

# Instructions

## Medical Imaging Distribution Boards

### 1 General

- 1.1 These instructions apply to the installation of and operation of single-compartment Low Voltage Distribution Boards, model numbers beginning with SL1, SL2, SR1 and SR2
- 1.2 This series is single-compartment assemblies with one or two MCCB isolators, 415V AC, and includes the following options:
  - a) 200, 160, 125A or 80A current ratings for single MCCB
  - b) 250A current rating for dual MCCB
  - c) 3 or 4 pole isolators
  - d) With or without X-Ray Warning Light Circuits
  - e) With or without Earth Leakage Protection on the main circuit
  - f) With or without Power Monitoring
  - g) With or without Emergency Power Off
- 1.3 These instructions are issued in accordance with the requirements of AS/NZS 61439.2:2016. Compliance with these instructions is necessary to ensure that the assembly meets this standard.

### 2 Safety

- 2.1 Failure to follow these instructions can result in death or serious injury.
- 2.2 Electrical equipment should be installed, operated, serviced, and maintained only by qualified personnel.
- 2.3 No responsibility is assumed by Morsen Pty Ltd for any consequences arising out of the use of this material.
- 2.4 Current Ratings are provided in the Datasheet for all distribution boards. All MCCB must have their current ratings set in accordance with those specified in the datasheet to maintain compliance with AS/NZS 61439-2. Instructions for setting the Trip Units on MCCB are provided in Paragraph 6.
- 2.5 All pertinent state, regional, and local safety regulations must be observed when installing and using this product.
- 2.6 Apply appropriate personal protective equipment (PPE) and follow safe electrical work practices. See [Code of Practice - Managing Electrical Risks in the Workplace \(NSW\)](#) or local equivalent.

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Doc	MIDB-005-001		
Desc	Installation and Operating Instructions		
Models	SX1-X200/160/125/080, SX2-X250		
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- 2.7 Turn off all power supplying this equipment before working on or inside equipment.
- 2.8 Always use a properly rated voltage sensing device to confirm power is off.
- 2.9 Replace all devices, doors, and covers before turning on power to this equipment.
- 2.10 Beware of potential hazards and carefully inspect the work area for tools and objects that may have been left inside the equipment.

### 3 Transportation and Handling

- 3.1 Refer to the Datasheet provided with individual models for size and weight information.

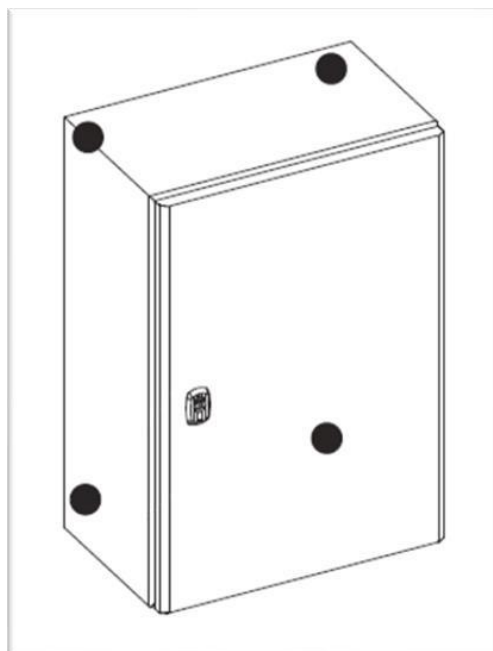
### 4 Service Conditions

- 4.1 The assembly must be installed and operated in accordance with the environmental conditions specified in the datasheet provided with the assembly, noting especially:
  - a) Suitable for Indoor use only
  - b) Ambient temperature limits as listed in the datasheet.

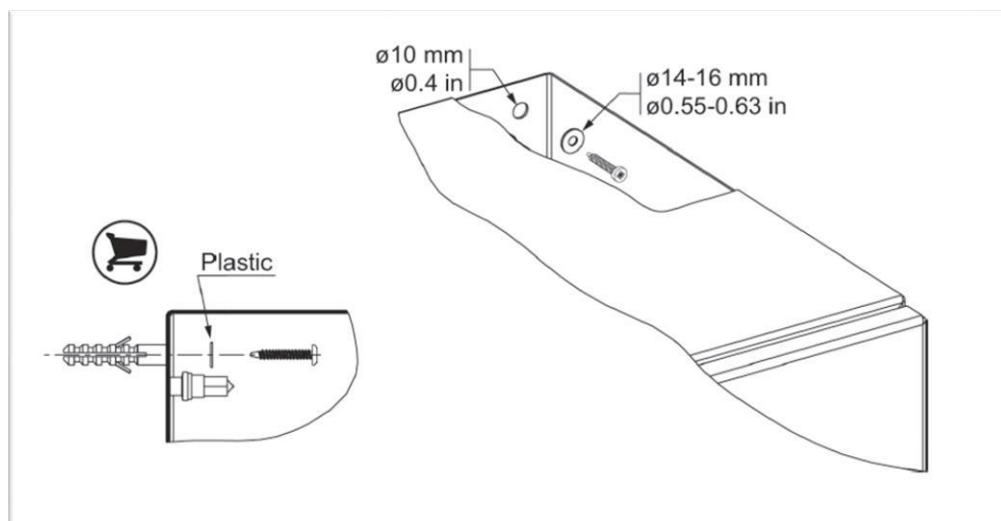
### 5 Enclosure Mounting

- 5.1 Morsen recommends installing the enclosure such that the height of the rotary handle and Emergency Stop is 1.6m or less. This is to ensure compliance with the maximum height for emergency switching devices. Where no Emergency Stop is fitted, the height of the rotary handle can be up to 2m.
- 5.2 To maintain the environmental type rating:
  - a) all conduit fittings and other components installed in openings made in the enclosure must have its same ratings, and
  - b) only wall fixing bracket NSYAEFPFXSC, NSYAEFPFSC, NSYAEFPFSC2 or NSYAEFPF40SC kit may be used.
- 5.3 Enclosures must be mounted such that air circulation for cooling is unimpeded on both sides, top and bottom.
- 5.4 When installed as a NEMA Type 2 or 3R enclosure, drill a drain hole Ø3.2-6.4mm in the lowest part of the bottom wall.
- 5.5 It is the customer's responsibility to fulfill requirements of section 19 (Openings) UL508A Standard and Section 9.6 (Equipment openings) of UL50E Standard.

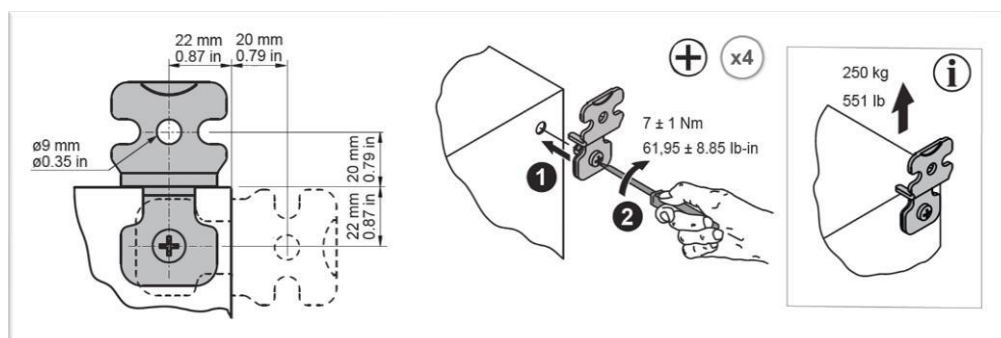
- 5.6 Fix to wall directly as shown in Figure 2 or using fixing brackets as shown in Figure 1



**Figure 1. Mounting Hole Locations**



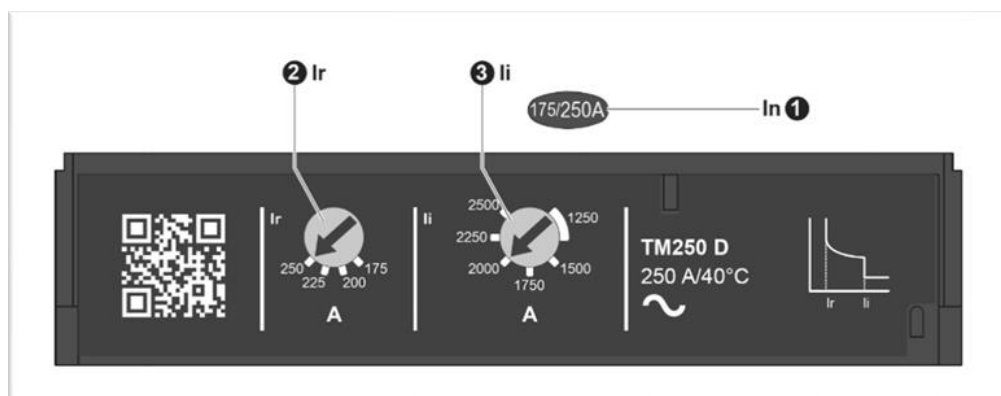
**Figure 2. Direct Fixings**



**Figure 3. Mounting Brackets**

## 6 Trip Unit Adjustment

- 6.1 All MCCB provided with Morsen Medical Imaging Distribution Boards are equipped with trip units that must be set to ensure that the distribution board does not exceed its rated current and to maintain compliance with AS/NZS 61439-2. The current rating for the distribution boards as well as individual MCCB, where applicable, are provided in the datasheet for the board.
- 6.2 For Thermal-Magnetic Trip Units (model numbers TM-D) the adjustments for current settings are shown in Figure 4
  - a) Set the Long-Time Protection Pick-Up ( $I_r$ ) to the current rating of the MCCB specified in the datasheet. This is the only setting required to ensure that the distribution board does not exceed its current rating.
  - b) The Instantaneous Protection Pick-Up ( $I_i$ ) is adjustable on 4-Pole TM-D Trip Units can be set to any value according to site requirements, for example to manage Earth Fault selectivity with upstream protective devices. Unless instructed otherwise, this should be set to its maximum value

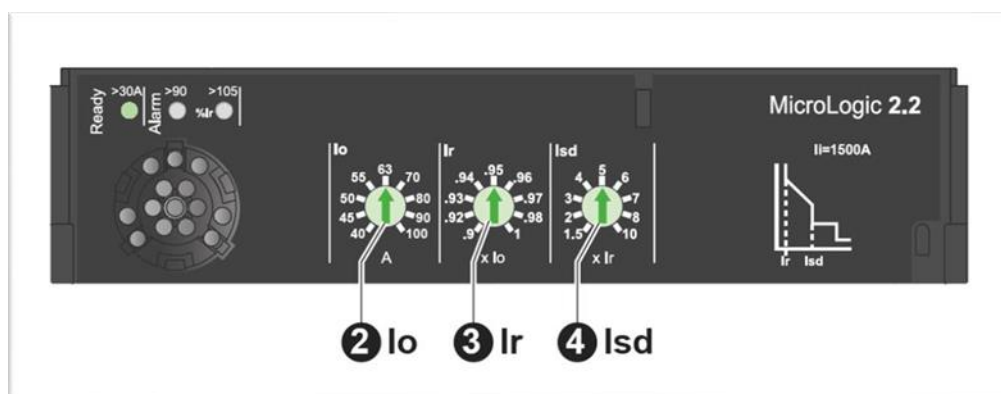


**Figure 4. Schneider TM-D Trip Unit – Current Settings**

4-Pole unit is shown, with adjustable Instantaneous Protection Pickup ( $I_i$ )

6.3 For Schneider Micrologic 2.2, Vigi 4.2 and 5.2E Electronic, the adjustments for current settings are shown in Figure 5.

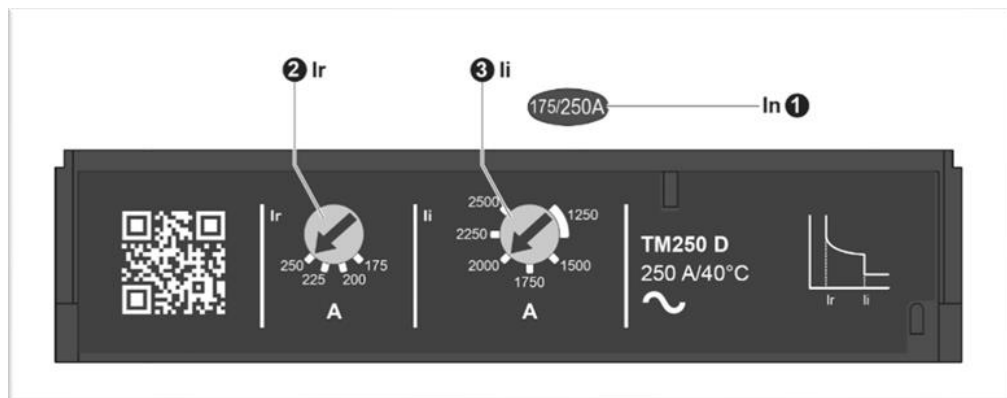
- Set the Current Out ( $I_o$ ) to the current rating of the MCCB specified in the datasheet. This is the only setting required to ensure that the distribution board does not exceed its current rating.
- The Long-Time Protection Pick-Up ( $I_r$ ) may be adjusted to less than  $I_o$  to suit site requirements. Unless instructed otherwise, this should be set to 1.
- The Short-Time Protection Pick-Up ( $I_{sd}$ ) can be set to any value according to site requirements, for example to manage Earth Fault selectivity with upstream protective devices. Unless instructed otherwise, this should be set to its maximum value.



**Figure 5. Schneider MicroLogic 2.2, Vigi 4.2 and 5.2E Trip Units – Current Settings**

6.4 For Schneider Micrologic Vigi 7.2 Electronic Trip Units, the adjustments for current settings are shown in Figure 6.

- a) Set the Long-Time Protection Pick-Up ( $I_r$ ) to the current rating of the MCCB specified in the datasheet. This is the only setting required to ensure that the distribution board does not exceed its current rating.
- b) The Short-Time Protection Pick-Up ( $I_{sd}$ ) can be set to any value according to site requirements, for example to manage Earth Fault selectivity with upstream protective devices. Unless instructed otherwise, this should be set to its maximum value.



**Figure 6. Schneider Micrologic Vigi 7.2E Trip Unit – Current Settings**

4-Pole unit is shown, with adjustable Instantaneous Protection Pickup ( $I_i$ )

6.5 For all other features and adjustments of the trip unit, refer directly to the Schneider instruction manual.

- a) A link to download the instruction manual is provided on the Morsen Distribution Boards web page for each model. Access the web page by following the QR Code on the front of the Distribution Board, or from the model list at <http://morsen.com.au/DistributionBoards>
- b) Go to the Schneider website at the following link and find the applicable Trip Unit with all current documents:  
<https://www.se.com/au/en/product-range/39910531-compact-nxs-new-generation/#products>

## 7 Electrical Connections

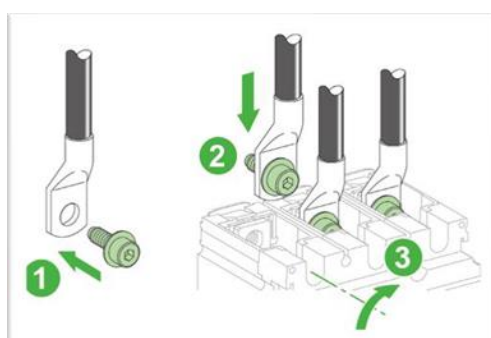
### 7.1 HAZARD OF FIRE

7.2 Use only specified wiring cross-section with the equipment and comply with the specified wiring requirements.

7.3 Tighten the connections to the specified torque values.

7.4 Failure to follow these instructions can result in death, serious injury, or equipment damage.







7.5 Maximum compression lug width for all moulded-case circuit breakers supplied with this equipment is 25mm.



**Figure 7. Compression Lugs**

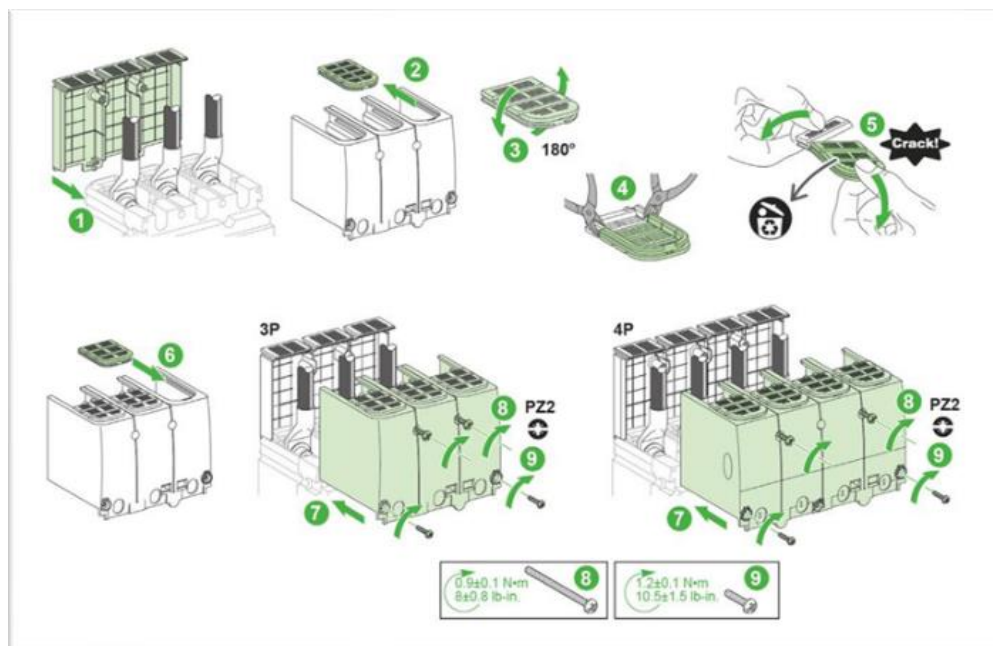
Connect cables using compression lugs in the sequence shown.

Recommended conductor sizes are 120, 150 and 185mm<sup>2</sup>

100 A			
$\varnothing \geq 6$ $\varnothing \geq 0.23$	 <b>M6x20</b>	 <b>PZ2/PZ3</b>	 $10 \pm 1 \text{ N}\cdot\text{m}$ $88 \pm 9 \text{ lb}\cdot\text{in.}$
160/250 A			
$\varnothing \geq 8$ $\varnothing \geq 0.31$	 <b>M8x20</b>	 <b>6 mm</b> <b>15/64 in.</b>	 $15 \pm 1.5 \text{ N}\cdot\text{m}$ $130 \pm 13 \text{ lb}\cdot\text{in.}$

**Figure 8. Torque Specification**

Connect compression lugs using screw sizes, types, and tightening torque appropriate to the circuit breaker size, as shown



**Figure 9. Terminal Shields**

Adjust grids and install terminal shields as shown

<div> <div> <div>Phillips head 'PH'</div> <div></div> <div></div> </div> <div> <div>Pozidriv head 'PZ'</div> <div></div> <div></div> </div> <div> <div></div> <div></div> </div> </div>										
mm	mm <sup>2</sup>	mm <sup>2</sup>	mm <sup>2</sup>	mm <sup>2</sup>	mm <sup>2</sup>	mm <sup>2</sup>	mm	C N.m	L mm	Ø mm
1 x 6,35 2 x 2,8	0,34 ⋮ 2,5	0,34...2,5 + 0,34...1,5	0,75...4	0,75...4 + 0,75...4	1,5...4	1,5...4 + 1,5...4	7	1.3	7	3
										8

**Figure 10. Control Contactor Connections**



## 7.6 Connect to Terminal Blocks according to the following:

- a) Cable cross section
  - 0.14...6 mm<sup>2</sup>, solid cable with cable end
  - 0.2...4 mm<sup>2</sup>, flexible cable with cable end
  - 0.2...6 mm<sup>2</sup>, solid cable without cable end
  - 0.2...6 mm<sup>2</sup>, flexible cable without cable end
- b) Tightening torque 0.6...0.8 Nm
- c) Wire stripping length 9mm

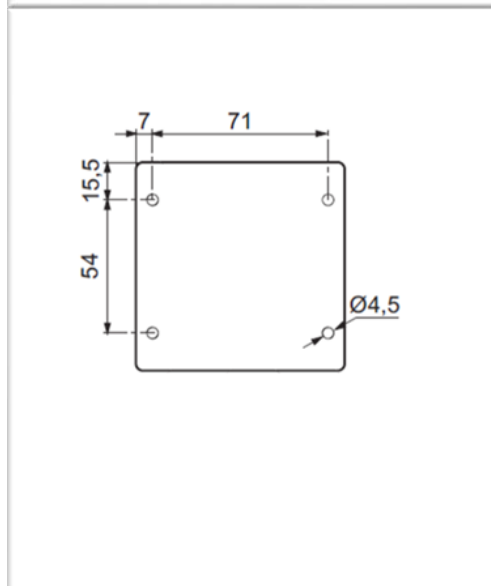
## 8 Additional Emergency Power Off Buttons



**Figure 11. Siemens E-Stops**

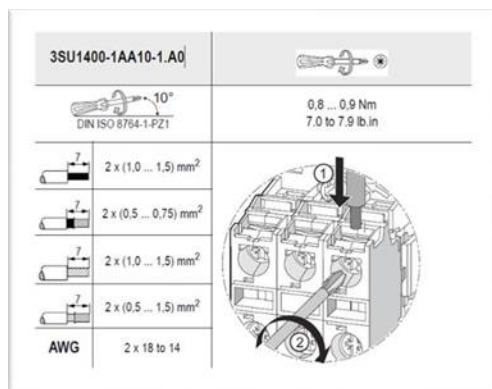
Additional Emergency Power Off buttons are provided complete with base-mounted enclosure, protective collar and screw-terminal contact modules, as shown.

When reassembling, tighten the enclosure screws visible in the figure to 1.5-1.7Nm



**Figure 12. E-Stop Mounting**

Mount the enclosure using suitable fasteners for the mounting surface. Mounting hole centres and sizes are provided

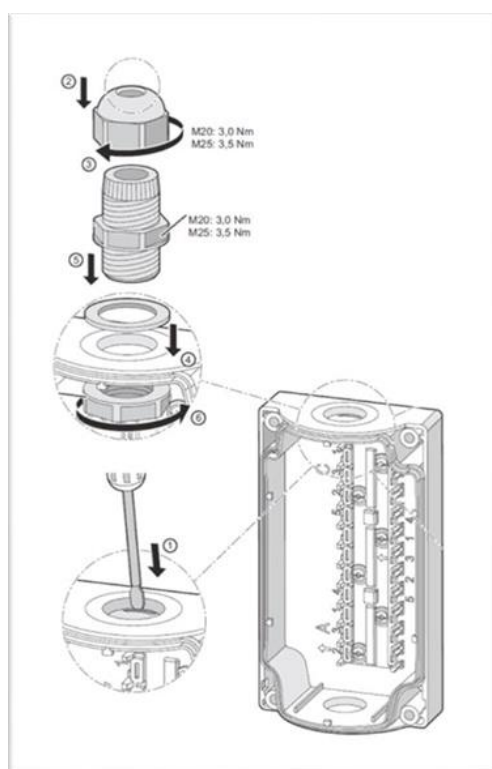


**Figure 13. Contactor Terminals**

Connect to contactor terminals using conductor sizes, tools and tightening torque shown

- 8.1 Choose a metric screw connection according to the cable size as per the table below. Suggested Siemens part numbers are provided

Cable Diameter	Screw Connection	Part Number
Ø 5-12mm	M20	3SU1900-0HG10-0AA0
Ø 9-14mm	M25	3SU1900-0HH10-0AA0



**Figure 14. Cable Glands**

Install in the sequence indicated by the numbers 1 to 6 and the torque specifications shown