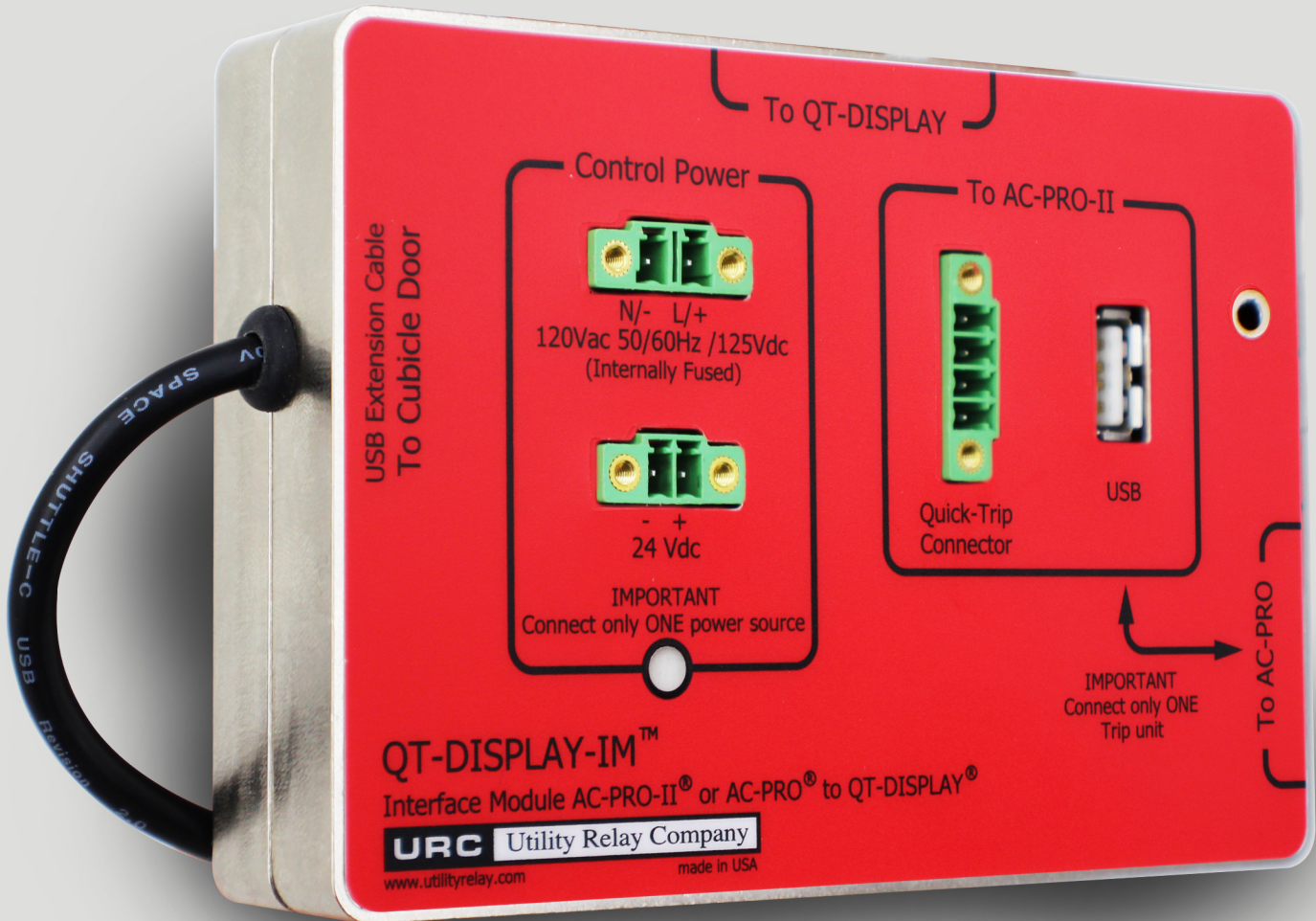


INSTRUCTION MANUAL

QT-DISPLAY-IM
Manual v1.0

QT-DISPLAY-IM[®]



QT-DISPLAY & QT-SWITCH compatibility
for AC-PRO-II[®] or AC-PRO[®] Trip Units

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For latest version, visit:
http://www.utilityrelay.com/Side_Bar/Instruction_Manuals.html



Manual Revision 1.0 – January 2019

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1.0 Introduction and Product Overview

The QT-Display-IM (Quick-Trip Display Interface Module) mounts to the back of a cubicle door and allows the URC door-mounted QT-Display and QT-Switch products to be used with breakers equipped with either AC-PRO or AC-PRO-II. In addition, the QT-Display-IM can be used with the QT-Display and QT2-Switch, if already installed. See Figures 1, 2, and 3 for possible system configurations.

The QT-Display-IM is ideal for:

- Cubicles where breakers with AC-PRO or AC-PRO-II could be racked in.
- Cubicles where QT-Display is already installed.
- Customers who want a basic cubicle door display for AC-PRO-II.

The QT-Display-IM is compatible with existing AC-PRO (units marked "with Quick-Trip"), AC-PRO-II**, QT-Display, or QT-Switch.

**AC-PRO-II firmware v2.0 or later recommended but not required. See Section 4.5.

When the QT-Display-IM is used with AC-PRO-II, the QT-Display can show the following information:

- Currents: Phase, Neutral, & Ground Fault
- Voltages, Power, & Energy (AC-PRO-II with VDM required)
- Settings (review)
- Last Trip Data

In addition, the QT-Display-IM includes a mini-USB port pigtail to allow all AC-PRO-II data to be accessed via a cubicle door USB port along with URC's free InfoPro-AC software. The mini-USB port can also be used with the SAFE-T-TRIP hand held trip device.

When the QT-Display-IM is used with AC-PRO, the QT-Display will show the same information as the AC-PRO.
 Note: The USB port does not work with AC-PRO.

1.1 Existing Product Background

Before the QT-Display-IM was released, the QT-Display and QT-Switch products could only be used with AC-PRO trip units.

The door-mounted QT-Display and QT-Switch provide the URC Quick-Trip system for Arc Flash Reduction. The QT-Display also allows trip unit information to be viewed without opening the breaker cubicle door. The QT-Switch is pad-lockable.

The QT-Display includes:

- 16 character LCD Display
- Quick-Trip LED, a Pickup LED, and a Self-Test LED.
- "REVIEW" button, which is used to sequence through trip unit data.

The QUICK-TRIP system is a manually controlled arc flash hazard reduction system. It can reduce trip times when turned on and allows selective coordination between circuit breakers when turned off.

If maintenance personnel must work on energized equipment, they will first turn the QUICK-TRIP system on at the upstream breaker feeding the equipment or breaker. If a fault now occurs, the upstream breaker will trip quickly based on the QUICK-TRIP settings **reducing the Arc Flash Hazard to personnel**.

When the maintenance work is finished, the QUICK-TRIP system is turned off and the original selective coordination is back in effect.

When QUICK-TRIP is **on**, the following settings are enabled:

- Instantaneous QUICK-TRIP (I QT)
- GF QUICK-TRIP (GF QT)

The "QUICK-TRIP ON LED" provides positive indication that the QUICK-TRIP settings are active if the LED is on.

****** IMPORTANT ******

A qualified engineer must determine the QUICK-TRIP settings, calculate the incident energy levels and determine the Hazard Risk Categories (HRC).

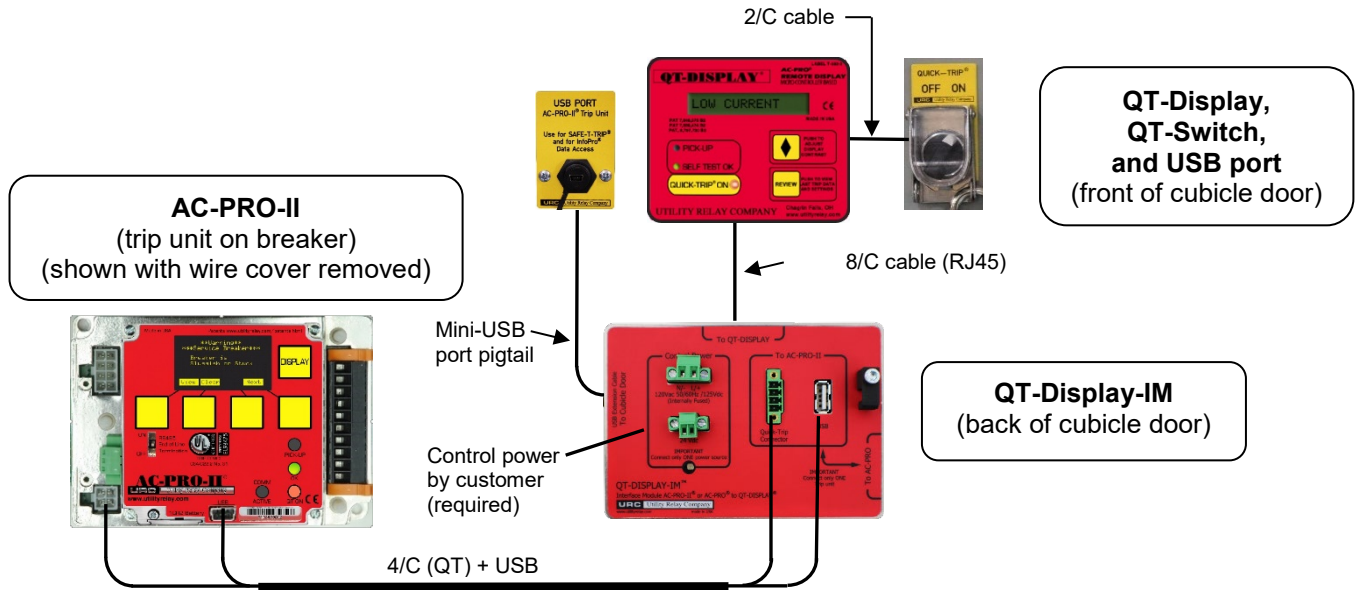


Figure 1: QT-Display-IM with AC-PRO-II

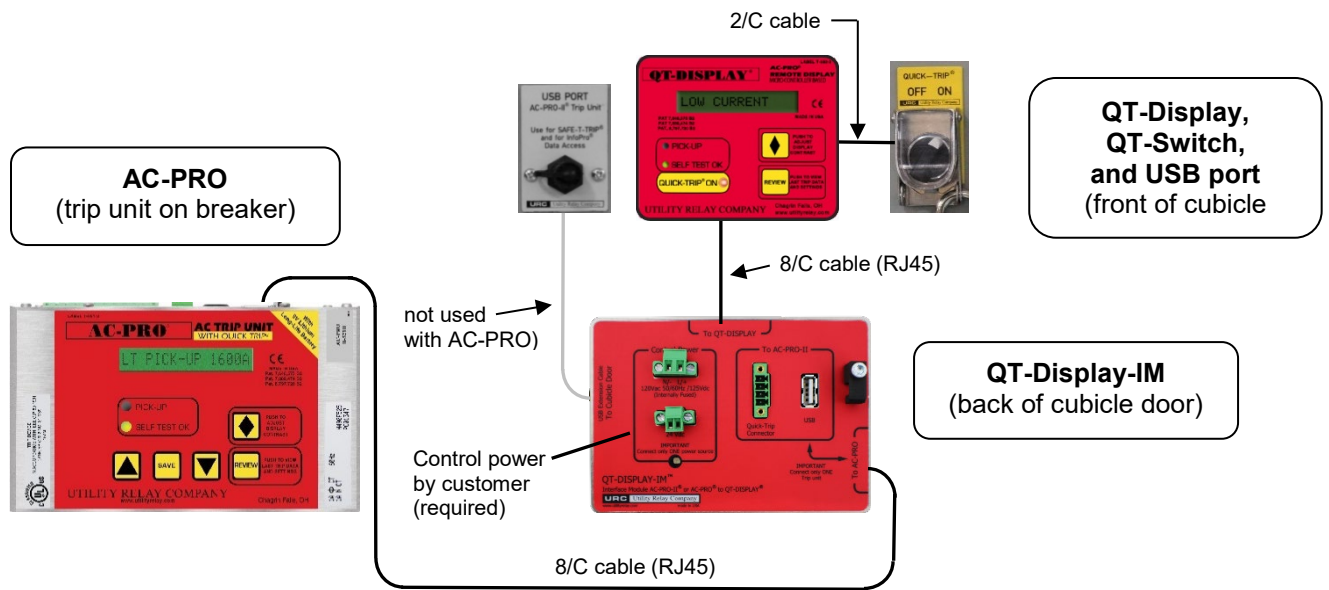


Figure 2: QT-Display-IM with AC-PRO

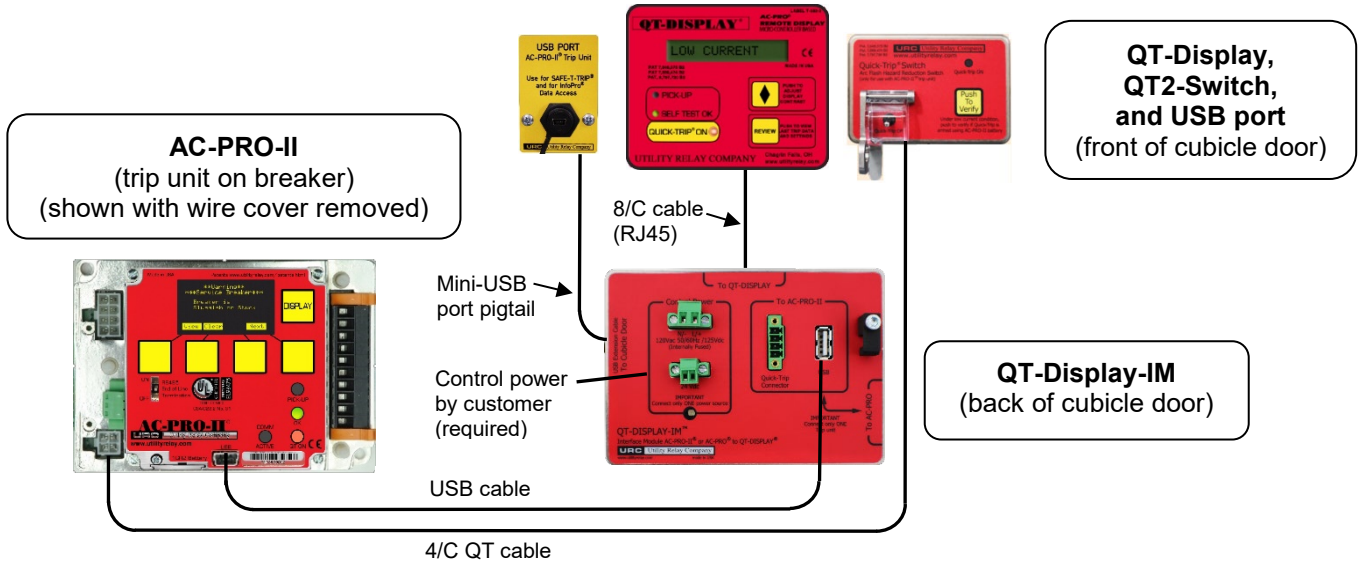


Figure 3: QT-Display-IM with AC-PRO-II & QT2-Switch

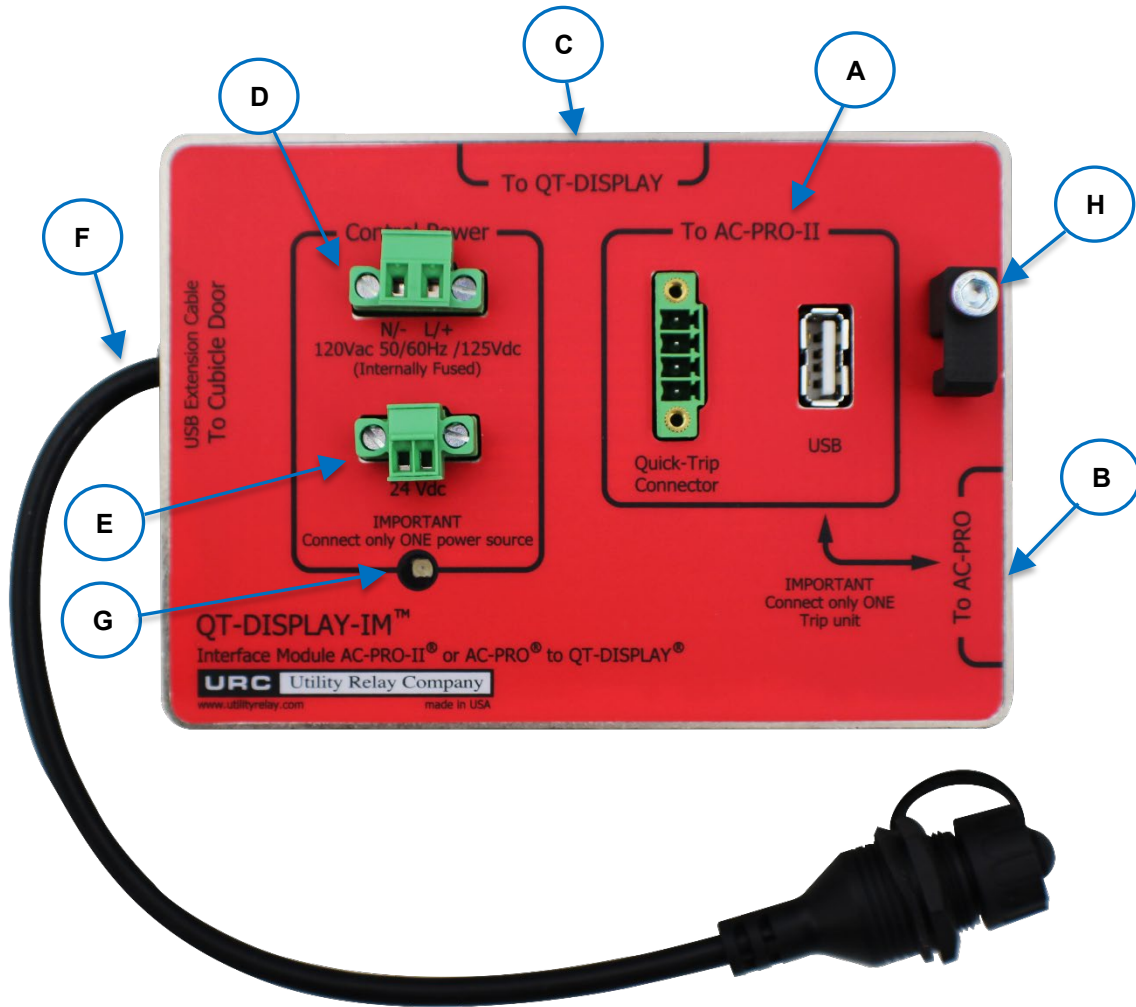


Figure 4: QT-Display-IM Front View

Trip Unit Connection (only connect one (1) trip unit):

- A. AC-PRO-II Connectors**
4/C connector and USB connector.
Only use cable supplied by URC.
- B. AC-PRO-Connector (side)**
8/C RJ45 connector
Only use cable supplied by URC. (not included in QT-Display-IM kit)

QT-Display Connection:

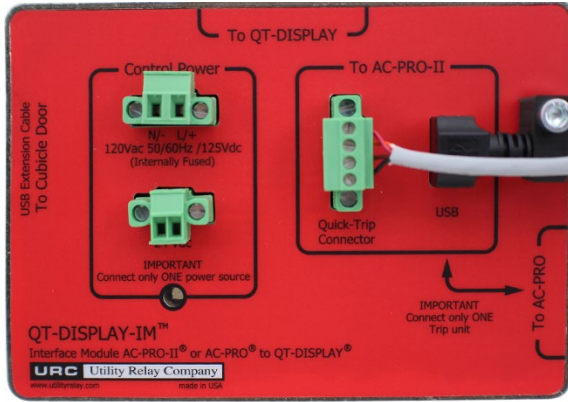
- C. QT-Display Connector (top)**
8/C RJ45 connector
Only use cable supplied by URC.

Control Power Connection (required) (only connect one (1) source)

- D. 120VAC/125VDC Control Power Connector**
- E. 24VDC Control Power Connector**

Other items:

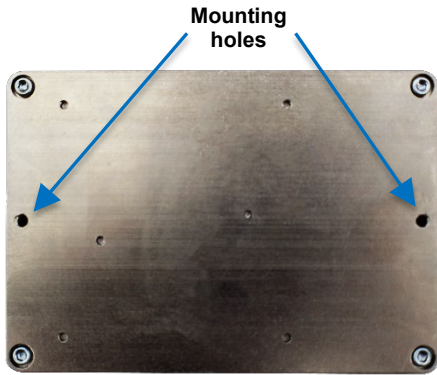
- F. USB (port) Extension Cable pigtail (side) (“port” mounts in cubicle door) – 12” length**
- G. Control Power LED (ON when Control power is present)**
- H. AC-PRO-II Cable retention clip – for USB Cable ONLY.**



QT-Display-IM: with AC-PRO-II cable connected (cable clamp over USB cable ONLY)



QT-Display-IM: angled showing AC-PRO and QT-Display connectors



Back of QT-Display-IM



Cubicle door Mini-USB port (cover off) and legend plate



Cable: QT-Display-IM to AC-PRO-II (60" length)



Cable: QT-Display-IM to QT-Display (12" length)

Figure 5: Additional product photos

2.0 General

2.1 Items included in QT-Display-IM kit:

- QT-Display-IM unit & mounting hardware
- Cable for QT-Display – 12" length
- Cable for AC-PRO-II – 60" length
- USB legend plate & mounting hardware
- Cable installation hardware
- Instruction Manual

Note: The QT-Display and QT-Switch are NOT included in the QT-Display-IM kit and must be purchased separately.

3.0 QT-Display-IM Installation

Refer to Figures 6 and 7 for QT-Display-IM installation details.

1. Find a suitable location on the cubicle door and mark the location of the two (2) holes using the dimensions in Figure 6. Note that the mounting screw heads will be visible on the front of the cubicle door.
2. Drill two (2) 7/32" mounting holes.
3. Attach the QT-DISPLAY-IM to the back of the cubicle door using the two (2) supplied 8-32 x 1/2 Phillips HD screws and lock washers.
4. Route the cables so they do not interfere with the opening or closing of the cubicle door or with the racking of the breaker between connect and disconnect positions. Use cable ties and holders to hold the cable in position.
5. Make the electrical connections shown in Figure 1, 2, or 3.
6. When connecting the AC-PRO-II cable, use the USB cable clip for the USB cable only. See photo in Figure 5.
7. Update AC-PRO-II firmware as required. See Section 4.5.

Refer to the AC-PRO Instruction manual for QT-Display installation instructions.
http://www.utilityrelay.com/Side_Bar/Instruction_Manuals.html

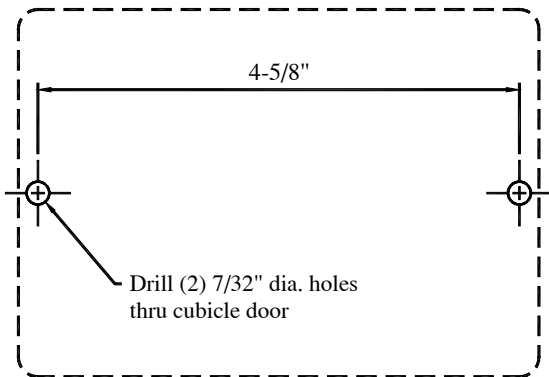


Figure 6: QT-Display-IM Drilling

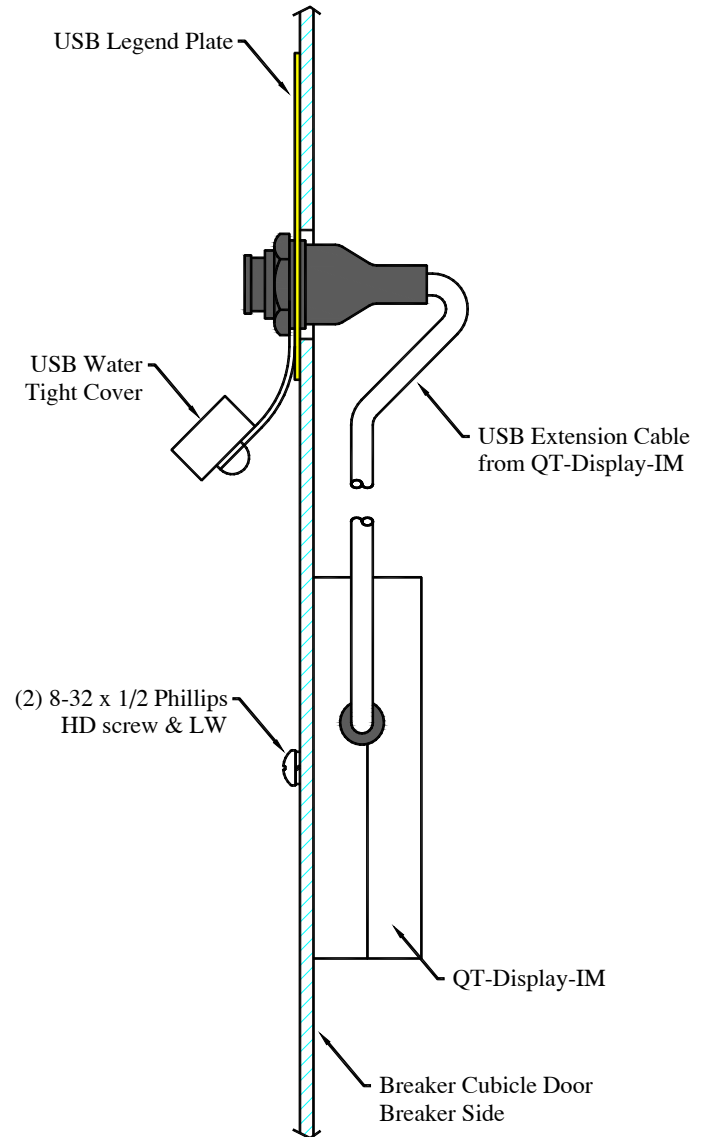


Figure 7: QT-Display-IM Section View

3.1 USB port installation

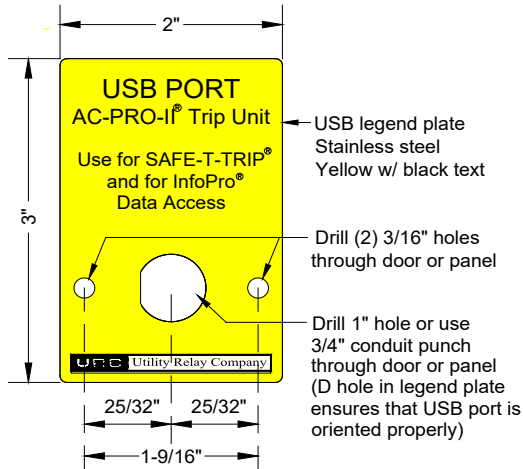


Figure 8: USB Plate Drilling

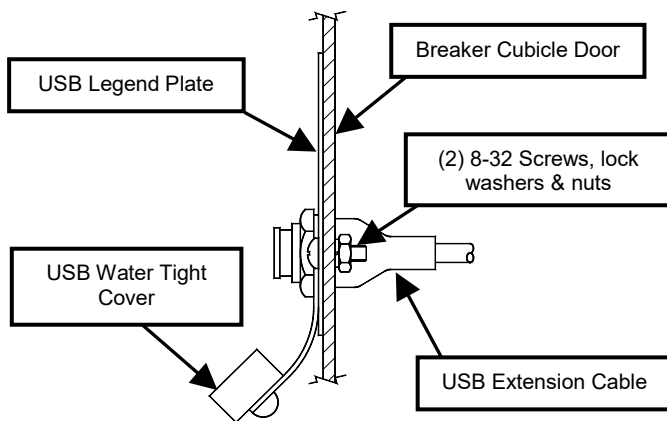


Figure 9: USB Plate & Cable Installation

To install the USB port/cable:

1. Find a suitable location on the cubicle door and mark the three (3) holes using the dimensions in Figure 8. **IMPORTANT:** The fixed USB "pigtail" is 12" long. This must be considered before drilling.
2. Drill two (2) 3/16" mounting holes.
3. For the center hole, cut a 1" diameter hole using a hole saw or alternately, use a 3/4" conduit knockout punch.
4. Attach the USB legend plate to the front of the cubicle door using the supplied two (2) 8-32 screws, nuts, and lock washers.
5. Route the cable so it does not interfere with the opening or closing of the cubical door or with the racking of the breaker between connect and disconnect positions. Use the supplied cable ties and holders to hold the cable in position.
6. Position the USB port through the 1" opening and through the opening in the legend plate. Ensure one rubber washer is on the interior of the door / panel, and the threaded USB cover and rubber washer are on the exterior.
7. Thread the plastic nut onto the USB port connector, securing it to the door / panel.

4.0 QT-Display & Switch Installation

NOTE: The QT-Display and QT-Switch are not part of the QT-Display-IM kit and must be purchased separately.

The QT-Display and QT-Switch are easy to install on the front of the breaker cubicle door.

To install the QUICK-TRIP Display:

1. Find a suitable location on the cubicle door and mark the location of the three (3) holes using the dimensions in Figure 10.
2. Drill two (2) 13/64" mounting holes.
3. For the center hole, cut a 1-11/16" diameter hole using a hole saw or alternately, use a 1-1/4" conduit knockout punch.
4. Attach the QUICK-TRIP Display to the front of the cubicle door using two (2) 10-32 hex nuts, flat washers and lock washers.

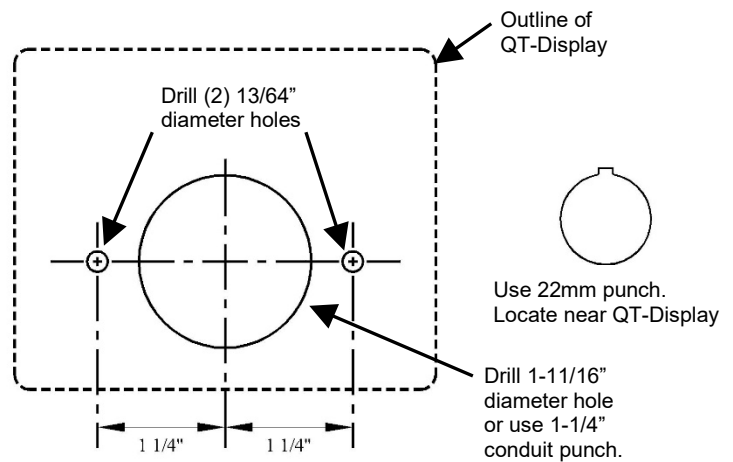


Figure 10: QT-Display & QT-Switch drilling plan

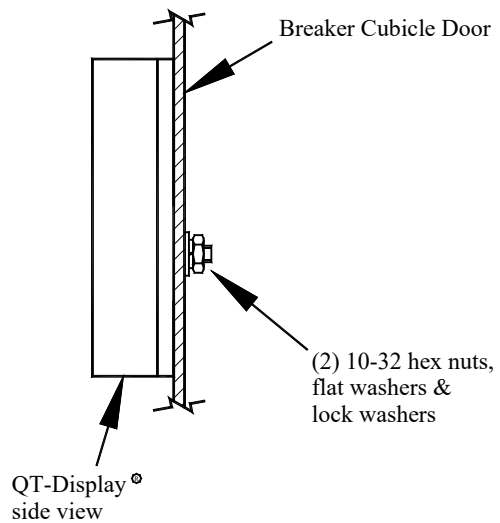


Figure 11: QT-Display Mounting

To install the QT-Switch:

1. Use a 22mm switch knock-out punch to make a hole in the cubicle door for the selector switch. The QT-Switch should be located near the QUICK-TRIP Display.
2. Attach the selector switch, padlock attachment and contact blocks to the cubicle door.
3. Plug the cable from the switch into the back of the QUICK-TRIP Display.

5.0 QT-Display Operation with AC-PRO-II

When the QT-Display-IM is used with AC-PRO-II, the QT-Display can show the following information:

- Currents: Phase, Neutral, & Ground Fault
- Voltages, Power, & Energy (AC-PRO-II with VDM required)
- Settings (review)
- Last Trip Data
- LEDs: Self-Test OK, Pickup, Quick-Trip

The QT-DISPLAY “REVIEW” button is used to advance/step through information.

5.1 AC-PRO-II Readings on QT-Display

In normal operation, the QT-Display “Main Readings” routine will automatically scroll through the AC-PRO-II Current readings, as long as they are above 10% of the CT Rating. If all currents are below 10%, “LOW CURRENT” will be displayed. If some currents are below 10%, those readings will be skipped in the scroll routine.

If the AC-PRO-II is equipped with a VDM (Voltage Divider Module), the readings routine will also include Voltage, Power, and Energy values.

5.2 AC-PRO-II Trip Data on QT-Display

QT-Display will show AC-PRO-II Last Trip data from the single most recent trip. This data can be accessed by pressing the “Review” button on the QT-Display.

5.3 AC-PRO-II Settings on QT-Display

QT-Display will show AC-PRO-II basic settings: CT Rating, Long Time, Short Time, Instantaneous, Ground Fault, Quick-Trip, and Communications. This data can be accessed by pressing the “Review” button on the QT-Display.

Additional AC-PRO-II settings can be viewed on the AC-PRO-II screen or by using URC’s free InfoPro-AC software.

5.4 AC-PRO-II Alarms/Errors on QT-Display

If an AC-PRO-II error or alarm is present, a basic message will appear on the QT-Display screen. For some Alarm conditions, additional information will be available on the AC-PRO-II screen, or by using URC’s free InfoPro-AC software. Refer to the AC-PRO-II Instruction Manual for additional information.

http://www.utilityrelay.com/Side_Bar/Instruction_Manuals.html

5.5 AC-PRO-II Firmware

All AC-PRO-II firmware versions are compatible with the QT-Display-IM. However, AC-PRO-II firmware version 2.0 or later is strongly recommended.

If the QT-Display detects “version 1” firmware, it will display: “AC-PRO-II NEEDS FW UPDATE”.

Note: when “Version 1” AC-PRO-II firmware is used with QT-Display-IM, the AC-PRO-II OLED display will be on continuously, which is not recommended.

The AC-PRO-II firmware version can be viewed on the AC-PRO-II screen by using the “MORE” menu, which is accessible from the main screen. See the AC-PRO-II Instruction Manual for additional information. http://www.utilityrelay.com/Side_Bar/Instruction_Manuals.html

5.6 Mini-USB port for AC-PRO-II

The QT-Display-IM includes a mini-USB “pigtail” / port (see Section 3.1 for installation in cubicle door), which allows USB connection to AC-PRO-II for InfoPro-AC software, or for the SAFE-T-TRIP hand-held trip device. This port is specifically for AC-PRO-II trip units.

NOTE: This port is NOT for AC-PRO trip units. Refer to the AC-PRO-II Instruction Manual for additional information.

http://www.utilityrelay.com/Side_Bar/Instruction_Manuals.html

5.7 QT-Display Screens with AC-PRO-II

Figure 12 below shows a basic flowchart of the sequence of Information displayed on the QT-Display, when it is connected to AC-PRO-II.

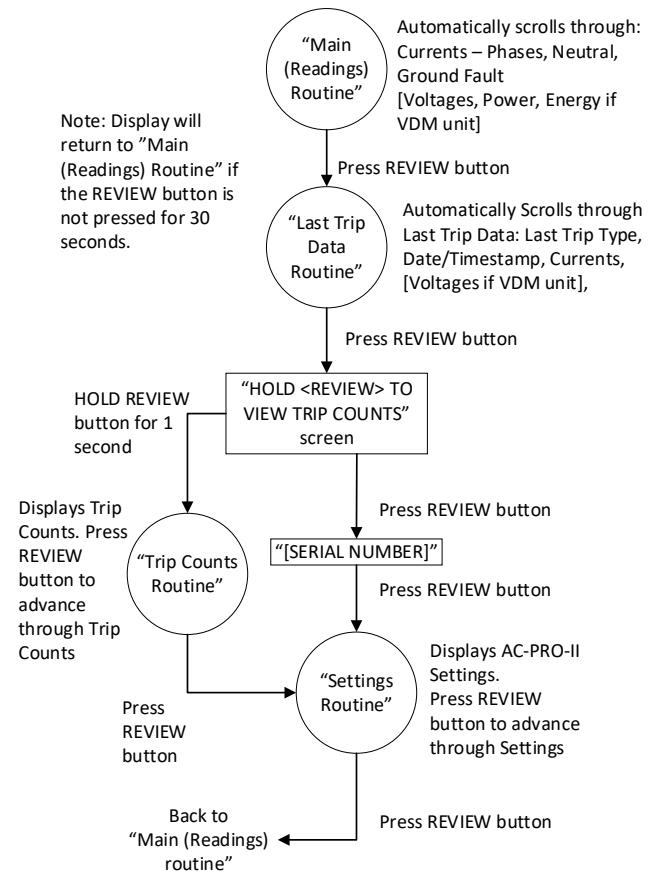


Figure 12: Display screens with AC-PRO-II

6.0 Operation With AC-PRO

When the QT-Display-IM is used with AC-PRO, the QT-Display can show the following information:

- Currents: Phase & Ground Fault
- Settings (review)
- Last Trip Data
- LEDs: Self-Test OK, Pickup, Quick-Trip

The information displayed on the QT-Display and the "Review" button performance directly match the AC-PRO display and "Review" button performance.

Refer to the AC-PRO Instruction manual for information displayed.

http://www.utilityrelay.com/Side_Bar/Instruction_Manuals.html

Note: The QT-Display-IM mini-USB port does not function with AC-PRO. InfoPro-AC software and SAFE-T-TRIP do not function with AC-PRO.

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