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## SECTION 3: INSTALLATION

### 3.1 INTRODUCTION

The IQ 200 is designed to be installed, operated, and maintained by adequately trained personnel. These instructions do not cover all details, variations or combinations of the equipment, its storage, delivery, installation, checkout, safe operation, or maintenance. Care must be exercised to comply with local, state, and national regulations, as well as with industry standard safety practices for this class of equipment. Refer to figure 3.5 through 3.14 for wiring details.



#### WARNING

**A THREE PHASE SWITCH OR CIRCUIT BREAKER SHOULD BE IN CLOSE PROXIMITY TO THE IQ 200 MOUNTING LOCATION AND MARKED AS THE DISCONNECTING DEVICE FOR THE EQUIPMENT.**



#### WARNING

**TURN OFF AND LOCK OUT POWER SUPPLYING THE PANELBOARD OR SWITCHGEAR IN WHICH THE IQ 200 IS BEING INSTALLED. INJURY TO PERSONNEL OR DAMAGE TO EQUIPMENT CAN RESULT.**

### 3.2 PANEL PREPARATION

It is recommended that the IQ 200 be mounted in an electrical switchgear enclosure that is suitable for its environment. The IQ 200 Display and IQ 200 Base Modules may be mounted together or separately. The IQ 200 is designed with flexibility in mind. While it is recommended that the IQ 200 Display Module be door- or panel-mounted, the Base Module may be attached to the IQ 200 Display Module; mounted remotely using the supplied DIN rail and clip, or L-bracket; or mounted directly to panel or floor. For floor or panel mounting, a #10 (10-32) or #12 (12-28) screw is recommended.

In *all* instances where the IQ 200 Base Module is mounted remotely, the IQ 200 Display Module Chassis *must* be connected to earth ground.

Before installing the IQ 200, refer to dimensions listed in table 2.5 and allow adequate room for wiring of and access to the IQ 200 Base Module terminals and connectors.

### 3.2.1 Mounting the IQ 200 Modules as a Single Unit

Using the screws provided, attach the supplied DIN rail to the back of the IQ 200 Display. Use the screws provided with the IQ 200 Base Module to attach the supplied DIN clip to the front face of the IQ 200 Base Module.

Cut a ¼ DIN (92mm x 92mm) access cutout in the switchgear door or other panel where the IQ 200 is to be mounted as shown in figure 3.1. Install the IQ 200 Display Module as shown in figure 3.1, following these steps:

- Install the supplied gasket when using in NEMA 12 applications.
- Slide the supplied gasket over the rear of the IQ 200 Display Module until it is flush with the rear of the outer bezel.
- Insert the IQ 200 Display Module with gasket installed into the cutout.
- Slide the 4 supplied locking bars into the 4 slots in the top, bottom, and sides at the rear of the IQ 200 Display Module
- Insert and tighten the supplied thumbscrews to secure the IQ 200 Display Module in place.
- Connect the IQ 200 Base Module to the IQ 200 Display Module using the DIN rail and clip, as shown in figure 3.2.

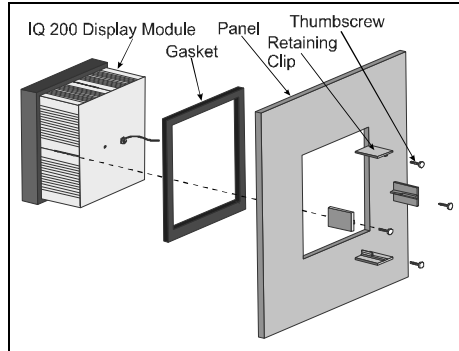


Figure 3.1 Securing the IQ 200 Display Module

Connect the IQ 200 Display Module to the IQ 200 Base Module by inserting one end of the 1 foot long Category 5 cable into the port on the IQ 200 Display Module, and the other end into the DISPLAY port on the IQ 200 Base Module. *Do not route the Category 5 cable in the same enclosure or cable tray as 600V system wiring.*

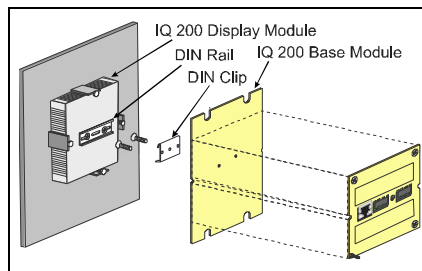


Figure 3.2 Mounting the IQ 200 Base Module to the IQ 200 Display Module

Proceed to *section 3.3, Wiring.*

### 3.2.2 Mounting the IQ 200 Display and Base Modules Separately

In *all* instances where the IQ 200 Base Module is mounted remotely, the IQ 200 Display Module Chassis *must* be connected to earth ground.

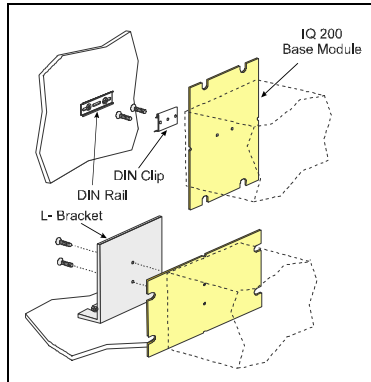
**Display Module** Cut a ¼ DIN (92mm x 92mm) access cutout in the switchgear door or other panel where the IQ 200 is to be mounted as shown in figure 3.1. Install the IQ 200 Display Module as shown in figure 3.1, following these steps:

- Install the supplied gasket when using in NEMA 12 applications.
- Slide the supplied gasket over the rear of the IQ 200 Display Module until it is flush with the rear of the outer bezel.
- Insert the IQ 200 Display Module with gasket installed into the cutout.
- Slide the 4 supplied locking bars into the 4 slots in the top, bottom, and sides at the rear of the IQ 200 Display Module
- Insert and tighten the supplied thumbscrews to secure the IQ 200 Display Module in place.

Connect the grounding terminal on the rear face of the IQ 200 Display Module to earth ground.

**Base Module** Select a location for the IQ 200 Base Module.

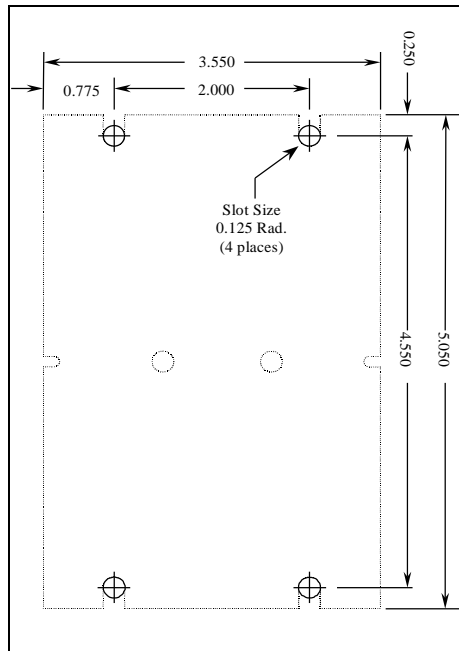
Depending on the location, use the mounting holes in the flange on the front face of the IQ 200 Base Module, the supplied L-bracket, or the DIN rail/DIN clip set to secure the IQ 200 Base Module in the desired location and orientation. Typical mounting options are shown in figure 3.3. The hole drilling pattern for mounting the IQ 200 Base Module to floor, wall, or other surface is shown in figure 3.4.



**Figure 3.3 Typical Mounting Options for Mounting the IQ 200 Base Module**

Connect the IQ 200 Base Module to earth ground using the grounding terminal on the rear face.

Route a Category 5 cable from the IQ 200 Base Module to the IQ 200 Display Module. *Do not route the Category 5 cable in the same enclosure or cable tray as 600V system wiring.*



**Figure 3.4 Mounting Hole Pattern for the IQ 200 Base Module**

Connect the IQ 200 Display Module to the IQ 200 Base Module by inserting one end of a Category 5 cable into the port on the IQ 200 Display Module, and the other end into the *DISPLAY* port on the IQ 200 Base Module.

Proceed to *section 3.3 Wiring*.

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### 3.3 WIRING

The IQ 200 requires connection to system currents and voltages. If mounted separately, the cases of IQ 200 Display Module *and* the IQ 200 Base Module case *must* be connected to earth ground. If mounted together as one unit, the case of the IQ 200 Base Module *must* be connected to earth ground.

Additionally, the IQ 200 may require connection to an IMPACC network and/or an external pulse counter. The steps for completing each type of wiring are described in the following sections.



#### CAUTION

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**ALL WIRING MUST CONFORM TO NATIONAL AND LOCAL CODES. SUFFICIENT ROOM MUST BE PROVIDED FOR ROUTING OF ALL POWER CABLES. ALL SIGNAL CABLES MUST BE ROUTED SEPARATELY FROM POWER CABLES. THE CATEGORY 5 CABLE CONNECTING THE IQ 200 DISPLAY MODULE AND THE IQ 200 BASE MODULE IS RATED AT 300V. THIS CABLE MUST NOT BE ROUTED IN THE SAME WIRING CHANNEL AS THE SYSTEM POWER.**

#### 3.3.1 Wiring System Current and Voltage

The IQ 200 must be connected to sources of current and voltage for each phase that is to be monitored. Current transformers having a 5 amp secondary provide the phase current measurement. Phase voltages under 600V may be measured directly by the IQ 200. Phase voltages over 600V must be measured using potential transformers.

#### 3.3.2 Wiring Diagrams for Various System Configurations

Recommended IQ 200 wiring diagrams for current and potential transformers are shown below in figures 3.5 through 3.14. It is the user's responsibility to determine which wiring diagram applies and to specify and install all current transformers, potential transformers, fuses, and other components.

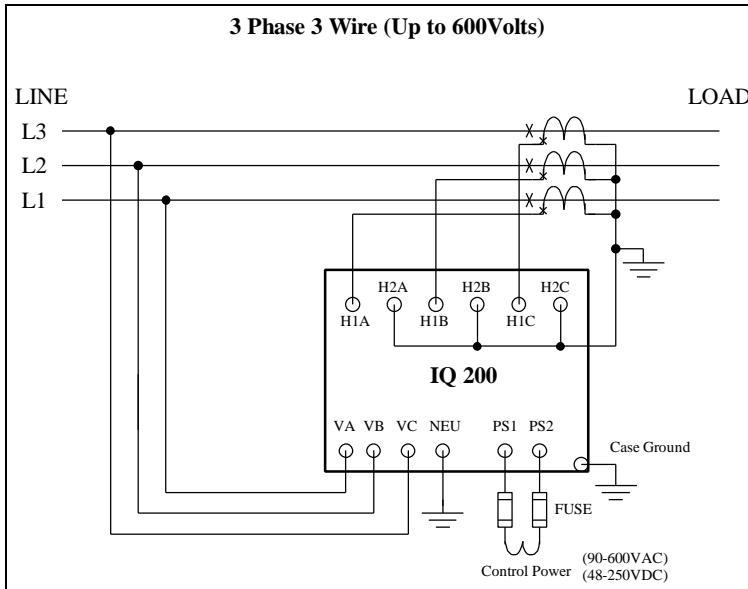


Figure 3.5 3 Phase 3 Wire Configuration (Up to 600 Volts)

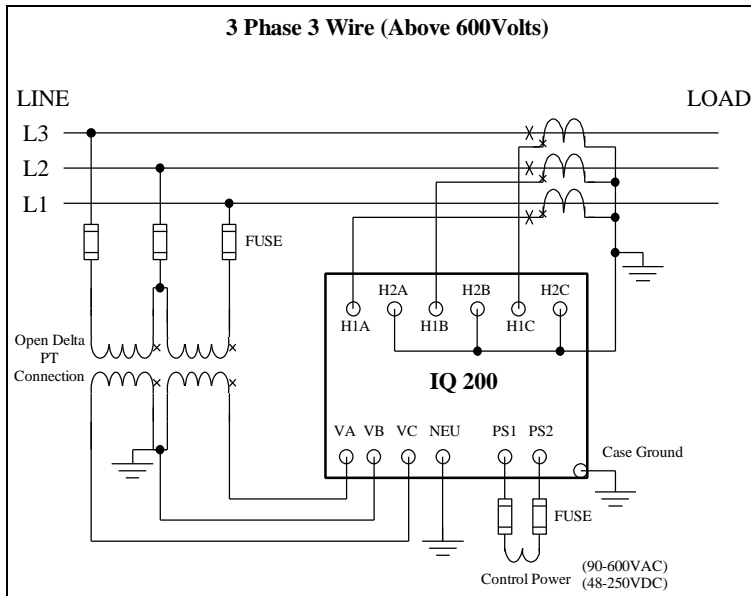


Figure 3.6 3 Phase 3 Wire Configuration (Above 600 Volts)

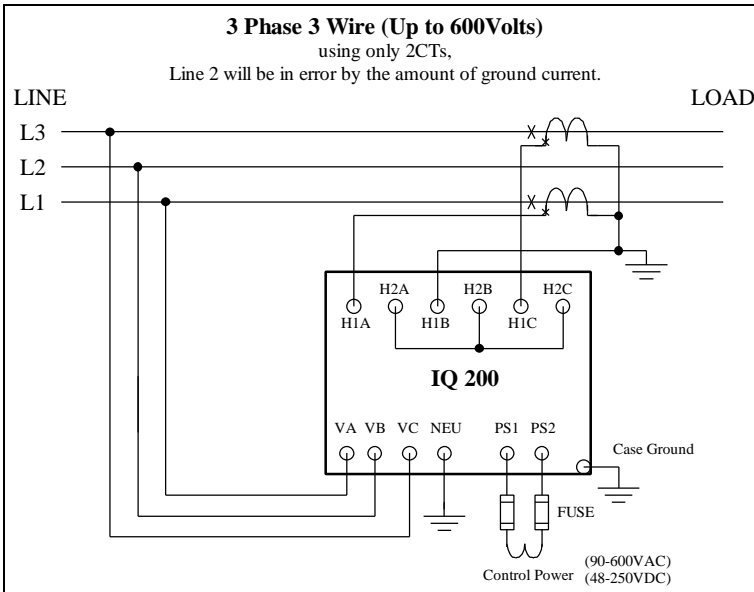


Figure 3.7 3 Phase 3 Wire, 2 CT Configuration (Up to 600 Volts)

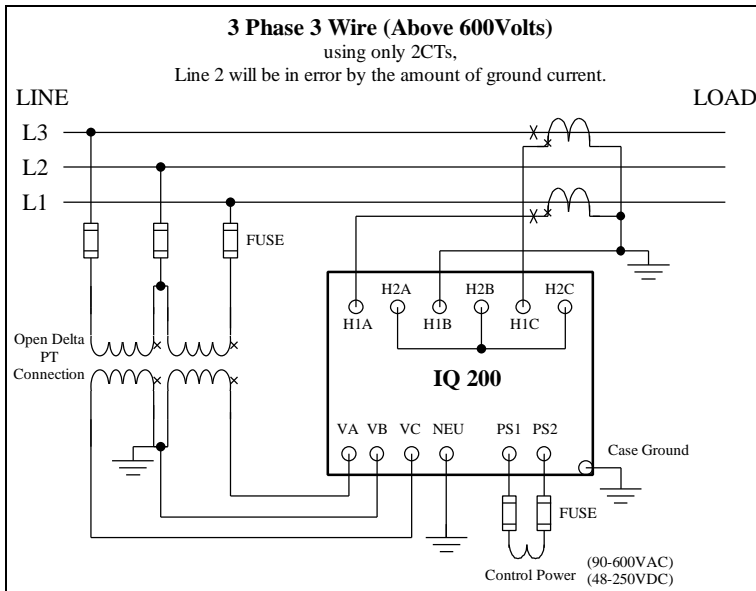


Figure: 3.8 3 Phase 3 Wire, 2CT Configuration (Above 600 Volts)

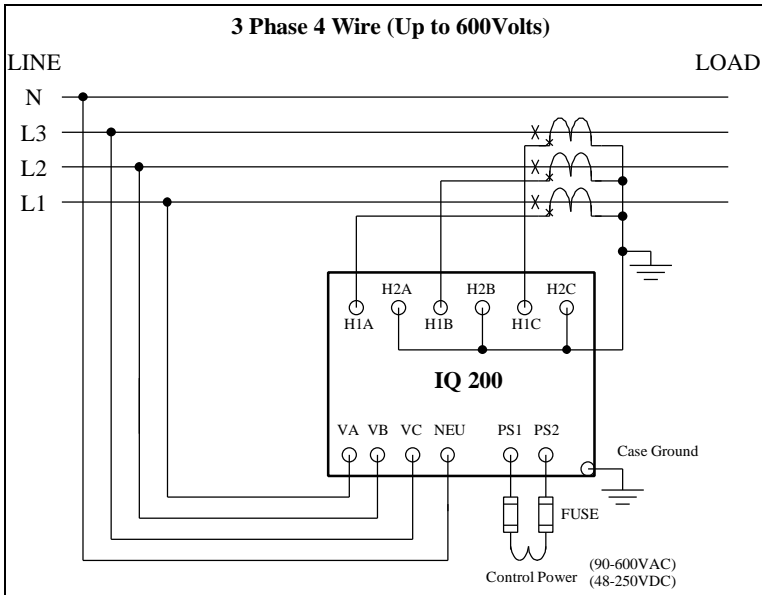


Figure: 3.9 3 Phase 4 Wire Configuration (Up to 600 Volts)

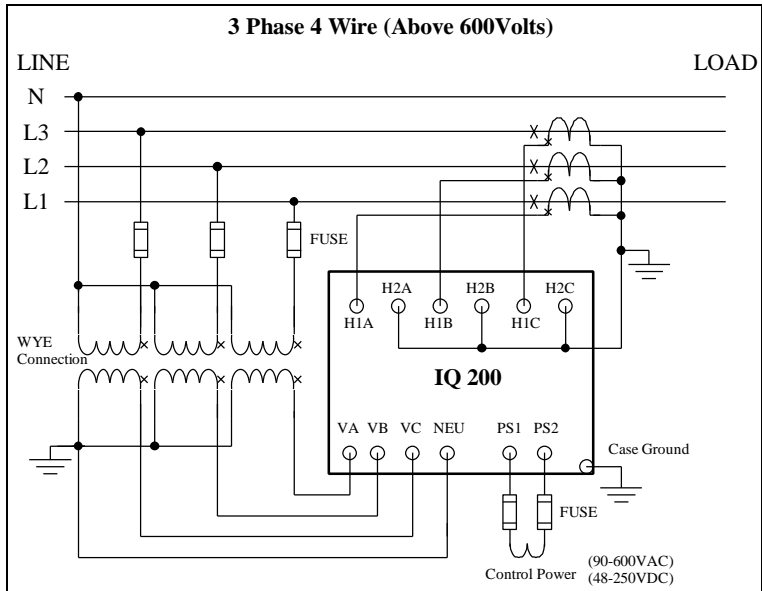


Figure 3.10 3 Phase 4 Wire Configuration (Above 600 Volts)



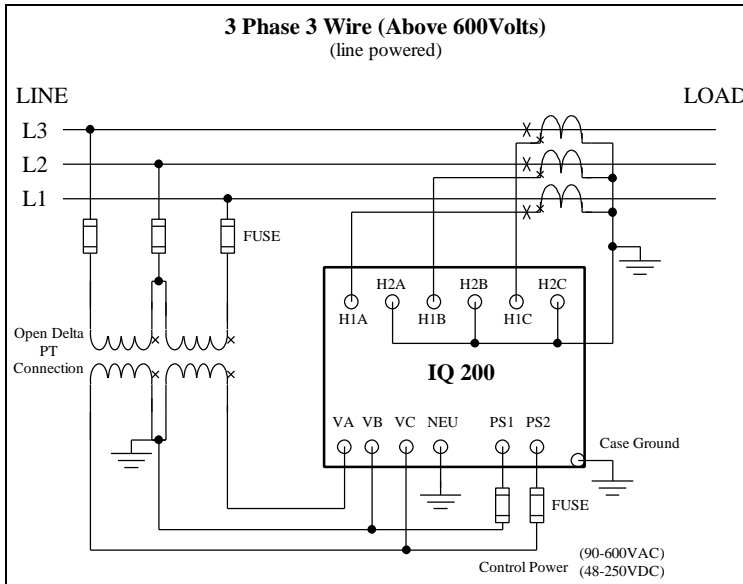


Figure 3.11 3 Phase 3 Wire Configuration (Above 600 Volts) Line Powered

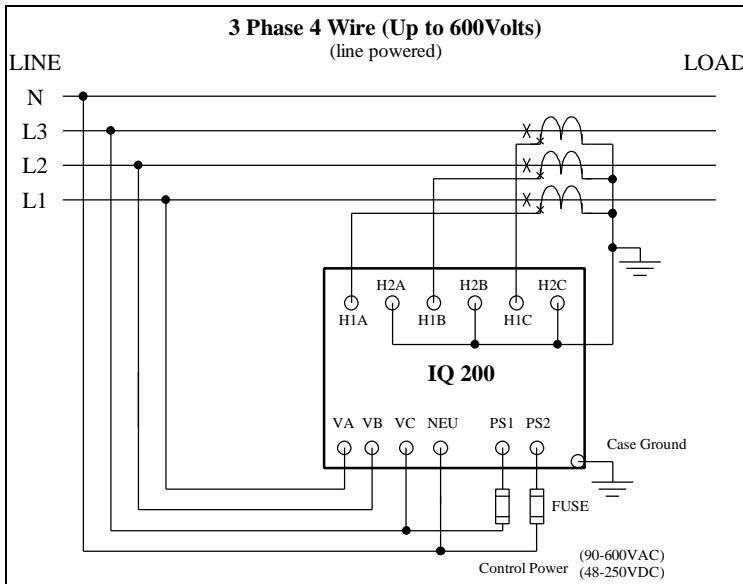


Figure 3.12 3 Phase 4 Wire Configuration (Up to 600 Volts) Line Powered

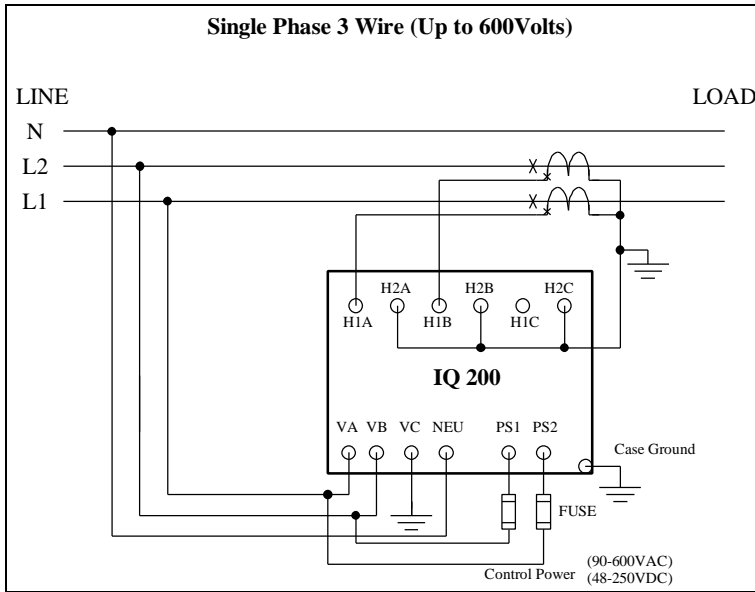


Figure 3.13 Single Phase 3 Wire Configuration (Up to 600 Volts)

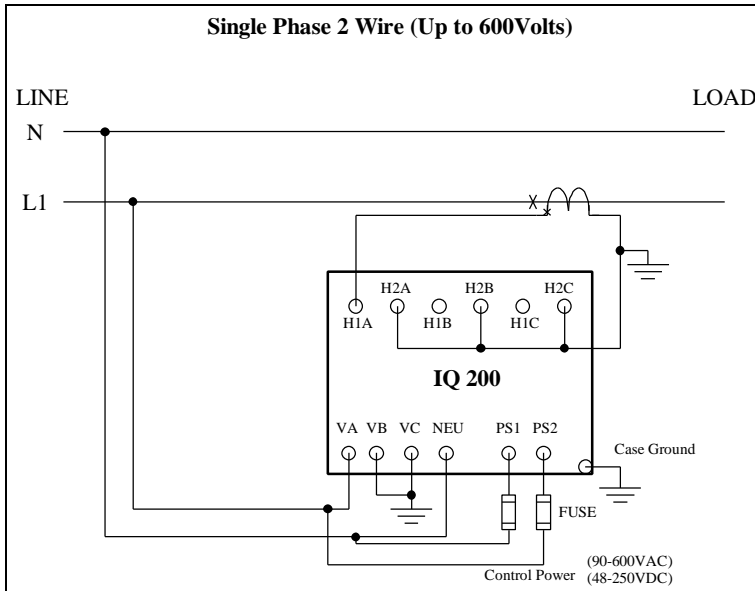


Figure 3.14 Single Phase 2 Wire Configuration (Up to 600 Volts)

### 3.3.3 INCOM™ Network Communications

**Note:** To satisfy IMPACC Wiring Specifications use only Belden 9463 OR 3072F, or Culter-Hammer IMPCABLE shielded twisted pair cable or equivalent, according to system requirements. SEE TD17513, IMPACC WIRING SPECIFICATIONS BASE RULES for more detailed information.

Connect the IQ200 to the IMPACC network by connecting the twisted pair communication cable to the INCOM™ port located on the rear face of the IQ 200 Base Module. The polarity of the twisted pair is not important.

Tie the communication cable shield to ground only once at the INCOM™ master device. If there are more than one remote INCOM™ compatible devices (such as the IQ 200) cabled to the master device, tie the communication cable shields together but *do not* connect to ground.

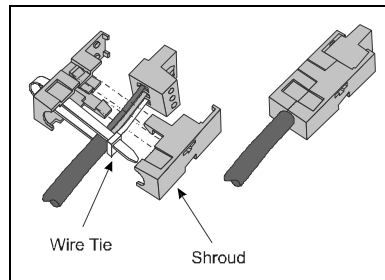
Care must be taken in stripping wire due to close proximity of terminals.



## CAUTION

### PREPARE THE CABLE FOR ATTACHMENT TO THE INCOM™ JACK TO AVOID SHORTING CABLE SHEILD TO POWER INPUT TERMINALS.

Carefully strip the end of the communication wire as described in TD 17513. Install the INCOM™ jack onto the prepared cable. Place the cable and jack assembly into the recess in the side of the shroud component of the supplied Phoenix Contact Cable Housing that includes a supplied wire tie as shown in figure 3.15. Ensure that the supplied wire tie passes through the holes in the shroud so the ends of the tie flank the cable, as shown in figure 3.15. Tighten the wire tie to secure the cable to the shroud.



**3.15. Securing INCOM™ Cable to Shroud**

### 3.3.4 KYZ Pulse Initiator

The KYZ Pulse Initiator output can be wired to a 2-wire (K-Y terminals) or 3 wire (K-Y-Z terminals) pulse receiver. These terminal configurations and the resulting pulse trains are shown in figures 3.15 and 3.16. The energy represented by each pulse can be specified by the user as: *apparent (VAh)*; *forward* or *reverse real*