Instruction Sheet

PowerLogic™ ION™ Meter Demo Case
with ION7650, PM8240, PM5560 meters

Safety Information

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 a hazardous situation which, if not avoided, **will result in** death or serious injury.

⚠ WARNING

WARNING indicates a hazardous situation which, if not avoided, **could result in** death or serious injury.

⚠ CAUTION

CAUTION indicates a hazardous situation which, if not avoided, **could result in** minor or moderate injury.

NOTICE

NOTICE is used to address practices not related to physical injury.

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.

A qualified person is one who has skills and knowledge related to the construction, installation, and operation of electrical equipment and has received safety training to recognize and avoid the hazards involved.

Safety Precautions

Installation, wiring, testing and service must be performed in accordance with all local and national electrical codes.

⚠ DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

- Apply appropriate personal protective equipment (PPE) and follow safe electrical work practices. See NFPA 70E in the USA, CSA Z462 or applicable local standards.
- This equipment must only be installed and serviced 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 all power is off.
- Replace all devices, doors and covers before turning on power to this equipment.
- Treat communications and I/O wiring connected to multiple devices as hazardous live until determined otherwise.
- Power unit only from sockets equipped with earth contact.

Failure to follow these instructions will result in death or serious injury.

NOTE: See IEC 60950-1:2005, Annex W for more information on communications and I/O wiring connected to multiple devices.

Introduction

This document is for internal use only. It describes the functionality of the demo case and explains the communications and wiring setup.

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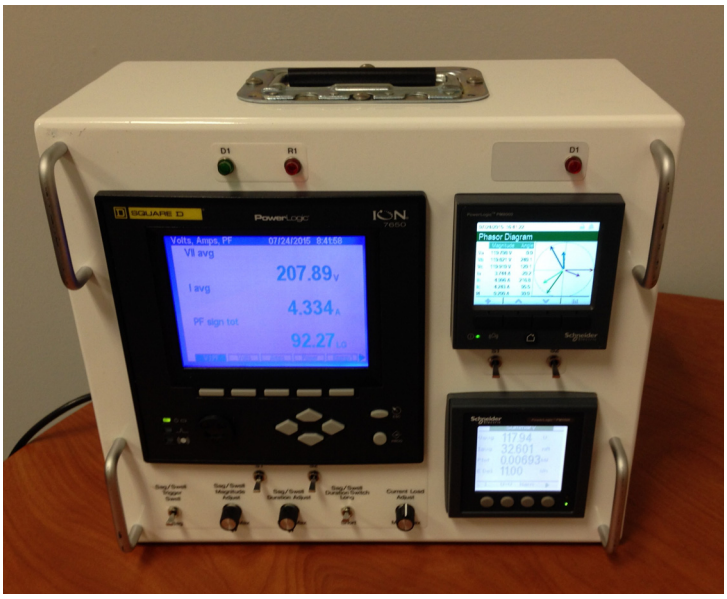
Case Contents

The Demo Case is made up of these items:

- Carrying case
- Power cable
- Two Phoenix communications connectors (installed)
- This instruction sheet

Figure 1: Demo Case and Carrying Case



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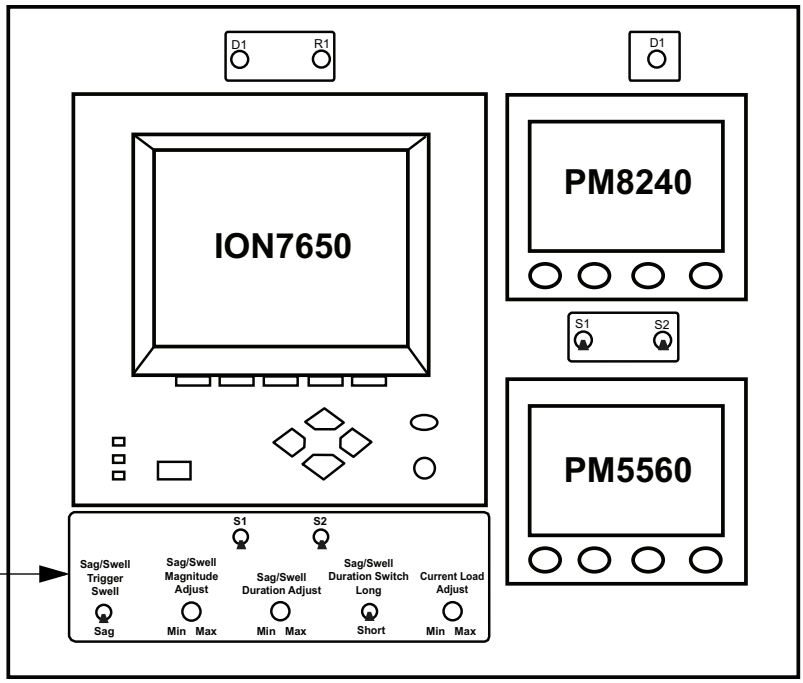
Front Panel Orientation

This standard Demo Case consists of an ION7650, PM8240, PM5560, and a power simulator control board. The output of the power simulator is connected to the ION7650 and PM8240 meters.

Figure 2: Front Panel



ION7650

Serial Number__ _____

Order Number__M7650B1C0B5E0A0A__

Inputs: S1 switch connected to digital input 1
S2 switch connected to digital input 2

Outputs: D1 light connected to digital output 1
R1 light connected to relay output 1

PM8240 (typical)

Serial Number__ _____

Order Number__METSEPM8240__

Inputs: S1 switch connected to digital input 1
S2 switch connected to digital input 2

Outputs: D1 light connected to digital output 1

PM5560 (typical)

Serial Number__ _____

Order Number__METSEPM5560__

Inputs: N/A

Outputs: N/A

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Power Simulator Controls

The ION7650 and the PM8240 voltage inputs are connected to the power simulator outputs. The power simulator outputs approximately 33 Vac when powered by 120 Vac, and 60 Vac when powered by 220 Vac. The current load adjust dial ranges from 0-50 mA. Depending on the input voltage, use the settings in Table 1 to display realistic PT values.

The PM5560 voltage input is connected to the input voltage of the Demo Case. Therefore, the sag/swell features of the power simulator controls do not affect the PM5560.

Table 1: Suggested PT and CT Settings

Demo Case Input Voltage	120 Vac	220 Vac
PT Primary	436	807
PT Secondary	120	120
CT Primary	2500	2500
CT Secondary	5	5

Figure 3: Power Simulator Control Panel

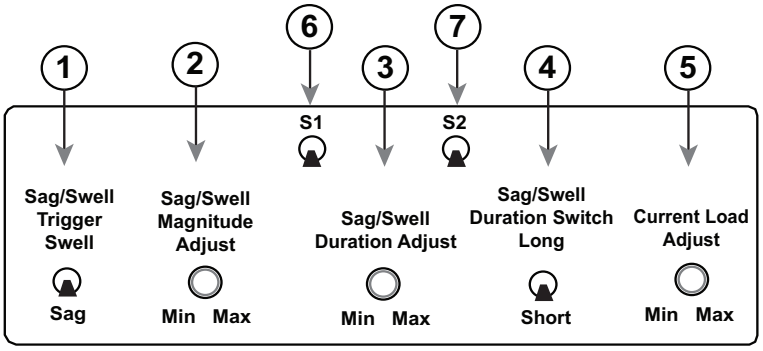

Table 2: Power Simulator Control Panel Operation

1	**Sag/Swell Trigger**	To generate a swell, push the switch up. To generate a sag, push the switch down. **NOTE**: The sag or swell duration is NOT controlled by how long the switch is held in the up or down position.
2	**Sag/Swell Magnitude Adjust**	Turn this dial to adjust the size of the power quality event. When the dial is set to the maximum (Max), the generated sag or swell is at its largest deviation from nominal. A swell is above nominal and a sag below nominal.
3	**Sag/Swell Trigger Duration Adjust**	Turn this dial to adjust the timed length of the power quality event.
4	**Sag/Swell Trigger Duration Switch**	Use this switch to increase the duration of the power quality disturbance.
5	**Current Load Adjust**	Turn this dial to change the load current applied to the meters. **NOTE**: When the load is connected to the monitored load receptacle, the current load adjust dial has little effect on the load reading.
6,7	**ION7650 S1 and S2**	S1 switch connected to digital input 1 S2 switch connected to digital input 2

Switch Position	Adjust Position	PQ Duration – Approx.
Short	Min.	0.0004 secs. (0.4 ms)
Short	Max.	0.150 secs (150 ms)
Long	Min.	0.010 secs (10 ms)
Long	Max	0.400 secs (400 ms)

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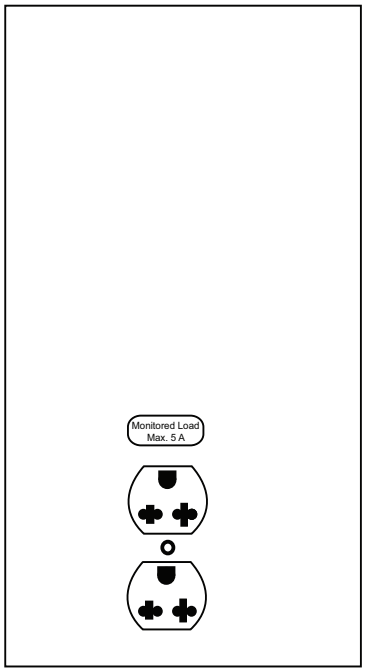
Monitored Load

Figure 4 shows the monitored load receptacle, which is located on the right side of the Demo Case.

Figure 4: Monitored Load Receptacle



The meters in the case monitor the load from a device that is plugged into this receptacle. The measured current values of the meters are affected.

To avoid blowing the internal power input fuse, only connect equipment that is rated under 150 W to the monitored load receptacle.

NOTE: When the load is connected to the monitored load receptacle, the current load adjust dial has little effect on the load reading.

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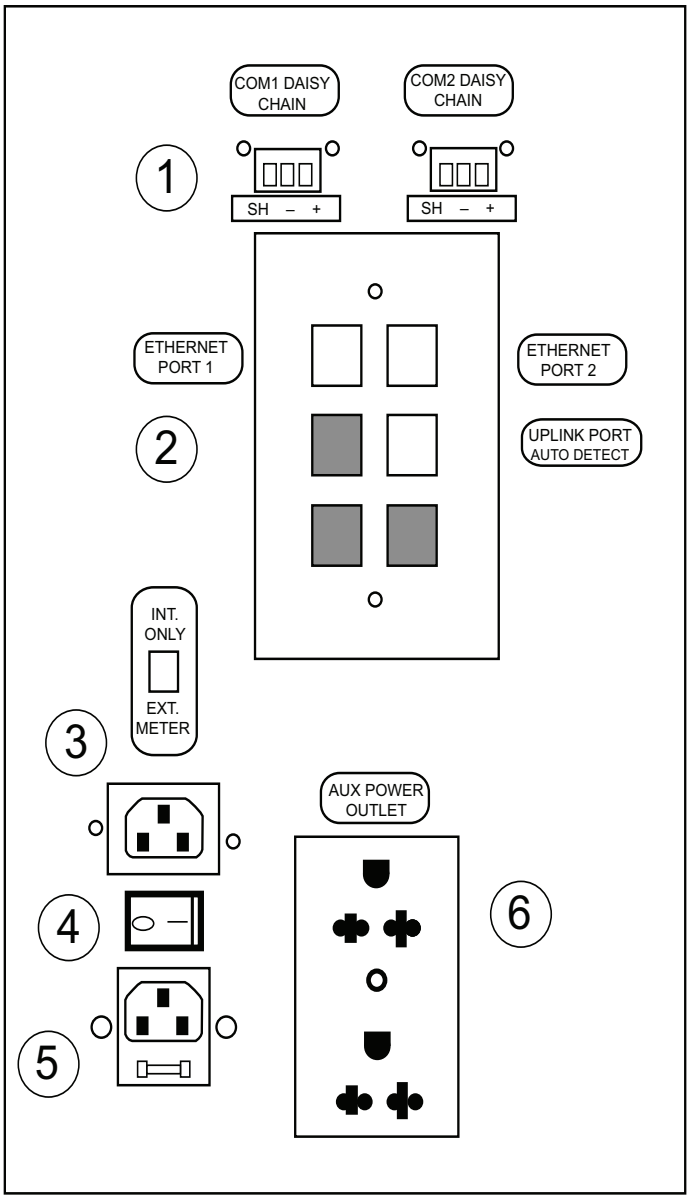
Communications and Expansion

The left side of the Demo Case contains connections for:

- Communications to the meters
- Support of additional meters to be added to the system
- Input (for power cord)
- Auxiliary power

Figure 5: Left Side of Demo Case



The sections that follow provide detailed information about the numbered items in Figure 5.

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[1] COM1 and COM2 Daisy Chain

The green Phoenix connectors installed on COM1 or COM2 are used to connect the serial daisy chain of the ION7650 (see 1 in Figure 5).

For more about serial connections, see “Serial Communications” on page 10.

[2] Ethernet Connections

All meters in the Demo Case are connected to an Ethernet switch built into the case. You can use the remaining ports of the Ethernet switch to connect to another meter or computer (see 2 Figure 5).

NOTE: All ports on the Ethernet switch have cross-over auto-detection. You can use straight or cross-over cables.

[3] Internal or External Meter Switch

This switch allows an external meter to be connected to the power simulator in the Demo Case (see 3 in Figure 5). Plug the external meter into the receptacle directly under it and set the switch to external meter (EXT METER). For the wiring diagram, see “Connecting an External Meter to the Power Simulator” on page 12.

[4] Power Switch

The ON/OFF switch on the Demo Case turns off all power to the Demo Case including the meters, Ethernet switch, and power simulator (see 4 in Figure 5).

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[5] Input Power and Fuse

The Demo Case can accept voltage input ranging from 100–230 Vac (50–60 Hz) (see 5 in Figure 5). The 5 A fuse is also located here.

Replacing a Blown Fuse

Before replacing the fuse, determine why the fuse was blown. Eliminate the cause of the overload.

⚠ DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

- Apply appropriate personal protective equipment (PPE) and follow safe electrical work practices. See NFPA 70E in the USA, CSA Z462 or applicable local standards.
- This equipment must only be installed and serviced 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 all power is off.
- Replace all devices, doors and covers before turning on power to this equipment.
- Unplug the power cord from the power source and remove any loads on the outlets before replacing the fuse.
- Do not attempt to service the Demo Case except for replacing the fuse.
- Treat communications and I/O wiring connected to multiple devices as hazardous live until determined otherwise.
- Power unit only from sockets equipped with earth contact.

Failure to follow these instructions will result in death or serious injury.

To replace the fuse, unplug the input power cord from the Demo Case and pry open the fuse holder with a screwdriver. Replace the fuse only with 250 V, 5 A, Type 5 mm x 20 mm, fast-acting fuse.

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[6] Auxiliary Power Receptacle

The AUX POWER OUTLET can be used to power additional meters, portable computers, or other electronic devices (see 6 in Figure 5). This power receptacle is not monitored by the meters and does not affect the power simulator load current. To avoid blowing the fuse, do not exceed 3 A to power additional devices through the AUX POWER OUTLET.

The voltage on the auxiliary power outlet and the input power receptacle is the same.

NOTICE

MISMATCHED VOLTAGE

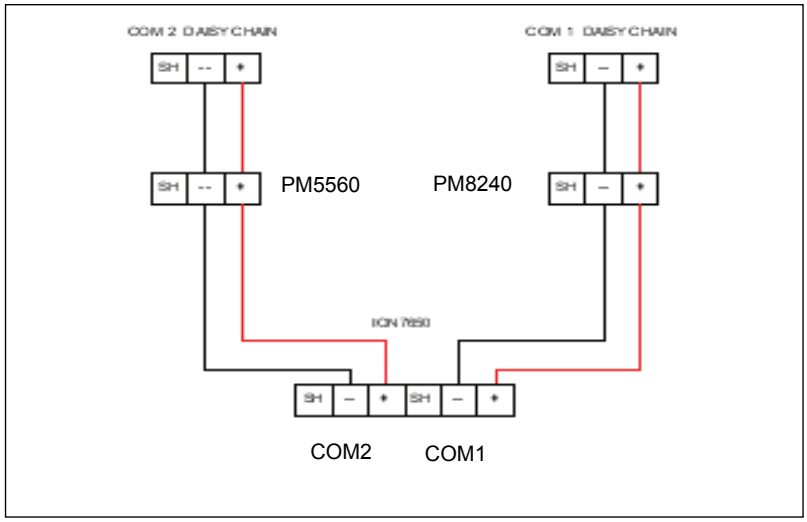
Ensure that any load connected to the auxiliary outlet has the same voltage rating as the input power.

Failure to follow these instructions can result in equipment damage.

Serial Communications

The ION7650 has two serial ports. The ION7650 COM2 is connected to the PM5560 and then to the external Phoenix connector. The ION7650 COM1 is connected to the serial port of the PM8240 and then to the external Phoenix connector.

Figure 6: Serial Connections



NOTE: The Phoenix connector manufacturer's part # is MSTB2.5/3-ST-5.08

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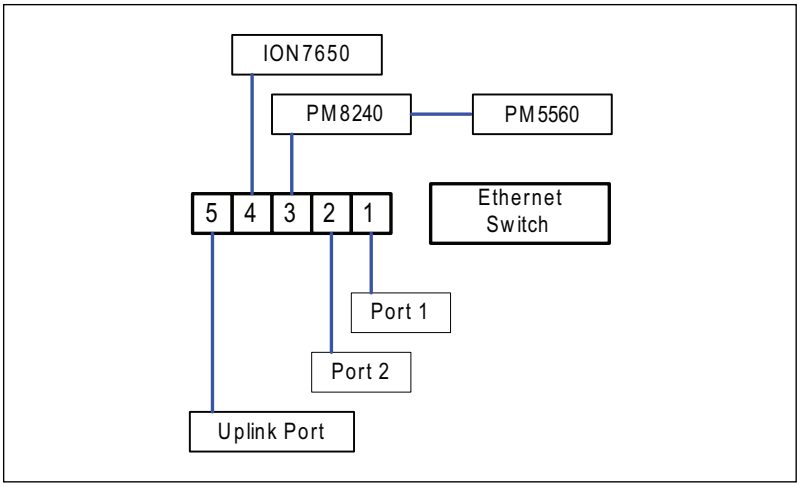
Ethernet Communications

The Demo Case is equipped with an internal 5-port Ethernet switch. The ION7650 and PM8240 are connected to the switch. The PM5560 is connected to the PM8240 with Ethernet. The remaining Ethernet ports are available on the side panel (see 2 in Figure 5).

Figure 7: Ethernet Communications Layout



NOTE: All the ports on the Ethernet switch have cross-over auto-detection. Either straight or cross-over cables work.

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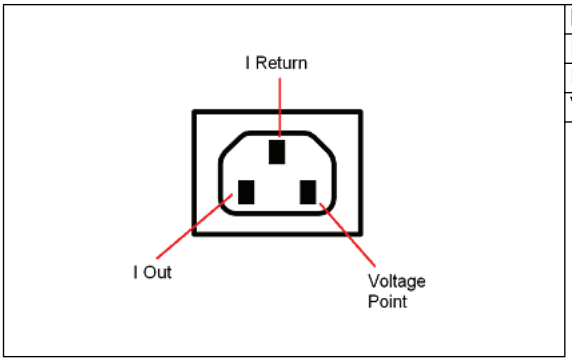
Connecting an External Meter to the Power Simulator

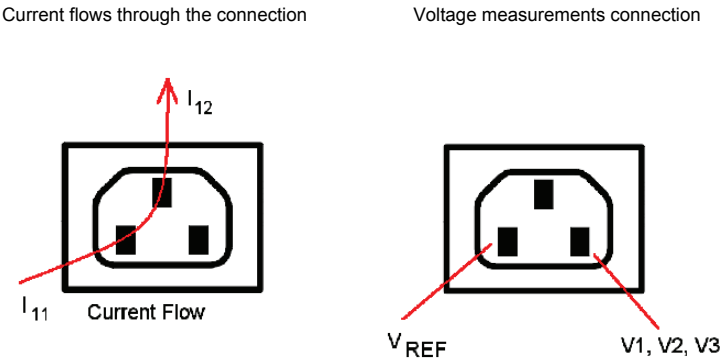
You can add an external meter to the Demo Case system by using one of the serial or Ethernet connections on the left side of the Demo Case. In addition to communications, the meter can also be connected to the internal power simulator. The following diagrams show how the external power simulator connector is wired to accommodate an additional meter.

Table 3: External Power Simulator Connection



Location Name	Connection to External Meter
I Out	I 11 and V REF
I Return	I 12
Voltage Point	V1

Figure 8: Current Flow and Voltage Connection



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Use a power cable extender to connect to the external meter connection point.

Figure 9: Power Cable Extender

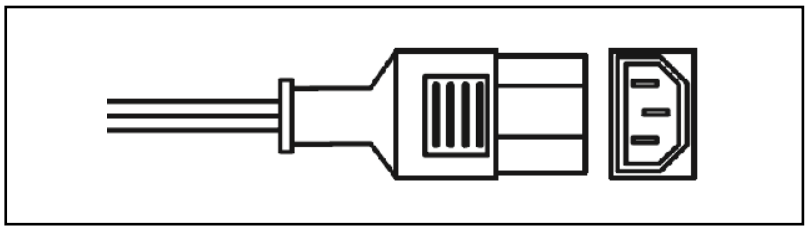
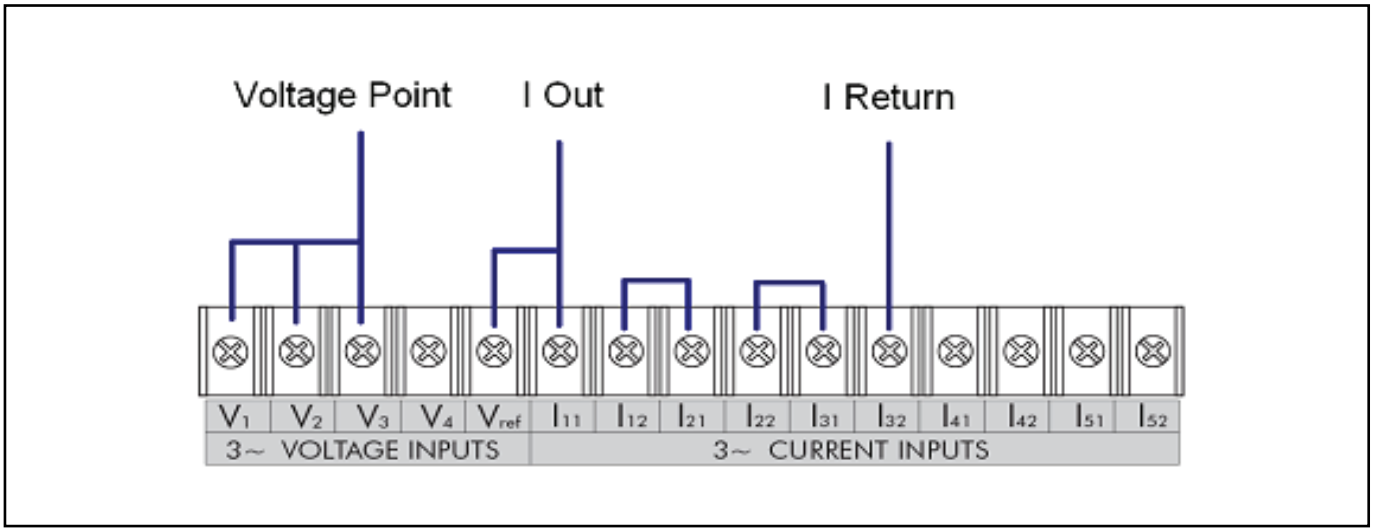


Table 4: Power Cable Extender Connections

Connection	Standard Color
I Out	White colored wire
I Return	Green colored wire
Voltage Point	Black colored wire

NOTE: Always check the color code with an ohmmeter before completing the connections.

Figure 10: External Meter Wiring Example



After the external meter is connected and the switch is set to EXT METER, all the meters in the system are connected to the power simulator at the same time. Any sag/swell event is sent to all meters. Any current adjustments are seen by all the meters.

NOTE: To activate the connector, use a small screwdriver to slide the switch towards Ext Meter.

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Troubleshooting

Symptom	Possible Solution
Demo Case has no power	• Ensure that the power cable is tightly connected. • Check that the power switch is in the ON position (located on the left side of the case). • Check that the power input fuse (located underneath the input power connector) is in place and not blown.
Meters measure no current	Ensure the slider switch is in “Int. Only” mode. If “Ext. Meter” mode is being used, check the wiring on the external meter.
Current Load Adjust dial does not change current load	Check to see if external load is connected. The internal load is quite small. If an external load is applied, the current adjust has little impact.
Meter measures no V-LL voltage	This is normal operation due to the single phase power simulator. Please look for V-LN values instead.
Unable to contact an Ethernet device	• Check that the IP address of meter is configured correctly. • Check that the subnet mask setting is configured correctly.
Unable to contact a serial device	• Verify the protocol setting on all devices in the daisy chain. • Check the unit ID setting on all devices in the daisy chain. • Check the baud rate setting on all devices in the daisy chain.

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