PowerLogic™ ION™ Setup

Meter Configuration Software
Configuration Guide

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Schneider Electric

Conventions Used in this Manual

This section describes the symbols and terminology used in this guide.

Symbols

DANGER

This alerts you to things that may cause serious injury to a person. Only qualified, properly trained personnel should perform these procedures.

CAUTION

This alerts you to things that may cause loss of data, damage to your computer or your devices.

NOTE

A note provides you with additional information that you might want to consider.

TIP

This draws your attention to information that will help you perform a task more quickly or easily.

Terminology

Clear	Place the mouse cursor over the check box option, then click the mouse button so that the check mark is removed from the check box.
Click	Place the mouse cursor over the specified option or button, then press and release the mouse button.
Double-click	Place the mouse cursor over the specified option or button, then press and release the mouse button twice.
Drag	Hold down the mouse button while moving the mouse cursor to the appropriate location, then release the button.
Enter	Type the information, then press the ENTER or RETURN key.
Point	Position the mouse pointer over a submenu or menu command. For example, point to the File menu.
Press	Press the specified key or key combination on your keyboard, for example, press CTRL+ALT+DEL.
Right-click	Place the mouse cursor over the button or item, then press and release the right mouse button.[1]
Select	Place the mouse pointer over the specified option or check box, then click the mouse button. A selected check box receives a check mark; a selected radio button is marked with a dot.
Type	Type the information, but DO NOT press the ENTER or RETURN key.

[1] "Mouse button" means the primary mouse button (left, by default), while "right mouse button" means the secondary mouse button. This configuration can be switched for accessibility.

Contents

Chapter 1 E5600 Socket-Based Energy Meter

The PowerLogic™ E5600 is a cost-effective S-base socket meter with ANSI C12.20 Class 0.2 accuracy.

In this chapter

E5600 Meter Setup

The E5600 has two configuration options: via the meter's IR (infrared) optical port or through the RS-485 connection.

If you need to change your meter's default RS-485 settings, you must first connect to your meter through the IR optical port to configure the meter's RS-485 communications settings. Otherwise, your meter can be completely configured through the RS-485 connection. Refer to "Default RS-485 settings" on page 15.

NOTE

Meter password protection can only be implemented through the IR optical port.

Tools required

Before starting to set up your E5600 meter, make sure you have a computer with the latest version of ION Setup installed. To communicate with your meter through RS-485, you need to use a Modbus gateway or an RS-232 to RS-485 converter.

To communicate with your meter through the IR optical port, you also need the following:

- ANSI C12.19 type II optical probe (refer to the *E5600 Installation and Operation Guide* for the meter's front optical port specifications)
- Strong magnet (such as a rare-earth or similar permanent magnet)

Meter Setup through IR Optical Port

To communicate with your meter through the IR optical port, you must configure your computer to use the optical probe. You can then connect the probe to the meter and communicate using ION Setup.

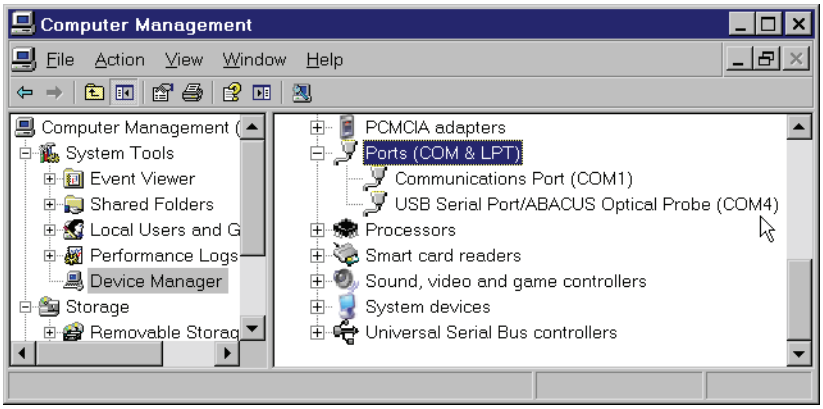
Computer configuration

This describes how to configure the computer's communication port for optical probe communication, and how to identify which port is being used by the optical probe, in order to communicate with ION Setup.

Before starting ION Setup, connect the meter to your computer using an ANSI C12.19 type II optical probe. If the Microsoft Windows driver for the USB optical probe is not installed, Windows detects the optical probe as new hardware and prompts you to search for a compatible driver. Use the installation disc that came with the optical probe to install the driver, or download the appropriate driver from the optical probe manufacturer's website.

Open your computer's Device Manager to see which serial port number is assigned to the optical probe:

1. Right-click My Computer and select **Manage**.
2. Expand **System Tools** and select **Device Manager**.
3. Expand **Ports**.



4. Note the optical probe's serial port number.
5. Close the Computer Management screen.

Meter communication

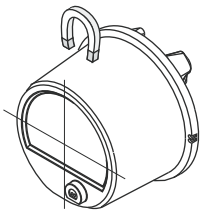
This describes how to put the meter into diagnostic mode so that it can be configured through the IR optical port using ION Setup.

1. Put the meter into diagnostic mode.

   - To put the meter into diagnostic mode, hold a strong magnet over the meter, approximately at the 12 o'clock position, to activate the reed switch. When the reed switch is activated, the meter's display will show all segments, then a blank screen, and then will start to display the diagnostic display sequence.

   Do not remove the magnet from the meter's reed switch while communicating through the meter's IR port.

12 o'clock

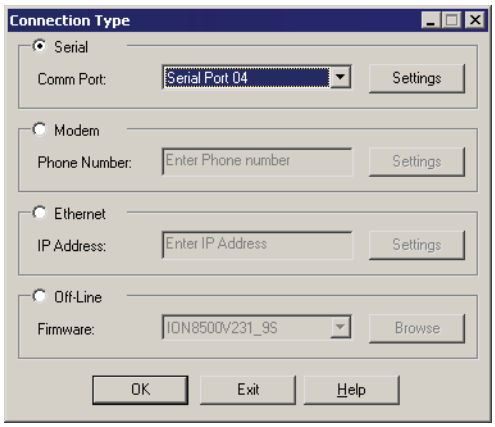


NOTE

RS-485 (Modbus) data will not be updated while the meter is communicating via the front optical port.

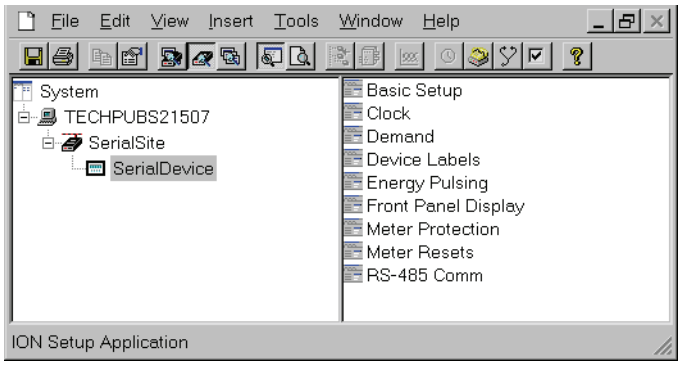
2. Start and log on to ION Setup using Single Device Configuration mode. See the "Starting, Logging On and Logging Off" section of the ION Setup Help for more information on the operation modes, and starting and logging onto ION Setup.

3. In the Connection Type dialog, select the optical probe's serial port number (see "Computer configuration" on page 8).



4. Click **OK**.

   ION Setup attempts to establish a connection (9600 baud, ANSI protocol) to the device. If communication attempts fail, close ION Setup, check to make sure there is good physical connection between the computer and the meter and ensure that the magnet is activating the reed switch. Restart ION Setup and try connecting to the device again.



5. Configure the meter. The setup screens are detailed in the section "Meter Setup through RS-485" on page 10.

Meter Setup through RS-485

To configure your meter through RS-485, you must add the meter in ION Setup, in Network Mode. Once the meter has been added, you can configure your meter using the setup screens.

Adding the E5600 to a site

1. If your meter is connected through the IR optical port, exit ION Setup then remove the magnet from the meter.
2. Make sure the meter's RS-485 port is connected to the computer (through an RS-232 to RS-485 converter or an Ethernet gateway device).

3. Start and log on to ION Setup using Network mode. See the “Starting, Logging On and Logging Off” section of the ION Setup Help for more information on the operation modes, and starting and logging onto ION Setup.
4. Create and configure a new site for your meter, or use an existing site if appropriate (i.e., if an existing site already exists and you have wired the E5600 communications port to use that communications link). Refer to the ION Setup online help for details on adding sites and meters.
5. Add the meter to the site. For Unit ID, enter the Modbus address you set for the device (refer to “RS-485 Comm” on page 15).
6. Configure the meter’s setup parameters.

Basic Setup

Use this screen to configure the meter’s primary and secondary transformer values.

1. Select the PT Multiplier parameter and click **Edit**.
2. The PT/CT Multiplier Setup screen appears. Enter the PT Multiplier value and click **OK**.

   The PT Multiplier is a positive integer that represents the PT primary to PT secondary ratio. For example, if PT primary = 480 V and PT secondary = 120 V, then PT Multiplier = 4.
3. Repeat for the CT Multiplier parameter.

   The CT Multiplier is a positive integer that represents the CT primary to CT secondary ratio. For example, if CT primary = 500 A and CT secondary = 5 A, then CT Multiplier = 100
4. Click **Send** to save your changes to the meter.

NOTE

The PT and CT multipliers only affect values displayed on the meter’s front panel and values exported using Modbus protocol. The PT and CT multipliers you configure do not affect the digital output pulse signal. To change the pulse rate, you must change the Ke value. See “Energy Pulsing” on page 12 for details.

Clock

The front panel of the E5600 displays hours and minutes in 24 hour clock format, regardless of whether your computer displays time in a 12 or 24 hour clock format.

NOTE

Setting or synchronizing the meter’s time causes the demand interval to be reset, which creates artificially low real-time demand values. Only set or synchronize the meter’s time during periods of low demand, or at the beginning of the demand interval.

To manually set the meter's local time

1. Select the Date/Time parameter and click **Edit**.
2. Use the **Meter Date** dropdown button to display the calendar. You can use the left or right scroll button to change the month. Click the calendar day to set the meter date.
3. Click the hour, minute, second or AM/PM setting, then use the up/down scroll buttons (or use your computer's keyboard) to change the value.

   The time information is sent to the meter exactly as entered. No corrections (such as Daylight Savings Time) are applied to the time information, or supported by the meter.
4. Click **OK** then **Send** to set the date and time.

To synchronize the meter's time to the computer's time

1. Select the Date/Time parameter and click **Sync**.
2. Click **Send**. The meter's time is set to the time on the computer.

Demand

Demand is the average power consumption over a fixed time period (demand period), typically 15 minutes.

1. Select Interval Length parameter and click **Edit**.
2. Select either Block Demand or Sliding Window Demand.
   - Block Demand: Select the Block Length from the drop-down list.
   - Sliding Window Demand: Select the appropriate Period/Sub-Interval from the drop-down list. For example, if you require a 30 minute interval broken into two periods of 15 minutes each, select "2 x 15 minutes".
3. Click **OK** then **Send** to save your changes to the meter.

Device Labels

Select Device Identification and click **Edit**. Type the device label for the E5600 meter in the "Enter Device Identification" box. The device label can be 1 - 18 ASCII characters.

Click **OK** then **Send** to save your changes to the meter.

Energy Pulsing

Energy pulsing transitions the digital output KY relay (from low-high, or high-low) each time the source energy parameter increases by the Ke value. There are two digital outputs on the E5600.

The digital output pulse rate is not affected by the PT and CT multipliers that you enter on the Basic Setup screen. To change the pulse rate, you must configure the Ke value as outlined below.

NOTE

The meter may not begin energy pulsing for up to 15 minutes after you initially configure energy pulsing (after receiving the meter from the factory) because of the default demand interval.

Enable

Use this to enable or disable energy pulsing for that KY relay.

Source

Use this to select the energy measurement for KY relay pulsing.

Ke Value

Use this to set the amount that the source must increase before the digital output transitions. You must set this to a numeric value between 0.001 and 16 in order to enable energy pulsing through the digital output.

NOTE

If Ke is zero (0) the associated KY relay is disabled. You must enter a valid Ke value (between 0.001 and 16) before you can enable the associated KY relay.

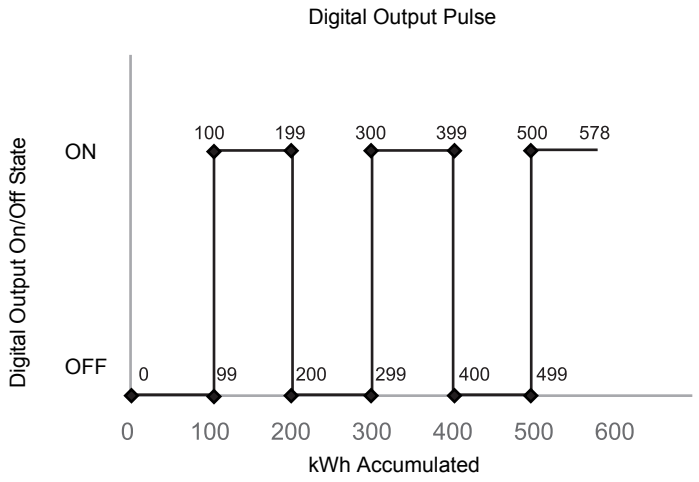
1. Select a parameter (Enable, Source or Ke Value), then click **Edit.**
2. Modify the parameter by entering the required value or selecting an option from the drop-down list.
3. Click **OK** then **Send** to save your changes to the meter.

Calculating an appropriate Ke value

In order to adjust the digital output pulse rate, you need to determine the appropriate Ke value using the following formula:

Ke=<Primary Energy Value>/(PT * CT), where the primary energy value is the amount of accumulated energy that you want to trigger a change in the state of the digital output.

For example, if you want the digital output to change state every time 100 kWh is accumulated, and your PT multiplier is 1 and your CT multiplier is 160, you would enter 0.625 as the Ke value, since 100/(1*160)=0.625.



Front Panel Display

Configure the following to specify how many data screens are displayed on the front panel, and the time duration for each displayed screen.

of Displays

You can configure a maximum of six (6) display screens:

1. Select # of Displays, then click **Edit**.
2. Use the Display Editor window to edit, add or delete the displayed parameters.
   - To edit the displayed parameter, select it, then click **Edit**. In the Display Screen Setup window, use the Parameter box to select the quantity you want to display. Use the Indicator box to assign a three-character label for the displayed parameter.
   - To add a new display screen, click **New**. Set the Parameter and Indicator as described above.
   - To delete a display screen, select it then click **Delete**.

NOTE

Do not delete the Modbus Unit ID display screen. If you do, you may not be able to recover the Modbus Unit ID for the device.

3. Click **Exit** to return to the Front Panel Display setup screen, then click **Send** to save your changes to the meter.

Display On Time

You can configure a duration from 1 second to 15 seconds.

1. Select Display On Time, then click **Edit**.
2. Enter the Display On Time in the space provided and click **OK**, then click **Send** to send your changes to the meter.

Meter Resets

Use this setup screen to perform reset functions for the meter.

1. Select a reset parameter then click **Edit**.
   - Peak Demand Reset: clears peak demand values.
   - Master Reset: clears all demand and energy values, and clears the load profile.
   - Energy Reset: clears all energy accumulated values (total, delivered, received).
2. Use the dropdown box to select “Reset” or “No Reset”, then click **OK**.
3. Click **Send** to save your changes to the meter. The parameters for which you selected Reset are reset immediately. The parameters for which you selected No Reset are not reset; to perform a reset on those parameters, repeat this procedure, setting those parameters to Reset.

RS-485 Comm

Use this setup screen to configure the E5600 meter’s RS-485 communications settings.

Default RS-485 settings

Parameter	Value
Modbus Address	Displayed on meter front panel
Baud Rate	9600 bps
Parity	No parity or “None”

NOTE

Changing RS-485 Comm parameters while communicating through the RS-485 port will cause you to lose communications with your meter.

Modbus Address

Use this to set the device address (unit ID) for the E5600 meter. The allowable Modbus address range is 1 to 247. Make sure the Modbus address is unique to each device on that RS-485 loop.

Baud Rate

Use this to set the baud rate for RS-485 communications. Make sure all devices connected on the same RS-485 loop are set to the same baud rate.

Parity

Make sure the communications link (site) and all devices connected to that site are set to the same parity setting.

1. Select a parameter (Modbus Address, Baud Rate or Parity) and click **Edit.**
2. A parameter editing screen appears. Enter the appropriate value into the field or select from the drop-down lists and click **OK**.
3. Click **Send** to save your changes to the meter.

Communications Card Firmware Upgrade

NOTE

You can only upgrade the E5600 communication card's firmware through the RS-485 port.

1. Make sure all necessary information from the E5600 meter has been recorded.
2. Save the E5600 firmware upgrade file to your computer desktop or a local folder.
3. Right-click the E5600 meter icon and select Properties.
4. Click the Tools tab, then click **Firmware Upgrade**.
5. A prompt displays, alerting you that all recorded data for the device will be reset. Click **OK** to proceed.
6. Navigate to the location where you saved the firmware upgrade file, select it then click **Open**.
7. Enter the ION Setup password to upgrade the firmware.

Upgrade considerations

While your meter's communication card is undergoing a firmware upgrade:

- The meter's I/O may de-energize or change state.
- Do not have any other communications taking place on your RS-485 network.
- The meter will continue to measure and log data, but it will not update real-time displayed values until the upgrade is completed.

Meter Protection

Meter protection can be configured only through the front optical port. See “Meter Setup through IR Optical Port” on page 8 for connection details. Start ION Setup in Single Device Configuration mode; see the “Starting, Logging On and Logging Off” section of the ION Setup Help for more information on the operation modes, and starting and logging onto ION Setup.

Password-protecting the meter

1. Double-click Meter Protection.
2. Select Protection Lockout then click **Edit**.
3. Type a numeric password in the box, then click **Enable**. Make sure you do not lose or forget the password, as this is the only way to disable protection later on.
4. Click **Send** to save the changes to the meter.

With a password-protected E5600 meter, you can still make changes to these setup screens through the RS-485 connection (these parameters are not protected from modifications):

- Front Panel Display
- RS-485 Comm

Disabling password protection

When the E5600 meter is password-protected, you must enter the correct password when you are initially prompted by ION Setup. Otherwise, the protected parameters are displayed as read-only.

NOTE

Do not lose or forget your password. If you lose your password and need to modify the locked parameters, a factory reconfiguration is required, which will reset your meter to its factory defaults and destroy all logged data.

Chapter 2 PM700 series Power Meter

The PowerLogic™ PM700 series meter is a compact, versatile and cost-effective power meter. It is simple to use and has a bright LCD display for improved visibility in poor lighting conditions. The meter can be used for stand-alone metering applications, in custom panels, switchboards, switchgear, gensets, motor control centers, or UPS systems.

Some of the features included are power, demand, energy, power factor, and frequency measurements. PM700 series meters also have IEC62053-21 Class 1 and IEC62053-22 Class 0.5S (PM750 only) accuracy certification for basic sub-billing and cost allocation.

For more information, refer to the meter documentation available from www.powerlogic.com.

In this chapter

PM700 series Meter Setup

Before using ION Setup, make sure all the communications settings for the PM700 series meter has been configured, as explained in the meter documentation.

NOTE

The procedures described here only apply to the meter models that are equipped with communications (i.e., the PM710 and PM750 meters, but not the PM700 and PM700P).

The PM700 series meter uses Modbus RTU protocol to communicate through its RS-485 serial communications port.

- **Device communications settings**: Make sure all the devices on the same RS-485 loop are set to the same baud rate and parity. Recommended setting for parity is “None” (no parity).
- **Device address (unit ID) settings**: Make sure the device address (unit ID) is unique for each device in a given RS-485 loop (range = 1 to 247 for Modbus devices).

Using ION Setup

Use Network mode in ION Setup to add and configure the PM700 series meter. See the “Starting, Logging On and Logging Off” section of the ION Setup Help for more information on the operation modes, and starting and logging onto ION Setup.

Refer to the ION Setup online help for information on adding sites and meters.

PM700 series Setup Screens

The following sections describe what setup screens are available on the PM700 series meter. Some setup parameters only apply to particular models — refer to your meter documentation for details on supported features.

Basic Setup

System Type

Select the option that describes how your PM700 series meter is wired to the electrical service. Refer to the PM700 series meter installation guide for details on the different system types.

PT Ratio

Select the appropriate scale value (multiplier) for the PT primary. For direct connect, select “No PTs”.

PT Primary

Enter the value for the PT primary, in Volts.

PT Secondary

Select the value for the PT secondary.

CT Primary

Enter the value for the CT primary, in Amps.

CT Secondary

Select the value for the CT secondary.

Service Frequency

Select the system frequency of the electrical service.

Demand

Demand is the average power consumption over a fixed time interval (demand period), typically 15 minutes.

Demand values are calculated for each sub-interval, then averaged over the number of sub-intervals that make up the demand period.

Thermal Dmd Period (mins)

Enter the length of the demand period, in minutes.

Block Dmd Period (mins)

Enter the length of each rolling block period (sub-interval), in minutes.

Block # of Sub-Intervals

Enter the number of sub-intervals used for calculating demand

NOTE

Refer to the PM700 series documentation for details on how the meter calculates demand.

Front Panel Display

Display Mode

Select IEC or IEEE convention for displaying data on the PM700 series meter's display panel.

I/O Setup

Refer to the PM700 series meter documentation for I/O descriptions and configuration details.

Digital Out KY

- **Label**: This field identifies the KY digital output.
- **Mode**: Select the KY digital output mode of operation.
  - **External Control** configures the output to be controlled by a command sent over the communications link.
  - **PM Alarm** configures the output to be controlled by the power meter in response to a setpoint controlled alarm condition.
  - **kWh out pulse** sets the meter to generate a fixed-duration pulse output that can be associated with the kWh consumption. Use the "Pulse Weight" register to enter how many kWh out of the load are associated with each pulse of the KY digital output. Then use the "Pulse Duration" box to select the pulse width (in milliseconds) for each kWh pulse.

Digital In S1 and S2 (PM750 only)

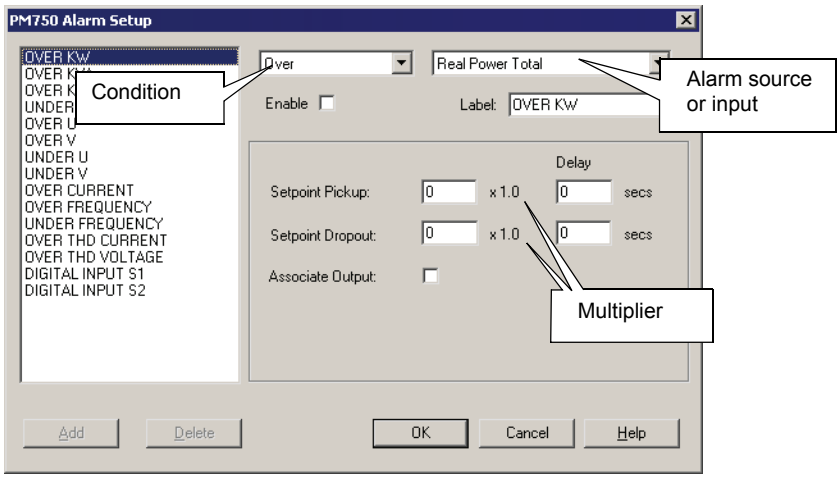
- **Label**: This field identifies the digital input.
- **Mode**: Select the operation mode for the SI digital input:
  - For simple on/off digital input operation, select **Normal**.
  - Select **Demand Interval Sync Pulse** if the SI digital input is configured as the demand sync input.

Onboard Alarms

The Onboard Alarms setup screen allows you to make changes to 15 preconfigured alarms (13 standard alarms and 2 digital input alarms). Refer to the *PM750 Reference Manual* for a listing of these alarms.

Setting a preconfigured standard alarm

1. Select All Alarms, then click **Edit**.



2. In the Alarm Setup screen, select the standard alarm you want to set.
   - **Enable:** Select this checkbox to enable the alarm
   - Label: If required, use this box to rename the selected alarm
   - Setpoint Pickup: Enter the magnitude above (for “Over”) or below (for “Under”) that defines the alarm ON condition, then in the Delay box enter the number of seconds the alarm ON condition needs to be true before the alarm is activated.
   - **Setpoint Dropout**: Enter the magnitude below (for “Over”) or above (for “Under”) that defines the alarm OFF condition, then in the Delay box enter the number of seconds the alarm OFF condition needs to be true before the alarm is deactivated.

NOTE

Pay special attention to the multipliers for Setpoint Pickup and Setpoint Dropout settings, and adjust the values if needed.

   - **Associate Output**: Select this checkbox to associate the alarm condition with an output (e.g., the meter’s digital output).

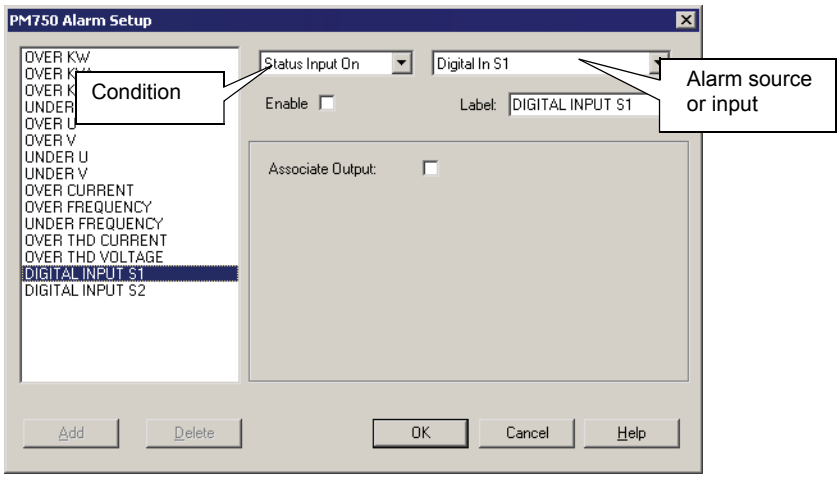
Redefining a preconfigured alarm

You can redefine a preconfigured alarm by changing the alarm condition (“Over” or “Under”) and/or selecting a different alarm source or input. Make sure you update the **Label** field as appropriate.

For example, “Status Input On” can mean the alarm is activated when the digital input is switched on, while “Status Input Off” can mean the alarm is activated when the digital input is switched off.

Setting a preconfigured digital input alarm

1. Select All Alarms, then click **Edit**.



2. In the Alarm Setup screen, select the digital input you want to configure for alarming.
   - **Enable:** Select this checkbox to enable the alarm
   - **Label**: If required, use this box to rename the selected alarm
   - **Associate Output**: Select this checkbox to associate the alarm condition with an output (e.g., the meter's digital output)

Redefining a preconfigured digital input alarm

You can redefine a preconfigured alarm by changing the alarm condition. "Status Input On" means the alarm is activated when the digital input is switched on, while "Status Input Off" means the alarm is activated when the digital input is switched off.

Serial Comms

Modbus Address

This displays the Modbus address (unit ID) of the meter.

Baud Rate

This displays the meter's baud rate setting.

Chapter 3 PM800 series Power Meter

The PowerLogic™ PM800 series meter is an IEC 62053-22 Class 0.5S meter and offers many high-performance capabilities needed to meter and monitor an electrical installation in a compact 96 x 96 mm unit. It includes an easy-to-read display that presents measurements for all three phases and neutral at the same time, an RS-485 Modbus communication port, one digital input, one KY-type digital output, total harmonic distortion (THD) metering, and alarming on critical conditions. Four models offer an incremental choice of custom logging and power quality analysis capabilities. Expand any model with field-installable option modules that offer a choice of additional digital inputs and outputs, analog inputs and outputs, and Ethernet port.

For more information, refer to the meter documentation available from www.powerlogic.com.

In this chapter

PM800 series Meter Setup

Before using ION Setup, make sure all the communications settings for the PM800 series meter have been configured, as explained in the meter documentation.

The PM800 series meter uses Modbus RTU protocol to communicate through its RS-485 serial communications port.

- **Device communications settings**: Make sure all the devices on the same RS-485 loop are set to the same baud rate. Also, make sure parity is set to “None” (no parity) in order to communicate with ION Setup.
- **Device address (unit ID) settings**: Make sure the device address (unit ID) is unique for each device in a given RS-485 loop (range = 1 to 247 for Modbus devices).

The PM800 series meters can also be equipped with the optional Ethernet Communications Card, which provides Ethernet communications capability and Ethernet Gateway functionality to the device. The gateway uses Modbus TCP/IP protocol to communicate on the Ethernet port and Modbus RTU on the serial port.

PM8ECC Considerations

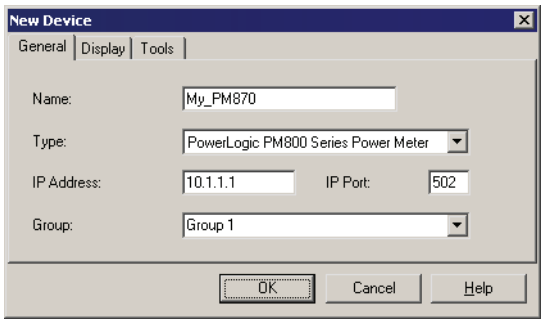
If your PM800 series meter is equipped with the PM8ECC Ethernet communication card, you can communicate to the meter directly through its Ethernet port.

NOTE

Refer to the PM8ECC documentation for instructions on how to set up the device parameters such as Ethernet & TCP/IP settings.

Adding the PM800 series meter as an Ethernet device

1. Start ION Setup in Network mode. See the “Starting, Logging On and Logging Off” section of the ION Setup Help for more information on the operation modes, and starting and logging onto ION Setup. You must add and configure an Ethernet site if there are no Ethernet sites on your ION Setup network.
2. Right-click the Ethernet site icon and select **Insert Item**. Select **Meter** and click **OK**.



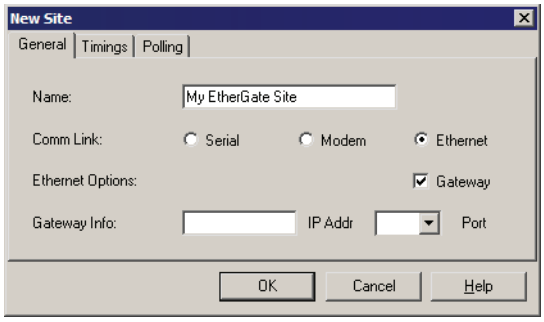
3. Type a descriptive name for your PM800 series meter. Select the type of device (i.e., PM800 series). Type the IP address of the PM8ECC. In the IP Port box, type **502**. Select Group. Click **OK**.

Setting up the PM8ECC as an Ethernet gateway

You can set up the PM8ECC as an Ethernet gateway — this allows you to communicate with RS-485 serial devices on the PM8ECC serial port, through the PM8ECC's Ethernet port. Make sure the communications settings for all devices in the RS-485 loop are set up properly (see "PM800 series Meter Setup" on page 26). For RS-485 wiring instructions, refer to the PM800 series documentation.

Each serial device on the RS-485 loop must be added to the PM8ECC's device list by using the web browser to access the PM8ECC webpages. Refer to the PM8ECC documentation for details.

1. Start ION Setup in Network mode. See the "Starting, Logging On and Logging Off" section of the ION Setup Help for more information on the operation modes, and starting and logging onto ION Setup.
2. Add a new site. Select **Ethernet**, then select the **Gateway** box.



3. In the Gateway Info boxes, enter the IP address of the PM8ECC. In the IP Port box, type **502**. Click **OK**.

NOTE

The IP Port must be set to 502 for Modbus TCP communication.

Using ION Setup

Use Network mode in ION Setup to add and configure the PM800 series meter; see the "Starting, Logging On and Logging Off" section of the ION Setup Help for more information on the operation modes, and starting and logging onto ION Setup.

Refer to the ION Setup online help for information on adding sites and meters.

PM800 series Setup Screens

The following sections describe the PM800 series meter's setup screens.

NOTE

Some setup screens only apply to particular models (e.g., waveform capture for the PM870), while other screens apply only to installed options (such as the "Comm - ECC" setup screen for meters equipped with the optional PM8ECC Ethernet communications card). Refer to your meter documentation for details on supported features.

Alarm Log

Status

Select the appropriate option to enable or disable alarm logging.

Basic Setup

System Type

Select the option that describes how your PM800 series meter is wired to the electrical service. Refer to the PM800 series meter documentation for details.

Primary Scale Factor

Select the appropriate scale value (multiplier) for the PT primary. For direct connect, select "No PTs".

PT Primary

Enter the value for the PT primary, in Volts.

PT Secondary

Select the value for the PT secondary.

CT Primary

Enter the value for the CT primary, in Amps.

CT Secondary

Select the value for the CT secondary.

Service Frequency

Select the system frequency of the electrical service.

Nominal Voltage

Enter the normal or designed voltage level of the electrical service, in Volts.

Nominal Current

Enter the normal or designed current level of the electrical service, in Amps.

Billing Log

Status

Select the appropriate option to enable or disable the billing log.

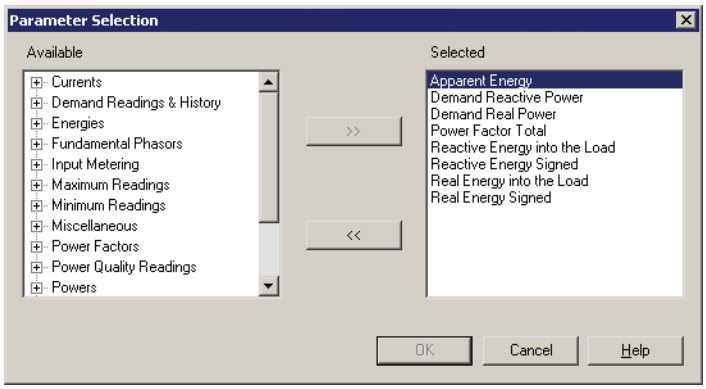
Interval (mins)

Enter how often (in minutes) the billing quantities should be logged.

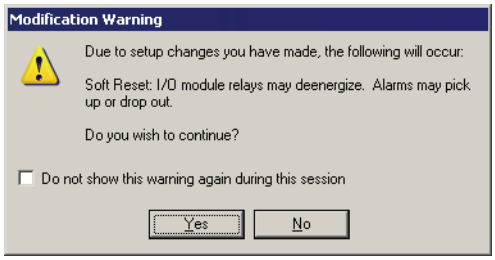
Channels

This allows you to select which parameters to include in the billing log.

1. Select **Channels**, then click **Edit**.



2. To add or remove a parameter from the billing log:
   - Adding parameters: Under “Available”, click the “+” sign to expand and display individual parameters. Click a parameter to select it, then click the >> button to move the parameter to “Selected”.
   - Removing parameters: Under “Selected”, click the parameter you want to remove, then click the << button.
3. Click **Send** to save the changes to the meter. The following prompt appears:



4. Note that clicking **Yes** will power-cycle (reset) the device. Click **Yes** to confirm, or **No** to cancel and go back to the previous dialog.

Clock

The Clock setup screen allows you to set the date and time on the meter. Click **Edit** to change the date/time setting, then click **Send**.

Comm - ECC Card

This section applies to meters that are equipped with the optional PM8ECC Ethernet communications card module. If installed, the PM8ECC settings can be viewed from the following setup registers:

IP Address

This displays the IP address of the PM8ECC.

Subnet Mask

This displays the Ethernet subnet mask setting for the PM8ECC.

Gateway

This displays the Ethernet gateway setting for the PM8ECC.

Com3 Protocol

This displays the protocol used on the PM8ECC's serial port.

Com3 Address

This displays the Modbus address of the PM8ECC's serial port.

Com3 Baud Rate

This displays the baud rate setting of the PM8ECC's serial port.

Com3 Parity

This displays the parity setting of the PM8ECC's serial port.

Comm - Onboard Serial

Com1 Protocol

This displays the meter's serial communications protocol setting (e.g. Modbus).

Com1 Address

This displays the Modbus address (unit ID) of the meter.

Com1 Baud Rate

This displays the meter's baud rate setting.

Com1 Parity

This displays the meter's communications port parity setting. To communicate with ION Setup, this must be set to **None**.

NOTE

The remote display adapter (PM8RDA) provides an additional serial communications port (COM2). However, this COM2 port becomes unavailable if you connect an Ethernet communications card (PM8ECC) to the meter.

Data Log #1, Data Log #2, Data Log #3, Data Log #4

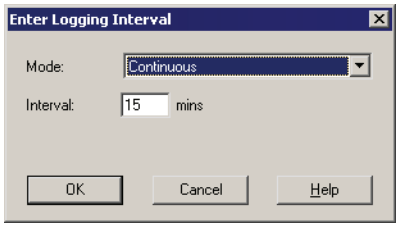
Status

Select the appropriate option to enable or disable the data log.

Interval

This allows you to set the logging mode and interval for the data log.

1. Select **Interval**, then click **Edit**.



2. Use the Mode box to select **Only On Event**, **Continuous**, or **Start/Stop** (refer to the meter documentation for more information). Enter how often (in minutes) the parameters should be recorded in the data log.
3. Click **OK**.

Channels

This allows you to select which parameters to include in the data log. The setup procedure is similar to the one described in the “Billing Log” section, under “Channels” on page 29.

Device Labels

Device Label

You can use this text field to assign a label (e.g., an abbreviation) for your meter.

Device Nameplate

You can use this text field to describe your meter (e.g., type, location or other device detail).

EN50160 Setup

EN50160 Evaluation

Select the appropriate option to enable or disable the EN50160 evaluation feature.

First Day of Week

Select **Sunday** or **Monday** to be the first day of the week.

Interruption (% Nominal)

Enter the value that defines what constitutes a voltage interruption, expressed as a percentage of nominal voltage. For example, if “Interruption (% Nominal)” is set to 1%, a voltage interruption is recorded if the voltage drops below 99% of its nominal value.

Max Short Interruption (secs)

Enter the longest time duration, in number of seconds, that defines a short interruption. For example, if “Max Short Interruption (secs)” is set to 270 seconds, a voltage interruption lasting longer than that time is considered a “long interruption”.

Slow Voltage Variations

Enter the value that defines the allowable range of slow voltage variations, expressed as a percentage of nominal voltage (typically +/-10% of nominal).

Voltage for 4-Wire Systems

Select whether the voltage for a 4-wire system is expressed as Line-to-Neutral or Line-to-Line.

Frequency Configuration

Select “Synchronous” for a system with a synchronous connection to an interconnected system, or “Unsynchronous” for a system without a synchronous connection to an interconnected system.

For more information, refer to the *PM800 series Reference Manual*.

Energy & Demand

Accumulated Energy

Select how accumulated energy values should be stored (absolute or signed).

Power Mode

Select which technique is used to calculate demand power.

Power Interval

Enter the duration of each demand interval (for calculating demand power), in minutes.

Power Sub-Interval

Enter the duration of each sub-interval (for demand power), in minutes.

Current Mode

Select which technique is used to calculate demand current.

Current Interval

Enter the duration of each demand interval (for calculating demand current), in minutes.

Current Sub-Interval

Enter the time period for each sub-interval (for demand current), in minutes.

Front Panel Display

Language

Select which language is displayed on the PM800 series meter's LCD panel.

Date Format

Select your date format (e.g. yy/mm/dd).

Time Format

Select your time format (24 hour or 12 hour AM/PM).

Phase Notation

Select your line phase label format (A/B/C/N or 1/2/3/N).

I/O Setup

Refer to the PM800 series meter documentation for I/O descriptions and configuration details.

Digital Out KY

- **Label**: Type a name identifying the KY digital output.
- **Mode**: Select the KY digital output mode of operation:
  - **Normal**: Use this mode for normal ON/OFF operation of the KY digital output.
  - For **Timed** or **End of Demand Interval** mode, use the "Hold Time" register to enter how many seconds the KY digital output remains energized.
  - For **Absolute kWh pulse**, **Absolute kVARh pulse** or **kVAh pulse** mode, use the "Pulse Weight" register to enter how many absolute kWh (into and out of the load), absolute kVARh (into and out of the load) or kVAh are associated with each pulse of the KY digital output.
  - For **kWh in pulse** or **kVARh in pulse** mode, use the "Pulse Weight" register to enter how many kWh or kVARh into the load are associated with each pulse of the KY digital output.

- For **kWh out pulse** or **kVARh out pulse** mode, use the “Pulse Weight” register to enter how many kWh or kVARh out of the load are associated with each pulse of the KY digital output.

If set to any of the above pulse modes, the Digital KY Output will pulse based on an energy-per-pulse value. Refer to the PM800 series reference manual for details on determining the value of the Pulse Weight setting.

- **Control**: For “Normal”, “Latched” or “Timed” mode of operation, select how the KY digital output is controlled, i.e., either **Externally Controlled** or controlled by power meter alarm (**PM Alarm**).

NOTE

For detailed descriptions on the different Mode and Control options, refer to the “Relay Output Operating Modes” section in the *PM800 series reference manual*.

Digital In SI

- **Label**: Type a name identifying the SI digital input.
- **Mode**: Select the operation mode for the SI digital input. For detailed descriptions on the different modes, refer to the “Digital Inputs” section in the *PM800 series reference Manual*.
  - **Normal**: Use this mode for normal ON/OFF operation of the digital input.
  - **Demand Interval Sync Pulse**: Use this mode to configure the SI digital input as the demand sync input (to receive a demand sync pulse from a utility demand meter, for example).
  - **Conditional Energy Control**: Use this mode to configure the SI digital input for conditional energy control.
- **Pulse Weight**: For “Normal” or “Input Metering” mode of operation, enter the pulse weight associated with the change of state of the input.
- **Units**: For “Normal” or “Input Metering” mode of operation, select the unit of measurement associated with the SI digital input pulse (if applicable).

Optional I/O modules

The following parameters apply to meters equipped with the optional I/O modules. Refer to the PM800 series meter documentation to see which inputs and outputs are available for the type of I/O module(s) installed on your meter.

Relay A-R1, Relay A-R2, Relay B-R1, Relay B-R2

- **Label**: Type a name identifying the relay output.
- **Mode**: Select which mode of operation the relay output uses (**Normal**, **Latched**, **Timed**, or **End of Demand Interval**).
- **Control**: For “Normal”, “Latched” or “Timed” mode of operation, select how the relay output is controlled, i.e., either **Externally Controlled** (Remotely Controlled) or **PM Alarm** (Power Meter Controlled).
- **Hold Time**: For “Timed” and “End of Demand Interval” mode of operation, enter how many seconds the relay remains energized.

NOTE

For detailed descriptions on the different modes of operation, refer to the "Relay Output Operating Modes" section in the *PM800 series reference manual*.

Click **OK**. Configure the other relays as required.

Digital In A-S1, Digital In A-S2 … Digital In A-S6,
Digital In B-S1, Digital In B-S2 … Digital In B-S6

- **Label**: Type a name identifying the digital input.
- **Mode**: Select the digital input mode of operation (**Normal**, **Demand Interval Sync Pulse**, **Conditional Energy Control**, or **Input Metering**).
- **Pulse Weight**: For "Normal" or "Input Metering" mode, enter in the "Pulse Weight" box how many units of a measured or calculated quantity is associated with each pulse.
- **Units**: For "Normal" or "Input Metering" mode, select the units used for the measured or calculated quantity (if applicable).

NOTE

For detailed descriptions on the different modes of operation, refer to the "Digital Inputs" section in the *PM800 series Reference Manual*.

Analog I/O

Refer to the *PM800 series power meter input/output module installation manual* for instructions on how to set up the analog inputs (Analog In A-AI1, Analog In A-AI2, Analog In B-AI1, Analog In B-AI2) and analog outputs (Analog Out A-AO1, Analog Out A-AO2, Analog Out B-AO1, Analog Out B-AO2):

- Analog Inputs
  - **Label**: This name identifies the specific analog input.
  - **Units**: Defines the units of the monitored analog value.
  - **Scale factor**: Defines what multiplier is used on the measured value.
  - **Report Range Lower Limit**: This is the value the power meter reports when the input reaches (or drops below) the lowest valid reading.
  - **Report Range Upper Limit**: This is the value the power meter reports when the input reaches (or exceeds) the highest valid reading.
- Analog Outputs
  - **Label**: This name identifies the specific analog output.
  - **Output register**: Defines the power meter register assigned to the analog output.
  - **Lower Limit**: This is the minimum output current that the power meter sends to the analog output when the register value reaches (or drops below) the lower limit.
  - **Upper Limit**: This is the maximum output current that the power meter sends to the analog output when the register value reaches (or exceeds) the upper limit.

Input Metering

Refer to the meter documentation for detailed descriptions on metering capabilities and options.

Demand Method

Select which method is used for calculating demand.

Demand Interval

Enter the time period for each demand interval, in minutes.

Demand Sub-Interval

Enter the time period for each demand sub-interval, in minutes.

Channel 1, Channel 2 … Channel 5

Before you can associate a digital input to a channel, you need to set up the digital input for input metering operation. Refer to “I/O Setup” on page 33 for details.

1. From the Input Metering setup screen, select one of the available channels.
2. In the “Label” field, enter a descriptive name for the channel.
3. Select the appropriate units and rate. The units you select must match the units you selected for the digital input (when you configured it for input metering).
4. In the “Available Inputs” column, select the digital input, then click the ›› button to move it to the “Assigned Inputs” column.

   (To unassign the input, select it from the “Assigned Inputs” column, then click the ‹‹ button.)

NOTE

Usually, input metering applications also require one input to be set up for Demand Interval Sync Pulse, to allow customers to synchronize their demand intervals to the utility (typically, the pulse signal is provided by the utility). To set up an input for demand interval sync pulse, refer to “I/O Setup” on page 33.

Meter Resets

To reset the meter, double-click **Meter Init** then select **Reinitialize**. Click **OK**.

Click **Send** to initialize the meter. At the prompt, click **Yes** to proceed, or **No** to abort the initialization.

NOTE

Initializing a meter will reset or disable certain parameters. Make sure you read the warning prompt before proceeding.

Metering Standards

Harmonic Distortion

Select how total harmonic distortion is calculated.

PF Sign Convention

Select which standards convention to use for displaying PF sign.

Voltage Harmonic Method

Select how the magnitude of voltage harmonic is displayed.

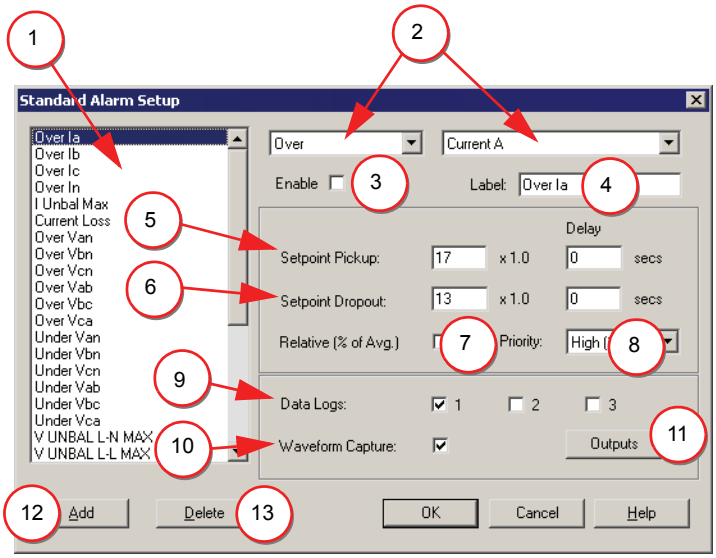
Current Harmonic Method

Select how the magnitude of current harmonic is displayed.

Onboard Alarms/Events

Standard

This allows you to configure the standard alarms. Select “Standard” then click **Edit**.



The numbered labels (on the drawing) are described below:

1. The left column lists the standard alarms. Select an item in this list to edit it.
2. The two boxes at the top lists the standard alarm condition and measurement that defines the highlighted item in alarms list. You can use these boxes to change the condition and measurement for this alarm.
3. Select the “Enable” box to enable the selected (highlighted) alarm in the list, or clear the box to disable the alarm.

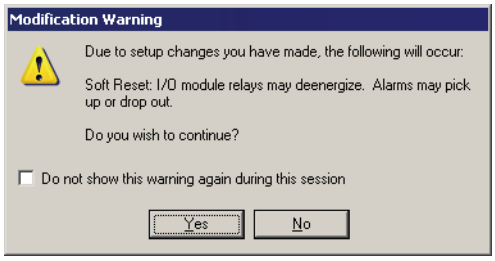
4. The “Label” box identifies the name of the standard alarm. Use this box to rename the alarm as necessary (e.g., if you changed the condition or measurement for the standard alarm).
5. Enter the setpoint pickup value (absolute or relative, see item #7 below) and the pickup delay (in seconds).
6. Enter the setpoint dropout value (absolute or relative, see item #7 below) and the dropout delay (in seconds).
7. To specify absolute values for the setpoint pickup and dropout limits, clear (uncheck) the “Relative (% of Avg)” box. To specify setpoint pickup and dropout limits as a percentage above or below the RMS average value (Avg), select (check) the “Relative (% of Avg)” box.
8. Use the “Priority” box to set the alarm priority.
9. Use the “Data Logs” check boxes to select which onboard data log(s) are used to record the selected alarm.
10. Select the “Waveform Capture” box to trigger a waveform capture on alarm, or clear the box to disable waveform capture on alarm.
11. If you want to trigger a digital output or relay on an alarm, click the **Output** button, select one of the available outputs, then click the ›› button to move it to the “Selected” column. Click **OK**.
12. To create a new alarm, click **Add**, then specify the alarm condition and measurement, as described in the previous steps.

NOTE

There is a limit to the number of alarms you can create. The **Add** button is disabled once that limit is reached. In this case, you must delete an existing alarm before you can create a new one (or you can select an existing alarm and edit/configure it as necessary).

13. To delete an alarm, select it from the alarms list, then click **Delete**.

To save the changes to the meter, click **Send**. Depending on the type of changes, a meter reset might occur:

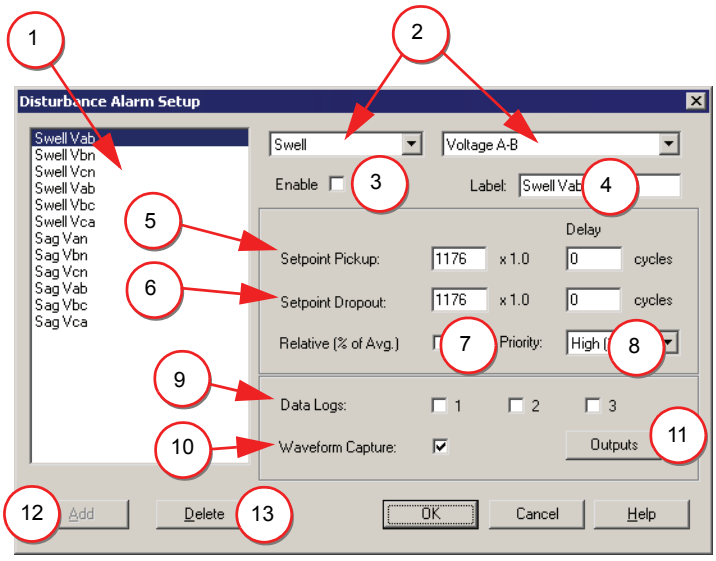


Note that clicking **Yes** will power-cycle (reset) the device. Click **Yes** to confirm and proceed with your changes, or **No** to cancel and go back to the previous dialog.

For more information on configuring the alarms, refer to the *PM800 series Reference Manual*.

Disturbance (PM870 only)

This allows you to configure the disturbance alarms (i.e. voltage sags and swells). Select “Disturbance” then click **Edit**.



The numbered labels (on the drawing) are described below:

1. The left column lists the disturbance alarms. Select an item in this list to edit it.
2. The two boxes at the top lists the disturbance alarm condition and measurement that defines the highlighted item in alarms list. You can use these boxes to change the condition (sag or swell) and measurement (current or voltage) for a selected alarm.
3. Select the “Enable” box to enable the selected (highlighted) alarm in the list, or clear the box to disable the alarm.
4. The “Label” box identifies the name of the disturbance alarm. Use this box to rename the alarm as necessary (e.g., if you changed the condition/ measurement for the disturbance alarm).
5. Enter the setpoint pickup value (absolute or relative, see item #7 below) and the pickup delay (in **number of cycles**).
6. Enter the setpoint dropout value (absolute or relative, see item #7 below) and the dropout delay (in **number of cycles**).
7. To specify absolute values for the setpoint pickup and dropout limits, clear (uncheck) the “Relative (% of Avg)” box. To specify setpoint pickup and dropout limits as a percentage above or below the RMS average value, select (check) the “Relative (% of Avg)” box.
8. Use the “Priority” box to set the alarm priority.
9. Use the “Data Logs” check boxes to select which onboard data log(s) are used to record the selected alarm.
10. Select the “Waveform Capture” box to trigger a waveform capture on alarm, or clear the box if you do not want to trigger a waveform capture on alarm.

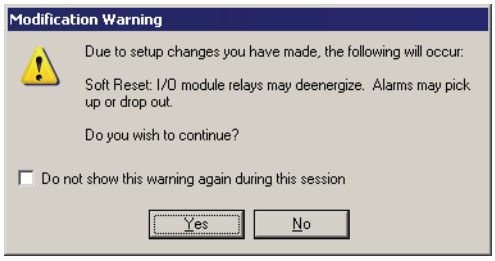
11. If you want to trigger a digital output or relay on an alarm, click the **Output** button, select one of the available outputs, then click the >> button to move it to the "Selected" column. Click **OK**.
12. To create a new alarm, click **Add**, then specify the alarm condition and measurement, as described in the previous steps.

NOTE

There is a limit to the number of alarms you can create. The **Add** button is disabled once that limit is reached. In this case, you must delete an existing alarm before you can create a new one (or you can select an existing alarm and configure it as necessary).

13. To delete an alarm, select it from the alarms list, then click **Delete**.

To save the changes to the meter, click **Send**. Depending on the type of changes, a meter reset might occur:

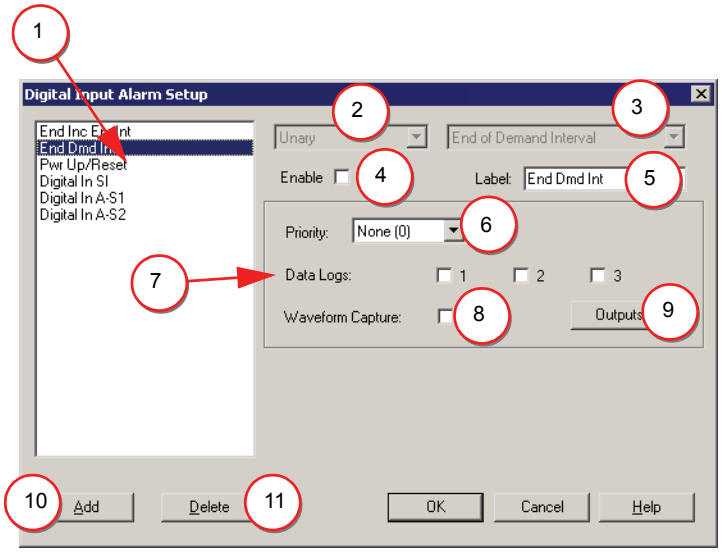


Note that clicking **Yes** will power-cycle (reset) the device. Click **Yes** to confirm and proceed with your changes, or **No** to cancel and go back to the previous dialog.

For more information on configuring the alarms, refer to the *PM800 series Reference Manual*.

Digital

This allows you to configure the digital input alarms. Select “Digital” then click **Edit**.

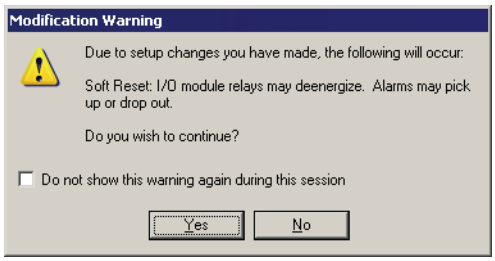


The numbered labels (on the drawing) are described below:

1. The left column lists the digital input alarms. Select an item in this list to edit it.
2. This defines the alarm condition.
   - Select “Status Input On” to set the alarm when the digital input changes from off to on.
   - Select “Status Input Off” to set the alarm when the digital input changes from on to off.
   - The “End of incremental energy interval” (End Inc Enr Int), “End of demand interval” (End Dmd Int) and “Power up/reset” (Pwr Up/Reset) alarms are unary type alarms because they use internal signals from the power meter, and cannot be changed through this setup screen. Refer to the meter documentation for more information.
3. Depending on the I/O module installed on your meter, this allows you to select one of the available digital inputs. Note that this is not configurable for unary type alarms — see item #2 above.
4. Select the “Enable” check box to enable the selected (highlighted) alarm in the list, or clear the box to disable the alarm.
5. The “Label” box identifies the name of the digital alarm. Type in this box to rename the alarm as necessary.
6. Use the “Priority” box to set the priority for the selected alarm.
7. Use the “Data Logs” check boxes to select which onboard data log(s) are used to record the selected alarm.
8. Select the “Waveform Capture” check box to trigger a waveform capture on alarm, or clear the box to if you do not want to trigger a waveform capture on alarm.

9. If you want to trigger a digital output or relay on an alarm, click the **Output** button, select one of the available outputs, then click the >> button to move it to the “Selected” column. Click **OK**.
10. To create a new alarm, click **Add**, then specify the alarm type and select the digital input, as described in the previous steps.
11. To delete an alarm, select it from the alarms list, then click **Delete**.

To save the changes to the meter, click **Send**. Depending on the type of changes, a meter reset might occur:



Note that clicking **Yes** will power-cycle (reset) the device. Click **Yes** to confirm and proceed with your changes, or **No** to cancel and go back to the previous dialog.

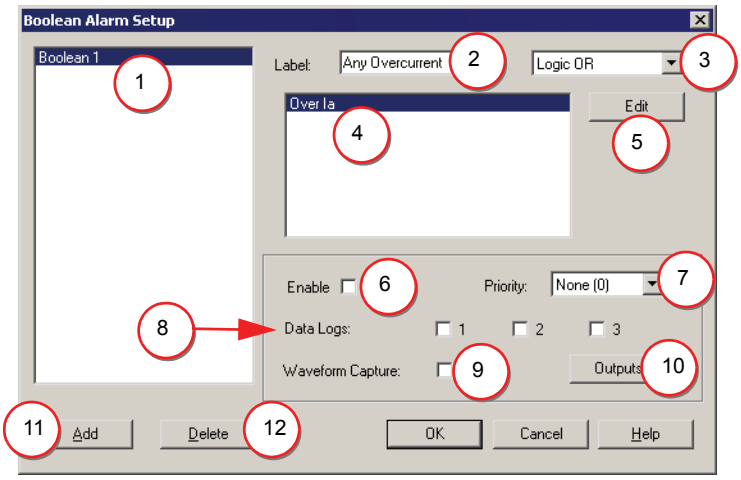
For more information on configuring the alarms, refer to the *PM800 series Reference Manual*.

Boolean

This allows you to configure the Boolean alarms. Select “Boolean” then click **Edit**.

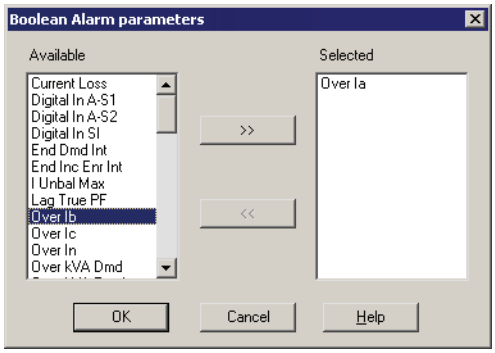
NOTE

If you haven’t set up any Boolean alarms yet, click **Add** to create a Boolean alarm.



1. Select a Boolean alarm to edit it.
2. Use the “Label” box to rename the selected Boolean alarm (e.g. “Any Overcurrent”).

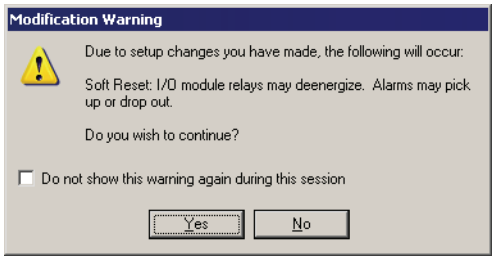
3. Select the type of logic operation (e.g., “Logic OR”) you want to use to test for the alarm condition.
4. This box lists the alarm parameters used for the Boolean logic test.
5. Click **Edit** to add or remove alarm parameters.



Select an alarm parameter under “Available”, then click the >> button to move it to “Selected”. If you want to remove a parameter, select it under “Selected”, then click the << button.

6. Select the “Enable” check box to enable the selected (highlighted) alarm in the list, or clear the box to disable the alarm.
7. Use the “Priority” box to set the priority for the selected alarm.
8. Use the “Data Logs” check boxes to select which onboard data log(s) are used to record the selected alarm.
9. Select the “Waveform Capture” box to trigger a waveform capture on alarm, or clear the box if you do not want to trigger a waveform capture on alarm.
10. If you want to trigger a digital output or relay on an alarm, click the **Output** button, select one of the available outputs, then click >> button to move it to “Selected”. Click **OK**.
11. To create a new Boolean alarm, click **Add**, then specify the alarm type and select the digital input, as described in the previous steps.
12. To delete an alarm, select it from the alarms list, then click **Delete**.

To save the changes to the meter, click **Send**. Depending on the type of changes, a meter reset might occur:



Note that clicking **Yes** will power-cycle (reset) the device. Click **Yes** to confirm and proceed with your changes, or **No** to cancel and go back to the previous dialog.

Shift Energy

This allows you to group energy usage and cost according to three different time shifts inside a 24-hour period (for example, three 8-hour shifts).

First Shift Start, Second Shift Start, Third Shift Start

Use these settings to select what time the first, second or third shift starts.

Cost Scale Factor

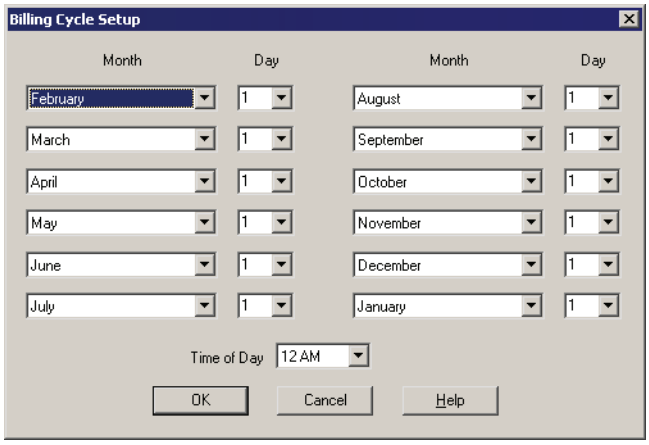
Select the multiplier used when calculating energy cost.

First Shift Cost (per kWh), Second Shift Cost (per kWh), Third Shift Cost (per kWh)

Use these settings to enter the cost per kWh for each shift.

Billing Cycle Setup

Select this then click Edit to set up the billing cycle.



Use the “Month” and “Day” boxes to select meter reading dates. Use the “Time of Day” box to select the hour the meter reading is performed.

Trending & Forecasting

Feature Control

Select the appropriate option to enable or disable this feature.

Register Trend Item

Select one of the available quantities you would like to trend, or select “User Defined”.

User Defined Register

Select one of the available items for trending.

User Defined Scaling

Select the appropriate multiplier for the item selected for trending.

User Defined Label

Enter a descriptive name you want for the item selected for trending.

Waveform Capture

Waveform capture is supported on the PM850 and PM870. The PM870 allows you to select and configure the waveform capture.

Status

Select the appropriate option to enable or disable this feature.

File Mode

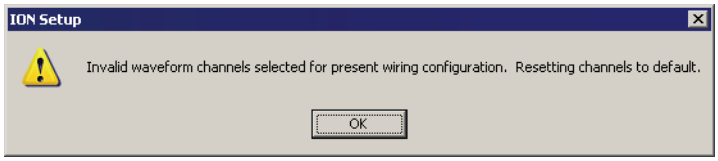
Select which method is used for storing waveforms:

- "FIFO" (first-in-first-out) mode discards the oldest waveform capture when the waveform storage is full.
- "Fill and Hold" mode keeps the oldest waveform capture and does not record new ones when the waveform storage becomes full.

Channels (PM870 only)

This allows you to select which inputs you want to set up for waveform capture. Select "Channels" then click **Edit**.

Depending on your wiring configuration, certain inputs become N/A (not applicable). If this is the case, ION Setup displays this prompt:



1. Select the voltage and/or current input channels you want to capture. Click **Next**.
2. Set the capture options:
   - Samples/Cycle
   - Duration (cycles)
   - Pre-Event Cycles

   Max Capture indicates the maximum number of recordings for waveform capture, and is shown for informational purpose only.

Chapter 4 Branch circuit power meter

The PowerLogic™ Branch circuit power meter provides a cost effective solution for electrical load management of power distribution units (PDU) or remote power panels (RPP). The meter monitors up to 84 branch circuits and the incoming mains. Three feature sets are available for the Branch circuit power meter:

- Advanced: current, power and energy per circuit and mains
- Intermediate: current per circuit, power and energy on mains only
- Basic: current only per circuit and mains

The Branch circuit power meter is available in two versions: BCPM and BCPMSC.

BCPM (solid core CTs)

The BCPM is suitable for new installations, and features 100 Amp solid core CTs (current transducers) mounted on a circuit board strip. The 2 CT strip model supports one panel, while the 4 CT strip model supports two panels. Each panel can monitor 42 branch circuits (i.e. 84 branch circuits for the 4 CT strip model).

BCPMSC (split core CTs)

The BCPMSC is suitable for retrofit applications, and can monitor up to 84 branch circuits (42 branch circuits per panel), using 50 Amp or 100 Amp split core CTs (current transducers).

For more information, warnings and safety precautions, refer to the *BCPM Installation Guide* or *BCPMSC Installation Guide*.

In this chapter

Branch circuit power meter Device Settings

Before using ION Setup, make sure the meter's communications settings have been configured, as explained in the *BCPM Installation Guide* or *BCPMSC Installation Guide*.

Device communications settings

The Branch circuit power meter uses Modbus RTU protocol to communicate through its RS-485 serial communications port. All devices on the same RS-485 loop must be set to the same baud rate and parity. The recommended setting for direct serial communications is 8N1 (8 data bits, no parity, 1 stop bit).

Device address (Unit ID) settings

The Branch circuit power meter supports two device addresses (one each for Panel 1 and Panel 2). Panel 1 address is set using the Communications Address DIP switch on the Branch circuit power meter. Panel 2 address is automatically set to the next higher address (i.e., Panel 1 address + 1).

Each panel in use must therefore be entered as a separate BCPM device in ION Setup. Panel 1 and Panel 2 for a particular Branch circuit power meter are added as two "meters" in ION Setup, as follows:

- To set up Panel 1, add a BCPM device in ION Setup and set its Unit ID to match the Communications Address DIP switch setting on the Branch circuit power meter.
- To set up Panel 2, add another BCPM device in ION Setup and set its Unit ID to the next higher address (i.e., Panel 1 address + 1).

NOTE

The device address must be unique for each device on the same communications bus.

Device address considerations

Adopting a standard for assigning device addresses for the Branch circuit power meter is highly recommended. For example, you can implement a device address assignment convention, such as (2n - 1), that specifically allows only odd numbered addresses for Panel 1 of the Branch circuit power meter. Using this convention, an even numbered device address (2n) is always associated with Panel 2 for a particular BCPM. For example, if you set the Unit ID for Panel 1 to "19", the Unit ID for Panel 2 is automatically set to "20" (i.e., 19 + 1).

Device naming considerations

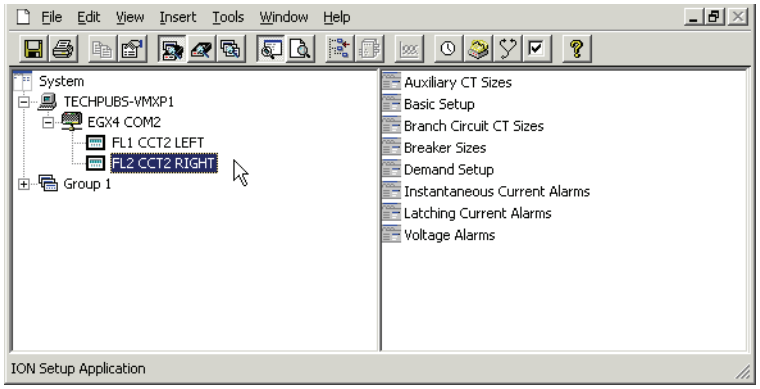
Adopting a standard device naming convention for the Branch circuit power meter is highly recommended so that Panel 1 and Panel 2 for the same BCPM device can be easily identified.

Configuring the Branch circuit power meter

This section assumes you have a good working knowledge of ION Setup. Refer to the online help to learn how to add and configure sites and meters.

Adding the Branch circuit power meter

1. Log on to ION Setup in Network mode. See the “Starting, Logging On and Logging Off” section of the ION Setup Help for more information on the operation modes, and starting and logging onto ION Setup.
2. Add the RS-485 gateway site where the Branch circuit power meter is physically connected (or select the site, if it has already been set up).
3. For Panel 1 of the Branch circuit power meter, add a meter to the site:
   - Device Type = BCPM
   - Unit ID = Communications Address DIP switch setting
   - Name = name associated with Panel 1 of the Branch circuit power meter
4. If Panel 2 of the Branch circuit power meter is used, add another meter:
   - Device Type = BCPM
   - Unit ID = Panel 1 Unit ID **+ 1**
   - Name = name associated with Panel 2 of the Branch circuit power meter



5. Use the setup screens to configure the BCPM device for Panel 1. Repeat for Panel 2, if applicable.

BCPM Setup Screens

The following sections describe what setup screens are available on the BCPM device. Some setup parameters only apply to particular models/options.

Basic Setup

Configuration

Select the option that corresponds to how the CT strips or adapter boards are arranged and installed inside the panel. Refer to the installation guide for details.

Location

Type a name that identifies each panel and/or describes its physical location.

Auxiliary CT Sizes

Auxiliary #1 (Amps) to Auxiliary #4 (Amps)

These define the Auxiliary or “Mains” CT size (typically 200 A). Type the appropriate numeric value for each auxiliary CT installed in the panel.

Branch Circuit CT Sizes

Channel #1 (Amps) to Channel #42 (Amps)

These define the Channel or “Branch” CT size. For the BCPM, this is set to 100 A. For the BCPMSC, select the appropriate CT size (50 A or 100 A) to match the split core CT installed on the corresponding channel, or select “Disabled” to turn off (disable) that particular channel.

Breaker Sizes

Auxiliary #1 (Amps) to Auxiliary #4 (Amps)

These define the Auxiliary or “Mains” breaker size (typically 225 A). Type the appropriate numeric value for each auxiliary breaker in the panel. For unused breakers, set the value to 0 (zero) to disable alarms for those channels.

Channel #1 (Amps) to Channel #42 (Amps)

These define the Channel or “Branch” breaker size (typically 20 A). Type the appropriate numeric value for each channel breaker in the panel. Enter a value of zero (“0”) to disable alarms for that particular channel (e.g., for unused channels, or to temporarily disable alarms when performing routine maintenance on the breaker circuit).

Demand Setup

Demand is the average power consumption over a fixed time interval (demand period), typically 15 minutes. Demand values are calculated for each sub-interval, then averaged over the number of sub-intervals that make up the demand period.

Number of Sub-intervals

Type the number of sub-intervals used for calculating demand (default = 1).

Sub-interval Length (secs)

Type the number of seconds for each sub-interval (default = 900 seconds).

Instantaneous Current Alarms

The instantaneous current alarm setup parameters define the maximum (high alarm) and minimum (low alarm) limits for all branch and main circuits monitored by the Branch circuit power meter. Instantaneous current alarms are ON only if the alarm conditions are met. These alarms are reset automatically (alarm is turned OFF or cleared when circuit current returns to the normal range).

High Alarm Threshold

Type the instantaneous current value, expressed as a percentage of the breaker size (default = 60%). When the circuit current exceeds that value, the high current alarm is activated. To disable this alarm, set value = 0 (zero).

- **Example**: If the threshold is set to 60%, the high alarm would be activated when instantaneous current for a 20 A breaker exceeds 12 A (i.e., 20 A x 0.60).

Low Alarm Threshold

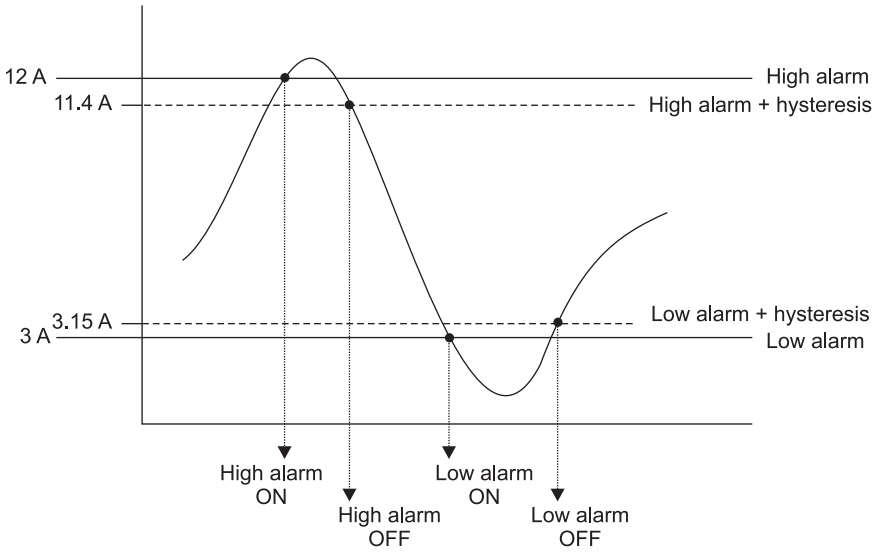
Type the instantaneous current value, expressed as a percentage of the breaker size (default = 5%). When the circuit current falls below that value, the low current alarm is activated. To disable this alarm, set value = 0 (zero).

- **Example**: If the threshold is set to 5%, the low alarm would be activated when instantaneous current for a 20 A breaker drops below 1 A (i.e., 20 A x 0.05).

Hysteresis

Type the value, expressed as a percentage of the alarm threshold, that defines how much the circuit current must fall below the High alarm threshold or rise above the Low alarm threshold to determine the alarm's "OFF" state (default = 5%). To disable the instantaneous current alarms, set Hysteresis to zero (0%).

- **Example**: If hysteresis is set to 5%, the "OFF" state for a high alarm threshold of 12 A would be at 11.4 A and below (i.e., 12 A minus (12 A x 0.05)), while the "OFF" state for a low alarm threshold of 3 A would be at 3.15 A and above (i.e., 3 A plus (3 A x 0.05)).



Latching Current Alarms

The latching current alarm setup parameters define the alarm delay (timer) and threshold (limit) for all branch and main circuits monitored by the Branch circuit power meter. Latched alarms remain ON until the user resets or clears the alarms.

The alarm delay setting defines how many seconds a circuit needs to be in an alarm state (i.e., exceeds the high or high-high alarm threshold, or falls below the low or low-low alarm threshold) before the alarm is activated. A return to normal (non-alarm) state is instantaneous, so the alarm delay timer is reset if the current in the circuit returns to normal state before the timer expires.

The alarm threshold setting defines the limit for a high current or low current alarm state, expressed as a percentage of the breaker size.

High-High Alarm Delay (s)

Type the number of seconds the current in a circuit needs to be continuously above the High-High Alarm Threshold before the High-High alarm is activated (default = 10 s).

High Alarm Delay (s)

Type the number of seconds the current in a circuit needs to be continuously above the High Alarm Threshold before the High alarm is activated (default = 10 s).

Low Alarm Delay (s)

Type the number of seconds the current in a circuit needs to be continuously below the Low Alarm Threshold before the Low alarm is activated (default = 10 s).

Low-Low Alarm Delay (s)

Type the number of seconds the current in a circuit needs to be continuously below the Low-Low Alarm Threshold before the Low-Low alarm is activated (default = 10 s).

Latching Alarm On Time (s)

Type the number of seconds the current in a circuit needs to stay above the low-low alarm threshold level before the latching alarms are armed/enabled (default = 10 s).

Latching Alarm Off Time (s)

Type the number of seconds the current in a circuit needs to be below the Low-Low Alarm Threshold level before the latching alarm is deactivated (default = 30 s). After this point, on this channel, all latching alarms are disabled.

High-High Alarm Threshold (%)

Type the limit for the High-High current alarm state, expressed as a percentage of the breaker size (default = 70%). For example, the High-High alarm threshold for a 20 A breaker is 14 A (i.e., 20 x 0.70). To disable this alarm (for all channels) set its threshold value to 0%.

High Alarm Threshold (%)

Type the limit for the High current alarm state, expressed as a percentage of the breaker size (default = 60%). For example, the High alarm threshold for a 20 A breaker is 12 A (i.e., 20 x 0.60). To disable this alarm (for all channels) set its threshold value to 0%.

Low Alarm Threshold (%)

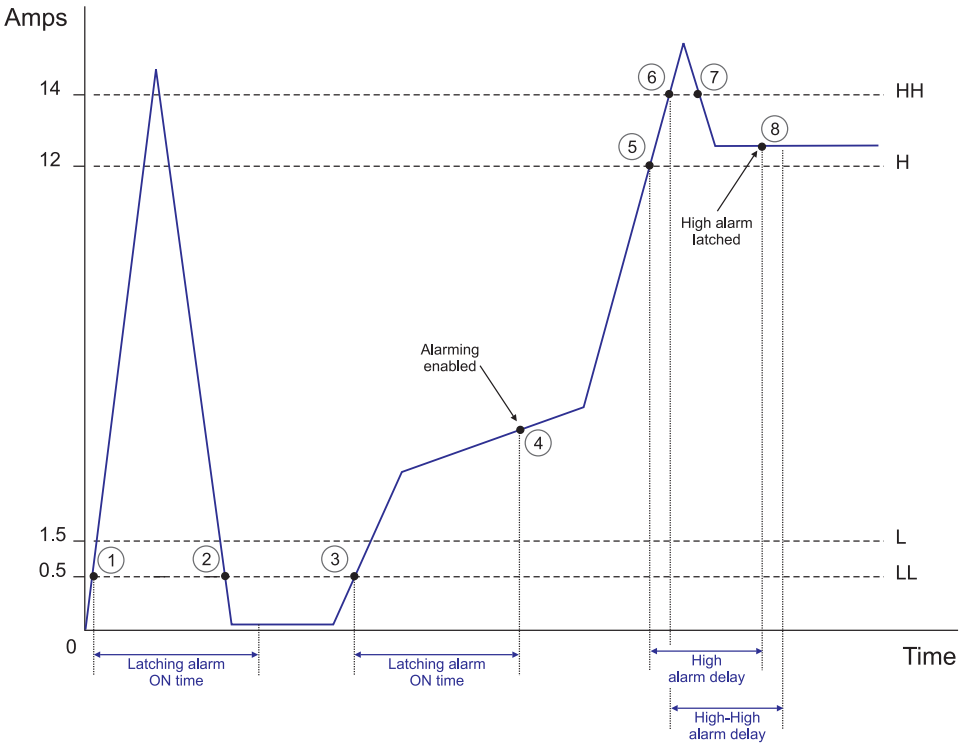
Type the limit for the Low current alarm state, expressed as a percentage of the breaker size (default = 7.5%). For example, the Low alarm threshold for a 20 A breaker is 1.5 A (i.e., 20 x 0.075). To disable this alarm (for all channels) set its threshold value to 0%.

Low-Low Alarm Threshold (%)

Type the limit for the Low-Low current alarm state, expressed as a percentage of the breaker size (default = 2.5%). For example, the Low-Low alarm threshold for a 20 A breaker is 0.5 A (i.e., 20 x 0.025). To disable this alarm (for all channels) set its threshold value to 0%.

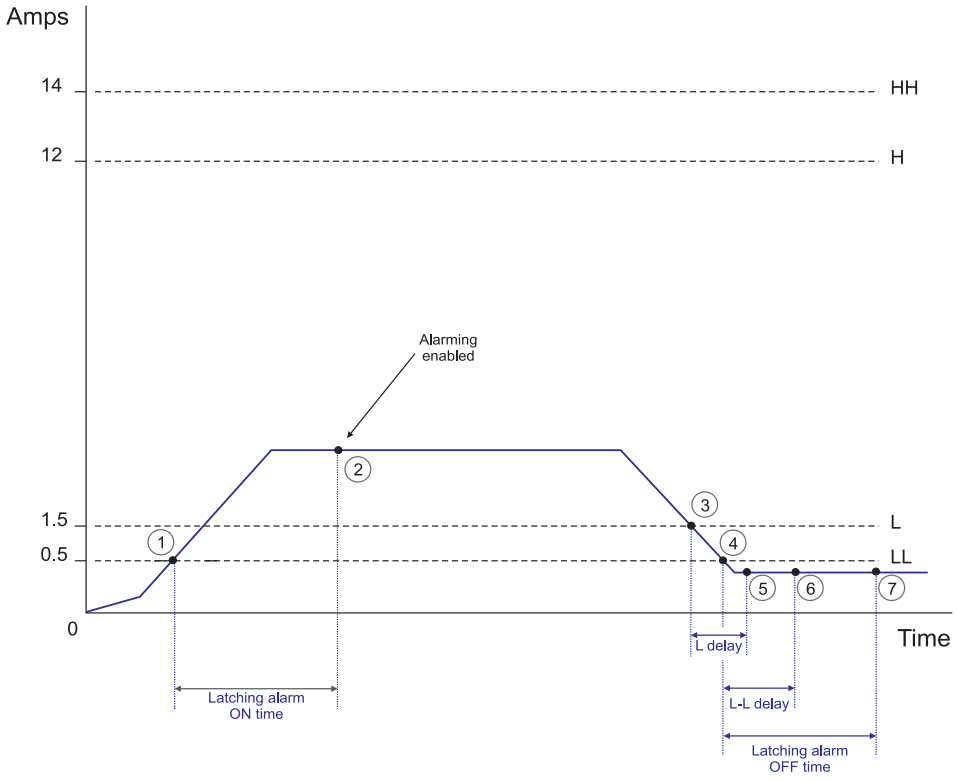
Latching alarm examples

Example 1



1. Current rises above LL (low-low alarm threshold) — this starts the zero current alarm ON timer.
2. Current drops below LL before the zero current alarm ON time period ends, so alarming is not enabled. The zero current alarm ON timer is reset.
3. Current rises above LL — this starts the zero current alarm ON timer.
4. Current remains above the low-low alarm threshold, beyond the time period specified by the zero current alarm ON time setting — this enables the latching alarms (all latching alarms are armed).
5. Current rises above H (high alarm threshold) — this starts the high alarm delay timer.
6. Current rises above HH (high-high alarm threshold) — this starts the high-high alarm delay timer.
7. Current drops below HH before the high-high alarm delay period ends, so the high-high alarm delay timer is reset.
8. High alarm is latched at the end of the high alarm delay time period.

Example 2



1. Current rises above LL (low-low alarm threshold) — this starts the zero current alarm ON timer.
2. Current remains above the low-low alarm threshold, beyond the time period specified by the zero current alarm ON time setting — this enables the latching alarms (all latching alarms are armed).
3. Current drops below L (low alarm threshold) — this starts the low alarm delay timer.
4. Current drops below LL (low-low alarm threshold) — this starts the low-low alarm delay timer **and** the zero current alarm delay timer.
5. Low alarm is latched at the end of the L delay (low alarm delay) time period.
6. Low-low alarm is latched at the end of the L-L delay (low-low alarm delay) time period.
7. Current remains below the low-low alarm threshold, beyond the time period specified in the zero current alarm delay time setting, thus latching the zero current alarm.

Voltage Alarms

The voltage alarm setup parameters define the alarm delay (timer) and threshold (limit) for voltage inputs monitored by the BCPM / BCPMSC (if your BCPM / BCPMSC model option supports this feature).

The alarm delay setting defines how many seconds a voltage input needs to be in an alarm state (i.e. exceeds the over voltage alarm threshold, or falls below the under voltage alarm threshold) before the alarm is activated. A return to normal (non-alarm) state is instantaneous, so the alarm delay timer is reset if the voltage returns to normal state before the timer expires.

The alarm threshold setting defines the limit for a high voltage or low voltage alarm state, expressed as a percentage of the breaker size. To disable an alarm, set its threshold value to 0 (zero) Volts.

Over Voltage Delay (s)

Type the number of seconds the voltage needs to be continuously above the Over Voltage Threshold level before the Over Voltage alarm is activated.

Under Voltage Delay (s)

Type the number of seconds the voltage needs to be continuously below the Under Voltage Threshold level before the Under Voltage alarm is activated.

Over Voltage Threshold (V)

Type the limit for the Over Voltage alarm state, in Volts. To disable this alarm (for all voltage inputs) set its threshold value to 0 Volts.

Under Voltage Threshold (V)

Type the limit for the Under Voltage alarm state, in Volts. To disable this alarm (for all voltage inputs) set its threshold value to 0 Volts.

Voltage Alarm Hysteresis (%)

Type the value, expressed as a percentage of the alarm threshold, that defines how much the voltage must fall below the Over voltage threshold or rise above the Under voltage threshold, to determine the alarm's "OFF" state.

- **Example**: If the Over Voltage Threshold is set to 270 V and the Under Voltage Threshold is set to 200 V, a 5% hysteresis would result in an over voltage alarm "OFF" state at 256.5 V and below (i.e. 270 V minus (270 V x 0.05)), and an under voltage alarm "OFF" state at 190 V and above (i.e., 200 V minus (200 V x 0.05)).

Chapter 5 Enercept Meter

The Enercept meter is a cost-effective solution for standard energy metering applications. It combines easy-to-install split-core CTs and highly accurate digital metering and communications electronics in the same package. Its unique design reduces installation costs by eliminating the need for a separate meter enclosure or to disconnect conductors.

There are two models of the Enercept meter. The Basic model reports power and energy, while the Enhanced model provides multiple parameters, including power, demand, energy, amps, volts, power factor, and reactive power.

For more information, refer to the meter documentation available from www.powerlogic.com.

In this chapter

Enercept Meter Setup

Before using ION Setup, make sure all the communications settings for the Enercept meter has been configured, as explained in the meter documentation.

The Enercept meter uses Modbus RTU protocol to communicate through its RS-485 serial communications port.

- **Device communications settings**: Make sure all the devices on the same RS-485 loop are set to the same baud rate and parity. The Enercept operates at 9600 baud and uses 8N1 format (8 data bits, No parity, 1 stop bit).
- **Device address (unit ID) settings**: Make sure the device address (unit ID) is unique for each device in a given RS-485 loop (range = 1 to 247 for Modbus devices). If the Enercept meter is connected on the same RS-485 loop as devices using POWERLOGIC protocol, **do not use address 16** (likewise, address 0 or 1 must not be used for the POWERLOGIC protocol devices). Refer to the Enercept meter documentation for more information.

Using ION Setup

Use Network mode in ION Setup to add and configure the Enercept meter. See the “Starting, Logging On and Logging Off” section of the ION Setup Help for more information on the operation modes, and starting and logging onto ION Setup.

Refer to the ION Setup online help for information on adding sites and meters.

Enercept Setup Screens

Basic setup parameters are available only for the Enhanced model of the Enercept meter. Enhanced models can be identified by the prefix “E” in the part number, while Basic models are identified by the prefix “B”.

Basic Setup

System Type

Select the option that describes how your Enercept meter is connected to the electrical service. Refer to the meter documentation for typical installation examples.

Number of Sub-Intervals

Enter the number of sub-intervals used for calculating demand. Demand is the average power consumption over a fixed time period (demand period), typically 15 minutes. Demand values are calculated for each sub-interval, then averaged over the number of sub-intervals that make up the demand period.

Sub-Interval Length

Select the time duration for each sub-interval (in minutes), or select "Sync to Comm" to start the demand interval using a command from the monitoring software, such as PowerLogic™ System Manager Software (SMS).

Enercept Data Screen

ION Setup supports real-time data display for the Enercept meter:

1. While the Enercept meter is selected, click **View** > **Data Screens** (or click the button).
2. Double-click the RealTime icon to display the data from the Enercept.

Resetting Energy and Demand Values

You can reset Demand Period, Peak Demand or kWh by clicking the appropriate button. Enter the password when prompted (default is “0”).

Chapter 6 ION6200 Power and Energy Meter

The PowerLogic™ ION6200 power and energy meter is low-cost, compact and has a big, bright LED display for increased visibility in poor lighting conditions.

In this chapter

ION6200 Meter Setup

Before using ION Setup, make sure all the communications settings for the ION6200 have been configured, as explained in the *ION6200 Installation and Operation Guide*.

The ION6200 uses either the PML or Modbus RTU protocol to communicate through its RS-485 serial communications port.

NOTE

If the ION6200 is set to Modbus communications protocol ("MOD"), select the device type "Modbus RTU Device" when adding it to the ION Setup network. If the protocol is set to "PML", select the device type "ION6200".

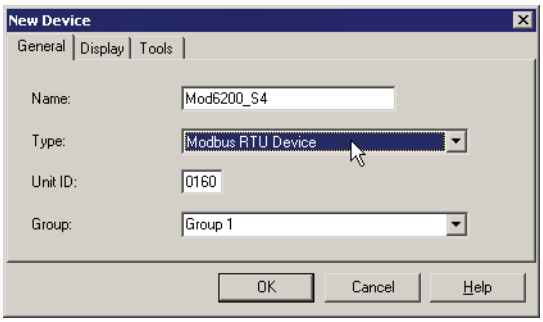
You can change the protocol setting using the front panel (or remote) display of the ION6200. Use Network mode in ION Setup to connect to the ION6200 meter; see the "Starting, Logging On and Logging Off" section of the ION Setup Help for more information on the operation modes, and starting and logging onto ION Setup.

Adding the ION6200 as a Modbus device

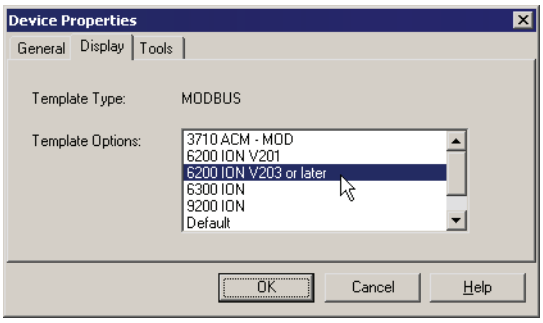
To add the ION6200 as a Modbus RTU device, first use the meter's front panel or remote display to set the communications protocol to Modbus. Refer to the *ION6200 Installation and Operation Guide* for details.

Using ION Setup

1. Add the ION6200 to a site (to a Modbus gateway site, for example) and select "Modbus RTU device" for device type.



2. Click the Display tab, select the appropriate template option for the ION6200, then click **OK**.



Adding the ION6200 as an ION device

To add the ION6200 as an ION device, use the meter's front panel or remote display to set the communications protocol to ION. Refer to the *ION6200 Installation and Operation Guide* for details.

Use ION Setup to add the ION6200 to a site (to an Ethernet gateway site, for example) and select "ION6200" for device type. Click **OK**.

ION6200 Setup Screens

The following sections describe what setup screens are available on the ION6200 meter.

Basic Setup

Use the Basic Setup screen to configure the setup register so the meter displays the correct power monitoring values.

Volts Mode

Select the option that describes how your ION6200 meter is wired to the electrical service.

PT Primary

Enter the value for the PT (potential transformer) primary, in Volts.

PT Secondary

Enter the value for the PT secondary, in Volts.

NOTE

If a PT is not used, enter the system's nominal voltage for both the PT Primary and PT Secondary settings (e.g., voltage L-L for Direct Delta connection).

CT Primary

Enter the value for the CT (current transformer) primary, in Amps.

CT Secondary

Enter the value for the CT secondary, in Amps.

Communications

When ION Setup connects to the ION6200, the meter's communications settings are displayed on the Communications setup screen.

NOTE

Altering the settings of a communications channel that is in use can cause a loss of communications with the meter.

Baud Rate

Displays the meter's serial communications baud rate setting.

Protocol

Displays the meter's serial communications protocol setting.

NOTE

The “Factory” protocol is only used by Technical Support for troubleshooting purposes.

Unit ID

Displays the meter’s unit ID.

RTS Delay

Displays the RTS (ready-to-send) delay setting for the meter’s serial communication.

Demand

Demand is the average power consumption over a fixed time period (demand period), typically 15 minutes. Demand values are calculated for each sub-interval, then averaged over the number of sub-intervals that make up the demand period.

Period (mins)

This is the time duration for each sub-interval, in minutes.

# of Intervals

This is the number of demand periods (sub-intervals). Enter the number of sub-intervals used for calculating demand.

Display

Use the Display setup screen to configure how the front panel/remote display behaves.

Scroll Time

Enter the number of seconds until the next set of values is displayed on the front panel. To disable scrolling, set Scroll Time to 0 (zero).

Refresh Period

Enter the number of seconds until the front panel display refreshes its values.

Outputs

The Kt (pulse weight, or time constant) value defines the amount of energy (e.g., kWh, kVAh, kVARh) represented by each calibration pulse of the meter’s LED or digital output.

Kt Digital Output 1

This defines the Kt value for digital output #1.

Kt Digital Output 2

This defines the Kt value for digital output #2.

Kt IRDA

This applies only to ION6200 meters with firmware v207 and earlier versions, and defines the Kt value for the infrared data port when used for energy pulsing.

Digital Output 1 Mode

For digital output #1, select energy pulsing (kWh, kVAh, kVARh) or external pulsing (Ext).

Digital Output 2 Mode

For digital output #1, select energy pulsing (kWh, kVAh, kVARh) or external pulsing (Ext).

IRDA Mode

Only applies to ION6200 meters with firmware v207 and earlier. This is used to set the infrared data port for energy pulsing (kWh, kVAh, kVARh) or external pulsing (Ext).

Scaling

The following Modbus scaling registers should not be changed from their default settings unless Modbus protocol is being used. Changes to these registers affect only the values displayed in software (they have no effect on values displayed on the ION6200 front panel). To set the scaling, select the appropriate multiplier ("x 0.001", "x 0.01", "x 0.1", "x 1", "x 10", "x 100" or "x 1000").

Modbus Scaling Registers

- Voltage Scale
- Current Scale
- Neutral Scale
- Power Scale

Wiring Setup

The following parameters allow you to change the polarity of the individual voltage and current inputs so that they match how the PTs and CTs are oriented in the electrical system. Default is set to Normal for all inputs. You can change the setting to Inverted as required:

Wiring Setup Registers

- V1 Polarity,
- V2 Polarity
- V3 Polarity
- I1 Polarity
- I2 Polarity
- I3 Polarity

PowerLogic ION™ Setup 2.2
Device Configuration Guide

Schneider Electric
2195 Keating Cross Road
Saanichton, BC V8M 2A5 Canada

For technical support:
Global-PMC-Tech-support@schneider-electric.com
(250) 652-7100

Contact your local Schneider Electric sales representative for assistance or go to www.powerlogic.com

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