

# Installation & User Instructions

## Pre-Wired Cabinets

### HES12xxx & HES24xxx range



#### INTRODUCTION

These instructions relate to the installation of an Imagine *PRE-WIRED CABINET* type HES12xxx or HES24xxx. For full details on operation, please refer to the User Guide (part no. I293GB).

#### SITING REQUIREMENTS

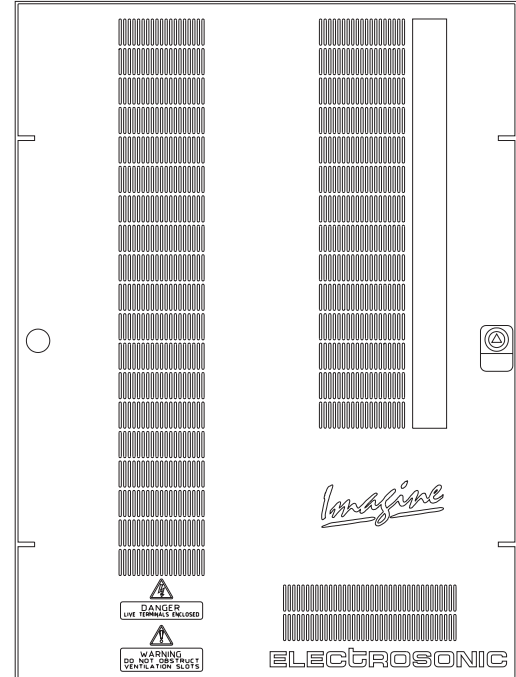
The installation site must meet the following criteria:

- Temperature range: 0C – 35C.
- Humidity: 0% – 90% non-condensing.

There should be sufficient ventilation to dissipate the heat produced from the cabinet(s) when all outputs are at their maximum level and loading. The door ventilation grilles must be kept free from obstruction at all times.

| Model >               | HES12000 | HES12200 | HES12100 | HES12300 |
|-----------------------|----------|----------|----------|----------|
| Max. heat dissipation | 225W     | 615W     | 210W     | 600W     |

| Model >               | HES24000 | HES24200 | HES24100 | HES24300 |
|-----------------------|----------|----------|----------|----------|
| Max. heat dissipation | 435W     | 1215W    | 420W     | 1200W    |



#### Cabinet Clearances

Since all necessary ventilation is achieved through the cabinet door, there is no specific clearance required above, below or on either side. However, it is recommended that a gap of at least 100mm is allowed all round to provided access for installation and maintenance. Sufficient space should be available above or below the cabinet to allow for cable entry.

Where more than one cabinet is being installed, it is not recommended that they are mounted one above the other as heat produced by the lower cabinet may affect the ventilation of the upper cabinet.

The door will open to a maximum of 90° within the overall width of the cabinet. If the door is required to open further, then extra clearance needs to be given on the hinged side of the door (Fig.1-1).

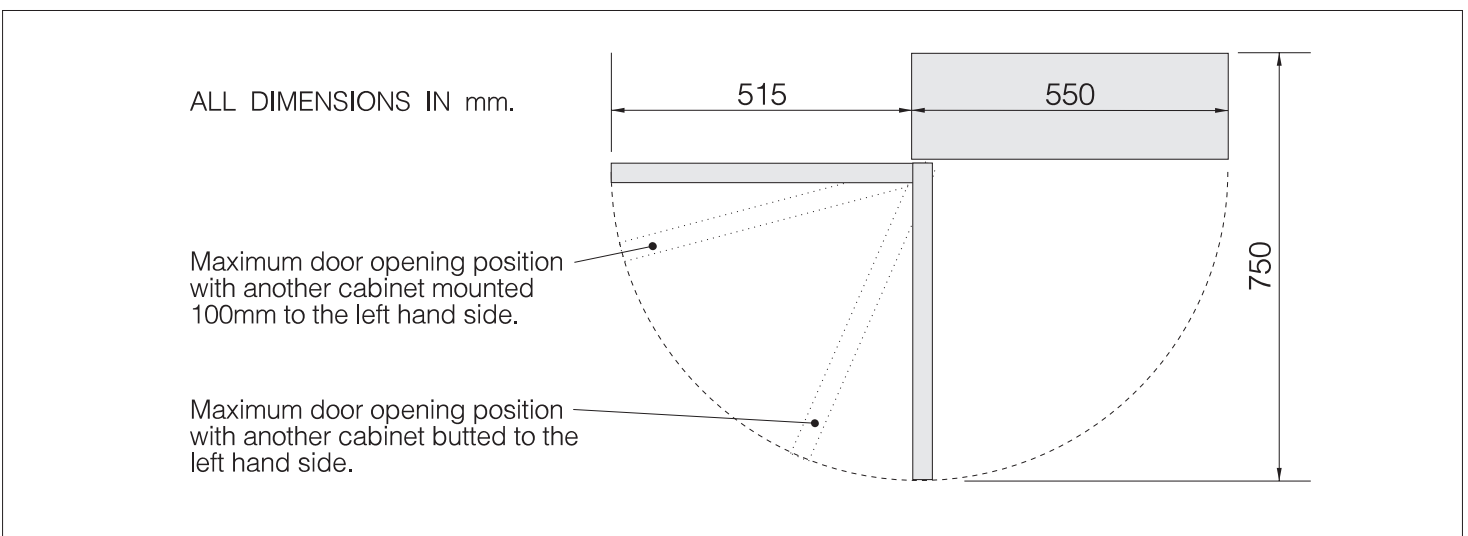


Fig.1-1: Door clearances.

## MOUNTING OPTIONS

The cabinet can be installed in a variety of ways depending on the location and user requirements, but must be installed vertically.

The important consideration for any method of installation is that the cabinets are heavy and must be secured accordingly.

### Wall Fixing

There are number of 'keyhole' type fixing holes provided on the back of both sizes of cabinet which may be used for wall fixing (Fig.1-2).

It is recommended that the HES97520 Wall Fixing Kit be used.

### Wall Fixing Kit (HES97520)

A kit of parts is available to assist wall fixing. The kit comprises two metal plates, each with two threaded studs and five fixing holes. The plates are intended to be secured to the wall with suitable screws or bolts (not supplied), with the cabinet then being clamped into position on each stud with nuts and washers provided. Full instructions are included with the kit.

#### WARNING

Both wall plates must be fitted, and you should ensure that both the wall and the plate fixings are capable of supporting the weight of the cabinet. Remember to take into account that the cabinet may be leant upon or put under other such stresses during installation and use.

### Floor Plinth (HES97540)

A metal plinth is available allowing the cabinet to stand directly on the floor. This is particularly recommended for the HES24xxx range of cabinets.

Fitting the plinth requires the removal of the two cable entry plates from the base of the cabinet. The plinth is then secured to the base of the cabinet with self-tapping screws provided.

Cable entry is not possible through the base of the cabinet when the plinth is fitted.

#### WARNING

If the cabinet is floor mounted, it is essential that the top of the cabinet is secured to a rear wall (or another supporting arrangement) to prevent the unit from tipping. One of the wall fixing plates detailed above may be used for this purpose.

### Back-to-back

Two cabinets fitted with floor plinths may be installed back-to-back. The two cabinets must be bolted together top and bottom using suitable M10 nuts, bolts and washers (not supplied) through the rear fixing holes.

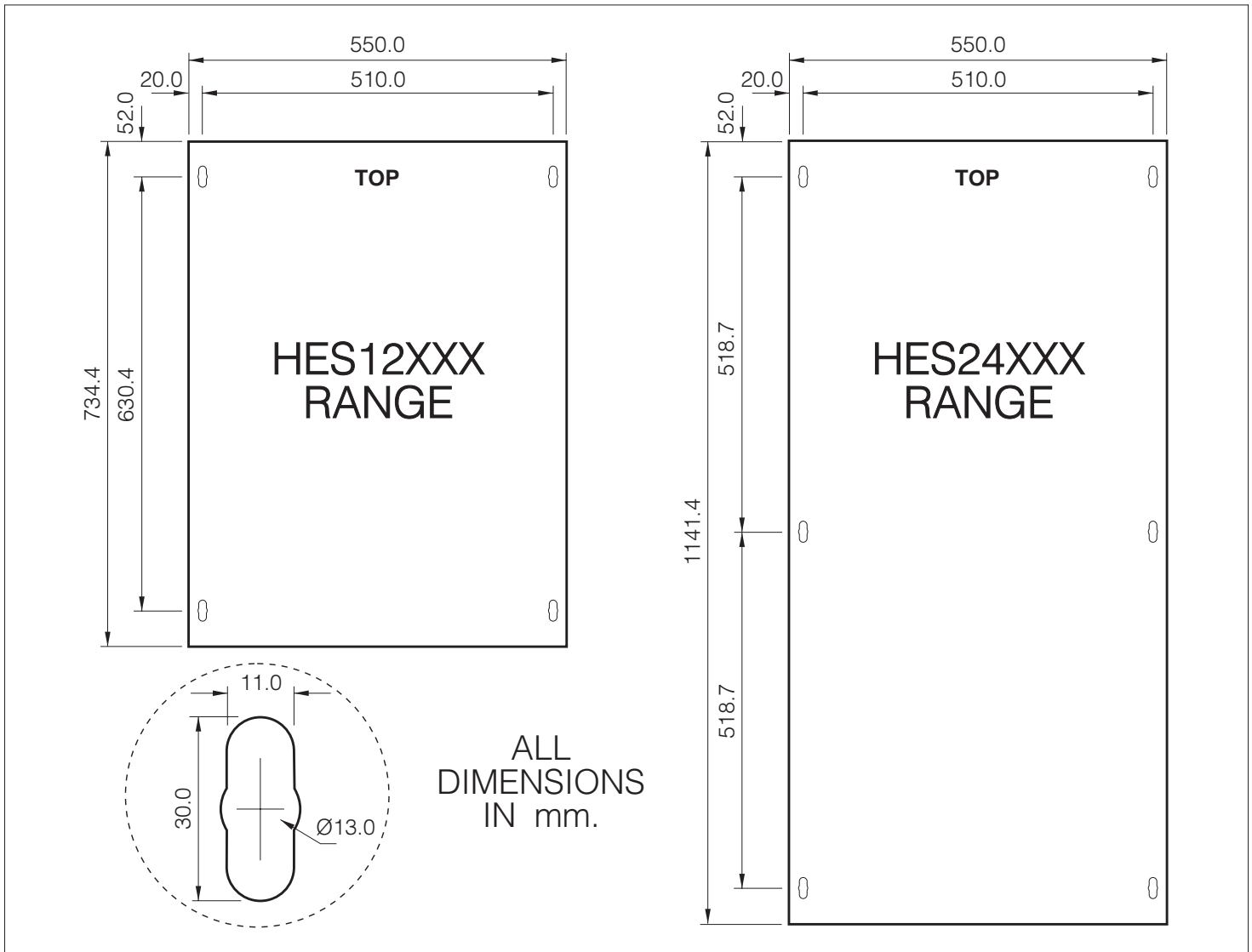


Fig.1-2: Dimensions of cabinet rear fixing holes.

## REVERSING THE DOOR

The door on each type of cabinet is designed to be reversible. This is achieved by transferring the various fittings to the mounting points on the opposite sides of the door and cabinet, as follows:

### WARNING

If the cabinet is already connected to the mains supply, for your own safety always ensure that the supply is isolated before attempting to remove the door.

Ensure that all earth leads are reconnected.

1. Unlock the door using the key provided.
2. Open the door and disconnect the earth lead from the stud on the back of the door.
3. Remove the collars from the top and bottom hinge pins by loosening the grub screw with an M4 allen key.
4. Partially close the door (with the open edge approximately 50mm from the cabinet), grasp the door firmly at the top and bottom, and lift it upwards off of the hinge pins.

5. Transfer the lock and finger plate to the opposite side of the door in place of the hole plug (which should be transferred to the vacant hole). Ensure that the lock is orientated correctly before fixing (see Fig.1-3).

6. Remove the two hinge plates from the cabinet, move the hinge pin to the other hole in each plate, and refit the hinge plates to the opposite side of the cabinet (see Fig.1-4).

**NOTE** There are two groups of four holes where the hinge brackets are to be mounted; use the top two holes only.

7. Transfer the latch plate and locating stud to the opposite side of the cabinet, noting that the latch plate is inverted (see Fig.1-5).

8. Disconnect the door earth lead from the side panel of the cabinet and transfer it to the opposite side panel earth stud.

**NOTE** To improve accessibility when fitting or removing the lead from the right-hand side panel, remove the four screws securing the panel to the cabinet and ease the panel forward. Once the earth wire is secure, refit the side panel ensuring that the fixing screws are securely tightened.

9. Offer the door up to the cabinet in the 'almost closed' position and hook it on to the hinge pins.

10. Open the door and connect the earth wire to the door earth stud.

11. Resecure the collars to the top and bottom hinge pins.

## Removing the Side Panels

To assist with the physical and electrical installation of the cabinet, the side panels can be removed. To remove the side panel with the door hinged to it, first remove the door as described in steps 1 to 4 on page 3, then proceed as follows:

### WARNING

If the cabinet is already connected to the mains supply, for your own safety always ensure that the supply is isolated before attempting to remove the sides.

Ensure that all earth leads are reconnected.

1. Disconnect the earth lead to the appropriate side, which is located at the bottom front of the panel.
2. Remove the four screws (two top, two bottom) securing the side panel to the cabinet.
3. Slide the panel forwards until the rear retaining lugs are free, then lift the panel away. When replacing ensure that the rear lugs locate correctly on the rear panel flanges and that the earth lead is reconnected.

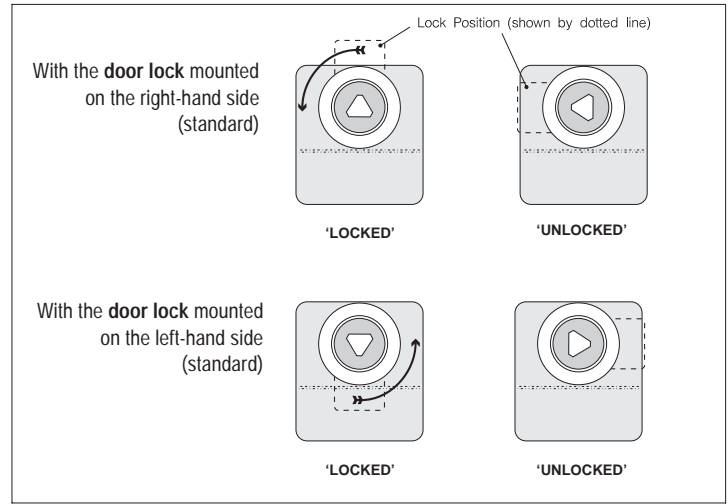


Fig.1-3: Door lock mounting positions.

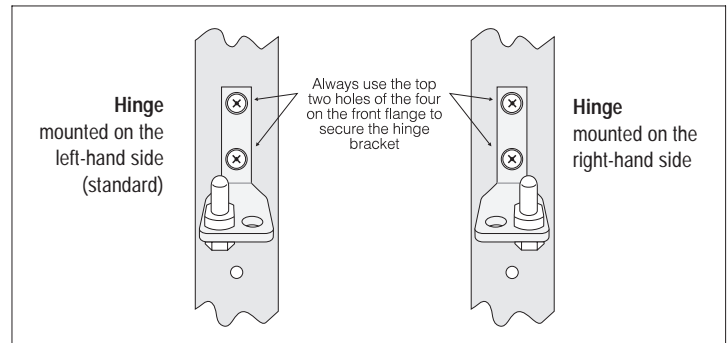


Fig.1-4: Hinge plate and hinge pin positions.

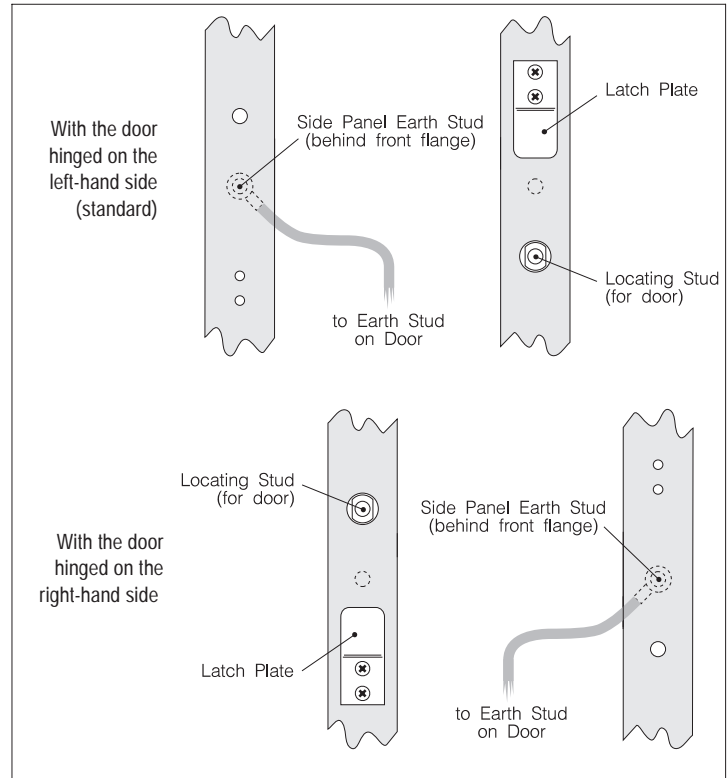


Fig.1-5: Latch plate, locating stud and earth wire.

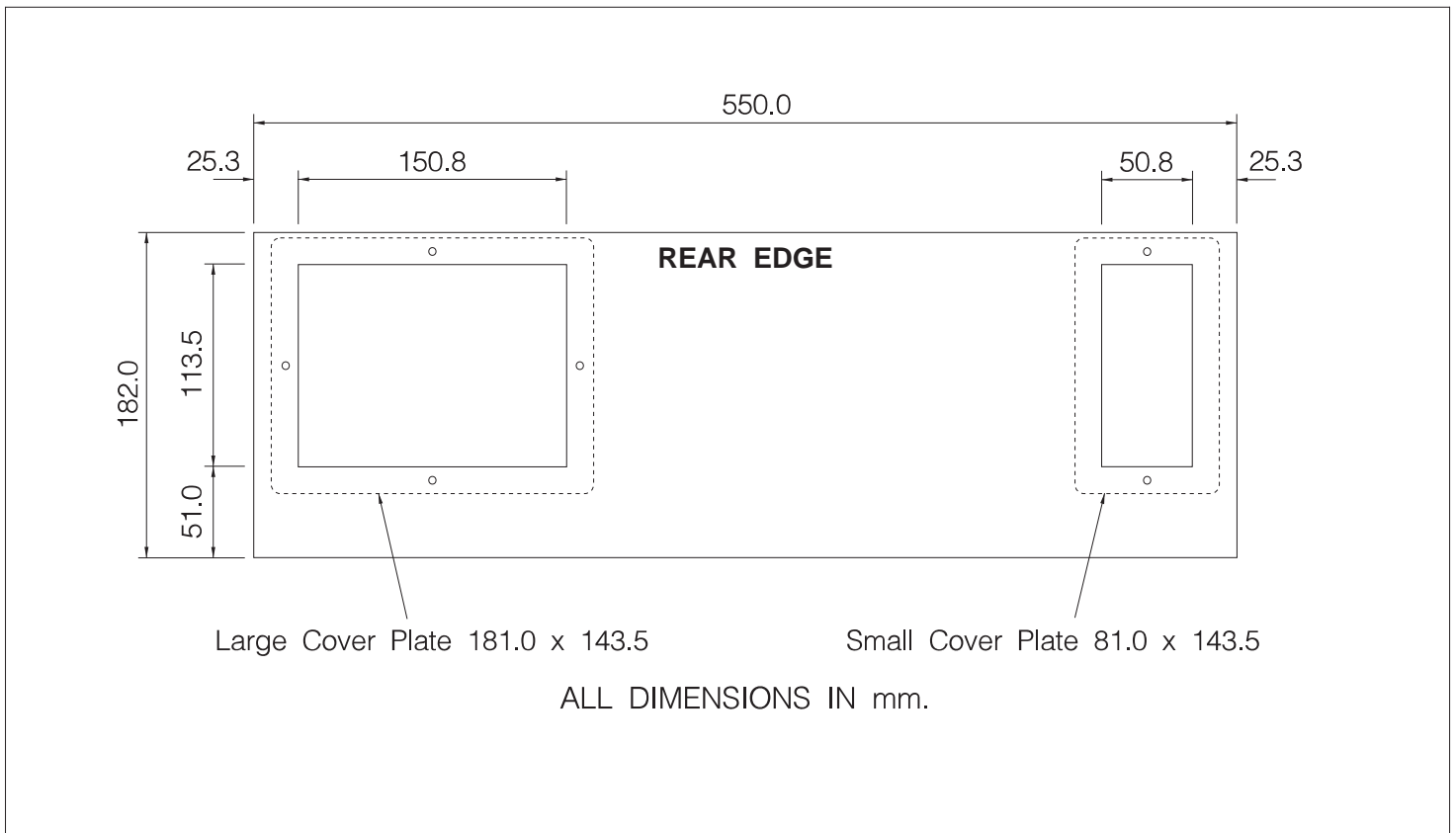


Fig.1-6: Cable entry cut-out and plate dimensions.

## CABLE ENTRY POINTS

There are cable entry cut-outs located on the top and bottom panels of all types of cabinet. These are covered with plates secured by screws.

The plates may be removed completely for access or can be cut or drilled to allow for fixing to conduit and trunking systems. Fig.1-6 shows the cut-out and plate dimensions viewed from the top and these are the same for both the top and bottom panels.

The large left-hand cut-out is for mains input and output cables, whilst the smaller right-hand cut-out is for FELV (Functional Extra-Low Voltage) cables.

### Terminal Cover Panel

A plastic cover is fitted around the MCB's, covering the various input and output terminals. The panel provides secondary insulation and also identifies the various MCB's and power connections.

The panel is retained by several pairs of plastic clips which are attached to the DIN rail. To remove the panel, squeeze the lugs of each pair together in turn and ease the panel forwards until completely free. To refit, align the panel with each pair of clips and firmly push the panel into position.

A channel is provided on the panel for a slot-in label, on which details of the input supply, MCB and output functions should be recorded. The label (with its clear protective cover) slides out from the top of the channel.

## INPUT SUPPLY

### Input Current (3-phase)

The table below shows the maximum possible current that may be drawn with all outputs at maximum load and level. The input supply must be externally protected.

| Model      | Max. current Phase 1 | Max. current Phase 2 | Max. current Phase 3 | Max. current TOTAL |
|------------|----------------------|----------------------|----------------------|--------------------|
| HES12000   | 40A                  | 40A                  | 41A                  | 121A               |
| HES12200 * | 80A                  | 80A                  | 81A                  | 241A               |
| HES12100   | 40A                  | 40A                  | 40A                  | 120A               |
| HES12300 * | 80A                  | 80A                  | 81A                  | 241A               |
| HES24000   | 80A                  | 80A                  | 81A                  | 241A               |
| HES24200 * | 160A                 | 160A                 | 161A                 | 481A               |
| HES24100   | 80A                  | 80A                  | 80A                  | 240A               |
| HES24300 * | 160A                 | 160A                 | 161A                 | 481A               |

\* These cabinets are fitted with a cooling fan.

### Input Current (single phase)

The *PRE-WIRED CABINET* is primarily intended for use with a 3-phase supply.

If the cabinet is to be connected to a single phase supply, the maximum current that can be drawn is limited by the capacity of the neutral bus-bar on the output terminals.

Maximum current: 160A.  
(single phase operation)

The input supply must be externally protected.

## INPUT CONNECTIONS

### Earth Terminal

This is located at the top of the DIN rail and is coloured green and yellow.

- Maximum cable size: 35mm<sup>2</sup>.
- Stripping length: 20mm.
- Screw torque setting: 2.5 Nm.

### Live Input Terminals (Phase 1, 2 & 3)

The input MCB's are arranged in three groups (one for each phase). All of the input terminals within each group are linked by an internal bus-bar. Always ensure that the connection to each MCB group is made via the MCB nearest the centre of each group to provide equal load distribution along the bus-bar.

Connection is achieved by various methods according to the cabinet type and size of the input cables; these are illustrated in Fig.1-10 and 1-11. Cables of 16mm<sup>2</sup> size (or less) should be fitted directly into the MCB input terminals. Cables of 35mm<sup>2</sup> size should use the adapter(s) supplied and be connected in the positions indicated. Both screws on each adapter must be fully screwed-in to ensure that the cable is securely clamped.

- Maximum cable size: 35mm<sup>2</sup> (with adapter – see note below).
- 16mm<sup>2</sup> (MCB terminal).
- Stripping length: 13mm (one adapter).
- 30mm (two adapters).
- 10mm (MCB terminal).
- Screw torque setting: 2Nm (MCB only).

**NOTE** The adapters are suitable for 35mm<sup>2</sup> cable only. If 25mm<sup>2</sup> cable is used then a different type of adapter must be fitted (available on request).

### Neutral Terminal

This is located on the neutral bus-bar for the power output terminals. The output terminals are arranged in two groups with the neutral terminal situated between them.

- Maximum cable size: 35mm<sup>2</sup>.
- Stripping length: 15mm.
- Screw torque setting: 2.5 Nm.

### MCB ANTI-TAMPER CLIP

On cabinets fitted with a cooling fan, the MCB for the fan unit is fitted with an anti-tamper clip. This is used to prevent the MCB from being switched-off accidentally.

To remove the clip, slide back the plastic sleeve and compress the two retaining springs until they disengage with the holes in the MCB body (Fig.1-7). When refitting, ensure that the MCB is switched-on and that the clip is positioned on the left-hand side.

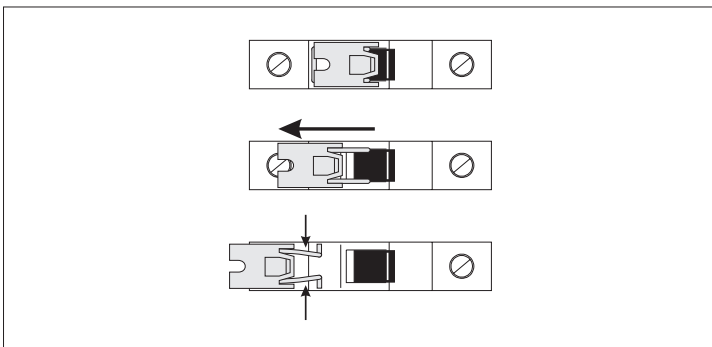


Fig.1-7: Removing the MCB ant-tamper clip.

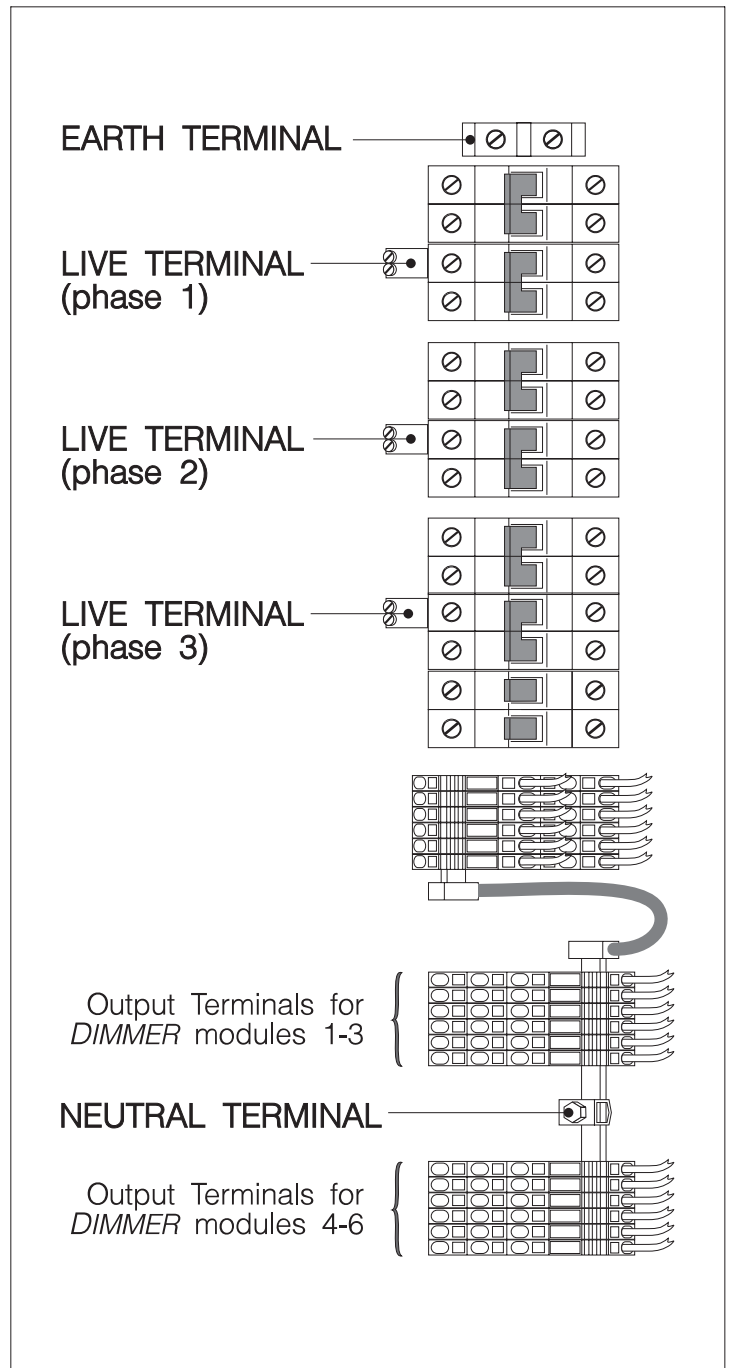


Fig.1-8: Main input terminals for HES12xxx range.

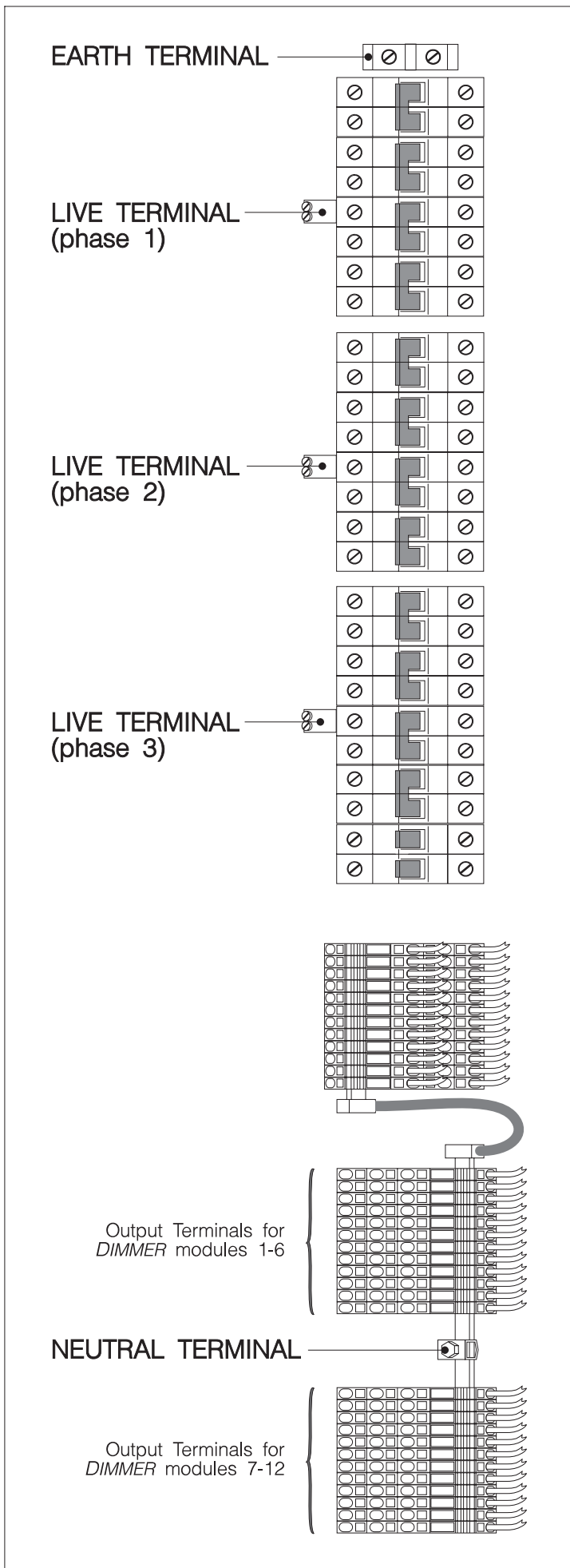


Fig.1-9: Main input terminals for HES24xxx range.

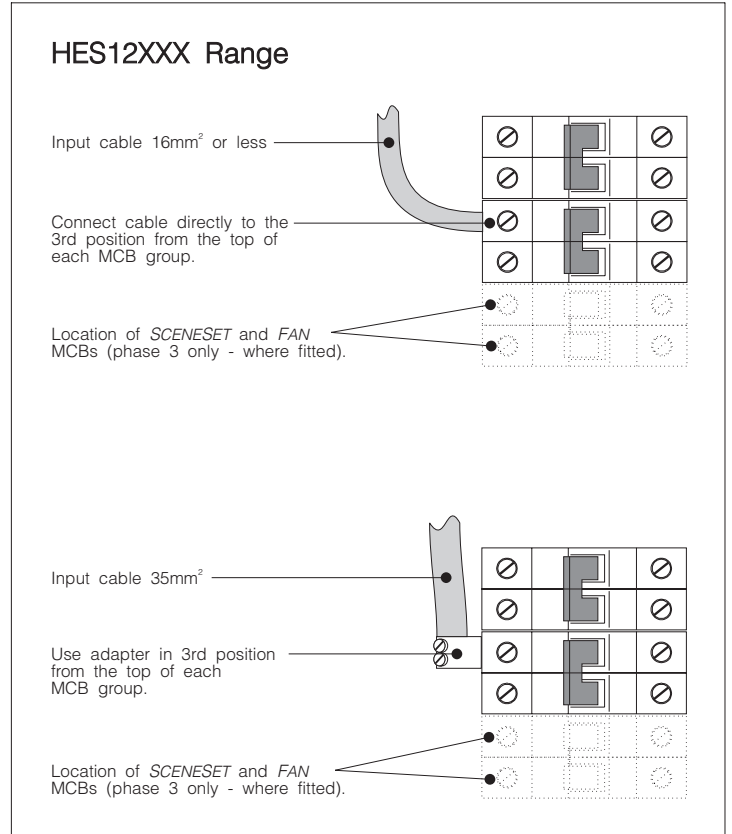


Fig.1-10: HES12xxx - live input connection methods.

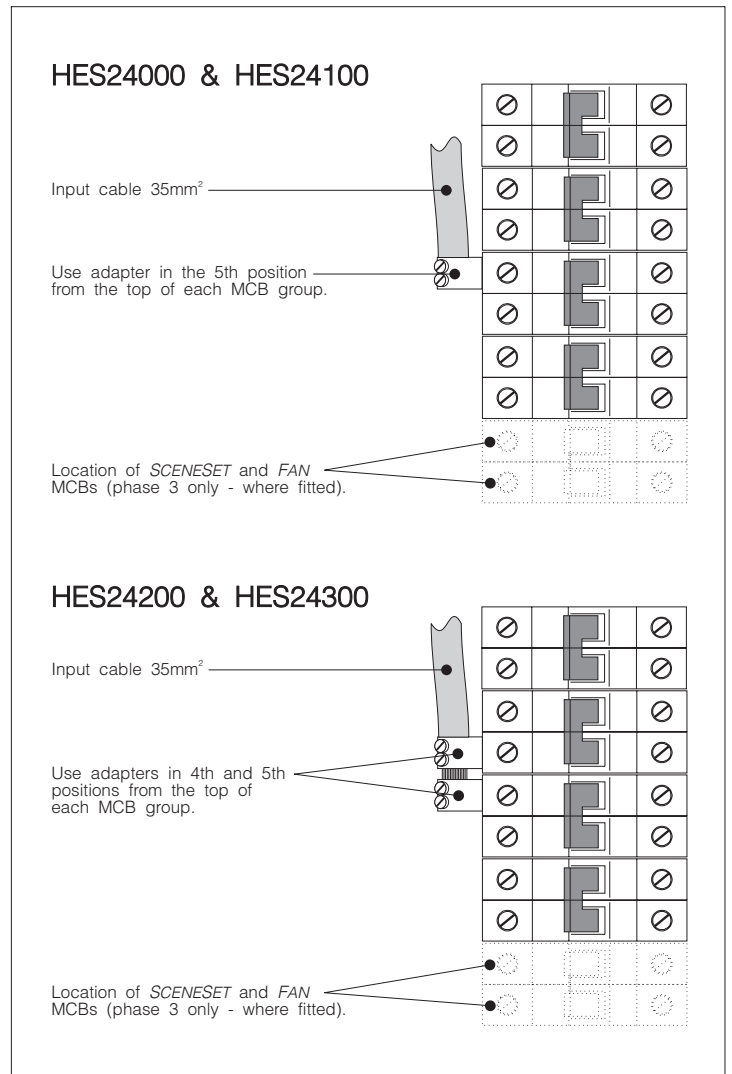


Fig.1-11: HES24xxx - live input connection methods.

## OUTPUT POWER CONNECTIONS

The connections for each output circuit are located at the bottom of the DIN mounting rail. A 'triple' terminal arrangement is provided giving a separate neutral and earth terminal for each controlled live output, allowing easy connection and identification of each circuit (see Fig.4-1).

### Cable Type

The connecting cables should conform with the following specification:

- Suitable cable type: Solid, stranded or flexible.
- Cable size:  $1.5\text{mm}^2 - 4\text{mm}^2$ .
- Stripping length: 10mm.

### Output Loading

The maximum load for each output must not exceed the rating of the input MCB. If an output is to be used with a switched load (i.e. non-dimming), it is recommended that the load should not exceed 80% of the MCB rating to avoid nuisance tripping.

### Method of Connection

The terminals are of a screw-less cage-clamp design and connection is achieved as follows (see Fig.1-12):

1. Insert the blade of a small flat-bladed screwdriver as far as it will go into the terminal release point (square hole) next to the connecting point.
2. Push the screwdriver handle to the right, which will open the cage-clamp.
3. Insert the cable into the connecting point. (If stranded wire is used, ensure that the strands are twisted together).
4. Release pressure on the screwdriver, and check the security of the connection by pulling on the cable.

#### IMPORTANT NOTE

Only one cable should be inserted into each terminal to ensure a reliable connection. If additional cables are needed (e.g. for Parallel Operation), a separate junction box or splitter must be used.

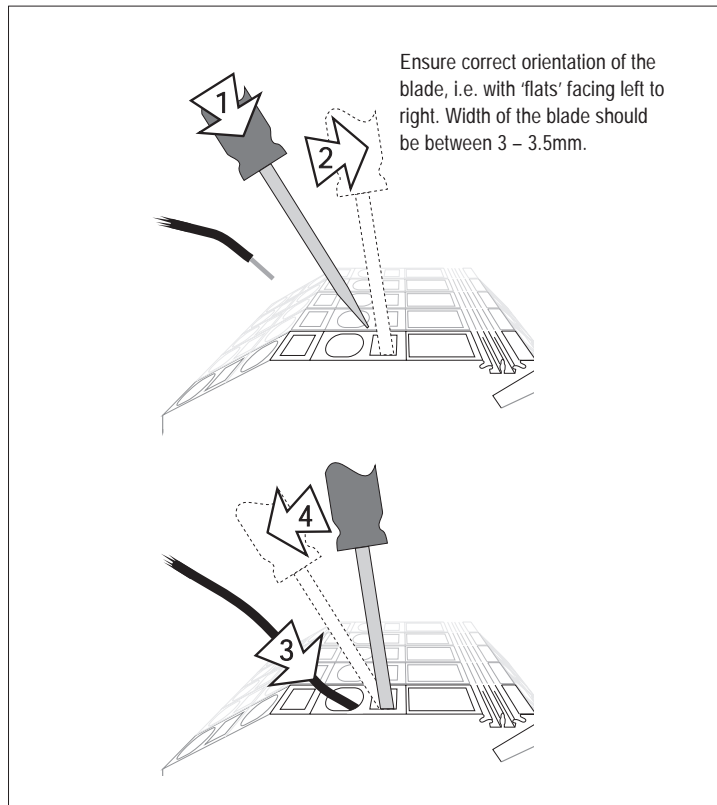


Fig.1-12: Connecting to 'cage-clamp' output terminals.

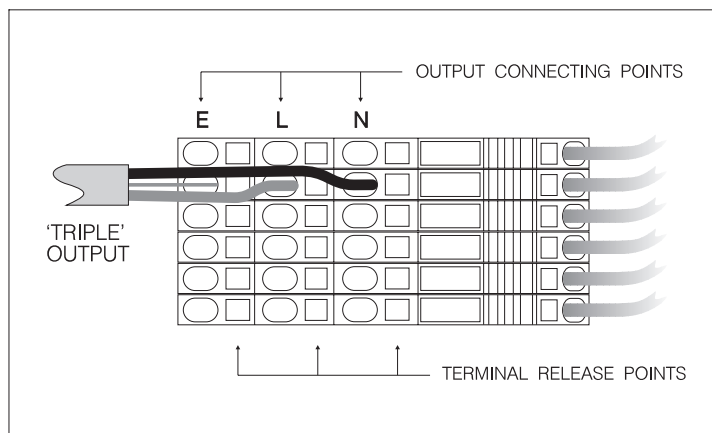


Fig.1-13: Power output connections.

### Parallel Operation

When two DIMMER outputs are required to be used in parallel to drive a higher load, a separate feed must be taken from the two output terminals and joined together in a junction box. This 'double' feed may then be connected to the load circuit.

For parallel operation, both DIMMER outputs must be set to the same channel address (refer to the User Guide for further details).

### Securing the Output Cables

When all of the output cables have been connected, they should be tied together using suitable cable ties. If additional support is required, the cables may be tied to the DIN rail support brackets.

## TESTING THE OUTPUT LOADS

### Cabinets with a SCENESET Module

With the SCENESET module unpowered, automatic watchdog will be activated which will cause each DIMMER output to assume its override level setting within a 1 second fade. The default override level is factory-set to full power.

The dimming law applied to each output is factory-set for Tungsten Linear which will be suitable for testing most load types.

#### CAUTION

Some switched loads may not be suitable for use with this dimming law or with the default 1 second fade. Refer to the User Guide for details of how to change the dimming law.

Power-up each DIMMER module in turn (via its associated MCB) and check that the loads connected to each output are functioning correctly.

#### WARNING

If a load fails to operate, remember to turn-off the appropriate DIMMER module MCB before checking for wiring or connection faults

### Cabinets without a SCENESET Module

When a SCENESET is not fitted, the same process described above may be used to check each DIMMER output provided that watchdog is activated manually.

This can be achieved by linking the two pins of the 'LEVEL' connector on the BREAKOUT module located at the base of the STACKER unit (see Fig.1-14).

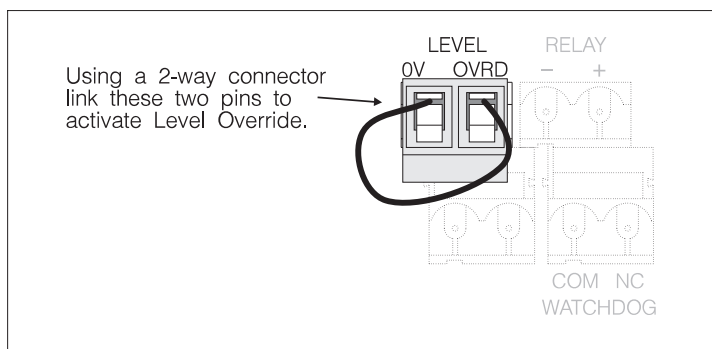


Fig.1-14: Manually activating Level Override.

## S-COM CONNECTION

#### CAUTION

Ensure that the SCENESET controller is turned-off before attempting to connect the S-COM (external) highway.

Connection to the S-COM data highway is made via the BREAKOUT module which is located at the base of the STACKER unit. There are two 5-way connectors which are electrically identical and both labelled 'PANEL' (see Fig.1-16). If the BREAKOUT module is located along the data highway, one connector should be used for each half of the highway.

Mating connector part no.: P9850 (5-way).

Cable size: 0.2 -2.5mm<sup>2</sup>.

Stripping length: 7.0mm.

#### CAUTION

Please note that the power supply connections are different on issue C and D BREAKOUT Modules — check for correct polarity before powering the S-COM line.

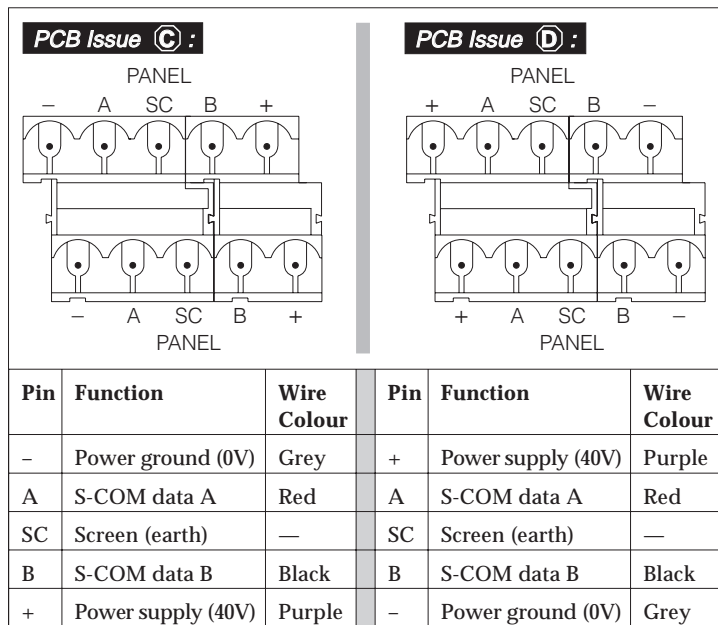


Fig.1-16: Connection details for S-COM (external).

#### CAUTION

Incorrect connections may result in damage to the internal circuitry of the controller and of any other devices connected to the S-COM (external) highway.

Check that all connections are correct and that there are no short-circuits before powering-up the SCENESET module. In particular, ensure that the data lines are not accidentally or deliberately connected to the supply lines.

### Line Termination

If the BREAKOUT module is located at one end of the data highway, set switch 4 ('PANEL') to the 'ON' position (see Fig.1-15).

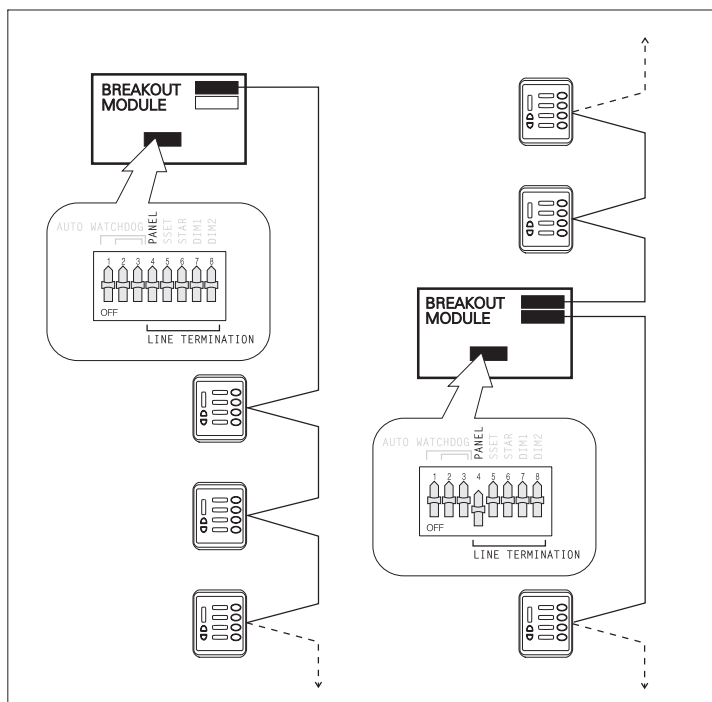


Fig.1-15: S-COM termination on BREAKOUT module.