR						DOUBLE BAR			TRIPLE BAR
Rated current	**In [A]**	**630**	**800**	**1000**	**1250**	**1600**	**2000**	**2500**	**3200**	**4000**	**5000**
Overall dimension of the busbars	L x H [mm]	125 x 130	125 x 130	125 x 130	125 x 130	125 x 200	125 x 220	125 x 380	125 x 440	125 x 480	125 x 740
Rated operational voltage	Ue [V]	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
Rated insulation voltage	Ui [V]	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
Frequency	f [Hz]	50	50	50	50	50	50	50	50	50	50
Rated short-time current (1 s)	I_{cw} [kA]$_{rms}$	36	36	50	70	70	85	120	120	150	150
Peak current	I_{pk} [kA]	76	76	105	154	154	187	264	264	330	330
Allowable specific energy for three phase fault	I^2t [MA²s]	1296	1296	2500	4900	4900	7225	14400	14400	22500	22500
Rated short-time current of the neutral bar (1 s)	I_{cw} [kA]$_{rms}$	22	22	30	42	42	51	72	72	90	90
Peak current of the neutral bar	I_{pk} [kA]	45	45	63	88	88	112	158	158	198	198
Rated short-time current of the protective circuit (1 s)	I_{cw} [kA]$_{rms}$	22	22	30	42	42	51	72	72	90	90
Peak current of the protective circuit	I_{pk} [kA]	45	45	63	88	88	112	158	158	198	198
Phase resistance at 20°C	R_{20} [mΩ/m]	0·077	0·077	0·056	0·045	0·031	0·025	0·022	0·015	0·012	0·010
Phase reactance (50hz)	X [mΩ/m]	0·023	0·017	0·017	0·015	0·014	0·011	0·006	0·006	0·006	0·005
Phase impedance	Z [mΩ/m]	0·080	0·079	0·059	0·047	0·034	0·027	0·023	0·017	0·014	0·011
Phase resistance at thermal conditions	R_t [mΩ/m]	0·101	0·102	0·076	0·062	0·043	0·035	0·032	0·022	0·018	0·014
Phase impedance at thermal conditions	Z [mΩ/m]	0·104	0·103	0·078	0·064	0·045	0·037	0·032	0·023	0·019	0·015
Neutral resistance	R_{20} [mΩ/m]	0·038	0·038	0·028	0·022	0·015	0·012	0·011	0·008	0·006	0·005
Resistance of the protective bar (PE 1)	R_{PE} [mΩ/m]	0·133	0·133	0·266	0·266	0·222	0·213	0·156	0·143	0·136	0·035
Resistance of the protective bar (PE 2)	R_{PE} [mΩ/m]	0·049	0·049	0·049	0·049	0·032	0·029	0·019	0·016	0·014	0·010
Resistance of the protective bar (PE 3)	R_{PE} [mΩ/m]	0·084	0·084	0·084	0·084	0·054	0·049	0·032	0·027	0·025	0·016
Reactance of the protective bar	X_{PE} [mΩ/m]	0·080	0·078	0·078	0·048	0·039	0·028	0·020	0·015	0·016	0·014
Resistance of the fault loop (PE 1)	R_o [mΩ/m]	0·210	0·210	0·322	0·311	0·253	0·238	0·179	0·158	0·148	0·045
Resistance of the fault loop (PE 2)	R_o [mΩ/m]	0·126	0·126	0·106	0·094	0·063	0·054	0·041	0·031	0·027	0·019
Resistance of the fault loop (PE 3)	R_o [mΩ/m]	0·161	0·161	0·140	0·129	0·085	0·074	0·054	0·043	0·037	0·026
Reactance of the fault loop (50hz)	X_o [mΩ/m]	0·10	0·10	0·10	0·06	0·05	0·04	0·03	0·02	0·02	0·02
Impedance of the fault loop (PE 1)	Z_o [mΩ/m]	0·234	0·230	0·336	0·318	0·258	0·241	0·181	0·160	0·150	0·049
Impedance of the fault loop (PE 2)	Z_o [mΩ/m]	0·163	0·158	0·142	0·114	0·082	0·067	0·049	0·038	0·035	0·027
Impedance of the fault loop (PE 3)	Z_o [mΩ/m]	0·191	0·187	0·169	0·144	0·100	0·084	0·060	0·047	0·043	0·032
Zero-sequence short circuit average resistance phase - N	R_o [mΩ/m]	0·064	0·064	0·047	0·037	0·026	0·021	0·019	0·013	0·010	0·008
Zero-sequence short circuit average reactance phase - N	X_o [mΩ/m]	0·019	0·014	0·014	0·013	0·012	0·009	0·005	0·005	0·005	0·004
Zero-sequence short circuit average impedance phase - N	Z_o [mΩ/m]	0·247	0·225	0·225	0·212	0·206	0·228	0·159	0·177	0·114	0·114
Zero-sequence short circuit average resistance phase - PE	R_o [mΩ/m]	0·157	0·157	0·150	0·148	0·121	0·115	0·086	0·077	0·072	0·039
Zero-sequence short circuit average reactance phase - PE	X_o [mΩ/m]	0·088	0·084	0·084	0·053	0·044	0·032	0·022	0·017	0·018	0·016
Zero-sequence short circuit average impedance phase - PE	Z_o [mΩ/m]	0·180	0·178	0·172	0·157	0·129	0·119	0·088	0·079	0·074	0·042
Voltage drop with distributed load ΔV [V/(m*A)]10^{-6}	cosφ = 0·70	75·6	72·1	56·5	47·0	34·7	27·9	23·0	17·2	14·6	11·5
	cosφ = 0·75	79·0	75·7	59·0	49·0	36·0	28·9	24·1	17·9	15·1	11·9
	cosφ = 0·80	82·1	79·2	61·3	50·9	37·1	29·9	25·1	18·5	15·6	12·2
	cosφ = 0·85	85·1	82·6	63·5	52·7	38·1	30·7	26·1	19·1	16·0	12·5
	cosφ = 0·90	87·7	85·6	65·5	54·2	38·8	31·3	27·0	19·6	16·3	12·7
	cosφ = 0·95	89·6	88·2	66·9	55·3	39·2	31·7	27·8	19·9	16·4	12·8
	cosφ = 1·00	87·7	88·0	65·6	53·9	37·3	30·2	27·5	19·3	15·6	12·0
Weight (PE 1)	p [kg/m]	17·5	17·5	19·7	21·7	28·8	33·6	42·8	54·4	62·9	102·2
Weight (PE 2)	p [kg/m]	20·8	20·8	23·0	25·0	34·0	39·3	51·5	64·7	74·2	119·2
Weight (PE 3)	p [kg/m]	21·0	18·6	20·8	22·7	30·5	35·5	45·6	57·7	66·6	107·8
Fire load	[kWh/m]	5·6	6·9	6·9	7·5	10·6	13·1	20·0	23·8	26·3	27·3
Degree of protection	IP	55*	55*	55*	55*	55*	55*	55*	55*	55*	55*
Insulation material thermal resistance class		B**	B**	B**	B**	B**	B**	B**	B**	B**	B**
Losses for the Joule effect at nominal current	P [W/m]	121	195	227	292	330	418	596	683	863	1042
Ambient temperature min/ MAX (daily average)	[°C]	-5/+70	-5/+70	-5/+70	-5/+70	-5/+70	-5/+70	-5/+70	-5/+70	-5/+70	-5/+70

* IP 65 for feeder lines is available on request
** Class F is available on request

Data measured in accordance with IEC 61439-6
For temperatures over 50°C it will be necessary to derate the busbar and for ambient temperatures under -5°C please contact technical support on +44 (0) 370 608 9020

The data on this page refers to the 50 Hz frequency. For 60 Hz please contact technical support on +44 (0) 370 608 9020



PE 1 Standard version

PE 2 Extra earth - COPPER

PE 3 Extra earth - ALUMINUM XCP Al 3L+N+50%PE (available on request)

Xtra Compact (XCP-HP)

technical data

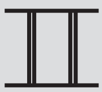
XCP-HP CU (4 conductors)

3P+N+PE		SINGLE BAR						DOUBLE BAR			TRIPLE BAR
Rated current	**In [A]**	**800**	**1000**	**1250**	**1600**	**2000**	**2500**	**3200**	**4000**	**5000**	**6300**
Overall dimension of the busbars	L x H [mm]	125 x 130	125 x 130	125 x 130	125 x 170	125 x 170	125 x 220	125 x 380	125 x 440	125 x 480	125 x 680
Rated operational voltage	Ue [V]	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
Rated insulation voltage	Ui [V]	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
Frequency	f [Hz]	50	50	50	50	50	50	50	50	50	50
Rated short-time current (1 s)	I_{cw} [kA]$_{rms}$	36	50	70	70	85	120	120	150	150	150
Peak current	I_{pk} [kA]	76	105	154	154	187	264	264	330	330	330
Allowable specific energy for three phase fault	I^2t [MA^2s]	1296	2500	4900	4900	7225	14400	14400	22500	22500	22500
Rated short-time current of the neutral bar (1 s)	I_{cw} [kA]$_{rms}$	22	30	42	42	51	72	72	90	90	90
Peak current of the neutral bar	Ipk [kA]	45	63	88	88	112	158	158	198	198	198
Rated short-time current of the protective circuit (1 s)	I_{cw} [kA]$_{rms}$	22	30	42	42	51	72	72	90	90	90
Peak current of the protective circuit	I_{pk} [kA]	45	63	88	88	112	158	158	198	198	198
Phase resistance at 20°C	R_{20} [mΩ/m]	0·077	0·045	0·038	0·034	0·018	0·015	0·013	0·009	0·006	0·006
Phase reactance (50hz)	X [mΩ/m]	0·023	0·017	0·017	0·015	0·014	0·011	0·007	0·006	0·006	0·004
Phase impedance	Z [mΩ/m]	0·080	0·048	0·042	0·037	0·023	0·018	0·015	0·011	0·009	0·007
Phase resistance at thermal conditions	R_t [mΩ/m]	0·100	0·055	0·048	0·044	0·024	0·019	0·017	0·012	0·009	0·008
Phase impedance at thermal conditions	Z [mΩ/m]	0·103	0·058	0·051	0·047	0·028	0·022	0·019	0·014	0·011	0·009
Neutral resistance	R_{20} [mΩ/m]	0·077	0·045	0·038	0·034	0·018	0·015	0·013	0·009	0·006	0·006
Resistance of the protective bar (PE 1)	R_{PE} [mΩ/m]	0·132	0·132	0·132	0·119	0·119	0·106	0·078	0·072	0·068	0·037
Resistance of the protective bar (PE 2)	R_{PE} [mΩ/m]	0·049	0·049	0·049	0·038	0·038	0·014	0·019	0·016	0·014	0·011
Resistance of the protective bar (PE 3)	R_{PE} [mΩ/m]	0·084	0·084	0·084	0·064	0·064	0·025	0·032	0·025	0·023	0·018
Reactance of the protective bar	X_{PE} [mΩ/m]	0·054	0·054	0·054	0·044	0·044	0·032	0·022	0·017	0·016	0·014
Resistance of the fault loop (PE 1)	R_o [mΩ/m]	0·209	0·176	0·170	0·153	0·137	0·121	0·091	0·081	0·074	0·043
Resistance of the fault loop (PE 2)	R_o [mΩ/m]	0·126	0·094	0·087	0·072	0·056	0·029	0·032	0·025	0·021	0·016
Resistance of the fault loop (PE 3)	R_o [mΩ/m]	0·16	0·13	0·12	0·10	0·08	0·04	0·05	0·03	0·03	0·02
Reactance of the fault loop (50hz)	X_o [mΩ/m]	0·077	0·071	0·071	0·059	0·058	0·043	0·029	0·023	0·022	0·018
Impedance of the fault loop (PE 1)	Z_o [mΩ/m]	0·222	0·190	0·184	0·164	0·149	0·129	0·096	0·084	0·078	0·046
Impedance of the fault loop (PE 2)	Z_o [mΩ/m]	0·148	0·118	0·113	0·093	0·081	0·052	0·043	0·034	0·030	0·024
Impedance of the fault loop (PE 3)	Z_o [mΩ/m]	0·179	0·147	0·141	0·114	0·101	0·058	0·054	0·042	0·037	0·030
Zero-sequence short circuit average resistance phase - N	R_o [mΩ/m]	0·103	0·060	0·050	0·045	0·025	0·020	0·018	0·012	0·009	0·008
Zero-sequence short circuit average reactance phase - N	X_o [mΩ/m]	0·031	0·023	0·023	0·020	0·019	0·015	0·009	0·008	0·008	0·005
Zero-sequence short circuit average impedance phase - N	Z_o [mΩ/m]	0·107	0·064	0·055	0·050	0·031	0·025	0·020	0·015	0·012	0·009
Zero-sequence short circuit average resistance phase - PE	R_o [mΩ/m]	0·157	0·147	0·144	0·130	0·125	0·111	0·083	0·075	0·070	0·039
Zero-sequence short circuit average reactance phase - PE	X_o [mΩ/m]	0·062	0·060	0·060	0·049	0·049	0·036	0·024	0·019	0·018	0·015
Zero-sequence short circuit average impedance phase - PE	Z_o [mΩ/m]	0·2	0·2	0·2	0·1	0·1	0·1	0·1	0·1	0·1	0·0
Voltage drop with distributed load ΔV [V/(m*A)]10^{-6}	cosφ = 0·70	74·9	43·9	39·4	36·1	23·3	18·5	14·8	11·1	9·0	7·1
	cosφ = 0·75	78·2	45·5	40·7	37·3	23·7	18·8	15·2	11·4	9·1	7·2
	cosφ = 0·80	81·3	47·0	41·9	38·4	24·0	19·0	15·6	11·6	9·1	7·3
	cosφ = 0·85	84·1	48·3	42·9	39·4	24·1	19·2	15·9	11·8	9·1	7·4
	cosφ = 0·90	86·7	49·3	43·6	40·1	24·1	19·1	16·1	11·8	9·0	7·4
	cosφ = 0·95	88·5	49·9	43·9	40·4	23·6	18·8	16·1	11·7	8·7	7·3
	cosφ = 1·00	86·7	47·7	41·3	38·3	20·9	16·6	14·9	10·6	7·5	6·6
Weight (PE 1)	p [kg/m]	21·2	26·9	29·6	33·5	50·4	62·2	74·2	97·9	130·3	173·6
Weight (PE 2)	p [kg/m]	24·5	30·2	32·9	37·8	54·8	73·6	83·0	108·2	141·6	189·1
Weight (PE 3)	p [kg/m]	22·3	28·0	30·7	34·9	51·8	65·9	77·1	101·5	134·2	178·7
Fire load	[kWh/m]	4·5	5·5	5·5	8	8·2	10·5	16	19	21	22
Degree of protection	IP	55*	55*	55*	55*	55*	55*	55*	55*	55*	55*
Insulation material thermal resistance class		B**	B**	B**	B**	B**	B**	B**	B**	B**	B**
Losses for the Joule effect at nominal current	P [W/m]	192	165	224	339	289	360	529	588	648	901
Ambient temperature min/ MAX (daily average)	[°C]	-5/+70	-5/+70	-5/+70	-5/+70	-5/+70	-5/+70	-5/+70	-5/+70	-5/+70	-5/+70

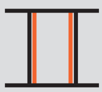
* IP 65 for feeder lines is available on request
** Class F is available on request

Data measured in accordance with IEC 61439-6
For temperatures over 55°C it will be necessary to derate the busbar and for ambient temperatures under -5°C please contact technical support on +44 (0) 370 608 9020

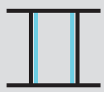
The data on this page refers to the 50 Hz frequency. For 60 Hz please contact technical support on +44 (0) 370 608 9020



PE 1
Standard version



PE 2
Extra earth - COPPER XCP
Cu 3L+N+50%PE
(tinned copper conductors available on request)



PE 3
Extra earth - ALUMINUM

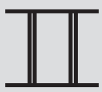
XCP-HP CU (5 conductors - clean earth)

3P+N+PE+FE		SINGLE BAR						DOUBLE BAR			TRIPLE BAR
Rated current	**In [A]**	**800**	**1000**	**1250**	**1600**	**2000**	**2500**	**3200**	**4000**	**5000**	**6300**
Overall dimension of the busbars	L x H [mm]	125 x 130	125 x 130	125 x 130	125 x 170	125 x 170	125 x 220	125 x 380	125 x 440	125 x 480	125 x 680
Rated operational voltage	Ue [V]	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
Rated insulation voltage	Ui [V]	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
Frequency	f [Hz]	50	50	50	50	50	50	50	50	50	50
Rated short-time current (1 s)	I_{cw} [kA]$_{rms}$	36	50	70	70	85	120	120	150	150	150
Peak current	I_{pk} [kA]	76	105	154	154	187	264	264	330	330	330
Allowable specific energy for three phase fault	I^2t [MA²s]	1296	2500	4900	4900	7225	14400	14400	22500	22500	22500
Rated short-time current of the neutral bar (1 s)	I_{cw} [kA]$_{rms}$	22	30	42	42	51	72	72	90	90	90
Peak current of the neutral bar	I_{pk} [kA]	45	63	88	88	112	158	158	198	198	198
Rated short-time current of the protective circuit (1 s)	I_{cw} [kA]$_{rms}$	22	30	42	42	51	72	72	90	90	90
Peak current of the protective circuit	I_{pk} [kA]	45	63	88	88	112	158	158	198	198	198
Phase resistance at 20°C	R_{20} [mΩ/m]	0·077	0·045	0·038	0·034	0·018	0·015	0·013	0·009	0·006	0·006
Phase reactance (50hz)	X [mΩ/m]	0·023	0·017	0·017	0·015	0·014	0·011	0·007	0·006	0·006	0·004
Phase impedance	Z [mΩ/m]	0·080	0·048	0·042	0·037	0·023	0·018	0·015	0·011	0·009	0·007
Phase resistance at thermal conditions	R_t [mΩ/m]	0·100	0·055	0·048	0·044	0·024	0·019	0·017	0·012	0·009	0·008
Phase impedance at thermal conditions	Z [mΩ/m]	0·103	0·058	0·051	0·047	0·028	0·022	0·019	0·014	0·011	0·009
Neutral resistance	R_{20} [mΩ/m]	0·077	0·045	0·038	0·034	0·018	0·015	0·013	0·009	0·006	0·006
Functional Earth resistance (FE)	R_{20} [mΩ/m]	0·077	0·045	0·038	0·034	0·018	0·015	0·013	0·009	0·006	0·006
Functional Earth reactance (FE)	X [mΩ/m]	0·023	0·017	0·017	0·015	0·014	0·011	0·007	0·006	0·006	0·004
Resistance of the protective bar (PE 1)	R_{PE} [mΩ/m]	0·132	0·132	0·132	0·119	0·122	0·108	0·078	0·072	0·068	0·037
Resistance of the protective bar (PE 2)	R_{PE} [mΩ/m]	0·049	0·049	0·049	0·038	0·038	0·014	0·019	0·016	0·014	0·011
Resistance of the protective bar (PE 3)	R_{PE} [mΩ/m]	0·084	0·084	0·084	0·064	0·064	0·025	0·032	0·025	0·023	0·021
Reactance of the protective bar	X_{PE} [mΩ/m]	0·054	0·054	0·054	0·044	0·044	0·032	0·022	0·017	0·016	0·014
Resistance of the fault loop (PE 1)	R_o [mΩ/m]	0·126	0·078	0·067	0·060	0·035	0·028	0·024	0·018	0·012	0·011
Resistance of the fault loop (PE 2)	R_o [mΩ/m]	0·107	0·068	0·059	0·052	0·031	0·022	0·021	0·015	0·011	0·009
Resistance of the fault loop (PE 3)	R_o [mΩ/m]	0·12	0·07	0·06	0·06	0·03	0·02	0·02	0·02	0·01	0·01
Reactance of the fault loop (50hz)	X_o [mΩ/m]	0·077	0·071	0·071	0·059	0·058	0·043	0·029	0·023	0·022	0·018
Impedance of the fault loop (PE 1)	Z_o [mΩ/m]	0·147	0·106	0·098	0·084	0·067	0·051	0·038	0·029	0·025	0·021
Impedance of the fault loop (PE 2)	Z_o [mΩ/m]	0·132	0·098	0·093	0·079	0·066	0·048	0·036	0·028	0·025	0·020
Impedance of the fault loop (PE 3)	Z_o [mΩ/m]	0·140	0·102	0·096	0·081	0·067	0·049	0·037	0·028	0·025	0·021
Zero-sequence short circuit average resistance phase - N	R_o [mΩ/m]	0·103	0·060	0·050	0·045	0·025	0·020	0·018	0·012	0·009	0·008
Zero-sequence short circuit average reactance phase - N	X_o [mΩ/m]	0·031	0·023	0·023	0·020	0·019	0·015	0·009	0·008	0·008	0·005
Zero-sequence short circuit average impedance phase - N	Z_o [mΩ/m]	0·107	0·064	0·055	0·050	0·031	0·025	0·020	0·015	0·012	0·009
Zero-sequence short circuit average resistance phase - PE	R_o [mΩ/m]	0·103	0·060	0·050	0·045	0·025	0·020	0·018	0·012	0·009	0·008
Zero-sequence short circuit average reactance phase - PE	X_o [mΩ/m]	0·031	0·023	0·023	0·020	0·019	0·015	0·009	0·008	0·008	0·005
Zero-sequence short circuit average impedance phase - PE	Z_o [mΩ/m]	0·107	0·064	0·055	0·050	0·031	0·025	0·020	0·015	0·012	0·009
Voltage drop with distributed load ΔV [V/(m*A)]10^{-6}	cosφ = 0·70	74·9	43·9	39·4	36·1	23·3	18·5	14·8	11·1	9·0	7·1
	cosφ = 0·75	78·2	45·5	40·7	37·3	23·7	18·8	15·2	11·4	9·1	7·2
	cosφ = 0·80	81·3	47·0	41·9	38·4	24·0	19·0	15·6	11·6	9·1	7·3
	cosφ = 0·85	84·1	48·3	42·9	39·4	24·1	19·2	15·9	11·8	9·1	7·4
	cosφ = 0·90	86·7	49·3	43·6	40·1	24·1	19·1	16·1	11·8	9·0	7·4
	cosφ = 0·95	88·5	49·9	43·9	40·4	23·6	18·8	16·1	11·7	8·7	7·3
	cosφ = 1·00	86·7	47·7	41·3	38·3	20·9	16·6	14·9	10·6	7·5	6·6
Weight (PE 1)	p [kg/m]	23·8	31·1	34·5	39·0	59·9	74·3	88·2	117·3	157·4	200·3
Weight (PE 2)	p [kg/m]	27·2	34·5	37·8	43·4	64·3	85·6	96·9	127·6	168·8	215·7
Weight (PE 3)	p [kg/m]	24·9	32·2	35·5	40·4	61·3	78·0	91·1	120·8	161·4	204·5
Fire load	[kWh/m]	5·625	6·875	6·875	10	10·25	13·125	20	23·75	26·25	27·25
Degree of protection	IP	55*	55*	55*	55*	55*	55*	55*	55*	55*	55*
Insulation material thermal resistance class		B**	B**	B**	B**	B**	B**	B**	B**	B**	B**
Losses for the Joule effect at nominal current	P [W/m]	192	165	224	339	289	360	529	588	648	901
Ambient temperature min/ MAX (daily average)	[°C]	-5/+70	-5/+70	-5/+70	-5/+70	-5/+70	-5/+70	-5/+70	-5/+70	-5/+70	-5/+70

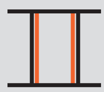
* IP 65 for feeder lines is available on request
** Class F is available on request

Data measured in accordance with IEC 61439-6
For temperatures over 55°C it will be necessary to derate the busbar and for ambient temperatures under -5°C please contact technical support on +44 (0) 370 608 9020

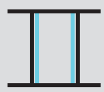
The data on this page refers to the 50 Hz frequency. For 60 Hz please contact technical support on +44 (0) 370 608 9020



PE 1
Standard version



PE 2
Extra earth - COPPER
XCP Cu 3L+N+50%PE
(tinned copper conductors available on request)



PE 3
Extra earth - ALUMINUM

Xtra Compact (XCP-HP)

technical data

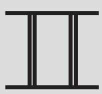
XCP-HP CU (5 conductors - double neutral)

3P+2N+PE		SINGLE BAR						DOUBLE BAR			TRIPLE BAR
Rated current	**In [A]**	**800**	**1000**	**1250**	**1600**	**2000**	**2500**	**3200**	**4000**	**5000**	**6300**
Overall dimension of the busbars	L x H [mm]	125 x 130	125 x 130	125 x 130	125 x 170	125 x 170	125 x 220	125 x 380	125 x 440	125 x 480	125 x 680
Rated operational voltage	Ue [V]	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
Rated insulation voltage	Ui [V]	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
Frequency	f [Hz]	50	50	50	50	50	50	50	50	50	50
Rated short-time current (1 s)	I_{cw} [kA]$_{rms}$	36	50	70	70	85	120	120	150	150	150
Peak current	I_{pk} [kA]	76	105	154	154	187	264	264	330	330	330
Allowable specific energy for three phase fault	I^2t [MA²s]	1296	2500	4900	4900	7225	14400	14400	22500	22500	22500
Rated short-time current of the neutral bar (1 s)	I_{cw} [kA]$_{rms}$	22	30	42	42	51	72	72	90	90	90
Peak current of the neutral bar	I_{pk} [kA]	45	63	88	88	112	158	158	198	198	198
Rated short-time current of the protective circuit (1 s)	I_{cw} [kA]$_{rms}$	22	30	42	42	51	72	72	90	90	90
Peak current of the protective circuit	I_{pk} [kA]	22	63	88	88	112	158	158	198	198	198
Phase resistance at 20°C	R_{20} [mΩ/m]	0·077	0·045	0·038	0·034	0·018	0·015	0·013	0·009	0·006	0·006
Phase reactance (50hz)	X [mΩ/m]	0·023	0·017	0·017	0·015	0·014	0·011	0·007	0·006	0·006	0·004
Phase impedance	Z [mΩ/m]	0·080	0·048	0·042	0·037	0·023	0·018	0·015	0·011	0·009	0·007
Phase resistance at thermal conditions	R_t [mΩ/m]	0·100	0·055	0·048	0·044	0·024	0·019	0·017	0·012	0·009	0·008
Phase impedance at thermal conditions	Z [mΩ/m]	0·103	0·058	0·051	0·047	0·028	0·022	0·019	0·014	0·011	0·009
Neutral resistance	R_{20} [mΩ/m]	0·038	0·022	0·019	0·017	0·009	0·007	0·007	0·005	0·003	0·003
Resistance of the protective bar (PE 1)	R_{PE} [mΩ/m]	0·132	0·132	0·132	0·119	0·122	0·108	0·078	0·072	0·068	0·037
Resistance of the protective bar (PE 2)	R_{PE} [mΩ/m]	0·049	0·049	0·049	0·038	0·038	0·014	0·019	0·016	0·014	0·011
Resistance of the protective bar (PE 3)	R_{PE} [mΩ/m]	0·084	0·084	0·084	0·064	0·064	0·025	0·032	0·025	0·023	0·021
Reactance of the protective bar	X_{PE} [mΩ/m]	0·054	0·054	0·054	0·044	0·044	0·032	0·022	0·017	0·016	0·014
Resistance of the fault loop (PE 1)	R_o [mΩ/m]	0·209	0·176	0·170	0·153	0·140	0·123	0·091	0·081	0·075	0·043
Resistance of the fault loop (PE 2)	R_o [mΩ/m]	0·126	0·094	0·087	0·072	0·056	0·029	0·032	0·025	0·021	0·016
Resistance of the fault loop (PE 3)	R_o [mΩ/m]	0·16	0·13	0·12	0·10	0·08	0·04	0·05	0·03	0·03	0·03
Reactance of the fault loop (50hz)	X_o [mΩ/m]	0·077	0·071	0·071	0·059	0·058	0·043	0·029	0·023	0·022	0·018
Impedance of the fault loop (PE 1)	Z_o [mΩ/m]	0·222	0·190	0·184	0·164	0·152	0·130	0·096	0·084	0·078	0·047
Impedance of the fault loop (PE 2)	Z_o [mΩ/m]	0·148	0·118	0·113	0·093	0·081	0·052	0·043	0·034	0·030	0·024
Impedance of the fault loop (PE 3)	Z_o [mΩ/m]	0·179	0·147	0·141	0·114	0·101	0·058	0·054	0·042	0·037	0·032
Zero-sequence short circuit average resistance phase - N	R_o [mΩ/m]	0·064	0·037	0·032	0·028	0·015	0·012	0·011	0·008	0·005	0·005
Zero-sequence short circuit average reactance phase - N	X_o [mΩ/m]	0·019	0·014	0·014	0·013	0·012	0·009	0·006	0·005	0·005	0·003
Zero-sequence short circuit average impedance phase - N	Z_o [mΩ/m]	0·067	0·040	0·035	0·031	0·019	0·015	0·012	0·009	0·007	0·006
Zero-sequence short circuit average resistance phase - PE	R_o [mΩ/m]	0·157	0·147	0·144	0·130	0·125	0·111	0·083	0·075	0·070	0·039
Zero-sequence short circuit average reactance phase - PE	X_o [mΩ/m]	0·062	0·060	0·060	0·049	0·049	0·036	0·024	0·019	0·018	0·015
Zero-sequence short circuit average impedance phase - PE	Z_o [mΩ/m]	0·169	0·158	0·156	0·139	0·134	0·117	0·086	0·077	0·072	0·042
Voltage drop with distributed load ΔV [V/(m*A)]10^{-6}	cosφ = 0·70	74·9	43·9	39·4	36·1	23·3	18·5	14·8	11·1	9·0	7·1
	cosφ = 0·75	78·2	45·5	40·7	37·3	23·7	18·8	15·2	11·4	9·1	7·2
	cosφ = 0·80	81·3	47·0	41·9	38·4	24·0	19·0	15·6	11·6	9·1	7·3
	cosφ = 0·85	84·1	48·3	42·9	39·4	24·1	19·2	15·9	11·8	9·1	7·4
	cosφ = 0·90	86·7	49·3	43·6	40·1	24·1	19·1	16·1	11·8	9·0	7·4
	cosφ = 0·95	88·5	49·9	43·9	40·4	23·6	18·8	16·1	11·7	8·7	7·3
	cosφ = 1·00	86·7	47·7	41·3	38·3	20·9	16·6	14·9	10·6	7·5	6·6
Weight (PE 1)	p [kg/m]	23·8	31·1	34·5	39·0	59·9	74·3	88·2	117·3	157·4	200·3
Weight (PE 2)	p [kg/m]	27·2	34·5	37·8	43·4	64·3	85·6	96·9	127·6	168·8	215·7
Weight (PE 3)	p [kg/m]	24·9	32·2	35·5	40·4	61·3	78·0	91·1	120·8	161·4	204·5
Fire load	[kWh/m]	5·625	6·875	6·875	10	10·25	13·125	20	23·75	26·25	27·25
Degree of protection	IP	55*	55*	55*	55*	55*	55*	55*	55*	55*	55*
Insulation material thermal resistance class		B**	B**	B**	B**	B**	B**	B**	B**	B**	B**
Losses for the Joule effect at nominal current	P [W/m]	192	165	224	339	289	360	529	588	648	901
Ambient temperature min/ MAX (daily average)	[°C]	-5/+70	-5/+70	-5/+70	-5/+70	-5/+70	-5/+70	-5/+70	-5/+70	-5/+70	-5/+70

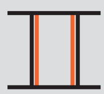
* IP 65 for feeder lines is available on request
** Class F is available on request

Data measured in accordance with IEC 61439-6
For temperatures over 55°C it will be necessary to derate the busbar and for ambient temperatures under -5°C please contact technical support on +44 (0) 370 608 9020

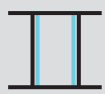
The data on this page refers to the 50 Hz frequency. For 60 Hz please contact technical support on +44 (0) 370 608 9020



PE 1
Standard version



PE 2
Extra earth - COPPER XCP Cu 3L+N+50%PE (tinned copper conductors available on request)



PE 3
Extra earth - ALUMINUM

Xtra Compact (XCP)

design instructions for the creation of a rising mains (BTS*)

1) The RH rising main feed unit (without monobloc) is used at the start of the riser line, allowing the busbar to be installed just 40 mm away from the wall
In order to position the tap-off boxes correctly as shown in the figure (see opposite), the neutral conductor of the riser main must be on the left side of the length

2) The tap-off boxes can be installed in the tap-off outlets (Plug-in type) and on the junction of elements (Bolt-on type)
The cables come out from bottom part of the tap-off boxes

3) Use lengths with tap-off outlets where it is necessary to draw energy through plug-in boxes

4) EI120 fire barrier kit for each compartment floor, where requested
Note : the fire barrier is long 630 mm with aluminum conductors and 1000 mm with copper conductors

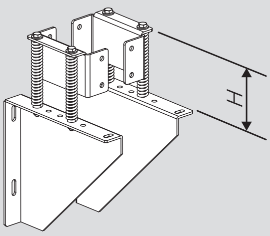
5) Position the IP 55 end cover at the end of the riser mains

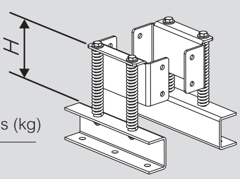
Maximum hanging distance with springs (Dmax)

	XCP-S				XCP-HP			
	Al		Cu		Al		Cu	
In (A)	D max	n° of springs	D max	n° of springs	D max	n° of springs	D max	n° of springs
630	11	4	-	-	10	4	-	-
800	10	4	9	4	10	4	9	4
1000	10	4	8	4	9	4	7	4
1250	9	4	7	4	9	4	7	4
1600	10	6	6	4	10	6	6	4
2000	9	6	6	6	9	6	4	4
2500	12	8	9	8	11	8	5	6
3200	11	12	7	8	11	12	6	8
4000	10	12	7	12	10	12	6	12
5000	7	12	5	12	6	12	5	12
6300	-	-	4	12	-	-	4	12

For 5C version, multiply Dmax by 0·9 for both product lines
For 3C version, multiply Dmax by 1·1 for both product lines

Spring preload calculation (H)





$$W = \frac{BTS^{*}\ \frac{(Kg)}{m}\ \times\ D\ (m) + \text{total weight of devices (kg)}}{\text{Number of springs}}$$

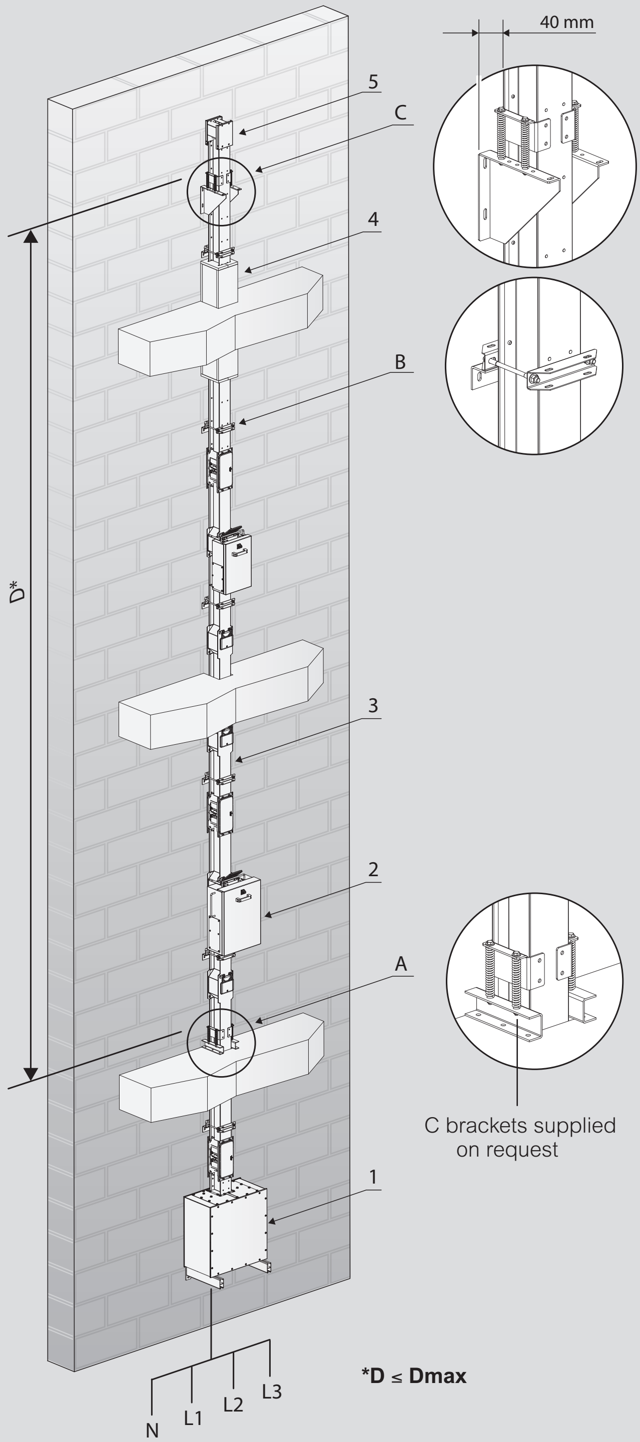
$$H = 130 - \frac{W}{3}$$

Preload calculation example (H)

BTS* type : XCP-S 5c-Al (PE1)
In (A) : 2000
Dmax (m) : 9 x 0·9 = 8·1
D (m) : 6
Busway (Kg/m) : 31·1
Weight box 1 (Kg) : 18
Weight box 2 (Kg) : 12

$$W = \frac{31{\cdot}1 \times 6 + (18 + 12)}{6} = 36{\cdot}1\ \text{kg} \qquad H = 130 - \frac{36{\cdot}1}{3} = 117{\cdot}97\ \text{mm}$$

* BTS = busway trunking system

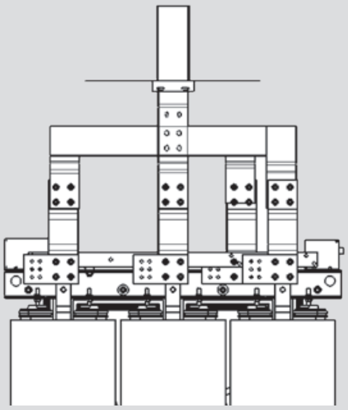


A) Floor hanger : use one or more of these suspension brackets, depending on the weight of the whole riser mains (including the boxes)
For risers that are shorter than 4 m, fix to the base with type D brackets, when longer, use type C suspension brackets respecting the maximum distances (Dmax) indicated in the tables
B) Standard hanger : use this type of suspension bracket to hang the busbar every 1·5 metres of the riser mains
C) Wall hanger : use one or more of these suspension brackets, depending on the weight of the whole riser mains (including the boxes)
For risers that are shorter than 4 m, fix to the base with type B brackets, when longer, use a type A suspension bracket respecting the maximum distances (Dmax) indicated in the tables

Xtra Compact (XCP)

technical information

The system : the Legrand transformer advantage



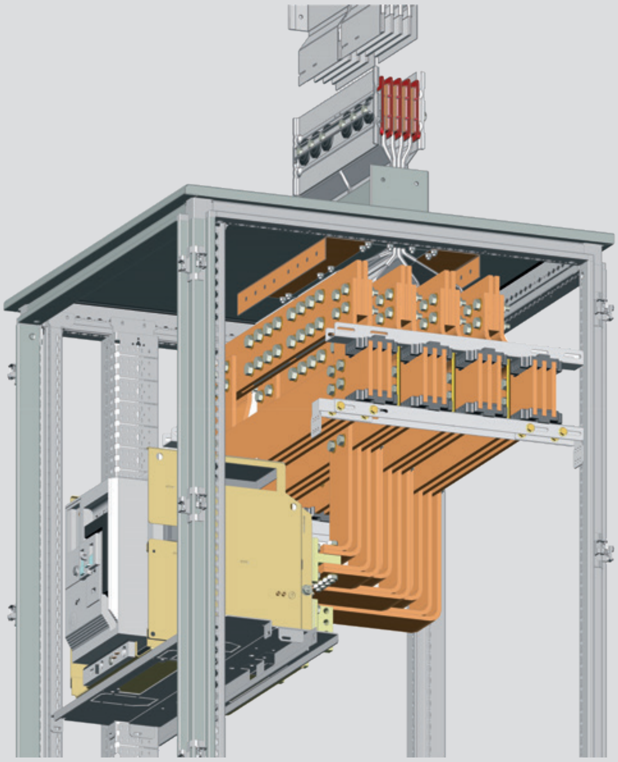
Zucchini cast resin transformers from Legrand

The Legrand Group product synergy answers to global installation needs
Legrand cast resin transformers have specifically designed connections for Legrand busbars

The versions shown represent some of the standardised solutions

For more information, contact us on +44 (0) 370 608 9020

The system : connection to LV switchboard



OPERATING INFORMATION

Suggestions for the design and installation of the busbar

Operational information and advice for the correct design and construction of the busbar trunking system

Xtra Compact (XCP)

suggestions for the project development

1. **Rating**

   ..2500..A

2. **Application :**

   Transport ☑

   Distribution ☐ No. of outlets ....

3. **Icc at the beginning of the line** ....kA

4. **Material :**

   Aluminium ☑

   Copper ☐

5. **Degree of protection :**

   IP 55 (standard) ☑

   IP 65 (only for transport of Energy) ☐

6. **Paint :**

   RAL7035 (standard) ☑

   Different RAL

   colour on request .... ☐

7. **Neutral section :**

   100% XCP (standard) ☑

   200% XCP 2N ☐

8. **Nominal ambient temperature :**

   35°C (standard) ☑

   Other on request........... ☐

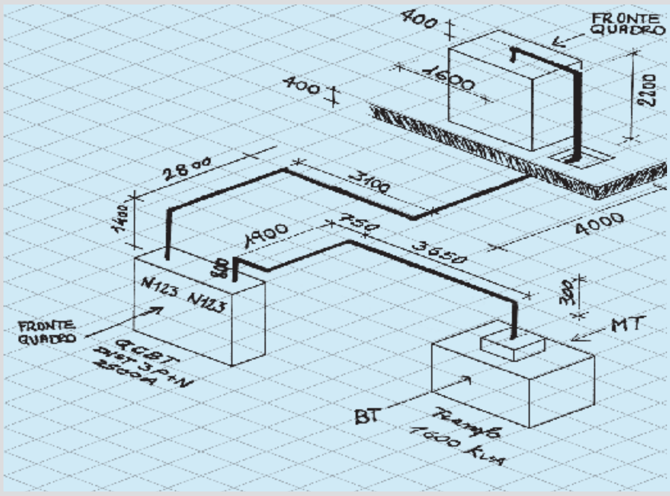
9. **Attach Busbar layout***

   Drawing ☑

   Dwg file ☐

   Revit file ☐

* Example of drawing to attach



Xtra Compact (XCP)

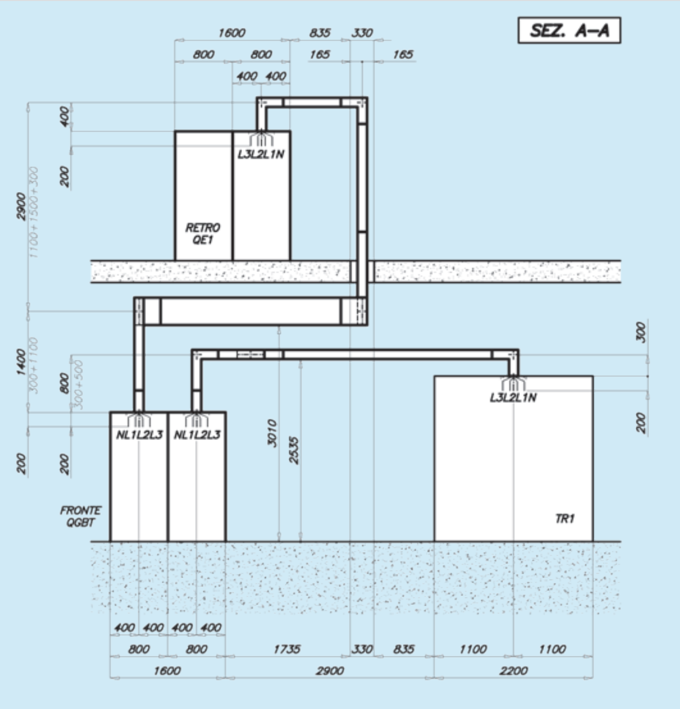
suggestions for the project development

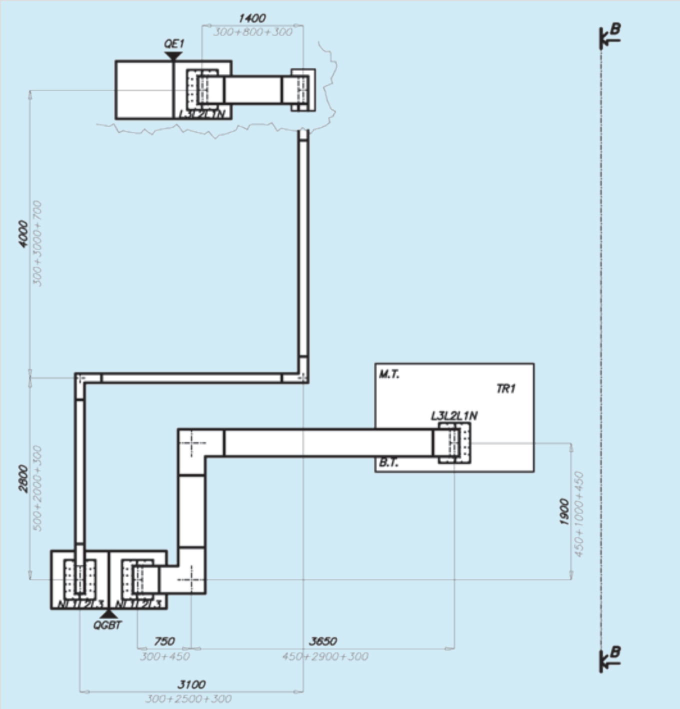
Example for quotation check list :

Checklist to be carried out during the project

1. Verify the measurements of the drawings and the correct position of the equipment (MV/LV transformer and LV electric board enclosures)
2. Check the availability of drawings required (transformer, electric board, etc.)
3. Check for the existence of unforeseen obstacles in the installation which could impede the run of the busbar (for example pipelines, ventilation and air-conditioning ducts)
4. Agree upon who is responsible for providing the connection from the busbar to the other devices (MV/LV transformer and LV electric boards)

Example of the detail of the project





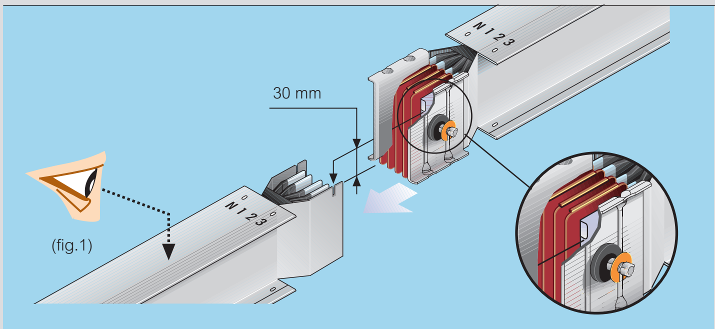
If required, Legrand can provide :

- The mechanical layout of the project
- Study of the connections between the busbar and the transformer or between electric board enclosures
- Possibility of site measurement by qualified persons

Xtra Compact (XCP)

installation guidelines

Installation sequence of the junction

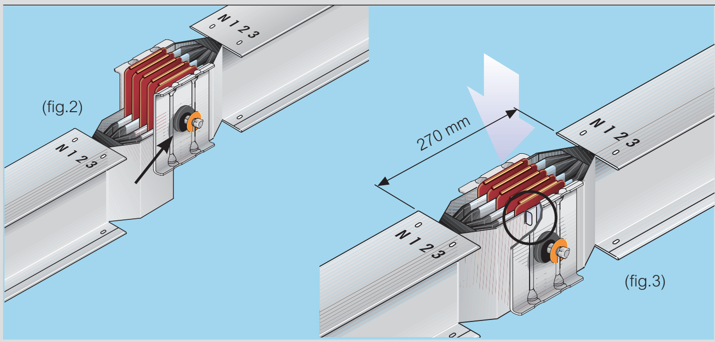


(fig.1)

The installation instructions are placed on every element near the junction

Make sure that the contacts are clean

Join the two elements together (Fig.1)

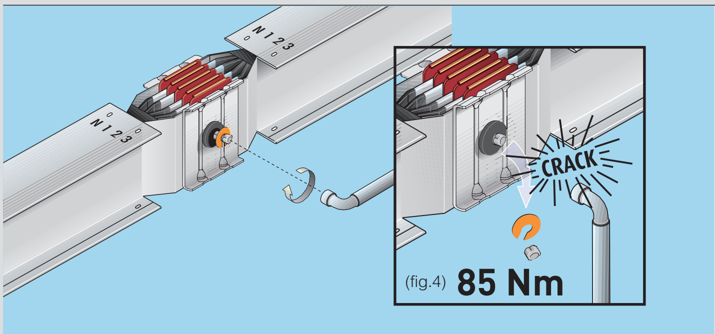


(fig.2) (fig.3)

Make sure that the earth plate of the straight length is inserted behind the front plate of the junction monobloc (Fig.2)

The positioning pin on the monobloc should be fitted into the corresponding slot on the earth plate

Verify that the distance between the elements is 270 mm before tightening the monobloc completely (Fig.3)



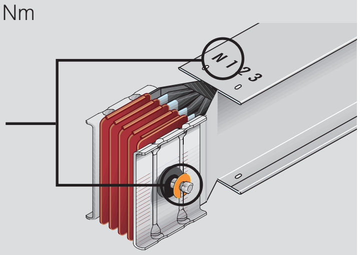
(fig.4)

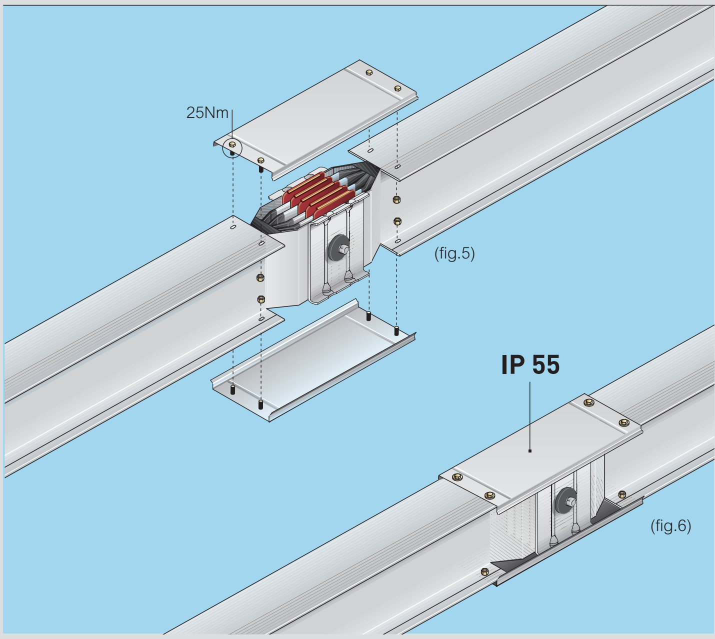
Tighten the bolt of the monobloc until the 1st head breaks off (Fig. 4)

The bolt that tightens the monobloc has a second head which is used when carrying out operations or inspections on the line

The nominal tightening torque is 85 Nm

In standard execution, the self-shearing bolt is fitted on the opposite side of the neutral





(fig.5) (fig.6)

Install the covers of the junction (fig. 5)

Connection completed correctly with protection degree IP 55 (fig.6)

Below are some precautions that may be useful to avoid problems during the assembly, which we recommend should be taken into account during the design

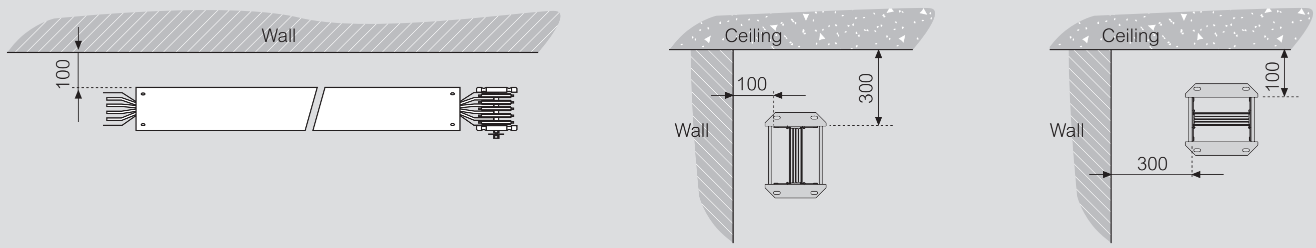
Minimum distances from the structure

The minimum distance from the walls in order to avoid problems during edgeways installation of the busbar is 300 mm
The variables that must be taken into account for correct assembly are :

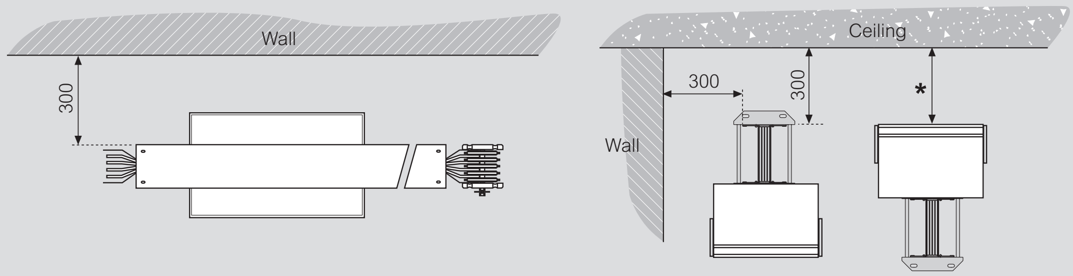
- the position of the bolt for tightening the monobloc. The minimum required distance is 100 mm
- the sizes of the distribution element (box) selected for the collection of power should be at least 300 mm
- any brackets and their assembly
- accessibility to the screws for the installation of the brackets and the closing of the junctions
- any material required for the actual installation in order to compensate for any wall imperfections

In projects with a rising main installation, and if the system does not require fire barriers, the fixing supporting the bracket can be directly secured to the wall. Otherwise, allow for a spacing support between the bracket and the wall to ensure that the back of the busbar remains at a distance of 100 mm from the wall, therefore ensuring enough space for the positioning of the partitions

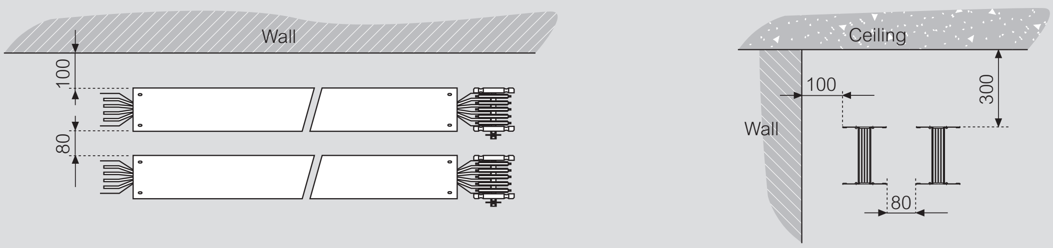
Minimum distance of the wall / ceiling elements



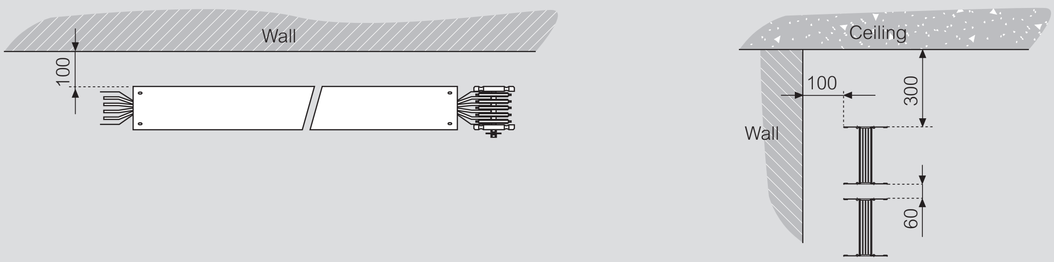
When there are tap-off units along the busbars, the minimum distances depend on the dimensions of the tap-offs selected



*** When there is a tap-off box installed above the busbar, check the overall dimensions of the open cover of the tap-off unit used in the specific section**



Minimum installation distance when there are several adjacent lines



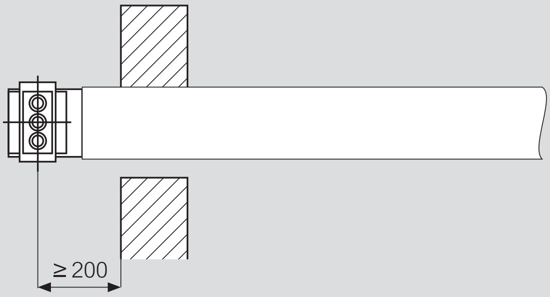
Minimum installation distance when there are several overlapped lines

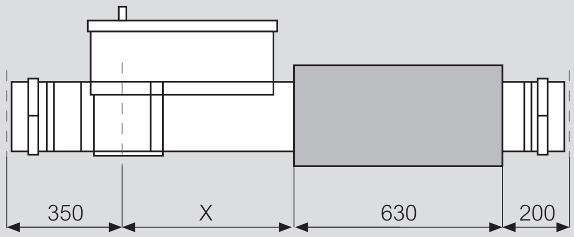
Xtra Compact (XCP)

mechanical design precautions

Positioning of the mechanical joint arrangement

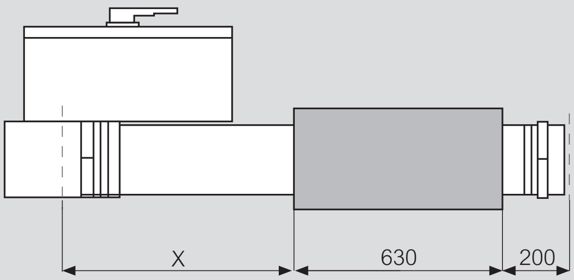
The minimum distance from the junction to the point the busbar crosses the wall or other structure must be at least 200 mm, to ensure the closure of the junctions
Where plug-in boxes and fire barriers are required on the same element, the minimum distance between the box and the partition must be taken into account, at the same time allowing for the necessary free space in the junction area and the minimum distance between the distribution outlet and the start of the element
By taking all these variables into account, it is possible to obtain the minimum size of the element in order be able to fit the partition and the plug-in box. The tables that follow summarise the minimum sizes





Refers to aluminium

PLUG-IN TAP-OFF BOXES (X MINIMUM SIZE)		
Type	**Rating (A)**	**X (mm)**
1	63 – 160	520
2	250 – 630	720
3	125 – 400	620



Refers to aluminium

PLUG-IN BOXES ON THE JUNCTION		
Type	**Rating (A)**	**X (mm)**
-	125 – 400	700
-	630	820
-	800 – 1250	1120

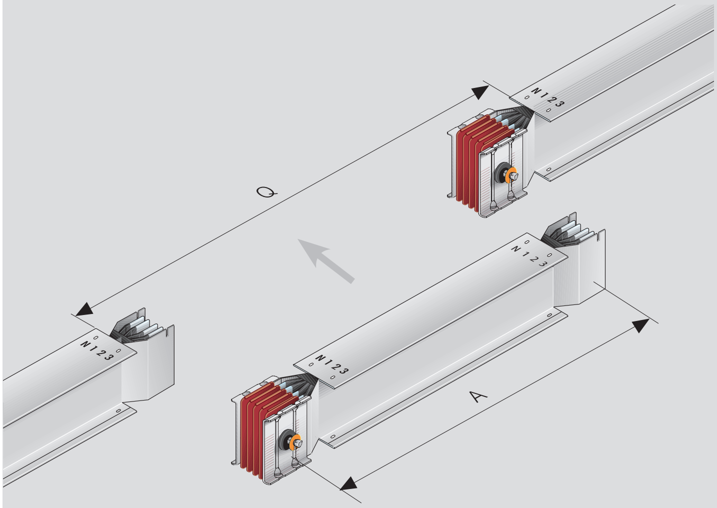
Connection to the board

As a rule, the manufacturer of the board is responsible for connecting the connection element and the distribution busbars inside the board
On request Legrand may develop and supply the connections, subject to all necessary details being available
All types of connections must be agreed and checked with the board manufacturer

Short circuit withstand

The short circuit withstand of the connection elements depends on the connection of the busbars inside the distribution board
The declaration of short circuit withstand for the system busbars may only be supplied by the board manufacturer

Measurement of straight lengths

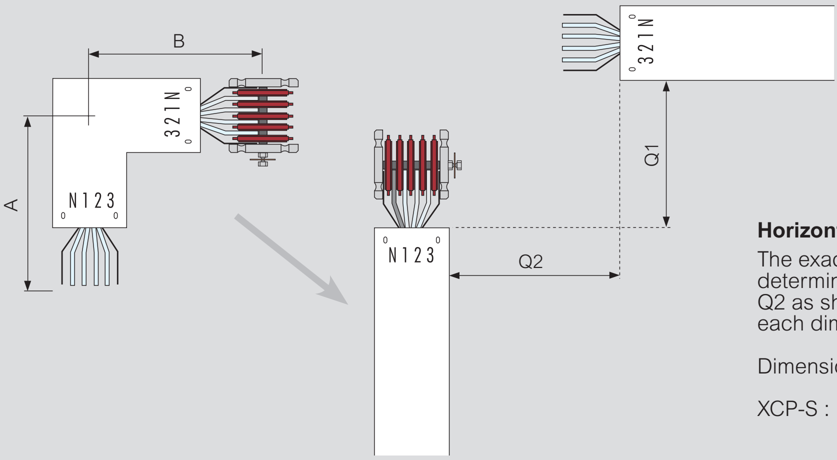


The exact length of the piece to be ordered can be determined by measuring the distance between the lengths (as shown in the picture) and then subtracting 270 mm from the dimension that has been taken

A (Length of element) = Q - 270 mm

Example : Dimension measuring Q = 2500 mm
Order element (2500 - 270) = 2230 mm (quote A)

Measurement for ordering a special path element



Horizontal elbow

The exact length of the piece to be ordered can be determined by measuring the dimensions Q1 and Q2 as shown opposite and then by subtracting from each dimension the values indicated below

Dimensions of the element to be ordered:

XCP-S : **A** = Q1 - 75 mm
B = Q2 - 75 mm

XCP-HP : **A** = Q1 - 72·5 mm
B = Q2 - 72·5 mm

Xtra Compact (XCP)

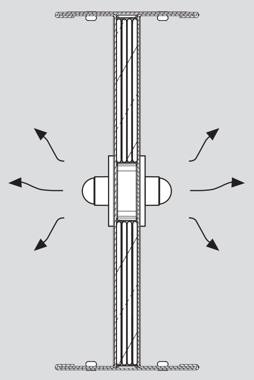
Insulation technology

Superior moisture-free insulation technology

XCP busbars are insulated by a PET* film wrapping
To get superior quality and safety, conductor bars are wrapped with two sheets, both of which are enough to ensure the complete dielectric level required. Therefore, the second sheet has the function to double insulate and ensure the safety of the bar in the chance of remote failure of the first sheet
The PET* films used to insulate the bars are non-hygroscopic and therefore their dielectric performance is independent to the air humidity

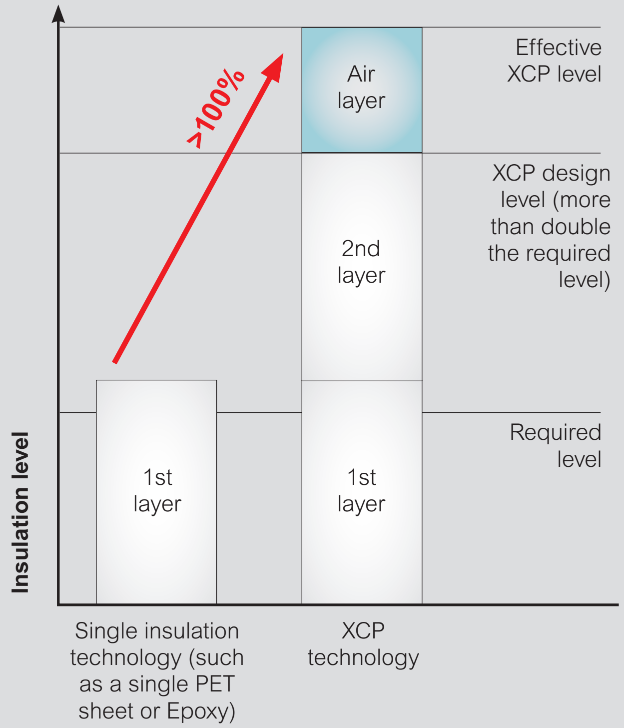
XCP construction follows a sandwich logic. In this way, free air circulation is not possible inside the casing. Thanks to this IP rating, penetration of humidity and dust is prevented (IP 55 or IP 65 on request), regardless of the orientation of the busbar elements
In any case, an energised bar has a temperature higher in comparison to the surrounding atmosphere, and this prevents any possibility of condensation or eventual moisture, an event that can only happen on colder surfaces
Thanks to the double insulating layer technology, together with the sandwich construction, the XCP range is fully protected from any problems that can occur from humidity

Fully enclosed housing



The XCP BTS** has a modern fully enclosed housing design that does not need derating whatever the mounting position
Due to the fact that there are no ventilation holes in the housing, the possibility for dirt and moisture to enter into contact with bars is extremely low

PET* based insulation technology is sometimes incorrectly associated with a reduction in perfomance due to atmospheric humidity
This is a misperception. PET* itself is not hygroscopic and therefore its performance is not affected by any moisture entity
The area that could be affected is the layer of air found between the conductive bar and the PET* film. However this layer is negligible and the XCP design uses these air layers to increase the insulation level to more than double the requirement
Consequently, the total isolation level provided by the XCP range is even higher than that provided by the double PET* film

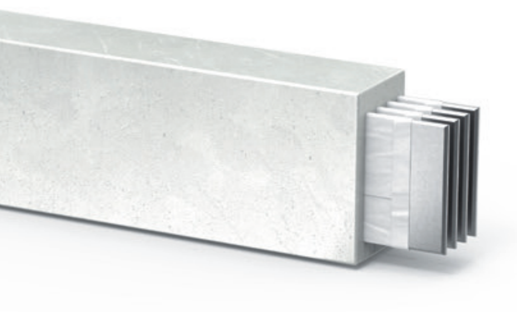


*PET = polyethylene terephthalate
the most useful insulation material for the electric and electronics industry, PET is used for example in the windings of transformers and to insulate the rotor and stators of electric motors

** BTS = busway trunking system

IP 68 RCP RESIN busbar trunking

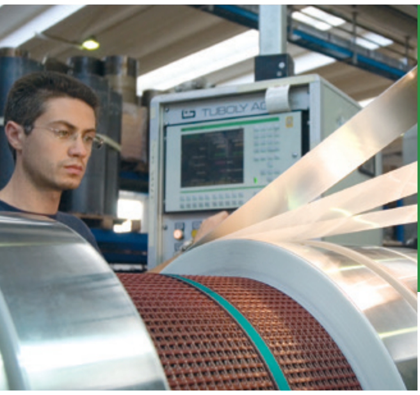
RCP resin busbar - suitable for indoor and outdoor installations



With an ingress protection rating of IP 68 and ranging from 630 A to 6300 A, RCP is ideal for the distribution of high power energy in external environments.

RCP is manufactured with either aluminium or copper conductors which are completely embedded in an epoxy resin, that provides mechanical strength and electrical insulation.

RCP resin busbar has good performance in fire conditions and exceeds the requirements stipulated in IEC 60331-1 : 2009 for continuity of service in the event of fire.



Green T.HE

high efficiency transformers

quality through to the core

From July 2021, regulation 548/2014 (updated by regulation 2019/1783) requires manufacturers to reduce no-load losses of their transformers by 10% compared with the previous requirement.

Legrand's Zucchini Green T.HE (Tier 2) transformers fully comply with the new eco-compatible design rules and guarantee a significant reduction in energy consumption, thus promoting substantial economic savings and the reduction of CO2 emissions into the atmosphere.

To find out more call our technical support team on **+44 (0) 370 608 9020**

Protection classifications

Protection against solid bodies and liquids : Index of protection - IP xx

Degree of protection of enclosures of electrical equipment in accordance with standards
IEC 60529, BS EN 60529
Up to 1 000 V∿ and 1 500 V⎓

1st digit: protection against solid bodies

IP	tests	
0		No protection
1	Ø 50 mm	Protected against solid bodies larger than 50 mm
2	Ø 12.5 mm	Protected against solid bodies larger than 12.5 mm
3	Ø 2.5 mm	Protected against solid bodies larger than 2.5 mm
4	Ø 1 mm	Protected against solid bodies larger than 1 mm
5		Protected against dust (no harmful deposit)
6		Completely protected against dust

Additional letter IP XX (ABCD): protection against direct contact resulting from the access to hazardous current-carrying parts

IP	tests	protection
A	Ø 50 mm, d	The back of the hand remains remote from dangerous parts
B	12 mm	The dangerous parts can not be touched when introducing a finger
C		The dangerous parts can not be touched when introducing a tool (eg a screwdriver)
D		The dangerous parts cannot be touched when introducing a wire

2nd digit: protection against liquids

IP	tests	
0		No protection
1		Protected against vertically-falling drops of water (condensation)
2	15°	Protected against drops of water falling at up to 15° from the vertical
3	60°	Protected against drops of rain water at up to 60° from the vertical
4		Protected against projections of water from all directions
5		Protected against jets of water from all directions
6		Protected against jets of water of similar force to heavy seas
7	1 m, 15 cm mini	Protected against the effects of immersion
8	m	Protected against prolonged effects of immersion under pressure
9 9K[1]		Protected against high pressure and temperature water jets

Legrand appliances for domestic applications, once installed, have a degree of protection IP equal to or greater than IP 2XC
1 : In accordance to ISO 20653

Protection against mechanical impact : Index of protection - IK

According to standards IEC 62262 and BS EN 62262

IK	Tests	Impact energy (in Joules)
IK 00		0
IK 01	0.2 kg, 75 mm	0.15
IK 02	0.2 kg, 100 mm	0.2
IK 03	0.2 kg, 175 mm	0.35
IK 04	0.2 kg, 250 mm	0.5
IK 05	0.2 kg, 350 mm	0.7
IK 06	0.5 kg, 200 mm	1
IK 07	0.5 kg, 400 mm	2
IK 08	1.7 kg, 295 mm	5
IK 09	5 kg, 200 mm	10
IK 10	5 kg, 400 mm	20

A product previously classed as IP xx-7 can be assumed to fulfill the conditions of an IP xx - IK 08

This table can be used to ascertain the resistance of a product to an impact given in Joules from the IK code (graduated from 00 to 10).
It can also be used to ascertain the correspondence with the old IP code 3rd digit and the corresponding external "Ag" conditions.

The contents of the Protection Classifications charts are for guidance only. If you have any doubt as to the interpretation of the information contained therein, please refer either to the standard itself or contact Legrand.

Health and Safety at Work, etc. Act. 1974

Statement to Purchasers and Prospective Purchasers

1. Section 6 of this Act provides that manufacturers, designers, importers or suppliers of articles for use at work have a duty to ensure so far as is reasonably practical, that the article will be safe and without risk to health when properly used. An article is not regarded as being 'properly used' if it is used without regard to any relevant information or advice relating to its use made available by the manufacturer, designer, importer or supplier.

2. With regard to these provisions the following is given as a guide to the information which is readily available to you. This information relates to those products detailed in our catalogue(s) or associated literature or may be obtained by specific request to the Company.

3. All products should be installed and maintained in accordance with good engineering practice and relevant British or other applicable standards, regulations for the installation of equipment by the Institute of Electrical Engineers or any other applicable Codes of Practice.

Health and Safety at Work Act

The Electricity at Work Regulations, 1989

1. All installations and maintenance should be carried out within the provision of the above Act and by persons so qualified as defined in the Act.

2. Information and advice on the suitability of our products can be obtained from Legrand Electric Limited on specific request.

For information concerning wiring device standards outside the UK contact :

BSI
Customer Services
09:00 to 17:00 – Monday to Friday
Tel : +44 (0) 20 8996 9001
Fax : +44 (0) 20 8996 7001
Email : cservices@bsi-global.com

CE marking appears on electrical or electronic products from Legrand and enables the circulation of goods outside the UK.

Conditions of sale
Please consult our current price list

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999547 Zucchini XCP busbar product guide 06/2021