

## Instruction Leaflet Powerpact 4

The Schneider Electric range of wall and floor mounted Powerpact 4 panelboards is designed, manufactured and tested to BS EN60439-1. The structures are rigid sheet steel finished in a cream colour epoxy powder (RAL 9001).

All the boards contain a unique connection system that ensures that all busbar/breaker connections are tightened to the correct torque. The system comprises a tightening bolt head which shears off when the correct torque is reached. Facilities are provided to enable the breaker to be repositioned at a later time if so required.

The breaker range comprises single pole, single pole with switched neutral, double pole, triple pole, three pole with switched neutral and four pole. Incoming device ratings up to 1600A and outgoing ratings up to 630A.

The extremely flexible board design allows 1, 2, 3 and 4 pole breakers to be positioned in any order on the busbar stack thus allowing maximum use of the available space and also allowing breakers feeding associated loads to be positioned together.

The full range of Compact NSX moulded case circuit breakers includes a wide range of breakers for special applications, higher breaking capacities, additional ratings and adaptations including rotary handles and motor mechanisms for remote operation. Most of these breakers, of ratings up to 630A, can be adapted for use in the Powerpact 4 panelboards.

### Safety

The equipment must be installed and maintained by competent personnel in accordance with the appropriate statutory regulations and codes of practice e.g. Electricity at Work Regulations, IEE. Wiring regulations (BS7671) Etc.

Ensure the source is isolated elsewhere, locked off and labelled prior to work being carried out on the board.

It is the responsibility of the installer to ensure that all electrical connections are tight and satisfactory earth continuity has been achieved.

**Following completion of installation these instructions should be left with the equipment/end user.**



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Fig 1

## 1 Powerpact 4 250A powerboard

The Powerpact 4 250A powerboard can be mounted horizontally or vertically to allow maximum flexibility of cable entries. Do not drill on busbar elevation, i.e. top of enclosure. To allow the installation of the Compact NSX MCCB or switch disconnecter a factory fitted cassette is added to the device. The board is also available with cut-outs to accept meters. For each 3 or 4 pole breaker to be metered a current transformer and a meter should be ordered separately. Fit the meters according to section 8.2 d-e. Instead of an auxiliary busbar a terminal bar is supplied.

### 1.1 Fitting an incoming MCCB or switch disconnector

The incomer can be situated anywhere along the busbar stack, however we recommend fixing on the left (if board is mounted horizontal). Ensure that the main incomer label is fitted adjacent to the incoming device. Remove the front cover from the panelboard by loosening the 4 captive screws.

Check if the jaws of the cassette on the device are fully open (Fig 1).

- a. Place the incoming device onto the mounting plate. Push the cassette onto the bars (Fig 2).
- b. Fix the device to the mounting plate using an M5 bolt (Fig 3).
- c. Tighten shear head bolts on cassette using a 17mm A/F socket or ring spanner (Fig 4). The top half of the hexagon head will shear off when the required tightening torque is reached.
- d. Note: Prepare yourself for this action and ensure you do not slip when the bolt head shears off.
- e. Place the terminal shield on the incoming device and screw down with the two fixing screws (Fig 5).
- f. If adjustable MCCBs are fitted set them according to the setting guide in section 12.
- g. Reverse procedure to remove an incoming device. For removing or refitting an incoming device with sheared off bolts use a 17mm 12 point socket (for refitting in combination with a torque wrench set to 20 Nm).

### 1.2 Fitting outgoing MCCBs

Fitting outgoing devices is the same as incoming devices. See 1.1.

### 1.3 Blanking plates

- a. Any unused outgoing way must be shrouded with a blanking plate. Blanking plates should be fitted before refitting door and cover assembly. Push the blanking plate into the slot on top of the busbar shrouding, which runs down the centre of the busbars on all unused outgoing ways (Fig 6).
- b. Clip the other end of the blanking plate into the mounting plate (Fig 7).



Fig 2



Fig 3



Fig 4



Fig 5



Fig 6



Fig 7

## 2 Powerpact 4 250A panelboard

The Powerpact 250A panelboard will accept top or bottom entry main cable without modification (The board has to be inverted for top entry). The board is designed to accept either 3 or 4 pole incoming devices can be a MCCB or a switch disconnecter. To allow the installation of the Compact NS MCCB or switch disconnecter a factory fitted cassette is added to the device.

### 2.1 Fitting an incoming MCCB or switch disconnecter

- Remove incoming transparent shroud fitted at the bottom right of the board (Fig 8).
- follow step 1.1 b-e.
- Connect the incoming cable using 25mm max width crimps and M6/M8 bolts. The required tightening torques for the bolts are: 100A M6 10Nm and 160/250A M8 15Nm.
- If adjustable MCCBs are fitted set them according to the setting guide in section 12.
- Reverse procedure to remove an incoming device. For removing or refitting an incoming device with sheared off bolts use a 17mm 12 point socket (for refitting in combination with a torque wrench set to 20 Nm).



Fig 8

### 2.2 Fitting outgoing MCCBs

- Check if the jaws of the cassette on the device are fully open (Fig 1)
- Align the circuit breaker into position and push onto bars (Fig 9).
- Fix the device to the mounting plate using an M5 bolt (Fig 10).
- Tighten shear head bolts on cassette using a 17mm A/F socket or ring spanner (Fig 11). The top half of the hexagon head will shear off when the required tightening torque is reached.
- Note: Prepare yourself for this action and ensure you do not slip when the bolt head shears off.
- Connect the cables using 25mm max width crimps. Tightening torque for the bolts are: 100A M6 10Nm and 160/250A M8 15 Nm.
- If adjustable MCCBs are fitted set them according to the setting guide in section 12.
- Reverse procedure to remove an outgoing MCCB. For removing or refitting an outgoing MCCB with sheared off bolts use a 17mm 12 point socket (for refitting in combination with a torque wrench set to 20 Nm).



Fig 9



Fig 10

### 2.3 Blanking plates

Any unused outgoing way must be shrouded with a blanking plate. See section 1.3 for fitting blanking plates.

## 3 Powerpact 4 400/630A panelboard

The Powerpact 400/630A panelboard can be inverted for top entry. The board is supplied with a spare set of labels to correctly label the board. Ensure that a top entry incoming device is selected. The board is designed to accept either 3 or 4 pole incoming devices.

The incomer rating can be a 250A, 400A or 630A and can be a MCCB or a switch disconnecter. The incoming device can also be a direct incomer kit. To allow the installation of the Compact NSX MCCB or switch disconnecter a factory fitted cassette is added to the device.



Fig 11

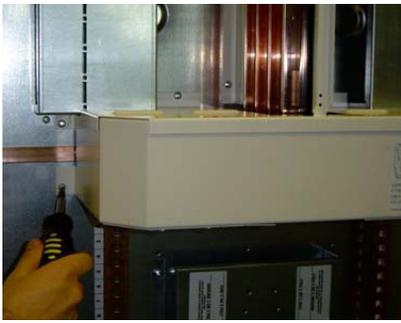


Fig 12

### 3.1 Fitting an incoming MCCB or switch disconnector

- Remove the front cover from the panelboard by loosening the 4 captive fixing screws.
- Remove the bottom part of the incoming terminal trim by removing the fixing screws (Fig 12). Leave the top part in place.
- Check if the jaws of the cassette on the device are fully open (Fig13)
- Place the incoming device onto the mounting plate (toggle will be “down” in OFF position. With a bottom entry device the cassette will be at the top and with a top entry device the cassette will be at the bottom of the device.) Align the device as label on plate according to rating and top or bottom entry (Fig 14). The toggle of the device will be in the middle of the mounting plate
- Push device fully onto the busbar (Fig 15) and fix to the mounting plate (Fig 17) using fixings according to the table below and Fig 16.

#### Fixing holes

Incomer	Bottom Entry	Top Entry
NSX100/160/250 3P	3 (tapped hole)	2 (tapped hole)
NSX100/160/250 4P	1 & 3 (tapped hole)	2 & 4 (tapped hole)
NSX400/630 3P	7 & 8 (captive nuts)	7 & 8 (captive nuts)
NSX400/630 4P	5 (screw) & 8 (nut)	10 (screw) and 8 (nut)



Fig 13

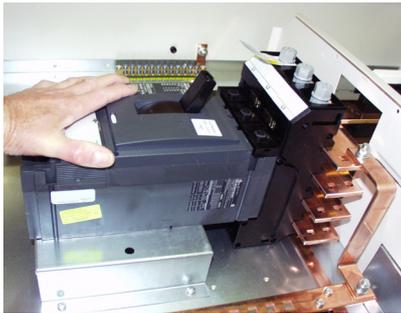


Fig 14

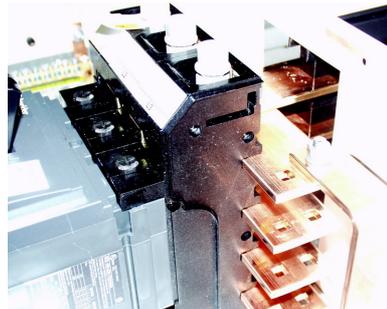


Fig 15

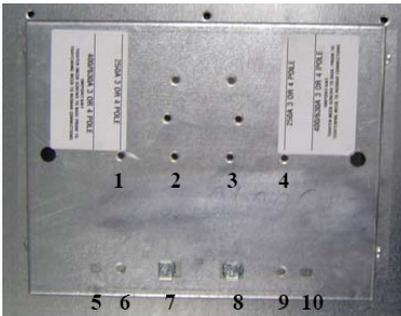


Fig 16



Fig 17

- Tighten shear head bolts on cassette using a 17mm A/F socket or ring spanner (Fig 18). The top half of the hexagon head will shear off when the required tightening torque is reached.
- Note: Prepare yourself for this action and ensure you do not slip when the bolt head shears off.**
- The incoming terminal trim is ready to be fitted for a 250A 3 pole breaker. When using a different incomer the tabs of the trim should be modified according to the table and Fig 19. Remove the tabs by snipping with a pair of cutters or by using a small hacksaw. It may be necessary to file off any rough edges once the tabs have been removed.



Fig 18



Fig 19

<b>Tab to be removed</b>		
<b>Incomer</b>	<b>Bottom Entry</b>	<b>Top Entry</b>
NSX100/160/250 3P	None	None
NSX100/160/250 4P	1 & 2	4 & 5
NSX400/630 3P	1 & 4	1 & 4
NSX400/630 4P	1, 2, 3 & 4	1, 4, 5 & 6

- i. Refit the incoming terminal trim with the fixing screws (Fig 20).
- j. Place the terminal shield on the incoming device and screw down with the two fixing screws (Fig 21).
- k. If adjustable MCCBs are fitted set them according to the setting guide in section 12.

Reverse procedure to remove an incoming device. For removing or refitting an incoming device with sheared off bolts use a 17mm 12 point socket (for refitting in combination with a torque wrench set to 20 Nm).

### 3.2 Cover adaptation for 400/630A incomers or incomers with ammeter or VIGI unit fitted

The front cover is trimmed to fit an NSX 100/160/250A 3 or 4 pole incomer. If this incomer is fitted with an ammeter or VIGI unit the plate below the aperture (held by 2 screws) should be removed. If a 400/630A incomer is fitted the complete aperture dish (held by 4 screws) should be removed. If this incomer is fitted with an ammeter or VIGI unit the angled filler (2 screws) should be removed as well.

### 3.3 Fitting a direct incoming kit (Fig 22)

- a. Remove the front cover from the panelboard by loosening the 4 captive fixing screws.
- b. Remove the trim covering the incoming terminals by following the next 4 steps:
  - Remove fixing screws from the bottom part of the trim (Fig 12).
  - Remove the bottom part of the trim.
  - Remove top part of the trim.
  - Remove the incomer mounting tray.
  - Retain all hardware
- c. Assemble the insulator mouldings to support using 4 bolts M10 x 16mm long, plain washers and lockwashers and tighten to 35Nm. Assemble the unit to the panelboard base using the M6 x 12mm long thread forming screws provided in the kit.
- d. Remove the coach bolt securing the left hand neutral link to copper busbar and discard.
- e. Assemble copper connectors to insulators with 4 bolts M10 x 20mm long, plain washers and lockwashers and tighten finger tight.
- f. Secure incoming copper busbars to incoming flags with 7 off M8 coach bolts, plain washers and lockwashers. Secure incoming neutral link to top copper busbar with M8 x 30mm hexagonal bolt, plain washers and lockwasher, as well as the M8 coach bolt, with the plain washer, lockwasher and nut to underside of copper busbar. Ensure coach bolts, plain washers, lockwashers are assembled such that on all connections nuts are on top. Tighten all bolts, M8 coach bolt 11Nm, M10 bolts 25Nm and M8 x 30mm hexagon head bolt 27Nm.
- g. Assemble direct shroud plate and side blanking plate to direct incomer shroud using 11 off M5 x 12mm long thread forming screws provided in the kit. (If a neutral connection to the existing panelboard Neutral link is required modify side blanking plate).



Fig 20



Fig 21

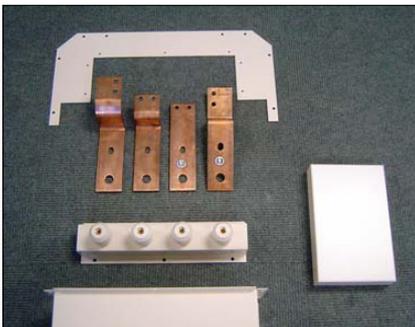


Fig 22

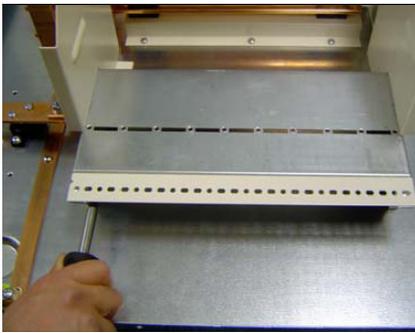


Fig 23

- h. Re-fit top part of trim removed in 3.3b and the trim covering the incoming copper busbar using existing hardware. (Remove side filler plates from the incoming terminal trim (Fig 19 plates 1-6))
- i. Panelboard gland plate can be removed and machined to comply with incomer type. (e.g.:cable or copper)
- j. Make incoming connections.

**Note: Observe phase marking to ensure correct phase orientation.**

- k. Fit direct entry incoming connection shroud and secure with 4 off M5 x 12mm self tapping screws in the base of the panelboard and 8 off M5 x 12mm self tapping screws previously removed in 3.3b step 2.
- l. Continue fitting outgoing ways as per installation instructions provided in this leaflet.
- m. Remove MCCB adapter dish and filler plate from cover incoming aperture. Replace with direct entry adapter dish supplied with the kit.

### 3.4 Fitting outgoing MCCBs up to 250A without ammeter or VIGI unit

- a. Follow step 2.2 a-d.
- b. Place the terminal shield on the outgoing MCCB and screw down with the two fixing screws.
- c. If adjustable MCCBs are fitted set them according to the setting guide in section 12.

Reverse procedure to remove an outgoing MCCB. For removing or refitting an outgoing MCCB with sheared off bolts use a 17mm 12 point socket (for refitting in combination with a torque wrench set to 20 Nm for 250A).

### 3.5 Blanking plates

Any unused outgoing way must be shrouded with a blanking plate. See section 1.3 for fitting blanking plates.

### 3.6 Fitting outgoing MCCBs above 250A or with ammeter or VIGI unit using shrouding kit

- a. Bolt one of the drilled mounting rails to the side of the mounting plate where the outgoing breakers are to be fitted. The notch indicated should be towards the incoming section of the panelboard (Fig 23). The shrouding kit contains a left and right hand rail.
- b. Push the clip on nuts onto the mounting rail to allow a set of fixing points for the breaker. To determine the position for the clip on nuts it is recommended to put the breaker upside down on the mounting plate (Fig 24).
- c. Position the breaker and accessories on the mounting plate and locate the additional fixing screws in the clip on nuts. Loosely tighten the fixing screws to hold the device in place. Ensure that the screws go into the clip on nuts (Fig 25).
- d. Tighten shear head bolts on cassette using a 17mm A/F socket or ring spanner (Fig 11). The top half of the hexagon head will shear off when the required tightening torque is reached.

**Note: Prepare yourself for this action and ensure you do not slip when the bolt head shears off.**

- e. Fully tighten the fixing screws mentioned in step c.
- f. Place the terminal shield on the outgoing MCCB and screw down with the two fixing screws.
- g. If adjustable MCCBs are fitted set them according to the instructions supplied with the breaker.

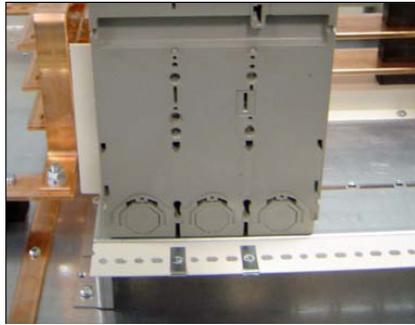


Fig 24



Fig 25



Fig 26



Fig 27



Fig 28



Fig 29

Reverse procedure to remove an outgoing MCCB. For removing or refitting an outgoing MCCB with sheared off bolts use a 17mm 12 point socket (for refitting in combination with a torque wrench set to 20 Nm for 250A and 28Nm for 400/630A).

### 3.7 Shrouding kit for cover adaptation for outgoing MCCBs above 250A or with ammeter or VIGI unit

- Remove the terminal cover from the front cover by unfastening the two retaining bolts (Fig 26 & 27).
- Fix the grooved metal strip to the front cover using the same four fixing holes from the terminal cover (Fig 28 & 29).
- Cut the blanking plates to fit the remaining space left by the circuit breaker according to the table (Fig 30 & 31).
- Clip the blanking plates between the "A" frame and the rim of the front cover (Fig 32).
- Check that the blanking plates do not foul circuit breakers or accessories and that all blank spaces are filled (Fig 33).

Device	Blanking Plate
Breaker =< 250A without auxiliary units	1 (No cutting)
Breaker =<250A with Vigi/measurement/indication module or breaker > 250A without auxiliary units	2
Breaker > 250A with Vigi/measurement/indication module	3



Fig 30

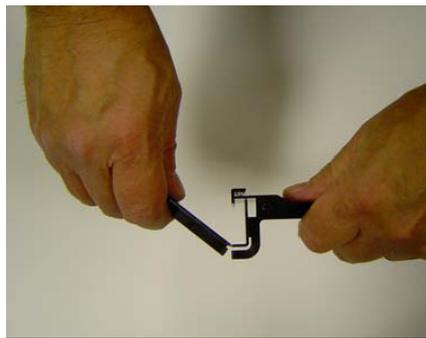


Fig 31

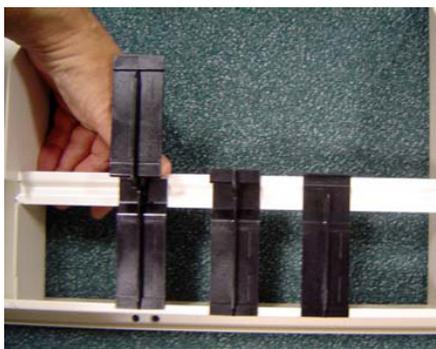


Fig 32



Fig 33

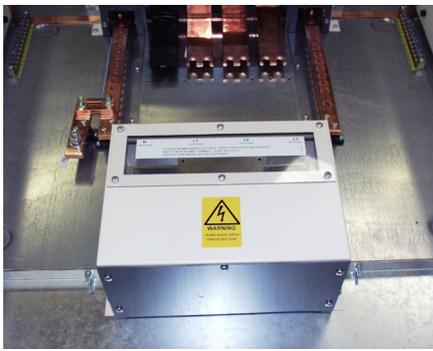


Fig 34

## 4 Powerpact 4 800A panelboard

The Powerpact 800A panelboard is supplied as a top or bottom entry version. Both are supplied with a (top or bottom) cable extension box. The board is designed to accept either 3 or 4 pole incoming devices. The incomer can be a 800A MCCB or switch disconnecter.

### 4.1 Fitting an incoming MCCB or switch disconnecter

Phase rotation is always N, L1, L2 and L3 reading from left to right whether the board is top or bottom entry.

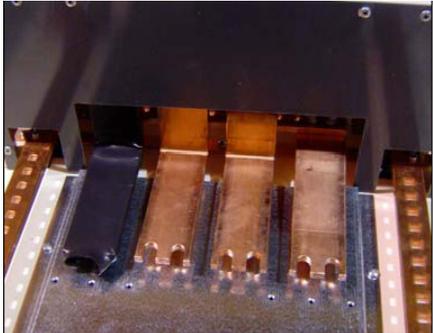


Fig 35



Fig 36

- a. Remove the front covers from the panelboard
- b. Remove the incoming cable shroud (Fig 34).
- c. Only if fitting a 4 pole incomer remove the sleeving from the end of left hand connection. Do not attempt to remove all the sleeving (Fig 35).
- d. Place the breaker on the mounting plate such that the toggle will be "down" in OFF position. For a bottom entry board the busbar connections will be at the bottom of the breaker and for a top entry board on the top.
- e. Connect a 3 pole breaker to the three right hand connections. Connect a 4 pole breaker to all four connections. Slide the breaker under the connections so that the connection studs locate into the slots in the ends of the bars (Fig 36).
- f. Secure the breaker using the fixing screws supplied with the breaker.
- g. Fit washers and nuts to the breaker terminal studs. Tighten to 50 Nm.
- h. Fit plastic terminal shield over the connections.
- i. Fit the incoming cable connectors to the other end of the breaker. Tighten to 50Nm. Then slide the flexible phase separators into the slots at the end of the breaker.
- j. When the incomer is a 3 pole device, remove one of the tabs from the incoming cable shroud by bending. Which one to remove depends on the entry direction of the incoming cable.
- k. When the incomer is a 4 pole device both tabs should be removed (Fig 37).
- l. Refit the incoming cable shroud.
- m. If adjustable MCCBs are fitted set them according to the setting guide in section 12.

Reverse procedure to remove an incoming device.



Fig 37

### 4.2 Cover adaptation for incomers

If a 3 pole incomer is used the filler strip should be fitted to the left hand side of the front cover (Fig 38). If a 4 pole incomer is used the filler strip should be removed and discarded.

### 4.3 Fitting outgoing MCCBs up to 250A without add-on ammeters or Vigi units

- a. Follow steps 2.2 a-d
- b. Place the terminal shield on the outgoing MCCB and screw down with the two fixing screws.
- c. If adjustable MCCBs are fitted set them according to the setting guide in section 12.

Reverse procedure to remove an outgoing MCCB. For removing or refitting an outgoing MCCB with sheared off bolts use a 17mm 12 point socket (for refitting in combination with a torque wrench set to 20 Nm for 250A and 28Nm for 400/630A).



Fig 38



Fig 39

#### 4.4 Blanking plates

Any unused outgoing way must be shrouded with a blanking plate. See section 1.3 for fitting blanking plates.

#### 4.5 Fitting outgoing MCCBs above 250A or with ammeter or VIGI unit using shrouding kit

Follow the steps in section 3.6



Fig 40

#### 4.6 Shrouding kit for cover adaptation for outgoing MCCBs above 250A or with ammeter or VIGI unit

Follow the steps in section 3.7

### 5 Powerpact 1600A panelboard

The Powerpact 1600A panelboard is supplied as a top or bottom entry version. The board is supplied without the incoming MCCB fitted. It will accept either a 3 or 4 pole incoming device. The incomer can be a NS1250 or a NS1600 MCCB or switch disconnecter. The board is supplied with a PM750MG multifunction meter to monitor the incoming supply. This meter is set up for the 1600/5 current transformers fitted on the bars and to suit a 415V 3 phase 4 wire 50Hz supply. For further information refer to the PM750MG instruction leaflet supplied. Leave the leaflet with the end user.



Fig 41

#### 5.1 Fitting an incoming MCCB or switch disconnecter

Phase rotation is always N, L1, L2 and L3 reading from left to right whether the board is top or bottom entry. These instructions and photos show a bottom entry arrangement.

- Remove the front covers from only the incoming section.
- If fitting a 4 pole incoming device remove the neutral link assembly. Retain the T connectors and hardware. Discard the flat copper links and insulators. (Fig 39)
- Remove the steel packing piece used to brace the vertical busbars during transit.
- Fit the incoming device to the mounting plate using the 4 bolts provided so that the connections align with the busbars in the board (Fig 40).
- Fit the T connectors between the breaker and the vertical busbars (Fig 41). Tighten connections on the breaker to 50Nm and the connections to the vertical bars to 30Nm.
- Fit the T connections and cable connection plates to the bottom of the breaker (Fig 42 & 43). Fit the threaded insulated bar between the connections for added bracing (Fig 44).
- Refit front covers when main cables have been terminated.
- Set up the control unit on the breaker in accordance with section 12.

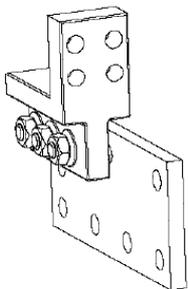


Fig 42



Fig 43

#### 5.2 Fitting outgoing MCCBs

- Remove the complete front cover assembly from the outgoing breaker section.
- Check if the jaws of the cassette on the device are fully open (Fig 1).
- For 400A and 630A breakers fit 2 off M5 square captive nuts into the vertical slot and slide to the required position.
- Align the circuit breaker into position and push onto bars (Fig 9).
- Fix the device to the mounting plate using an M5 bolt (Fig 10) or in case of a 400A and 630 A breaker using 2 M5 bolts screwed into the captive nuts.

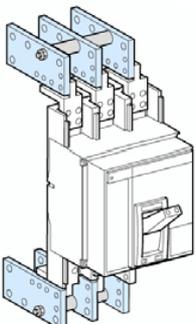


Fig 44

- f. Tighten shear head bolts on cassette using a 17mm A/F socket or ring spanner (Fig 13). The top half of the hexagon head will shear off when the required tightening torque is reached.

**Note: Prepare yourself for this action and ensure you do not slip when the bolt head shears off.**

- g. If adjustable MCCBs are fitted set them according to the setting guide in section 12.

Reverse procedure to remove an outgoing MCCB. For removing or refitting an outgoing MCCB with sheared off bolts use a 17mm 12 point socket (for refitting in combination with a torque wrench set to 20 Nm).

### 5.3 Cover adaptation for 250A outgoing MCCBs with ammeter or VIGI unit and for 400/630A MCCBs

For 250A MCCBs with ammeter or Vigi unit remove the flat part of the perforated sheet from the front cover with a hacksaw (Fig 45).

For 400/630A breakers remove the flat part and the section at right angles from the front cover with a hacksaw. (Fig 45).

For MCCBs up to 250A without ammeter or Vigi unit there is no cover adaptation required.

### 5.4 Blanking plates

Any unused outgoing ways must be shrouded with a blanking plate. See section 1.3 for fitting blanking plates.

### 5.5 Neutral Barrier

This barrier assembly offers additional protection (in a Form 4) situation to the neutral bar. It has been designed to be used in the following products:-

MG16CE4 and MG16CEM4

#### Installation

For ease of installation the M6 cage nuts are already installed in the frame in top and bottom positions depending on whether you have a top (fig 46) or bottom (fig 47) entry board.

#### Fitting to MG16CE4

These products do not have the auxiliary busbar fitted as in figs 46 & 47. Therefore two horizontal supports must be used.

- Assemble supports to frame using 4 x M6 x 16 screws.
- Clip M4 cage nuts to horizontal supports. Refer to figs 46 & 47 for approximate positions.
- Fix clear plastic shield to horizontal cross supports using M4 fixing hardware provided.

#### Fitting to MG16CEM4

These products have the auxiliary busbar fitted as in figures 46 & 47. Therefore only one horizontal support will need to be used.

- Assemble support to frame using 2 x M6 x 16 screws.
- Clip M4 cage nuts to horizontal support. Refer to fig 46 & 47 for approximate positions.
- Remove top/bottom fixing of auxiliary busbar and retain.
- The clear plastic shield can now be slid into position underneath the auxiliary busbar.
- Fix plastic shield to horizontal supports using M4 fixing hardware provided. Replace fixing for auxiliary busbar.

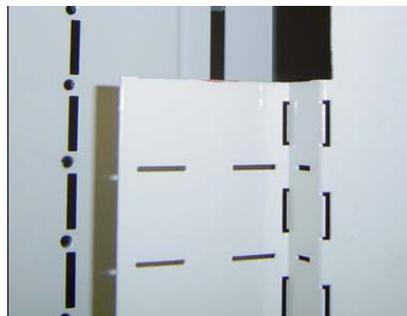


Fig 45

250A MCCB with ammeter  
or Vigi unit

400/630A MCCB



Fig 46

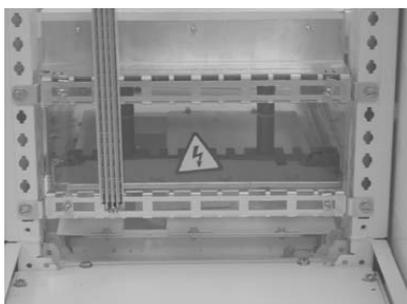


Fig 47

## 5.6 1600A 14 Way Extension

The Merlin Gerin Powerpact 4 1600A panelboard has facility for 14 - 250A outgoing ways (42 single pole modules). The panelboards can be extended to a further 14 - 250A ways by the addition of an extension cubicle. It is essential that the correct extension cubicle is fitted.

MG16C14 can only be extended using MG16CE14

MG16C14T can only be extended using MG16CE14T

It is recommended that a cable extension cubicle MG16CEX4 is fitted to give adequate space for the outgoing cables.

Fitting the extension panel

- a. Remove left hand covers from existing panelboard and retain for future use.
- b. Butt new extension panel up to existing board and bolt sections together using hardware provided. Fix to floor as required.
- c. Join the horizontal main busbars together using the linking kits supplied. A separate instruction leaflet is supplied showing the positioning of these links. Tighten bolts as instructed.
- d. Link the main earth bars using the link provided.
- e. Fit cable extension cubicle, as required, using hardware supplied and fix to floor.
- f. After cabling, fit plinth covers.
- g. Refit the side covers to the extreme left hand end of the board.

## 6 Extension boxes

### 6.1 Bottom extension box for 13SP 250A powerboard

- a. Remove the bottom gland plate from the powerboard and the extension box.
- b. Invert the extension so that the open end faces the open end of the powerboard.
- c. Drill holes of a sufficient size in the bottom of the extension box (sealed end) to allow incoming or outgoing cables to be glanded off.
- d. Align the open ends of the powerboard and the extension box.
- e. Drill aligning holes in each corner of the two units (existing gland plate holes may be enlarged to help with alignment).
- f. Join the two units with bolts, nuts and washers of a suitable size.
- g. Mount the assembly in the desired position.
- h. Ensure that all foreign bodies are removed from the assembly interior.
- i. Fit incoming and outgoing devices as described in this leaflet.
- j. Gland off and terminate incoming or outgoing cables as necessary.

### 6.2 Bottom extension box for 17SP 250A powerboard and side extension box for 13 and 17SP 250A powerboard

- a. Determine the side of the board through which cables are to be passed.
- b. Drill or cut holes which are of a sufficient size to allow cables to be passed through and bent on to incoming or outgoing devices.
- c. Determine which side of the extension box will be butted against the powerboard.
- d. Drill or cut holes in the box which are of the same size and alignment with that of the board.
- e. Drill or cut holes in the box to allow incoming or outgoing cables to be glanded off (the gland plate on the extension box may be removed for drilling if glanding is necessary on this side of the board.)

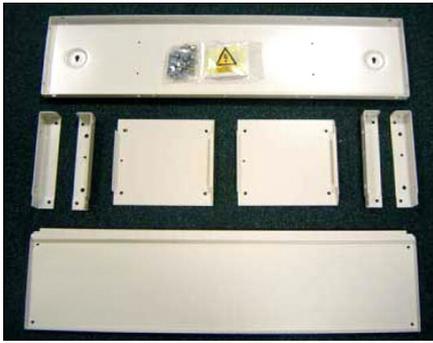


Fig 48

- f. Mount the powerboard in the desired position.
- g. Mount the extension box against the powerboard such that the cable entry holes align.
- h. Secure the extension box.
- i. Ensure that all foreign bodies are removed from the assembly interior.
- j. Fit incoming and outgoing devices, as described in this leaflet
- k. Gland off and terminate incoming or outgoing cables as necessary.  
Note: Where cables pass through cut or drilled metal work it should be ensured that protection against chafing is provided using grommets or similar.

### 6.3 Top/bottom extension box 200mm for 250A, 400/630A and 800A panelboard



Fig 49

- a. Remove the front cover from the panelboard by loosening the 4 captive screws.
- b. Remove the gland plate from the top or the bottom of the panelboard by loosening and removing the 4 coach bolts from the corner brackets and the screws retaining the gland plate to the base plate. Retain the gland plate and hardware.
- c. Assemble to the extension box base using the 4 corner brackets, 2 sides, 8 coach bolts, 8 star serrated washers and 4 plain washers (Do not fit the extension box cover) (Fig 48). The bolts are put in the short sides of the extension box. (The holes in the top and bottom are used for fitting the box to the board and to fit the gland plate.) The plain washers must be put on the bolts adjacent to the cover. Serrated washers are put on all bolts. Tighten bolts to finger tightness. (Fig 49)
- d. Assemble extension box base to the panelboard with 2 off M6 bolts and 4 coach bolts provided. Fit a serrated washer on to the coach bolts closest to the back of the board and a serrated washer and a plain washer to the bolts closest to the front of the board. Ensure keyhole slots in board are as extension box. Tighten bolts to finger tightness. (Fig 50)
- e. Assemble cover screws, spring washer and spacer to cover.(Fig 51)
- f. Ensure that the extension box cover fits to the corner brackets and then tighten all coach bolts attaching the extension base to the panelboard and the corner brackets. Tighten coach bolt nuts to 5.6Nm and the M6 bolts to 11Nm.
- g. Remove the extension box cover and refit the panelboard gland plate to the open end of the extension box using the original coach bolts, washers etc. and a new M5 x 12mm thread forming screw. Ensure serrated washer is under the head of the thread forming screw. Tighten coach bolt nuts to 5.6Nm.
- h. Refit extension box cover and tighten cover screws.
- i. Refit the panelboard front cover and tighten cover screws.

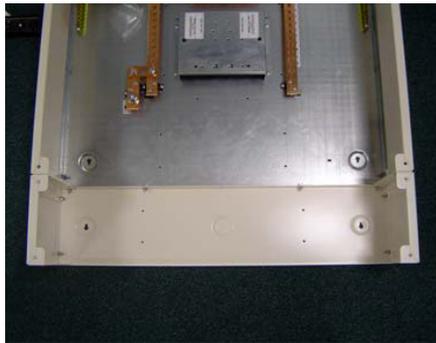


Fig 50

### 6.4 Side extension box for 400/630A and 800A panelboard



Fig 51

- a. Remove the front cover from the panelboard by loosening the 4 captive screws.
- b. Remove side plate from left or right hand side of the panelboard by loosening and removing 4 coach bolts from corner brackets and the screws retaining it to the base plate. Remove earth bolt and its associated hardware. Retain the gland plate and hardware.
- c. Assemble to the extension box base using the 4 corner brackets, 2 sides, 8 coach bolts, 8 serrated washers and 4 plain washers (Do not fit the extension box cover) (Fig 49). The bolts are put in the short sides of the extension box. (The holes in the top and bottom are used for fitting the box to the board and to fit the gland plate.) The plain

- washers must be put on the bolts adjacent to the cover. Serrated washers are put on all bolts. Tighten bolts to finger tightness.
- d. Assemble extension box base to panelboard with M6 bolts and 4 coach bolts provided. (note position of earth strap mounting holes such that it aligns with panelboard earth strap). Tighten bolts to finger tightness.
  - e. Assemble cover screws, spring washer and spacer to cover (Fig 51).
  - f. Ensure that the extension box cover fits to the corner brackets and then tighten all coach bolts attaching the extension base to the panelboard and the corner brackets. Tighten coach bolt nuts to 5.6Nm and the M6 bolts to 11Nm.
  - g. Remove the extension box cover and refit the existing panelboard side plate to the open end of the extension box using the original coach bolts, washers etc. and a new M5 x 12 thread forming screw. Ensure serrated washer is under head of thread forming screw. Tighten coach bolts to 5.6Nm.
  - h. Refit the extension box cover and tighten cover screws.
  - i. Refit the panelboard front cover and tighten cover screws.

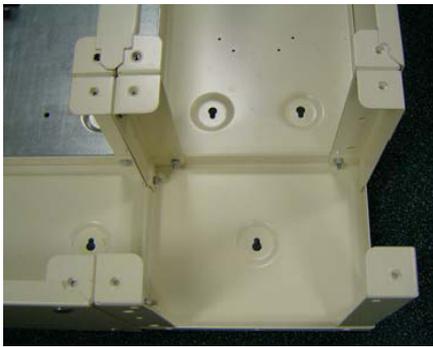


Fig 52

### 6.5 Corner units for 400/630A and 800A panelboard

The corner units are used in combination with a side and top or bottom extension box on the 630A or 800A panelboard.

- a. Fit the side and top or bottom extension box as described in sections 6.3 and 6.4 without fitting the panelboard and box covers.
- b. Remove the top or bottom extension box side plate if fitted and remove the side extension box end plate if fitted (depending on where the corner unit is to be fitted). Retain the hardware.
- c. Assemble the corner unit base and 4 corner brackets to the panelboard using the coach bolts provided (Fig 52). Use a plain washer on the coach bolts adjacent to the cover. Serrated washers are used on all the coach bolts.
- d. Using the corner unit cover as a template assemble it to the corner brackets and tighten. Tighten all coach bolts attaching the corner unit base to the panelboard. Tighten coach bolt nuts to 5.6Nm.
- e. Remove the corner unit cover and refit the existing top or bottom extension box side plate to the open end of the corner unit using the original coach bolts, washers etc. Tighten coach bolts to 5.6Nm. Refit the existing side extension box end plate to the open end of the corner unit using the original coach bolts, washers etc (Fig 53). Tighten coach bolts to 5.6Nm.
- f. Refit the corner unit cover and tighten cover screws.
- g. Refit the panelboard and extension boxes' covers and tighten cover screws.



Fig 53

### 6.6 Plain extension cubicle for 1600A panelboard

- a. Remove the existing side cover from the panelboard and retain.
- b. Position the side extension panel next to the main board and bolt together using the M6 bolts and steel sleeves provided.
- c. Refit the side cover on the outer side of the extension box.
- d. The section is supplied with a set of cable support straps. They should be fitted to suit on the side of the section.

Note: More than one extension cubicle may be fitted if required.

## 7 Incoming metering kit for the 400/630A and 800A panelboard

The kit is fitted with the Schneider Electric Power Meter type PM750MG. The meter is set up for the current transformer ratio of the kit (400/5, 600/5 or 800/5) and a supply voltage up to 415/240V 3 phase 4 wire 50Hz. Demand current and PQS demand are not set. Refer to the meter instruction leaflet for further details.

### 7.1 Installing the metering box

The metering kit is suitable for mounting on all MG6P and MG8P Powerpact 4 panelboards. The box is suitable for top or bottom mounting, depending on the incoming cable arrangement. For top mounting the metering box front cover should be reversed.

- a. Remove the panelboard front cover by loosening the four captive screws.
- b. Remove the gland plate from the end of the panelboard at which the metering kit is to be fitted by loosening and removing the 4 corner bolts and centre retaining screw. The gland plate and all fixings should be retained.
- c. Remove the CT plate from its fixings and take it out of the metering box (Fig 54).
- d. Position the box on the top or bottom of the panelboard and secure using the coach bolts provided. Tighten the coachbolts to 5.6Nm (Fig 55).
- e. Refit the panelboard gland plate to the metering box using the four corner bolts previously retained. Tighten the coach bolts to 5.6Nm.



Fig 54

### 7.2 Installing the current transformer tray

- a. A wiring loom links the metering box and the CT tray. The CT tray should be positioned so that main incoming cables pass through the CTs before they are terminated on the incoming MCCB/switch disconnecter (Fig 55).
- b. Each CT has phase identified wiring attached, the tray should be attached so that the correct phase passes through the correct CT, i.e. L1 phase cable passes through CT with L1 label. When viewing the plate from the front with the centre CT uppermost the phase sequence is L1, L2, L3 left to right.
- c. In order to provide a power supply to the meter it is necessary to terminate 4 cables onto the main panelboard busbar stack flags.
- d. Each cable has crimped lugs attached and is marked according to its phase connection N, L1, L2, L3. Bolts, nuts and washers are provided to fix the cables to the busbar.



Fig 55



Fig 56

The busbar stack has a phase sequence of Neutral, L1, L2, L3 from top to bottom and a pre-drilled hole is provided in each busbar "copper" to fix the cable. Each cable should be secured by passing the M8 bolt through the copper flag and cable lug.

Each bolt should then be tightened to 11Nm using the fasteners supplied. It should be ensured that the cables are run clear of all live parts. Note orientation of bolts to ensure maximum clearance. (Fig 56).

There are two earth cables included in the wiring loom. These should be connected to the panelboards main earth bar. All electrical connections should be rechecked after initial connection, the loom should then be connected to the back of the panelboard using the self adhesive pads and cable ties provided.

Once the metering box and all wiring has been connected and secured, the main power cables may be installed. It is necessary to run each main cable through its respective current transformer.

To assist in cabling, the current transformers may be removed from their fixing plate. This allows the current transformers to be slipped over the cable ends before they are made off.

**Note: Disconnecting current transformers from their control wiring produces a high voltage risk. Never disconnect current transformers when energised.**

Current transformer connections should be checked after power cable have been terminated. This action should be carried out even if the current transformers have not been disconnected or removed from the tray.

When installation of the metering kit is complete, incoming and outgoing MCCBs/switch disconnectors should be installed by following the guidance notes in this leaflet.

TYPICAL INSTALLATION  
OF AUXILIARY BUSBAR  
SYSTEM

EXTENSION BOX FOR  
6 WAY BOARD SHOWN

## 8 Outgoing metering for the 250A, 400/630A and 800A panelboard

### 250A Powerboard

This board is available as a special version for the metering of circuits. For each 3 or 4 pole breaker to be metered a current transformer and a meter should be ordered separately. Fit the meters according to section 8.2 d-e. Terminal bars are supplied for the auxiliary supply.

### 400/630A and 800A panelboard

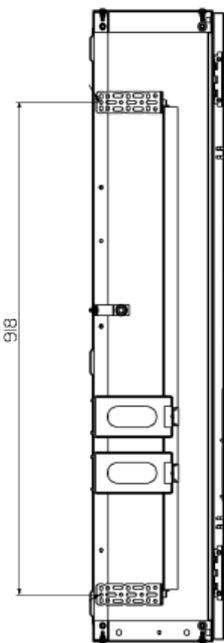
For metering of outgoing circuits one current transformer module and one meter are required for each outgoing circuit. These are not supplied with the metering kit. The outgoing metering kit is designed for either left or right hand sided use. The right hand side extension box has more meter slots than the left hand side box.

This is to allow additional items, such as surge arresters and control circuit fuses to be fitted.

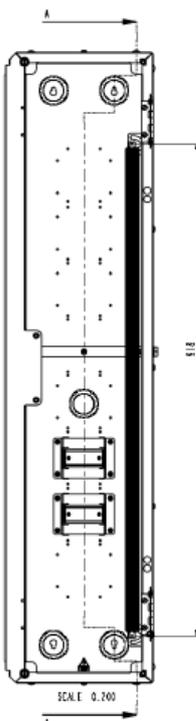
### 8.1 Extension box installation

It is recommended that the panelboard is installed in its final position before fitting the side extension boxes.

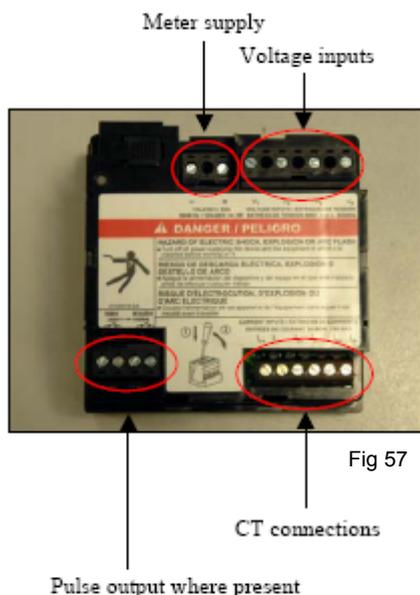
- Fit the extension box as in step a - h in section 6.4.
- Mount the DIN rail bracket onto the base towards the bottom of the extension box using the holes provided. If using a right hand box the fuse holder can be mounted behind one of the window apertures. Wire the fuse holder to the main incoming connections (Live - neutral) on the load side of the main incoming breaker and also to the auxiliary bus. Clearly identify the live and neutral on the auxiliary bus. Ensure the fuse link is in the live line.



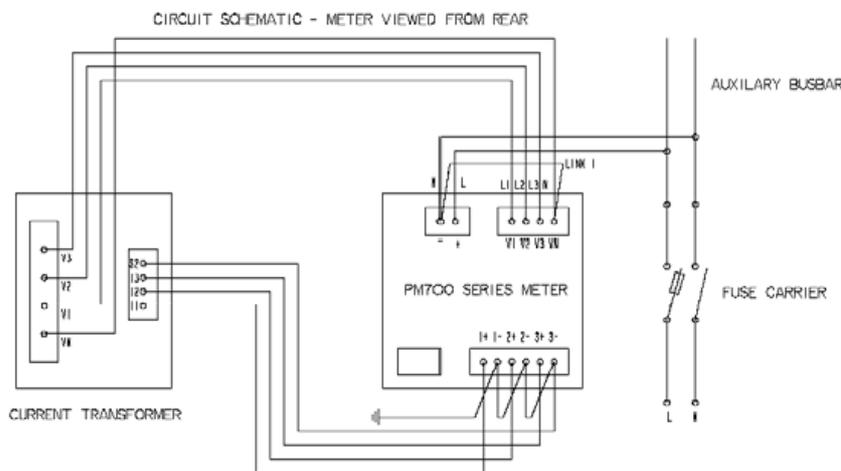
SECTION A-A



## 8.2 Installation of the metering



- Identify the circuits that require to be metered and fit a current transformer module to each circuit breaker using the instructions supplied. (current transformer modules cannot be fitted to single and two pole wide breakers.) Each CT module contains self protected voltage connections eliminating the need for separate voltage fuses in the monitoring circuit. If fitting a Vigi module in combination with a CT module to a breaker the Vigi module must be fitted first.
- Fit the circuit breakers to the panelboard according to the instructions in this leaflet.
- Fit the meters to the doors of the side extensions, using the slot aligned with the breaker position if possible.
- The voltage connections and the current connections are supplied as two separate looms. Using the two cable looms supplied, connect the CT module to the meter, running the loom carefully around the back of the enclosure and across the door hinge. Ensure the correct wires are connected to the correct terminals in accordance with the diagram below (Fig 57).



**Note: The cable loom has a blue cable link between the 'N' connection on the auxiliary supply and the 'VN' on the voltage signal input. If a 4 pole current transformer module is fitted to the circuit breaker this link must be removed by side cutters at each pin terminal.**

- Connect the auxiliary supply terminals to the auxiliary busbar using the leads supplied. Ensure the polarity is correct otherwise the meter will be damaged. Connections to the auxiliary bus are made by push-on connectors.
- Refit the panelboard cover and tighten cover screws.
- Set up the meter according to the manual supplied.

**Note: if a CT module is fitted for future use and not being wired to a meter, the shorting links across the current terminals must be left in place.**

### Additional features

The two lowest aperture positions on the right hand extension boxes are fitted with transparent windows and have a short length of DIN rail mounted behind. They may be used for fitting a surge arrester which must be fed from a breaker on the main busbars.

Alternatively the spaces may be used to fit a set of voltage circuit fuses for any additional meters, not fed from a CT module.

## 9 Outgoing metering 1600A panelboard

For metering of outgoing circuits one current transformer module and one meter are required for each outgoing circuit. These are not supplied with this metering cubicle. Fit the metering cubicle according to section 6.6. The auxiliary busbar is fitted in the metering cubicle. It requires wiring to the main incoming bars via the auxiliary fuse holder supplied. There are suitable connection tags on the copper bars on the load side of the main breaker. The fuse link must be in the live supply. Ensure that this cable runs from the bars to the fuse holder and is adequately protected from mechanical damage.

Cable looms are supplied for each metering circuit. The cables should be run around the back of the cubicle away from the power cables, using the cable ties supplied. For details of the circuits and the wiring of the meter refer to section 8.2.

## 10 Integrated Control and Distribution System

Ref Fig 58.

- Remove the cover from the panelboard by loosening and removing the 4 captive screws.
- Remove the side plate from the left or right hand side of the panelboard by loosening and removing the 4 coach bolts from the corner brackets and the screws retaining it to the base plate. Retain the side plate and hardware.
- Remove the earth bolt and its associated hardware.
- Offer the ICDS to the panelboard and bolt together through the corner brackets. Tighten to 5.6Nm.
- Fix the ICDS to the wall using the fixing holes in the back of the enclosure.
- Connect the earth continuity straps together. Tighten to 40Nm.

The accessories can now be fitted into the ICDS. The top section can accept a 15 way SP&N pan assembly or a length of DIN rail. There are four fixing holes provided on the mounting bracket. Use all four when fitting the pan assembly or the bottom two when fitting DIN rail. The SP&N Pan Assembly can be fed directly from one of the panelboard outgoing MCCBs. It can be connected via a terminal block (MGTB1252) or a incoming switch disconnecter (MGI1252) and be maximum rating of 100A or an RCD up to 63A (63A MCCB for RCD). Ensure that all connections are tight and that the cables are securely fixed and retained by the cable clamp provided.

Outgoing MCCBs can now be fitted to the pan assembly and final distribution sub circuits wired and connected. When using the DIN rail for Cocom products; timers, relays, meters or alarms etc, these products can be wired from the MCCBs on the TP&N pan assembly below.

The centre section has fixing brackets for a TP&N assembly. Use the four fixing holes in the centre of the rows. The TP&N pan assembly is connected to the terminal block (supplied) maximum load 225A, fed directly from a suitably rated outgoing MCCB on the panel board. Ensure that all connections are tight and that the cables feeding the pan assembly are securely fixed along the complete length and up to the incoming connections.

Outgoing MCCBs can now be fitted to the pan assembly and final distribution sub circuits wired and connected. The bottom section is designed to accept a contactor on a slotted plate Telemecanique AM3 PA44 and F225. This feature is useful for remote switching sub circuits or distribution boards.

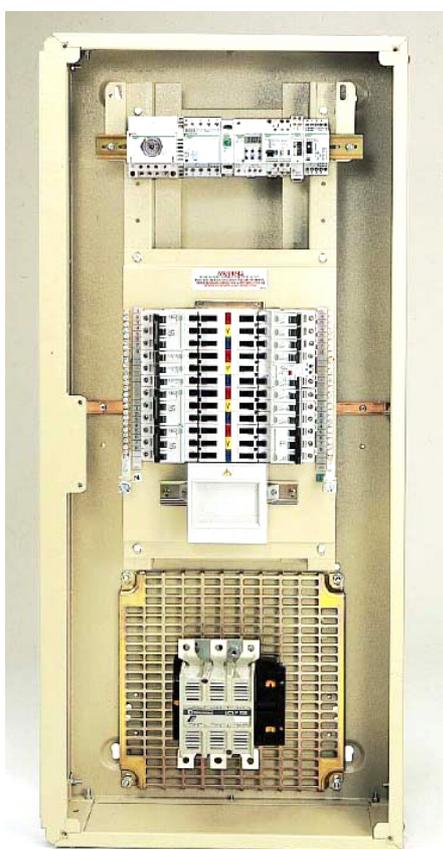


Fig 58

## 11 Setting the breaker

Please refer to the individual instructions supplied with the breaker. These instructions should be left with the board after installation in case settings need to be adjusted in the future.

## 12 Neutral link

The 400/630A and 800A panelboard have a neutral link fitted to permit maintenance and testing of the installation in line with the relevant clause of BS7671.

To remove the link loosen both nuts and slide the link across as shown (Fig 59).

It is essential to ensure that the link is made and both bolts are fully tightened to 11Nm prior to energisation of the board.

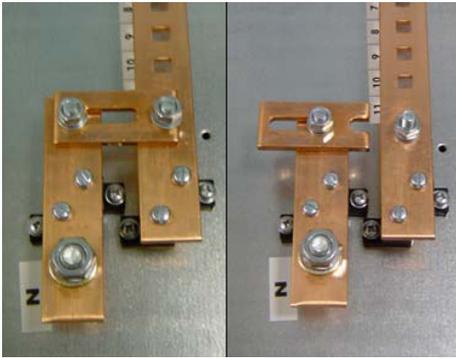


Fig 59

## 13 Powerpact 4 630A and 800A pan assembly

### 13.1 Incoming connection with cables or bars

Connection of an incoming device may be performed by copper bars, cables or MCCB when using the Schneider Electric incoming pan assembly. Each bar has 2 x M8 holes provided for the connection of cables or busbars. When using cables or busbars for an incoming connection the phase sequence is N, L1, L2 and L3 from front to back. There is a 3 pole and 4 pole incoming pan assembly available.

### 13.2 Fitting an incoming pan assembly and incoming device

The incoming pan assembly is supplied with a set of 3 or 4 “flags” to allow the incoming breaker to be fitted to the busbars of the outgoing pan assembly.

- Secure the incoming pan assembly to the outgoing assembly with the 3 bolts provided.
- Fit each flag to the underside of the main busbar length and secure with the 2 x M8 bolts provided. Tighten the bolts to 11Nm.
- If required, fit neutral bars to the incoming pan assembly using the components provided. Connect the neutral bars to the main neutral flag with the 2 bolts provided. Tighten the bolts to 11Nm.
- To remove the neutral link see section 12.

Fit the incoming device as described in section 3.1.

### 13.3 Fitting outgoing devices

Outgoing devices are fitted as described in section 3.4 etc.

## 14 Forms of separation

As standard the boards conform to form 3 type 2. Form 4 types 2 & 6 can be achieved by use of individual disconnectable neutral links adjacent to breakers or by the use of 4 pole breakers. Tunnel terminals are to be fitted on the breaker outgoing terminals and shrouded by short terminal shields. The main neutral bar either side of the incomer on the 400/630A and 800A boards should be removed and discarded together with the connecting copper bar.

The incoming breaker should be a 4 pole or a 3 pole with individual disconnectable neutral link adjacent to the breaker (up to 630A).

## 15 Fitting Additional Earth & Neutral connections

The Powerpact 4 panelboards are fitted with 24 earth connections and 22 neutral connections. This is usually sufficient if the boards are fitted with a normal mix of 1 pole, 2 pole, 3 pole and 4 pole breakers. When boards are fitted with a predominant number of single pole breakers additional terminations will be required. These kits provide that facility.

A 12 way kit may be fitted in an 18 way board if a smaller number of additional terminals are required but a second 12 way kit cannot subsequently be added.

### 15.1 Neutral bars

The additional neutral bars are mounted on the existing bars. The 12 way kit has one additional bar and the 18 way has two additional bars on each side of the board. Copper spacers are used to separate the bars providing adequate space for the cable terminations. The bolt heads should be towards the front of the panel with the nuts and washers behind the base bar. The 800A assemblies have doubled-up bars. Bolt tightening torque to be 15 Nm. Remove existing identification labels and replace with the new ones supplied (Fig 60).

### 15.2 Earth bars

There is one additional bar on each side of the board (Only the left hand side bars are shown in the illustrations). This bar mounts onto the existing bar. Place the additional bar adjacent to the existing bar and note which terminal screws align with the two small fixing brackets. Remove these two cross head screws and discard (Do not remove the two outer screws of the existing bar). Place the new bar brackets on the existing bar and fix using the hex head screws provided. Tighten to 12Nm. Remove existing identification labels and replace by the new ones supplied (Fig 61).

## 16 Intelligent Panelboard – Intelligent Modular Units

To allow the installation of the Intelligent Metering, Measuring and Monitoring functionality of the compact NSX Moulded Case Circuit Breaker, a factory fitted data cable is installed into the MCCB. (Fig 62)  
The data cable (NSX Cord) can be connected to either the Modbus interface module (IFM ) or the external remote display module (FDM) as detailed below.

For further information on the connectivity of the system please refer to the in depth installation manual TRV99101.



Fig 60



Fig 61



Fig 62

## Important Information

### NOTICE

Read these instructions carefully, and look at the equipment to become familiar with the device before trying to install, operate, or maintain it. The following special messages may appear throughout this documentation or on the equipment to warn of potential hazards or to call attention to information that clarifies or simplifies a procedure.



The addition of this symbol to a Danger or Warning safety label indicates that an electrical hazard exists, which will result in personal injury if the instructions are not followed.



This is the safety alert symbol. It is used to alert you to potential personal injury hazards. Obey all safety messages that follow this symbol to avoid possible injury or death.

### DANGER

DANGER indicates an imminently hazardous situation, which, if not avoided, will result in death or serious injury.

### WARNING

WARNING indicates a potentially hazardous situation, which, if not avoided, can result in death, serious injury, or equipment damage.

### CAUTION

CAUTION indicates a potentially hazardous situation, which, if not avoided, can result in injury or equipment damage.

### PLEASE NOTE

Electrical equipment should be installed, operated, serviced, and maintained only by qualified personnel. No responsibility is assumed by Schneider Electric for any consequences arising out of the use of this material.

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The Connecting system between the devices is known as the ULP systems and the components are as detailed in the table below.

The ULP System

## ULP System Modules and Accessories

### ULP Modules

The ULP modules are described below:

ULP Module	Description	Part Number
 Modbus communication interface module	<p>The Modbus communication interface module is a communication interface which allows intelligent modular units (IMUs) in the ULP system to communicate using the Modbus protocol.</p> <p>The Modbus communication interface module is described in <i>Modbus Communication Interface Module</i>, p. 68.</p>	TRV00210
 Front display module FDM121	<p>The front display module FDM121 is a local display unit dedicated to displaying measurements and operating assistance data from the IMU.</p> <p>The front display module FDM121 is described in <i>Front Display Module FDM121</i>, p. 75.</p>	TRV00121
 Maintenance module	<p>The maintenance module is dedicated to testing, set-up and maintenance of the IMU modules, using the RSU and LTU software.</p> <p>The maintenance module is described in <i>Maintenance Module</i>, p. 90.</p>	TRV00911
	RSU software	LV4ST100
	LTU software	LV4ST121



The Power & Interface kit part no SEPINTP1 which comprises of a 24V DC power supply (54444), fuse and modbus interface module pre assembled ready to install.

This unit is to be mounted either at the bottom left or right hand side of the panelboard and is suitable to supply a total of 5 metered **systems**. Additional SEPINTP1 power and interface kits will be required for each additional 5 **systems**.

A **system** comprises of the following items, Compact NSX MCCB with Micrologic 5 or 6 protection unit, NSX cord, IFM module and FDM display module.

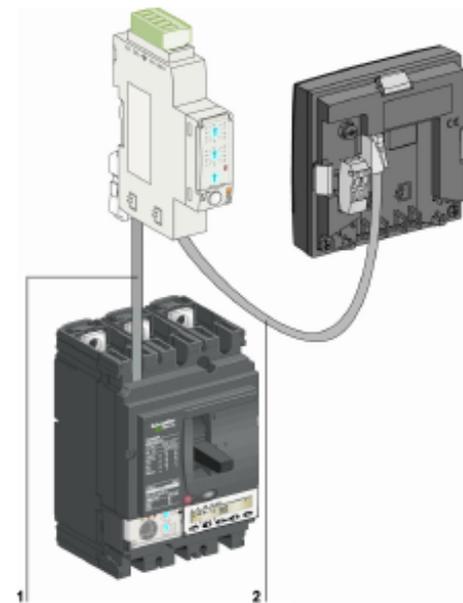
## The ULP System

### ULP Cable

ULP cables are used to interconnect ULP modules within a single IMU. They have male RJ45 connectors at both ends and are available in several lengths.

	Description	Part Number
	L = 0.3 m (10 cables)	TRV00e03
	L = 0.6 m (10 cables)	TRV00e06
	L = 1 m (5 cables)	TRV00e10
	L = 2 m (5 cables)	TRV00e20
	L = 3 m (5 cables)	TRV00e30
	L = 5 m (1 cable)	TRV00e50

ULP modules are interconnected by simple plug and play connection using ULP cables, without prior set-up.



- 1 NSX cord
- 2 ULP cables

### ULP Line Termination

The ULP line termination closes the unused ULP connector on a ULP module. It consists of an RJ45 connector and has passive components in a sealed unit linked to this connector.

	Description	Part Number
	10 ULP line terminations	TRV00880

### RJ45 Female/Female Connector

The RJ45 female/female connector is used to connect two ULP cables end-to-end and thus extend them.

It consists of two female RJ45 connectors linked by a direct electrical connection.

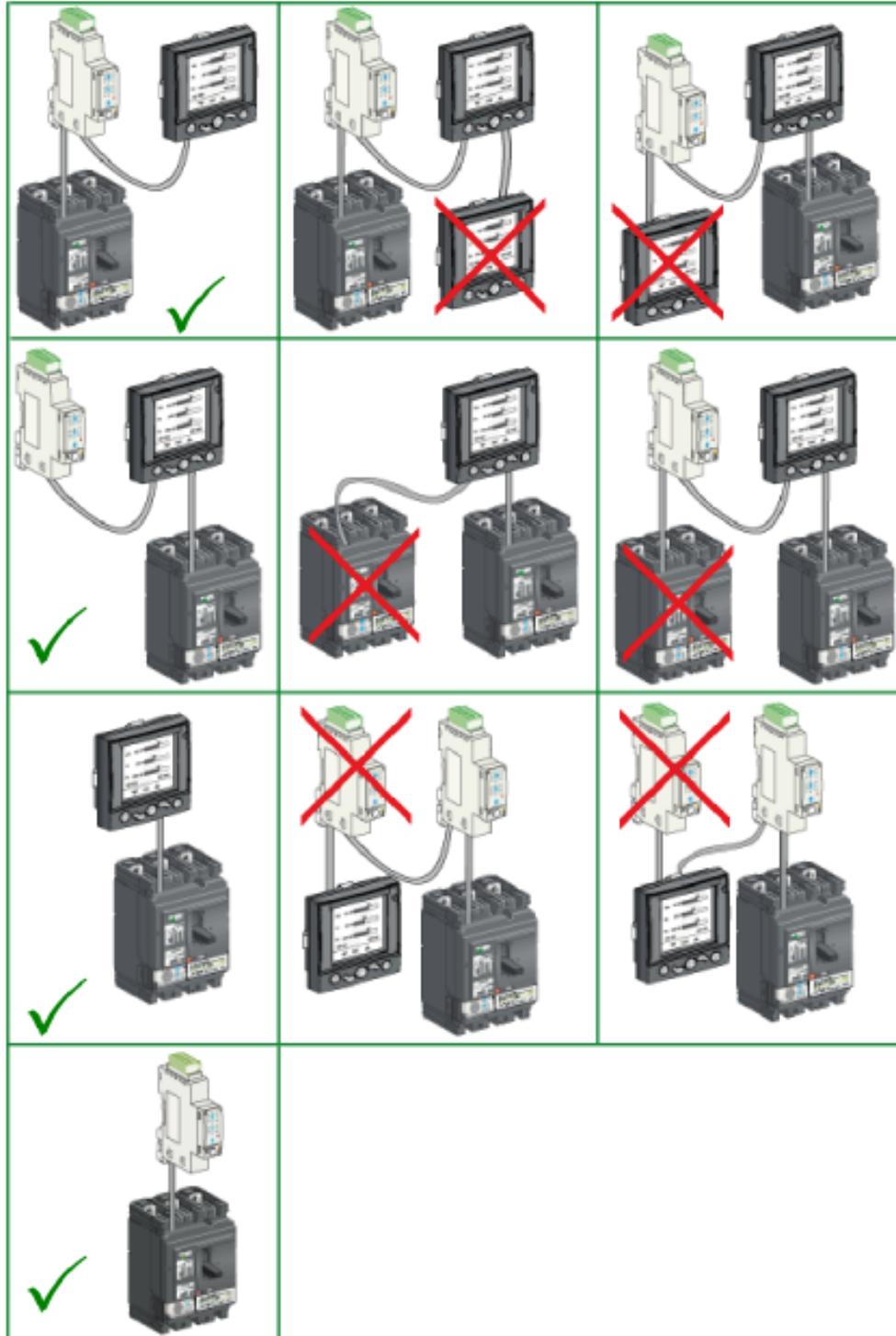
	Description	Part Number
	10 RJ45 female/female connectors	TRV00870

## Composition Rules for Intelligent Modular Units (IMUs)

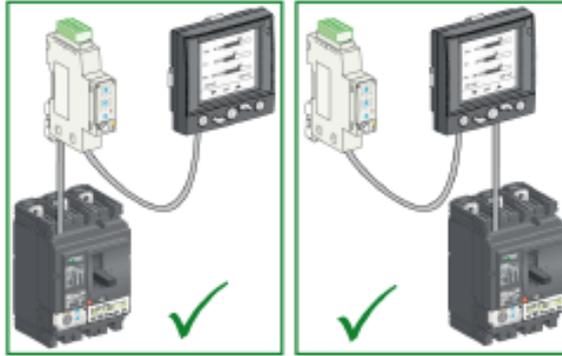
**Introduction** Connection of IMU ULP modules has been designed to be simple. It complies with a certain number of rules concerning composition, ULP cables and the ULP module power supply.

**General Rules** The following rules apply to IMU structure:

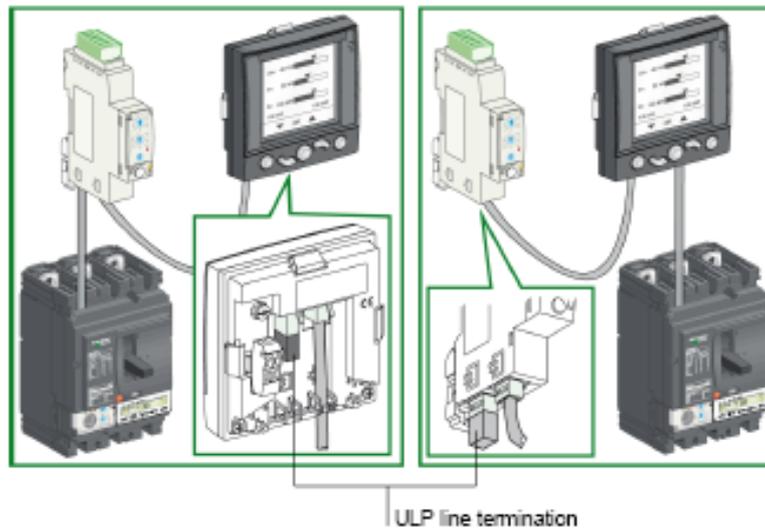
- An IMU contains a maximum of one ULP module of any given type. For example, an IMU cannot contain more than one front display module FDM121 or more than one Compact NSX circuit breaker.



- The ULP modules in a single IMU can be connected in any order. Connection must be guided by the cable routing and the desired layout for the ULP modules in the switchboard.

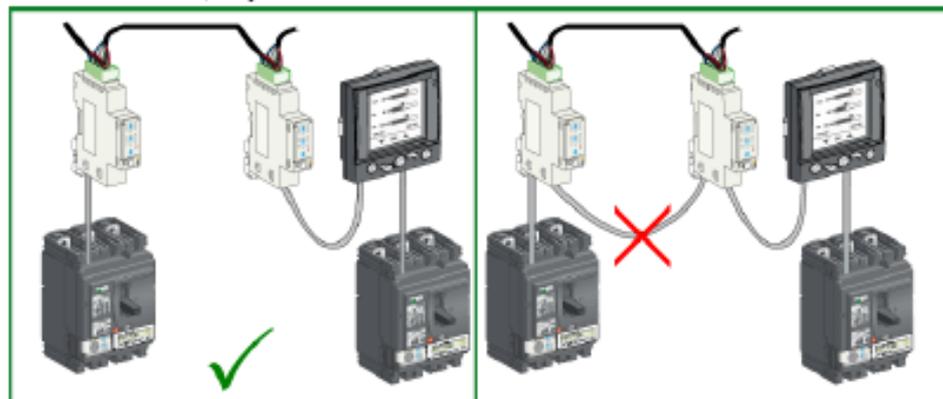


- The ULP modules placed at the end of the ULP line take a ULP line termination on the unused ULP connector.



Certain ULP modules, such as the Compact NSX circuit breaker, have an integral ULP line termination and should therefore always be placed at the end of the ULP line.

- IMUs must not be connected to one another by ULP cables. In the case of IMUs connected to a Modbus network, only the Modbus cable can be used to interconnect them.



#### Length of ULP Cables

The following rules apply to IMU ULP connection:

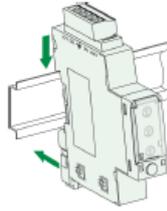
- The maximum length of the ULP cable between two IMU ULP modules is 10 m.
- The maximum length of all the ULP cables on a single IMU is 20 m.
- The total length of the ULP cables in the fixed part of an installation with a withdrawable drawer must be less than 12 m to ensure that the fixed part operates correctly when the unit is drawn out (see *Intelligent Modular Unit (IMU) with withdrawable drawer*, p. 30).
- The bending radius of the ULP cables must be 50 mm minimum.

## Installing the Modbus Communication Interface Module

**Mounting** There are two possible mounting configurations for the Modbus communication interface module:

- Direct mounting on DIN rail
- Mounting on the stacking accessory mounted on a DIN rail

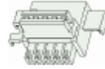
**Direct Mounting on DIN Rail** The figure below shows the direct mounting of the Modbus communication interface module on a DIN rail:



Direct mounting on a DIN rail is used in the case of distributed architectures (see *Daisy-Chained Distributed Modbus Architecture*, p. 51 and *Derivated Distributed Modbus Architecture*, p. 57).

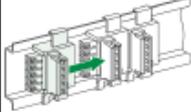
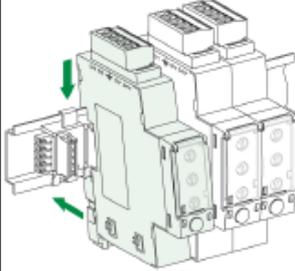
**Stacking Accessory** Where there are several communicating intelligent modular interfaces (IMUs) in a switchboard column, the Modbus communication interface modules in the column can be grouped in blocks on the column in-comer (see *Centralized Modbus Architecture*, p. 44).

The stacking accessory can be used for quick connection by simply snapping in the Modbus communication interface modules, thus providing the Modbus link and the 24 VDC power supply between all the adjacent Modbus communication interface modules, without any additional wiring.



### Mounting on the Stacking Accessory

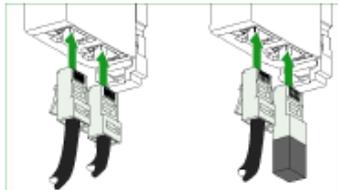
The procedure for mounting the Modbus communication interface module on the stacking accessory is as follows:

Step	Action
1	Clip the stacking accessories onto the DIN rail (1 stacking accessory for each Modbus communication interface module) and snap them together: 
2	Mount the Modbus communication interface module on the DIN rail and snap it onto its stacking accessory: 

**Note:** Do not clip more than 12 Modbus communication interface modules together with the stacking accessory.

### ULP Connection

The two ULP RJ45 connectors on the Modbus communication interface module are used to connect it to the other ULP modules on the IMU. Both ULP connectors are identical and in parallel, allowing the IMU ULP modules to be connected in any order.



**Note:** When the second ULP connector is not used (Modbus communication interface module at the end of the ULP line), it must be closed with a ULP line termination.

### 5-Pin Connector (Modbus and 24 VDC Power Supply)

The 5-pin connector is a screw connection block that is used to power the IMU and connect it to the Modbus network. Connecting the Modbus cable to the 5-pin connector is described in *Connection to the Modbus Communication Interface Module*, p. 36.

## Operation of the Modbus Communication Interface Module

**Introduction** The user can configure the Modbus communication Interface module directly on its front panel or with the RSU software.

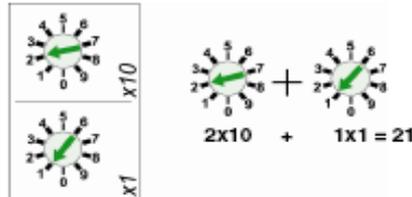
The Modbus communication Interface module can be used to:

- Assign a Modbus address to the Modbus communication Interface module and its associated intelligent modular unit (IMU)
- Enable/disable remote control commands
- Test the ULP connection

**Modbus Address** The address switches assign a Modbus slave address to the Modbus communication Interface module and its associated IMU.

The user defines the Modbus address in the range 1...99. The first address switch corresponds to the tens and the second address switch corresponds to the units.

The figure below shows the address switch configuration for address 21:



The Modbus communication Interface module is factory-set with address 99.

Address 00 is reserved for Modbus broadcasting.

If the address switches are set to address 00, no Modbus communication is accepted by the Modbus communication Interface module.

The user can modify the address at any time. The change of address takes effect 5 seconds after the modification.

### Modbus Traffic LED

The yellow Modbus traffic LED describes the Modbus communication activity:

LED Status	Meaning
Blinking	Transmission/reception of a Modbus frame by the Modbus communication interface module
Steady ON	Address 00 assigned to the Modbus communication interface module

For more information about Modbus communication between the Modbus communication Interface module and the Compact NSX circuit breaker, refer to *Modbus Compact NSX - User manual*.

### Modbus Locking Pad

The Modbus locking pad on the front panel of the Modbus communication Interface module enables or disables remote control commands and modification of the IMU module parameters.

Locking Pad Status	Meaning
	Remote control commands and parameter modifications are enabled.
	Remote control commands and parameter modifications are disabled. In this case, the only remote control commands that are enabled are the get time and set time commands on the IMU ULP modules. For more information about these commands, refer to <i>Modbus Compact NSX - User manual</i> .

Health and Safety at Work, etc Act 1974

To ensure that the equipment described is safe for both personnel and property it should be installed, commissioned and maintained by or under the supervision of qualified persons. Regard should be taken of BS7671, Codes of practice statutory requirements and specific Instructions issued by Schneider Electric. Any operating or installation queries relating to these products should be communicated directly to Schneider Electric.

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