Instructional Leaflet **IL03300001E** Effective December 2011

Enclosed meter

Contents

⚠ WARNING

READ AND UNDERSTAND THE INSTRUCTIONS CONTAINED HEREINAFTER BEFORE ATTEMPTING TO UNPACK, ASSEMBLE, OPERATE, OR MAINTAIN THIS EQUIPMENT.

⚠ WARNING

HAZARDOUS VOLTAGES THAT CAN CAUSE DEATH OR SEVERE PERSONAL INJURY ARE PRESENT INSIDE ENCLOSURE. FOLLOW PROPER INSTALLATION, OPERATION, AND MAINTENANCE PROCEDURES TO AVOID THESE VOLTAGES.

⚠ WARNING

ALL POSSIBLE CONTINGENCIES THAT MAY ARISE DURING INSTALLATION, OPERATION, OR MAINTENANCE, AND ALL DETAILS AND VARIATIONS OF THIS EQUIPMENT DO NOT PURPORT TO BE COVERED BY THESE INSTRUCTIONS. IF FURTHER INFORMATION IS DESIRED BY PURCHASER REGARDING HIS PARTICULAR INSTALLATION, OPERATION, OR MAINTENANCE OF PARTICULAR EQUIPMENT, CONTACT AN EATON REPRESENTATIVE.

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Introduction

Preliminary comments and safety precautions

This technical document is intended to cover most aspects associated with the installation, application, operation, and maintenance of Enclosed IQ and Power Xpert™ Meter (PXM) equipment. It is provided as a guide for authorized and qualified personnel only.

Warranty and liability information

No warranties, expressed or implied, including warranties of fitness for a particular purpose of merchantability, or warranties arising from course of dealing or usage of trade, are made regarding the information, recommendations, and descriptions contained herein. In no event will Eaton be responsible to the purchaser or user in contract, in tort (including negligence), strict liability, or otherwise for any special, indirect, incidental, or consequential damage or loss whatsoever, including but not limited to damage or loss of use of equipment, plant or power system, cost of capital, loss of power, additional expenses in the use of existing power facilities, or claims against the purchaser or user by its customers resulting from the use of the information and descriptions contained herein.

Safety precautions

All safety codes, safety standards, and/or regulations must be strictly observed in the installation, operation, and maintenance of this device.

⚠ CAUTION

COMPLETELY READ AND UNDERSTAND THE MATERIAL PRESENTED IN THIS DOCUMENT BEFORE ATTEMPTING INSTALLATION, OPERATION, OR APPLICATION OF THE EQUIPMENT. IN ADDITION, ONLY QUALIFIED PERSONS SHOULD BE PERMITTED TO PERFORM ANY WORK ASSOCIATED WITH THE EQUIPMENT. ANY WIRING INSTRUCTIONS PRESENTED IN THIS DOCUMENT MUST BE FOLLOWED PRECISELY. FAILURE TO DO SO COULD CAUSE PERMANENT EQUIPMENT DAMAGE.

⚠ CAUTION

REFER ALSO TO IQ DEVICE INSTRUCTION BOOKS. REFER TO INSTRUCTION BOOK IM02601001E IF YOUR ENCLOSURE IS EQUIPPED WITH A PXM 2000. REFER TO INSTRUCTION BOOK IB02601006E IF YOUR ENCLOSURE IS EQUIPPED WITH AN IQ 250/260. REFER TO INSTRUCTION BOOK IM02601003E IF YOUR ENCLOSURE IS EQUIPPED WITH AN IQ 100.

Description

Catalog number identification

The enclosed PXM/IQ catalog number provides a description of the features provided with your device. The catalog number is included on labels both on the shipping carton and on the equipment enclosure.

The first set of characters identifies the type of monitoring device mounted in the enclosure. (Refer to PXM 2000, IQ 250/260, or IQ 100 instruction books IM02601001E, IB02601006E, or IM02601003E, respectively, for detailed information on the monitoring device.)

PXM2250MA65105	PXM 2250 Meter/Display 60 Hz 5A 90–265 Vac/Vdc
PXM2250MA65115	PXM 2250 Meter/Display 60 Hz 5A 90–265 Vac/Vdc w/2DO and 2DI
PXM2250MA65145	PXM 2250 Meter/Display 60 Hz 5A 90–265 Vac/Vdc w/4AO 4–20
PXM2260MA65105	PXM 2260 Meter/Display 60 Hz 5A 90–265 Vac/Vdc
PXM2260MA65115	PXM 2260 Meter/Display 60 Hz 5A 90–265 Vac/Vdc w/2DO and 2DI
PXM2260MA65145	PXM 2260 Meter/Display 60 Hz 5A 90–265 Vac/Vdc w/4AO 4–20
PXM2270MA65105	PXM 2270 Meter/Display 60 Hz 5A 90–265 Vac/Vdc
PXM2270MA65115	PXM 2270 Meter/Display 60 Hz 5A 90–265 Vac/Vdc w/2DO and 2DI
PXM2270MA65145	PXM 2270 Meter/Display 60 Hz 5A 90–265 Vac/Vdc w/4AO 4–20
IQ250MA65100	IQ 250 Meter/Display 60 Hz 5A 90–265 Vac/Vdc
IQ250MA65110	IQ 250 Meter/Display 60 Hz 5A 90–265 Vac/Vdc w/2DO and 2DI
IQ250MA65114	IQ 250 Meter/Display 60 Hz 5A 90–265 Vac/Vdc w/2DO and 2DI and 4AO
IQ260MA65100	IQ 260 Meter/Display 60 Hz 5A 90–265 Vac/Vdc
IQ260MA65110	IQ 260 Meter/Display 60 Hz 5A 90–265 Vac/Vdc w/2DO and 2DI
IQ260MA65114	IQ 260 Meter/Display 60 Hz 5A 90–265 Vac/Vdc w/2DO and 2DI and 4AO
IQ150MA6511	IQ 150 Meter/Display 60 Hz 5A 90–265 Vac/Vdc w/Modbus®/KYZ Out
IQ150MA6512	IQ 150 Meter/Display 60 Hz 5A 90–265 Vac/Vdc w/Ethernet/KYZ Out

Note: The second character denotes the type of enclosure.

2	NEMA® 12 enclosure
3	NEMA 3R enclosure
4	NEMA 4X enclosure

Note: The third character denotes additional features, when provided.

A	None
B	Control power transformer

Catalog number example

The catalog number PXM2250MA65105-2B denotes a PXM2250MA65105 monitoring device mounted in a NEMA 12 enclosure with a control power transformer.

Receiving, handling, and storage

Receiving and handling

Every effort is made to ensure that the Enclosed PXM/IQ equipment arrives at its destination undamaged and ready for installation. Crating and packing are designed to protect internal components as well as the enclosure. Do not remove protective packing until the equipment is ready for installation.

When the equipment reaches its destination, the customer should inspect the shipping container for any obvious signs of rough handling and/or external damage that occurred during transportation. Record any external and internal damage for reporting to the transportation carrier and Eaton, once a thorough inspection is complete. All claims should be as specific as possible and include general order numbers.

A plastic bag of instruction booklets and/or CDs will be found in the shipping container. Store these documents in a safe place.

Storage

Although well packaged, this equipment is not suitable for storage outdoors. If the equipment is to be stored indoors for any period of time, it should be stored with its protective packaging in place. Refer to the PXM/IQ Installation and Operation Manuals IM02601001E, IB02601006E, or IM02601003E for suitable conditions for these devices.

Installation and wiring

General

Enclosed PXM/IQ devices are factory wired and tested. Installation requires solidly mounting the enclosed unit and connecting field wiring. Included in this booklet are diagrams of the factory wiring and various field wiring options. Review and understand the appropriate diagrams for the catalog number of the unit you have ordered.

The system voltage application is assumed to be a three-phase, four-wire system for both the models with and without a CPT. For a model with a CPT, the primary voltage is assumed to be 480 Vac with a secondary voltage of 120 Vac. It is also assumed that there will be three CTs used in the application for monitoring the current of the system. For applications that are three-phase, three-wire, and different CT configurations, please see Chapter 4 of the Installation and Operation Manual IM02601001E, IB02601006E, or IM02601003E for further details and configuration options. All models containing four analog outputs—4–20 mA and RS-485—or Power Xpert Meter 2000 Gateway Card/IQ 150 RJ45 communications connections will be required to have the external wires connected directly to the back of the PXM/IQ meter. When the 2 Relay Output/2 Status Input option is provided, it will be automatically wired to a terminal block inside the enclosure for ease of installation.

Mounting location

Choose a location that offers a flat, rigid mounting surface capable of supporting the weight of the equipment (**Figures 1-3**). Units will weigh 25 lbs (11.4 kg) maximum. Mount the equipment in a suitable environment. These enclosures are designed for NEMA 12, 3R, and 4X environments. The catalog number identifies the enclosure. If there are any doubts as to location suitability, discuss them with your Eaton representative. Check to make certain that there are no pipes, wires, or other mounting hazards in the immediate mounting area that could create a problem. Carefully remove all packing material from the unit. Even though an equipment inspection was made when the equipment was received, make another careful inspection of the enclosure and the devices inside as packing material is removed. Be especially alert for distorted metal, loose wires, or damaged components.

Mounting procedure

The enclosures are provided with four elongated mounting holes, two at the top mounting flange and two at the bottom.

Knockout procedure

Use appropriate knockout punching tool for incoming power connections. In addition, the use of appropriate NEMA rated hub is required to maintain enclosure NEMA rating.

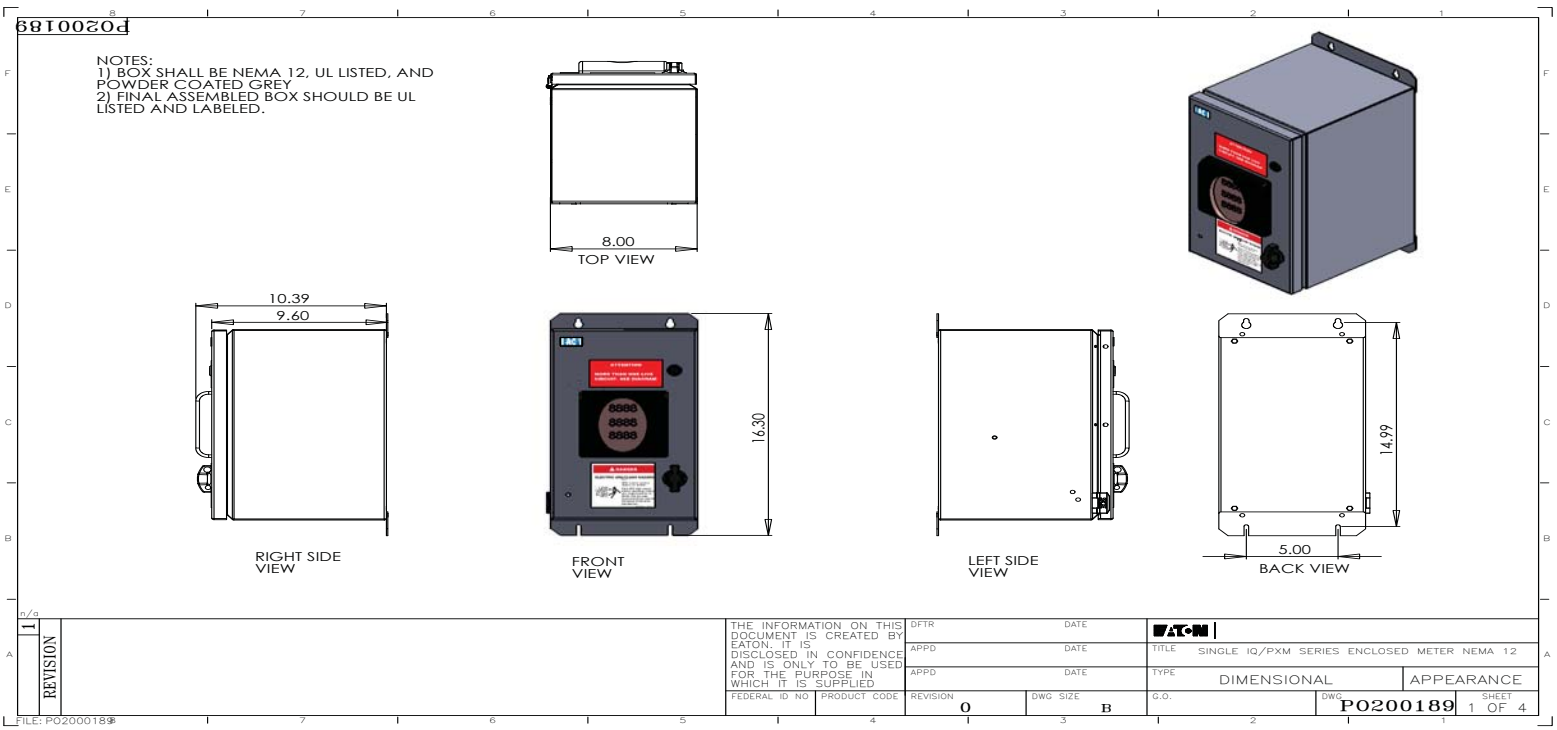


Figure 1. Dimensions of Enclosed PXM/IQ-NEMA 12

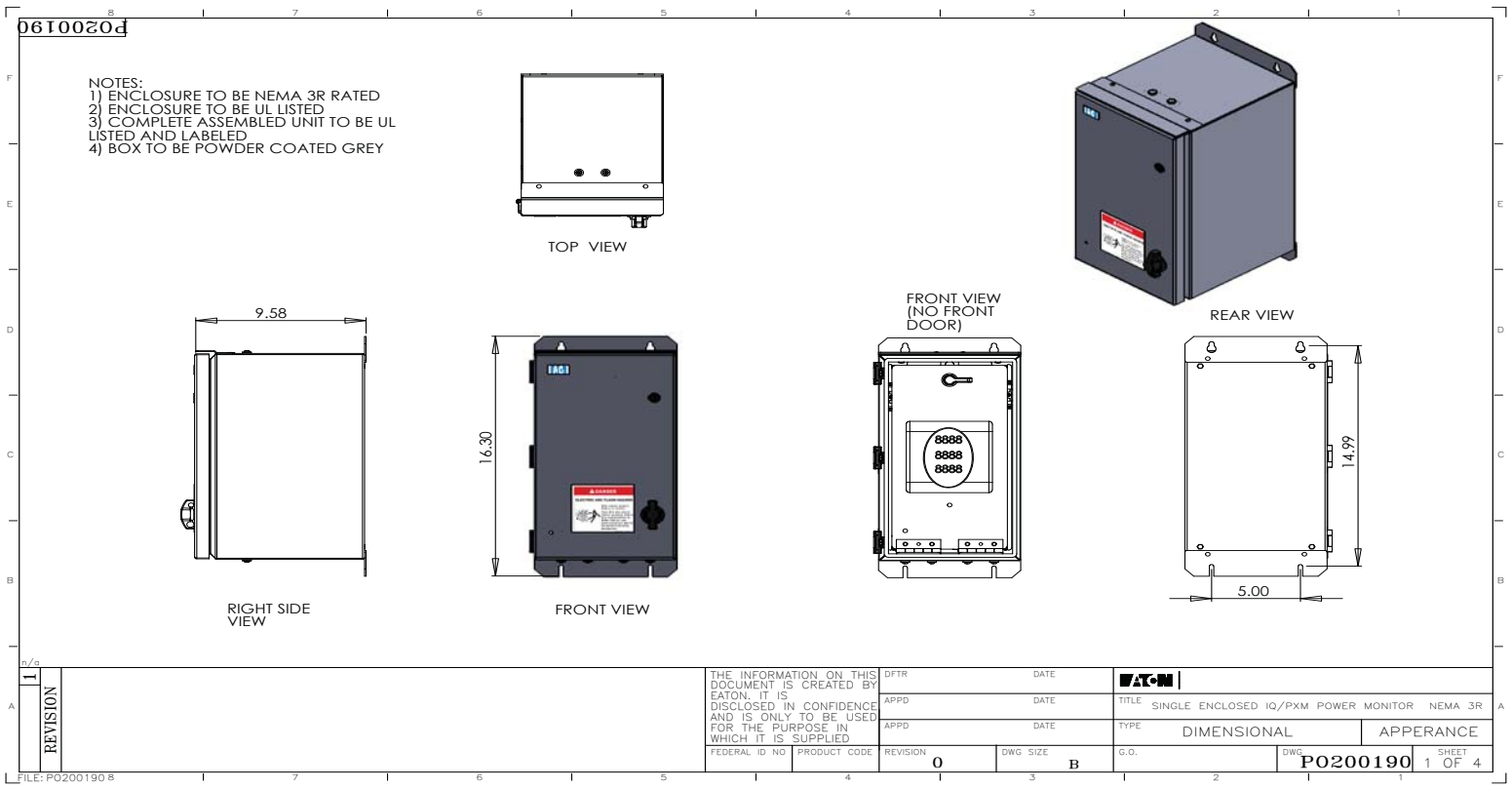


Figure 2. Dimensions of Enclosed PXM/IQ-NEMA 3R

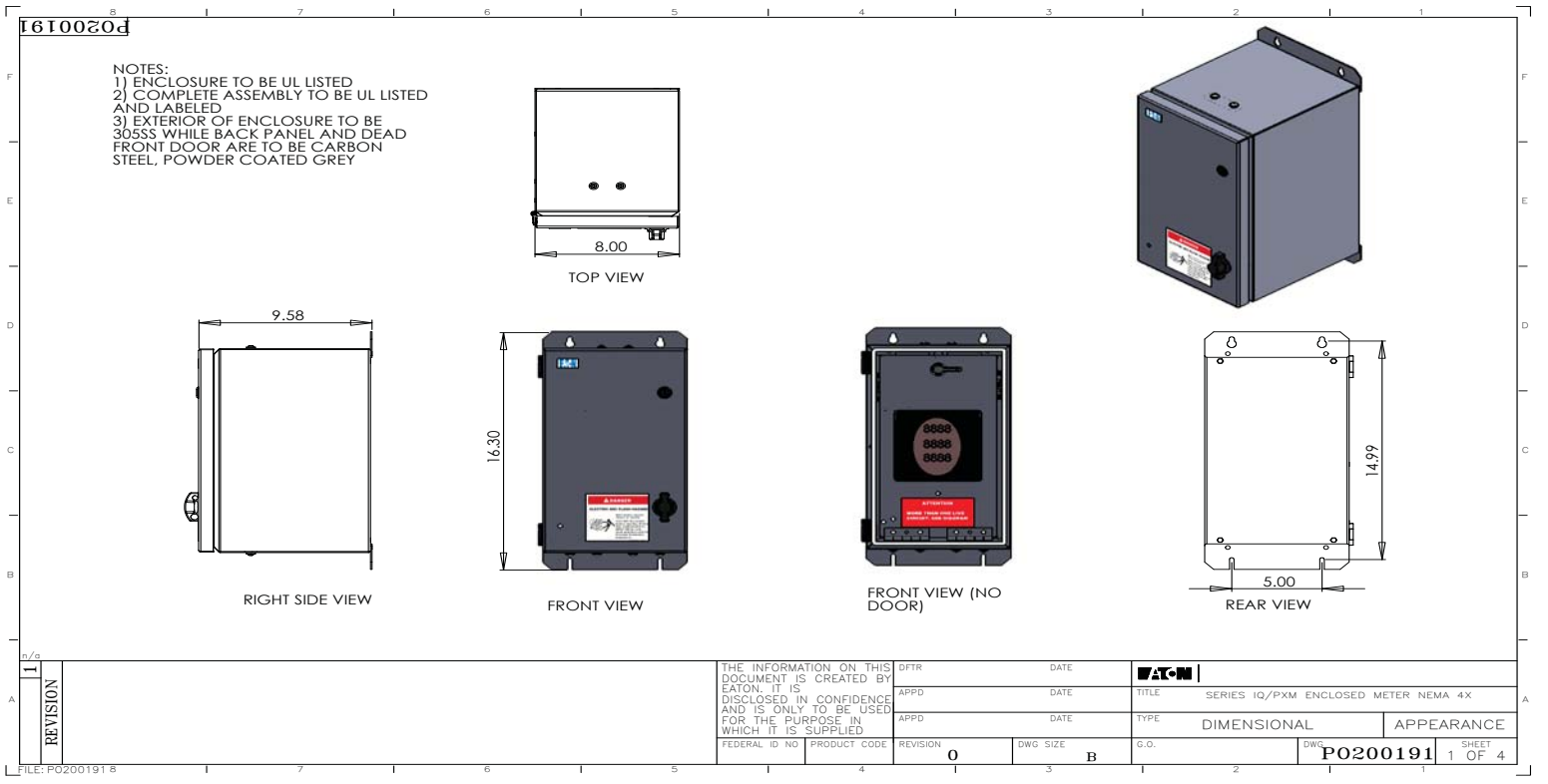


Figure 3. Dimensions of Enclosed PXM/IQ-NEMA 4X

⚠ CAUTION

EXTREME CARE SHOULD BE TAKEN TO PROTECT THE EQUIPMENT FROM DRILL CHIPS, FILINGS, AND OTHER CONTAMINANTS WHEN MAKING THE WIRE ENTRY HOLES AND MOUNTING THE ENCLOSURE TO PREVENT COMPONENT DAMAGE OR A FUTURE MALFUNCTION.

Step 1: Install required mounting bolt anchors and the two upper mounting bolts in the mounting surface.

Step 2: Gently lift the enclosure and guide the elongated holes in the upper mounting flange over the upper mounting bolts, but do not completely tighten the bolts.

Step 3: While still supporting the enclosure, install the two lower mounting bolts in the lower mounting flange, but do not completely tighten. Use shims, if required, to prevent deformation of the enclosure when tightening the bolts, if the mounting surface is distorted.

Step 4: Tighten all four mounting bolts after any required shimming is completed.

Wiring

⚠ WARNING

CONTROL WIRING MAY HAVE VOLTAGE PRESENT THAT CAN CAUSE SEVERE PERSONAL INJURY OR DEATH. DE-ENERGIZE ALL CONDUCTORS BEFORE BEGINNING TO PERFORM ANY WIRING ACTIVITY TO OR WITHIN THE ENCLOSED PXM/IQ DEVICE.

⚠ WARNING

THE DISCONNECT SWITCHES IN THIS UNIT DISCONNECT CONTROL OR SENSING VOLTAGE TO THE PXM/IQ METER. WHEN THESE DISCONNECTS ARE IN THE "OFF" POSITION, THE CURRENT TRANSFORMER CIRCUIT, FUSES, WIRING, RECEPTACLE, AND INPUT/OUTPUTS ARE ENERGIZED. A DISCONNECTING MEANS AND UPSTREAM PROTECTION SHOULD BE INSTALLED FOR ALL CIRCUITS. A SHORT-CIRCUIT–TYPE TERMINAL BLOCK IS PROVIDED FOR THE CURRENT TRANSFORMER CIRCUIT.

⚠ WARNING

A DEVICE EQUIPPED WITH A SEPARATE SOURCE POWER SUPPLY MODULE CAN BE WIRED FOR 90–265 VAC OR 100–370 VDC.

Understand the diagram(s) that pertain to your order before you begin the field wiring.

Refer to instruction booklet IM02601001E, IB02601006E, or IM02601003E for more information regarding the PXM 2000, IQ 250/260, or IQ 100, respectively.

Field wiring

Note: **All field wiring must be #14 AWG minimum.**

Figure 8 and **Figure 9** show the field wiring options available. Not all of these diagrams will pertain to your order. Understand your system and use the appropriate figures.

Factory wiring is shown solid; field wiring is shown dashed.

Figure 4. PXM 2000, IQ 250/260 2 Digital In/2 Relay Out

Figure 5. PXM 2000, IQ 250/260 4 Analog Outputs

Figure 6. IQ 100, IQ 250/260,PXM 2000 RS-485/KYZ Output

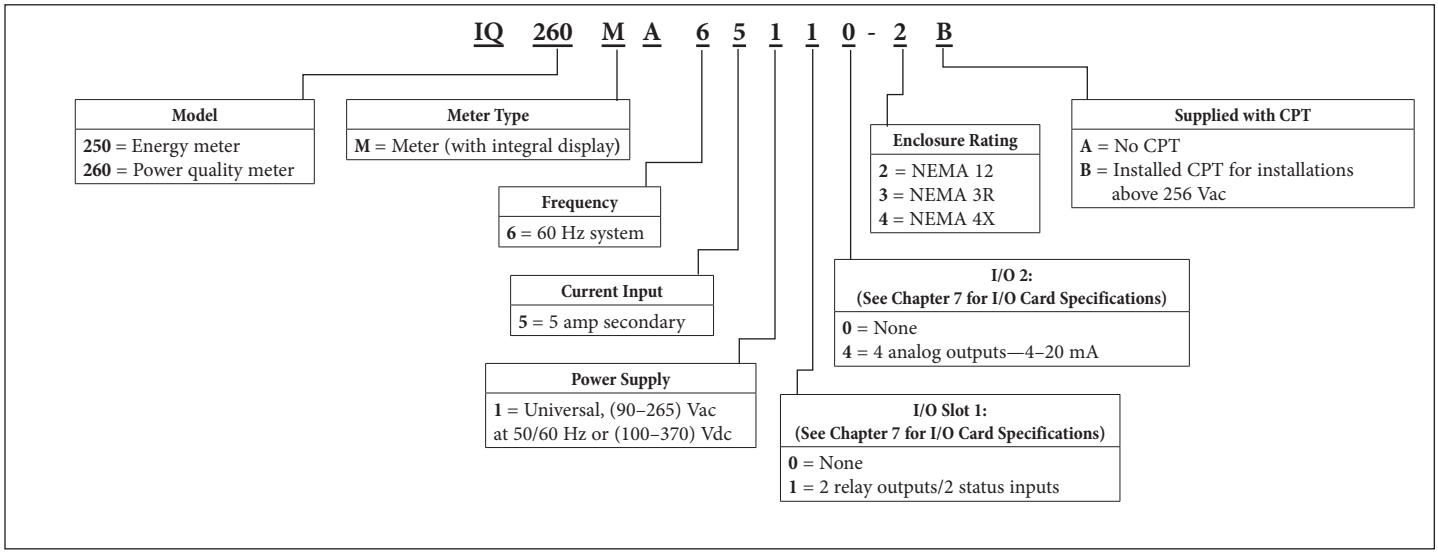
Figure 7. PXM 2000 Series Meter with Gateway Card, IQ150 with RJ45 (not shown)

Door-locking means

The enclosure has been fitted with means for securing the door so it cannot be opened or tampered with. The lower wing latch can be secured in place with a padlock or other multiple padlocking device. With the wing latch in the vertical position, the door can be locked in the OPEN position. With the wing latch in the horizontal position, the door can be locked in the CLOSED position. A padlock can be placed in the left or right slots. The left slot is sized for a 3/8-inch padlock and the right slot is sized for a 1/4-inch padlock. Please see image below for an example of a padlock installed in the wing latch.

Padlock Installed in Wing Latch

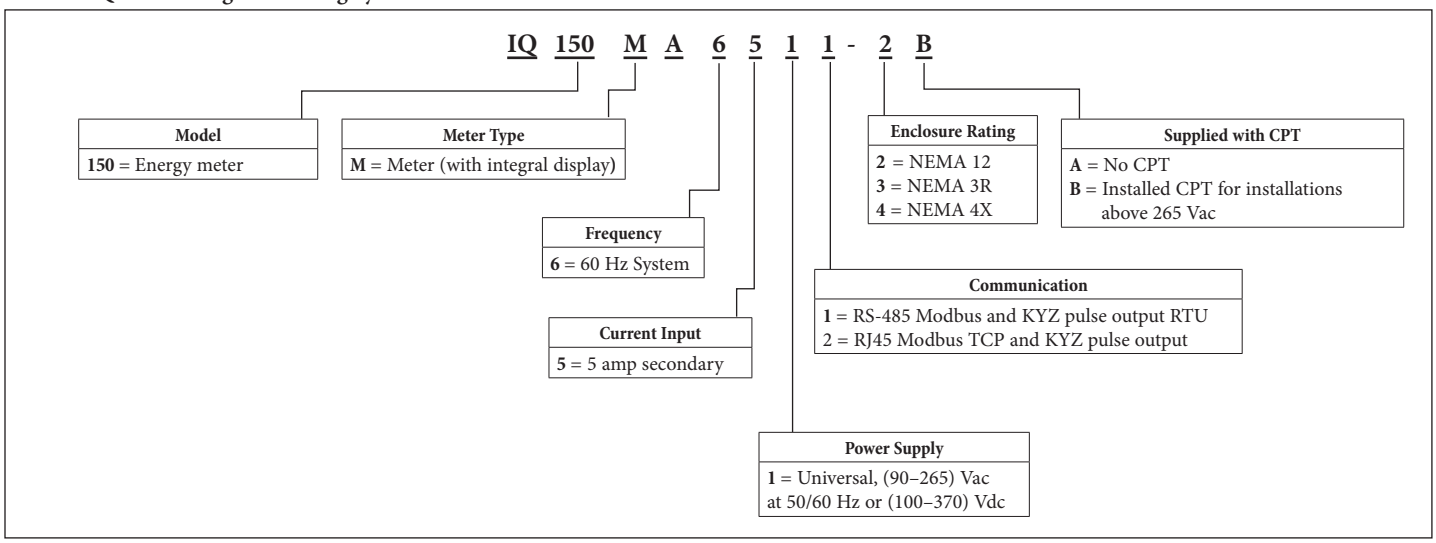
Table 1. IQ 260 Catalog Numbering System



Example: **IQ260MA65110-2B**

IQ Power Quality Meter with 60 Hz system, 5 amp secondary, 90–265 Vac/100–370 Vdc power supply, 2 relay outputs/2 status inputs, I/O Card in card slot 1 and no card in slot 2, NEMA 12 enclosure, control power transformer.

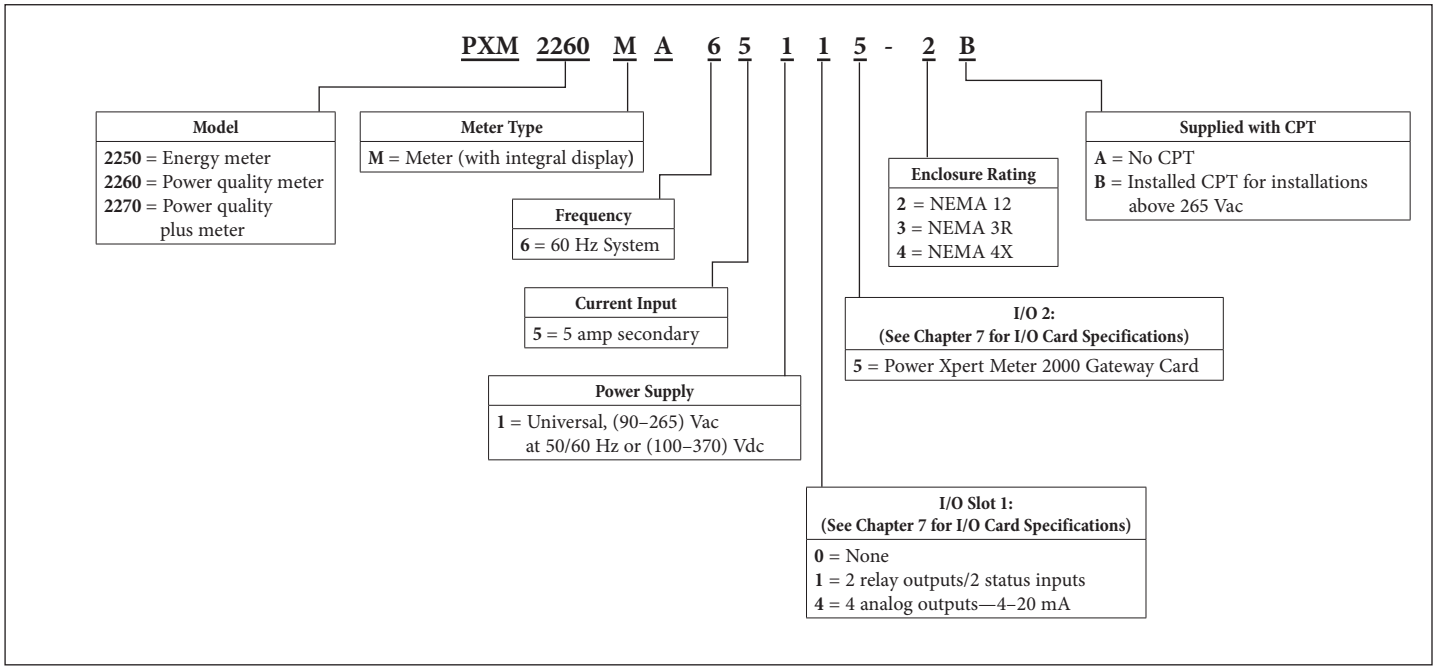
Table 2. IQ 150 Catalog Numbering System



Example: **IQ150MA6511-2B**

IQ 150 Energy Meter with 60 Hz system, 5 amp secondary, 90–265 Vac/100–370 Vdc power supply, RS-485 Modbus and KYZ pulse output, NEMA 12 enclosure, control power transformer.

Table 3. Power Xpert Meter Catalog Numbering System



Example: **PXM2260MA65115-2B**

PXM 2260 Meter with 60 Hz system, 5 amp secondary, 90–265 Vac/100–370 Vdc Power Supply, 2 relay outputs/2 status inputs, I/O Card in slot 1 and standard Power Xpert Meter 2000 Gateway Card in slot 2, NEMA 12 enclosure, control power transformer.

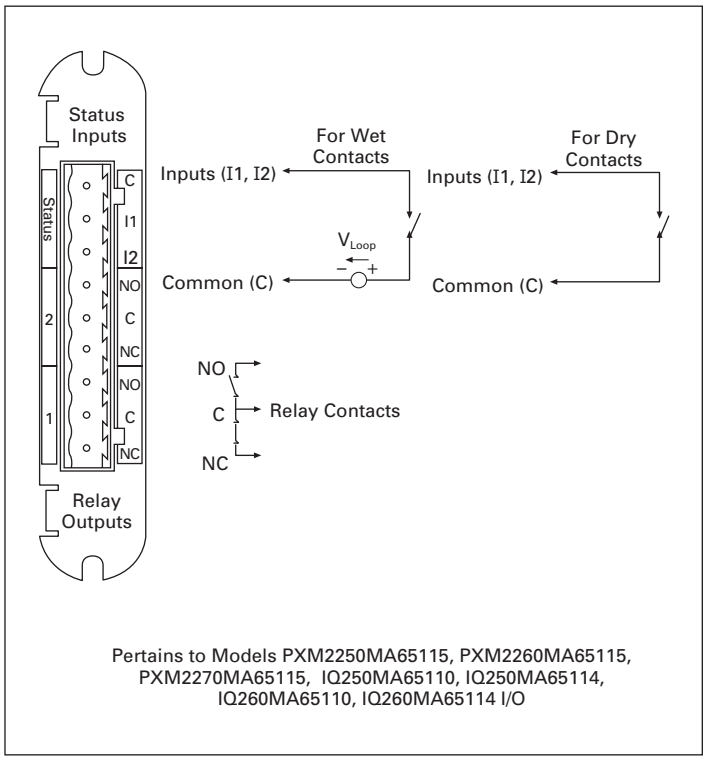


Figure 4. PXM 2000, IQ 250/260 2 Digital In/2 Relay Out

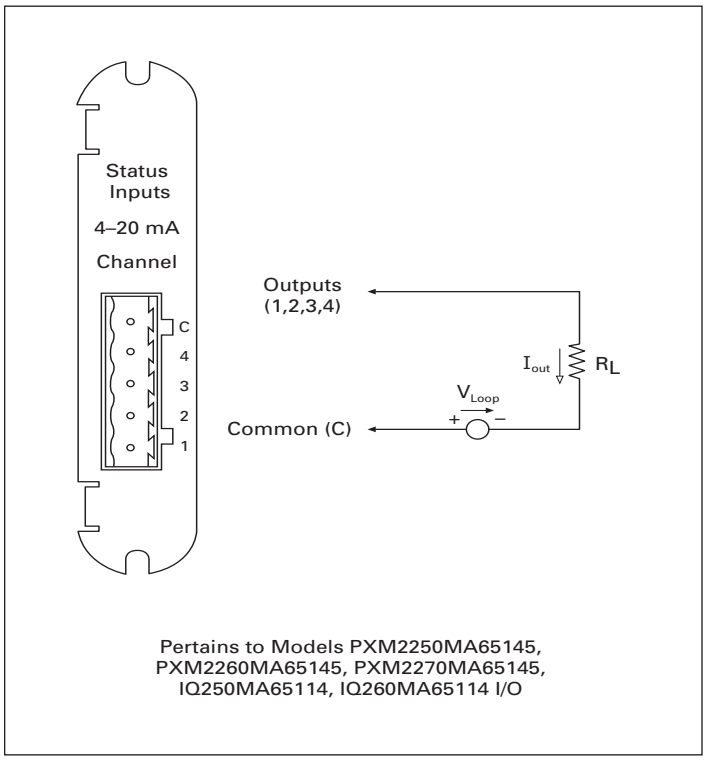


Figure 5. PXM 2000, IQ 250/260 4 Analog Outputs

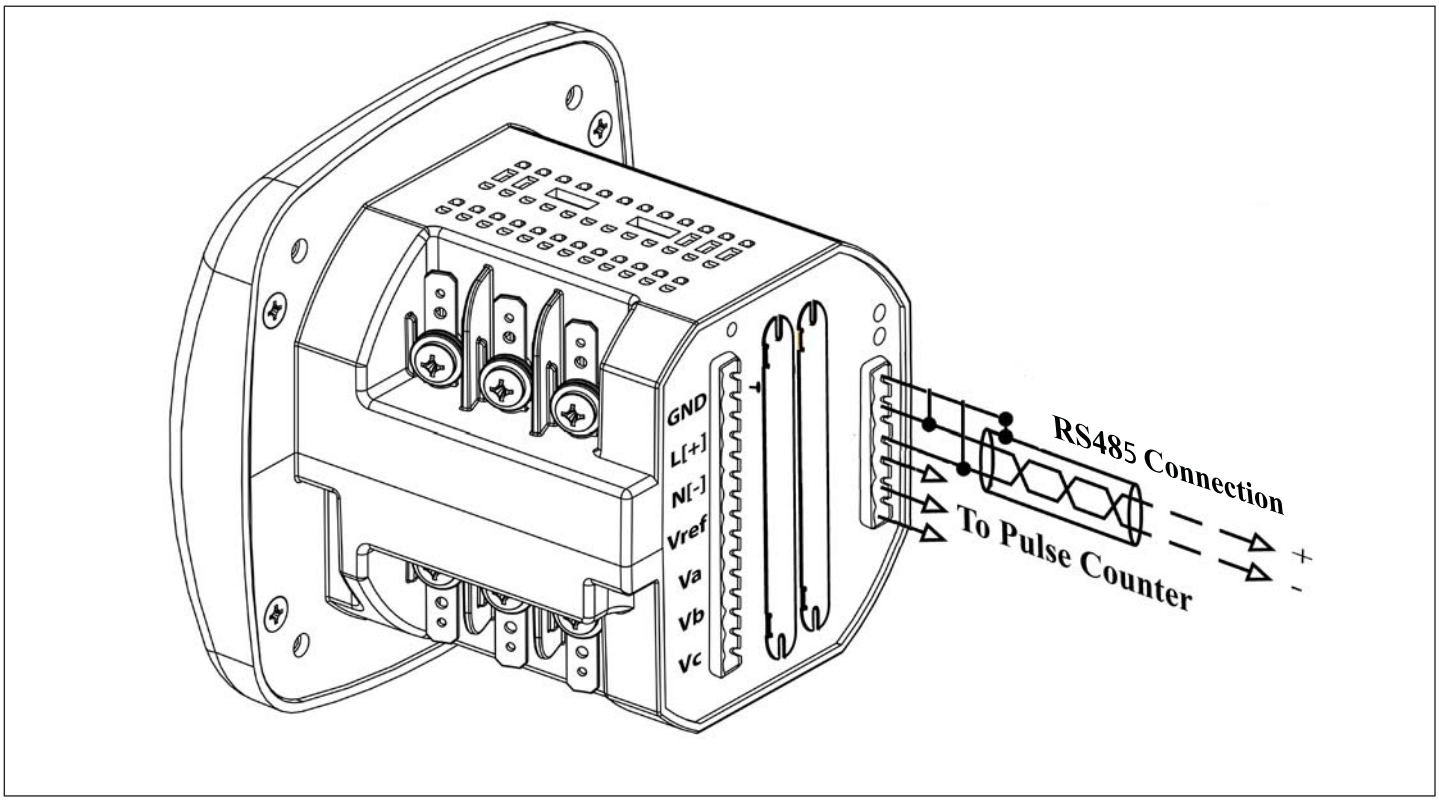


Figure 6. IQ 100, IQ 250/260 PXM 2000 RS-485/KYZ Output

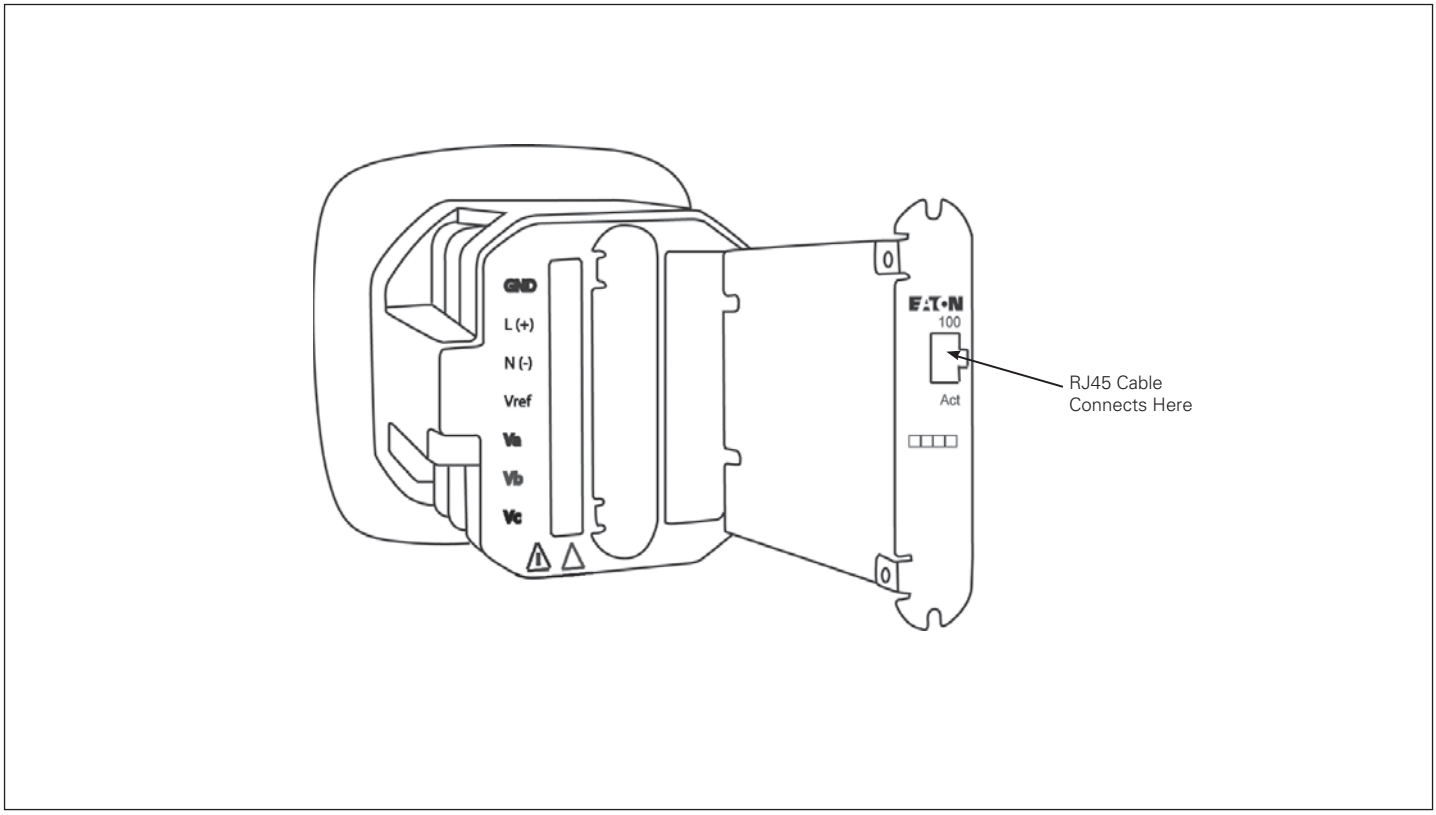


Figure 7. PXM 2000 Series Meter with Gateway Card

Note: IQ150 with Modbus TCP Option will have integral RJ45 connection

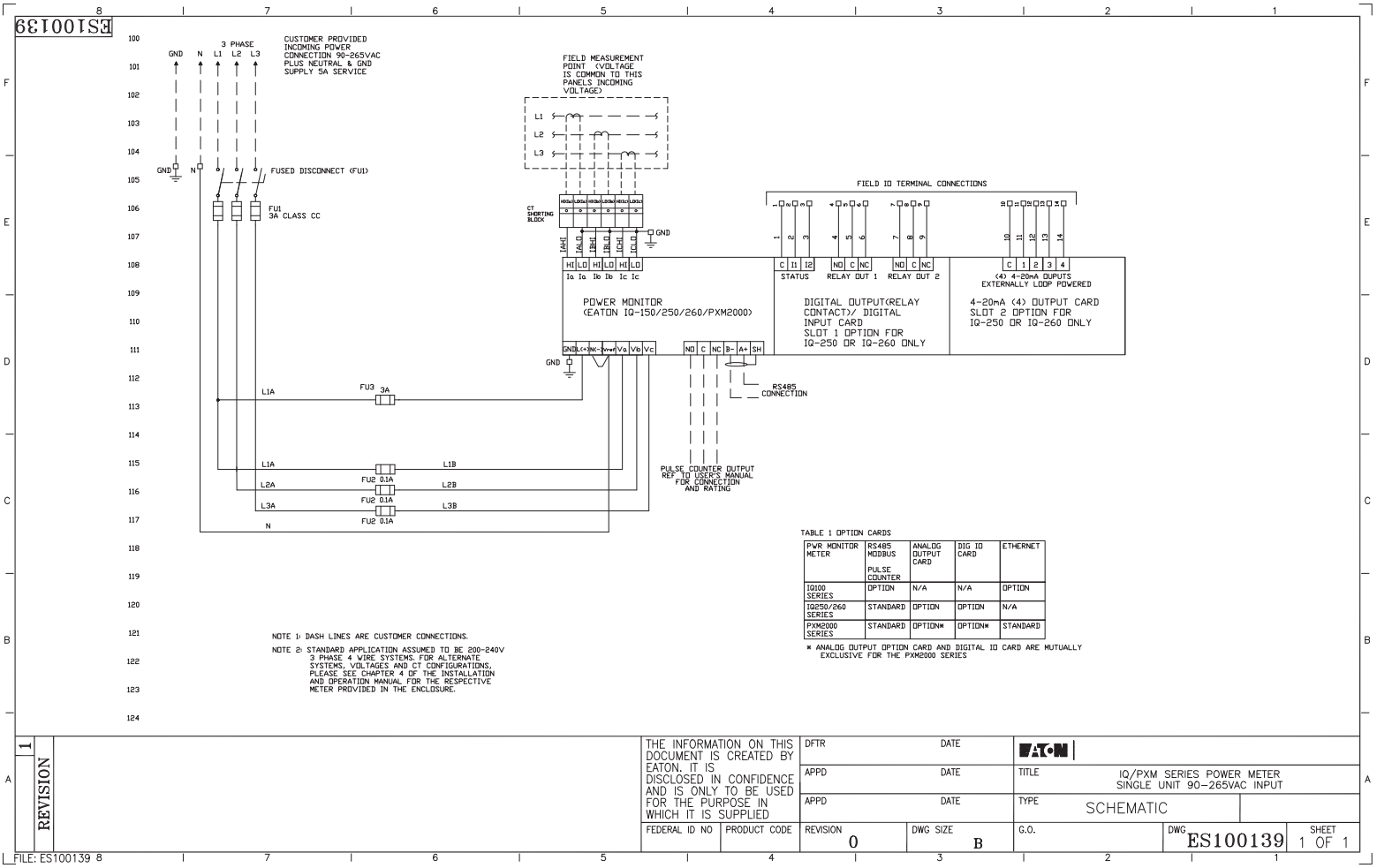


Figure 8. 200-240 VAC 50/60 Hz, Three Phase, Four Wire System

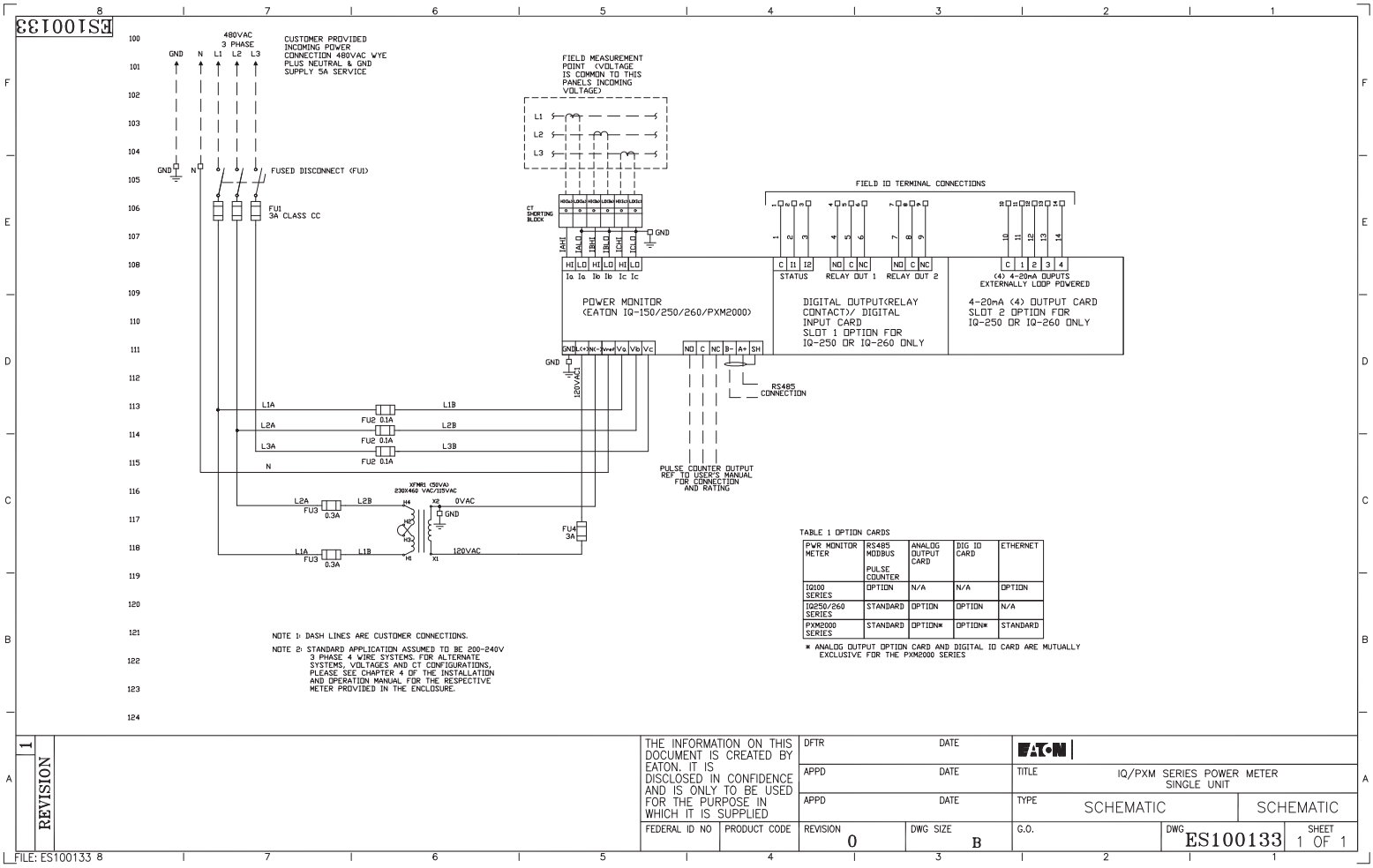


Figure 9. 480 VAC 50/60 Hz, Three Phase, Four-Wire System

Operation

Refer also to PXM/IQ device instruction books. Refer to instruction book IM02601001E if your enclosure is equipped with a PXM 2000. Refer to instruction book IB02601006E if your enclosure is equipped with an IQ 250/260. Refer to instruction book IM02601003E if your enclosure is equipped with an IQ 100.

The Enclosed PXM/IQ is equipped with a two-position fused disconnect switch to enable switching voltage on and off to the PXM/IQ device. This switch is marked SERVICE DISCONNECT. The terminal blocks for the current circuits are short-circuit type. Shorting screws are included.

The disconnect switch in this unit disconnects control or sensing voltage to the PXM/IQ meter. When this disconnects is in the ON position, the current transformer circuit, fuses, wiring, receptacle, and input/output are energized. A disconnecting means and upstream protection should be installed for all circuits. A short-circuit type terminal block is provided for the current transformer circuit.

Maintenance

WARNING

HAZORDOUS VOLTAGE CAN CAUSE SEVERE INJURY OR DEATH, MULTIPLE SUPPLY SOURCES ARE PROVIDED. DISCONNECT EACH BEFORE SERVICING.

WARNING

REFER ALSO TO PXM/IQ DEVICE INSTRUCTION BOOKS. REFER TO INSTRUCTION BOOK IM02601001E IF YOUR ENCLOSURE IS EQUIPPED WITH A PXM 2000. REFER TO INSTRUCTION BOOK IB02601006E IF YOUR ENCLOSURE IS EQUIPPED WITH AN IQ 250/260. REFER TO INSTRUCTION BOOK IM02601003E IF YOUR ENCLOSURE IS EQUIPPED WITH AN IQ 100.

CAUTION

IN GENERAL, THE ENCLOSED PXM/IQ IS DESIGNED TO BE RELATIVELY MAINTENANCE-FREE UNDER NORMAL USAGE. HOWEVER, BECAUSE OF THE VARIABILITY OF APPLICATION CONDITIONS AND THE IMPORTANCE PLACED ON DEPENDABLE OPERATION AND INSPECTION, MAINTENANCE CHECKS SHOULD BE MADE ON A REGULARLY SCHEDULED BASIS. VISUALLY INSPECT FOR LOOSE PARTS, WIRES, AND/OR HARDWARE. INSPECT FOR DISCOLORATION OF INSULATION AND DAMAGED OR DISCOLORED COMPONENTS. BE ALERT FOR ACCUMULATION OF DIRT/OR MOISTURE ON STRUCTURE. CHECK OPERATION OF DISCONNECT SWITCH(ES) AND CONTINUITY OF FUSES, WHERE APPLICABLE.

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