PowerLogic™ ION™ Setup 3.0

Meter configuration software
User guide

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Schneider Electric
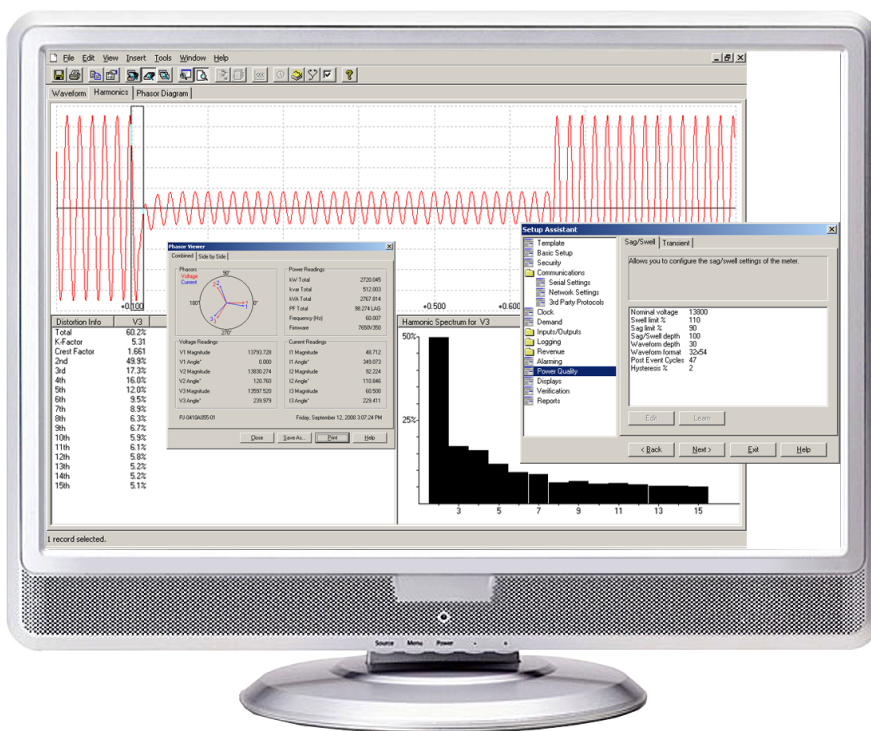
Contents

Safety information

Important information

Read these instructions carefully and look at the equipment to become familiar with the device before trying to install, operate, service or maintain it. The following special messages may appear throughout this bulletin or on the equipment to warn of potential hazards or to call attention to information that clarifies or simplifies a procedure.

The addition of either symbol to a "Danger" or "Warning" safety label indicates that an electrical hazard exists which will result in personal injury if the instructions are not followed.

This is the safety alert symbol. It is used to alert you to potential personal injury hazards. Obey all safety messages that follow this symbol to avoid possible injury or death.

⚠ DANGER

DANGER indicates an imminently hazardous situation which, if not avoided, **will result in** death or serious injury.

⚠ WARNING

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

⚠ CAUTION

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

NOTICE

NOTICE is used to address practices not related to physical injury. The safety alert symbol shall not be used with this signal word.

Please note

Electrical equipment should be installed, operated, serviced and maintained only by qualified personnel. No responsibility is assumed by Schneider Electric for any consequences arising out of the use of this material.

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

Chapter 1: Safety precautions

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

⚠ DANGER

HAZARD OF ELECTRICAL SHOCK, EXPLOSION OR ARC FLASH

- Apply appropriate personal protective equipment (PPE) and follow safe electrical work practices. See NFPA 70E in the USA or applicable local standards.

- Electrical equipment must only be installed and serviced by qualified electrical personnel.

- Turn of all power supplying a device and the equipment in which it is installed before working on the device or equipment.

- Always use a properly rated voltage sensing device to confirm that all power is off.

- Replace all devices, doors and covers before turning on power to this equipment.

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

⚠ WARNING

UNINTENDED EQUIPMENT OPERATION

Do not use ION Setup and associated devices for critical control or protection applications where human or equipment safety relies on the operation of the control circuit.

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

⚠ WARNING

INACCURATE DATA RESULTS

- Do not incorrectly configure ION Setup and its associated devices; this can lead to incorrect reports and/or data results.

- Do not rely solely on reports or data results to determine if ION Setup and its associated devices are functioning correctly or meeting all applicable standards and compliances.

- Do not use reports or data results as substitutes for proper workplace practices or equipment maintenance; they are supplemental only.

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

Chapter 2: Introduction

PowerLogic™ ION™ Setup is a user-friendly configuration tool that provides an intuitive environment for setting up and verifying settings on PowerLogic meters and other devices. Devices can be configured over communications links whether they are locally or remotely located. Hard drive footprint and memory requirements for ION Setup are minimal, so it is easy to install and use.

Typically, you can perform basic setup through the meter's front panel or remote display. ION Setup is mainly used for configuring advanced features of the device, or for setting up a device that does not have a front panel or remote display.

In this section

ION Setup features

ION Setup software provides configuration support for a wide variety of devices.

Note

The devices supported by ION Setup are subject to change. Please contact Schneider Electric for the latest information.

Devices	Basic Configuration Method		Real-time Data Display
	Setup Screens	**Setup Assistant**	
Branch Circuit Power Meter (BCPM and BCPMSC)	yes[1]		
Enercept	yes[1]		yes
E5600	yes[1]		yes
ION6200	yes[1]		yes
ION7300 / ION7330 / ION7350		yes	yes
ION7550 / ION7650 / ION7550 RTU		yes	yes
ION8600		yes	yes
ION8650		yes	yes
ION8800		yes	yes
PM5350	yes		
PM700 series	yes[1]		
PM800 series	yes[1]		
Legacy Devices			
3000 series	yes		yes
ION6300	yes		
ION7700		yes	yes
ION7500 / ION7600 / ION7500 RTU		yes	yes
ION8300 / ION8400 / ION8500		yes	yes
[1] For instructions on configuring these devices, refer to the *ION Setup Device Configuration Guide*.			

In addition, ION Setup provides an environment for historical trending, disturbance and harmonics display, as well as remote control capabilities (if the device supports those features).

ION Setup also features on-screen plotting of waveforms, time of use (TOU) functionality, communications diagnostics, template customization and pasting, and support for up to 255 sites with up to 128 devices in each site.

Your first installation (Network Builder Wizard)

The Network Builder Wizard opens the first time ION Setup is run. This wizard allows the user to quickly and easily set up and configure their first system made up of sites, groups, and devices. See to learn about using the wizard.

System requirements

- Microsoft Windows 7 (32- and 64-bit versions), Windows Vista, Windows XP, or Windows 2000
- Mouse or pointing device
- VGA display
- 1 gigahertz (GHz) or faster 32-bit (x86) processor
- 1 gigabyte (GB) RAM (32-bit) or more
- 100 MB available hard-drive space or more
- DirectX 9 graphics device with WDDM 1.0 or higher driver

Overview

This ION Setup User guide is designed to introduce you to ION Setup software to quickly get your system up and running.

You should use this guide:

- To learn about the main features of ION Setup.
- To view the main windows of ION Setup and find out how each is used.
- To read an overview of the ION Setup workflow and tasks.

Assumptions

This guide assumes that:

- You have a working knowledge of electrical systems.
- You are familiar with your Windows operating systems and the devices in your system.
- You have a working knowledge of networked environments, including client/server systems.
- You have read and you understand the installation, basic setup and all other procedures and warnings in the documentation for the devices in your system.
- All hardware, software, and network components of your computer system have been installed and configured according to their instructions, and they are operating correctly.

Where to learn more

This section describes additional resources for learning ION Setup.

Online help

The ION Setup online help is your primary source of information. Use the online help to:

- Read step-by-step procedures for all ION Setup tasks.
- Find out how the options in any ION Setup window will affect your software.

- Search for information about a topic or keyword.

To access online help

- Select **Help > Contents** from the menu in any ION Setup window, or click ⬛ in the toolbar or the help button in any dialog box to display help information.

To search for a topic in the online help index:

1. Click the **Search** tab on the left side of the help index window.

2. In the box at the top of the **Search** tab, type a keyword and click **List Topics**.

3. Double-click on a topic to display it, or select the topic and click **Display**. The topic is displayed and the search word or phrase is highlighted.

Home page

In ION Setup, select **Help > Visit Home Page** to access the following information:

- Technical Support
- News
- ION Setup Home
- Documentation
- FAQs
- Downloads

Getting more information

Documentation for other Schneider Electric products is available at www.schneider-electric.com.

Installing ION Setup

To install ION Setup, download the IONSetup.exe file from www.schneider-electric.com. Double-click the IONSetup.exe file to begin installing onto your local workstation.

Upgrading from previous versions of ION Setup

When upgrading ION Setup, the installer asks if you want to overwrite your existing default Setup Assistant configuration:

- Select **Yes** to make use of the upgraded functionality of the Setup Assistants.

  Any custom Setup Assistants that were created (separate from the default Setup Assistant) will then remain after upgrading.

- Select **No** if the default Setup Assistant files were customized and you want to retain those files after upgrading.

Note

> To uninstall ION Setup, double-click IONSetup.exe, select **Remove**, and click **Next**. Select **Yes** when prompted to completely remove the application and all of its features. Navigate to the location where ION Setup was installed to verify that all ION Setup files have been removed.

Communicating with devices

ION Setup uses one or more ports to communicate with the devices at each site in the system. Each port of the workstation running ION Setup can connect to one or more remote sites using a variety of communications hardware options. The next sections discuss general considerations when using different communications hardware options, including:

- Serial communications:
    - direct connection to a single device using RS-232
    - direct connection to multiple devices using RS-485
    - direct connection to a single device using an optical probe
- Ethernet and Ethernet gateway communications
- Modem communications to remote sites (through telephone lines, radio links, fibre optic cables, microwave links, etc.).

For detailed information on configuring devices with these communications options, see . For details on configuring devices using offline programming, see .

Using serial communications

ION Setup supports the RS-485 and RS-232 communications standards. If the device is equipped with an RS-232 port, you can use an RS-232 cable to directly connect the device to an available serial port on the computer.

To connect to more than one serial device, you can use an RS-232 to RS-485 communications converter. The RS-232 port on the converter connects to the computer's serial port, and the RS-485 port connects to up to 32 RS-485 devices.

| A | Workstation | B | RS-232 to RS-485 converter | C | RS-485 devices (maximum 32) |
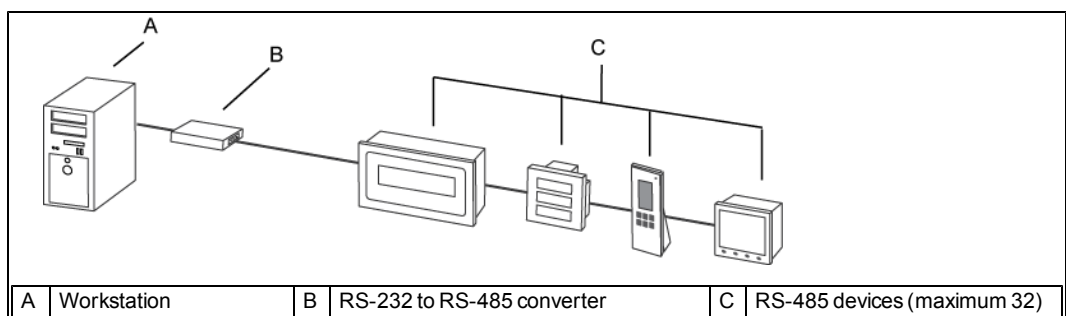
Make sure the serial communications parameters are set correctly for each device (for example, protocol, baud rate, parity and unique device address/unit ID). For serial communications at 9600 baud, ION Setup polls at roughly one device per second.

For instructions on communicating with serial devices, see

Connecting to serial devices

If you want to connect your computer to a single meter, you can use either RS-232 or RS-485:

- If the computer is less than 50 ft (15 m) from the meter, use either RS-232 or RS-485.

- If the computer is more than 50 ft (15 m) from the meter, but less than 4000 ft (1200 m), use RS-485.

To connect your workstation to more than one meter, you must use RS-485. In this case, you need either:

- an RS-485 communications port on the computer, OR

- an RS-232 communications port and an RS-232 to RS-485 converter. Communications converters such as the COM32 or COM128 (legacy products) can support up to 32 and 128 devices, respectively.

NOTICE

EQUIPMENT DAMAGE

Do not connect the RS-232 terminals with the RS-485 terminals of any device.

Failure to follow these instructions can result in equipment damage.

Directly connecting a single device using RS-232

Use a suitable RS-232 cable to connect your workstation directly to a single ION meter. Both the workstation and the meter must have RS-232 communications ports. With a direct RS-232 link, only one meter can be connected to each serial port of the workstation. Refer to the meter's installation manual for details on RS-232 communications connections.

Directly connecting multiple devices using RS-485

An RS-485 communications link allows you to connect your workstation to up to thirty-two devices using shielded twisted-pair wire. If your workstation is not equipped with an internal RS-485 communications card, you can connect an external RS-232 to RS-485 converter to the computer's RS-232 serial port.

Note

> Before connecting any communications cables, confirm that each device's communication port has been correctly configured. Refer to the meter's technical documentation for instructions on changing the communications configuration.

COM128 (legacy device) considerations

Below are the suggested DIP switch settings for the COM128 RS-232 to RS-485 communications converter (refer to the installation and operation manual for a complete list of mode settings):

Mode	Port	Baud	SW1	SW2	SW3	SW4	SW5	SW6
RS-485 Flow Control with Auto Baud Rate Detect (Modem)	DCE	N/A	OFF	ON	OFF	ON	ON	OFF
RS-485 Flow Control with Hardware RTS (Serial)	DCE	N/A	ON	OFF	ON	ON	ON	OFF

Optical probes

ION Setup supports optical probe communications for meters equipped with compatible optical IR ports. Refer to "Optical probe communications" on page 51 for details.

Using modem communications

Modem communications requires two or more compatible modems: one modem is located at each remote site (connected to one or more serial devices) and one is located at the workstation (connected to the computer's serial port). ION Setup uses the local modem to dial the remote modems' telephone number and establish communications.

A	Workstation	B	Local modem	C	Telephone line
D	Remote modem	E	RS-232 to RS-485 converter	F	RS-485 devices
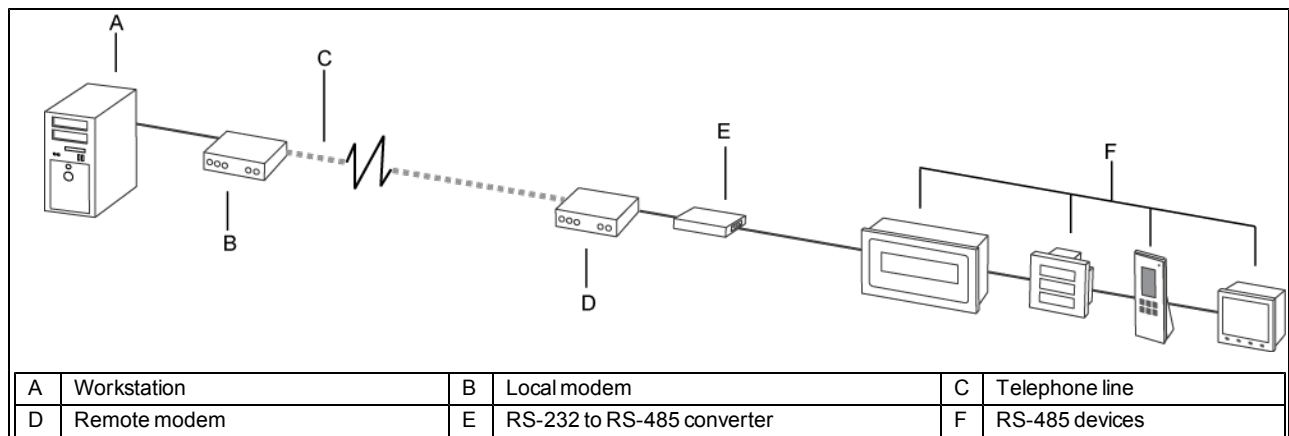
The modems can connect via any communication channel, including the public switched telephone network (PSTN), a dedicated or leased telephone line, a fiber-optic link, a radio modem, and so on.

Each remote site may contain one or more meters, with appropriate communication connections (RS-485 for multiple devices at a single site and RS-485 or RS-232 for a single device). Any site using an RS-485 communication link also requires an RS-232 to RS-485 converter to connect to the modem.

Note

RS-232 permits only one device to be connected to a modem. Use an RS-232 to RS-485 converter if more than one device will be installed at the remote site.

For instructions on communicating with devices using modem communications, see "Adding and configuring devices" on page 47.

ModemGate feature

Some ION meters are equipped with an internal modem that you can set up as a communications gateway to connect to multiple RS-485 devices (e.g., on a remote site). For more information, refer to the technical note *The ION meter as a ModemGate* available at www.schneider-electric.com.

Manually operating modems

Note

To stop modem communications (for example, if the remote modem is not responding), press the ESC key on your keyboard. When you do this, ION Setup attempts to stop modem communication.

ION Setup automatically dials a modem site when you view information from a meter at that site, but it does not automatically disconnect until requested to do so. To manually control a modem connection:

1. Select **Tools > Modem Control** (or click 🐞 on the toolbar). All the sites that are currently connected via modem are listed in the **Modem Sites** dialog box.

2. To connect to a site, select the site you want to connect to and click **Dial**. (If this button is unavailable, it means the modem site is already connected. To terminate a connection and hang up the modem, click **Hang Up**.

3. Click **Close** to close the dialog box.

Using Ethernet communications

If the device is equipped with Ethernet communications, you can use an Ethernet cable to connect it to your local or wide area network (LAN/WAN).

Make sure the Ethernet communications parameters are set correctly for each device (for example, IP address, subnet mask, default gateway, media type). Refer to your device's installation manual for details on Ethernet connections.

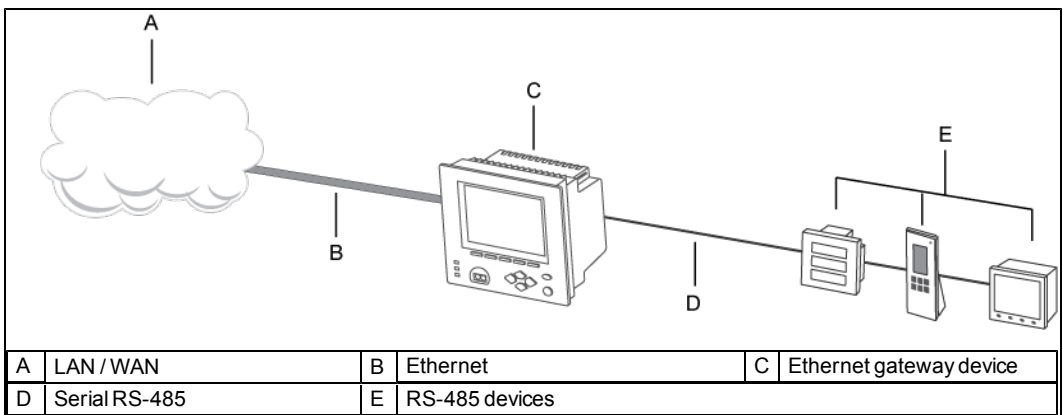| A	LAN / WAN	B	Ethernet devices
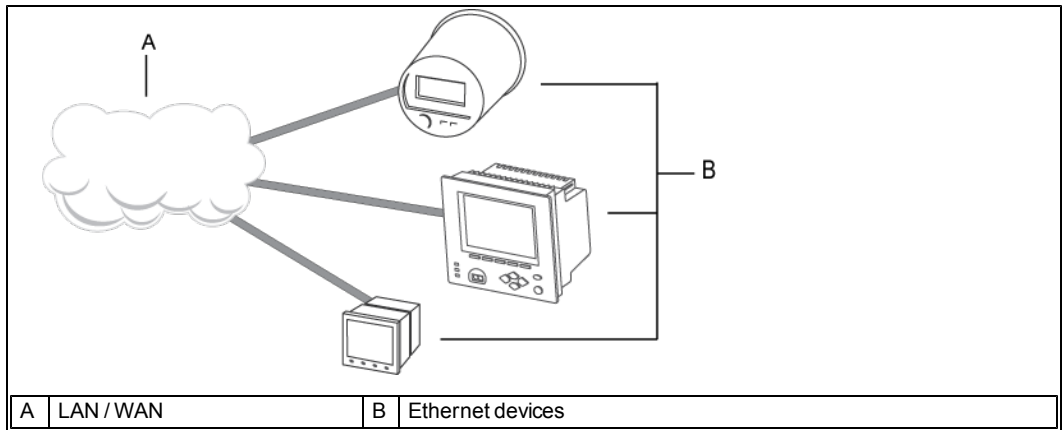
For instructions on communicating with Ethernet devices, see "Adding and configuring devices" on page 47.

Using Ethernet Gateways or Modbus gateways

Some Ethernet-capable devices can also serve as communications gateways. An Ethernet gateway device provides a communications link between its Ethernet port and its serial port. The gateway device receives TCP data on its Ethernet port, converts the data to RTU and sends the converted data to its serial port(s) and vice versa. This allows communication with the serial devices over Ethernet.

For example, a Modbus Ethernet gateway receives Modbus TCP data on its Ethernet port, converts the data to Modbus RTU and sends the converted data to devices connected to its serial port(s).

A	LAN / WAN	B	Ethernet	C	Ethernet gateway device
D	Serial RS-485	E	RS-485 devices		

Some devices can function as both metering points and gateways. This type of communications topology is typically used in applications where you have a high-end meter monitoring the incoming supply at the service entrance and mid-range meters monitoring the feeders.

For instructions on communicating with devices using an Ethernet or Modbus gateway, see .

General Ethernet gateway considerations

Before adding an Ethernet gateway to ION Setup, make sure that your gateway meter is connected to the Ethernet, your serial network of meters are wired to the gateway meter and basic setup has been performed on each device, including the gateway meter). Refer to the device documentation for detailed instructions.

Typical parameters that you need to configure are:

• Ethernet gateway device: IP address, subnet mask, the TCP/IP port number used to communicate with the serial port, and (depending on the gateway device) the protocol of the serial communications port to which the serial devices are connected.

• Serial devices: baud rate, unit ID, protocol and parity.

Additional settings may need to be configured — refer to the documentation that came with your Ethernet gateway device.

Recommended settings to avoid communications issues:

• Baud rate, protocol and data format settings need to be the same for all the connected serial devices.

• Each serial device must have a unique Unit ID.

• The gateway device must have the same baud rate and data format settings as the connected serial devices, if these can be configured.

EGX series considerations

The PowerLogic™ EGX series gateway only supports the Modbus gateway. They can provide Ethernet access to multiple RS-485 devices that are connected to the EGX's RS-485 port. After wiring the RS-485 devices to the EGX, use a web browser to log in to the EGX. Navigate to the device list page and enter each device that is connected to the EGX's RS-485 port. Set the appropriate device address and device type for each device. Refer to the *EGX Series Installation Guide* for more information.

After you add the devices to the EGX's web page, you must add an Ethernet gateway site to ION Setup and then add those devices to the gateway site. See for more information.

PM8ECC considerations

Similar to the EGX series gateway, the PM8ECCEthernet communications card only supports the Modbus gateway. The card provides Ethernet access to multiple RS-485 devices that are connected to the PM8ECC's RS-485 port. After wiring the RS-485 devices to the PM8ECC, use a web browser to log in to the PM8ECC. Browse to the device list page and enter each device that is connected to the PM8ECC's RS-485 port. Set the appropriate device address and device type for each device. Refer to the *PM8ECC Installation Guide*.

After you add the devices to the web page, you must add an Ethernet gateway site to ION Setup and then add those devices to the gateway site. See "Adding and configuring devices" on page 47 for more information.

ION meter EtherGate considerations

When an Ethernet-capable ION meter has EtherGate enabled, a workstation using ION Setup software can communicate through the meter to a serial device (or devices) wired to the appropriate serial communications port of the EtherGate-enabled meter.

When you configure the EtherGate-enabled meter (in addition to the general settings listed above), the protocol for the serial communications port must be set to EtherGate.

For more information on using your meter as an EtherGate, refer to the gateway meter's documentation and the technical note *The ION Meter as an Ethernet Gateway* available at www.schneider-electric.com.

Note

To connect to and read data from your EtherGate meter, in addition to the serial devices, add the meter as a stand-alone Ethernet meter in ION Setup. See "Adding a new device" on page 60.

ION7550 / ION7650 Modbus gateway

ION7550 / ION7650 meters (firmware v350 or later) also support Modbus gateway communications. This allows you to use the meter to provide Modbus RTU communications support for up to 16 downstream Modbus RTU devices on the same serial communications loop.

When you configure the meter as a Modbus gateway (in addition to the general settings listed above), the protocol for the serial communications port must be set to Modbus Master. You do not need to set the TCP/IP port; for Modbus TCP communications, the Ethernet IP port is hard-coded to port 502 on ION7550/ION7650 meters.

List of common procedures

This section lists procedures commonly performed in ION Setup:

How do I...?

- Add a new meter: "Adding a new device" on page 60

- Add a new site: "Adding and configuring sites" on page 56

- Apply TOU profiles: "Time of Use (TOU) screen" on page 112

- Assign a device to a group: "Assigning a device to a group" on page 61

- Clone a meter configuration: "ION meter cloning" on page 78

- Configure interval/depth: "Configuring Interval/Depth" on page 109

- Create new ION modules: "Creating new ION modules " on page 75

- Create your first installation: "Starting your first installation (Network Builder wizard)" on page 27

- Create or edit custom register labels: "Customizing ION module output register labels" on page 78

- Create or modify user accounts: "Applying security" on page 43

- Delete links between modules: "Deleting links between ION modules" on page 77

- Edit site properties: "Editing site properties" on page 62

- Find exceptions to cloning: "ION meter cloning" on page 78

- Log off: "Logging off or shutting down ION Setup" on page 27

- Log on: "Starting, logging on and logging off" on page 24

- Open multiple data screens: "Opening multiple data screens at the same time " on page 131

- Plot historical data: "Chart plotting" on page 132

- Remove a group, site, or device from the network: "Removing items from the network" on page 61

- Select output registers: "Editing meter properties" on page 64

- Switch between setup screen and data screen views: "Viewing options" on page 35

- Switch between basic and advanced configuration modes: "Basic versus Advanced Mode" on page 37

- View ION module output registers: "Viewing ION module output registers" on page 78

Chapter 3: Configuring ION Setup

This section describes ION Setup logon and logoff procedures, how to establish user accounts, and how to implement security features.

In this section

Starting, logging on and logging off

The following sections outline the initial start up of ION Setup, logon options and procedures and how to exit and log off.

Starting ION Setup

The following sections outline the startup modes for ION Setup and the procedures for initial and subsequent ION Setup startup.

Startup and View modes

The following table outlines the ION Setup startup modes. You can configure these startup modes by:

- Selecting the option in the User Profiler dialog box that appears when you first run an installation of ION Setup. See "Starting your first installation (Network Builder wizard)" on page 27.

- Selecting the option from the Startup Mode list on the View tab of the Options dialog box (**Tools > Options**).

The startup mode that ION Setup is using determines the mode of operation (Network mode, Single Device mode, or a choice) and whether or not a username and password are required. For more information on the modes of operation, see "Single Device mode and Network mode " on page 48.

Note

You can only configure non-default users when in Power User Mode, and you cannot switch to other modes with non-default users configured without first deleting those users. If you configure users while in other modes, ION Setup switches to Power User mode.

Startup Mode	Description	Username / Password Required?	Mode of Operation
First Time User / Network Mode	This option launches ION Setup in Network Mode. If you select this mode the first time you launch ION Setup, the Network Builder Wizard appears; when you subsequently launch ION Setup, it opens in Network Mode.	No	Network
Metershop Technician Mode	This option launches ION Setup in Single Device mode, displaying the Connection Type dialog box.	No	Single Device
Power User Mode	This option prompts you for a username and password. You can choose to launch ION Setup in Network Mode or you can select the check box to launch in Single Device Mode.	Yes	Login dialog box allows you to select the view mode.

Starting an ION Setup installation for the first time

Note

If ION Setup does not appear on your Programs menu or one of its submenus, use the Find or Search feature from the Start menu to locate IONSetup.exe.

1. Click the ION Setup shortcut on your desktop (or click **Start > Programs**, point to the folder that contains ION Setup, then select ION Setup).

   The **User Profiler** dialog box appears.

2. Select the type of user that best fits your situation: First Time User, Metershop Technician, or Power User. See for a description of these options.

3. Click **OK**.

   - If you selected **First Time User**, the **Network Builder Wizard** appears.

   - If you selected **Metershop Technician**, the **Connection Type** dialog box appears.

   - If you selected **Power User**, the ION Setup **System Log On** dialog box appears. Select or clear the checkbox to run ION Setup in single device mode (selected) or network mode (cleared). Enter the default password of 0 (zero) and click **OK**. **The Network Viewer** appears if you are running ION Setup in network mode and if you have not yet created a network; the **Connection Type** dialog box appears if you are running ION Setup in single device mode.

Starting ION Setup after the Initial Startup

The procedure for starting ION Setup varies depending on the Startup Mode. If you are logging in with non-default username and password, you must start ION Setup in Power User Mode.

Starting ION Setup (Network Mode)

Double-click the ION Setup shortcut on your desktop (or click **Start > Programs**, point to the folder that contains ION Setup, then select ION Setup). ION Setup opens to the Network Viewer.

Starting ION Setup (Metershop Technician Mode)

Double-click the ION Setup shortcut on your desktop (or click **Start > Programs**, point to the folder that contains ION Setup, then select ION Setup). The **Connection Type** dialog box appears. See for more information on using the **Connection Type** dialog box.

Starting ION Setup (Power User Mode)

1. Click the ION Setup shortcut on your desktop (or click **Start > Programs**, point to the folder that contains ION Setup, then select ION Setup).

   The **ION Setup System Log On** dialog box appears.

2. Type your username and password.

3. Select or clear the checkbox for **Single ION device configuration mode** to launch ION Setup in Single Device mode or Network mode.
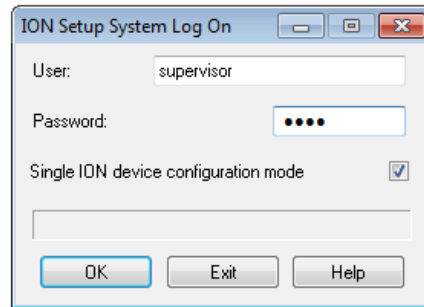
4. Click **OK**.

   Either the Connection Type dialog box or the Network Viewer appears. See "Single Device mode and Network mode " on page 48 for more information on the modes of operation.

Switching between startup modes

The following sections provide instructions on how to switch from your current startup mode to a different mode.

Switching from Power User mode

To switch from **Power User** mode to another startup mode:

1. Ensure that there are no non-default users configured in ION Setup. To do this, click **Tools > Options** and select the **Security** tab. Ensure there are no users in any of the user groups other than the default supervisor user in the Supervisor group.

2. Click on the **View** tab in the same dialog box and select the mode you want to switch to from the **Startup Mode** list.

3. Click **OK**. The next time you launch ION Setup, it will use the selected startup mode.

Switching from First Time User / Network mode

To switch from **First Time User** / **Network** mode to another startup mode:

1. Click **Tools > Options** and select the **View** tab.

2. Select the mode you want to switch to from the **Startup Mode** list.

3. Click **OK**. The next time you launch ION Setup, it will use the selected startup mode.

Switching from Metershop Technician mode

To switch from **Metershop Technician** mode to another startup mode:

1. Launch ION Setup. In the **Connection Type** dialog box, connect to a device or select **Off-Line** then select a firmware from the list (it does not matter which one).

2. Click **Exit** on the **Setup Assistant** dialog box (if it appears) then click **No** when prompted about saving your offline configuration or connecting to another device.

3. Click **Tools > Options** and select the **View** tab.

4. Select the mode you want to switch to from the **Startup Mode** list.

5. Click **OK**. The next time you launch ION Setup, it will use the selected startup mode.

Temporarily switching to Power User mode

To temporarily switch to **Power User** mode from **Metershop Technician** or **Network mode**:

1. Select **File > Exit**. The **Exit Options** dialog box appears.

2. Select **User Logoff** and click **OK**. The **System Log on** dialog box appears.

3. Select or clear the checkbox to open ION Setup in single device mode (selected) or network mode (cleared).

   The next time you start ION Setup, it reverts back to the original mode.

Logging off or shutting down ION Setup

Logging off from ION Setup exits your session and displays the ION Setup **System Log On** screen. Shutting down the program exits ION Setup completely.

To log off from or shut down ION Setup:

1. Select **File > Exit**.

   If you have made any network configuration changes, you are prompted to save the network configuration file (IONSetup.dat).

2. Click **OK** to save your changes. The next time you open ION Setup, your saved configuration changes appear. Click **No** to discard your changes. The **Exit Options** dialog box appears.

3. Select **User Logoff** or **Shutdown Program**, then click **OK**.

Starting your first installation (Network Builder wizard)

The Network Builder wizard opens the first time ION Setup is run. This wizard allows the user to quickly and easily set up and configure a first installation made up of sites, groups, and devices.

Note

If ION Setup does not appear on your **Programs** menu or one of its submenus, use the Find or Search feature from the **Start** menu to locate the program file IONSetup.exe.

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1. Click the ION Setup shortcut on your desktop (or click **Start > Programs**, point to the folder that contains ION Setup, then select ION Setup).

   • The **User Profiler** dialog box appears, and First Time User is selected.
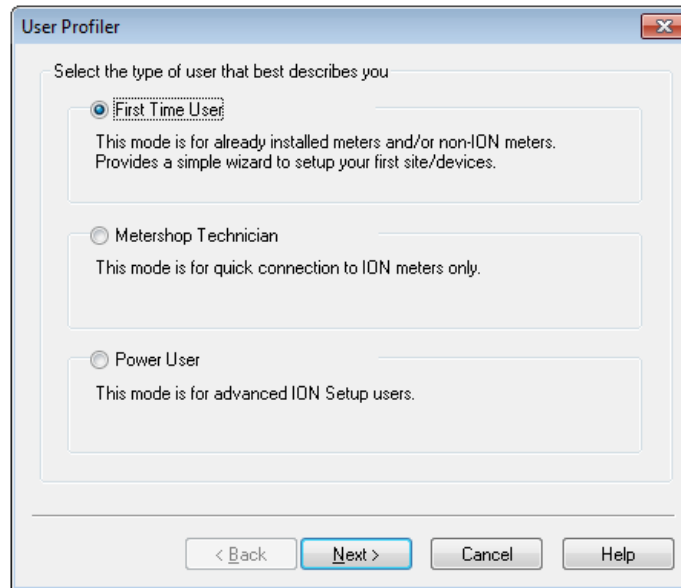
2. Click **Next**.

- The **Network Builder Wizard** dialog box appears.

If you are not a first-time user, see "Switching between startup modes" on page 26 for information about changing the mode to **Metershop Technician** or **Power User**.
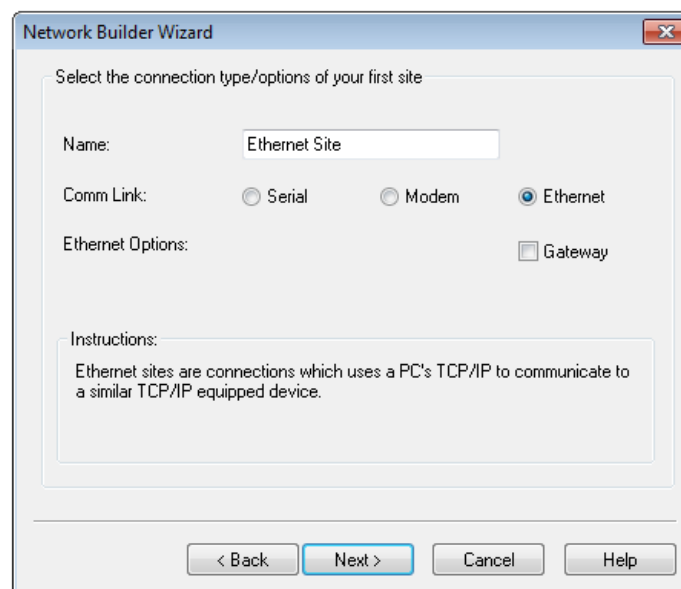
Creating your first installation

The following types of communications sites are available:

- Serial

- Modem

- Ethernet

- Ethergate or Modbus Gateway

To create your first site

1. Type a site name in the Name field.

2. Select a Serial, Modem, or Ethernet Comm Link type.

3. Depending on the Comm Link type you choose, select choices from the dropdown lists or enter necessary information in the fields for phone number, gateway information, etc..

4. Click **Next**.

   The Network Builder Wizard dialog box appears showing the first site created.
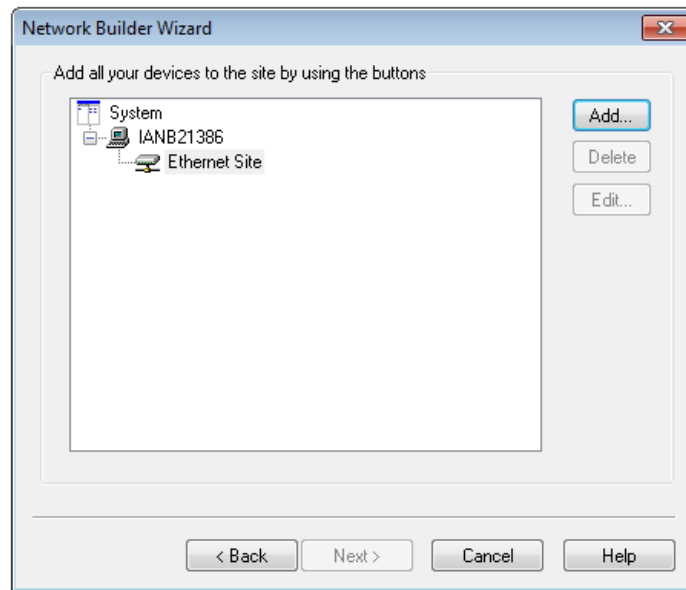
Related topics

- "Using modem communications" on page 51
- "Using serial communications" on page 51
- "Using Ethernet communications" on page 52

To add your first device

1. Select a **Comm Link** type, such as Ethernet Site.

2. Click **Add**.

   The **New Device** dialog box appears.
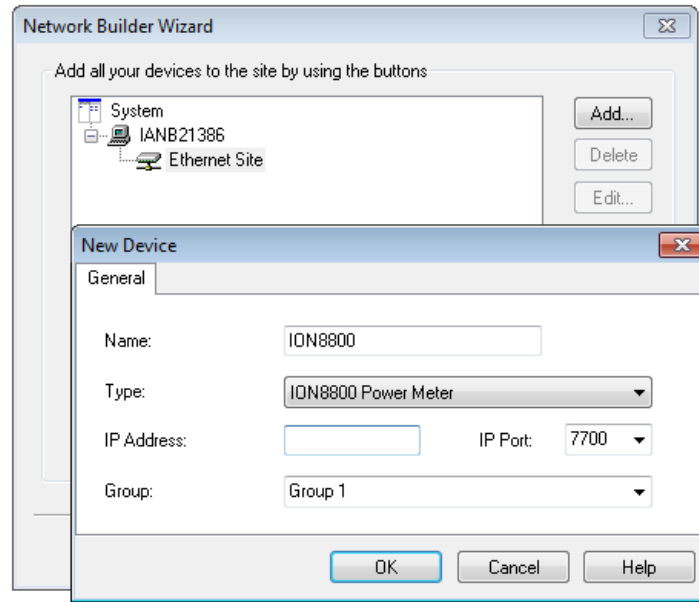
3. Type a name in the **Name** field. Note that names must begin with a letter (a-z, or A-Z).

4. Select your device from the dropdown list for **Type**.

5. Complete other fields as necessary.

6. Select a group name from the dropdown list for **Group**.

7. Click **OK**.

   The dialog box appears showing a new device added to the site.
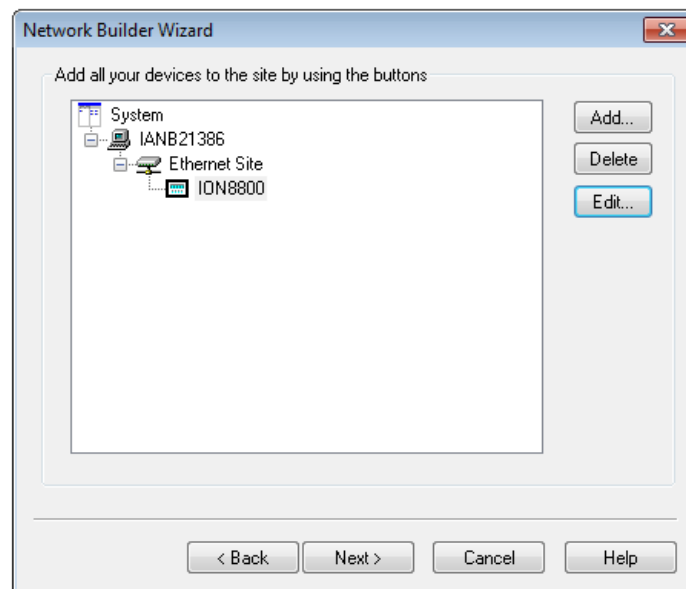
   Once you have added a device to a new site, the following dialog box appears. Click **Finish** to continue.
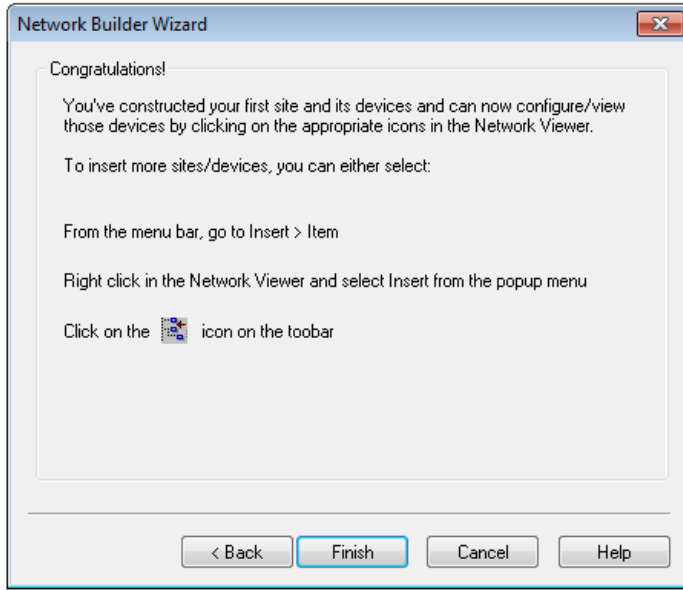
Related topics

- "Adding and configuring devices" on page 47

The next time you start ION Setup, the sites and devices you have added will be available in Network Mode where you can add, remove, or configure sites and devices to continue building your network.

Using the Network Viewer
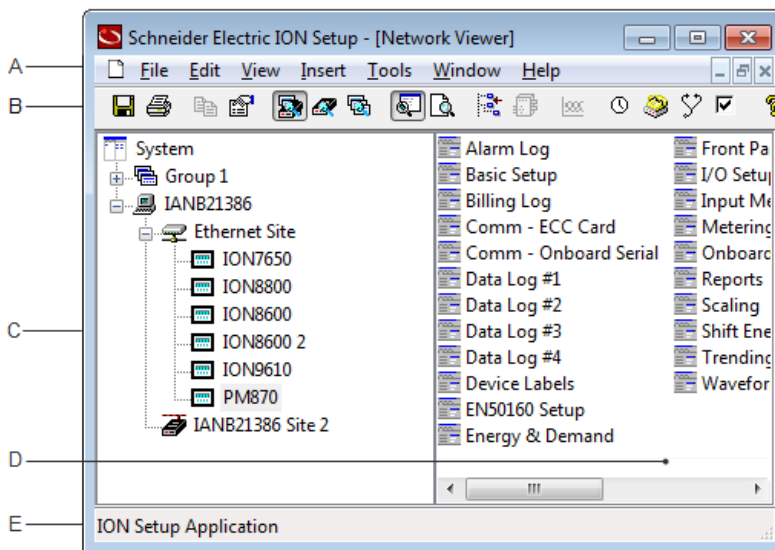
A	Menu bar	B	Tool bar	C	Left pane (Network Viewer)
D	Right pane (Content Viewer)	E	Status bar		

Menu bar

Selecting a heading on the menu displays a list of available commands. Use the mouse or keyboard to select a command from the menu bar.

To select a command from the menu bar:

1. Click on a menu (or press ALT and then type the underlined letter in the menu name). A list of commands appears.

2. Select the desired command (or type the underlined letter in the command). Some commands carry out an action immediately; commands followed by an ellipsis (...) display a dialog box where you can specify additional options.

In some cases, you can choose commands by typing a shortcut key combination (for example, pressing ALT+ ENTER on your keyboard activates the Properties command from the Item menu). When available, the shortcut key combination is displayed on the menu beside the command.

For a complete list of menu commands, refer to the topic "ION Setup commands" on page 33.

Toolbar

The toolbar consists of a row of buttons offering quick access to the commands that are used most frequently. Commands on the toolbar are also available from the menu bar. Note that depending on your selection and the view mode you are in, some toolbar buttons might be disabled.
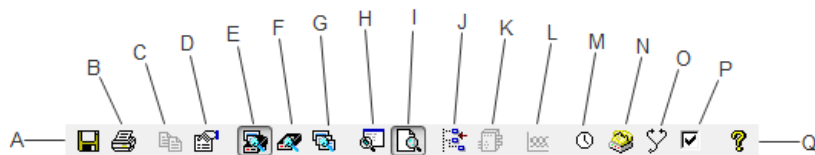
A	Save	B	Print	C	Copy
D	Edit Device Properties	E	View Sites and Groups	F	View Sites
G	View Groups	H	Display Setup Information	I	Display Data Information
J	Insert Item	K	Insert ION Module	L	Chart
M	Broadcast Time	N	Modem Options	O	Diagnostics
P	Change Options	Q	Help		

For descriptions of the above, refer to "ION Setup commands" on page 33.

Left and right panes

Below the toolbar is the main window split into two panes; the **Network Viewer** (left pane) and the **Content Viewer** (right pane).

Network Viewer (left pane)

The Network Viewer displays all the items in the ION Setup network configuration file in a Microsoft Explorer-type hierarchy. The Network Viewer displays your workstation and the sites and devices connected to it. The devices can be viewed by physical groupings (by site), by logical groupings (by groups) or both, depending on which view option is selected. Each item in the hierarchy is represented by an icon.

- To select an item, click the icon.
- To see what is beneath an item in the hierarchy, click the "+" beside the icon or double-click the item.
- Right-click an item to display the shortcut menu.

When you click an icon, ION Setup retrieves the necessary information from the selected device. This may take some time depending on the amount of data that must be retrieved and the speed of the connection. To abort the retrieval, press the ESC key on your keyboard.

Content Viewer (right pane)

The Content Viewer displays the contents of the item that is currently selected in the Network Viewer pane. For example, if you click on a site icon, the right pane displays all the devices in that site. If you select a group icon, it displays all the devices in that group. If you select a device, the right pane displays a collection of icons that represent either setup screens or data display screens (depending on which view option is selected).

The first time you run ION Setup, the right-hand side of the screen displays icons representing the different component of the item currently selected in the Network Viewer.

Status bar

The status bar displays the status of the application or a brief description of the currently selected command or toolbar button.
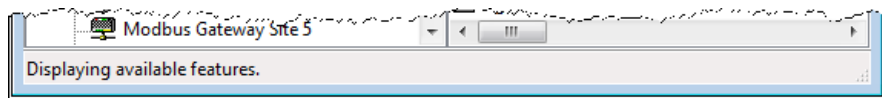
ION Setup commands

Below is a complete list of commands available from the menu bar. Note that some commands are disabled (grayed out), depending on your selection and the current view mode.

| Menu	Command	Effect
File	Save	Saves the network configuration file (ionsetup.dat)
	Page Setup	Determines the paper size and orientation for printing
	Print	Prints the active document
	Exit	Exits the ION Setup program

Menu	Command	Effect
Edit	Copy	Copies the selection to the clipboard
	Delete	Removes the selected item
	Properties	Displays the properties of the selected item
View		The View menu consist of two selection sets. The first set lets you display sites only, groups only, or both. The second selection set lets you set the display mode for configuring (setup screens) or viewing (data screens).
	Both Sites and Groups	Displays both site information and group information
	Sites	Displays only site information
	Groups	Displays only group information
	Setup Screens	Sets the screen for configuration only
	Data Screens	Sets the screen for displaying data only
Insert	Item	Displays the New Network Item dialog box, where you can add new groups, sites or meters
	Module	Creates a new ION module in the selected ION module folder (in Advanced mode only)
Tools	Chart Data	Displays the Chart Properties dialog box, where you can select the data you want to plot and determine the appearance of the chart
	Broadcast Time	Displays the Broadcast Time dialog box, where you can broadcast the present PC time to all the devices in one or more sites
	Modem Control	Displays the Modem Control dialog box, where you can select which modem site you want to dial
	Diagnostics	Displays diagnostics data for the selected item
	Options	Displays the Options dialog box, where you can set the directory location for ION Setup, view, confirmation, security, alarming and convention options
Window	Tile	Displays all open windows, arranged in non-overlapping tiles
	Cascade	Displays all open windows, arranged in an overlapping fashion (cascaded)
	Arrange Icons	Arranges the minimized window icons
	Close All Tables	Closes all open windows except the Network Viewer window
		You can also use the Window menu to select from multiple open windows. A list of open windows appears, with a check mark beside the active window. Select another window to change the active window.
Help	Contents	Displays the contents of ION Setup Help
	Visit home page	Provides link to www.schneider-electric.com.
	About ION Setup	Displays the version, build and copyright information for ION Setup

Shortcut menus

Shortcut menus are available in the left and right panes of ION Setup. To display the shortcut menu, right-click an item. The choices available in the shortcut menu are determined by the type of item selected. For example, if you select the External Boolean Modules folder, available commands are Insert Item and Insert Module. If you select a device icon, the commands are Insert Item, Delete and Properties.

Network and Content Viewer icons

The icons below represent the items in the Network and Content Viewers. All icons, except the system icon and workstation icon, can be added or deleted.

	This is the system icon. It represents the entire network, including the workstation running ION Setup and all connected devices. It is the top level of the Network Viewer. It cannot be deleted or changed.
	This represents the workstation that is running ION Setup. It cannot be deleted or changed.
	This represents a serial site (RS-232 or RS-485 connection).
	This represents a modem site.
	This represents a radio modem site.
	This represents an Ethernet site.
	This represents a logical group. Groups can have descriptive labels.
	This represents an Ethernet Gateway site.
	This represents an ION meter or other device. ION Setup can support up to 128 devices per site.
	These icons appear on the right pane and represent groups of setup or display parameters, or ION modules.
	These icons represent ION modules that have gone off-line due to setup or connection (e.g. circular links) errors.
	These icons contain ION modules in ION-compliant devices. They are also used to organize group display screens and setup screens.

Viewing options

The ION Setup Content Viewer can display either setup screens or data screens. The selected view mode determines which type of screens ION Setup displays. Setup screens are displayed the first time ION Setup is started. Once you have finished configuring the devices on your network, you can switch to data display mode. The options available are View Setup Screens or View Data Screens. The next time you start ION Setup, the Content Viewer will display data in the mode you have selected.

View modes

View setup screens

Select the Setup Screens mode (**View > Setup Screens**) if you want to configure the setup registers or edit ION module links in a device.
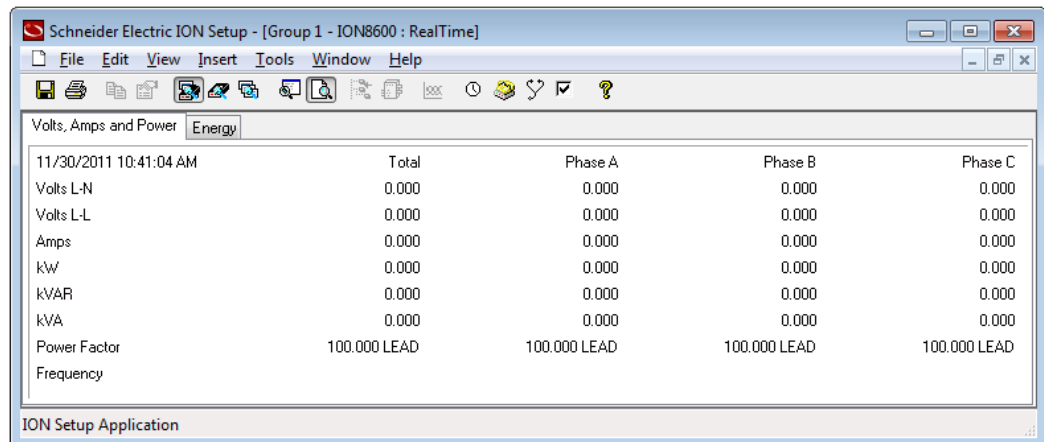
View data screens

Select the Data Screens mode (**View > Data Screens**) if you want to display data. ION Setup can display real-time data for meters and other supported devices.

Displaying data screens

1. Click the **View Data Screens** button 🔍 .
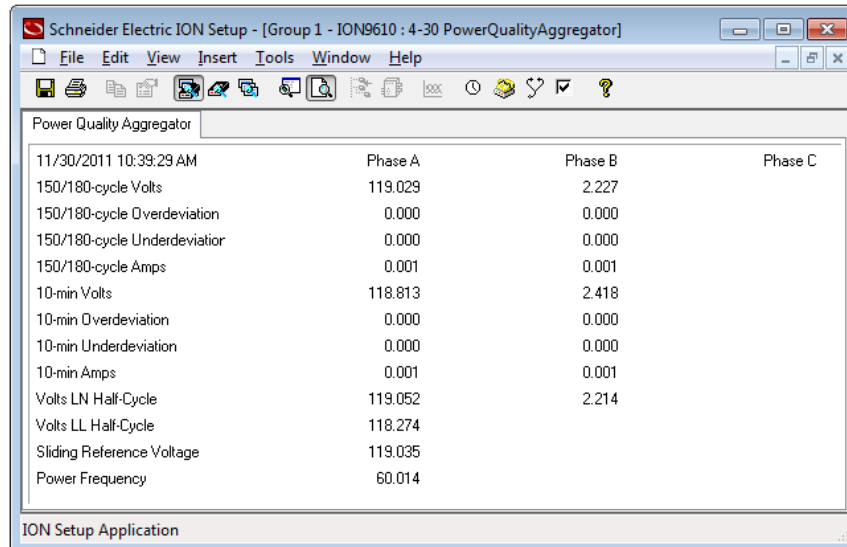2. Select the meter icon, then double-click the data screen you want to display.

Examples of data screens

Real-Time screen

Schneider Electric ION Setup - [Group 1 - ION8600 : RealTime]				
File Edit View Insert Tools Window Help				
Volts, Amps and Power	Energy			
11/30/2011 10:41:04 AM	Total	Phase A	Phase B	Phase C
Volts L-N	0.000	0.000	0.000	0.000
Volts L-L	0.000	0.000	0.000	0.000
Amps	0.000	0.000	0.000	0.000
kW	0.000	0.000	0.000	0.000
kVAR	0.000	0.000	0.000	0.000
kVA	0.000	0.000	0.000	0.000
Power Factor	100.000 LEAD	100.000 LEAD	100.000 LEAD	100.000 LEAD
Frequency				
ION Setup Application				

Power Quality Aggregator screen

Schneider Electric ION Setup - [Group 1 - ION9610 : 4-30 PowerQualityAggregator]			
File Edit View Insert Tools Window Help			
Power Quality Aggregator			
11/30/2011 10:39:29 AM	Phase A	Phase B	Phase C
150/180-cycle Volts	119.029	2.227	
150/180-cycle Overdeviation	0.000	0.000	
150/180-cycle Underdeviatior	0.000	0.000	
150/180-cycle Amps	0.001	0.001	
10-min Volts	118.813	2.418	
10-min Overdeviation	0.000	0.000	
10-min Underdeviation	0.000	0.000	
10-min Amps	0.001	0.001	
Volts LN Half-Cycle	119.052	2.214	
Volts LL Half-Cycle	118.274		
Sliding Reference Voltage	119.035		
Power Frequency	60.014		
ION Setup Application			

Viewing by site, group or both

See for detailed information on sites and groups.

You can display network items by site or by group, or you can display both sites and groups. Select the option you want under the **View** menu (or click the appropriate button on the toolbar).

	Displays both site and group information
	Displays site information only
	Displays group information only

Viewing the unassigned group

ION Setup requires all meters to be part of a group. When you add a new meter to a site, ION Setup automatically assigns it to a default group called "Group 1". If you delete a meter from a group, ION Setup moves that meter to the Unassigned group. To view the Unassigned group:

1. Select **Tools > Options** (or click [✓] on the toolbar).

2. Select the **View** tab.

3. Select the **Unassigned Group** box.

4. Click **OK**.

Basic versus Advanced Mode

ION Setup displays setup screens either in **Basic Configuration** or **Advanced Configuration** mode.

Basic Configuration mode is available for all supported devices. For details, see "Working in Basic Configuration mode" on page 66.

Advanced Configuration mode is only available on meters that use the ION architecture. For details, see "Working in Advanced Configuration mode" on page 72.

If your meter supports **Advanced Configuration** mode, you can switch to that mode by right-clicking the meter icon and selecting **Properties**. Click the **Tools** tab, then select **Show Advanced ION Setup** from the **Device Setup** dropdown list. Click **OK**. All modules available for the selected meter are displayed.
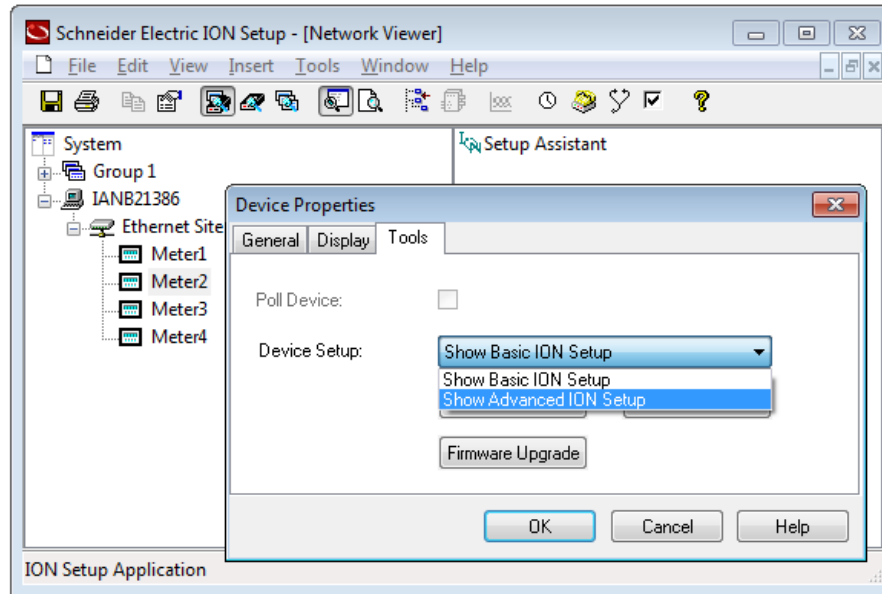
Tip

For devices that support **Advanced Configuration** mode, hold down CTRL and click the meter icon to switch (toggle) between **Basic Configuration** mode and **Advanced Configuration** mode.

Related topics

- "Grouping devices" on page 60

- "Assigning a device to a group" on page 61

- "Adding and configuring sites" on page 56

Setting up options

After you have installed ION Setup and connected your devices and communication hardware, you are ready to use the software.

Before you begin

Initially you are the administrator for ION Setup. Set your desired options before granting access to other users.

Note

> Some of the options are available only at the supervisor security level. See "Applying security" on page 43 for more detailed information on the security systems in ION Setup.

> Once you select your preferred options, you must restart ION Setup for the changes to take effect.

Select **Tools > Options** (or click 🔲 on the toolbar). The **Options** dialog box appears and shows six tabs:

- Directories
- View
- Confirmation
- Security
- HHF (hand-held format)
- Conventions

Directories tab

The Directories tab specifies the path where ION Setup is installed. This option is available to Supervisor-level personnel only. It is not recommended to move the ION Setup program (IONSetup.exe) or rename the directory where the program resides.
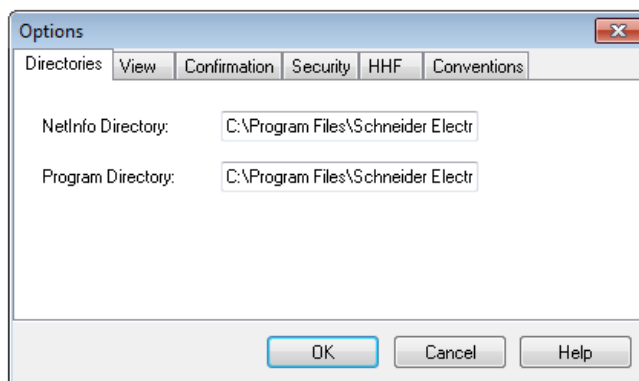

NetInfo directory: Specifies the location for the ION Setup network configuration file, ionsetup.dat. Changes made in ION Setup are stored in this file. If you move the ionsetup.dat file or rename its directory, enter the new location or name here.

Program directory: Specifies the location for the ION Setup program, IONSetup.exe. If you move the ION Setup program or rename its directory, enter the new directory location or name here.

View tab

The View tab lets you select how your network information appears and the mode at startup.
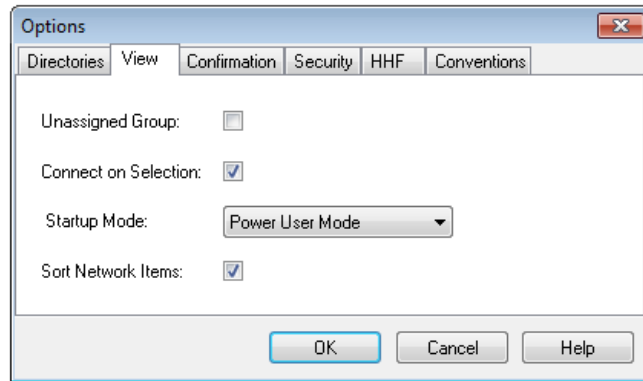
Unassigned Group: If you select this check box, ION Setup displays the Unassigned group, which contains all the meters that you have not yet assigned to any group. Note that if you delete a device in a defined group, that device is moved to the Unassigned group. This option is available only to Supervisor-level personnel.

Connect on Selection: If you select this check box, ION Setup automatically attempts to connect with a device when you click on a device icon in the Network Viewer. If this option is not selected, a prompt appears when you click on a device icon, giving you the option to connect.

Startup Mode: This option lets you select how ION Setup starts. Select the mode you want to use from the list. See "Startup and View modes" on page 24 for a description of the startup modes.

Sort Network Items: If you select this check box, ION Setup automatically sorts alphabetically all sites and devices.

Confirmation tab

The **Confirmation** tab lets you configure ION Setup to prompt you with a confirmation dialog before executing the selected command. This option is available only to Supervisor-level personnel.

By default, all check boxes in the Confirmation tab are selected.

- **Confirm Deletes**: Displays a Yes/No prompt before deleting the selected item.
- **Confirm Copies**: Displays a Yes/No prompt before copying (cloning) a certain meter's configuration onto another.
- **Confirm Moves**: Displays a Yes/No prompt before moving a meter to a different group.
- **Confirm Triggers with Password**: Displays an OK/Cancel prompt along with a password field before executing external pulse commands (such as triggering a waveform or resetting/clearing a register).

Security tab

The **Security** tab allows users to change their logon password for ION Setup. It also allows Supervisor-level personnel to add or delete users and edit users' passwords. See "Applying security" on page 43 for more information.
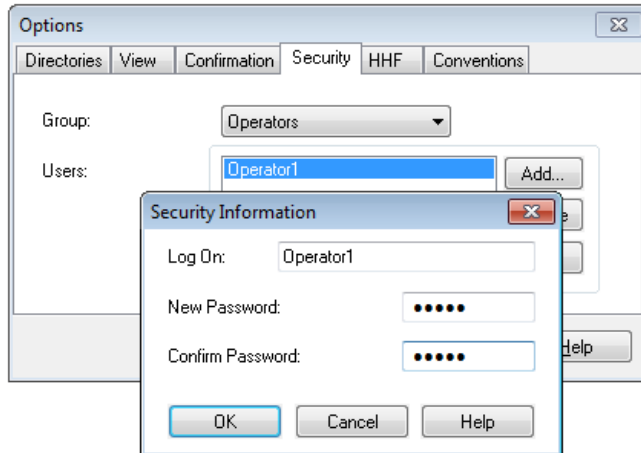

GroupUse this list to select the group/security level (see above) for a new or existing user. This option is available for Supervisor-level personnel only.

Users: This box displays the user names that belong to the selected group/security level. The options in this box are available to Supervisor-level personnel only.

HHF tab

The **HHF** tab is where you can enter MV-90 .hhf (hand-held format) file configuration details through ION Setup.

The HHF information must be entered if you are collecting revenue log data using .hhf files. Refer to "Reports screen" on page 125 and the technical note *MV-90 and ION Technology* available at www.schneider-electric.com.
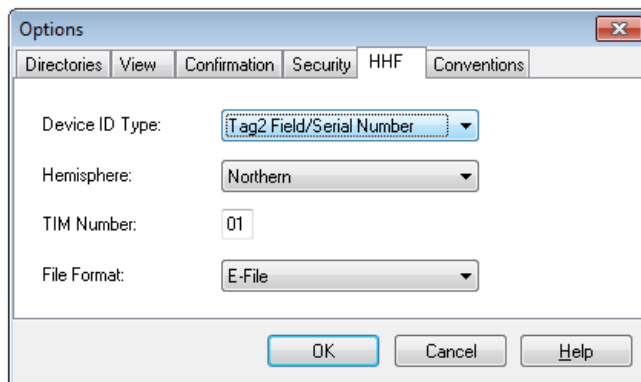
Device ID Type: Select this field to specify the HHF file Device ID Type so that it matches the Device ID field in your MV-90 system.

Hemisphere: Select the hemisphere in which the meter resides (i.e., Northern or Southern).

TIM Number: Enter the number you mapped to your TIM_ION module in your MV-90 system.

File Format: Select the E-File (engineering unit) or P-File (pulse unit) MV-90 data format.

NOTICE

LOSS OF DATA

Load profile/revenue log must be configured for pulse data if the P-File MV-90 data is required.

**Failure to follow these instructions can result in loss of data.**

Refer to "Load Profile/Revenue Log screen" on page 106 for more details.

Conventions tab

The **Conventinos** tab allows you to set how data is displayed in ION Setup for phasor and power factor sign.

Phasor Rotation: This option lets you select the phasor rotation for real-time phasor display. You can set the display to rotate clockwise (90 degrees at the 6 o'clock position) or counterclockwise (90 degrees at the 12 o'clock position).

This allows you to alter the phasor display angle so indicators are visible ("Phasor Viewer" on page 123).
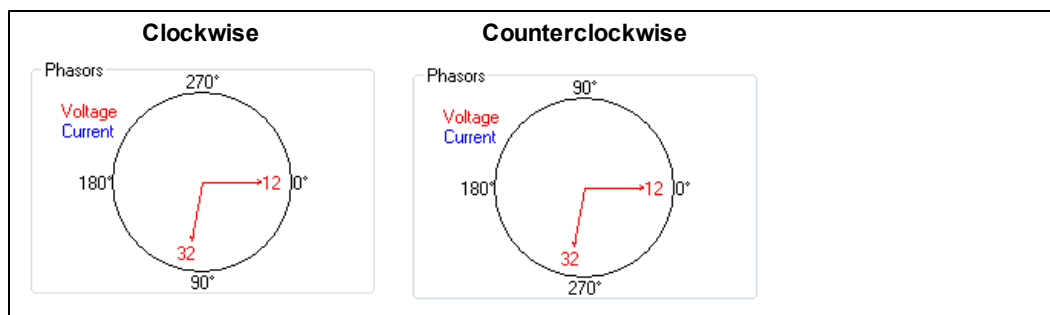
Delta Vector Display: This lets you select how vector diagrams are displayed in ION Setup for meters in Delta mode:

• **Instrument**: Vectors appear 60 degrees apart, showing the actual voltage and current values that the meter is measuring.

• **System**: Vectors appear 120 degrees apart, showing true system operation even though IB and VCA are calculated values.

PF Convention: This sets the power factor sign convention.

- **IEEE (Lead+/Lag-/0 to 100%)**: Use for IEEE meters. The sign of the power factor is converted to lead or lag, and the power factor value is expressed as a percentage.

- **IEC (+/-/0 to 1.000)**: Use for IEC meters. The power factor sign is not interpreted, and the power factor value is expressed as a decimal fraction of one.

Applying security

Note

You can only create users in **Power User** startup mode and cannot switch to other modes if non-default users exist in ION Setup. If you create a user in another mode, ION Setup switches to **Power User** mode. The default user is supervisor (username) and 0 (password). See "Starting ION Setup" on page 24 for information startup modes.

ION Setup provides a four-level security access system. Supervisor-level personnel can control access and define which functions are available to each user by grouping the users according to security level, as follows:

- **Supervisor**: This level is for management or supervisory personnel. This permits access to all device configuration functions, including the security list, system/network configuration, data display functions, and saving the default security configuration files.

- **Operator**: This level is for high level system operators. This permits access to system configuration and data display functions. Operators should be well trained in operating ION Setup.

- **Controller**: This level allows a controller to display data but not to change configuration of ION Setup or of meters. This level also allows a controller to operate triggers.

- **Users**: This is suitable for personnel that use ION Setup on a regular basis and who inform Supervisors or Operators of alarm conditions.

Note

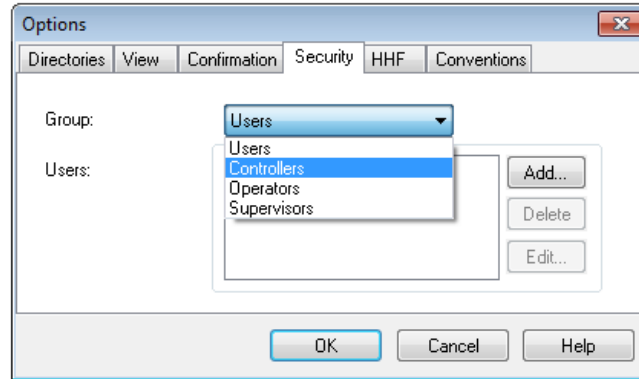ION Setup supports a maximum of 50 users.

For meter-specific security information, see the description of the Setup Assistant's "Security screen" on page 88.

Creating or modifying ION Setup user accounts

This function is only available to Supervisor-level personnel.

1. In the Network Viewer, select **Tools > Options** (or click ☑).

   The **Options** dialog box appears.

2. Select the **Security** tab and use the available buttons to add new accounts, delete existing accounts or edit existing accounts (for example, to change password information). Both user names and passwords are case sensitive.

Creating new user accounts:

Only Supervisor-level users can create new user accounts.

1. Select the new users security level from the **Group** list, then click **Add**.

2. Type the new user name in the **Log On** field. The name you enter must be unique.

3. Type the new password in the **New Password** field then re-type the password in the **Confirm Password** field.

4. Click **OK**. The new user is added.

Editing existing user accounts:

Supervisor-level users can edit any account; users with security levels can edit their own accounts.

1. Select the security level of the user account you want to change from the **Group** list, then select the user name from the **Users** list and click **Edit**.

    • To change a user name, type the new user name in the **Log On** field and type the current password in the **New Password** and **Confirm Password** fields.

    • To change a password, type the new password in the **New Password** field then re-type it in the **Confirm Password** field.

2. Click **OK**.

Deleting user accounts:

Only Supervisor-level users can delete user accounts.

1. Select the security level of the user account you want to delete from the **Group** list, then select the user name from the **Users** list.

2. Click **Delete**. The user account is deleted.

Note

The default security configuration files are set to read-only by default. To overwrite a file, right-click on the file in the **Save As** screen and select Properties. In the **General** tab, remove the checkmark beside the Read-only attribute and click **OK**. You should now be able to overwrite the default security configuration file.

Chapter 4: Adding and configuring devices

This section describes the difference between Single Device and Network mode. It outlines Network mode procedures for adding sites, groups and devices. This section also explains how to configure devices in Basic Configuration mode and Advanced Configuration mode.

> ## ⚠ WARNING
>
> **UNINTENDED EQUIPMENT OPERATION**
>
> - Do not use ION Setup and associated devices for critical control or protection applications where human or equipment safety relies on the operation of the control circuit.
>
> - Do not incorrectly configure ION Setup and its associated devices; this can lead to incorrect reports and/or data results.
>
> **Failure to follow these instructions can result in death or serious injury.**

Additional topics explain how to use your meter as an Ethernet Gateway (EtherGate) or Modbus Gateway, how to perform time synchronization, and how to copy a meter's setup configuration onto another meter of the same type.

Note

Some devices require additional configuration in order to access and modify certain setup parameters. For example, a revenue-class or hardware locked meter must be unlocked before you can configure it. Refer to the device's documentation for unlocking and basic setup procedures.

In this section

Single Device mode and Network mode

ION Setup provides two modes of operation: **Single Device** mode and **Network** mode. As the name indicates, **Single Device** mode allows you to communicate with and quickly configure one device, and is frequently used by metershop technicians. The **Network** mode allows you to configure multiple devices, sites, and groups, and is especially useful if you require frequent communications with multiple devices. For details on communicating with and configuring a device in **Single Device** mode, see "Working in Single Device mode" on page 50. For details on using **Network** mode, see "Working in Network mode" on page 54.

Single device mode
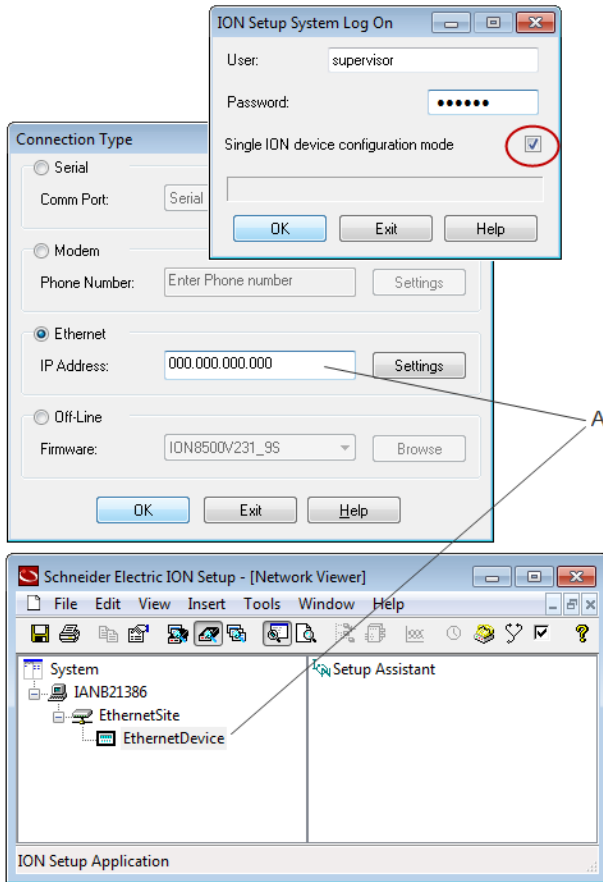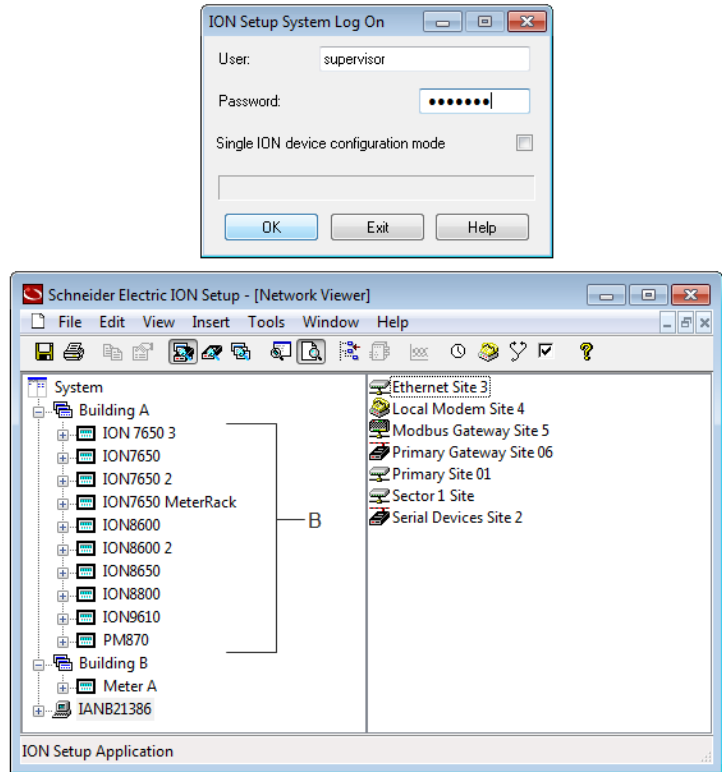
Network mode

A	In Single Device mode, you can only view the device to which you are connected	B	In Network mode, you can see all of the devices that are part of your network

When in **Power User** startup mode, ION Setup remembers the settings (**Network** or **Single Device** mode) from its last session and by default selects or clears the **Single Device Mode** option in the login screen. For **Network** and **Metershop Technician** startup modes, ION Setup automatically bypasses the login screen and goes directly into either **Network** mode or **Single Device** mode. For more information, refer to "Startup and View modes" on page 24.

Note

While in **Single Device** mode, the Network Viewer only displays the meter to which you are connected. To view other meters on your network, you must be logged on in **Network** mode.

Logging on in a different mode

The instructions for logging on in a different mode of operation depend on the startup mode you are currently using for ION Setup.

Switching modes when in Power User startup mode

1. Click **File > Exit** or click the exit icon. The **Exit Options** dialog box appears (the Shutdown Program option is selected by default). Select **User Logoff** and click **OK**.

   The ION Setup **System Log on** screen appears.

2. Select or clear the **Single ION device configuration mode** check box.

3. Click **OK** and log on again.

Switching modes when in Network or Metershop Technician startup mode

If you are in **Network** or **Metershop Technician** startup mode, you must change your startup mode by going to **Tools > Options > View**. Refer to "Switching between startup modes" on page 26 for more information.

Working in Single Device mode

When you log on in Single Device mode, the **Connection Type** dialog box appears. Select your desired connection type and enter the required information in the fields provided.

Note

Using **Single Device** mode is recommended only for working with devices with the ION protocol. **Single Device** mode is also not to be used with the ION6200 meter. It can be used with the E5600 via the front optical only. ModemGate, Ethergate and RS-485 are to be avoided when more than a single device is on the hardwire connection.

Once you have entered the connection information and configured your site properties using the **Settings** button, click **OK**. The ION Setup Network Viewer opens. The device you are connected to appears in the left pane of the Network Viewer.

Using the Settings button

The **Settings** button lets you configure additional communications settings for the connection you are using. Some settings are not configurable (or do not apply to the selected connection type) — these are disabled (grayed out).

Click **Settings** to access the **Site Properties** dialog box, containing two tabs:

- **General**: allows connection changes (e.g. Comm Link, Link Type, Link Speed)
- **Timings**: allows timing alterations (e.g. Response Delay, Transmit Delay, Byte Timeout)

Using serial communications

To connect using serial communications, click **Serial** in the **Connection Type** dialog box and select the appropriate serial port. Click the **Settings** button to set General and Timings configurations.

Optical probe communications

To communicate with a meter through an optical probe, follow the setup instructions supplied by the optical probe manufacturer. Use the probe to connect the meter to the laptop/computer running ION Setup.

For more information on using optical probes with your device, refer to the technical note *Optical Magnetic Couplers* available at www.schneider-electric.com.

Using modem communications

To connect via modem, select **Modem** in the **Connection Type** dialog box, enter the modem's phone number. Click the **Settings** button and enter the modem settings. Click the **Modem Profile** button and follow the instructions on the Modem Profile Selection Wizard to configure the local and remote modem properties.
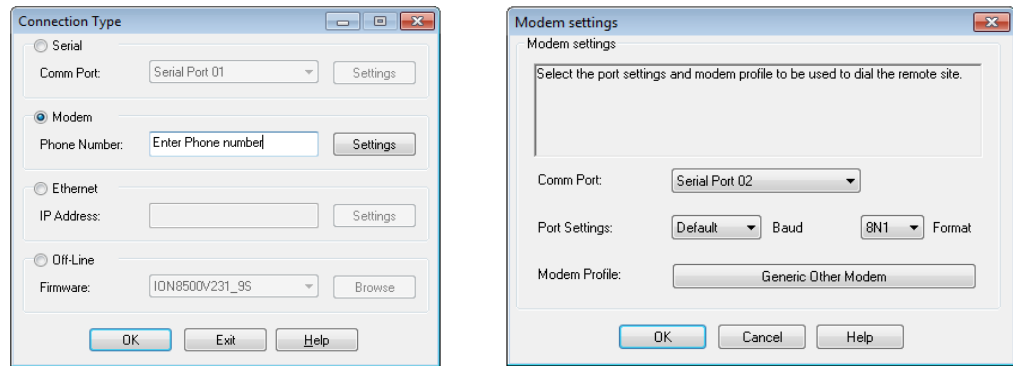
Note

To stop modem communications (for example, if the remote modem is not responding), press the ESC key on your keyboard. ION Setup then attempts to stop modem communication.

Using Ethernet communications

If your device has Ethernet capability, connect by entering the IP address of the device in the Ethernet box of the Connection Type dialog box. Your IT department can supply IP address information.

Using offline programming

Offline programming allows you to create, edit and test your ION device template files without being connected to a physical ION meter. Once your configuration and testing are complete, you can save templates and upload them to other meters of the same type.
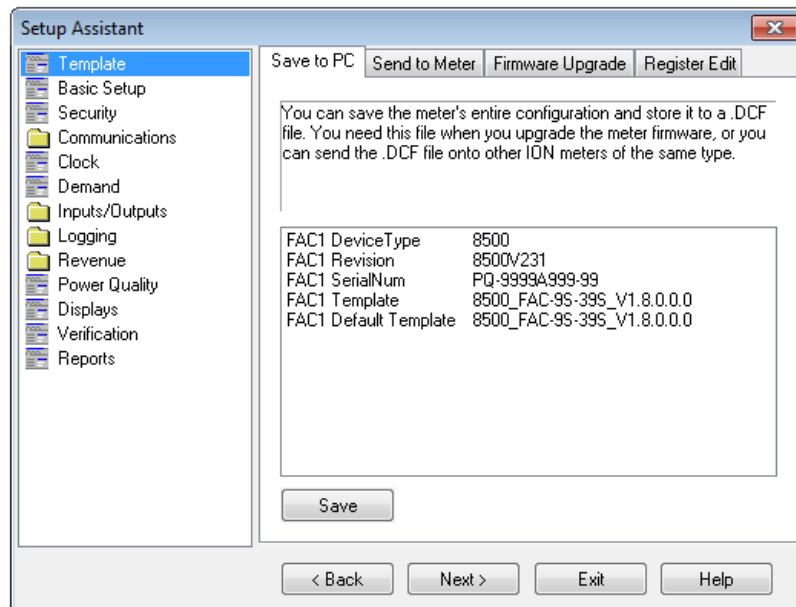
Note

Make sure you have the desired .exe file stored in the Offline folder in your ION Setup directory.

To use Offline programming:

1. Launch ION Setup. Enter any necessary password and select **Single ION device configuration mode**, then click **OK**.

2. Choose the **Off-line** option. Select the meter and firmware combination from the dropdown list, or click **Browse** to navigate to the desired .exe file. You are prompted to select the firmware file you want to work with.
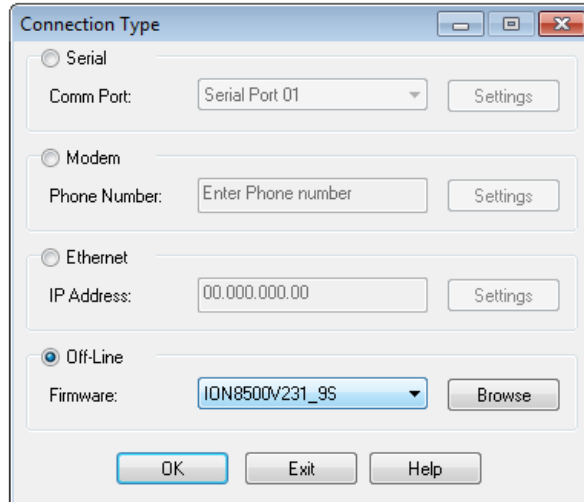
3. ION Setup takes a moment to load the offline configuration file. This file exactly duplicates the function of a meter. Once loaded, ION Setup defaults to the Setup Assistant for you to begin your template configuration.

4. Make your configuration changes as required.

When you exit Offline mode, you are prompted to save your changes.

The device configuration file (.dcf) is saved to the TEMPLATE folder (...\ION Setup\TEMPLATE) by default.
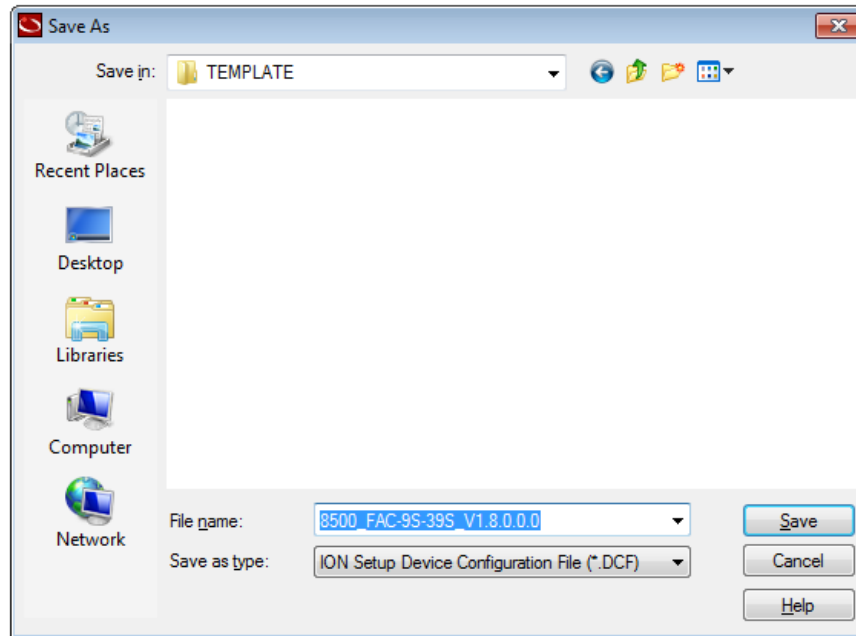
Note

Some modules are not copied during this procedure. See "Template paste options " on page 85 for details.

Working in Network mode

Unlike Single Device mode, Network mode allows you to add sites, groups and multiple devices, and save your network configuration.

Tip

You can configure ION Setup to always open in Network configuration mode. See "Starting ION Setup" on page 24 for more information.
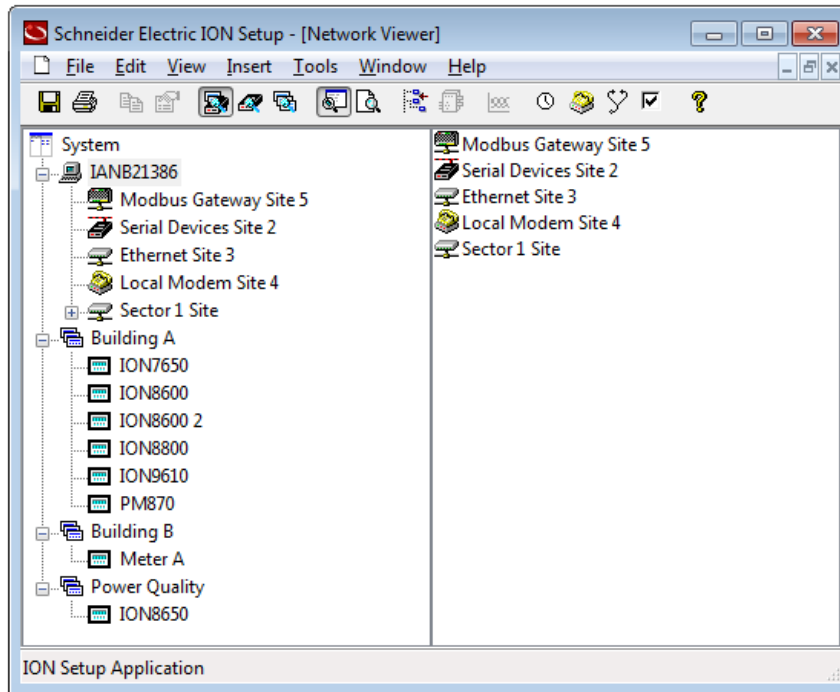
To add network items, do one of the following:

- Click the **Insert an Item** button ▣.

- Select **Item** from the Insert menu.

- Right-click anywhere on the screen to display the shortcut menu, then click **Insert Item**.

The **New Network Item** dialog box appears. Select the item that you want to add. Items that can be added include Sites, Groups and Meters. Select where you want to attach the new item from the **Attach To** list and click **OK**.

Tip

Right-click a specific item on the left pane that you want to add items to, and select **Insert Item** to automatically set the **Attach To** option.

Setting up a network in ION Setup
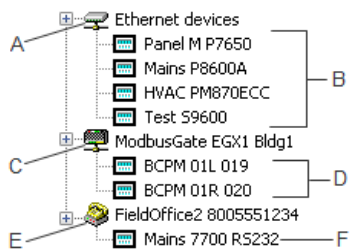
A	Ethernet site	B	Ethernet devices
C	Ethernet Gateway	D	RS-485 devices
E	Modem site	F	Remote serial device

The following summarizes the process for setting up a network in ION Setup:

1. Install and wire your devices, following the instructions and safety precautions in the device's documentation.

2. Follow the instructions in the device installation manual to configure the basic communications parameters for each device (for example, protocol, baud rate, parity and device address/unit ID).

Note

Make sure that all the devices on a single RS-485 loop are set to the same baud rate and data format, and that no two devices use the same unit ID.

---

3. If using a communications converter or gateway, configure its communications parameters, then install and wire it to the meter(s). Follow the instructions and safety precautions in the converter or gateway's documentation.

4. Start ION Setup in Network mode. See "Starting, logging on and logging off" on page 24 for more information on the operation modes, and starting and logging onto ION Setup.

5. Add and configure your sites.

6. Add each device to the appropriate site in ION Setup

Adding and configuring sites

Note

If you cannot see the sites you are adding, click **View** on the menu bar and select **Sites** (or click), or select **Both Sites and Groups** (or click).

What is a site?

A site is a group of devices that share a common communications link (for example, devices that are using a single serial communications port on the computer or share a single Ethernet gateway). A site can have one or more connected devices. Sites are connected to the workstation.

Adding a serial site in ION Setup

See "Using serial communications" on page 15 for general information on serial communications and network setup.

1. Right-click the workstation icon and select Insert Item. The **New Network Item** dialog box appears.

2. Select **Site** and click **OK**. The **New Site** dialog box appears. Select the **General** tab.

3. Type a name identifying the site in the **Name** box.

4. Select **Serial** from the **Comm Link** options.

5. Select the serial port on the computer that you are using to communicate with the meter(s) from the **Comm Port** list.

6. Select the baud rate and data format you want to use for the site from the **Port Settings** lists. These need to be set to the same value as the device(s) connected to the site.

7. Edit the values on the **Timings** and **Polling**, if needed. These tabs contain other site communications parameters which, in most cases, do not need to be modified from the default settings. See "Editing site properties" on page 62 for information regarding the settings on these tabs.

8. Click **OK**. The site is added to the network viewer.

   You can now add devices to your site; see "Adding a new device" on page 60.

Adding a new modem site in ION Setup

See "Using modem communications" on page 17 for general information on modem communications and network setup.

1. Right-click the workstation icon and select **Insert Item**. The **New Network Item** dialog box appears.

2. Select **Site** and click **OK**. The **New Site** dialog box appears. Select the **General** tab.

3. Type a name identifying the site in the **Name** box.

4. Select **Modem** from the **Comm Link** options.

5. Click **Modem configuration**. The **Modem settings** dialog box appears.

   • Select the serial port on the computer that you are using to communicate with the local modem from the **Comm Port** list.

   • Select the baud rate and data format you want to use for the site from the **Port Settings** lists. These need to be set to the same value as the device(s) connected to the site.

   • Click **Modem Profile** to access the **Modem Profile Selection Wizard** and configure the modem profile for the local and remote modems. Click **Finish** when you are done with the wizard.

   Click **OK** when you are finished to return to the **New Site** dialog box.

6. Type the phone number of the remote modem in the **Phone Number** box.

7. Edit the values on the **Timings** and **Polling**, if needed. These tabs contain other site communications parameters which, in most cases, do not need to be modified from the default settings. See "Editing site properties" on page 62 for information regarding the settings on these tabs.

8. Click **OK**. The site is added to the network viewer.

   You can now add devices to your site; see "Adding a new device" on page 60.

ModemGate feature

Some ION meters are equipped with an internal modem that you can set up as a communications gateway to connect to multiple RS-485 devices (e.g., on a remote site). For more information, refer to the meter's documentation and the technical note *The ION meter as a ModemGate* available at www.schneider-electric.com.

Adding a new Ethernet site in ION Setup

1. Right-click the workstation icon and select **Insert Item**. The **New Network Item** dialog box appears.

2. Select **Site** and click **OK**. The **New Site** dialog box appears. Select the **General** tab.

3. Type a name identifying the site in the **Name** box.

4. Select **Ethernet** from the **Comm Link** options.

5. Edit the values on the **Timings** and **Polling**, if needed. These tabs contain other site communications parameters which, in most cases, do not need to be modified from the default settings. See "Editing site properties" on page 62 for information regarding the settings on these tabs.

6. Click **OK**. The site is added to the network viewer.

   You can now add devices to your site; see "Adding a new device" on page 60.

Adding a new Ethernet gateway or Modbus gateway site in ION Setup

Note

If you are using an ION7550 / ION7650 as a Modbus gateway, see "Configuring the ION7550 / ION7650 meter as a Modbus gateway " on page 59 for instructions rather than following the steps below.

Before adding an Ethernet gateway or Modbus gateway site, make sure your gateway device is connected to the Ethernet and your serial network of meters are wired to the gateway device (and basic setup has been performed on each device, including the gateway meter).

See "Using Ethernet Gateways or Modbus gateways" on page 19 for general information on Ethernet gateway communications and network setup.

1. Right-click the workstation icon and select **Insert Item**. The **New Network Item** dialog box appears.

2. Select **Site** and click **OK**. The **New Site** dialog box appears. Select the **General** tab.

3. Type a name identifying the site in the **Name** box.

4. Select **Ethernet** from the **Comm Link** options then select the **Gateway** checkbox.

5. Type the IP address of the gateway device and select the port number from the dropdown list in **Gateway Info**.

IP Port	Description
502	Modbus TCP
7801	EtherGate through COM1 of an ION meter
7802	EtherGate through COM2 or COM4 of an ION meter
7803	EtherGate through COM3 of an ION meter

6. Edit the values on the **Timings** and **Polling**, if needed. These tabs contain other site communications parameters which, in most cases, do not need to be modified from the default settings. See "Editing site properties" on page 62 for information regarding the settings on these tabs.

7. Click **OK**. The site is added to the network viewer.

   As a result:

   • You can now add devices to your site.

   • If supported, you can connect to and read data from your gateway device by adding it as a stand-alone Ethernet device in ION Setup.

   See "Adding a new device" on page 60 for additional information.

Configuring the ION7550 / ION7650 meter as a Modbus gateway

Before configuring an ION7550 / ION7650 as a Modbus gateway, make sure the ION7550 / ION7650 meter is connected to the Ethernet, your serial meters are wired to the gateway meter, and basic setup has been performed on each device, including the gateway meter.

See "Using Ethernet Gateways or Modbus gateways" on page 19 for general information on Ethernet gateway communications and network setup.

Note

For Modbus TCP communications, the Ethernet IP port is hard-coded to port 502 on ION7550/ION7650 meters. You do not need to set this in ION Setup.

When using an ION7550 / ION7650 as a Modbus gateway, you do not need to add it as a gateway site in ION Setup; simply configure the meter as follows:

1. Add the meter as an Ethernet meter in ION Setup. See "Adding a new device" on page 60 for instructions.

2. Connect to the gateway meter in Basic Configuration mode.

3. Double-click the Setup Assistant icon to open it, then navigate to **Communications > Serial Settings**.

4. Select the serial communications port that is connected to the downstream Modbus devices. Set the Protocol to Modbus Master and verify that the baud rate and other settings match with the downstream devices.

5. Navigate to **Communications > Network Settings**. On the TCP/IP tab, select Modbus Gateway, and click **Edit**. From the Select Modbus Gateway screen, select the serial communications port connected to your downstream Modbus devices and click **OK**.

Adding a new device

1. Select **Insert > Item** (or click [icon]). The **New Network Item** dialog appears.

2. Select **Meter**. Use the **Attach To** list to specify which site the meter belongs to and click **OK**.

3. Fill in each field in the **New Device** dialog (see "Editing meter properties" on page 64 for related information). The meter name must begin with a letter.

4. The meter icon appears under the site. Refer to "Working in Basic Configuration mode" on page 66 for details on setting up the meter.

Note

If you cannot see the sites you are adding, click **View** on the menu bar and select **Sites** (or click [icon]), or select **Both Sites and Groups** (or click [icon]).

Related Topics

- "Assigning a device to a group" on page 61
- "Editing meter properties" on page 64

Grouping devices

What is a group?

A group is a feature that lets you define a logical grouping of meters. For example, you can have a group of meters dedicated to power quality monitoring or a group of meters defined by location. Groups are always attached to the System icon. Devices within each group are attached to both the group and the site.
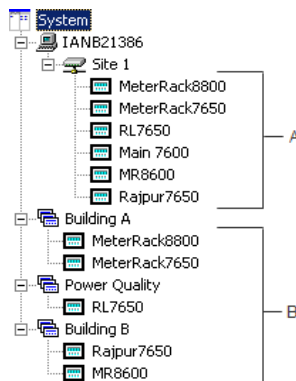
| A | All of the meters in the site | B | Meters grouped by location or purpose |

Creating a group

1. Select **Insert > Item** (or click ![icon] on the toolbar). The **New Network Item** dialog appears:

![New Network Item dialog]
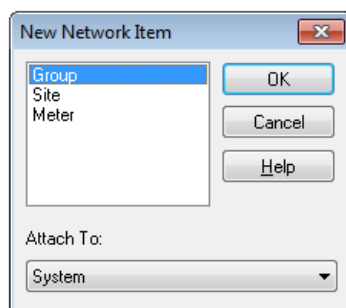
2. Select **Group** and click **OK**.

3. Fill in each field in the **New Group** dialog box.

Note

If you cannot see the sites you are adding, click **View** on the menu bar and select **Sites** (or click ![icon]), or select **Both Sites and Groups** (or click ![icon]).

Related topics

-
-

Assigning a device to a group

The ION Setup Network Viewer supports the same drag-and-drop feature available in Windows Explorer. To assign a device to a group:

1. Select **View > Both Sites and Groups** (or click ![icon] on the toolbar).

2. If the group has not yet been created, create the group so you have a destination for dragging. See for details.

3. In the Network Viewer, double-click the site icon that contains the target device to display the target device in the Content Viewer.

4. Click the target device and drag it on top of the destination group icon. An icon for that device appears under the group icon, as well as under the site it is attached to.

   To assign a device to a different group, drag its icon from one group to the other.

Removing items from the network

To remove a group, site or meter from the network, select the item in the Network Viewer, then do one of the following:

- Press the **Delete** key,
- Select **Edit > Delete**, or

• Right-click the item, then select **Delete**.

Note

You cannot delete the System icon, the unassigned group icon (see "Viewing the unassigned group " on page 37), the workstation icon, or the data display folders from the Network Viewer.

Editing site properties

Right-click the site you want to edit, then select **Properties**. The **Site Properties** dialog box appears.

The configurable site properties vary depending on the type of site.

Note

You cannot modify a site that has devices connected to it.

The **Site Properties** dialog box has the following tabs:

General

• **Name**: Enter a unique name for the site in the Name field.

• **Comm Link**: Select the appropriate communications type and fill in the required information.

   • **Serial**: Select the appropriate Comm Port and Port Settings.
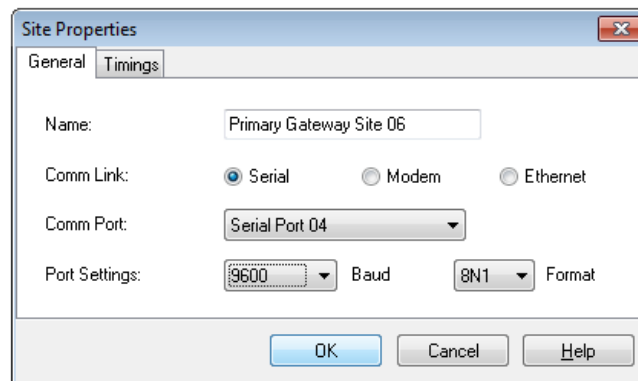
• **Modem**: Enter the phone number and click the button beside Modem Settings to configure your modem settings. Click the button beside Modem Profile to access the Modem Profile Selection Wizard, which guides you through a series of configuration screens to set up your local PC-side modem. Any remote modems must be configured manually if necessary using a terminal program.
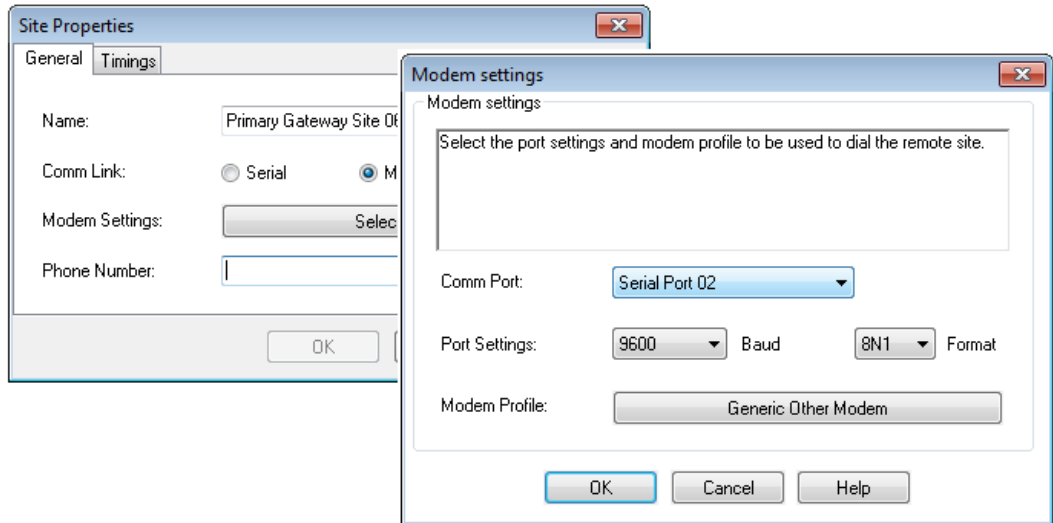
Note

To stop modem communications (for example, if the remote modem is not responding), press the ESC key on your keyboard. When you do this, ION Setup attempts to stop modem communication.

- **Ethernet**: Select the Gateway checkbox if the site is an Ethernet Gateway. Refer to for more information.
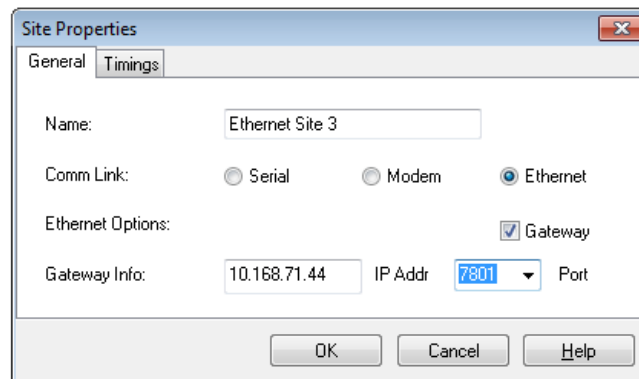
Timings

- **Response Delay**: Specify a Response Delay (in milliseconds).
- **Transmit Delay**: Specify a Transmit Delay (in milliseconds).
- **Byte Timeout**: Specify a Byte Timeout (in milliseconds).
- **RTS (Ready to Send) Control**: Specify an RS232/RS485 software flow control.
  - Disabled: Software flow control is disabled.
  - Force Off: Software flow control is set to off (RS232/RS485 line held low).

- Force On: Software flow control is active for the entire message string, which holds the RS232/RS485 line high for the complete message sequence. Use this setting for powering external devices from the RS232/RS485 line.

- Toggle: Toggles the line between receive/transmit. Use this setting for direct connection to COM32/COM128 or similar.

- Wait CTS: Waits for receipt of a Clear To Send message. Use this setting for active flow control for reduced throughput devices (e.g., modems).

Note

The "Force ON" setting should only be used for probes that are powered from the serial port. For serial probes, in ION Setup, set the RTS or DTS to "Force ON". For all other probes, set RTS or DTS to "Force OFF".

- **DTR (Data Terminal Ready)**: Specify a DTR line control.

  - Disabled: No software DTR line control.

  - Modem Ctrl: Forces the DTR line low upon "request communication end" failure. Use this setting to force a modem disconnect.

  - Force Off: Sets the DTR line low. Use this setting for optical probes on IEEE meters.

  - Force On: Sets the DTR line high. Use this setting for optical probes on IEC meters.

  - Probe Ctrl: Use this custom setting for self-powered probes to mitigate battery loss.

Polling

- **Polling Method**: Specify the polling method for the selected site from the dropdown list. Supported options are Continuous, On Demand, or Scheduled.

- **Edit Schedule**: Edit the polling schedule for the selected site (or view the current schedule used to poll the meters in the selected site).

- **Next Connection**: View when polling next occurs on the selected site.

- **Broadcast Interval**: Specify hours and minutes between polling intervals.

- **Timezone**: Specify local time zone.

Editing group properties

Right-click the group you want to edit, then select **Properties**. Type in a unique name for the group and click **OK**.

Editing meter properties

Expand the site (by double-clicking the site icon) where your meter is located. Right-click the meter icon, then select **Properties**.
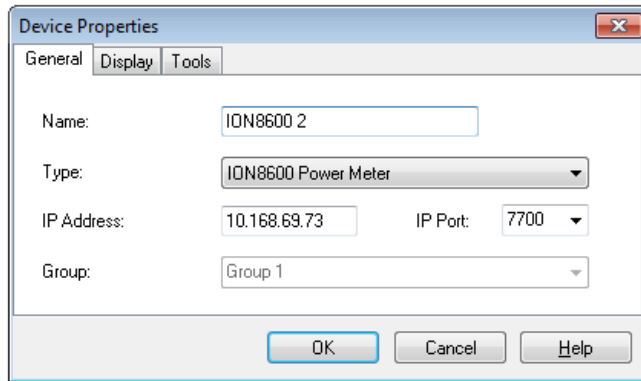
The **Device Properties** dialog box contains the following tabs:

General

- **Name**: Type in a unique name for the meter. The name must begin with a letter.

- **Type**: Select the appropriate meter type from this list.

- **Unit ID**: Type in a unique, 4-digit Unit ID. The number you enter here must match the number that has been programmed for the connected communications port on the device.

- **IP Address**: Enter the IP address if you are connecting using Ethernet.

- **IP Port**: This contains the port number of the device to which you are connected.

  The following table lists the ports used for Ethernet communications:

IP Port[1]	Description
502	Modbus TCP
7700	ION (direct)
7701	Modbus RTU over Ethernet
23	Telnet (used for meter diagnostics)
[1] Some meters support email (SMTP through port 25) and webpages (HTTP through port 80).	

- **Group**: This box displays the name of the group that the meter belongs to.

Display

- **Template Type**: This displays the type of template for the device.

- **Template Options**: This lets you select which template ION Setup uses to display data.

Tools

- **Poll Device**: To enable polling of the device, make sure to select this box.

- **Device Setup**: Choose whether to display basic ION Setup or advanced ION Setup parameters.

  - **Show Basic**: Displays the available setup parameters you can configure for the device. Some devices are configured using Setup Assistant — refer to for details.

- **Show Advanced**: Displays all available modules in the selected ION device. This option is only available on devices that are designed and built using the ION architecture.

Tip

For devices that support Advanced Configuration mode, hold down CTRL and click the meter icon to switch between Basic Configuration mode and Advanced Configuration mode.

- **Store to File**: This lets you save the current device configuration to a .dcf file in the security folder of the project.

- **Restore from File**: This lets you upload a different .dcf configuration file to the device.

- **Firmware Upgrade**: This lets you upgrade the device's firmware.

Working in Basic Configuration mode

All devices supported by ION Setup can be edited in Basic Configuration mode. Depending on the device type, ION Setup may display individual icons that represent the setup parameter groups for that device, or the Setup Assistant icon.

For setup parameter groups, double-click the icons in the Content Viewer to configure the parameters for the device.
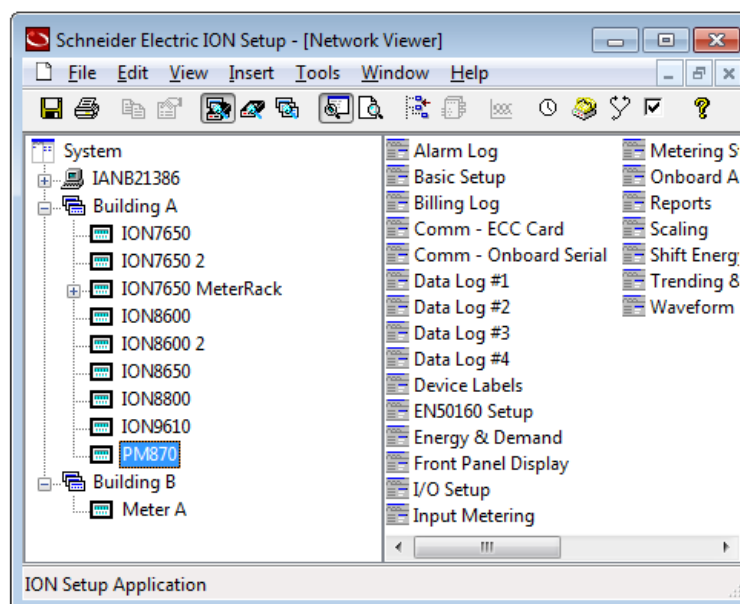
Note

For devices that do not have the Setup Assistant available, there are additional configuration wizards available. See "Accessing the Modbus Tester Interface tool" on page 141.

Double-click the Setup Assistant icon in the right pane to start the Setup Assistant, which allows you to specify setup and configuration values for the device. See "Using the Setup Assistant" on page 81 for further information.
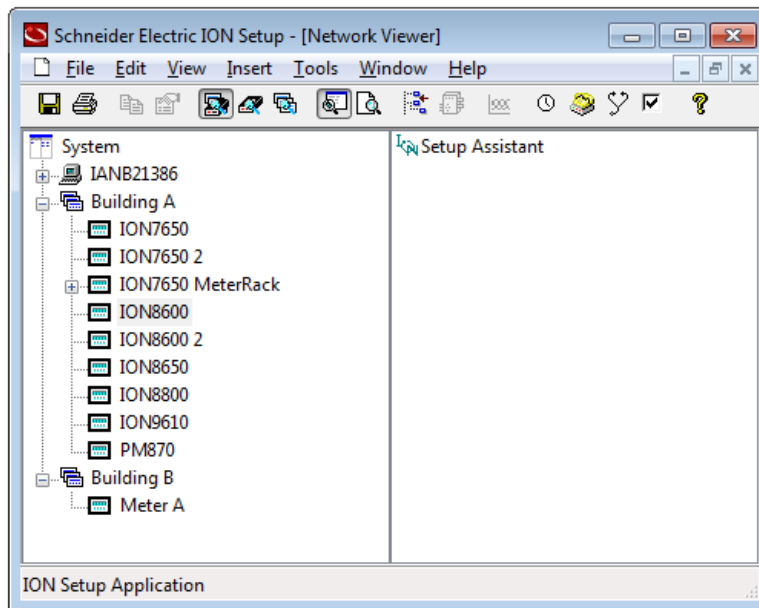

Editing in Basic Configuration mode

1. Make sure **View > Setup Screens** is selected (or click the 🔲 button).

2. Select the device. For devices that display individual icons for the setup parameters, double-click the icon to open the setup screen.

3. Select a setup parameter you want to change, then click **Edit**.

4. Make the changes to the setup register as appropriate. Most setup register types are enumerated, numeric-bounded, elapsed interval or date/time:

   • **Enumerated**: Click the 🔽 button and select an option from the list.
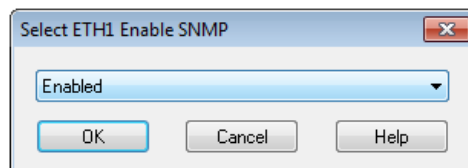
   • **Numeric bounded**: Select Numeric Bounded Format from the list and enter a numeric value in the box.
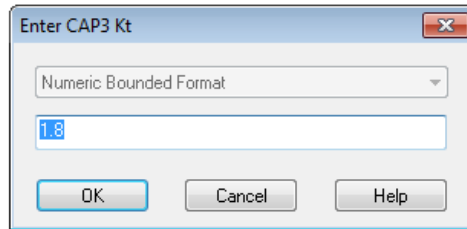
- **Elapsed Interval**: Select Elapsed Interval Format from the list. Enter the days, hours, minutes and seconds, and use the +/- drop down to indicate the interval direction.
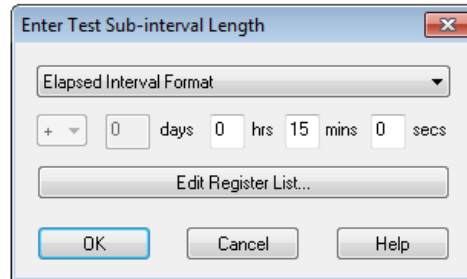
- **Date/Time**: Select Date/Time Format from the list. Select the month, day and year and enter the time.
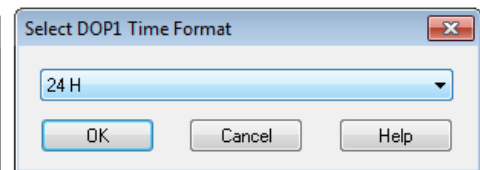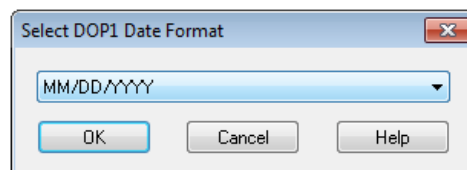
5. Click **OK**.

6. Make changes to the other setup registers if required.

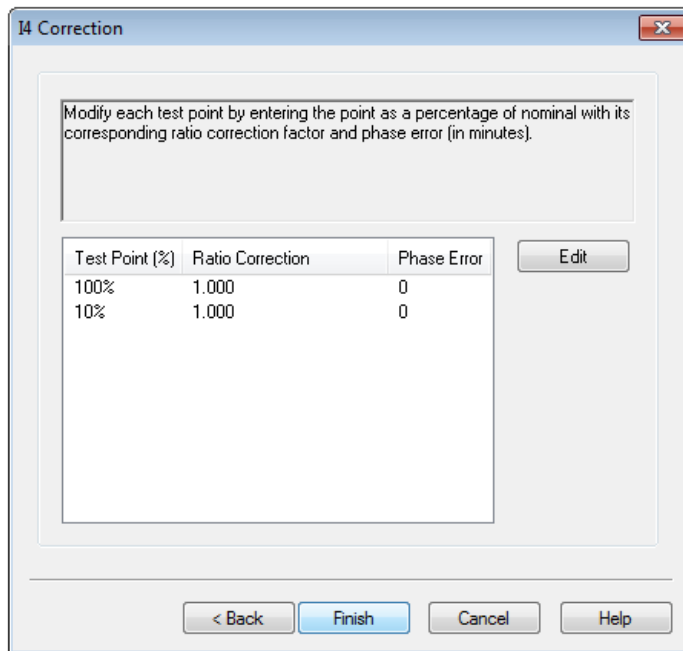7. Click **Send** to save your changes to the meter.

Setup screen examples

There are some setup register types that allow you to select one or more options, as shown below:

Example 1

Click a checkbox to select (check), or clear (uncheck), your selection. If there are additional setup screens, click **Next**.
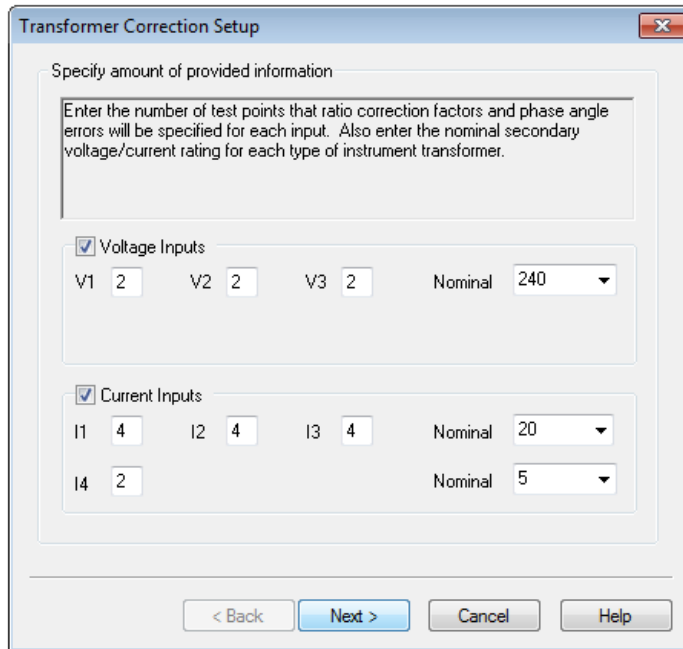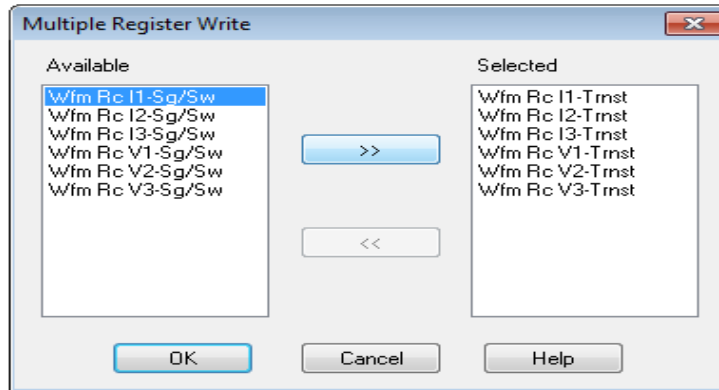
After you configure the remaining setup parameters, click **Finish**.

Example 2

Click an item in the Available field to highlight it, then click the [>>] button to add it the list of selected items.

Click an item in the Selected field to highlight it, then click the [<<] button to remove it from the list of selected items.

Example 3

In a parameter setup dialog, use the fields and controls on the window to define and configure the selected (highlighted) parameter in the left field.

To add a new parameter to the list, click **New**. To remove an existing parameter, select it, then click **Delete**. You typically use **Delete** when you want to make room for a new parameter after the maximum limit has been reached.
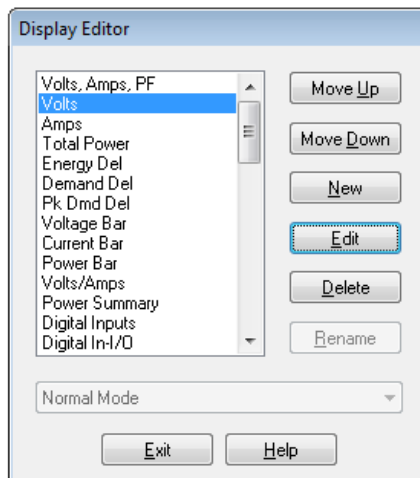
Example 4

To search for a parameter, enter the parameter name in the Parameter field and click Search. The parameter is selected and its location as displayed beside Source. Click the "+" symbol to expand the list to find your parameter.
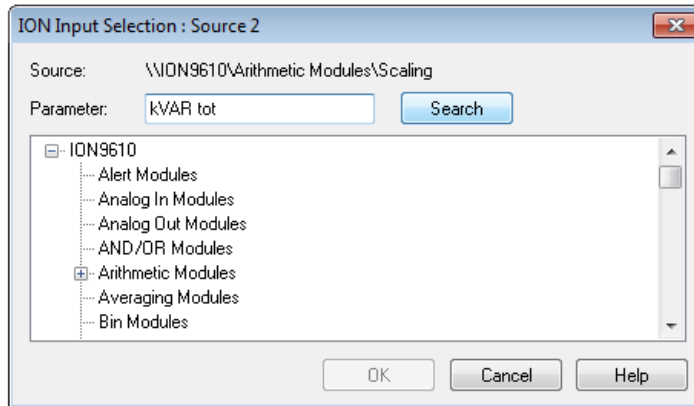
Errors

If you try to enter a value that is outside the limits for the register, ION Setup displays the error, either on the status bar (near the bottom left corner of the window), or in a popup dialog.

Value must be between 1 and 32767
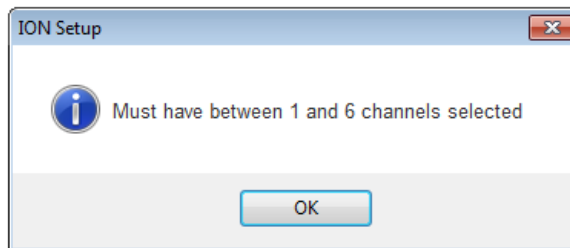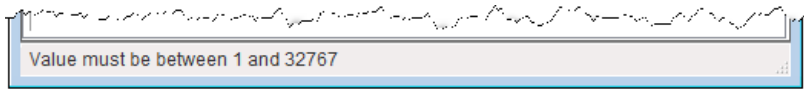
Typical meter setup parameters

Some setup parameter groups are common and available to all meter types (such as **Basic Setup**, for configuring PT and CT ratios and other system parameters). Other setup parameter groups are available only on meter types that support certain features (such **as Waveform Capture**). Refer to your meter documentation for information on how to set up the features supported by your meter. For information on how to use ION Setup to configure devices that are not based upon the ION protocol, refer to the *ION Setup Device Configuration Guide*.

Modbus protocol considerations

Serial communications (Modbus RTU): To avoid communications issues, make sure all devices on the serial communications bus are set to the same data format.

Note

8N1 (8 data bits, no parity, 1 stop bit) is the default serial communications port setting for most ION meters.

Ethernet communications (Modbus TCP): For meters that use Modbus TCP to communicate through Ethernet, enter "502" in the IP Port box when adding the meter in ION Setup (port 502 is used for Modbus TCP communications).

Working in Advanced Configuration mode

Advanced Configuration mode is available on meters that are designed and built using the ION architecture.

Tip

For devices that support Advanced Configuration mode, hold down CTRL and click the meter icon to switch between Basic Configuration mode and Advanced Configuration mode.

For information on basic configuration using the Setup Assistant, see "Setup Assistant overview" on page 82.

If you require advanced programming or configuration, it is recommended that you use the Designer component of ION Enterprise software. Its graphical interface lets you view links and modules, include descriptive text about the configuration, and troubleshoot any frameworks you create.

To access Advanced Configuration mode

Access the ION modules on a meter and create new modules by following these steps:

1. Go to the site, right-click on a meter and select **Properties**.

2. Click the Tools tab and select **Advanced ION Setup** from the Device Setup dropdown menu.

   It may take several seconds for the ION modules to load onto your screen.

3. Double-click an ION module to view/edit the module's configuration.
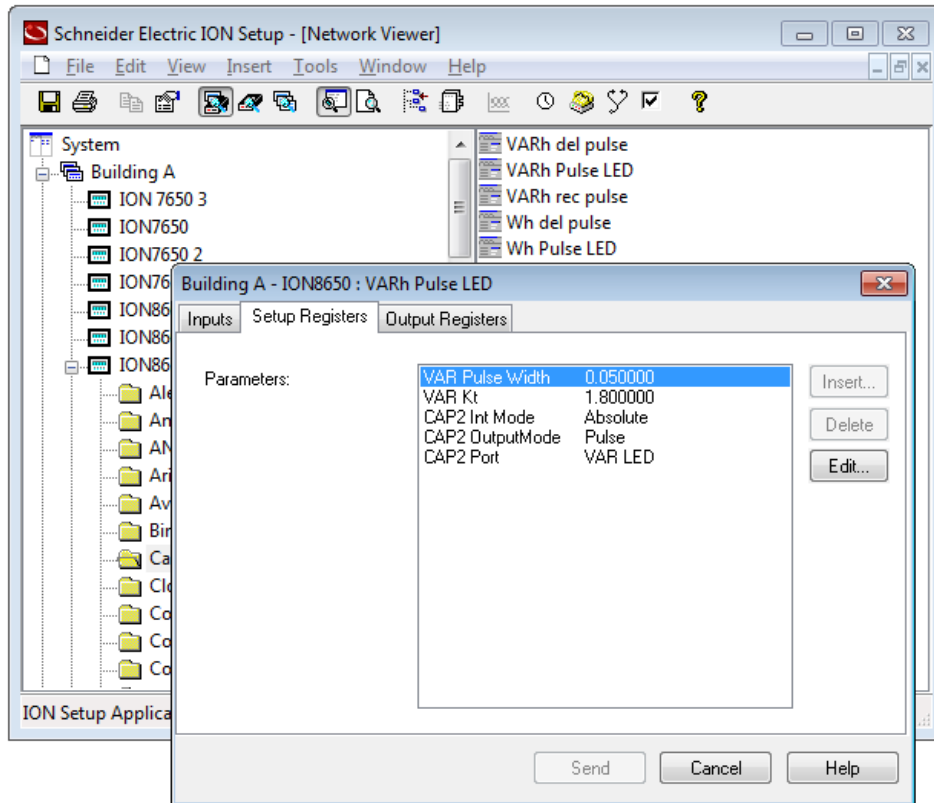
Note

When working in Network mode, Advanced and Basic views are device-specific rather than global. This allows you to view one meter in **Advanced** mode and another in **Basic** mode.

Overview of ION architecture

ION architecture forms the basis of every component in the ION network. This architecture defines the logical pathways used to control information and data when moving between individual functional blocks within a meter, between meters, or between meters and other parts in the power monitoring and control system.

ION architecture is object oriented, giving you exceptional system flexibility. ION meters can be configured to dedicate their resources to suit your application.

The fundamental objects that comprise the ION architecture are ION modules and ION registers.

For more information on ION architecture, refer to the *ION Reference*. For more information on the modules available in your device, refer to the *ION Device Templates Reference* on www.schneider-electric.com.

ION modules

ION modules are building blocks of functionality that link together to change setup as required. Each ION module is comparable to some part of a conventional power monitoring system: the Power Meter module is similar in function to a digital multimeter; the Thermal Demand module is similar to a conventional demand meter; the Integrator module is similar to an energy meter.

Over 80 types of ION modules are defined in ION architecture. Their functions range from basic real-time power measurements to comprehensive waveform data logging and setpoint control.

Collectively, these ION modules cover the complete range of power monitoring and control capabilities. Some examples of ION modules are:

- The Power Meter module provides the functionality of a discrete power measuring instrument, such as a conventional kW meter, or the basic measurements provided by multifunctional meters like the ION6200.

- The Maximum module is comparable to a peak register, which keeps track of variables such as peak demand. A Maximum module in the ION architecture, however, has the flexibility to keep track of the maximum value for any programmed parameter.

- The Data Recorder module models the behavior of a conventional strip chart recorder, which may be used to track information such as variations in current flow. This module stores values so that they can be displayed or printed for later analysis. Furthermore, since the Data Recorder can sample at sub-millisecond intervals, it can also be used as a very high-speed recorder for harmonics analysis and fault detection.

The types of modules available in an ION meter and the number of each type that may be used depend on the kind of device. The ION7650, for example, has 50 Data Recorder modules. The ION6200, on the other hand, has none. Refer the documentation for your devices to learn of the available modules.

ION registers

ION modules can have a number of setup registers and output registers. ION registers are data storage locations; the module reads data through its input(s), manipulates the data according to its function and the values in the setup registers, and writes the result to its output register(s). The output registers might contain maximum RMS readings for three-phase current or describe the high-speed digitized data points for 32 cycles of a single-voltage phase.

Module links

An ION meter is customized by linking ION modules. The output registers of a module can be linked to the input registers of other modules. This allows data to flow from one module to the next. The setup registers are internal to each module, so they do not require linking.

Register classes

Not all output registers can serve as inputs for all modules. There are different classes of registers, each capable of holding different types of information. For example, numeric registers contain numbers, Boolean registers contain ON or OFF information and waveform

registers contain waveform data. These registers are described in the *ION Reference*. To link two ION modules together, the output registers of the first module must contain information the next module can use.

Creating new ION modules

1. From the left pane (Network Viewer), click the folder for the module type you want to create.

2. Select **Insert > Module** (or click ⬚ on the toolbar).

If there are sufficient resources on the device and available modules of that type, the new module appears on the right pane.

Tip

To determine the number of modules of a particular type that are in use, select the folder in the left pane then hover over it. A message appears stating how many modules of that type are in use and how many are available (for example, Modules used: 17 of 20 (3 available)).

To determine the modules available on an ION device, refer to the *ION Device Template Reference* available at www.schneider-electric.com.

Creating custom module labels

ION Setup allows you to create custom labels for modules. To create a custom label:

1. Right-click on the module icon you want to label.

2. Select **Rename** from the pop-up menu.

3. Type the new label into the **Name** box.

4. Click **Send** to send your changes to the device.

Note

The number of labels available on an ION meter is limited. You may want to restrict the use of custom labels to output registers only (where they are typically more useful). See "Customizing ION module output register labels" on page 78 for more information.

Resetting custom module labels to their default labels

To reset a custom module label to its default label (and allow other custom labels to be created if you have run out of space):

1. Right-click on the icon of the module with the custom label you want to reset.

2. Select **Rename** from the pop-up menu.

3. Delete the custom label completely. You do not need to type the default label in the field.

4. Click **Send** to send your changes to the device. The label is reset to the default.

Configuring an ION Module setup register

ION Setup lets you change the values for numeric bounded registers, enumerated registers, and string setup registers. Setup registers that are not of these three classes cannot be configured using ION Setup.

1. Double-click on the module you want to configure.

2. Select the Setup Registers tab.

3. The Parameters box lists all the setup registers of the selected module and their settings. To change a setup register, select it and click **Edit**.

   • If the selected setup register is a numeric bounded register, type a value into the provided box and click **OK**.

   • If the selected setup register is an enumerated register, select an option from the list and click **OK**.

   • If the selected setup register is a string register, type the string in the provided box and click **OK**.

4. Click **Send** to send your changes to the device.

Linking ION modules

ION Setup lets you link the output register of an ION module to the input register of another ION module on the same device. This operation must be performed before reconfiguring ION devices.

To create a link between ION modules:

1. Double-click the module whose input you want to link.

2. Select the **Inputs** tab.

3. The **Parameters** box lists all the inputs of the selected module as well as the labels of the output registers that are currently linked to each input. To create a new link (or change an existing one), select the input and click the **Edit** button.

4. The **ION Input Selection** dialog box appears. Complete this dialog box (for more detail, see the topic).

5. The label of the output register you selected appears beside the input in the Parameters box.

6. Click **Send** to send your changes to the device.

ION Input selection dialog box

When you click on the "+" beside an item in the tree, it expands to show all the items beneath it in the hierarchy. For example, if you click on the Sliding Window Demand modules, all the available Sliding Window Demand modules are displayed. If you click on a specific module, all the output registers of that module are revealed.

As you navigate the tree, ION Setup caches the branches you open. Thus, if you open a branch of the tree that you already looked at, ION Setup can display it immediately, without

communications delays. The parts of the tree you have opened are identified by a small box with a "+" or "–" sign beside them (the "+" sign indicates that the item can be expanded further and the "-" sign indicates that the branch has already been expanded).

Note

The cached tree is only maintained until you open the ION tree of another ION device; once you change to another ION device, the cache is cleared.

There are several ways to select an output register:

• You can use the tree to select the module type, module and register. At the top of the dialog box, the full path of the register is shown as \\Device Name\ION module type\ION module and the name of the register appears in the Parameter box. Only those output registers of the class appropriate for the selected input are displayed (for more information on registers, register classes and module links, see "Overview of ION architecture " on page 73).

• If you already know the label of the register you want and you have already opened that branch of the tree, you can simply type the label of the register you want into the Parameter box and click the **Search** button. If the register is in the ION Setup cache, the path of the register appears above the Parameter box and the **OK** button becomes available. If the register is not in the cache or has been typed incorrectly, the message "No match found in cache" is displayed.

• If you know the handle of the register you want, you can bypass the ION tree altogether and simply type in the handle. This is the fastest method of accessing an ION register; however, it does not add the register to the cache.

Once you have selected an output register, click the **OK** button to return to the module's configuration dialog box. When you are finished linking, click **Send** to save your changes to the meter.

Deleting links between ION modules

To delete a link between two ION modules:

1. Double-click the module whose input you want to unlink.

2. Select the **Inputs** tab.

3. The Parameters box lists all the inputs of the selected module as well as the labels of the output registers that are currently linked to each input.

NOTICE

UNINTENDED DEVICE OPERATION

Do not delete any ION modules without knowing which modules are dependent on it.

Failure to follow these instructions can result in the unintended operation of the remaining modules.

---

4. Select the input, then click **Delete**.

5. Click **Send** to send your changes to the device.

Viewing ION module output registers

1. Double-click the module whose output registers you want to view.

2. Select the **Output Registers** tab.

3. The **Parameters** box lists all the output registers of the selected module.

Customizing ION module output register labels

Most output register labels can be customized. To customize an output register label:

1. Double-click the module whose output register you want to label.

2. Select the **Output Registers** tab.

3. The Parameters box lists all the output registers of the selected module. Select the register you want to label, then click **Edit** (or double-click the register).

4. Type the custom label in the box, then click **OK**. Some ION devices limit the number of characters a custom label can have.

5. Click **Send** to save your changes to the device.

Synchronizing the time across devices

This section applies to the ION8800, ION8600, ION8650, ION7550/ION7650 and ION7300 series meters and certain legacy meters (ION8300/ION8400/ION8500, ION7700, ION7500/ION7600 and 3000 series meters). To perform time synchronization on devices not listed here, refer to the documentation for your device.

To broadcast time from your workstation's internal clock to all devices in one or more sites:

1. Select **Tools > Broadcast Time** (or click ⊙ on the toolbar).

2. Select the site or sites to which you want to send the current time. Note that only sites that are presently connected appear in the list.

3. Click **Broadcast**.

All devices in the selected sites are updated with the current time from your workstation.

ION meter cloning

You can clone (or copy) configurations from one meter to another meter of the same model, with the following exceptions:

- COM modules

- Security Users modules

- Security Options modules

- Log Mail modules

For example, if you copy the setup configuration of ION meter A to ION meter B:

1. All modules in Meter B are erased, then

2. All the modules in Meter A are copied to Meter B (except those listed above).

 To completely clone an ION meter:

1. Make sure the **Display Setup Information** button [icon] is selected.

2. Expand the System tree so that the meter icons are displayed on both halves of the screen.

3. From the left pane, drag the icon of the meter you want to clone onto the meter you want to copy to.
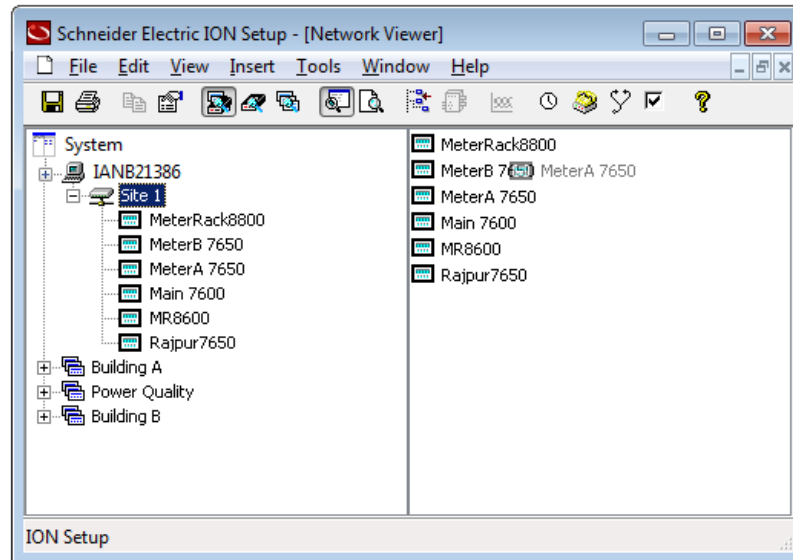
4. ION Setup now clones the meter and displays the **Copying Device Configuration** dialog box.

   After all configuration parameters have been copied, the message "Cloning fully successful" appears on the status bar at the bottom left corner of the ION Setup screen.

Chapter 5: Using the Setup Assistant

The Setup Assistant is a series of dialogs and wizards with instructions for most setup and configuration tasks that you need to perform. The available screens vary depending upon the model, firmware and framework of your connected device.

In this section

Setup Assistant overview

The Setup Assistant guides you through common setup requirements for your ION meter. Setup Assistant is available only to those devices that are designed and built using the ION architecture (i.e., the meters that support Advanced Configuration mode).

After you have connected to or added a device to your ION Setup network, the Setup Assistant icon appears in the right-hand window of the Network Viewer. Double-click the icon to open Setup Assistant.
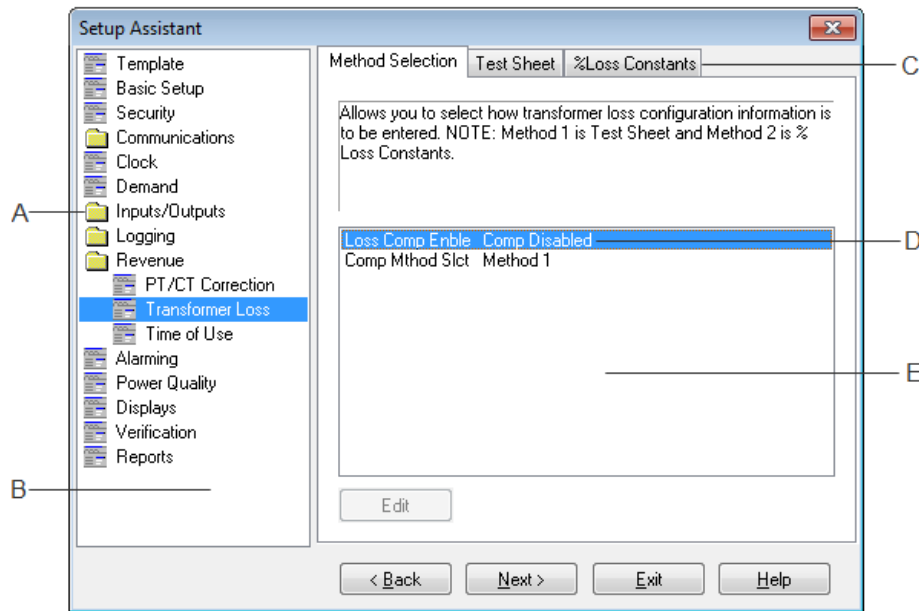
A	Click the folder icon to open and show available screens.	B	Click the icons in this pane to access the desired screen.	C	This area shows the available setup tabs.
D	Select a parameter and click **Edit** to configure.	E	This area contains the parameters available for configuration		

Note

If you cannot see the Setup Assistant in the right pane, and you are connected to a device that uses ION Architecture, then select **View > Setup Screens**.

Each setup screen on the left gives you access to different setup tabs on the right. Within the tabs you can set parameters and functions that are specific to each setup screen. For example, in the figure above, the tabs allow you to select your transformer loss configuration, enter transformer loss information using the Test Sheet method and enter loss information using the %Loss constants method.

Template association

When you connect to an ION device using ION Setup, it scans the device's template to determine which Setup Assistant to use to configure your device.

If ION Setup does not recognize the template it attempts to load from the device (e.g., a customized template), a **Custom Template association** screen will appear. If so, then take one of the following actions:

- If the template version number is greater than those displayed in the list, go to www.schneider-electric.com and download the latest version of ION Setup. The latest version of ION Setup and the latest factory template for that device will be installed.

- If the template corresponds to an existing template on the list, select that template. The next time you launch ION Setup, it will load the template you have selected.

- If the template does not correspond to any template on the list, contact the person who created the custom template to learn which template to select.

⚠ WARNING

UNINTENDED EQUIPMENT OPERATION

- Do not use ION Setup and associated devices for critical control or protection applications where human or equipment safety relies on the operation of the control circuit.

- Do not use an ION meter's digital outputs for any safety critical application due to possible unexpected change of state during power cycles, power outages, template pastes, or firmware upgrades.

- Do not incorrectly configure ION Setup and its associated devices; this can lead to incorrect reports and/or data results.

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

Setup Assistant icons

These icons are available in the left-hand screen of the Setup Assistant:

	These icons indicate an available Setup Assistant screen, which might represent groups of setup or display parameters for the device, or a particular ION module.
	The folder icons organize Setup Assistant screens into logical groupings (for example, revenue-related settings). Click the icon to open the folder; double-click to close it.

Available Setup Assistant screens

Setup Assistant screens are available for those devices that are designed and built using the ION architecture.

Note

> The setup screens and tabs available to you in the Setup Assistant vary depending upon the type of device and its firmware version.

Template screen

You can take advantage of new features for your meter by upgrading the meter's firmware. Alternatively, you can copy (Save to PC) a configuration from one meter and paste (Send to Meter) it to another meter of the same type. In the Setup Assistant, click **Template** at the left to see the available options.
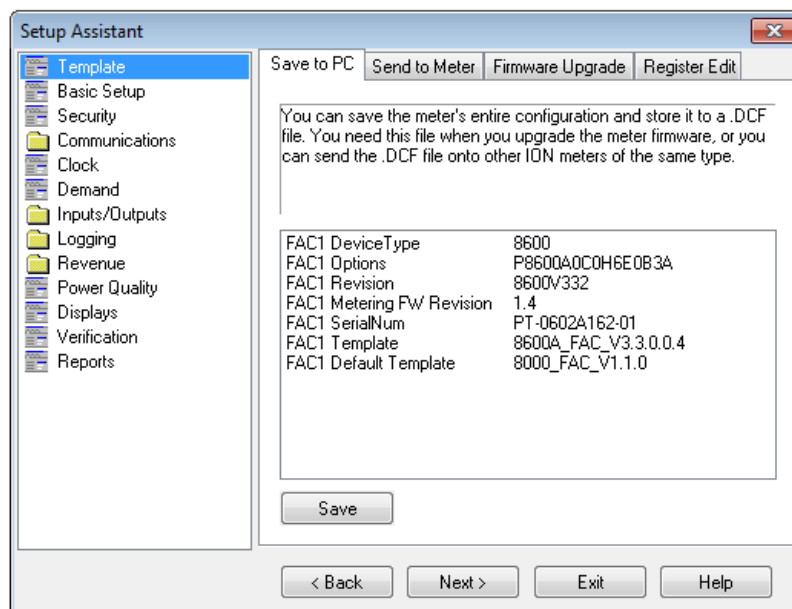
This screen has four tabs:

- **Save to PC** lets you save a device configuration file (.dcf) containing custom configuration changes. You can make custom changes to one meter, upload the configuration file onto a workstation, and then download this file onto one or more other meters. You can only download the .dcf file to other meters of the same type.

Note

> Uploading or retrieving device configuration may take some time. If you abort the procedure, ION Setup provides you with a list of the copy procedures that were successfully completed before they were stopped.

- **Send to Meter** lets you download to other meters a configuration file you have created or uploaded. The following formats are supported:

  - ION Setup device configuration file (.dcf)

  - ION Enterprise framework file (.fwn)

Note

You can only load framework files containing the full meter configuration onto a meter using ION Setup. To load partial framework files, you must use the Designer component of ION Enterprise. Framework (.fwn) files created in PEGASYS software are not supported.

- **Firmware upgrade** lets you upgrade the meter to gain access to new or enhanced modules. When you perform a firmware upgrade, you are prompted to download the configuration file onto the meter. For more information on upgrading your device's firmware, see your device's documentation.

- **Register Edit** lets you to view and modify energy register values.

Note

Users should take utmost precautions before performing a template paste or firmware upgrade operation if the outputs are to be used for control operations. Relays may either activate or deactivate when either the firmware is being downloaded or immediately after downloading is completed, or anytime during the template pasting operation.

⚠ WARNING

UNINTENDED EQUIPMENT OPERATION

- Do not use ION Setup and associated devices for critical control or protection applications where human or equipment safety relies on the operation of the control circuit.

- Do not incorrectly configure ION Setup and its associated devices; this can lead to incorrect reports and/or data results.

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

Template paste options

Some modules are not copied when upgrading firmware, saving to a workstation or sending to a meter. The setup registers of the following modules remain intact and must be configured manually:

- Communications modules

- Security Option modules

- Security User modules

- Log Mail modules

The **Template Paste Options** screen also allows you the option of retaining PT/CT, Clock/Nameplate settings and Energy Readings.
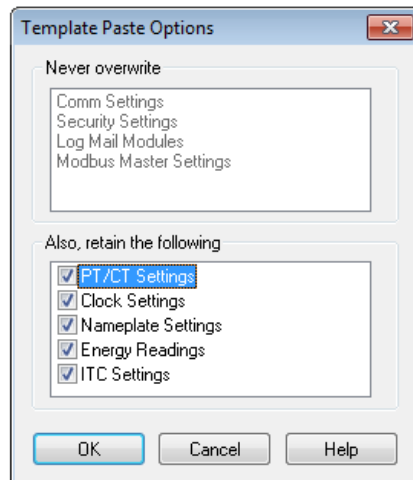
- **PT/CT Settings** retains your setup registers for Power Meter modules.

- **Clock Settings** retains your setup registers for the clock module.

- **Nameplate Settings** retains your Owner, Tag1 and Tag2 settings.

- **Energy Readings** retains the integrator values from your energy registers.

- **ITC Settings** retains your instrument transformer correction settings.

Basic Setup screen

The Basic Setup screen allows you to program the basic settings of your meter.
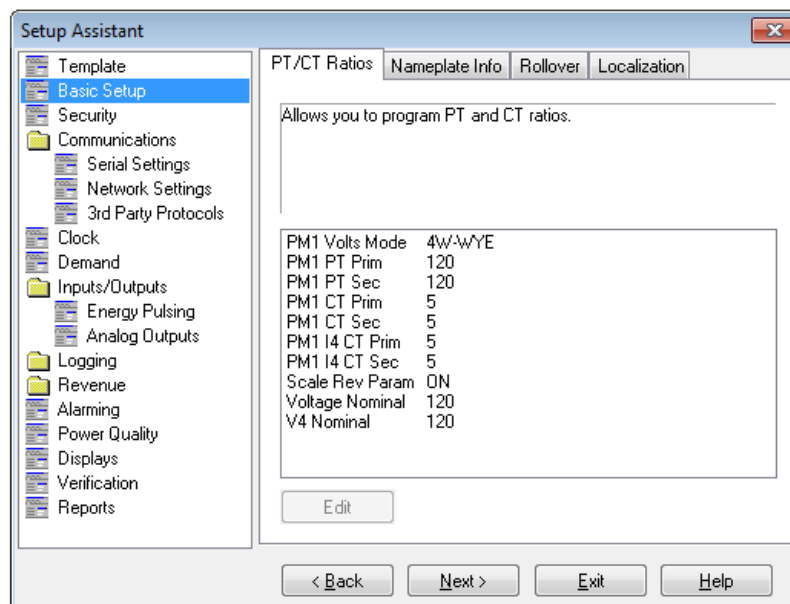
- **PT/CT Ratios** lets you program your potential (voltage) transformer and current transformer ratios. Select the desired parameter and click Edit to make configuration changes.

Scaled Rev Param determines if the PT/CT correction is applied to displayed and recorded meter data. By default, Scaled Rev Param is set to ON and PT/CT corrections are applied.

- **Nameplate Info** lets you edit your meter's nameplate information. Select the desired parameter and click Edit to make configuration changes.

- **Rollover** lets you program energy rollover information.Select the desired parameter and click Edit to make configuration changes.

- **Localization** lets you configure information such as language, time format, date format and digit grouping. Select the desired parameter and click **Edit** to make configuration changes. Click **IEEE/IEC** to access the Metering Convention Setup wizard.

Note

The Localization tab may not appear if the template is not a recent framework (e.g., if an older template is put onto a newer firmware).

- **IEEE/IEC**: Specify whether IEEE or IEC standards are used to display meter data and perform harmonics calculations.
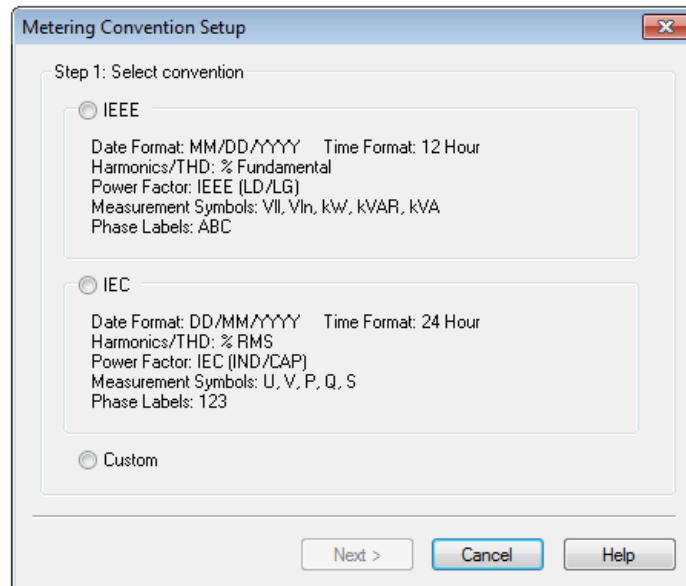
- Custom: Select **Custom** to go through the entire configuration, selecting an option from each format type, to create a custom metering convention.
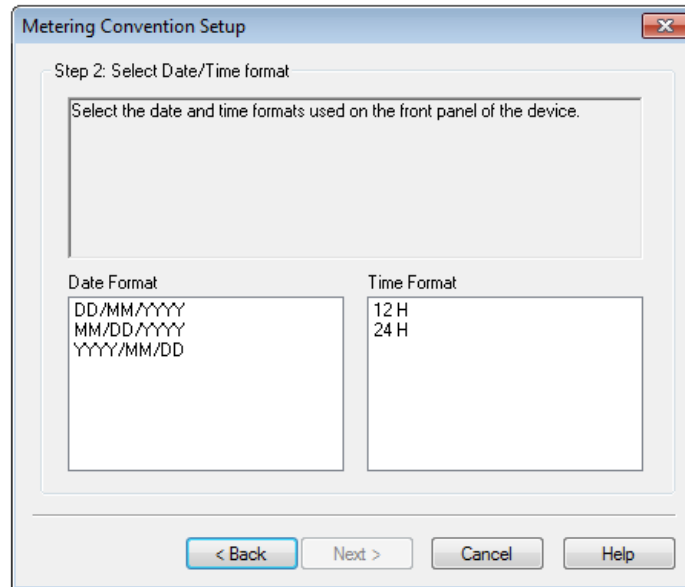
Security screen

In addition to ION Setup's four-level security access system (see "Applying security" on page 43), the Security screen also configures Standard and, for some ION meters, Advanced meter security.

Note

You must be logged in to ION Setup with supervisor-level security in order to make any changes to the security for a meter. See "Applying security" on page 43 for more detailed information. Once you select your preferred options, you must restartION Setup for the changes to take effect.

Depending on the device, the steps below may vary. For instructions specific to your device, refer to your device documentation.

To configure Standard security features:

1. Select Security Mode and click **Edit**.

2. Open the Standard.scf file. The Security Wizard leads you through the configuration process. Enter the meter password, if prompted.

3. Select your configuration options (meter password, active web server, allow web server programming and allow front panel programming).

If you change the communications settings of your meter with the **Allow Front Panel Programming** setting cleared, you may lose communications. In this case, a factory reconfiguration of your meter is required, which resets your meter to its factory defaults and erases all logged data on the meter. See "Password recommendations" on page 93 for more information.

NOTICE

LOSS OF DATA

- Record your meter's front panel and user password information in a secure location.

- Do not change communications port settings with the **Allow Front Panel Programming** setting cleared (unchecked).

Failure to follow these instructions can result in a factory reset of the meter and the loss of all logged data.

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4. Click **Finish** when configuration is complete. A prompt appears asking if you want to save your security settings in a file.

5. Click **Yes** to save your security settings to a file.

Note

Save your meter's security settings file under a descriptive name in a secure location, along with your meter and user password information. Your meter's security settings file can be used to configure additional meters with the same settings, and can also assist with meter troubleshooting.

6. Click **No** if you do not want to save your security settings.

If you change the communications settings of your meter with the **Allow Front Panel Programming** setting cleared, you may lose communications. In this case, a factory reconfiguration of your meter is required, which resets your meter to its factory defaults and erases all logged data on the meter. See "Password recommendations" on page 93 for more information.

NOTICE

LOSS OF DATA

• Record your meter's front panel and user password information in a secure location.

• Do not change communications port settings with the **Allow Front Panel Programming** setting cleared (unchecked).

Failure to follow these instructions can result in a factory reset of the meter and the loss of all logged data.

To configure the Advanced security features:

1. Select Security Mode and click **Edit**.

2. Open the Advanced .scf file. The Security Wizard leads you through the configuration process. Enter the meter password, if prompted.

3. Select your configuration options (meter password, web server programming and front panel programming).

4. Click **Next**. If the protocol lockout feature is available on your meter, the **Select protocol lockout options** screen appears.

   The communications protocol lockout feature allows you to set the number of invalid login attempts each user (in this case, user is a single user and password combination) can make using a particular protocol and communications method before being locked out. You can also configure the lockout duration for all configurable protocols.

   Once a user is locked out, the meter will not accept login attempts from that user on that protocol and communications method until the lockout duration has passed.
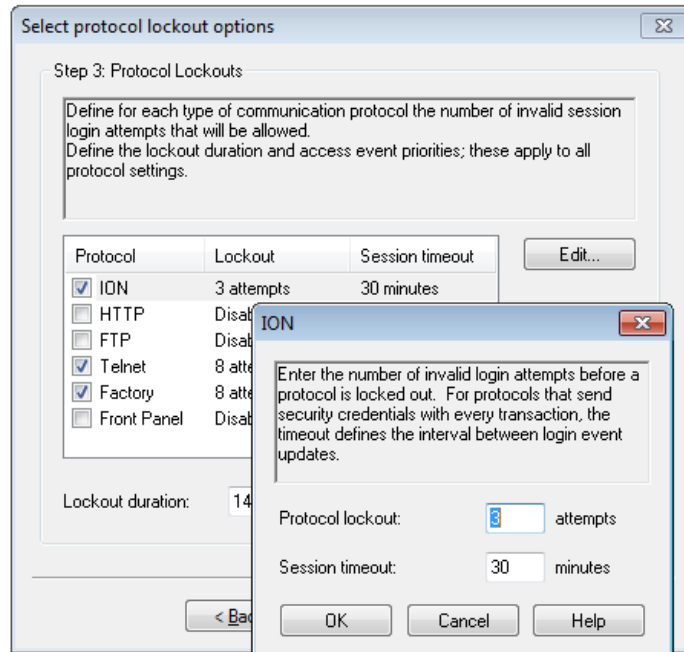
5. Select the check boxes beside the protocols for which you want to enable communications protocol lockout.

6. Highlight a selected protocol and click **Edit** to modify the lockout values for that protocol.

   • **Protocol lockout** specifies the number of invalid login attempts allowed per user/password combination before access is denied to that user using that protocol and communications method.

   • **Session timeout** specifies the active session duration for a protocol; during this time, repeated invalid login attempts using the same user/password combination are not registered (repeated invalid attempts with different combinations are still registered). This only applies to non-session-based protocols which send credentials with each packet (such as ION or HTTP). Configuring this setting helps prevent accidental lockouts and the meter's event log from being filled with protocol access events, if logging of these events is enabled.

7. Click **OK**. Repeat for all protocols for which you want to enable communications protocol lockout.

8. Type the lockout duration, in minutes. The lockout duration specifies how long the meter ignores communication attempts by a user who is locked out. The lockout duration value applies to all lockout-enabled protocols.

   Once a user is locked out, the user cannot access the meter using the same protocol and communications method, regardless of whether or not the user enters the correct USER/password combination.

9. Click **Events** to enter the event priority for valid login attempts, invalid login attempts and protocol lockouts. The event priorities apply to all lockout-enabled protocols. Enter 0 (zero) to disable event logging for a particular type of login attempt.

10. Click **Next**. The **Define individual users/passwords** screen appears.

11. Select the check boxes of the users you want to configure (1 through 16). Expand the tree by clicking on the + and select the appropriate check boxes to configure your user's access levels.
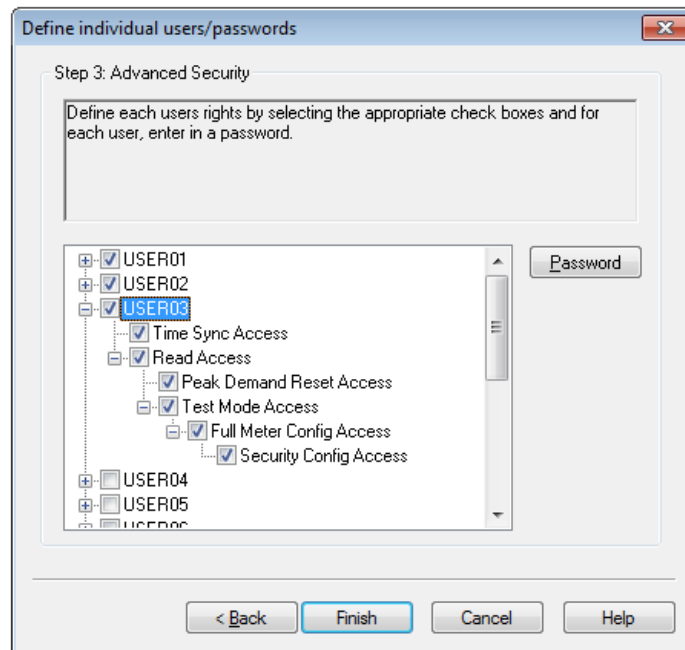
12. Select a user, then click **Password** to set a password for that user. Click **OK**.

If you change the communications settings of your meter with the **Allow Front Panel Programming** setting cleared, you may lose communications. In this case, a factory reconfiguration of your meter is required, which resets your meter to its factory defaults and erases all logged data on the meter. Refer to "Password recommendations" on page 93 for more information.

NOTICE

LOSS OF DATA

- Record your meter's front panel and user password information in a secure location.

- Do not change communications port settings with the **Allow Front Panel Programming** setting cleared (unchecked).

Failure to follow these instructions can result in a factory reset of the meter and the loss of all logged data.

---

13. Click **Finish** when you are done configuring users. A prompt appears asking if you want to save your security settings in a file.

14. Click **Yes** to save your security settings to a file.

Note

Save your meter's security settings file under a descriptive name in a secure location, along with your meter and user password information. Your meter's security settings file can be used to configure additional meters with the same settings, and can also assist with meter troubleshooting.

15. Click **No** if you do not want to save your security settings.

Note

When the advanced security settings are applied, the settings immediately take effect, causing ION Setup to prompt you to authenticate with a user name and password to continue.

Additional device security recommendations

Recommended meter configuration:

1. Enable front panel security.

2. Enable Advanced security.

   - Disable web server programming to help prevent configuration access to your meter over the web.

   - Disable Modbus programming to help prevent configuration access to your meter using Modbus.

   - Configure protocol lockouts to help minimize access to your meter.

   - Disable the Factory user.

   - Configure users and passwords to help minimize access to your meter.

Password recommendations

Perform the following actions to help ensure device password-protected security:

- Enable front panel security on your device.

- Ensure the front panel password is not set at the default factory value of "0" (zero).

- Make all passwords, especially the front panel password, as complex as possible, using the full number of characters available.

- Schedule regular changes to the device's passwords, especially for the front panel password.

- Password information is required in order to configure your device.

If you change the communications settings of your meter with the **Allow Front Panel Programming** setting cleared, you may lose communications. In this case, a factory reconfiguration of your meter is required, which resets your meter to its factory defaults and erases all logged data on the meter. Refer to for more information.

NOTICE
LOSS OF DATA
• Record your meter's front panel and user password information in a secure location.
• Do not change communications port settings with the **Allow Front Panel Programming** setting cleared (unchecked).
Failure to follow these instructions can result in a factory reset of the meter and the loss of all logged data.

Additional recommendations

1. Protect all Ethernet meters with a correctly-configured firewall that prevents Telnet access over port 23.

2. Save a copy of your meter's security configuration (.scf) file, in addition to the password and user information, in a secure location.

3. Set the meter's time synchronization source to a secure communications port and disable time synchronization on all other ports.

For the highest level of security, use a hardware-locked, sealed meter with Advanced security enabled and configured.

Communications screens

The Communication screens let you configure your serial communications settings (communications mode, protocol, unit ID and baud rate) and Ethernet settings (TCP/IP communication, DNS, SMTP and NTP) according to the communications capabilities of your device. Some devices have one Port Settings screen for serial and Ethernet configuration, and others have separate Serial Settings and Network Settings screens.

Note

Make careful note of your method of communication with your device. Making communications changes to the port by which ION Setup is connected to your device may cause ION Setup to lose communication with the device.

3rd Party Protocols screen

The 3rd Party Protocols screen in the Communications folder allows you to make real-time data available through Modbus, DNP and IEC 61850 protocols. Modbus and DNP modules are factory-configured in ION meters and in most cases do not require basic configuration changes. Changing the factory configuration is an advanced setup procedure that requires an understanding of the protocol, as well as an understanding of your meter's internal operation.

Note

If you have advanced security enabled, you must configure the Modbus Map Access register to allow write access for specific users. See the Security Options module description in the *ION Reference*, available on the website. If you have Standard or Advanced security enabled on the meter, you can only read Modbus information from a slave module. You must disable Standard security to write data to a slave module.

This screen has four tabs:

- **Modbus Slave** customizes the Modbus map that your third-party devices use to communicate with the meter.

- **Modbus Master** lets you program third-party device Modbus map information for the meter to retrieve, if your meter is configured as a Modbus Master. Click **Connections** to access the **Modbus Master Connections** configuration screens, or click **Add** to add a new Modbus device.
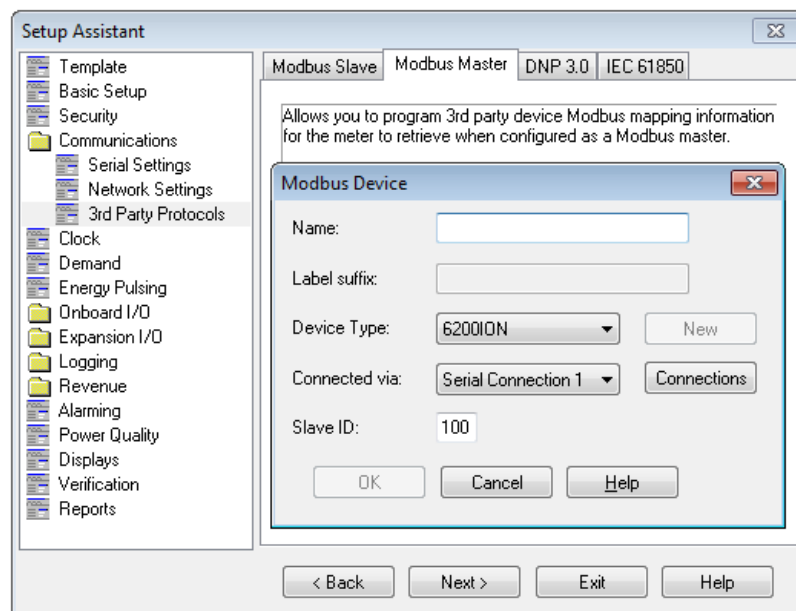
- **DNP 3.0** customizes the DNP 3.0 map that your third-party devices use to communicate with your meter. Select a map, then click **Edit** to start the DNP 3.0 Port Setup wizard. This leads you through the port setup configuration process.

- **IEC 61850** shows the meter's status as an IEC 61850 server. To map additional meter values into IEC 61850, select Custom Analog (for numeric values) or Custom Digital (for digital values) and click **Edit** to access the custom configuration screen.

See the documents *DNP 3.0 and ION Technology, Modbus and ION Technology, Modbus Protocol and Register Map for ION devices*, and *IEC 61850 and ION Technology*, available from the website, for more information about third party protocols.

Clock screen

The Clock screen allows you to configure the internal clock of the meter, which provides timestamps for data logged by the device. Set your Timezone, Time Sync Type, Time Sync Source, Clock Source, and DST Offset settings from this screen. Start of the Week data applies to the Trending and Forecasting module (not available on all meters).
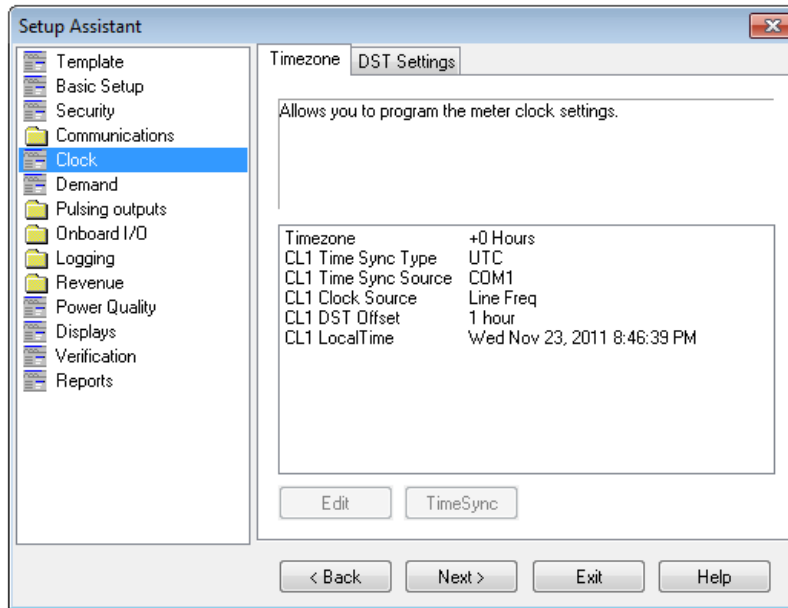
Click **TimeSync** to perform a time synchronization with the Time Sync Source. It may take a few moments for the time synchronization to complete. If the Time Sync Source is the same as your ION Setup connection port, the meter will synchronize with the local time of your workstation.

Time Sync Type

Select **Time Sync Type**, choose **Edit** and enter password if required. Select a **Time Sync Type** from the dropdown list, and click **OK**.

Time Sync Type	Description
UNIX time:	The time, in seconds, since January 1, 1970.
Local time:	The local date/time with DST applied, if applicable.
GMT time:	Greenwich mean time (time at Prime Meridian). DST may or may not be applied.
UTC time:	GMT without DST.
Standard time:	local time without any DST applied (regardless if DST is in season).

Note

Meters are set at the factory to UTC Time Sync Type. However, to synchronize the device clock with local time instead, set **Time Sync Type** to LOCAL, and ensure that the workstation is in the same time zone as the devices in your network. For ION meters, the **Timezone** must be set correctly before the clock is synchronized.

Timezone

On the **Timezone** tab, select Timezone, click **Edit**, then select a time zone from the list for your meter.
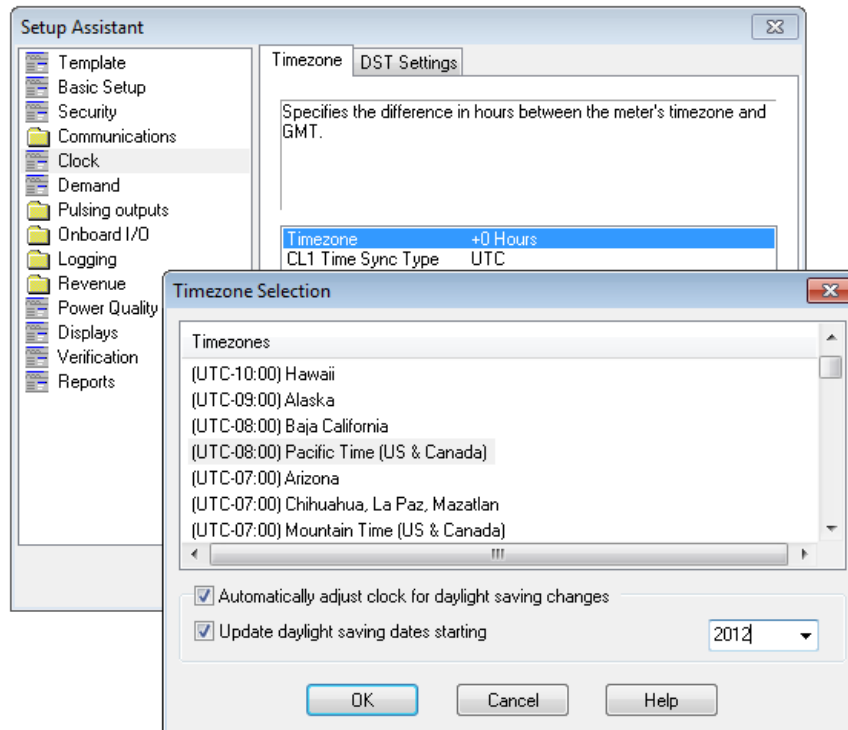
Percent Battery Remaining

Some devices have a replaceable battery and support the **Percent Battery Remaining** register, available on the **Timezone** tab. When a new battery is installed, you can select **Percent Battery Remaining**, click **Edit**, enter a value of 100, and click **OK**. The battery remaining value will be updated to reflect the percent remaining on the new battery
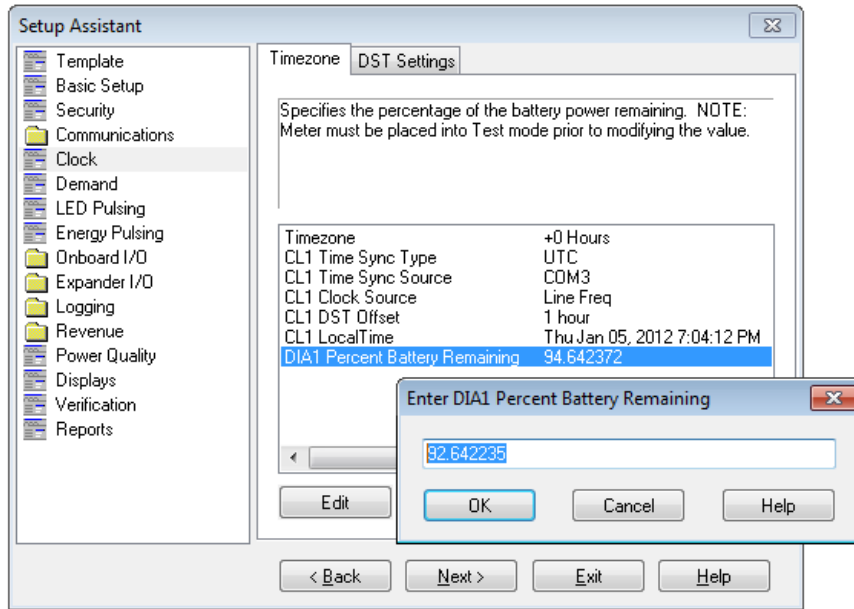
Daylight Savings settings

The **DST Settings** tab lets you program your Daylight Savings periods for up to 20 years.
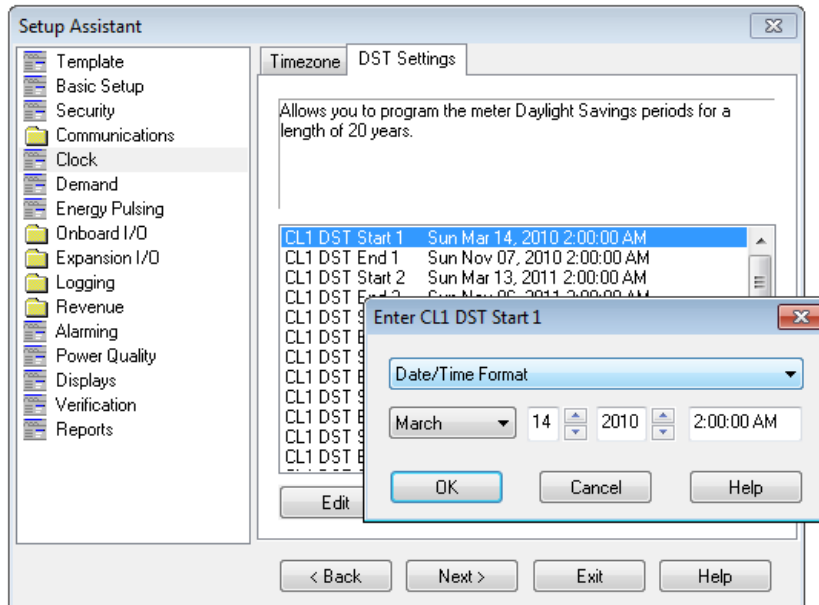
Demand screen

Demand is a measure of average power consumption over a fixed time interval. Peak (or maximum) demand is the highest demand level recorded during a billing period. From the Demand screen, you can configure Rolling Block (the interval used to compute your values) and Demand Forgiveness (the time during power restoration when demand is not calculated).
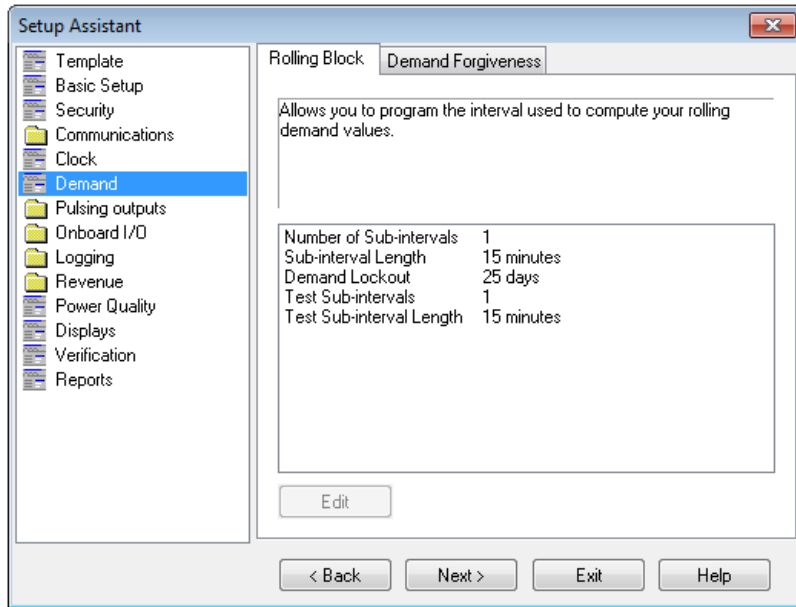
With Rolling Block (or Sliding Window) Demand, demand is measured based on the average load level over the most recent set of sub-intervals. The Rolling Block tab allows you to define the number and length of intervals used for demand calculations.

Demand Forgiveness is the time, programmed in the meter, during which demand (and therefore peak demand) will not be calculated following a total power outage. During power-up following a complete power outage, customer equipment consumes a higher-than-normal amount of power. The Demand Forgiveness feature lets a utility forgive the customer for peak demand penalties that may arise from power-up following a power outage.

Input / Output screens

The following sections outline the screens available for I/O configuration.

Note

The available screens vary depending upon the model and firmware of your connected device. See your device technical documentation for specific information on configuring inputs and outputs.

LED Pulsing screen

Some meters are pre-configured for LED pulsing. From the Energy Pulsing screen in the Inputs/Outputs folder (or the Pulsing outputs folder, depending on the meter), you can adjust LED pulse rates by modifying the Kt (pulse rate) registers. The Kt value entered defines how much energy is accumulated before a pulse is sent. Select the desired parameter, click Edit, type a numeric value, then click OK to set LED pulsing values.
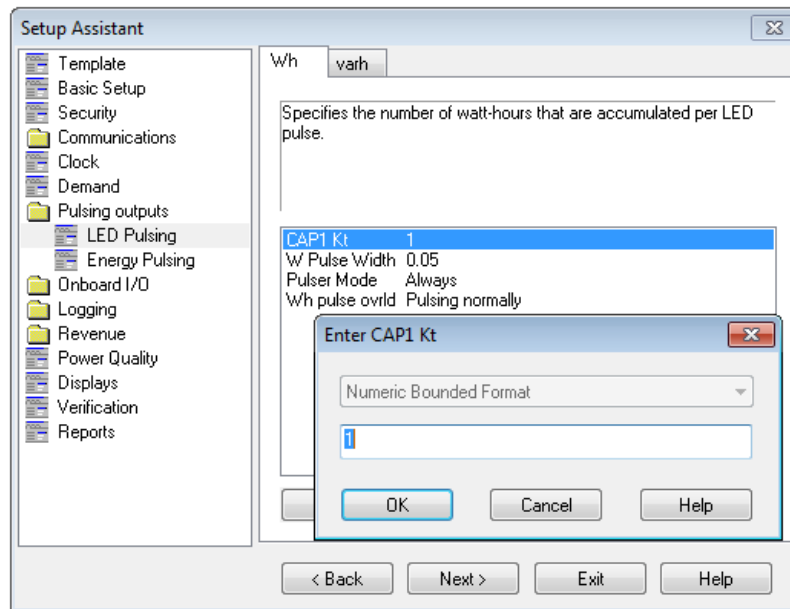
Note

To configure the LED ports for a different pulsing application, you must re-link the Source input to the output register of a different instantaneous power quantity in one of the Arithmetic modules. This is an Advanced Configuration procedure. See "Working in Advanced Configuration mode" on page 72.

Energy Pulsing screen

If you want to use one of the digital outputs available on your meter for energy pulsing applications, configure it from the Energy Pulsing screen on your meter. The Energy Pulsing screen shows the outputs of power in units of Wh, VAh, and VARh for each pulse value defined by the setup register.

<div style="border:1px solid black; padding:10px;">

⚠ WARNING

UNINTENDED EQUIPMENT OPERATION

Do not use ION Setup and associated devices for critical control or protection applications where human or equipment safety relies on the operation of the control circuit.

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

</div>

The pulse weight (Kt) determines how many energy units are accumulated before a pulse is created for use by external software. To set the Kh value to track revenue values, refer to "Basic Setup screen" on page 86 to set the Basic Rev Param on the PT/CT Ratios tab.
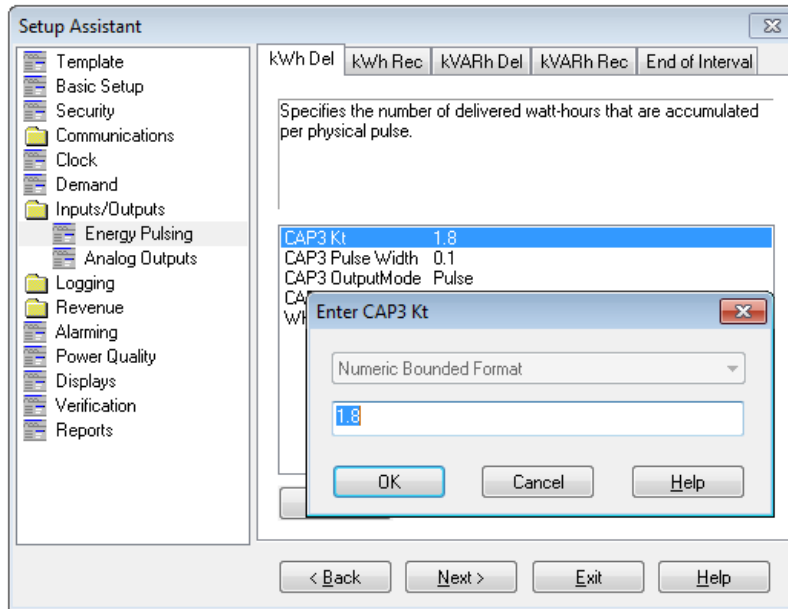
Note

If the *ovld* register is "Pulsing Suspended", the energy is accumulating faster than the digital output can pulse with the existing settings (the Calibration Pulser is in Overload State). Refer to the *ION Reference*, Calibration Pulser Module, Detailed Module Operation section for details on how to configure the settings of the Calibration Pulser Module.

Related topics

Onboard Digital Inputs screen

Digital inputs can be used for status monitoring or pulse counting applications. The Onboard Digital Inputs screen allows you to configure the input mode (Pulse or KYZ) and the multiplier (the number to increment the counter for each detected input pulse). It also allows you to view the counter and status for each digital input.
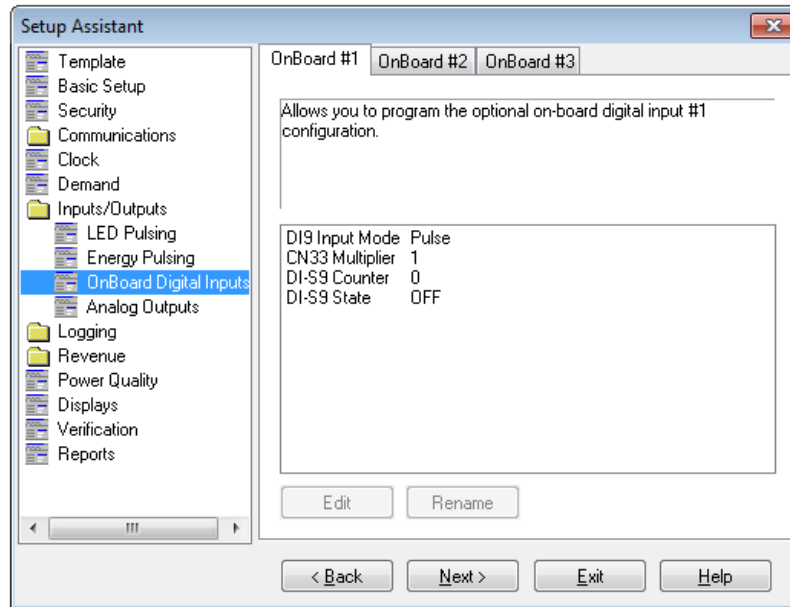
Onboard Digital Outputs screen

Digital outputs can be used to program digital output control. The Onboard Digital Outputs screen allows you to configure the output mode. Select parameters for the Source, Force ON and Force Off. It allows you to select and view the Polarity, PulseWidth and Port for each digital output.

⚠ WARNING
UNINTENDED EQUIPMENT OPERATION
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Failure to follow these instructions can result in death or serious injury.
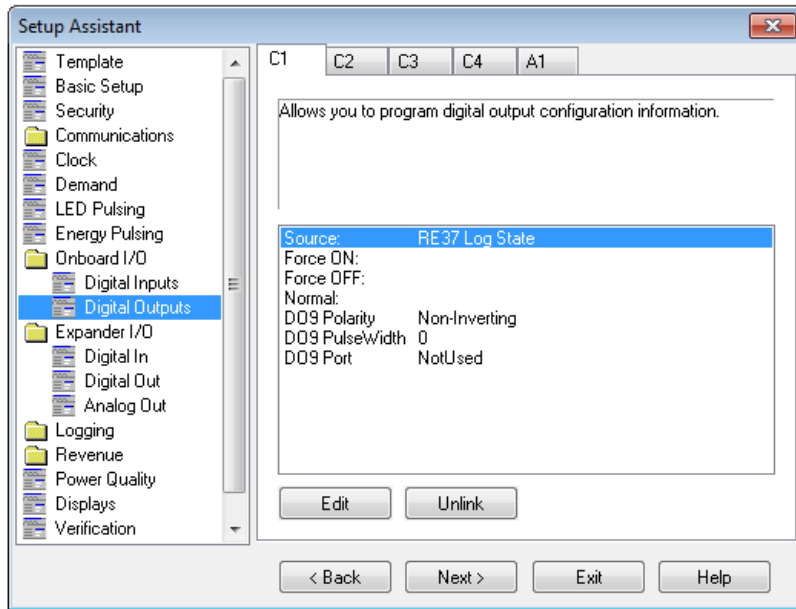
Expansion Analog Inputs screen

This screen allows you to program the analog input configuration information for the I/O expansion card. Select a tab to configure each input. Specify the minimum source value for Zero Scale, the maximum source value for Full Scale, then select the physical analog input port on which the signal occurs.
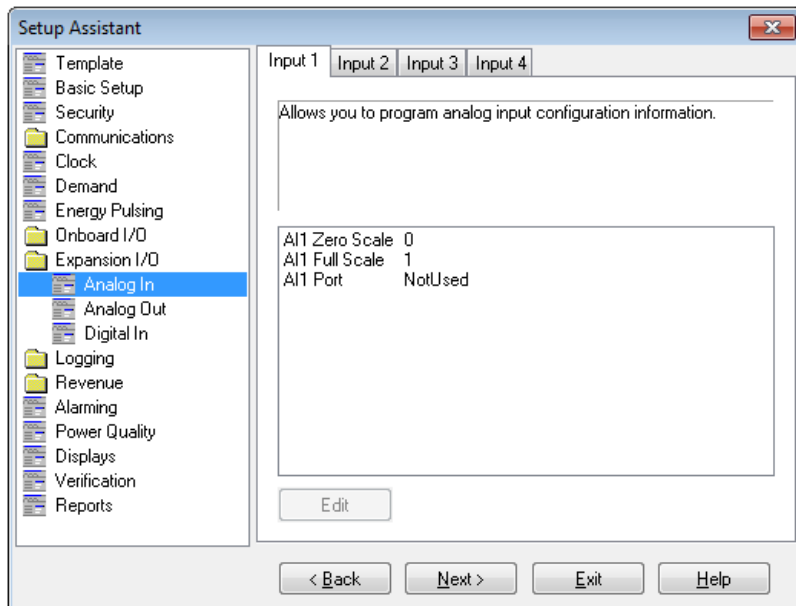
Expansion Analog Outputs screen

This screen allows you to program the analog output configuration information for the I/O expansion card. Select a tab to configure each output. Choose a parameter from the available registers for source. Specify the minimum source value for Minimum Scale, the maximum source value for Maximum Scale, then select the physical analog output port on which the signal occurs.

⚠ WARNING

UNINTENDED EQUIPMENT OPERATION

- Do not use ION Setup and associated devices for critical control or protection applications where human or equipment safety relies on the operation of the control circuit.

- Make sure proper polarity is observed when wiring external devices to the analog output ports.

Failure to follow these instructions can result in death or serious injury.
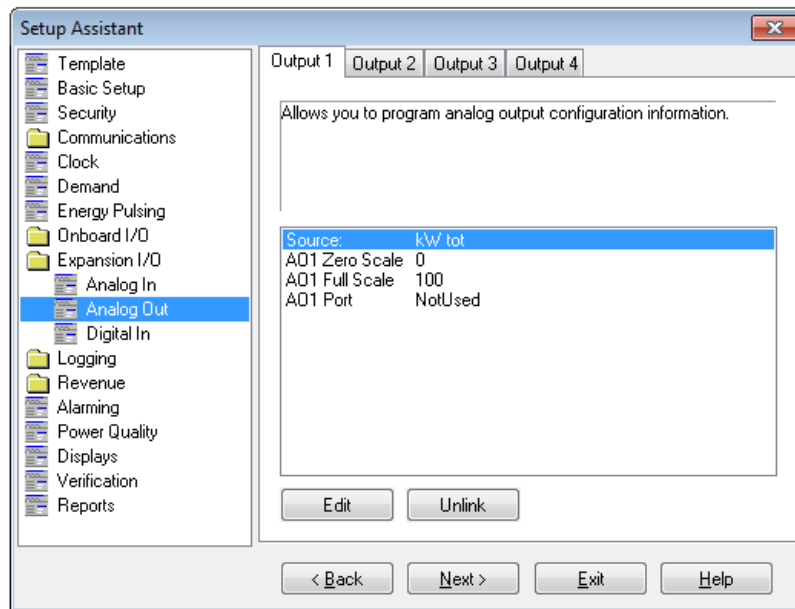
Expansion Digital Inputs screen

This screen allows you to program the digital input configuration information for the I/O expansion card. Select a tab to configure each input. Specify the type of input signal (Pulse, KYZ). Set the Polarity (if configurable), set the minimum time interval to detect state changes for Debounce, and then specify the physical digital input port on which the signal occurs.
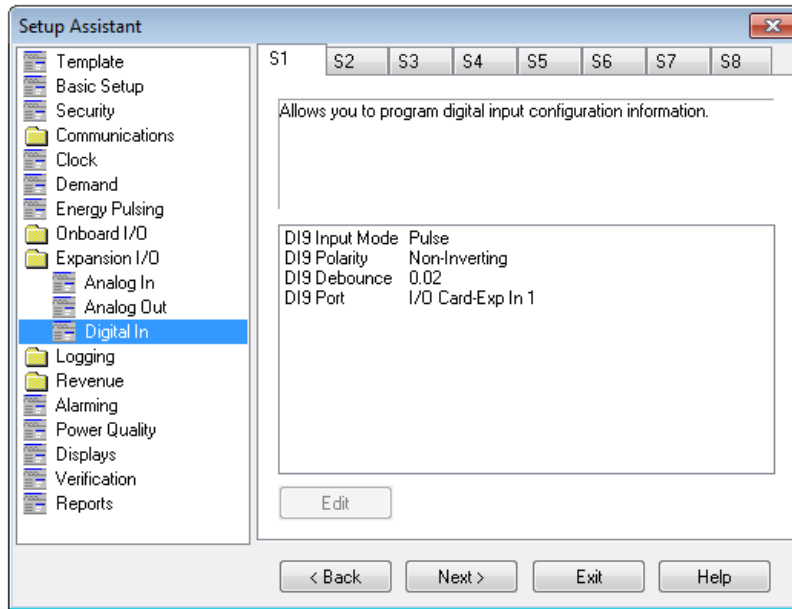
Analog Outputs screen

An ION meter's analog outputs act as transducers. The meter measures power and energy, and then sends that information via the analog outputs to a remote terminal unit (RTU). From the Analog Outputs screen in the Inputs/Outputs folder, you can define the information source, set the full-scale and zero-scale values, and define the ports that deliver and receive.

⚠ WARNING

UNINTENDED EQUIPMENT OPERATION

Do not use ION Setup and associated devices for critical control or protection applications where human or equipment safety relies on the operation of the control circuit.

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

The zero-scale value defines the source input value that creates the minimum current output on the analog device. The full-scale value defines the source input value that creates the maximum current output on the analog device.

For detailed information, see your meter's documentation, and the technical note *Digital and Analog I/O*, available at www.schneider-electric.com.
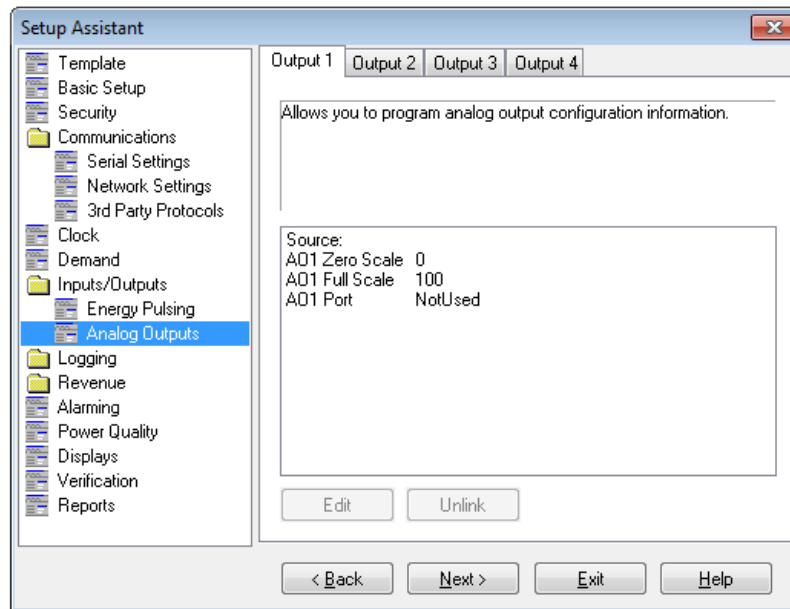
Memory screen

The **Memory** screen in the Logging folder allows you to configure the meter's log memory settings (for example Load Profile, Event Log, Waveforms, and System Resource allocation).

Record all important and necessary information before changing memory settings. The memory settings can be reset when some memory parameters are changed.

NOTICE
LOSS OF DATA
Do not modify memory parameters without first recording all important information.
Failure to follow these instructions can result in loss of data.

When editing the Load Profile, you can select the number of days (which calculates the depth based on the current interval length).

Load Profile/Revenue Log screen

The **Load Profile/Revenue Log** screen in the Logging folder allows you to specify the load profile (the interval and duration of the revenue log). The Load Profile contains information about the power usage in your system by gathering detailed energy usage patterns over a period of time.

In this screen, there are three tabs:

- **Channels** allows you to program the load profile channels.

- **Interval/Depth** allows you to program the interval and duration of the load profile on a specific channel.

- **Energy Pulse Weights** allows you to program the pulse weights' values when recording Energy - Pulse channels.

The channels you specify in this setup screen appear in a Load Profile Report that you can generate in the Reports setup screen (see).

To specify Load Profile channels:

1. Click on the Load Profile channel that you want to specify and click **Edit**.

   The **Parameter Selection** screen appears.

2. The parameters are grouped by type. Click on the + to expand the group (or select the checkbox for **Show all available registers** to see all the registers you can select). Select the desired logging parameter and click **OK**.

Note

Specify the Energy - Pulses parameters to save Load Profile data in MV-90 P-File (pulse unit) data format. See for file parameter details.
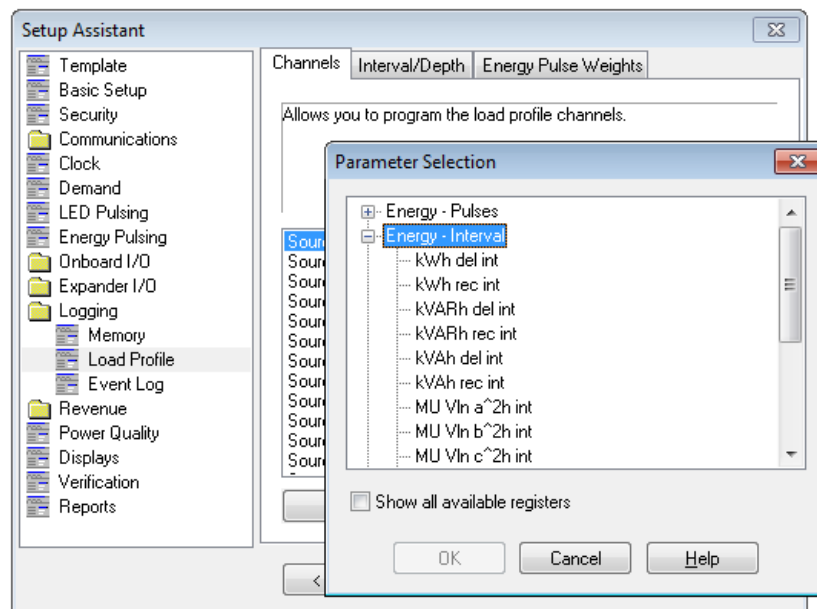
3. Repeat until you have completely specified your Load Profile channels.

For more information on configuring Interval/Depth, see .

Event Log screen

The Event Log screen allows you to configure the types of events that are recorded in the Event Log.

Cutoff: This is the event priority cutoff value. Events with a priority below this value are not recorded in the Event Log.

SS EvPriority: This is the Sag/Swell event priority value. This value must be greater than the Cutoff value for Sag/Swell events to be recorded in the Event Log.

TR EvPriority: This is the Transients event priority value. This value must be greater than the Cutoff value for Transient events to be recorded in the Event Log.

PhaseLossEnable: This allows you to enable phase loss Event Log recording and phase loss alarming. This information can be used by MV-90 to provide phase loss reporting.

EnergyDemand Log screen

The **EnergyDemand Log** screen allows you to specify the sources for and the interval and duration of the EnergyDemand log.
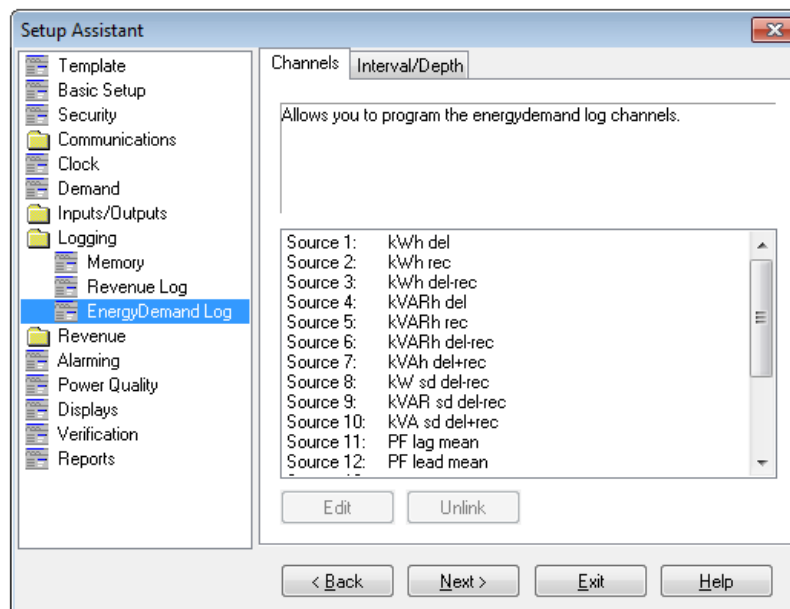
In this screen, there are two tabs:

- **Channels** allows you to program the EnergyDemand channels.
- **Interval/Depth** allows you to program the interval and duration of the EnergyDemand on a specific channel.

The channels you specify in this setup screen appear in an EnergyDemand Report that you can generate in the Reports setup screen (see "Reports screen" on page 125).

To specify EnergyDemand channels:

1. Click on the EnergyDemand channel that you want to specify and click **Edit**.

    The **Parameter Selection** screen appears.

2. The parameters are grouped by type. Click on the + to expand the group (or select the checkbox for **Show all available registers** to see all the registers you can select). Select the parameter and click **OK**.
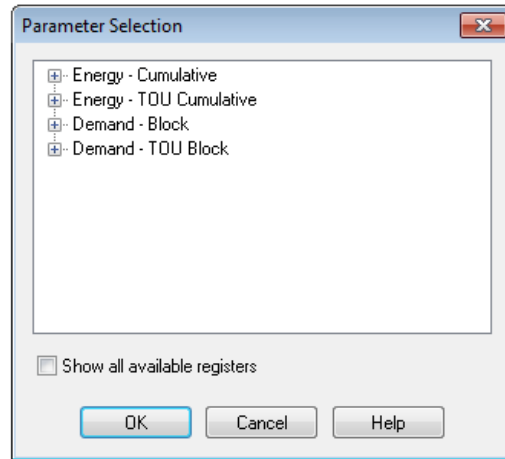
3. Repeat until you have completely specified your EnergyDemand channels.

Configuring Interval/Depth

You can use ION Setup to configure the interval length and depth of your meter's logs (i.e. Revenue Log, Energy Demand Log, Load Profile).

1. In the Setup Assistant, open the Logging folder and navigate to the desired log.
2. Click the **Interval/Depth** tab. Edit the interval length (time) and depth (number of records) as desired.
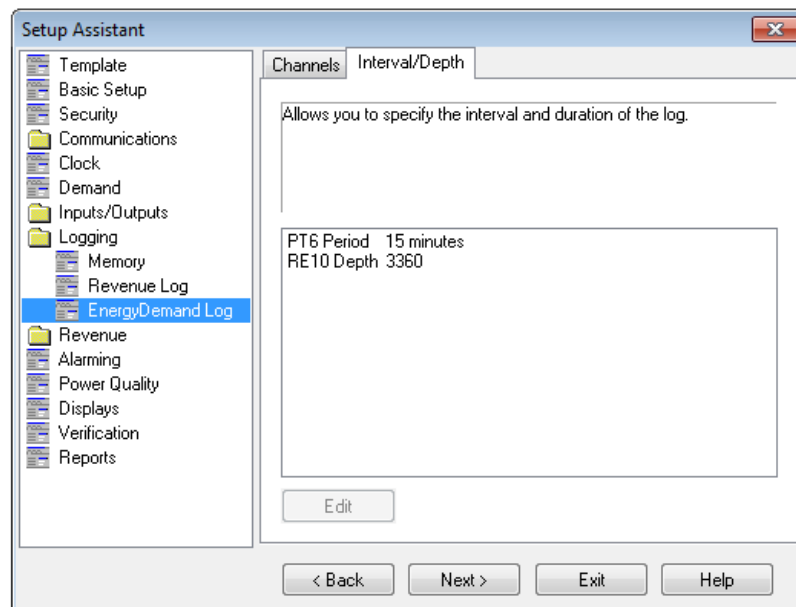
Modifications to these parameters will reset your recorded data. It is recommended that you record all necessary information before programming configuration changes on the meter.

<div style="border: 2px solid black; padding: 10px;">

NOTICE

LOSS OF DATA

- Do not program your meter to write any data recorder at continuous intervals lower than 60 seconds (heavy logging configuration).

- Use of an uninterruptible power supply (UPS) is recommended for such heavy logging configurations if data needs to be available after a power cycle.

Failure to follow these instructions can result in loss of data.

</div>

PT/CT Correction screen

The PT/CT Correction screen in the Revenue folder allows you to configure any transformer correction for voltage and current inputs. Select the parameter, then click **Edit** to configure either your voltage or current input correction details.
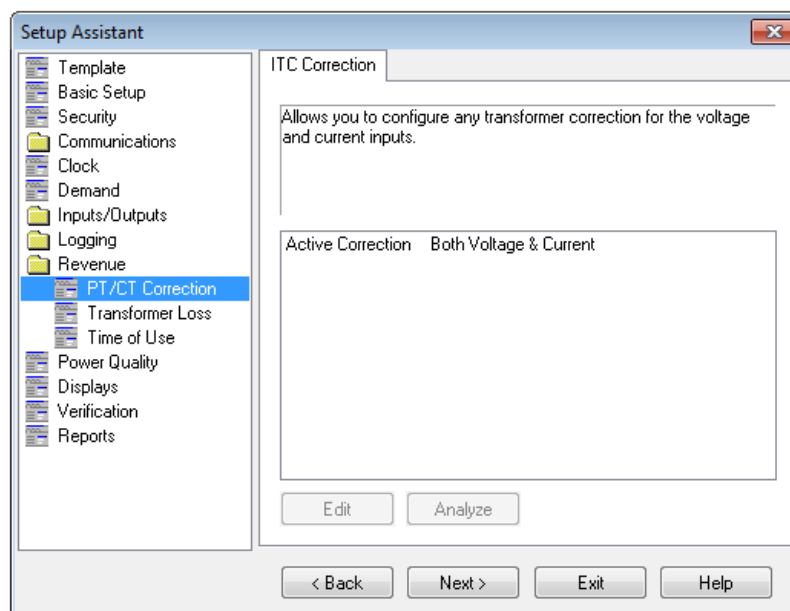
Transformer Loss screen

Some ION revenue meters support loss compensation in their default framework. For more information about Loss Compensation, see the technical note *Transformer/Line Loss Calculations* available at www.schneider-electric.com or contact your local sales representative.

Transformer loss occurs when power is dissipated by the core's magnetizing inductance (iron loss) and/or impedance of the wiring (copper loss). ION Setup can calculate these losses for any operating condition if certain parameters of the power transformer are known. Input parameters should only be programmed by qualified personnel that have appropriate training and experience with transformer loss compensation calculations.

NOTICE

INACCURATE DATA

Do not attempt to implement transformer loss compensation without advanced knowledge of power systems and connection methods.

Failure to follow these instructions can result in inaccurate data.
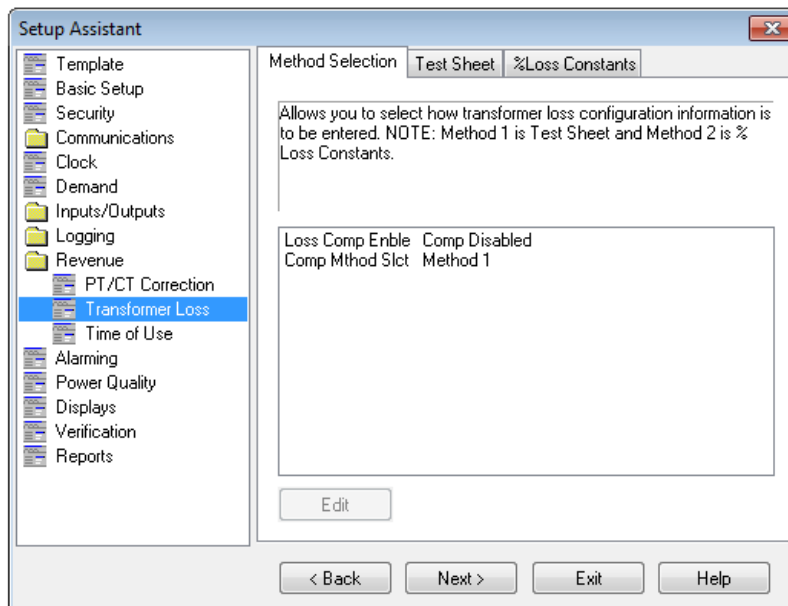
The Transformer Loss screen has the following tabs:

- **Method Selection** allows you to enable or disable loss compensation and select the method: Method 1 (Test Sheet) or Method 2 (%Loss Constants).

- **Test Sheet** lets you configure loss compensation using Method 1 (Test Sheet).

- **%Loss Constants** lets you configure loss compensation using Method 2 (%Loss Constants).

Time of Use (TOU) screen

The Time of Use (TOU) screen is not available for all meters. The information specified in the TOU screen can be used with logged data to calculate system energy and power costs. This information is important if you are using your meter in a billing application. The Setup Assistant leads you through a series of steps to create parameters for a TOU schedule, including daily, seasonal, holiday, and special rate profiles.
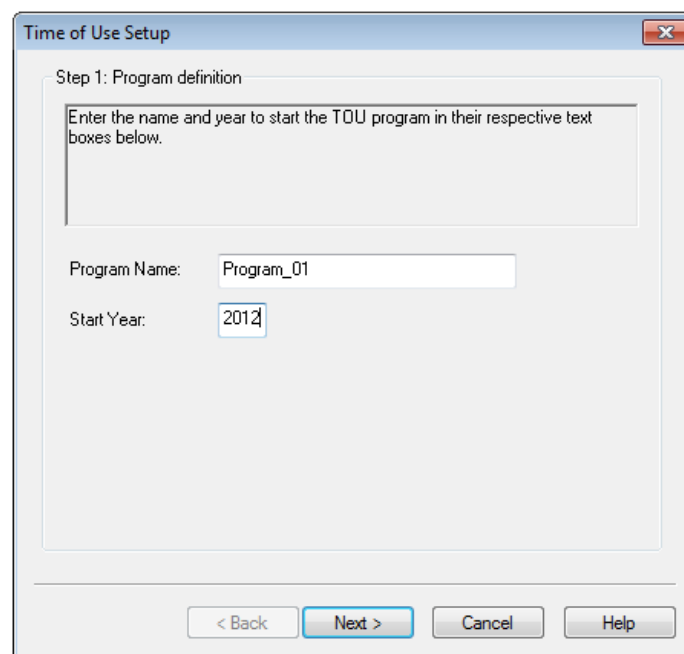
Enter the dates of your seasonal or other rate-profile period as prompted. If your season comprises the same dates every year, you only need to enter a single range of dates in the appropriate fields. If the active dates are different each year (for example, Season 3 becomes active every first Monday in August), specify start dates for each year.

Default sample TOU program

Depending on your meter configuration, a time of use program named "Sample TOU" may exist on your device as part of its default framework. If this is the case, choose a name other than "Sample TOU" for your time of use program. This is to preserve the integrity of your meter's default framework.

Configuring Time of Use

1. Select Sample TOU and click **Edit**. The TOU Assistant loads a default TOU program and holiday selection screen (not the "Sample TOU" program on the device). Name the TOU program, enter the start year and click **Next**.

2. Select the number of rates you want and enter a rate name in the field for each rate selected, then click **Next**.
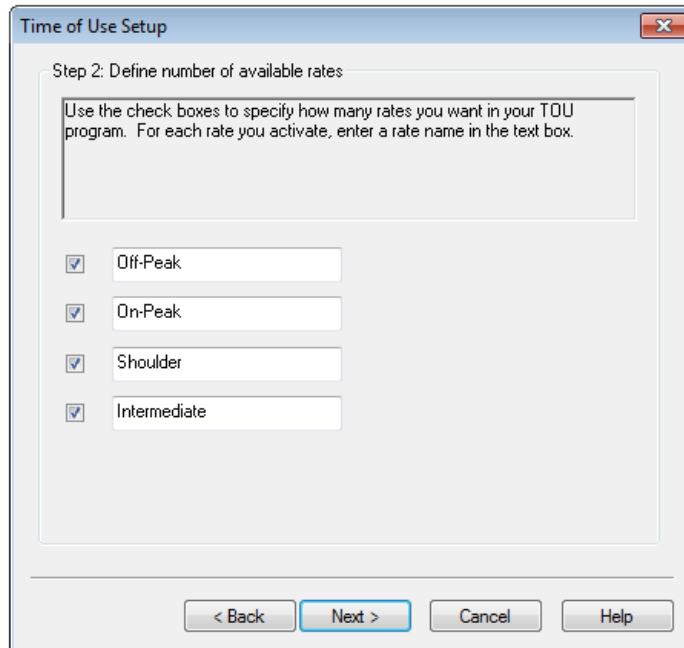
3. Select the number of seasons you want in your TOU program. Enter a name for each season and click the buttons beside the seasons to set a start date for each season selected.
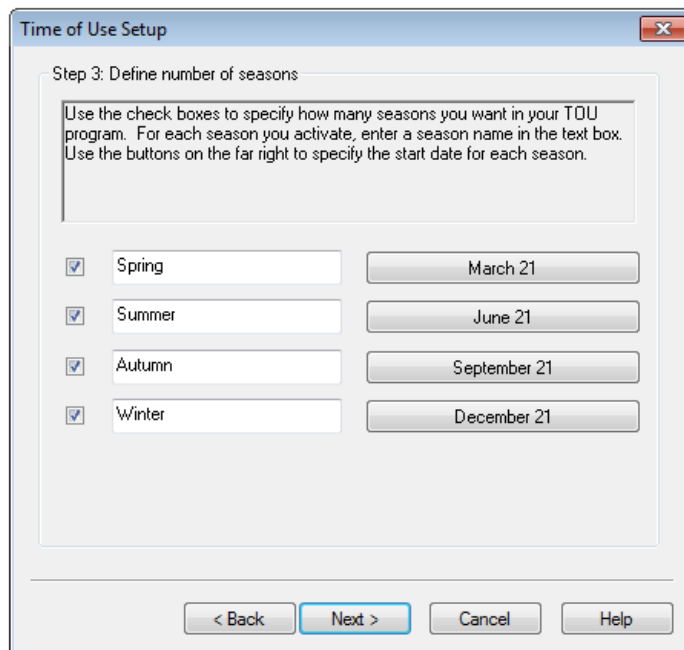
4. Set which days of the week are considered weekdays and weekends, then click **Next**.
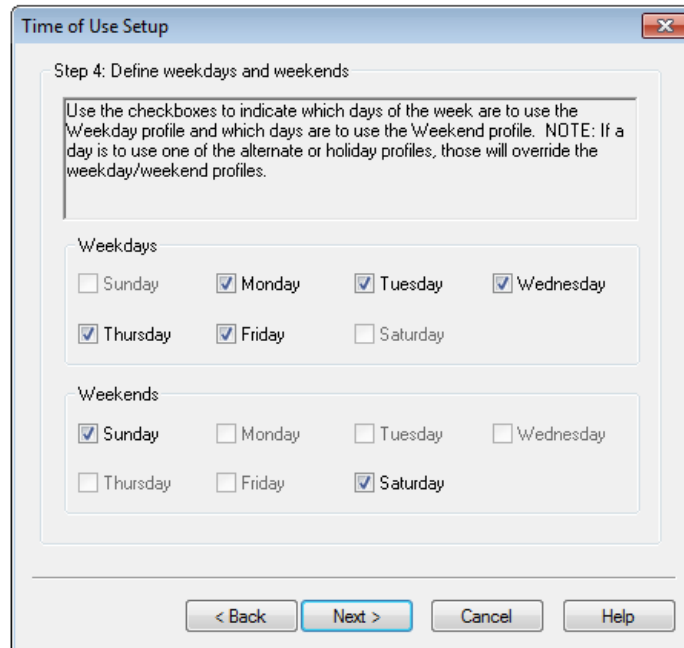
5. Select which days are considered holidays, then click **OK**. You are prompted to set the holiday exceptions—what to do when a holiday falls on a Saturday or Sunday—and click **OK**.
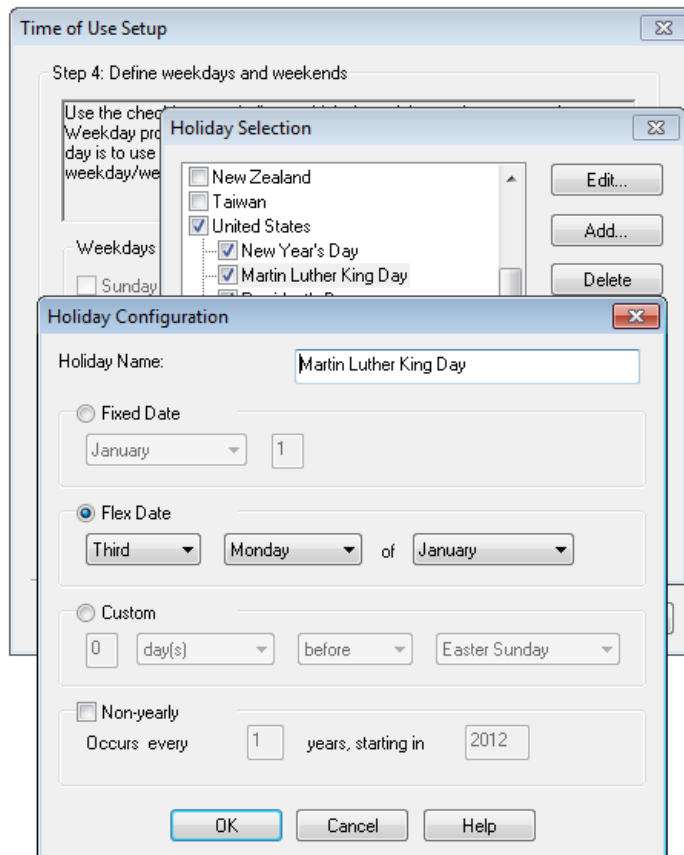
6. Set alternate days, holidays (as per section 5) and self-read days.
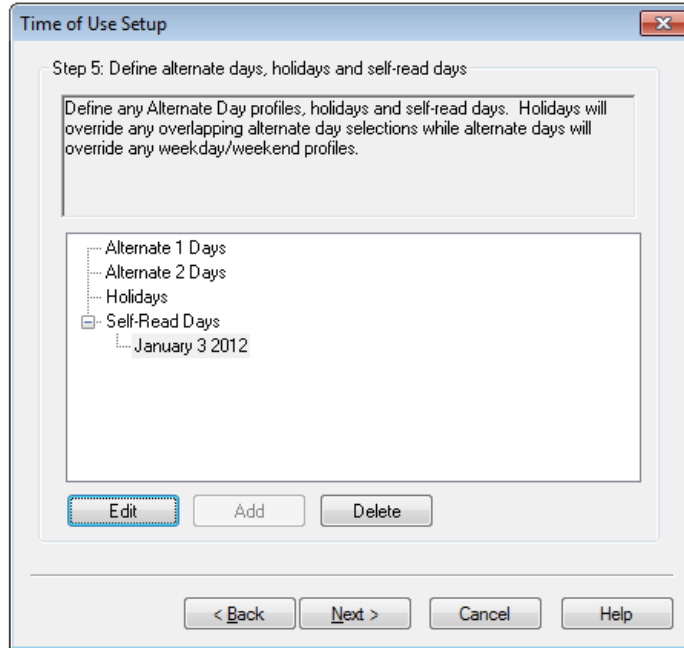
7. Set the seasons, days and times that are on-peak or off-peak, then click **Finish**.
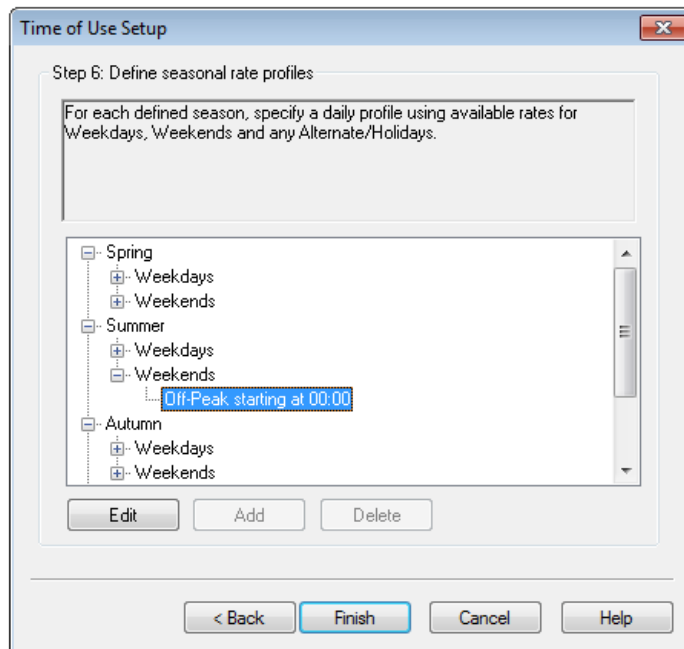
Once you have created the TOU file in the Setup Assistant, save the TOU as a .tcf (time of use configuration) file, and upload it to other meters as required.

Note

ION Setup (version 2.1 and later) supports user-configured holiday profiles. Holiday configurations are specific to your particular workstation, not to the meter.

Also, if you receive a popup message stating that there is an issue programming the TOU module, you may have run out of memory space. It is recommended that you reduce the total number of custom holidays or exceptions.

Editing TOU settings and holiday configurations

If you are not using the "Sample TOU" program, then you can edit, add and delete TOU data for your program using this setup screen.

Alarming screen

The Alarming screen allows you to manually configure or have the meter learn what are the high and low limits for certain setpoints.
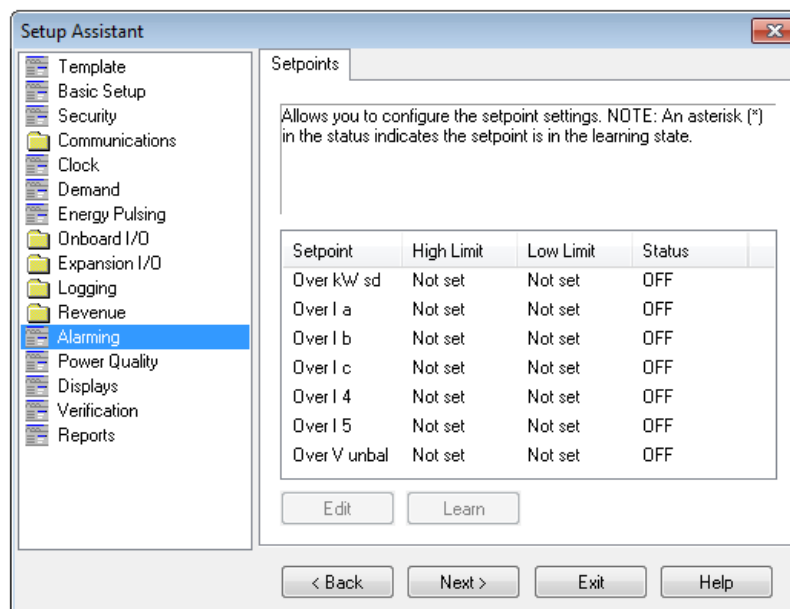
To manually edit a setpoint value, select the setpoint and click **Edit**.

You can also configure the meter to automatically learn setpoints by monitoring normal operation over time to determine valid data ranges. Select any setpoint and click **Learn** to access the Global Setpoint Learning screen. Click **Setup** to review the Alarm Learning Setup parameters. Select **Automatic** to automatically load all the learned setpoints at the end of the learning duration. Click **Start All** to start learning for all setpoints. Click **Install** to implement the learned setpoints at the end of the learning duration.
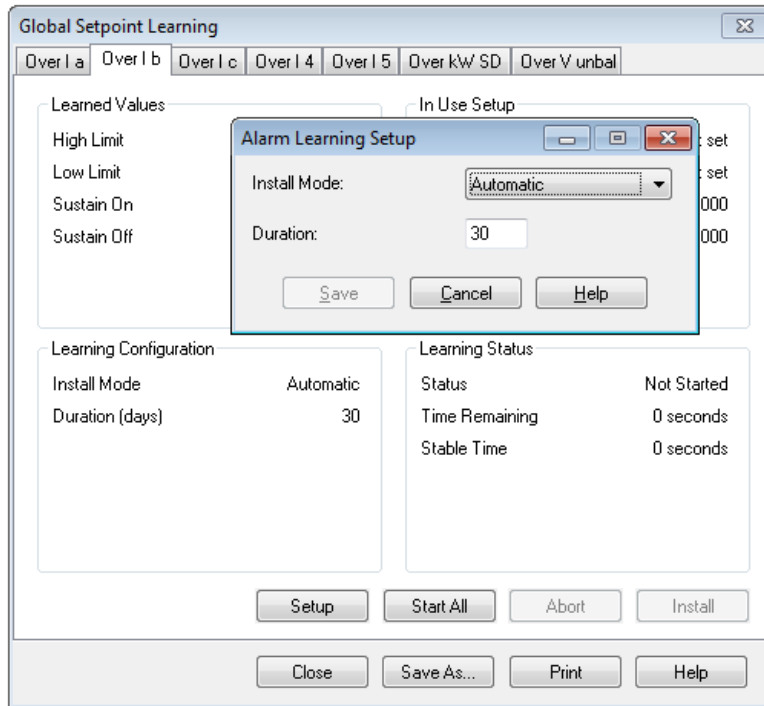
Power Quality screen

The Power Quality screen allows you to set parameters relating to transients, sags/swells, harmonics, and other power-quality disturbances. If available, this is also where you can enable COMTRADE-format sag/swell and transient waveform records to be generated and stored on your meter's internal FTP site. For more information, refer to the technical note *COMTRADE and ION Technology* available at www.schneider-electric.com.
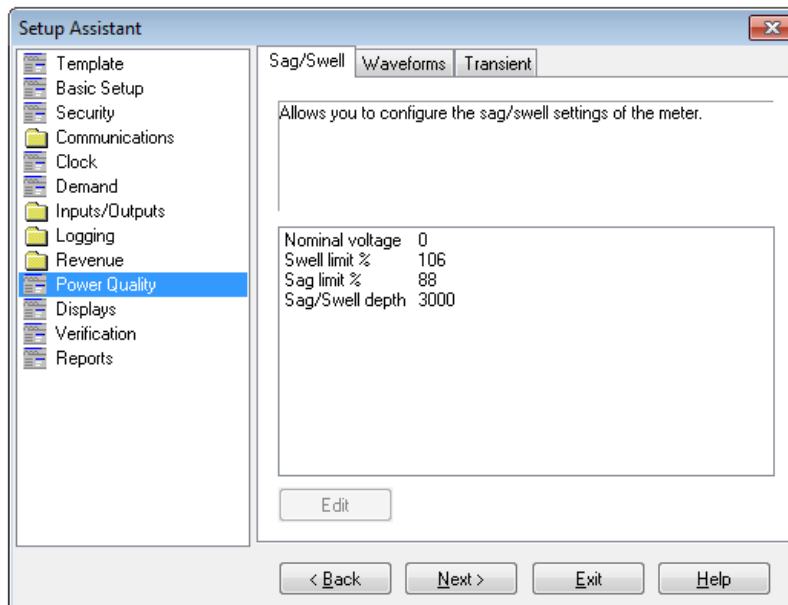
This screen has the following tabs:

- **Sag/Swell** allows you to configure the sag/swell limits of your meter.

- **Waveforms** allows you to configure the waveform recording format and depth.

- **Transient** allows you to configure the transient settings of the meter.

Note

COMTRADE must be disabled in order to modify sag/swell or transients settings.

The tabs available for Power Quality depends upon the meter.

Displays screen

ION meters ship with preconfigured display screens, and most users find that the data displayed by the front panel meets their requirements. If required, front panel displays can be customized on ION meters using the Displays Screen Setup Assistant.
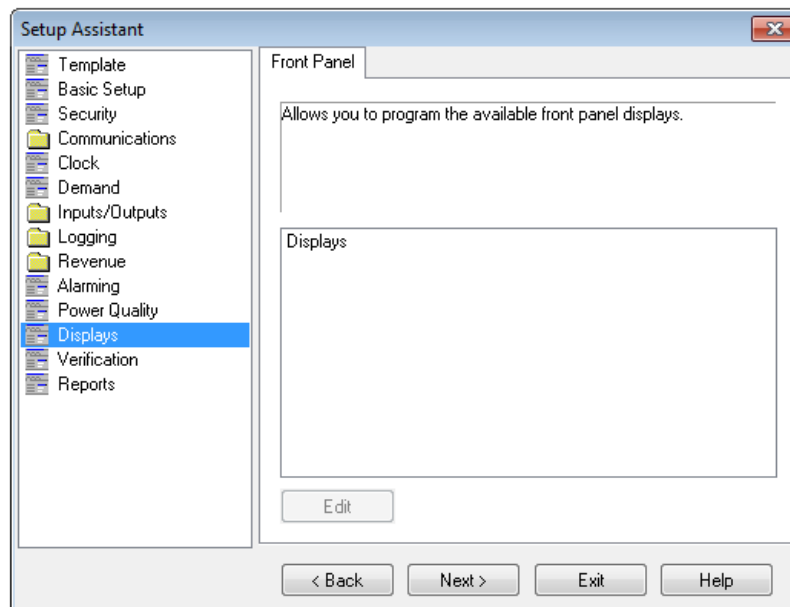
1. In the Setup Assistant, select Displays on the Front Panel tab and click **Edit**. The **Display Editor** appears.
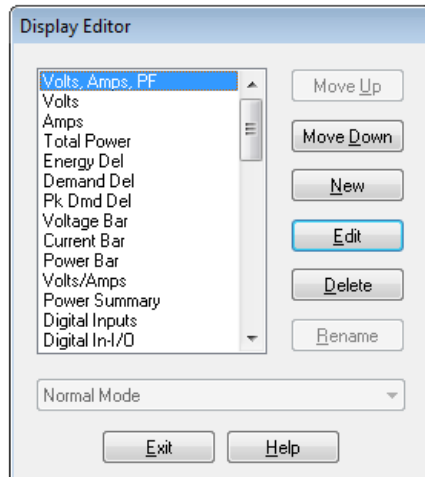
2. Use the Display Editor to add, delete, rename or reorder the screens by clicking the **New**, **Delete**, **Rename** and **Move Up** or **Move Down** buttons.

3. Click **New** to add a new parameter. Select the new parameter, or any parameter, and click **Edit** to open the **Display setup** wizard.

   Use the dropdown menu at the bottom of the dialog box to select from the different operational modes (e.g., Alternate or Test mode).
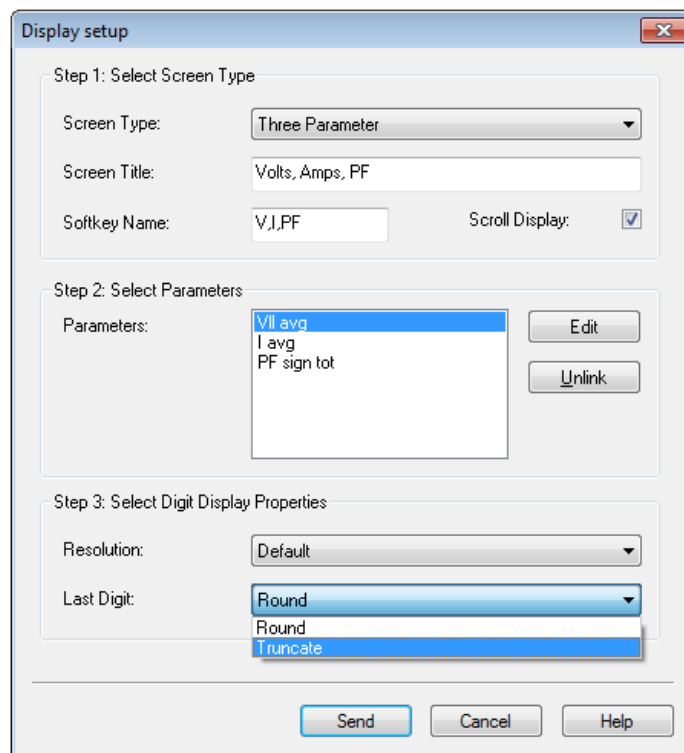
4. Select your screen type from the dropdown menu and provide a screen title and softkey name, if applicable. Select the **Scroll Display** checkbox to scroll the display on the meter, if applicable.

5. Click **Edit** to change the parameters available for your chosen screen type.

6. Where applicable, assign your preferred display units by clicking **Units**. See the following section "Considerations when assigning display units" on page 120 for more information.

> **Note**
>
> If you want to scale all front panel values by the same scaling factor, you do not need to assign display units to individual parameters. Instead, select the screen type that has scaling in the description (i.e., Two Parameter with Scaling), and configure the display scaling settings under the DISPLAY SETUP menu on the meter's front panel. You can also configure the display scaling settings by accessing the Display Options module; see the ION Reference for more information.

7. Select from the dropdown lists your display properties, including digit resolution and truncated or rounded last digits.

8. Click **Send** to save the changes to the meter.

Considerations when assigning display units

For most values, the meter determines and displays the correct units for the source measurement, and automatically scales displayed values for readability. If these units do not meet your needs, and if your meter has the display unit feature, you can configure display unit scaling. Assigning display units allows you to:

- override the default units and force a certain scaling, or

- to display units when the meter cannot determine the correct units (for example, when the source is an output from an Arithmetic module).

For the purposes of the display units, the source parameter is assumed to be in the base units of the Power Meter module (in other words, V, A, kW, etc.). If the source parameter is not in the base units of the Power Meter module, the parameter may be scaled incorrectly or display incorrect units.

The following example illustrates display unit scaling on a three parameter screen, including the case when the parameter is not in the base units from the Power Meter module. In the example, the kW tot value from the Power Meter module is 10000.

- Parameter 1 = kW tot directly from the Power Meter module

- Parameter 2 = kW tot from an Arithmetic module that has divided the Power Meter module value by 1000, converting it to MW.

- Parameter 3 = kW tot from an Arithmetic module that does not scale the value from the Power Meter module.

Configuration	Displayed Value	Notes
Default	Parameter 1 = 10000 kW Parameter 2 = 10 Parameter 3 = 10000	Parameter 2 and 3 do not display units because they come from Arithmetic modules
kW	Parameter 1 = 10000 kW Parameter 2 = 10 kW Parameter 3 = 10000 kW	Parameter 2 and 3 do not change since they are assumed to be in the base units of the Power Meter module. However, Parameter 2 is shown as 10 kW when it has already been scaled to 10MW.
MW	Parameter 1 = 10 MW Parameter 2 = 0.01 MW Parameter 3 = 10 MW	All three have been scaled. However, parameter 2 has been scaled twice.

Note

You can only assign display units to One, Two, Three and Four Parameter screens and One, Two and Three Parameter with Timestamp screens.

Verification screen

Select Normal Mode or Test Mode from the Verification tab and click **Display** to view readings. The readings are displayed in real time.

Note

Test Mode parameters *Test Mode Sub-intervals* and *Test Mode Sub-interval Length* must be changed in Normal mode under the Demand Setup screen (see). Loss Mode is only available in Test Mode.
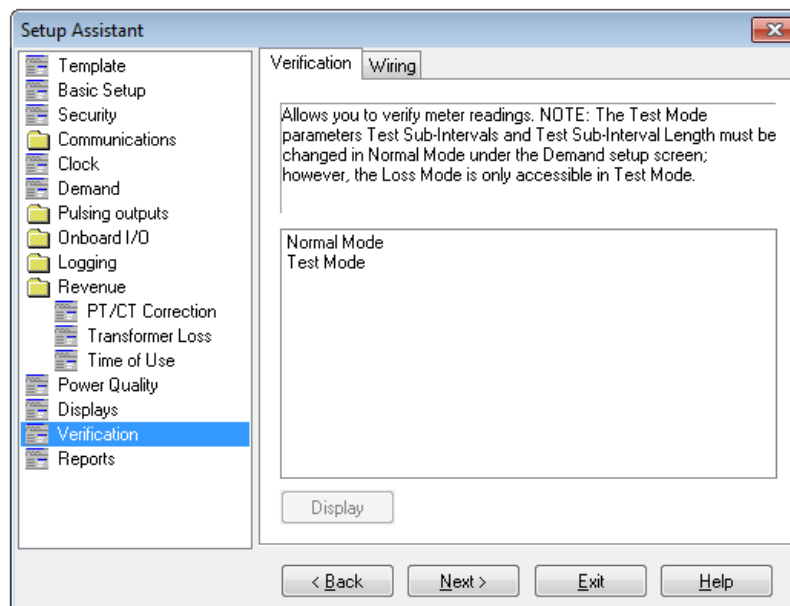
The image below shows some of the tabs available; these vary depending on the type of meter. Data in each of these tabs can be saved as a .txt file. You can also perform a master reset from each screen and peak resets on the demand screens.
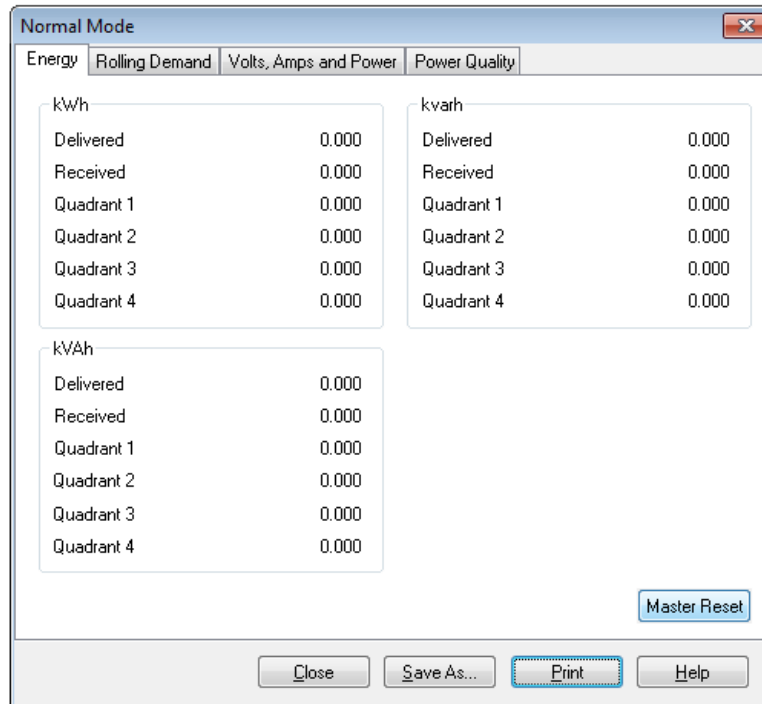
If you configure or power down your meter during a master reset, the affected parameters may not be completely reset.

NOTICE

INACCURATE DATA

Do not configure or power down your meter during a master reset until a message appears confirming the reset is complete.

Failure to follow these instructions can result in inaccurate data.

The figure below illustrates the **Test Mode** screen with its available tabs: Energy, Rolling Demand, and Volts, Amps and Power. As in Normal Mode, data from each of these tabs can be saved as a .txt file. You can perform a test reset from each tab.
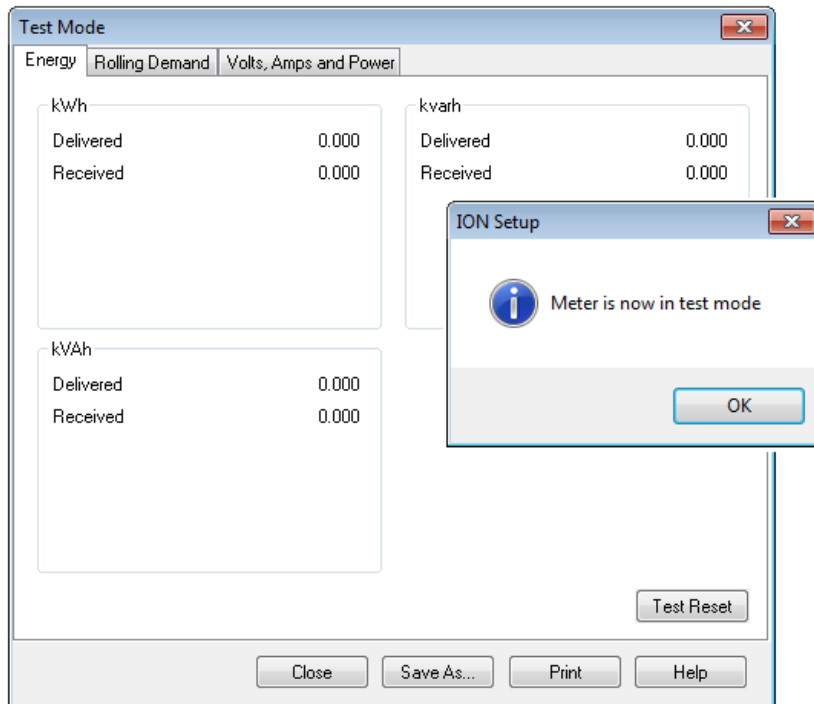
Phasor Viewer

From the **Verification** screen, you can check the wiring on some ION meters with the real-time Phasor Viewer. The Phasor Viewer provides detailed harmonics calculations for a voltage or current input on a meter. This information is valuable for power quality analysis, selecting properly rated transformers, and fault detection. For more information on meter wiring, refer to the technical note *Troubleshooting Meter Wiring* available at www.schneider-electric.com.

Note

The Phasor Viewer is set up by default to display correctly for the meter installer. Users can change the display to rotate clockwise or counterclockwise using the Phasor Rotation option in the View tab of the Options dialog box (see "View tab" on page 39). Users who are not installing a meter should utilize the Phasor Viewer's Delta Vector Display mode (see *ION Reference* for details).

To access the Phasor Viewer:

1. Connect to your meter in ION Setup.

2. Open the Setup Assistant, go to the Verification screen and click the **Wiring** tab.

3. Select Phasor Viewer, then click **Confirm**.

   The Phasor Viewer appears, containing both voltage and current phasors on the Combined and Side by Side tabs. The combined view also contains power readings.

---
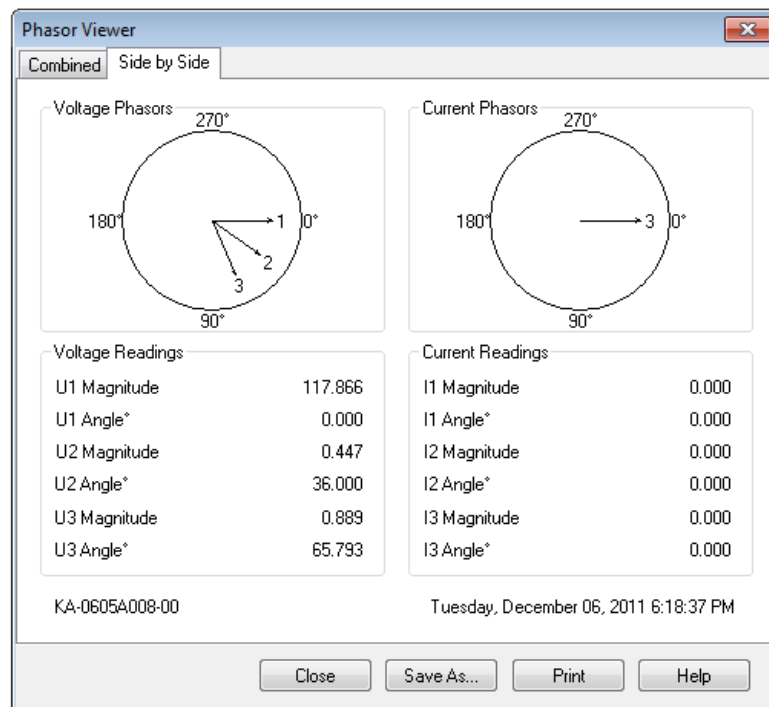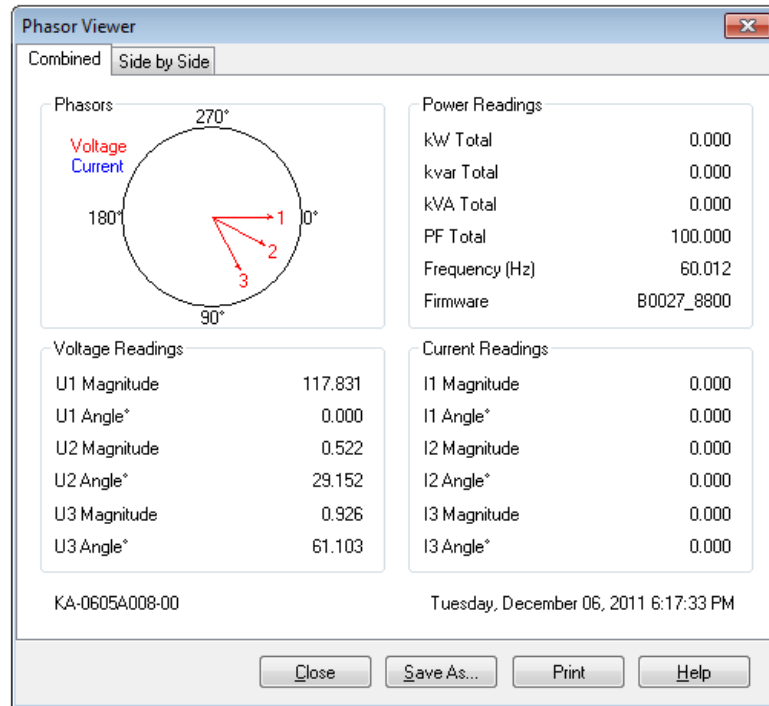
4. You can save the phasor data as a text (.txt) file by clicking **Save As**. The text file contains the readings from the moment the file was saved.
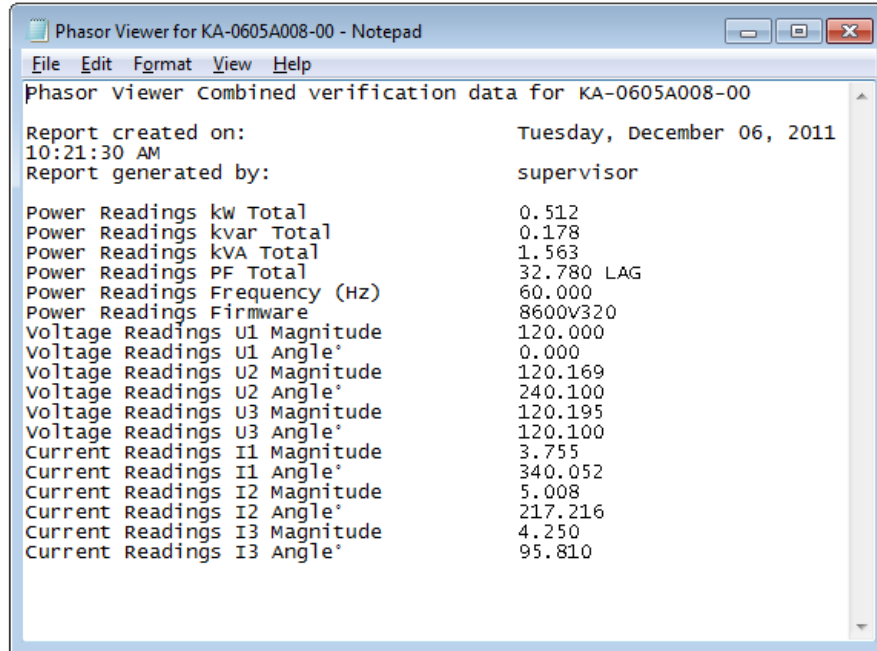
Reports screen

The reports screen allows you to save a meter's data as content and let other users access and interact with that content.
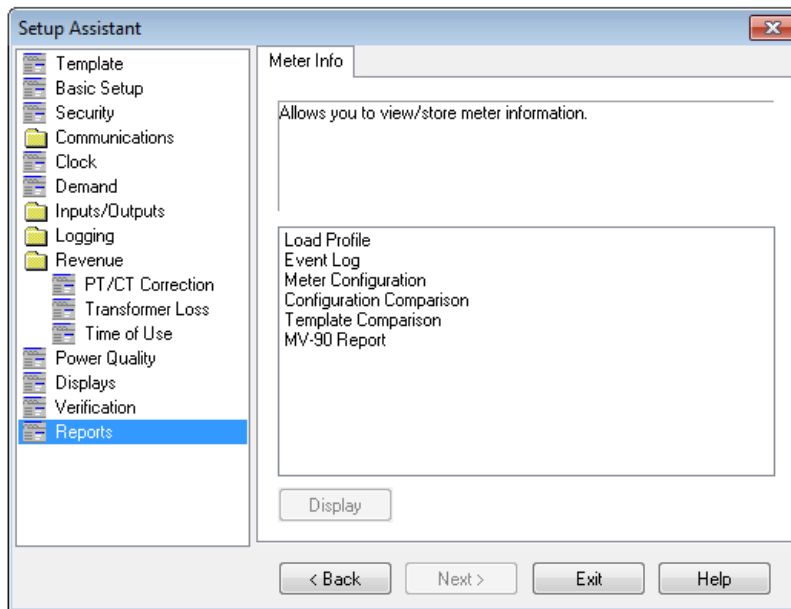
Depending on your meter, there are several available reports. Select the desired report and click **Display** to view. You can choose the directory in which you would like to save the file (the location defaults to the "Reports" folder in your ION Setup directory).

Available reports vary depending on meter type:

- **Load Profile/Revenue Log** generates a report showing values for the parameters defined in the "Load Profile/Revenue Log screen" on page 106. Choose all available logs or query the meter by time, records, hours or days. Click **Save As** to save your data in .hhf (hand-held format for MV-90), or select one of the other available format types.

Note

Refer to "HHF tab" on page 41 for instructions on how to configure ION Setup to export HHF files.

- **EnergyDemand Log** shows the meter's energy/demand log configuration. Choose all available logs or query the meter by time, records, hours, or days. Click **Save As** to save your data in the format desired.

- **Event Log** shows meter events, including cause, value, effect and date/time. This data can be saved as a .csv or .txt file.

Note

The Event Log obtains its time records from the local time of the workstation on which ION Setup is running, not the meter's local time.

- **Meter Configuration** uploads the meter's parameters and the set values of those parameters. This report can be saved as a .txt file.

- **Configuration Comparison** performs a text-based comparison between a saved meter configuration and the connected meter and reports the differences. Click **Display**, and browse to the saved meter configuration .txt file. In the Comparison results screen click **Details** to display a full report which highlights the differences in red.

- **Template Comparison** reports if there is a difference between a stored template and the meter template. Click **Display**, and browse to the stored template. A pop-up window will indicate if there are differences between the stored template and the meter template, which is useful to confirm that the meter's template has not been modified between configuration and deployment.

Note

Uploading or retrieving the device configuration or template may take a few minutes.

- **MV-90 Report** is available for some meters to automatically generate a master file detailing the meter's current MV-90 configuration. Click **Display**. The **MV-90 Master File Options** dialog appears:

Enter the required information and click **OK** to generate the report. Once the report is generated, you can save it by clicking **Save As** and saving it as a .dat file. You can import this created file into your MV-90 system as the master file for your meter. For details on incorporating your meter into an MV-90 system, refer to the technical note *MV-90 and ION Technology* available at www.schneider-electric.com.

Saving reports in ION Setup

Load Profile, Revenue Log, EnergyDemand Log and Event Log reports are organized in descending order according to date (the latest date is the top entry in the report). You can save or print the entire report or only portions of the report.

Note

The log obtains its time from the workstation on which ION Setup is running, not from the meter's local time.

To save the entire report, click the **Save As** button without selecting any rows of data.

To save a portion of the report, click the date you want your report to begin. Hold down the SHIFT key and select the date you want your report to end. Click **Save As** and ION Setup saves the portion of the report you selected.

To print the report, click the **Print** button. From the print dialog box, you can choose to print the entire report or a selected portion (if you have selected a portion of the data).

Writing to multiple registers

Some functions in the Setup Assistant let you change the value in more than one register on the meter at the same time. For example, you can choose to change the time interval of the calculated block period of multiple modules in the Demand screen.

1. Select the parameter you want to change and click edit. A dialog appears with the button **Edit Register List**.
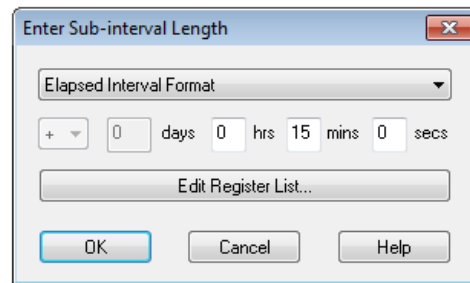
2. Click **Edit Register List** to select which registers will have the new values.
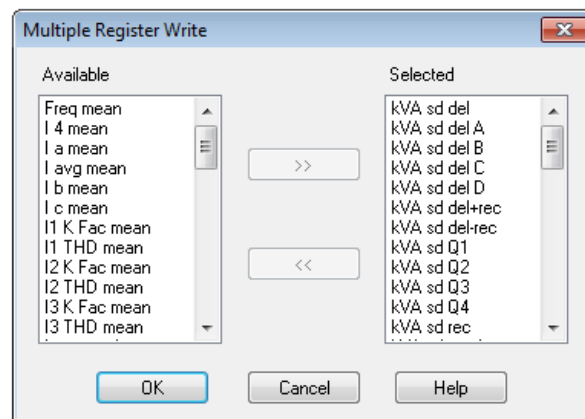
As shown above, the list on the left contains available registers. The list on the right contains registers that are currently selected to be written to. Click the arrow buttons to move registers from *Available* to *Selected*, or vice versa. Select multiple *Available* registers by holding down SHIFT or CTRL while selecting registers.

3. Click **OK** when you are finished selecting registers to edit. Any change made to the parameter being edited (for example, the block period) is made to all the registers in the *Selected* column.

Chapter 6: Monitoring your network

ION Setup has the ability to display and perform control operations with real-time and historical data. This section describes the ION Setup features that allow you to monitor your device network, including data screens, alarms and chart-plotting capabilities.

In this section

Displaying data

To view data in ION Setup, select **View > Data Screens**. This displays real-time measurements and logged data for the device that is currently selected in the network tree. These values are grouped into categories and displayed in easy-to-read tables. Each category of data is displayed under a different tab so you can easily switch back and forth between screens.

When you select a meter in the network tree, icons representing the data screens for that device are displayed on the right pane. The icons available depend on the type of ION meter. For example, all devices offer a RealTime icon that represents real-time data screens; some devices, such as the ION7650, have additional screens, such as Waveform and Harmonic screens.

If there are many screens of the same type, such as multiple Min/Max Logs or Data Recorder Logs, ION Setup groups the icons under a folder in the network tree. To open the folder and see the icons it contains, click on the folder in the network tree. The icons appear in the right pane.

To see these data screens, double-click the icon in the right pane of the Network Viewer. A new window opens displaying tables of data from the selected device. These tables are organized under different tabs; to switch between tables, click on the tab to bring its table to the front of the window.

Depending on the meter you selected and how it is configured, different tables are available and different values are displayed in each table. Refer to the meter's documentation for a detailed list of the measurements available.

Note

The time that appears on the data displays is not adjusted, and may not match the actual time with the same data that appears in the energy management system if there are time zone, DST or device clock drift issues.

Copying from a data screen

ION Setup lets you copy data from a data screen so you can paste it into another application, such as a spreadsheet or word processor. You cannot paste information into a data screen.

Real-Time data

If you want to copy real-time data, you can copy all the data in the screen by opening the data screen you want and selecting **Copy** from the Edit menu. This copies data to the clipboard and delimits each column with a tab.

Logged data

If you want to copy logged data, you can select single records or a range of records to copy. Hold down the CTRL key and click on each record you want to copy. If you want to select a

contiguous range of records, click on the beginning of the range, hold down the SHIFT key, then select the end of the range. To copy your selection, select **Edit > Copy** (or press CTRL+C).

Note

The entire row is copied. You cannot exclude individual columns from the selection.

Chart data

Plotted data can be copied from the Waveform and Harmonics tabs. For information on plotting data in a chart, see "Chart plotting" on page 132.

Waveform: Only the entire plot data for a selected waveform can be copied. If you have already plotted multiple waveforms on a single graph, you can copy the entire plot data for any single waveform by clicking on the button that corresponds to it and then clicking the **Copy** button.

For example, to copy the data for V2:

1. Click the **V2** button.
2. Click the **Copy** button.

Harmonics: In the Harmonics screen, only one cycle of plot data for a selected waveform can be copied. For multiple-cycle graphs, the start and end points for one cycle are represented by a rectangle that you can drag along the graph. To copy one cycle of plot data, click on the button that corresponds to the desired waveform first. The rectangle is located at the far left of the graph by default. Drag it over the area you want to copy. (The Distortion Info and Harmonics Spectrum data change values as you drag the rectangle.) Click **Copy** to copy.
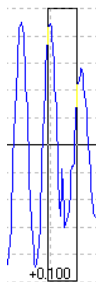
Opening multiple data screens at the same time

If you want to view additional data screens, either from the same device or from a different one:

1. Switch to the Network Viewer using the Window menu.

2. Select a device and double-click on one of its data screen icons. The corresponding data screen appears in a new window.

3. You can arrange the data screens by using the options under the Windows menu (see "ION Setup commands" on page 33) or you can resize and position the windows manually.

Closing data screens

To close a single data screen, click the [×] button for the window in which the data screen is displayed.

To close all data screens, select Close All Tables from the Window menu (see "ION Setup commands" on page 33).

Performing control operations

<table>
<tr><td align="center">⚠ WARNING</td></tr>
<tr><td>

UNINTENDED EQUIPMENT OPERATION

Do not use ION Setup and associated devices for critical control or protection applications where human or equipment safety relies on the operation of the control circuit.

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

</td></tr>
</table>

For devices that have control capabilities, ION Setup offers buttons in the appropriate data screens that let you manually trigger control operations. These operations include:

- Operating and releasing relays

- Resetting status counters and accumulating energy values (i.e., kWh, kVARh, kVAh)

- Resetting Min/Max values

Manually operating triggers

To manually operate triggers:

1. On the data screen, click the button if it is displayed, or go into the screen and right-click to display the available trigger options.

2. Move your mouse to the trigger you want to operate, then click on it.

3. In the Confirm Trigger box, click **Yes** (or enter your password) to activate the trigger.

> **Note**
>
> Depending on your confirmation setup (see "Confirmation tab " on page 40), you are prompted either for confirmation or for your password.

Chart plotting

ION Setup features a plot button that lets you view a graphical representation of selected parameters in the snapshot logs, data recorders or waveform recorders. You can manually trigger waveforms inside the Waveform screen. Up to eight Waveforms may be plotted at a

time.

Manually triggering a waveform

1. Make sure you are in data display mode by clicking the **View Data Display** button ⬜.

2. Select the meter whose data you want to plot.

3. Double-click on the Waveform icon (📊 Waveform).
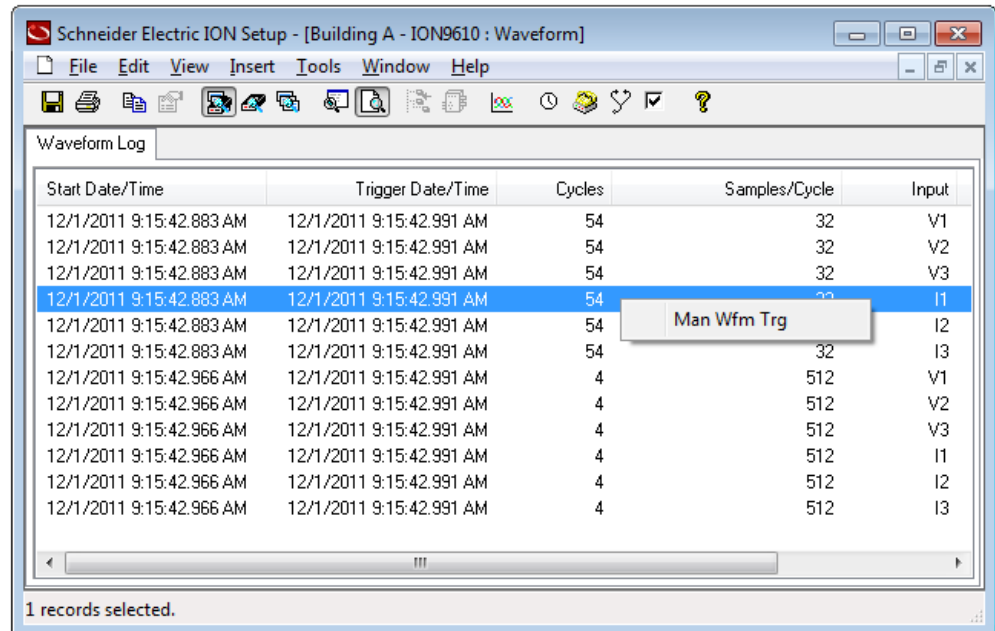
4. Right-click anywhere in the **Waveform Log** screen to display the available triggers.

5. Click on the input you want to trigger.

6. Inside the confirmation box, click **Yes** to activate the trigger.

   If Options are set to Confirm Triggers with Password (see "Confirmation tab " on page 40),
   enter your ION Setup password then click **OK** to activate the trigger.

7. Repeat to trigger other inputs, if desired.

Plotting historical data

1. Make sure you are in data display mode by clicking the **View Data Display** button ⬜.

2. Select the meter whose data you want to plot.

3. Select and double-click on an icon that displays historical data (such as Waveform or a
   Data Recorder module).

4. Select the data you want to plot.

   • For a contiguous selection of data, hold down the SHIFT key while selecting the first and
     last entries you want to view.

   • For a non-contiguous selection of data, hold down the CTRL key while selecting.

5. Click the **Plot** button 📊. The Chart Properties dialog box appears.

6. Select the parameters you want to plot, then click the **Add** button. The selected parameters move to the right side of the dialog.

   • To remove parameters already selected, click on the items from the right side of the dialog, then click the **Delete** button.

Note

Plotting manual triggers disables the **Add** and **Delete** buttons. To delete waveforms from the plotted manual trigger chart, close the chart and re-select only the data you want to plot, then click **Plot**.

---

7. Click **OK**.

Viewing phasor diagrams

1. Make sure you are in data display mode by clicking the **View Data Display** button 🔲.

2. Select the meter for which you would like to view waveforms.

3. Double-click on the Waveform icon to upload the available records up to a maximum of eight records.

4. Select the data you want to plot.

   • For a contiguous selection of data, hold down the SHIFT key while selecting the first and last entries you want to view.

   • For a non-contiguous selection of data, hold down the CTRL key while selecting.

Note

If no waveform data appears on your screen, you must manually trigger the request. See for this procedure.

---

5. Click the **Plot** button 📊. The Chart Properties dialog box appears.

6. Configure the chart as desired and click **OK**.

7. The Waveform Plot window appears. Click the **Phasor Diagram** tab to view the phasor diagram of your ION meter.

   If desired, right-click on the phasor diagram to lock V1 to zero degrees.

Editing chart properties

The Chart Properties dialog box contains three tabs (View, Scales, and Lines) where you can edit parameters in order to change the way a particular input is plotted. This dialog box appears when you first plot data and can be displayed by right-clicking anywhere in the graph screen.

View tab

• **Input Selection** displays the available inputs for plotting. The right side displays the selected inputs that are plotted.

• **Chart Type** allows you to select how the selected inputs appears on the chart, as follows.

- **Smooth Sliders** ensures smooth transition when moving the upper or lower sliders. De-selecting this box causes the sliders to lock onto the plotted points on the graph while moving the sliders.

- **Line Symbols** displays a point-by-point representation of the graph.

- **Gridlines** displays chart gridlines.

- **Center Axis** displays the center axis.

Scales tab

- **Input**: This dropdown list lets you select the parameter you want to change scales to.

- **Scaling Information**: Lets you change scaling information for the selected input, as follows:

  - **Vertical Axis**: Lets you change the scaling information for the vertical axis (e.g. Linear scaling, Power Factor scaling).

  - **Maximum Scale**: Specifies a different maximum scale for the selected input, first clear (uncheck) the Auto Scaling box, then type your desired scale in the Maximum Scale box.

  - **Minimum Scale**: Specifies a different minimum scale for the selected input, first clear (uncheck) the Auto Scaling box, then type your desired scale in the Minimum Scale box.

  - **Auto Scaling**: The chart is scaled automatically according to the parameters selected.

Lines tab

- **Input**: This dropdown list lets you select which plotted line you want to change appearance of.

- **Line Information**: Lets you change the appearance of the selected input, as follows:

  - **Line Color**: Changes the line color of selected input.

  - **Line Style**: Changes the line style of the selected input.

  - **Line Symbol**: Changes the symbol used to plot the selected input. Note that the "Line Symbols" box (under "View" tab) must be ticked first, before you can select a different line symbol.

Displaying Event Log reports in Microsoft Excel

When you display an Event Log report with the Setup Assistant, the time and date values display correctly. When the report is saved to a .csv file and viewed in Excel, only the time value may be displayed in the first column depending on how you have Excel configured. This is a function of how Excel interprets a date/time field when first loaded — only the time portion of a value is shown by default. (This also occurs when cutting and pasting into Excel.)

Note

The Event Log obtains its time records from the local time of the workstation on which ION Setup is running, not the meter local time.

If necessary, follow these steps to correctly display the date and time values in Excel:

1. Open the .csv file in Excel and highlight the entire Date/Time column.

2. Click **Format > Cells** from the menu.

3. Select **Date** from the Category listbox and ***3/14/2001** from the Type listbox.

4. Click **OK**. Both the date and time display correctly.

Chapter 7: Troubleshooting

This section describes some typical issues and the ION Setup tools used for troubleshooting.

In this section

Troubleshooting ION Setup

If you are having difficulties running ION Setup, check the following:

- Does your workstation have the necessary hardware and software requirements to support ION Setup? See "System requirements" on page 13 for more details.

- Does your workstation's name contain a space? ION Setup does not operate correctly if there is a space in the workstation name.

- Do you have write access privileges to the Microsoft Windows registry?

  - If you install ION Setup on a Windows workstation, you must have write access to the registry or the software cannot install correctly. If you require registry write privileges, contact your network administrator.

- Do you have the latest version of ION Setup? You can download the latest version of ION Setup from www.schneider-electric.com.

Troubleshooting devices

When you are configuring a meter on the network, it is possible that the changes you request will not be supported by the device.

For example, if you specify a value that is outside the supported range of the device, ION Setup displays a message in the status line about the limit.

There are number of reasons why creating a new module may not succeed, for which you will receive additional messages:

- The maximum number of modules of that type already exists.

- Creating the module exceeds the limits of the device's processing power.

- The selected module is a core module; core modules cannot be created or deleted.

Refer to the meter's technical documentation for details about supported ranges and configurations.

Refer to the *ION Device Template Reference* for information on the number of available modules for each type.

To view real-time phasor diagrams, see "Phasor Viewer" on page 123.

For information on troubleshooting meter wiring, refer to the meter's documentation and the technical note *Troubleshooting meter wiring* available at www.schneider-electric.com.

ION Setup diagnostics tools

ION Setup provides diagnostics information for all devices in the ION Setup network.

1. Select an item in the Network Viewer.
2. Click 🔧 on the toolbar (or select **Tools > Diagnostics**).

A diagnostics window appears with the following tabs: Communication and General. When you select a site, only the Communication tab appears.
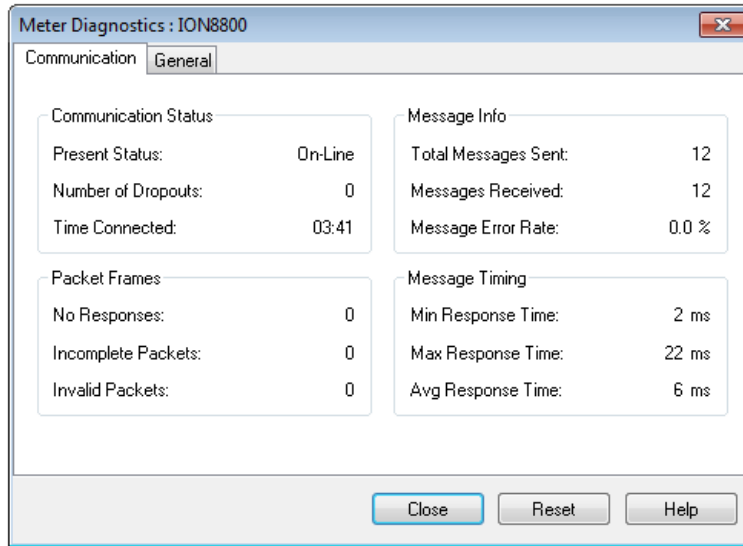
Communication tab

Communications status

The **Present Status** indicator shows whether the selected item is communicating (in other words, whether it is online or offline):

- A site or group only shows Offline if all devices in the site (or group) are offline.
- The workstation and system icon only show Offline if all devices in **all** sites (or groups) are offline.

The **Number of Dropouts** indicator shows how many times communications with the selected item were temporarily lost:

- If a site or group is selected, the indicator shows the number of times all devices in the site (or group) lost communications.
- If the workstation or system is selected, the indicator shows the number of times all devices in all sites (or groups) lost communications.

The **Time Connected** indicator shows how long the selected item has been connected (since ION Setup was started):

- If a site or group is selected, this refers to the connection time of the device in the site or group that has been connected the longest.
- If the workstation or system is selected, this refers to the connection time of the device that has been connected the longest among all devices in all sites (or groups).

Message Info

The **Total Messages Sent** indicator shows the total number of messages sent by the selected item.

The **Messages Received** indicator shows the total number of messages received by the selected item.

The **Message Error Rate** indicator shows what percentage of messages sent or received by the selected item had an error.

Packet Frames

The **No Responses** indicator shows how many communication packets sent by the selected item received no response.

The **Incomplete Packets** indicator shows how many communication packets sent by the selected item received an incomplete packet in response.

The **Invalid Packets** indicator shows how many communication packets sent by the selected item received an invalid packet in response.

Message Timing

The following diagnostic events are displayed:

The **Min Response Time** indicator shows the minimum amount of time it took the selected item to respond to a message (in milliseconds).

- If a site or group is selected, this is the minimum response time for any device in the site or group.
- If a workstation or system is selected, this is the minimum response time for any device in any site or group.
- If a device is selected, this is the minimum response time for the device.

The **Max Response Time** indicator shows the maximum amount of time it took the selected item to respond to a message (in milliseconds).

- If a site or group is selected, this is the maximum response time for any device in the site or group.
- If a workstation or system is selected, this is the maximum response time for any device in any site or group.
- If a device is selected, this is the maximum response time for the device.

The **Avg Response Time** indicator shows the average amount of time it took the selected item to respond to a message (in milliseconds). For a site, group, workstation or system, this is the average response time of all devices in that category.

Clearing diagnostic statistics

To clear the diagnostic statistics for the currently selected item, click the Reset button. Note that this action also clears the diagnostic statistics for all items below the selected item. For example, if you reset the statistics for a site, the statistics for all devices in that site are cleared. Similarly, if you reset the statistics for the workstation or the system icon, the statistics for all sites and devices are cleared.

General tab

If you display diagnostics data for a meter, the General tab also appears. This contains basic information about the meter, including the model, firmware version, serial number, options, etc.
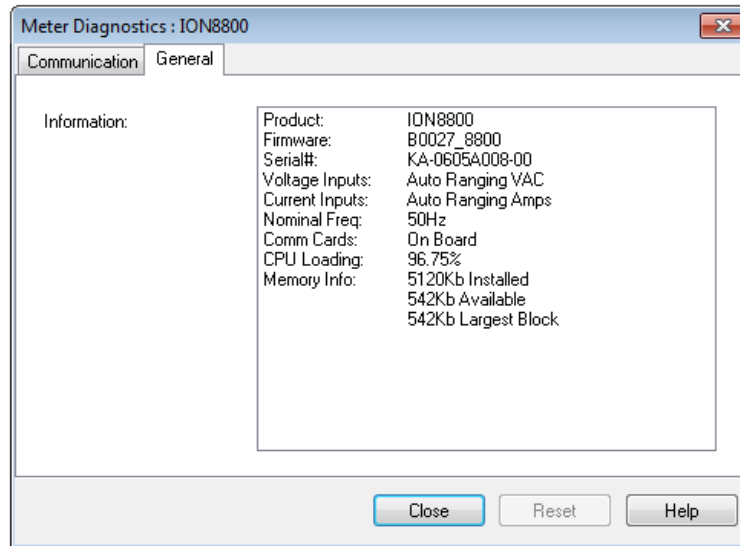
Accessing the Modbus Tester Interface tool

The Modbus Tester Interface tool, available only for devices using the Modbus protocol, is designed to be used to modify Modbus registers that are not usually available through basic setup. This tool is intended to be used only by qualified personnel with advanced knowledge of the Modbus protocol and registers, the devices, and the system.

⚠ WARNING

UNINTENDED EQUIPMENT OPERATION

- Do not use ION Setup and associated devices for critical control or protection applications where human or equipment safety relies on the operation of the control circuit.

- Register values should only be configured by personnel with a thorough understanding of Modbus and the system in which the devices and software are installed.

- Do not rely on displayed values to determine if the system is functioning as intended.

- System control paths may include communications links. Consideration must be given to the implications of unanticipated transmission delays or failures of the link.

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

To access the Modbus Tester Interface tool, select a Modbus device in your network. From the menu bar, click **Tools > Diagnostics** (or click 🔧 on the toolbar). Select the **Troubleshooting** tab, and click **Execute**.

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PowerLogic™ ION™ Setup 3.0
User guide

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