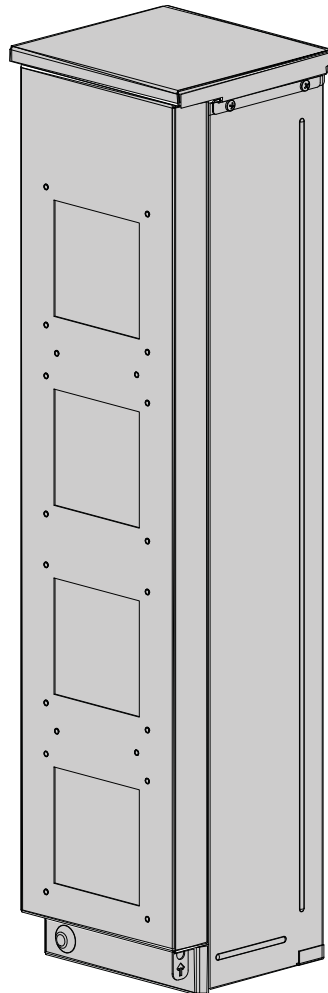


PowerLogic® High Density Metering System 4-Meter Enclosure Installation Guide

7002-0289-00

Instruction Bulletin



HAZARD CATEGORIES AND SPECIAL SYMBOLS

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



The addition of either 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 or serious injury.

⚠ CAUTION
CAUTION indicates a potentially hazardous situation which, if not avoided, can result in minor or moderate injury.

CAUTION
CAUTION , used without the safety alert symbol, indicates a potentially hazardous situation which, if not avoided, can result in property damage.



Provides additional information to clarify or simplify a procedure.

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.

4-METER ENCLOSURE

Introduction	1
Box Contents	1
Parts and Accessories	1
Safety Precautions	2
Specifications	2
Installation	4
Mounting the Enclosure	6
Mounting Dimensions	8
Wiring Connections	10
Shorting Block Use	11
Current Transformers	12
Wiring Diagrams	13
Control Power	15
Replacing CPT Secondary-Side Fuse	16
Communications	17
Initializing the Meters	17
Removing a Meters	18
Cover Plates	19

METER WIRING PATTERNS

Safety Precautions	21
Wire Colors	21

SECTION 1— 4-METER ENCLOSURE

INTRODUCTION

The PowerLogic® High Density Metering System is used to monitor the amount of electricity used in individual units of multi-unit residential or commercial buildings. The system consists of one or more power meters housed in a wall-mounted metal cabinet or enclosure. Multiple enclosures may be installed at a single location.

Meters are assigned to a tenant who occupies an individual unit within a complex. The meter monitors and records the energy consumed inside the unit. At pre-determined times, tenant billing software polls the meter through a communications link to gather usage information. This information can be used as a means of monitoring overall electrical usage or to generate an electric bill for the tenant.



Some states do not permit sub-billing. Before billing tenants, check your state and local regulations.

BOX CONTENTS

The following components are shipped with the 4-Meter Enclosure:

- Enclosure containing pre-installed meters (if any), shorting blocks, ground bar, wiring harness, and disconnect
- MCT2W terminating resistor
- Cover plate assembly kit
- Installation bulletin for meter
- This installation guide

PARTS AND ACCESSORIES

The following PowerLogic meters can be mounted in the enclosure:

- PM210
- PM750
- ION6200

The enclosure is typically shipped with the meters factory-installed and wired. The 4-Meter Enclosure can contain from 0-4 meters.

Table 1 lists part numbers and accessories for the High Density Metering System—4-Meter Enclosure.

Table 1: Parts and Accessories

Description	Part Number
PowerLogic Power Meter	See Power Meter installation document (PM210, PM750, ION6200).
Cover Plate Assembly Kit	96DINCVRLT

For more information on your particular meter, see the meter installation bulletin (also available in the technical library at www.powerlogic.com).

PowerLogic® Tenant Metering Software is purchased separately and includes installation and use instructions.

SAFETY PRECAUTIONS

This section contains important safety precautions that must be followed before attempting to install, service, or maintain electrical equipment. Carefully read and follow the safety precautions outlined below.

⚠ DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

- Apply appropriate personal protective equipment (PPE) and follow safe electrical work practices. See NFPA 70E.
- This equipment must be installed and serviced only by qualified electrical personnel.
- Turn off all power supplying this equipment before working on or inside equipment.
- Always use a properly rated voltage sensing device to confirm that power is off.
- All unused conductors not terminating in an insulated connector or plug at the enclosure bracket(s) must be protected using enclosed heat shrink sleeves or electrical tape.
- Replace all devices, doors, and covers before turning on power to this equipment.

Failure to follow this instruction will result in death or serious injury.

⚠ WARNING

**BONDING BETWEEN METALLIC PARTS IS NOT AUTOMATIC.
SUPPLIED SCREW MUST BE INSTALLED TO MAINTAIN BONDING.**

Failure to follow this instruction can result in electrical shock.

SPECIFICATIONS

Table 2: Technical Specifications

PHYSICAL CHARACTERISTICS	
Dimensions	
Without hood	W 7.42 inches, H 30.8 inches, D 7.37 inches [W 189 mm, H 288 mm, D 188 mm]
With hood	W 7.88 inches, H 31.5 inches, D 7.50 inches [200.03 mm, H 303 mm, D 191 mm]
Mounting	Wall mount
Weight (maximum including meter, hood, and Control Power Transformer (CPT))	46 lbs./22.2 kg.
COMMUNICATIONS	
RS485 port	2-wire, up to 19200 baud, Modbus RTU
POWER	
Power specifications vary according to equipment configuration. See separate power specifications in Table 3.	

Table 2: Technical Specifications *(continued)*

ENVIRONMENTAL CHARACTERISTICS	
Meter operating temperature	
PM210, PM750	-10° C to +55° C
ION6200	-20° C to +70° C
Storage temperature	-40° C to +85° C
Humidity rating	5 to 95% RH at 50° C (non-condensing)
Pollution degree	2
Altitude	9842 ft./3000 m
STANDARDS	
US and Canada	
Enclosure	UL 508A
Meter Accuracy Rating	
PM210	ANSI C12.16 Accuracy Class 1
PM750	ANSI C12.20 Accuracy Class 0.5
ION6200	ANSI C12.20 Accuracy Class 0.5

Table 3: Power Specifications

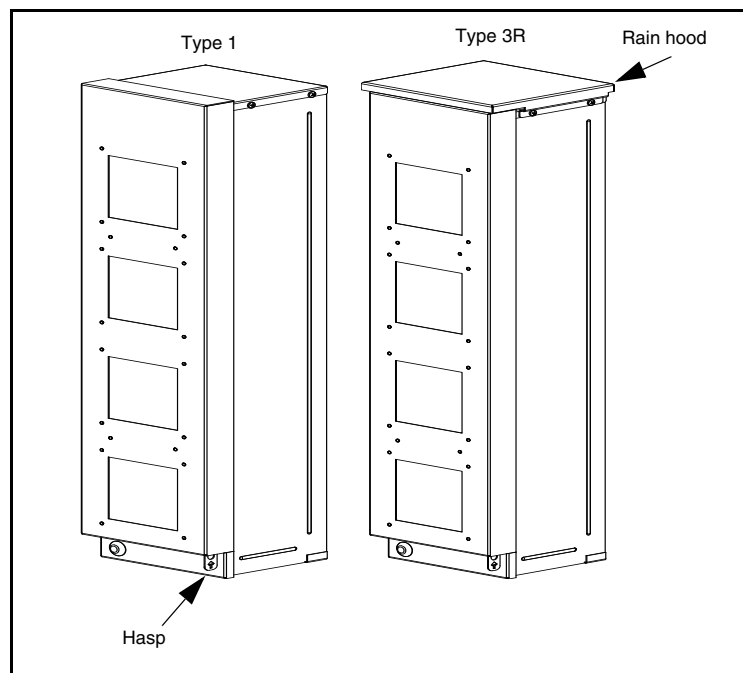
Meter	Specification
Without Control Power Transformer (CPT)	
PM210	115 to 415 \pm 10% Vac, 5 VA x 4 = 20 VA; 50 to 60 Hz or 125 to 250 \pm 20% Vdc, 3W
PM750	115 to 415 \pm 10% Vac, 5 VA x 4 = 20 VA; 50 to 60 Hz or 125 to 250 \pm 20% Vdc, 3-wire
ION6200	100 to 240 Vac, 13 VA x 4 = 52 VA; 50 to 60 Hz or 110 to 300 Vdc, 8W
With CPT	
PM210	480 \pm 10% Vac, 30 VA; 60 Hz
PM750	480 \pm 10% Vac, 30 VA; 60 Hz
ION6200	480-600 \pm 10% Vac, 65 VA; 60 Hz
CT inputs	
CT inputs	5 A nominal, 6 A maximum
Voltage Inputs	
PM210/PM750	10 to 480 Vac (L-L) 10 to 277 Vac (L-N) 10 to 1.6 MVac with external VT
ION6200	100 to 600 Vac (L-L) 60 to 347 Vac (L-N)

INSTALLATION

The 4-Meter Enclosure is available in two configurations (see Figure 1). The Type 1 configuration has clear viewing windows in the door and is intended for indoor applications. The Type 3R configuration has a rain hood and a solid door (no viewing windows) and is intended for outdoor applications.

The door is equipped with a hasp for a lock or seal to prevent tampering.

Figure-1: 4-Meter Enclosure

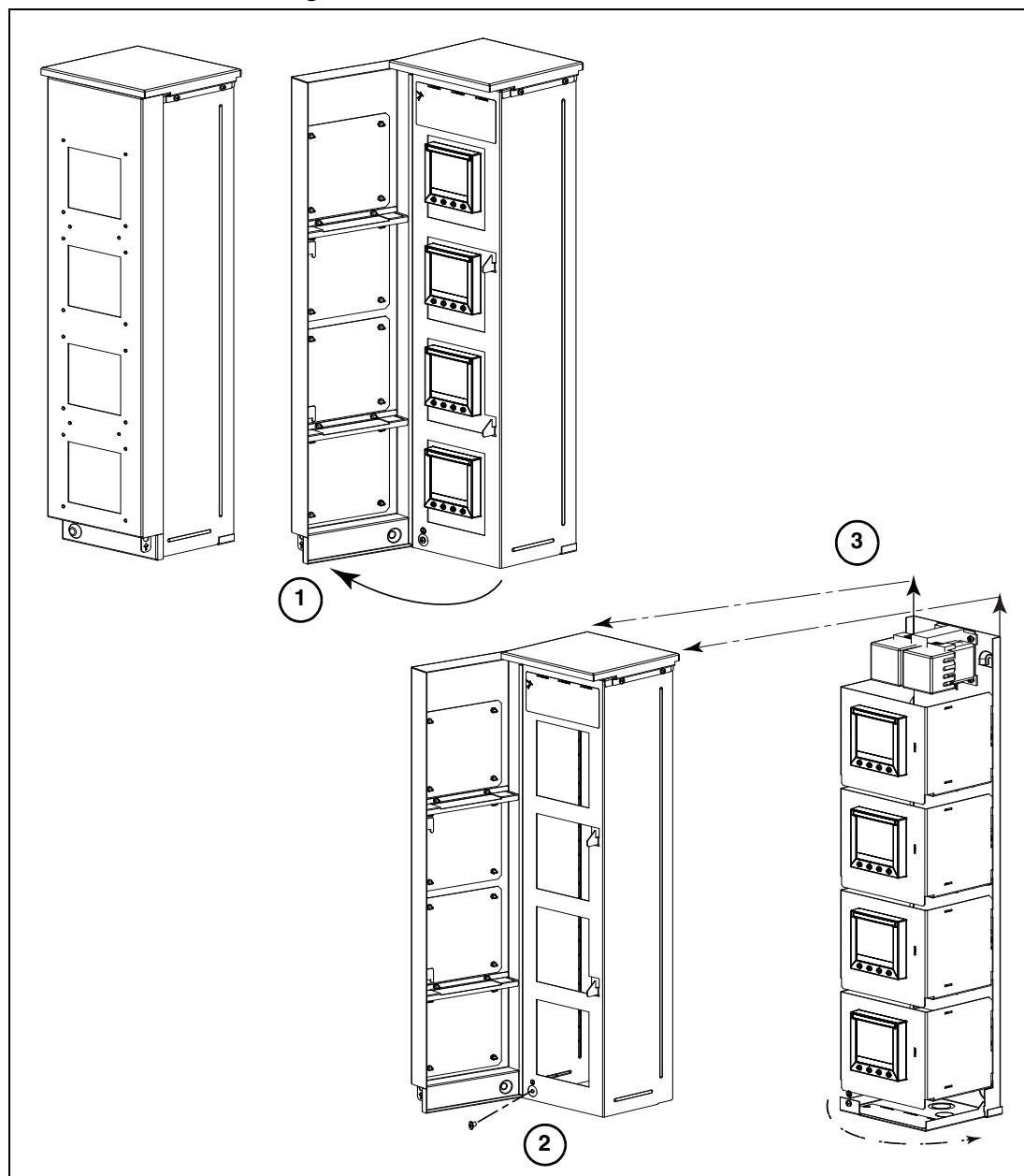


The meters, interior components, and wiring connections are covered by a protective, removable, exterior case enclosure. To access the interior, remove the case from the supporting base/backplate (see Figure 2). The meters are positioned on a supporting bracket attached to the base/backplate that swivels outward to allow access to the back of the meter and terminals for field wiring.

To remove the case, complete these steps:

1. Push the locking bar up to open the door.
2. Remove the front bonding screw.
3. Lift the case up and out to slide off the base/backplate.

Figure-2: Case Removal

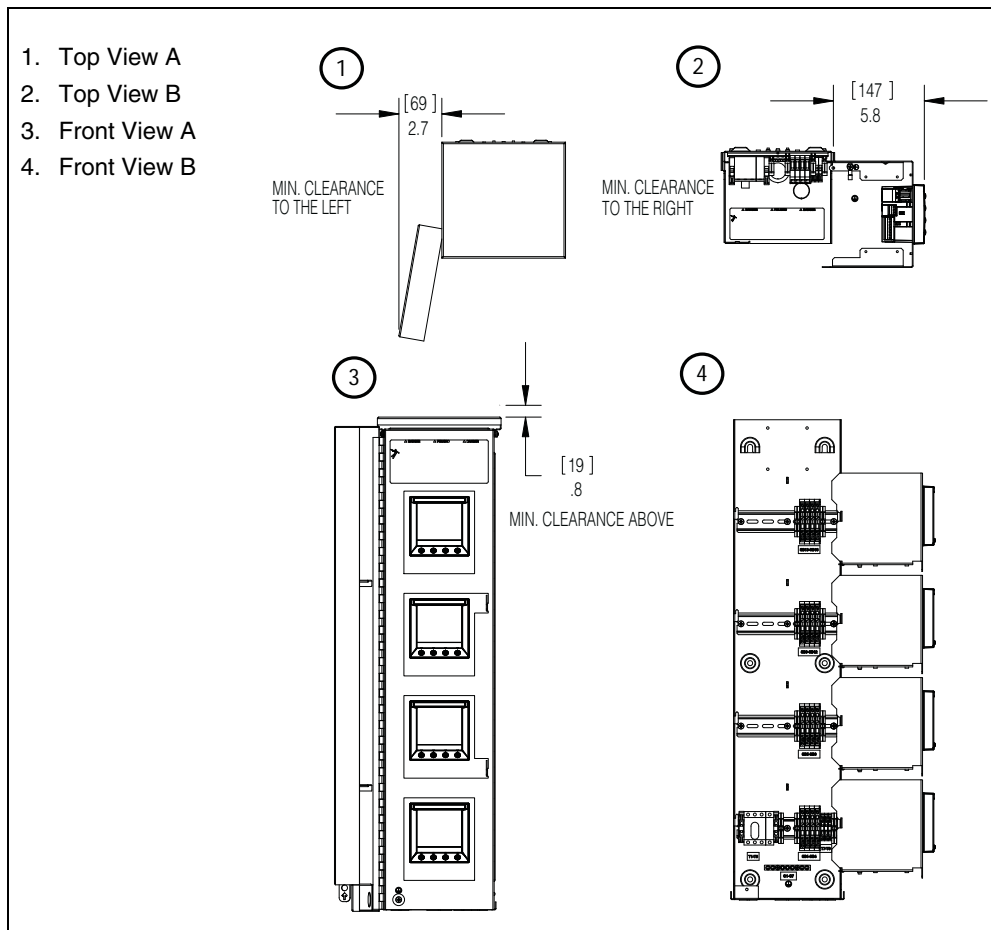


MOUNTING THE ENCLOSURE

Mount the metering enclosure next to the distribution panelboard that serves the load to be monitored.

The recommended clearances for the installed enclosure are shown in Figure 3 below:

Figure-3: Recommended Enclosure Clearances



CAUTION

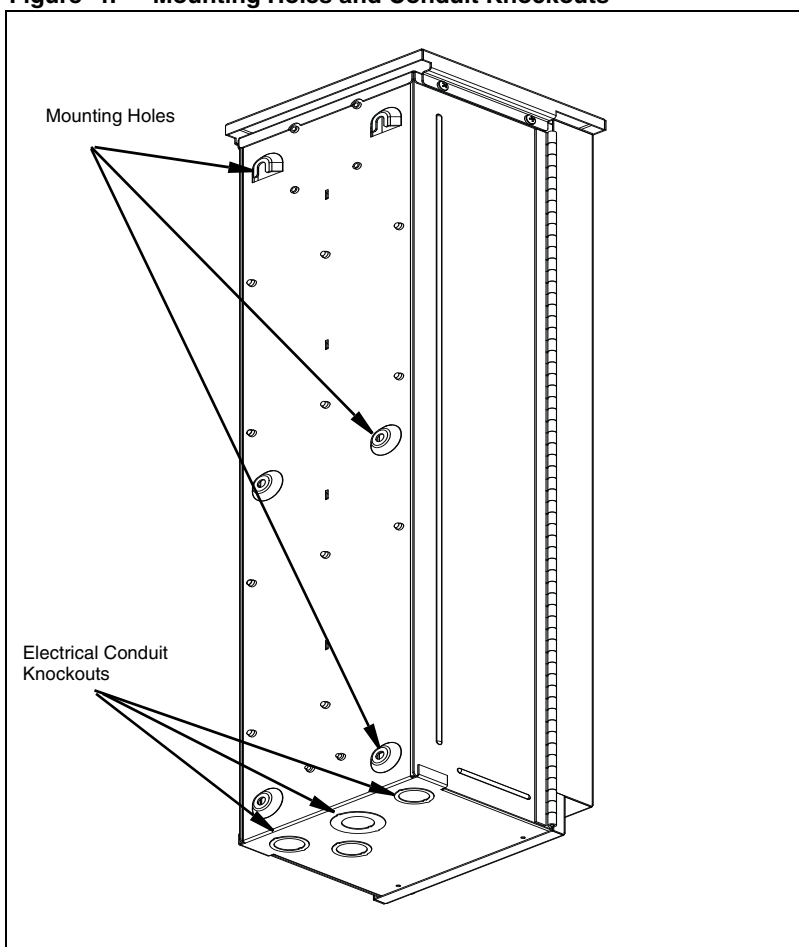
EQUIPMENT DAMAGE HAZARD

Do not drill into the enclosure. Drilling will produce metal shavings that may fall into vents, reduce spacings, and possibly create electrical short circuits.

Failure to follow this instruction can result in equipment damage.

Six (6) pre-drilled 3/8-inch holes are provided on the backplane of the enclosure for mounting. Use #10 or up to 5/16-inch screws, with washers, to attach the enclosure to the wall. Always mount with a minimum of six (6) screws. Figure 4 shows the pre-drilled mounting holes and knockout points for the electrical conduit.

Figure-4: Mounting Holes and Conduit Knockouts



Mounting Dimensions

Figure 5 shows dimensions for the enclosure without the hood. Figure 6 shows dimensions for the enclosure with a hood. Measurements shown are in [millimeters] and inches.

Figure-5: Dimensions for Type 1 Enclosure (without Hood)

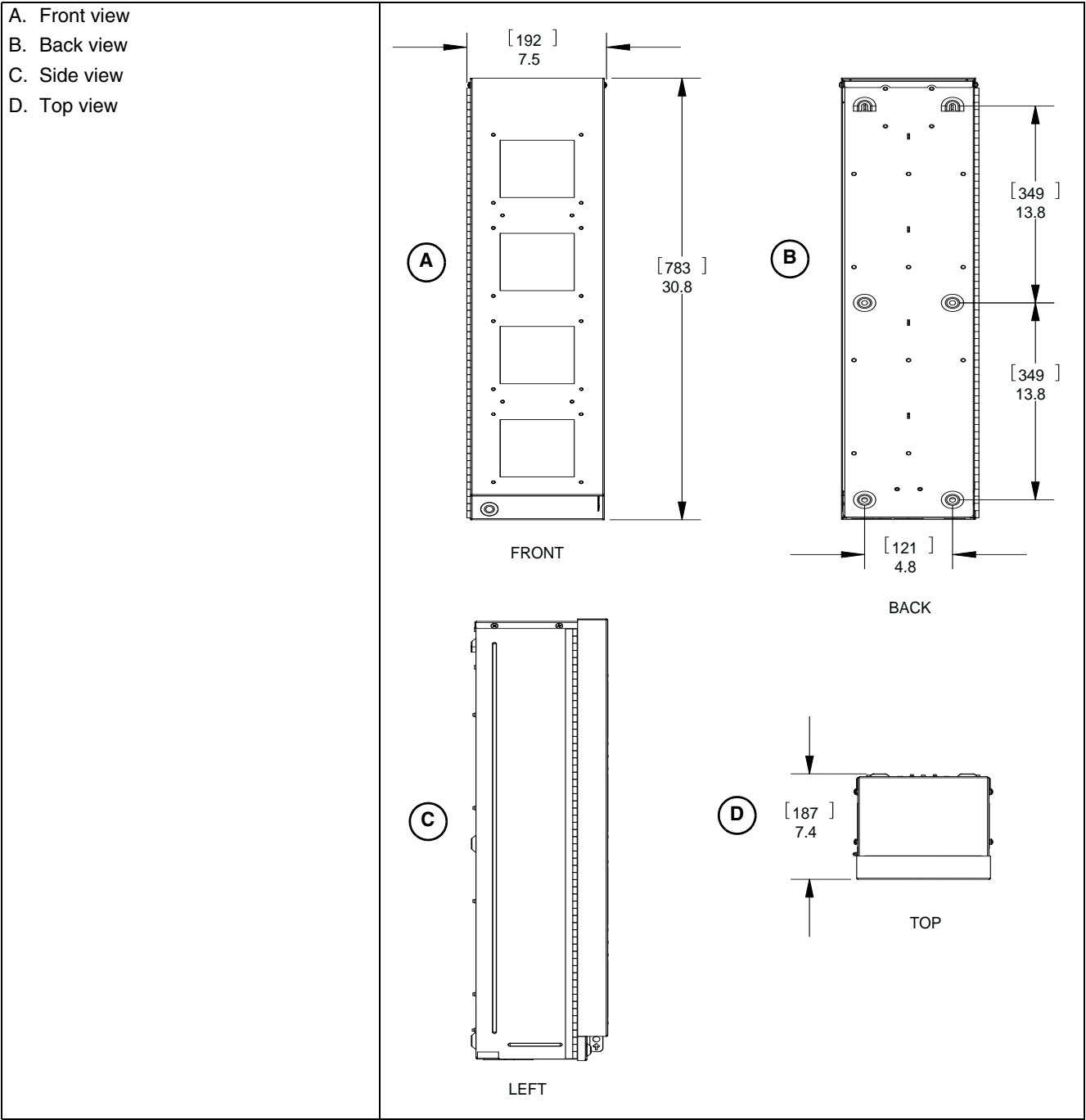
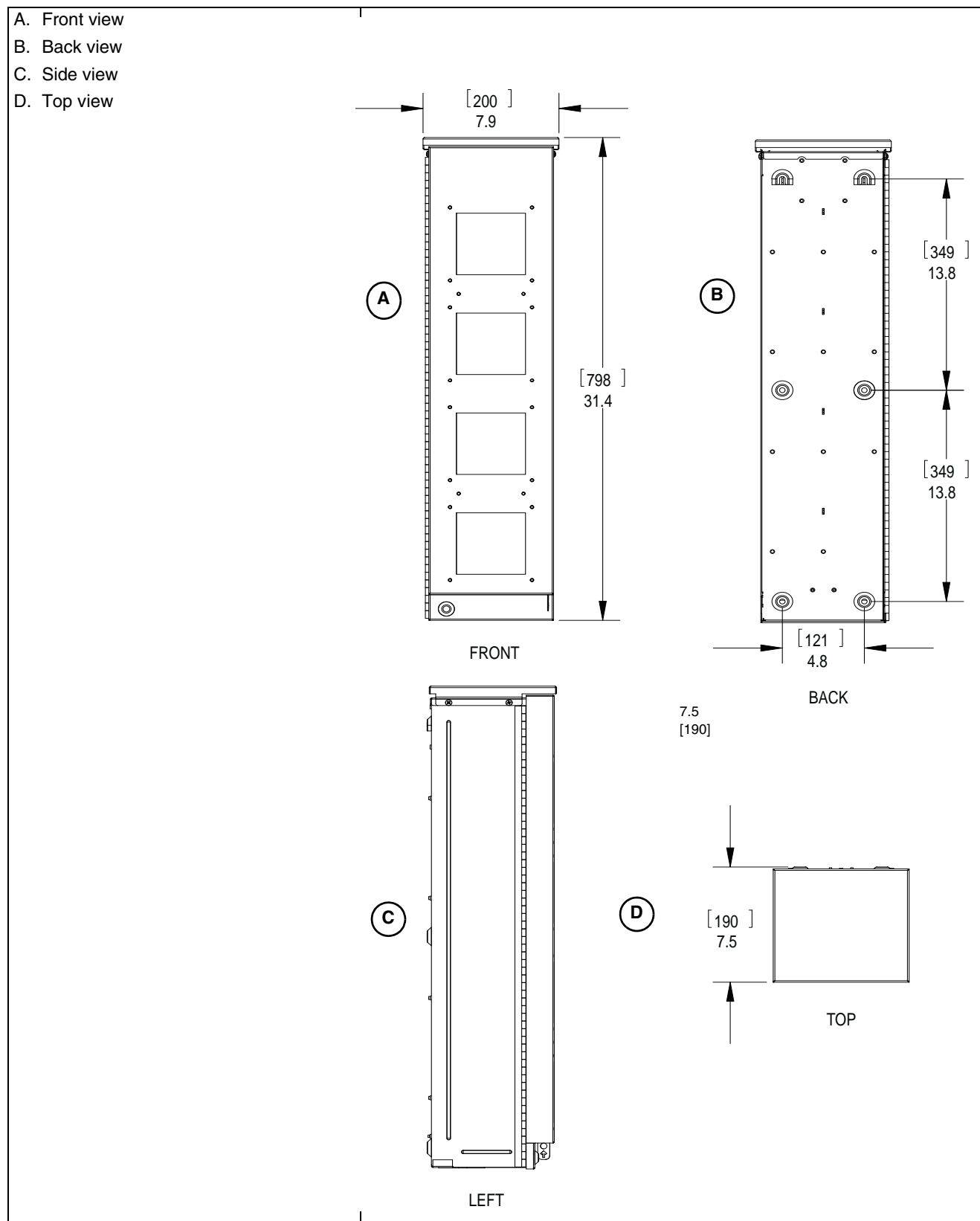


Figure-6: Dimensions for Type 3R Enclosure (with Hood)



WIRING CONNECTIONS

Conduit knockouts are provided on the enclosure (see Figure 4 on page 7). To comply with national and local standards, Class 1 (voltage input) wiring must be kept separate from Class 2 (current transformer and communications) wiring. Refer to NEC code and local codes before installing. For all field wiring, use copper conductors with 600V rated insulation only.

Control power and voltage inputs require overcurrent protection external to the enclosure. Voltage inputs must be connected to the load side of a Class CC, G, J, RK1, RK5, L or T 15A branch circuit fuse or inverse-time/instantaneous-trip circuit breaker. Use copper conductors only.

Conduit hubs must be rated to the same weather rating as the enclosure and must comply with the standard for Conduit, Tubing and Cable Fittings, UL 514B.

The wiring configuration is designed specifically for the High Density Metering System application. Do not change the wiring configuration.

DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

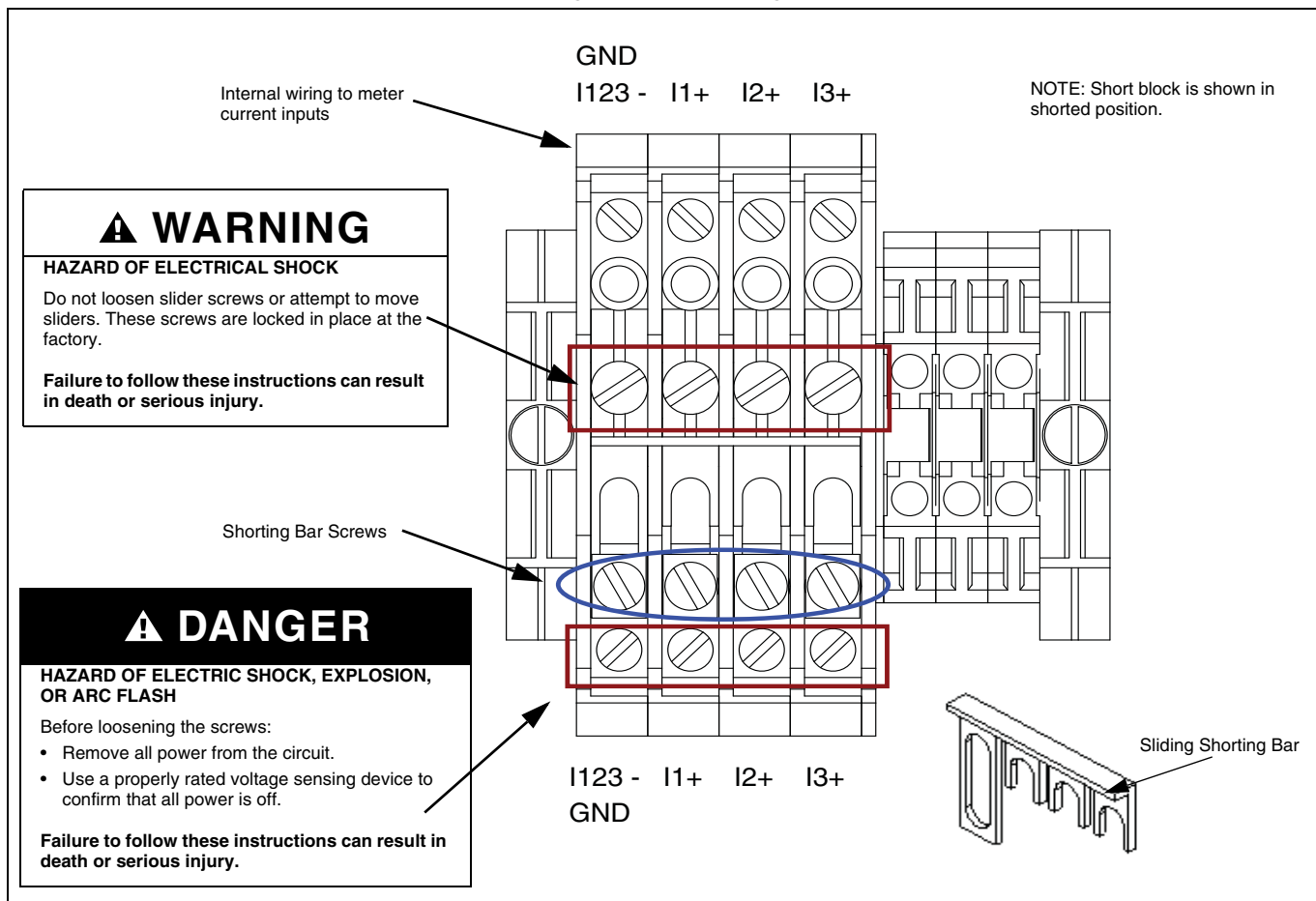
- Apply appropriate personal protective equipment (PPE) and follow safe electrical work practices. See NFPA 70E.
- This equipment must be installed and serviced only by qualified electrical personnel.
- Turn off all power supplying this equipment before working on or inside equipment.
- Always use a properly rated voltage sensing device to confirm that power is off.
- All unused conductors not terminating in an insulated connector or plug at the enclosure bracket(s) must be protected using enclosed heat shrink sleeves or electrical tape.
- Replace all devices, doors, and covers before turning on power to this equipment.

Failure to follow this instruction will result in death or serious injury.

Shorting Block Use

See Figure 7 and follow the instructions below for using the shorting blocks.

Figure-7: Shorting Block Use



Shorting the Current Inputs

By default, the current inputs are shorted when you receive the enclosure. To short the current inputs, complete these steps:

1. Turn off all power supplying this equipment before working on or inside this equipment. Use a properly rated voltage sensing device to confirm that all power is off.
2. Loosen the four (4) shorting bar screws.
3. Slide shorting bar toward field connection screws or bottom of the enclosure.
4. Tighten all four (4) shorting bar screws (6 ± 1 in. lbs.).

Removing Short from Current Inputs

To measure the energy from the circuit, you must remove the default short from the current inputs. To remove short from the current inputs, complete these steps:

1. Turn off all power supplying this equipment before working on or inside this equipment. Use a properly rated voltage sensing device to confirm that all power is off.
2. Ensure field wiring leads from current transformers are securely connected to the shorting block.
3. Ensure wiring within the enclosure is securely connected to a metering device.
4. Loosen the four (4) shorting bar screws.
5. Slide shorting bar away from field connection screws or toward the top of the enclosure.
6. Tighten the left-most (GND) shorting bar screw.

Current Transformers

Field-installed current transformer (CT) leads require stripped wire terminal connections. The CT shorting block is shipped in the shorted position by default from the factory.



Recommend metering class current transformers with 5A secondary.

⚠ DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH


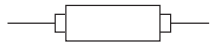



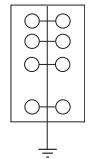


- Never open circuit a CT; use the shorting block to short circuit the leads of the CT before attaching or removing any meter.

Failure to follow this instruction will result in death or serious injury.

Wiring Diagrams

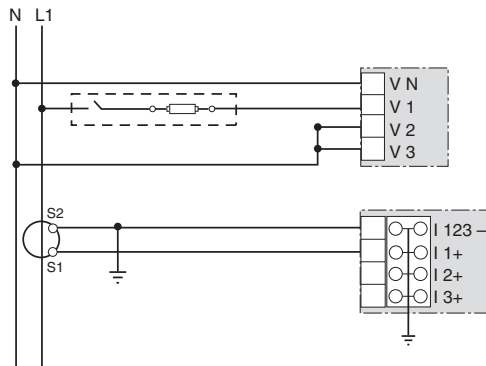
The wiring diagrams in this manual use the symbols shown in Table 4.

Table 4: Wiring Diagram Symbols

Symbol	Description
	Voltage disconnect switch
	Fuse
	Earth Ground
	Protective conductor terminal symbol
	Current transformer
	Shorting block
	Potential transformer
	US equivalent: 

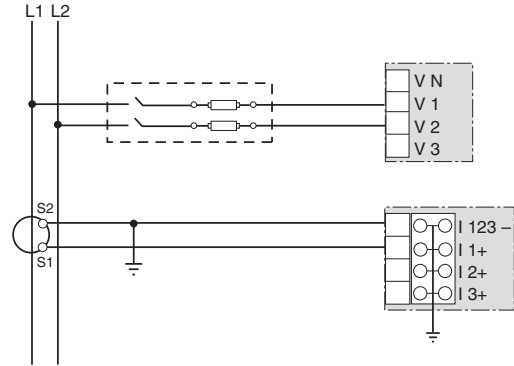
NOTE: The disconnect circuit breaker must be placed within reach of the power meter and labeled: **Disconnect Circuit Breaker for Power Meter.**

Figure-8: 1-Phase 2-Wire System Line-to-Neutral 1CT



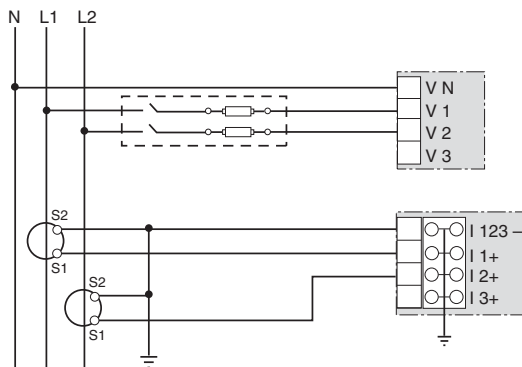
- For PM210 and PM750, use System Type 10.
- For ION6200, use Volts Mode 2W.
- To avoid distortion, use parallel wires for control power and voltage inputs. Keep the fuse close to the power source.

Figure-9: 1-Phase 2-Wire System Line-to-Line 1CT



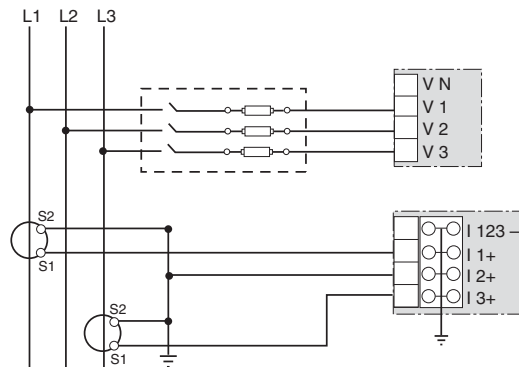
- For PM210 and PM750, use System Type 11.
- For ION6200, use Volts Mode 2W.
- To avoid distortion, use parallel wires for control power and voltage inputs. Keep the fuse close to the power source.
- Use with 120/240 V systems.

Figure-10: 1-Phase Direct Voltage Connection 2 CT



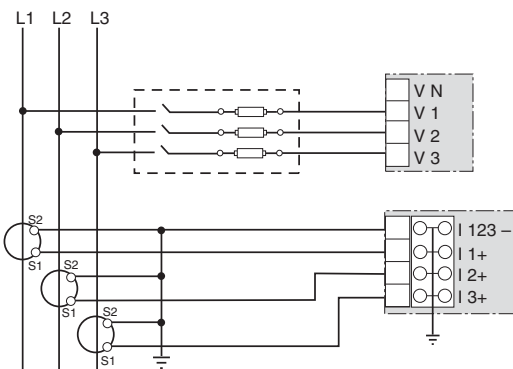
- For PM210 and PM750, use System Type 12.
- For ION6200, use Volts Mode 2W.
- To avoid distortion, use parallel wires for control power and voltage inputs. Keep the fuse close to the power source.

Figure-11: 3-Phase 3-Wire 2 CT no PT



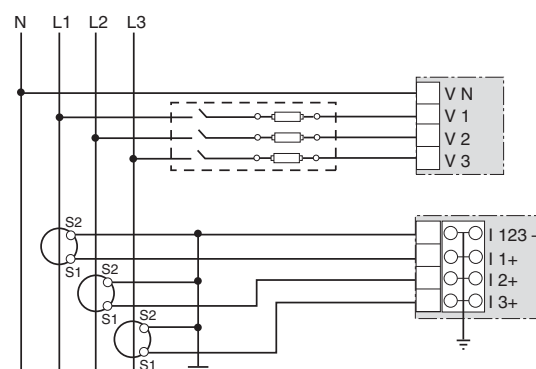
- For PM210 and PM750, use System Type 30.
- For ION6200, use Volts Mode Delta Direct.

Figure-12: 3-Phase 3-Wire 3 CT no PT



- For PM210 and PM750, use System Type 31.
- For ION6200, use Volts Mode Delta Direct.

Figure-13: 3-Phase 4-Wire Wye Direct Voltage Input Connection 3 CT



- For PM210 and PM750, use System Type 40.
- For ION6200, use Volts Mode 4W-Wye.
- Use with 208Y/120 V, 480Y/277 V, and 600Y/347 V (ION6200 only) systems.

Control Power

Control power wiring depends on the installed meter. For the PM210 and PM750, see Figure 14 and Figure 15. For the ION6200, see Figure 16 and Figure 17.

Using jumpers, control power can be derived from the phase conductors. Control power can also be supplied by a separate feed.

Power Meters PM210 and PM750

Figure-14: Direct Connect Control Power (Phase to Phase) < 415 + 10% Vac

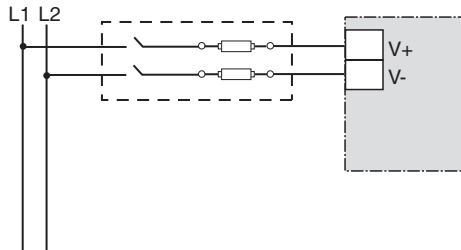
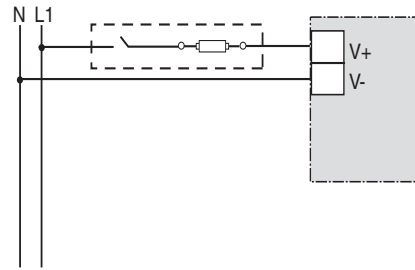


Figure-15: Direct Connect Control Power (Phase to Neutral) < 300 + 10% Vac



- Control power source > 415 Vac (L-L) or > 300 Vac (L-N) require a control power transformer. A control power transformer is available in this enclosure by specifying an input voltage range of "4T," which allows control power connections of 480-600 \pm 10% Vac (PM210, PM750, ION6200).

ION6200 Meter

Figure-16: Direct Connect Control Power (Phase to Phase) < 240 + 10% Vac

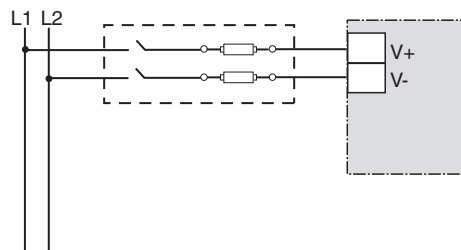
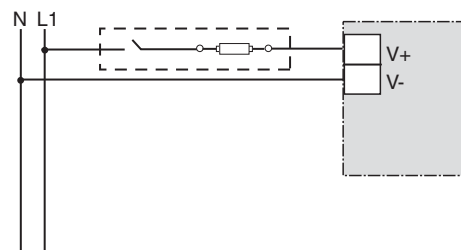


Figure-17: Direct Connect Control Power (Phase to Neutral) < 240 + 10% Vac

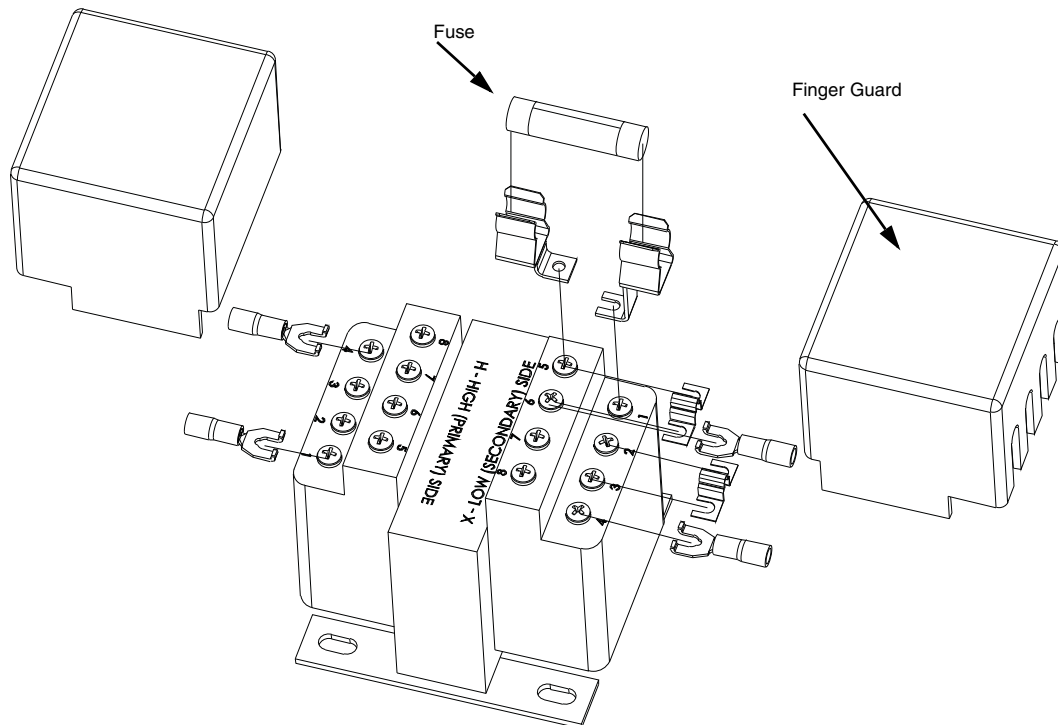


- Control power source > 240 Vac requires a control power transformer. A control power transformer is available in this enclosure by specifying an input voltage range of "4T," which allows control power connections of 480-600 \pm 10% Vac.

Replacing CPT Secondary-Side Fuse

You must remove the finger guards to replace the fuse. The fuse should be a 5A, 260V, 5AG standard fuse (Bussman #FNQ-5 or equivalent). See Figure 18 below.

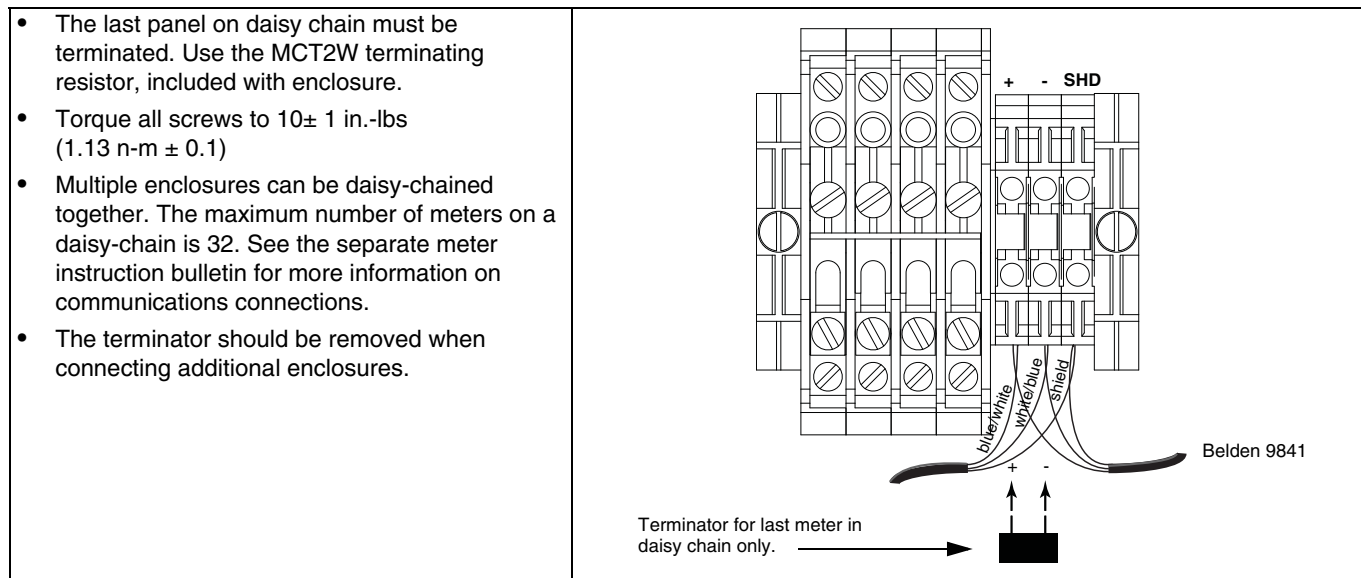
Figure-18: Remove Finger Guards



Communications

The meters use common daisy-chain wiring and communicate using Modbus protocol over RS485. The last meter in the chain must be terminated. Figure 19 shows the communications connections.

Figure–19: RS485 Serial Modbus Connection



INITIALIZING THE METERS

The meter must be initialized before placing into service. For instructions on initializing the meters, see the meter instruction bulletin shipped with the enclosure (also available at www.powerlogic.com).

REMOVING A METERS

If you need to remove a meter from the enclosure, a cover plate must be attached unless another meter is inserted into the slot. See “Cover Plates on page 19.

⚠ DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

- Apply appropriate personal protective equipment (PPE) and follow safe electrical work practices. See NFPA 70E.
- This equipment must be installed and serviced only by qualified electrical personnel.
- Turn off all power supplying this equipment before working on or inside equipment.
- Always use a properly rated voltage sensing device to confirm that power is off.
- All unused conductors not terminating in an insulated connector or plug at the enclosure bracket(s) must be protected using enclosed heat shrink sleeves or electrical tape.
- Replace all devices, doors, and covers before turning on power to this equipment.

Failure to follow this instruction will result in death or serious injury.

⚠ WARNING

**BONDING BETWEEN METALLIC PARTS IS NOT AUTOMATIC.
SUPPLIED SCREW MUST BE INSTALLED TO MAINTAIN BONDING.**

Failure to follow this instruction can result in electrical shock.

To remove a meter, complete these steps:

1. Turn off all power supplying this equipment before working on or inside this equipment. Use a properly rated voltage sensing device to confirm that all power is off.
2. Turn off the disconnect switch, located below the bottom meter. (See Figure A-1 on page 22.)
3. Short CT shorting block.
4. Remove the meter.
5. Insulate any loose wires, especially from the ION6200 meter.
6. Turn on the disconnect switch.
7. Restore power.

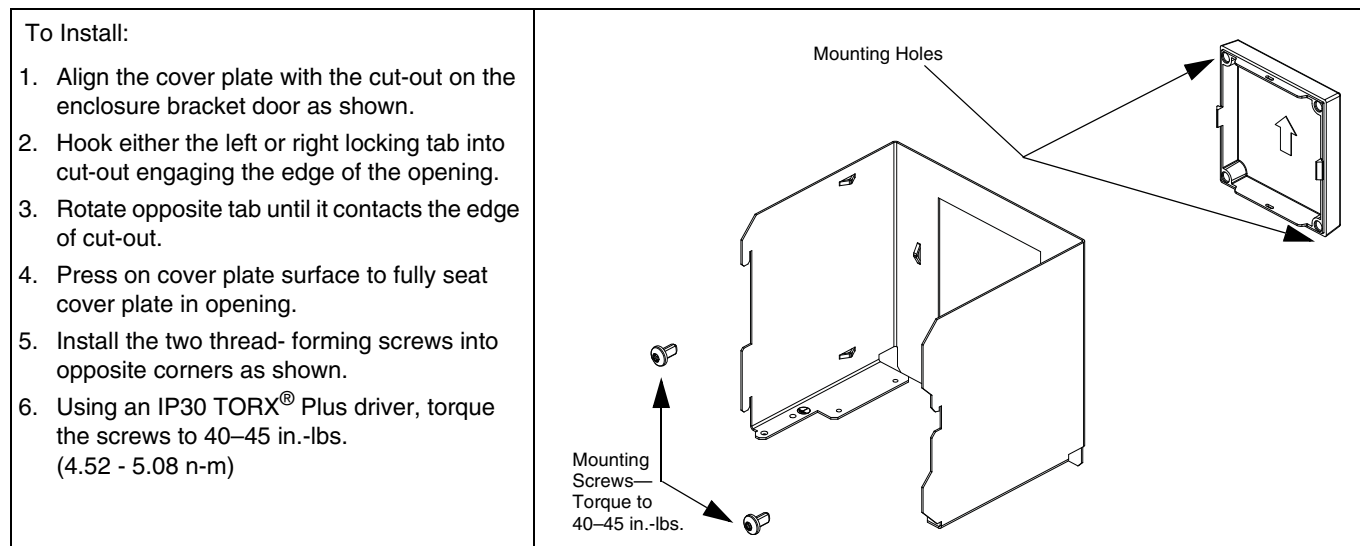


Do not remove the short on the current transformer shorting block while the meter is removed from the enclosure.

COVER PLATES

Cover plates are used to cover openings when no meter is present. Any time a meter is removed from the enclosure, a cover plate must be attached unless another meter is inserted into the slot. Figure 20 shows the cover plate assembly.

Figure-20: Cover Plate



APPENDIX A—METER WIRING PATTERNS

SAFETY PRECAUTIONS

<p style="text-align: center;">⚠ DANGER</p> <p>HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH</p> <ul style="list-style-type: none"> • Turn off all power supplying this equipment before working on or inside equipment. • Use a properly rated voltage sensing device to confirm that all power is off. • Replace all devices, covers, and close all doors before turning on power to this equipment. • Before energizing enclosure, all unused spaces must be filled with blank covers. • Use only established wiring configuration designed for the High Density Metering System. <p>Failure to follow this instruction will result in death or serious injury.</p>
--

Figure A–1 on page 22 shows a partial diagram of the typical field connections inside the enclosure. Meters are all wired in the same manner. Table A–1 lists the wire colors.

Wire Colors

Table A–1: Wire Colors

Control Power	
V+	Yellow
V-	White
Voltage	
V1	Black
V2	Red
V3	Blue
VN	White
Current	
I1-	White
I2-	White
I3-	White
I1+	Black
I2+	Red
I3+	Blue
Comm	
-	Black
+	Red
SH	Bare
GND	
	Green/Yellow

Figure A-1: Typical field connections

