PowerLogic® ION7550 / ION7650

Energy & Power Quality Meter

Installation Guide
December 2007

Schneider
Electric

Danger

This symbol indicates the presence of dangerous voltage within and outside the product enclosure that may constitute a risk of electric shock, serious injury or death to persons if proper precautions are not followed.

Caution

This symbol alerts the user to the presence of hazards that may cause minor or moderate injury to persons, damage to property or damage to the device itself, if proper precautions are not followed.

Note

This symbol directs the user's attention to important installation, operating and maintenance instructions.

Installation Considerations

Installation and maintenance of the PowerLogic ION7550 / ION7650 meter should only be performed by qualified, competent personnel that have appropriate training and experience with high voltage and current devices. The meter must be installed in accordance with all local and national electrical codes.

⚠ DANGER

Failure to observe the following instructions may result in severe injury or death.

◆ During normal operation of the ION7550 / ION7650 meter, hazardous voltages are present on its terminal strips, and throughout the connected potential transformer (PT), current transformer (CT), digital (status) input, control power and external I/O circuits. PT and CT secondary circuits are capable of generating lethal voltages and currents with their primary circuit energized. Follow standard safety precautions while performing any installation or service work (i.e. removing PT fuses, shorting CT secondaries, etc.).

◆ The terminal strips on the meter base should not be user-accessible after installation.

◆ Do not use digital output devices for primary protection functions. These include applications where the devices perform energy limiting functions or provide protection of people from injury. Do not use the ION7550 / ION7650 in situations where failure of the devices can cause injury or death, or cause sufficient energy to be released that can start a fire. The meter can be used for secondary protection functions.

◆ Do not HIPOT/Dielectric test the digital (status) inputs, digital outputs, or communications terminals. Refer to the label on the ION7550 / ION7650 meter for the maximum voltage level the device can withstand.

⚠ CAUTION

Observe the following instructions, or permanent damage to the meter may occur.

◆ The ION7550 / ION7650 meter offers a range of hardware options that affect input ratings. The ION7550 / ION7650 meter's serial number label lists all equipped options. Applying current levels incompatible with the current inputs will permanently damage the meter. This document provides installation instructions applicable to each hardware option.

◆ The ION7550 / ION7650 meter's chassis ground must be properly connected to the switchgear earth ground for the noise and surge protection circuitry to function correctly. Failure to do so will void the warranty.

◆ Terminal screw torque: Barrier-type (current, voltage, and relay terminal screws: 1.35 Nm (1.00 ft-lbf) max. Captured-wire type (digital inputs/outputs, communications, power supply: 0.90 Nm (0.66 ft.lbf) max.

FCC Notice

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment.

This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

The Ringer Equivalence Number (REN) for the ION7550 / ION7650 optional internal modem is 0.6. Connection to the ION7550 / ION7650 internal modem should be made via an FCC Part 68 compliant telephone cord (not supplied). The ION7550 / ION7650 cannot be used on a public coin phone service or party line services.

Network Compatibility Notice for the Internal Modem

The internal modem in meters equipped with this option is compatible with the telephone systems of most countries in the world. Use in some countries may require modification of the internal modem's initialization strings. If problems using the modem on your phone system occur, please contact Schneider Electric Technical Support.

Standards Compliance

CSA: Certified to CAN/   Certified to
CSA C22.2 No.1010-1   UL 3111

Made by Power Measurement Ltd.

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Covered by one or more of the following patents:

U.S. Patent No's 7010438, 7006934, 6990395, 6988182, 6988025, 6983211, 6961641, 6957158, 6944555, 6871150, 6853978, 6825776, 6813571, 6798191, 6798190, 6792364, 6792337, 6751562, 6745138, 6737855, 6694270, 6687627, 6671654, 6671635, 6615147, 6611922, 6611773, 6563697, 6493644, 6397155, 6236949, 6186842, 6185508, 6000034, 5995911, 5828576, 5736847, 5650936, D505087, D459259, D458863, D443541, D439535, D435471, D432934, D429655, D427533.

PowerLogic ION7550 / ION7650 Models

Integrated Display Model

Comes with front optical port.

TRAN (transducer) Model

The TRAN model has no display.

Available Options

Model		Option				
		Form Factor	**Current Inputs**	**COM**	**I/O**	**Security**
	ION7550	◆ Integ. Display ◆ TRAN ◆ 5 MB memory ◆ 10 MB memory ◆ Up to 256 sampling rate	◆ Standard (5 Amp) ◆ 1 Amp **Power Supply** ◆ Standard ◆ Low Voltage DC	◆ Standard (RS-232, RS-485, optical) ◆ Ethernet RJ45 ◆ Ethernet Fiber ◆ Modem	◆ Standard (8 digital inputs, 3 Form C relays, 4 Form A outputs) ◆ Extra 8 digital inputs ◆ Four 0-1mA analog inputs ◆ Four 0-20 mA analog inputs ◆ Four -1 to 1mA analog outputs ◆ Four 0-20 mA analog outputs	◆ Standard[1] ◆ RMANSI[2]
		Form Factor	**Current Inputs**	**COM**	**I/O**	**Security**
	ION7650	◆ Integ. Display ◆ TRAN ◆ 5 MB memory ◆ 10 MB memory ◆ Up to 512 sampling rate (standard) ◆ 1024 sampling rate (optional) ◆ EN50160 compliance ◆ IEC61000-4-30 Class A compliance	◆ Same as ION7550 **Power Supply** ◆ Same as ION7550	◆ Same as ION7550	◆ Same as ION7550	◆ Same as ION7550

Notes

[1] Standard = password protected, no locking or sealing.

[2] RMANSI = ANSI C12.16 approved revenue meter; meets ANSI C12.20 class 0.2 accuracy standards.

Before You Begin

Before installing the meter, familiarize yourself with the steps in this guide and read the safety precautions presented on the "Installation Considerations" page.

⚡ DANGER
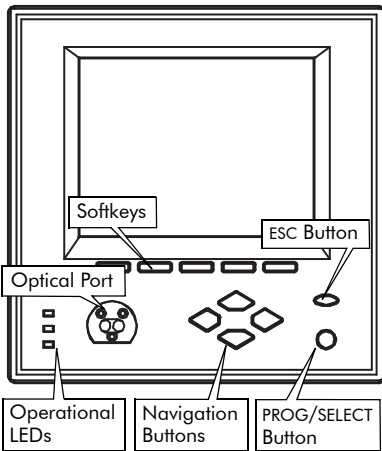
Do not power up the meter until the current and voltage wiring is completed.
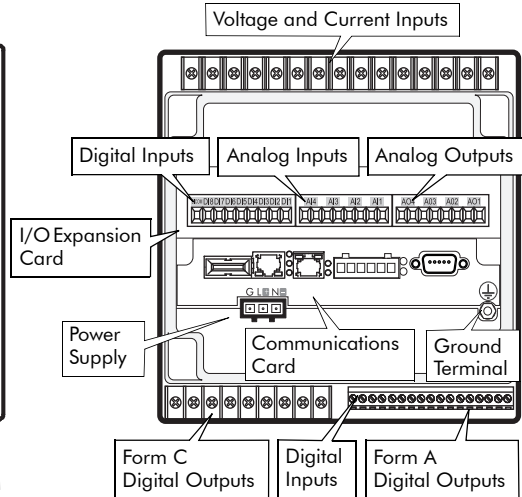
Recommended Tools

◆ Phillips screwdriver
◆ Precision flat-head screwdriver
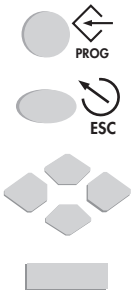◆ Wire cutters / stripper

Meter Overview

Meter Front   **Meter Back**

Front Panel Button Functions

PROG/SELECT: Press the PROG/SELECT (program or select) button to enter Setup mode. In Setup mode, press the PROG/SELECT button to accept changes.

ESC: Press the ESC (Escape) button to return to a higher menu or discontinue a configuration change.
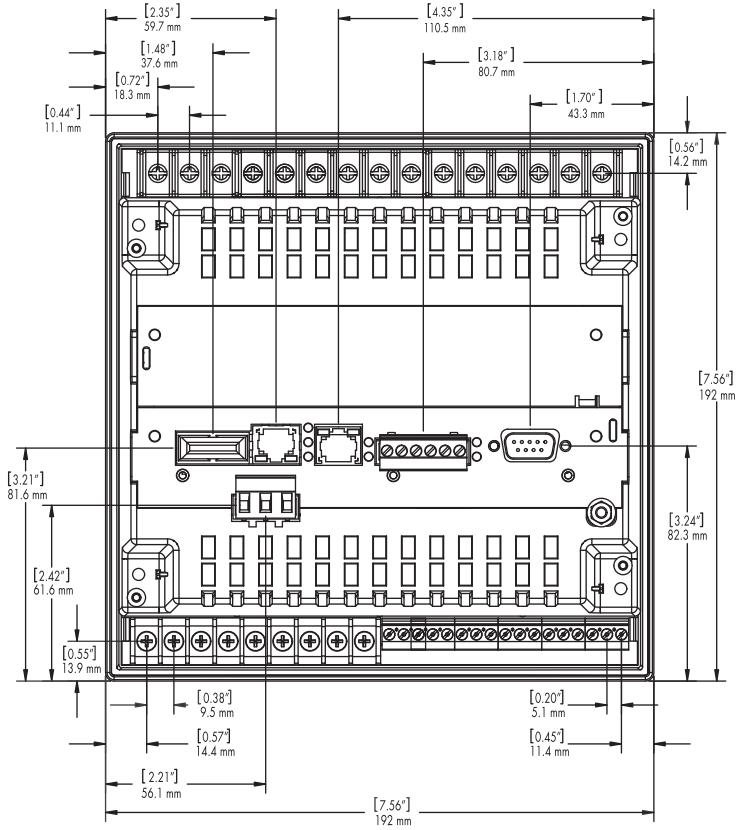
NAVIGATION: Press the UP / DOWN arrow buttons to highlight menu items, or increment / decrement numbers.

Press the LEFT or RIGHT arrow buttons to move to an adjacent digit.
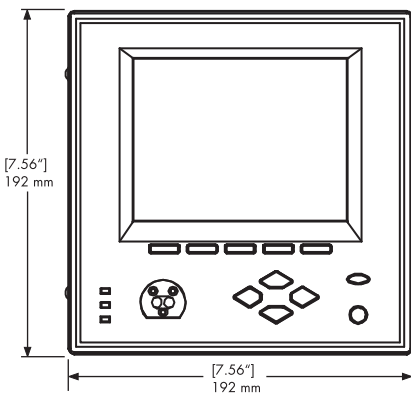
SOFTKEY: Press a SOFTKEY button to select the parameter that you want to configure from the sub-menus.
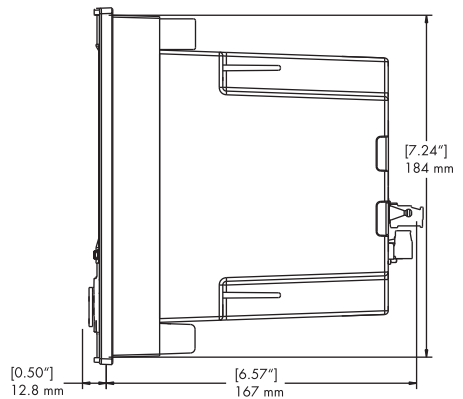
Unit Dimensions

Basic Model — Rear View

Basic Model — Front View

Basic Model — Side View

Step 1: Mount the Meter

Environmental Specifications

Mounting Location	Indoor use
Operating Range	-20 to +70°C (-4 to +158°F) Standard Power Supply -20 to +50°C (-4 to +122°F) Low Voltage DC Power Supply No formation of ice
Display Operating Range	-20 to +70°C (-4 to +158°F)
Storage Range	-40 to +85°C (-40 to +185°F)
Relative Humidity Range	5 to 95% non-condensing

Meter Battery Considerations

The meter's battery life expectancy depends on both temperature and the amount of time the meter is without power. For typical installations, the battery should last 20 years or more. If the meter is not powered, the battery will last a minimum of 7 years at room temperature.

Integrated Display Model

1. Fit the meter into the DIN standard 192 cutout (186 mm by 186 mm).

2. Slide the four brackets into their slots on the back of the meter and secure using the four Phillips head screws. Do not overtighten.
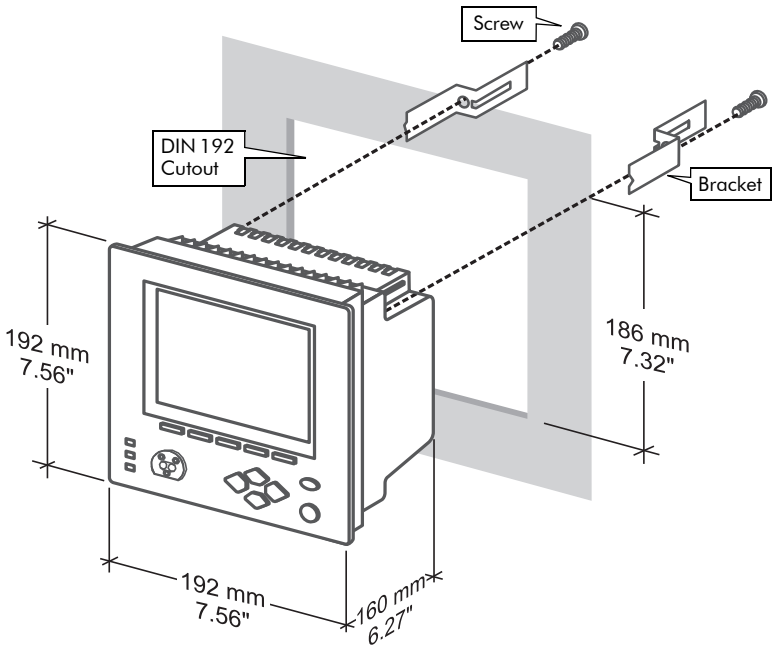
Step 2: Wire the Ground Terminal

Connect the ⏚ terminal to a good earth ground with a 2.1 mm^2 (14 AWG) wire. Ensure that the terminal nut is tightened down securely onto the ground wire. Do not use metal door hinges as a grounding point.

Step 3: Wire the Digital I/O and Analog I/O

Form C Digital Outputs: Mechanical Relays R1 - R3

Internal Form C Mechanical Relay

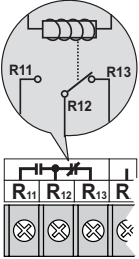|	
Type	Form C (R1, R2, R3)
Contacts	K (common), Y (NO), Z (NC)
Wire	Use wiring that is appropriate for the application
Connector	Ring or split ring connector
Voltage Rating	250 VAC / 30 VDC
Rated Load @ Rated Voltage	Resistive: 10 A (AC/DC) Inductive (PF=0.4): 7.5 A (AC) / 5 A (DC)
Max. Voltage	380 VAC / 125 VDC between K and NO/NC
MOV Protection	300 V max. between NO and NC
Max. Load @ Max. Voltage	3 A (AC) / 0.2 A (DC)
Turn-On Time	15 ms max.
Isolation	5,000 VAC for 60 s
Turn-Off Time	5 ms max.
Lifetime	No load = 10,000,000 operations Rated voltage and load = 100,000 operations
Update time	½ cycle or 1 s
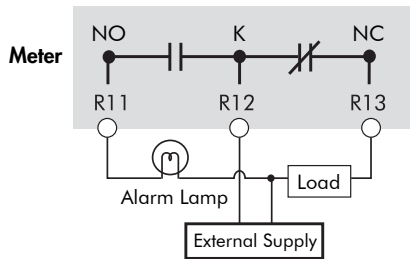
Mechanical relays should always be protected by external fuses

Form A Digital Outputs: Solid State Relays D1 - D4

Internal Form A Solid State Relay
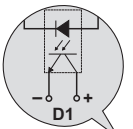
Type	Form A (D1, D2, D3, D4)
Wire	1.3 to 0.1 mm^2 (16 to 28 AWG)
Signal Type	Continuous or pulse
Max. Load Voltage	30 VDC
Max. Load Current	80 mA per channel
Isolation	Optically isolated; max. 5,000 V RMS isolation (UL-E91231)
Scan Time	½ cycle or 1 s
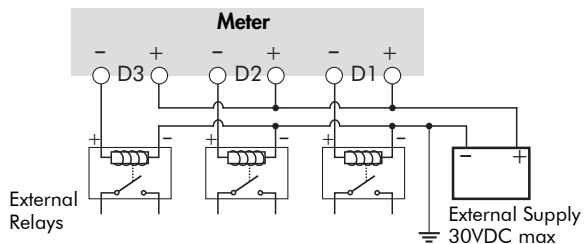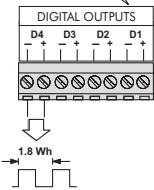
D4 output is factory-configured to pulse once every 1.8 Wh for Class 20 meters, or once every 0.18 Wh for Class 2 meters (for calibration testing purposes).

Digital Inputs: S1 - S8
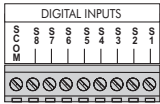
Type	Self-excited (internal 30 VDC supply)
Application	Dry contact sensing, or with external excitation
Wire	1.3 to 0.1 mm^2 (16 to 28 AWG)
Min. Pulse Width	1 ms
Max. Pulse Rate	20 pulses per second
Timing Resolution	1 ms
Updated	½ cycle (after timing resolution)
Isolation to Ground	max. 200 VDC for 10s
Max. External Voltage	130 VDC continuous
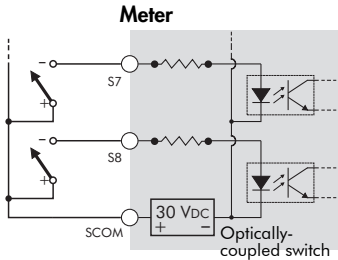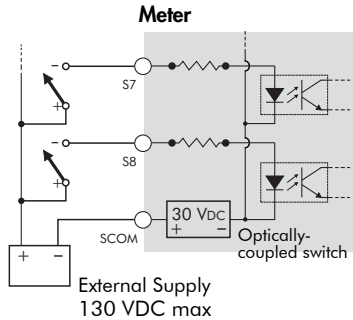
Digital Inputs (Meter Ordering Option): DI1 - DI8
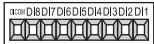
Type	Self excited (internal 30 VDC supply)
Application	Dry contact sensing, or with external excitation
Wire	1.3 to 0.1 mm^2 (16 to 28 AWG)
Min. Pulse Width	20 ms
Max. Pulse Rate	25 pulses per second
Timing Resolution	2 ms
Updated	½ cycle (after timing resolution)
Isolation to Ground	750 VDC
Max. External Voltage	50 VDC continuous
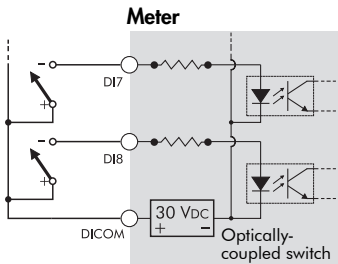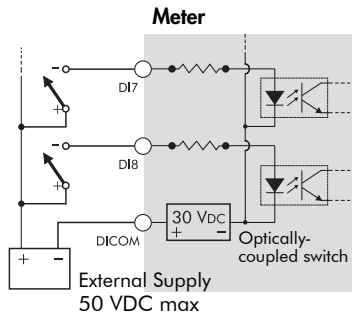
Analog Inputs (Meter Ordering Option): AI1 to AI4
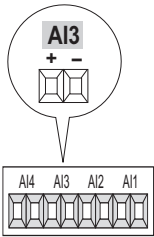
Type	Captured wire connector
Wire	1.3 to 0.1 mm^2 (16 to 28 AWG)
Signal Type	DC current
Available Options	0 to 20 mA (scalable 4-20 mA) or 0 to 1 mA
Input Impedance	24 Ω (0-20 mA option) or 475 Ω (0-1 mA option)
Accuracy	+/– 0.3% of full scale
Update Rate	1 s
Isolation to Ground	750 V
Isolation Impedance	max 400 kΩ (channel/channel)
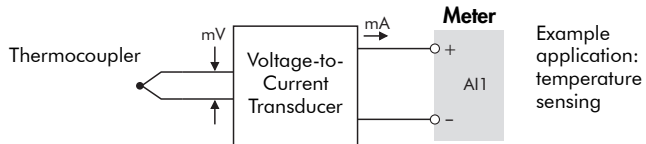
NOTE

Do not connect the analog inputs of the I/O card to the analog outputs on the same I/O card.

Analog Outputs (Meter Ordering Option): AO1 to AO4
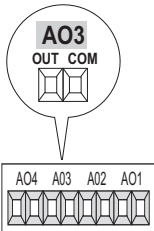
Type	Captured wire connector
Wire	1.3 to 0.1 mm^2 (16 to 28 AWG)
Signal Type	DC current
Available Options	0 to 20 mA (scalable 4-20 mA) or -1 to 1 mA (scalable 0-1 mA)
Driving Capability	500 Ω (0-20 mA option) or 10 kΩ (-1 to 1 mA option)
Accuracy	+/– 0.30% of full scale
Update Rate	½ cycle or 1 s
Latency	min. 1 cycle for measurement + ½ cycle for ION + 1 s delay for hardware
Isolation to Ground	750 V
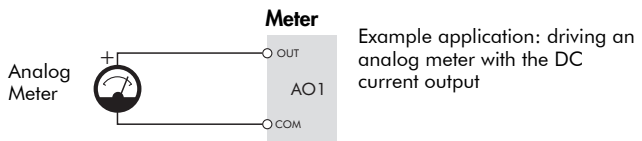
NOTE

Do not connect the analog outputs of the I/O card to the analog inputs on the same I/O card.

Step 4: Wire the Voltage and Current Inputs
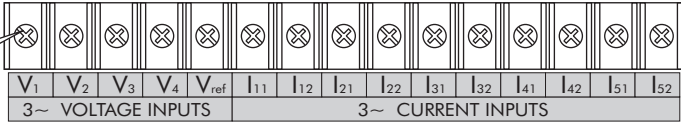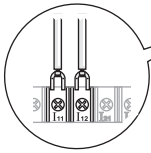
Voltage Inputs

Connector Type	Ring or split ring connector
Wire Gauge	3.3 to 2.1 mm^2 (12 to 14 AWG)
Rated Inputs	347 V L-N RMS /600 V L-L RMS
Fault Capture	1200 V L-N peak
Overload	1500 VAC RMS continuous
Dielectric Withstand	2500 VAC RMS at 60 Hz for 60 s
Input Impedance	5 MΩ/phase (phase - Vref)

Current Inputs: Class 20 Current Inputs (5A Option)

Connector Type	Ring or split ring connector
Wire Gauge	5.3 to 3.3 mm^2 (10 to 12 AWG): Use 8.4 mm^2 (8 AWG) for 10-20 A applications
Input Rating	5 A, 10 A, and/or 20 A RMS
Starting Current	0.005 A RMS
Fault Capture	70 A peak
Max. Voltage	600 V RMS (CAT III IEC61010-1)
Overload	500 A RMS for 1 s, non-recurring
Dielectric Withstand	2500 VAC RMS at 60 Hz for 60 s
Burden	0.05 VA per phase (at 5 A)
Impedance	0.002 Ω per phase

Current Inputs: Class 2 Current Inputs (1A Option)

Connector Type	Ring or split ring connector
Wire Gauge	5.3 to 3.3 mm^2 (10 to 12 AWG)
Input Rating	1 A, 2 A, 5 A, and/or 10 A RMS
Starting Current	0.001 A RMS
Fault Capture	17.5 A peak
Max. Voltage	600 V RMS (CAT III IEC61010-1)
Overload	50 A RMS for 1s, non-recurring
Dielectric Withstand	2500 VAC RMS at 60 Hz for 60 s
Burden	0.015 VA per phase (at 1 A)
Impedance	0.015 Ω per phase

📝 NOTE

The appropriate Volts Mode setting is included with each wiring diagram. Refer to Step 8 to learn how to configure Volts Mode on the meter.

4-Wire Wye, 3-Element, Direct Connection Diagram

Fuse for N/- terminal required if its supply source is ungrounded Connect G terminal to ground for AC power source

I4 Optional
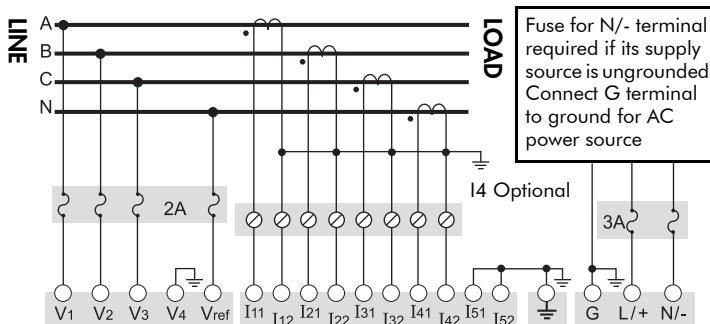
347 V L-N / 600 V L-L max.
VOLTS MODE = 4W-Wye

4-Wire Wye, 3-Element, 3 PTs Connection Diagram

Fuse for N/- terminal required if its supply source is ungrounded Connect G terminal to ground for AC power source

I4 Optional
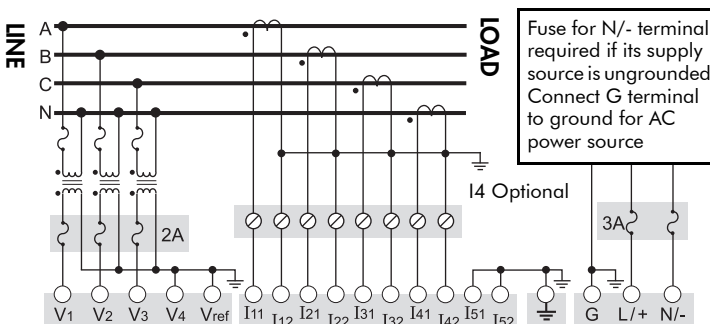
Use PTs for voltages over 347 V L-N / 600 V L-L.
Wye (Star) wiring for PT primaries and secondaries.
VOLTS MODE = 4W-Wye

4-Wire Wye, 2½-Element, 2 PTs Connection

Fuse for N/- terminal required if its supply source is ungrounded Connect G terminal to ground for AC power source

I4 Optional
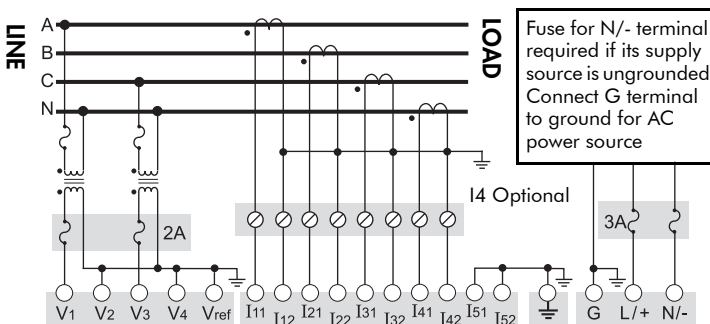
Phase B voltage (V2) displayed by meter is derived from phase A and phase C, not measured. V2 will display a value even if no voltage is present on Phase B. V2 values are only accurate for balanced loads.
VOLTS MODE = 3W-Wye

3-Wire Solid-Grounded Wye, 3-Element, Direct Connection
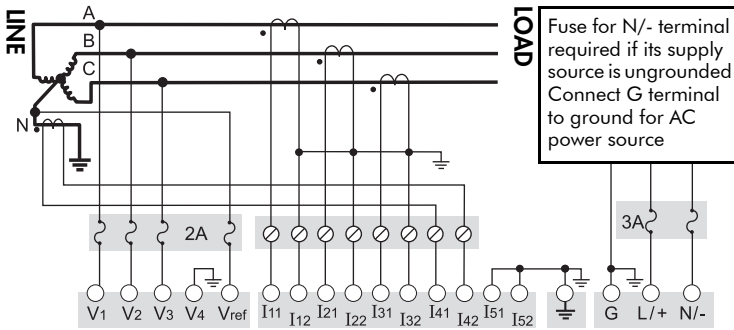
When the common or star point of a 3-wire Wye system is grounded, the meter may be connected directly without using PTs, provided that the phase voltages are within the meter's range.
VOLTS MODE = 4W-Wye

3-Wire Delta, 2½-Element, Direct Connection
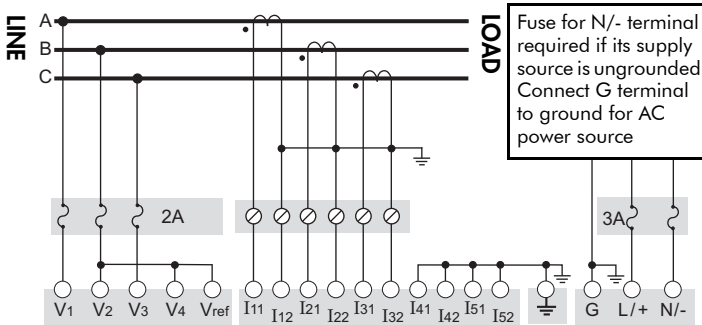
600 V L-L max.
VOLTS MODE = Delta

3-Wire Delta, 2-Element 2 PTs & 2 CTs
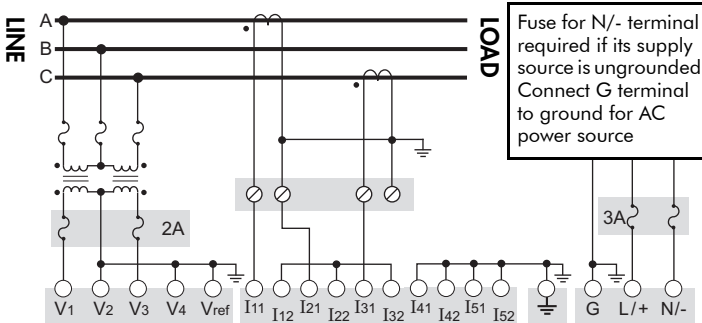
Use PTs for voltages over 600 V L-L.
VOLTS MODE = Delta

3-Wire Delta, 2½-Element, 2 PTs & 3 CTs

Fuse for N/- terminal required if its supply source is ungrounded Connect G terminal to ground for AC power source
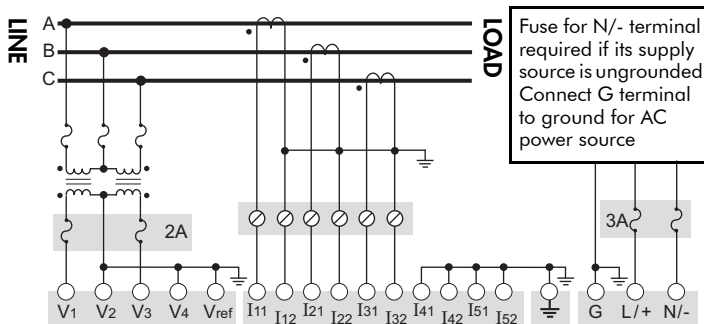
Use PTs for voltages over 600 V L-L
VOLTS MODE = Delta

Single Phase Connection Diagram

Fuse for N/- terminal required if its supply source is ungrounded Connect G terminal to ground for AC power source

I4 Optional

PF = 0.9 (25°) Lag
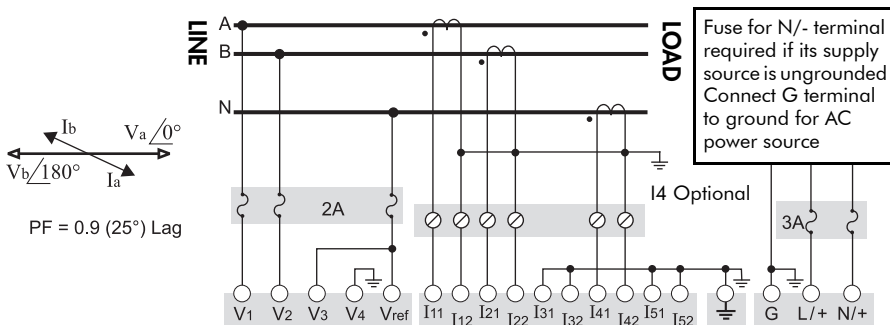
277 V L-N / 554 V L-L max. Use PTs for higher voltages.
VOLTS MODE = Single

Using Potential Transformers

System Mode	Voltage Range	Requires PTs
Wye	120 V L-N or 208 V L-L	no
	277 V L-N or 480 V L-L	no
	347 V L-N or 600 V L-L	no
	over 347 V L-N or 600 V L-L	yes
Single Phase	120 V L-N or 240 V L-L	no
	277 V L-N or 554 V L-L	no
	over 277 V L-N or 554 V L-L	yes
Delta	up to 600 V L-L	no
	over 600 V L-L	yes

Step 5: Wire the Communications

RS-232 Connections (COM1)

DB9 Null Modem
Wiring Diagram

Null modem cable pinout
Pin 3 - Transmit Data - Pin 2
Pin 2 - Receive Data - Pin 3
Pin 7 - Request to Send- Pin 8
Pin 8 - Clear to Send- Pin 7
Pin 5 - Signal Ground- Pin 5
Pin 6 - Data Set Ready- Pin 4
Pin 4 - Data Terminal Ready- Pin 6
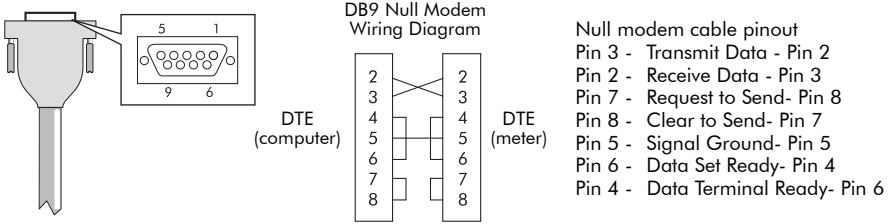
Specification	Meter Connected to Computer	Meter Connected to External Modem
Connector Type	DB9 female end for mating with male connector on the meter	
Wire	Null modem RS-232 cable	Straight-through RS-232 cable
Maximum Cable Length	15.2 m (50 ft)	
Data Rate	300 – 115,200 bps	
Isolation	Optical	
Duplex	Full	
Compliance	ANSI/IEEE C37.90.1-2002 surge withstand and fast transient tests	

RS-485 Connections (COM1 and COM2)

SH	RS-485 Shield (electrically connected to chassis ground)
–	RS-485 Data Minus
+	RS-485 Data Plus

Connect SH at
one end only
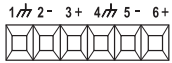
Connector Type	Captured wire
Wire	Shielded twisted pair RS-485 cable, 0.33 mm^2 (22 AWG) or larger
Maximum Cable Length	1219 m (4000 ft) total for entire bus
Data Rate	300 – 115,200 bps
Maximum Devices (per bus)	32
Isolation	Optical
Duplex	Half
Compliance	ANSI/IEEE C37.90.1-2002 surge withstand and fast transient tests
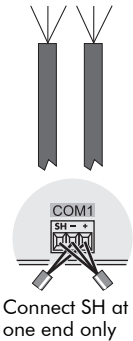
Infrared Connections (COM4)
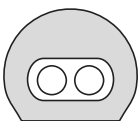
Interface	ANSI C12.18 Type II optical port
Location	Front of meter
Data Rate	1,200 – 19,200 bps
Duplex	Half

Ethernet Connections (if equipped)

10BASE-T / 100BASE-TX

RJ45

1
2
3
4
5
6
7
8
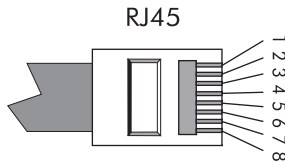
Pin 1: Transmit Data +
Pin 2: Transmit Data -
Pin 3: Receive Data +
Pin 6: Receive Data -

Wire Type	High quality Category 5 or 6 unshielded twisted pair cable
Connector Type	RJ45 modular
Maximum Length	100 m (328 ft)
Type	IEEE 802.3 10/100BASE-T for 10/100 Mbps base band CSMA/CD LANs
Data Rate	10/100 Mbps
Isolation	Transformer isolated to 1500 V RMS
Max. Connections Allowed	4 simultaneous (32 via Modbus TCP/IP)

100BASE-FX (Fiber)
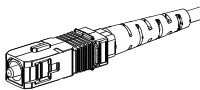
Wire Type	62.5/125 or 50/125 micrometer multimode fiber optic cable
Connector Type	SC
Maximum Length	2000 m (6562 ft) full duplex 400 m (1312 ft) half duplex
Data Rate	100 Mbps
Isolation	Optical

SC type fiber cable

Ethernet TCP/IP Service Ports

Only one EtherGate
connection per port
is allowed at a time

Protocol	Port
ION	7700
Modbus RTU	7701
Modbus TCP	502
EtherGate (COM1)	7801
EtherGate (COM2)	7802
DNP TCP	20,000
SMTP	25 (configurable)

Internal Modem Connection (COM3 if equipped)

RJ11

1
2
3
4
5
6
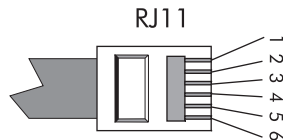
Pin 3: Ring
Pin 4: Tip

Connector Type	RJ11
Wire Type	FCC Part 68 compliant telephone cord (two male RJ11 ends)
Data Rate	300 bps – 56 kbps
Error Correction	V.42 LAPM, MNP 2-4, V.44
Data Compression	V.42 bis/MNP 5

Step 6: Wire the Power Supply

Specification	Standard Power Supply	Low Voltage DC
Type	Captured wire connector	
Wire	3.3-2.1 mm^2 (12-14 AWG)	2.1-0.8 mm^2 (14-18 AWG)
Rated Inputs	85-240 VAC ±10% (47-63 Hz), or 110-300 VDC ±10%	20-60 VDC ±10%
Dielectric Withstand	2500 VAC RMS at 60 Hz for 60s	
Burden	35 VA max. (15 VA typical)	18 W max. (12 W typical)
Ride-through	100 ms (6 cycles at 60 Hz) min.	None

Step 7: Power Up the Meter

1. Ensure the ground wire is securely connected on both ends.
2. Ensure the meter's power supply voltage is within the allowed range.
3. Power up the meter.

Step 8: Set Up the Meter Using the Front Panel

The following Setup screens are available for meter configuration via the front panel:

BASIC SETUP
COM1 SETUP
COM2 SETUP
COM3 SETUP
COM4 SETUP
NETWORK SETUP
PQ SETUP
FORMAT SETUP
DISPLAY SETUP
TIME SETUP
SECURITY SETUP
METER RESETS

Use the PROG/SELECT, ESC, softkeys and arrow buttons to configure settings. The following example shows Volts Mode setup using the meter front panel.
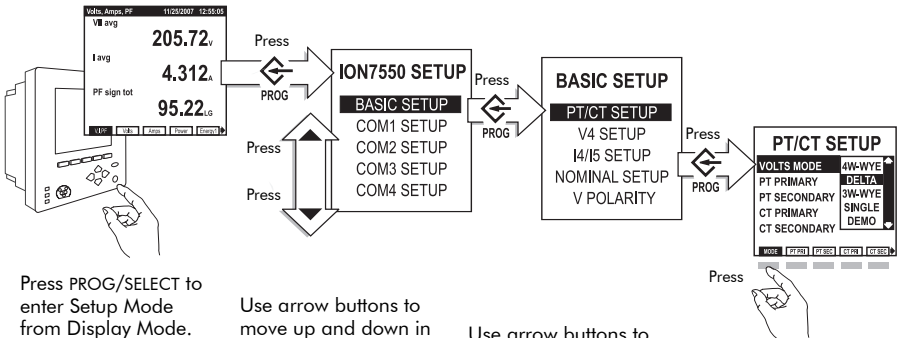
Press PROG/SELECT to enter Setup Mode from Display Mode.

Use arrow buttons to move up and down in list. Press PROG/SELECT to select Basic Setup.

Use arrow buttons to move up and down in list. Press PROG/SELECT to select PT/CT Setup.

Press Mode softkey. Use arrow buttons to move up and down in list. Press PROG/SELECT to select Delta.

Password

A password is required for all front panel configuration changes and to enter the Security Setup menu. The password is set to 0 (zero) in the factory. The front panel only prompts you for the meter password once, before you make your first configuration change. You can disable the password via the Security Setup menu.

Selecting the Front Panel Language

Meters are shipped with English as the default front panel language.
To select another language:

1. Press PROG/SELECT and the right arrow buttons, hold for two seconds then release.

2. Scroll through the language list and select the language you want.

```
 ┌─────────────────────────────────┐
 │  DISPLAY SETUP                  │
 │                                 │
 │  UPDATE RATE  ┌───────────┐▲   │
 │  CONTRAST     │ English   │     │
 │  DELTA VECTOR │ Español   │     │
 │  LANGUAGE     │ Français  │     │
 │               │ Russian   │     │
 │               └───────────┘▼   │
 │ [UPDATE][CNTRST][VECTORS][LANG][    ]▶ │
 └─────────────────────────────────┘
```
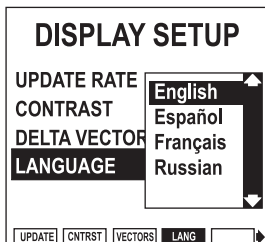
3. Press PROG/SELECT to confirm.

You can also access this setting via the Display Setup menu.

✎ NOTE

The meter only communicates to software in English.

Front Panel Setup Menu Settings

The following table lists all settings that can be configured via the front panel.

Menu	Setting	Description	Range (Values)	Default
BASIC SETUP	VOLTS MODE	The power system's configuration – WYE, DELTA, etc.	4W-WYE, DELTA, 3W-WYE, SINGLE, DEMO	4W-WYE
	PT PRIMARY	The Potential Transformer's primary winding voltage rating	1 to 999,999.99	120.00
	PT SECONDARY	The Potential Transformer's secondary winding voltage rating	1 to 999,999.99	120.00
	CT PRIMARY	The Current Transformer's primary winding current rating	1 to 999,999.99	5.00
	CT SECONDARY	The Current Transformer's secondary winding current rating	1 to 999,999.99	5.00
	V4 PRIMARY	The Potential Transformer's primary winding voltage rating on V4	1 to 999,999.99	120.00
	V4 SECONDARY	The Potential Transformer's secondary winding voltage rating on V4	1 to 999,999.99	120.00
	I4 PRIMARY	The Current Transformer's primary winding current rating on I4	1 to 999,999.99	5.00
	I4 SECONDARY	The Current Transformer's secondary winding current rating on I4	1 to 999,999.99	5.00
	I5 PRIMARY	The Current Transformer's primary winding current rating on I5	1 to 999,999.99	5.00
	I5 SECONDARY	The Current Transformer's secondary winding current rating on I5	1 to 999,999.99	5.00
	V NOMINAL	The V1, V2 and V3 nominal voltage used for harmonics calculations	1.000 to 999,999.000	120.00
	V4 NOMINAL	The V4 nominal voltage used for harmonics calculations	1.000 to 999,999.000	120.00
	Va POLARITY	The polarity of the Potential Transformer on Va	Normal or Inverted	Normal
	Vb POLARITY	The polarity of the Potential Transformer on Vb	Normal or Inverted	Normal
	Vc POLARITY	The polarity of the Potential Transformer on Vc	Normal or Inverted	Normal
	V4 POLARITY	The polarity of the Potential Transformer on V4	Normal or Inverted	Normal
	Ia POLARITY	The polarity of the Current Transformer on Ia	Normal or Inverted	Normal
	Ib POLARITY	The polarity of the Current Transformer on Ib	Normal or Inverted	Normal
	Ic POLARITY	The polarity of the Current Transformer on Ic	Normal or Inverted	Normal
	I4 POLARITY	The polarity of the Current Transformer on I4	Normal or Inverted	Normal
	I5 POLARITY	The polarity of the Current Transformer on I5	Normal or Inverted	Normal
	CURRENT PROBE TYPE	The type of current probes being used with the meter	Factory Default, User Defined 1, or User Defined 2	Factory Default

Menu	Setting	Description	Range (Values)	Default
COM1 SETUP	PROTOCOL	The communications protocol	ION, Modbus RTU, Modbus Master, DNP V3.00, GPS:Truetime/Datum,GPS: Arbiter, GPS:Arbiter-Vorne, Factory, Ethergate, ModemGate	ION
	BAUD RATE	The data rate, in bits per second	300[1], 1200, 2400, 4800, 9600, 19200, 38400, 57600, 115200	19,200
	TRAN DELAY	The transmit delay in seconds	0 to 1	0.010
	UNIT ID	Every meter on an RS-485 network must have a unique Unit ID number	1 to 9999	From serial number[2]
	SERIAL PORT	Parity and stop bits for the port	8N1, 8N2, 8E1, 8E2, 8O1, 8O2	8N1
	MODE	Hardware mode for the port	RS232 or RS485	RS232
	FLOW CONTROL	Specifies the handshake mode when COM1 is set to RS232	RTS + DELAY or RTS/CTS	RTS + DELAY
	RS485 BIAS	Turns on biasing when Mastering on the RS-485 bus	ON or OFF	OFF
COM2 SETUP	PROTOCOL	The communications protocol	See COM1 protocol	ION
	BAUD RATE	The data rate, in bits per second	300[1], 1200, 2400, 4800, 9600, 19200, 38400, 57600, 115200	19,200
	TRAN DELAY	The transmit delay in seconds	0 to 1	0.010
	UNIT ID	Every meter on an RS-485 network must have a unique Unit ID number	1 to 9999	101
	SERIAL PORT	Parity and stop bits for the port	8N1, 8N2, 8E1, 8E2, 8O1, 8O2	8N1
	RS485 BIAS	Turns on biasing when Mastering on the RS-485 bus	ON or OFF	OFF
COM3 SETUP	PROTOCOL	The communications protocol	ION, Modbus RTU, Modbus Master, DNP V3.00, GPS:Truetime/Datum,GPS: Arbiter, GPS:Arbiter-Vorne, Factory	ION
	BAUD RATE	The data rate, in bits per second	300[1], 1200, 2400, 4800, 9600, 19200, 38400, 57600, 115200	19,200
	TRAN DELAY	The transmit delay in seconds	0 to 1	0.010
	UNIT ID	Every meter on an RS-485 network must have a unique Unit ID number	1 to 9999	102
	ANSWER HR RINGS	The number of rings during defined answer hours	0 to 255	1
	NON-ANSWER HR RINGS	The number of rings during defined non-answer hours	0 to 255	5
COM4 SETUP	PROTOCOL	The communications protocol	ION, Modbus RTU, DNP V3.00, Factory	ION
	BAUD RATE	The data rate, in bits per second	1200, 2400, 4800, 9600, 19200	9600
	TRAN DELAY	The transmit delay in seconds	0 to 1	0.010
	UNIT ID	Every meter on an RS-485 network must have a unique Unit ID number	1 to 9999	103
	SERIAL PORT	Parity and stop bits for the port	8N1, 8N2, 8E1, 8E2, 8O1, 8O2	8N1

Menu	Setting	Description	Range (Values)	Default
NETWORK SETUP	IP ADDRESS	Sets the IP address for the meter	000.000.000.000 to 999.999.999.999	varies[3]
	SUBNET MASK	Used if subnetting applies to your network	000.000.000.000 to 999.999.999.999	255.240.0.0
	GATEWAY	Used in multiple network configurations	000.000.000.000 to 999.999.999.999	0.0.0.0
	DNS PRIMARY	Sets the address for the primary DNS Server that is configured to resolve domain names	000.000.000.000 to 999.999.999.999	none
	DNS SECONDARY	Sets the address for the secondary DNS Server that is configured to resolve domain names	000.000.000.000 to 999.999.999.999	none
	10/100BT CONFIG	Sets the BASE-T Ethernet max. link speed and duplexing	Auto, 10BT half, 10BT full, 100BTX half, 100BTX full	Auto
	100BFX CONFIG	Sets the Fiber Ethernet duplexing	Full Duplex or Half Duplex	Full Duplex
	SNMP SERVER	Determines whether SNMP protocol is enabled on the meter or not	Enabled or Disabled	Disabled
PQ SETUP	SWELL LIMIT	Specifies the magnitude above which an input must rise for a swell to be recorded	100 to 1000	106
	SAG LIMIT	Specifies the magnitude below which an input must fall for a sag to be recorded	0 to 100	88
	CHANGE CRITERIA	Specifies the amount by which an input must change during a disturbance to be considered a new sub-disturbance	0 to 100	10
	NOMINAL VOLTAGE[4]	Specifies the nominal voltage of the power system	0 to 1,000,000	0
	EVENT PRIORITY	Assigns a priority level to sag/swell events	0 to 255	200
FORMAT SETUP	DIGIT GROUP	Specifies symbols used to delimit thousands & decimal place holder	1000.0 or 1,000.0 or 1000,0	1000.0
	VOLTS DECIMAL	Number of decimal places displayed for voltages	1. to 123456789.XXX	1.XX
	CURRNT DECIMAL	Number of decimal places displayed for currents	1. to 123456789.XXX	1.XXX
	POWER DECIMAL	Number of decimal places displayed for power measurements	1. to 123456789.XXX	1.XXX
	MEAS SYMBOL	Specifies the convention used for displaying measurements	IEEE or IEC	IEEE
	PHASE LABEL	Specifies how phases are labelled	ABC, RST, XYZ, RYB, RWB, 123	ABC
	PF SIGN	Specifies the power factor sign convention used	IEEE or IEC	IEEE
	PF SYMBOL	Sets how power factor is labelled (LD = leading/LG = lagging)	LD/LG, +/-, CAP/IND	LD/LG
	DATE FORMAT	Specifies how dates are displayed	MM/DD/YYYY, DD/MM/YYYY, YYYY/MM/DD	MM/DD/YYYY
	TIME FORMAT	Specifies whether time is displayed in 12 hour or 24 hour clock format	12 H or 24 H	24 H
	DISPLAY DST	Specifies whether or not DST is displayed	Yes or No	Yes

| Menu	Setting	Description	Range (Values)	Default
DISPLAY SETUP	UPDATE RATE	Sets when the display updates	1 to 6 (seconds)	1
	CONTRAST	Higher numbers are sharper	0 to 9	7
	DELTA VECTORS	Specifies how vector diagrams are displayed when in Delta mode	System or Instrument	System
	LANGUAGE	Specifies the language used on the meter's front panel	English, Spanish, French, Russian	English
TIME SETUP	TZ OFFSET	Sets the time zone of the meter's location, relative to UTC	- 12:00 to +13:00	+00:00
	DST OFFSET	Sets the daylight savings time offset of the meter's location	-3:00 to +3:00	+00:00
	SYNC SOURCE	Sets the port to receive time synchronization signals	Ethernet, COM1, COM2, COM3, COM4	COM1
	SYNC TYPE	Specifies whether time sync signals are received in local time or UTC	Local Time or UTC	UTC
	CLOCK SOURCE	Specifies time sync source	Internal, Line Freq or COMM	Line Freq
	LOCAL DATE	Sets the local date	Same as Date Format setting	
	LOCAL TIME	Sets the local time		
SECURITY SETUP	PASSWORD	Sets the meter password	00000000 to 99999999	00000000
	ENABLED	Enables or disables meter security	Yes or No	No
	WEB CONFIG	Enables or disables web browser configuration of the meter	Enabled or Disabled	Enabled
	WEB ACTIVE	Enables or disables internal web server on the meter	Yes or No	Yes

[1] A baud rate of 300 bps is only intended for paging applications.

[2] Serial number = PA-030**2B222**-01, Unit ID = **2222**

[3] Default IP ADDRESS = 172.16.xxx.xxx, where the last two bytes (decimal) match the last two bytes of the meter's MAC address (hex).

[4] NOMINAL VOLTAGE must be set to your system's nominal voltage to activate the meter's power quality features.

Step 9: Verify Meter Operation

The LEDs on the back of the meter flash during communications.

LED	Color	Function
Ethernet 100 (Speed)	Green	Off = link at 10 Mb, On = link at 100 Mb
Ethernet TX	Green	Blinking indicates Ethernet transmission
Ethernet RX/LINK	Green	On = link up, Off = link down Blinking indicates Ethernet reception
Modem DCD	Green	Indicates a carrier signal is detected (active connection to the modem)
Modem RI	Green	Indicates a ring is detected by the modem
COM3 (Modem) TX	Yellow	Indicates serial transmission on COM3
COM3 (Modem) RX	Yellow	Indicates serial reception on COM3
COM2 TX	Yellow	Indicates serial transmission on COM2
COM2 RX	Yellow	Indicates serial reception on COM2
COM1 TX	Yellow	Indicates serial transmission on COM1
COM1 RX	Yellow	Indicates serial reception on COM1

The LEDs on the front panel indicate the following:

Watt-hour pulsing

Front Panel
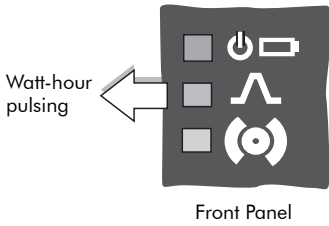
Top (green) LED indicates the meter is operational. The light should always remain on when the meter is in service.

Middle (red) LED is a watt-hour pulser. During normal operations this LED should blink intermittently as the meter measures power.

Bottom (red) LED is user programmable. It can be used for Alarm notification. See the *ION7550 / ION7650 User Guide* for more information.

Phasor Diagrams

You can also view the meter's phasor diagram in real time. Use the Phasor Viewer available in PowerLogic ION Setup v2.1 and later (free download from the PowerLogic website) to verify your meter's wiring. See the ION Setup online help for details.

📝 NOTE

The following DELTA phasor diagrams are represented in System mode view.

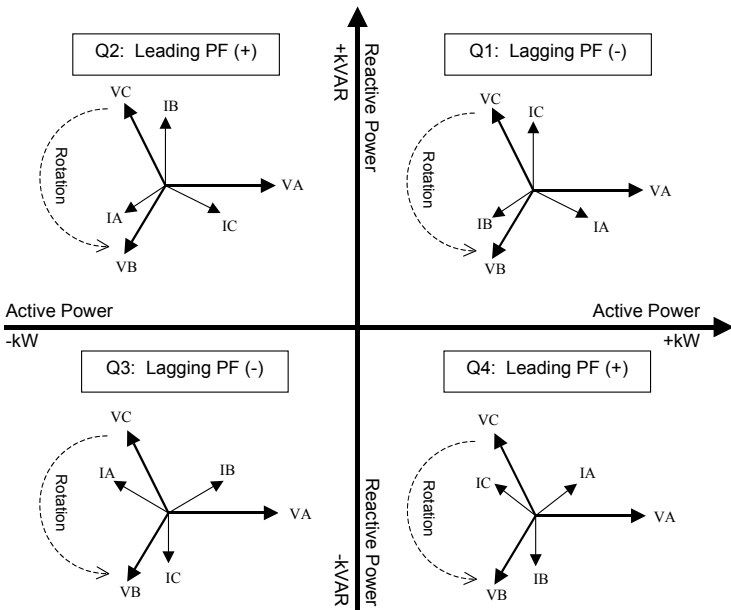### DELTA phasors for UNITY Power Factor (resistive load)
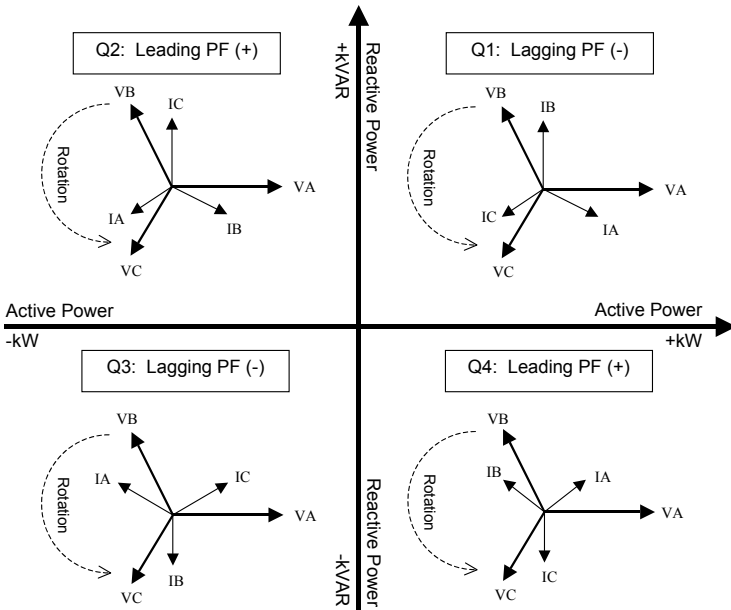
Applicable Volts Mode = DELTA
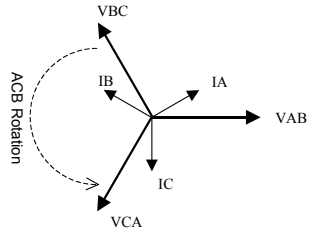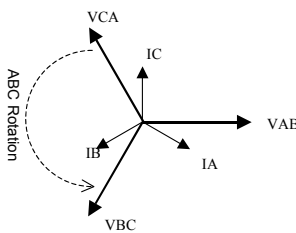
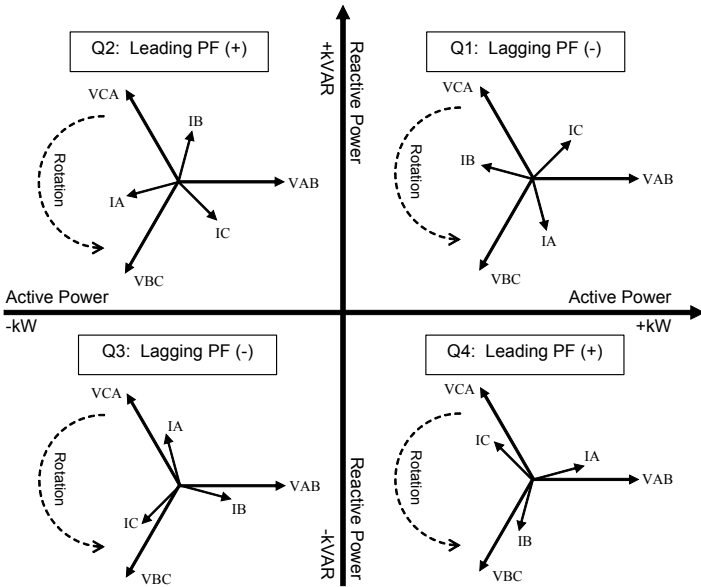## WYE - ABC Rotation

Applicable Volts Mode = 4W-WYE and 3W-WYE

WYE - ACB Rotation

Applicable Volts Mode = 4W-WYE and 3W-WYE

2 Element (3Wire) DELTA - ABC Rotation

Applicable Volts Mode = DELTA

Q2: Leading PF (+)

+KVAR

Reactive Power

Q1: Lagging PF (-)

VCA

IB

VAB

Rotation

IA

IC

VBC

VCA

IC

IB

VAB

Rotation

IA

VBC

Active Power

-kW

Active Power

+kW

Q3: Lagging PF (-)

VCA

IA

VAB

Rotation

IC

IB

VBC

Reactive Power

-kVAR

Q4: Leading PF (+)

VCA

IC

IA

VAB

Rotation

IB

VBC

2 Element (3Wire) DELTA - ACB Rotation

Applicable Volts Mode = DELTA

Q2: Leading PF (+)

+KVAR

Reactive Power

Q1: Lagging PF (-)

VBC

IC

IB

VAB

Rotation

IA

VCA

VBC

IB

VAB

Rotation

IC

IA

VCA

Active Power

-kW

Active Power

+kW

Q3: Lagging PF (-)

VBC

IC

IA

VAB

Rotation

IB

VCA

Reactive Power

-kVAR

Q4: Leading PF (+)

VBC

IA

VAB

Rotation

IB

IC

VCA
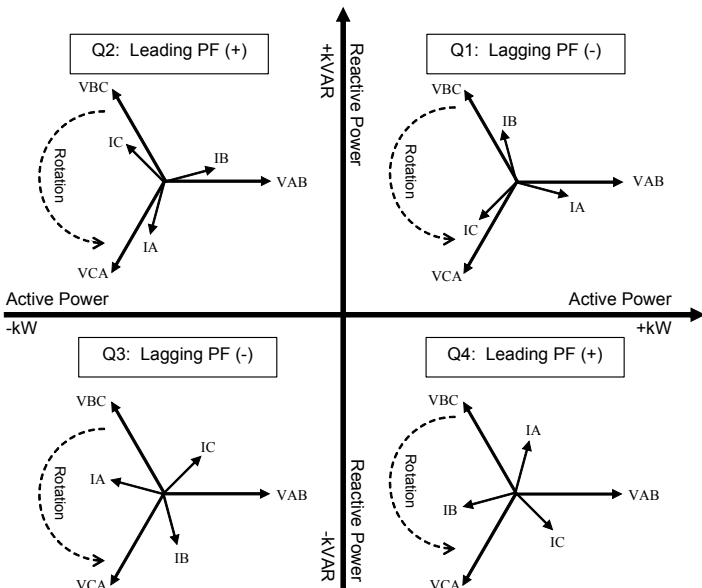
Step 10: View Meter Data

Use the softkeys to select which data to display. Use the left and right arrow buttons to scroll through the available display screens.

Display Screens

Softkey	Contents
V,I,PF	Volts, Amps, Power Factor
Volts	Volts
Amps	Amps
Power	Total Power
Energy1	Energy delivered
Demand1	Demand delivered
Pk Dmd1	Peak Demand delivered
V Bar, I Bar, P Bar	Voltage, Current and Power Bar Graphs
Summary1, Summary2	Volts/Amps Summary, Power Summary
D Inputs	Digital Inputs
DI - I/O	Digital I/O on expansion I/O card
D-Output	Digital Outputs
Anlg - I/O	Analog In and Out
Phasors	Phasors
Name Plt	Nameplate information
Events	Events
Setpoint	Setpoint status
Energy2	Energy received
Demand2	Demand received
Pk Dmd2	Peak Demand received
THD	Volts and Amps Total Harmonic Distortion
V1 Harm, V2 Harm,...	V1, V2, V3, V4 harmonics
I1 Harm, I2 Harm,...	I1, I2, I3, I4, I5 harmonics
TOU	Time Of Use Active Rate / Season
TOU Egy	TOU Energy delivered
TOU Dmd1 & TOU Dmd2	TOU Peak Demand 1 and 2
*PQ Freq	Power Quality Power Frequency
*PQ Vmag1	PQ Supply Voltage 1
*PQ Vmag2	PQ Supply Voltage 2
*PQ Flk1	PQ Flicker 1
*PQ Flk2	PQ Flicker 2
*PQ Vdist	PQ Voltage Disturbance
*PQ Vunb	PQ Voltage Unbalance
*PQ Vhrm1	PQ Voltage Harmonics 1
*PQ Vhrm2	PQ Voltage Harmonics 2
V-Trend, I-Trend, P-Trend	Voltage, Current, Power Trends

*   Additional display screens for ION7650 meters with EN50160 option.

PowerLogic ION7550 / ION7650
with WebMeter and MeterM@il

Installation Guide

For further assistance
please contact us at:

Schneider Electric

Power Monitoring and Control
2195 Keating Cross Road
Saanichton, BC
Canada V8M 2A5
Tel: 1-250-652-7100

295 Tech Park Drive, Suite 100
Lavergne, TN 37086
USA
Tel: 1-615-287-3400

Electropole (38 EQI)
31, rue Pierre Mendès France
F - 38050 Grenoble Cédex 9
Tel : + 33 (0) 4 76 57 60 60

Getting technical support:
Contact your local Schneider Electric sales
representative for assistance or go to the
www.powerlogic.com website.

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