

# Wiring accessories

## Recommended quantity of socket outlets for domestic installation

Inadequate installations can occur when not enough socket outlets have been installed or where the existing sockets are located in the wrong areas. This could lead to potentially dangerous improvisations.

The table below summarises the recommendations of the Electrical Installation Industry Liaison Committee (EILC) regarding the minimum number of twin switched socket outlets per room, suitable for domestic installations. This takes into account likely uses and likely trends.

Room	Number of sockets	Room	Number of sockets
Kitchen	4	Landing/stairs	1
Lounge	6	Hall	1
Dining room	3	Garage	2
Double bedroom	3	Store/workroom	1
Single bed-sitting room	3	Central heating boiler point	1

## Wiring circuits for 6AX and 10AX switches

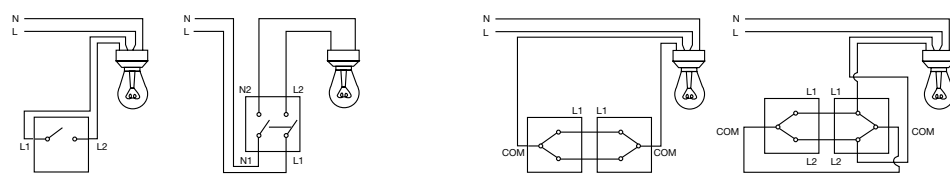


Diagram A – One way circuits

Diagram B – Two way circuits

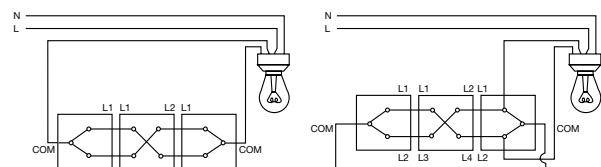


Diagram C – Intermediate circuits

**Note:** 1 way or 2 way switches can be replaced by dimmer switches. Rotary dimmers are 1 way only whilst Push dimmers are 2 way. LV dimmers are suitable for use on the LV input side only.

## Accessories mounting box

Product	Description	Ultimate white moulded	Exclusive white moulded	Ultimate metal plate	Exclusive metal plate
6AX/10AX plate switches	1-2 gang	16mm	16mm	16mm	25mm
	3 gang	25mm	25mm	25mm	25mm
	4-6 gang	25mm	25mm	25mm	25mm
	TP isolator	25mm	25mm	25mm	25mm
Dimmer switches	1 & 2 gang	**16mm/25mm	**16mm/25mm	25mm	25mm
	3 & 4 gang	25mm	25mm	25mm	25mm
Socket outlets	1 gang	25mm*/35mm	25mm	25mm*/35mm	25mm
	2 gang	25mm*/35mm	25mm	25mm*/35mm	25mm
	3 gang		25mm		
Round pin sockets		25mm	25mm	25mm	25mm
RCD socket outlets	1 & 2 gang		25mm		25mm
Fused connection units		25mm	25mm	35mm	25mm
Flex outlet plates		25mm	25mm		
20AX key switches		25mm	25mm	25mm	25mm
20AX DP switches		25mm	25mm	25mm	25mm
32A DP plate switches	1 gang	47mm	47mm		47mm
	2 gang	47mm	47mm	47mm	
45A DP switches	1 gang	47mm	47mm		47mm
	2 gang	47mm	47mm	47mm	
45A DP ceiling switch			47mm		
Cooker connection units		47mm	47mm	47mm	47mm
Cooker terminal box		47mm	47mm		
Shaver sockets		47mm	47mm		47mm
Telephone socket outlets	Master & secondary	25mm	25mm	25mm	25mm
Co-axial socket outlets	Single & twin	25mm	25mm	25mm	25mm
Diplex and triplex		25mm	25mm	35mm	25mm
Satellite socket		25mm	25mm	25mm	25mm
RJ45 & RJ11		35mm	35mm	35mm	35mm

**Note:** Metal clad accessories are supplied complete with a 42mm surface mounted box in the same matching finish. Metal plate accessories are not suitable for mounting on surface moulded pattresses.

\*Dependent upon wiring configuration

\*\*For 16mm flush fitted steel boxes use adaptor plate supplied when mounting 2 Way Ultimate slim line moulded dimmer switches

# Wiring accessories

## Dimmer switches

General Information:

When specifying dimmers it is advisable to obtain as much information as possible to ensure suitability and compatibility of products.

Consider the following:

- Type of lamps/lighting
- Type of control gear used in the light fittings, (if applicable) e.g. type, make and model number of transformer or ballast, etc
- Number of light fittings/load of each dimmer
- Number of circuits/dimmers
- Number of dimmers on each plate
- Number of switching positions for each circuit
- Any requirement for dimming lights from more than one position

### 1 gang plate size

Dimmer modules	Max.each dimmer	Min.each dimmer	Total per plate
1	250W	60W	250W
1	400W	60W	400W
1 (Electronic)	300VA	60VA	350VA
2	250W	60W	500W
2 (Electronic)	200VA	60VA	400VA

Maximum load of 400W for the plate should not be exceeded.

Dimmer modules	Max.each dimmer	Min.each dimmer	Total per plate
1	1000W	100W	1000W
3	250W	60W	750W
4	250W	60W	1000W

Maximum load of 1000W for the plate should not be exceeded.

Schneider Electric mains dimmers are NOT designed for dimming with any form of Low Voltage transformer. For this application a suitably rated Low Voltage Dimmer Switch should be used.

### Maximum permitted loads in Watts for multiple dimmers in a single enclosure

Front plate gang size	2	3	4	6	8	9	12	18	24
Per row (max rating W)	400	480	480	480	480	480	480	480	480
Total plate (max rating W)	400	480	480	740	740	940	940	1440	1800

## Dimmer guidelines

Moulded plate mounted dimmers can generally be used with the supplied pattress to replace standard wall switches (where a 16mm box depth is typically used). For flat plate mounted dimmers, 25mm boxes are required, except for the 1000W Electronic dimmer that requires a 47mm box. All rotary dimmer terminations and wiring are the same as for standard switches, i.e. COM, L2 (and also L1 for two-way dimmers). Rotary one-way dimmers can only be used for switching and dimming from one position. Rotary two-way (push) dimmers can be used to replace any one, (but not both), of the two-way switch circuit, (note that only one dimmer can be used per switch circuit or lamp(s); thus the lights can be switched from more than one position but can only be dimmed from one. With any rotary dimmer, if replacing an existing switch or dimmer, make a careful note of which wires are installed in which terminals on the old unit, and then connect them into the terminals with corresponding markings on the new dimmer. To ensure that plate temperatures are within maximum limits, maximum total connected load for a single size plate is 630W, and for a double size plate is 1000W. For Low Voltage lighting, remember to allow for transformer losses when calculating the total circuit load, typically 15% - 20%.

To use electronic dimmers in 1, 2 or more way circuits the circuit diagrams below and the Important Notes MUST be followed exactly.

### Simulated 'Off - Click'

Recent developments within the industry have resulted in rotary dimmer modules not having the positive 'Off Click' as the dimmer is switched off. This has led to consumers returning product identifying they are not functioning. To counter this Schneider Electric have a 'simulated Off'. The range has been designed to withstand a higher inrush current than others in the market. This inrush is typical when lamps turn on for the lamps 'blow'. Typically this inrush or energy surge can be up to 100 times the normal current being supplied to a lamp. For example the inrush for a 150W lamp could be up to 40NS over 10 milliseconds. A number of dimmer products in the market when tested have a maximum capacity of approximately 20NS. The Schneider Electric product has an equivalent capacity of 50NS. This, therefore means that the Schneider Electric product will last longer within installations, depending on the switching duty. A thermal fuse protects the Schneider Electric module. This will not protect the unit against an inrush but against overloads and short-circuits etc. This fuse is not self restoring or replaceable. It's function is to protect against electrical and fire damage. This requirement was not mandatory in the previous standard and therefore some modules in circulation potentially do not have the safety feature, unlike ours.

### Tungsten/Mains Voltage Tungsten Halogen Lighting

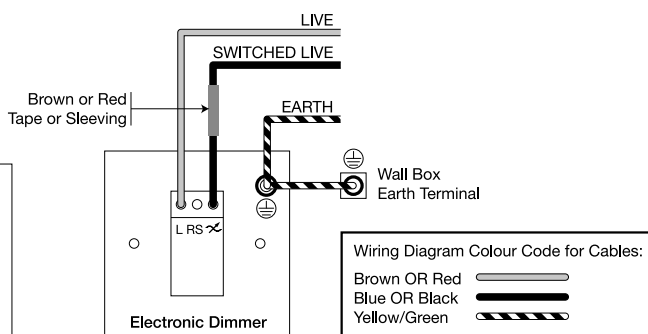
Most Tungsten lamps can be dimmed; these include standard GLS lamps, candle lamps, reflector and mains voltage Tungsten Halogen lamps etc. Tungsten lamps of mains voltage halogen type (GZ10, GU10 or G9) can be dimmed using standard Tungsten dimmers. However, to protect the dimmer, it is important to de-rate the dimmers maximum rating by 50%, (e.g. for dimmer rated as SOW- 400W, it's Tungsten Halogen lamp rating becomes SOW- 200W). This de-rating requirement only applies to Plate and Grid dimmers rated up to 1500W, for other dimmers, observe individual product guidelines. While observing maximum dimmer ratings, also ensure that the connected load is not less than the minimum rating of each dimmer, otherwise the lamps may flicker and the dimmer may fail.

# Wiring accessories

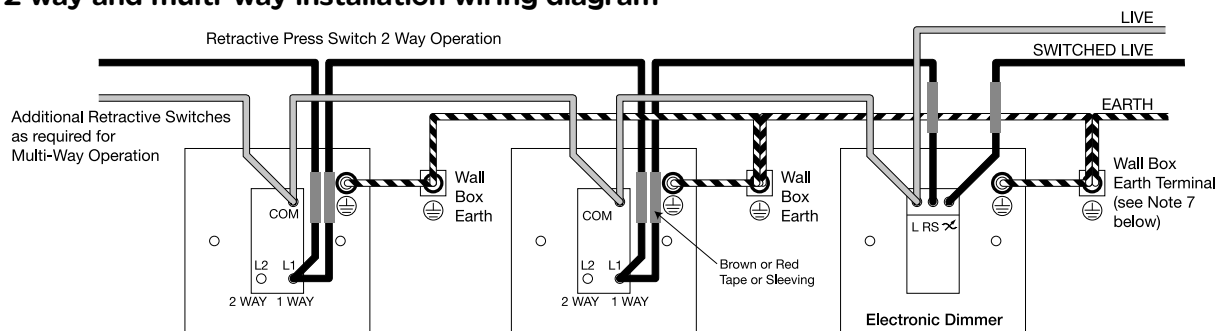
## 1 way installation wiring diagram

**IMPORTANT NOTES - for 1 Way Installation**

1. Read General Installation Safety Instructions before starting work
2. Do not connect any conductor to dimmer terminal marked RS. This is for use with 2 way switching



## 2 way and multi-way installation wiring diagram



### Important notes - for two way and multi - way installation

1. Read General Installation Safety Instructions before starting work.
2. Any existing 2 Way or Intermediate dimmers MUST be replaced with Retractive Press Switches.
3. Any number of Retractive Press Switches may be installed provided total cable length does not exceed 50m.
4. Either 1 Way normally open or 2 Way Retractive Push Switches may be used.
5. If 2 Way retractive switches are used, connect to Common (COM) and normally open L1 (1 WAY) terminals as shown. Do NOT use the L2 (2 WAY) terminal.
6. If replacing an existing 2 Way switch, cut back and insulate the unused 2 way wire previously connected to the L2 (2 way) terminal.
7. All Metal Wall Boxes and Metal Plate Switches must be earthed.
8. Do NOT connect more than 1 Dimmer in the same circuit,
9. Remove label covering centre terminal on rear of dimmer. This terminal is to be connected to Retractive Switch as shown in wiring diagram. Do NOT connect any other conductor to this terminal.

### Circuit, lamp and other equipment compatibility

To ensure optimum performance and reliability is obtained from dimmer switches the following recommendations and precautions should be followed as appropriate to the type of dimmer:

## General recommendations

### Circuits

It is recommended that all lighting circuits incorporating dimmers be protected by a 6A or up to a 10A maximum Type B miniature circuit breaker.

### Tungsten halogen lamps

When using mains voltage Tungsten Halogen lamps, it is essential that these types of lamp incorporate internal fuses or are constructed such that arcing at the end of life cannot occur and are from quality lamp manufacturers. The use of inferior low quality lamps is not recommended and will invalidate any guarantee or warranty supplied with the dimmer switch.

### Dimmable low voltage transformers

- Always check transformer compatibility BEFORE installation and if in doubt always check with the dimmer Helpline or the transformer manufacturer. It is recommended that electronic dimmable transformers be loaded to at least 70% of their rated maximum wattage.
- When running multiple lamps on dimmable electronic transformers ensure that all lamps are working correctly. Replace failed lamps as soon as possible as a single failed lamp may cause flickering of all other lamps connected to the same dimmer.
- Do NOT mix electronic and magnetic transformers on the same dimmer switch.
- It is recommended that a maximum number of 5 Low Voltage transformers only should be connected to an individual dimmer switch.

## Electronic dimmers

### Circuits

- For two-way or more switching ONLY use retractive switches. Do NOT use two-way switches.
- The live supply for retractive switches must come from the live (L) connection of the dimmer.

### Lamps

- Do NOT use with Compact Fluorescent Lamps (CFL) even if marked "dimmable", Fluorescent lamps and Light Emitting Diode (LED) lamps of any description or motor loads.

### Dimmable low voltage transformers

- These Electronic dimmer switches, except the 1kW, use leading edge (phase delay) dimming technology and must therefore be used with compatible good quality dimmable electronic or wire-wound (magnetic) transformers. Trailing edge (phase cut) dimmable transformers must not be used.
- The 1kW dimmer switch uses trailing edge (phase cut) dimming technology and must therefore be used with compatible good quality dimmable electronic transformers. Do not use the 1kW dimmer with magnetic transformers.

# Wiring accessories

## Rotary and 2 way (push) dimmers

### Circuits

■ Only use two-way (push) dimmers in two-way switching circuits. Only use one two-way dimmer in a two-way switching circuit.

### Lamps

- These dimmer switches are suitable for dimming incandescent lamps and dimmable CFL lamps only and are NOT to be used with Fluorescent lamps, Light Emitting Diode (LED) lamps of any description or motor loads. Use of non-dimmable CFL lamps may permanently damage the dimmer or the lamp and will invalidate any guarantee or warranty supplied with the dimmer switch.
- It is recommended that a maximum number of 5 dimming CFL lamps only should be connected to an individual dimmer switch.

### Dimmable low voltage transformers

- Only use Low Voltage dimmers with transformers. Do not use mains voltage dimmers.
- The Low Voltage dimmer switches use leading edge (phase delay) dimming technology and must therefore be used with compatible good quality dimmable electronic or wire-wound transformers. Trailing edge (phase cut) dimmable transformers must not be used.

## Co-Axial and Satellite sockets

### Non isolated

Non-isolated products are intended for direct connection to a single or two separate TV/FM aerial downloads. These units are not designed for use in multi outlet systems.

Single TV/FM outlet for connection to a single TV or FM coaxial aerial lead.

Twin outlet for connection to each of two separate TV/FM, coaxial aerial leads.

## Diplex and Triplex

### Performance

#### Diplex

TV/FM diplex units for connection to a single coaxial aerial lead with combined TV and FM signals.

The connector standard IEC 169-2 plug for TV and IEC 169-2 socket for Radio.

#### Triplex

TV/FM/SAT triplex unit for connection to a single coaxial aerial lead with combined TV, FM and satellite signals.

TV: 470-860MHZ

Radio: (FM) 87.5 – 108 MHz and (DAB) 217.5 – 230 MHz.

Satellite: DC – 200kHz and 950-2300MHz.

The connector standard is 'f' for satellite, IEC 169-2 plug for TV and IEC 169-2 socket for Radio.

## Telephone socket outlets

It is legal for a contractor to install a secondary telephone socket with associated wiring into house-holds with single exchange lines. The contractor may install a secondary socket and wire up to the master socket and wiring to the exchange. This does not include wiring the actual master socket or to the exchange itself. This final connection must be made by an approved installer.

For commercial and industrial installations a PBX (or PABX) internal exchange or 'intelligent' telephones are often fitted. In this case, the contractor may install all of the equipment except for the PBX unit installation. Again this must be carried out by a BSI approved installer and the interface between the PBX/PABX internal system and the incoming external lines must be connected by British Telecom.

Schneider Electric telephone sockets are suitable for use in accordance with BS 7671, formerly the 16th Edition of the IEE Wiring regulations and should be wired in accordance with the diagrams shown.

### Example of typical connection

1 Connection to 2 & 5

2 Earth recall (when used) connect to terminal 4

3 Connection to terminal 3 is not usually required

**NB** (a) Standard 4 wire cable is shown below as incoming cable. If terminals 1 and 6 (normally unused) are required, 6 wire cable may be used.

(b) All socket outlet connections are parallel – any number of socket outlets can be connected, but it is recommended that only a maximum of 5 telephones be used at any one time on one line.

