StruxureWare™ Power Monitoring Expert Healthcare Edition

Commissioning Guide

7EN02-0386-00
04/2016

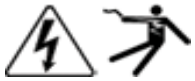
Schneider Electric

Legal Information

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

⚠ WARNING

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

⚠ CAUTION

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

NOTICE

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

Please Note

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

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

Safety precautions

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

⚠ DANGER

ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

- Apply appropriate personal protective equipment (PPE) and follow safe electrical work practices. In the USA, see NFPA 70E.
- Only qualified electrical workers should install this equipment. Such work should be performed only after reading this entire set of instructions.
- NEVER work alone.
- Before performing visual inspections, tests, or maintenance on this equipment, disconnect all sources of electric power. Assume that all circuits are live until they have been completely de-energized, tested, and tagged. Pay particular attention to the design of the power system.
- Consider all sources of power, including the possibility of backfeeding.
- Turn off all power supplying the power meter and the equipment in which it is installed before working on it.
- Always use a properly rated voltage sensing device to confirm that all power is off.
- Before closing all covers and doors, carefully inspect the work area for tools and objects that may have been left inside the equipment.
- Use caution while removing or installing panels so that they do not extend into the energized bus; avoid handling the panels, which could cause personal injury.
- The successful operation of this equipment depends upon proper handling, installation, and operation. Neglecting fundamental installation requirements may lead to personal injury as well as damage to electrical equipment or other property.
- NEVER bypass external fusing.
- The power meter should be installed in a suitable electrical enclosure.

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

⚠ WARNING

UNINTENDED EQUIPMENT OPERATION

- ION modules and registers must only be configured by personnel with a thorough understanding of ION architecture and the system in which the meters and software are installed.
- Do not use meters or the software 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 output for any safety critical application due to possible unexpected change of state during power cycles, power outages, configuration changes or firmware upgrades.

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

⚠ WARNING

INACCURATE REPORT RESULTS

- Do not incorrectly configure the Power Monitoring Expert system, this can lead to inaccurate reports and/or data results.
- Do not rely solely on reports to determine if the system is functioning correctly or meeting all applicable standards and requirements.
- Use reports as a supplement to proper workplace practices or equipment maintenance, not as a substitute.

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

⚠ WARNING

INACCURATE DATA RESULTS

Do not install incorrect drivers for the circuit breakers in your system. This can lead to algorithms not functioning correctly and to incomplete or inaccurate reports and/or data results.

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

NOTICE

UNINTENDED OPERATION

Make sure to enable the logs in the groups section when configuring the device.

Failure to enable the logs in the groups section will result in the inputs not being available and not appearing in the Generator Performance Tool.

Contents

Power Monitoring Expert 8.1 Healthcare Edition Commissioning Overview

This document is an instructional guide for Application Engineers who are responsible for installing and configuring StruxureWare™ Power Monitoring Expert 8.1 Healthcare Edition. This offer includes:

- Genset Monitoring
- Generator Fuel Management
- Operating Room Isolated Power Interface for ANSI
- Operating Room Isolated Power Interface for IEC

Application Modules

In addition to the foundational solution, Power Monitoring Expert 8.1 Healthcare Edition includes a set of optional application modules that extend the capabilities of the solution. Application modules consist of configuration tools, utilities, and reports that help you to better manage your system equipment, and increase power efficiency and capacity.

NOTE: Each application module requires a license to be used. Contact your Schneider Electric representative for more information.

For more information on how to configure and use the Power Monitoring Expert application modules, refer to *StruxureWare™ Power Monitoring Expert Application Modules - Configuration Guide*. This guide is available on the Power Monitoring Expert Exchange Community.

Commissioning Process without EPSS

The commissioning process includes these steps:

1. Install the Healthcare Software, "Power Monitoring Expert 8.1 Healthcare Edition Installation" on page 17.

Depending on your system, configure the following system components:

2. Configure the installed ION power meters. See "ION Power Meter Configuration" on page 23.
3. Configure the installed non-ION Meters. See "Non-ION Power Meter Configuration" on page 45.
4. Configure generators, optional equipment, and groups in the Generator Performance Configuration Tool. See "Generator Performance Configuration Tool" on page 103.
5. Configure the equipment and generator reports.

6. Configure devices, frameworks, and report for Generator Battery Health. See "Generator Battery Health" on page 162.
7. Configure devices and frameworks for Generator Fuel Monitoring. See "Generator Fuel Management" on page 177.

NOTE: For more information on how to configure any optional components your system has, refer to the *StruxureWare™ Power Monitoring Expert Application Modules - Configuration Guide*.

Commissioning Process with EPSS

If the installation includes the EPSS application module, the commissioning process includes steps:

1. Install the Healthcare software. See"Power Monitoring Expert 8.1 Healthcare Edition Installation" on page 17.

Depending on your system, configure the following system components:

2. Review EPSS details
3. Configure the installed ION power meters. See "ION Power Meter Configuration" on page 23.
4. Configure the installed non-ION Meters. See "Non-ION Power Meter Configuration" on page 45.
5. Configure generators, ATS, optional equipment, and groups and then generate EPSS Vista diagrams in the Generator Performance Configuration Tool with EPSS Test Module. See "Generator Performance Configuration Tool with EPSS Test Module" on page 114.
6. Configure the equipment and generator reports
7. Configure and generate the EPSS report
8. Configure devices, frameworks, and report for Generator Battery Health Monitoring "Generator Battery Health" on page 162.
9. Configure devices and frameworks for Generator Fuel Monitoring. See "Generator Fuel Management" on page 177.
10. Log generator data in the Smart Device Data Collector

NOTE: For more information on how to configure any optional components your system has, refer to the *StruxureWare™ Power Monitoring Expert Application Modules - Configuration Guide*.

Commissioning the Operating Room Isolated Power Interface

The commissioning process for the Operating Room solution includes these steps:

1. Install the Healthcare Software,"Power Monitoring Expert 8.1 Healthcare Edition Installation" on page 17.
2. Configure the software, device frameworks, and report:
   - For ANSI, "Operating Room Isolated Power Interface ANSI" on page 203.
   - For IEC, "Operating Room Isolated Power Interface IEC" on page 242.

Support Contacts

To contact Technical Support:

For **NAOD** - (North America Operating Division):
Email: pmo.support@schneider-electric.com

For **EMEAS** - (Europe, Middle East, Africa and South America) and **APAC** (Asia Pacific):

1. Navigate to http://www.schneider-electric.com.
2. Choose your country when prompted, or, at top of the page, click Change country, select your country from the list, and then click search.
3. Select an option from the **Support** tab at the top of the page.

   Available contact information appears based on the country you select.

Power Monitoring Expert 8.1 Healthcare Edition Installation

Power Monitoring Expert 8.1 Healthcare Edition uses the StruxureWare Power Monitoring Expert platform as its base. The Power Monitoring Expert 8.1 Healthcare Edition installation process is similar to installing the base platform, with additional features that are specific to Healthcare.

Upgrades

StruxureWare™ Power Monitoring Expert 8.1 Healthcare Edition can be installed as an in-place upgrade to the following systems:

- StruxureWare Power Monitoring Expert 8.0
- StruxureWare Power Monitoring Expert 7.2
- StruxureWare Power Monitoring 7.0.1 with EPSS 3
- StruxureWare Power Monitoring 7.0.1
- ION Enterprise™ 6.0 SP 1

For more information on upgrading to Power Monitoring Expert 8.1 Healthcare Edition, see the *Power Monitoring Expert Upgrade Guide*.

StruxureWare Power Monitoring 7.0.1 upgrades

Note the following:

- You do not have to uninstall the 7.0.1 software version. The Healthcare software installer package performs this task.
- For distributed systems, where the primary server is on a different machine than the database server, install the Healthcare software in this order: Database server > Primary server > Secondary server > Client machines.
- If the system has EPSS 3, the EPSS option is automatically included.
- For information about system hardware requirements, see the *Power Monitoring Expert Commissioning Guide*. Verify that the existing hardware can accommodate the requirements for Power Monitoring Expert 8.1 Healthcare Edition.

ION Enterprise 6.0 SP 1 upgrades

Note the following:

- EPSS 2 is only compatible with ION Enterprise 6.0 SP1. EPSS 3 will not install or run under ION Enterprise 6.0 SP1.

- If the system has EPSS 2 then it must be uninstalled using the Microsoft Windows uninstall tool accessible from the control panel. This removes the EPSS 2 reports and subscriptions, but the EPSS 2 data will be preserved in the ION Enterprise 6.0 SP1 or StruxureWare Power Monitoring (SPM) 7.0 database.
- EPSS 3 is only compatible with SPM 7.0 or 7.0.1. If the customer migrates from ION Enterprise 6.0 SP1 to Power Monitoring Expert 8.1, they must upgrade to EPSS.
- For information about system hardware requirements, see the *StruxureWare Power Monitoring Expert Installation Guide*. Verify that the existing hardware can accommodate the requirements for Power Monitoring Expert 8.1 Healthcare Edition.
- For more information about upgrade support information, see *StruxureWare Power Monitoring Expert 8.1 - What's New*.

Before You Begin

NOTE: Before you install and configure SQL Server or Power Monitoring Expert 8.1 Healthcare Edition, make sure that Microsoft Silverlight 5.2 or later is installed (version 6 is recommended).

Microsoft Excel 2010, 2013, or 2016 is optional.

If the existing system has Event Notification Module (ENM), use the Windows software removal tool to remove the ENM software before you start the Healthcare software installation. This only removes the application. The configuration settings are saved and will be integrated into the new ENM version.

After the Microsoft software has been installed and the prior ENM software has been removed, you can install the following software in this order:

1. SQL Server. See "Install Microsoft SQL Server" on page 18
2. StruxureWare Power Monitoring Expert for Healthcare 8.1. See "Install Power Monitoring Expert 8.1 Healthcare Edition" on page 19
3. Event Notification Module. See "Install Event Notification Module" on page 19

Install Microsoft SQL Server

SQL Server is a required component of Power Monitoring Expert 8.1 Healthcare Edition.

For information on installing SQL Server, see the following documentation:

- *Power Monitoring Expert Installation Guide*
- *Using the SQL Server 2014 DVD*
- *StruxureWare Power Monitoring Expert 8.1 - What's New*

Install Power Monitoring Expert 8.1 Healthcare Edition

The Power Monitoring Expert 8.1 Healthcare Edition installation includes the Power Monitoring Expert platform, Vista diagrams, frameworks specific to the Healthcare edition, and optional application modules.

For information on installing Power Monitoring Expert 8.1 Healthcare Edition, see the *Power Monitoring Expert Installation Guide*.

For information on how to configure your system components, refer to the *Power Monitoring Expert Application Modules - Configuration Guide*.

Install Event Notification Module

The Event Notification Module (ENM) provides notification regarding critical power incidents to designated people in your facility, regardless of their location. ENM delivers alerts of power system events to the mobile device or email of designated users to help them quickly identify system abnormalities and take appropriate action.

NOTE: During the ENM installation, you will be prompted to select the type of setup. In the **Setup Type** drop-down list, select **Event Notification Module - Complete**.

For more details about the ENM installation, see the *Event Notification Module Installation Guide*. For instructions to configure ENM, see the *Event Notification Module help*.

StruxureWare Building Operation integration

Follow these steps to integrate StruxureWare Building Operation with Power Monitoring Expert 8.1 Healthcare Edition.

Prerequisites

Before you begin the integration, make sure to complete the following:

- Completely configure Power Monitoring Expert 8.1 Healthcare Edition as needed.
- Secure the necessary licensing for StruxureWare Building Operation
- If necessary, make any changes to the network diagram (.dgm) file.

NOTE: It is recommended that you install StruxureWare Building Operation on a separate server.

Running the Integration Utility

IMPORTANT: Perform the following actions on the Power Monitoring Expert 8.1 Healthcare Edition server, not on the StruxureWare Building Operation server.

1. Browse to the Power Monitoring Expert Exchange Community and search for "Integration Utility."
2. Download, extract, and run the Integration Utility on the Power Monitoring Expert 8.1 Healthcare Edition server.
3. In your browser, go to "http://standalone/SystemDataService/Auth/GenerateAuthUrl" and log in. Use the same user name and password as used in the Integration Utility.

   Destination URL Type: Choose **Web Diagrams** - **Network Diagram**

   Destination Protocol: Choose **HTTP**

   Destination Host name: IP address of the Power Monitoring Expert 8.1 Healthcare Edition primary server. For example: 10.168.92.80
4. Click **Generate URL**.
5. Copy the entire generated token code from window and save it in a text file.
6. Open and log in to StruxureWare Building Operation Workstation.
7. In StruxureWare Building Operation, right-click on the Enterprise server (the highest level in the system tree), then select **Import** from the menu.
8. Navigate to and select the XML file you just created with the Integration Utility, and then click **Import**. The file import process completes, and a new file folder now appears in your **System Tree**.

   You can run the Integration Utility more than once. However, importing the Export file multiple times without deleting the previously-imported folder will create a duplicate entry in the target StruxureWare Building Operation system.
9. Right-click on the imported folder in the System Tree, select **New > Hyperlink** and name it as a new Power Monitoring Expert 8.1 Healthcare Edition diagram, and then click **Next**.
10. Paste in to the **URL** field all of the generated token code, and then click **Create**.
11. Click the **HC Diagrams** link in left menu to verify that all Power Monitoring Expert 8.1 Healthcare Edition-related diagrams appear in right window.
12. Verify all Healthcare-related diagrams, such as EPSS, UPS, Breaker Aging, and Operator Screen.
13. Log in to the StruxureWare Building Operation Webstation using http://localhost:8080.

Activating software licenses

The installed software includes a 90-day trial license of the product. You must activate valid purchased software licenses within 90 days, otherwise some functionality is disabled.

NOTICE
LOSS OF COMMUNICATION • Be sure to activate product and component licenses prior to the expiry of the trial license. • Ensure that you activate sufficient licenses for the components in your system. **Failure to follow these instructions can result in loss of data.**

You need to purchase and activate licenses for the following software features:

Communications Server – Requires Server and Device licenses

- Vista – Licensed with Power Monitoring Expert 8.1 Healthcare Edition
- Designer– Requires an Engineering Client license
- OPC Server – Requires an OPC DA Server license
- Event Notification Module (ENM) – Requires the appropriate license
- Application Modules – Requires the appropriate Application Module license
- Web Clients – Require Web Client licenses

When your order is processed, a software license Entitlement Certificate is sent by email from softwarelicensing@schneider-electric.com. You may need to change the settings in your email application to ensure that this email arrives in your inbox and is not routed to your spam folder.

To activate software licenses:

1. Locate your Entitlement Certificate email.
2. In the Windows **Start** menu, click **All Programs** > **Schneider Electric** > **Floating License Manager** > **Floating License Manager**. The Schneider Electric Floating License Manager screen appears.

NOTE: Only activated licenses appear in the table area. If you have not activated any licenses, the table area is blank.

3. Click **Activate** to activate licenses for installed software components. The Activation Method screen appears.
4. Choose one of the available activation methods and follow the detailed instructions provided in the dialog.

For more information on the License Manager, see the *StruxureWare Power Monitoring Expert Licensing Guide*. This guide is available on the Power Monitoring Expert Exchange Community.

ION Power Meter Configuration

This section describes how to complete the following tasks:

1. Add ION power meters to the Power Monitoring Expert solution.
2. Deploy a custom framework on an ION power meter using the Designer application of Power Monitoring Expert solution.
3. Configure the framework with site-specific information.

Experience using ION Setup, Designer, and other software is necessary to configure ION power meters. Successful completion of these tasks ensures that:

- The operational states on the Active Transfer Switches (ATS) and generators are associated with the digital inputs on the ION power meters, and that the digital inputs are appropriately labeled and logged in the ION_Data database.
- The engine data for the generators is associated with the analog inputs on the ION power meters, and that the analog inputs are appropriately labeled and logged in the ION_ Data database.
- The electrical details for the generators are logged and saved in the ION_Data database.

⚠ WARNING

UNINTENDED OPERATION

- Do not use ION meters for critical control or protection applications where human or equipment safety relies on the operation of the control circuit.
- Refer to the *ION Reference* for more information on ION module operation.

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

Supported ION Power Meters

Power Monitoring Expert can use the following ION power meters:

- PM8000, ION7550 and ION7650 for ATSs only, generators only, or for generators and ATSs combined
- ION7550 RTU for ATSs only

Related information

For information about adding ION power meters to Power Monitoring Expert, see the Management Console online help or the *StruxureWarePower Monitoring Expert Help*.

For details about configuring Analog or Digital Input modules, refer to *ION Reference*.

Maintenance and Backups

As a good practice, always save a backup of the final framework that is pasted onto the meter. Use Designer to create a copy of the framework from the meter. Save the framework to a location from where the framework can be pasted back to the meter if necessary.

Be sure to save a backup of the meter's framework before deploying and configuring the EPSS frameworks.

If a meter needs to be replaced, use the backup copy of the ION meter framework for the new ION meter. For all other installation and configuration steps, you must follow the original commissioning steps as described in the following sections.

Refer to existing Power Monitoring Expert documentation for instructions to backup meter frameworks.

Prerequisites

The following items must be completed before attempting to configure ION power meters to record data from generators, automatic transfer switches (ATS) and other equipment.

- Power Monitoring Expert must be installed and operational.
- All ION power meters must be installed and communicating.
- ION power meters selected to monitor **each ATS device** must have the following available data recorders and inputs:
    - One available data recorder
    - At least three available digital inputs (site specific)
- ION power meters selected to monitor **each generator device** must have the following available data recorders and inputs:
    - Two available data recorders
    - Three available digital inputs (site specific)
    - Two available data recorders
- See "Additional Information about Digital and Analog Inputs" on page 25 for more information.
- Each ATS should be physically wired to the appropriate ION power meters so that the following status signals are represented:
    - Normal
    - Emergency
    - Test
    - Power Outage (optional)
- Each generator should be physically wired to the appropriate ION power meters so that the following status signals are represented:

- Start (optional)
- Emergency Power Source Available (optional)
- Run
- Stop

- The following generator electrical data must be metered and available for each generator:
  - Vln a
  - Vln b
  - Vln c
  - Vln avg
  - Vll ab
  - Vll bc
  - Vll ca
  - Vll avg
  - I a
  - I b
  - I c
  - I avg
  - kW tot
  - kVA tot
  - PF sign tot
  - Freq

Additional Information about Digital and Analog Inputs

Digital Inputs

Meters used to monitor generators and other equipment must have enough available digital inputs to handle the incoming status signals. The number of required digital inputs depends on how many signals are available and whether they are single state or dual state signals.

Example of single state signals, where signalA represents GEN Running

- When signalA = 1, GEN Running is TRUE
- When signalA = 0, GEN Running is FALSE

Example of dual state signals, where signalA represents GEN Running and GEN Stopped

- When signalA = 1, GEN Running is TRUE
- When signalA = 0, GEN Stopped is TRUE

Analog Inputs

Meters used to monitor generators must have available analog inputs to handle the incoming generator-specific analog data. The number of required analog inputs depends on how many measurements are being recorded. For example, analog data can include the following:

- Exhaust Gas Temperature left and right
- Engine Coolant Temperature in and out.
- Engine Oil Pressure

Generator analog signals can be obtained through the analog inputs or via Modbus Master from the engine controller. Refer to the *PowerLogic ION7550/7650 User Guide* for more information.

Add ION Devices to the System

Follow these steps to add ION power meters to your system configuration.

Complete these steps to prevent any unwanted database actions when modifying the meter framework.

1. Stop the Log Inserter Service, as follows:
   a. Open the Windows Services panel by clicking:

      Start > Administrative Tools > Services

      The path to **Services** may vary depending on the Windows operating system being used.

   b. Right-click **ION Log Inserter Service** and select **Stop**.
2. Open the Management Console.
3. Use the Device window in Management Console to add each ION power meter.

   The Device window includes **Group** and **Name** fields. **Group** is the name under which you want to associate the device you are adding. **Name** identifies the meter that you are adding. The meter name should include a reference to identify which ATS or generator is connected to the meter.

   When a meter has been added it appears in the list of devices in *group.name* format. For example, if you named the group `EPSS`, and identified the meter as `ATS1`, the name in the device list is `EPSS.ATS1`. Similarly, if you used the same group to add a meter identified as `GEN1`, the name in the device list is `EPSS.GEN1`. See the *StruxureWare Power Monitoring Expert User Guide* or online help for information about adding a meter.

After the power meter is added, configure the appropriate frameworks as described in "Deploying ATS Frameworks for EPSS" on page 26 and "Deploying Generator Frameworks" on page 36.

Deploying ATS Frameworks for EPSS

Overview

Use Designer to copy and paste the ATS framework to your ION power meter. Repeat this process for every power meter in your system that records ATS data for EPSS purposes.

Pasting ATS Frameworks

Before you deploy ATS frameworks, you need to be aware of the implications of free pasting and lock pasting modules.

Use free pasting to paste a new module with a different name if a module with the same name already exists. This helps to ensure that existing modules and their functionality are not replaced.

Use lock pasting to overwrite an existing module and its functionality with a new module, while retaining the module name. However, you need to understand what the modules are currently being used for before you lock paste the modules. A lock paste replaces the functionality of those modules.

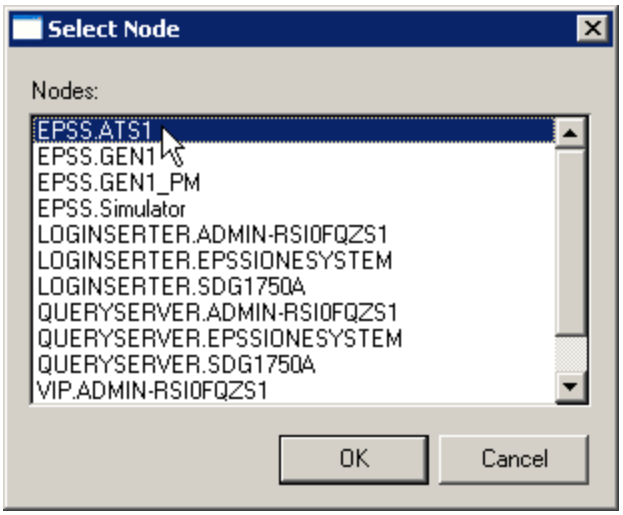
- If a power meter already uses all modules of a certain type that are a necessary part of the framework, then a lock paste operation is required.
- If all of the available digital or analog input modules are in use, a lock paste of the analog or digital input modules is required to help ensure that the parameter settings are updated

Copy the ATS Framework to the ION Power Meter

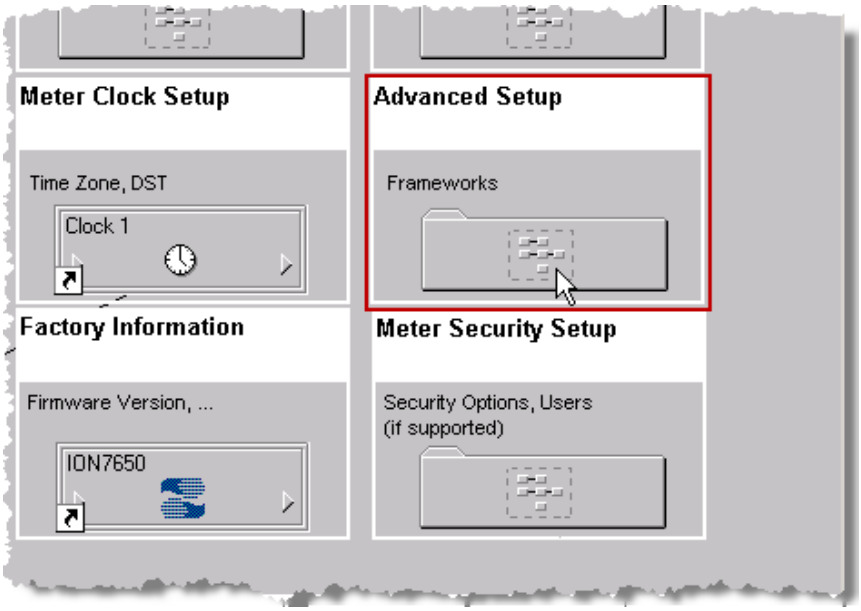
Use Designer to copy and paste the ATS framework to the power meter. Repeat this process for every power meter in the system that records ATS data for the EPSS.

Follow these steps to copy the ATS framework and paste it to the power meter.

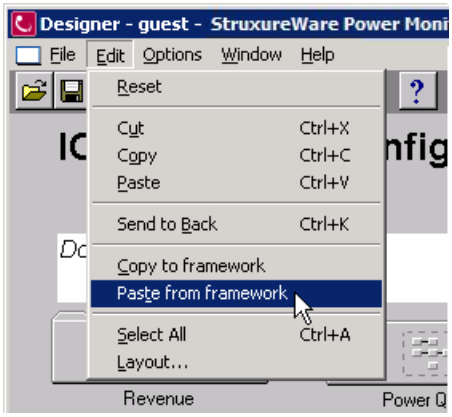
1. In **Management Console** click **Tools > System > Designer**. The Designer login window appears.
2. Enter the login credentials with administrator or supervisor access and click **OK**.
3. Click **File > Open**, select the power meter that has the ATS connected to it, and then click **OK** to open the meter's framework.



4. Navigate to **Advanced Setup** and double-click the **Frameworks** folder to open it.

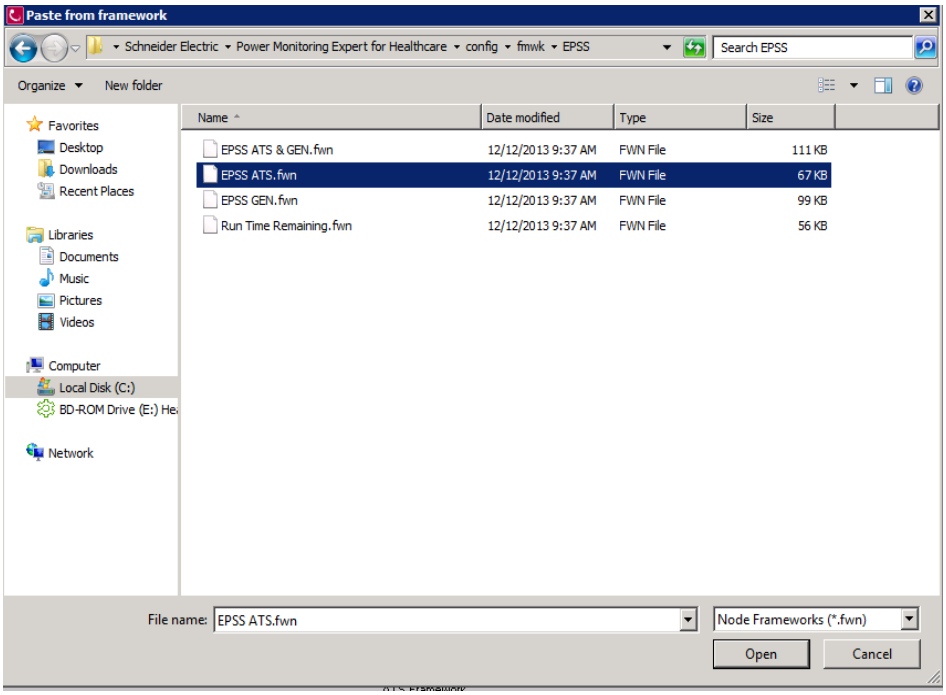


5. Make sure that the Toolbox is open. Select **Options > Show Toolbox** if it is not open.
6. Select **Edit > Paste from framework**. The **Paste from framework** window appears, from which you paste the framework to the **Frameworks – ION Advanced Configuration** folder.



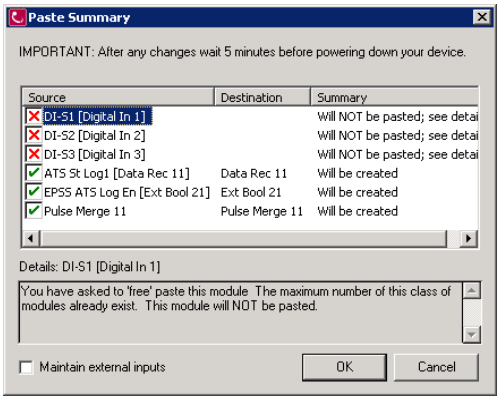
7. Navigate to C:\Program Files (x86)\Schneider Electric\Power Monitoring Expert for Healthcare\config\fmwk\EPSS, select the EPSS ATS framework `.fwn` file, and click **Open**.

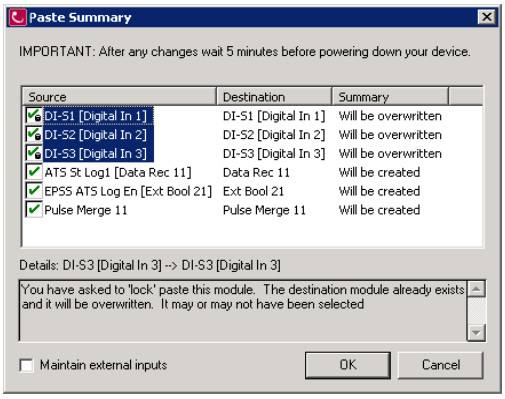
   For example, in the following image the EPSS ATS framework file is `EPSS ATS.fwn`.



8. Press SHIFT and left-click to lock paste all of the Digital Input modules listed in the **Paste Summary** dialog, and free paste all of the remaining modules.

   The lock paste overwrites a module if it already exists on the meter. For more information, see "Deploying ATS Frameworks for EPSS" on page 26.





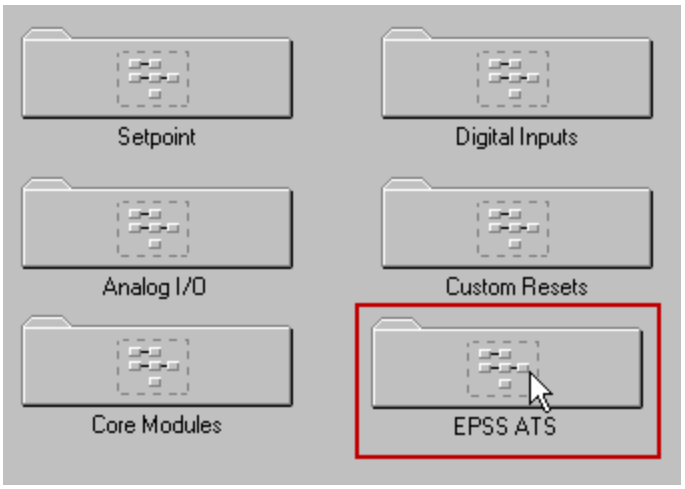
9. Do not select **Maintain external inputs**.

10. Press **OK** to paste the EPSS ATS framework.

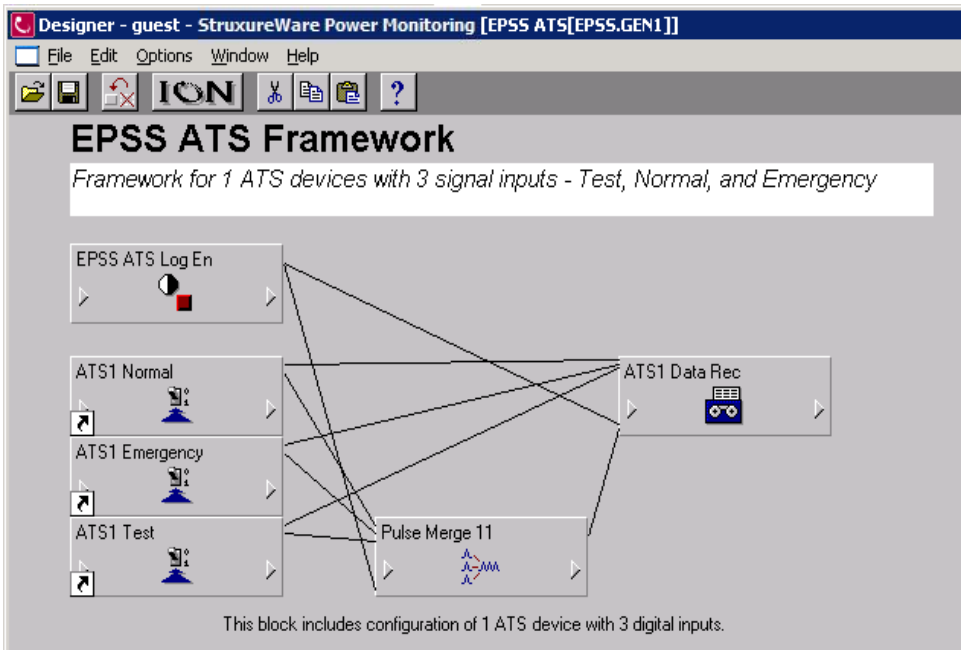
Configure the ATS Frameworks

After the EPSS ATS framework has been pasted, configure the EPSS ATS framework with site-specific data.

1. Double-click the framework folder **EPSS ATS** to open its node diagram.



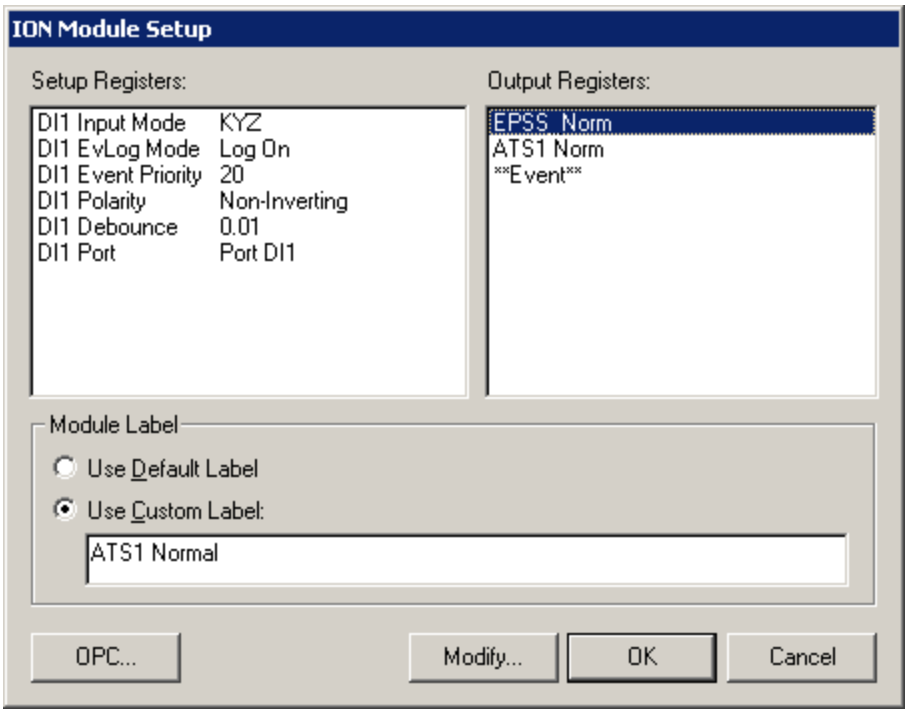
The nodes of the ATS framework, as shown next, support the three single state status signals: Normal, Emergency, and Test. These status signals are received by their respective digital input modules ATS1 Normal, ATS1 Emergency, and ATS1 Test.



The names of the digital input modules are examples to identify how the label the components in the framework. You can rename them to match the system being deployed. For example, ATS1 could be just ATS. The remaining steps use these label names to illustrate the updates made to the framework.

2. Right-click a Digital Input module to access its registers. The **ION Module Setup** screen appears.

   The following image shows the registers for the digital input module ATS1 Normal. The ATS controller hardware that this module interfaces with governs how *Input Mode*, *Polarity*, and *Debounce* should be configured.



3. To update a register, select the register and click **Modify**. The **Modify Registers** screen appears.
4. Change the values to the site-specific sources and quantities. Click **OK** to return to the node diagram. For example:
   - The Setup Register *Input Mode* is set to KYZ, which forces a pulse output on both leading and trailing edges of the signal. This causes the data recorder to record the state on each transition of the signal.
   - The Output Register label `EPSS_Norm` is the name associated with the signal received by the digital input module ATS1 Normal. The maximum number of characters for the label is 15. Examples of Output Register labels for digital input modules ATS1 Emergency and ATS1 Test are `EPSS_Emerg` and `EPSS_Test`, respectively.

     Make sure that Output Register labels are consistently labeled across the entire system. For example, if you plan to represent the ATS Normal state as `EPSS_Norm`, then you need to use the same label for all of the ATSs.

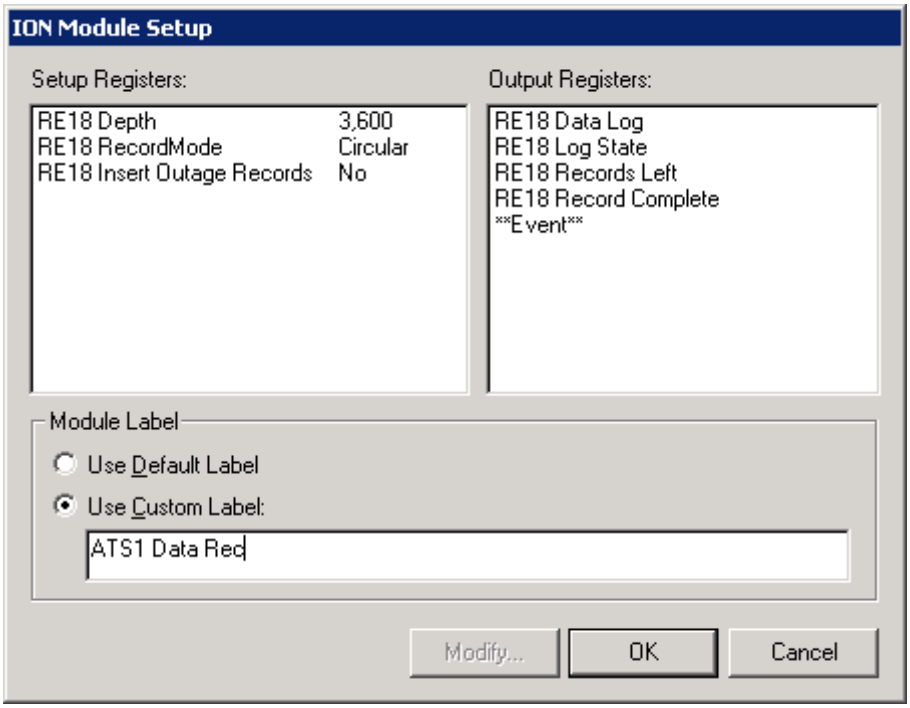
     For systems that use a single meter to record EPSS status measurements for multiple EPSS devices, the Output Register naming convention for digital input modules must be modified from *`quantity`* to *`quantity@source`*.

     For example, change `EPSS_Test` to `EPSS_Test@ATSxx` where `xx` uniquely identifies the ATS device.

     The *`quantity@source`* format allows the data it represents to be uniquely identified.

The quantities remain the same (`EPSS_Test`, `EPSS_Emerg`, `EPSS_Norm`) but the source name is now unique (`ATSxx`). If this change is not made, data for all ATSs or generators recorded on the meter cannot be uniquely identified.

5. Right-click the Data Recorder module to access its setup registers.



6. Set the *Depth* setup register to at least a value of `100` to help ensure that data is recorded.
7. Select **Use Custom Label** and add a label that clearly identifies the data recorder within the framework.
8. When you have completed all of the necessary site-specific modifications, click **File > Send & Save** from the node diagram to write your changes to the ION power meter.

   Refer to the *ION Reference* for more information about configuring setup registers.
9. Restart the Log Inserter Service after you configure the framework.

You can configure the EPSS ATS framework to remotely switch the ATS into test mode, as described next.

(Optional) If you have a power outage signal, feed it into the above module with the EPSS Normal Emergency and Test.

Configure Remote ATS Test for ION7550/7650 Power Meter

Switching an ATS to test mode remotely is done by linking a control object in a Vista diagram to a digital output on the ION7550/7650 meter that is connected to the ATS controller.

Refer to *StruxureWare Power Monitoring Expert User Guide* for more instructions on working with Vista diagram control objects.

For details about configuring modules, refer to *ION Reference*.

NOTE: The EPSS ATS framework must be deployed to the meter and configured before you can set up the framework for ATS remote switching. For instructions, refer to "Deploying ATS Frameworks for EPSS" on page 26.

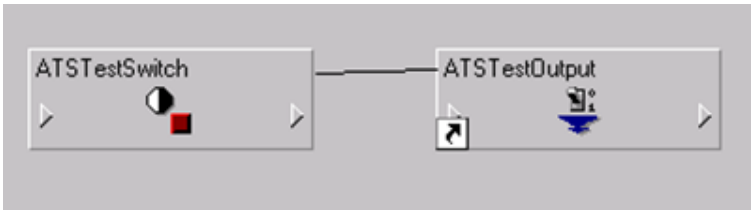
Configure the Digital Output

Follow these steps to configure the digital output for the ION7550/7650 power meter.

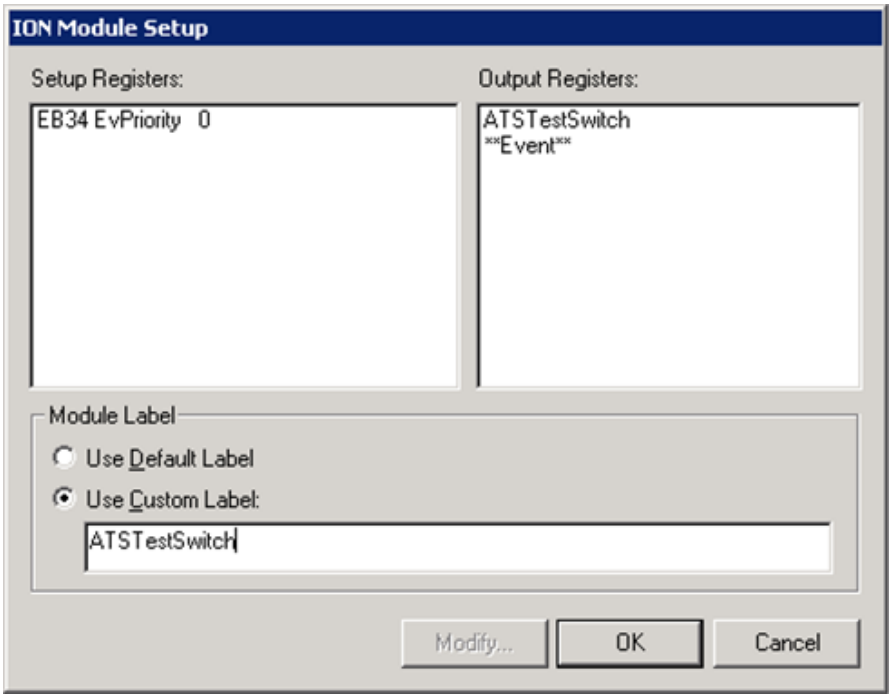
1. Open Designer and login as a supervisor.
2. Connect to the meter.
3. In the meter framework, open the EPSS ATS folder.
4. From the Toolbox drag and drop an External Boolean module into the EPSS folder.
5. Locate the Digital Output folder and drag in a Digital Output module.

   You can also use CTRL-SHIFT left click to drag in a shortcut to the Digital Output module.

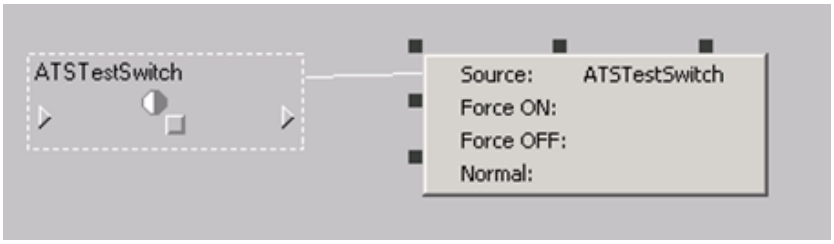
   The folder should look similar to the following example:



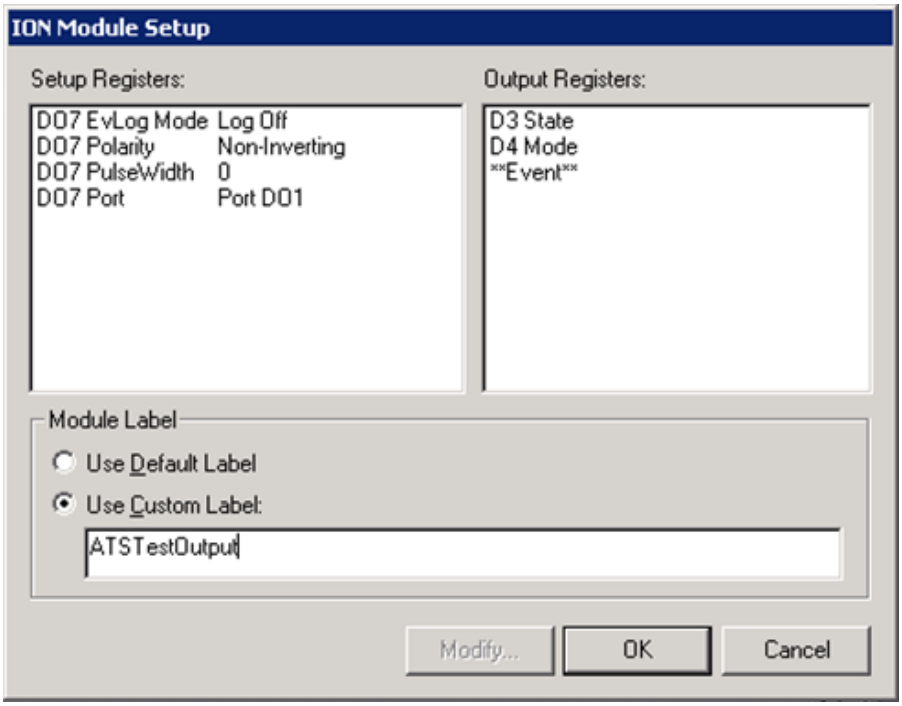
6. Configure the External Boolean Setup Registers as shown next:



7. Connect the ATSTestSwitch output to the Source input of the Digital Output module, as shown next.



8. Configure the Digital Output module as shown next:



Note the following details for the module setup:

- **Polarity** - Set this to "Non-Inverting"
- **Pulse Width** - Set this to "0"
- **Port** - Set this to the physical port on the meter that is connected to the ATS. In this case, DO1.
- **Use Custom Label** - Enter a name easy to recognize, such as "ATSTestOutput."

9. Click the **Send and Save** icon.

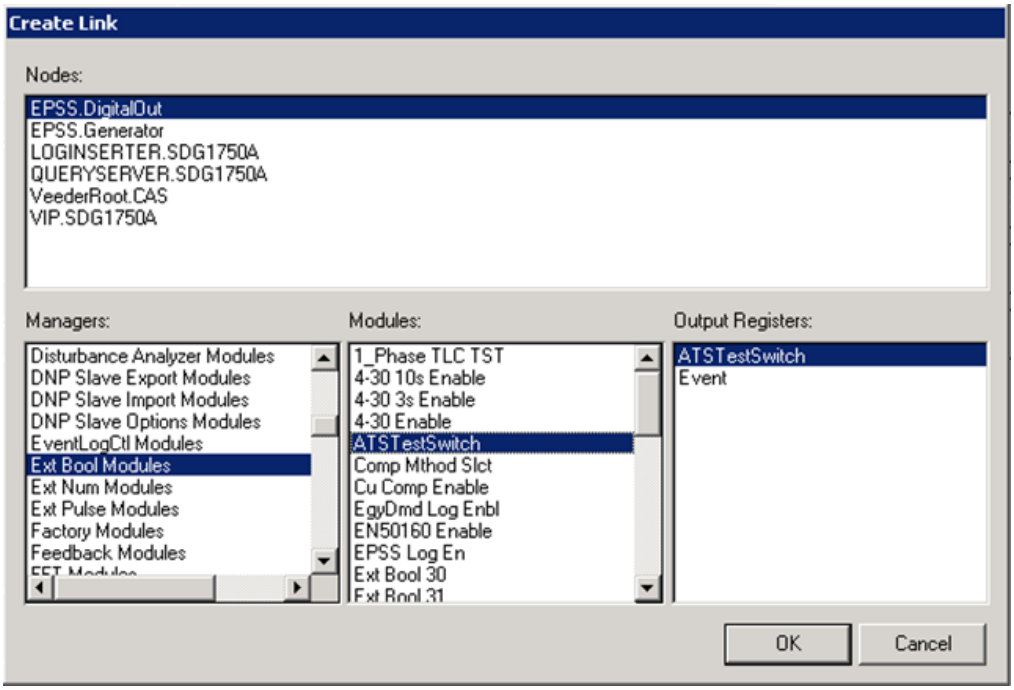
Configure the Vista diagram for the meter, as described next.

Configure the Vista Diagram

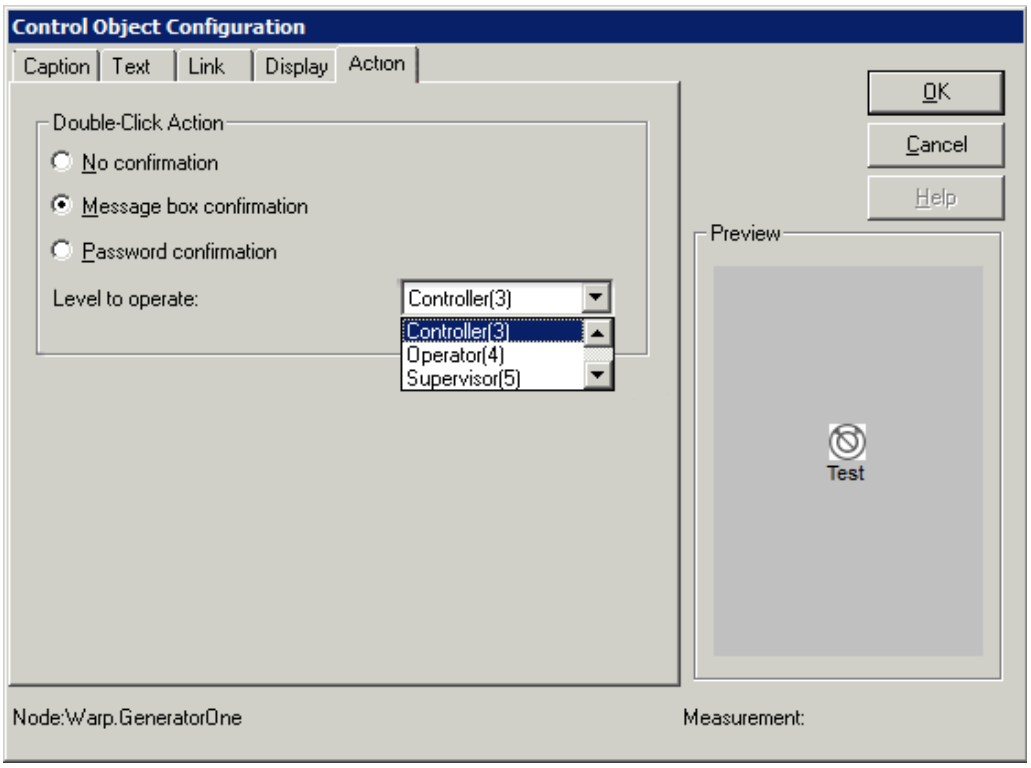
Follow these steps for the ION7550/7650 power meter. Make sure Designer is closed before linking any objects in Vista.

1. Login to Vista as a supervisor and open a new diagram.
2. From the Toolbox, drag a Control object onto the diagram.
3. Right-click on the Control object. The Control Object Configuration screen appears.
4. Use a custom label, such as "ATSTestSwitch."

5. Configure the link to the External Boolean module's Switch output register, as shown next.



6. Click **OK**.
7. Right-click the ATSTestSwitch object. The Control Object Configuration screen appears.
8. On the **Action** tab, set the **Level to Operate** field to "Controller" as shown next.



9. Click **OK**.
10. Close the Toolbox.
11. Restart the ION Log Inserter Service after you configure the framework.

Now you can control the ATS by clicking the switch.

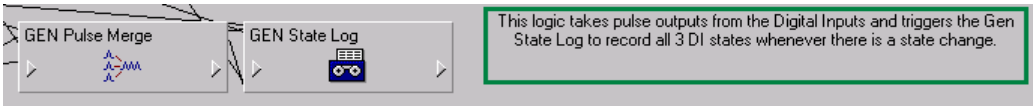
Deploying Generator Frameworks

Overview

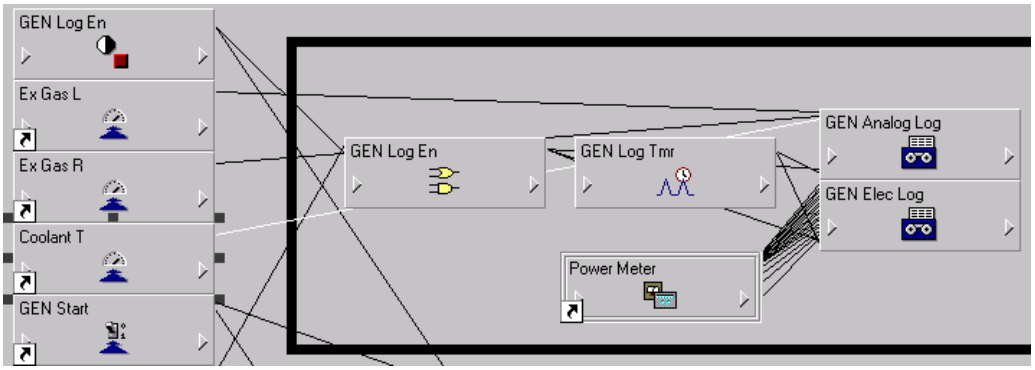
Use Designer to copy and paste the generator framework to the power meter. Repeat this process for every power meter in the system that records generator data for purposes. The generator framework is designed to capture generator status changes when they occur, and then to log generator-specific field data when the generator is active.

This framework is a template that should be adjusted to meet the requirements of your site. GEN Start or GEN Run can be used to initiate logging, and the frequency can be adjusted in the periodic timer.

- The status signals for status events GEN Start, GEN Run, and GEN Stop are recorded in the Gen State Log whenever any one of them changes state.



- The logic is designed to record analog and general electrical data when the generator is running. The data is logged at one minute intervals.



- The external Boolean Gen Log En must be linked to a control object in a Vista diagram and enabled before any data is logged. This allows users to notify the system that they are running a test and to log data accordingly.

Pasting Generator Frameworks

Before you deploy generator frameworks, you need to be aware of the implications of free pasting and lock pasting modules.

Use free pasting to paste a new module with a different name if a module with the same name already exists. This helps to ensure that existing modules and their functionality are not replaced.

Use lock pasting to overwrite an existing module and its functionality with a new module, while retaining the module name. However, you need to understand what the modules are currently being used for before you lock paste the modules. A lock paste replaces the functionality of those modules.

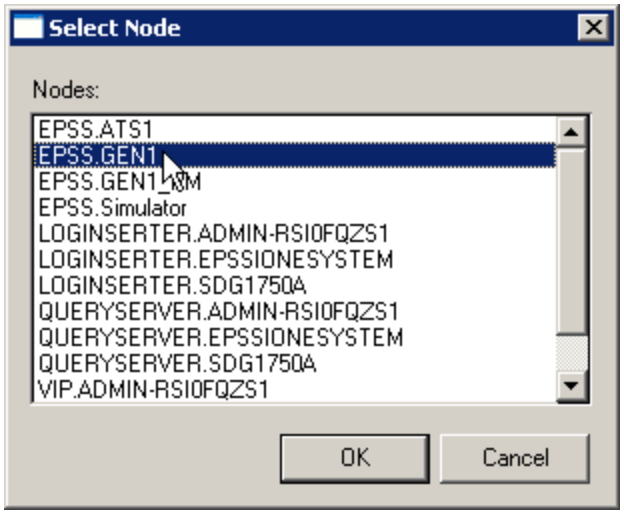
- If a power meter already uses all modules of a certain type that are a necessary part of the framework, then a lock paste operation is required.
- If all of the available digital or analog input modules are in use, a lock paste of the analog or digital input modules is required to help ensure that the parameter settings are updated

Copy Generator Framework to ION Power Meter

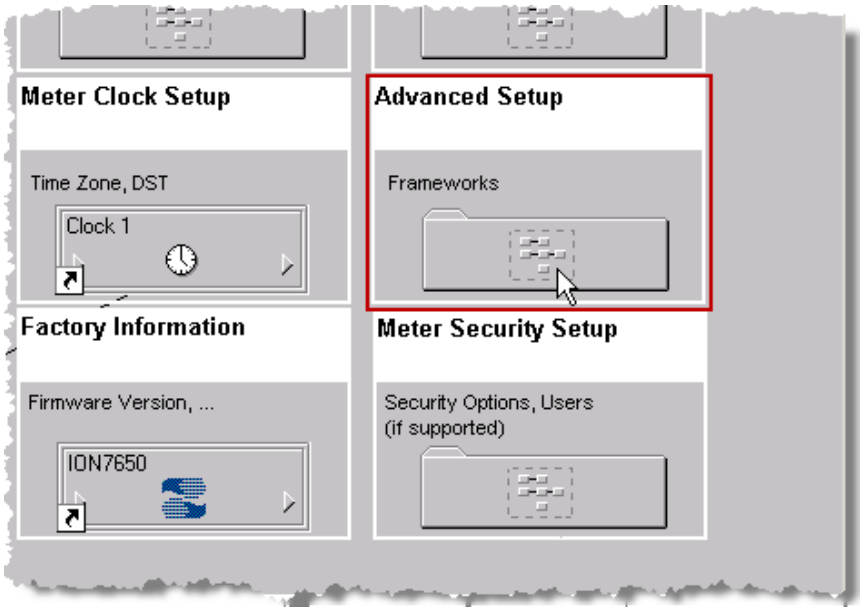
Use Designer to copy the generator framework to the power meter. Repeat this process for every power meter in the system that records generator data.

1. In **Management Console** click **Tools > System > Designer**. The Designer login window appears.

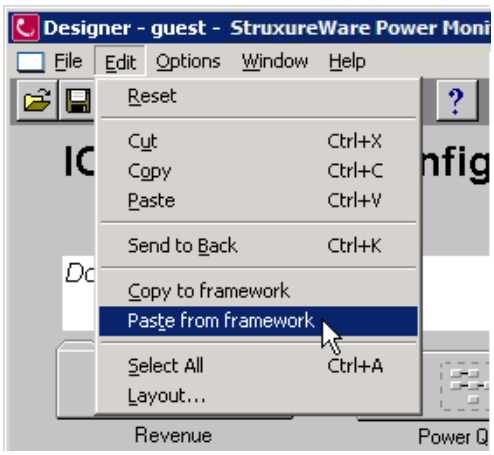
2. Enter the login credentials with administrator or supervisor access and click **OK**.
3. Click **File > Open**, select the power meter that has the generator connected to it, and then click **OK** to open the meter's framework.



4. Once the meter's framework is open, navigate to **Advanced Setup** and double-click the **Frameworks** folder to open it.

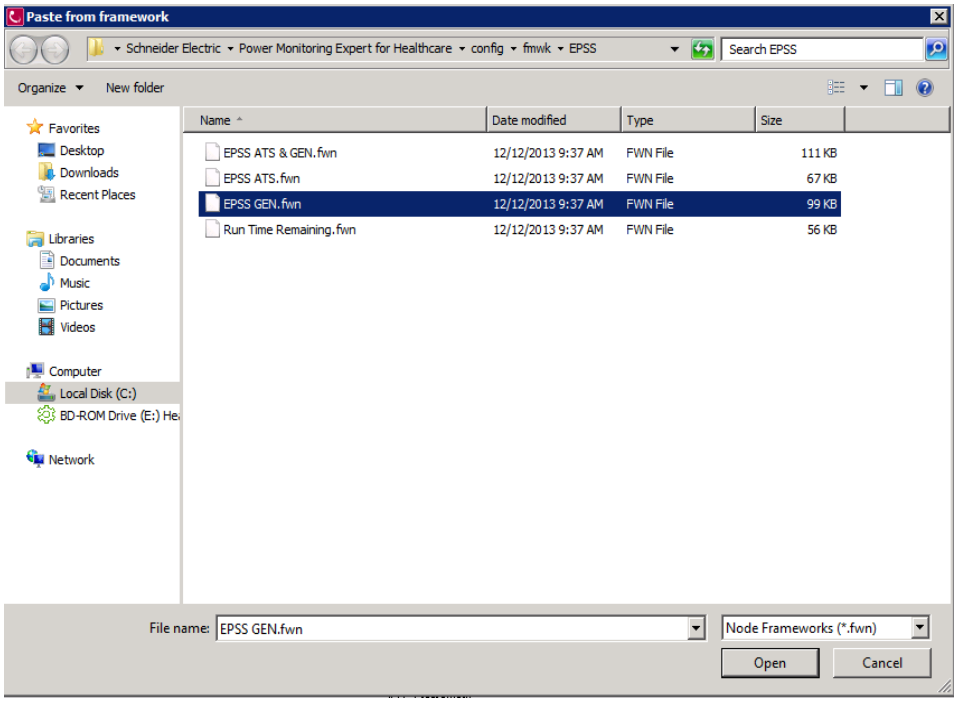


5. Ensure that the Toolbox is open. Select **Options > Show Toolbox**, to open the Toolbox.
6. Select **Edit > Paste from framework** to open the **Paste from framework** window, from which you paste the generator framework to the **Frameworks – SPM Advanced Configuration** folder.



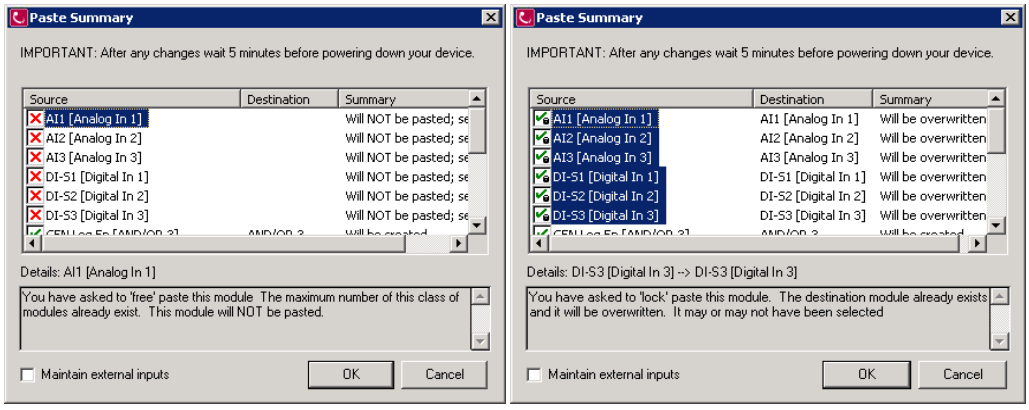
7. Navigate to ...\Program Files (x86)\Schneider Electric\Power Monitoring Expert for Healthcare\config\fmwk\EPSS, select the generator framework `.fwn` file, and click **Open**.

   For example, in the following image the generator framework file is `EPSS GEN.fwn`.



8. Press **Shift** and left-click to lock paste all of the Analog Input and Digital Input modules listed in the **Paste Summary** dialog, and free paste all of the remaining modules.

   The lock paste overwrites a module if it already exists on the meter. For additional information see "Deploying ATS Frameworks for EPSS" on page 26.

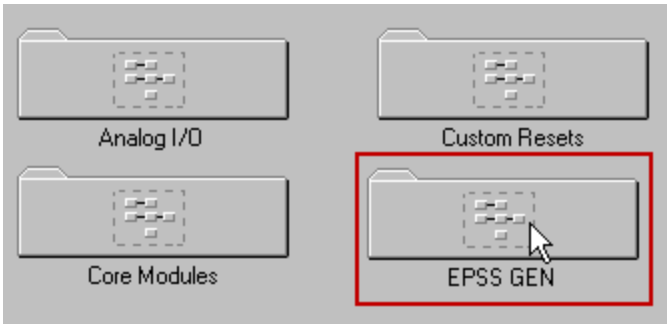


9. Do not select **Maintain external inputs**.
10. Press **OK** to paste the generator framework.

Configure the Generator Framework

Configure the generator framework with site-specific data. Refer to the *ION Reference* for more information about configuring setup registers.

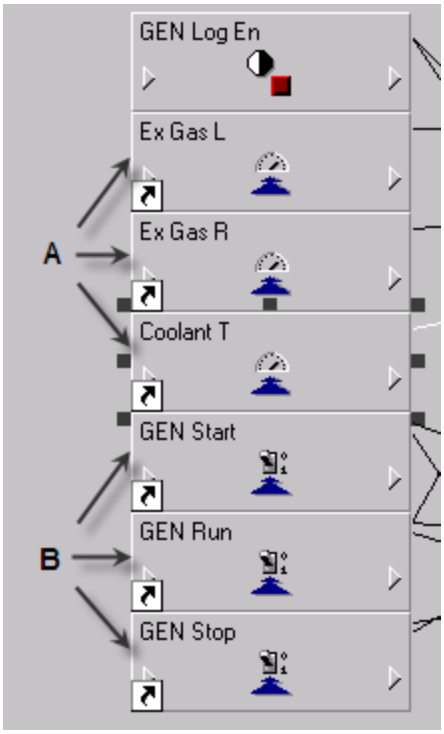
1. After the generator framework has been pasted, double-click the folder **EPSS GEN** to open its node diagram.



The nodes of the generator framework shown below support the three single state status signals: GEN Start, GEN Run, and GEN Stop. These status signals are received by their respective digital input modules GEN Start, GEN Run, and GEN Stop.

The names of the digital input modules are simply placeholders that are used as examples to identify how the components in the framework should be labeled. You can rename them to match the system being deployed. For example, GEN could be GEN1. The remaining descriptions in this section use these example labels to illustrate the updates made to the framework.

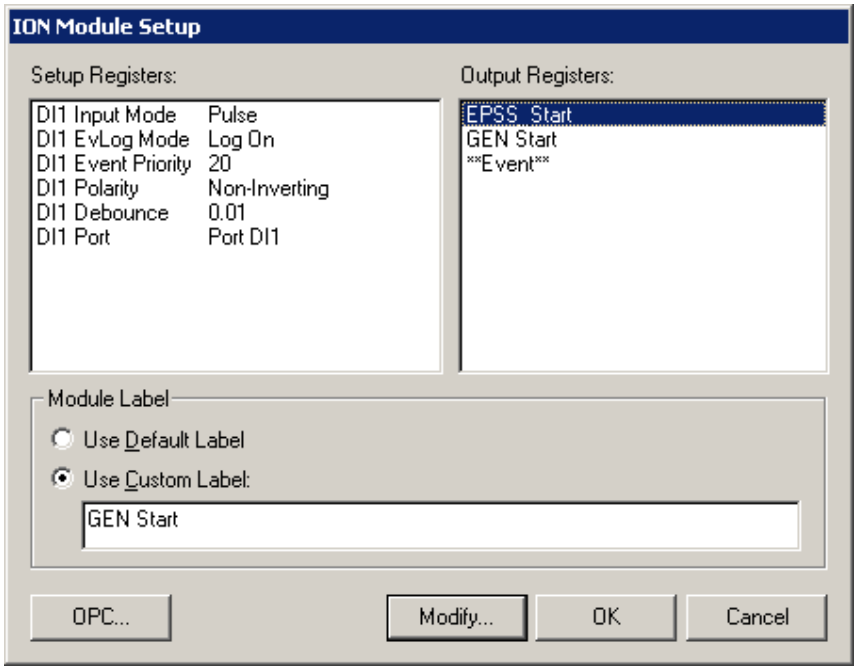
The framework also supports three analog signals. In the following image, these are Ex Gas L (exhaust gas left), Ex Gas R (exhaust gas right), and Coolant T (coolant temperature), and these signals are received by their respective analog input modules: Ex Gas L, Ex Gas R, and Coolant T. These module are examples only and they can be modified to any other parameters that need to be monitored and recorded.



A. Analog Input Modules

B. Digital Input Modules

2. Right-click a Digital Input module to access its setup registers. The following image shows the registers for the digital input module GEN Start. The generator controller hardware that this module interfaces with governs how it needs to be configured.



3. To update a register, select the register and click **Modify**. The **Modify Registers** screen appears.
4. Change the values to the site-specific sources and quantities, and click **OK** to return to the node diagram. For example:
   - The Setup Register *Input Mode* is set to KYZ, which forces a pulse output on both leading and trailing edges of the signal. This causes the data recorder to record the state on each transition of the signal.
   - The Output Register label `EPSS_Start` is the name associated with the signal received by the digital input module GEN Start. The maximum number of characters for the label is 15. Examples of Output Register labels for digital input modules GEN Run and GEN Stop are `EPSS_Run` and `EPSS_Stop`, respectively.

     Make sure that Output Register labels are consistent across the entire system. For example, if you plan to represent the GEN Start state as `EPSS_Start`, then you need to use the same label for all of the generators.

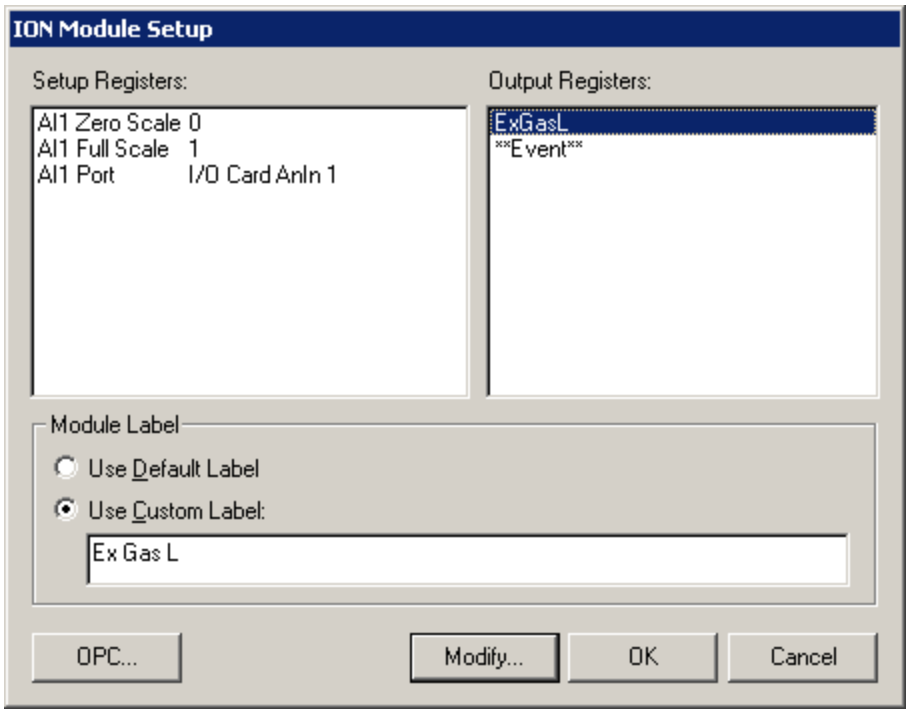
     Make sure that Output Register labels are consistent across the entire system. For example, if you plan to represent the GEN Normal state as `EPSS_Norm`, then you need to use the same label for all of the generators.

     For systems that use a single meter to record EPSS status measurements for multiple EPSS devices, the Output Register naming convention for digital input modules must be modified from *`quantity`* to *`quantity@source`*.

     For example, change `EPSS_Test` to `EPSS_Test@GENxx` where `xx` uniquely identifies the generator device.

     The *`quantity@source`* format allows the data it represents to be uniquely identified.

     The quantities remain the same (`EPSS_Test`, `EPSS_Emerg`, `EPSS_Norm`) but the source name is now unique (`GENxx`). If this change is not made, data for all generators recorded on the meter cannot be uniquely identified.
5. Right-click an Analog Input module to access its registers. Shown below are the registers for the analog input module Ex Gas L. The generator controller hardware that this module interfaces with governs how it needs to be configured.



- The Output Register label `ExGasL` is the name associated with the signal received by the analog input module Ex Gas L. The maximum number of characters for the label is 15. Examples of Output Register labels for analog input modules Ex Gas R and Coolant T are `ExGasR` and `CoolTemp`, respectively.
- Output Register labels should be consistent across the entire system. For example, if you plan to represent Exhaust Gas Left as `ExGasL` then you need to use the same label for all of the generators.

6. When you have completed all of the necessary site-specific modifications, click **File > Send & Save** from the node diagram to write your changes to the power meter.
7. Restart the ION Log Inserter Service after configuring the generator frameworks.

Non-ION Power Meter Configuration

This chapter provides information about configuring non-ION power meters for the Power Monitoring Expert solution.

⚠ WARNING

UNINTENDED OPERATION

- Do not use the power meters for critical control or protection applications where human or equipment safety relies on the operation of the control circuit.
- Refer to your meter's technical documentation for more information on its operation.

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

Supported Power Meters

Power Monitoring Expert can use the following non-ION power meters for the EPSS:

- PM800 series power meters. Refer to "Configuring PM800 Series Meters" on page 46.
- PowerLogic Circuit Monitor Series 3000 and 4000 Power Meters. Refer to "Configuring CM3000 and CM4000 Series Meters" on page 64.
- Momentum PLC. Refer to "Configuring Momentum PLC" on page 83.

Supported Sequence of Event Recorders

- SER-2408/SER-3200. Refer to "Adding the SER-2408/SER-3200 to Management Console" on page 96.

Prerequisites

The following prerequisites must be completed before attempting to configure a non-ION power meter to record data from generators and other equipment for the EPSS:

- Power Monitoring Expert is installed and operational.
- All meters must be installed and communicating.
- The following status signals for each ATS are physically wired to the digital inputs on the appropriate meters.
    - Normal
    - Emergency
    - Test
    - Power Outage (optional)

- The following status signals for each generator are physically wired to the digital inputs on the appropriate meters.
    - Start (optional)
    - Emergency Power Source Available (optional)
    - Run
    - Stop
- The following generator electrical data are metered and available for each generator:
    - Currents: A, B, C, N, Avg
    - Minimum Apparent Power Total
    - Minimum Real Power Total
    - Frequency
    - Real Power Total
    - Apparent Power Total
    - Voltages: A-B, B-C, C-A, L-L Avg, A-N, B-N, C-N, L-N Avg
- The following signals for each generator are physically wired to the analog inputs on the appropriate meters. The number of analog inputs required depends on how many measurements are being recorded. For example, analog data can include the following:
    - Exhaust Gas Temperature left and right
    - Engine Coolant Temperature in and out.
    - Engine Oil Pressure

Configuring PM800 Series Meters

This chapter describes how to use PowerLogic™ ION Setup to configure meters. This chapter does not explain how to add power meters to the system or how to use ION Setup.

- For information about adding meters to the system, refer to the Management Console online help or the Management Console section of the *StruxureWare Power Monitoring Expert User Guide*.
- For information about ION Setup software, refer to ION Setup online Help or the *PowerLogic ION Setup User Guide*.

For more information about configuring the PM800 series meters using ION Setup software:

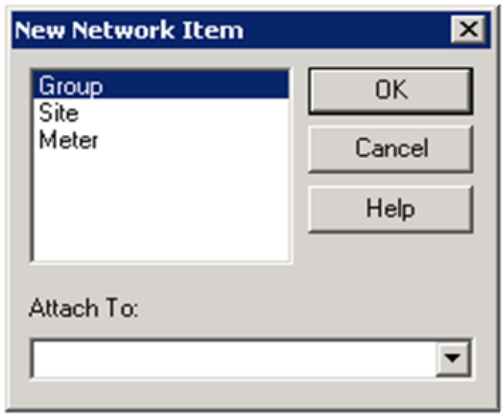
- *Additional Device Support in ION Setup* in the ION Setup online help
- *PowerLogic ION Setup Device Configuration Guide*

You can configure the PM800 series meter for switching the ATS into test mode remotely. See "Configure Auto-Enable Data Logs for CM4000 and PM800 series" on page 80 for instructions.

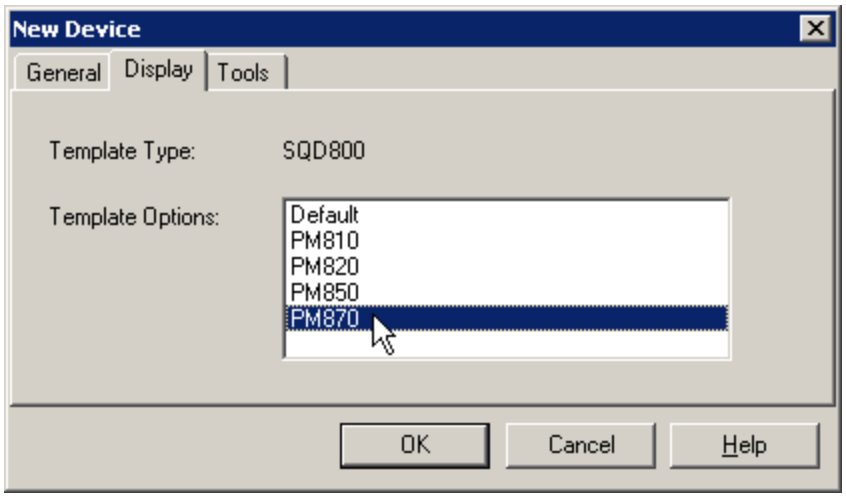
Add PM800 Series Meters to a Site in ION Setup

Use ION Setup to add PM850 or PM870 meters to the site.

1. In the devices area, right-click and select **Insert Item**. The **New Network Item** screen appears.

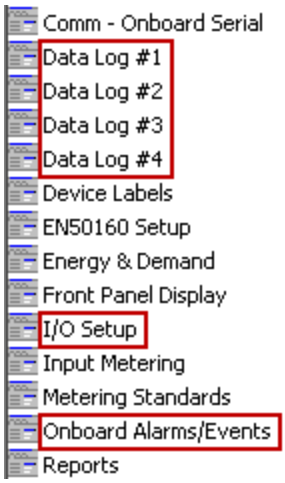


2. Select **Meter** and click **OK**. The **New Device** screen appears.
3. Select the **General** tab
4. In the **Type** list, select **PowerLogic PM800 Series Power Meter**.
5. Select the **Display** tab. In the **Template Options** box, select the type of meter you are adding.



6. Click **OK** to add the meter.
7. In the Network Viewer (left pane), click the meter icon. The setup screens appear in the Content Viewer (right pane).

The following image shows a partial list of the setup screens. Use the **I/O Setup**, **Onboard Alarms/Events**, and **Data Log** setup screens to access the parameters that need to be configured. The remaining topics in this chapter describe the parameter changes that are required.



For more information about adding PM850 or PM870 meters to a site in ION Setup, refer to the following:

- ION Setup online Help
- *PowerLogic ION Setup Device Configuration Guide*, "PM800 series power meter" section
- *PowerLogic ION Setup User Guide*, "Adding and Configuring Devices" section

Configuring Digital and Analog Inputs

This section describes how to configure the digital and analog inputs for the PM800 meters. The instructions assume that you are using separate PM800 series power meters to record data for ATSs and generators.

⚠ WARNING

UNINTENDED OPERATION

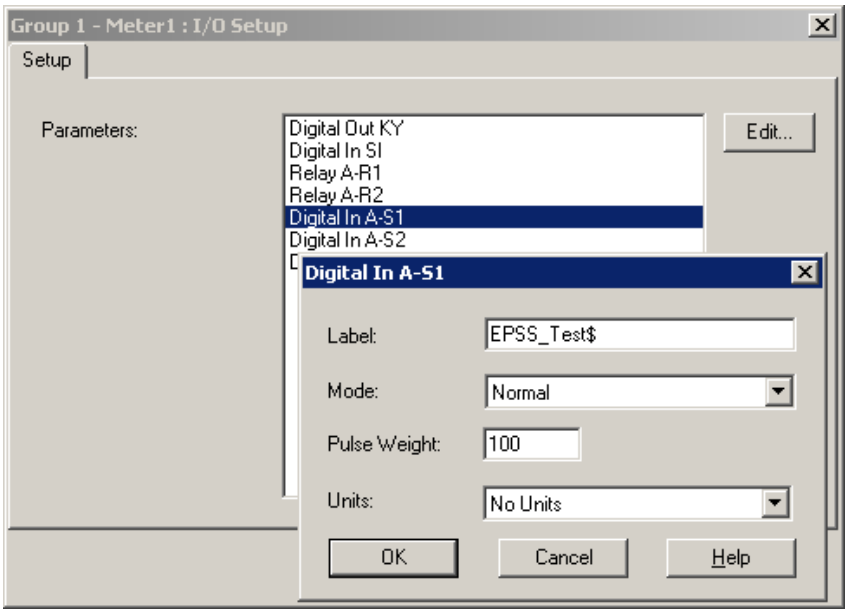
- Do not use the meters for critical control or protection applications where human or equipment safety relies on the operation of the control circuit.
- Refer to your meter's technical documentation for more information on its operation.

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

Configure Digital Inputs

1. In the Content Viewer, double-click **I/O Setup** to access the Digital Inputs for the meter.
2. Select the I/O point that you want to configure and click **Edit**.

   The following image shows **Digital In A-S1** selected.



3. Update the **Label** field with a name that ends with the $ character.

   The $ character activates the translated device dynamic labeling feature. If the $ character is not used, the default label is used.

   - For an ATS, examples of labels that conform to the naming convention are `EPSS_Test$`, `EPSS_Emerg$`, `EPSS_Norm$`, and `EPSS_Util$`.
   - For a generator, examples of labels are `EPSS_Start$`, `EPSS_Run$`, and `EPSS_Stop$`.

4. Set **Mode** to Normal, **Pulse Weight** to a non-zero value, for example 100, and leave **Units** set as No Units.
5. Click **OK** to update the parameters and to close the dialog.
6. Repeat the steps above for each I/O point that you want to configure.
7. Click **Send** to save the changes and send the configuration to the meter.

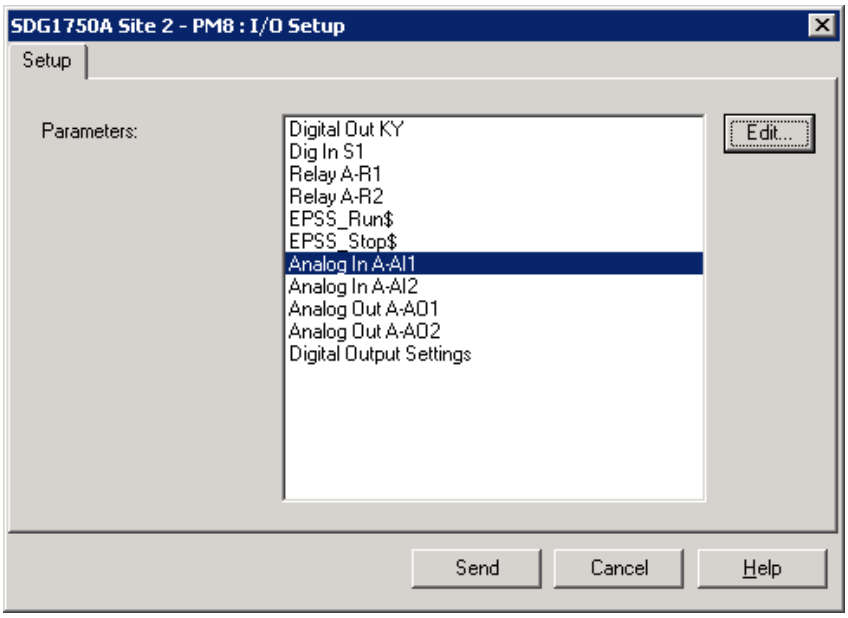
Configure Analog Inputs

PM800 series power meter Analog Inputs are only available when you install the PM8M2222 Input/Output module on the meter.

Refer to the *Power Meter Input/Output Module PM8M2222, PM8M26, PM8M22 Installation Manual* for more information about installing the input/output module. Obtain this installation manual at www.powerlogic.com. Select the country, and then **Energy and Power Quality Meters** > **PowerLogic Multifunction Power Meters** > **PM800 Series** > **Downloads** > **Tech Publications**.

1. In the Content Viewer, double-click **I/O Setup** to access the Analog Inputs for the meter.
2. Select the I/O point that you want to configure and click **Edit**.

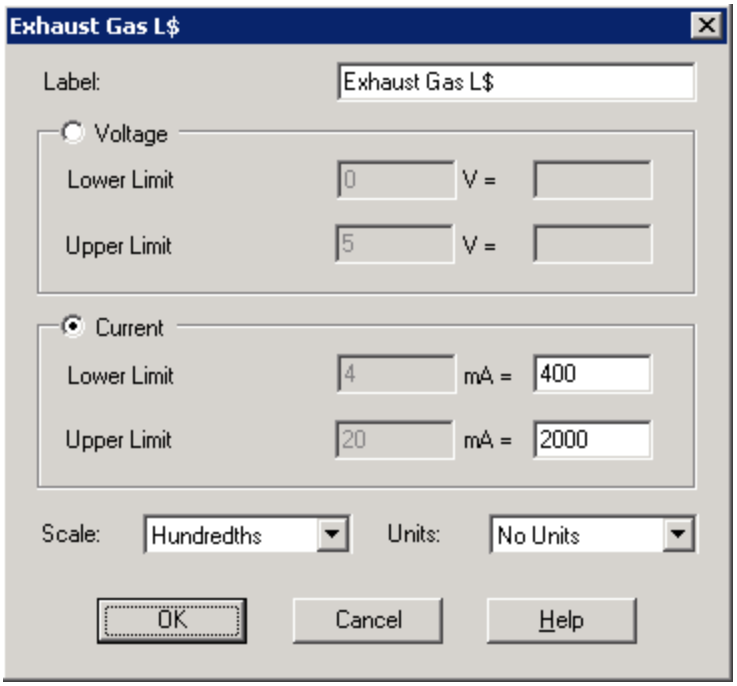
   The following image shows **Analog In A-AI1** selected.



3. Click **Edit** to open the parameter window for the I/O point and update the **Label** field with a name that ends with the $ character.

   For a generator, examples of labels for analog inputs are `Exhaust Gas L$`, `Exhaust Gas R$`, and `Coolant T$`.

   The following image shows the label updated to `Exhaust Gas L$`.



4. Click **OK** to update the parameters and to close the dialog.
5. Repeat the steps above for each I/O point that you want to configure.
6. Click **Send** to save the changes and send the configuration to the meter.

Configuring Onboard Alarms and Events

For each digital input configured in I/O Setup, you need to configure the alarms to record when the digital input on an ATS or a generator changes from OFF to ON, and also from ON to OFF.

Configure Digital Input Alarms for ATSs

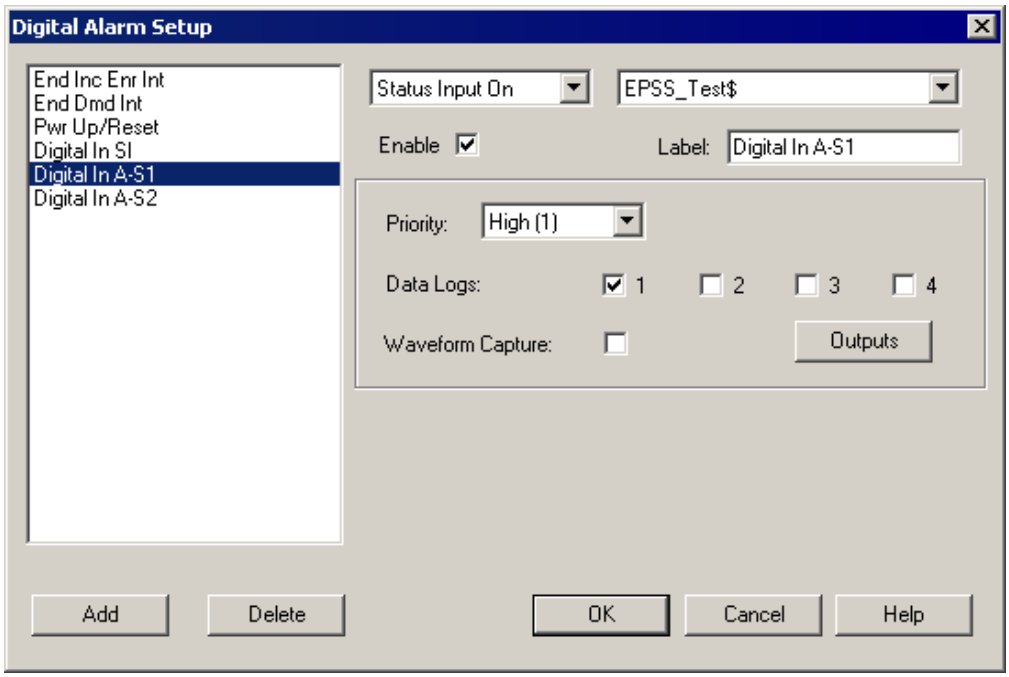
This section assumes that you configured digital inputs **Digital In A-S1** as `EPSS_Test$`, **Digital In A-S2** as `EPSS_Emerg$`, and **Digital In A-S3** as `EPSS_Norm$`. You must configure an alarm for the digital input change from OFF to ON and from ON to OFF.

Digital input change from OFF to ON

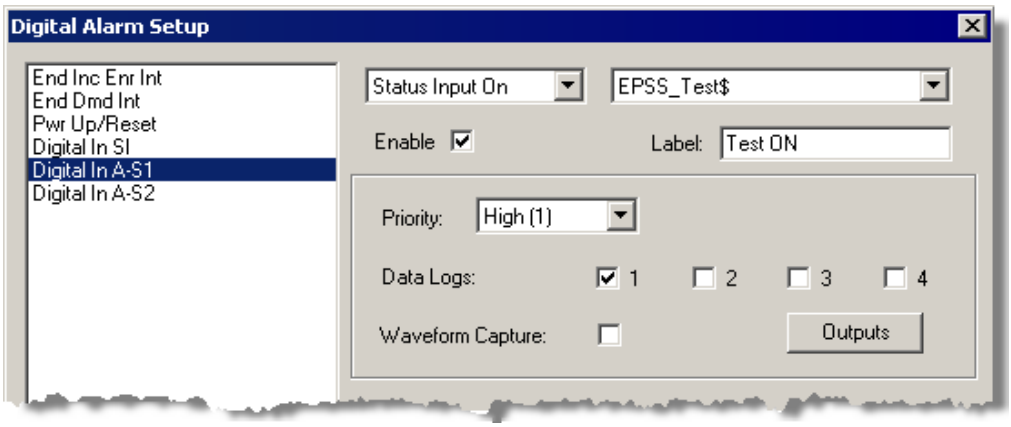
Complete the following steps to configure an alarm when a digital input changes from OFF to ON.

1. In the Content Viewer, double-click **Onboard Alarms/Events** to open the **Setup** dialog.
2. Select **Digital** and click **Edit** to open the **Digital Alarm Setup** dialog.
3. Select one of the Digital Input/Output points.

   The following figure shows the **Digital In A-S1** input selected and its label `EPSS_Test$`.



4. Select **Status Input On** from the list to set the alarm when the digital input changes from OFF to ON.
5. Make sure that **Enable** is selected.
6. In the **Label** field, change the digital alarm name from **Digital In A-S1** to **Test ON**.



7. Set **Priority** to High(1), and select Data Log 1 as the data log to use. Select **Waveform Capture** if you want to trigger a waveform capture on alarm.

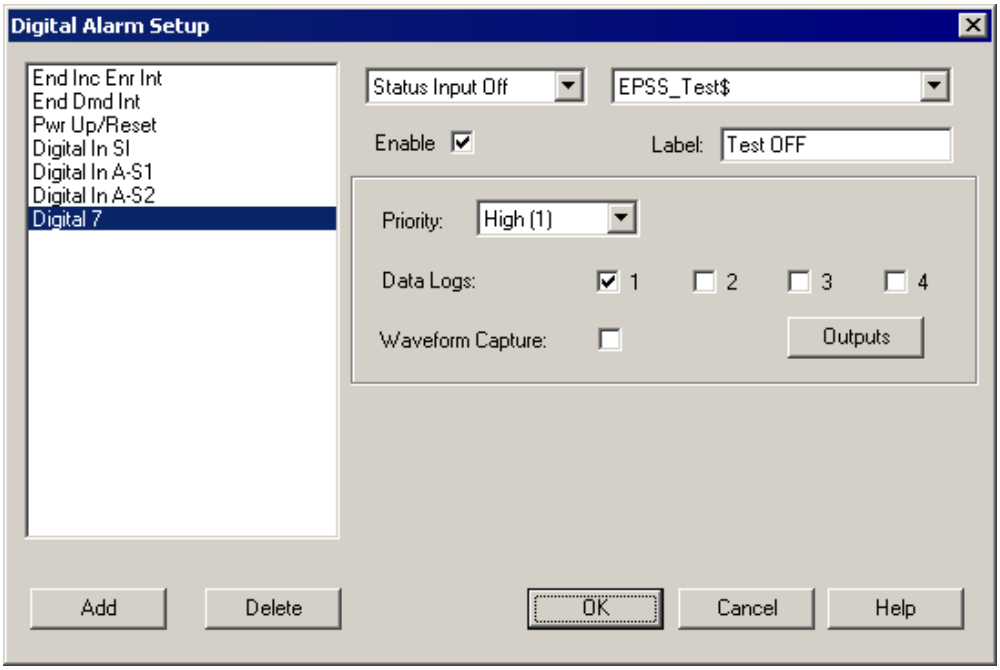
   When the status for `EPSS_Test$` changes to ON, Data Log 1 records all channels currently configured on it.

Digital input change from ON to OFF

Complete the following steps to configure an alarm when a digital input for `EPSS_Test$` changes from ON to OFF.

1. Click **Add** to add another digital input alarm parameter to the list in the left pane of the **Digital Alarm Setup** dialog.

   If the 12 available digital input alarms have been configured, you need to re-configure an existing alarm for the ON to OFF status change.



2. Select **Status Input Off** from the list to set the alarm when the digital input changes from ON to OFF.
3. Select `EPSS_Test$` from the list.

4. Make sure that **Enable** is selected.
5. In the **Label** field, change the digital alarm name to **Test OFF**.
6. Set **Priority** to High(1), and select Data Log 1 as the data log to use. Select **Waveform Capture** if you want to trigger a waveform capture on alarm.
7. Repeat the steps above to configure alarms for digital input changes from OFF to ON and from ON to OFF for all of the applicable I/O points.

   The following table summarizes the configuration of the alarms, assuming that the I/O points are Digital In A-S1, Digital In A-S2, and Digital In A-S3:

Digital Input Label	Maps to	Alarm Status	Alarm Name
EPSS_Test$	Digital In A-S1	Status Input On	Test ON
EPSS_Test$	Digital In A-S1	Status Input Off	Test OFF
EPSS_Emerg$	Digital In A-S2	Status Input On	Emerg ON
EPSS_Emerg$	Digital In A-S2	Status Input Off	Emerg OFF
EPSS_Norm$	Digital In A-S3	Status Input On	Normal ON
EPSS_Norm$	Digital In A-S3	Status Input Off	Normal OFF

8. Click **OK** to close the dialog.
9. Click **Send** to save the changes and send the configuration to the meter.

Configuring Digital Input Alarms for Generators

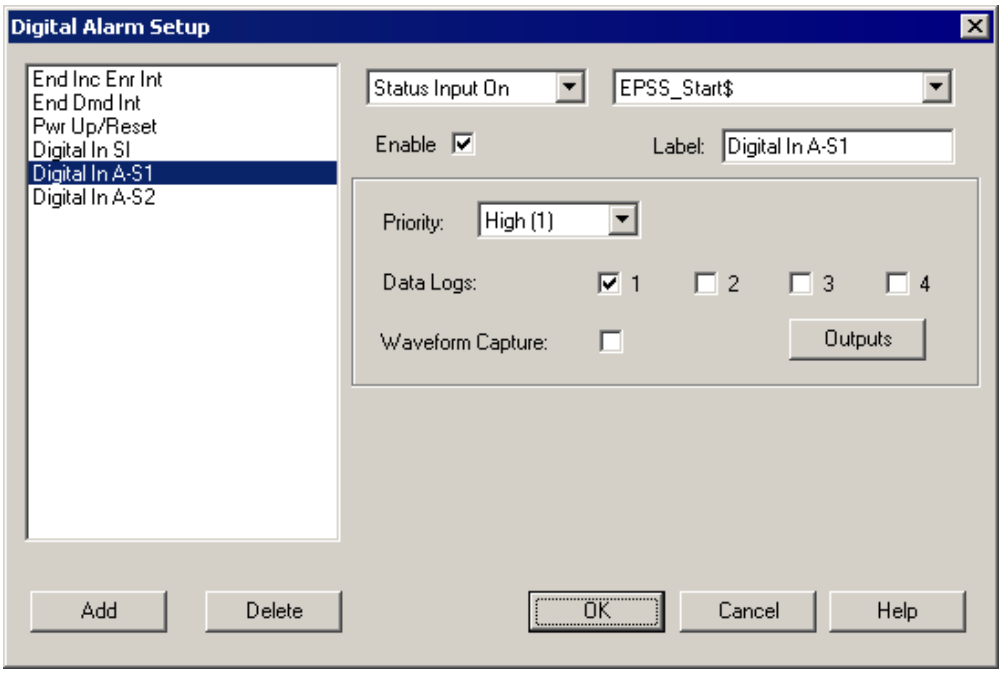
This section assumes that you configured digital inputs **Digital In A-S1** as `EPSS_Start$`, **Digital In A-S2** as `EPSS_Run$`, and **Digital In A-S3** as `EPSS_Stop$`. You must configure an alarm for the digital input change from OFF to ON and from ON to OFF.

EPSS_Start$: Digital input change from OFF to ON

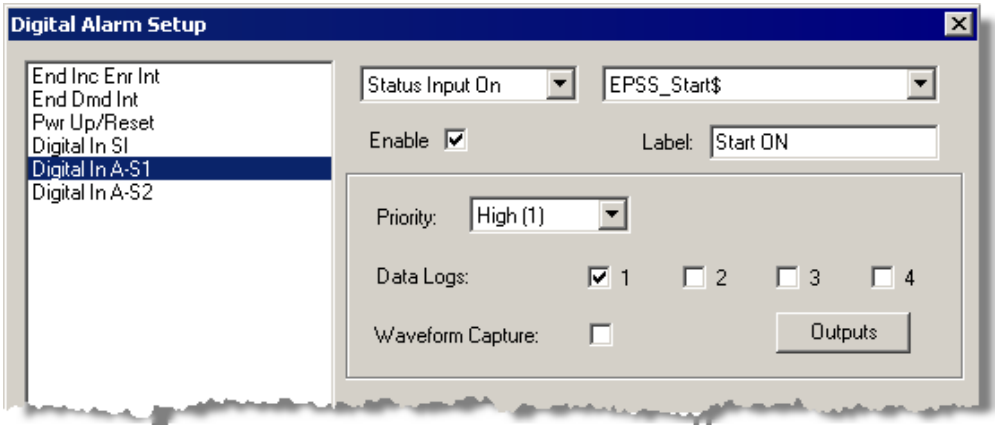
Complete the following steps to configure an alarm when a digital input changes from OFF to ON.

1. In the Content Viewer, double-click **Onboard Alarms/Events** to open the **Setup** dialog.
2. Select **Digital** and click **Edit** to open the **Digital Alarm Setup** dialog.
3. Select one of the Digital Input/Output points.

   The following figure shows the **Digital In A-S1** input selected and its label `EPSS_Start$`



4. Select **Status Input On** from the list to set the alarm when the digital input changes from OFF to ON.
5. Make sure that **Enable** is selected.
6. In the **Label** field, change the digital alarm name from **Digital In A-S1** to **Start ON**.



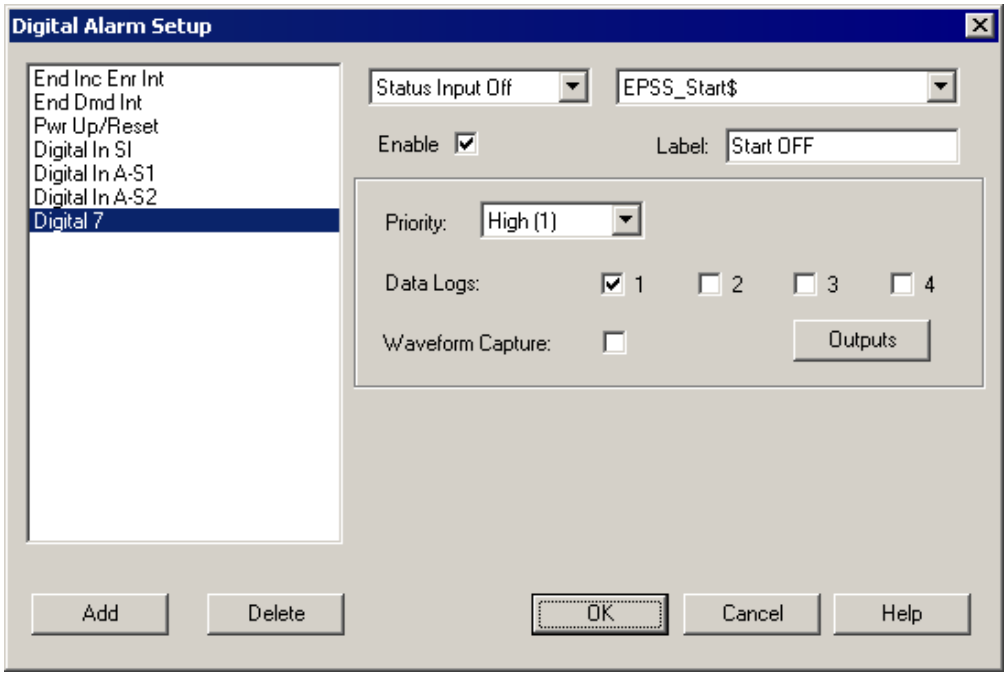
7. Set **Priority** to High(1), and select Data Log 1 as the data log to use. Select **Waveform Capture** if you want to trigger a waveform capture on alarm.

   When the status for `EPSS_Start$` changes to ON, Data Log 1 records all channels currently configured on it.

EPSS_Start$: Digital input change from ON to OFF

Complete the following steps to configure an alarm when a digital input for `EPSS_Start$` changes from ON to OFF.

1. Click **Add** to add another digital input alarm parameter to the list in the left pane of the **Digital Alarm Setup** dialog. **NOTE:** If the 12 available digital input alarms have been configured, you need to re-configure an existing alarm for the ON to OFF status change.



2. Select **Status Input Off** from the list to set the alarm when the digital input changes from ON to OFF.
3. Select `EPSS_Start$` from the list.
4. Make sure that **Enable** is selected.
5. In the **Label** field, change the digital alarm name to **Start OFF**.
6. Set **Priority** to High(1), and select Data Log 1 as the data log to use. Select **Waveform Capture** if you want to trigger a waveform capture on alarm.
7. Repeat the steps above to configure alarms for digital input changes from OFF to ON and from ON to OFF for all of the applicable I/O points.

   The following table summarizes the configuration of the alarms, assuming that the I/O points are Digital In A-S1, Digital In A-S2, and Digital In A-S3:

Digital Input Label	Maps to	Alarm Status	Alarm Name
EPSS_Start$	Digital In A-S1	Status Input On	Start ON
EPSS_Start$	Digital In A-S1	Status Input Off	Start OFF
EPSS_Run$	Digital In A-S2	Status Input On	Run ON
EPSS_Run$	Digital In A-S2	Status Input Off	Run OFF

Digital Input Label	Maps to	Alarm Status	Alarm Name
EPSS_Stop$	Digital In A-S3	Status Input On	Stop ON
EPSS_Stop$	Digital In A-S3	Status Input Off	Stop OFF

8. Click **OK** to close the dialog.
9. Click **Send** to save the changes and send the configuration to the meter.

Define a Digital Alarm for a Single Digital Input

If a single digital input is used to record signals indicating when the generator is running, and also when the generator has stopped, you need to define the digital alarm as follows.

1. In the **Digital Alarm Setup** dialog, select the Digital Input/Output point that will be used to record the alarm. For example, if you configured **Digital In A-S1** with a label of `EPSS_Run$`, select this I/O point.
2. Select **Status Input On** from the list to set the alarm when the digital input changes from OFF to ON.
3. Make sure that **Enable** is selected.
4. In the **Label** field, change the digital alarm name from **Digital In A-S1** to **Run ON**.
5. Set **Priority** to High(1), and select Data Log 1 as the data log to use.

EPSS_Run$: Digital input change from ON to OFF

1. Click **Add** to add another digital input alarm parameter to the list in the left pane of the **Digital Alarm Setup** dialog.
2. Select **Status Input Off** from the list to set the alarm when the digital input changes from ON to OFF.
3. Select `EPSS_Run$` from the list.
4. Make sure that **Enable** is selected.
5. In the **Label** field, change the digital alarm name to **Stop ON**.
6. Set **Priority** to High(1), and select Data Log 1 as the data log to use.
7. Click **OK** to close the dialog.
8. Click **Send** to save the changes and send the configuration to the meter.

As a result of this alarm configuration where `EPSS_Run$` represents both the Running and Stopped states for the generator, when **Run ON** is TRUE, the signal is recorded as "1", and when **Stop ON** is TRUE, the signal is recorded as "0".

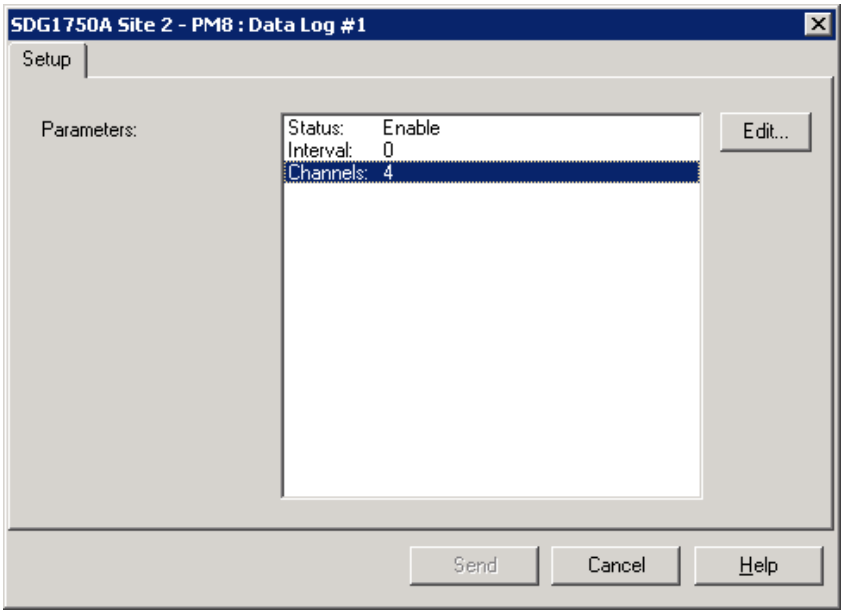
Defining the Data Log Parameters

This section explains how to define data log parameters for the digital inputs, analog inputs, and load profile data. The instructions assume that you use Data Logs 1 and 2. However, you can use any Data Log that meets your requirements.

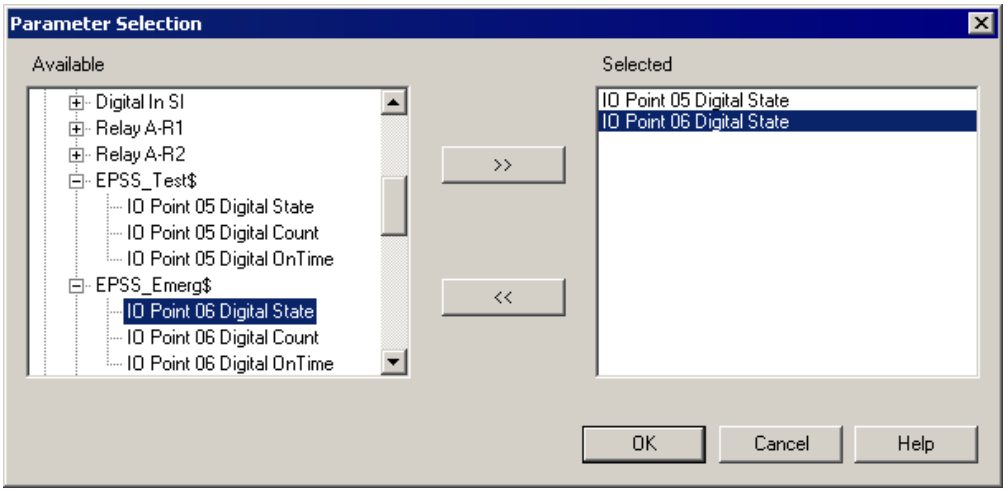
Define Data Log Parameters for Digital Inputs

Complete the following steps to define the data log parameters for the digital inputs.

1. In the Content Viewer, double-click **Data Log #1** to open the **Setup** dialog for the data log parameters.
2. Set **Status** to Enable and **Interval** to Only On Event. The Only On Event mode appears as 0 in the **Interval** field of the **Setup** dialog.
3. Select **Channels**, click **Edit**. The Parameter Selection dialog appears.



4. In the **Available** box, navigate to **Inputs/Outputs** and select a custom label, such as `EPSS_Emerg$`.
5. Select the **IO Point *xx* Digital State**, where xx is the number of the I/O point present on the meter. Click **>>** to move the parameter to the **Selected** box.



6. Repeat steps 4 - 5 for all I/O points available for the ATS or generator.

7. In the **Available** box, expand **Miscellaneous** and select **Present MilliSeconds**. Click **>>** to move it to the **Selected** column.

   Add all I/O points for a given ATS or generator to the data log to help ensure that all of the states are recorded in the data log when any state changes.

8. Click **OK** to close the dialog.
9. Click **Send** to save the changes and send the configuration to the meter.

Define Data Log Parameters for Analog Inputs and Load Profile Data

Configure the system to log the analog inputs and load profile data automatically when the generator state changes to Running. When the generator state is Running, the alarm status for digital input `EPSS_Run$` is ON.

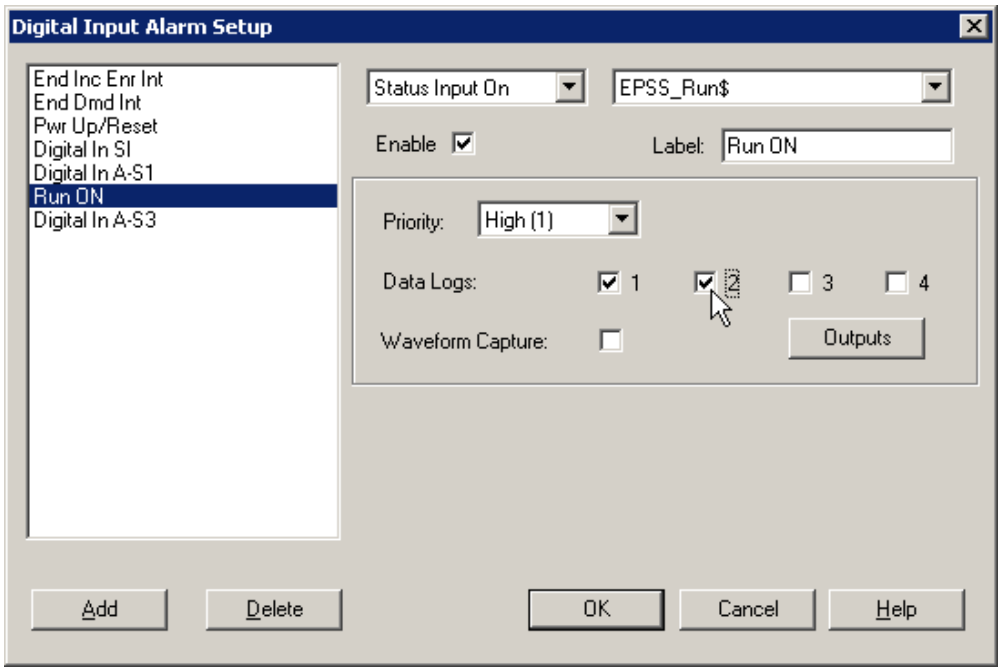
Using ION Setup, the process to configure automatic logging is:

1. Associate Data Log 2 with the digital input alarm **Run ON** that you previously defined for `EPSS_Run$`.
2. Select the parameters for the Analog Input data to be logged in Data Log 2.
3. Select the parameters for the Load Profile data to be logged in Data Log 2.
4. Set the status of Data Log 2 to Auto-Enable.

These steps assume that you use Data Log 2.

Associate Data Log 2 with the Digital Input Alarm Run ON

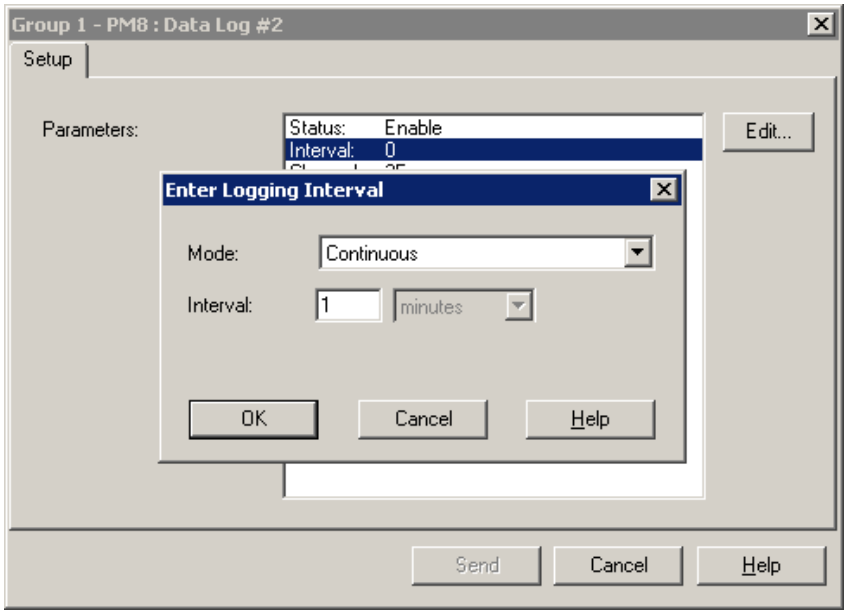
1. In the Content Viewer, double-click **Onboard Alarms/Events** to open the **Setup** dialog.
2. Select **Digital** and click **Edit** to open the **Digital Alarm Setup** dialog.
3. Select the digital input alarm **Run ON** that was defined for I/O point `EPSS_Run$`. You previously selected Data Log 1 when you configured this digital input alarm for the generator.
4. In the **Data Logs:** group, select **2**. Now both **1** and **2** are selected.



5. Click **OK** to close the dialog.
6. Click **Send** to save the changes and send the configuration to the meter.

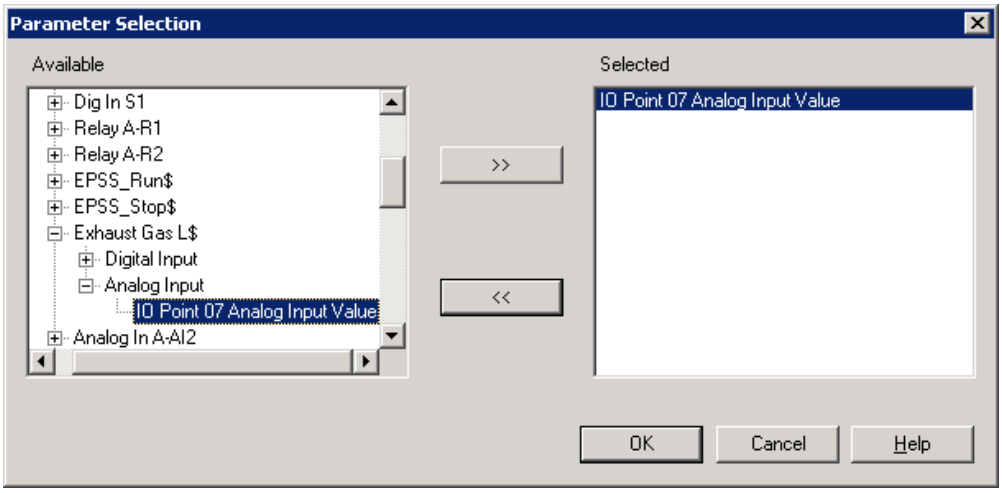
Select Parameters for Analog Input Data to be logged in Data Log 2

1. In the Content Viewer, double-click **Data Log #2** to open the **Setup** dialog for the data log parameters.
2. Select **Interval** and click **Edit** to open the **Enter Logging Interval** dialog. Select **Continuous** from the list in **Mode**, set **Interval** to 1 minute, and click **OK** to close the dialog.



3. Select **Channels**, click **Edit**. The Parameter Selection dialog appears.

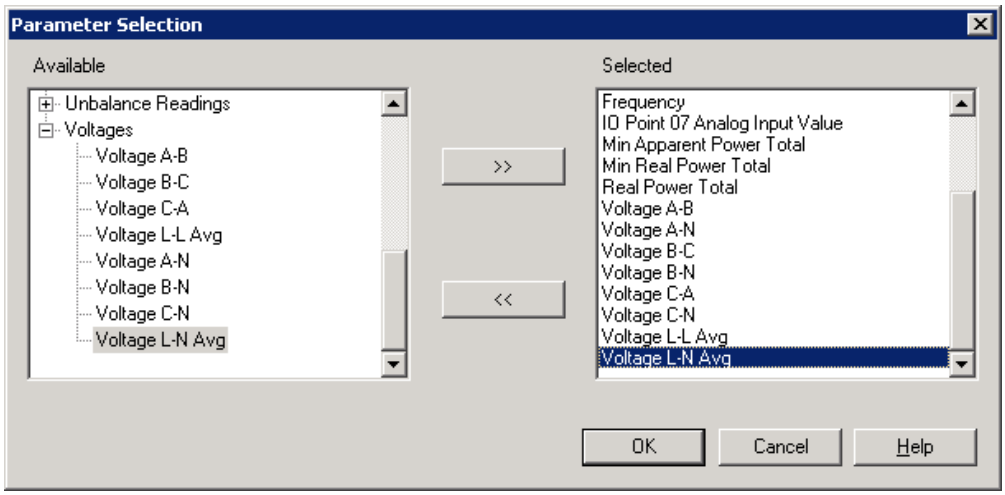
4. In the **Available** box, navigate to **Inputs/Outputs** and select a custom label, such as `Exhaust Gas L$`.
5. Under **Analog Input**, select the **IO Point *xx* Analog Input Value**, where xx is the number of the I/O point present on the meter. Click **>>** to move the parameter to the **Selected** box.



6. Repeat steps 4 - 5 for each analog input available for the generator.
7. Click **OK** to close the dialog.
8. Click **Send** to save the changes and send the configuration to the meter.

Select Parameters for Load Profile Data to be logged in Data Log 2

1. In the **Setup** dialog for Data Log 2, select **Channels** and click **Edit**. The **Parameter Selection** dialog appears.
2. Expand each of the following categories. Within each category select the parameters indicated. For each parameter click **>>** to move it to the **Selected** column:
   a. In **Currents**, select Current A, Current B, Current C, Current N, and Current Avg.
   b. In **Minimum Readings**, select Min Apparent Power Total, Min Real Power Total.
   c. In **Miscellaneous**, select Frequency.
   d. In **Powers**, select Real Power Total and Apparent Power Total.
   e. In **Voltages**, select Voltage A-B, Voltage B-C, Voltage C-A, Voltage L-L Avg, Voltage A-N, Voltage B-N, Voltage C-N, and Voltage L-N Avg.

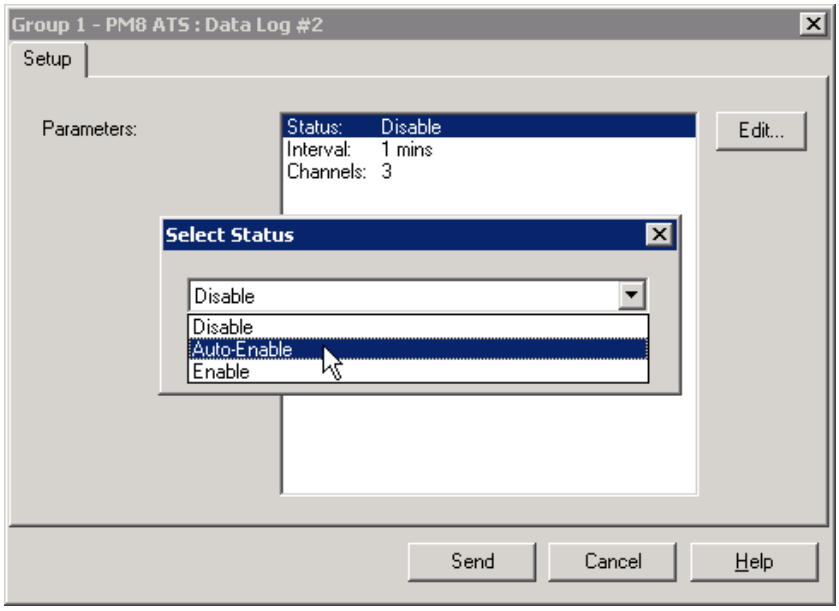


3. Click **OK** to close the dialog.
4. Click **Send** to save the changes and send the configuration to the meter.

Set the Status of Data Log 2 to Auto-Enable

Auto-Enable is a special mode that allows logging to be triggered when an alarm occurs. Data is recorded in the data log at a defined interval if the logging mode is set to **Continuous**. Logging stops when the alarm ends.

1. In the **Setup** dialog for Data Log 2, select **Status** and click **Edit**. The **Select Status** dialog appears.
2. In the drop-down list, select **Auto-Enable** and click **OK** to close the dialog.



3. Click **Send** to save the changes and send the configuration to the meter.

You can also use Vista to set a Data Log to Auto-Enable. Refer to "Configure Auto-Enable Data Logs for CM4000 and PM800 series" on page 80 for more information.

Configure Remote ATS Test Mode for PM800 Series Meter

Switching an ATS to test mode remotely is done by linking a control object in a Vista diagram to a digital output on the PM800 series meter that is connected to the ATS controller.

Refer to *StruxureWare Power Monitoring Expert User Guide* for more instructions on working with Vista diagram control objects.

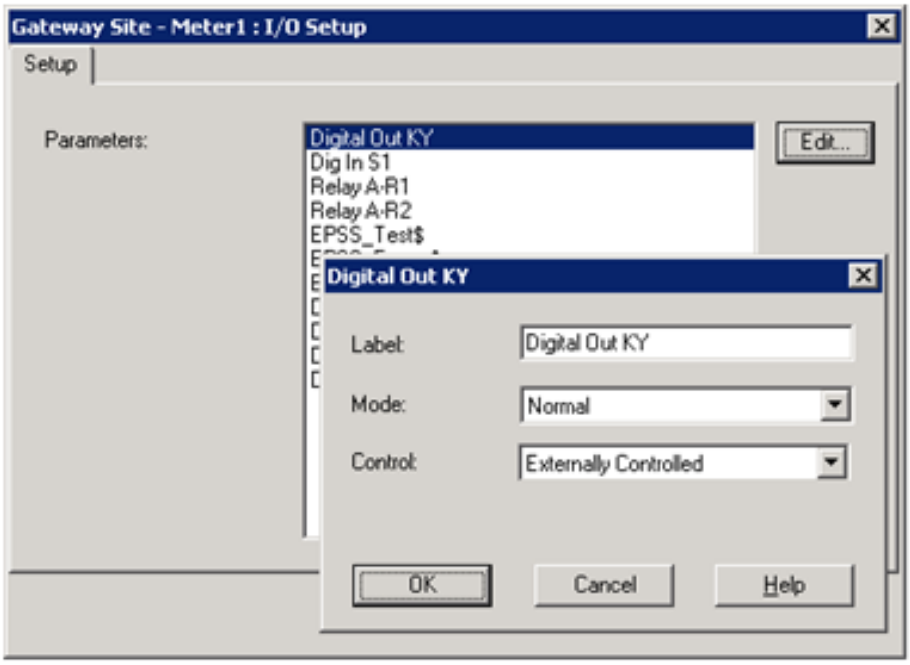
For details about configuring modules, refer to *ION Reference*.

NOTE: The EPSS ATS framework must be deployed to the meter and configured before you can set up the framework for ATS remote switching. For instructions, refer to "Deploying ATS Frameworks for EPSS" on page 26.

Configure the Digital Output

Configure the onboard KY output for the meter as follows:

1. In ION Setup for the meter, click I/O Setup. The **Gateway Site** screen appears.
2. In the **Parameters** box, select Digital Out KY and click **Edit**.



3. In the **Mode** field, select Normal.

   The mode is dependent on the characteristics of the digital input port on the ATS controller.

4. In the **Control** field, select Externally Controlled.

   This allows the meter to accept external commands from an application like Vista.

5. Click **OK**. The **Gateway Site** screen appears.
6. Select **Send** to update the meter.

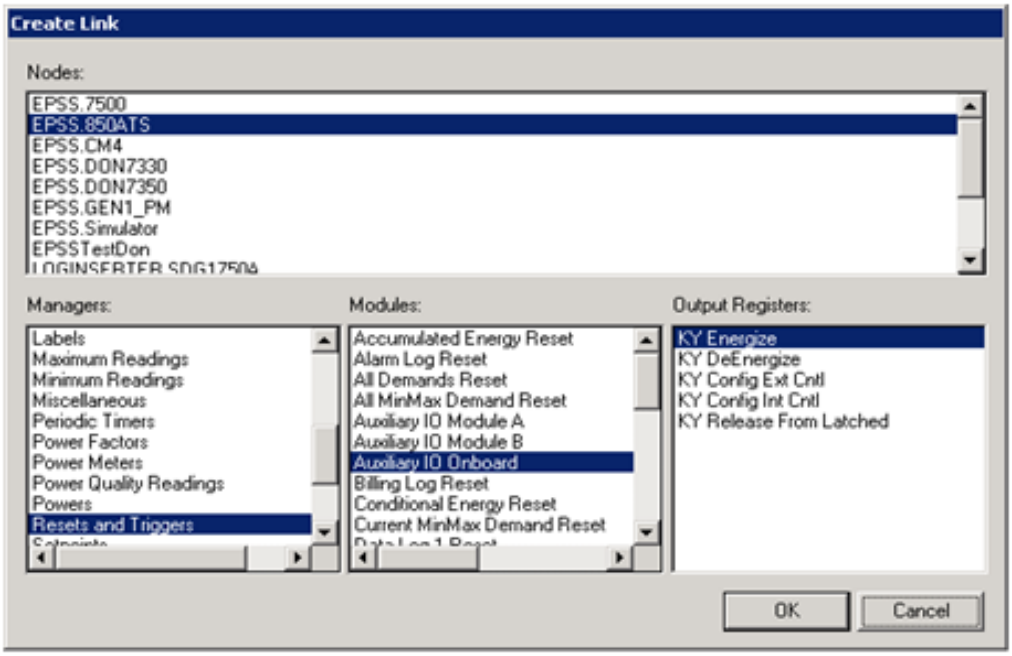
Configure the Vista Diagram for the meter, as described next.

Configure the Vista diagram

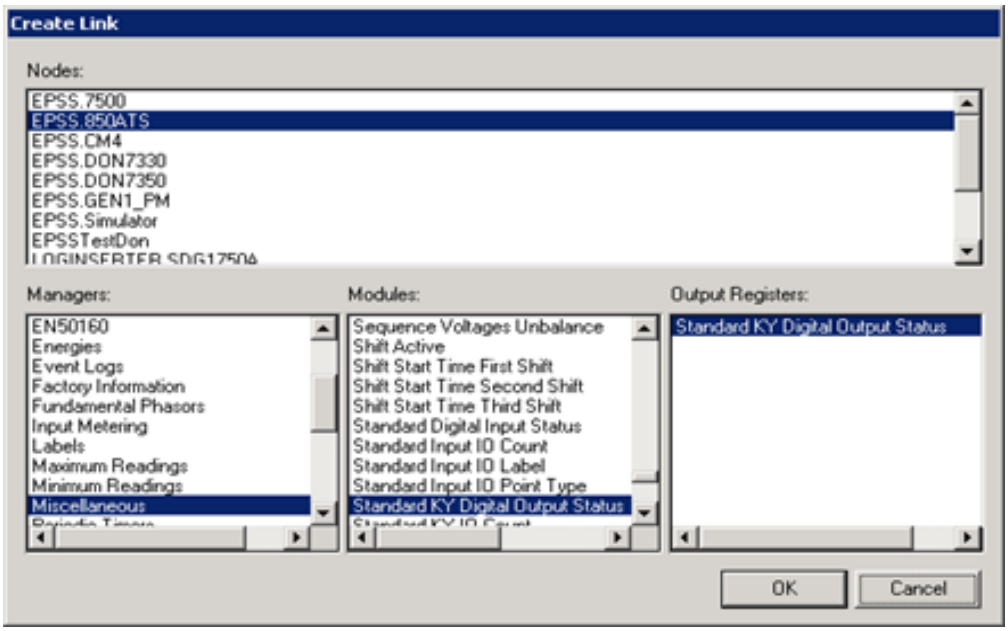
Follow these steps for the PM800 power meter. Make sure Designer is closed before linking any objects in Vista.

In Vista, open a new diagram and complete the setup as follows:

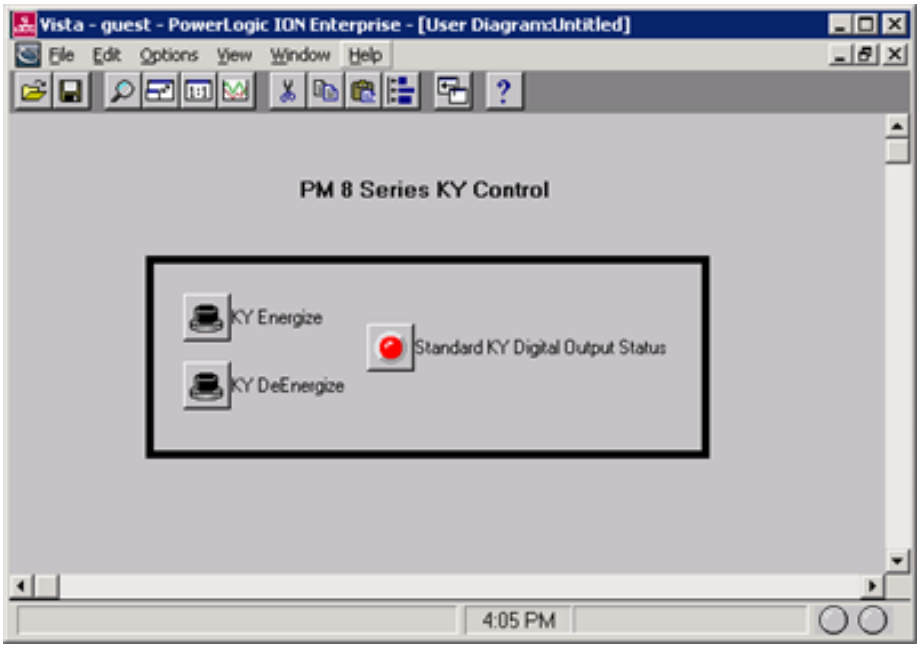
1. Open a new diagram in Vista.
2. Drag a Control object from the Toolbox and link it to KY Energize, as shown next.



3. Right-click the Control object.
4. On the **Action** tab, set the **Level to Operate** field to Controller, and click **OK**.
5. Drag another Control object from the Toolbox and link it to KY DeEnergize.
6. Right-click the Control object.
7. On the **Action** tab, set the **Level to Operate** field to Controller, and click **OK**.
8. Drag a Status object and link it to the Standard KY Digital Output Status, as shown next.



9. Save the diagram. The following image is an example of the Vista diagram.



You can now use the diagram to control and view the state of the onboard digital output port.

Configuring CM3000 and CM4000 Series Meters

This section describes how to configure CM3000 and CM4000 series meters for the system.

To obtain the *CM3000 Installation Manual*, *CM3000 Reference Manual*, and related instructions, go to www.powerlogic.com and search for "cm3000 installation."

To obtain instructions for installing and configuring CM4000 series meters, go to www.powerlogic.com. Select the country, and then **Energy and Power Quality Meters** > **PowerLogic Energy and Power Quality Meters** > **CM4000** > **Downloads** > **Tech Publications**.

- Installation Manual
- Reference Manual
- Series 4000T Reference Manual
- I/O Extender and Input/Output Option Card

You can configure the CM4000 series meter for switching the ATS into test mode remotely. See "Configure Auto-Enable Data Logs for CM4000 and PM800 series" on page 80 for instructions.

Add CM4000 Series Meters to a Site in ION Setup

Complete the following steps to add CM4000 series meters to a site in ION Setup.

1. In the Network Viewer, right-click the workstation icon and select **Insert Item > Site**. The **New Site** dialog appears.
2. Add a name to identify the site, select **Ethernet**, and click **OK**. The new site appears in the Network Viewer.
3. In the Network Viewer, right-click the new site name and select **Insert Item > Meter**. The **New Device** dialog appears.
4. Complete the following:

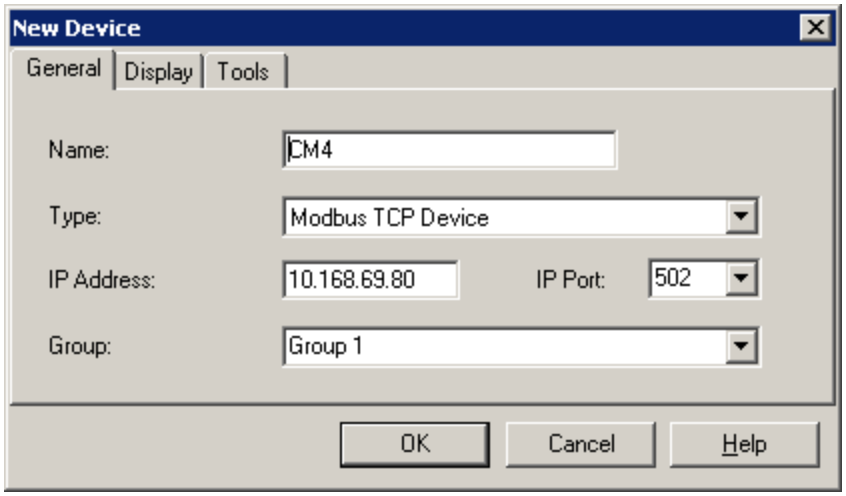
   Name - Enter a name to identify the meter.

   Type - Select Modbus TCP Device from the dropdown list.

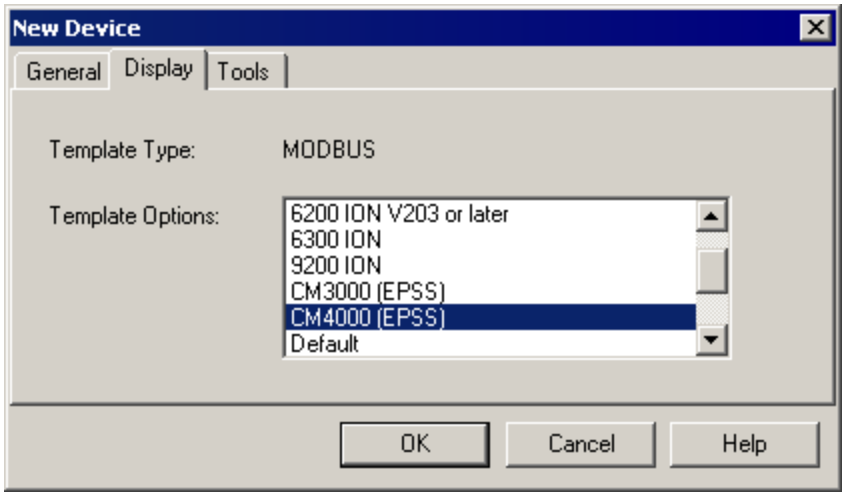
   IP Address - Enter the IP address for the Modbus TCP.

   Port - Select 502 from the dropdown list.

   Group - Select a group name from the list or enter a name to define a new group.

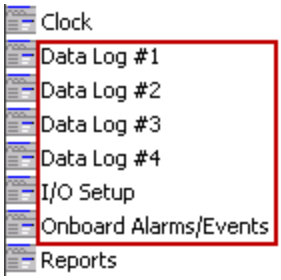


5. Click the **Display** tab and select the CM4000 (EPSS) template option.



6. Click **OK**. The meter is added to the Network Viewer.
7. In the Network Viewer, click the meter icon. The setup screens appear in the Content Viewer.

The following image shows the setup screens. Use the **I/O Setup**, **Onboard Alarms/Events**, and **Data Log** setup screens to access the parameters that need to be configured. The remaining topics in this chapter describe the parameter changes that are required.



Configuring Digital and Analog Inputs

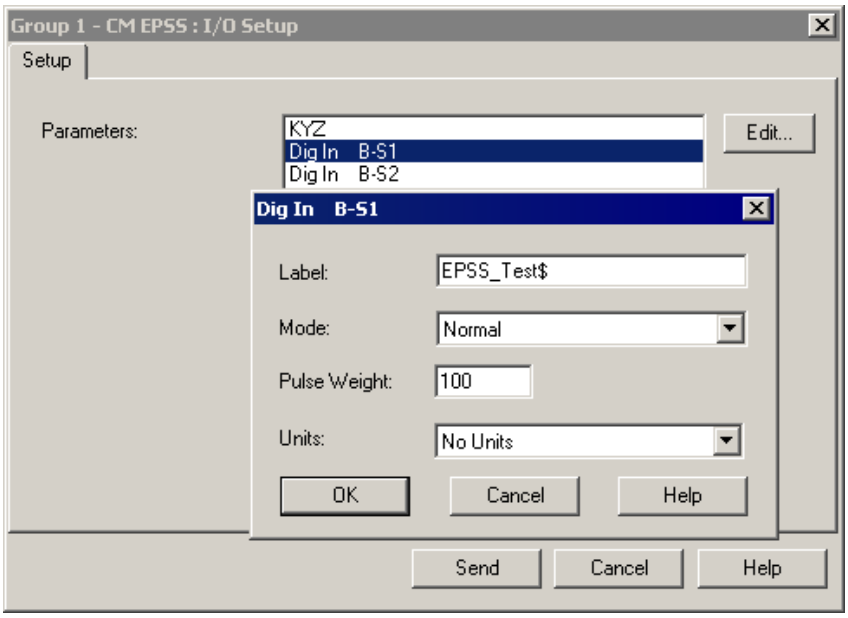
This section describes how to configure digital and analog inputs to record data on CM4000 series power meters for the ATSs and generators.

Configure Digital Inputs

In the Content Viewer, double-click **I/O Setup** to access the Digital Inputs for the meter.

1. Select the I/O point that you want to configure and click **Edit**.

   The following image shows **Dig In B-S1** selected.



2. Update the **Label** field with the name that ends with the $ character.

   The $ character activates the translated device dynamic labeling feature. If the $ character is not used, the default label is used.

   - For an ATS, examples of labels that conform to the naming convention are `EPSS_Test$`, `EPSS_Emerg$`, `EPSS_Norm$`, and `EPSS_Util$`.
   - For a generator, examples of labels are `EPSS_Start$`, `EPSS_Run$`, and `EPSS_Stop$`.

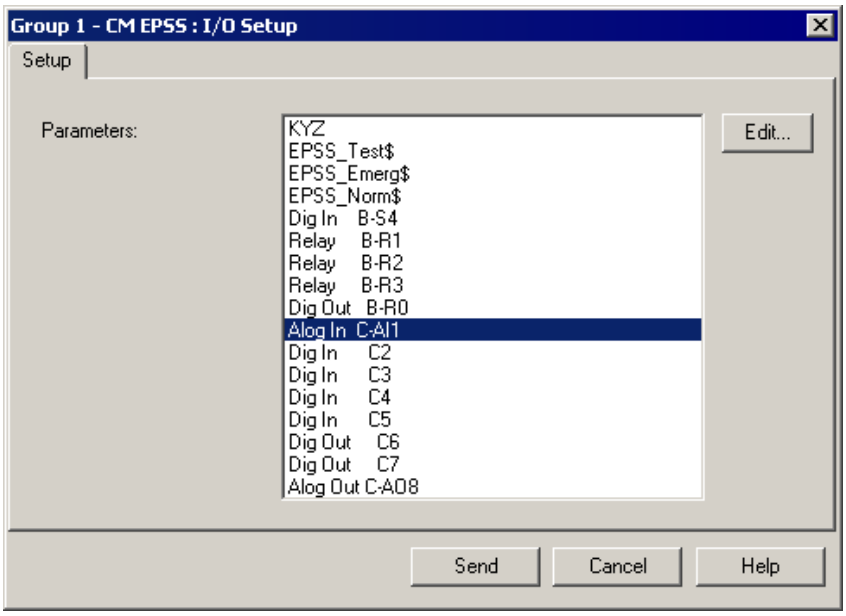
3. Set **Mode** to Normal, **Pulse Weight** to a non-zero value, for example 100, and leave **Units** set as No Units.
4. Click **OK** to update the parameters and to close the dialog.
5. Repeat the steps above for each I/O point that you want to configure.
6. Click **Send** to save the changes and send the configuration to the meter.

Configuring Analog Inputs

In the Content Viewer, double-click I/O Setup to access the Analog Inputs for the meter.

1. Select the I/O point that you want to configure and click **Edit**.

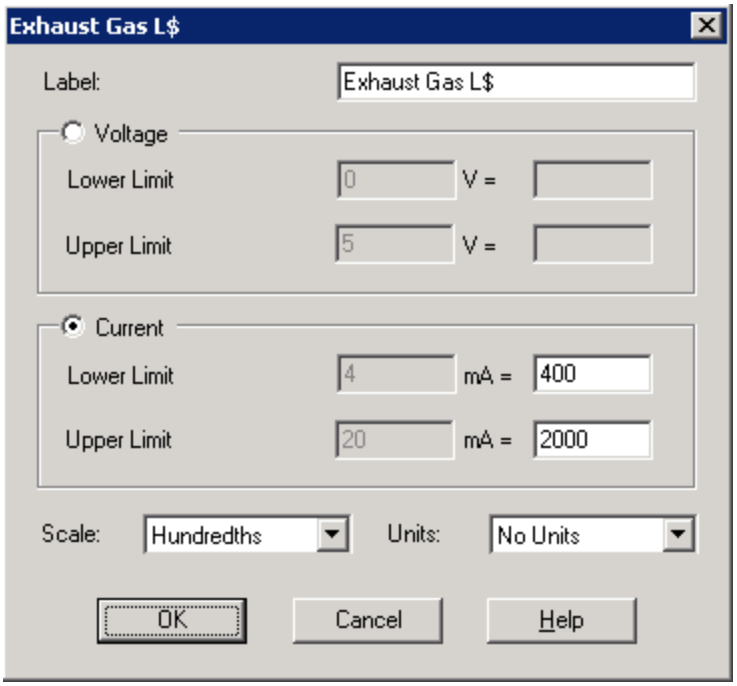
   The following image shows **Alog In C-AI1** selected.



2. Click **Edit** to open the parameter window for the I/O point and update the **Label** field with a name that ends with the $ character.

   For a generator, examples of labels for analog inputs are `Exhaust Gas L$`, `Exhaust Gas R$`, and `Coolant T$`.

   The following image shows the label updated to Exhaust Gas L$.



3. Click **OK** to update the parameters and to close the dialog.
4. Repeat the steps above for each I/O point that you want to configure.
5. Click **Send** to save the changes and send the configuration to the meter.

Configuring Onboard Alarms and Events

For each digital input configured in I/O setup, configure the alarms to record when the digital input on an ATS or a generator changes from OFF to ON, and also from ON to OFF.

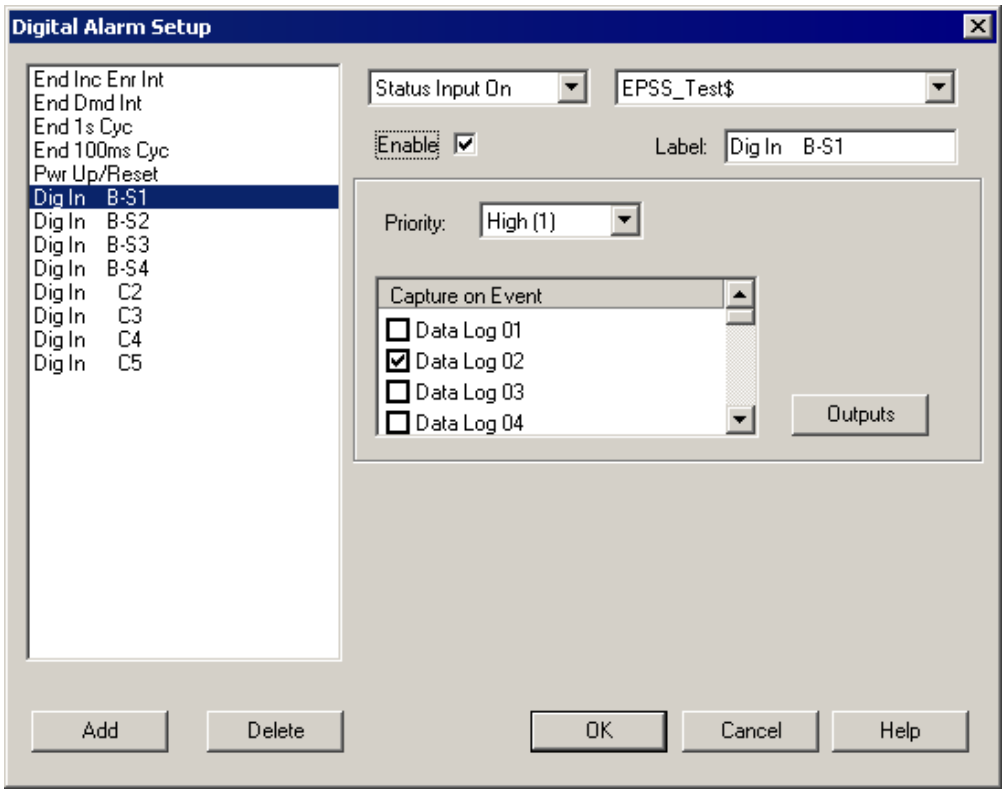
Configure Digital Input Alarms for ATSs

This section assumes that you configured digital inputs **Dig In B-S1** as `EPSS_Test$`, **Dig In B-S2** as `EPSS_Emerg$`, and **Dig In B-S3** as `EPSS_Norm$`.

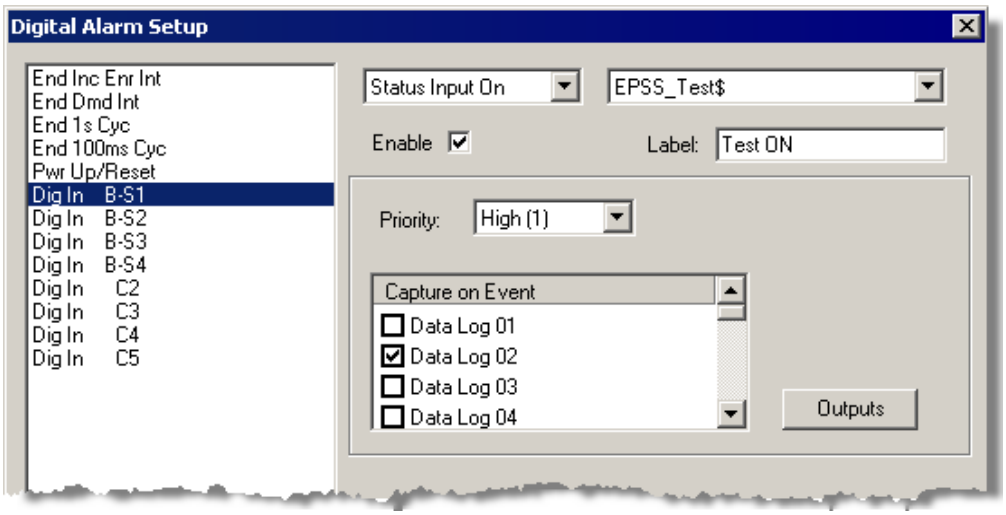
Digital input change from OFF to ON

1. In the Content Viewer, double-click **Onboard Alarms/Events** to open the **Setup** dialog.
2. Select **Digital** and click **Edit** to open the **Digital Alarm Setup** dialog.
3. Select one of the Digital Input/Output points.

   The following figure shows the **Dig In B-S1** input selected and its `EPSS_Test$` label, configured in **I/O Setup**.



4. Select **Status Input On** from the list to set the alarm when the digital input changes from OFF to ON.
5. Make sure that **Enable** is selected.
6. In the **Label** field, change the digital alarm name from **Dig In B-S1** to **Test ON**.



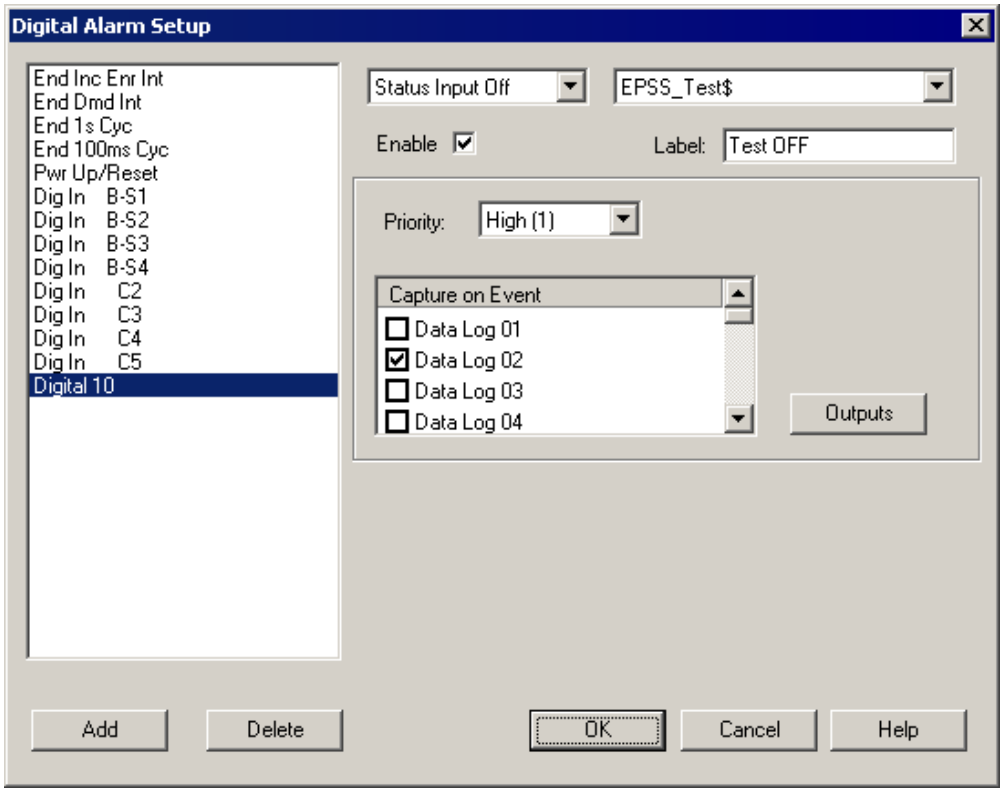
7. Set **Priority** to High(1), and select Data Log 2 as the data log to use.

   When the status for `EPSS_Test$` changes to ON, Data Log 2 records all channels currently configured on it.

Digital input change from ON to OFF

1. Click **Add** to add another digital input alarm parameter to the list in the left pane of the **Digital Alarm Setup** dialog.

   If all 40 available digital input alarms have been configured already, you need to re-configure an existing alarm for the ON to OFF status change.



2. Select **Status Input Off** from the list to set the alarm when the digital input changes from ON to OFF.
3. Select `EPSS_Test$` from the list.
4. Make sure that **Enable** is selected.
5. In the **Label** field, change the digital alarm name to **Test OFF**.
6. Set **Priority** to High(1), and select Data Log 2 as the data log to use.
7. Repeat the steps above to configure alarms for digital input changes from OFF to ON and from ON to OFF for all of the applicable I/O points.

   The following table summarizes the configuration of the alarms, assuming that the I/O points are Dig In B-S1, Dig In B-S2, and Dig In B-S3:

Digital Input Label	Maps to	Alarm Status	Alarm Name
EPSS_Test$	Dig In B-S1	Status Input On	Test ON
EPSS_Test$	Dig In B-S1	Status Input Off	Test OFF
EPSS_Emerg$	Dig In B-S2	Status Input On	Emerg ON
EPSS_Emerg$	Dig In B-S2	Status Input Off	Emerg OFF
EPSS_Norm$	Dig In B-S3	Status Input On	Normal ON
EPSS_Norm$	Dig In B-S3	Status Input Off	Normal OFF

8. Click **OK** to close the dialog.
9. Click **Send** to save the changes and send the configuration to the meter.

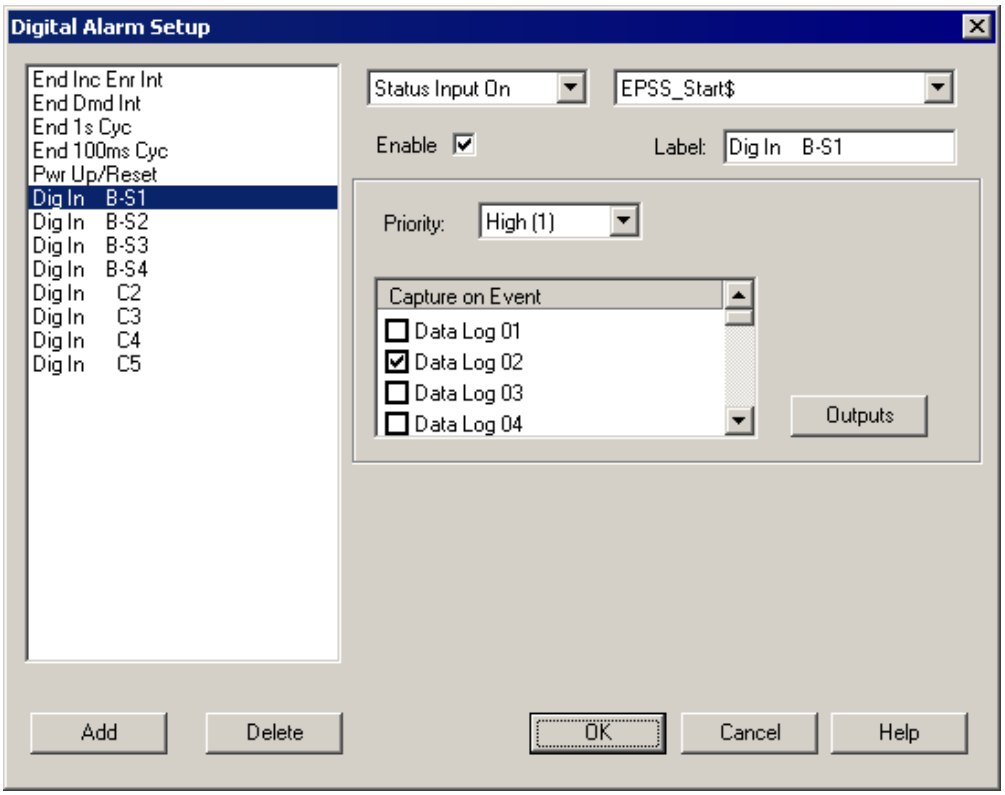
Configuring Digital Input Alarms for Generators

This section assumes that you configured digital inputs **Dig In B-S1** as `EPSS_Start$`, **Dig In B-S2** as `EPSS_Run$`, and **Dig In B-S3** as `EPSS_Stop$`.

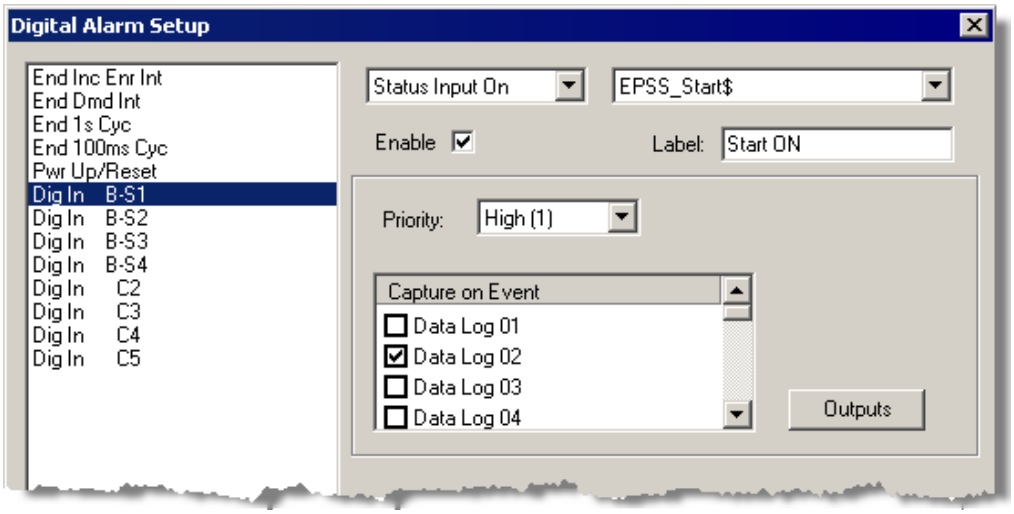
Digital input change from OFF to ON

1. In the Content Viewer, double-click **Onboard Alarms/Events** to open the **Setup** dialog.
2. Select **Digital** and click **Edit** to open the **Digital Alarm Setup** dialog.
3. Select one of the Digital Input/Output points.

   The following screenshot shows the **Dig In B-S1** input selected and its `EPSS_Start$` label, as configured in **I/O Setup**.



4. Select **Status Input On** from the list to set the alarm when the digital input changes from OFF to ON.
5. Make sure that **Enable** is selected.
6. In the **Label** field, change the digital alarm name from **Dig In B-S1** to **Start ON**.



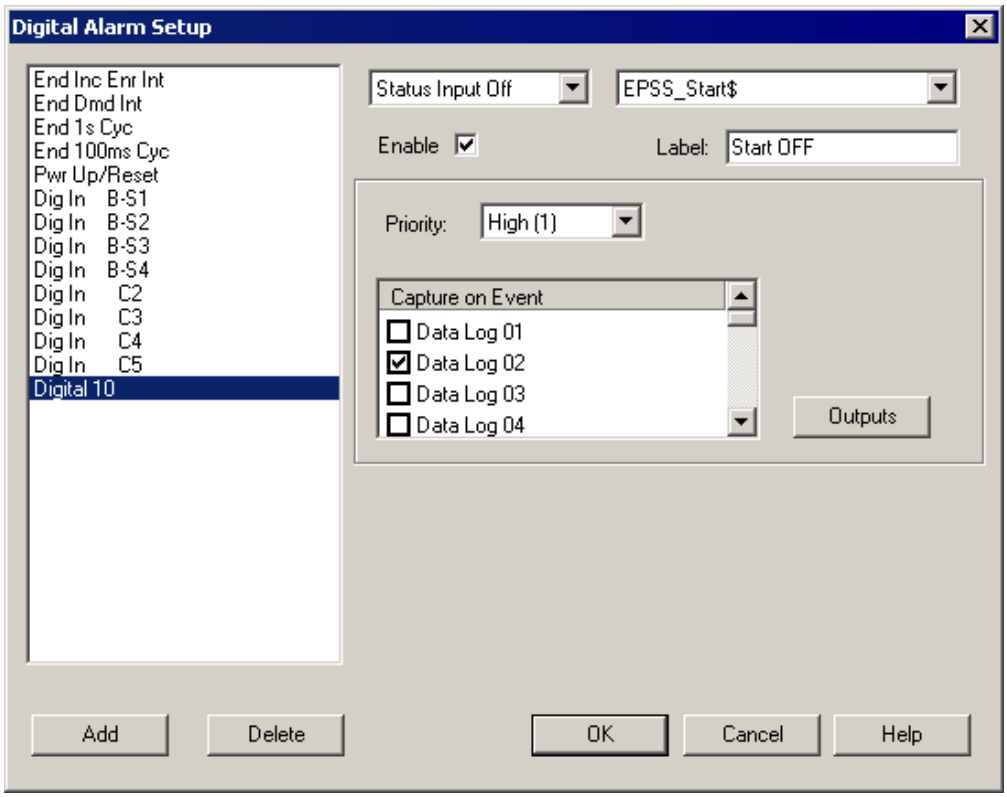
7. Set **Priority** to High(1), and select Data Log 2 as the data log to use.

   When the status for `EPSS_Start$` changes to ON, Data Log 2 records all channels currently configured on it.

Digital input change from ON to OFF

1. Click **Add** to add another digital input alarm parameter to the list in the left pane of the **Digital Alarm Setup** dialog.

   If all 40 available digital input alarms have been configured already, you need to re-configure an existing alarm for the ON to OFF status change.



2. Select **Status Input Off** from the list to set the alarm when the digital input changes from ON to OFF.
3. Select `EPSS_Start$` from the list.
4. Make sure that **Enable** is selected.
5. In the **Label** field, change the digital alarm name to **Start OFF**.
6. Set **Priority** to High(1), and select Data Log 2 as the data log to use.
7. Repeat the steps above to configure alarms for digital input changes from OFF to ON and from ON to OFF for all of the applicable I/O points.

   The following table summarizes the configuration of the alarms, assuming that the I/O points are Dig In B-S1, Dig In B-S2, and Dig In B-S3:

Digital Input Label	Maps to	Alarm Status	Alarm Name
EPSS_Start$	Dig In B-S1	Status Input On	Start ON
EPSS_Start$	Dig In B-S1	Status Input Off	Start OFF
EPSS_Run$	Dig In B-S2	Status Input On	Run ON

Digital Input Label	Maps to	Alarm Status	Alarm Name
EPSS_Run$	Dig In B-S2	Status Input Off	Run OFF
EPSS_Stop$	Dig In B-S3	Status Input On	Stop ON
EPSS_Stop$	Dig In B-S3	Status Input Off	Stop OFF

8. Click **OK** to close the dialog.
9. Click **Send** to save the changes and send the configuration to the meter.

Defining a Digital Alarm for a Single Digital Input

If a single digital input is used to record signals indicating when the generator is running, and also when the generator has stopped, you need to define the digital alarm as follows:

1. In the **Digital Alarm Setup** dialog, select the Digital Input/Output point that will be used to record the alarm. For example, if you configured **Dig In B-S1** with a label of `EPSS_Run$`, select this I/O point.
2. Select **Status Input On** from the list to set the alarm when the digital input changes from OFF to ON.
3. Make sure that **Enable** is selected.
4. In the **Label** field, change the digital alarm name from **Dig In B-S1** to **Run ON**.
5. Set **Priority** to High(1), and select Data Log 2 as the data log to use.

EPSS_Run$: Digital Input Change from ON to OFF

1. Click **Add** to add another digital input alarm parameter to the list in the left pane of the **Digital Alarm Setup** dialog.
2. Select **Status Input Off** from the list to set the alarm when the digital input changes from ON to OFF.
3. Select `EPSS_Run$` from the list.
4. Make sure that **Enable** is selected.
5. In the **Label** field, change the digital alarm name to **Stop ON**.
6. Set **Priority** to High(1), and select Data Log 2 as the data log to use.
7. Click **OK** to close the dialog.
8. Click **Send** to save the changes and send the configuration to the meter.

As a result of this alarm configuration where `EPSS_Run$` represents both the Running and Stopped states for the generator, when **Run ON** is TRUE, the signal is recorded as "1", and when **Stop ON** is TRUE, the signal is recorded as "0".

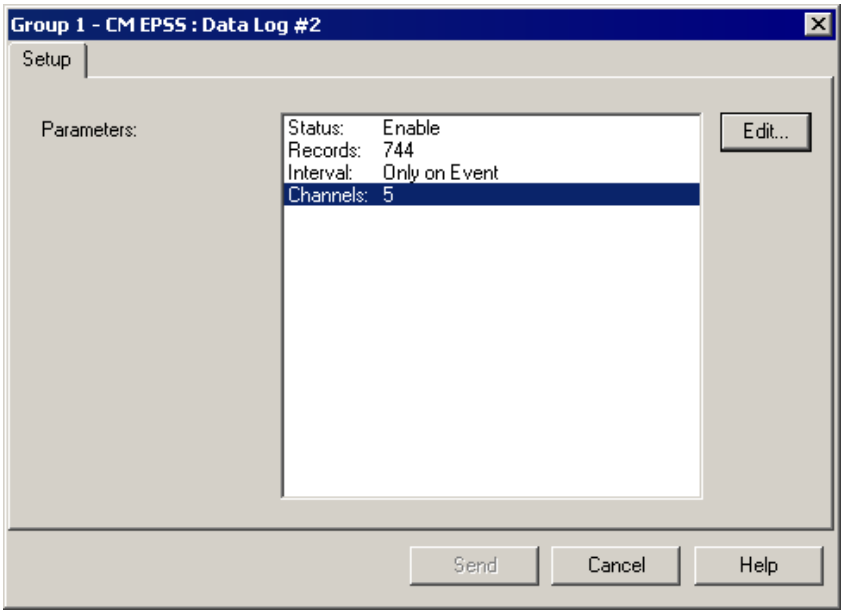
Configure the Data Log Parameters

This section describes how to define data log parameters for the digital inputs, analog inputs, and load profile data. The instructions assume that you use Data Logs 2 and 3. However, you can use any Data Log that meets your requirements.

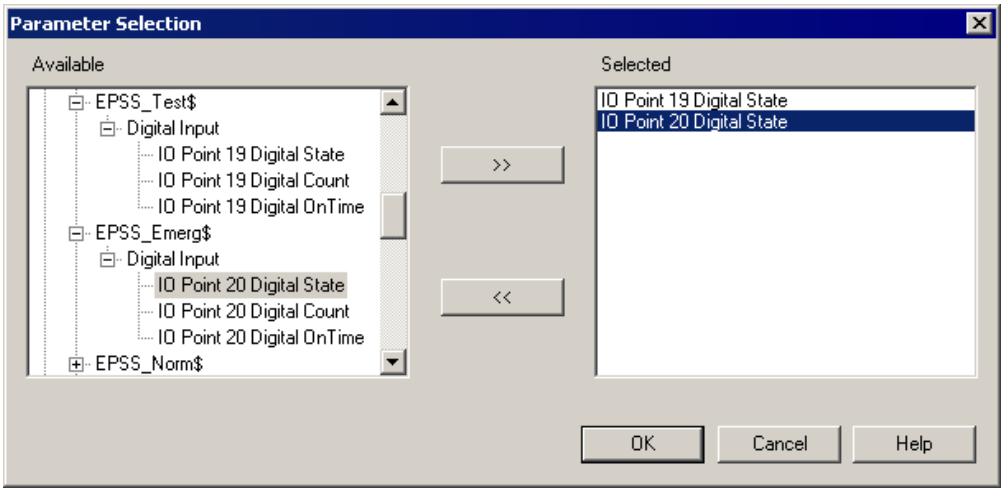
Define Data Log Parameters for Digital Inputs

Complete the following steps to define the data log parameters for the digital inputs.

1. In the Content Viewer, double-click **Data Log #2** to open the **Setup** dialog for the data log parameters.
2. Set **Status** to Enable and **Interval** to Only On Event.
3. Select **Channels**, click **Edit**. The Parameter Selection screen appears.



4. In the **Available** box, navigate to **Inputs/Outputs** and select a custom label, such as `EPSS_Emerg$`.
5. Under **Digital Input**, select the **IO Point *xx* Digital State**, where xx is the number of the I/O point present on the meter. Click **>>** to move the parameter to the **Selected** box.



6. Repeat steps 4 - 5 for all I/O points available for the ATS or generator.
7. In the **Available** box, expand **Miscellaneous** and select **Present MilliSeconds**. Click **>>** to move it to the **Selected** box.

Add all I/O points for a given ATS or generator to the data log to help ensure that all of the states are recorded in the data log when any state changes.

8. Click **OK** to close the screen.
9. Click **Send** to save the changes and send the configuration to the meter.

Define Data Log Parameters for Analog Inputs and Load Profile Data

Configure the system to log the analog inputs and load profile data automatically when the generator state changes to Running. When the generator state is Running, the alarm status for digital input `EPSS_Run$` is ON.

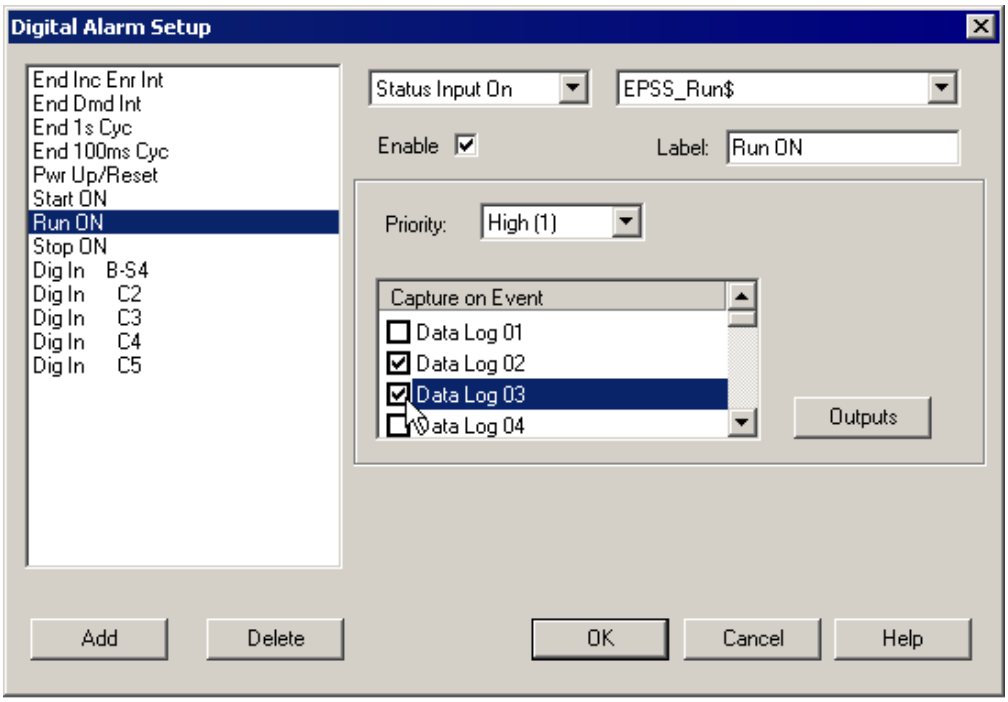
Using ION Setup, the process to configure automatic logging is:

1. Associate Data Log 3 with the digital input alarm **Run ON** that you previously defined for `EPSS_Run$`.
2. Select the parameters for the Analog Input data to be logged in Data Log 3.
3. Select the parameters for the Load Profile data to be logged in Data Log 3.
4. Set the status of Data Log 3 to Auto-Enable.

These steps assume that you use Data Log 3.

Associate Data Log 3 with the Digital Input Alarm Run ON

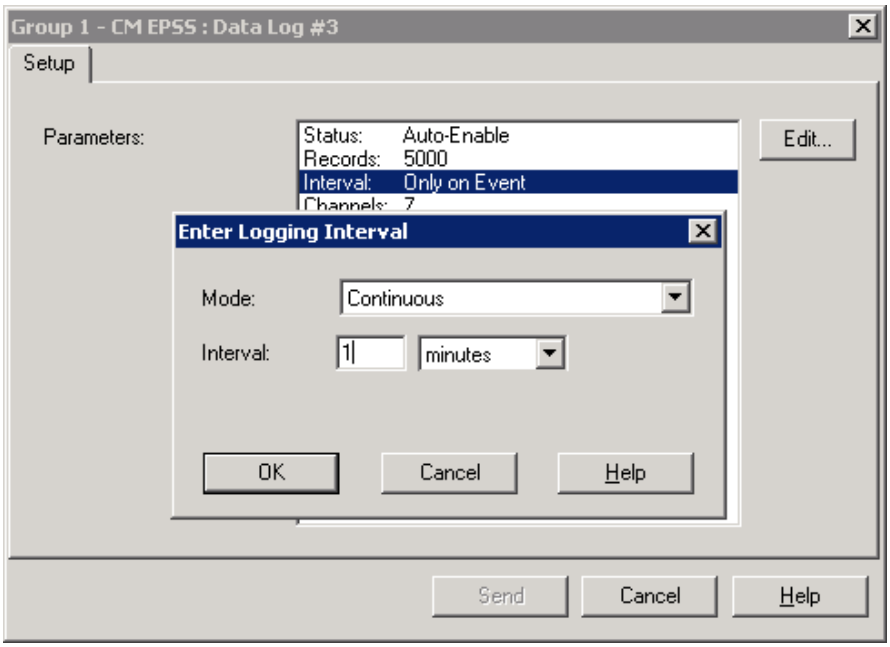
1. In the Content Viewer, double-click **Onboard Alarms/Events** to open the **Setup** dialog.
2. Select **Digital** and click **Edit** to open the **Digital Alarm Setup** dialog.
3. Select the digital input alarm **Run ON** that was defined for I/O point `EPSS_Run$`. You previously selected Data Log 2 when you configured this digital input alarm for the generator.
4. In the **Capture on Event** list, select Data Log 3. Now both Data Logs 2 and 3 are selected.



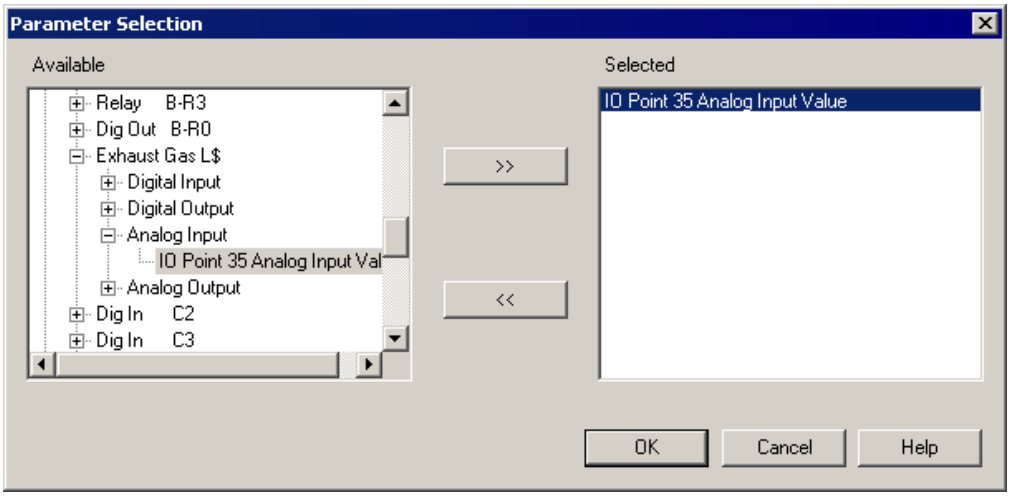
5. Click **OK** to close the screen.
6. Click **Send** to save the changes and send the configuration to the meter.

Select Parameters for Analog Input Data to be logged in Data Log 3

1. In the Content Viewer, double-click **Data Log #3** to open the **Setup** dialog.
2. Select **Interval** and click **Edit** to open the **Enter Logging Interval** dialog.
3. In the **Mode** list, select **Continuous**. Set **Interval** to 1 minute, and click **OK** to close the dialog.



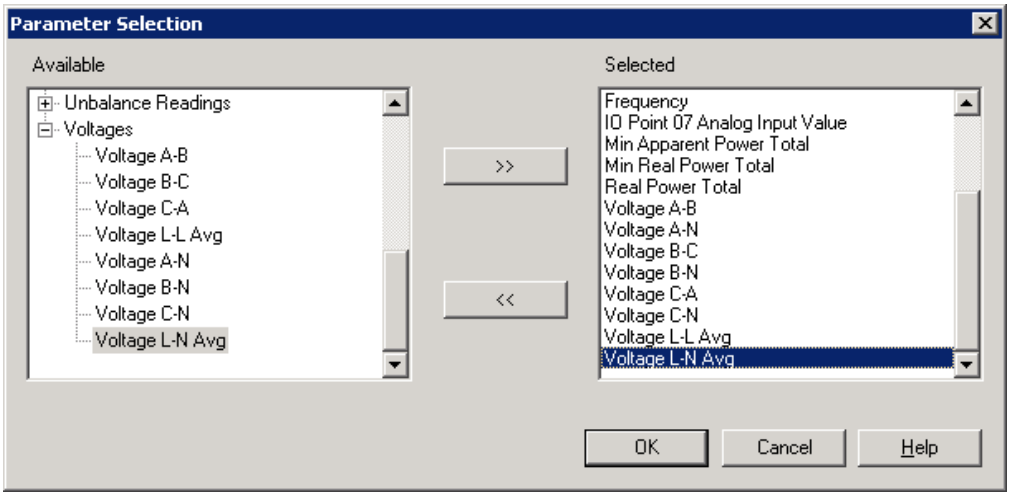
4. Select **Channels**, click **Edit**. The Parameter Selection screen appears.
5. In the **Available** box, navigate to **Inputs/Outputs** and select a custom label, such as `Exhaust Gas L$`.
6. Under **Analog Input**, select the **IO Point *xx* Analog Input Value**, where xx is the number of the I/O point present on the meter. Click **>>** to move the parameter to the **Selected** box.



7. Repeat steps 4 - 5 for each analog input available for the generator.
8. Click **OK** to close the dialog.
9. Click **Send** to save the changes and send the configuration to the meter.

Select Parameters for Load Profile Data to be logged in Data Log 3

1. In the **Setup** dialog for Data Log 3, select **Channels** and click **Edit**. The **Parameter Selection** dialog appears.
2. Expand each of the following categories. Within each category, select the parameters indicated. For each parameter click **>>** to move it to the **Selected** column:
   a. In **Currents**, select Current A, Current B, Current C, Current N, and Current Avg.
   b. In **Minimum Readings**, select Min Apparent Power Total, Min Real Power Total.
   c. In **Miscellaneous**, select Frequency.
   d. In **Powers**, select Real Power Total and Apparent Power Total.
   e. In **Voltages**, select Voltage A-B, Voltage B-C, Voltage C-A, Voltage L-L Avg, Voltage A-N, Voltage B-N, Voltage C-N, and Voltage L-N Avg.

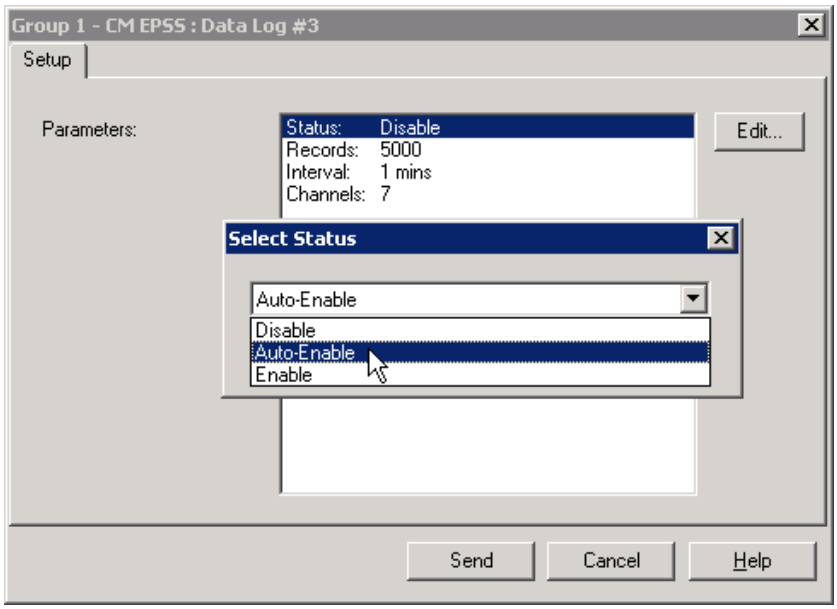


3. Click **OK** to close the dialog.
4. Click **Send** to save the changes and send the configuration to the meter.

Set the Status of Data Log 3 to Auto-Enable

Auto-Enable is a special mode that allows logging to be triggered when an alarm occurs. Data is recorded in the data log at a defined interval if the logging mode is set to **Continuous**. Logging stops when the alarm ends.

1. In the **Setup** dialog for Data Log 3, select **Status** and click **Edit**. The **Select Status** dialog appears.
2. Select **Auto-Enable** in the dropdown list and click **OK**.



3. Click **Send** to save the changes and send the configuration to the meter.

You can also use Vista to set a Data Log to Auto-Enable. See "Configure Auto-Enable Data Logs for CM4000 and PM800 series" on page 80.

Configure Auto-Enable Data Logs for CM4000 and PM800 series

This section explains how to use Vista to configure the data logs for PM800 Series Meters and the CM4000 Series Meters for auto-enable.

Auto-Enable is a special mode that allows logging to be triggered when an alarm occurs. Data is recorded in the data log at a defined interval if the logging mode is set to **Continuous**. Logging stops when the alarm ends. The following instructions assume that you associated Data Log 2 with the digital input alarm **Run ON** for the purpose of logging the analog inputs and load profile data.

For information about using ION Setup to set a Data Log to Auto-Enable, see:

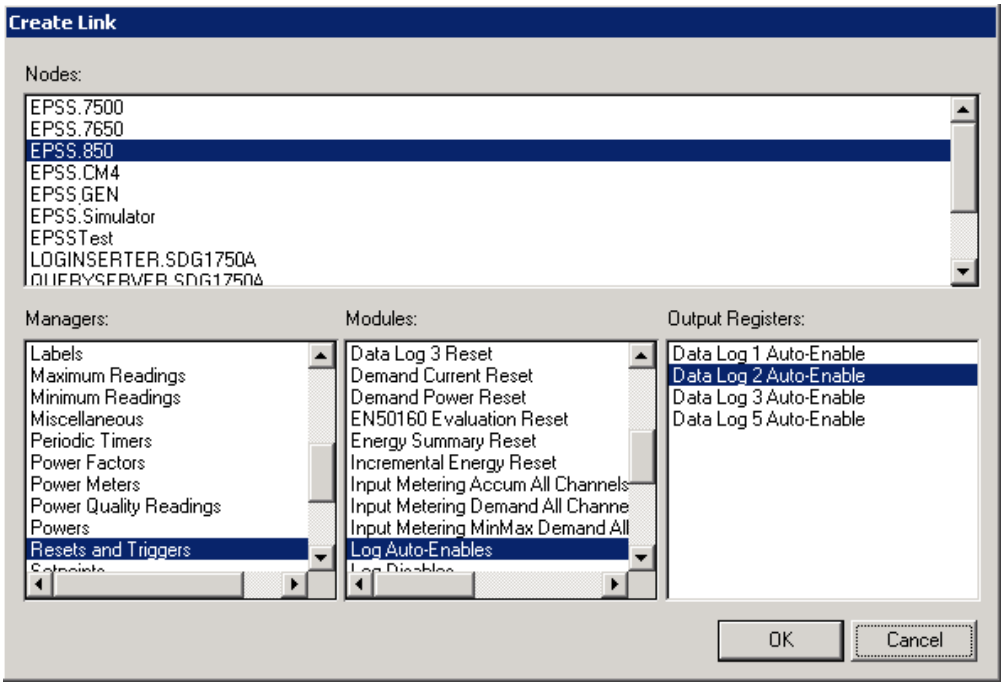
- For PM800 series meters, see "Set the Status of Data Log 2 to Auto-Enable" on page 61.
- For CM4000 series meters, see "Set the Status of Data Log 3 to Auto-Enable" on page 79.

Use Vista to Set a Data Log to Auto-Enable

Complete the following steps to use Vista to set the status of Data Log 2 to Auto-Enable.

1. Open Vista and select **File > New** to open an empty workspace.
2. Ensure that the Toolbox is open. If not, select **Options > Show Toolbox**.
3. In the Toolbox, select a **Control Object** and drag it to the workspace.
4. Right-click the control object. The **Control Object Configuration** screen appears.

5. Click the **Link** tab. In the **Link** area, select **Custom**, and then click **Edit Link**. The **Create Link** screen appears.
6. In the **Nodes** list, double-click the meter name. The associated module directories appear in the **Managers** list.



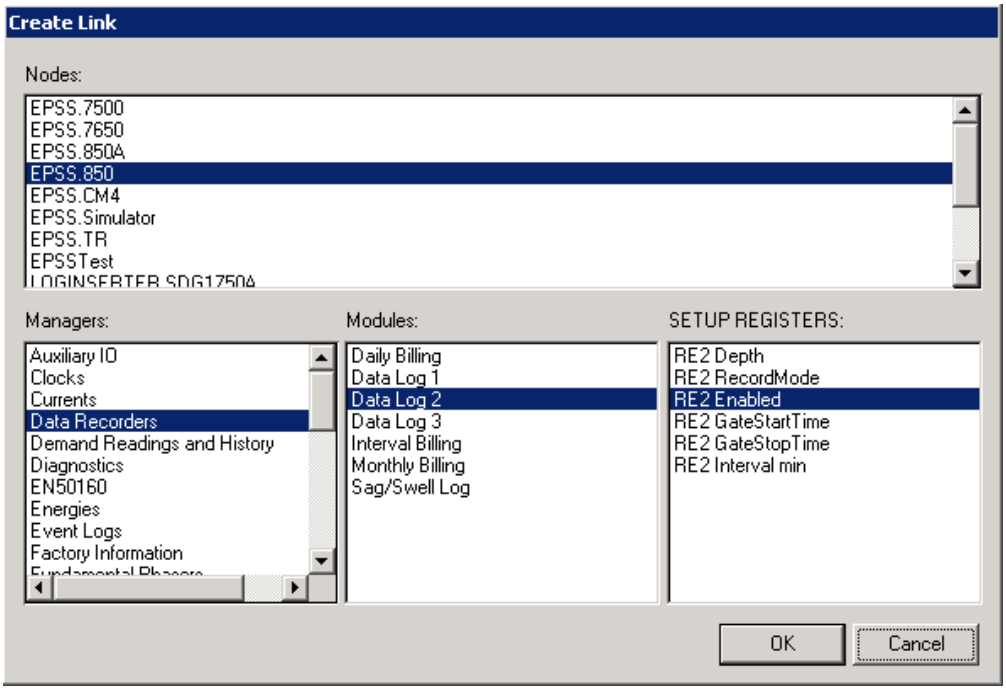
7. In the **Managers** list, double-click **Resets and Triggers**.
8. In the **Modules** list, double-click **Log Auto-Enables**.
9. In the **Output Registers** list, select **Data Log 2 Auto-Enable**.
10. Click **OK** to save the selection and to close the screen.
11. Double-click the control object in the workspace to set Data Log 2 on the meter to Auto-Enable.

Verify that Data Log 2 has been set to Auto-Enable

You can verify that Data Log 2 has been set to Auto-Enable by adding a numeric object to the workspace and linking it to a setup register for the Data Log.

1. In Vista, ensure that the Toolbox is open. If not, select **Options > Show Toolbox**.
2. In the Toolbox, select a **Numeric Object** and drag it to the workspace.
3. Right-click the numeric object. The **Numeric Object Configuration** screen appears.

4. Click the **Link** tab. In the **Link** area, select **Custom** and press the **Ctrl** key while clicking **Edit Link**. The **Create Link** screen for Setup Registers.
5. In the **Nodes** list, double-click the meter name. The associated module directories appears in the **Managers** list.



6. In the **Managers** list, double-click **Data Recorders**.
7. In the **Modules** list, double-click **Data Log 2**.
8. In the **Setup Registers** list, select **RE2 Enabled**.
9. Click **OK** to save the selection and to close the screen.

When the numeric object displays "Auto," you have confirmation that Data Log 2 has been set successfully to Auto-Enable by the control object.

Configuring Momentum PLC

This chapter describes how to configure Momentum PLC for the system.

For information about installing and configuring Momentum PLC, see the PLC's documentation at www.powerlogic.com.

⚠ WARNING

UNINTENDED OPERATION

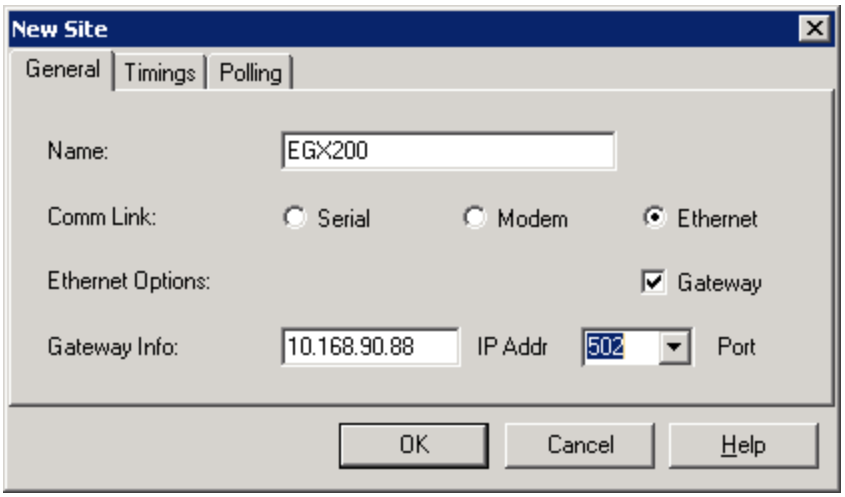
- Do not use the Momentum PLC with either Power Monitoring Expert or ION Setup for critical control or protection applications where human or equipment safety relies on the operation of the control circuit.
- Refer to your PLC's technical documentation for more information on its operation.

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

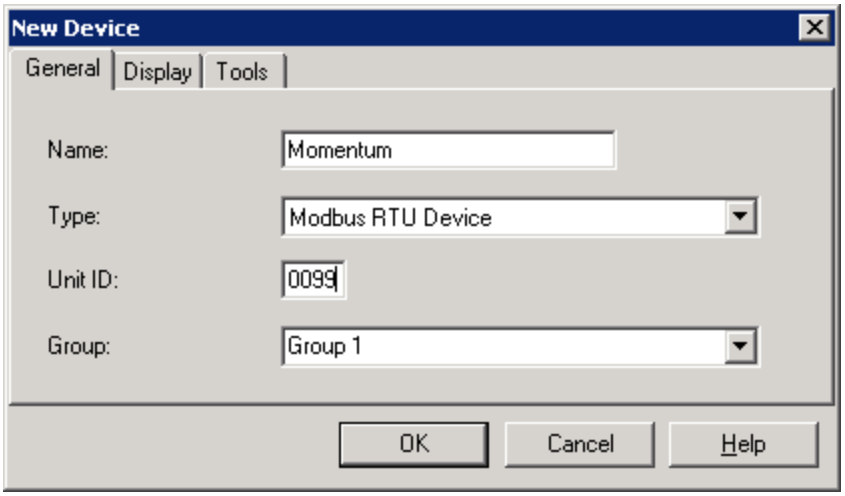
Add a Momentum PLC to a Site

Use ION Setup to add each Momentum PLC to a site.

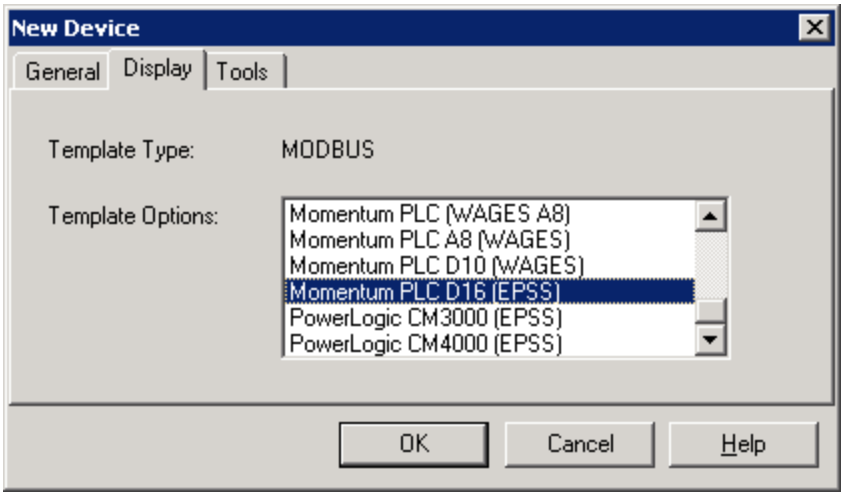
1. In the Network Viewer, right-click the workstation icon and select **Insert Item > Site**. The **New Site** screen appears.
2. Complete the fields to define the new site:
   - **Name** - Add a name to identify the site.
   - **Comm Link** - Select **Ethernet**.
   - **Ethernet Options** - Select **Gateway**.
   - **IP Address** - Enter the IP Address for the device.
   - **Port** - Select 502.



3. Click **OK** to add the site. The new site appears in the Network Viewer.
4. In the Network Viewer right-click the site name and select **Insert Item > Meter**. The **New Device** screen appears.
5. Complete the fields to define the PLC:
   - **Name** - Enter a name to identify the device.
   - **Type** - Select Modbus RTU Device from the dropdown list.
   - **Unit ID** - Enter the unit ID for the device.
   - **Group** - Select a group name from the list or enter a name to define a new group.

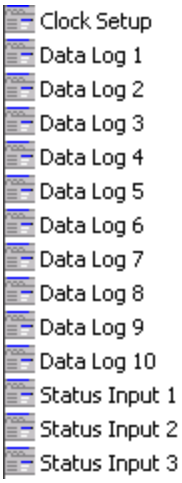


6. Click the **Display** tab and select the **Momentum PLC D16 (EPSS)** template option.



7. Click **OK** to add the PLC to the site.

After a PLC has been added, click its icon in the Network Viewer to display the setup screens in the Content Viewer. The following image shows a partial list of the setup screens.



The remaining topics in this chapter describe how to configure the parameters for the **Clock Setup**, **Data Log** and **Status Input** setup screens.

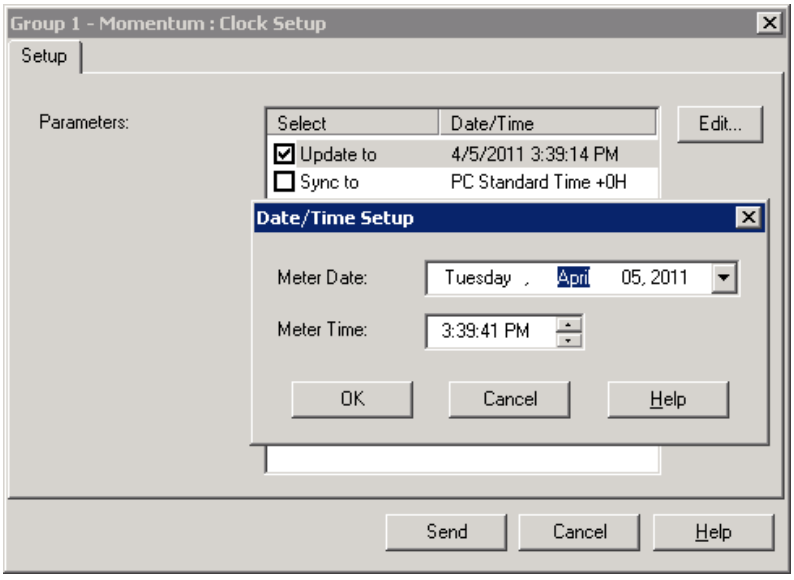
Setting the Clock

Follow these steps to set or adjust the date and time for the PLC's clock.

1. In the Content Viewer, double-click **Clock Setup**. The **Clock Setup** screen appears.

   The first time you access this screen, the label under the **Select** column is "Device time" and the **Date/Time** column shows the current time on the PLC.

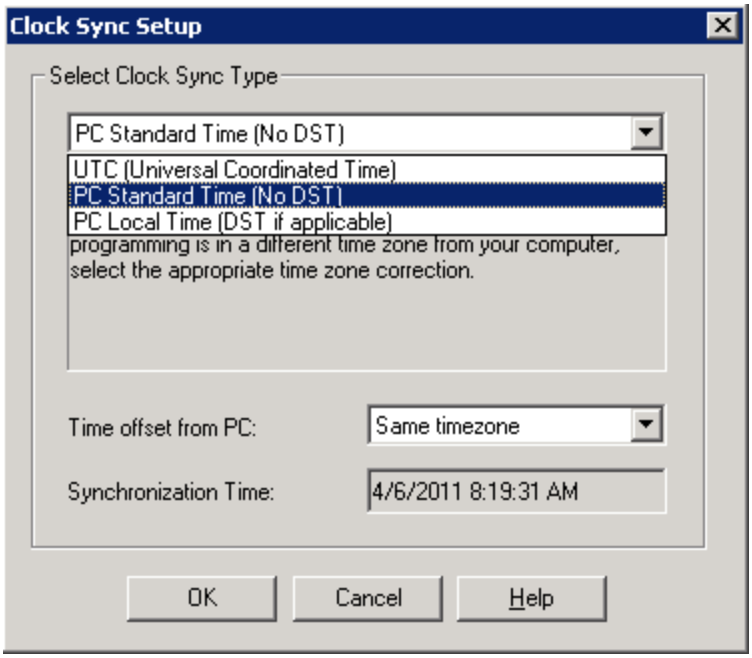
2. Select the Date/Time entry and click **Edit**. The **Date/Time Setup** screen appears.



3. Set the desired date and time in the **Meter Date** and **Meter Time** fields.
4. Click **OK**. The **Date/Time Setup** screen closes.

   The "Device time" label changes to "Update to" and is automatically selected. The check mark indicates that the new date and time value will be sent to the PLC when you click **Send**.

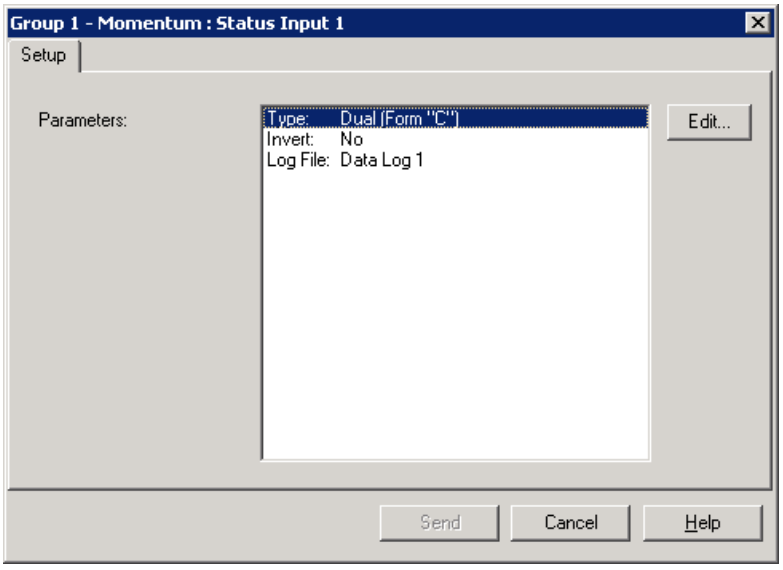
If you clear the check box, the date and time entry reverts to the time currently configured on the PLC.



Configuring Status Inputs

Follow these steps to configure the status inputs on Momentum PLCs so that data about the states of the ATSs and generators is recorded.

1. In the Content Viewer, double-click **Status Input 1**. The **Status Input 1** screen appears.



2. In the **Parameters** box, select **Type** and click **Edit**. The **Select Type** screen appears.

3. In the **Type** box, select **Dual(Form "C")** and click **OK**. This parameter generates an event for both the leading and trailing edges of the signal.
4. Select **Invert** and click **Edit**. The **Select Invert** screen appears.
5. In the **Invert** box, select **No** and click **OK**.
6. Select **Log File** and click **Edit**. The **Select Log File** screen appears.
7. In the **Log File** box, select the data log for the status input and click **OK**.
8. Click **Send** to save the changes and send the configuration to the PLC.

Keep track of these status inputs for correct mapping to the ATS and generator states through the EPSS. Status inputs for ATSs need to be set to Test, Emergency, and Normal states. For generators, they need to be set to Run and Stop states.

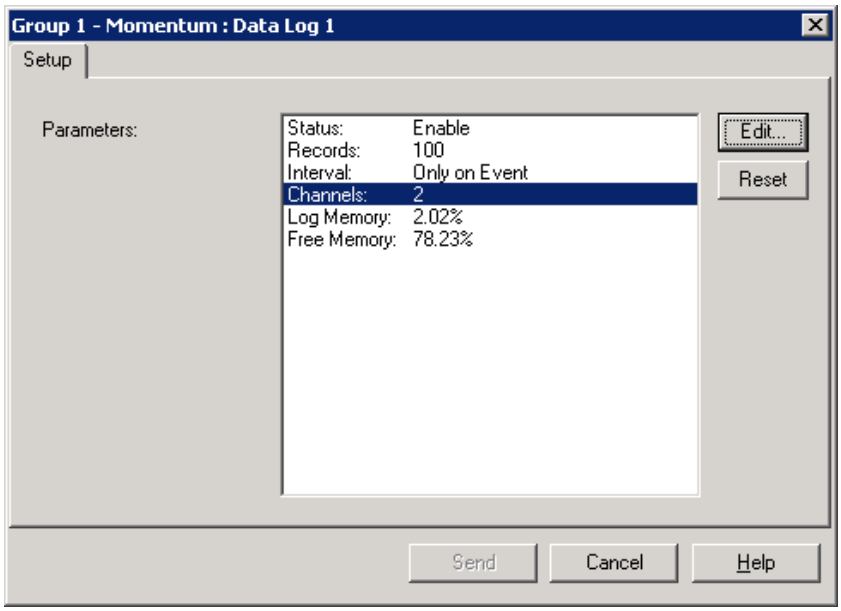
For example, the following table shows the relationship of Status Inputs on the PLC to the settings that are applied through the EPSS.

Momentum PLC		EPSS	
Slot Position	**Status Inputs**	**EPSS Device**	**State**
1	Status Input 1	ATS1	Test
2	Status Input 2		Normal
3	Status Input 3		Emergency
4	Status Input 4	GEN1	Run
5	Status Input 5		Stop
…	…	…	…

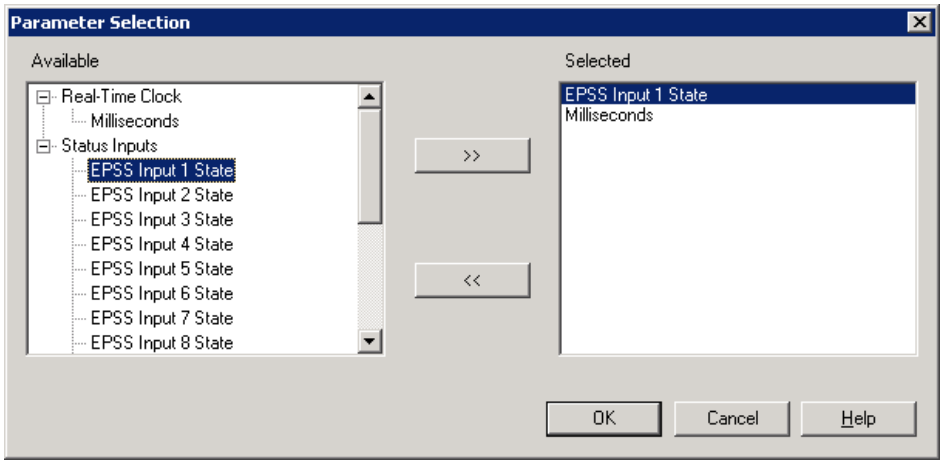
Defining Data Log Parameters for Status Inputs

Complete these steps to define the data log parameters for the Status Inputs.

1. In the Content Viewer, double-click **Data Log x**, where **x** is the number for the datalog. The **Setup** screen appears.
2. Select the following parameters and click **Edit** to configure them in the Parameter Selection screen:
   - Set **Status** to Enable.
   - Set **Records** to a non-zero value.
   - Set **Interval** to Only On Event.



3. Select **Channels**, click **Edit**.
4. In the **Available** box, navigate to **Status Inputs**.



5. Expand **Status Inputs**, select an EPSS input state, such as **EPSS Input 1 State**, click **>>** to move it to the **Selected** column.
6. Repeat steps 4 and 5 for all status inputs available for the ATSs or generators.
7. Expand **Real-Time Clock**, select **MilliSeconds** and click **>>** to move it to the **Selected** column.
8. Click **OK**.
9. Repeat steps 1 through 8 for all of the Data Logs that you want to configure.
10. Click **Send** to save the changes and send the configuration to the PLC.

Configuring Digital Outputs

The standard Momentum PLC device driver does not support the configuration of digital outputs. However, you can use the Modbus Device Importer (MDI) to define and configure digital outputs.

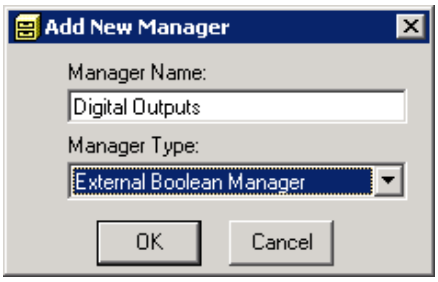
The following information assumes that you already configured an Ethernet Gateway site in Management Console and that you added a device to the site. For more information, see *Setting Up Devices for Ethernet Gateway Communications* in the online help for Management Console or in the *StruxureWare Power Monitoring Expert User Guide*.

Configure Digital Outputs in MDI

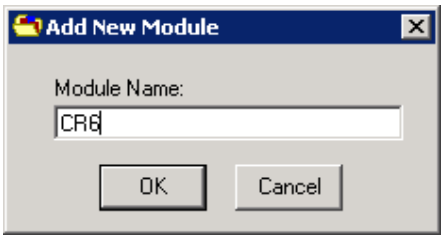
Complete these steps Modbus Device Importer (MDI) to define and configure digital outputs on the PLC.

Before proceeding, make a backup copy of the Momentum PLC map and tree files Momentum_PLC_D16_EPSS.xml and Momentum_PLC_D16_EPSS.ion, respectively. These files are located in the ..\Schneider Electric\system\translators\ folder.

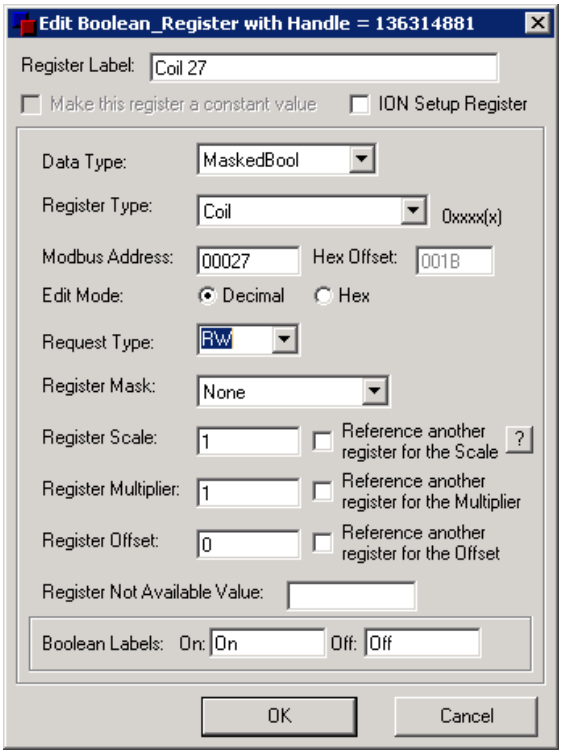
1. In Management Console, select **Tools** > **System** > **Modbus Device Importer**. The MDI main console appears.
2. Open the existing Momentum PLC driver configuration:
   a. Select **File** > **Open** and browse to C:\Program Files (x86)\Schneider Electric\Power Monitoring Expert for Healthcare\system\translators.
   b. Select Momentum_PLC_D16_EPSS.ion.
   c. Click **Open**. The register details appear in MDI.
3. Under **ION Map Information**, right-click Momentum_PLC_D16_EPSS and select **New Manager**. The **Add New Manager** screen appears.



4. In the **Manager Name** box, enter **Digital Outputs**. In the **Manager Type** box, select **External Boolean Manager**. Click **OK**.
5. Under **ION Map Information**, right-click **Digital Outputs** and select **New Module**. The **Add New Module** screen appears.



6. In the **Module Name** box, replace **Ext Bool 1** with the correct name, and click **OK**. In this example, **CR6** is entered.
7. Under **ION Map Information**, right-click **CR6** and select **New Register**. The **Edit Boolean_Register screen** appears.
8. Update the values for **Register Label**, **Register Type**, **Modbus Address**, and **Reset Type** and click **OK**. An example is shown next.



Use Copy to create other module and register entries

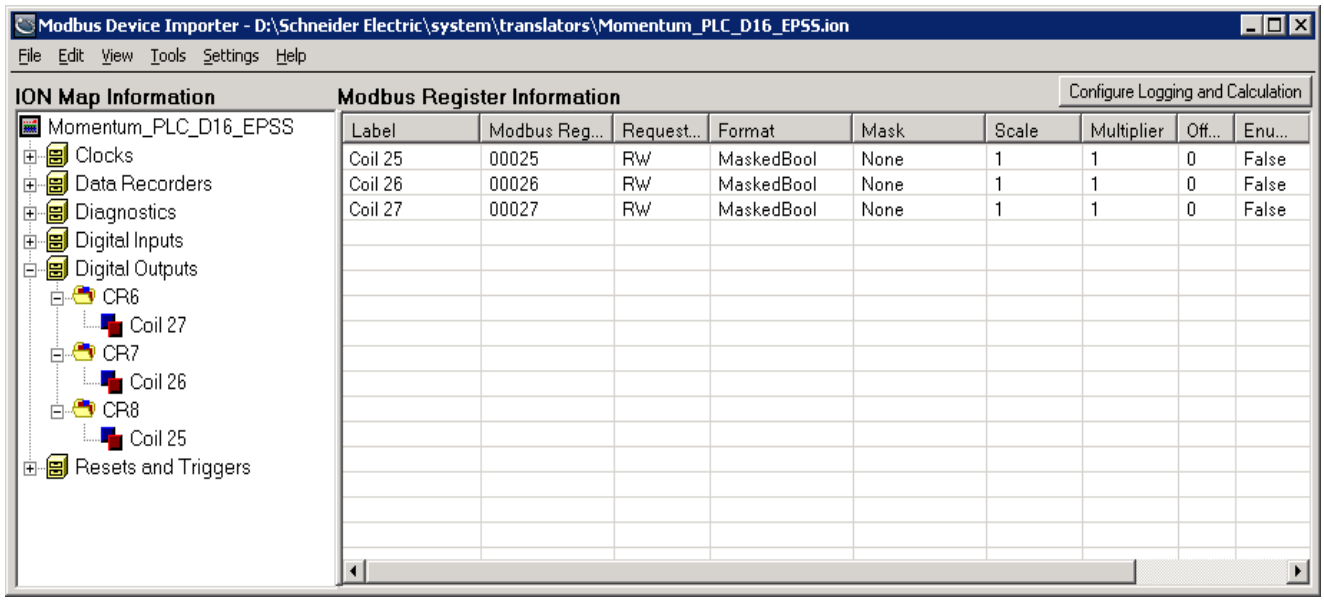
You can create multiple module and register entries by using **Copy** and **Paste** operations.

1. Right-click a module name and select **Copy**.
2. Right-click **Digital Outputs** and select **Paste** to add a copy of the module and registry entries.
3. To change the module name, right-click the module, select **Advanced Properties**, change the name for the module, and click **OK**.
4. To change the register values in the **Modbus Register Information** area:

- **Label** - In the **Label** column, double-click the register name. Change the label and press Enter.
- **Address** - Double-click the Modbus register address. Change the address and press Enter.

5. Repeat steps 1 through 4 above to create and update additional modules.

   The following image shows an example of completed entries in the MDI console.



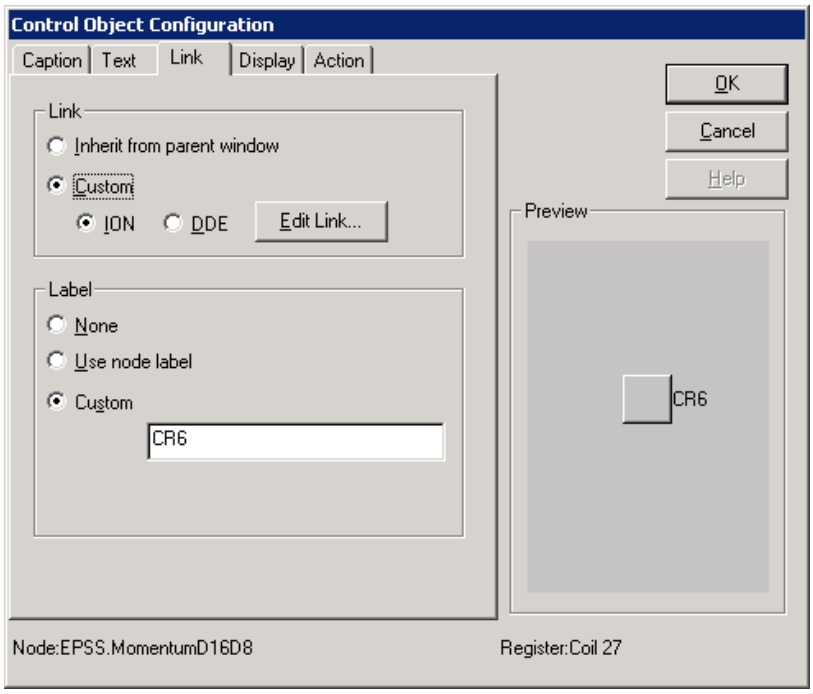
The Modbus registers shown above may not match your system. Adjust the values to match your particular Modbus map.

6. Select **File** > **Save** to save your changes.
7. Select **Tools** > **Update Device Type** to add the configuration to the Momentum PLC.

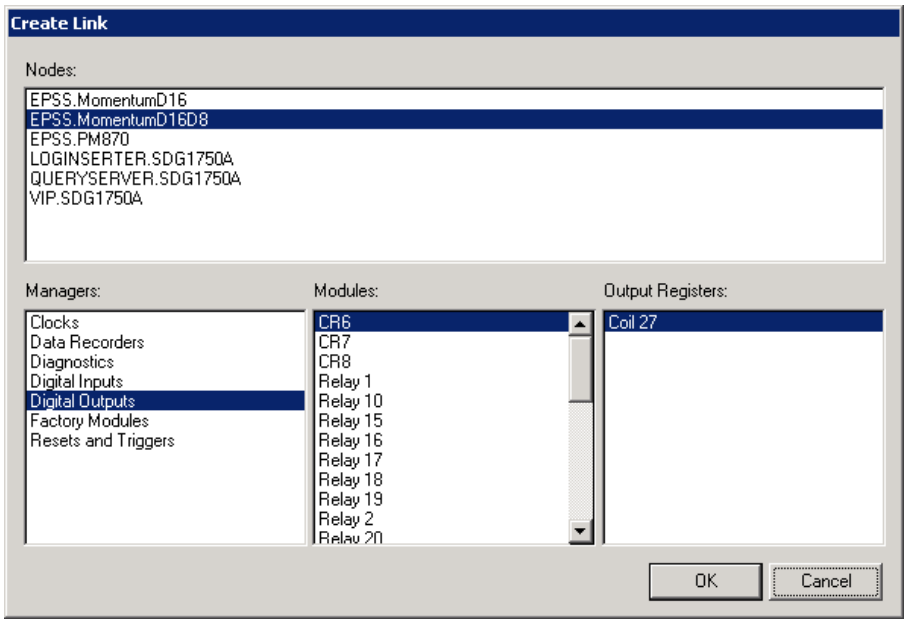
Create a Control Object and Status Object in Vista

Complete these steps to link a Control Object and a Status Object to an Output Register that you defined in the MDI.

1. Open Vista and select **File** > **New** to open an empty workspace.
2. Ensure that the Toolbox is open by clicking **Options** > **Show Toolbox**.
3. Select a **Control Object** in the Toolbox and drag it to the workspace.
4. Right-click the control object. The **Control Object Configuration** screen appears.
5. Select the **Link** tab.



6. Under **Link**, select **Custom** and **ION**.
7. Under **Label**, select **Custom** and enter a label for the control object.
8. Under **Link**, click **Edit Link**. The **Create Link** screen appears.



a. In the **Nodes** box, double-click the PLC name. The module directories appear in the **Managers** box.

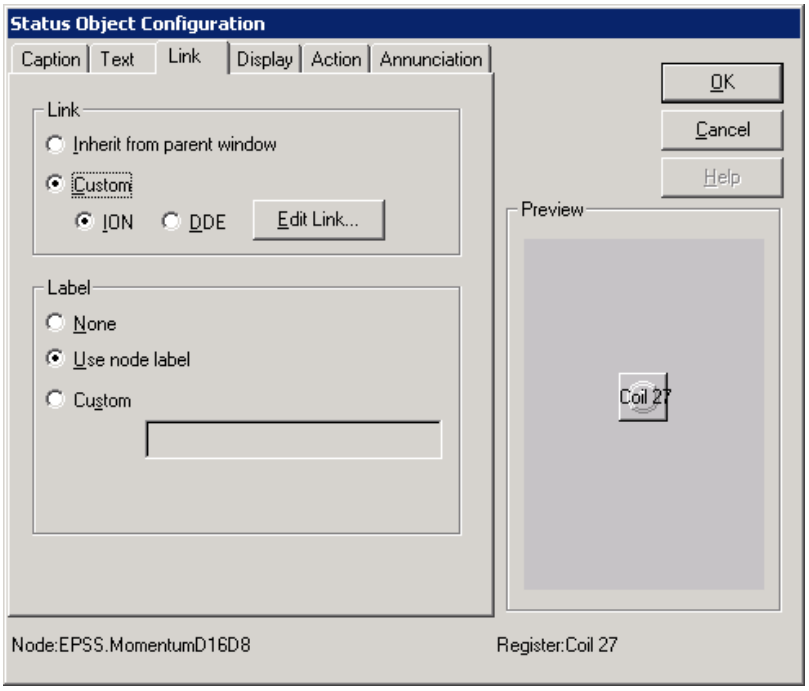
b. In the **Managers** box, double-click **Digital Outputs**

c. In the **Modules** box, double-click **CR6**.

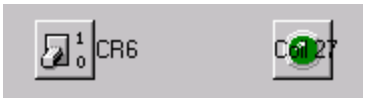
d. In the **Output Registers** box, select **Coil 27**.

e. Click **OK** to save the selection and to close the screen.

9. In the Workspace, select a **Status Object** in the Toolbox and drag it to the workspace.
10. Right-click the status object. The **Status Object Configuration** screen appears.



11. Select the **Link** tab.
12. Under **Link**, select **Custom** and **ION**.
13. Under **Label**, select **Use node label**.
14. Under **Link**, click **Edit Link**. The **Create Link** screen appears.
15. Repeat steps a. through e. above.
16. Save the diagram. The following image is an example of the Vista diagram.



You can now use the Control Object to initiate a state change remotely.

Configuring SER-2408/SER-3200

The SER-2408/SER-3200 Sequence of Event Recorders can be used with the software to record status changes of the ATS and generator contacts in the onboard data logs.

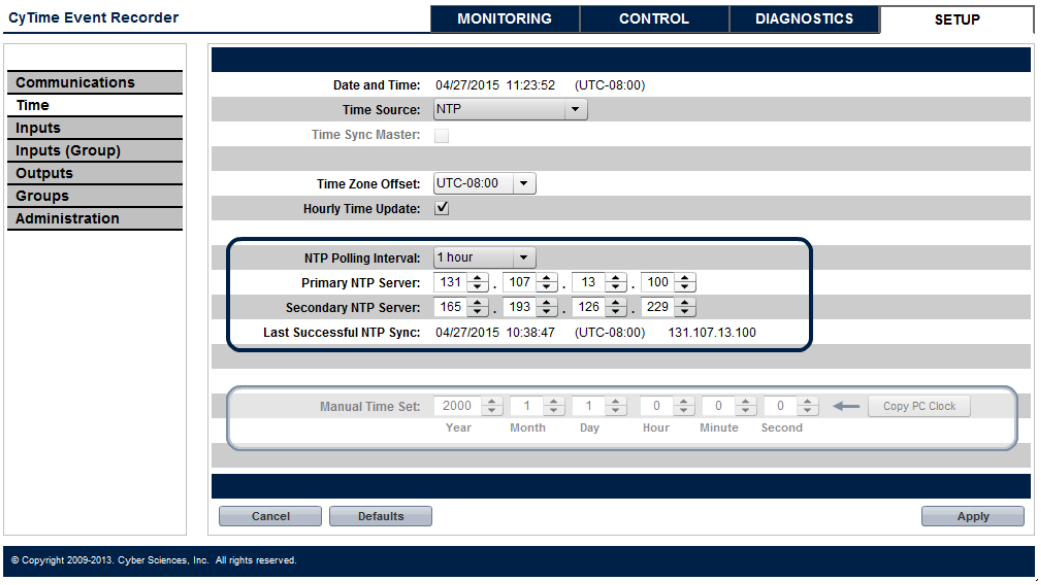
The process to set up the SER-2408/SER-3200 with Power Monitoring Expert includes these steps:

1. Install hardware and configure device communications and digital inputs.

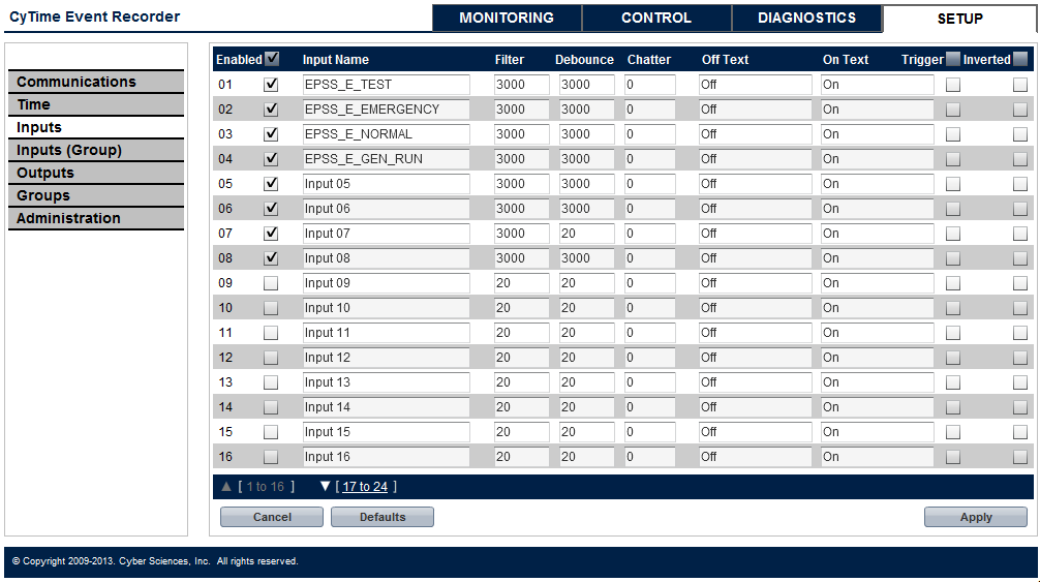
   The SER-2408/SER-3200 can be configured using the integral webserver of the device. Enter the IP address of the device in the browser to open the setup page. Refer to *SER-3200/SER-2408 Instruction Bulletin: User's Guide* for instructions.

Perform the following steps from the *SER-3200/SER-2408 Instruction Bulletin: User's Guide* before proceeding:

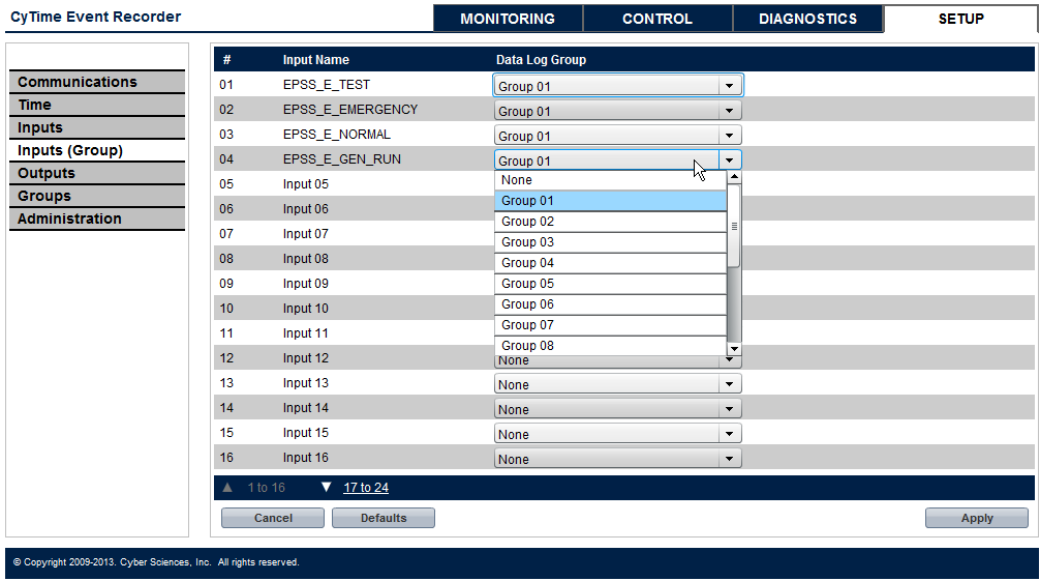
2. In your browser, enter your device IP address and press **Enter**. Log in using your Login ID and password.
3. Click **SETUP**, and then click **Time**. Set the time/clock correctly for your location.



4. Click **SETUP**, and then click **Inputs**. Configure all necessary inputs and select the **Enabled** check box next to each input. When finished, click **Apply**.



5. Click **SETUP**, and then click **Groups**. Assign a group to each input. When finished, click **Apply**.



6. Make sure that you enable logging for all above groups.

NOTICE

UNINTENDED OPERATION

Make sure to enable the logs in the groups section when configuring the device.

Failure to enable the logs in the groups section will result in the inputs not being available and not appearing in the Generator Performance Tool.

For more information on configuring the communications and digital inputs for this device, see the *SER-3200/SER-2408 Instruction Bulletin: User's Guide* located on the Power Monitoring Expert DVD.

7. Add the device in Management Console.
8. Open Vista to verify communications.
9. Use the Generator Performance Configuration Tool to assign measurements for generators or ATS equipment.

See the following sections for instructions on step 2 - 4.

After you complete the above steps, you can generate the EPSS or Generator Test Report for data recorded by the SER-2408/SER-3200.

⚠ WARNING

UNINTENDED OPERATION

- Do not use the SER-2408/SER-3200 with either Power Monitoring Expert or ION Setup for critical control or protection applications where human or equipment safety relies on the operation of the control circuit.
- Refer to your power meter's technical documentation located on the product DVD for more information on its operation.

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

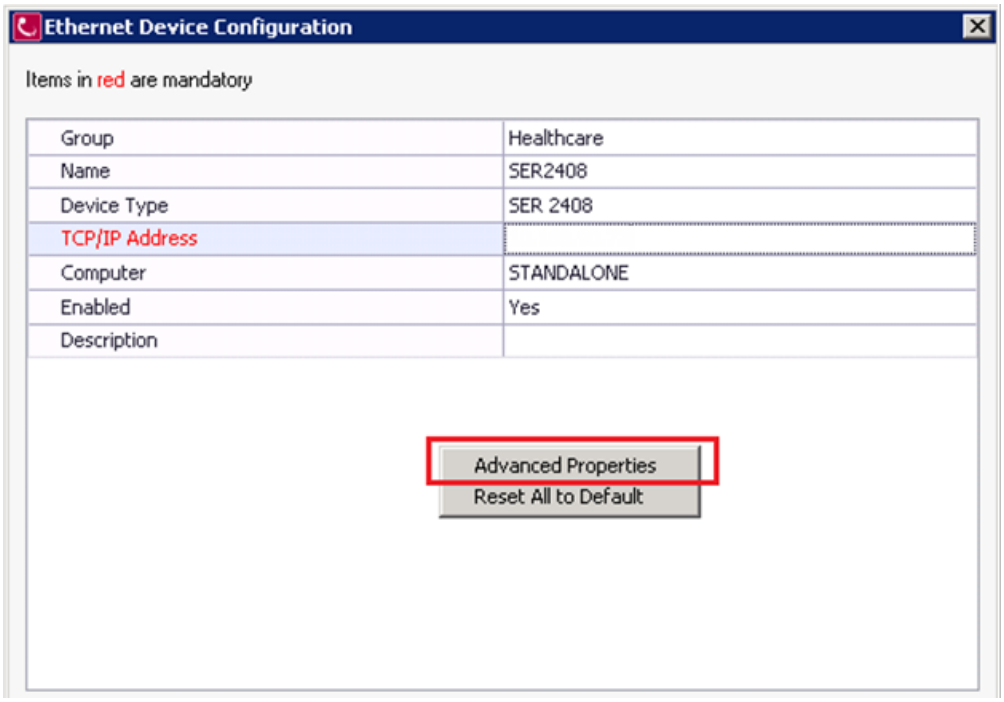
Adding the SER-2408/SER-3200 to Management Console

In Management Console, add the SER-2408/SER-3200 as an Ethernet device.

For proper operation, the device must have the **Unit ID** value set to 1.

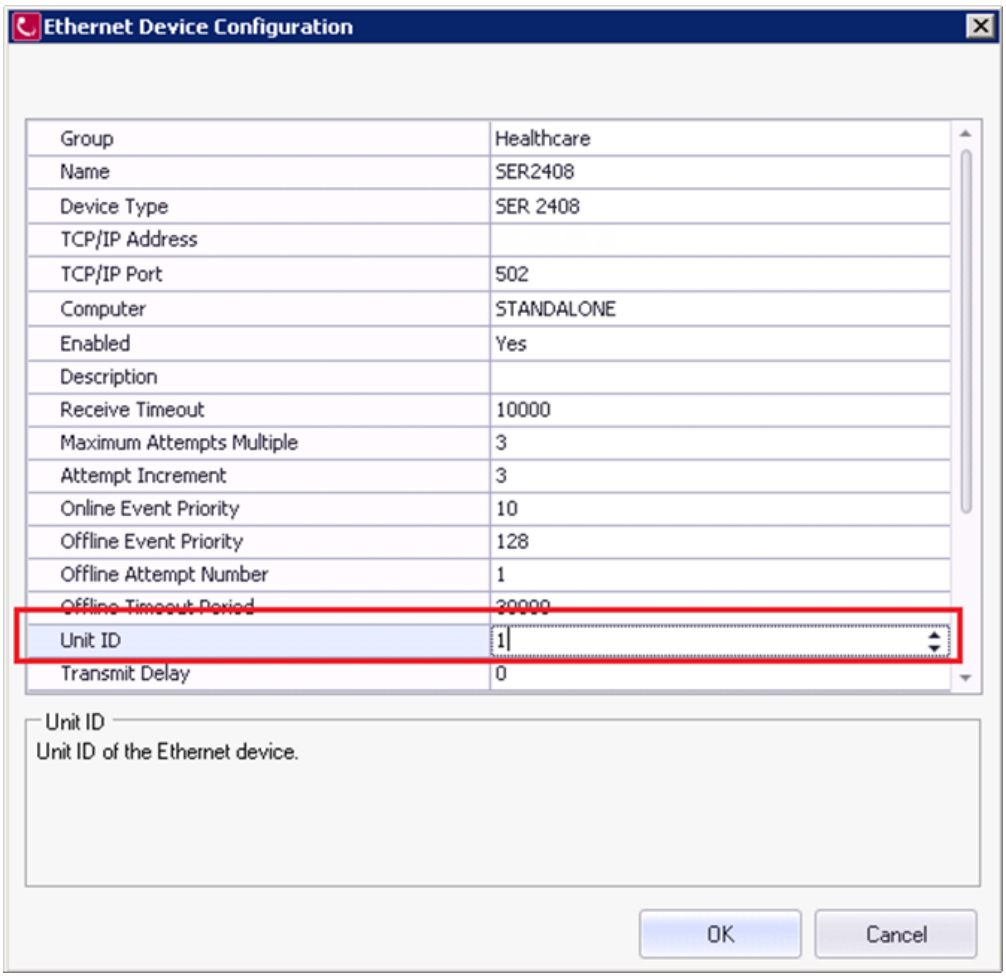
Follow these steps to set the device **Unit ID**:

1. As you enter the device details in the Ethernet Device Configuration screen, right-click the screen and click **Advanced**.

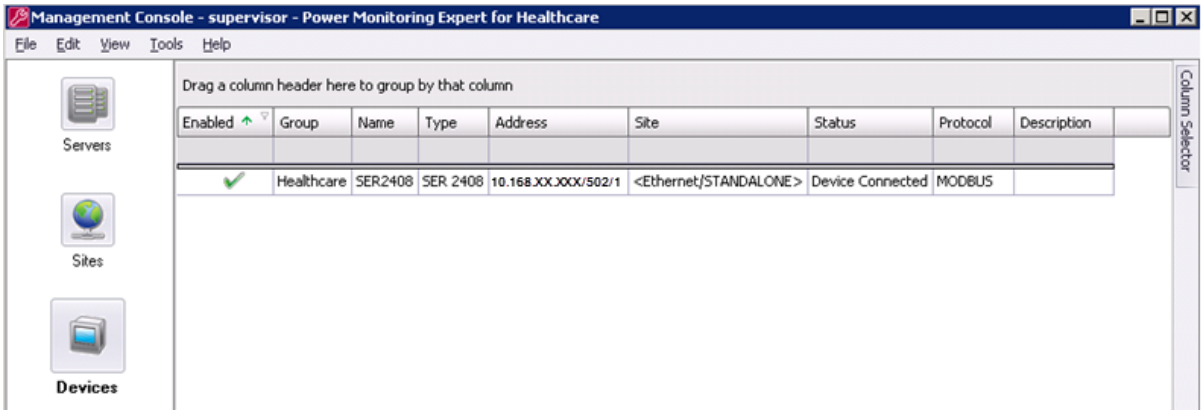


The Advanced Properties for the device appear.

2. In the Unit ID field, enter 1.



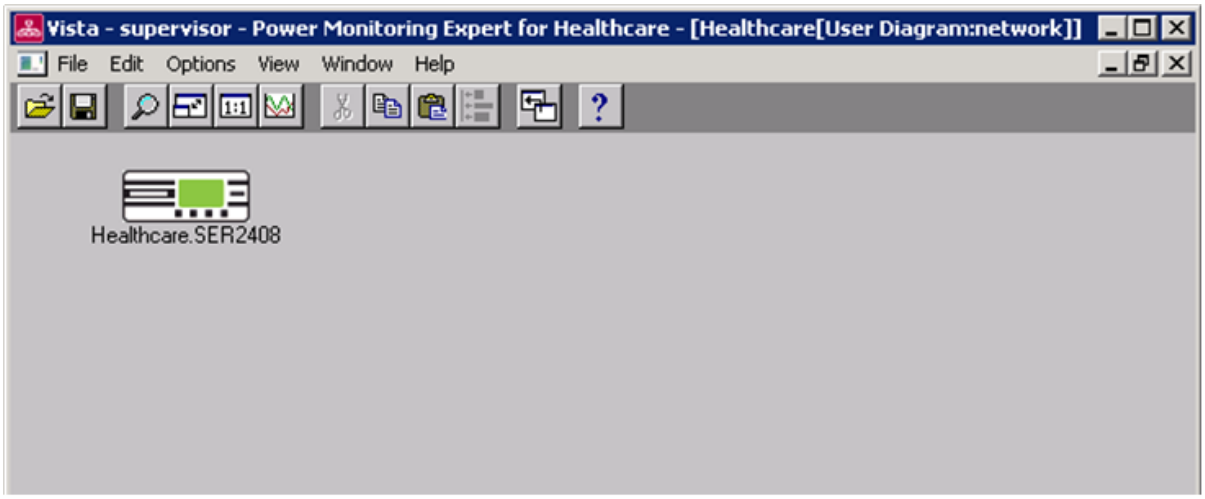
3. Click **OK**.
4. Verify the device status is "Device Connected" as shown next.

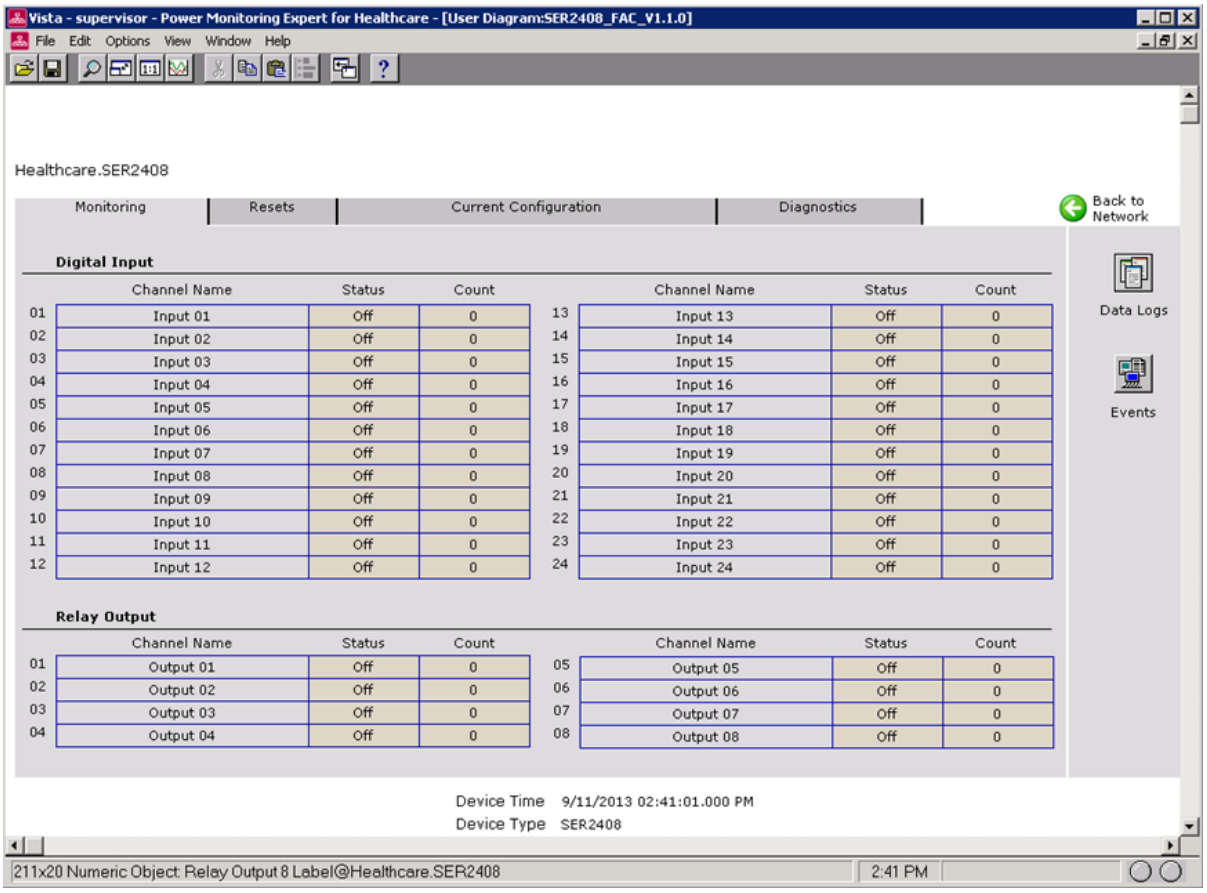


Verify Device Communications in Vista

After you add the device to Management Console, you can open Vista to view the device's counter, input\output status, and data logs.

The following examples show the device diagram and recorded data details.





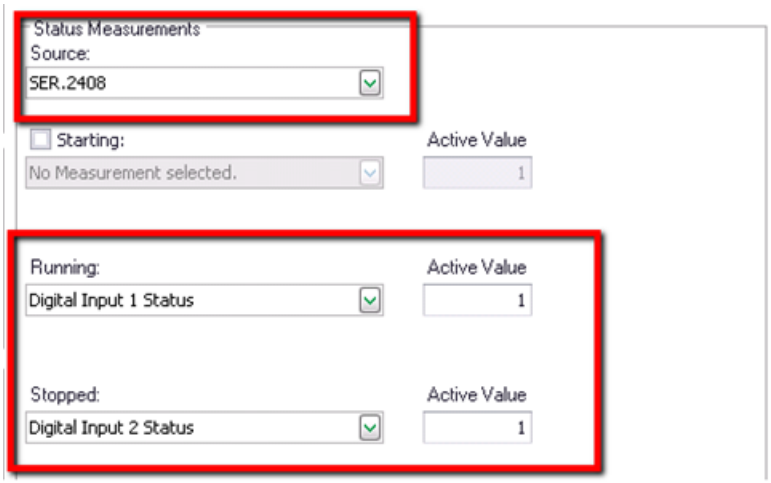
Assign Measurements for Generators or ATS Equipment

After device data is logged into the database, you can assign device measurements using the Generator Performance Configuration Tool with EPSS Test Module.

Add the device and select the measurements for the generator or ATS, as explained in these sections:

- "Define Generators for EPSS" on page 117
- "Define Generators" on page 104
- "Define Transfer Switches for EPSS" on page 126

The required status measurements for the SER-2408/SER-3200 are “Digital Input Status X” where X = input of the SER-2408/SER-3200 . On the **Generators** tab, the selected source and measurement are similar to the following example.



Genset Monitoring

Genset Monitoring lets you manage and report on your equipment and generator systems. It includes the following configuration tools and reports:

- "Generator Performance Configuration Tool" on page 103 *
- "Generator Activity Report" on page 150
- "Generator Capacity Report" on page 154
- "Generator Battery Health Export" on page 173
- "Generator Battery Health Report" on page 170
- "Generator Load Summary Report" on page 159
- "Equipment Capacity Report" on page 143

---

* **NOTE:** To configure the Genset Monitoring module without EPSS, see "Generator Performance Configuration Tool" on page 103. If your system includes the EPSS application module, see "Generator Performance Configuration Tool with EPSS Test Module" on page 114.

Generator Performance Configuration Tool

Use the Generator Performance Configuration Tool to configure the generators and other equipment for reporting the data and status of the power system.

If your installation includes the Emergency Power Supply System (EPSS), see "Generator Performance Configuration Tool with EPSS Test Module" on page 114.

Prerequisites

- Before opening the configuration tool, make sure the sources - which represent metering devices - are added in Management Console and they are communicating.

Start the Generator Performance Configuration Tool

To start the Generator Performance Configuration Tool, open the Power Monitoring Expert folder on the desktop and double-click the Generator Performance Configuration Tool shortcut.

The Generator Performance Configuration Tool window contains these tabs: **Groups**, **Generators**, **Transfer Switches**, **Equipment**, and **Run History**. On these tabs, you create the entities and groups for equipment in the system. You also view data for prior test runs. The tabs contain a grid area and an editor area, as shown next. The grid area is initially empty but it will be populated with entries that you create through the editor area. Use the editor area to define the settings for new items, or to update the settings for an item that you select in the grid area.

When you first use the configuration tool, you need to define generators and equipment on the applicable tabs. After you do this, define the device groups on the Groups tab.

NOTE: In order to use the reports, you must define the device groups on the **Groups** tab.

Use the following tabs to configure the tool:

- **Groups** tab - "Define Groups" on page 108
- **Generators** tab - "Define Generators" on page 104
- **Transfer Switches** tab - Define, describe and configure the transfer switches.
- **Equipment** tab - "Define Equipment" on page 106
- **Run History** tab -"View Run History" on page 111

Use the following common controls for the tabs:

- **Help** - Click this to view online help for the tab.
- **New** - Creates a new entry in the grid.
- **Delete** - Deletes the selected entry from the grid.
- **Revert** - Returns a modified record to its original values, if **OK** or **Apply** have not been clicked.
- **OK** - Saves all changes and exits the configuration tool.

- **Cancel** - Exits the tool without saving changes.
- **Apply** - Saves all changes and leaves the tool open.

The **Modified** column in the grid area shows the status of the row data:

+ (plus) - a new entry.

***** (asterisk) - a modified entry.

! (exclamation mark) - entry needs more information before it can be saved.

Define Generators

Use the **Generators** tab to create or update entities representing the generators in the power supply system. Complete this tab if you need to produce reports for generators.

You can perform the following actions on this tab:

- Click **New** to define the properties of the generators in the system. See "Edit Generator Properties" on page 104.
- Click **Clone** to define a new generator that is similar to an existing generator. The system copies many details of the existing device into the new entry. You can then enter the unique details of the new device. If you need to define several devices that are similar, this feature can help you define them quickly. See "Clone Generator Properties" on page 105.
- Click **Delete** to remove records from the system.
- Click **Revert** (before you click **Apply** or **OK**) if you make changes to a record and want to revert to your initial settings.

Edit Generator Properties

The **Edit Generator** area on the tab is used to create a generator entry and to define specific values for it.

1. On the **Generator** tab, click **New**.
2. Complete the following fields to define a generator.
   - **Name** - Enter a unique name to identify the generator.
   - **Description** (Optional) - You can add specific information about the generator, such as make and model.
   - **Electrical Data**
     - **Source** - Select a source name. The source represents the device that records the electrical data from the generator.
     - **Prime Nameplate Rating** - Enter the maximum power load for the generator. Refer to the generator's nameplate for this value.
     - **Unit** - Select the unit of measurement for the power load.
   - **Battery Waveform** (Optional) - Use this area to if you want to configure and generate the Battery Health Report. To enable the report, check the box and complete these fields:

- **Source** - Select a source name that is performing the waveform capture. This option is available for ION 7550 and ION 7650 meters.
- **Measurement** - Select the measurement recording the battery waveform. For a typical configuration, this is the V4 waveform.

  Specific frameworks for the battery voltage waveform must also be configured. See "Generator Battery Health" on page 162 for additional instructions. See Generator Battery Health *Power Monitoring Expert 8.1 Healthcare Edition - Commissioning Guide* for instructions.

- **Status Measurements** - These fields are not required.

3. Click **Apply** to save the changes and remain on the tab.
4. Repeat these steps to define other generators.
5. If you are defining several similar generators, use the **Clone** button. See "Clone Generator Properties" on page 105.

Clone Generator Properties

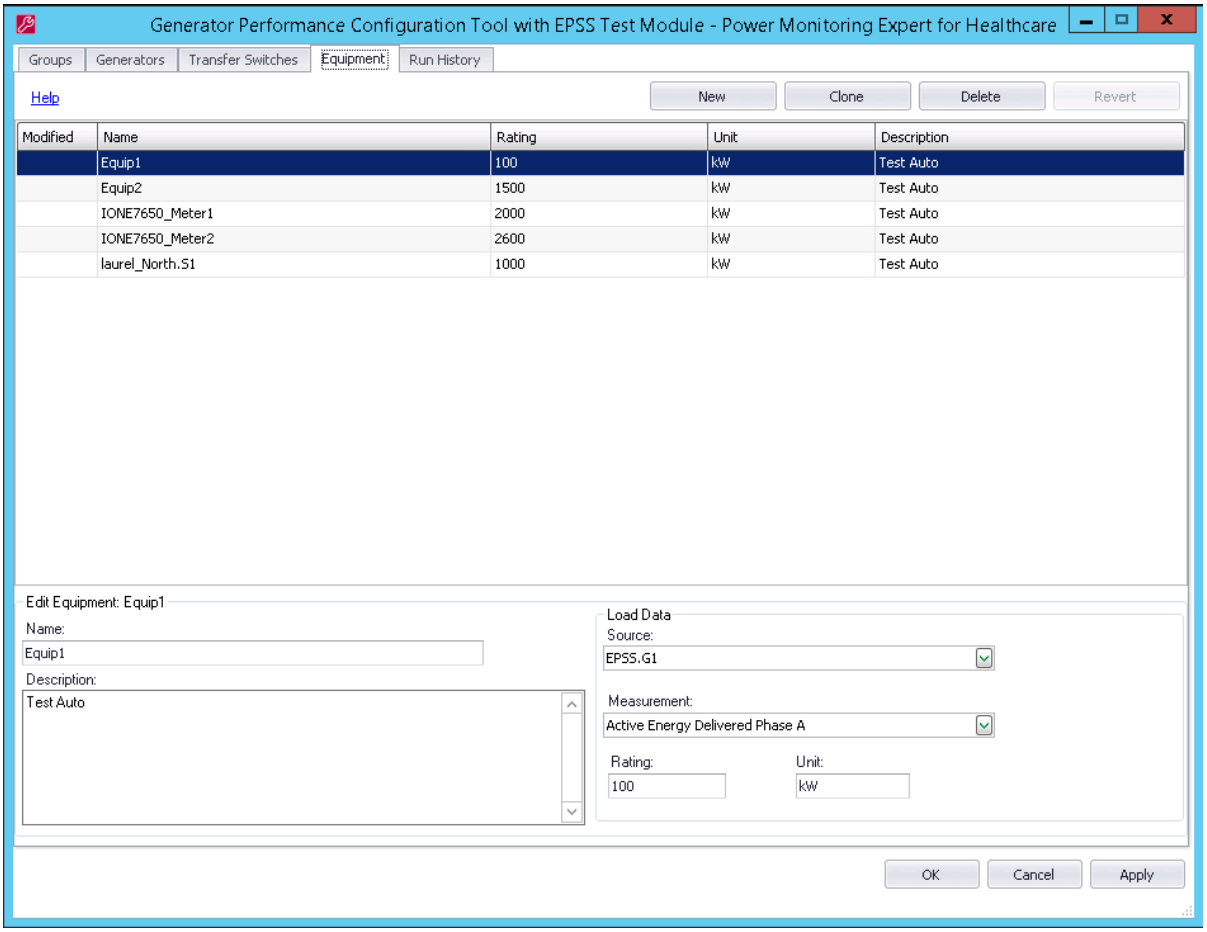
You can use the clone feature to copy the properties of an existing generator entity and use those properties as the baseline for multiple generators. The clone feature can help you define several similar generators quickly.

1. On the **Generators** tab, select the generator you want to use as the baseline for another generator.
2. Click **Clone** to create a new generator based on a selected entity. Many fields are copied from the selected generator. The fields which are not copied have an information icon to indicate where you need to enter data, as follows:
   - **Name** - Enter a unique name to identify the generator.
   - **Electrical Data** - **Source** - Select a source name from the dropdown list. The source represents the device that records the electrical data from the generator.
   - **Status Measurements** - **Source** - Select a source name. The source represents the metering device that records the status of a generator.

   For information about other generator properties, see the previous section.
3. Click **Apply** to save the new generator entity.

Define Equipment

Use the **Equipment** tab to create a logical device with a source measurement and rating. You can add these logical devices to device groups for reporting. Complete this tab if you need to produce reports for equipment capacity.



You can perform the following actions on this tab:

- Click **New** to enter new record for a device. See "Edit Equipment Sources" on page 107 for instructions to define the devices.
- Click **Clone** to copy an existing record and make minor changes. The system copies many details of the existing device into the new entry. You can then enter the unique details of the new device. If you need to define several devices that are similar, this feature can help you define them quickly.
- Click **Delete** to remove records from the system.
- Click **Revert** (before you click **Apply** or **OK**) if you make changes to a record and want to revert to your initial settings.

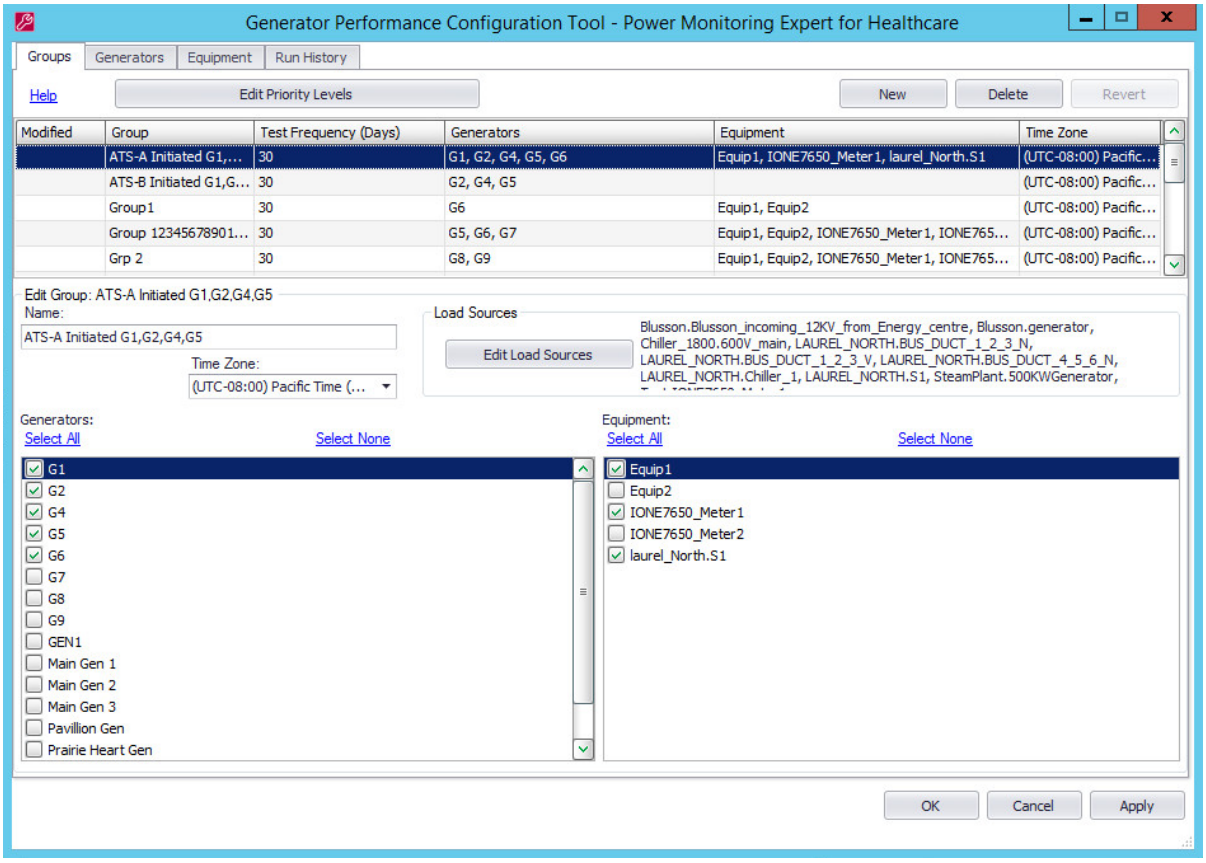
Edit Equipment Sources

The **Equipment** tab displays the equipment load sources and measurements defined in the system.

1. Click **New** to create a record.
2. Complete these fields:
   - **Name** - Enter a unique name to identify the record.
   - **Description** - Enter additional information about the device. Optional.
   - **Source** - Select the load source for the device.
   - **Measurement** - Select the measurement for the device.
   - **Rating** - Enter the maximum rated load for the device.
   - **Unit** - Enter the unit of the measurement.
3. Click **Apply** to save the record and remain on the tab.
4. Repeat these steps to enter additional devices.

Define Groups

A performance group is a combination of generators and other equipment for reporting. The **Groups** tab must be completed before you can configure and produce any reports.



You can perform the following actions on this tab:

- Click **New** to create a new group for generating reports. A group can contain any device that has been configured on the other tabs. See "Edit Groups" on page 109 for instructions to define the groups.
- Click **Delete** to remove records from the system.
- Click **Revert** (before you click **Apply** or **OK**) if you make changes to a record and want to revert to your initial settings.
- Click **Edit Priority Levels** to create or modify response times for devices and equipment. See "Edit Group Priority Levels" on page 133 for instructions.
- Click the **Edit Load Sources** to associate a group with the electrical loads that the group of generators must carry in a power outage. See "Edit Group Load Sources" on page 110 for instructions.

Edit Groups

The **Groups** tab displays the device groups defined in the system. The generators and other equipment must be defined on their respective tabs before you can add them to a group.

1. Click **New** to create a group.
2. Complete the following to define the values for a group:
   - **Name** - Enter a unique name to identify the group.
   - **Generators** - Select the generators to include in the group.
   - **Equipment** - Select the equipment to include in the group.

   The **Select All** and **Select None** options let you work easily with large numbers of sources by selecting all check boxes or clearing all check boxes at the same time.
3. Click **Apply** to save the group and remain on the tab.
4. Repeat these steps to create other groups.

Edit Group Priority Levels

The following reports use priority levels:

- Generator Capacity Report – Priority level values are required to accurately display the colors indicated in the priority levels.
- EPSS Test Report – Priority level values are required for the ATSs in the system to PASS or FAIL an ATS based on the required transfer time of the priority level.

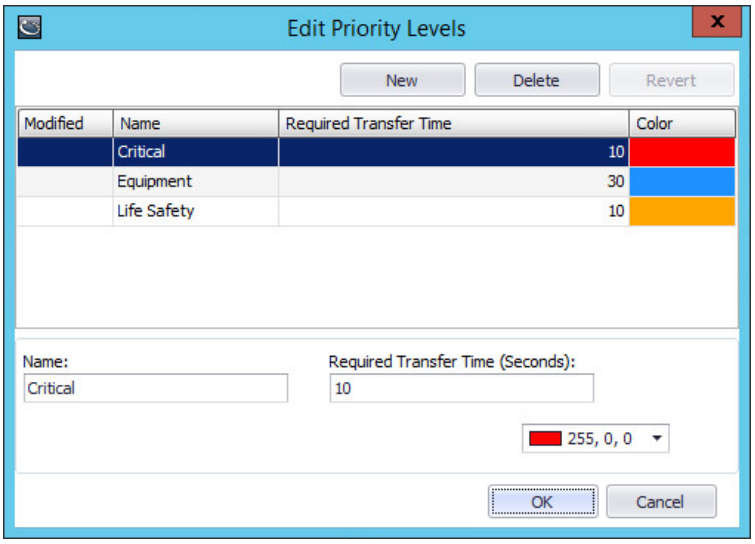
Default priority levels are setup as default.

The **Edit Priority Levels** editor is used to select at least one priority level that you want to apply to the equipment groups. The default priority level names and transfer times are:

- Critical - 10 sec
- Equipment - 30 sec
- Life Safety - 10 sec

You can change any of these names and transfer times and add new priority levels as necessary.

1. Click **Edit Priority Levels**. The **Priority Levels** screen appears.



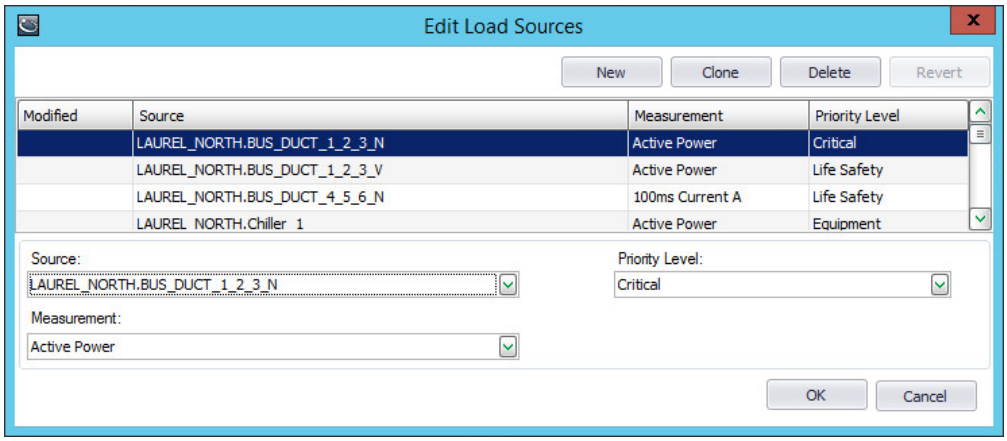
2. Click **New** to add a priority level.
3. Complete the following to define priority levels:
   - **Name** - Enter a unique name to identify the priority level.
   - **Required Transfer Time (Seconds)** - Enter the transfer time in seconds. This time indicates the maximum acceptable time it takes the equipment to move from the **Test** state to the **Emergency** state.
   - **Color** - Click the color box to select a color for the priority level. This color appears on the Generator Capacity Report summary page, where the generator loads are compared. See "Generator Capacity Report Example" on page 157 for an illustration.
4. Click **OK** to save the priority level and return to the **Groups** tab.

Edit Group Load Sources

On the **Edit Load Sources** screen, you can associate an equipment group with the various electrical loads that the equipment must carry during a power outage.

Define the priority levels for the system before you configure load sources. See "Edit Group Priority Levels" on page 133 for instructions.

1. Click **Edit Load Sources**. The **Select Load Sources** screen appears.



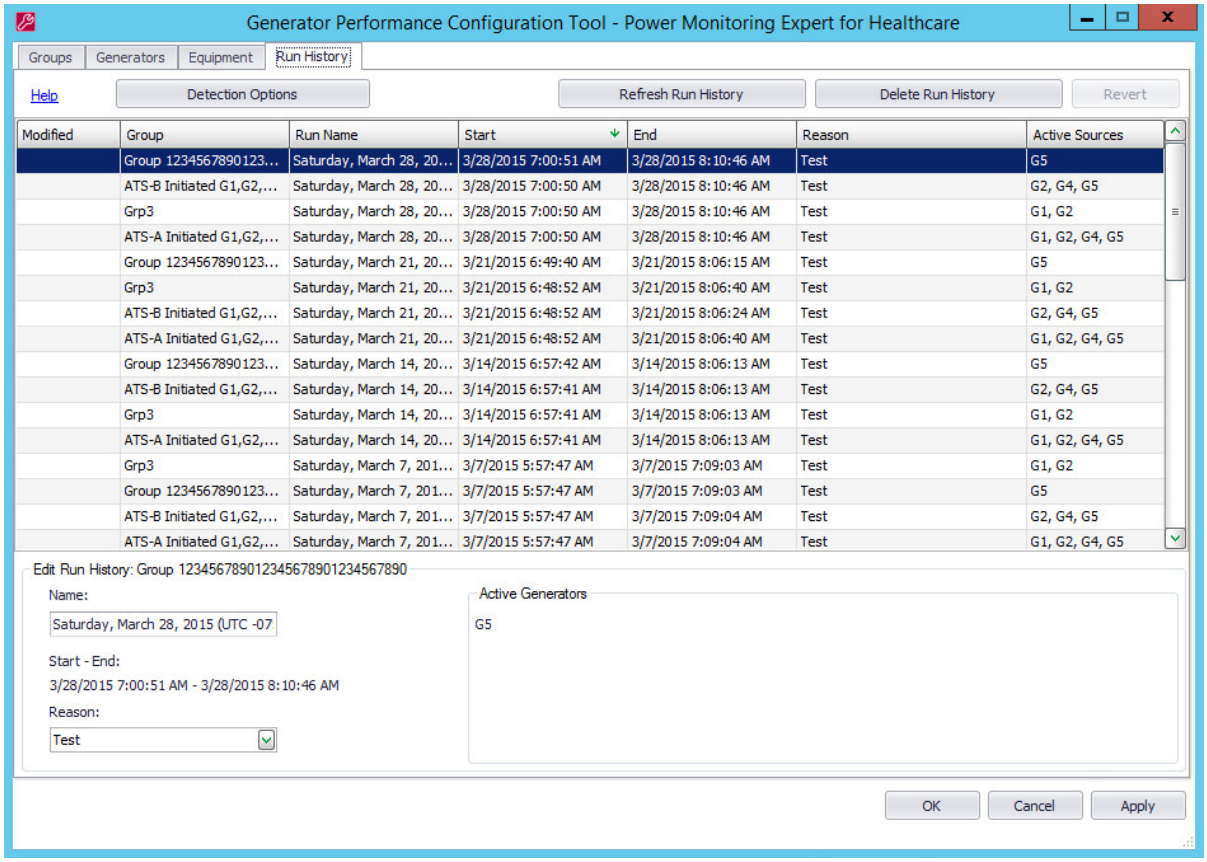
2. Click **New** to add a load source.
3. Complete these fields:
   - **Source** - Select the measurement source.
   - **Measurement** - Select the measurement to monitor.
   - **Priority Level** - Select the priority level to assign to the load source.
4. Click **OK** to save the new load source and return to the **Groups** tab.

   You can use the **Clone** button to associate an equipment group with several sources where the load is logged against the same measurement. The cloned group contains the same measurement and priority level as the original.

View Run History

Use the **Run History** tab to view or modify run activities that represent the Test, Load Shedding, and Power Outage activities that have occurred in the system. The history indicates when components of the power system have become active, such as when a generator was running. The runs stored in history can be used as input for reports and dashboards.

Because the system stores the history of these activities, you can generate useful reports about the equipment operation. The reports can identify when the system was active, why the system was active, and what devices were active.



The first time the history records are generated on the **Run History** tab, the system may take a long time depending on the amount of history present in the system. When changes occur in the equipment configuration, the run history must be generated again.

For example if you remove a generator from a group, the run history for that group needs to be rebuilt because that generator may have been the reason for the detection of a run. Now that the generator is not part of the group, the system needs to build the run history again to have accurate data.

You can perform the following actions on this tab:

- Click **Detection Options** to modify the criteria of a run event that will cause it to appear on this tab. See "Modify Run Detection Options" on page 112.
- Click **Refresh Run History** to update the tab with the latest run events that have occurred in the system.
- Click **Delete Run History** to remove all run event records from the tab.
- Modify the name and run reason for a run event. See "Modify Run Details" on page 113.

Modify Run Detection Options

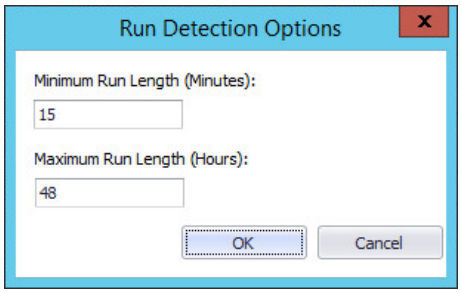
The run detection options can be defined to help guard against bad data in the system. To record actual run activities, you can set the parameters so the system only records runs that fall within the criteria.

The minimum run length value is present to prevent false positives, which may occur during commissioning when the states of the generators are changing quickly and seemingly at random. This may be due to signals being recorded that really do not reflect actual generator activity.

You can set the maximum run length to eliminate "hanging" runs. A hanging run occurs when the stop signal for a generator is not recorded properly. As a result, every week during the test it records a running signal but there is no way for the system to know when it stops. If the system does not see a stop signal, it sets the end of the run to be the start of the run plus the maximum run duration. Therefore you cannot determine how long the generator was actually running.

Complete the following steps to define the run criteria for the system to store runs in history.

1. Click **Detection Options**. The **Run Detection Options** screen appears.



2. Change the values in the minimum and maximum fields.
3. Click **OK** to save the changes and return to the **Run History** tab.

4. Click **Refresh** to update the tab with the run events that match the new detection criteria.

Modify Run Details

The system defines run data, such as name, start time, end time, reason, and active sources automatically. You can change the name of the run event and the reason for the run.

- The default run name is the start date of the run, such as `June 12 2015`. If a group has multiple runs on the same date, the subsequent runs have the same date with the run number appended, such as `June 12 2015 Run 2` and `June 12 2015 Run 3`.
- The system automatically detects the reason for the run. If the detected reason is incorrect, you can change the reason. For example, the reason appears as Test, but the run is actually Load Shedding.

Other details about the run event cannot be modified directly. If the sources for a run are not correct, you can exclude or include specific sources when generating a report based on this run.

1. Click the run record you want to modify. The run details appear below the grid.
2. In the **Name** field, change the suggested run name as necessary.
3. In the **Reason** list, select the correct reason for the run.
4. Click **OK** to save the changes for the run.

Generator Performance Configuration Tool with EPSS Test Module

The Generator Performance Configuration Tool with EPSS Test Module is an application that helps you configure the transfer switches, generators and other equipment for reporting the data and status of the power system, including EPSS components. The reports will not work until the required parameters in the tool are set up.

In the configuration tool, you can also generate the Vista diagrams for the configured devices. This feature of the tool produces the diagrams faster than building the diagrams manually. Generated diagrams may still need some adjustment—you can use Vista to finalize the diagrams

After your system is configured using the Generator Performance Configuration Tool, you can use the following generator-related reports:

- Generator Activity Report
- Generator Battery Health Report
- Generator Capacity Report (available for Power Monitoring Expert 8.1 Healthcare Edition only)
- Equipment Capacity Report (available for Power Monitoring Expert 8.1 Healthcare Edition only)
- EPSS Test Report (requires a license for the EPSS Module)

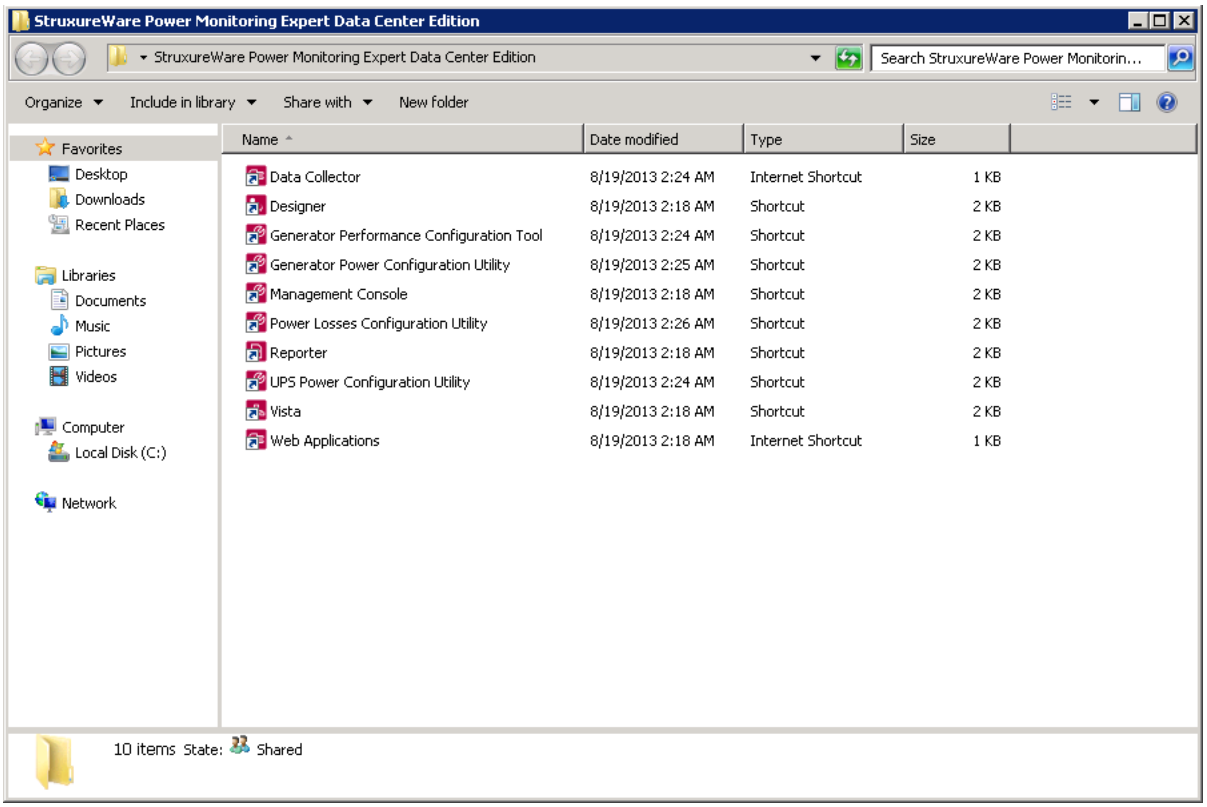
NOTE:If your installation does not include the EPSS, see "Generator Performance Configuration Tool" on page 103.

Prerequisites

- Before opening the configuration tool, make sure the sources - which represent metering devices - are added in Management Console and they are communicating.

Start the Generator Performance Configuration Utility with EPSS

To start the Generator Performance Configuration Tool with EPSS Test Module, open the StruxureWare Power Monitoring Expert folder on the desktop and double-click the Generator Performance Configuration Tool shortcut.



The Generator Performance Configuration Tool with EPSS Test Module window contains these tabs: **Groups**, **Generators**, **Transfer Switches**, **Equipment**, and **Run History**. On these tabs, you create the entities and groups for equipment in the system. You also create Vista diagrams and view data for prior test run results. Use the tabs to define new entities or update existing entities.

When you first use the configuration utility, define generators, transfer switches, and other equipment on the applicable tabs. After you do this, define the device groups on the **Groups** tab. The device groups are necessary for reporting and Vista diagrams.

Use the following tabs to configure the tool:

- **Groups** tab - "Define Groups for EPSS" on page 131
- **Generators** tab - "Define Generators for EPSS" on page 117
- **Transfer Switches** tab - "Define Transfer Switches for EPSS" on page 126
- **Equipment** tab - "Define Equipment for EPSS" on page 130
- **Run History** tab - "View Run History for EPSS" on page 135

Use the following common controls for the tabs:

- **Help** - Click this to view online help for the tab.
- **New** - Creates a new entry in the grid.
- **Delete** - Deletes the selected entry from the grid.

- **Revert** - Returns a modified record to its original values, if **OK** or **Apply** have not been clicked.
- **OK** - Saves all changes and exits the configuration tool.
- **Cancel** - Exits the tool without saving changes.
- **Apply** - Saves all changes and leaves the tool open.

The **Modified** column in the grid area shows the status of the row data:

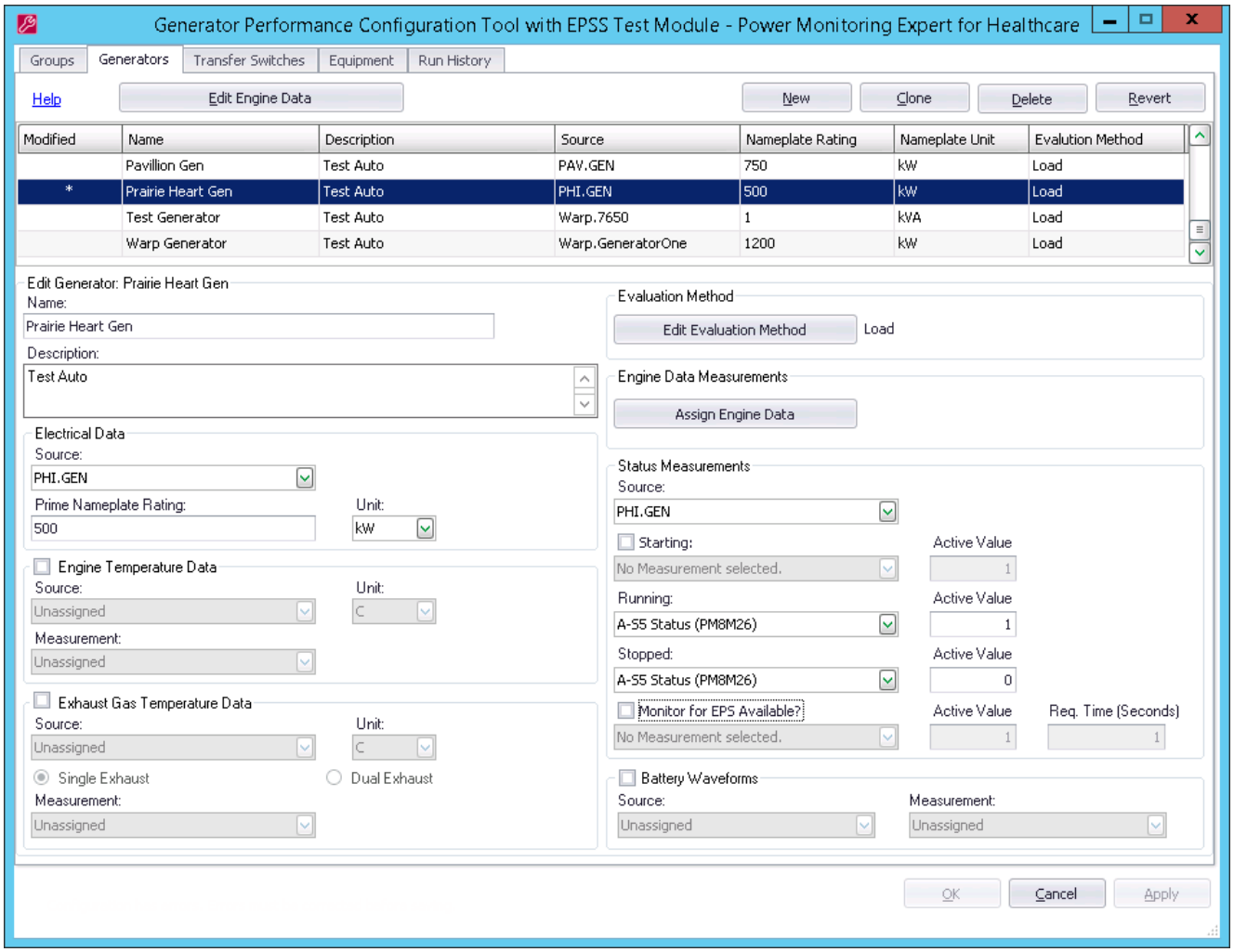
+ (plus) - a new entry.

***** (asterisk) - a modified entry.

! (exclamation mark) - entry needs more information before it can be saved.

Define Generators for EPSS

Use the **Generators** tab to create or update entities representing the generators in the emergency power supply system. Configure this tab to successfully generate reports for generator data. After you configure, you can generate the Generator Test, Generator Load Summary, Generator Capacity, and the Generator Battery Health reports from this information.



You can perform the following actions on this tab:

- Click **New** to define the properties of the generators in the system. See "Edit Generator Properties" on page 118.
- Click **Clone** to define a new generator that is similar to an existing generator. The system copies many details of the existing device into the new entry. You can then enter the unique details of the new device. If you need to define several devices that are similar, this feature can help you define them quickly. See "Clone Generator Properties" on page 121.
- Click **Delete** to remove records from the system.
- Click **Revert** (before you click **Apply** or **OK**) if you make changes to a record and want to revert to your initial settings.

Edit Generator Properties

The **Edit Generator** area on the tab is used to create a generator entry and to define specific values for it.

1. On the **Generator** tab, click **New**.
2. Complete the following fields to define a generator.
   - **Name** - Enter a unique name to identify the generator.
   - **Description** - optional. You can add specific information about the generator, such as make and model.

Electrical Data

- **Source** - Select a source name from the dropdown list. The source represents the device that records the electrical data from the generator.
- **Prime Nameplate Rating** - Enter the maximum power load for the generator. Refer to the generator's nameplate for this value.
- **Unit** - Select the unit of measurement for the power load.

Engine Temperature Data

- (Optional) To capture engine temperature data, check the box and complete these fields:
  - **Source** - Select a source name. The source represents the device that records the engine temperature of the generator.
  - **Measurement** - Select the engine temperature measurement.
  - **Unit** - Select either F (for Fahrenheit) or C (for Celsius) for the temperature unit of measurement.

    The Evaluation Method does not convert units from one type to another. Set the Unit type for Engine Temperature Data on the **Generators** tab to the same Unit type in the Evaluation Method.
  - Click **Edit Evaluation Method** to open the **Evaluation Method** editor. The **Evaluation Method** editor is used to select the evaluation method and the respective pass/fail criteria that you want to use when evaluating a generator. See "Edit Evaluation Method" on page 122.
  - Click **Assign Engine Data** to open the **Engine Data Measurements** editor. The **Engine Data Measurements** editor is used to define engine data values and other custom data values for generators. Defining engine data measurements is optional. See "Edit Engine Data" on page 124.
  - Click **Assign Engine Data** to open the **Assign Engine Data Measurement** editor. The **Engine Data Measurement** editor is used to associate engine data values with specific generator measurements. For information about this activity, see "Assign Engine Data" on page 124.

Exhaust Gas Temperature Data

- (Optional) If exhaust gas data is not being captured, you do not need to select and complete these values. To capture exhaust data, check the box and complete these fields:
  - **Source** - Select a source name. The source represents the device that records the exhaust gas temperature of the generator.
  - **Single Exhaust** or **Dual Exhaust** - Select one of these options to indicate whether the exhaust gas temperature is measured for a single exhaust or a dual exhaust generator.
  - **Measurement** - Select the exhaust gas temperature measurement.
  - **Unit** - Select either F (for Fahrenheit) or C (for Celsius) for the temperature unit of measurement.
  - Click **Edit Evaluation Method** to open the **Evaluation Method** editor. The **Evaluation Method** editor is used to select the evaluation method and the respective pass/fail criteria that you want to use when evaluating a generator. See "Edit Evaluation Method" on page 122.
  - Click **Assign Engine Data** to open the **Engine Data Measurements** editor. The **Engine Data Measurements** editor is used to define engine data values and other custom data values for generators. Defining engine data measurements is optional. See "Edit Engine Data" on page 124.
  - Click **Assign Engine Data** to open the **Assign Engine Data Measurement** editor. The **Engine Data Measurement** editor is used to associate engine data values with specific generator measurements. For information about this activity, see "Assign Engine Data" on page 124.

Status Measurements

- Use this area to configure the states used to record the status of a generator. A generator can be in one of three states: **Starting**, **Running**, and **Stopped**. When a generator is in one of the states, the active value is stored in the measurement. The states appear in the **Events Summary** section of the EPSS Test Report.
  - **Source** - Select a source name. The source represents the ION device that records the status of a generator.
  - **Starting** - (Optional) This state indicates that the generator is starting. Select the check box, select the measurement that provides the starting state input, and enter the active value for the measurement. If this setting does not apply to your installation, do not select the check box.
  - **Running** - This state indicates that the generator is running. Select a measurement that provides the running state input, and enter the active value for the measurement.
  - **Stopped** - This state indicates that the generator has stopped. Select a measurement that provides the stopped state input, and enter the active value for the measurement.

Two stop signals could be sent from the generator controller – the initial stop signal, which is followed by 3-5 minute cooling period, and the final stop signal after the cooling period is complete. If the generator has two stop signals, be sure to use the measurement for the first stop signal before the generator goes into the cooling mode. Do not use the stop signal after the cooling period.

The active value for the measurements can be any value you choose.

For example, assume that the system has been configured with measurements of `GENStarting`, `GENRunning`, and `GENStopped`. You assign these measurements to the **Starting**, **Running**, and **Stopped** states respectively and enter `1` as the Active Value for each.

- When the generator starts, the active value for `GENStarting` becomes `1`, and **Starting** is the state for the generator.
- When the generator is running, the active value for `GENRunning` becomes `1`, and **Running** is the state for the generator.
- When the generator stops, the active value for `GENStopped` becomes `1`, and **Stopped** is the state for the generator.

When an EPSS Test Report is generated, the states for the generator, and the time when they occurred, are included in the **Events Summary** section of the report. See Power Monitoring Expert Web help for information about this report.

Additional notes about the Status Measurements:

If there is only one measurement to indicate that the generator is either running or stopped, then you select that measurement for both the **Running** and **Stopped** states, and assign a different active value for each. For example, if the measurement used to indicate whether a generator is running or not is `GenRunningStopped`, define the states like this:

For the **Running** state:

1. Select `GenRunningStopped` as the measurement.
2. Set the Active Value to `1`.

   When the generator is running, the active value for `GenRunningStopped` is `1`, and **Running** is the state for the generator.

For the **Stopped** state:

1. Select `GenRunningStopped` as the status measurement.
2. Set the Active Value to `0`.

   When the generator is stopped, the active value for `GenRunningStopped` is `0`, and **Stopped** is the state for the generator.

   - **Monitor for EPS Available** - (Optional) This state indicates that the emergency backup source is available.

Select the check box, select the measurement that provides the available state input, and then enter the active value for the measurement. If this setting does not apply to your installation, do not select the check box.

Recommended state is 0 or 1.

- **Required Time (Seconds)** - Enter a value in seconds. The Required Time value specifies the amount of time required to be considered a pass.

  If you click **Apply** at this point, you can run the EPSS Test Report for date ranges, but not for a run history.

Battery Waveforms

- (Optional) Use this area to if you want to configure and generate the Generator Battery Health Report. To enable the report, check the box and complete these fields:
  - **Source** - Select a source name that is performing the waveform capture. This option is only available for ION7550 and ION7650 meters.
  - **Measurement** - Select the measurement recording the battery waveform. For a typical configuration, this is the V4 waveform.

3. Click **Apply** to save the changes and remain on the tab.
4. Repeat these steps to define other generators.
5. If you are defining several similar generators, use the **Clone** button. See "Clone Generator Properties" on page 121.

Clone Generator Properties

You can use the clone feature to copy the properties of an existing generator entity and use those properties as the baseline for multiple generators. The clone feature can help you define several similar generators quickly.

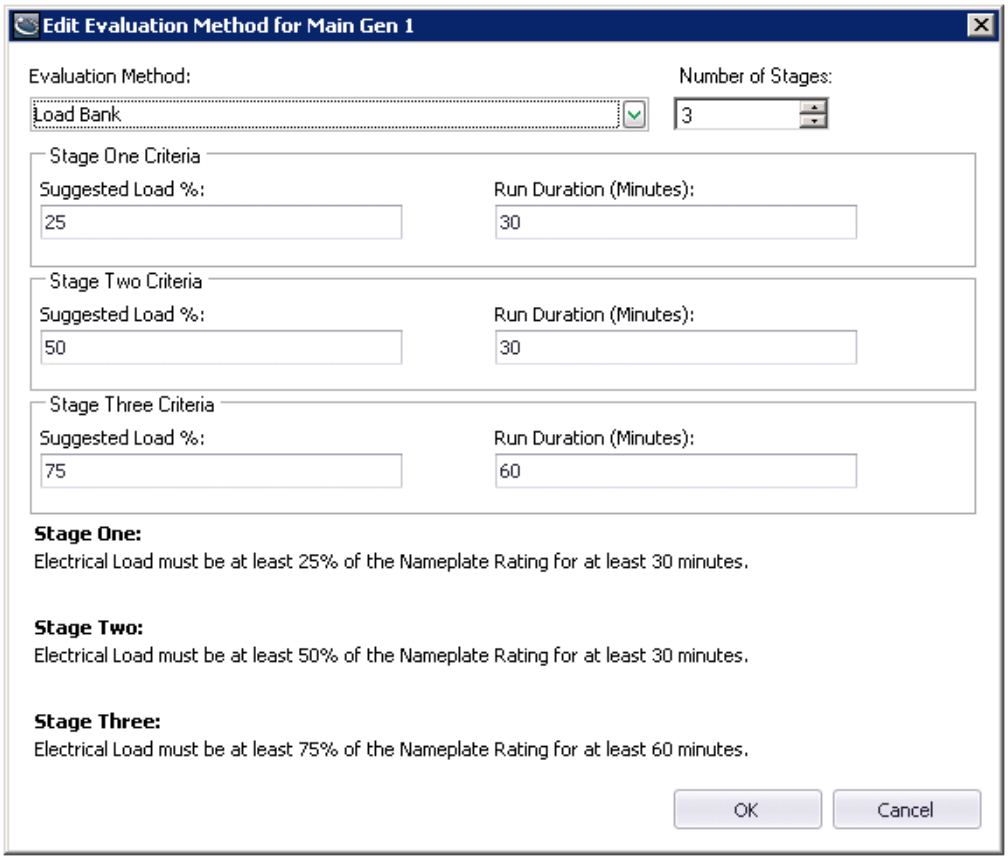
1. On the **Generators** tab, select the generator you want to use as the baseline for another generator.
2. Click **Clone** to create a new generator based on a selected entity. Many fields are copied from the selected generator. The fields which are not copied have an information icon to indicate where you need to enter data, as follows:
   - **Name** - Enter a unique name to identify the generator.
   - **Electrical Data** - **Source** - Select a source name from the dropdown list. The source represents the device that records the electrical data from the generator.
   - **Status Measurements** - **Source** - Select a source name. The source represents the metering device that records the status of a generator.

   For information about other generator properties, see "Edit Generator Properties" on page 118.

Edit Evaluation Method

The **Evaluation Method** editor is used to select the evaluation method and the respective pass/fail criteria that you want to use when evaluating a generator.

1. Click **Edit Evaluation Method** to open the **Edit Evaluation Method** editor.



2. Complete the following to set up evaluation criteria for a generator:
   - **Evaluation Method** - Select an evaluation method. For `Load Bank`, you can select from one to three stages to include in the evaluation. If you select `Load Bank`, the **Generator Load Summary** section of the EPSS Test Report shows the details of the selected stages of the load bank test. The stages are represented on the graph. The table below describes the evaluation methods.
   - **Number of Stages** - Select the number of stages for the evaluation if you selected Load Bank.
   - **Suggested Load %** or **Minimum Exhaust Gas Temperature** - Depending on the evaluation method that you selected, enter a numerical value for the percentage or for the temperature.
   - **Run Duration (Minutes)** - Enter the minimum number of minutes that the test needs to run for evaluation purposes.
3. Click **OK** to save the evaluation criteria and return to the **Generators** tab.

The evaluation methods and their respective pass/fail criteria are listed in the following table. **Load** is the default evaluation method.

Evaluation Method	Pass/Fail Criteria
Load	The generator must run at an electrical load % that is equal to or greater than the manufacturer's suggested electrical load % for the run duration.
Engine Temperature	The generator must run at an engine temperature that is less than or equal to the engine temperature for the duration.
Exhaust Gas Temperature	The generator must run at an exhaust gas temperature that is equal to or greater than the manufacturer's suggested exhaust gas temperature for the run duration.
Load Bank	The generator must pass the stages selected for the electrical load bank test. If more than one stage is selected, the generator must pass each stage consecutively.
Load OR Engine Temperature	The generator must pass either the electrical load or the engine temperature test.
Load OR Exhaust Gas Temperature	The generator must pass either the electrical load or the exhaust gas test.
Load AND Exhaust Gas Temperature	The generator must pass both the electrical load and the exhaust gas test.
Load AND Engine Temperature	The generator must pass both the electrical load and the engine temperature test.
Load OR Engine Temperature OR Exhaust Gas Temperature	The generator must pass either the electrical load or the exhaust gas test or the exhaust gas test.
Load OR Engine Temperature AND Exhaust Gas Temperature	The generator must pass either the electrical load or the engine temperature test and the exhaust gas temperature test.
Load AND Engine Temperature OR Exhaust Gas Temperature	The generator must pass both the electrical load and the engine temperature test OR the exhaust gas temperature test.
Load AND Engine Temperature AND Exhaust Gas Temperature	The generator must pass both the electrical load and the engine temperature test and the exhaust gas temperature test.

You can edit the test criteria for a test method by selecting the test name and then updating its criteria. The following table shows the default test criteria for each evaluation method. Confirm that these values meet the regulations mandated by local jurisdictions, or meet the minimum values recommended by the manufacturer, and update them if necessary.

Test Name	Stage	Minimum	Run Duration
Load	1	30 %	30 minutes
Engine Temperature	1	140 F	30 minutes
Exhaust Gas Temperature	1	900 F	30 minutes
Load Bank	1	25 %	30 minutes
Load Bank	2	50 %	30 minutes
Load Bank	3	75 %	60 minutes

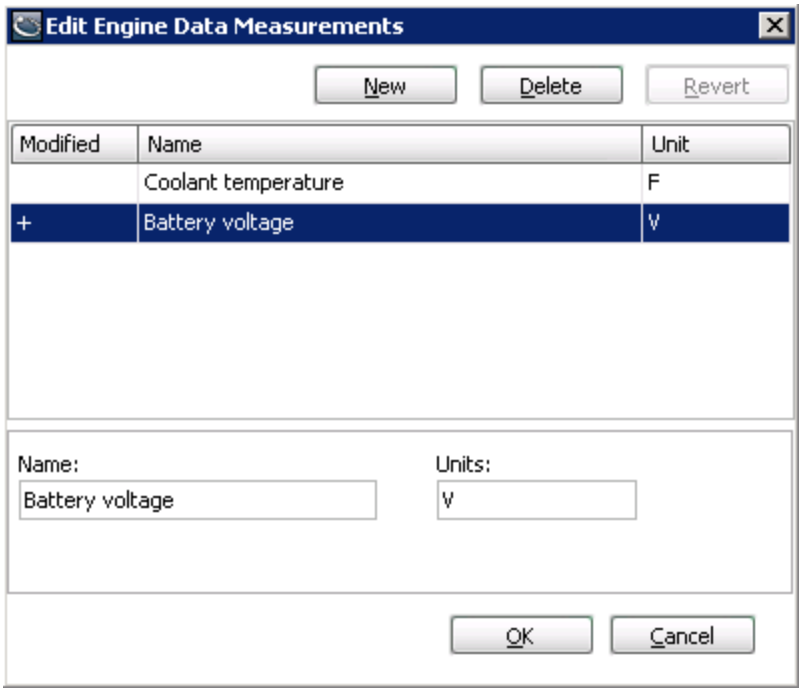
Edit Engine Data

The **Engine Data Measurements** editor is used to define engine data values and other custom data values for generators. The items being measured, typically analog data, can differ from generator to generator. Battery voltage and coolant temperature are two common measurements.

If you want to use the Smart Device Data Collector to log generator data, add the engine data values you need. These values can also be reported on the Trend Report, Tabular Report, EPSS Test Report, and dashboard gadgets.

Follow these steps to add engine data values and other custom data values.

1. Click **Edit Engine Data** to open the **Edit Engine Data Measurements** editor.



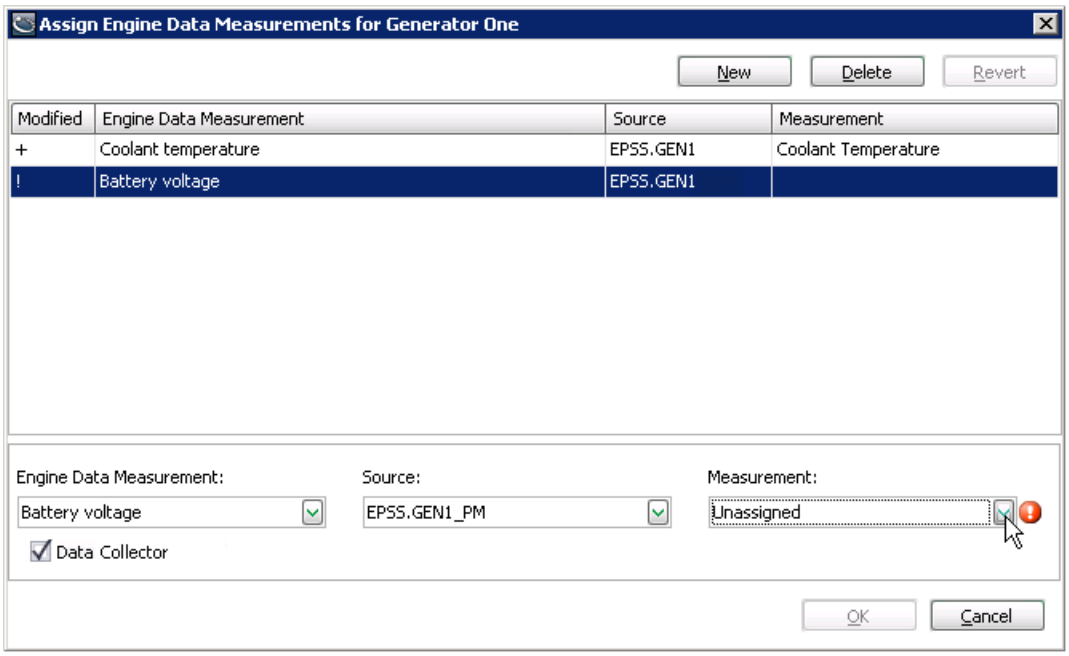
2. Click **New** to enable the input fields.
3. Complete the following to define new data values:
   - **Name** - Enter a name for the data value.
   - **Units** - Enter a unit of measure for the data value.
4. Click **OK** to save the new data value and return to the **Generators** tab.

Next, assign these data values to generator measurements. See "Assign Engine Data" on page 124 for instructions.

Assign Engine Data

The **Engine Data Measurement** editor is used to associate engine data values with specific generator measurements. See "Edit Engine Data" on page 124 for instructions to define custom engine data values.

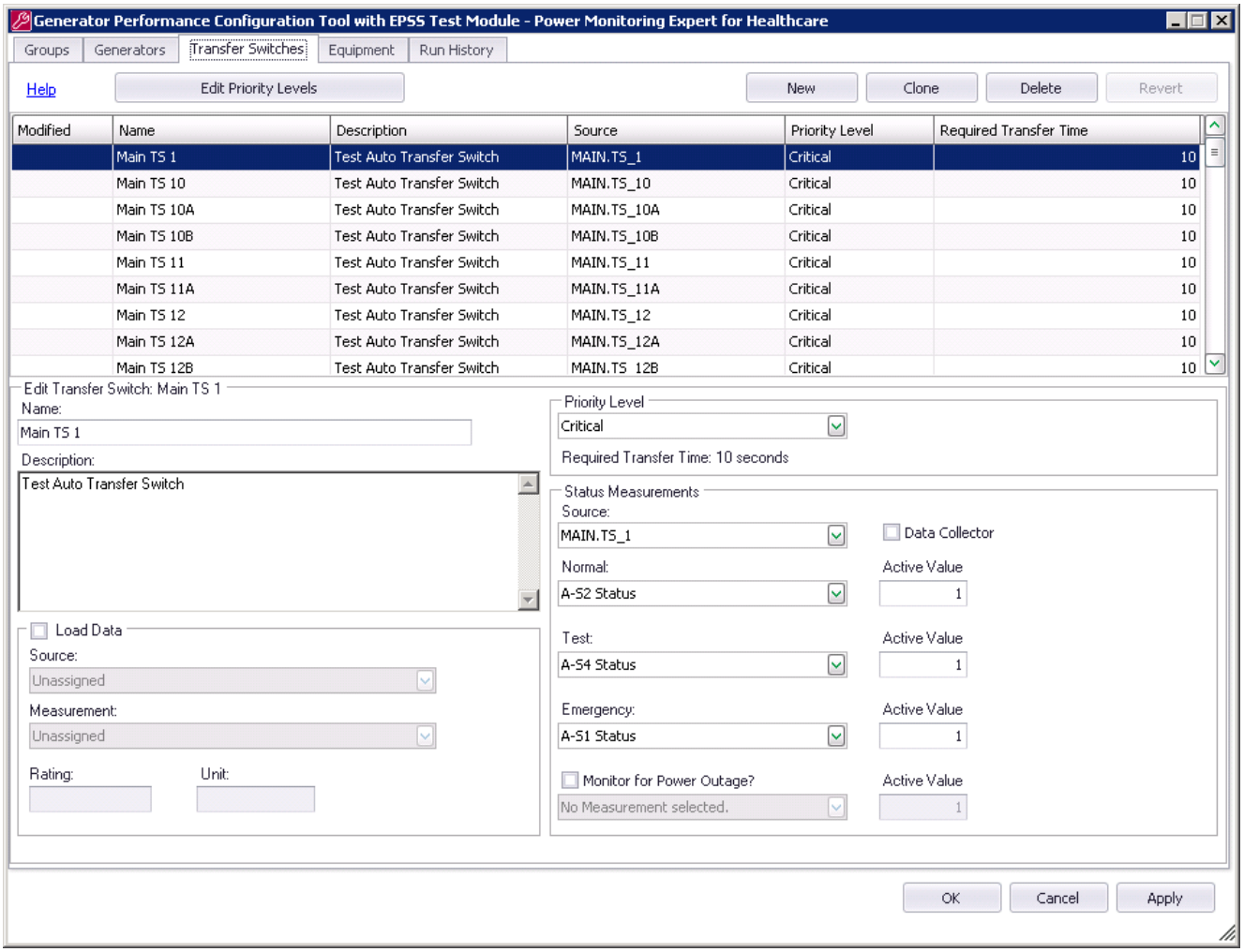
1. Click **Assign Engine Data** to open the **Assign Engine Data Measurement** editor.



2. Click **New**.
3. Complete these fields to associate a data value with a specific measurement:
   - **Engine Data Measurement** - Select the data value. The dropdown list contains all of the data values that were configured on the Edit Engine Data Measurements screen.
   - **Source** - Select the device name that records the generator data.
   - **Measurement** - Select the measurement for the data value.
   - **Data Collector** - Check this option to enable users to enter measurement data through the Smart Device Data Collector web tool. See "Smart Device Data Collector" on page 1. This data can also be included in the EPSS Test Report.
4. Click **OK** to save your changes and return to the **Generators** tab.

Define Transfer Switches for EPSS

Use the **Transfer Switches** tab to configure the automatic transfer switch entities in the system. Complete this tab when you are configuring the EPSS Test Report.



You can perform the following actions on this tab:

- Click **New** to create a transfer switch entry and to define specific values for it. See "Edit Transfer Switch Properties" on page 127 for instructions.
- Click **Clone** to define a new transfer switch that is similar to an existing entry. The system copies many details of the existing device into the new entry. You can then enter the unique details of the new device. If you need to define several devices that are similar, this feature can help you define them quickly. For more information, see "Clone Transfer Switches" on page 128.
- Click **Delete** to remove records from the system.
- Click **Revert** (before you click **Apply** or **OK**) if you make changes to a record and want to revert to your initial settings.

- Click **Edit Priority Levels** to open the **Priority Levels** editor. The **Edit Priority Levels** editor is used to select at least one priority level that you want to apply to your transfer switches. See "Edit Priority Levels" on page 129 for instructions.

Edit Transfer Switch Properties

The **Edit Transfer Switch** area on the tab is used to create a transfer switch entry and to define specific values for it.

1. Click **New** to create a transfer switch entity.
2. Complete the following to define a transfer switch.
   - **Name** - Enter a unique name to identify the transfer switch.
   - **Description** - optional. Enter other information that you want to use to identify the transfer switch.
   - **Load Data** - Check this box if you want to generate the Equipment Capacity Management Report for the ATS.
     - **Source** - Select a meter source that is recording electrical data from the ATS.
     - **Measurement** - Select the electrical measurement item you want to track when the report is generated, such as Current Phase Average.
     - **Rating** - Enter the rating value for the measurement, such as 400.
     - **Unit** - Enter the unit of measurement, such as A.
   - **Priority Level** - Select a priority level from the dropdown list. You need to assign a priority level to each transfer switch. After you assign a priority level, the required transfer time for it appears under the dropdown list.
   - **Status Measurements** - Configure the states used to record the status of the ATS. When a transfer switch is in one of the states, the active value is stored in the measurement. The states appear in the **Events Summary** section of the EPSS Test Report.
     - **Data Collector** - Check this option to enable users to enter measurement data through the Smart Device Data Collector web tool. See "Smart Device Data Collector" on page 1. This data can also be included in the EPSS Test Report.
     - **Source** - Select a source name. The source represents the device that records the status of a transfer switch.
     - **Normal** - The ATS is in the Normal position and power is supplied to the load from the utility. Select the measurement that provides the input indicating that the ATS is in the **Normal** state, and then enter the active value for the measurement.
     - **Test** - The ATS is in the Test mode. Select the measurement that provides the input indicating that the ATS is in the **Test** state, and then enter the active value for the measurement.

- **Emergency** - The ATS is in the Emergency position and power is supplied to the load from the generator. Select the measurement that provides the input indicating that the ATS is in the **Emergency** state, and then enter the active value for the measurement.
- **Monitor for Power Outage** - If you are monitoring utility power, select this option. Select the measurement that indicates a power outage occurred and enter the **Active Value** for the measurement.

The active value for the measurements can be any value you choose.

For example, assume that the system has measurements called `EPSS_Norm`, `EPSS_Test`, `EPSS_Emerg`, and `EPSS_Util`. You assign these measurements to the **Normal**, **Test**, **Emergency**, and **Power Outage** states and enter `1` as the active value for each.

When the ATS is in the Normal position, the active value for `EPSS_Norm` is `1`, and **Normal** is the state for the ATS. When the ATS is set to the Test mode, the active value for `EPSS_Test` is `1`, and **Test** is the state for the ATS. When the ATS is in the Emergency position, the active value for `EPSS_Emerg` is `1`, and **Emergency** is the state for the ATS. If a power outage occurs, the active value for `EPSS_Util` is `1`, and **Power Outage** is the state for the ATS.

In the EPSS Test Report, the states for the ATS and the time when they occurred are included in the Events Summary section.

In the Automatic Transfer Switch Summary section of the report, the states are used to derive the Transfer Time and In Emergency time:

- **Transfer Time** - The duration (in seconds) to switch to the **Emergency** state. For Test mode, the Transfer Time is the time to switch from the **Normal** state to the **Emergency** state once the test signal has been received. When an actual power outage occurs, the Transfer Time is the time to switch from the **Normal** state to the **Emergency** state once the power outage signal has been received.
- **In Emergency** - The duration (in hours, minutes, and seconds) the ATS receives power from the generators. This is the time between the **Emergency** state and the **Normal** state.

3. Click **Apply** to save the changes and remain on the tab.
4. Repeat these steps to define other transfer switches.
5. If you are defining several similar transfer switches, use the **Clone** button. See "Clone Transfer Switches" on page 128.

Clone Transfer Switches

You can use the clone feature to copy the properties of an existing transfer switch entity and use those properties as the baseline for multiple transfer switches. The clone feature can help you define several similar transfer switches quickly.

1. On the **Transfer Switches** tab, select the transfer switch you want to use as the baseline for another transfer switch.
2. Click **Clone** to create a new transfer switch based on a selected entity. Many fields are copied from the selected transfer switch. The fields which are not copied have an information icon to indicate where you need to enter data, as follows:
   - **Name** - Enter a unique name to identify the generator.

- **Status Measurements** - **Source** - Select a source name.

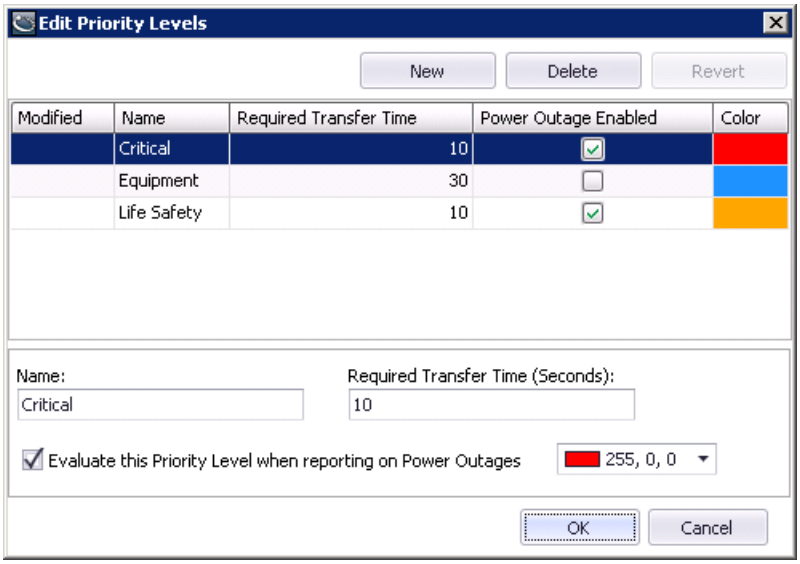
For information about other transfer switch properties, see .

3. Click **Apply** to save the new transfer switch entity.

Edit Priority Levels

The **Edit Priority Levels** editor is used to select at least one priority level that you want to apply to your transfer switches.

1. Click **Edit Priority Levels** to open the **Edit Priority Levels** editor.



2. Click **New** to add a priority level.
3. Complete the following to define priority levels:
   - **Name** - Enter a unique name to identify the priority level.
   - **Required Transfer Time (Seconds)** - Enter the transfer time in seconds. This value indicates the maximum acceptable time for the ATS to switch from the **Test** state to the **Emergency** state.
   - **Evaluate this Priority Level when reporting on Power Outages** - Select this check box to include a priority level in the pass or fail grading. Clear the check box to exclude the priority level from grading. By excluding a priority level, you can exclude non-critical switches from evaluation.

     For example, if a transfer switch has a priority level of Life Safety and it must be graded as a result of a power outage, then select this check box. Conversely, if a transfer switch has a priority level of Equipment, this transfer switch may not have to be graded as a result of a power outage. In this case, clear the check box.

   - **Color Picker** - Select the color that the priority level detail will appear in the test report.

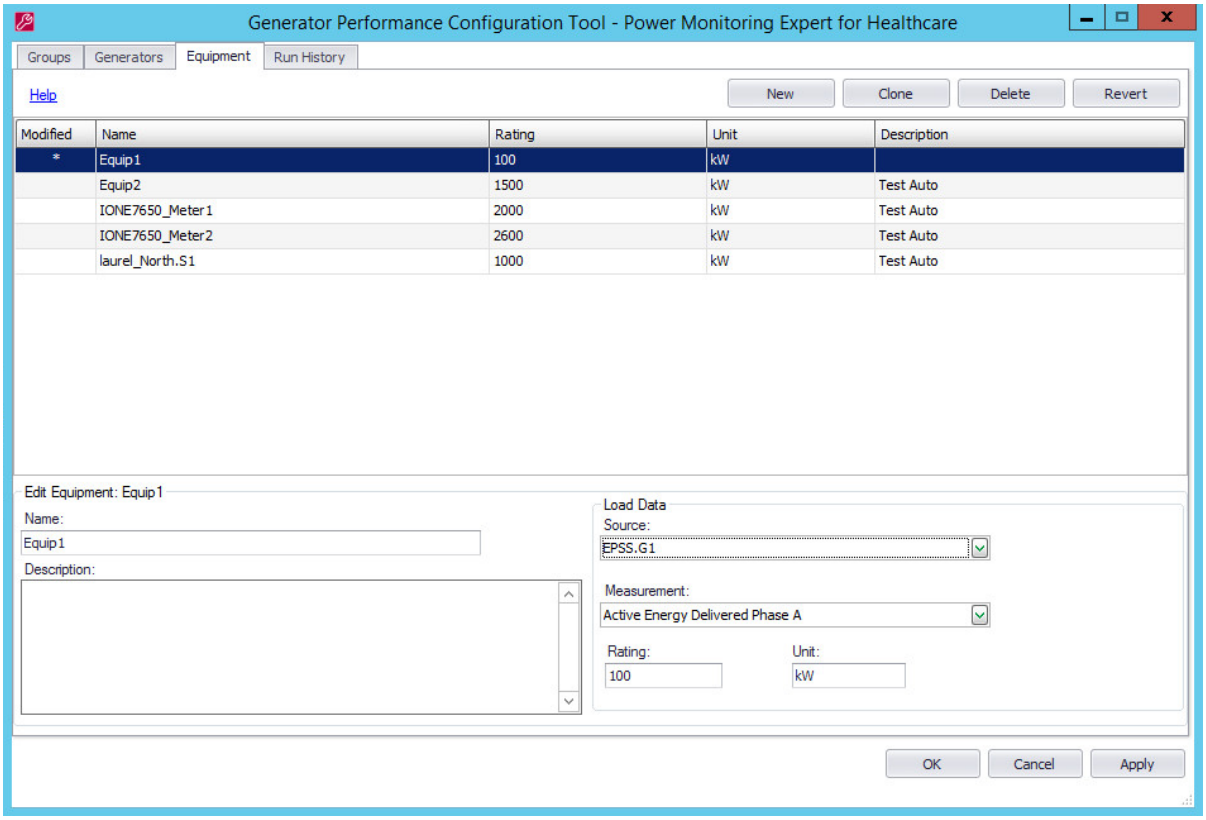
   Default priority levels are shown in the following table. You can change any of these to a priority level scheme of your choice.

Name	Required Transfer Time	Power Outage Enabled
Life Safety	10	True
Critical	10	True
Equipment	30	False

4. Click **OK** to save the priority level and return to the **Transfer Switch** tab.

Define Equipment for EPSS

Use the **Equipment** tab to create a logical device with a source measurement and rating. You can add these logical devices to device groups for reporting. Complete this tab when you are configuring reports.



You can perform the following actions on this tab:

- Click **New** to enter new record for a device. See "Edit Equipment Sources" on page 131 for instructions to define the devices.
- Click **Clone** to copy an existing record and make minor changes. The system copies many details of the existing device into the new entry. You can then enter the unique details of the new device. If you need to define several devices that are similar, this feature can help you define them quickly.
- Click **Delete** to remove records from the system.
- Click **Revert** (before you click **Apply** or **OK**) if you make changes to a record and want to revert to your initial settings.

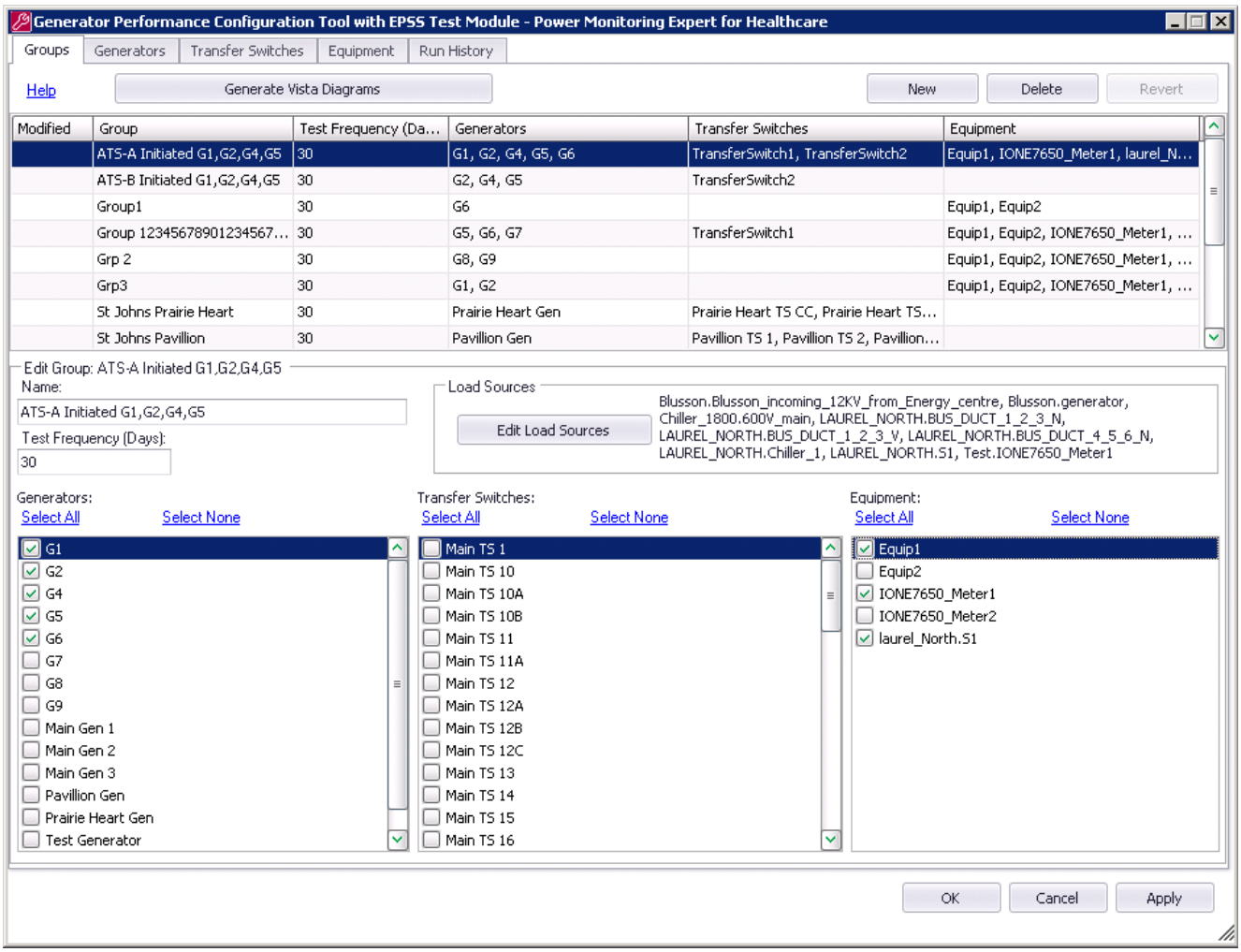
Edit Equipment Sources

The **Equipment** tab displays the equipment load sources and measurements defined in the system.

1. Click **New** to create a record.
2. Complete these fields:
   - **Name** - Enter a unique name to identify the record.
   - **Description** - Enter additional information about the device. Optional.
   - **Source** - Select the load source for the device.
   - **Measurement** - Select the measurement for the device.
   - **Rating** - Enter the maximum rated load for the device.
   - **Unit** - Enter the unit of the measurement.
3. Click **Apply** to save the record and remain on the tab.
4. Repeat these steps to enter additional devices.

Define Groups for EPSS

A performance group is a combination of generators, transfer switches, and other equipment for reporting and generating Vista diagrams. Complete the **Groups** tab when you are configuring reports.



You can perform the following actions on this tab:

- Click **New** to create a new group for generating reports and Vista diagrams. A group can contain any device that has been configured on the other tabs. See "Edit Groups" on page 133 for instructions to define the groups.
- Click **Delete** to remove records from the system.
- Click **Revert** (before you click **Apply** or **OK**) if you make changes to a record and want to revert to your initial settings.
- Click the **Edit Load Sources** to associate a group with the electrical loads that the group of generators must carry in a power outage. See "Edit Group Load Sources" on page 134 for instructions.
- Click **Generate Vista Diagrams** to generate the frameworks for the EPSS groups. You can select which groups to include in the diagrams. See "Generate EPSS Vista Diagrams" on page 138 for instructions.

Edit Groups

The **Groups** tab displays the device groups defined in the system. The generators, and transfer switches, and other equipment must be defined on their respective tabs before you can add them to a group.

1. Click **New** to create a group.
2. Complete the following to define the values for a group:
   - **Name** - Enter a unique name to identify the group.
   - **Test Frequency** - Select the frequency, in days, that the group should be tested. Refer to local regulations for an appropriate value.
   - **Generators** - Select the generators to include in the group.
   - **Equipment** - Select the equipment to include in the group.
   - **Transfer Switches** - Select transfer switches to include in the group.

   The **Select All** and **Select None** options let you work easily with large numbers of sources by selecting all check boxes or clearing all check boxes at the same time.
3. Click **Apply** to save the group and remain on the tab.
4. Repeat these steps to create other groups.

Edit Group Priority Levels

The following reports use priority levels:

- Generator Capacity Report – Priority level values are required to accurately display the colors indicated in the priority levels.
- EPSS Test Report – Priority level values are required for the ATSs in the system to PASS or FAIL an ATS based on the required transfer time of the priority level.

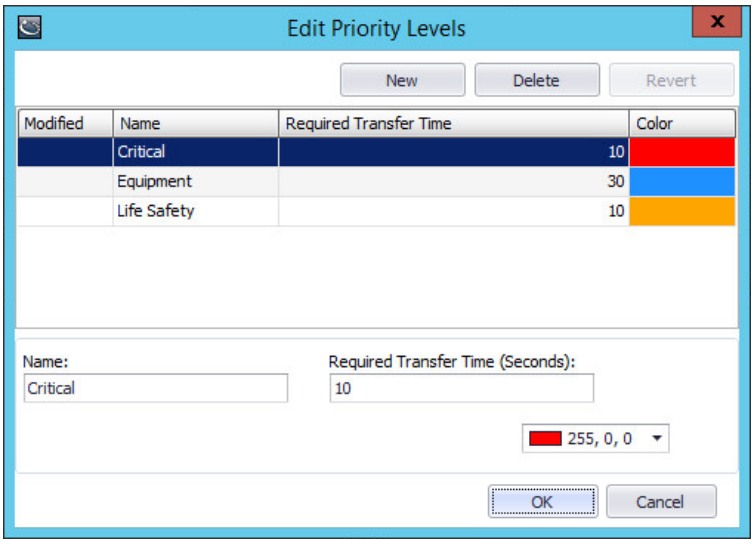
Default priority levels are setup as default.

The **Edit Priority Levels** editor is used to select at least one priority level that you want to apply to the equipment groups. The default priority level names and transfer times are:

- Critical - 10 sec
- Equipment - 30 sec
- Life Safety - 10 sec

You can change any of these names and transfer times and add new priority levels as necessary.

1. Click **Edit Priority Levels**. The **Priority Levels** screen appears.



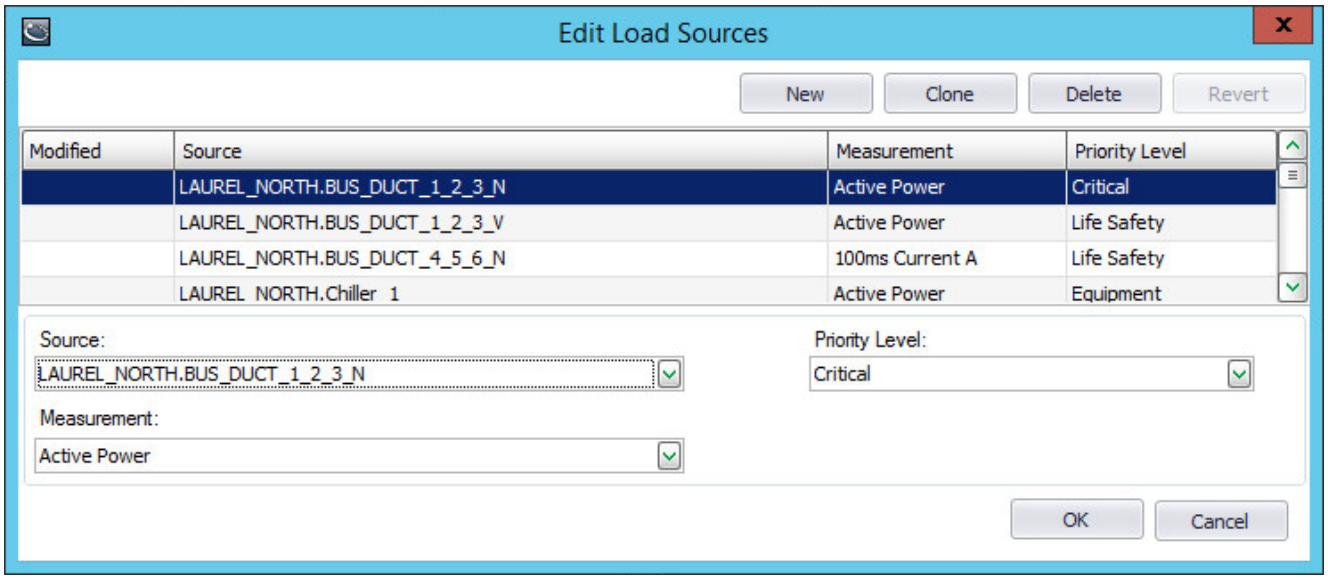
2. Click **New** to add a priority level.
3. Complete the following to define priority levels:
   - **Name** - Enter a unique name to identify the priority level.
   - **Required Transfer Time (Seconds)** - Enter the transfer time in seconds. This time indicates the maximum acceptable time it takes the equipment to move from the **Test** state to the **Emergency** state.
   - **Color** - Click the color box to select a color for the priority level. This color appears on the Generator Capacity Report summary page, where the generator loads are compared. See "Generator Capacity Report Example" on page 157 for an illustration.
4. Click **OK** to save the priority level and return to the **Groups** tab.

Edit Group Load Sources

On the **Select Load Sources** screen , you can associate a group with the various electrical loads that the group of generators must carry during a power outage.

Be sure to define the priority levels for the system before you configure load sources. See "Edit Priority Levels" on page 129 for instructions.

1. Click **Edit Load Sources**. The **Edit Load Sources** screen appears.



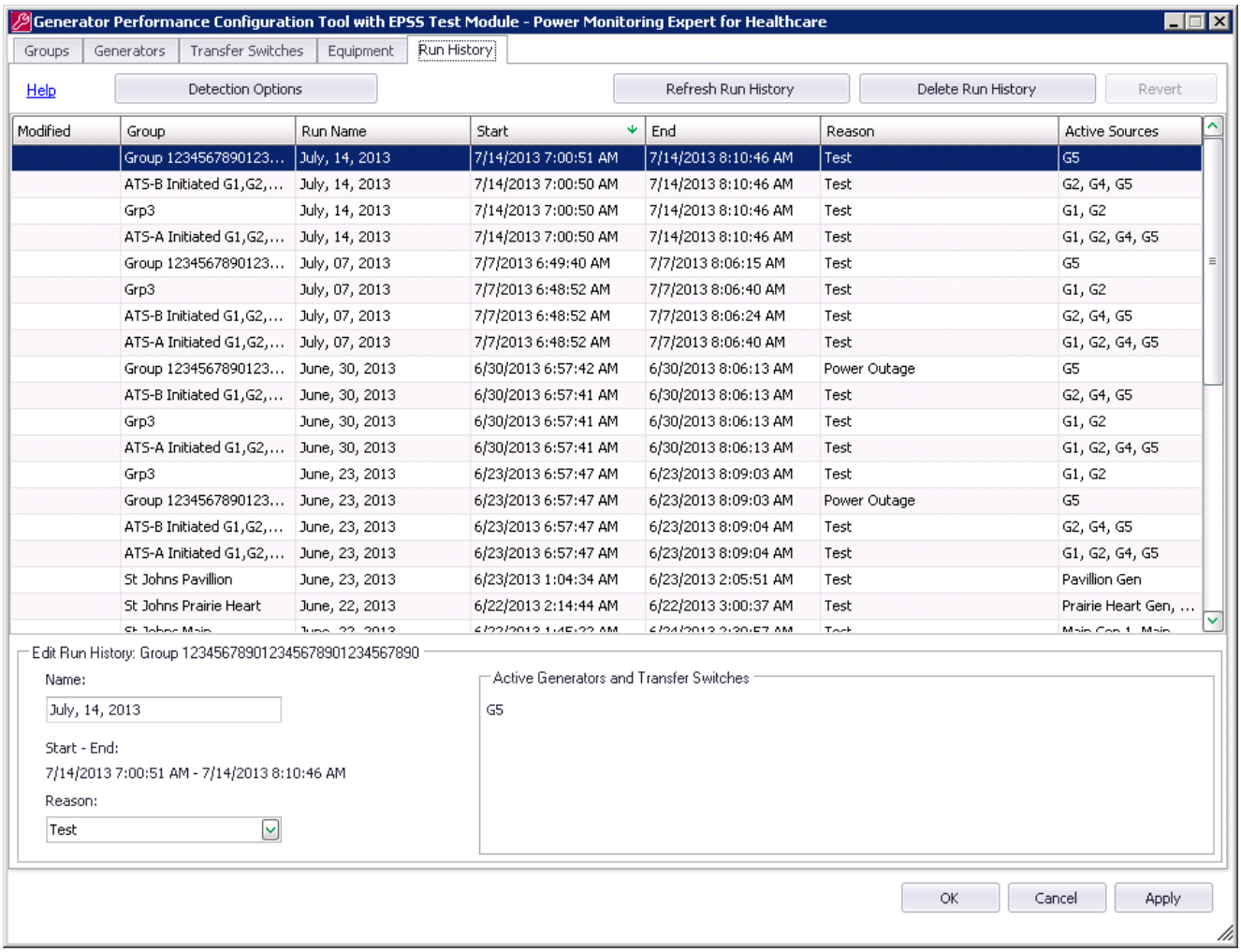
2. Click **New** to add a load source.
3. Complete these fields:
   - **Source** - Select the measurement source.
   - **Measurement** - Select the measurement to monitor.
   - **Priority Level** - Select the priority level to assign to the load source.
4. Click **OK** to save the new load source and return to the **Groups** tab.

   You can use the **Clone** button to associate a group with several sources where the load is logged against the same measurement. The cloned group contains the same measurement and priority level as the original.

View Run History for EPSS

Use the **Run History** tab to view or modify run activities that represent the Test, Load Shedding, and Power Outage activities that have occurred in the system. The history indicates when components of the EPSS have become active, such as when a generator was running or when a transfer switch entered test or emergency status. The runs stored in history can be used as input for reports and dashboards in Power Monitoring Expert.

Because the system stores the history of these activities, you can generate useful reports about the equipment operation. The reports can identify when the system was active, why the system was active, and what devices were active.



The first time the history records are generated on the **Run History** tab, the system may take a long time depending on the amount of history present in the system. When changes occur in the EPSSconfiguration, the run history must be generated again.

For example if you remove a generator from a group, the run history for that group needs to be rebuilt because that generator may have been the reason for the detection of a run. Now that the generator is not part of the group, the system needs to build the run history again to have accurate data.

You can perform the following actions on this tab:

- Click **Detection Options** to modify the criteria of a run event that will cause it to appear on this tab. See "Modify Run Detection Options" on page 137.
- Click **Refresh Run History** to update the tab with the latest run events that have occurred in the system.
- Click **Delete Run History** to remove all run event records from the tab.
- Modify the name and run reason for a run event. See "Modify Run Details" on page 137.

Modify Run Detection Options

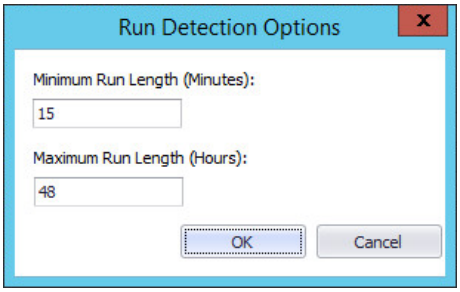
The run detection options can be defined to help guard against bad data in the system. To record actual run activities, you can set the parameters so the system only records runs that fall within the criteria.

The minimum run length value is present to prevent false positives, which may occur during commissioning when the states of the generators and transfers switches are changing quickly and seemingly at random. This may be due to signals being recorded that really do not reflect actual generator or transfer switch activity.

You can set the maximum run length to eliminate "hanging" runs. A hanging run occurs when the stop signal for a generator is not recorded properly. As a result, every time during the test it records a running signal but there is no way for the system to know when it stops. If the system does not see a stop signal, it sets the end of the run to be the start of the run plus the maximum run duration. Therefore you cannot determine how long the generator was actually running.

Complete the following steps to define the run criteria for the system to store runs in history.

1. Click **Detection Options**. The **Run Detection Options** screen appears.



2. Change the values in the minimum and maximum fields.
3. Click **OK** to save the changes and return to the **Runs** tab.
4. Click **Refresh** to update the tab with the run events that match the new detection criteria.

Modify Run Details

The system defines run data, such as name, start time, end time, reason, and active sources automatically. You can change the name of the run event and the reason for the run.

- The default run name is the start date of the run, such as `June 12 2011`. If a group has multiple runs on the same date, the subsequent runs have the same date with the run number appended, such as `June 12 2011 Run 2` and `June 12 2011 Run 3`.
- The system automatically detects the reason for the run. If the detected reason is incorrect, you can change the reason. For example, the reason appears as Test, but the run is actually Load Shedding.

Other details about the run event cannot be modified directly. If the sources for a run are not correct, you can exclude or include specific sources when generating a report based on this run.

1. Click the run record you want to modify. The run details appear below the grid.

2. In the **Name** field, change the suggested run name as necessary.
3. In the **Reason** list, select the correct reason for the run.
4. Click **OK** to save the changes for the run.

Generate EPSS Vista Diagrams

After the generators, transfer switches, and device groups are configured, you can generate the Vista diagrams for the configured devices. The same information can be built manually in Vista , but the Generator Performance Configuration Tool with EPSS Test Module provides a way to build these diagrams automatically. Vista diagrams help provide you with real time insight into the system.

After the diagrams are generated, you can open them in Vista or Designer and optimize the designs. See "Vista Diagram Examples" on page 140 for descriptions and examples of the generated diagrams.

EPSS Vista diagrams are useful to the customer so they can see real-time information about the status of the generators, transfer switches, and other components of the system. The diagrams can include the customer logo and a map of the customer's facility. The customer can view the diagrams in the Diagrams module of Power Monitoring Expert after the diagrams have been linked to the Diagrams module.

The system includes a template that you can use to set up certain parts of the diagrams before you generate them.

Set up the Template Diagram

The template diagram allows you to produce a consistent structure for the generated diagrams. The template file is used as a basis for the dynamically generated EPSS diagrams. The template is a normal diagram file that the system uses to apply common elements to the generated diagrams.

With the template, you can apply linked-button elements to the generated diagrams, which will help you reduce the amount of time to configure the diagrams.

Follow these steps to set up the diagram template.

1. Open the Vista Diagrams application.
2. Open the `Epss_Template.dgm` file in the folder:

   ...\config\diagrams\ud\EPSS\templates
3. To the left side of the diagram, add the buttons with the appropriate links.
4. Do not link the EPSS button to any diagram, because you will already be on the EPSS pages when they are generated.
5. Save and close the template diagram.

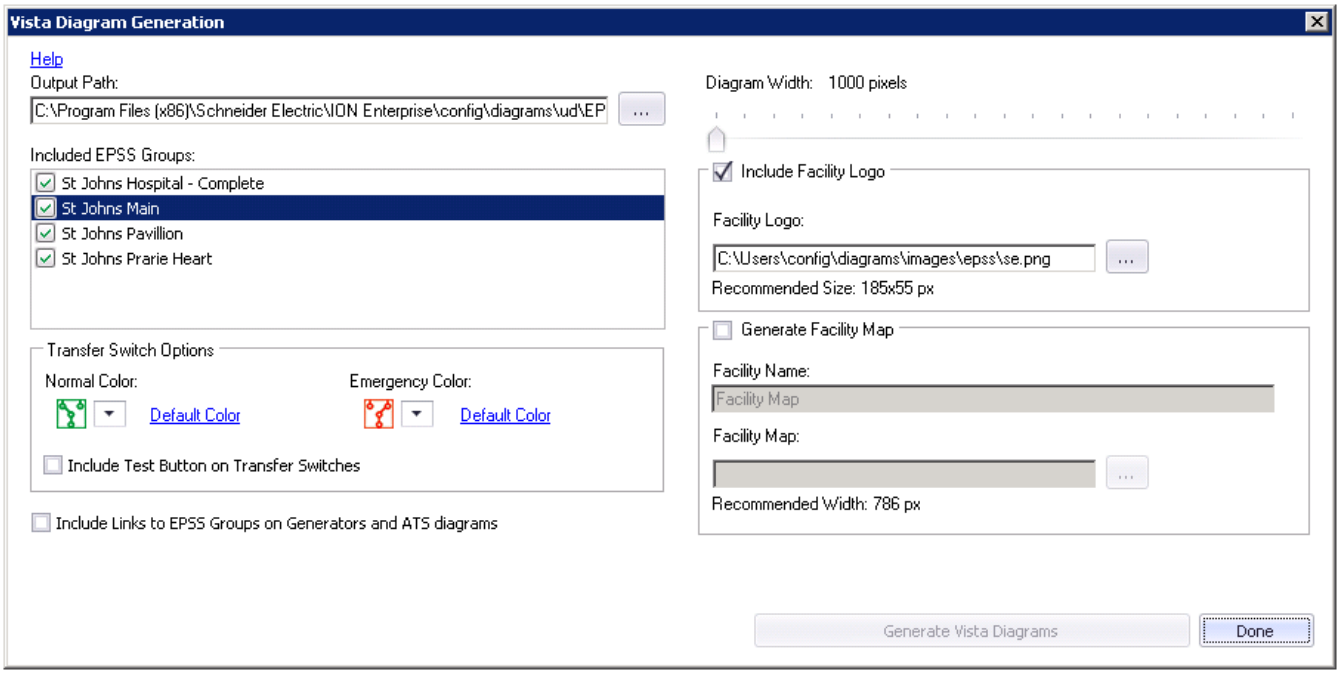
When diagrams are being generated by the configuration tool, the template is read in and any objects on the diagram will be added to every diagram created by the tool.

NOTE:On the generated diagrams, the background image is dynamically created. The background does not come from the EPSS template diagram.

Generate EPSS Diagrams

Before you generate the EPSS Vista diagrams, make sure all devices and groups are configured correctly. Save the changes you have made to the EPSS configuration.

1. Click the **Groups** tab.
2. Click **Generate Vista Diagrams**. The Vista Diagram Generation screen appears.



3. In the **Output Path** field, enter or select the folder where you want to store the diagrams.
4. (Optional) In the **Included EPSS Groups** box, select the device groups that you want to generate diagrams for. Uncheck any groups you do not want to generate.
5. (Optional) In the **Transfer Switch Options** box, select the colors you want to use for normal and emergency status.
6. (Optional) Check the **Include Test Button on Transfer Switches** option if you want to add a control object for each ATS on the diagrams. This object allows you to manually test the ATS from the diagram. The control must be manually linked using Vista once the diagrams have been created.
7. (Optional) Check the **Include Links to EPSS Groups...** option if you want the device diagrams to have a link to the EPSS Group diagram.
8. In the **Diagram Width** field, select the horizontal width in pixels of the diagrams.
9. Select **Facility Logo** and enter the image file if you want the diagrams to include the customer logo at the top-left of every diagram.

10. Select **Generate Facility Map** if you want to include a map with the diagrams. If you do this, you will be able to add the generator and transfer switch device locations to the map.
    - Enter the **Facility Name** to appear on the map.
    - Select the image file for the map.
11. Click **Generate Vista Diagrams** to generate and store the diagrams in the selected output folder.

Several diagrams will be created: the homepage that lists all EPSS groups, summary pages that list all generators and transfer switches, and the detail pages for each EPSS Group, Generator and ATS in the system.

You can open the diagrams in Vista and optimize the designs if necessary. Refer to *ION Reference* for information about configuring the modules in the diagram.

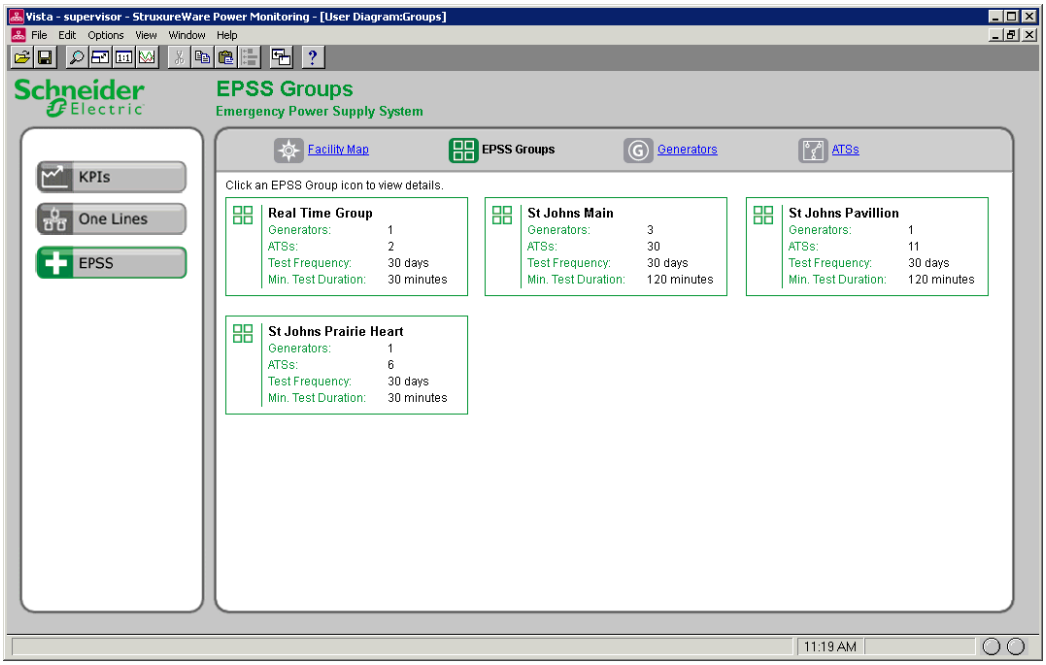
See the next section for descriptions and examples of the generated diagrams.

Vista Diagram Examples

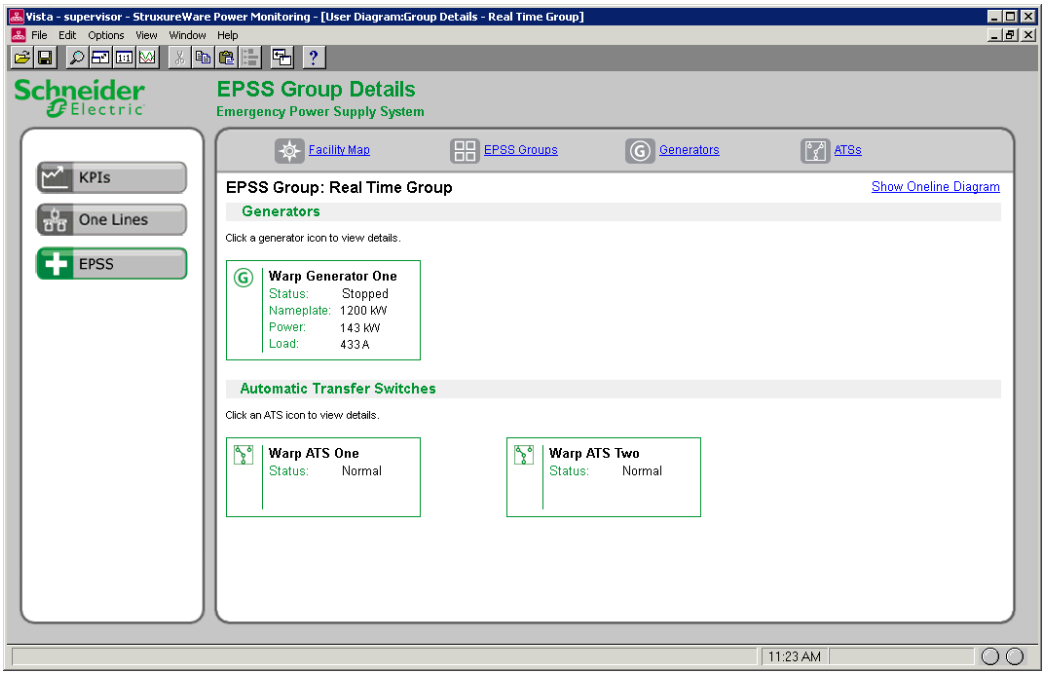
When you generate the Vista diagrams, several diagrams are produced.

- **Home Page diagram** - One Home Page diagram is generated. This diagram contains a navigation bar that has links for the facility map, device group diagrams, and device diagrams.
- **Group diagrams** - For each group selected on the configuration screen, one group diagram is produced. This diagram contains an object for each generator or transfer switch in the group. A Oneline diagram for each device group is also generated and linked to the diagrams. You will need to manually configure the generated Oneline diagrams. Several default objects are included for assistance.
- **Device detail diagrams** - For each generator and transfer switch in a group, a diagram is generated. The device diagram includes status information for the device, including run status, test parameters, and real-time electrical data.
- **Facility Map** - This diagram is generated if the option was selected on the configuration screen. This diagram includes a moveable icon for each generator and transfer switch in all the selected device groups. On the map diagram, you can drag and drop the device icons to the map to represent the physical locations of those devices.

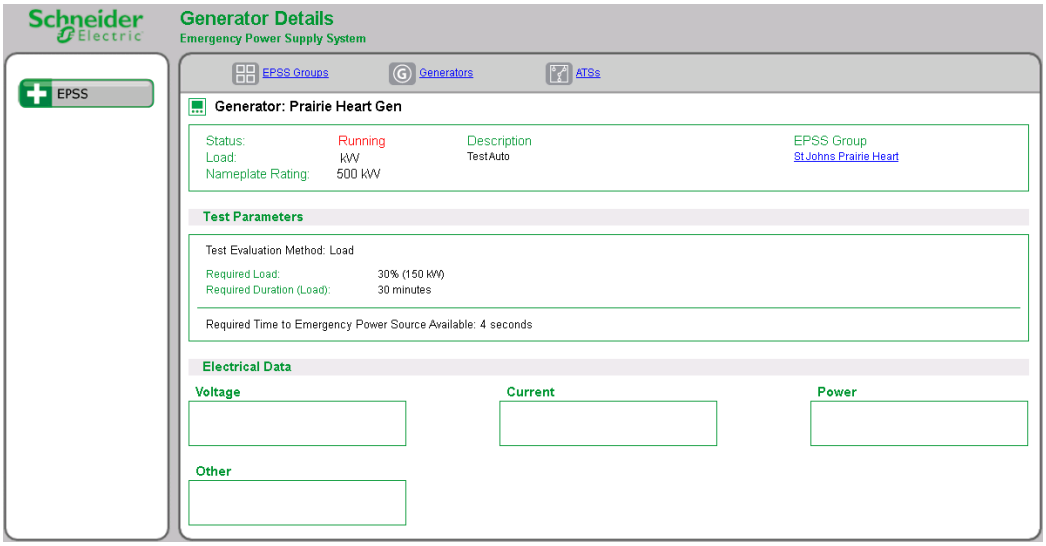
Home Page Diagram



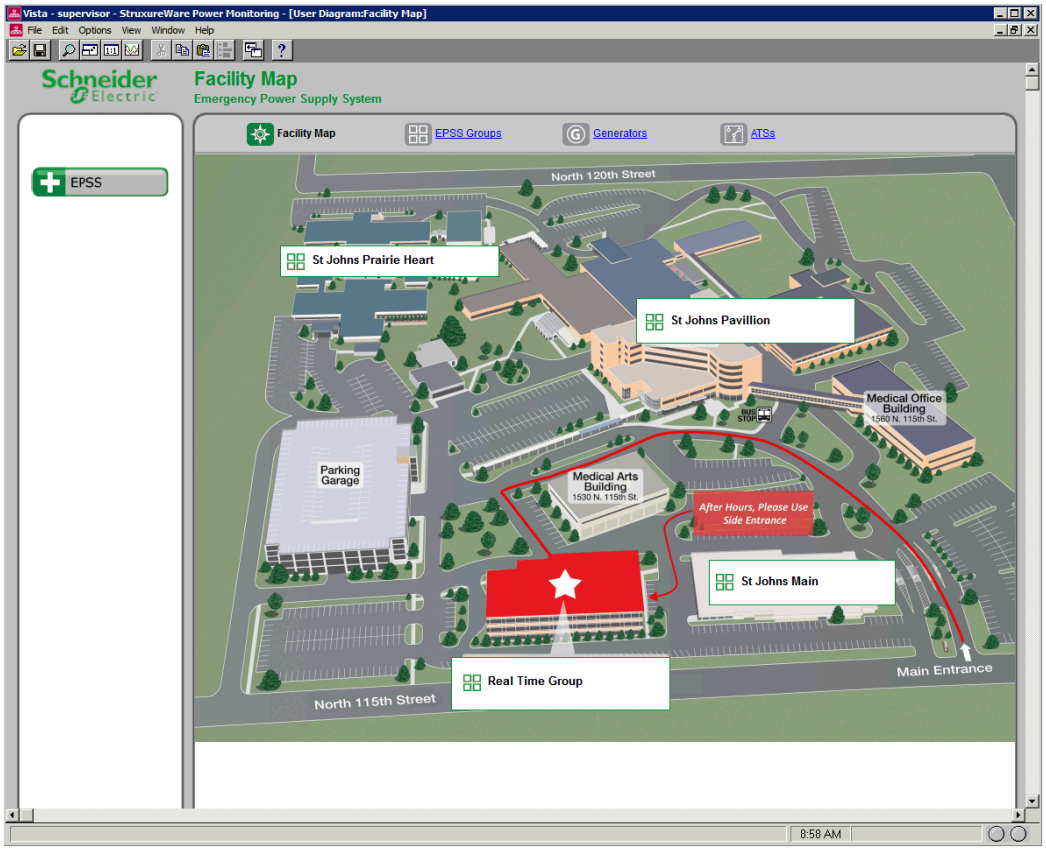
EPSS Group Diagram



Device Diagram



Facility Map



Equipment Capacity Report

The **Equipment Capacity Report** shows the peak load provided by an ATS or other equipment during a time period and compares the peak load to the rated capacity. The report can show a summary of all entities in a group or daily information for each ATS or equipment, such as circuit breakers or transformers. The report includes visual graphs of the load and capacity. If the equipment exceeds the capacity threshold the green summary bar shows red.

⚠ WARNING

INACCURATE REPORT RESULTS

- Do not incorrectly configure the devices and software. This can lead to inaccurate reports and/or data results.
- Do not rely solely on system reports to determine if the system is functioning correctly or meeting all applicable standards and requirements.
- Use system reports as a supplement to proper workplace practices or equipment maintenance, not as a substitute.

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

Report prerequisites

In the configuration tool, you must define the following tabs and fields in order to generate the report.

Groups tab

- **Name** - The name for the group entity.
- **Equipment** - Select at least one entity from the list. The group can contain more than one equipment entity.

See either of these sections for instructions on the above settings.

- For Generator Performance Configuration Tool, see "Define Groups" on page 108.
- For Generator Performance Configuration Tool with EPSS Test Module, see "Define Groups for EPSS" on page 131.

Generators tab

- **Name** - The name for the generator entity.
- **Electrical Data** - The measurement source, nameplate rating, and unit of measurement are required.
- **Status Measurements** - Select the source of the status measurement and the start, run, and stop values. Configure the meters that provide these measurements.

- **Evaluation Method** - “Load” is default, but this may be changed to accommodate customer requirements.

See either of these sections for instructions on the above settings.

- For Generator Performance Configuration Tool, see "Define Generators" on page 104.
- For Generator Performance Configuration Tool with EPSS Test Module, see "Define Generators for EPSS" on page 117.

Equipment tab

- Complete all fields on the Equipment tab (except **Description**) ATS equipment can be added in this tab to include ATS units in the report.

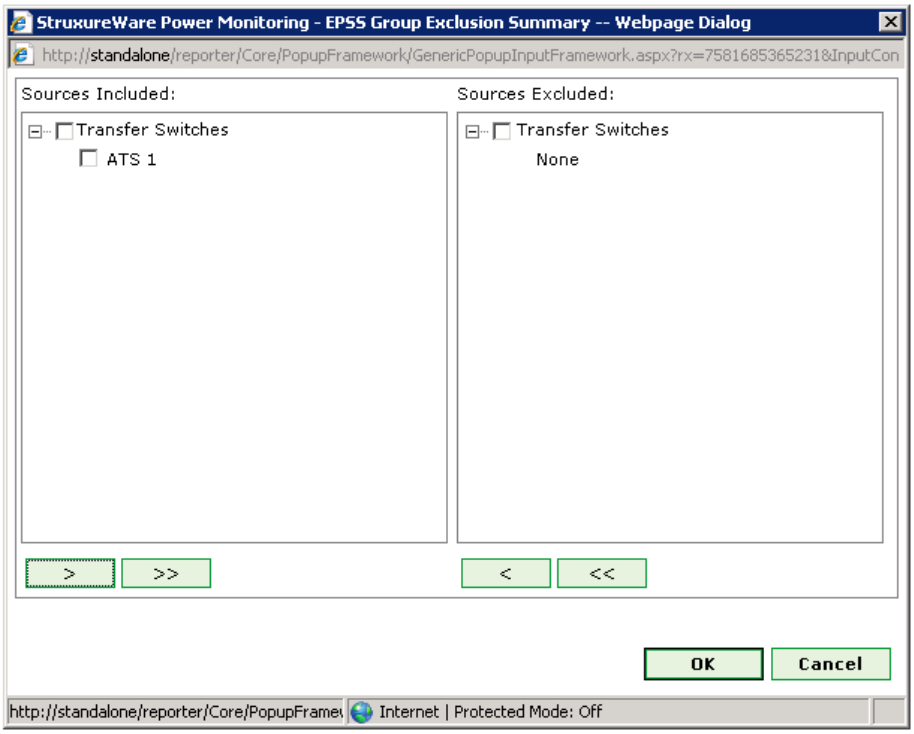
After you define these required items, you can configure and generate the report as described next.

Configure and Generate the Equipment Capacity Report

Use the Reports module to configure and generate the Equipment Capacity Report.

The report includes a summary of all transfer switches and equipment in the group for the selected date range. You can also include the daily rollup for each item in the group.

1. Complete the fields to define the report:
   - **Title** - Enter a name for the report.
   - **EPSS Group** - Select the transfer switches and other equipment group for the report. The list shows the groups that you defined. When you select a group in the list, the field to the right shows the devices included in the group.
   - **Exclude Sources** - Click this to define the sources to exclude from the report.



a. In the **Sources Included** area, select sources to exclude and then click **>** to move those sources to the **Sources Excluded** area. This area only shows transfer switches recording electrical data.

b. To move all of the sources into the **Sources Excluded** area, click **>>**.

c. Click **OK** to save the sources and return to the report template. The devices in the group will appear in the **Sources** section of the generated report. Excluded devices will appear as grayed-out entries.

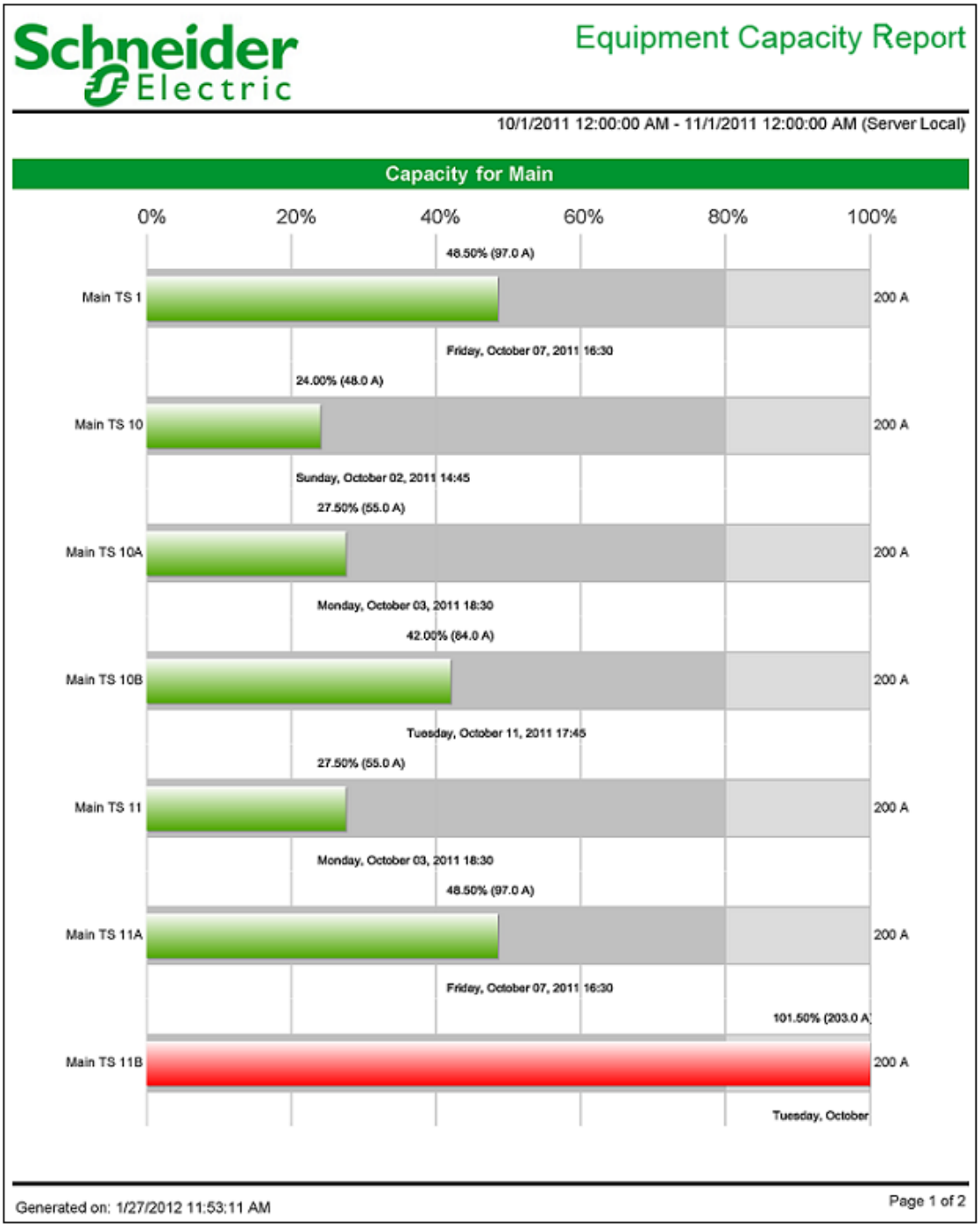
- **Reporting Period** - Select the date range for the data you want to include. This can be a fixed number of prior days, such as Last 7 Days, or a fixed date range. The initial setting is `Last 7 Days`. In the US, select at least 30 days of load data recorded at 15 minute intervals to satisfy regulations. Also select the type of timestamp to use in the report, either `Server Local Time` or `UTC (Universal Time)`.
- **Threshold** - Enter the percentage for the maximum test run load capacity. This is the percentage of the equipment electrical rating (in amps) entered in the **Transfer Switches** tab or the **Equipment** tab.
- **Show Daily Rollups** - Click **Yes** to include the daily peak load for the equipment. If you select **No**, the report shows the peak load for the entire reporting period.
- **Include Data Table** - Click **Yes** to include the equipment capacity data in the report. Click **No** to exclude this section.
- **Include Data Warnings** - Click **Yes** to include the data warnings in the report. If there are no data warnings, the section is not included in the report. Click **No** to exclude this section.

2. Click **Generate Report** to produce the report.

Equipment Capacity Report Example

Summary Pages

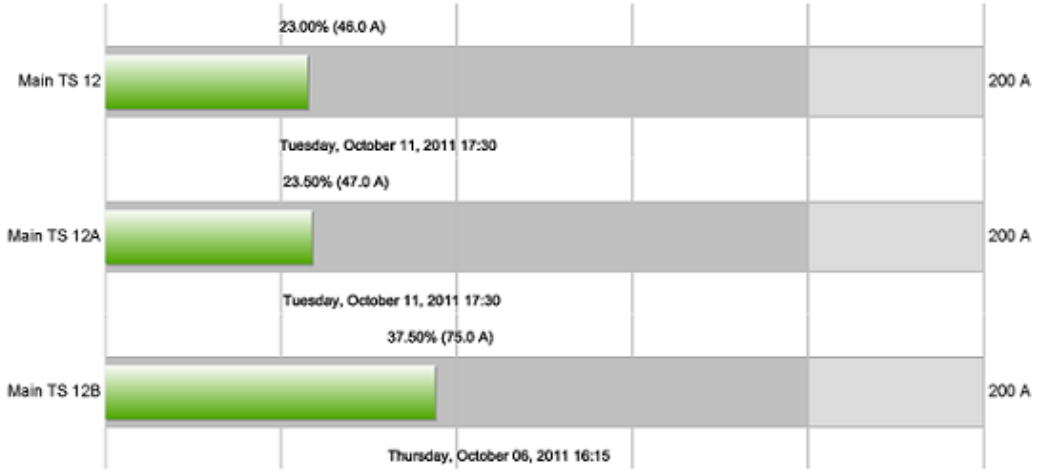
If **Show Daily Rollups** is set to **No**, the summary pages are generated as follows:



Schneider Electric

Equipment Capacity Report

10/1/2011 12:00:00 AM - 11/1/2011 12:00:00 AM (Server Local)



Transfer Switch	Peak	Peak Date	Available Capacity
Main TS 1	97.00 A (49%)	Friday, October 07, 2011 16:30	103.00 A (52%)
Main TS 10	48.00 A (24%)	Sunday, October 02, 2011 14:45	152.00 A (76%)
Main TS 10A	55.00 A (28%)	Monday, October 03, 2011 18:30	145.00 A (73%)
Main TS 10B	84.00 A (42%)	Tuesday, October 11, 2011 17:45	116.00 A (58%)
Main TS 11	55.00 A (28%)	Monday, October 03, 2011 18:30	145.00 A (73%)
Main TS 11A	97.00 A (49%)	Friday, October 07, 2011 16:30	103.00 A (52%)
Main TS 11B	203.00 A (102%)	Tuesday, October 11, 2011 14:45	-3.00 A (-2%)
Main TS 12	46.00 A (23%)	Tuesday, October 11, 2011 17:30	154.00 A (77%)
Main TS 12A	47.00 A (24%)	Tuesday, October 11, 2011 17:30	153.00 A (77%)
Main TS 12B	75.00 A (38%)	Thursday, October 06, 2011 16:15	125.00 A (63%)

Generated on: 1/27/2012 11:53:11 AM

Page 2 of 2

Daily Details Pages

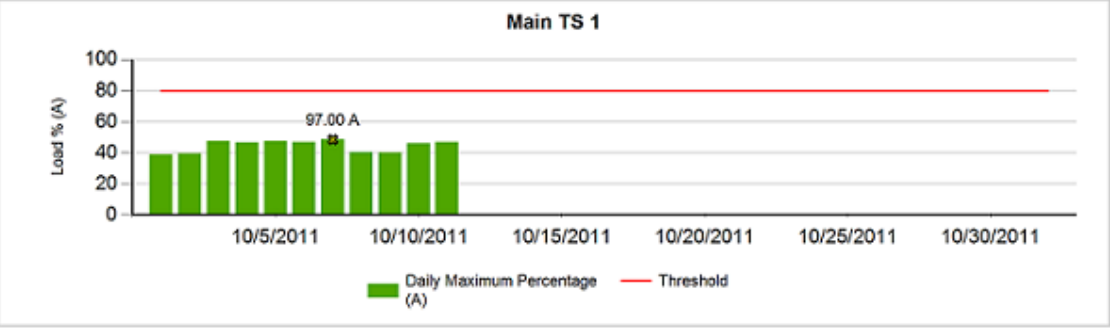
If **Show Daily Rollups** is set to **Yes**, the daily detail pages are generated as follows:

Schneider Electric

Equipment Capacity Report

10/1/2011 12:00:00 AM - 11/1/2011 12:00:00 AM (Server Local)

Capacity for Main



Date	Peak	Available Capacity
Saturday, October 01, 2011	78.00 A (39%)	122.00 A (61%)
Sunday, October 02, 2011	79.00 A (40%)	121.00 A (61%)
Monday, October 03, 2011	95.00 A (48%)	105.00 A (53%)
Tuesday, October 04, 2011	93.00 A (47%)	107.00 A (54%)
Wednesday, October 05, 2011	95.00 A (48%)	105.00 A (53%)
Thursday, October 06, 2011	94.00 A (47%)	106.00 A (53%)
Friday, October 07, 2011	97.00 A (49%)	103.00 A (52%)
Saturday, October 08, 2011	81.00 A (41%)	119.00 A (60%)
Sunday, October 09, 2011	80.00 A (40%)	120.00 A (60%)
Monday, October 10, 2011	92.00 A (46%)	108.00 A (54%)
Tuesday, October 11, 2011	94.00 A (47%)	106.00 A (53%)

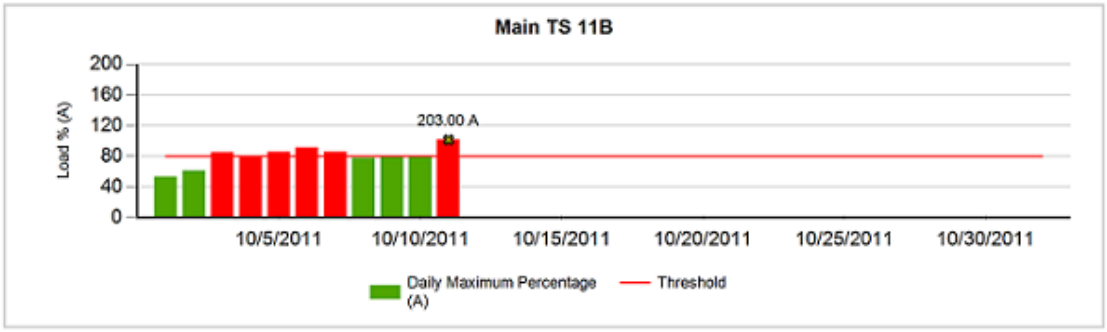
Generated on: 1/27/2012 11:48:28 AM

Page 1 of 10

Schneider Electric

Equipment Capacity Report

10/1/2011 12:00:00 AM - 11/1/2011 12:00:00 AM (Server Local)



Date	Peak	Available Capacity
Saturday, October 01, 2011	106.00 A (53%)	94.00 A (47%)
Sunday, October 02, 2011	122.00 A (61%)	78.00 A (39%)
Monday, October 03, 2011	170.00 A (85%)	30.00 A (15%)
Tuesday, October 04, 2011	162.00 A (81%)	38.00 A (19%)
Wednesday, October 05, 2011	172.00 A (86%)	28.00 A (14%)
Thursday, October 06, 2011	183.00 A (92%)	17.00 A (9%)
Friday, October 07, 2011	172.00 A (86%)	28.00 A (14%)
Saturday, October 08, 2011	155.00 A (78%)	45.00 A (23%)
Sunday, October 09, 2011	157.00 A (79%)	43.00 A (22%)
Monday, October 10, 2011	159.00 A (80%)	41.00 A (21%)
Tuesday, October 11, 2011	203.00 A (102%)	-3.00 A (-2%)

Generated on: 1/27/2012 11:48:28 AM

Page 7 of 10

Generator Activity Report

The **Generator Activity Report** shows the test run hours and other test run data for each generator in the selected group.

⚠ WARNING

INACCURATE REPORT RESULTS

- Do not incorrectly configure the devices and software. This can lead to inaccurate reports and/or data results.
- Do not rely solely on system reports to determine if the system is functioning correctly or meeting all applicable standards and requirements.
- Use system reports as a supplement to proper workplace practices or equipment maintenance, not as a substitute.

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

Report Prerequisites

In the Generator Performance Configuration Tool, define the following tabs and fields in order to generate the report:

Generators Tab

- **Name** - The generator entity needs a name.
- **Electrical Data** - Specify the required measurement source, nameplate rating, and unit of measurement.
- **Status Measurements** - The source of the status measurement and the start, run, and stop values must be selected. Configure the meters that provide these measurements.
- **Evaluation Method** - “Load” is default, but this may be changed to accommodate customer requirements.

For instructions on the above settings see either of these sections:

- For Generator Performance Configuration Tool, see "Define Generators" on page 104.
- For Generator Performance Configuration Tool with EPSS Test Module, see "Define Generators for EPSS" on page 117.

Configure and Generate the Generator Activity Report

Use the Reports module in Web Applications to configure and generate the Generator Activity Report.

NOTE: Emergency Power Supply System (EPSS) is a North American term used in the healthcare segment. "EPSS Group" refers to the "Groups" defined in the Generator Performance Configuration Utility.

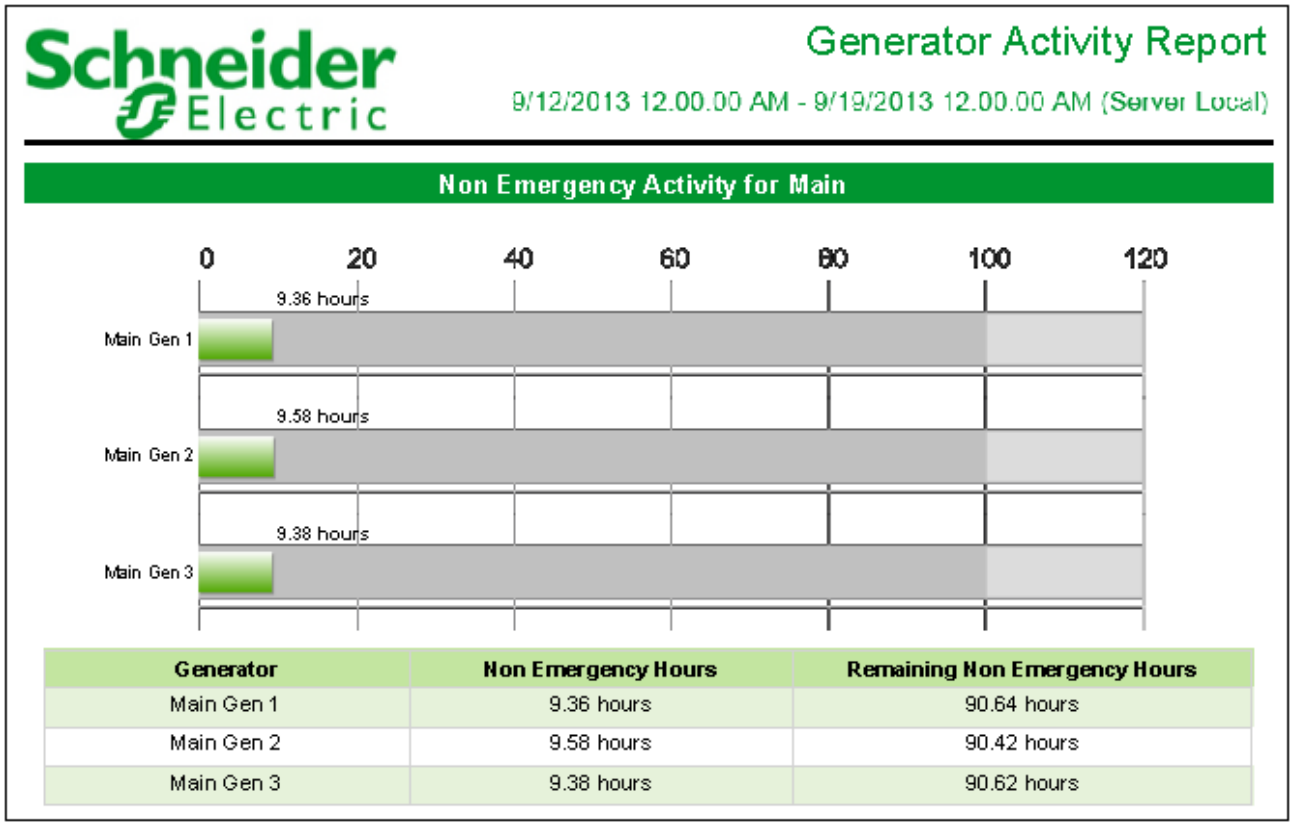
---

1. Complete the fields to define the report:
   - **Title** - Enter a name for the report.
   - **EPSS Group** - Select the group for which the report is intended. When you select a group in the list, the field to the right shows the devices included in the group.
   - **Exclude Sources** - Click this to define the sources to exclude from the report.
     a. In the **Sources Included** area, select sources to exclude and then click **>** to move those sources to the **Sources Excluded** area.
     b. To move all of the sources into the **Sources Excluded** area, click **>>**.
     c. Click **OK** to save the sources and return to the report template. The devices in the group will appear in the **Sources** section of the generated report. Excluded devices will appear as grayed-out entries.
   - **Reporting Period** - Select the date range for the data you want to include. This can be a fixed number of prior days, such as Last 7 Days, or a fixed date range. The initial setting is `Last 7 Days`. In the US, select at least 30 days of load data recorded at 15 minute intervals to satisfy regulations. Also select the type of timestamp to use in the report, either `Server Local Time` or `UTC (Universal Time)`.
   - **Threshold (Hours)** - Enter the maximum number of hours the generators should run in non-emergency use. Enter a value that is in compliance with local authority requirements. For example, in the US, the EPA requires that generators can run no more than 100 hours in non-emergency use.
   - **Include Activity Details** - Click **Yes** to include the generator details in the report. Click **No** to exclude this section.
   - **Include Data Warnings** - Click **Yes** to include data warnings in the report. If there are none, the section is not included. Click **No** to exclude this section.
2. Click **Generate Report** to produce the report.

Generator Activity Report Example

Summary Page

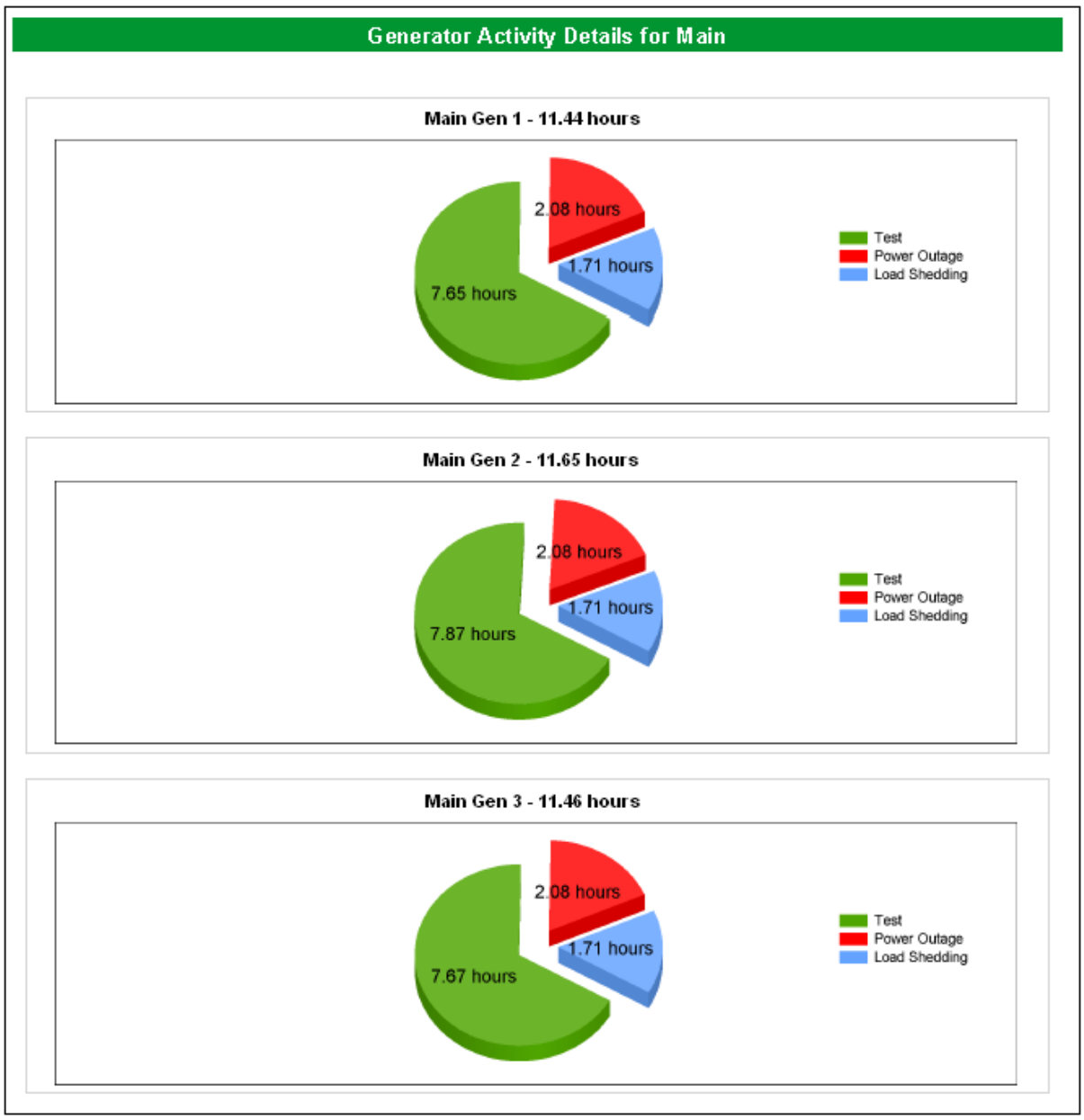
The first page of the report shows the title, company name, group, a bar graph representing the test run hours on each generator, and a table of test run data for each generator.



Generator	Non Emergency Hours	Remaining Non Emergency Hours
Main Gen 1	9.36 hours	90.64 hours
Main Gen 2	9.58 hours	90.42 hours
Main Gen 3	9.38 hours	90.62 hours

Details Page

The details page shows a pie chart of the type of hours for each generator and the total run time table.



Schneider Electric

Generator Activity Report

9/12/2013 12:00:00 AM - 9/19/2013 12:00:00 AM (Server Local)

Main

Generator	Start Time	Stop Time	Duration (hours)	Run Reason
Main Gen 1	9/12/2013 7:00:50 AM	9/12/2013 8:10:45 AM	7.65	Test
Main Gen 2	9/12/2013 7:00:50 AM	9/12/2013 8:10:46 AM	7.87	Test
Main Gen 3	9/12/2013 7:00:51 AM	9/12/2013 8:10:45 AM	7.67	Test

Generator Capacity Report

The **Generator Capacity Report** helps verify the generators can adequately support the loads required during an emergency. The report compares the loads the generators and equipment must carry with the available generator capacity.

⚠ WARNING

INACCURATE REPORT RESULTS

- Do not incorrectly configure the devices and software. This can lead to inaccurate reports and/or data results.
- Do not rely solely on system reports to determine if the system is functioning correctly or meeting all applicable standards and requirements.
- Use system reports as a supplement to proper workplace practices or equipment maintenance, not as a substitute.

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

Report Prerequisites

In the Generator Performance Configuration Tool, define the following tabs and fields in order to generate the report:

Generators Tab

- **Name** - The generator entity needs a name.
- **Electrical Data** - The measurement source, nameplate rating, and unit of measurement are required.
- **Status Measurements** - Select the source of the status measurement and the start, run, and stop values. Configure the meters that provide these measurements.
- **Evaluation Method** - “Load” is default, but this may be changed to accommodate customer requirements.

For instructions on the above settings see:

- For Generator Performance Configuration Tool, see "Define Generators" on page 104.
- For Generator Performance Configuration Tool with EPSS Test Module, see "Define Generators for EPSS" on page 117.

Equipment Tab

- Complete all fields on the Equipment tab (except **Description**). Generators can be added in this tab to include them in the report. See either of these sections for instructions on the **Equipment** tab.
  - For Generator Performance Configuration Tool, see "Edit Equipment Sources" on page 107.

- For Generator Performance Configuration Tool with EPSS Test Module, see "Edit Equipment Sources" on page 131.

Groups Tab

- Add the load sources indicating measurement and priority levels to the EPSS group in the Edit Load Sources screen. If load sources are not added, the report will return empty pages and state "No Data Available." See either of these sections for instructions on the Groups tab.
  - For Generator Performance Configuration Tool, see "Define Groups" on page 108.
  - For Generator Performance Configuration Tool with EPSS Test Module, see "Define Groups for EPSS" on page 131.

Configure and Generate the Generator Capacity Report

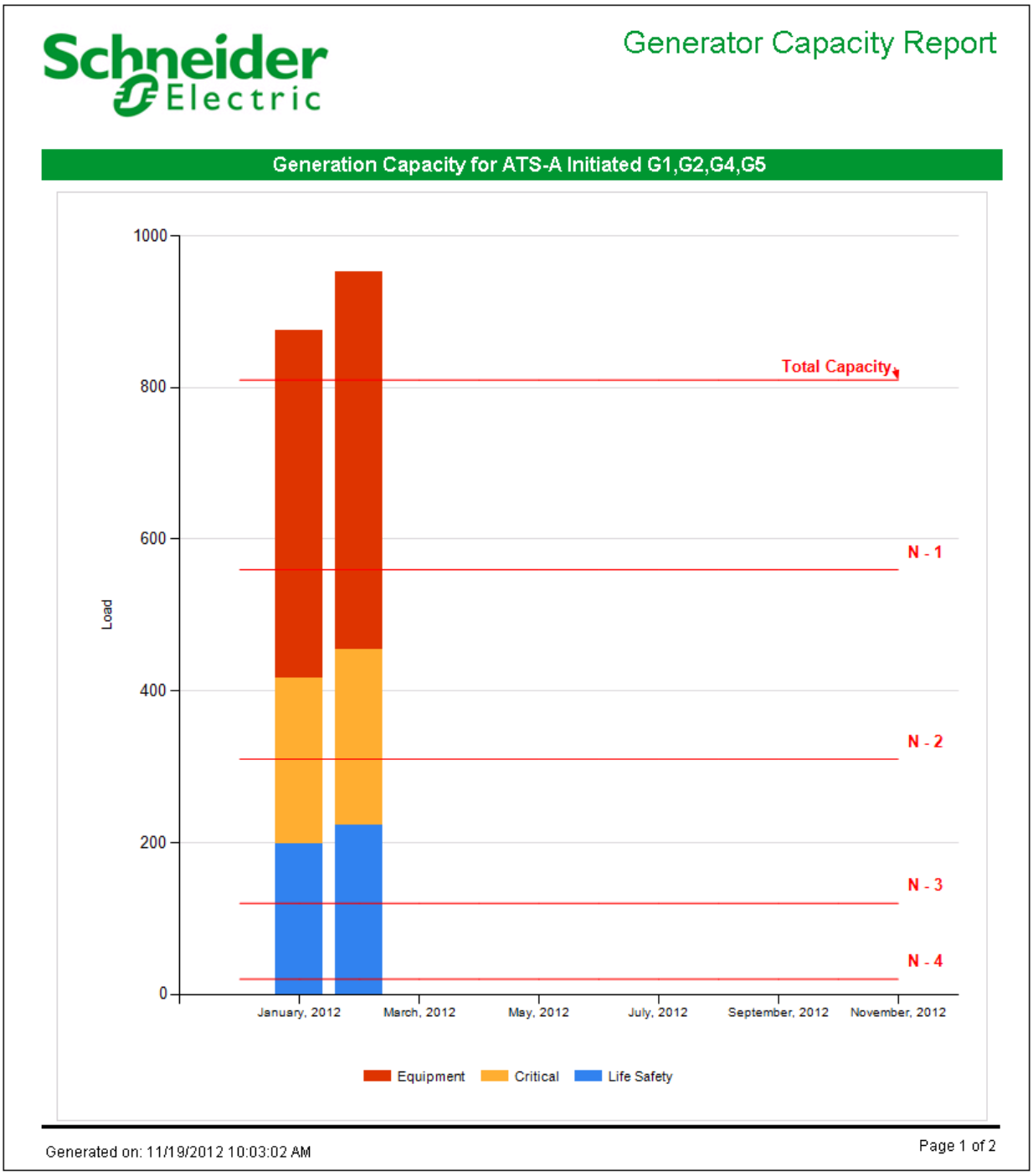
Use the Reports module in Web Applications to configure and generate the Generator Capacity Report.

For more information on generating and managing reports, see the "Reports" section of the Web Applications help file.

Generator Capacity Report Example

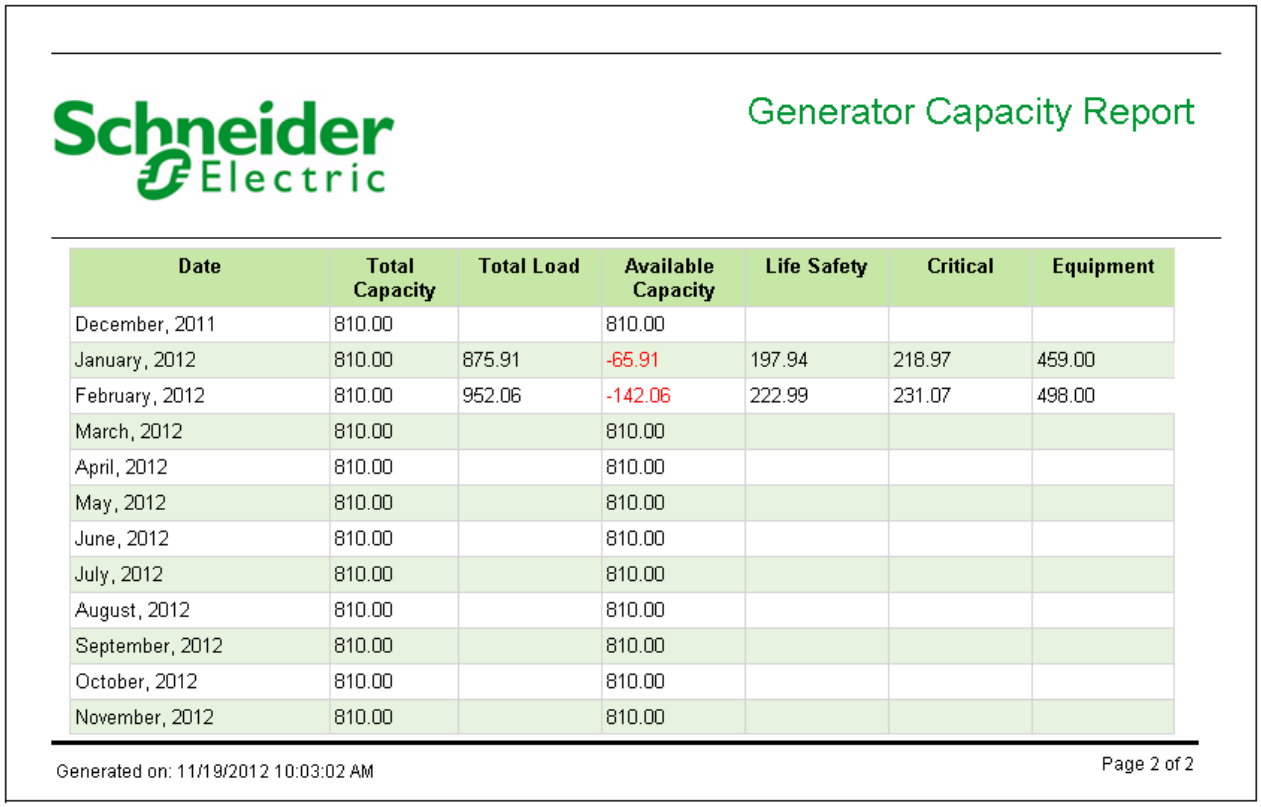
Summary Page

The first page of the report shows a chart of the loads on each generator compared to the total capacity rating. The colors for the bars are defined for the load priority levels. See "Edit Group Priority Levels" on page 133 for instructions to define the priority levels.



Details Page

The next page shows the details for the capacity of the selected generators.



Schneider Electric

Generator Capacity Report

Date	Total Capacity	Total Load	Available Capacity	Life Safety	Critical	Equipment
December, 2011	810.00		810.00			
January, 2012	810.00	875.91	-65.91	197.94	218.97	459.00
February, 2012	810.00	952.06	-142.06	222.99	231.07	498.00
March, 2012	810.00		810.00			
April, 2012	810.00		810.00			
May, 2012	810.00		810.00			
June, 2012	810.00		810.00			
July, 2012	810.00		810.00			
August, 2012	810.00		810.00			
September, 2012	810.00		810.00			
October, 2012	810.00		810.00			
November, 2012	810.00		810.00			

Generated on: 11/19/2012 10:03:02 AM

Page 2 of 2

Generator Load Summary Report

The **Generator Load Summary Report** provides a summary graph of electrical data during a generator run. The report includes a load curve, minimum-maximum-average load summary, and other electrical details.

This report is only included with the system if the EPSS is not installed.

⚠ WARNING

INACCURATE REPORT RESULTS

- Do not incorrectly configure the devices and software. This can lead to inaccurate reports and/or data results.
- Do not rely solely on system reports to determine if the system is functioning correctly or meeting all applicable standards and requirements.
- Use system reports as a supplement to proper workplace practices or equipment maintenance, not as a substitute.

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

Report Prerequisites

In the Generator Performance Configuration Tool, define the following tabs and fields in order to generate the report.

Generators Tab

- **Name** - The generator entity needs a name.
- **Electrical Data** - The measurement source, nameplate rating, and unit of measurement are required.
- **Status Measurements** - The source of the status measurement and the start, run, and stop values must be selected. Configure the meters that provide these measurements.
- **Evaluation Method** - “Load” is default, but this may be changed to accommodate customer requirements.

See "Define Generators" on page 104 for instructions on the above settings.

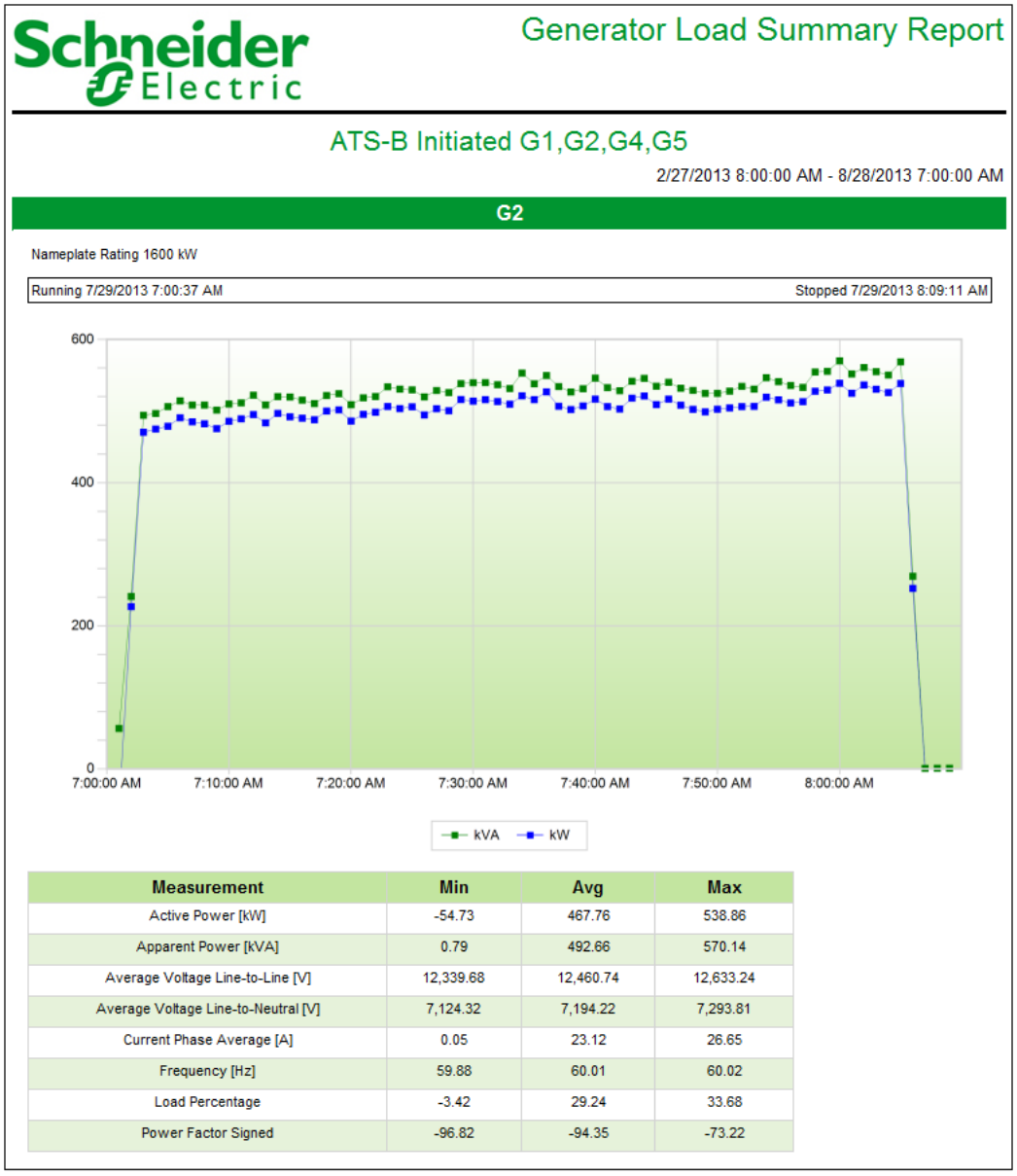
Configure and Generate the Generator Load Summary Report

Use the Reports module in Web Applications to configure and generate the Generator Load Summary Report.

For more information on generating and managing reports, see the "Reports" section of the Web Applications help file.

NOTE: Emergency Power Supply System (EPSS) is a North American term used in the healthcare segment. "EPSS Group" refers to the "Groups" defined in the Generator Performance Configuration Utility.

Generator Load Summary Report Example



Measurement	Min	Avg	Max
Active Power [kW]	-54.73	467.76	538.86
Apparent Power [kVA]	0.79	492.66	570.14
Average Voltage Line-to-Line [V]	12,339.68	12,460.74	12,633.24
Average Voltage Line-to-Neutral [V]	7,124.32	7,194.22	7,293.81
Current Phase Average [A]	0.05	23.12	26.65
Frequency [Hz]	59.88	60.01	60.02
Load Percentage	-3.42	29.24	33.68
Power Factor Signed	-96.82	-94.35	-73.22

Schneider Electric

Generator Load Summary Report

ATS-B Initiated G1,G2,G4,G5

2/27/2013 8:00:00 AM - 8/28/2013 7:00:00 AM

Electrical Details for G2

Nameplate Rating 1600 kW

Running 7/29/2013 7:00:37 AM — Stopped 7/29/2013 8:09:11 AM

Timestamp	kW	kVA	Load %	PFS	I avg	VII avg	VIn avg	Frequency
7/29/2013 7:01:00 AM	-54.73	56.53	-3.42	-96.82	2.64	12,534.83	7,236.99	59.88
7/29/2013 7:02:00 AM	226.71	240.88	14.17	-94.12	11.49	12,494.25	7,213.56	60.01
7/29/2013 7:03:00 AM	470.29	494.12	29.39	-95.18	23.31	12,445.82	7,185.60	60.01
7/29/2013 7:04:00 AM	474.87	496.57	29.68	-95.63	23.38	12,459.60	7,193.56	60.01
7/29/2013 7:05:00 AM	478.81	506.26	29.93	-94.58	23.88	12,434.85	7,179.26	60.01
7/29/2013 7:06:00 AM	490.59	514.21	30.66	-95.41	24.19	12,449.52	7,187.74	60.01
7/29/2013 7:07:00 AM	484.94	508.25	30.31	-95.41	23.89	12,467.79	7,198.28	60.02
7/29/2013 7:08:00 AM	482.31	508.36	30.14	-94.88	23.90	12,451.94	7,189.13	60.01
7/29/2013 7:51:00 AM	504.39	527.84	31.52	-95.56	24.78	12,473.35	7,201.50	60.01
7/29/2013 7:52:00 AM	506.23	534.55	31.64	-94.70	25.11	12,457.29	7,192.22	60.01
7/29/2013 7:53:00 AM	506.58	530.68	31.66	-95.46	24.88	12,480.67	7,205.72	60.01
7/29/2013 7:54:00 AM	519.32	546.56	32.46	-95.02	25.53	12,497.70	7,215.55	60.01
7/29/2013 7:55:00 AM	515.66	541.11	32.23	-95.30	25.30	12,496.31	7,214.75	60.01
7/29/2013 7:56:00 AM	511.40	535.62	31.96	-95.48	25.10	12,490.05	7,211.13	60.01
7/29/2013 7:57:00 AM	513.06	533.16	32.07	-96.23	24.93	12,509.28	7,222.24	60.01
7/29/2013 7:58:00 AM	527.68	554.73	32.98	-95.12	26.01	12,466.06	7,198.44	60.01
7/29/2013 7:59:00 AM	529.43	555.54	33.09	-95.30	25.93	12,500.62	7,217.24	60.01
7/29/2013 8:00:00 AM	538.86	570.14	33.68	-94.51	26.65	12,466.28	7,197.41	60.01
7/29/2013 8:01:00 AM	524.81	551.78	32.80	-95.11	25.84	12,465.62	7,197.03	60.01
7/29/2013 8:02:00 AM	536.41	560.83	33.53	-95.64	26.28	12,462.86	7,195.44	60.01
7/29/2013 8:03:00 AM	530.49	555.05	33.16	-95.58	25.99	12,474.76	7,202.31	60.01
7/29/2013 8:04:00 AM	525.79	550.30	32.86	-95.55	25.80	12,467.89	7,198.34	60.01
7/29/2013 8:05:00 AM	538.57	568.77	33.66	-94.69	26.28	12,633.24	7,293.81	59.97
7/29/2013 8:06:00 AM	252.21	269.19	15.76	-93.69	12.51	12,531.39	7,235.00	59.95
7/29/2013 8:07:00 AM	-0.58	0.79	-0.04	-73.22	0.05	12,339.68	7,124.32	59.96
7/29/2013 8:08:00 AM	-0.60	0.81	-0.04	-74.03	0.05	12,339.84	7,124.41	59.96
7/29/2013 8:09:00 AM	-0.62	0.83	-0.04	-74.58	0.05	12,339.95	7,124.47	59.96

Generator Battery Health

The Generator Battery Health system contains several components that provide the customer with information about the generator battery bank. Specifically, the monitor shows the customer the starting voltage signature, which indicates the battery bank's voltage drop and recovery during and after starting the generator.

The following tasks must be completed to set up the Generator Battery Health system:

- Install and configure the ION7550 / ION7650 meter to the battery bank to be monitored. Refer to the *PowerLogic ION7550 / ION7650 Installation Guide* and *PowerLogic ION7550 / ION7650 User Guide* for more information. Obtain the latest version of these documents from www.schneider-electric.com.

  Note the following:

  - Digital signal from the Crank relay connected to the digital input of the ION7550/ ION7650 meter. This is the signal that triggers that triggers the oneshot timer to start recording waveform
  - V1 - V3 voltage inputs must have PTs in order to isolate the ground from the system being monitored and the battery.
  - Connect V4 to the positive side of the battery. Input impedence of V4 terminal is 5 Mohm (phase - Vref). For the most up to date specification, contact the local representative.
  - Connect Vref to battery ground.
  - Fusing must be installed according to the meter installation instructions.
  - Perform visual inspection of connections to help ensure there is physical separation between the system connected to V1, V2 and V3, and the battery connected to V4.
  - For other wiring options with PTs, see the *PowerLogic ION7550 / ION7650 Installation Guide.*

⚠ DANGER

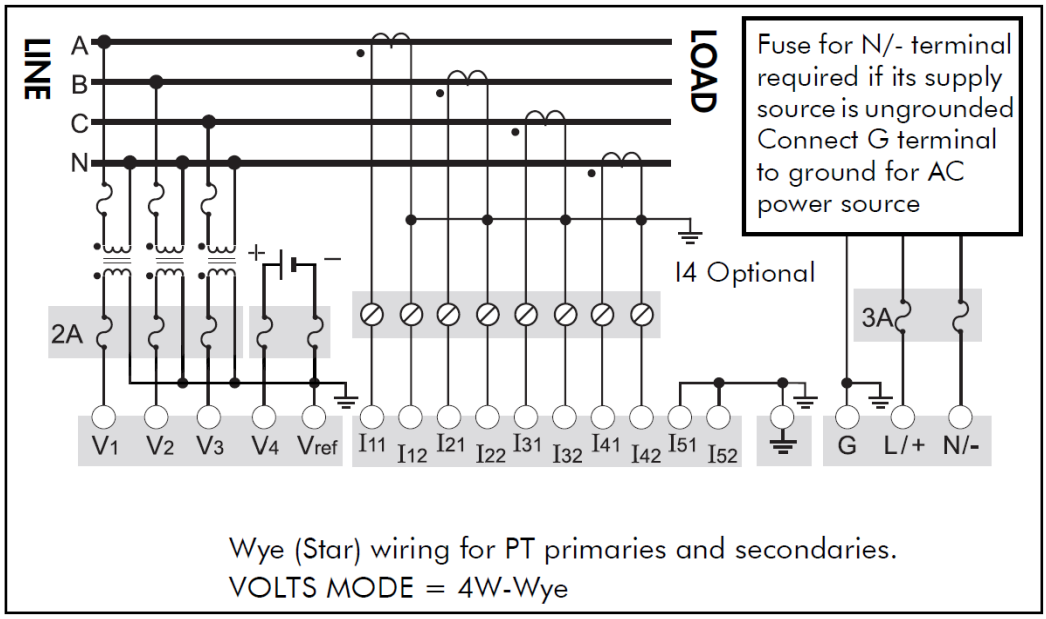
EQUIPMENT ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

Treat the battery circuit as energized to the category of the installation.

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

Refer to the following diagram as an example for connections to the meter.

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

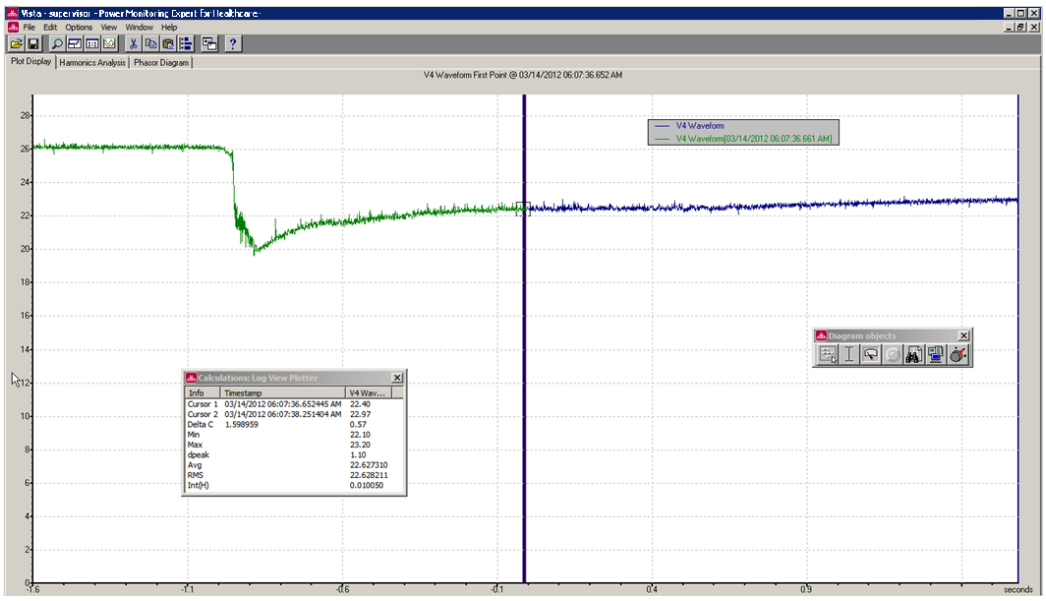


- Configure the Battery Health Framework to capture the battery voltage signature or waveform and deploy the framework to the meter. See the next section for instructions.
- In the Generator Performance Configuration Tool, check the Battery Waveforms option for the generator to be included in the customer's Battery Health report. See "Edit Generator Properties" on page 104 or or "Edit Generator Properties" on page 118 for instructions.
  - Configure the Generator Battery Health Report to display the graph of the voltage signature. The customer can use the report to help understand the battery bank condition. The report can display multiple generators for the same starting date or a single generator on multiple starting dates. See "Configuring and Running the Battery Health Report" on page 171.

This chapter provides instructions for configuring the framework to capture the voltage signature.

Configure the Battery Health Framework

The Battery Health Framework is designed to capture and record a generator's battery voltage signature at start up. This voltage signature provides some indication of the health of the generator's battery bank. A typical waveform capture of the voltage drop when starting is shown next:



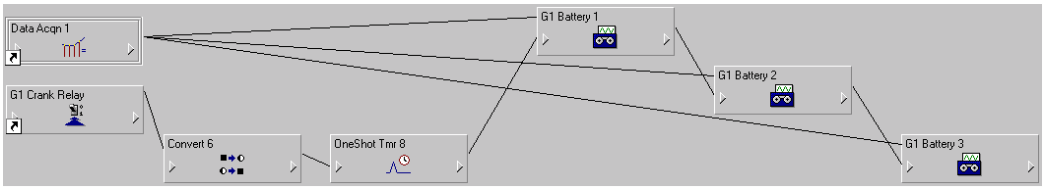
Note the following items about this example:

- This capture shows about 4 - 5 seconds worth of data, accomplished via 3 waveform recorders in series configured at a resolution of 16x96.
- The voltage does not immediately recover to its original value (~26 v) but it begins to ramp up.
- There is about 0.5 seconds of data before the voltage drop to approximately 20 v.

Two options in the framework are possible to capture the waveform, based on how the crank relay signal is triggered - pulse or KYZ.

Example Framework

The following figure shows the typical modules for the framework.



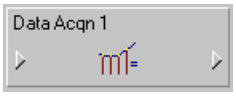
The types of module used are:

- Data Acquisition
- Digital Input
- Convert
- OneShot Timer
- Waveform Recorder

See the following descriptions for the way each module works in this framework.

Refer to *ION Reference* for details on how each module operates and for setting module parameters.

Data Acquisition – Data Acqn 1



The V4 signal from the meter goes to the Data Acquisition module.

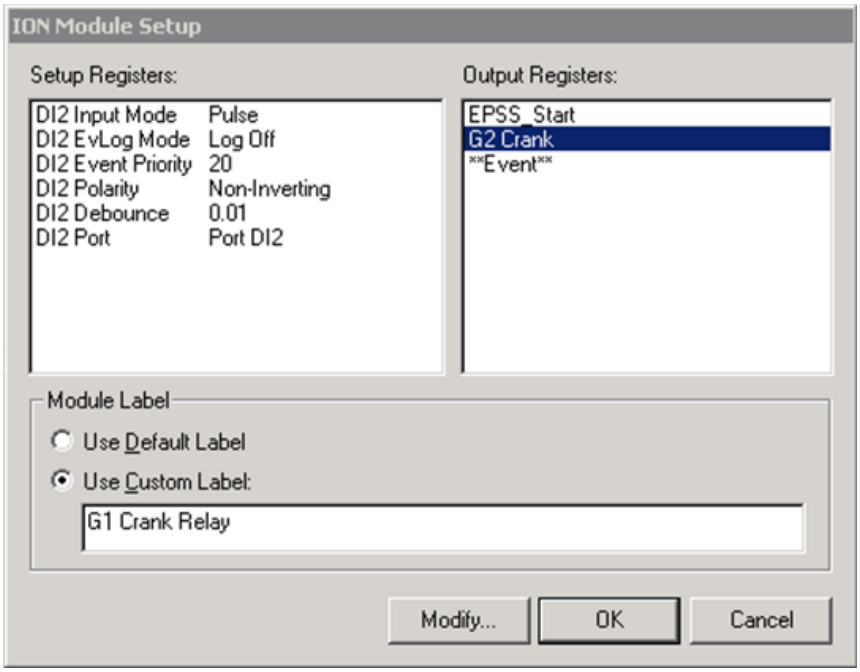
Digital Input – G1 Crank Relay

This module accepts the Cranking Relay signal from the field. When the signal goes high, the logic to record the battery voltage triggers.

The Input mode can be set to Pulse or KYZ, as explained next.

Pulse Input Mode

When the Crank Relay signal goes high, a pulse is generated on the Trigger output register, labeled "G1 Crank Relay." The setup registers for the Digital Input module are shown next.



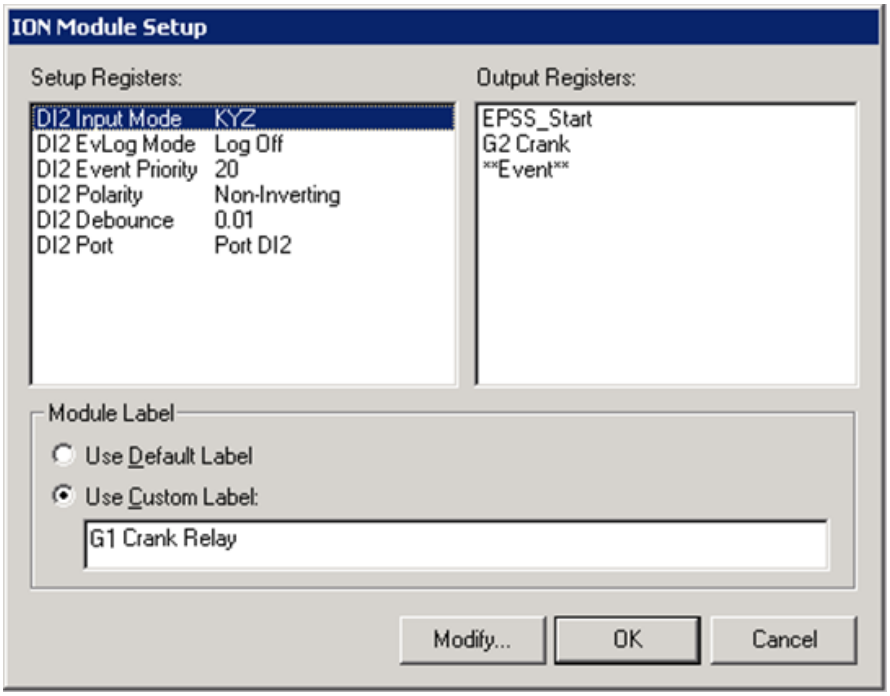
Note that the **Input Mode** value is Pulse. The Trigger output can now be fed into the first Waveform Recorder along with V4 from the Data Acquisition module.

KYZ Input Mode

If you are using the same Digital Input to handle the Generator Start signal (EPSS_Start) it is probably set to KYZ mode.

Input Mode KYZ means that a pulse is generated on the Trigger output register when the Crank Relay signal goes high AND when it goes low. The Convert module and One Shot Timer module (explained later) prevent triggering the downstream logic twice.

The Crank Relay Module is setup like this:



Note that the Input Mode value is KYZ.

Convert

The signal from the Digital Input module cannot be fed directly into the One Shot Timer. The Convert module converts the digital signal to analog for the One Shot Timer.

One-Shot Timer

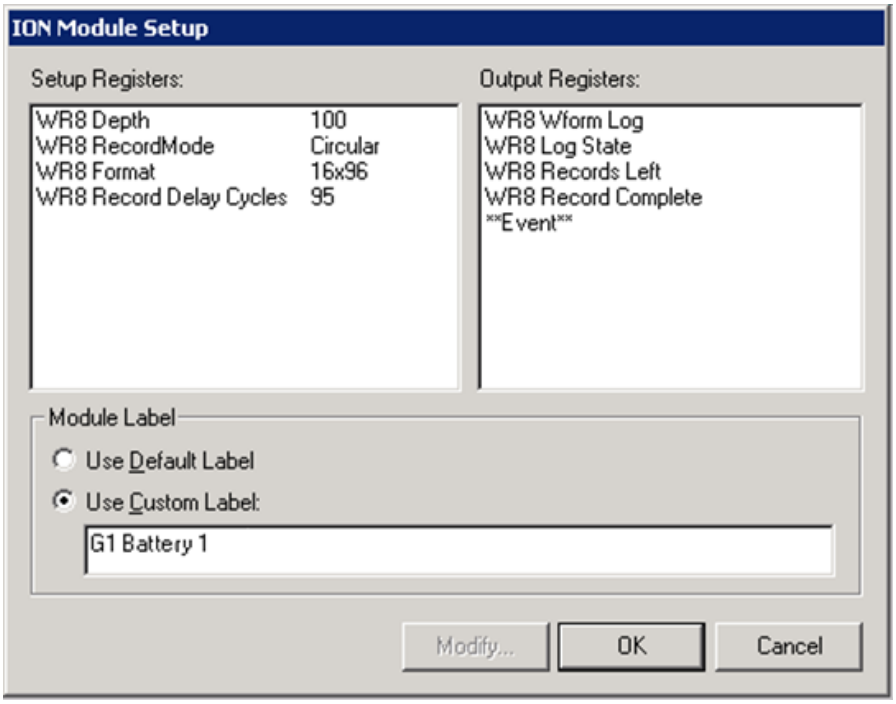
To prevent triggering the downstream logic twice, send the state (EPSS_Start) from the Convert module into the One Shot Timer:

Send the output register into the first Waveform Recorder G1 Battery 1.

First Waveform Recorder – G1 Battery 1

The Data Acquisition module and G2 Crank Relay module are the inputs to the first Waveform Recorder, labeled “G1 Battery 1.”

These are the setup registers for the module:

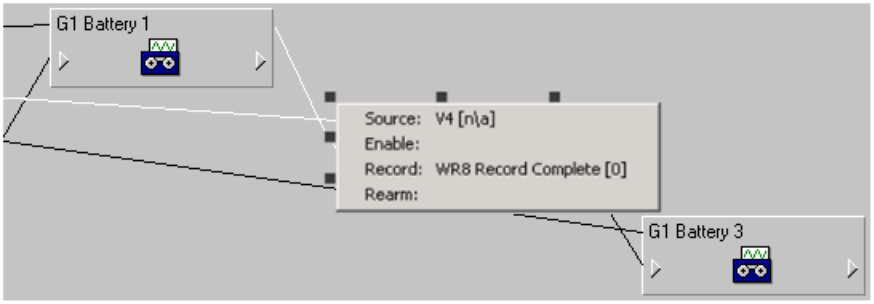


Note the following about the setup registers:

- Depth must be non-zero – 100 is a good number.
- Record Mode should be Circular.
- Format should 16x96. This means 16 samples per cycle and 96 cycles, so at 60 Hz this results in approximately 1.6 seconds worth of data.
- Record Delay Cycles is set to 95 to allow the “window of observation” to move so that only post-event data is captured. Refer to *ION Reference* for more details.

Second and Third Waveform Recorders

The second Waveform Recorder - G1 Battery 2 - is cascaded with the first to capture another 1.6 seconds of the battery voltage signature. Do this by using the Record Complete output register on G1 Battery 1 as a flag to trigger G1 Battery 2 to start recording.

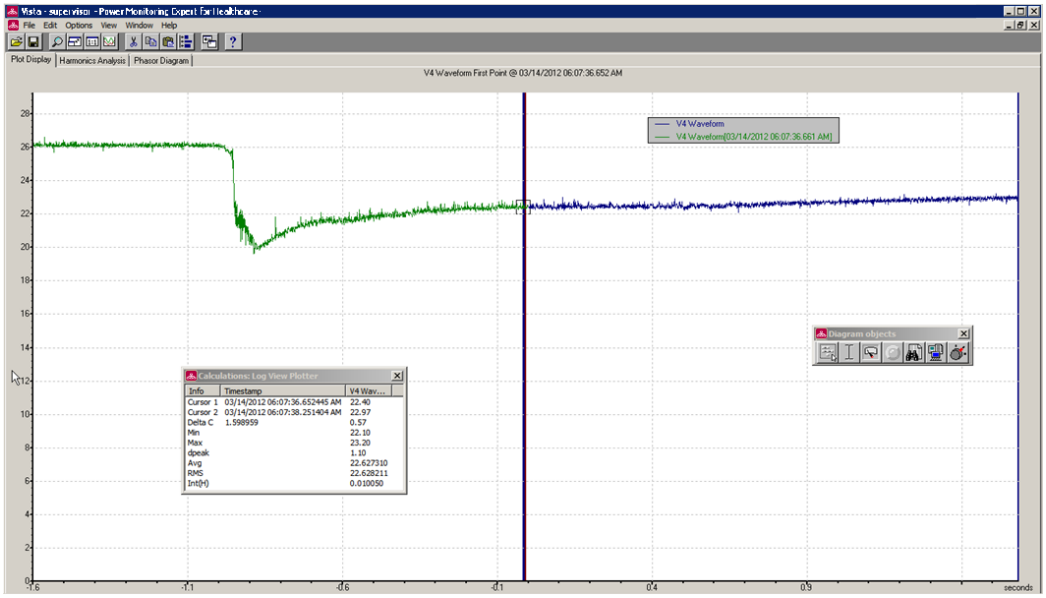


The third Waveform Recorder - G1 Battery 3 - is cascaded with the second recorder to capture the final 1.6 seconds of the battery voltage signature. As above, use the Record Complete output register on G1 Battery 2 as a flag to trigger G1 Battery 3 to start recording.

The Setup Registers should be the same as first waveform recorder with different labels.

Battery Health Waveform Capture Results

After the framework is complete, in Vista you should see the voltage signature that looks similar to the illustration shown next.



After you obtain this type of result, you can configure the generator in the Generator Performance Configuration Tool and define the Battery Health Report in the Power Monitoring Expert 8.1 Healthcare Edition Web Applications Reports feature. Refer to these sections for instructions on these tasks.

- "Edit Generator Properties" on page 104 if the system does not include the EPSS.
- "Edit Generator Properties" on page 118, if the system includes the EPSS.
- "Configuring and Running the Battery Health Report" on page 171.

Generator Battery Health Report

The **Generator Battery Health Report** shows the captured waveform image of the generator voltage when the generator starts.

The waveform image includes a reference waveform that shows the initial voltage signature when the batteries were first installed and tested. The reference waveform helps compare the current battery condition to their initial condition.

Research has indicated that when a battery begins to fatigue, the waveform for the voltage during start-up changes. The voltage waveform can be captured and stored in the system for ongoing analysis.

By capturing the voltage waveform when the batteries are in a known good condition, subsequent waveforms can be compared to it to identify changes. In the Generator Battery Health report, you can compare waveform images to see the changes over time. Adverse changes in the waveform indicate a degradation of battery condition.

⚠ WARNING

INACCURATE REPORT RESULTS

- Do not incorrectly configure the devices and software. This can lead to inaccurate reports and/or data results.
- Do not rely solely on system reports to determine if the system is functioning correctly or meeting all applicable standards and requirements.
- Use system reports as a supplement to proper workplace practices or equipment maintenance, not as a substitute.

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

Prerequisites

In the Generator Performance Configuration Tool (with or without the EPSS), define the following tabs and fields in order to generate the report:

Generators Tab

- **Name** - The generator entity needs a name.
- **Electrical Data** - The measurement source, nameplate rating, and unit of measurement are required.
- **Status Measurements** - The source of the status measurement and the start, run, and stop values must be selected. Configure the meters that provide these measurements.
- **Evaluation Method** - “Load” is default, but this may be changed to accommodate customer requirements.
- **Battery Waveforms** - Select the source and the measurement. Configure the meters that provide these measurements. Also, configure the frameworks as described in "Generator Battery Health" on page 162.

For instructions on completing this tab, see the following:

- "Edit Generator Properties" on page 104 if the system does not include the EPSS.
- "Edit Generator Properties" on page 118, if the system includes the EPSS.

After these required items are defined, the report can be configured and generated, as described next.

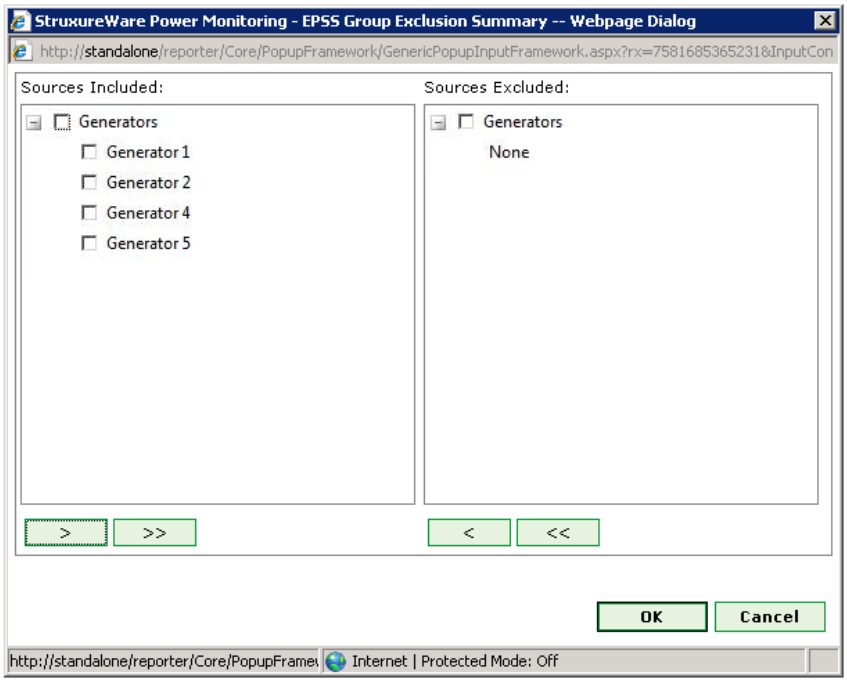
Configuring and Running the Battery Health Report

Use the Reports module in Web Applications to configure and generate the Battery Health Report.

NOTE: Emergency Power Supply System (EPSS) is a North American term used in the healthcare segment. "EPSS Group" refers to the "Groups" defined in the Generator Performance Configuration Utility.

---

1. Complete the fields to define the report:
   - **Title** - Enter a name for the report.
   - **Select EPSS Group** - Select the generator group for which the report is intended. The list shows the groups that include generators that can record the battery voltage waveform via ION 7550 / ION 7650 meter. See "Edit Generator Properties" on page 104 for more details about selecting the battery waveform selection for a generator. When you select a group in the list, the field to the right shows the devices included in the group.
   - **Exclude Sources** - Click this to define the sources to exclude from the report.



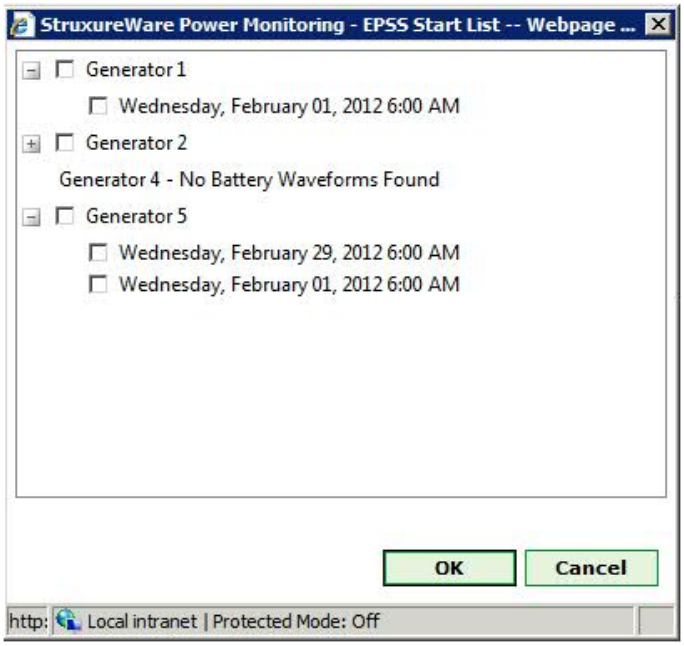
   a. In the **Sources Included** area, select sources to exclude and then click **>**

to move those sources to the **Sources Excluded** area.

b. To move all of the sources into the **Sources Excluded** area, click **>>**.

c. Click **OK** to save the sources and return to the report template. The devices in the group will appear in the **Sources** section of the generated report. Excluded devices will appear as grayed-out entries.

- **Select Generator Starts** - Select the option to specify the start records. If you click **Select Reference Starts** you can choose the specific start records by generator and date. For example, you can use this option to compare yesterday's Gen 1 start voltage signature to the Gen 1 start voltage signature from six months prior.

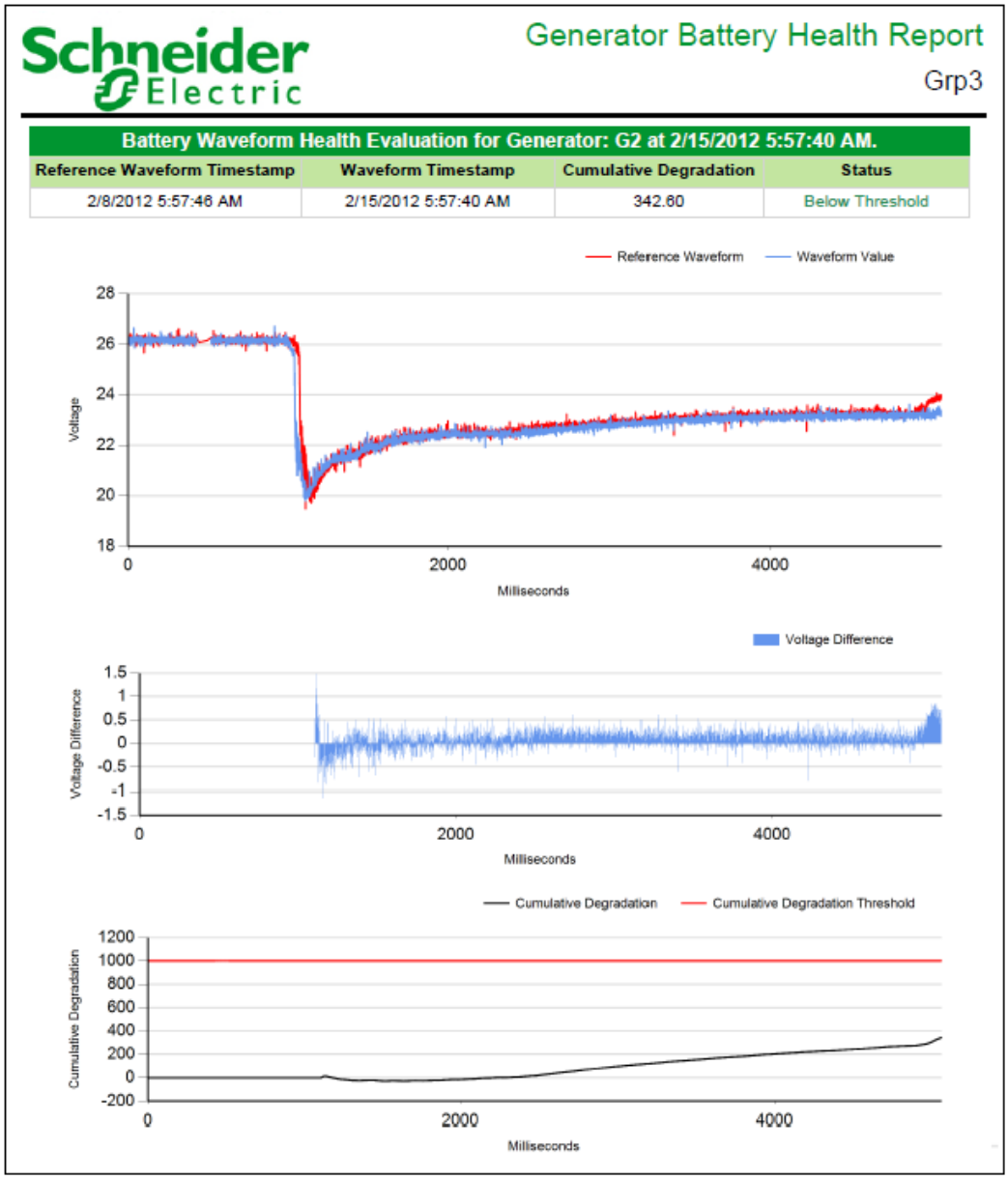


- **Include Data Warnings** - Click **Yes** to include the data warnings in the report. If there are no data warnings, the section is not included in the report. Click **No** to exclude this section.
- **Cumulative Degradation Threshold** - Enter the value that represents the maximum total voltage difference between the reference waveform and the evaluated waveforms. For example, if the waveform is off by 1.0 on each point from the reference, the total degradation is 10. If the threshold value is 8, then the degradation exceeds the threshold.

2. Click **Generate Report** to produce the report.

Battery Health Report Example

In this example, the starting voltage waveform (blue) is very similar to the reference waveform (red). The drop to 20 VDC is the point at which the generator started. After the start, battery voltage rises to normal state of charge after the start.



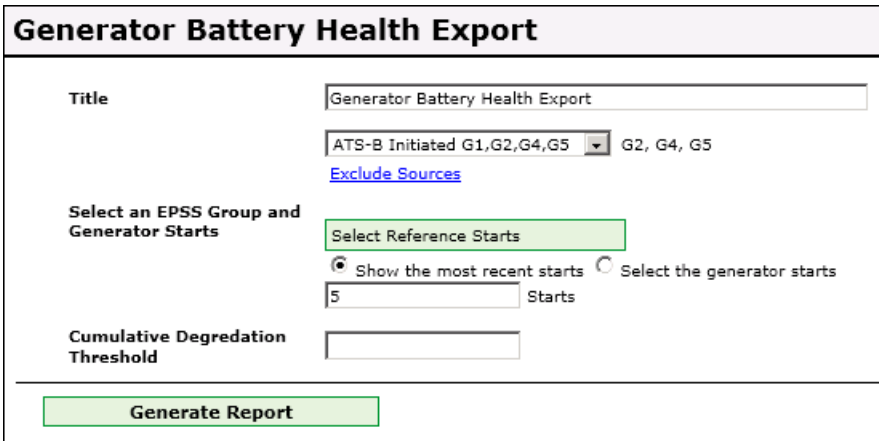
Generator Battery Health Export

The **Generator Battery Health Export** report is based on the same data as the graphic-based report. The export version provides the raw data in CSV file format. The export file can be imported by other systems, such as Energy Operation.

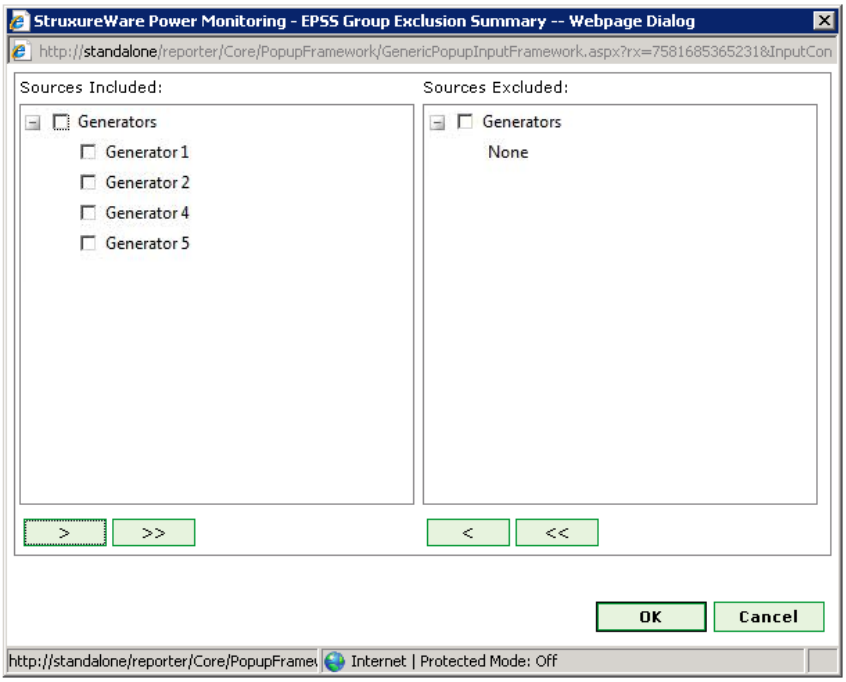
Configure and Run the Generator Battery Health Export

Use the Power Monitoring Expert 8.1 Healthcare Edition Web Application Reports feature to configure and produce the Generator Battery Health Export file.

1. In the Reports Library, expand the Healthcare Reports folder and click **Generator Battery Health Export**. The report template appears.



2. Complete the fields to define the report.
   - **Title** - Enter a name for the export file.
   - **Select EPSS Group** - Select the generator group for which the report is intended. The list shows the groups that include generators that can record the battery voltage waveform via ION 7650 meter. For more details about selecting the battery waveform selection for a generator, see:
     - For Generator Performance Configuration Tool, see "Edit Generator Properties" on page 104.
     - For Generator Performance Configuration Tool with EPSS Test Module, see "Edit Generator Properties" on page 118.
   - When you select a group in the list, the field to the right shows the devices included in the group.
   - **Exclude Sources** - Click this to define the sources to exclude from the report.

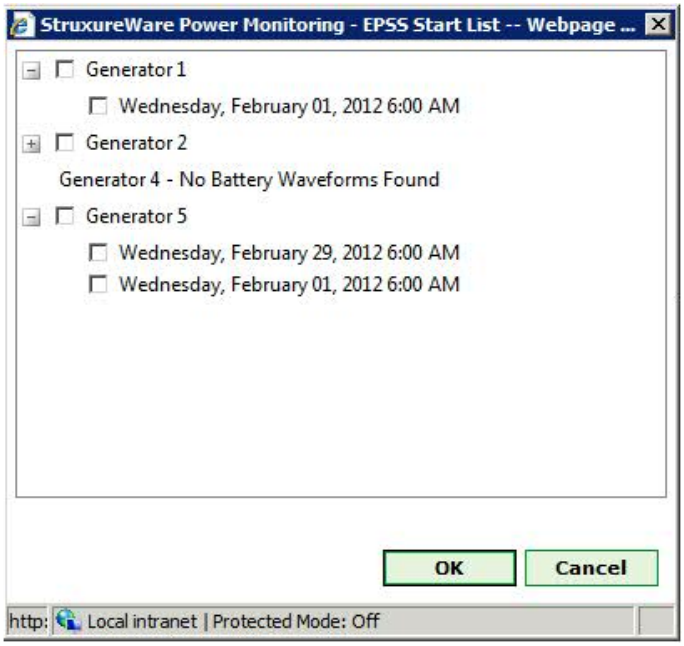


a. In the **Sources Included** area, select sources to exclude and then click **>** to move those sources to the **Sources Excluded** area.

b. To move all of the sources into the **Sources Excluded** area, click **>>**.

c. Click **OK** to save the sources and return to the report template. The devices in the group will appear in the **Sources** section of the generated report. Excluded devices will appear as grayed-out entries.

- **Select Generator Starts** - Select the option to specify the start records. If you click **Select Reference Starts** you can choose the specific start records by generator and date. For example, you can use this option to compare yesterday's Gen 1 start voltage signature to the Gen 1 start voltage signature from six months prior.



- **Cumulative Degradation Threshold** - Enter the value that represents the maximum total voltage difference between the reference waveform and the evaluated waveforms. For example, if the waveform is off by 1.0 on each point from the reference, the total degradation is 10. If the threshold value is 8, then the degradation exceeds the threshold.

3. Click **Generate Report** to produce the report.

Battery Health Export Example

	A	B	C	D	E	F	G	H	I	J	K	L	M	N
1	2	G1	2012-02-22T15:06:57	733	2012-02-29T15:11:02	187	0	1000	2839.898804	1256	2939.623901	99.72509766	80	99.72509766
2	2	G1	2012-02-22T15:06:57	733	2012-02-29T15:11:02	187	0	1000	2839.898804	1256	2939.623901	99.72509766	80	199.4501953
3	2	G1	2012-02-22T15:06:57	733	2012-02-29T15:11:02	187	0	1000	2839.898804	1256	2939.623901	99.72509766	80	299.175293
4	2	G1	2012-02-22T15:06:57	733	2012-02-29T15:11:02	187	0	1000	2839.898804	1256	2939.623901	99.72509766	80	398.9003906
5	2	G1	2012-02-22T15:06:57	733	2012-02-29T15:11:02	187	0	1000	2839.898804	1256	2939.623901	99.72509766	80	498.6254883
6	2	G1	2012-02-22T15:06:57	733	2012-02-29T15:11:02	187	0	1000	2839.898804	1256	2939.623901	99.72509766	80	598.3505859
7	2	G1	2012-02-22T15:06:57	733	2012-02-29T15:11:02	187	0	1000	2839.898804	1256	2939.623901	99.72509766	80	698.0756836
8	2	G1	2012-02-22T15:06:57	733	2012-02-29T15:11:02	187	0	1000	2839.898804	1256	2939.623901	99.72509766	80	797.8007813
9	2	G1	2012-02-22T15:06:57	733	2012-02-29T15:11:02	187	0	1000	2839.898804	1256	2939.623901	99.72509766	80	897.5258789
10	2	G1	2012-02-22T15:06:57	733	2012-02-29T15:11:02	187	0	1000	2839.898804	1256	2939.623901	99.72509766	80	997.2509766
11	2	G1	2012-02-22T15:06:57	733	2012-02-29T15:11:02	187	0	1000	2839.898804	1256	2939.623901	99.72509766	80	1096.976074
12	2	G1	2012-02-22T15:06:57	733	2012-02-29T15:11:02	187	0	1000	2839.898804	1256	2939.623901	99.72509766	80	1196.701172
13	2	G1	2012-02-22T15:06:57	733	2012-02-29T15:11:02	187	0	1000	2839.898804	1256	2939.623901	99.72509766	80	1296.42627
14	2	G1	2012-02-22T15:06:57	733	2012-02-29T15:11:02	187	0	1000	2839.898804	1256	2939.623901	99.72509766	80	1396.151367
15	2	G1	2012-02-22T15:06:57	733	2012-02-29T15:11:02	187	0	1000	2839.898804	1256	2939.623901	99.72509766	80	1495.876465
16	2	G1	2012-02-22T15:06:57	733	2012-02-29T15:11:02	187	0	1000	2839.898804	1256	2939.623901	99.72509766	80	1595.601563
17	2	G1	2012-02-22T15:06:57	733	2012-02-29T15:11:02	187	0	1000	2839.898804	1256	2939.623901	99.72509766	80	1695.32666
18	2	G1	2012-02-22T15:06:57	733	2012-02-29T15:11:02	187	0	1000	2839.898804	1256	2939.623901	99.72509766	80	1795.051758

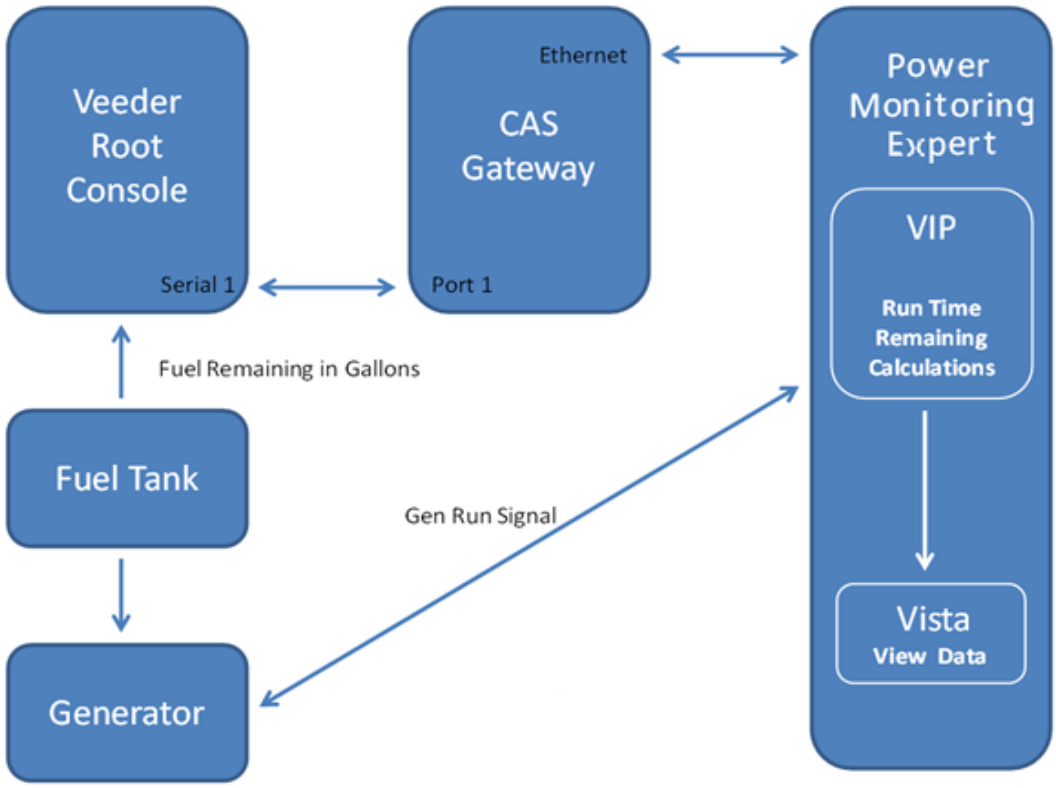
Generator Fuel Management

This Generator Fuel Management system calculates and displays the “Run Time Remaining” data for generators in the facility.

Components of the system include:

- CAS Gateway + CAS_IPSetup tool (ordered from Schneider Electric separately from Power Monitoring Expert)
- Veeder Root Fuel Management System (supplied by customer)
- Generators and fuel tanks (supplied by customer)

The components of the fuel monitoring system correlate to each other as follows:



Two main components of the hardware are:

- **Veeder Root Device** - Monitors data, such as volume, water content, temperature, of the fuel tanks. The Veeder Root device generates data using the VR protocol, which cannot be read directly in Power Monitoring Expert. The Veeder Root device sends serial data to the CAS Gateway.

- **CAS Gateway** - Collects data from Veeder Root device and sends the data to Power Monitoring Expert. The gateway converts Veeder Root data on the serial port to Modbus data (ModTCP protocol) on the Ethernet port for the software.

Configure Generator Fuel Management

The main steps to set up the Generator Fuel Management system are:

- Connect the CAS Gateway to Power Monitoring Expert 8.1 Healthcare Edition. Use Vista to validate communications and expose Tank Data. Refer to "Configure the CAS Gateway" on page 178 for instructions.
- Configure the Run Time Remaining framework. Refer to "Configure Run Time Remaining Diagrams" on page 181 for instructions.

Additional tasks you may want to complete are:

- "Integrate Veeder Root Diagrams With Vista Diagrams" on page 198
- "Add Fuel Management Widgets to Diagrams" on page 199

Graphics for the fuel management diagrams are available. Not all graphics have been used in the diagram templates. If you want to use additional graphics, such as the Veeder Root panel and Control panel, review the graphic files on the Power Monitoring Expert 8.1 Healthcare Edition Installation DVD in the Graphics > Models folder. To use the *.SKP graphics, download the free application “Google SketchUp 8.”

Configure the CAS Gateway

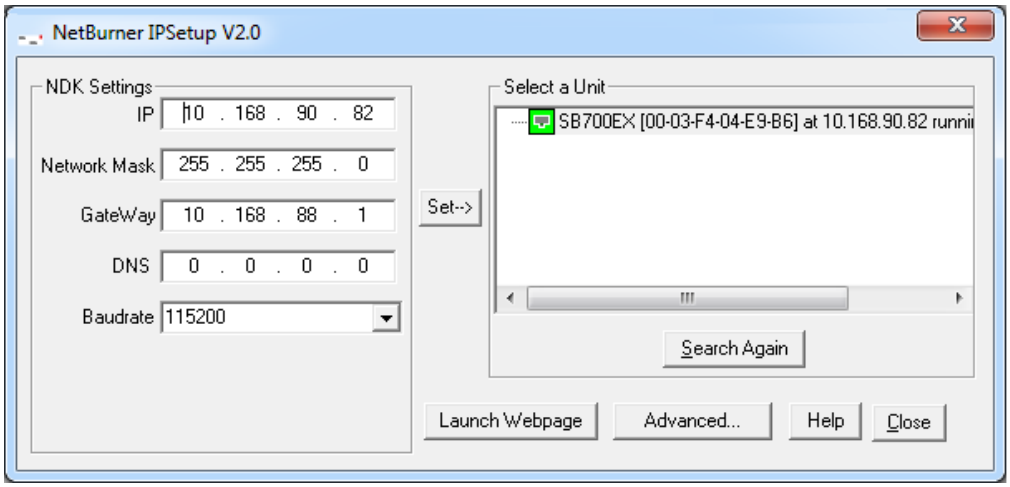
The main steps for this process are:

1. Configure the CAS Gateway for the network.
2. Set up the Serial Communications Parameters.
3. Connect the CAS Gateway to the Veeder Root console.
4. Add the CAS Gateway to Power Monitoring Expert 8.1 Healthcare Edition.

Instructions for these steps are provided next.

Configure the CAS Gateway for the Network

1. Install the CAS_IPSetup tool - Installer_CAS IPSetup V2.0.exe – on the laptop.
2. If you do not have an isolated network, connect the laptop to the CAS Gateway with a network cable.
3. Start the CAS_IPSetup tool.



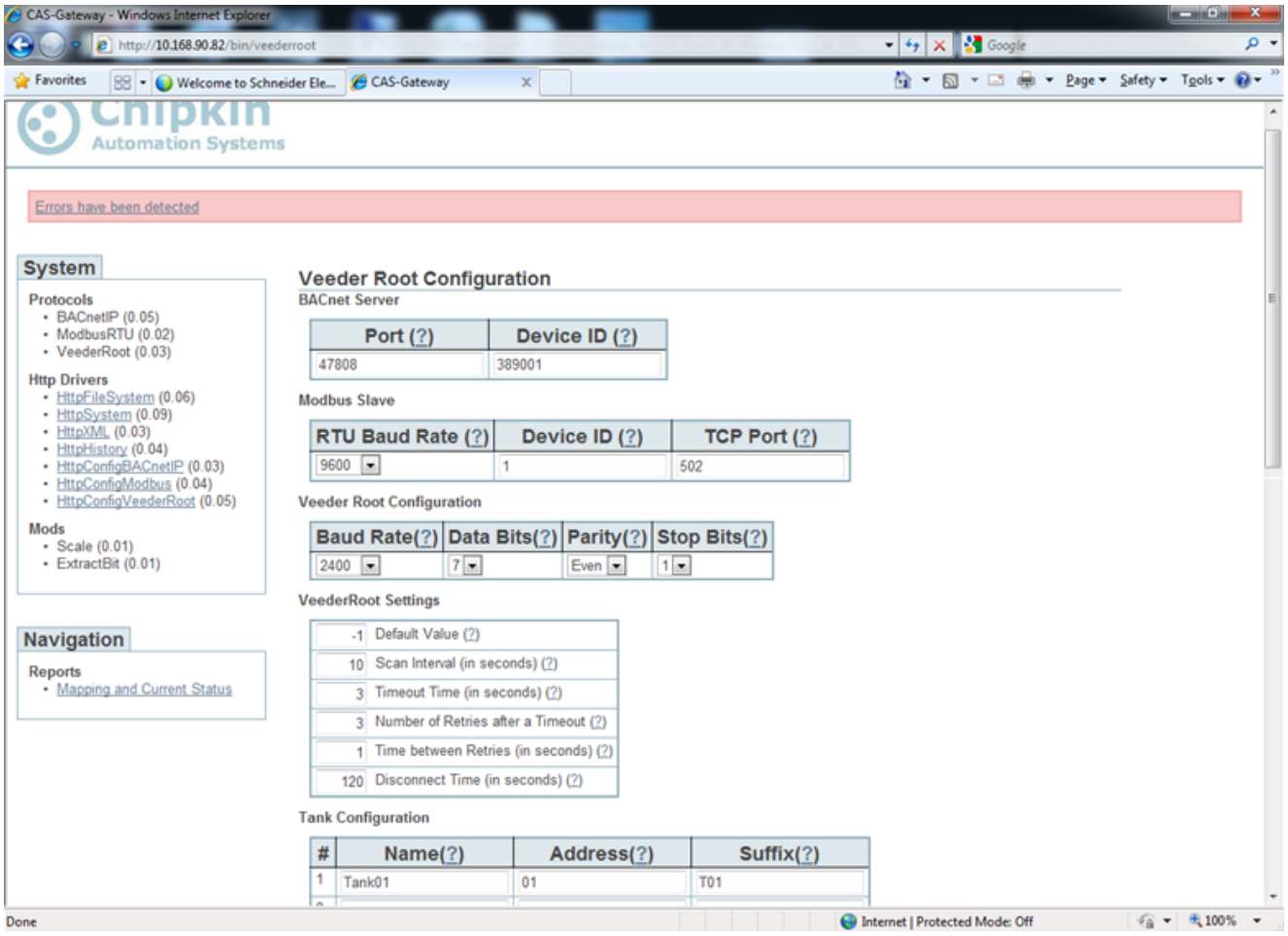
The tool searches the network and displays any CAS Gateways present.

4. Under **Select a Unit**, highlight the found unit, enter the values under **NDK Settings** and click **Set**.

Once credentials are set, the context will come back to the unit and the new IP appears. You will need this IP address for later steps.

Set the Serial Communications Parameters

1. In the IPSetup Tool, click **Launch Webpage**. The CAS Configuration web page opens.
2. In the address bar, enter http://<*IP address*>/bin/veederroot. Use the IP address that appeared in the previous section. The Veeder Root configuration login page appears.
3. Enter the login credentials and click **OK**. The CAS Veeder Root Configuration page appears.



4. Under **Veeder Root Configuration**, enter the Baud Rate, Data Bits, Parity and Stop Bits to match those on the Veeder Root Communications Card you plan to interface with.

   The Device ID in the Modbus Slave section is the ID for the ModTCP connection. This ID is also used for the RTU connection off of Port 0. For this application this port is not used.

5. Scroll to bottom of page and click **Save**.

For more information about the configuration tool, refer to *CAS Gateway Configuration Guide*.

Connect the CAS Gateway to the Veeder Root console

1. Connect the CAS Gateway to the Ethernet Network.
2. Connect Port 1 on the CAS Gateway to the Veeder Root Communications port using a Null Modem cable.
3. Power up the gateway device.

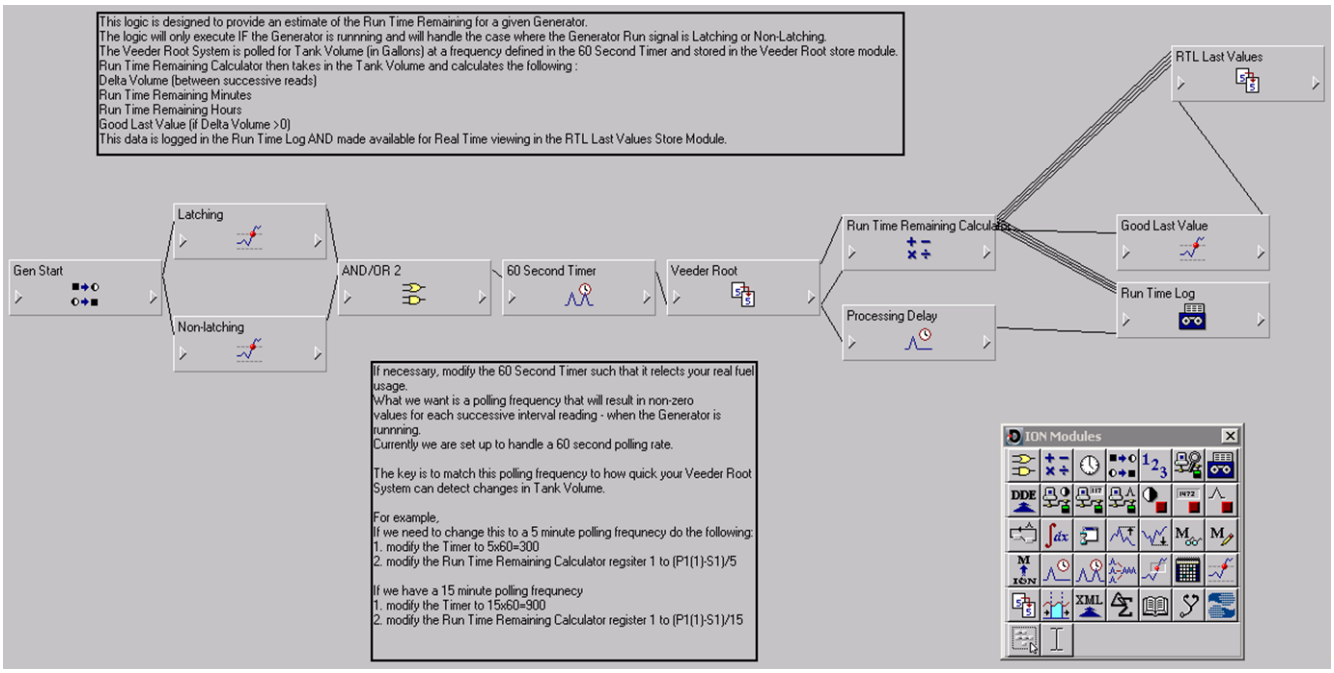
Add the CAS Gateway to Power Monitoring Expert 8.1 Healthcare Edition

1. Open Management Console and select **Devices**.
2. Right-click in the grid and select **New** > **Ethernet device**.
3. Enter the IP address of the CAS Gateway.
4. In the **Device Type** field select "Veeder Root."
5. Click **OK**.

After the configuration steps are complete, set up the framework to expose the tank fuel data. Refer to "Configure Run Time Remaining Diagrams" on page 181 for instructions.

Configure Run Time Remaining Diagrams

The Run Time Remaining Framework should have modules as in the following example:



This framework uses the following modules.

- Convert Module, labeled “Gen Start”
- SetPoint Modules, labeled "Latching" and "Non-Latching"
- AND/OR Module
- Periodic Timer, labeled “60 Second Timer”
- Store, labeled “Store 1”
- Arithmetic Module, labeled “Run Time Remaining Calculator”

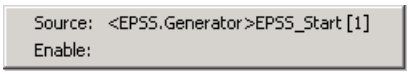
- One Shot Timer, labeled “Processing Delay”
- SetPoint module, labeled "Good Last Value"
- Store, labeled "RTL Last Values"
- Data Recorder, labeled “Run Time Log “

Refer to *ION Reference* for details on how the modules operate. The following sections specify the module parameters required for this framework.

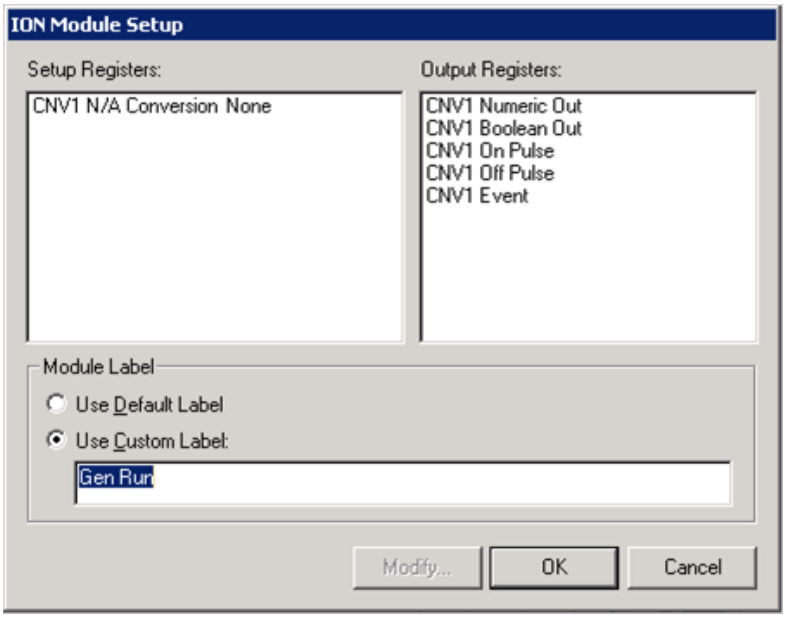
The VIP logic flows left to right and the modules perform the functions as follows:

Convert Module - Gen Start

The Convert module reads the status of the Generator Start signal via a Digital Input.



The Setup Registers for this module are shown next:



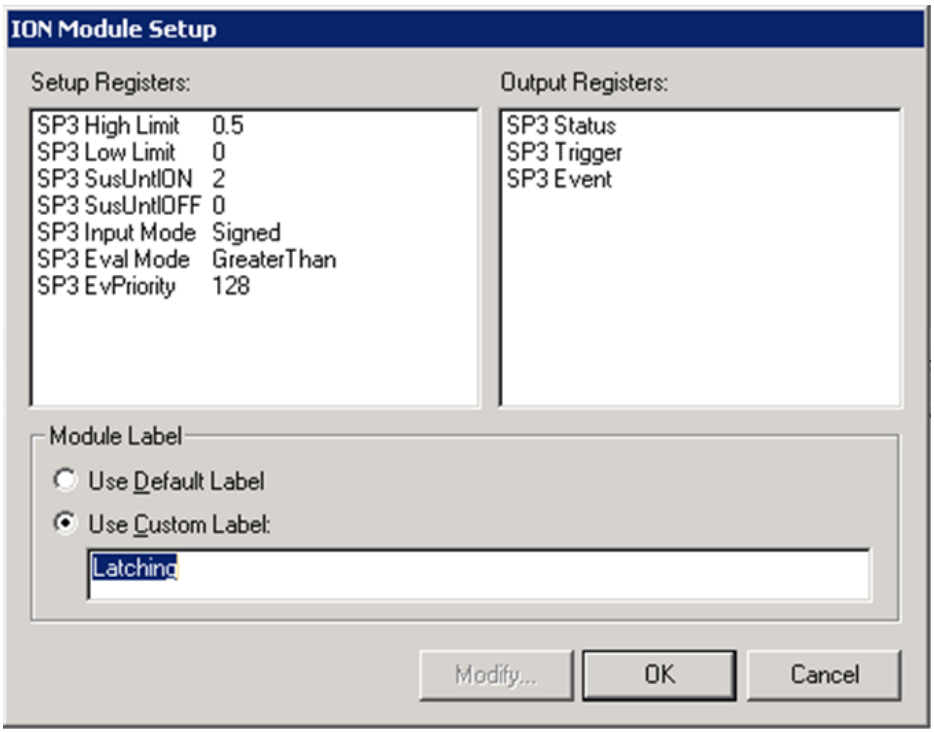
- Link the Boolean Out output register to the Latching SetPoint Source input register.

SetPoint - Latching

The Latching module reads the Gen Start signal state.

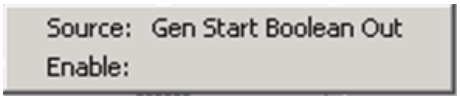
The signal must be high for at least 2 seconds to be considered valid.

The Setup Registers for this module are shown next:



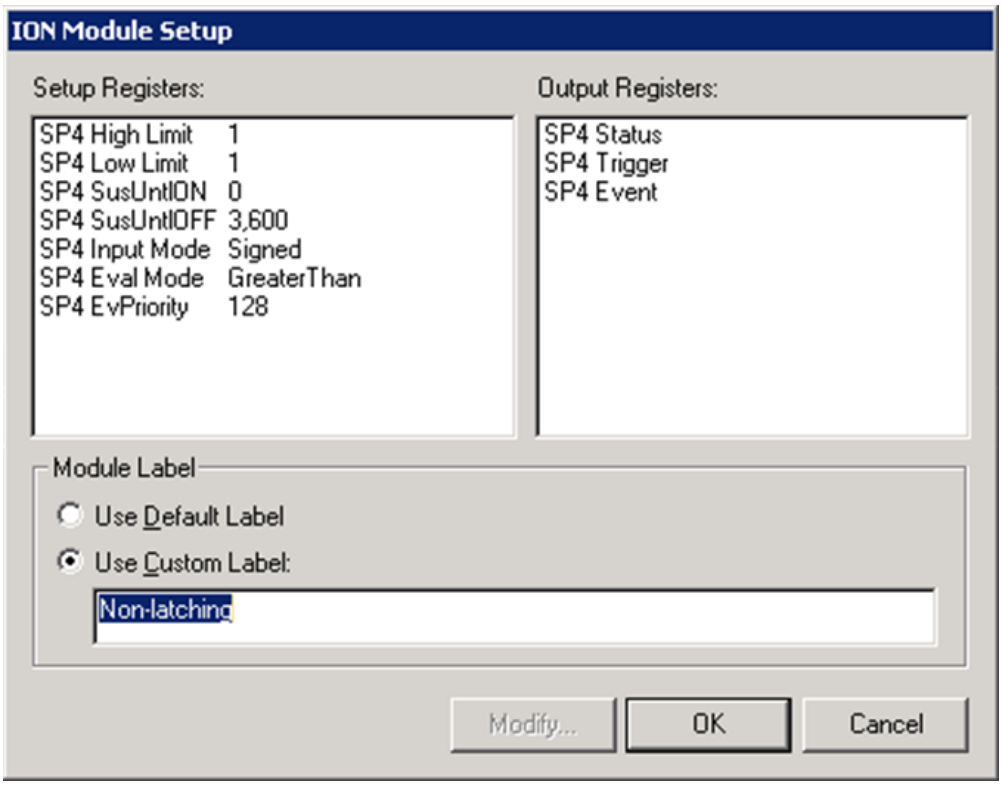
SetPoint - Non-Latching

The Non-Latching module reads the Gen Start signal state.



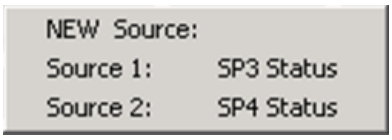
If the signal goes high and then drops out (low) the output of this module will be held high (latched for the duration of the test – 3600 seconds) using the SusUntlOFF setup register.

The Setup Registers for this module are shown next:



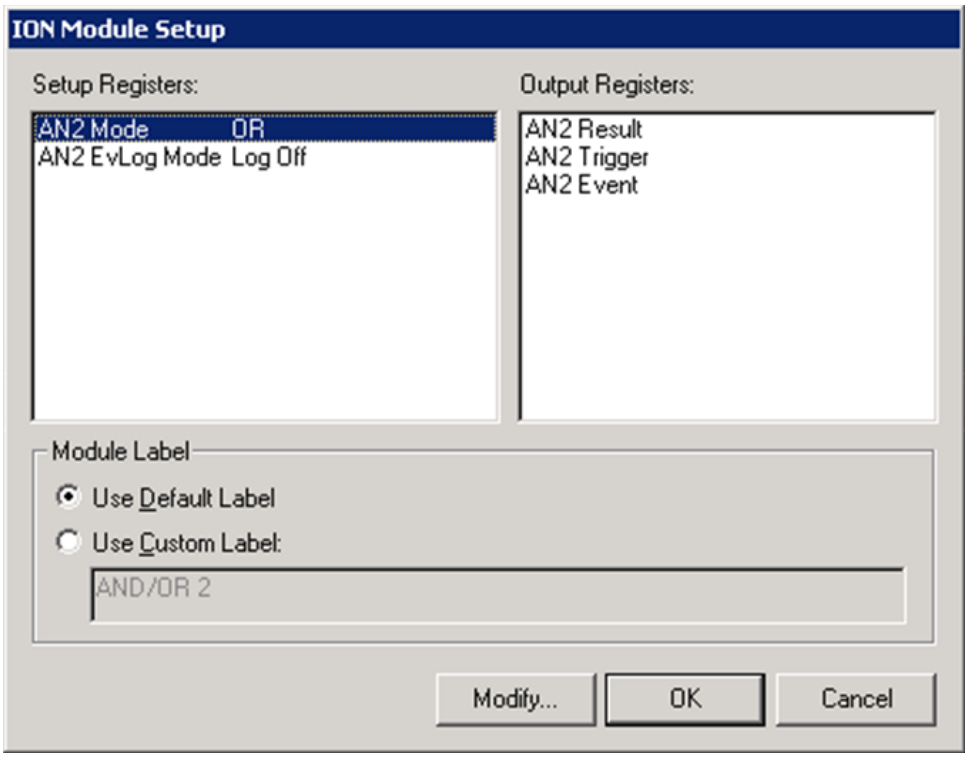
AND/OR

The AND/OR module allows the logic to execute whether the Gen Run signal is latching or non-latching. This module takes the status outputs of both setpoint modules as inputs.



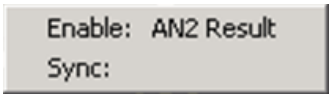
This module uses OR logic to pass the state through to the 60 Second Timer.

The Setup Registers for this module are shown next:



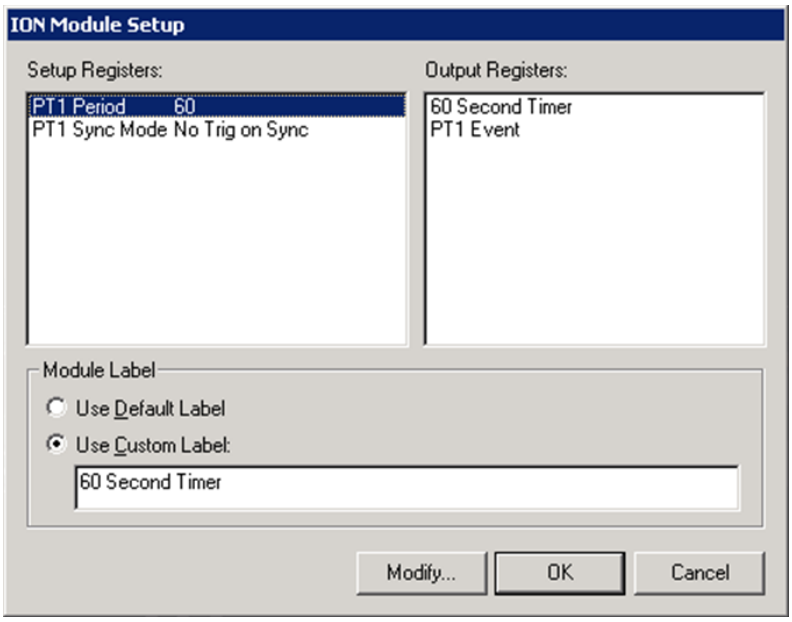
Periodic Timer – 60 Second Timer

The Periodic Timer module controls the logging frequency. It also links the AND/OR module result output to the enable input register.



- Set the period to 60 seconds.
- Link the Trigger output register (labeled 60 Second Timer) to the Store module Store input register.

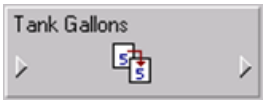
The Setup Registers for this module are shown next:

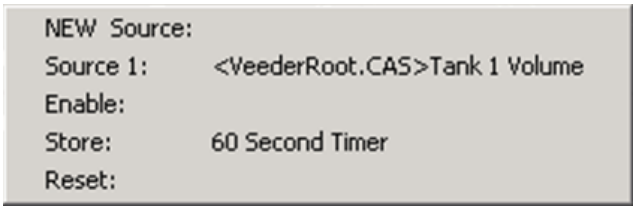


- Set the period to 60 seconds.
- Link the Trigger output register to the Store module Store Now input register.

Store Module – Store 1

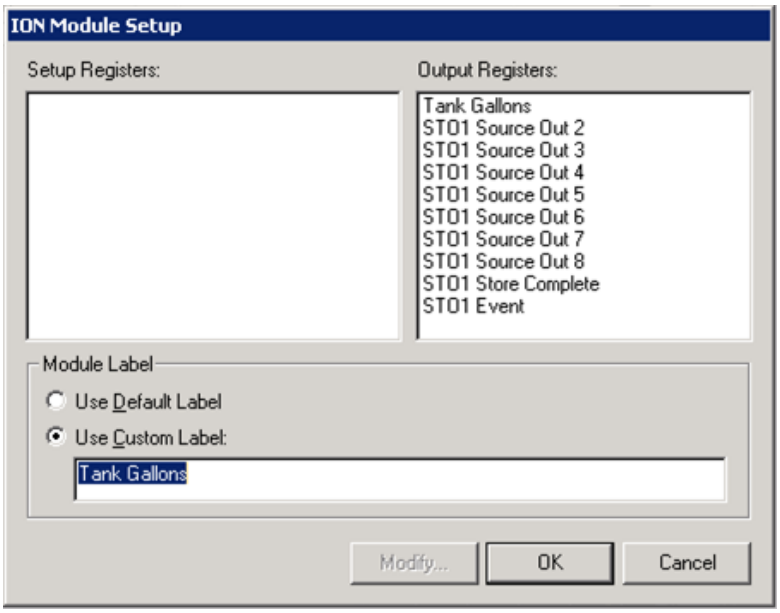
The Store module passes the Tank Volume value (in gallons) from the CAS Gateway to the Arithmetic module Run Time Remaining Calculator. This module triggers the Arithmetic module and the One Shot Timer module Processing Delay.





- Link the Source input to Tank Volume.

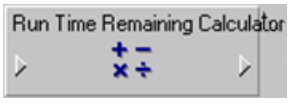
The Setup Registers for this module are shown next:



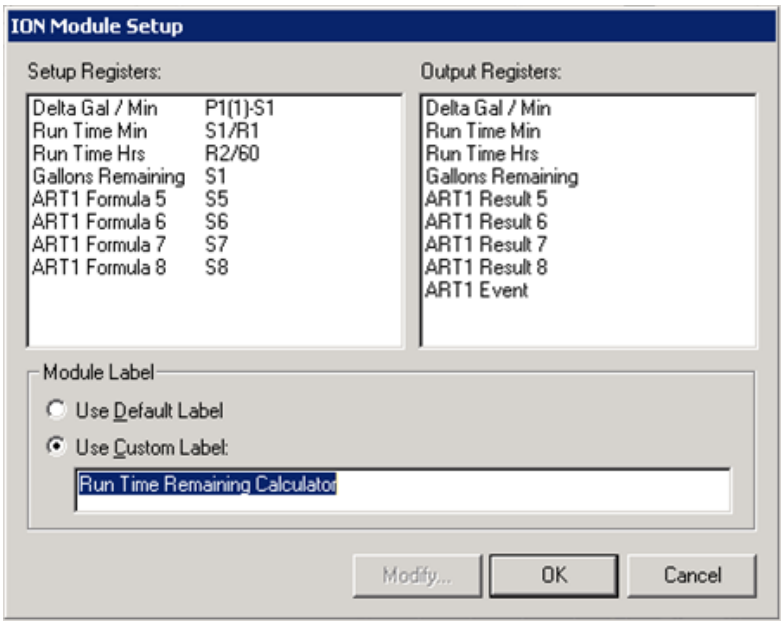
- Link the Source Out output register to the Source input register on the Run Time Remaining Calculator
- The Store Complete output register:
  - feeds into the Run Time Remaining Calculator Calc Now input register.
  - feeds into the Processing Delay Start input register.

Arithmetic Module – Run Time Remaining Calculator

Receives input from Tank Gallons, performs calculations, and sends the results into the Data Recorder module Run Time Log and the Store module RTL Last Value.



Setup Registers for this module are:

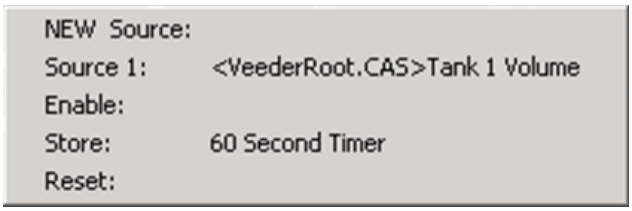


Output registers are fed into:

- Data Recorder module Run Time Log
- SetPoint module Good Last Value
- Store module RTL Last Value

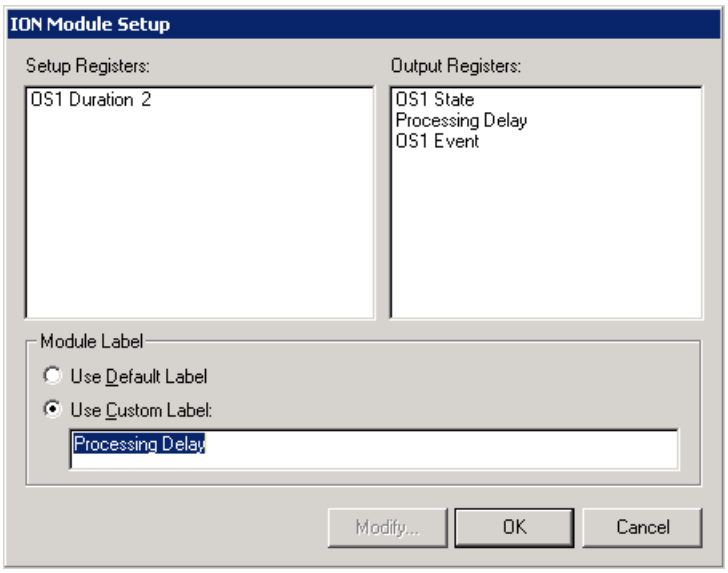
One Shot Timer – Processing Delay

Allows the Run Time Remaining Calculator to finish its calculations before the Run Time Log is triggered to record. Delay time of 1 - 2 seconds is adequate.



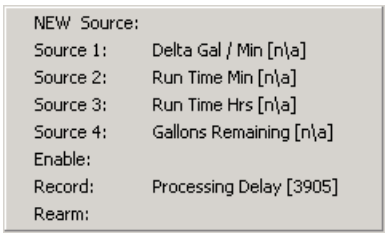
Tank Gallons Store Complete output register starts the timer.

Trigger output feeds into the Run Time Log Record input register.



Data Recorder – Run Time Log

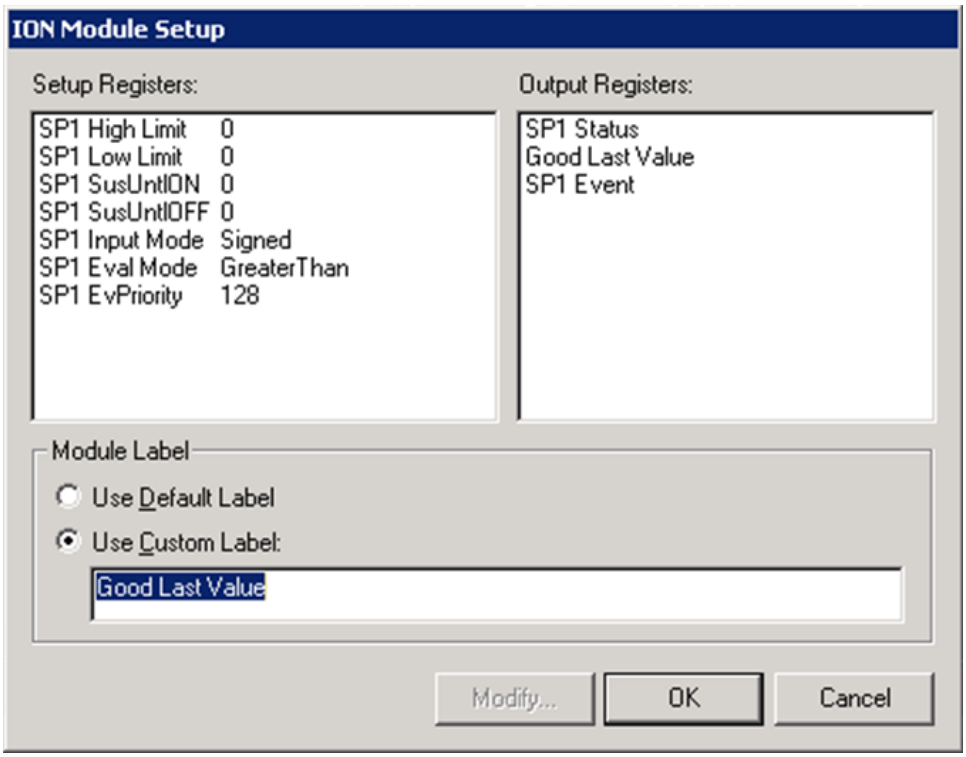
Use the Run Time Log to log data from the Run Time Remaining Calculator.



SetPoint – Good Last Value

This module stores the last known good values from the Run Time Remaining Calculator. This module bases its decision on Delta Gal / Min being non-zero.

Input is the result of the logic in register 5 of the Run Time Remaining Calculator.

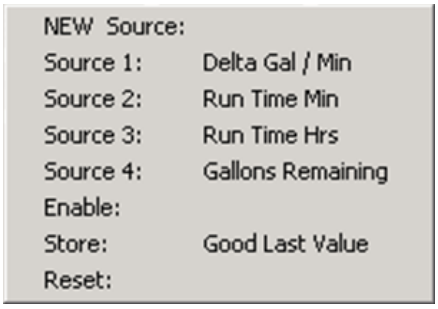


The output triggers the RTL Last Value Store module's Record input.

Store – RTL Last Values

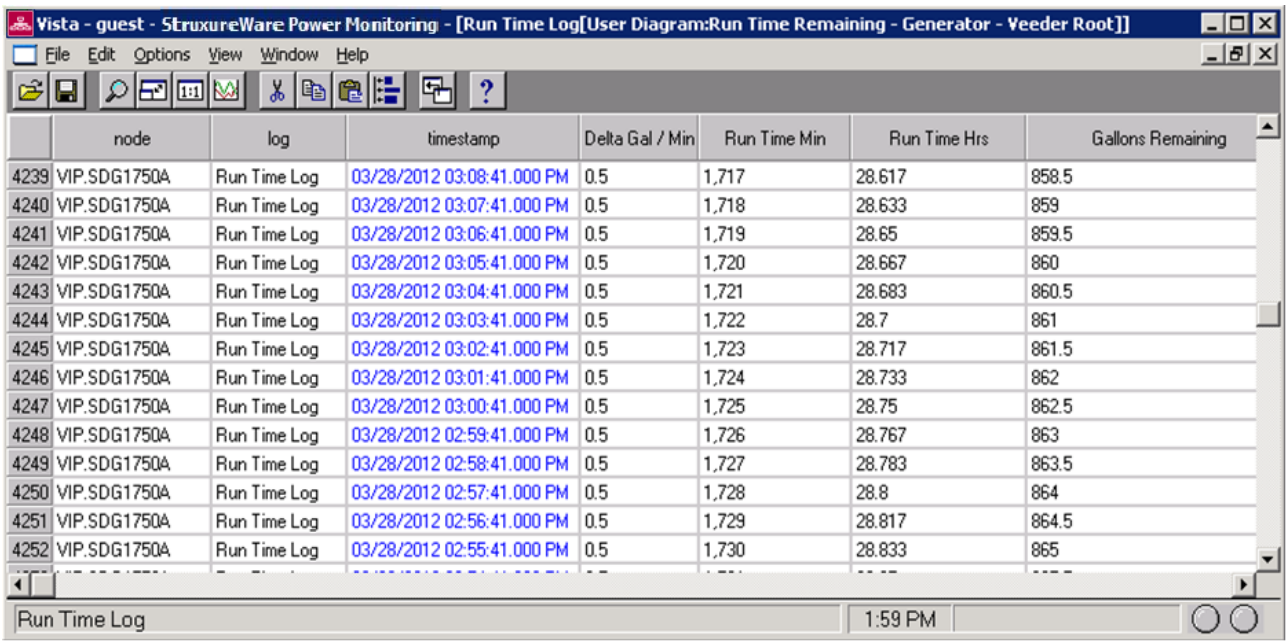
This module stores the last known good values so they can be exposed in a Vista diagram. The generator does not have to be running.

This module records data when the fuel tank volume changes across successive readings.



Results of VIP logic

When the generator is running, you can see the results in Vista, similar to the following example:



	node	log	timestamp	Delta Gal / Min	Run Time Min	Run Time Hrs	Gallons Remaining
4239	VIP.SDG1750A	Run Time Log	03/28/2012 03:08:41.000 PM	0.5	1,717	28.617	858.5
4240	VIP.SDG1750A	Run Time Log	03/28/2012 03:07:41.000 PM	0.5	1,718	28.633	859
4241	VIP.SDG1750A	Run Time Log	03/28/2012 03:06:41.000 PM	0.5	1,719	28.65	859.5
4242	VIP.SDG1750A	Run Time Log	03/28/2012 03:05:41.000 PM	0.5	1,720	28.667	860
4243	VIP.SDG1750A	Run Time Log	03/28/2012 03:04:41.000 PM	0.5	1,721	28.683	860.5
4244	VIP.SDG1750A	Run Time Log	03/28/2012 03:03:41.000 PM	0.5	1,722	28.7	861
4245	VIP.SDG1750A	Run Time Log	03/28/2012 03:02:41.000 PM	0.5	1,723	28.717	861.5
4246	VIP.SDG1750A	Run Time Log	03/28/2012 03:01:41.000 PM	0.5	1,724	28.733	862
4247	VIP.SDG1750A	Run Time Log	03/28/2012 03:00:41.000 PM	0.5	1,725	28.75	862.5
4248	VIP.SDG1750A	Run Time Log	03/28/2012 02:59:41.000 PM	0.5	1,726	28.767	863
4249	VIP.SDG1750A	Run Time Log	03/28/2012 02:58:41.000 PM	0.5	1,727	28.783	863.5
4250	VIP.SDG1750A	Run Time Log	03/28/2012 02:57:41.000 PM	0.5	1,728	28.8	864
4251	VIP.SDG1750A	Run Time Log	03/28/2012 02:56:41.000 PM	0.5	1,729	28.817	864.5
4252	VIP.SDG1750A	Run Time Log	03/28/2012 02:55:41.000 PM	0.5	1,730	28.833	865

Data should be recorded only when the generator is running. Real-time data should be available and valid at all times.

If necessary, modify the 60 second timer to reflect your actual fuel usage. Define a polling frequency that results in non-zero values for each successive interval reading while the generator is running. By default, this framework uses a 60 second polling rate.

The key is to match this polling frequency to how quickly the Veeder Root system can detect changes in the Fuel Tank volume.

For example, if you want to change to a 5 minute polling frequency, do this:

1. Change the 60 second timer frequency to 300.
2. Change the Run Time Remaining Calculator register 1 formula to (P1(1)-S1)/5.

If you want to change to a 15 minute polling frequency, do this:

1. Change the 60 second timer frequency to 900.
2. Change the Run Time Remaining Calculator register 1 formula to (P1(1)-S1)/15.

Power Monitoring Expert 8.1 Healthcare Edition includes framework templates that you can use to expose the fuel volume and run time remaining information to the customer. The templates provide the necessary logic and widgets to send the information to StruxureWare dashboards for customer monitoring. Refer to "Configure Veeder Root Diagrams" on page 192 for instructions.

Configure Veeder Root Diagrams

Power Monitoring Expert 8.1 Healthcare Edition includes a set of Veeder Root diagrams for Vista. They are installed in the folder:

C:\Program Files (x86)\Schneider Electric\Power Monitoring Expert for Healthcare\config\diagrams\ud\EPSS\templates

The diagrams are:

- EPSS_TankFarm.dgm – Top level tanks diagram.
- EPSS_Tank(1-4).dgm – Individual tank diagrams.
- EPSS_Widgets.dgm – Indicators for generator run time and tank fuel level.

The diagrams are pre-linked to numerous Veeder Root measurements and have a suggested layout. Before they can be used, the diagrams must be linked to the source capturing the Veeder Root data.

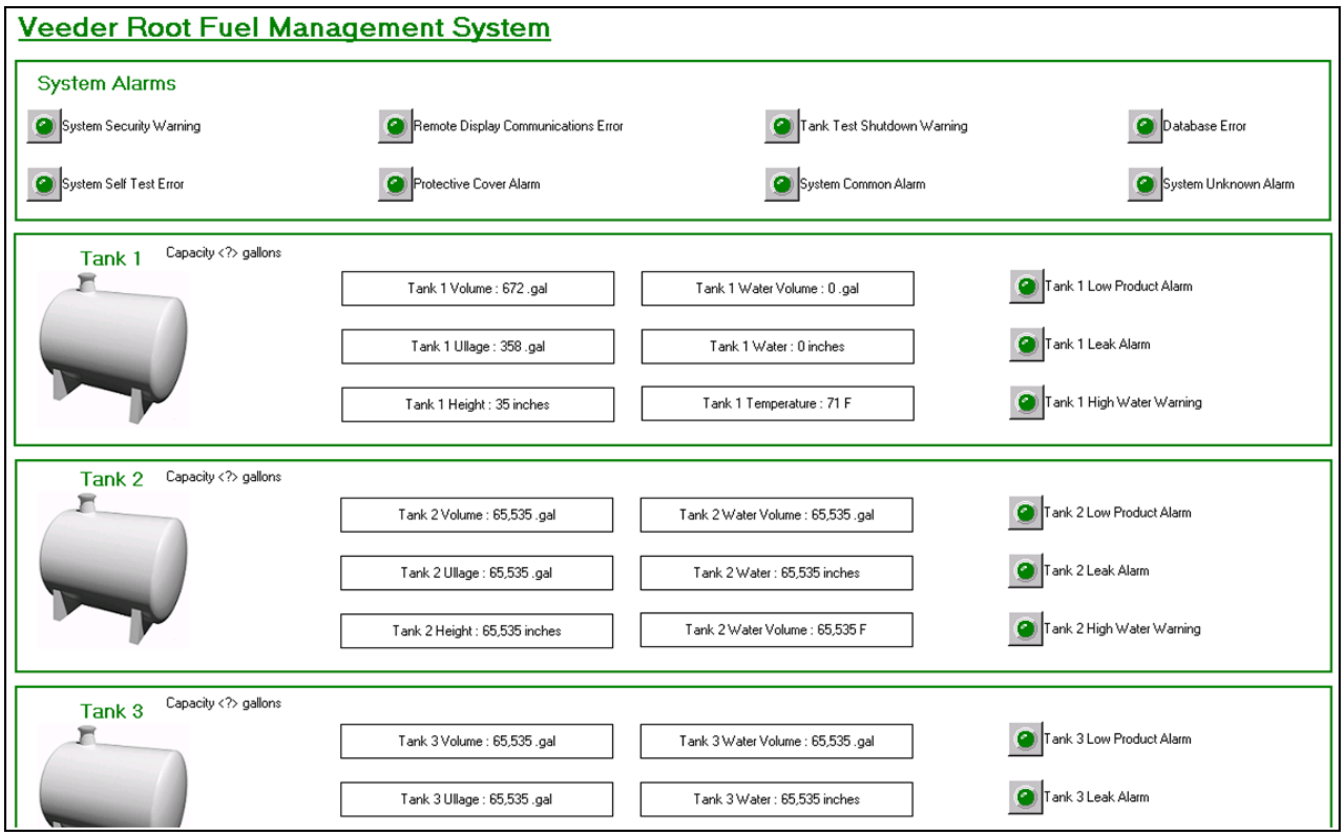
You can select the background images for the diagrams. If you want to add a background image, do this before you configure and link the diagrams.

Configure the Tank Farm diagram

The Tank Farm diagram represents the top level view of the Veeder Root system.

The top area of the diagram contains common system alarms the customer may want to use. The tank area contains details for fuel four tanks.

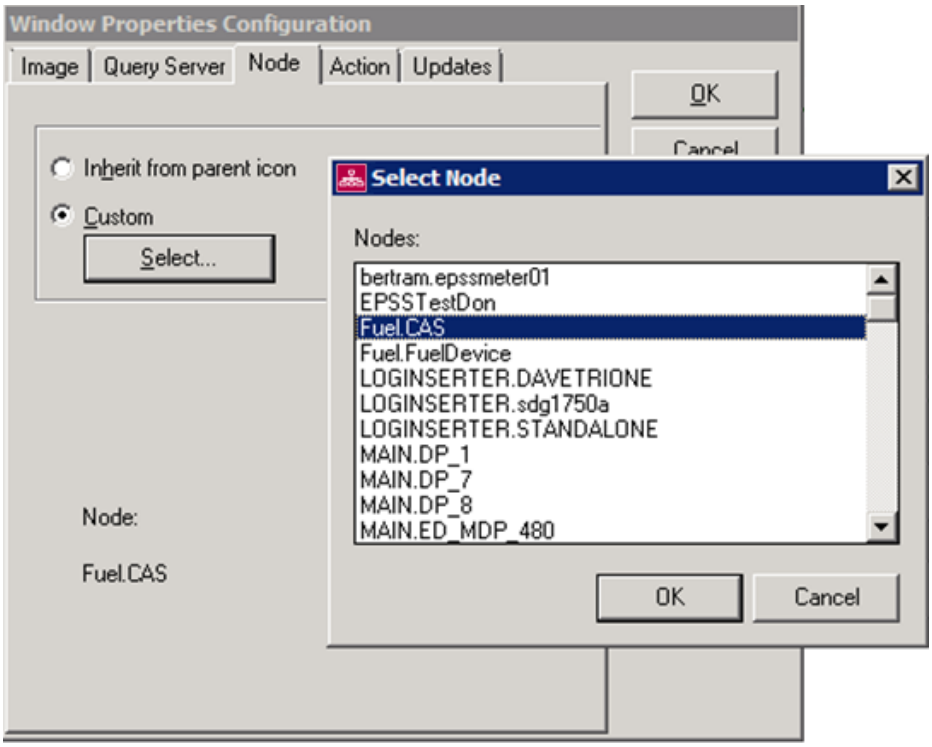
On this diagram, you need to select the source for fuel data and link the alarms to alarm data.



Select the Source for Fuel Data

The first task to do with the Tank Farm diagram is to link it to the source recording fuel management data. When you link the Tank Farm diagram, the individual tank diagrams will inherit the same source from Tank Farm.

1. In Vista, open the Tank Farm diagram, EPSS_TankFarm.dgm.
2. Right-click on the diagram and select Properties. The Window Properties Configuration screen appears.
3. Click the **Node** tab.
4. Select the **Custom** option and click **Select**. The Select Node screen appears.



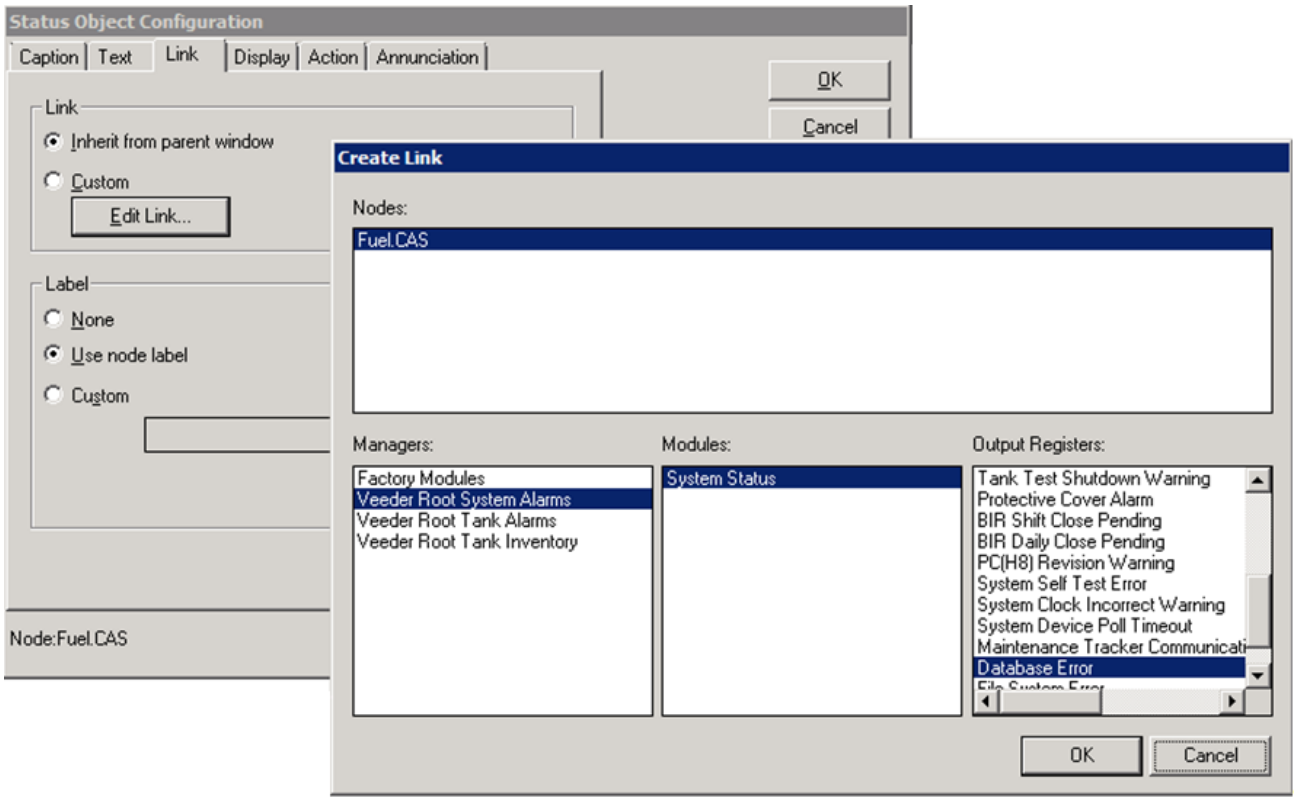
5. Select the source recording fuel data and click **OK**.

The Tank Farm diagram and all specific tank diagrams will receive data from this source.

Configure Alarms

The System Alarm section of the Tank Farm diagram comes preconfigured for eight system alarms. If desired, these objects can be linked to other alarms. Also, new alarms can be added to the diagram.

1. In the System Alarms area, right-click on the status object. The Status Object Configuration screen appears.
2. Click the **Link** tab and click **Edit Link**. The Create Link screen appears.



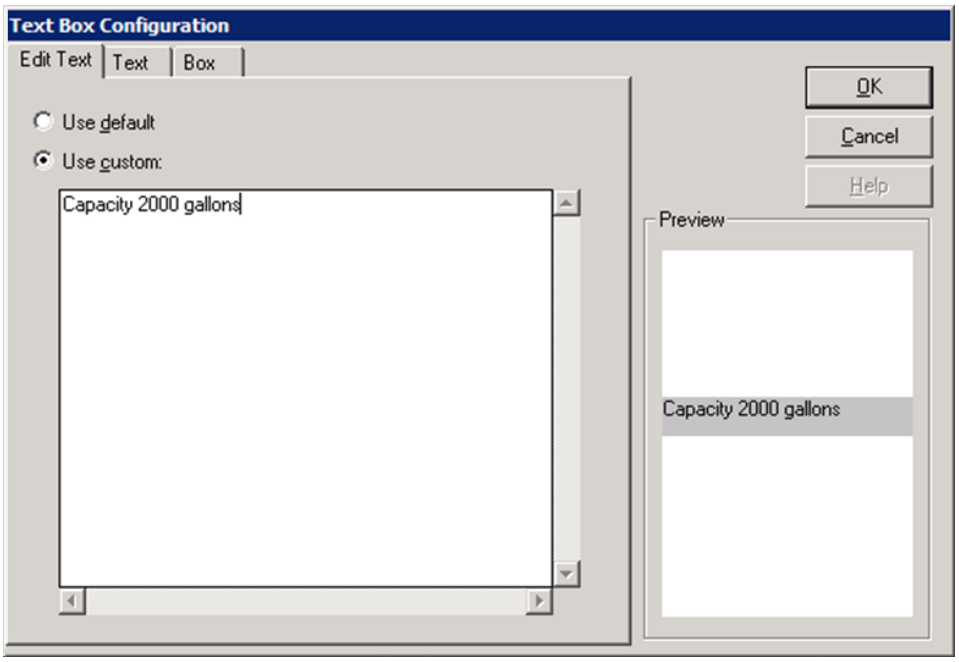
3. In the **Managers** box, select Veeder Root System Alarms.
4. In **Modules**, select System Status.
5. In **Output Registers**, select the alarm to link.
6. Click **OK**.

Repeat these steps for other alarms on the diagram.

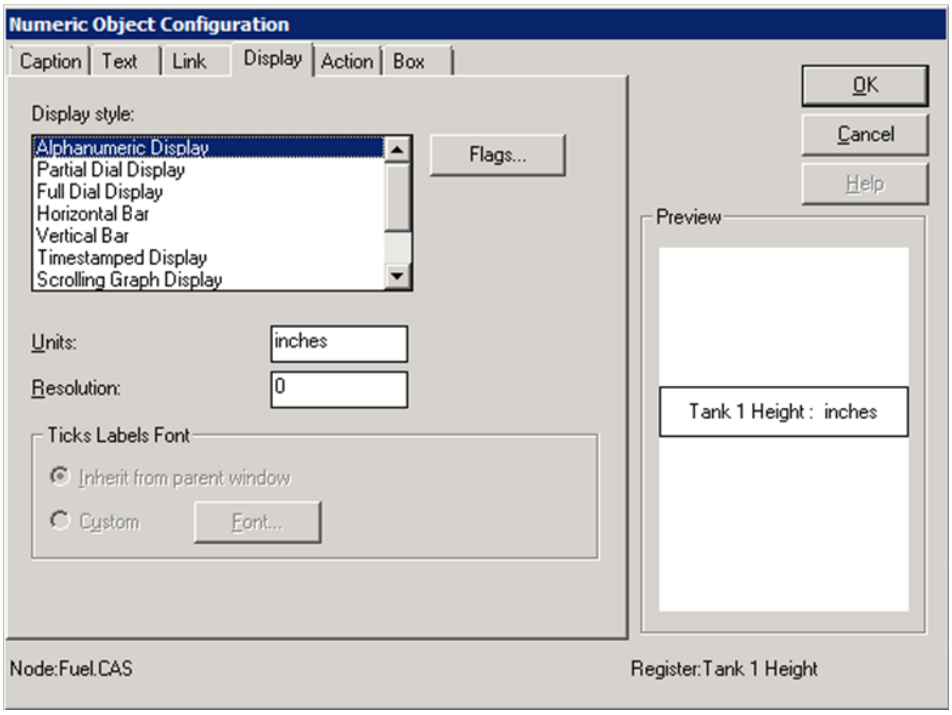
Configure Tank 1-4 Sections

The tank sections in the diagram need to be configured with capacity and unit data. If the system does not have four tanks, you can delete the extra sections. Each tank section is pre-linked to six tank inventory values and three alarms. Like the system alarms, these items can be relinked or deleted as necessary. Also, you can enter the tank capacity and change the units the system is displaying.

1. Right-click the “Capacity <?> Gallons” text next to the tank name. The Text Box Configuration screen appears.



2. On the **Edit Text** tab, select **Use custom** and enter the tank capacity.
3. Click **OK** to save the text.
4. To change the units for a numeric object, right-click on the object. The Numeric Object Configuration screen appears.



5. Click the **Display** tab and enter in the desired unit for the object.

   Vista does not show correctly data where the unit begins with “ga.” This is

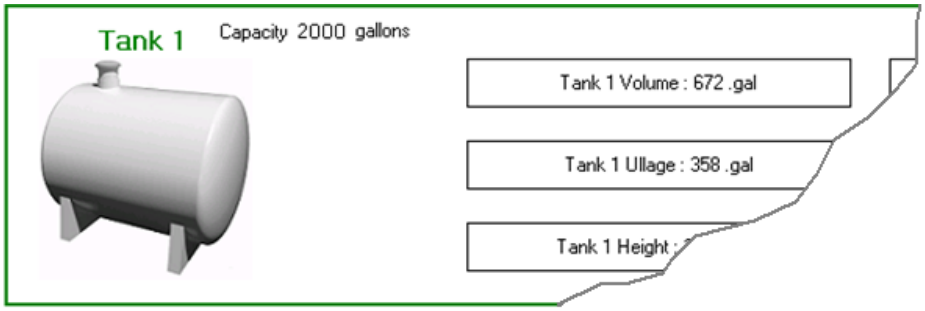
the reason why the unit for gallons is ".gal" and not "gal."

Changing the unit in Vista will not recalculate actual values. If you need to read the actual values in different unit, you must change the setting in the Veeder Root box.

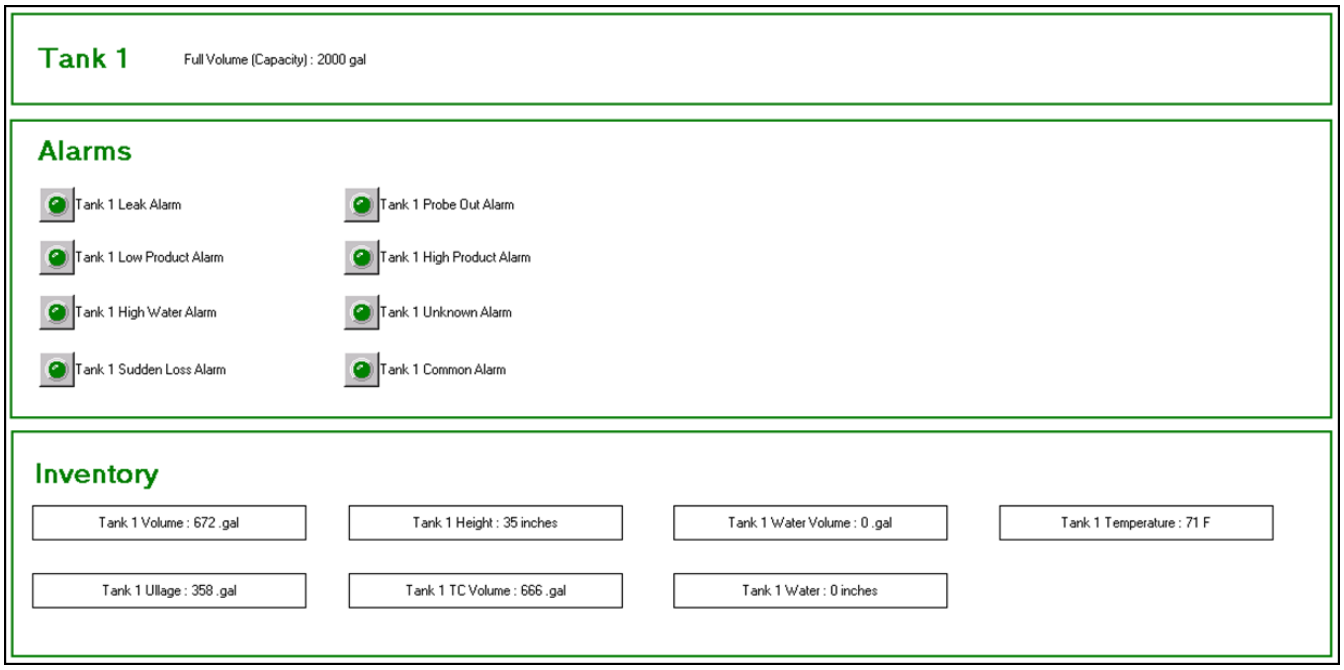
6. Click **OK** to save the change.

Configure the Individual Tank Diagrams

There are four diagrams representing the four tanks in the Veeder Root system. To open the tank diagram, click the tank image on the Tank Farm diagram.



Each tank diagram is pre-linked to eight tank alarms and seven inventory measurements. Alarms and inventory measurements can be added, edited, and deleted as desired.



Refer to "Integrate Veeder Root Diagrams With Vista Diagrams" on page 198 for instructions to integrate the tank diagrams with the EPSS diagrams.

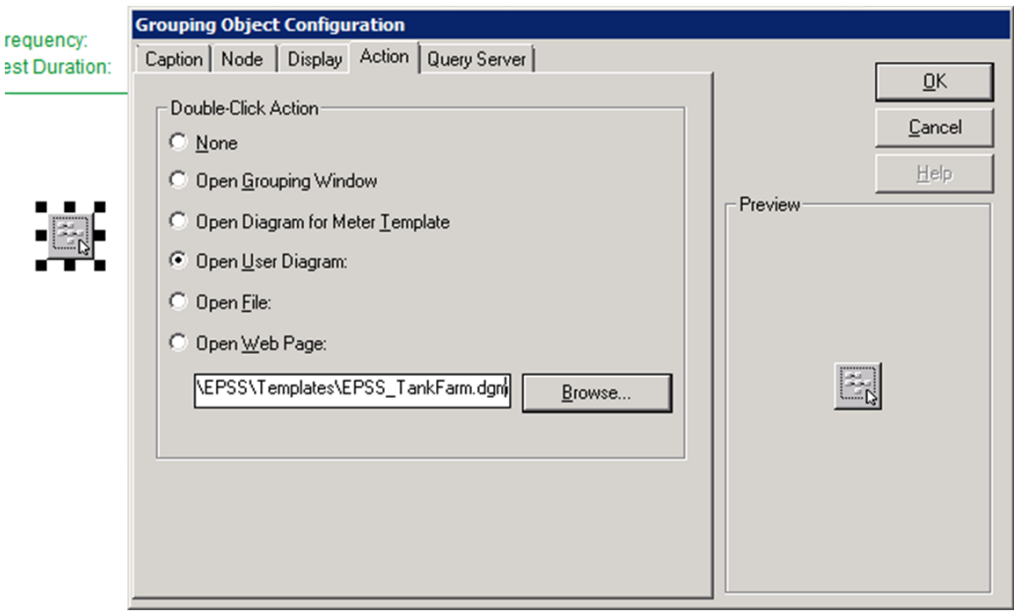
See also "Add Fuel Management Widgets to Diagrams" on page 199.

Integrate Veeder Root Diagrams With Vista Diagrams

To provide the customer with quick access to the various diagrams, you can create links from the Vista diagrams or other system diagrams to the Veeder Root fuel management diagrams.

Follow these steps to create a link to the fuel management diagrams:

1. Open the Vista diagram where you want to add the link.
2. Drag and drop a grouping object onto the diagram.
3. Open the Grouping Object Configuration screen.
4. Click the **Action** tab.
5. Under **Double-Click Action**, edit the properties to open the desired fuel management diagram.



6. Click **OK** to save the changes.

Repeat these steps for linking to other diagrams, as needed.

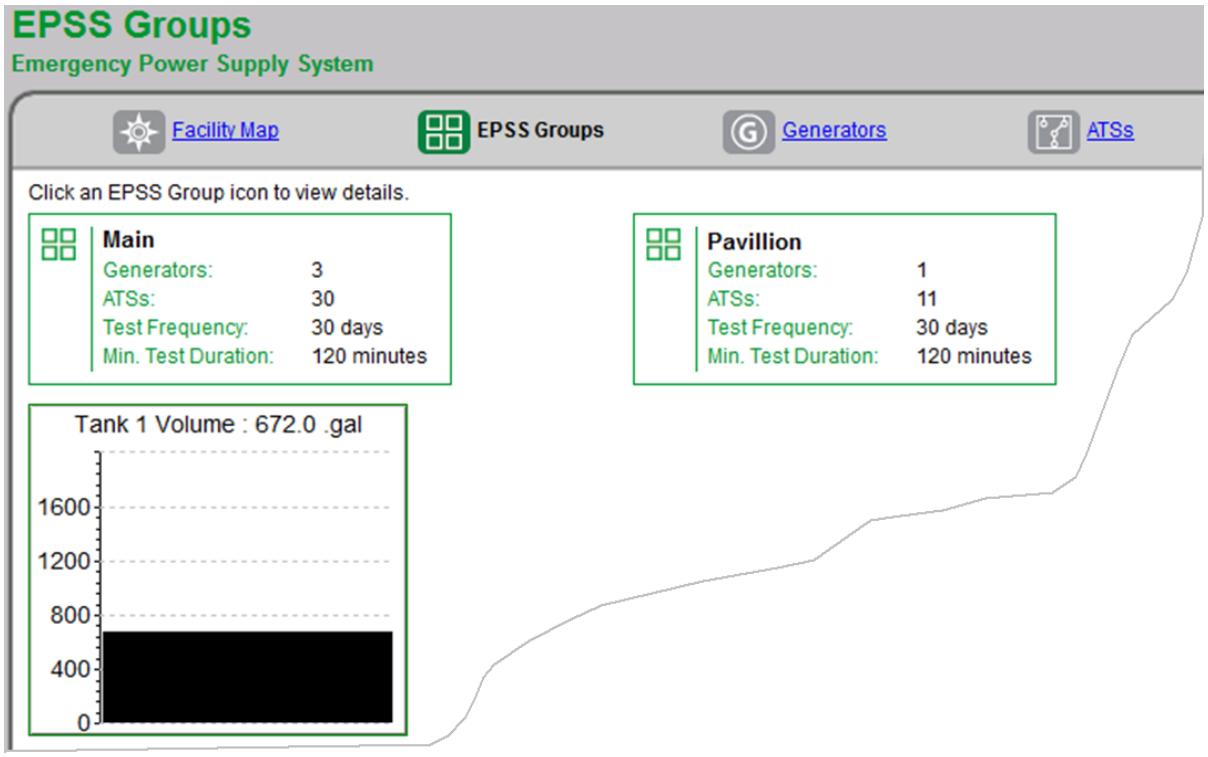
The Vista diagram now contains a link to the fuel management diagram.

The EPSS Test Module includes widgets that display tank fuel volume and run time remaining data in easy-to-read gauges. You can incorporate these widgets into the diagrams for the customer. See "Add Fuel Management Widgets to Diagrams" on page 199 for instructions.

Add Fuel Management Widgets to Diagrams

Two fuel management widgets are contained in the EPSS_Widget diagram: a Fuel Gauge display (tank volume) and a Run Time Remaining display. The widgets can be added to other diagrams as well.

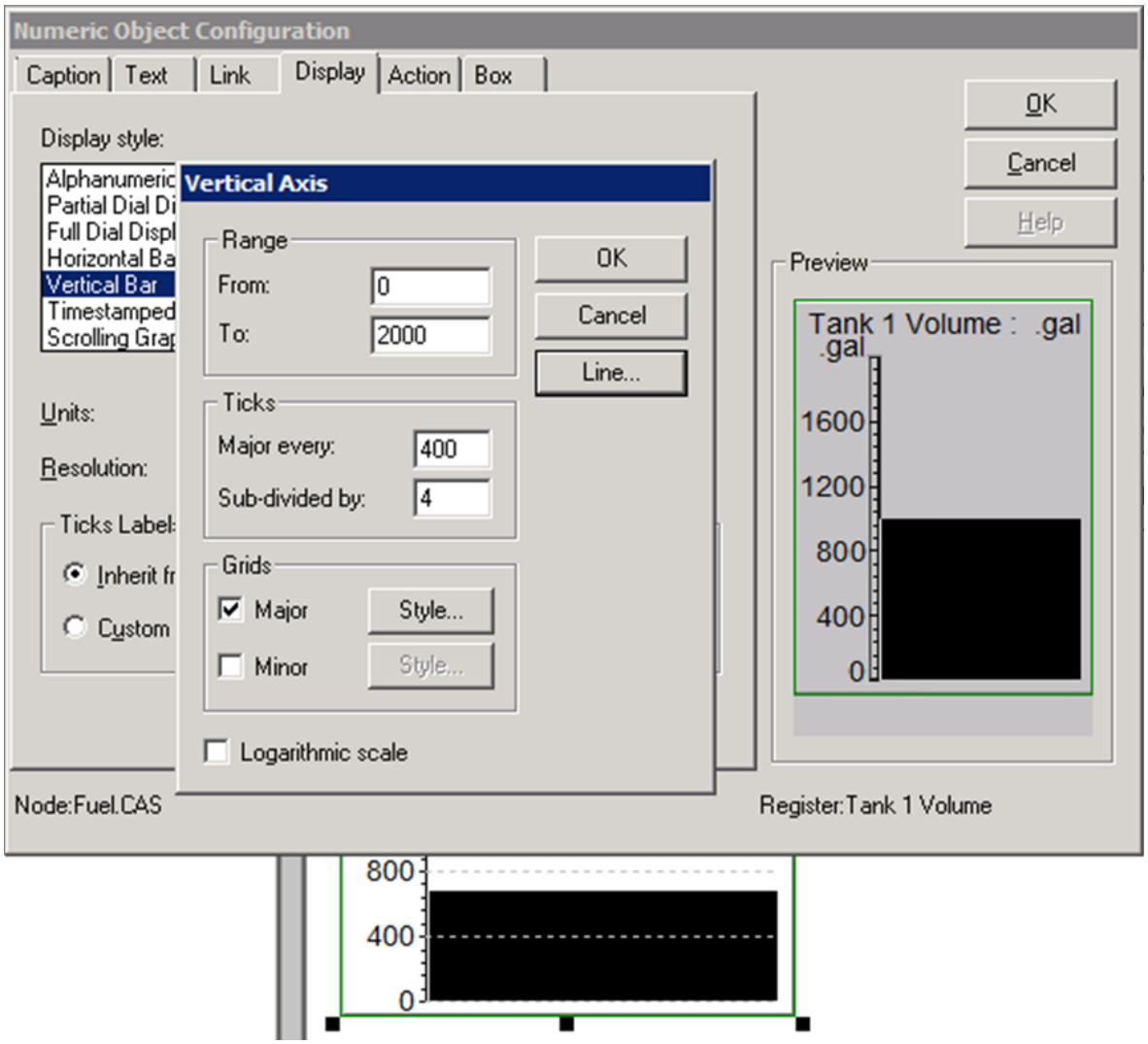
1. Open the EPSS_Widget.dgm file.
2. Select the widget and use **Edit** > **Copy** to copy it to the clipboard.
3. Open the target diagram and use **Edit** > **Paste** to paste it in place, as shown in the following example.



Fuel Gauge Widget

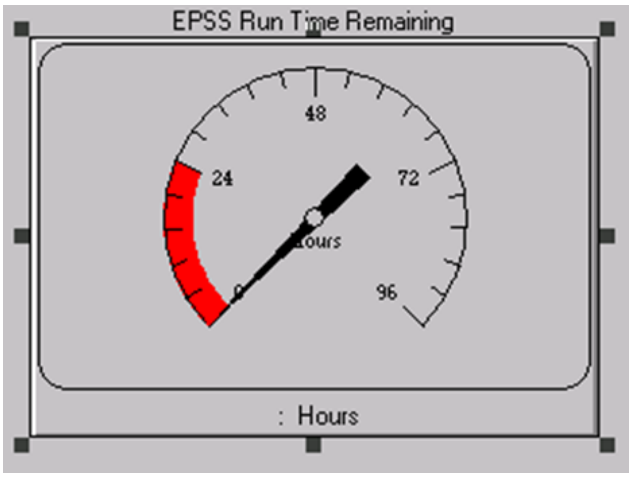
The Fuel Gauge is a display similar to an automobile fuel gauge. It can be linked to one of the tank volume measurements. You can also adjust the scale of the widget, as follows:

1. Open the Numeric Object Configuration properties screen.
2. Click the Display tab and then right-click on the y axis on the graph. The Vertical Axis screen appears.
3. Set the range and other graph properties, as shown next.



Run Time Remaining Widget

The Run Time Remaining widget shows approximately how long the EPSS can continue to run without re-fueling. It can be copied onto existing EPSS diagrams and linked to a VIP framework.



According to standards or other accepted practices in the location, the color of the lower range can be adjusted.

The color comes from the global Vista flags setting in the **Options** > **Flag Colors** menu. This part of the gauge is the **Low Flag** color. If you change this color, the change affects all other diagrams that also use this flag.

Operating Theater

Operating Room Isolated Power Interface ANSI

The Operating Room Isolated Power Interface is installed in conjunction with StruxureWare Power Monitoring Expert 8.1 Healthcare Edition. This document explains how to configure the solution for facilities in the ANSI market.

Hardware components in the solution include isolated power panels, line isolation monitors, and TCP gateway devices. Several optional components are available. For more information about the hardware components, see the *Operating Room Isolated Power Interface ANSI Design Guide*.

Software components of the solution include the Operating Room Configuration Tool and files needed for Vista diagrams. These components are installed when Power Monitoring Expert 8.1 Healthcare Edition is installed.

NOTE: If you are configuring the Operating Room Isolated Power Interface for an IEC market site, see "Operating Room Isolated Power Interface IEC" on page 242.

Configuration Overview

The overall process for configuring the Operating Room Isolated Power Interface for facilities in the ANSI market includes these tasks:

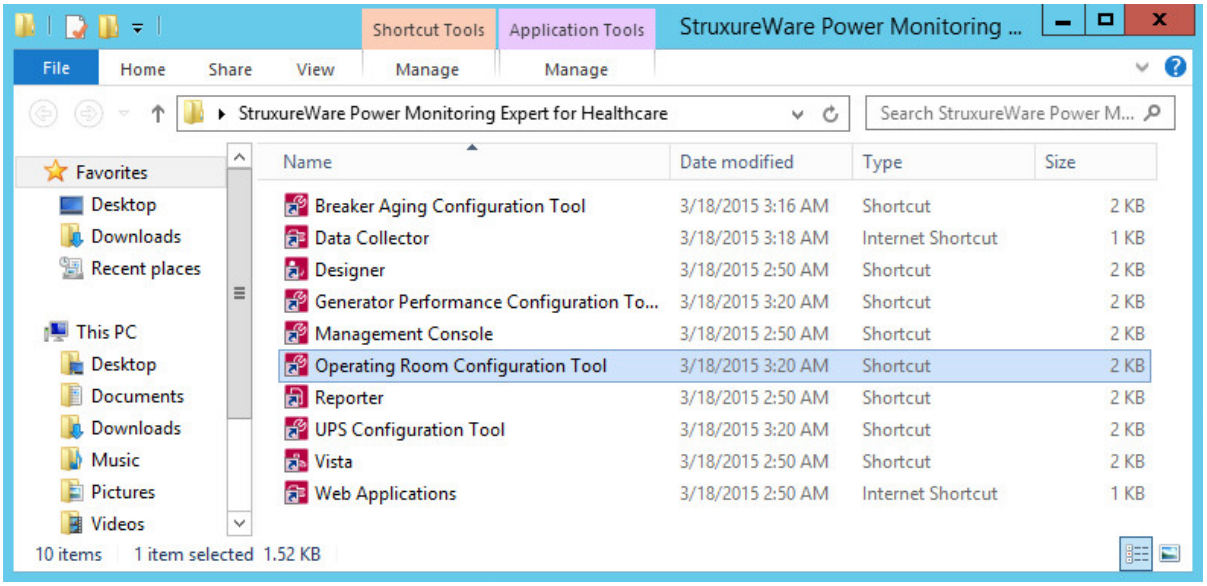
1. Configure the unit IDs, IP addresses, and other parameters for the hardware components, as described next.
2. Set up device communications in Management Console. See "Adding devices in Management Console" on page 207.
3. Configure the hospital rooms in the Operating Room Configuration Tool. See "Hospital Rooms Configuration for ANSI" on page 210 or online help in the tool for instructions.
4. Generate Vista diagrams using the Operating Room Configuration Tool and configure the status objects for the diagrams. See "Generate Hospital Room Vista Diagrams" on page 218 for instructions.
5. Generate the Isolated Power report. See "Generate the Isolated Power Report " on page 240.

Installed Software Components

For the Operating Room Isolated Power Interface, Power Monitoring Expert 8.1 Healthcare Edition installer adds the following items to the system:

- Operating Room Configuration Tool
- Drivers for LIM-IG6 and EDS 151 and EDS 461 monitoring devices
- Operating Room Isolated Power Report (ANSI)
- Vista diagram images and VIP framework: Operating Room Alarming Status for ANSI.fwn, installed in:

  C:\Program Files (x86)\Schneider Electric\Power Monitoring Expert for Healthcare\config\fmwk\Operating Room
- The StruxureWare Power Monitoring Expert 8.1 Healthcare Edition folder on the Desktop. This folder contains shortcuts to the configuration tools:



Prerequisites

Make sure to complete the following tasks before you begin the process of configuring the Operating Room Isolated Power Interface:

- Isolated power panels, optional monitoring devices, and communications for hardware have been installed in the designated hospital rooms. Instructions for these hardware components are provided in their respective documentation.
- Power Monitoring Expert is installed and operational. See "Power Monitoring Expert 8.1 Healthcare Edition Installation" on page 17.

Hardware Configuration

This section contains information about the hardware devices used in the solution. Refer to the installation manuals for each device for instructions, safety messages, and parameter details.

⚠ WARNING

INACCURATE REPORT RESULTS

- Do not incorrectly configure the devices and software. This can lead to inaccurate reports and/or data results.
- Do not rely solely on system reports to determine if the system is functioning correctly or meeting all applicable standards and requirements.
- Use system reports as a supplement to proper workplace practices or equipment maintenance, not as a substitute.

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

Set up parameters for hardware components

The Operating Room Isolated Power Interface includes several hardware components. Some of these components communicate on an internal bus and must be configured with unique IP addresses and unit IDs.

Set up the parameters for the installed hardware as described in this section.

Isolated power panel

The isolated power panel includes the circuit monitoring devices such as the IG6.

See the Bender Resources Web site for circuit monitoring device installation instructions.

NOTE: Make sure the clocks on all devices are correctly configured during commissioning so that the reports you run show the correct timestamp.

IGC COM460/COM461/COM465IP Gateway

In the Operating Room Isolated Power Interface, the IGC COM460/COM461/COM465IP Gateway converts the serial Bender BMS protocol to Modbus TCP. For this solution, note the following:

- The IP address must be unique. Set up the IP address so that the software can communicate with it.

NOTE: Make sure to always set the unit ID to **1**. Doing this sets the gateway to Master mode on the Bender bus.

- Set the gateway to operate on its internal bus.

See the Bender Resources Web site for instructions on how to configure the gateway.

Line Isolation Monitor

The Iso-Gard™ IG6 line isolation monitor (LIM-IG6) is installed in the isolated power panel. This device continuously calculates the total hazard current (THC) by measuring the leakage impedance between isolated line and ground. Up to two LIM-IG6 monitors can be installed in one panel.

NOTE: Set the Unit ID of the LIM IG6 to immediately succeed the Unit ID of the COM460.

For example, if you have a branch of COM460s with the devices connected to it, such as three IG6s, two EDS 461s, and one CMS 460, then set the Unit IDs as follows:

Device Type	Unit ID
COM460	1
LIM-IG6	2
LIM-IG6	3
LIM-IG6	4
EDS 461	5
EDS 461	6
CMS 460	7

- Set the Unit ID of the Serial devices that are connected to the IGC COM46x gateway.
- Set the total hazard current level to the appropriate value for your location.

NOTE: Make sure the clocks on all devices are correctly configured during commissioning so that the reports you run show the correct timestamp.

See the LIM-IG6 documentation for instructions on how to install and operate the device.

Circuit Fault Locator (Optional)

The EDS 151 and EDS 461 circuit fault locator identifies the specific circuits where insulation faults could result in current leakage that exceeds the defined total hazard current level. For this solution, note the following:

NOTE: Make sure the clocks on all devices are correctly configured during commissioning so that the reports you run show the correct timestamp.

- Set up the unit ID on the device. This ID must be unique from the unit ID and serial ID of other devices.

See the EDS 151 and EDS 461 documentation for instructions on how to configure the device.

Circuit Load Transformer (Optional)

The solution can include an optional SWT3 or SWT4 circuit transformer for load monitoring.

See the LIM-IG6 documentation for instructions to connect wiring to the circuit transformer and configure the device.

Temperature Sensor (Optional)

The temperature sensor monitors the temperature of the isolation transformer, if installed. Temperature data appears in the Vista diagrams if the device is installed and set up in the configuration tool.

See the LIM-IG6 documentation for instructions to connect wiring to the temperature sensor and configure the device.

Load Current Evaluator (Optional)

The CMS460 Load Current Evaluator is used to detect, monitor and evaluate loads and installation for load currents in power supplies.

NOTE: Make sure the clocks on all devices are correctly configured during commissioning so that the reports you run show the correct timestamp.

- Set up the unit ID on the device. This ID must be unique from the unit ID and serial ID of other devices.

See the CMS460 Load Current Evaluator documentation for instructions on how to configure the device.

After the parameters for the hardware components are configured, set up the communications for the devices as described next.

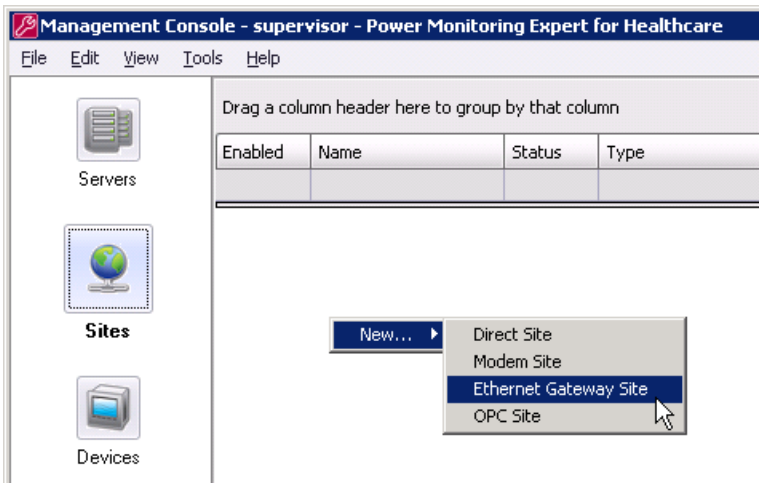
Adding devices in Management Console

The following devices must be set up in Management Console:

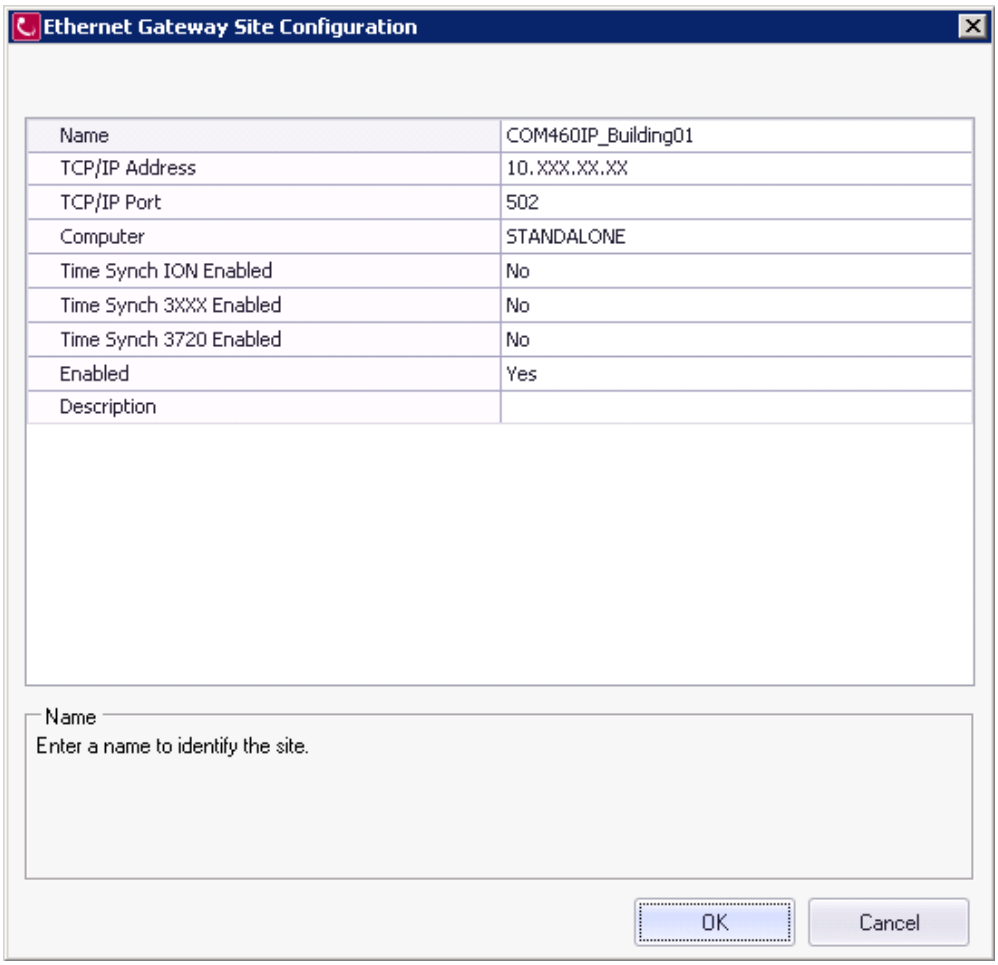
- IGC Gateway
- LIM-IG6 devices
- EDS 151 and EDS 461 circuit fault locators, if installed
- CMS460, if installed.

See the *StruxureWare Power Monitoring Expert User Guide* or online help for more information about Management Console.

1. Open Management Console on the server.
2. Add the IGC Gateway as follows:
3. Click **Sites**.
4. In the sites area, right-click and select **New** > **Add Ethernet Gateway Site**. The Ethernet Gateway Site Configuration screen appears.



5. Enter details for the gateway:
   - **Name** - Enter a name that will be recognizable in the Operating Room Configuration Tool.
   - **TCP/IP Address** - This address must be unique from all other gateways and devices in the system.
   - **TCP/IP Port** - Select **Modbus TCP Device 502**.
   - **Enabled** - Select **Yes**.
   - Complete other fields as needed.



6. Click **OK**.
7. Click **Devices** to add the LIM-IG6 and EDS 151 / EDS 461 circuit fault locators that are connected to the gateway.
8. In the devices area, right-click and select **New** > **Serial Device on Ethernet Gateway Site**. The Serial Device Configuration screen appears.
9. Enter details for the LIM-IG6 or EDS 151 / EDS 461 device.
   - **Name** - Enter a name that will be recognizable in the Operating Room Configuration Tool.
   - **Device Type** - Select the appropriate type.
   - **Unit ID** - This value must be unique from all other devices in the system.
   - **Site** - Select the gateway you just added.
   - **Enabled** - Select **Yes**.
   - Complete other fields as necessary.
10. Click **OK**.
11. Repeat steps 8 - 10 for all other devices connected to the gateway.

After all devices associated with the gateway are added, repeat the above steps for other gateways and their devices in the system.

After all hardware is configured in Management Console, configure the rooms and devices in the Operating Room Configuration Tool, as described next.

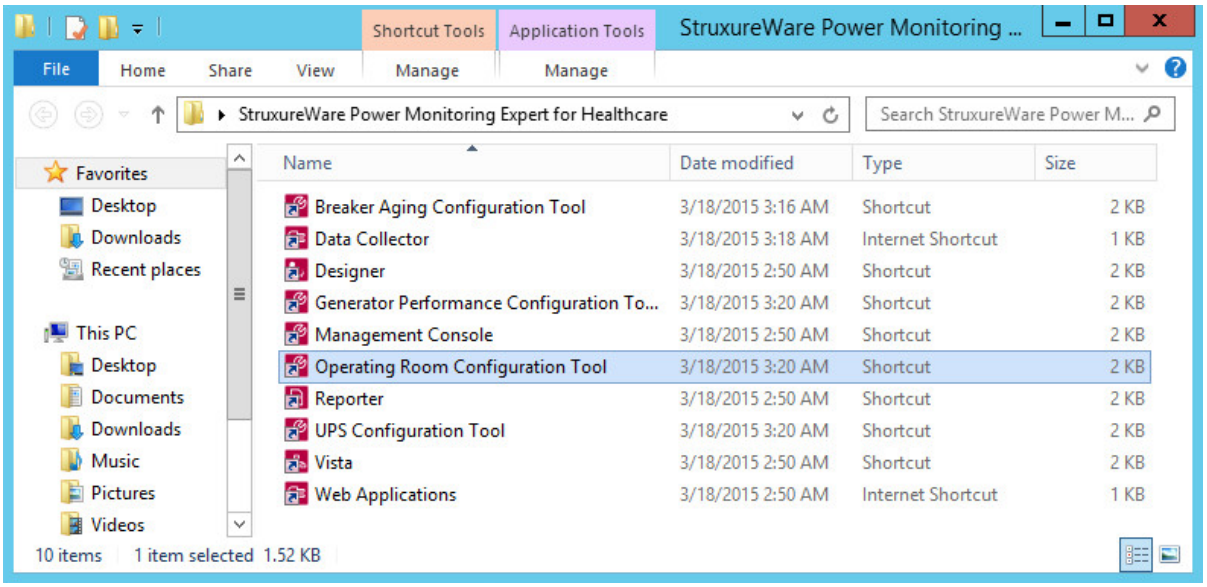
NOTE: Configure the gateway and all devices connected to the gateway as a group. Then set up another gateway and its associated devices.

Hospital Rooms Configuration for ANSI

The Operating Room Configuration Tool helps you configure and generate Vista diagrams to monitor the electrical status of critical hospital areas, such as operating rooms, emergency rooms, and post-surgery recovery rooms such as cardiac ICU. The Vista diagrams contain visual indicators for specific isolated power panels and circuits being monitored by fault-monitoring and reporting devices. If any circuit faults occur, the Vista diagrams help hospital staff identify and respond to the situation.

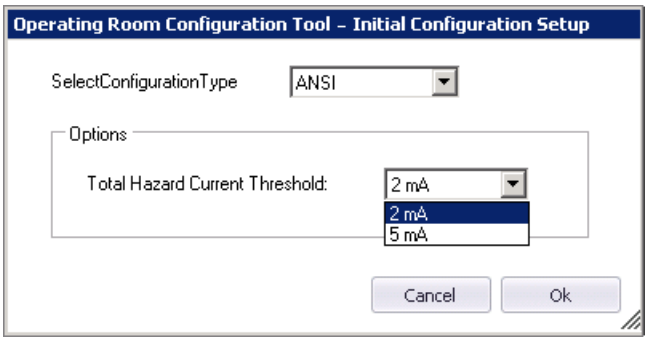
Start the Operating Room Configuration Tool

1. To start the Operating Room Configuration Tool, double-click the program icon in the Healthcare folder.



The **Initial Configuration Setup** screen appears.

2. Select **ANSI** and select the maximum total hazard current level for the location.



NOTE: Select the correct threshold value for your location. This value affects the results of the isolated power report.

3. Click **OK**. The configuration tool appears, as shown in "Define Isolated Power Panels" on page 212.
4. Use the configuration tool to configure all the system components you want to view in the Hospital Vista diagrams.

Each tab contains a grid area and an editor area. The grid area is empty initially but it will be populated with entries that you define. Use the editor area to define the settings for new items or to update the settings for existing items.

The following controls are common for the tabs:

- **Help** - Click this to view online help for the tab.
- **New** - Creates a new entry in the grid.
- **Delete** - Deletes the selected entry from the grid.
- **Revert** - Returns a modified record to its original values, if **OK** or **Apply** have not been clicked.
- **OK** - Saves all changes and exits the configuration tool.
- **Cancel** - Exits the tool without saving changes.
- **Apply** - Saves all changes and leaves the tool open.

The **Modified** column in the grid area shows the status of the row data:

+ (plus) - a new entry.

***** (asterisk) - a modified entry.

! (exclamation mark) - entry needs more information before it can be saved.

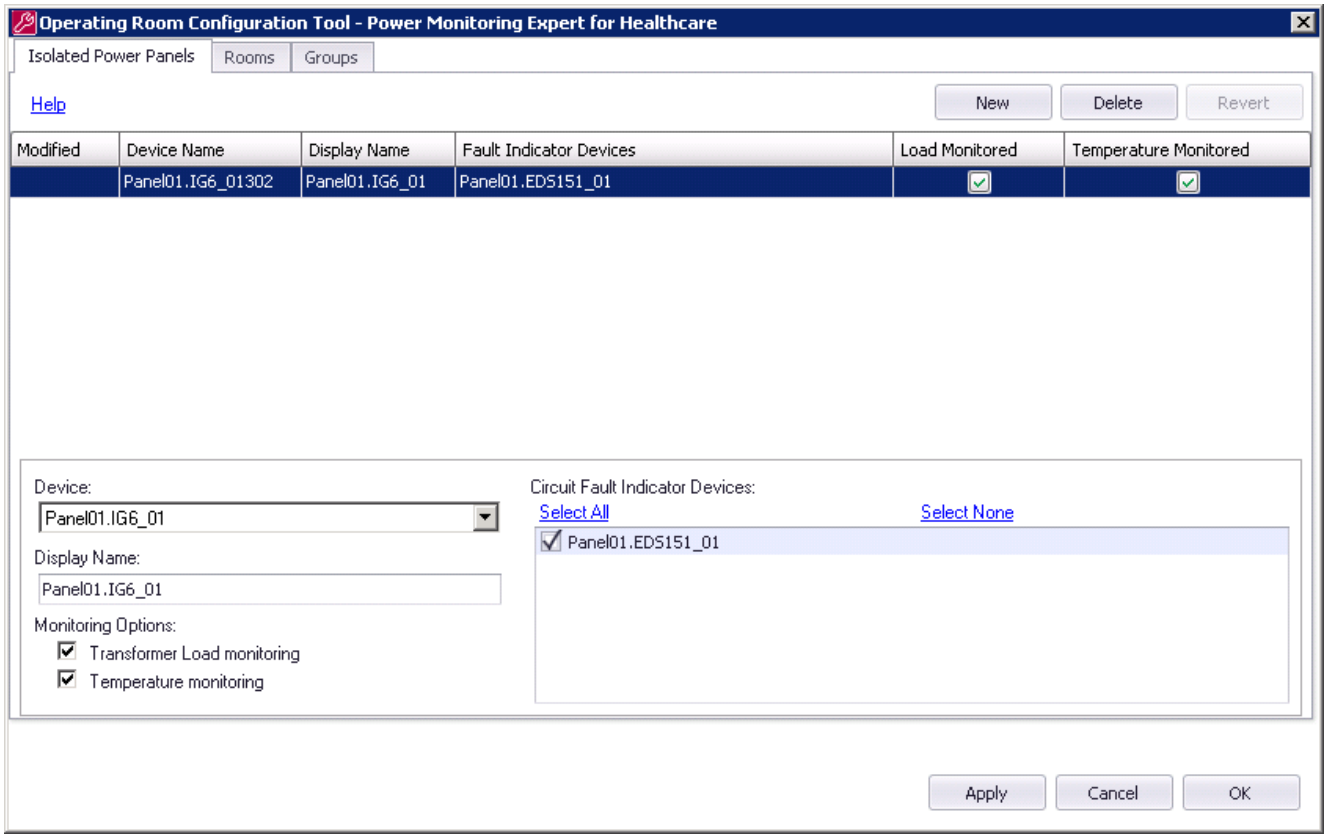
NOTE: If you select the wrong configuration type on the initial setup screen, you can return to the setup screen:

1. Close the configuration tool.
2. Press the Shift key and double-click the shortcut.
3. The Initial Configuration Setup screen appears so you can select the correct option.

Define Isolated Power Panels

Use the **Isolated Power Panels** tab to create or update device associations that represent the isolated power panels and the circuit monitoring devices that are communicating with the LIM-IG6.

After the devices have been added in Management Console, the devices appear in the in the **Isolated Power Panels** tab. The format for the device name is *group.name*. For example, if you named the group Panel01, and identified the device as IG6_01, the name in the device list is Panel01.IG6_01.



You can perform the following actions on this tab:

- Add new device associations for an isolated power panel to circuit monitors.
- Update device associations as panel or circuit monitor components change.
- Enable optional monitoring devices.
- Delete records from the grid.

Add New Devices

Follow these steps to associate a LIM-IG6 with the circuit fault locators and optional components connected to it.

1. On the **Isolated Power Panels** tab, click **New**. A new row appears in the device grid.
2. In the **Device** field, select the device.

3. In the **Display Name** field, enter a name for this LIM-IG6 record.
4. In the **Circuit Fault Indicator Devices** field, check the monitoring devices that are communicating with the selected LIM-IG6.
5. Under **Monitoring Options**, check the option for each type of optional monitor that is configured with the LIM-IG6.
6. Click **Apply**. The new device record is added to the grid.
7. Repeat steps 1 - 6 for additional panels and monitor devices you need to set up.

Next, configure specific rooms with the isolated power panels, as described in "Define Rooms" on page 214.

Update Devices

As specific components and devices in the panel change, you can update the device records on this tab. If Vista diagrams have already been generated for the prior configuration, the diagrams must be regenerated after you update the device records.

1. On the **Isolated Power Panels** tab, click a device record. The record details appear in the fields below the grid.
2. Change the name, panel, or monitoring device selections as needed.
3. Click **Apply**. The changes for the record appear in the grid.

If necessary, also update the room and group configurations on the other tabs.

Regenerate the Vista diagrams, as described in "Generate Hospital Room Vista Diagrams" on page 218.

Delete Devices

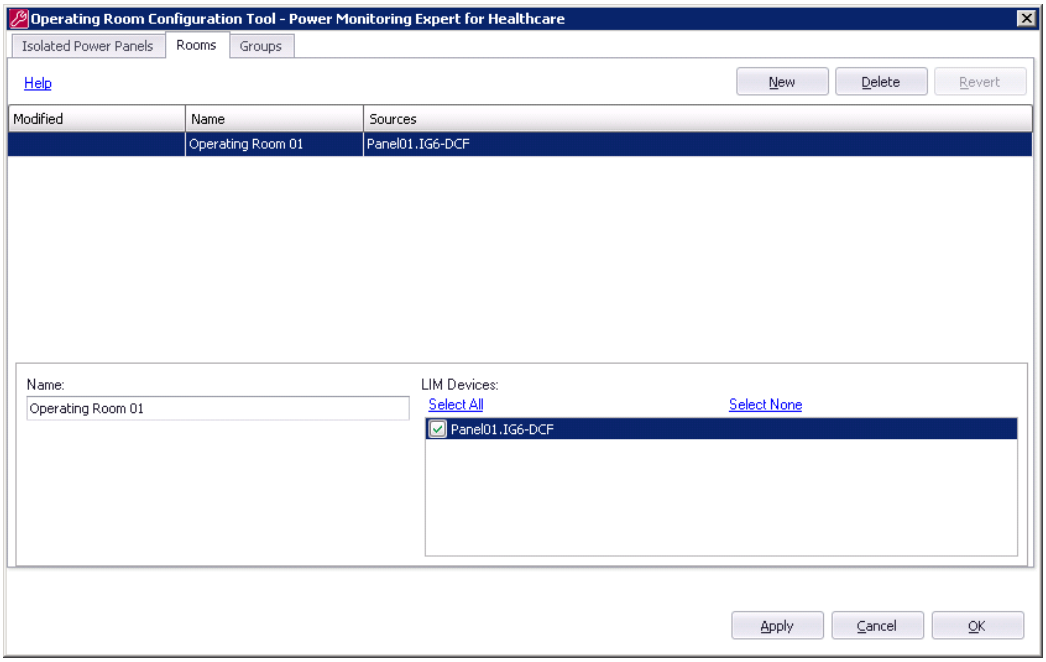
1. On the **Isolated Power Panels** tab, click a device record. The record details appear in the fields below the grid.
2. Click **Delete** and then **Apply** or **OK**. The record is removed from the grid.

If necessary, also update the room and group configurations on the other tabs.

Regenerate the Vista diagrams, as described in "Generate Hospital Room Vista Diagrams" on page 218.

Define Rooms

Use the **Rooms** tab to create rooms in the hospital environment and associate one of these devices per room.



You can perform the following actions on this tab:

- Add new rooms and select devices for the rooms.
- Update room configurations.
- Delete room configurations.

Add New Rooms

Follow these steps to add rooms and select the devices that you configured on the **Isolated Power Panels** tab.

1. Click the **Rooms** tab and click **New**. A new row appears in the room grid.
2. In the **Name** field, enter a descriptive name for the room.
3. In the **LIM Device** field, check the LIM devices that are associated with the room. The devices in this list are the devices you configured on the **Isolated Power Panels** tab.
4. Click **Apply**. The new room is added to the grid.
5. Repeat steps 1 - 4 for additional rooms you need to set up.

Next, configure the hospital environment with specific rooms, as described in "Define Groups" on page 216.

Update Rooms

If panels and circuits change in the hospital rooms, you can update the room records on this tab. If Vista diagrams have already been generated for the prior configuration, the diagrams must be regenerated after you update the room records.

1. On the **Rooms** tab, click a room record. The record details appear in the fields below the grid.
2. Change the name or device selections as needed.
3. Click **Apply**. The changes for the record appear in the grid.

If necessary, also update the configuration on the **Groups** tab.

Regenerate the Vista diagrams, as described in "Generate Hospital Room Vista Diagrams" on page 218.

Delete Rooms

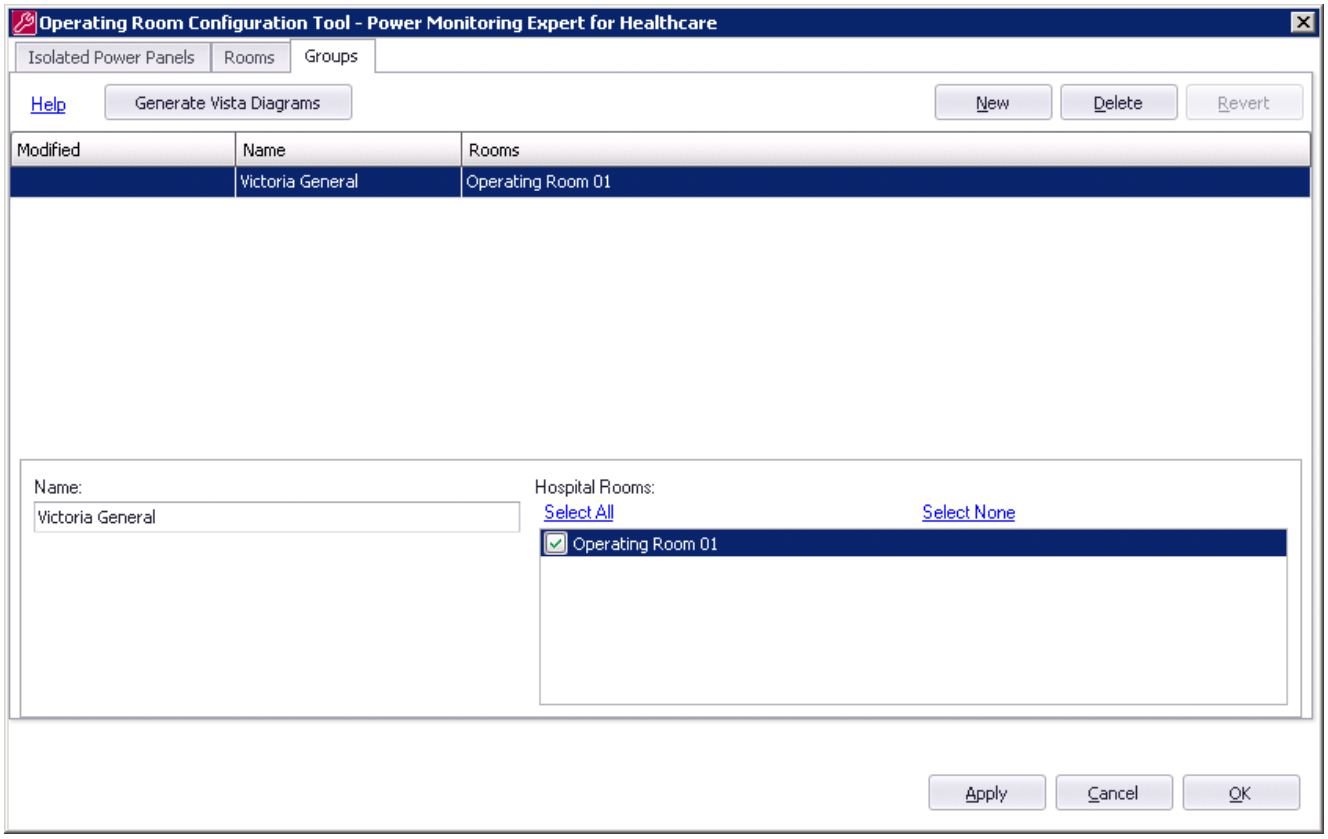
1. On the **Rooms** tab, click a room record. The record details appear in the fields below the grid.
2. Click **Delete** and then **Apply** or **OK**. The record is removed from the grid.

If necessary, also update the configuration on the **Groups** tab.

Regenerate the Vista diagrams, as described in "Generate Hospital Room Vista Diagrams" on page 218.

Define Groups

Use the **Groups** tab to select the rooms for the building, facility, or other location where a group of rooms is monitored. If the hospital needs only one group of rooms, you still need to add a group and configure it with rooms.



You can perform the following actions on this tab:

- Add new groups and select rooms for each group.
- Update group configurations.
- Delete group configurations.

Add New Groups

Follow these steps to add hospitals and select the rooms that you configured on the **Rooms** tab.

1. Click the **Groups** tab and click **New**. A new row appears in the grid.
2. In the **Name** field, enter a name for the group.
3. In the **Rooms** field, check the rooms that are associated with the location. The rooms in this list are the rooms you configured on the **Rooms** tab.
4. Click **Apply**. The new group is added to the grid.
5. Repeat steps 1 - 4 for additional locations to define.

Next, generate and configure the Vista diagrams for the hospital environment "Generate Hospital Room Vista Diagrams" on page 218.

Update Groups

If physical rooms and areas change in the hospital, you can update the groups on this tab. If Vista diagrams have already been generated for the prior configuration, the diagrams must be regenerated after you update the groups.

1. On the **Groups** tab, click a hospital record. The record details appear in the fields below the grid.
2. Change the name or room selections as needed.
3. Click **Apply**. The changes for the record appear in the grid.

Regenerate the Vista diagrams, as described in "Generate Hospital Room Vista Diagrams" on page 218.

Delete Groups

1. On the **Groups** tab, click a record. The record details appear in the fields below the grid.
2. Click **Delete** and then **Apply** or **OK**. The record is removed from the grid.

Regenerate the Vista diagrams, as described in "Generate Hospital Room Vista Diagrams" on page 218.

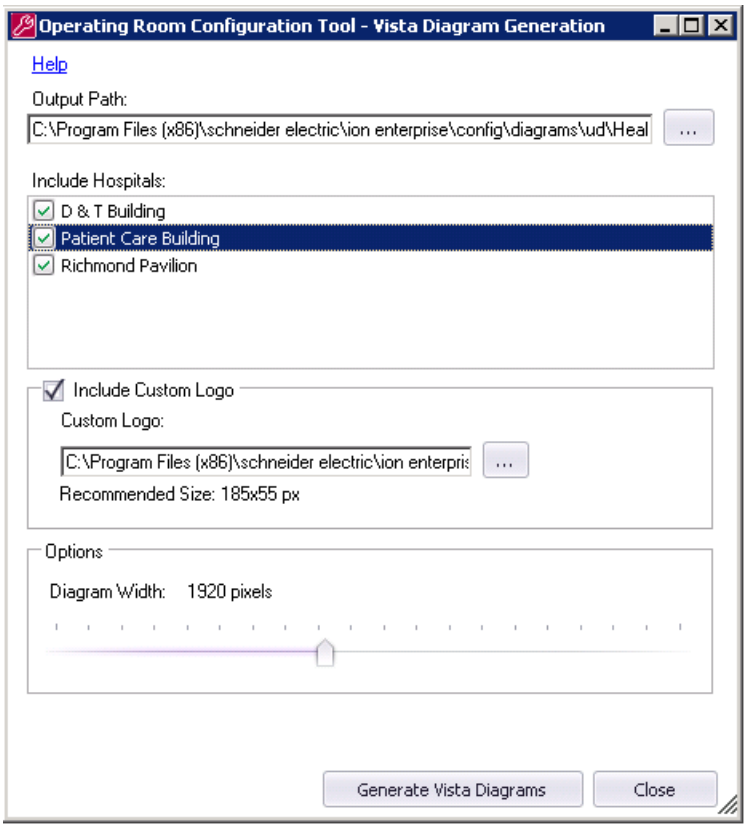
Generate Hospital Room Vista Diagrams

Hospital Vista diagrams are useful to the customer so they can see real-time information about the status of the circuits in selected rooms of the of the hospital system. The customer can view the diagrams in the Vista client and the Diagrams application of Power Monitoring Expert.

Before you generate the diagrams, make sure all panels, devices, rooms and hospitals are configured correctly in the configuration tool. All changes must be saved before you generate the diagrams.

Follow these steps to generate the diagrams.

1. Click the **Groups** tab.
2. Click **Generate Vista Diagrams**. The Vista Diagram Generation screen appears.



3. In the **Output Path** field, leave the path as the default, or enter the folder where you want to store the diagrams.
4. In the **Include Groups** field, all hospitals are selected by default. If you do not want diagrams generated for some of the hospitals, clear the checkboxes for those hospitals.
5. In the **Include Custom Logo** field, select the image file for the hospital logo.
6. Under **Options**, select the horizontal width of the diagrams.
7. Click **Generate Vista Diagrams**. The diagrams are generated and stored in the selected output folder.

If the folder has existing diagrams, a message appears to confirm that you want to replace the older diagrams.

For each hospital you selected, several diagrams are created, as shown in the next section.

After the diagrams are generated, open them in Designer or Vista and configure the VIP framework and alarm status objects, as described next.

Configure VIP Framework and Diagrams

After the diagrams are generated, you configure the framework and finalize the diagrams to allow the alarm status from the LIM-IG6 to properly appear in the diagrams.

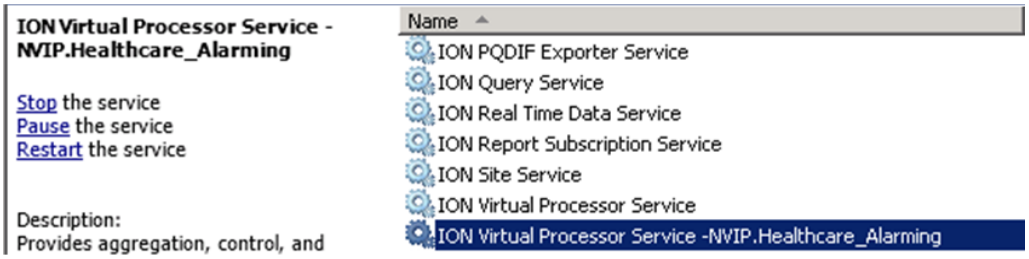
Create a new VIP for the framework

You need to create a VIP service to enable the diagrams to appear in the Diagrams application of Power Monitoring Expert 8.1 Healthcare Edition. The VIP for the framework performs the logic for the alarm status that appears on the diagrams.

1. Open the Command Prompt window.
2. Change the current folder to C:\Program Files (x86)\Schneider Electric\Power Monitoring Expert 8.1 Healthcare Edition\system\bin.

   For 32-bit systems, use C:\Program Files\Schneider Electric\Power Monitoring Expert 8.1 Healthcare Edition\system\bin.
3. Type `vip -Service -NVIP.Healthcare_Alarming` on the command line.

   This creates the VIP service in Windows and names it “Healthcare_Alarming”.
4. Open the Windows Control Panel and go to the Services window.
5. Start the newly created VIP Healthcare_Alarming service.



After the VIP Healthcare_Alarming service starts, configure the framework in the new VIP service, as described next.

Configure the framework

The VIP framework contains the logic for the alarm status objects on the diagrams. The VIP framework uses the AND/OR module for the rooms and buildings.

You manually link the status objects in the framework: Connect the source input of the room AND/OR module to the alarm output status of the device. Then connect the status output from the room module to the source input of the building AND/OR module. Details for this process are provided in the following steps.

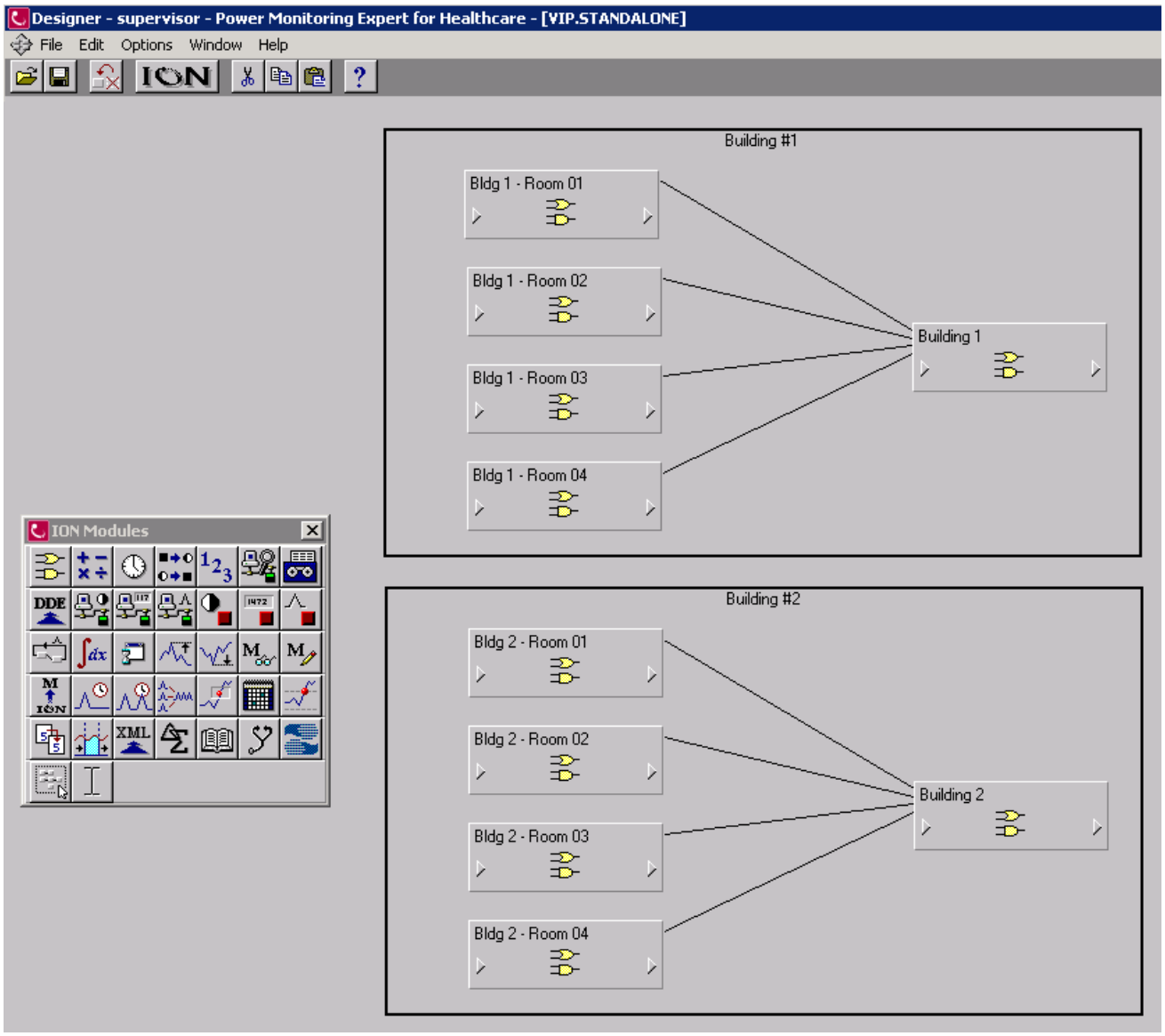
See *ION Reference* for information about configuring the modules in Vista diagrams.

Follow these steps to configure the framework:

1. Open Designer.
2. Paste the default framework `Operating Room Alarming Status for ANSI.fwn` in C:\Program Files (x86)\Schneider Electric\Power Monitoring Expert 8.1 Healthcare Edition\config\fmwk\Operating Room into Designer.

   For 32-bit systems, the file is in C:\Program Files\Schneider Electric\Power Monitoring Expert 8.1 Healthcare Edition\config\fmwk\Operating Room.
3. Paste the default framework into the new Healthcare_Alarming VIP.

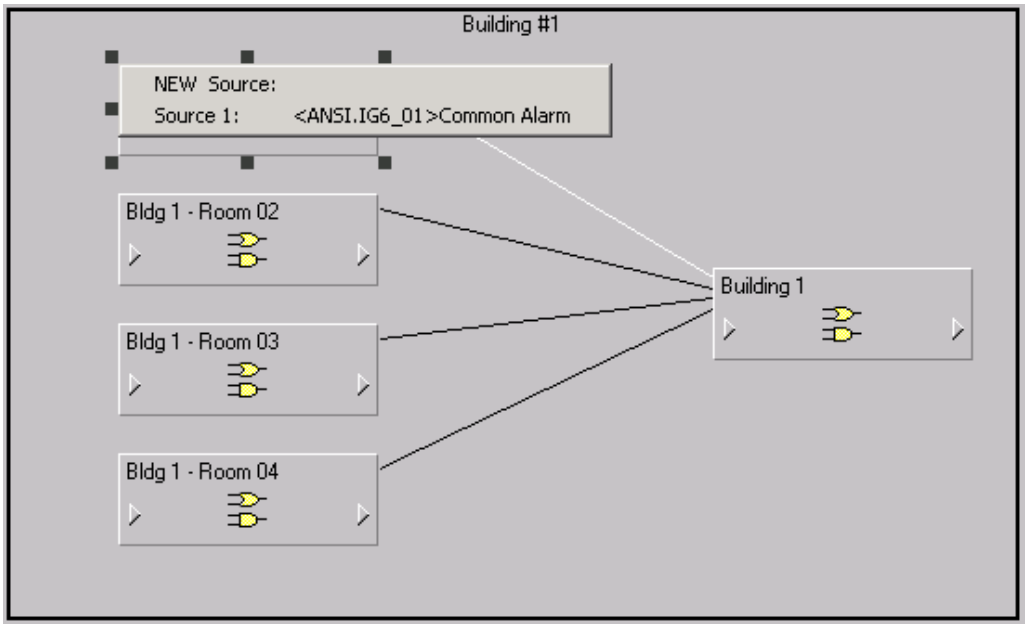
   Here is an example of the default framework.



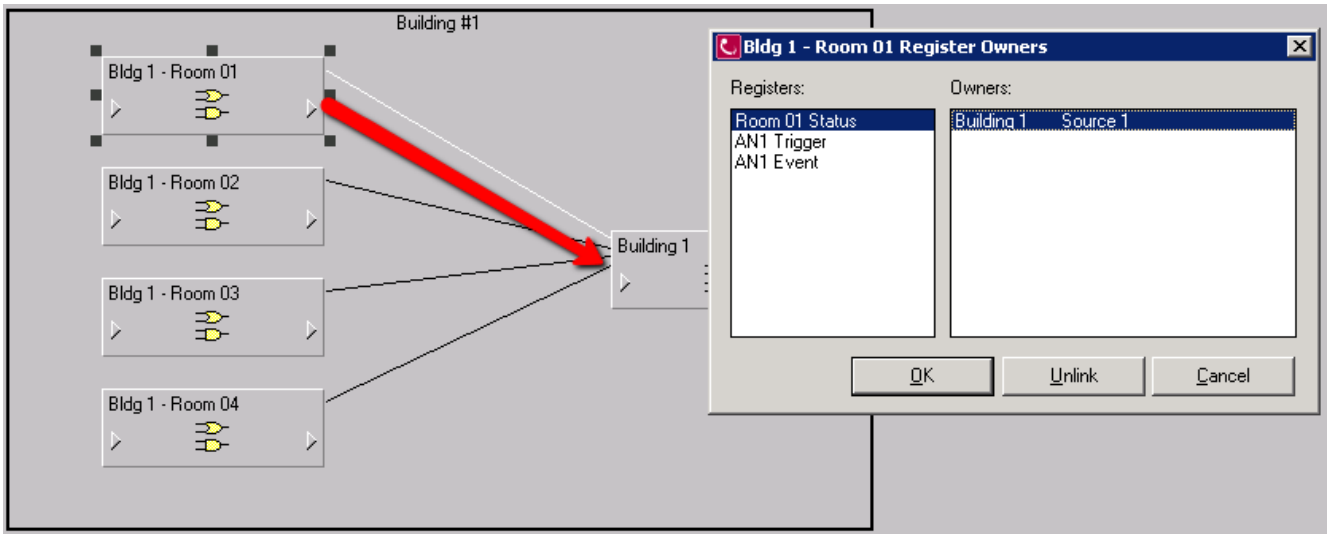
This framework is set up for two buildings by default. Each building is identified by an outline box. To add more buildings with rooms, select all the modules inside a box, and copy and paste them to the bottom of diagram.

For every LIM-IG6 in a room, there is one AND/OR module. For example, if Room 1 has four LIM-IG6 monitors, then the first LIM-IG6 alarm status output is connected to the input of the first room AND/OR module, the second LIM-IG6 alarm status output is connected to the input of the second AND/OR module and so on.

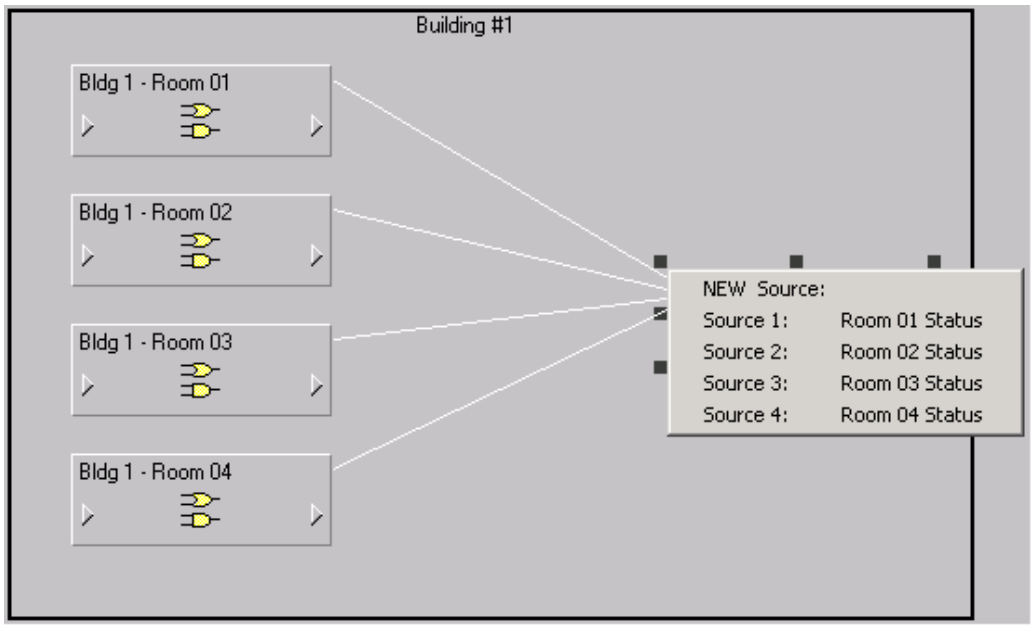
4. Connect the source input of the room AND/OR module to the Common Alarm output of a LIM-IG6.



5. Connect the output of each room AND/OR module to the source input of the building AND/OR module: Select **Create ION Link** from the toolbar. Choose the first IG6 from list of nodes and navigate to the common alarm output register: **IG6 Registers > Common Registers > Common Alarm**.



6. Verify the building AND/OR module has an alarm input from each room module.



NOTE: If there is only one LIM-IG6, you can use Vista to directly connect the status object to the IG6 device. You do not have to use Designer to configure the status object. Open the diagram in Vista and right-click the gray status object to configure the alarm.

Finalize the Hospital and Room Diagrams

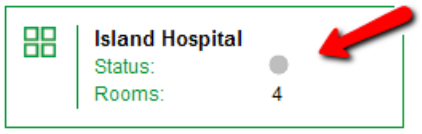
After the VIP framework is configured, open the diagrams in Vista and link the status objects to the correct modules in the VIP framework. These status objects indicate whether the measured THC is within the safe limit for the facility. The colors shown on the status objects are:

- **Green** - Safe. THC is under the limit.
- **Red** - Hazard. THC has exceeded the limit or the LIM-IG6 is in test mode.
- **Gray** - No status. The object has not been connected to an alarm output, as shown:

See the "Hospital Summary Diagram" on page 266 for examples of the indicators that show safe or hazard values.

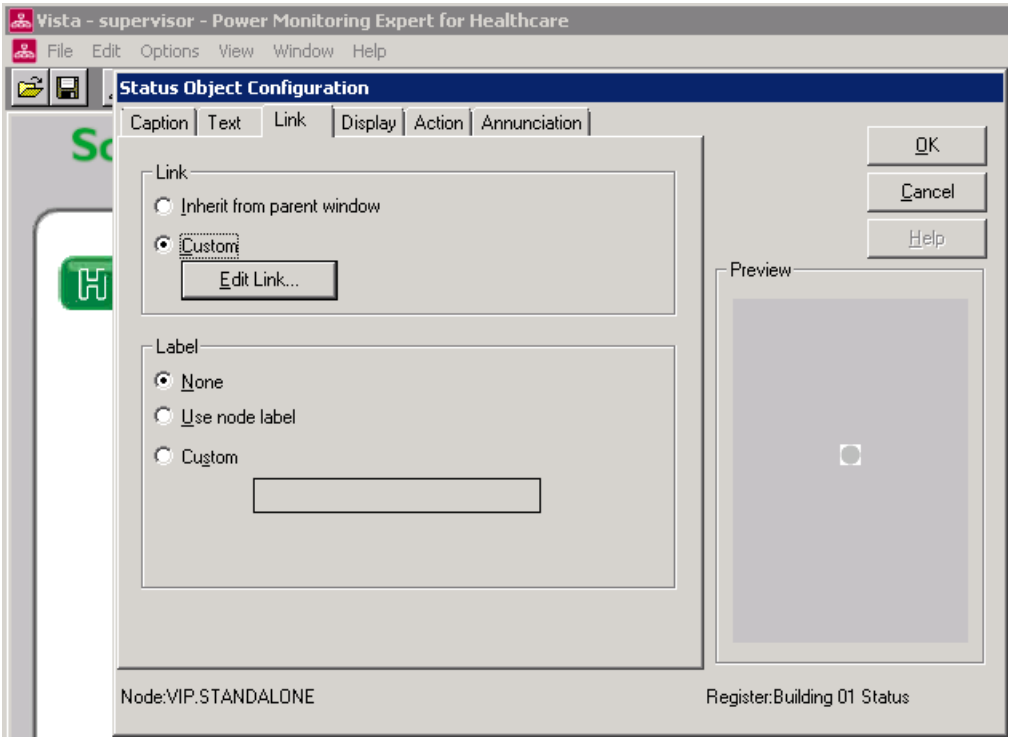
Hospital/Building Diagrams

In the top level Summary of Hospitals diagram, link the LED status object to the AND/OR module for the Hospital Level Status in the VIP framework.

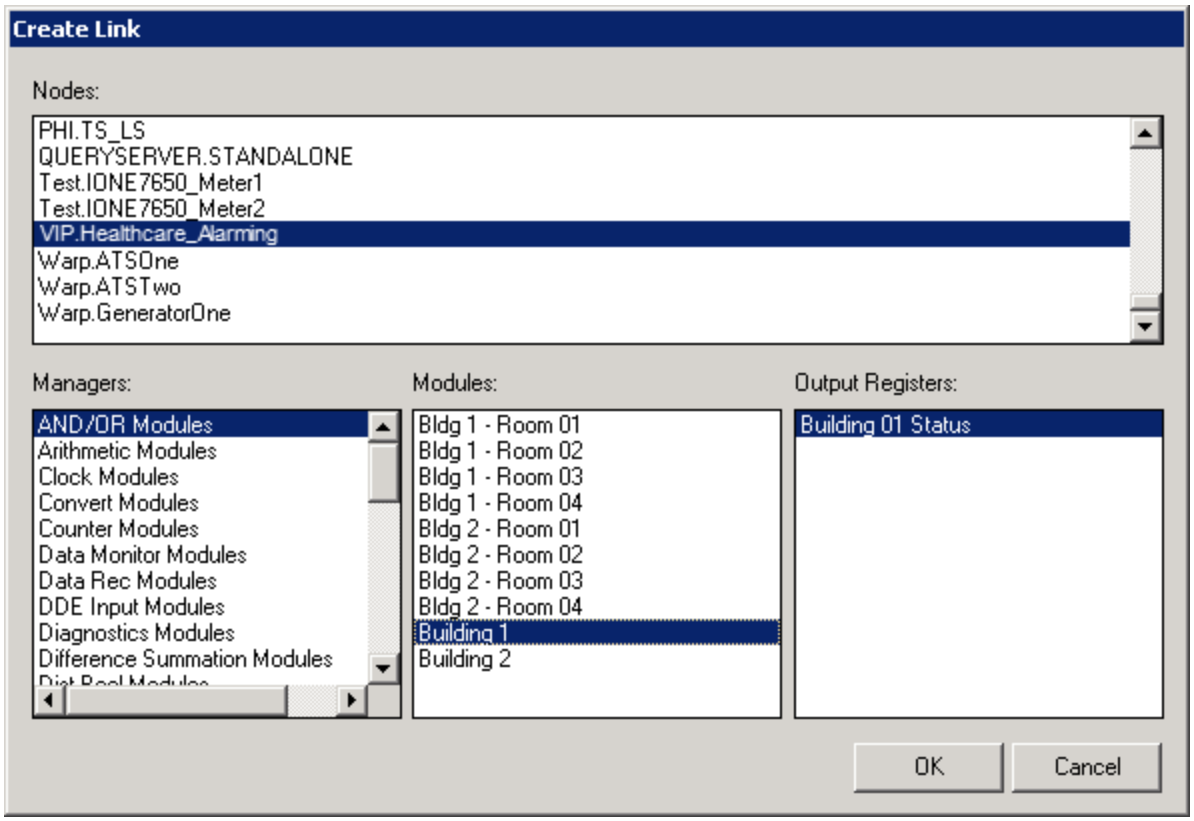


This LED object reads the status for each room. After you link it correctly, this object remains green in normal circumstances. If any room or panel changes to an alarm state, this object turns red.

1. Right-click the gray status object. The Status Object Configuration screen appears.
2. Click the **Link** tab.



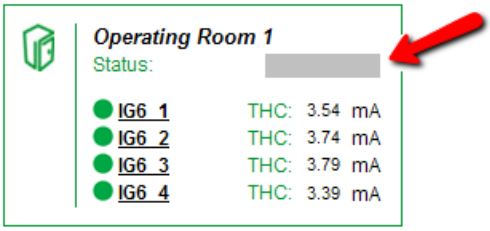
3. Under **Link**, click **Custom** and click **Edit Link**. The Create Link screen appears.
4. Select the correct output register for the device node, as shown next:



5. Click **OK** to save the changes.

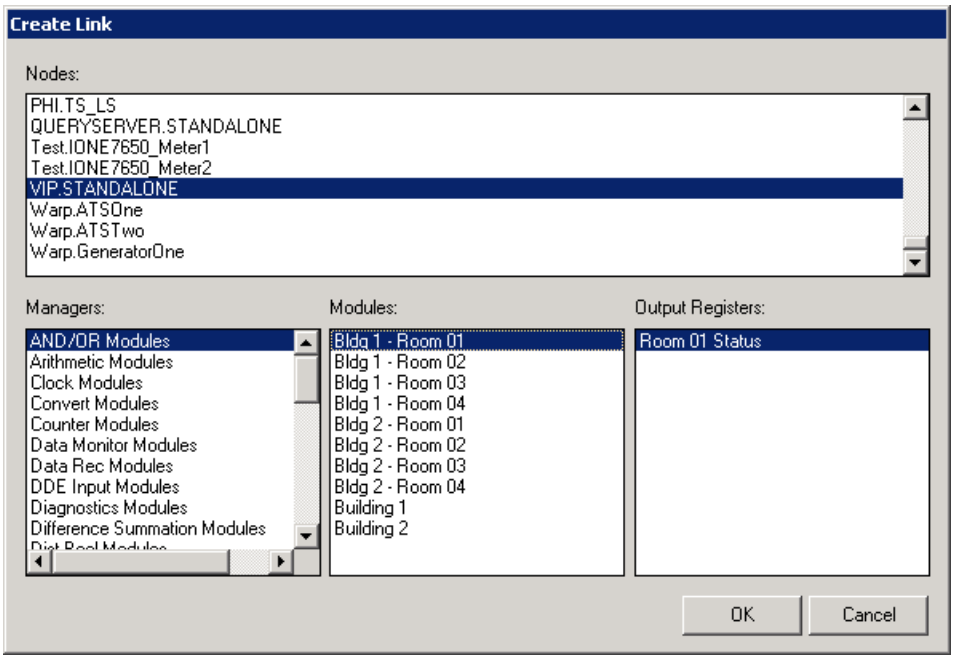
Room Diagrams

If the room has more than one LIM-IG6 or panel, connect the output of each AND/OR module in the room VIP to the grey status bar on the diagram.



The output of the AND\OR module takes the input from each LIM-IG6 and reads the status. IF the status is 0, then the diagram shows green "Safe" condition. If the alarm status changes to 1 the diagram shows red “Hazard”.

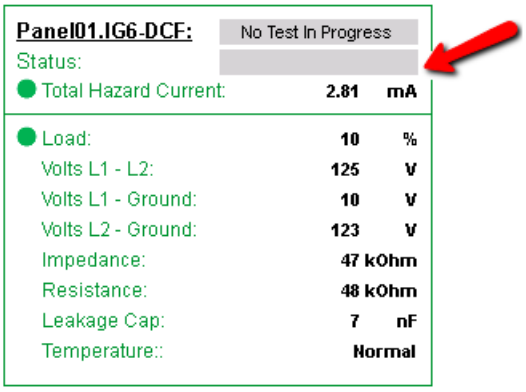
1. Right-click the status object and navigate to the Create Link screen.
2. Select the correct output register for the device node, as shown next:



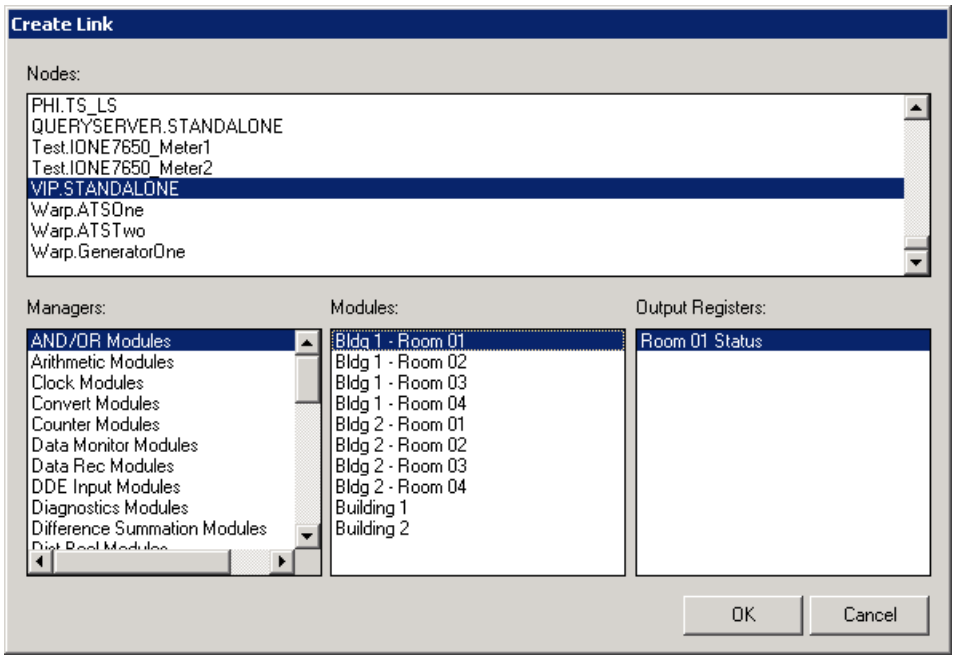
3. Click **OK** to save the changes.

Room Details Diagrams

In the Room Details diagram, link the status object to the AND/OR module for the room status in the VIP framework.



1. Right-click the status object and navigate to the Create Link screen.
2. Select the correct output register for the device node, as shown next:



3. Click **OK** to save the changes.

Repeat these linking tasks for all buildings and rooms in the diagrams.

Open the Diagrams in Power Monitoring Expert

After you configure the diagrams, login to Power Monitoring Expert and open the diagrams through the Diagrams application.

Verify all status objects in the diagrams are correct. If any status objects are gray, make the necessary corrections to the framework modules or the status objects.

Hospital Room Diagrams for ANSI

When the Operating Room Configuration Tool is run for your hospital, several diagrams are produced that visually indicate the electrical status of the rooms and circuits being monitored.

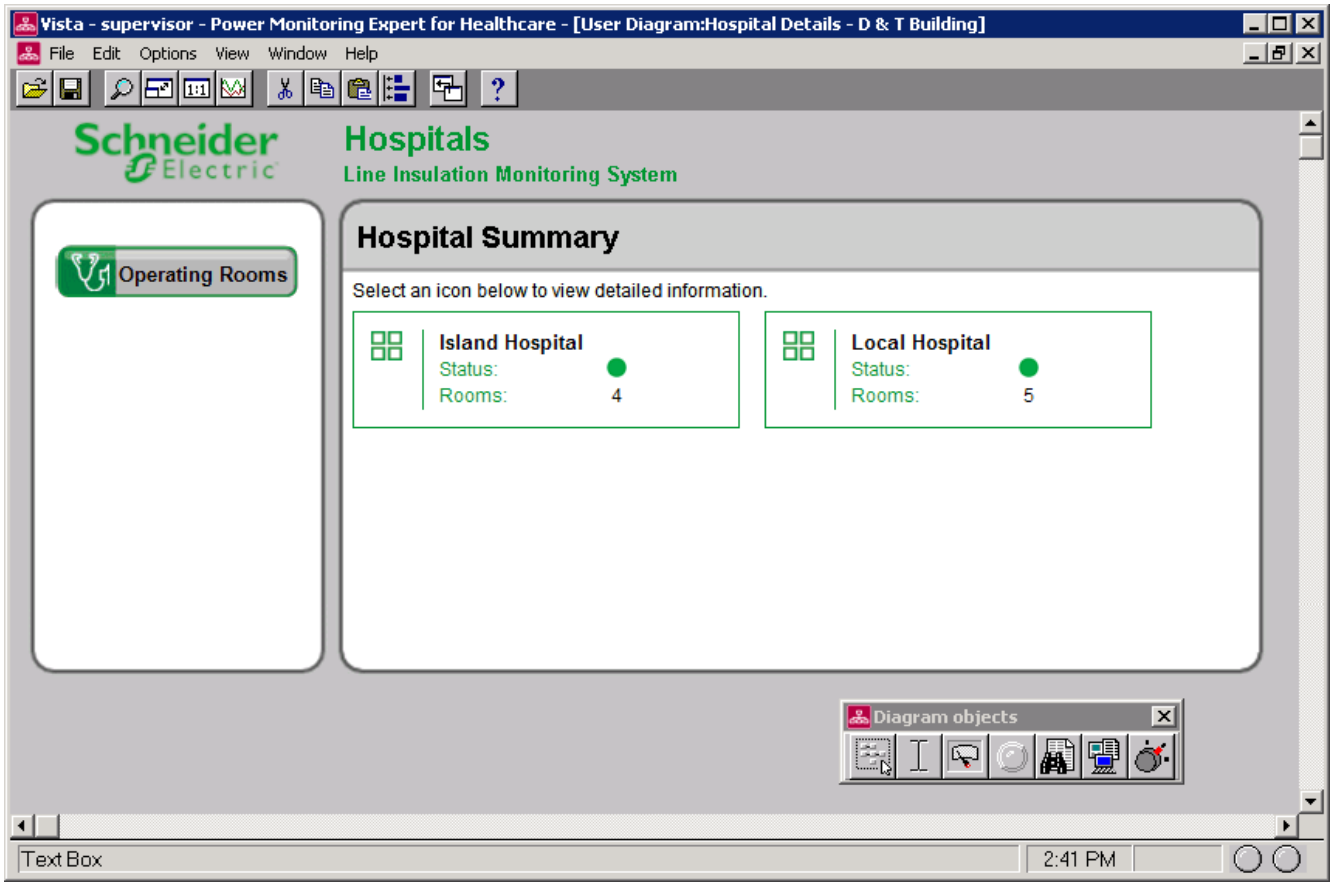
This section describes each type of diagram and details about measurements, status objects, and configuration.

Several diagrams are generated for each hospital you configure in the tool. The diagrams are in a hierarchy from the top-level hospital down to the insulation fault monitor and monitored circuits. This allows you to drill down from a hospital overview to the circuit details.

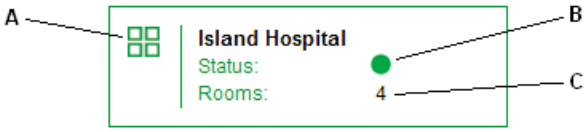
NOTE: After the diagrams are generated, diagram labels can be changed in Vista. You do not have to use the configuration tool to change any names.

Hospital Summary Diagram

The Hospital Summary diagram shows each hospital or facility that contains a group of rooms.



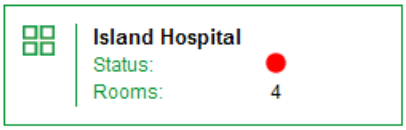
The Hospitals Summary diagram lists all the hospitals, facilities, or groups of rooms that were configured for the hospital. Each box in the main area represents a group of rooms. This diagram provides a status overview and links to rooms in the hospital, as shown next:



A **Hospital Icon.** Click this icon to see the diagram of rooms in the hospital.

B **Status Indicator.** This indicator is green or red to show the general status of the hospital:

- **Green** - The hazard current monitor devices in all rooms do not detect any unsafe conditions. This applies to all of the monitoring devices included in the group of rooms.
- **Red** - One or more rooms have a circuit with an insulation fault or a LIM-IG6 is in safety test mode. A LIM-IG6 test lasts 5 to 30 seconds. When the test is complete, the color changes back to green. If an insulation fault has occurred, the indicator remains red until the fault is corrected. In the hazard or test situation, the hospital box appears like this:



- **Gray** - The status object is not linked to the correct module of the VIP framework. See "Finalize the Hospital and Room Diagrams" on page 222 for instructions.

C **Rooms.** Total number of monitored rooms in this hospital. These are the rooms with LIM-IG6 monitors.

What to do if the status indicator is red:

1. Click the Hospital Icon to open the Summary of Rooms diagram. One or more room boxes will also have a red alarm indicator.
2. Click the specific room icon to open the Room Details diagram. One or more panel boxes will also have a red indicator. If the optional EDS 151 / EDS 461 circuit fault locator devices are installed, the panel box also indicates each circuit that has a resistance fault.

NOTE: Some types of electrical faults can occur and not be indicated by the individual circuit fault locators. Only the room status indicator turns red. See "Indicators for Capacitive Faults" on page 235 for details.

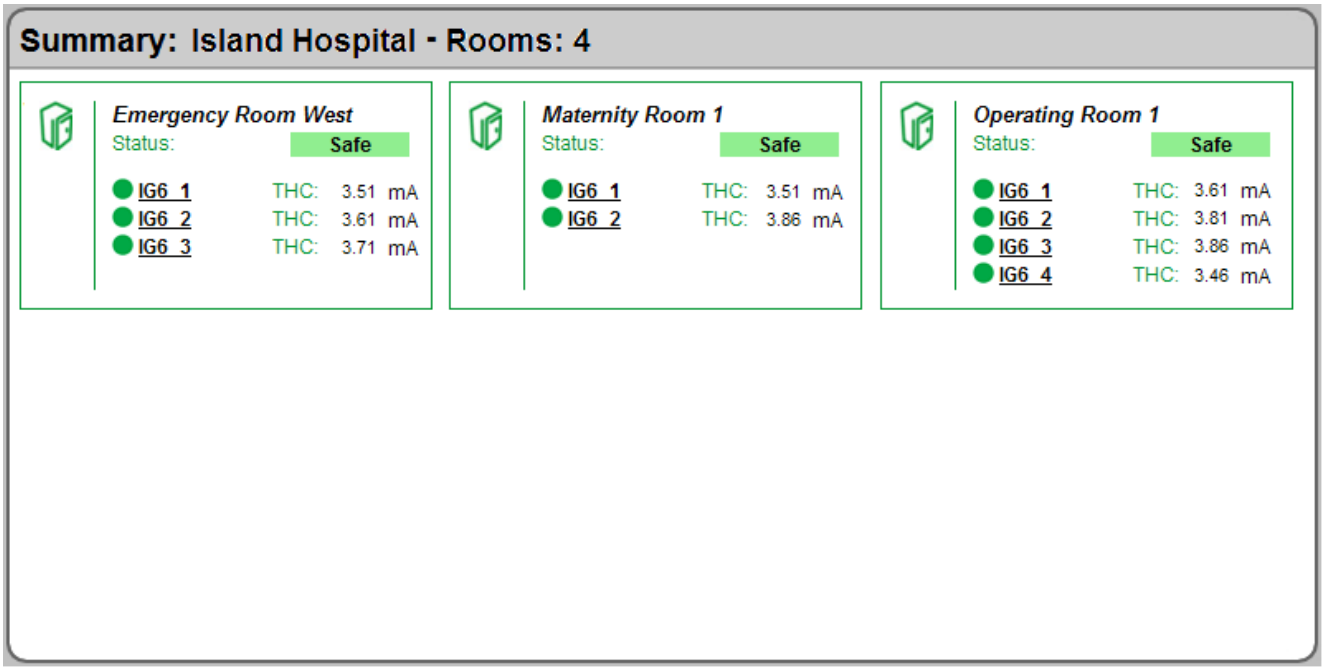
---

3. Notify the responsible person that can address the condition for the room and specific circuits.

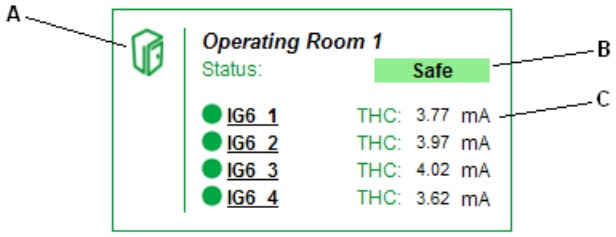
See the next sections for information about the additional diagrams.

Summary of Rooms Diagram

The next figure shows an example diagram of the group of rooms in a hospital:



This diagram provides an overview of each room in the hospital. Each box represents a single room as shown next:



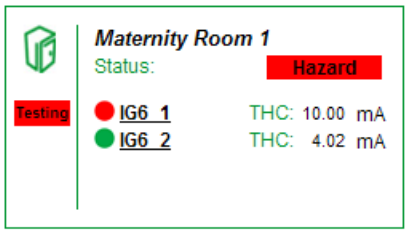
A **Room Icon.** Click the icon to see LIM-IG6 and circuit details for the room.

B **Room Status Indicator.** Indicates the general conditions in the room. This indicator is either green "Safe" or red "Hazard." If the indicator is red, one or more IG6 monitors are in test mode or an insulation fault is detected.

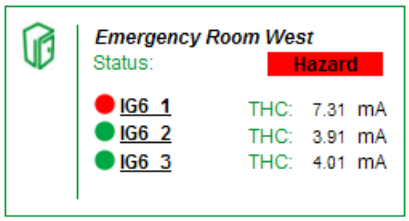
This status object needs to be configured for proper operation.

C **IG6 Status Indicators.** Displays the status and real-time total hazard current (THC, in mA) for each LIM-IG6 in the room. Up to six LIM-IG6 monitors can be installed in a room. The indicator changes to red if the LIM-IG6 is in safety test mode or if a circuit has a hazard current condition. When in test mode, the THC measurement changes to 10.0 mA and the red "Testing" label appears next to the LIM-IG6 name. The test lasts 5 to 30 seconds. When the test is complete, the color changes to green. If a LIM-IG6 detects an insulation fault, the THC measurement shows the real-time THC measurement.

LIM-IG6 in test mode:

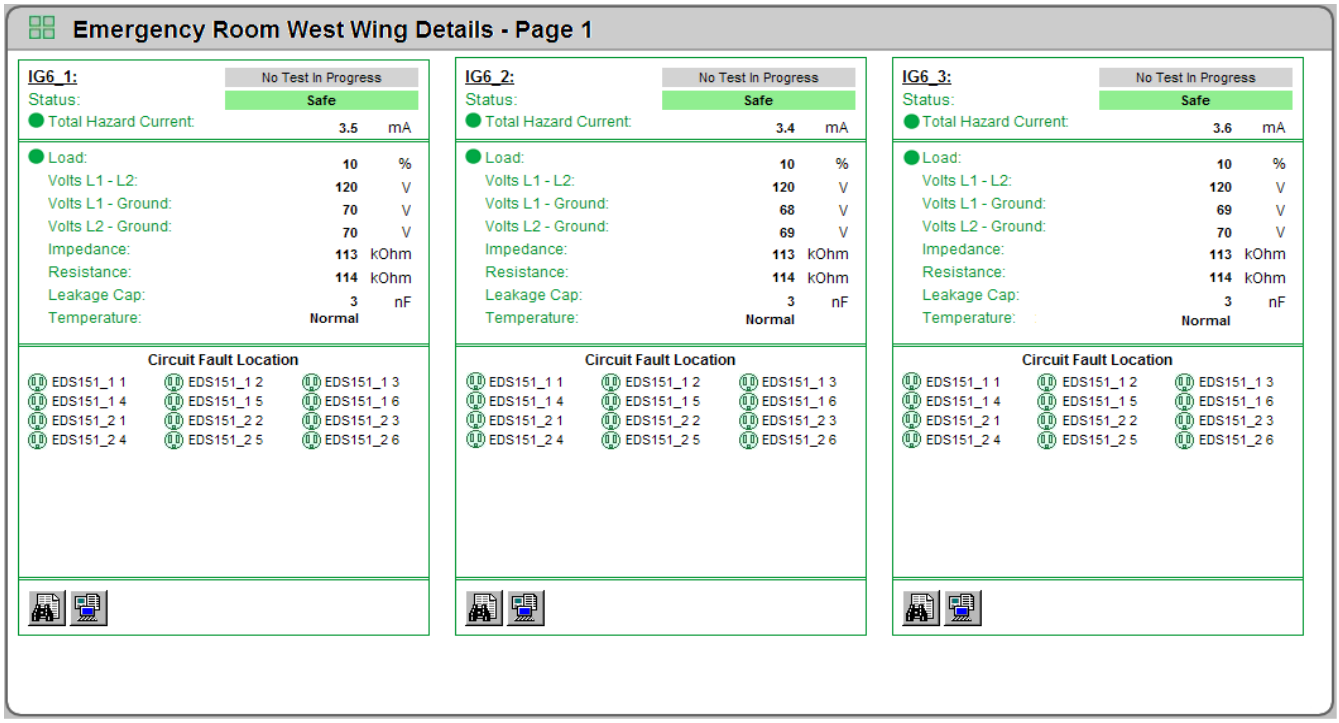


LIM-IG6 in hazard condition:



Room Details Diagram

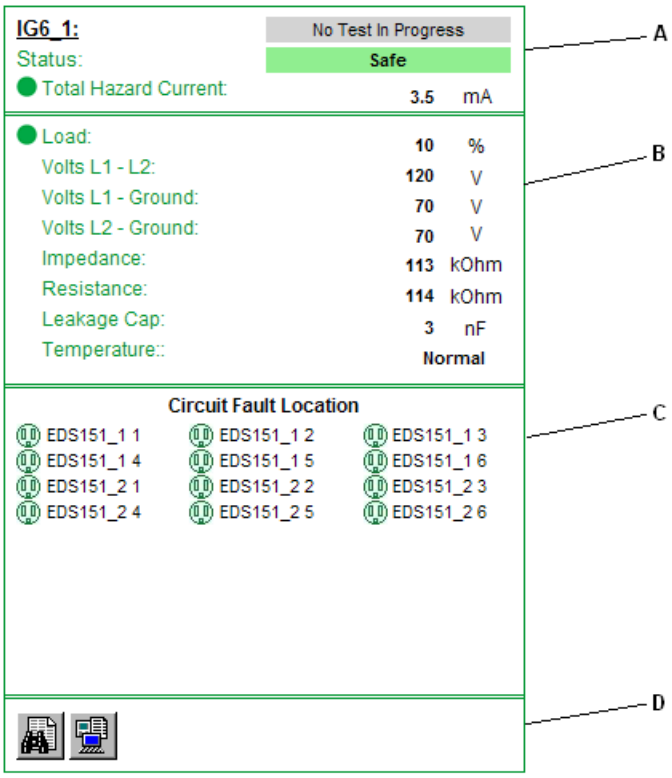
The next figure shows an example diagram of the room and LIM-IG6 details:



This diagram shows the details for each LIM-IG6 and connected devices in a room. Up to three LIM-IG6 monitors can be shown per screen of the diagram. If more than three monitors are in the diagram, click the arrow in the upper right corner to see other monitors.

NOTE: For 208/240V systems, one LIM-IG6 can be shared between two rooms. In this case, the monitor appears on both room diagrams.

Each LIM-IG6 area contains these sections to provide specific information about the circuit conditions:



A **LIM-IG6 Status.** This section shows the name and status of the monitor, real-time THC measurement, and test status. The THC measurement is taken directly from the LIM-IG6. The LIM-IG6 name is defined in the configuration tool.

This indicator is either green "Safe" or red "Hazard." In the indicator is red, one or more panels are in test mode or circuits in the room are in a hazard condition. The red "Test In Progress" label appears when someone starts a LIM-IG6 test. A test is started by pressing the test button on the LIM-IG6 or by pressing the test button on the remote test device. This label remains visible during the test.

See "Indicators for Test Mode and Hazard Condition" on page 234 for details.

B **Measurements.** Displays the real-time measurements for the components connected to the LIM-IG6.

- **Load** - Optional. Displays the transformer load if the SWT3 or SWT4 circuit transformer is connected to the LIM-IG6. The status indicator turns red if the overload percentage exceeds the threshold defined for the transformer.
- **Volts L1 - L2** - Voltage between L1 and L2, in V.
- **Volts L1 - Ground** - Voltage between L1 and Ground, in V.
- **Volts L2 - Ground** - Voltage between L2 and Ground, in V.
- **Impedance** - Impedance Zf in kΩ.
- **Resistance** - Resistance Rf in kΩ.
- **Leakage Cap** - Leakage capacitance in nF.
- **Temperature** - Optional. The status of the transformer temperature, according to the over-temperature sensor. This appears only if the temperature sensor is installed with the transformer. The value changes to red "High" if the temperature exceeds the threshold.

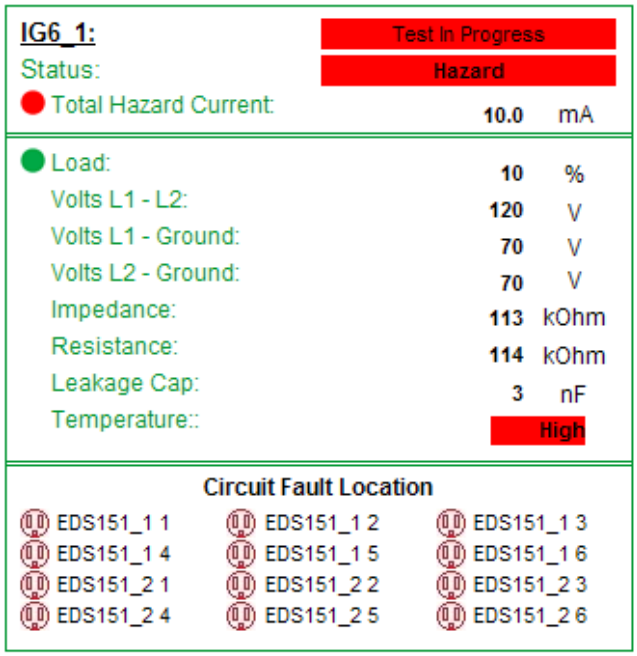
C **Circuit Status.** Optional area. This area only appears if the optional EDS 151 / EDS 461 circuit fault locator is connected to the LIM-IG6. This area shows the status for each circuit being monitored. If the LIM-IG6 detects a resistance fault, the circuit monitor identifies the specific circuit and the circuit indicator turns red. When any indicator turns red, the hazard status propagates up to the top-level Hospitals Summary diagram. If the LIM-IG6 is in test mode, all circuit indicators turn red.

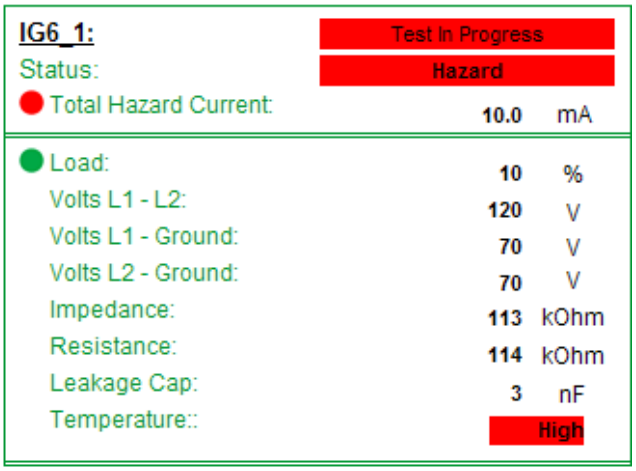
See examples below for indicators in test or hazard condition.

D **Event Log and Data Log.** This area contains links to the historical data log and event log for the panel measurements. See "Data Logs and Graphs" on page 236 for more information.

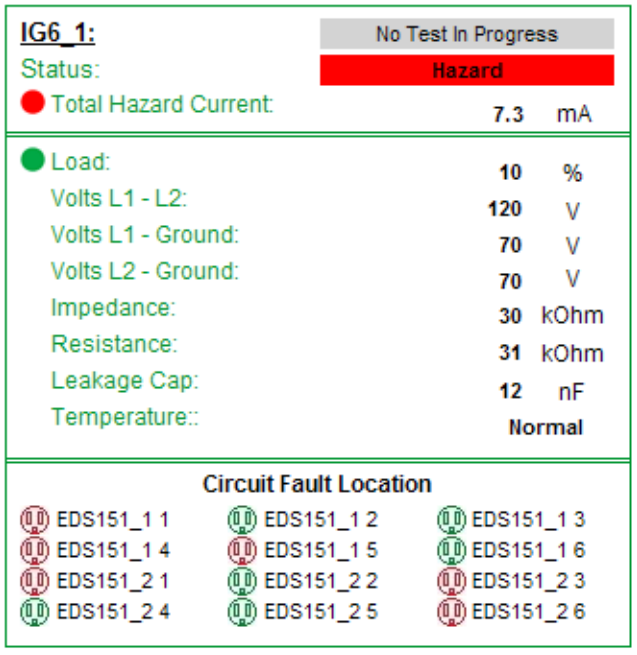
Indicators for Test Mode and Hazard Condition

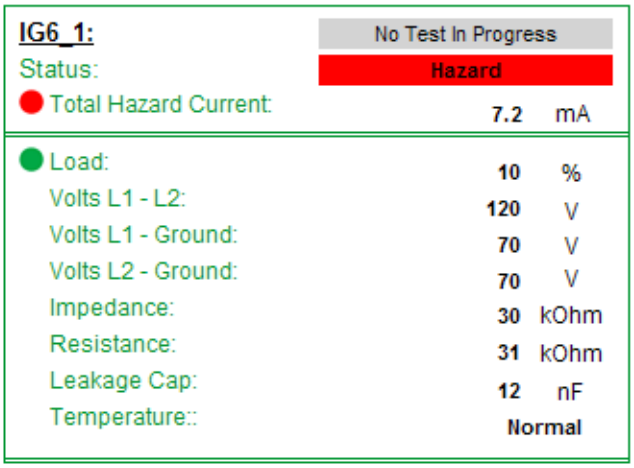
LIM-IG6 in test mode, with circuit fault locators (left) and without circuit fault locators (right):





LIM-IG6 in hazard condition, with circuit fault locators (left) and without circuit fault locators (right):





Indicators for Capacitive Faults

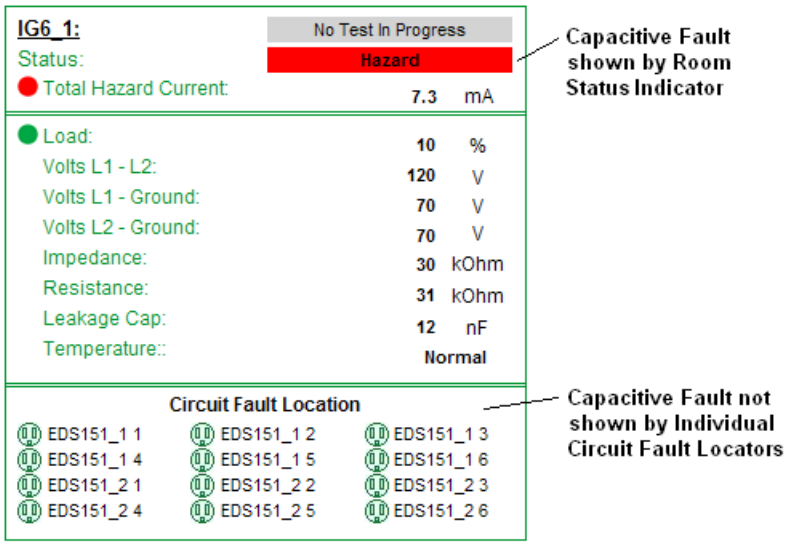
⚠ WARNING

DEVICE HAZARD INDICATORS

Do not ignore the main device hazard indicator when all circuit fault locator icons show green status.

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

In some cases, such as when too many equipment items are connected to circuits, the LIM-IG6 detects a capacitance fault that exceeds the THC. For this situation, the room **Status** area shows the hazard, as shown next. However, if the optional circuit fault locators are installed, the circuit indicators do not indicate the capacitive fault, because they show only resistance faults, as shown next:



If all the circuit fault indicators are green, as above, and the room **Status** area shows a hazard, appropriate personnel must take action to determine and correct the cause of the fault.

Data Logs and Graphs

For hospital staff who need additional details about circuit measurements and details, the Room Details diagram provides links to the historical data log and the event log. These logs provide measurement data for the 5-minute polling interval of the LIM-IG6. You can filter the data in the logs by date range.

When using the event log, you can also generate a graph that shows THC measurements plotted across time. If any THC measurement exceeds the hazard threshold, the graph includes a callout at the specific event point.

Historical Data Log and Graph

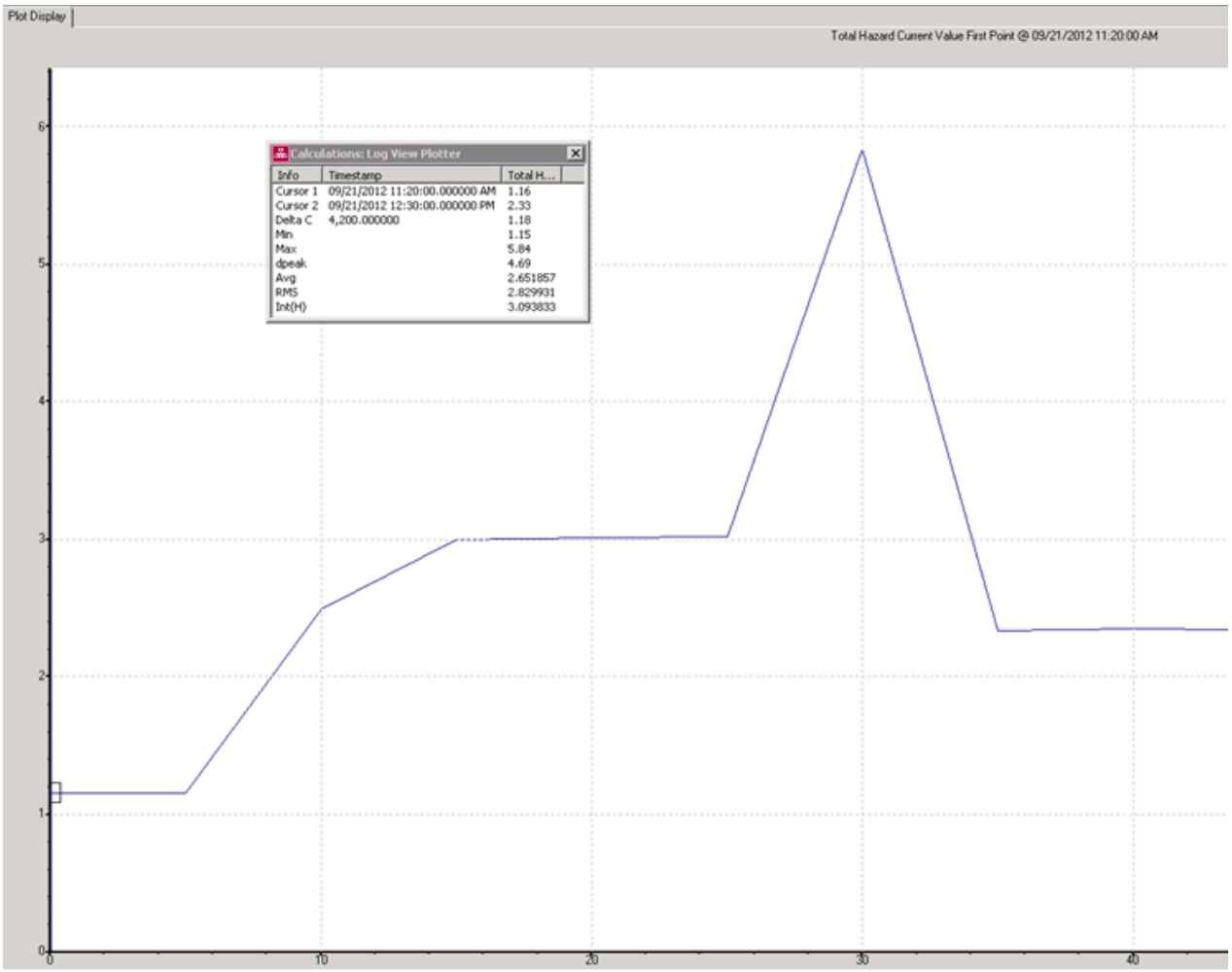
The following figure shows the historical log table.

Device Diagram | Change Date Range | Show Graph

Node	Timestamp	Total Hazard Current Value	Load Percentage Value	Voltage L1-L2 Value	Voltage L1-Gnd Value	Voltage L2-Gnd Value	Impedance Value	Resistance Value	Capacitance Value
Hospital.IG6_1	1/29/2013 10:55:00.000 AM	3.800	10.000	127.000	10.000	122.000	113.000	114.000	3.000
Hospital.IG6_1	1/29/2013 10:50:00.000 AM	3.800	10.000	127.000	10.000	122.000	113.000	114.000	3.000
Hospital.IG6_1	1/29/2013 10:45:00.000 AM	3.800	10.000	127.000	10.000	122.000	113.000	114.000	3.000
Hospital.IG6_1	1/29/2013 10:40:00.000 AM	3.800	10.000	127.000	10.000	122.000	113.000	114.000	3.000
Hospital.IG6_1	1/29/2013 10:35:00.000 AM	3.800	10.000	127.000	10.000	122.000	113.000	114.000	3.000
Hospital.IG6_1	1/29/2013 10:30:00.000 AM	3.800	10.000	127.000	10.000	122.000	113.000	114.000	3.000
Hospital.IG6_1	1/29/2013 10:25:00.000 AM	3.800	10.000	127.000	10.000	122.000	113.000	114.000	3.000
Hospital.IG6_1	1/29/2013 10:20:00.000 AM	3.800	10.000	127.000	10.000	122.000	113.000	114.000	3.000
Hospital.IG6_1	1/29/2013 10:15:00.000 AM	3.800	10.000	127.000	10.000	122.000	113.000	114.000	3.000
Hospital.IG6_1	1/29/2013 10:10:00.000 AM	3.800	10.000	127.000	10.000	122.000	113.000	114.000	3.000
Hospital.IG6_1	1/29/2013 10:05:00.000 AM	3.800	10.000	127.000	10.000	122.000	113.000	114.000	3.000
Hospital.IG6_1	1/29/2013 10:00:00.000 AM	3.800	10.000	127.000	10.000	122.000	113.000	114.000	3.000
Hospital.IG6_1	1/29/2013 9:55:00.000 AM	3.800	10.000	127.000	10.000	122.000	113.000	114.000	3.000
Hospital.IG6_1	1/29/2013 9:50:00.000 AM	3.800	10.000	127.000	10.000	122.000	113.000	114.000	3.000
Hospital.IG6_1	1/29/2013 9:45:00.000 AM	3.800	10.000	127.000	10.000	122.000	113.000	114.000	3.000
Hospital.IG6_1	1/29/2013 9:40:00.000 AM	3.800	10.000	127.000	10.000	122.000	113.000	114.000	3.000
Hospital.IG6_1	1/29/2013 9:35:00.000 AM	3.800	10.000	127.000	10.000	122.000	113.000	114.000	3.000
Hospital.IG6_1	1/29/2013 9:30:00.000 AM	3.800	10.000	127.000	10.000	122.000	113.000	114.000	3.000
Hospital.IG6_1	1/29/2013 9:25:00.000 AM	3.800	10.000	127.000	10.000	122.000	113.000	114.000	3.000
Hospital.IG6_1	1/29/2013 9:20:00.000 AM	3.800	10.000	127.000	10.000	122.000	113.000	114.000	3.000
Hospital.IG6_1	1/29/2013 9:15:00.000 AM	3.800	10.000	127.000	10.000	122.000	113.000	114.000	3.000
Hospital.IG6_1	1/29/2013 9:10:00.000 AM	3.800	10.000	127.000	10.000	122.000	113.000	114.000	3.000
Hospital.IG6_1	1/29/2013 9:05:00.000 AM	3.800	10.000	127.000	10.000	122.000	113.000	114.000	3.000
Hospital.IG6_1	1/29/2013 9:00:00.000 AM	3.800	10.000	127.000	10.000	122.000	113.000	114.000	3.000
Hospital.IG6_1	1/29/2013 8:55:00.000 AM	3.800	10.000	127.000	10.000	122.000	113.000	114.000	3.000

Buttons at the top of the table are:

- **Device Diagram** - Click this to return to the diagram.
- **Change Date Range** - Click this to view data for different dates. See "Select Date Range" below for more information.
- **Show Graph** - Select one or more column headers in the table and click this to see a graph of the data. The graph shows the data at 5-minute intervals. For example, you can check the **Total Hazard Current** option in the table and see the values. Click a point on the data line to see details for that value, as shown next.



Event Log

The following figure shows the event log table.

Device Diagram | Change Date Range

Node	Log	Timestamp	Cause	Cause Value	Effect	Effect Value	Priority	Ack Time	User Name
Hospital.IG6_1	EventLogCtl 1	12/6/2012 10:38:06.000 AM	Current I2 Alarm	No CT connected	-		100	1/28/2013 11:35:29 AM	supervisor
Hospital.IG6_1	EventLogCtl 1	12/6/2012 10:38:05.000 AM	Current I3 Alarm	InActive	-		100	-	-
Hospital.IG6_1	EventLogCtl 1	12/6/2012 10:38:05.000 AM	Current I2 Alarm	InActive	-		100	-	-
Hospital.IG6_1	EventLogCtl 1	12/6/2012 9:38:06.000 AM	Current I3 Alarm	No CT connected	-		100	1/28/2013 11:35:29 AM	supervisor
Hospital.IG6_1	EventLogCtl 1	12/5/2012 3:49:53.000 PM	Total Hazard Current Alarm	InActive	-		100	-	-
Hospital.IG6_1	EventLogCtl 1	12/5/2012 3:49:06.000 PM	Total Hazard Current Alarm	Active	-		100	1/28/2013 11:35:29 AM	supervisor
Hospital.IG6_1	EventLogCtl 1	12/1/2012 1:12:46.000 PM	Current I3 Alarm	InActive	-		100	-	-
Hospital.IG6_1	EventLogCtl 1	12/1/2012 1:12:46.000 PM	Current I2 Alarm	InActive	-		100	-	-
Hospital.IG6_1	EventLogCtl 1	12/1/2012 1:12:07.000 PM	Current I3 Alarm	No CT connected	-		100	1/28/2013 11:35:29 AM	supervisor
Hospital.IG6_1	EventLogCtl 1	12/1/2012 1:12:07.000 PM	Current I2 Alarm	No CT connected	-		100	1/28/2013 11:35:29 AM	supervisor
Hospital.IG6_1	EventLogCtl 1	12/1/2012 12:17:30.000 PM	Current I3 Alarm	InActive	-		100	-	-
Hospital.IG6_1	EventLogCtl 1	12/1/2012 12:17:30.000 PM	Current I2 Alarm	InActive	-		100	-	-
Hospital.IG6_1	EventLogCtl 1	12/1/2012 12:17:06.000 PM	Current I3 Alarm	No CT connected	-		100	1/28/2013 11:35:29 AM	supervisor
Hospital.IG6_1	EventLogCtl 1	12/1/2012 12:17:06.000 PM	Current I2 Alarm	No CT connected	-		100	1/28/2013 11:35:29 AM	supervisor
Hospital.IG6_1	EventLogCtl 1	12/1/2012 12:15:45.000 PM	Total Hazard Current Alarm	InActive	-		100	-	-
Hospital.IG6_1	EventLogCtl 1	12/1/2012 12:15:39.000 PM	Total Hazard Current Alarm	Active	-		100	1/28/2013 11:35:29 AM	supervisor
Hospital.IG6_1	EventLogCtl 1	12/1/2012 12:13:34.000 PM	Total Hazard Current Alarm	InActive	-		100	-	-
Hospital.IG6_1	EventLogCtl 1	12/1/2012 12:13:25.000 PM	Total Hazard Current Alarm	Active	-		100	1/28/2013 11:35:29 AM	supervisor
Hospital.IG6_1	EventLogCtl 1	12/1/2012 12:12:41.000 PM	Total Hazard Current Alarm	InActive	-		100	-	-
Hospital.IG6_1	EventLogCtl 1	12/1/2012 12:12:13.000 PM	Total Hazard Current Alarm	Active	-		100	1/28/2013 11:35:29 AM	supervisor
Hospital.IG6_1	EventLogCtl 1	12/1/2012 12:11:33.000 PM	Total Hazard Current Alarm	InActive	-		100	-	-
Hospital.IG6_1	EventLogCtl 1	12/1/2012 12:11:28.000 PM	Total Hazard Current Alarm	Active	-		100	1/28/2013 11:35:29 AM	supervisor
Hospital.IG6_1	EventLogCtl 1	12/1/2012 11:13:14.000 AM	Current I3 Alarm	InActive	-		100	-	-
Hospital.IG6_1	EventLogCtl 1	12/1/2012 11:13:14.000 AM	Current I2 Alarm	InActive	-		100	-	-

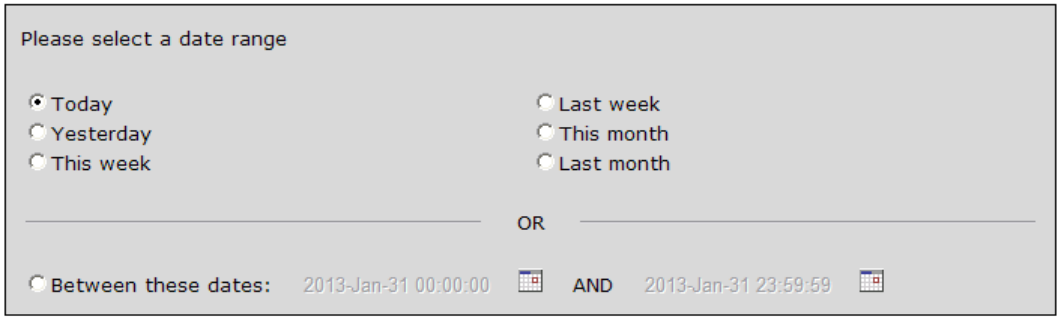
Buttons at the top of the table are:

- **Device Diagram** - Click this to return to the diagram.
- **Change Date Range** - Click this to view data for different dates. See "Select Date Range" below for more information.

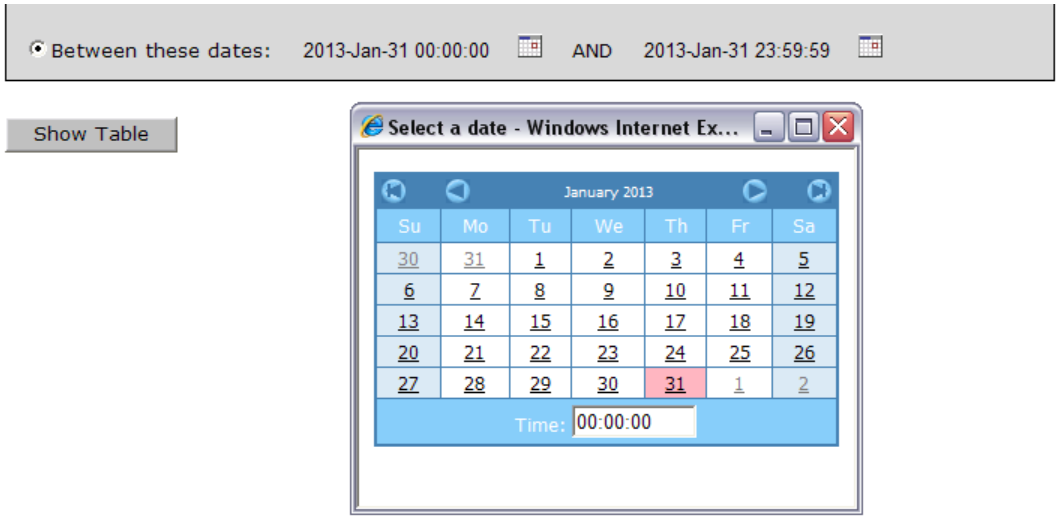
Select Date Range

For either type of log table, you can select the date range for data you want to see. The default date range is "Today".

1. Click **Select Date Range**.



2. Select an available range or click **Between these dates** and select specific dates in the calendar.



3. Click **Show Table** to see the data.

   If you select a date range of more than one week, a message appears to inform you that the table will be very long.

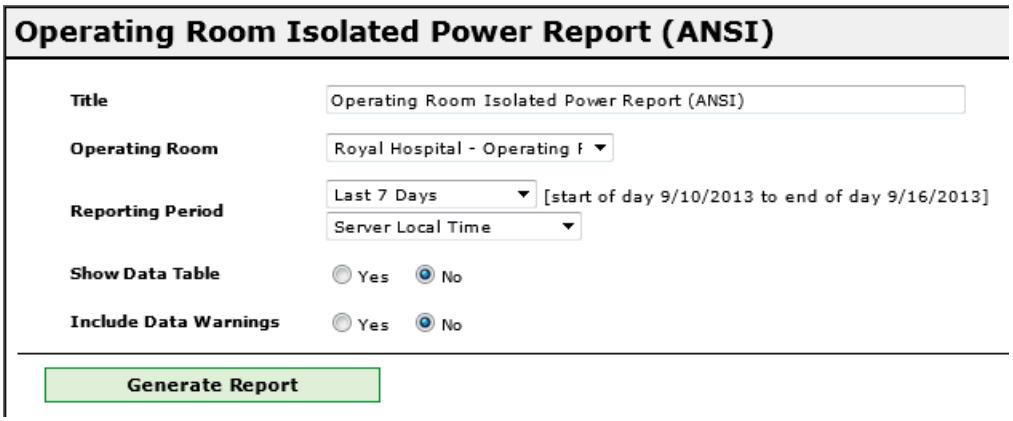
The new table appears.

Generate the Isolated Power Report

In Power Monitoring Expert 8.1 Healthcare Edition, the Operating Room Isolated Power Report is available for the electrical data and events that are recorded by the system. This report is included in the Report Library when the solution is installed.

1. In the Report Library, go to the **Operating Theater** folder and click **Operating Room Isolated Power Report (ANSI)**.

   The report configuration screen appears.



2. Select the information you want to see in the report.

   If you show data logs in the report, and the date range is more than seven days, the report could be very long. Confirm that you want to generate the report with those details.

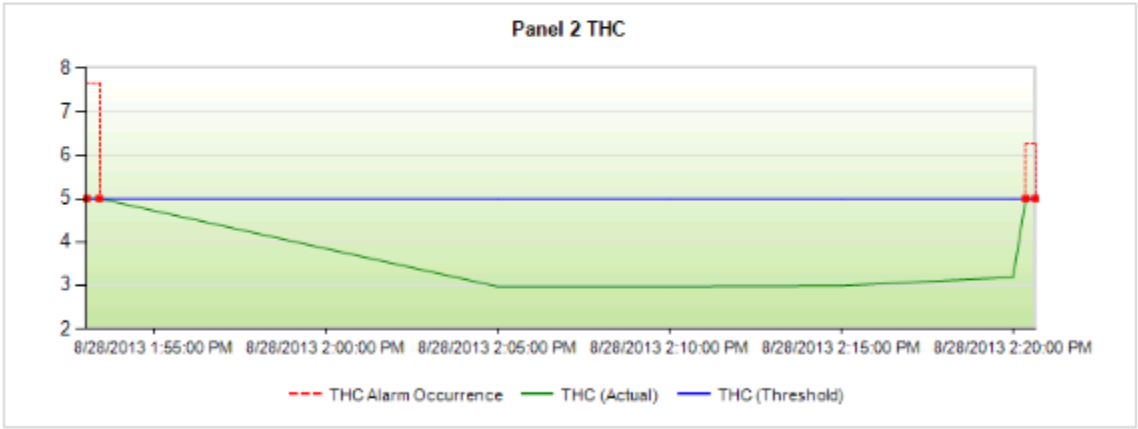
3. Click **Generate Report** to see the report. A report sample is shown next.

For each LIM-IG6 in the room, the report shows:

- Total Hazard Current graph - Displays a comparison of THC measurements to the THC limit. The THC limit is a blue line and actual THC measurements are shown as a green line. The report can include up to six graphs at a time, one graph per LIM-IG6.
- Events table - Shows each event, cause, timestamp, and other data for events that occurred in the data range.
- Data log table (optional) - Contains THC measurements and other meter data in the selected date range. Red values indicate the THC measurement was over the limit.

Operating Room Isolated Power Report (ANSI)

Report ID: Room 2
Description: Logs from Room 2
Report Generated: 8/28/2013 2:25:12 PM



Timestamp	THC	THC Threshold	Load %	Voltage L1-L2	Voltage L1-Gnd	Voltage L2-Gnd	Impedance	Resistance	Capacitance
8/28/2013 2:20:00 PM	3.183	5	22	121	10	119	40	40	9
8/28/2013 2:15:00 PM	2.987	5	22	121	10	119	43	43	9
8/28/2013 2:10:00 PM	2.97	5	22	120	10	118	43	43	9
8/28/2013 2:05:00 PM	2.969	5	22	120	10	118	43	43	9

Report ID: Room 2
Description: Events from Room 2
Report Generated: 8/28/2013 2:25:12 PM

Timestamp	Cause	Cause Value	Effect	Effect Value	Priority
8/28/2013 2:20:39 PM	Total Hazard Current Alarm	InActive	Total Hazard Current Value	THC Safe	100
8/28/2013 2:20:38 PM	Impedance Alarm	InActive	Impedance Value	Impedance Normal	100
8/28/2013 2:20:38 PM	Resistance Alarm	InActive	Resistance Value	Resistance Normal	100
8/28/2013 2:20:38 PM	Ground Fault Location Alarm	InActive	Ground Fault Location Value	Ground Fault Location Normal	100
8/28/2013 2:20:22 PM	Impedance Alarm	Active	Impedance Value	Impedance Alarm	100
8/28/2013 2:20:22 PM	Resistance Alarm	Active	Resistance Value	Resistance Alarm	100
8/28/2013 2:20:22 PM	Total Hazard Current Alarm	Active	Total Hazard Current Value	THC Hazard	100
8/28/2013 2:20:22 PM	Ground Fault Location Alarm	Active	Ground Fault Location Value	Ground Fault Location Alarm	100
8/28/2013 1:53:25 PM	Total Hazard Current Alarm	InActive	Total Hazard Current Value	THC Safe	100

Operating Room Isolated Power Interface IEC

The Operating Room Isolated Power Interface is installed in conjunction with StruxureWare Power Monitoring Expert 8.1 Healthcare Edition. This document explains how to configure the solution for facilities in the IEC market.

Hardware components in the solution include isolated power panels, line isolation monitors, and TCP gateway devices. Several optional components are available.

Software components of the solution include the Operating Room Configuration Tool and files needed for Vista diagrams. These components are installed when Power Monitoring Expert 8.1 Healthcare Edition is installed.

NOTE: If you are configuring the Operating Room Isolated Power Interface for an ANSI market site, see "Operating Room Isolated Power Interface ANSI" on page 203.

Configuration Overview for IEC

The process for configuring the Operating Room Isolated Power Interface for facilities in the IEC market includes these tasks:

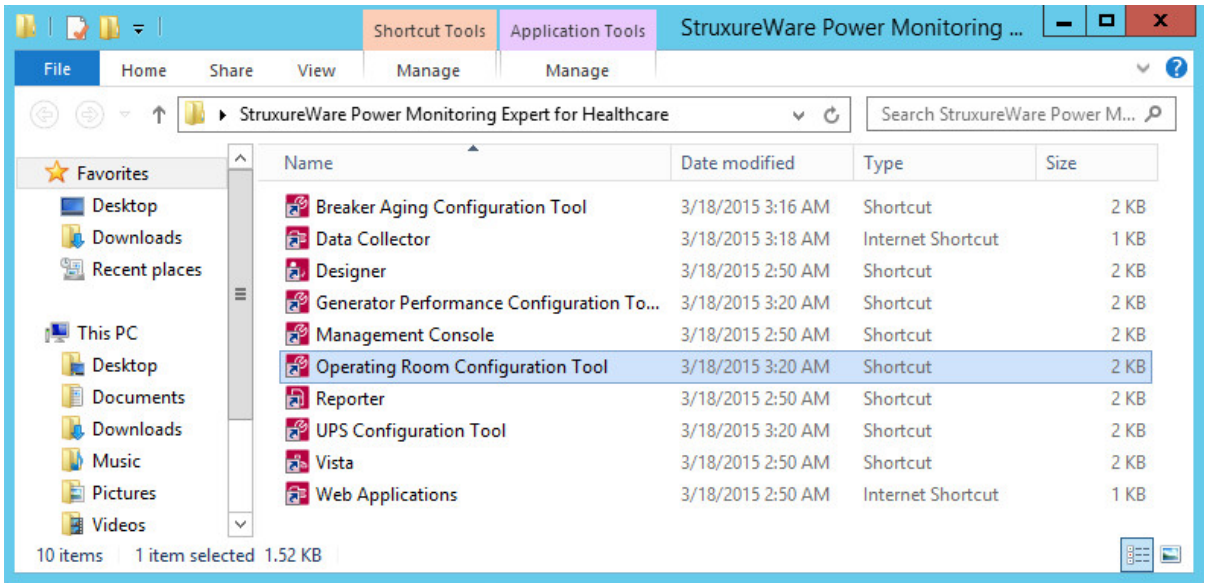
1. Configure the devices in Management Console, as described next.
2. Configure the hospital rooms in the Operating Room Configuration Tool. See "Hospital Rooms Configuration for IEC" on page 248 or online help in the tool for instructions.
3. Generate Vista diagrams using the Operating Room Configuration Tool. See "Generate Hospital Room Vista Diagrams" on page 256 for instructions.
4. Configure the VIP frameworks and status objects for the diagrams. See "Configure VIP Framework and Diagrams for IEC" on page 257 for instructions.
5. Generate the Operating Room Isolated Power Report. See "Generate the Isolated Power Report IEC" on page 277.

Installed Software Components IEC

For the Operating Room Isolated Power Interface, the following software components are installed by the installer package:

- Operating Room Configuration Tool
- Driver for the Vigilohm IM20-H
- Operating Room Isolated Power Report (IEC)
- Vista diagram images and VIP framework: Operating Theater Alarming Status for IEC.fwn, installed in:

  C:\Program Files (x86)\Schneider Electric\Power Monitoring Expert for Healthcare\config\fmwk\Operating Room
- The StruxureWare Power Monitoring Expert 8.1 Healthcare Edition folder on the Desktop. This folder contains shortcuts to the configuration tools:



Prerequisites

Make sure to complete the following tasks before you begin the process of configuring the Operating Room Isolated Power Interface:

- Isolated power panels, optional monitoring devices, and communications for hardware have been installed in the designated hospital rooms. Instructions for these hardware components are provided in their respective documentation.
- Make sure that the Vigilohm IM20-H is configured correctly and time synced to the EGX gateway. Refer to the hardware installation and user manual for more details.
- Power Monitoring Expert is installed and operational. See "Power Monitoring Expert 8.1 Healthcare Edition Installation" on page 17.

Hardware Configuration

This section contains information about the hardware devices used in the solution. Refer to the installation manuals for each device for instructions, safety messages, and parameter details.

⚠ WARNING

INACCURATE REPORT RESULTS

- Do not incorrectly configure the devices and software. This can lead to inaccurate reports and/or data results.
- Do not rely solely on system reports to determine if the system is functioning correctly or meeting all applicable standards and requirements.
- Use system reports as a supplement to proper workplace practices or equipment maintenance, not as a substitute.

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

Configure Devices in Management Console

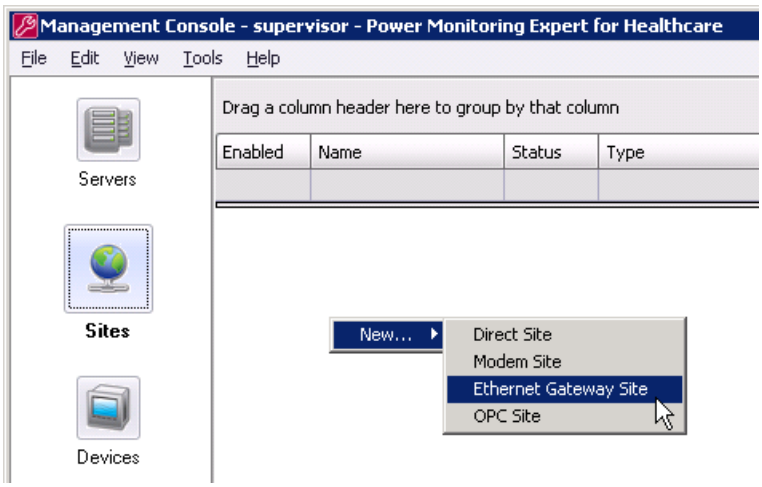
The following devices must be set up in Management Console:

- EGX100 Gateway
- Vigilohm IM20-H line isolation monitors

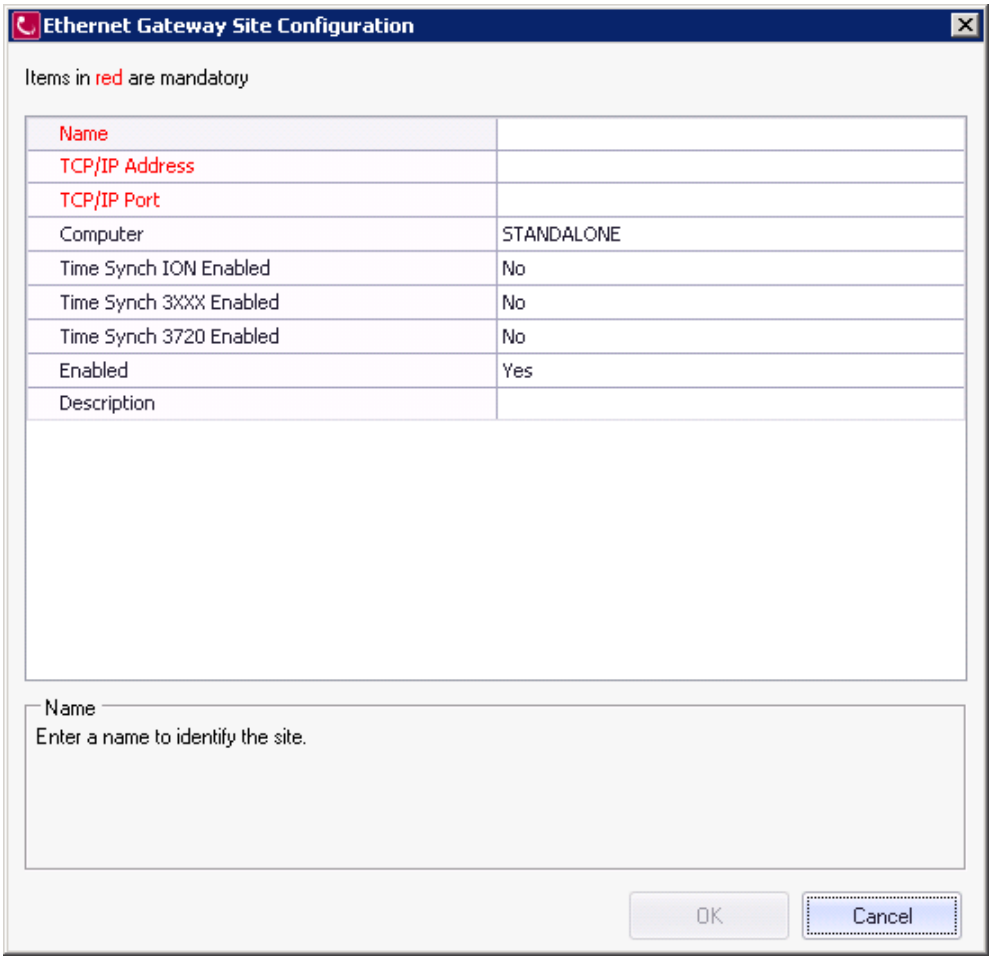
  Configure the gateway and all devices connected to the gateway as a group. Then set up another gateway and its associated devices.

See the *StruxureWare Power Monitoring Expert User Guide* or online help for more information about Management Console.

1. Open Management Console on the server.
2. Add the EGX100 Gateway as follows.
3. Click **Sites**.
4. In the sites area, right-click and select **New** > **Add Ethernet Gateway Site**.



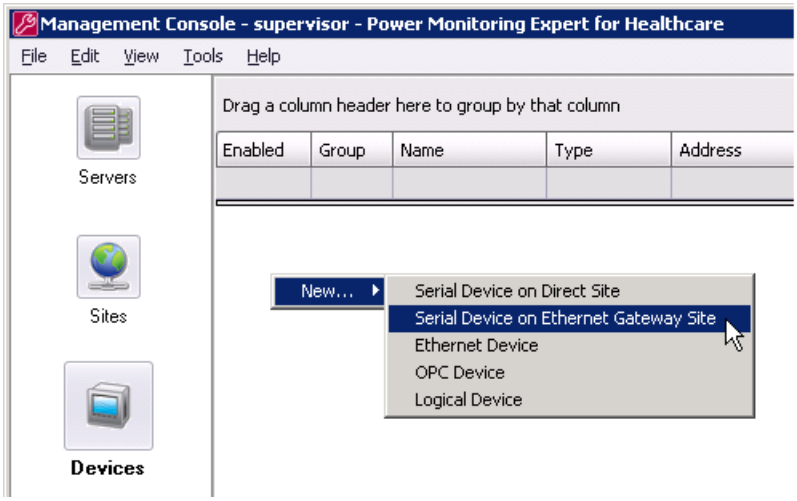
The Ethernet Gateway Site Configuration screen appears.



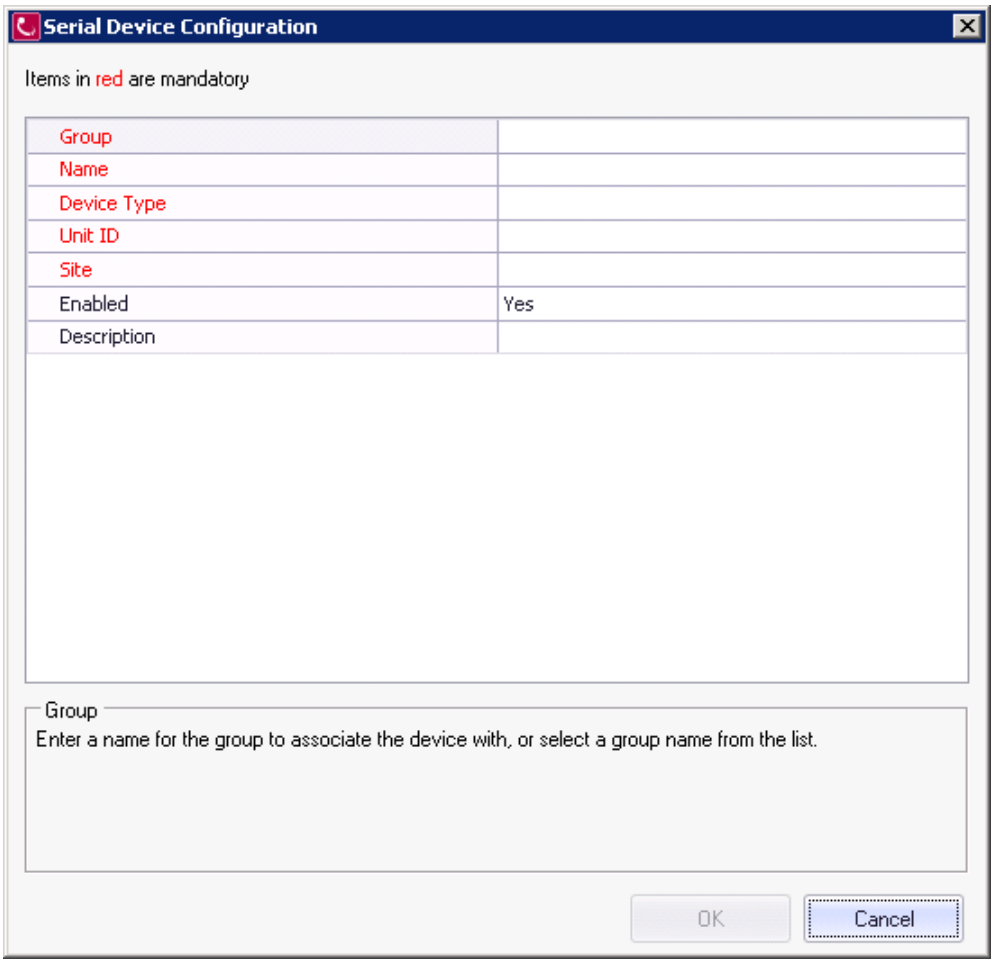
5. Enter details for the gateway:
   - **Name** - Enter a name that will be recognizable in the Operating Room Configuration Tool.

- **TCP/IP Address** - This address must be unique from all other gateways and devices in the system.
- **TCP/IP Port** - Select **Modbus TCP Device 502**.
- **Enabled** - Select **Yes**.
- Complete other fields as needed.

6. Click **OK**.
7. Click **Devices** to add the Vigilohm IM20-H devices that are connected to the gateway.
8. In the devices area, right-click and select **New** > **Serial Device on Ethernet Gateway Site**.



The Serial Device Configuration screen appears.



9. Enter details for the IM20-H.
   - **Group** - Select the device group.
   - **Name** - Enter a name that will be recognizable in the Operating Room Configuration Tool.
   - **Device Type** - Select the appropriate type.
   - **Unit ID** - This value must be unique from all other devices in the system.
   - **Site** - Select the gateway you just added.
   - **Enabled** - Select **Yes**.
   - Complete other fields as necessary.
10. Click **OK**.
11. Repeat steps 8 - 10 for all other devices connected to the gateway.

After all devices associated with the gateway are added, repeat the above steps for other gateways and their devices in the system.

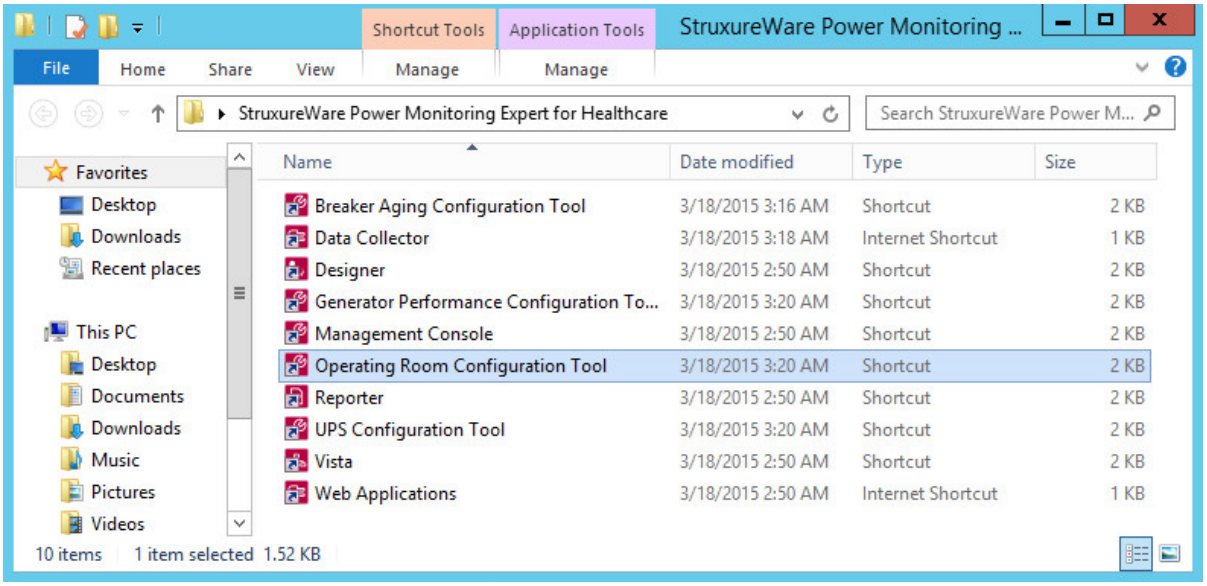
After all hardware is configured in Management Console, configure the hospital rooms and devices in the Operating Room Configuration Tool, as described next.

Hospital Rooms Configuration for IEC

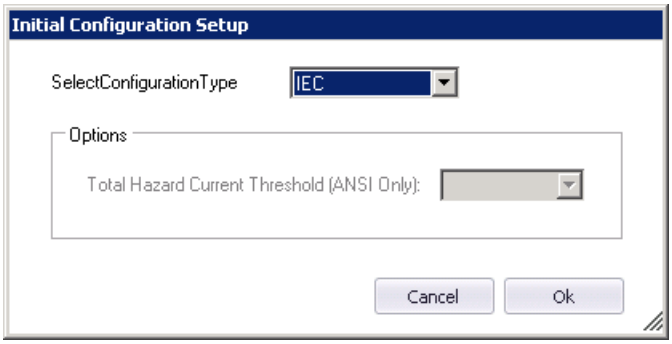
The Operating Room Configuration Tool helps you quickly configure and generate Vista diagrams to monitor the electrical status of critical hospital areas, such as operating rooms, emergency rooms, and post-surgery recovery rooms such as cardiac ICU. The Vista diagrams contain visual indicators for specific isolated power panels and circuits being monitored by fault-monitoring and reporting devices. If any circuit faults occur, the Vista diagrams help hospital staff quickly identify and respond to the situation.

Start the Operating Room Configuration Tool

1. Open the StruxureWare Power Monitoring Expert folder on the Windows Desktop.
2. Double-click the Operating Room Configuration Tool program icon.



The **Initial Configuration Setup** screen appears.



3. Select **IEC** and **OK**. The configuration tool appears, as shown in "Define Isolated Power Panels" on page 249.
4. Use the configuration tool to configure all the system components you want to view in the Hospital Vista diagrams.

Each tab contains a grid area and an editor area. The grid area is empty initially but it will be populated with entries that you define. Use the editor area to define the settings for new items or to update the settings for existing items.

The following controls are common for the tabs:

- **Help** - Click this to view online help for the tab.
- **New** - Creates a new entry in the grid.
- **Delete** - Deletes the selected entry from the grid.
- **Revert** - Returns a modified record to its original values, if **OK** or **Apply** have not been clicked.
- **OK** - Saves all changes and exits the configuration tool.
- **Cancel** - Exits the tool without saving changes.
- **Apply** - Saves all changes and leaves the tool open.

The **Modified** column in the grid area shows the status of the row data:

+ (plus) - a new entry.

***** (asterisk) - a modified entry.

! (exclamation mark) - entry needs more information before it can be saved.

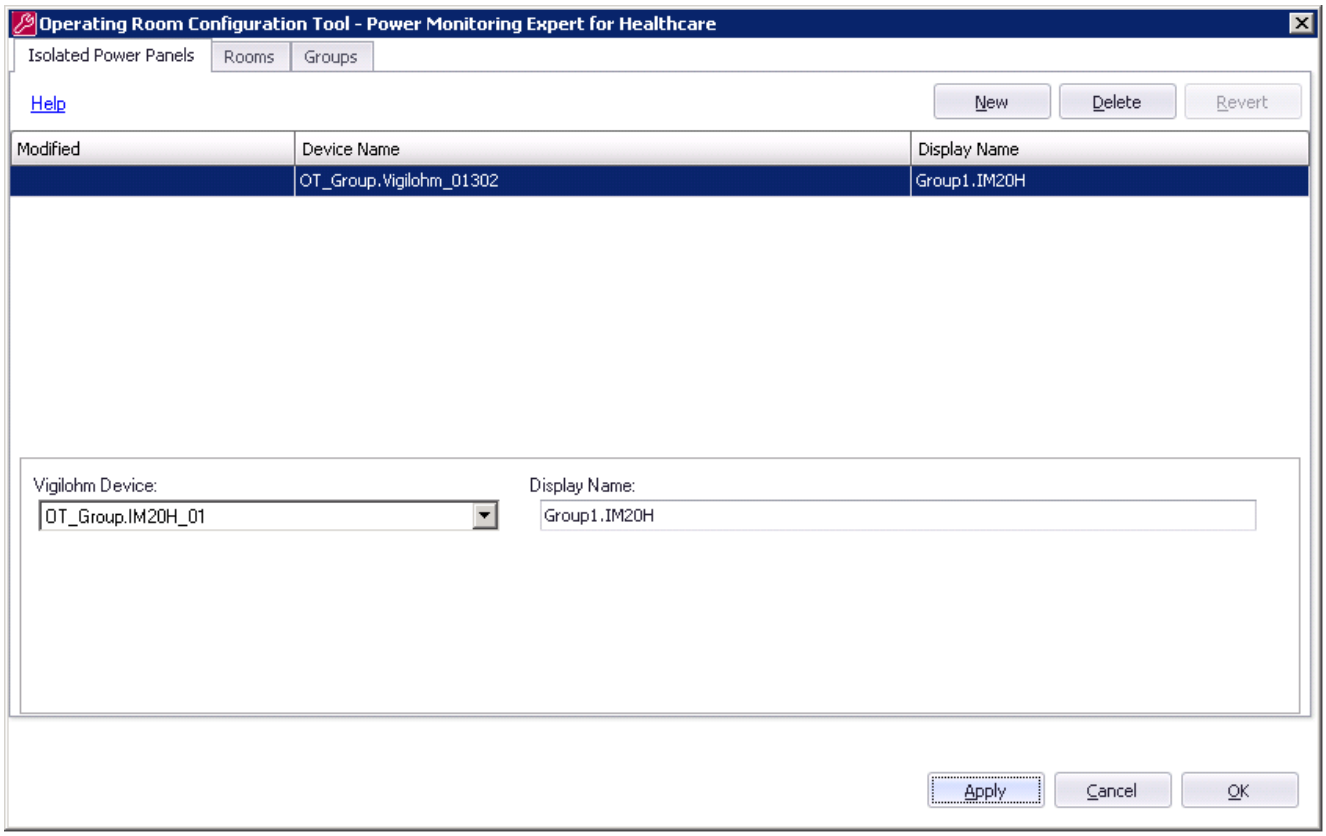
NOTE: If you select the wrong configuration type on the initial setup screen, you can return to the setup screen:

1. Close the configuration tool.
2. Press the Shift key and double-click the shortcut.
3. The Initial Configuration Setup screen appears so you can select the correct option.

Define Isolated Power Panels

Use the **Isolated Power Panels** tab to create or update device associations that represent the system isolated power panels and the circuit monitoring devices that are communicating with the Vigilohm IM20-H.

After the devices have been added in Management Console, the devices appear in the **Isolated Power Panels** tab. The format for the device name is *group.name*. For example, if you named the group Hospital1, and identified the device as IM20_01, the name in the device list is Hospital1.IM20_01.



You can perform the following actions on this tab:

- Add new device associations for isolated power panel to circuit monitors.
- Update device associations as panel or circuit monitor components change
- Delete device associations

Add New Devices

Follow these steps to select the devices to be used in the configuration.

1. On the **Isolated Power Panels** tab, click **New**. A new row appears in the device grid.
2. In the **Vigilohm Device** field, select the IM20-H device you want to add.
3. In the **Display Name** field, enter a name for this device record.
4. Click **Apply**. The new device record is added to the grid.
5. Repeat steps 1 - 6 for additional panels and monitor devices you need to set up.

Next, configure the equipment in the rooms, as described in "Define Rooms" on page 251.

Update Devices

As specific components and devices in the system change, you can update the device records on this tab. If Vista diagrams have already been generated for the prior configuration, the diagrams must be regenerated after you update the device records.

1. On the **Isolated Power Panels** tab, click a device record. The record details appear in the fields below the grid.
2. Change the settings as needed.
3. Click **Apply**. The changes for the record appear in the grid.

If necessary, also update the room and hospital configurations on the other tabs.

Regenerate the Vista diagrams, as described in "Generate Hospital Room Vista Diagrams" on page 256.

Delete Devices

1. On the **Isolated Power Panels** tab, click a device record. The record details appear in the fields below the grid.
2. Click **Delete** and then **Apply** or **OK**. The record is removed from the grid.

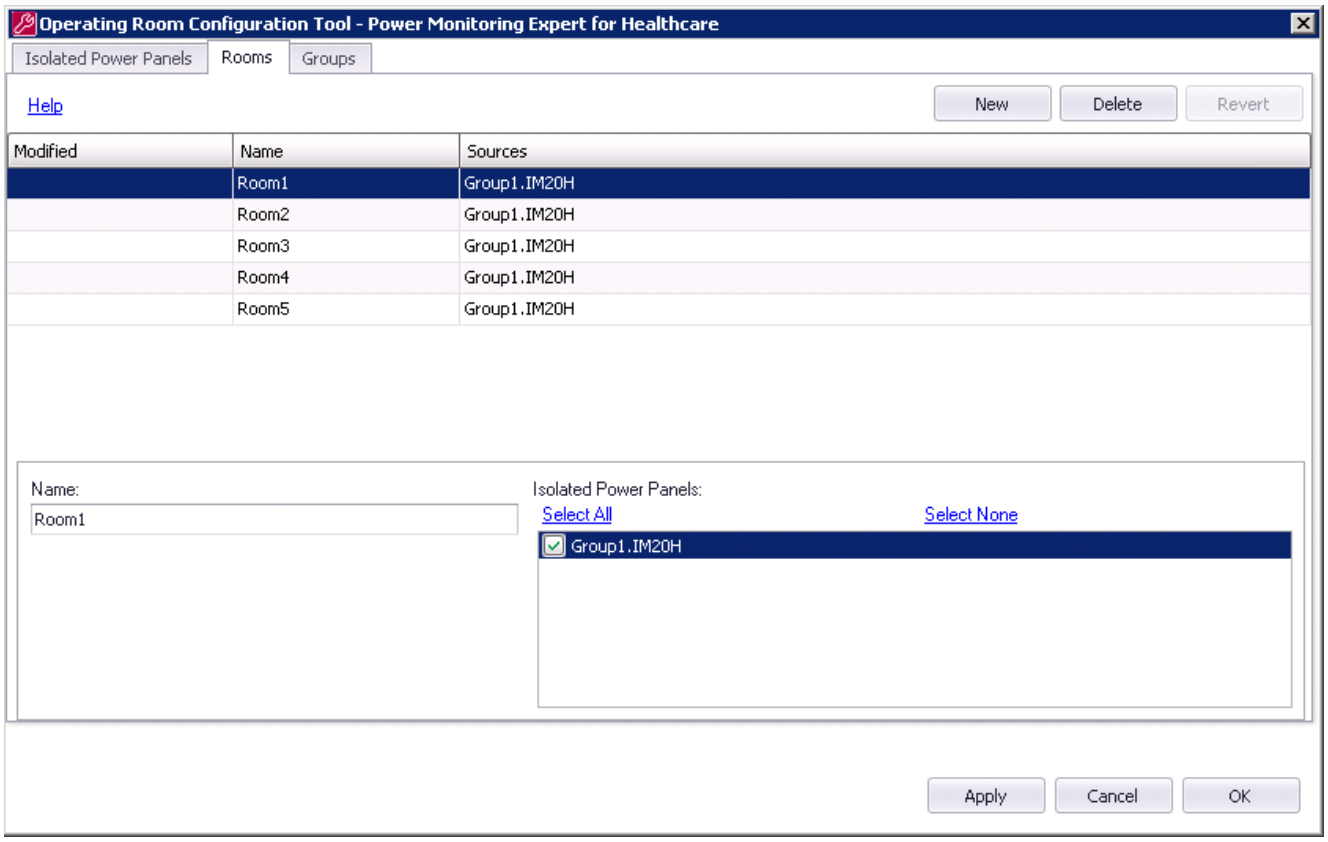
If necessary, also update the room and hospital configurations on the other tabs.

Regenerate the Vista diagrams, as described in "Generate Hospital Room Vista Diagrams" on page 256.

Define Rooms

Use the **Rooms** tab to create rooms in the hospital environment and associate one Vigilohm IM20-H device per room.

With IEC, you can have only one Vigilohm device per room.



You can perform the following actions on this tab:

- Add new rooms and select devices for the rooms.
- Update room configurations.
- Delete room configurations.

Add New Rooms

Follow these steps to add rooms and select the Vigilohm devices for the rooms.

1. Click the **Rooms** tab and click **New**. A new row appears in the room grid.
2. In the **Name** field, enter a descriptive name for the room.
3. In the **Isolated Power Panels** field, check the devices that are associated with the room. The devices in this list are the devices you configured on the **Insulation Panel Systems** tab.
4. Click **Apply**. The new room is added to the grid.
5. Repeat steps 1 - 4 for additional rooms you need to set up.

Next, configure the hospital environment with specific rooms, as described in "Define Groups" on page 253.

Update Rooms

If panels and circuits change in the hospital rooms, you can update the records on this tab. If Vista diagrams have already been generated for the prior configuration, the diagrams must be regenerated after you update the rooms.

1. On the **Rooms** tab, click a room record. The record details appear in the fields below the grid.
2. Change the name or device selections as needed.
3. Click **Apply**. The changes for the record appear in the grid.

If necessary, also update the hospital configuration on the **Hospital** tab.

Regenerate the Vista diagrams, as described in "Generate Hospital Room Vista Diagrams" on page 256.

Delete Rooms

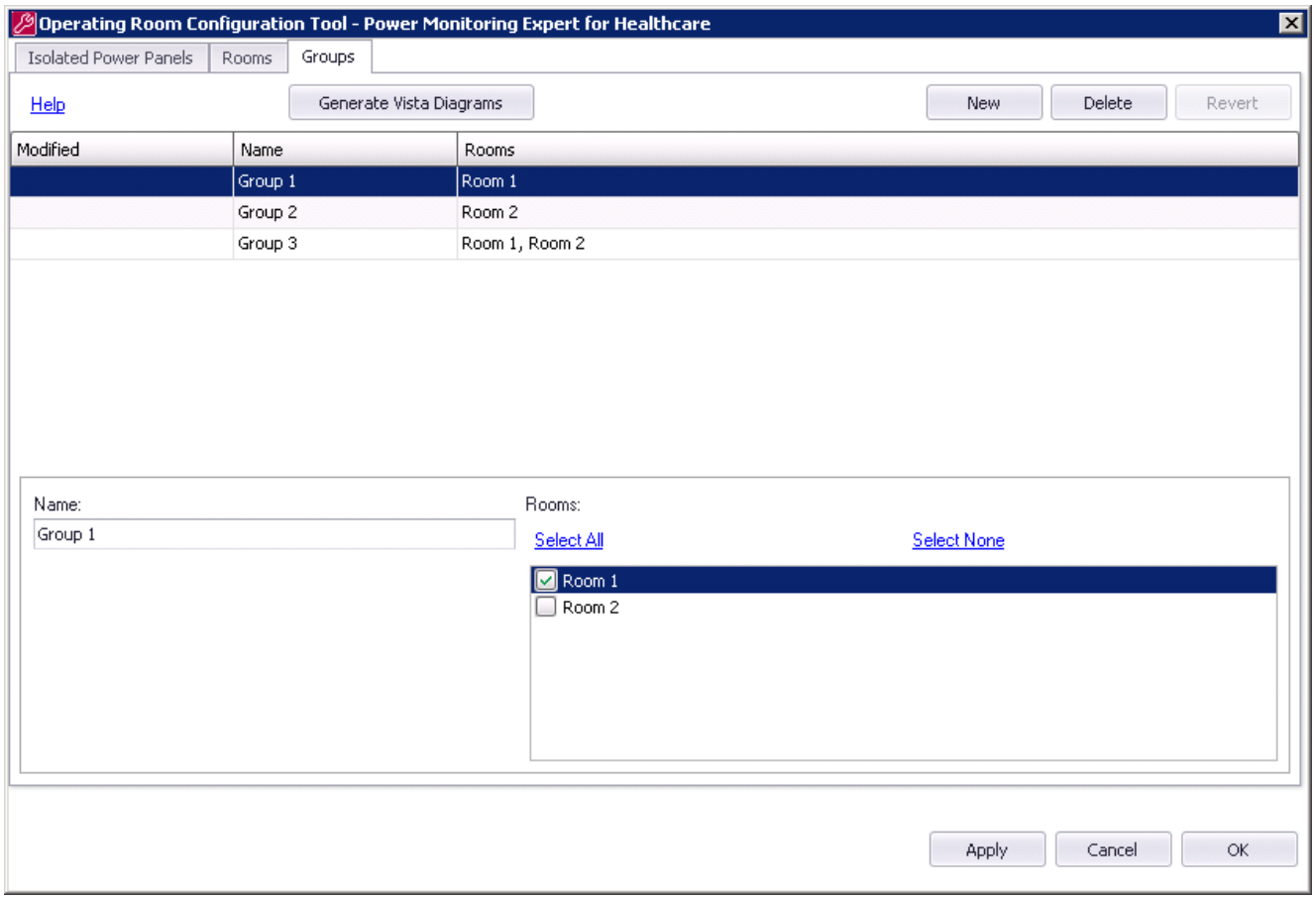
1. On the **Rooms** tab, click a room record. The record details appear in the fields below the grid.
2. Click **Delete** and then **Apply** or **OK**. The record is removed from the grid.

If necessary, also update the hospital configuration on the **Hospital** tab.

Regenerate the Vista diagrams, as described in "Generate Hospital Room Vista Diagrams" on page 256.

Define Groups

Use the **Groups** tab to select the rooms for the building, facility, or other location where a group of rooms is monitored. If the hospital needs only one group of rooms, you still need to add a group and configure it with rooms.



You can perform the following actions on this tab:

- Add new groups and select rooms for each group.
- Update group configurations.
- Delete group configurations.

Add New Groups

Follow these steps to add hospitals and select the rooms that you configured on the **Rooms** tab.

1. Click the **Groups** tab and click **New**. A new row appears in the grid.
2. In the **Name** field, enter a name for the group.
3. In the **Rooms** field, check the rooms that are associated with the location. The rooms in this list are the rooms you configured on the **Rooms** tab.
4. Click **Apply**. The new group is added to the grid.
5. Repeat steps 1 - 4 for additional locations to define.

Next, generate and configure the Vista diagrams for the hospital environment "Generate Hospital Room Vista Diagrams" on page 256.

Update Groups

If physical rooms and areas change in the hospital, you can update the groups on this tab. If Vista diagrams have already been generated for the prior configuration, the diagrams must be regenerated after you update the groups.

1. On the **Groups** tab, click a hospital record. The record details appear in the fields below the grid.
2. Change the name or room selections as needed.
3. Click **Apply**. The changes for the record appear in the grid.

Regenerate the Vista diagrams, as described in "Generate Hospital Room Vista Diagrams" on page 256.

Delete Groups

1. On the **Groups** tab, click a record. The record details appear in the fields below the grid.
2. Click **Delete** and then **Apply** or **OK**. The record is removed from the grid.

Regenerate the Vista diagrams, as described in "Generate Hospital Room Vista Diagrams" on page 256.

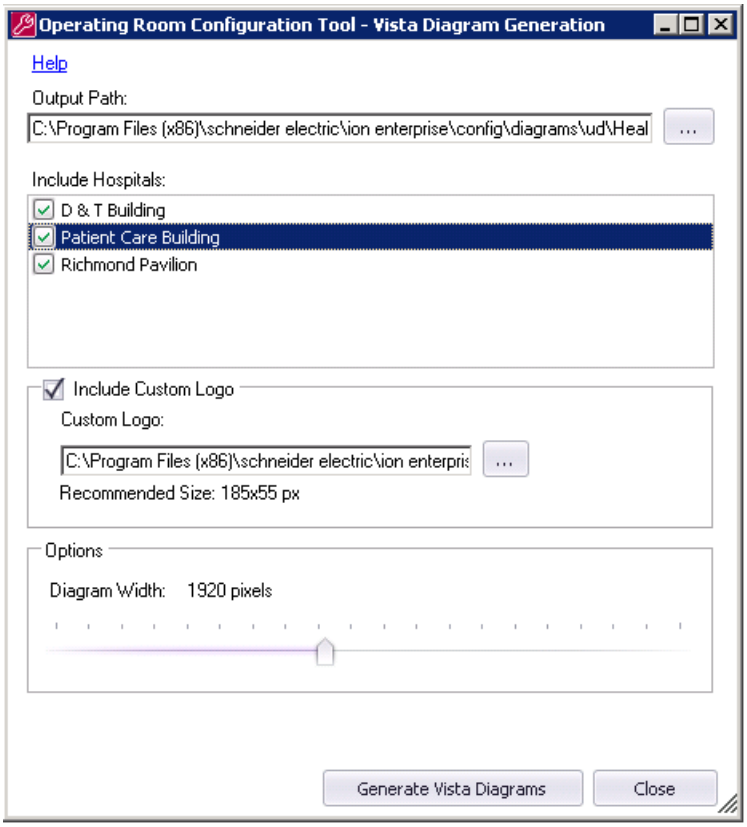
Generate Hospital Room Vista Diagrams

Hospital Vista diagrams are useful to the customer so they can see real-time information about the status of the circuits in selected rooms of the of the hospital system. The customer can view the diagrams in the Vista client and the Diagrams application of Power Monitoring Expert.

Before you generate the diagrams, make sure all panels, devices, rooms and hospitals are configured correctly in the configuration tool. All changes must be saved before you generate the diagrams.

Follow these steps to generate the diagrams.

1. Click the **Groups** tab.
2. Click **Generate Vista Diagrams**. The Vista Diagram Generation screen appears.



3. In the **Output Path** field, leave the path as the default, or enter the folder where you want to store the diagrams.
4. In the **Include Groups** field, all hospitals are selected by default. If you do not want diagrams generated for some of the hospitals, clear the checkboxes for those hospitals.
5. In the **Include Custom Logo** field, select the image file for the hospital logo.
6. Under **Options**, select the horizontal width of the diagrams.

7. Click **Generate Vista Diagrams**. The diagrams are generated and stored in the selected output folder.

   If the folder has existing diagrams, a message appears to confirm that you want to replace the older diagrams.

For each hospital you selected, several diagrams are created, as shown in the next section.

After the diagrams are generated, open them in Designer or Vista and configure the VIP framework and alarm status objects, as described next.

Configure VIP Framework and Diagrams for IEC

After the diagrams are generated, you configure the framework and finalize the diagrams to allow the alarm status from the Vigilohm IM20-H to properly appear in the diagrams.

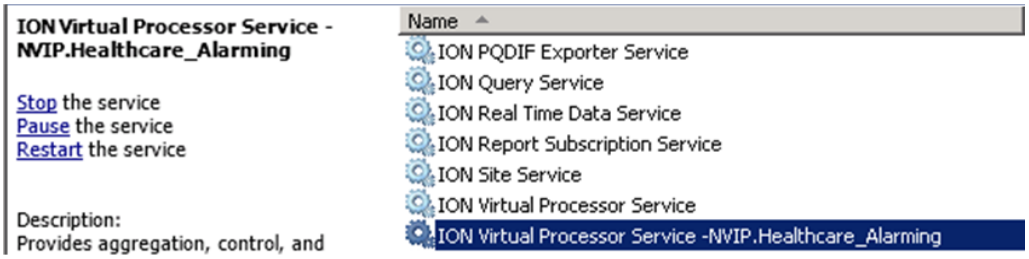
Create a new VIP for the framework

You need to create a VIP service to enable the diagrams to appear in the Diagrams application of Power Monitoring Expert 8.1 Healthcare Edition. The VIP for the framework performs the logic for the alarm status that appears on the diagrams.

1. Open the Command Prompt window.
2. Change the current folder to C:\Program Files (x86)\Schneider Electric\Power Monitoring Expert 8.1 Healthcare Edition\system\bin.

   For 32-bit systems, use C:\Program Files\Schneider Electric\Power Monitoring Expert 8.1 Healthcare Edition\system\bin.
3. Type `vip -Service -NVIP.Healthcare_Alarming` on the command line.

   This creates the VIP service in Windows and names it “Healthcare_Alarming”.
4. Open the Windows Control Panel and go to the Services window.
5. Start the newly created VIP Healthcare_Alarming service.



After the VIP Healthcare_Alarming service starts, configure the framework in the new VIP service, as described next.

Configure the framework for IEC

The VIP framework contains the logic for the alarm status objects on the diagrams. The VIP framework uses the AND/OR module for the rooms and buildings.

You manually link the status objects in the framework: Connect the source input of the room AND/OR module to the alarm output status of the device. Then connect the status output from the room module to the source input of the building AND/OR module. Details for this process are provided in the following steps.

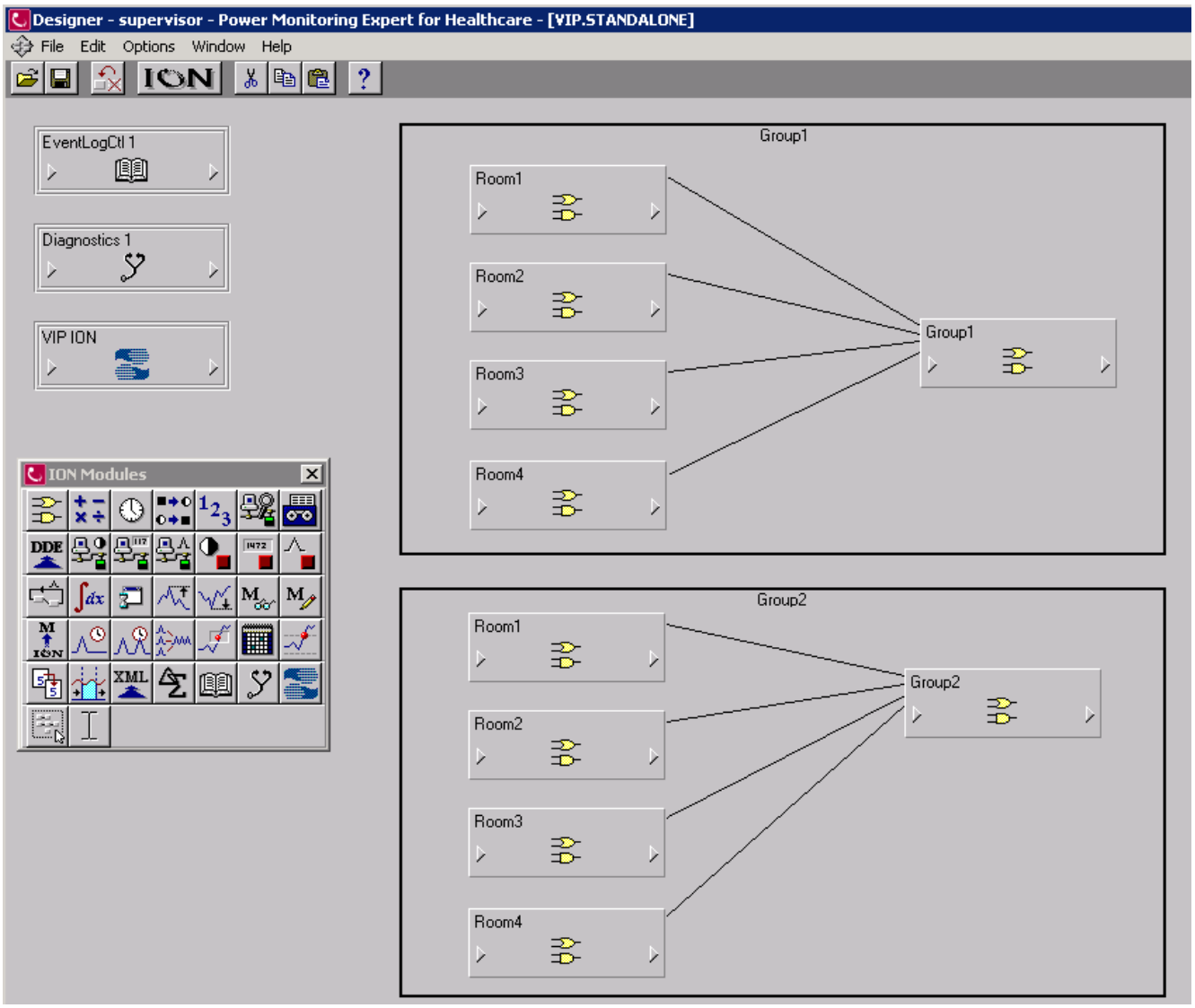
See *ION Reference* for information about configuring the modules in Vista diagrams.

Follow these steps to configure the framework:

1. Open Designer.
2. Paste the default framework `Operating Room Alarming Status for IEC.fwn` in C:\Program Files (x86)\schneider electric\Power Monitoring Expert 8.1 Healthcare Edition\config\fmwk\Operating Room into Designer.

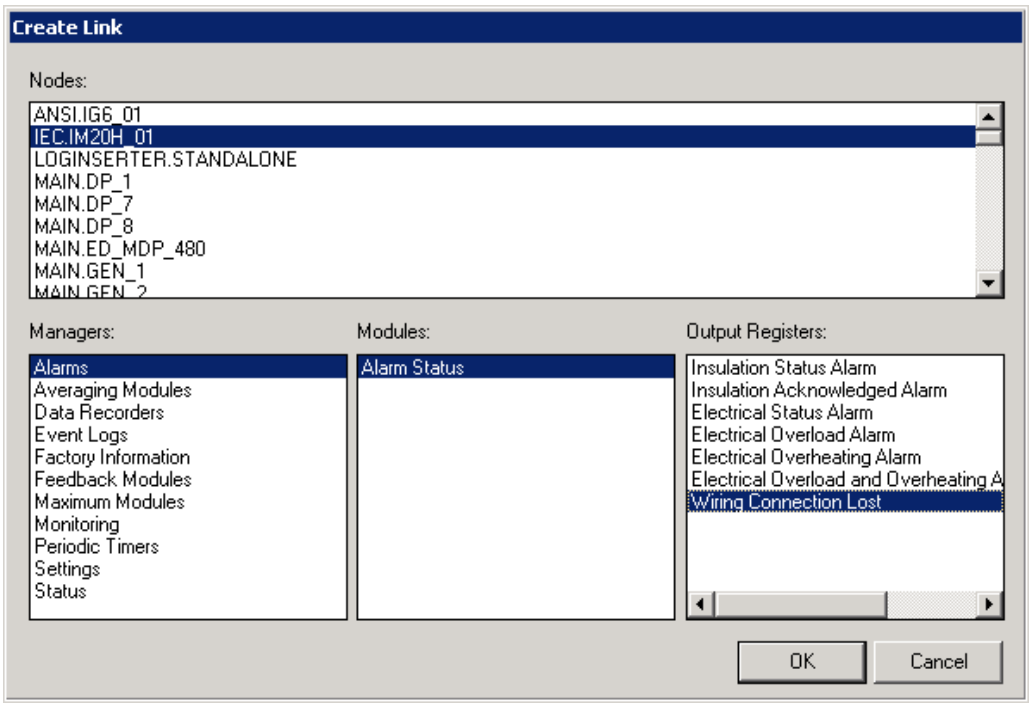
   For 32-bit systems, the file is in C:\Program Files\Schneider Electric\Power Monitoring Expert 8.1 Healthcare Edition\config\fmwk\Operating Room.
3. Paste the default framework into the new Healthcare_Alarming VIP.

   Here is an example of the default framework.

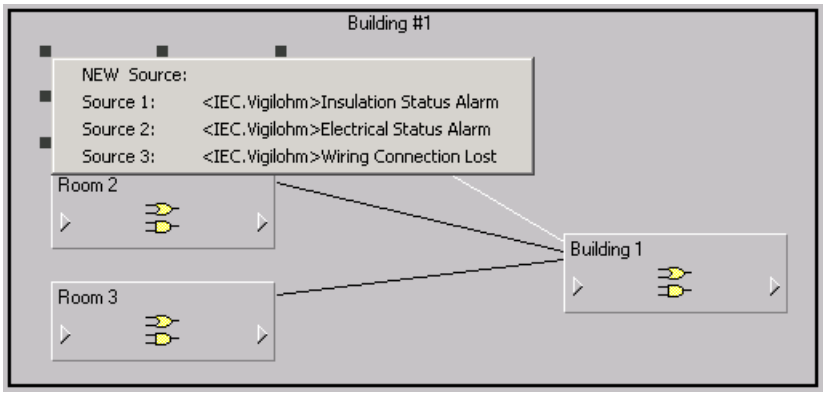


This framework is set up for two buildings with four rooms by default. Each building is identified by an outline box. To add more buildings and rooms, select all the modules inside a box, and copy and paste them to the bottom of diagram.

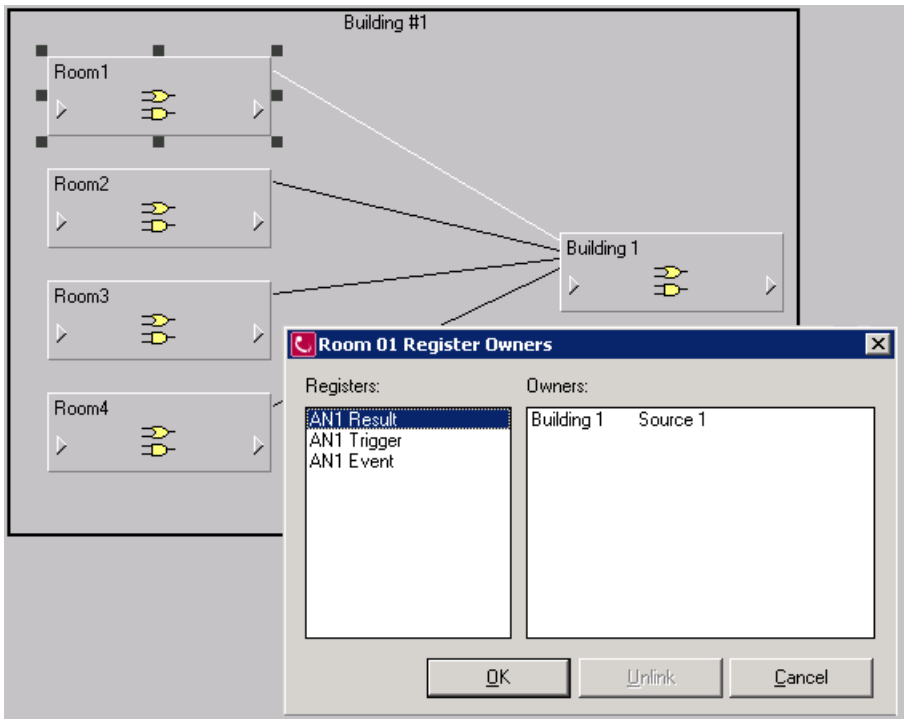
4. Open the **Create Link** screen to connect the source input of each room AND/OR module to the alarm outputs: Insulation Status Alarm, Electrical Status Alarm, and Wiring Connection Lost. These alarm registers are available in *Node* > Alarms > Alarm Status as shown next:



- Verify the room AND/OR module has the correct sources:



5. Repeat step 3 for each room in the building. You can add and delete room modules as needed.
6. Connect the result output of each room module to the source input of the building AND/OR module, as shown next.



7. Make sure that the setup mode of each AND/OR module is set to OR.
8. Save the framework changes.

Finalize the Hospital and Room Diagrams

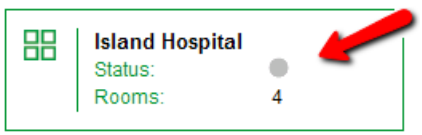
After the VIP framework is configured, open the diagrams in Vista and link the status objects to the correct modules in the VIP framework. These status objects indicate whether the measured impedance is within the safe limit for the facility. The colors shown on the status objects are:

- **Green** - Safe. Impedance is under the limit.
- **Red** - Hazard. Impedance has exceeded the limit.
- **Gray** - No status. The object has not been connected to an alarm output.

See "Hospital Summary Diagram" on page 266 for examples of the indicators that show safe or hazard values.

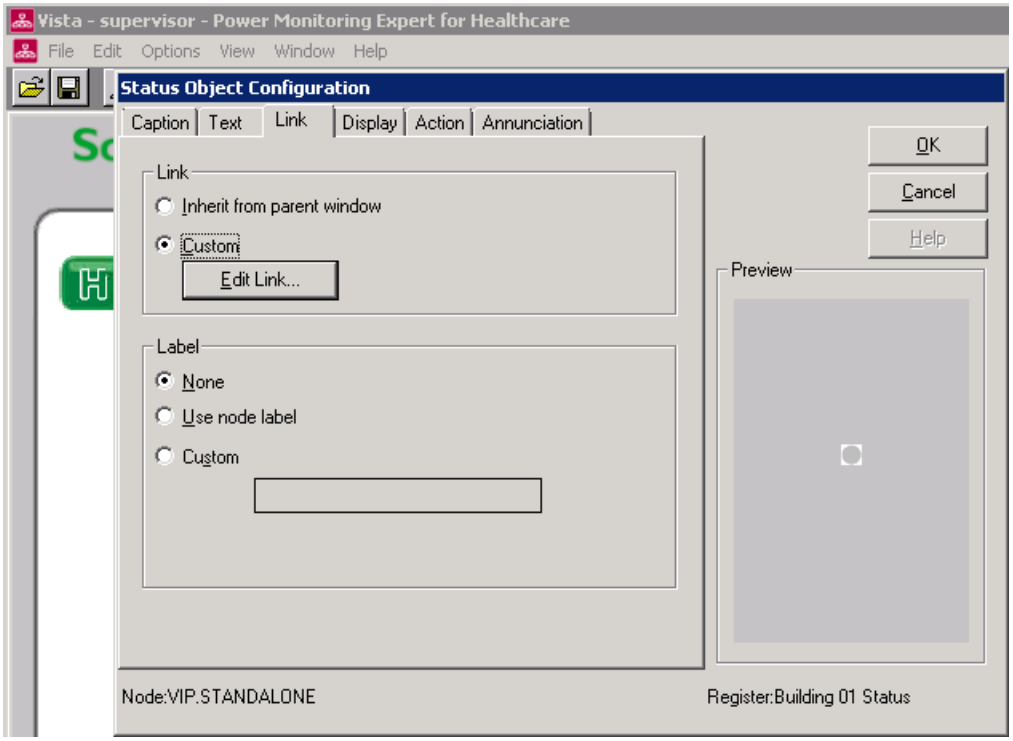
Hospital/Building Diagrams

In the top level Summary of Hospitals diagram, link the LED status object to the AND/OR module for the building status in the VIP framework.

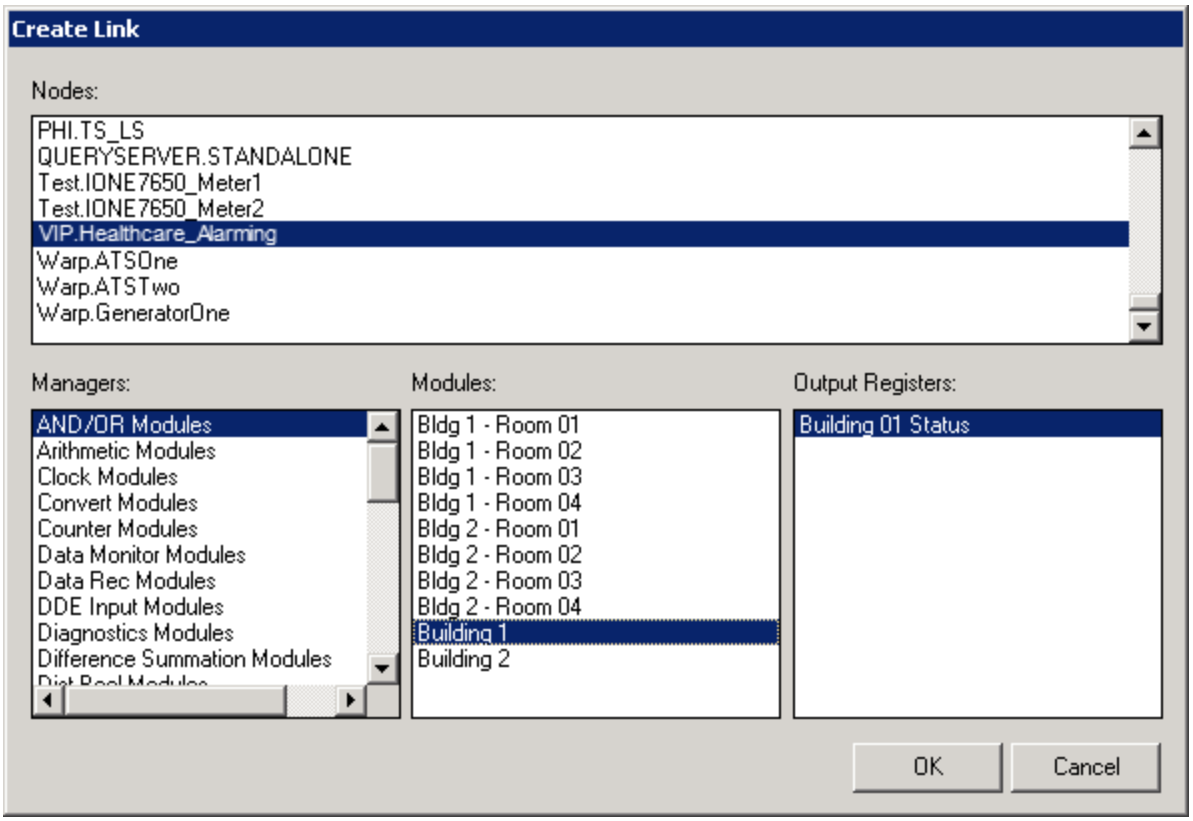


This LED object reads the status for each room. After you link it correctly, this object remains green in normal circumstances. If any room or panel changes to an alarm state, this object turns red.

1. Right-click the gray status object. The Status Object Configuration screen appears.
2. Click the **Link** tab.



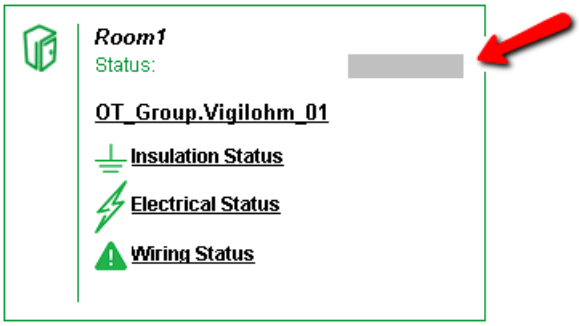
3. Under **Link**, click **Custom** and click **Edit Link**. The Create Link screen appears.
4. Select the correct output register for the device node, as shown next:



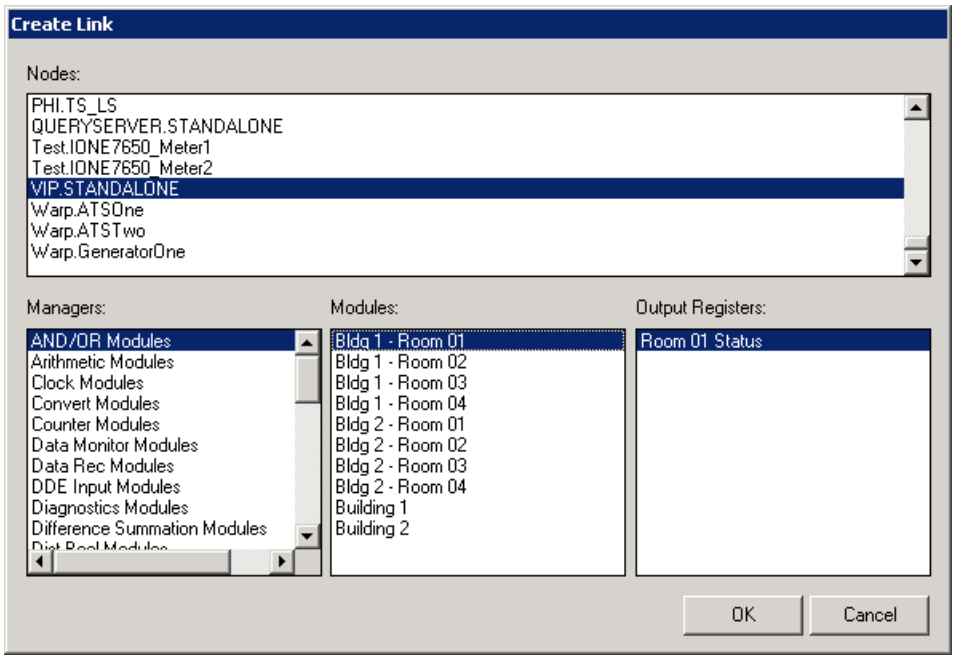
5. Click **OK** to save the changes.

Room Diagrams

If the room has more than one IM20-H, connect the output of each AND/OR module in the room VIP to the gray status bar on the diagram.



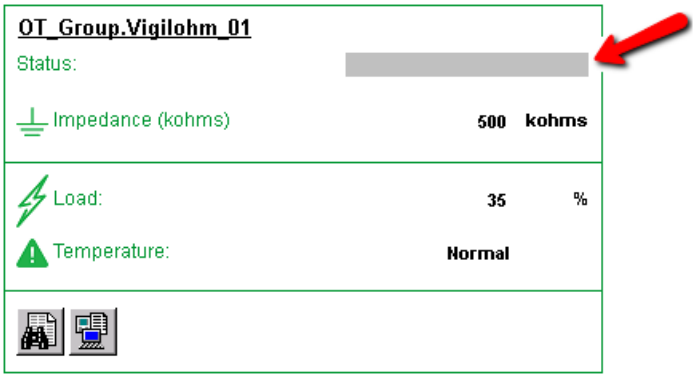
1. Right-click the status object and navigate to the Create Link screen.
2. Select the correct output register for the device node, as shown next:



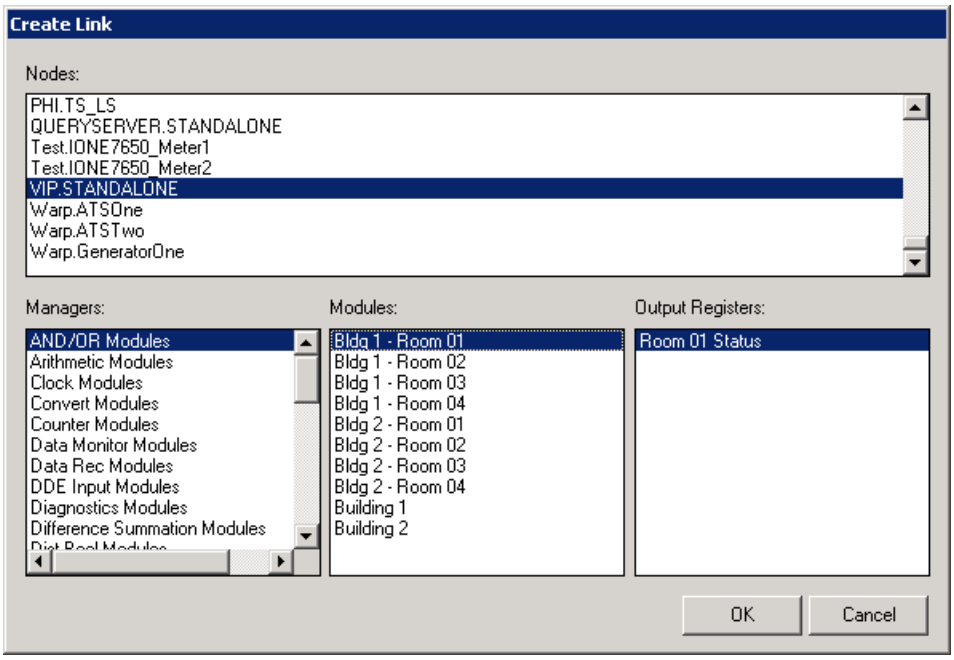
3. Click **OK** to save the changes.

Room Details Diagrams

In the Room Details diagram, link the LED status object to the AND/OR module for the room status in the VIP framework.



1. Right-click the status object and navigate to the Create Link screen.
2. Select the correct output register for the device node, as shown next:



3. Click **OK** to save the changes.

Repeat these linking tasks for all buildings and rooms in the diagrams.

Open the Diagrams in Power Monitoring Expert

After you configure the diagrams, login to Power Monitoring Expert and open the diagrams through the Diagrams application.

Verify all status objects in the diagrams are correct. If any status objects are gray, make the necessary corrections to the framework modules or the status objects.

Hospital Room Diagrams for IEC

When the Operating Room Isolated Power Interface is configured for your hospital, several diagrams are produced that visually indicate the electrical status of the rooms and circuits being monitored.

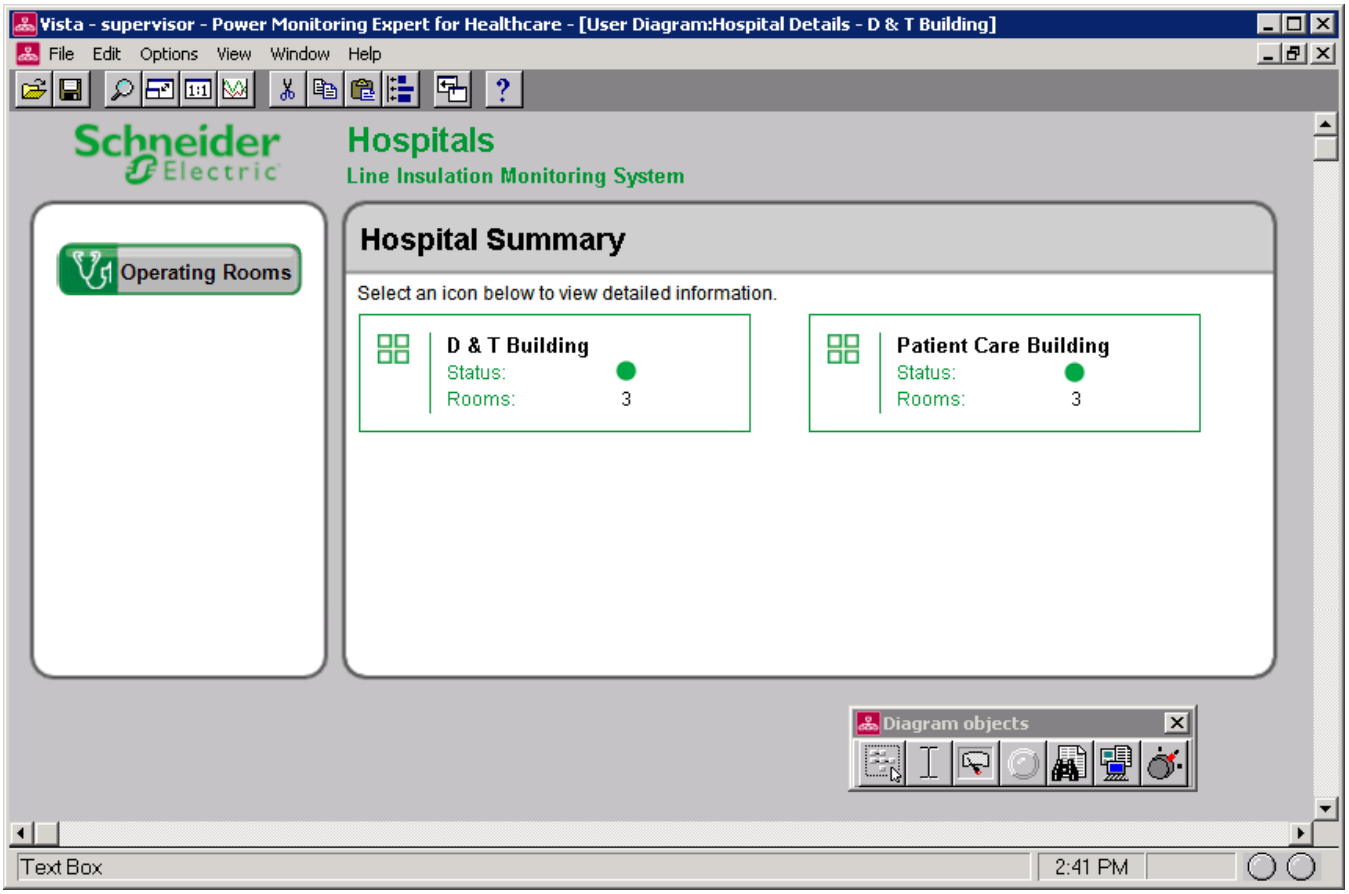
This section describes each type of diagram and details about measurements, status objects, and configuration.

Several diagrams are generated for each hospital you configure in the tool. The diagrams are in a hierarchy from the top-level hospital down to the insulation fault monitor and monitored circuits. This allows you to drill down from a hospital overview to the circuit details.

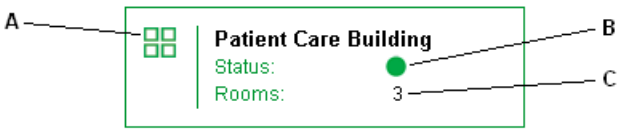
NOTE: After the diagrams are generated, diagram labels can be changed in Vista. You do not have to use the configuration tool to change any names.

Hospital Summary Diagram

The Hospital Summary diagram lists all the facilities, buildings, or other group of rooms that were configured for the hospital.



Each box in the main area represents a group of rooms. This diagram provides a status overview and links to rooms in the hospital, as shown next:



A **Hospital Icon.** Click this icon to see the diagram of rooms in the hospital.

B **Status Indicator.** This indicator is green or red to show the general status of the hospital:

- **Green** - The hazard current monitor devices in all theatres do not detect any unsafe conditions. This applies to all of the monitoring devices included in the group of theatres.
- **Red** - One or more rooms have a circuit with an insulation fault. If an insulation fault has occurred, the indicator remains red until the fault is corrected. In the hazard situation, the hospital box appears like this:

- **Gray** - The status object is not linked to the correct module of the VIP framework. See "Finalize the Hospital and Room Diagrams" on page 261 for instructions.

C **Rooms.** Total number of monitored rooms in this hospital. These are the rooms with IM20-H monitoring devices.

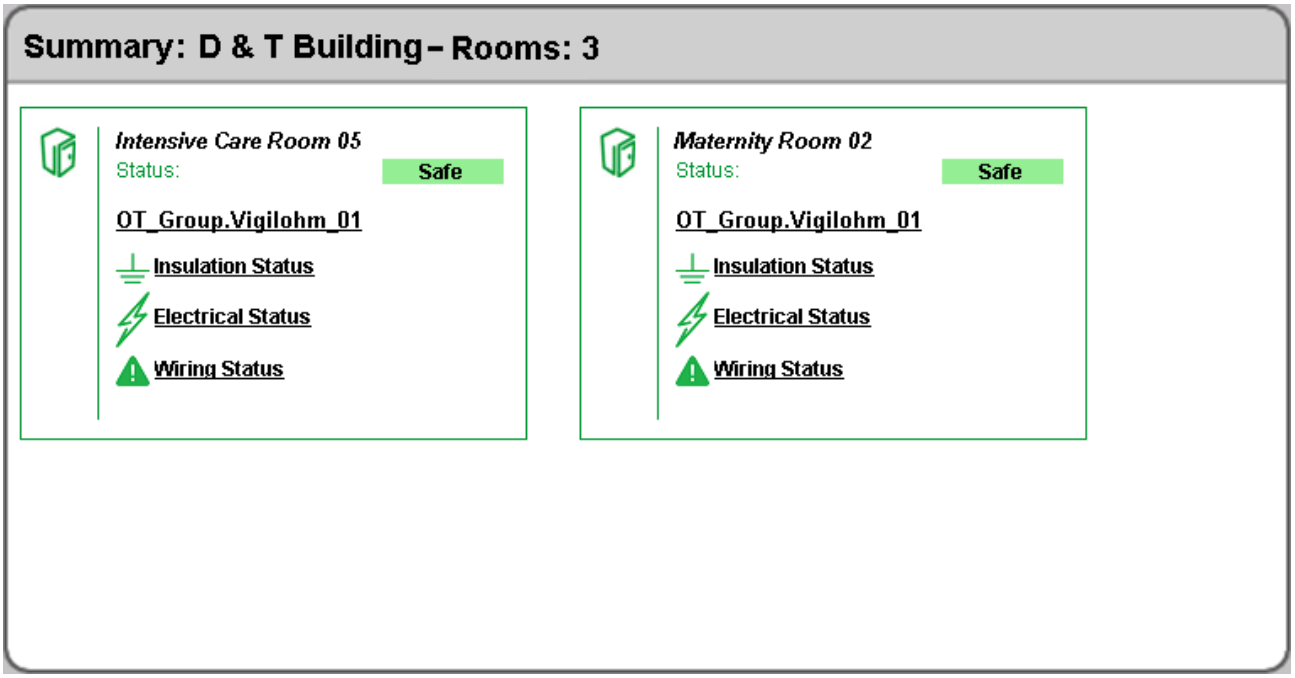
What to do if the status indicator is red:

1. Click the Hospital Icon to open the Summary of Rooms diagram. One or more room boxes will also have a red alarm indicator.
2. Click the specific room icon to open the Room Details diagram. One or more panel boxes will also have a red indicator.
3. Notify the responsible person that can address the condition for the room and specific circuits.

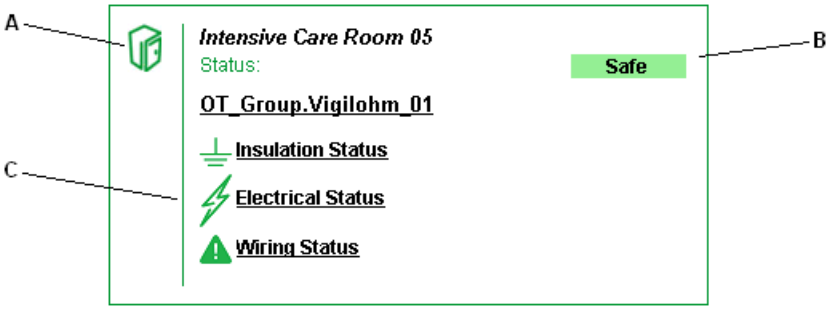
See the next sections for information about the additional diagrams.

Summary of Building Rooms Diagram

This Summary of Building Rooms diagram provides an overview of each room in the building.



Each box represents a single room as shown next:

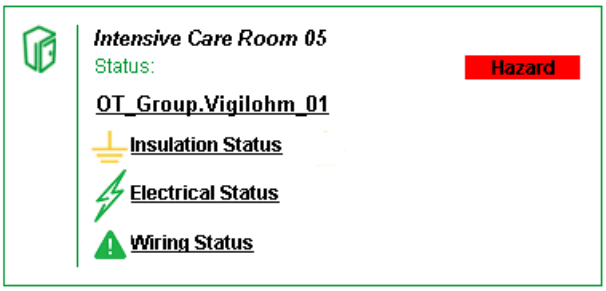


A **Room Icon.** Click this icon to see the details for the IM20-H device measurements in the room.

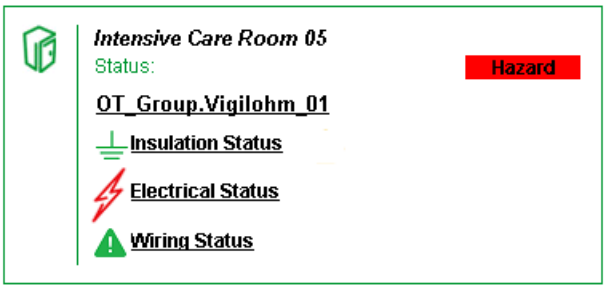
B **Status Indicator.** Indicates the general conditions in the room. This indicator is either green "Safe" or red "Hazard." If the indicator is red, one or more IM20-H devices detects a fault.

C **Room Information and Status Indicators.** Displays the room name, the IM20-H device in the room and the status indicators. If a fault occurs in the room, these indicators show the specific type of fault.

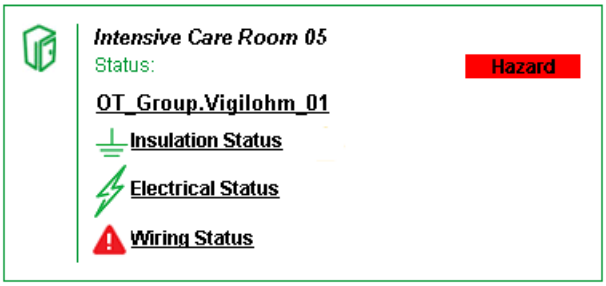
- **Insulation Status**. Normal condition is green. If the impedance is lower than the threshold, the indicator turns orange. The impedance threshold is set on the IM20-H device.



- **Electrical Status**. Normal condition is green. If the current transformer load or temperature exceed the threshold set on the IM20-H device, this indicator turns red.



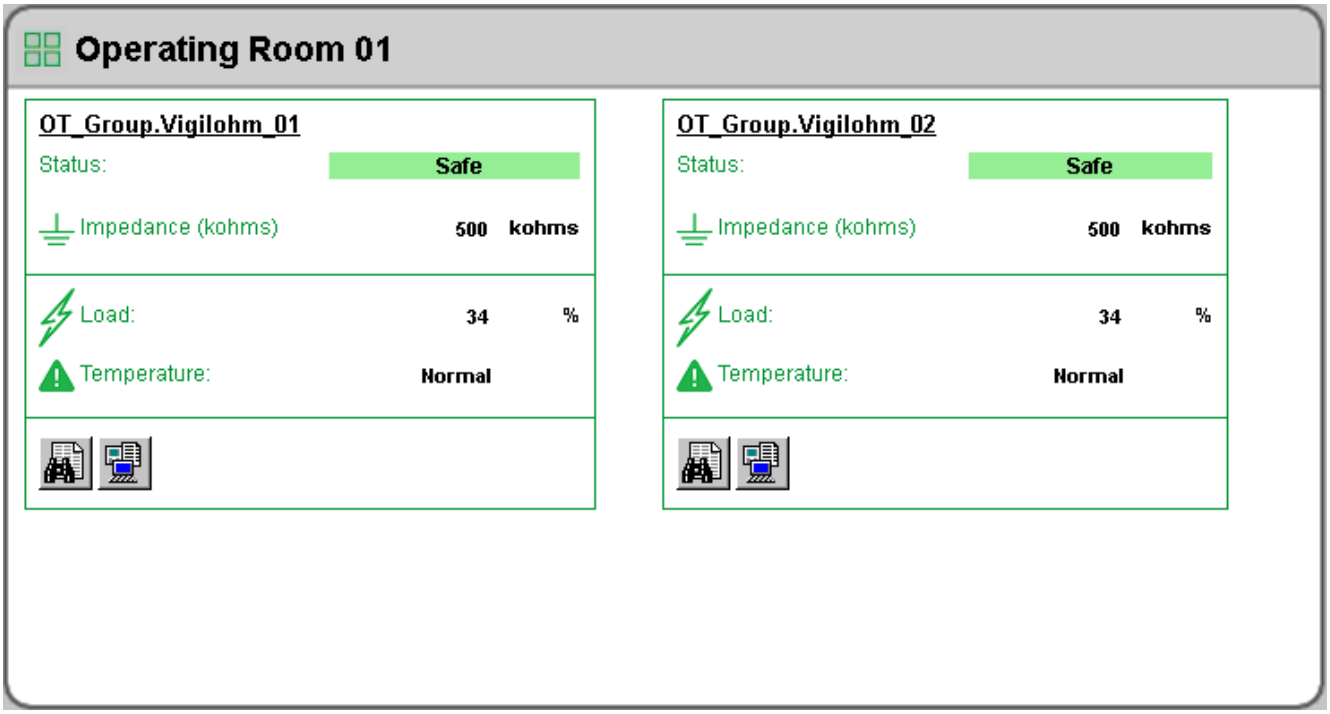
- **Wiring Status**. Normal condition is green. This indicator turns red if the device cannot monitor the isolation transformer.



Room Details Diagram

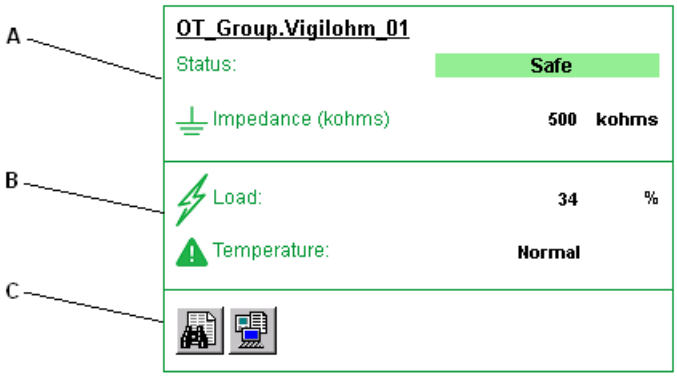
Use the **Rooms** tab to create rooms in the hospital environment and associate one Vigilohm IM20-H device per room.

NOTE: With IEC, you can have only one Vigilohm device per room.



Up to two IM20-H device areas can be shown per screen of the diagram.

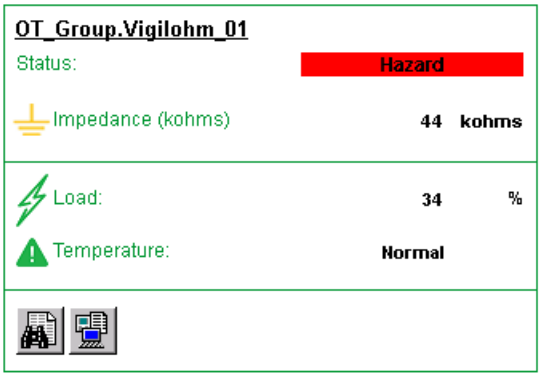
Each IM20-H area contains these sections to provide specific information about the circuit conditions:



A **Device Name.** Displays the group and name of the device in the room.

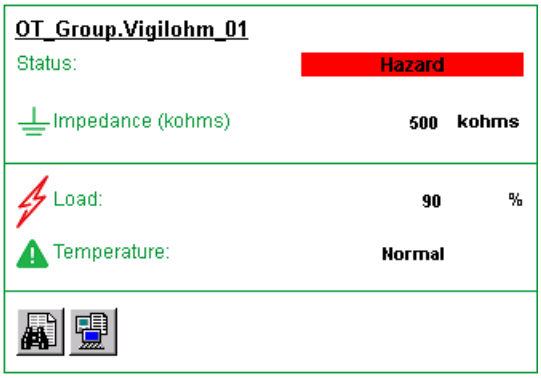
IM20-H Status. This section shows the name and status of the IM20-H. This indicator is either green "Safe" or red "Hazard."

Impedance. This indicator displays the real-time measurement of the impedance to ground, in kiloohms. If the impedance is lower than the threshold, the indicator turns orange. The impedance limit is set on the IM20-H device.

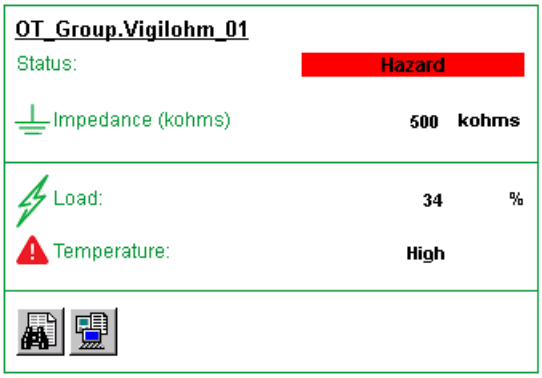


B **Transformer Indicators.** Displays load and temperature status for the current transfer.

- **Load**. If the current transformer load exceeds the threshold, this indicator turns red and displays the real-time load percentage value.



- **Temperature**. If the current transformer temperature rises above the safe threshold, this indicator turns red and the status changes to "High."



C **Event Log and Data Log.** This area contains links to the historical data log and event log for the panel measurements. See "Data Logs" on page 273 for more information.

Data Logs

For hospital staff who need additional details about circuit measurements and details, the Room Details diagram provides links to the historical data log and the event log. These logs provide measurement data for the 15-minute polling interval of the Vigilohm IM20-H. You can filter the data in the logs by date range.

Historical Data Log

The following figure shows the historical log table from the Power Monitoring Expert 8.1 Healthcare Edition view:

Device Diagram | Change Date Range | Show Graph

Node	Timestamp	Resistance Maximum kohms	Resistance Mean kohms	Transformer Load Current % Mean	Transformer Load Current % Maximum
OT_Group.IM20H_01	4/3/2013 12:15:00.000 PM	500.000	500.000	37.904	38.355
OT_Group.IM20H_01	4/3/2013 12:00:00.000 PM	500.000	500.000	37.863	38.256
OT_Group.IM20H_01	4/3/2013 11:45:00.000 AM	500.000	500.000	37.732	38.455
OT_Group.IM20H_01	4/3/2013 11:30:00.000 AM	500.000	500.000	37.909	38.660
OT_Group.IM20H_01	4/3/2013 11:15:00.000 AM	500.000	500.000	37.849	38.320
OT_Group.IM20H_01	4/3/2013 11:00:00.000 AM	500.000	500.000	37.705	38.560
OT_Group.IM20H_01	4/3/2013 10:45:00.000 AM	500.000	500.000	37.687	37.997
OT_Group.IM20H_01	4/3/2013 10:30:00.000 AM	500.000	500.000	37.658	38.092
OT_Group.IM20H_01	4/3/2013 10:15:00.000 AM	500.000	500.000	38.089	38.405
OT_Group.IM20H_01	4/3/2013 10:00:00.000 AM	500.000	500.000	37.837	38.286
OT_Group.IM20H_01	4/3/2013 9:45:00.000 AM	500.000	500.000	37.931	38.329
OT_Group.IM20H_01	4/3/2013 9:30:00.000 AM	500.000	500.000	38.065	38.491
OT_Group.IM20H_01	4/3/2013 9:15:00.000 AM	500.000	500.000	37.799	38.106
OT_Group.IM20H_01	4/3/2013 9:00:00.000 AM	500.000	500.000	37.363	38.120
OT_Group.IM20H_01	4/3/2013 8:45:00.000 AM	500.000	500.000	36.773	37.036
OT_Group.IM20H_01	4/3/2013 8:30:00.000 AM	500.000	500.000	36.563	37.142
OT_Group.IM20H_01	4/3/2013 8:15:00.000 AM	500.000	500.000	36.367	36.661
OT_Group.IM20H_01	4/3/2013 8:00:00.000 AM	500.000	500.000	36.406	36.854

Buttons at the top of the table are:

- **Device Diagram** - Click this to return to the diagram.
- **Change Date Range** - Click this to view data for different dates. See "Select Date Range" below for more information.
- **Show Graph** - Select one or more column headers in the table and click this to see a graph of the data. The graph shows the data at 5-minute intervals.

The following figure shows the historical log table from the Vista client view:

[User Diagram:Room Details - Room_01]

	Node	Timestamp	Resistance Maximum kohms	Resistance Mean kohms	Transformer Load Current % Mean	Transformer Load Current % Maximum
1	IEC.IM20H_01	03/12/2013 08:45:00.000 AM	500	500	32.354	33.002
2	IEC.IM20H_01	03/12/2013 08:30:00.000 AM	500	500	32.255	32.884
3	IEC.IM20H_01	03/12/2013 08:15:00.000 AM	500	500	32.175	32.936
4	IEC.IM20H_01	03/12/2013 08:00:00.000 AM	500	500	32.15	32.967
5	IEC.IM20H_01	03/12/2013 07:45:00.000 AM	500	500	32.118	32.871
6	IEC.IM20H_01	03/12/2013 07:30:00.000 AM	500	500	32.14	32.882
7	IEC.IM20H_01	03/12/2013 07:15:00.000 AM	500	500	32.153	32.796
8	IEC.IM20H_01	03/12/2013 07:00:00.000 AM	500	500	32.065	32.676
9	IEC.IM20H_01	03/12/2013 06:45:00.000 AM	500	500	31.995	32.823
10	IEC.IM20H_01	03/12/2013 06:30:00.000 AM	500	500	32.26	32.821
11	IEC.IM20H_01	03/12/2013 06:15:00.000 AM	500	500	32.278	32.899
12	IEC.IM20H_01	03/12/2013 06:00:00.000 AM	500	500	32.22	33.067
13	IEC.IM20H_01	03/12/2013 05:45:00.000 AM	500	500	32.132	32.812
14	IEC.IM20H_01	03/12/2013 05:30:00.000 AM	500	500	32.058	32.55
15	IEC.IM20H_01	03/12/2013 05:15:00.000 AM	500	500	31.992	32.972
16	IEC.IM20H_01	03/12/2013 05:00:00.000 AM	500	500	31.901	32.672
17	IEC.IM20H_01	03/12/2013 04:45:00.000 AM	500	500	31.926	32.558
18	IEC.IM20H_01	03/12/2013 04:30:00.000 AM	500	500	31.893	32.644
19	IEC.IM20H_01	03/12/2013 04:15:00.000 AM	500	500	31.871	32.479
20	IEC.IM20H_01	03/12/2013 04:00:00.000 AM	500	500	31.897	32.789
21	IEC.IM20H_01	03/12/2013 03:45:00.000 AM	500	500	31.885	32.413
22	IEC.IM20H_01	03/12/2013 03:30:00.000 AM	500	500	31.886	32.977
23	IEC.IM20H_01	03/12/2013 03:15:00.000 AM	500	500	31.969	33.343

Event Log

The following figure shows the event log table from the Power Monitoring Expert 8.1 Healthcare Edition view:

Device Diagram | Change Date Range

Node	Log	Timestamp	Cause	Cause Value	Effect	Effect Value	Priority	Ack Time	User Name
OT_Group.IM20H_01	EventLogCtl 1	4/2/2013 10:27:21.000 AM	Insulation Status Alarm	Insulation Status Alarm Inactive	Insulation Status Alarm	Insulation Status Alarm	200	-	-
OT_Group.IM20H_01	EventLogCtl 1	4/2/2013 10:27:17.000 AM	Resistance kohms	Resistance Register Active	Insulation Status Alarm	Resistance reached 190	200	-	-
OT_Group.IM20H_01	EventLogCtl 1	3/25/2013 2:33:11.000 PM	Insulation Status Alarm	Insulation Status Alarm Inactive	Insulation Status Alarm	Insulation Status Alarm	200	-	-
OT_Group.IM20H_01	EventLogCtl 1	3/25/2013 2:32:57.000 PM	Resistance kohms	Resistance Register Active	Insulation Status Alarm	Resistance reached 150	200	-	-
OT_Group.IM20H_01	EventLogCtl 1	3/25/2013 2:32:55.000 PM	Insulation Status Alarm	Insulation Status Alarm Inactive	Insulation Status Alarm	Insulation Status Alarm	200	-	-
OT_Group.IM20H_01	EventLogCtl 1	3/25/2013 2:32:49.000 PM	Resistance kohms	Resistance Register Active	Insulation Status Alarm	Resistance reached 300	200	-	-
OT_Group.IM20H_01	EventLogCtl 1	3/25/2013 12:09:37.000 PM	Insulation Status Alarm	Insulation Status Alarm Inactive	Insulation Status Alarm	Insulation Status Alarm	200	-	-
OT_Group.IM20H_01	EventLogCtl 1	3/25/2013 11:35:27.000 AM	Resistance kohms	Resistance Register Active	Insulation Status Alarm	Resistance reached 140	200	-	-
OT_Group.IM20H_01	EventLogCtl 1	3/25/2013 9:12:00.000 AM	Insulation Status Alarm	Insulation Status Alarm Inactive	Insulation Status Alarm	Insulation Status Alarm	200	-	-
OT_Group.IM20H_01	EventLogCtl 1	3/25/2013 9:11:49.000 AM	Resistance kohms	Resistance Register Active	Insulation Status Alarm	Resistance reached 160	200	-	-
OT_Group.IM20H_01	EventLogCtl 1	3/25/2013 8:05:57.000 AM	Insulation Status Alarm	Insulation Status Alarm Inactive	Insulation Status Alarm	Insulation Status Alarm	200	-	-
OT_Group.IM20H_01	EventLogCtl 1	3/25/2013 8:05:54.000 AM	Resistance kohms	Resistance Register Active	Insulation Status Alarm	Resistance reached 270	200	-	-
OT_Group.IM20H_01	EventLogCtl 1	3/25/2013 8:05:51.000 AM	Insulation Status Alarm	Insulation Status Alarm Inactive	Insulation Status Alarm	Insulation Status Alarm	200	-	-
OT_Group.IM20H_01	EventLogCtl 1	3/25/2013 8:05:17.000 AM	Resistance kohms	Resistance Register Active	Insulation Status Alarm	Resistance reached 230	200	-	-
OT_Group.IM20H_01	EventLogCtl 1	3/22/2013 3:52:23.000 PM	Insulation Status Alarm	Insulation Status Alarm Inactive	Insulation Status Alarm	Insulation Status Alarm	200	-	-
OT_Group.IM20H_01	EventLogCtl 1	3/22/2013 3:51:30.000 PM	Resistance kohms	Resistance Register Active	Insulation Status Alarm	Resistance reached 250	200	-	-

Buttons at the top of the table are:

- **Device Diagram** - Click this to return to the diagram.
- **Change Date Range** - Click this to view data for different dates. See "Select Date Range" below for more information.

The following figure shows the event log table from the Vista client view:

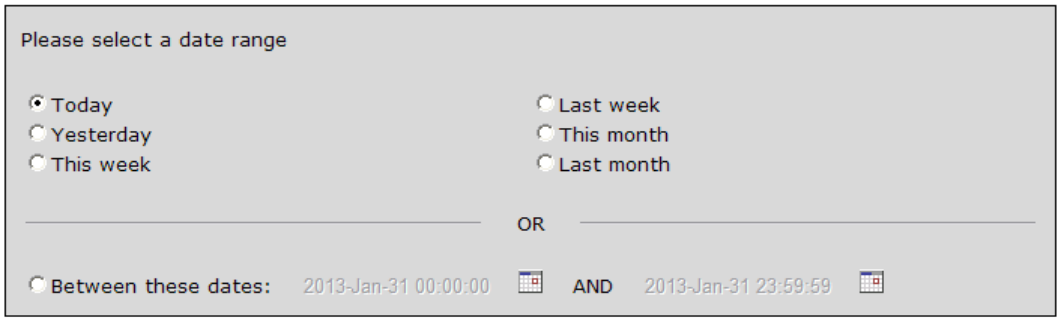
[User Diagram:Room Details - Room_01]

	Node	Log	Timestamp	Cause	Cause Value	Effect	Effect Value	Priority	Ack Time	User Name
1	IEC.IM20H_01	EventLogCtl 1	03/11/2013 07:04:16.000 AM	Insulation Status Alarm	Insulation Status Alarm Inactive	Insulation Status Alarm	Insulation Status Alarm	200		
2	IEC.IM20H_01	EventLogCtl 1	03/11/2013 06:35:42.000 AM	Insulation Resistance	Resistance Register Active	Insulation Resistance	Resistance reached 77000	200		
3	IEC.IM20H_01	EventLogCtl 1	03/11/2013 06:26:24.000 AM	Insulation Status Alarm	Insulation Status Alarm Inactive	Insulation Status Alarm	Insulation Status Alarm	200		
4	IEC.IM20H_01	EventLogCtl 1	03/11/2013 06:26:16.000 AM	Insulation Resistance	Resistance Register Active	Insulation Resistance	Resistance reached 53000	200		
5	IEC.IM20H_01	EventLogCtl 1	03/11/2013 06:26:09.000 AM	Insulation Status Alarm	Insulation Status Alarm Inactive	Insulation Status Alarm	Insulation Status Alarm	200		
6	IEC.IM20H_01	EventLogCtl 1	03/11/2013 05:24:27.000 AM	Insulation Resistance	Resistance Register Active	Insulation Resistance	Resistance reached 99000	200		
7	IEC.IM20H_01	EventLogCtl 1	03/11/2013 05:23:40.000 AM	Insulation Status Alarm	Insulation Status Alarm Inactive	Insulation Status Alarm	Insulation Status Alarm	200		
8	IEC.IM20H_01	EventLogCtl 1	03/11/2013 05:08:25.000 AM	Insulation Resistance	Resistance Register Active	Insulation Resistance	Resistance reached 100000	200		
9	IEC.IM20H_01	EventLogCtl 1	03/11/2013 05:07:08.000 AM	Insulation Status Alarm	Insulation Status Alarm Inactive	Insulation Status Alarm	Insulation Status Alarm	200		
10	IEC.IM20H_01	EventLogCtl 1	03/11/2013 05:06:53.000 AM	Insulation Resistance	Resistance Register Active	Insulation Resistance	Resistance reached 73000	200		
11	IEC.IM20H_01	EventLogCtl 1	03/11/2013 05:06:52.000 AM	Insulation Status Alarm	Insulation Status Alarm Inactive	Insulation Status Alarm	Insulation Status Alarm	200		
12	IEC.IM20H_01	EventLogCtl 1	03/11/2013 05:06:49.000 AM	Insulation Resistance	Resistance Register Active	Insulation Resistance	Resistance reached 90000	200		
13	IEC.IM20H_01	EventLogCtl 1	03/11/2013 03:56:57.000 AM	Insulation Status Alarm	Insulation Status Alarm Inactive	Insulation Status Alarm	Insulation Status Alarm	200		
14	IEC.IM20H_01	EventLogCtl 1	03/11/2013 03:56:51.000 AM	Insulation Resistance	Resistance Register Active	Insulation Resistance	Resistance reached 47000	200		
15	IEC.IM20H_01	EventLogCtl 1	03/11/2013 03:56:48.000 AM	Insulation Status Alarm	Insulation Status Alarm Inactive	Insulation Status Alarm	Insulation Status Alarm	200		
16	IEC.IM20H_01	EventLogCtl 1	03/11/2013 03:56:43.000 AM	Insulation Resistance	Resistance Register Active	Insulation Resistance	Resistance reached 56000	200		
17	IEC.IM20H_01	EventLogCtl 1	03/11/2013 03:56:32.000 AM	Insulation Status Alarm	Insulation Status Alarm Inactive	Insulation Status Alarm	Insulation Status Alarm	200		
18	IEC.IM20H_01	EventLogCtl 1	03/11/2013 03:56:23.000 AM	Insulation Resistance	Resistance Register Active	Insulation Resistance	Resistance reached 98000	200		
19	IEC.IM20H_01	EventLogCtl 1	03/11/2013 03:56:12.000 AM	Insulation Status Alarm	Insulation Status Alarm Inactive	Insulation Status Alarm	Insulation Status Alarm	200		
20	IEC.IM20H_01	EventLogCtl 1	03/11/2013 03:56:04.000 AM	Insulation Resistance	Resistance Register Active	Insulation Resistance	Resistance reached 48000	200		
21	IEC.IM20H_01	EventLogCtl 1	03/11/2013 03:55:59.000 AM	Insulation Status Alarm	Insulation Status Alarm Inactive	Insulation Status Alarm	Insulation Status Alarm	200		
22	IEC.IM20H_01	EventLogCtl 1	03/11/2013 03:55:40.000 AM	Insulation Resistance	Resistance Register Active	Insulation Resistance	Resistance reached 77000	200		
23	IEC.IM20H_01	EventLogCtl 1	03/11/2013 03:55:37.000 AM	Insulation Status Alarm	Insulation Status Alarm Inactive	Insulation Status Alarm	Insulation Status Alarm	200		
24	IEC.IM20H_01	EventLogCtl 1	03/11/2013 03:55:33.000 AM	Insulation Resistance	Resistance Register Active	Insulation Resistance	Resistance reached 80000	200		

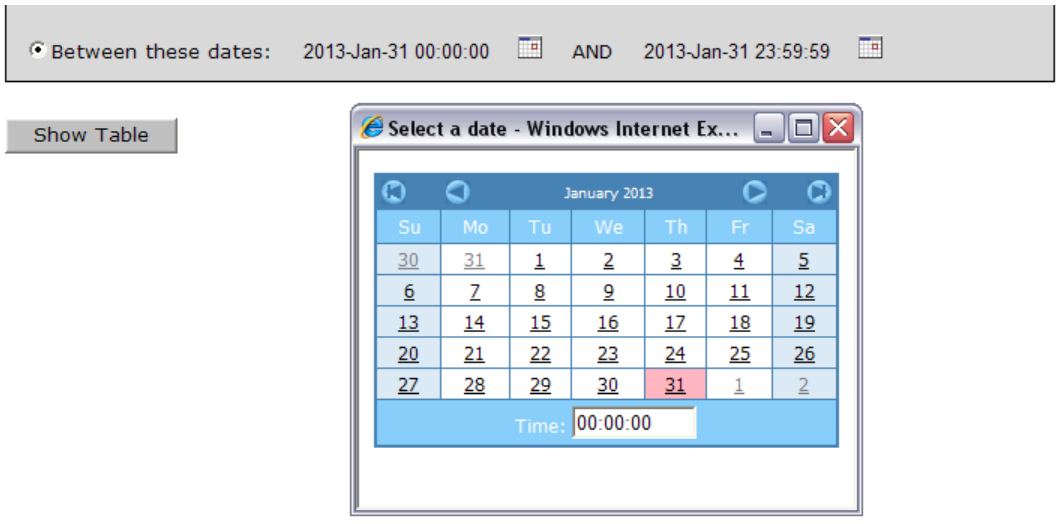
Select Date Range

For either type of log table, you can select the date range for data you want to see. The default date range is "Today".

1. Click **Select Date Range**.



2. Select an available range or click **Between these dates** and select specific dates in the calendar.



3. Click **Show Table** to see the data.

   If you select a date range of more than one week, a message appears to inform you that the table will be very long.

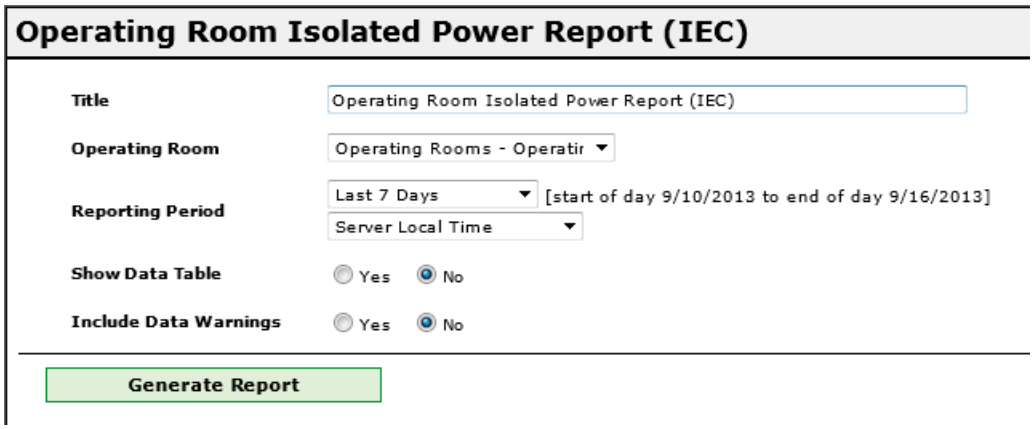
The new table appears.

Generate the Isolated Power Report IEC

In Power Monitoring Expert 8.1 Healthcare Edition, the Operating Room Isolated Power Report is available for the electrical data and events that are recorded by the system. This report is included in the Report Library when the solution is installed.

1. In the Report Library, in the **Healthcare Reports** folder, click Operating Room Isolated Power Report (IEC).

   The report configuration screen appears.



2. Select the information you want to see in the report.
3. Click **Generate Report** to see the report. A report sample is shown next.

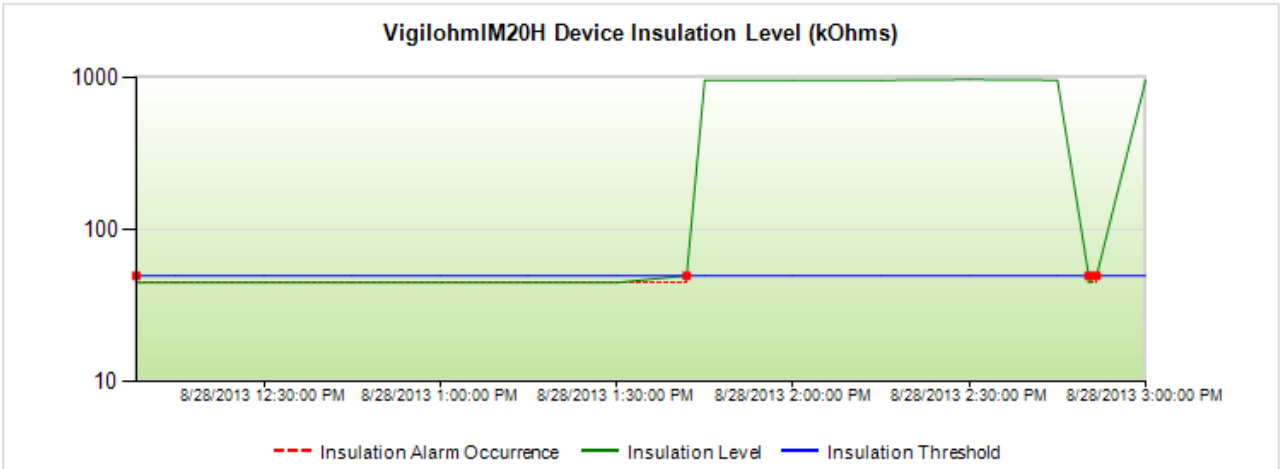
For each IM20-H in the room, the report shows:

- Impedance graph - Displays a comparison of impedance measurements to the impedance threshold. The impedance threshold is a blue line and actual measurements are shown as a green line. A red line shows the time when the impedance dropped below the threshold.
- Transformer load graph - Displays a comparison of transformer load measurements to the load threshold. The threshold is a blue line and actual measurements are shown with a green line. A red line shows the time when the load rose above the threshold.
- Events table - Shows information for each event that occurred in the date range.
- Data log table (optional) - Contains measurements for impedance, load, and temperature in the selected date range. Red values indicate measurements over the limit.

Report ID: Operating Room 1a

Description: Logs from Operating Room 1a

Report Generated: 8/28/2013 3:03:44 PM



Timestamp	Insulation Level	Insulation Threshold
8/28/2013 3:00:00 PM	970	50
8/28/2013 2:51:40 PM	50	50
8/28/2013 2:51:39 PM	50	50
8/28/2013 2:50:20 PM	45	50
8/28/2013 2:50:20 PM	50	50
8/28/2013 2:45:00 PM	970	50
8/28/2013 2:30:00 PM	980	50
8/28/2013 2:15:00 PM	970	50
8/28/2013 2:00:00 PM	970	50
8/28/2013 1:45:00 PM	970	50
8/28/2013 1:41:56 PM	50	50
8/28/2013 1:41:55 PM	50	50
8/28/2013 1:30:00 PM	45	50
8/28/2013 1:15:00 PM	45	50
8/28/2013 1:00:00 PM	45	50
8/28/2013 12:45:00 PM	45	50
8/28/2013 12:30:00 PM	45	50
8/28/2013 12:15:00 PM	45	50
8/28/2013 12:08:19 PM	45	50
8/28/2013 12:08:19 PM	50	50

Power Monitoring Expert 8.1 Healthcare Edition
Commissioning Guide

Schneider Electric
35 Rue Joseph Monier
92500 Rueil Malmaison, France

www.schneider-electric.com

7EN02-0386-00 04/2016