POWER LEADER ™

PMCS 6.11a
Interface Toolkit

Installation Guide
GEH-6513

GE Power Management Control System 6.11a

Notice

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EPM 7600 Electronic Power Meter	EPM 7500 Electronic Power Meter	EPM 7330 Electronic Power Meter
Enhanced MicroVersaTrip-C	SR489 Generator Management Relay	EPM 7700 Electronic Power Meter
Enhanced MicroVersaTrip-D	565 Feeder Management Relay	EPM 3710 Electronic Power Meter
MDP Overcurrent Relay	735 Feeder Relay	EPM 3720 Electronic Power Meter
SR750/SR760 Feeder Management Relay	SR745 Transformer Management Relay	Spectra Electronic Control Module
Universal Relay	EPM7430D/EPM7450D	Motor Manager II (MMII)
GE-Zenith MX200 (Microprocessor Controller)	GE-Zenith Generator PLC (Series 90-70)	EPM5300P/EPM5200P
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Introduction

Welcome

The PMCS Interface Toolkit is a POWER LEADER Power Management Control System (PMCS) version 6.11a tool that provides a custom toolkit to efficiently create flexible, accurate, and friendly user interfaces to your power management data. With the PMCS Wizards (accurate graphical representations of power management devices and other commonly encountered objects), you can create applications to provide a customized interface that accurately represents physical, electrical, and geographical plant layouts. The wizards can significantly cut new system development time, providing results in less than an hour.

The PMCS Interface Toolkit allows you to create one-line diagrams, elevation views, and floor plans that you can combine with tabular data screens and three-dimensional device wizards to create a virtual representation of your facility and equipment. With this graphical user interface, you actually see and control devices on the screen, without having to make a trip out to the meter or trip unit.

The Toolkit, which consists of the Wonderware InTouch development environment coupled with GE's wizards, is easy to use, taking advantage of state-of-the-art drag-and-drop technology. Wizards are provided for all the devices most commonly used with the PMCS DDE Server. Creating a custom interface is as easy as selecting wizards for the devices installed in a facility and placing them on the screen.

Here's what you'll find in this guide:

- Chapter 2 explains the kinds of PMCS Wizards, their use and configuration – Small Faceplate wizards, Large Faceplate wizards, Tabular Data Screen wizards, One- Line wizards, Elevation wizards, and Floor Plan wizards.
- Chapter 3 illustrates the use of the GE wizards described in Chapter 2 to create animated displays of the facility floor plan, switchgear elevations, and system one- line diagrams.
- Chapter 4 gives an example of application development, using the wizards described in Chapters 2 and 3 to create an actual PMCS application.
- Chapter 5 describes the functions available with each of the GE Large Faceplate wizards. These wizards are accurate graphical representations

of power management devices, complete with working controls that are linked to the corresponding devices in your facility.

- Chapter 6 describes the Tabular Data wizards. These wizards list the data and setpoints of power management devices in a tabular format. Simply point and click to select the appropriate tab of information to display and view the related data.

The examples and references in this guide enable you to create custom interfaces for your PMCS system, and allow you to access power management data in the way that best suits you.

How should I use this manual?

How you use this book depends on your level of expertise with Wonderware InTouch. Consult the table below to determine where you should start.

If this describes you…	Start here:
I've never seen this stuff before! What's Wonderware InTouch? What are "Wizards"?	Refer to the documentation that came with your Wonderware InTouch package. Start with the introduction and tutorial sections, which will teach you about Wonderware InTouch and how to use it to create custom applications. When you understand what wizards are and how to use them, come back here.
I've just opened this package – where do I go first?	Go to Chapter 1, Introduction. Chapter 1 explains what the User Screen Configurator is, what it's good for, and where to go after that.
I'm familiar with Wonderware InTouch and I'd like to build a custom application for some GE power management devices.	Go to Chapter 1 for installation instructions, then to Chapter 2 for descriptions of the wizards and how to use them. Chapter 4 provides a demo of actual application development. This package contains wizards for the power management devices supported by GE's PMCS 6.11a software.
The GE PMCS Wizards are already installed on my system, I'm already experienced with InTouch, and I'm ready to start building custom applications.	Turn to Chapter 2 for information on how to use the GE PMCS Wizards, and Chapter 4 for a quick example of application development. For detailed descriptions of the Large Faceplate wizards or the Tabular Data Screen wizards, refer to Chapters 5 and 6 respectively.
Just tell me about the wizards; I'm an old pro and ready to go!	Skim through Chapters 2 and 3 for an overview of what's in the package, then Chapter 4 for a quick example of application development. Chapter 5 describes the GE Large Faceplate wizards and Chapter 6 the associated Tabular Data Screen wizards.

Conventions

You will find this book easy to use if you look for these simple conventions:

- **Boldface** type indicates the name of an item you need to select.
- `Monospace` type indicates an example or text that is displayed on the screen.
- UPPERCASE type indicates a file name, command name, or acronym.

About the Interface Toolkit

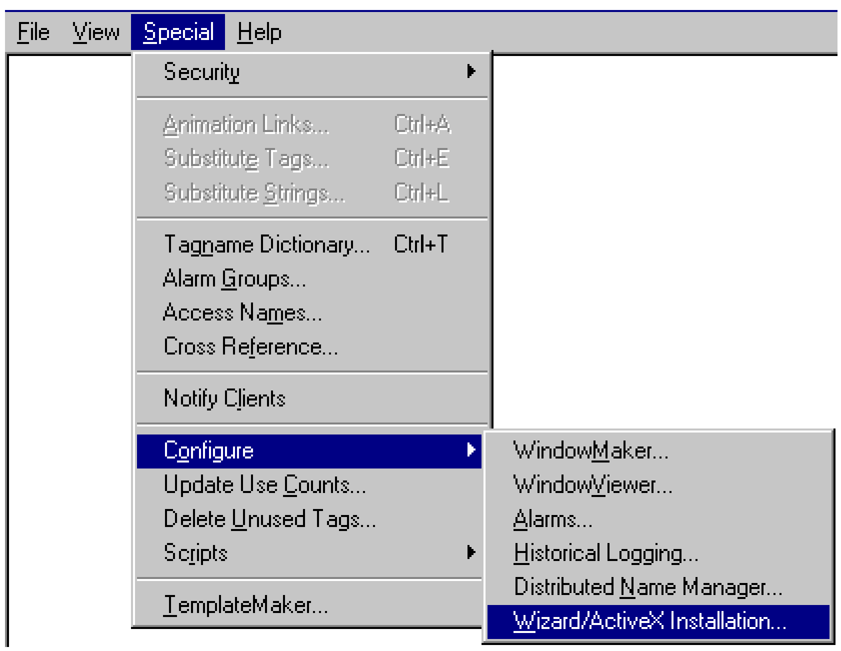
The Interface Toolkit consists of the Wonderware InTouch development environment and a special set of wizards developed for use with the power management devices supported by PMCS.

Installation

To install the Interface Toolkit from the CD-ROM, refer to the instructions provided in GEH-6514, *Read This Book First*.

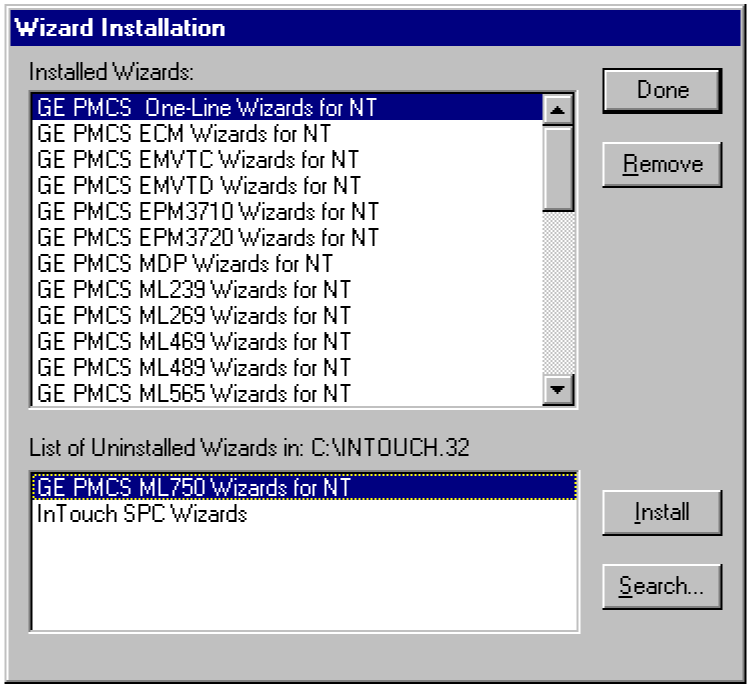
When InTouch is successfully installed, you must add the PMCS wizards to InTouch's library of available wizards.

To add the wizards to InTouch, start InTouch and enter **Development** mode. Pull down the **Special** menu and select **Configure > Wizard**.



From the **InTouch Configuration** menu, select **Install Wizards**.

The **Wizard Installation** dialog displays two list boxes, showing the currently installed wizards and the wizards available for installation. Select the desired wizards from the bottom box and click **Install**. When the installation is complete, click **Done**.



Exit from the InTouch Configuration dialog box by clicking **OK**. The PMCS wizards should now be loaded and ready for use.

Using and Configuring PMCS Wizards

About the Wizards

The wizards contained in the PMCS Interface Toolkit allow you to quickly build accurate and friendly user interfaces with InTouch. In addition to the various wizards standard with InTouch development systems, the Interface Toolkit provides six types of powerful GE wizards:

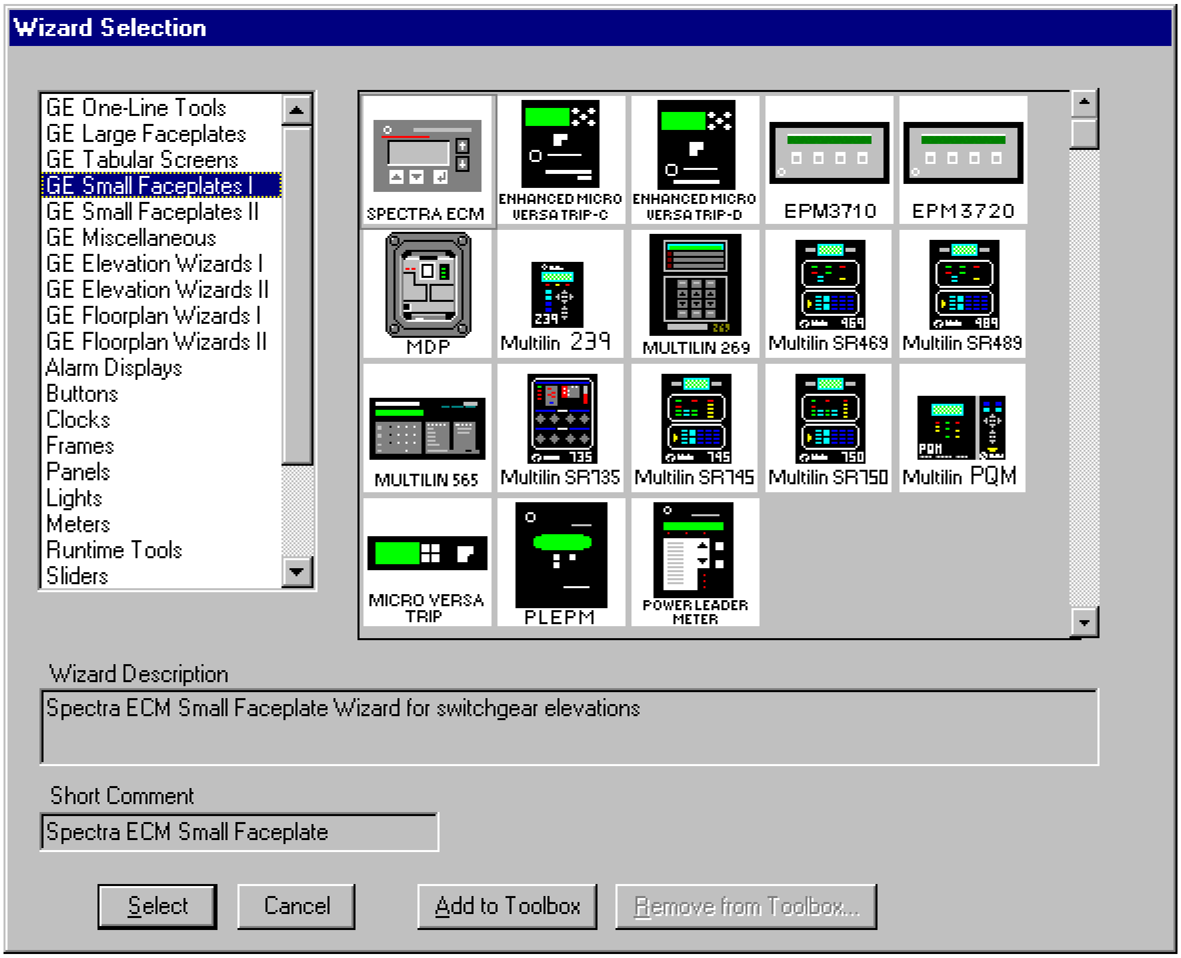
- GE Small Faceplates
- GE Large Faceplates
- GE Tabular Screens
- GE One-Line Tools
- GE Elevation Wizards
- GE Floor Plan Wizards

The five-step procedure below outlines how to use InTouch wizards.

1. From InTouch, either create a new window or open an existing window to modify.
2. Select the **wizards** button  from the floating toolbars. The Wizard Selection dialog box pops up.
3. Select the class of wizard from the list of wizards on the left side of the Wizard Selection dialog. Several classes contain too many devices to fit on one palette and have been broken up into several palettes; for example; Small Faceplates 1 and Small Faceplates 2.
4. Double-click on the desired wizard, then click on the window to place the wizard.
5. Once the wizard has been placed, double-click anywhere on the wizard to open a configuration dialog (if appropriate), and complete any necessary configuration based on the instructions later in this chapter.

The remainder of this chapter is devoted to describing and illustrating the various kinds of wizards included in the PMCS Interface Toolkit.

Small Faceplate Wizards



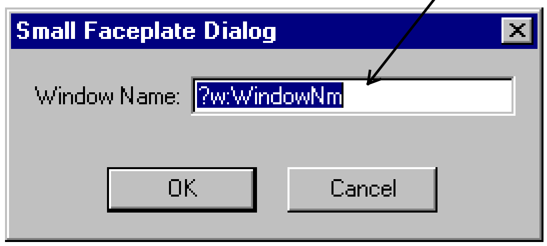
Usage

The Small Faceplate wizards are icon-sized graphics typically used to create accurate elevation views and one-line diagrams. These wizards are provided with logic to open another window, typically either a Large Faceplate or Tabular Data Screen wizard. There are two palettes of Small Faceplates to choose from.

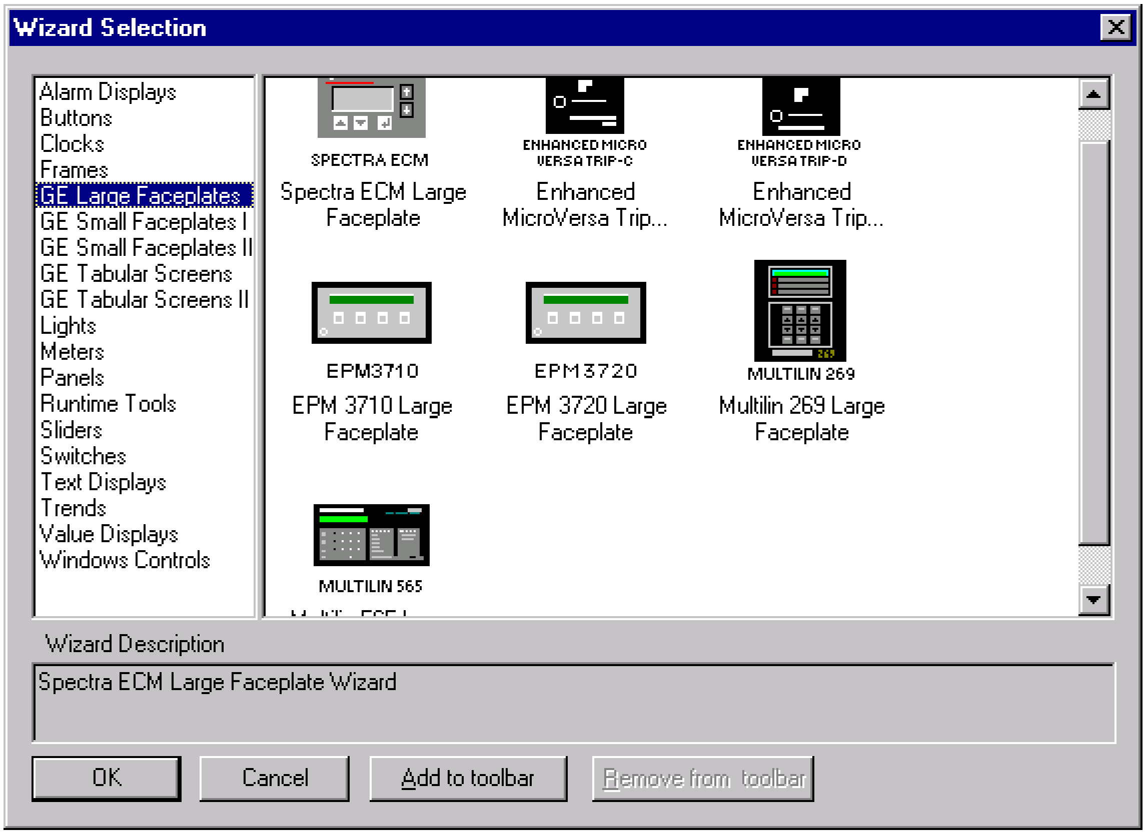
Configuration

In development mode, after placing the Small Faceplate, double-click on the icon to open the Small Faceplate Dialog box, as illustrated below. Typically, a Small Faceplate wizard is linked to a window containing either a Large Faceplate or a Tabular Data Screen wizard. You can move or resize Small Faceplate wizards in the window as desired.

Enter the name of the window to open when the icon is clicked on during runtime.



Large Faceplate Wizards



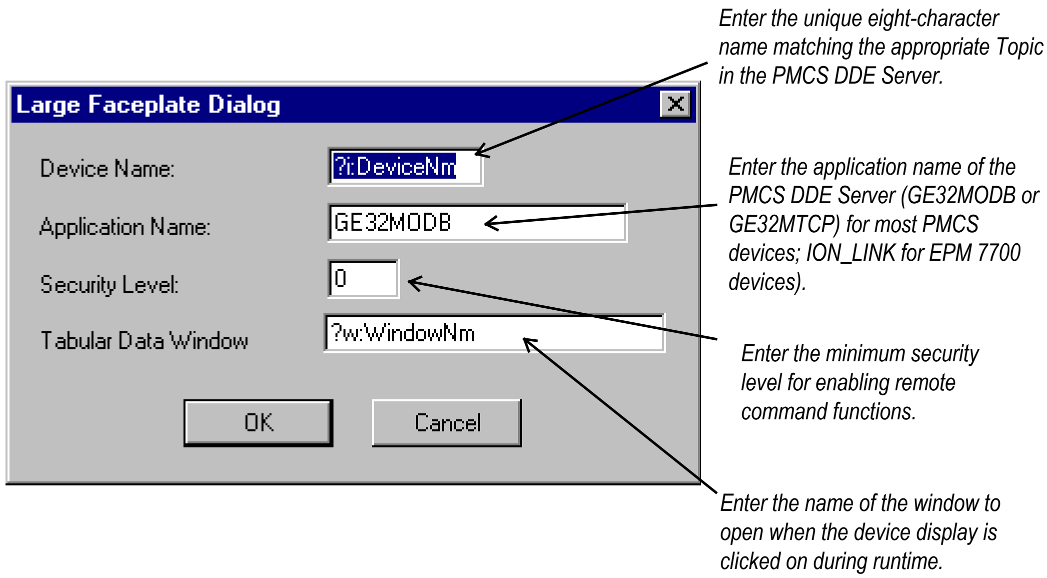
Usage

Large Faceplate wizards are three-dimensional representations of device faceplates that can be used to display data from the device. These three-dimensional wizards include extensive logic that provides an accurate reproduction of the actual display and keys of the device. Large Faceplate wizards are typically placed in overlay windows.

Configuration

Place the Large Faceplate wizard into an open window, then double-click on it to display the Large Faceplate Dialog box. Configure the wizard by entering the appropriate information into each of the boxes.

The figure shown below is the dialog for a typical wizard. Some wizards have additional features which may be configured. See the section titled **Features of GE Large Faceplate Wizards** for more details.



You can move and resize Large Faceplate wizards as desired.

Special Considerations

The button controls on the 3-D representation emulate the controls of the actual device. This may be useful for reducing software training time for personnel already familiar with device operation. The detailed features of each of the Large Faceplate wizards are described in the section titled **Features of GE Large Faceplate Wizards** .

EPM 7700

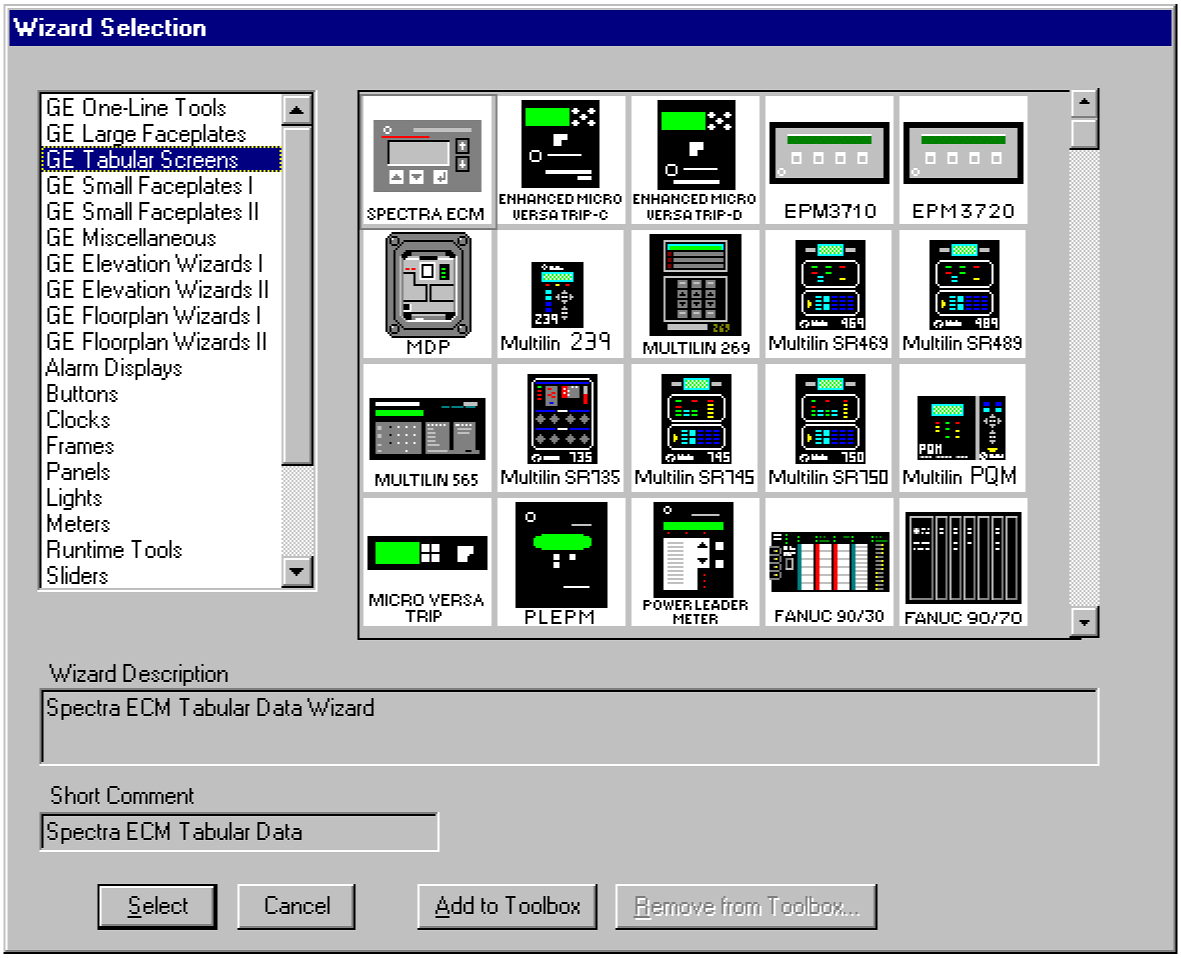
The EPM 7700 Large Faceplate Dialog box contains an extra field, which must be completed during configuration. The *Node Name* field requires that you enter the name of the computer running the Communications Server that connects to this particular device. Depending on the configuration of the EPM7700 network, this can be either the Primary node computer, or a computer setup as a "Full Station" Secondary node. Refer to DEH-40035, the *GE 7700 Gateway Users Guide*, and GEH-6514, *PMCS Read This Book First*, for more information on network configuration. The Node Name field is required because the EPM7700 does not use the same DDE server as the rest of the standard PMCS devices, and the wizard must be directed to the location of the correct Communications Server for proper configuration of DDE topic names.

Also, the Application Name field must be completed as ION_LINK rather than GE32MODB or GE32MTCP for the EPM7700 device. The ION LINK program is installed during initial PMCS 6.11a setup if the EPM7700 software option is selected.

When configuring Wizards on Secondary nodes, the Application Name field entry does not follow the PMCS wizard convention of “\\RemoteComputer\ION_LINK”. EPM7700 Secondary nodes run a local copy of the ION LINK server, thus the application name for EPM7700 Large Faceplate wizards is always “ION_LINK” whether the wizard is installed on the Primary node or a Secondary node. The Node Name entry determines if the wizard is on a Secondary node.

Finally, the EPM 7700 device type requires special InTouch scripting for the large faceplate wizard. Refer to the section at the end of this chapter titled *Special Scripting Considerations for the EPM 7700.*

Tabular Data Screen Wizards



Usage

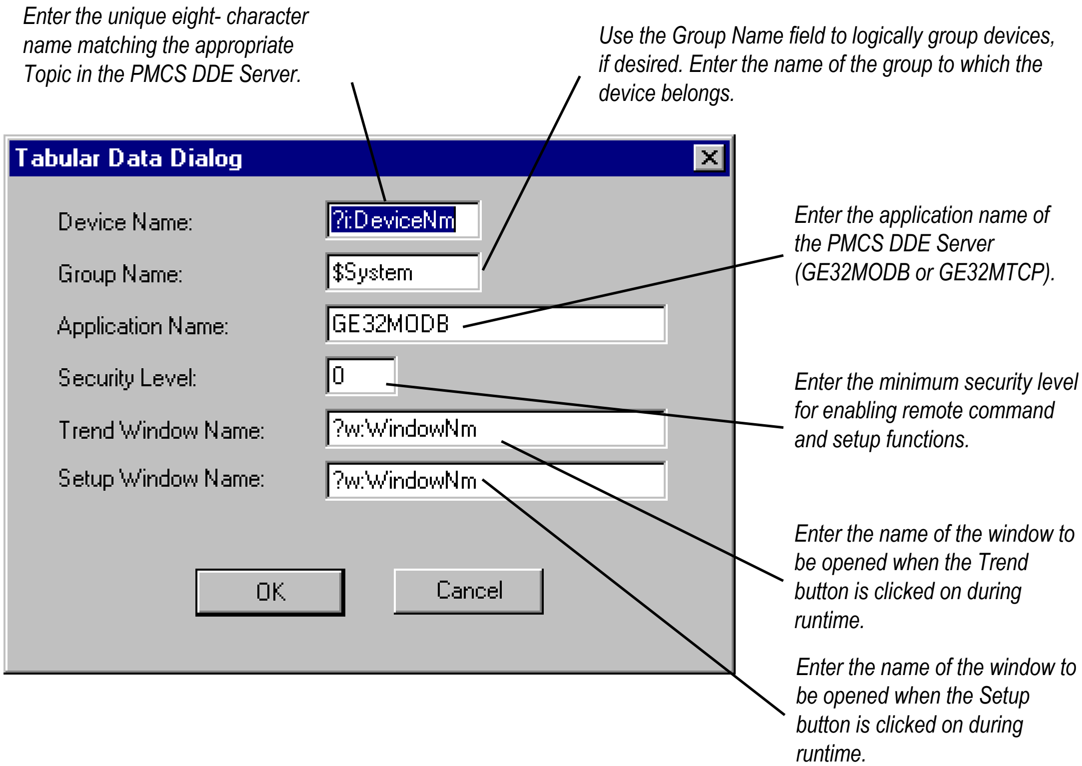
Tabular Data Screen wizards contain organized, comprehensive, tabular layouts of device parameters including additional configuration and remote control features. Depending on the device, there may be multiple file-tabs beneath the tabular data section. These switch among various pages relating to data and setpoints.

Each Tabular Data Screen wizard contains buttons for activating the help file, trend window, setup window (if applicable), Event Logger, Waveform Capture, and for closing the window.

You can move and resize Tabular Data Screen wizards as desired.

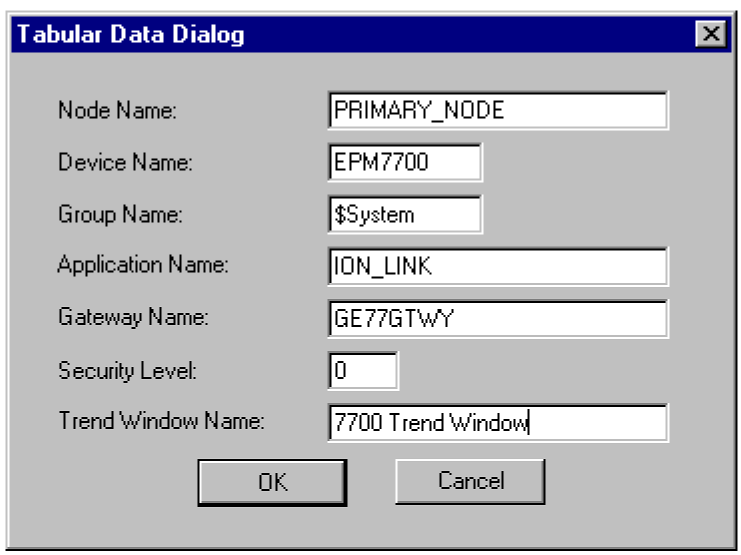
Configuration

In development mode, after placing a wizard into an open window, double-click on it to display the Tabular Data Dialog box. The figure below shows the dialog box for a typical Tabular Data wizard. Some wizards have additional features which may be configured. See the section titled **Features of Tabular Data Screen Wizards** for more details.



EPM 7700

The EPM 7700 Tabular Data Dialog box is slightly different from the other PMCS device types, containing two extra fields and requiring minor differences in configuration. The Tabular Data Dialog for the EPM 7700 is shown below, followed by the special configuration requirements.



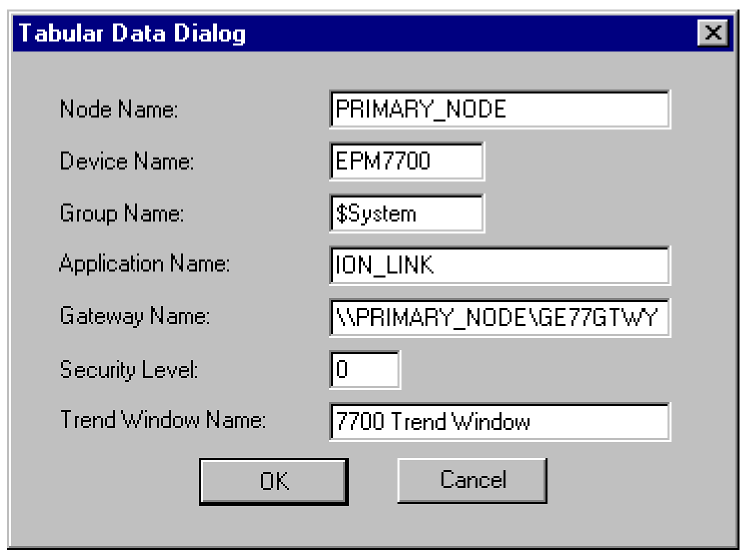
The *Node Name* field requires that you enter the name of the computer running the Communications Server that connects to this particular device. Depending on the configuration of the EPM7700 network, this can be either the Primary node computer, or a computer setup as a “Full Station” Secondary node. Refer to DEH-

40035, the *GE 7700 Gateway Users Guide*, and GEH-6514, *PMCS Read This Book First*, for more information on network configuration. The *Node Name* field is required because the EPM7700 does not use the same DDE server as the rest of the standard PMCS devices, and the wizard must be directed to the location of the correct Communications Server for proper configuration of DDE topic names.

Also, the Application Name field must be completed as ION_LINK rather than GE32MODB or GE32MTCP for the EPM7700 device. The ION LINK program is installed during initial PMCS setup if the EPM7700 software option is selected.

When configuring Wizards on Secondary nodes, the Application Name field entry does not follow the PMCS wizard convention of "\\RemoteComputer\ION_LINK". EPM7700 Secondary nodes run a local copy of the ION LINK server, thus the application name for EPM7700 Tabular Data Wizards is always "ION_LINK" whether the wizard is installed on the Primary node or a Secondary node. The Node Name entry determines if the wizard is on a Secondary node.

The Gateway Name field must be completed with GE77GTWY, the application name of the GE 7700 Gateway Server program. When configuring the EPM7700 Tabular wizard on a Secondary node, the Gateway Name *does* follow the PMCS wizard convention of "\\RemoteComputer\GE77GTWY" in the Gateway Name field, where 'RemoteComputer' is the name of the PC where the GE 7700 Gateway application is running – the Primary Node. The following example shows a Tabular Data Dialog box as it would appear when configuring a Tabular Data wizard on a Secondary node. The Node Name field contains the name of the Primary Node computer, the Application Name field is ION_LINK (as it is for ALL EPM7700 wizards on ANY node) and the Gateway Name field points to the GE 7700 Gateway Server running on the Primary Node PC.



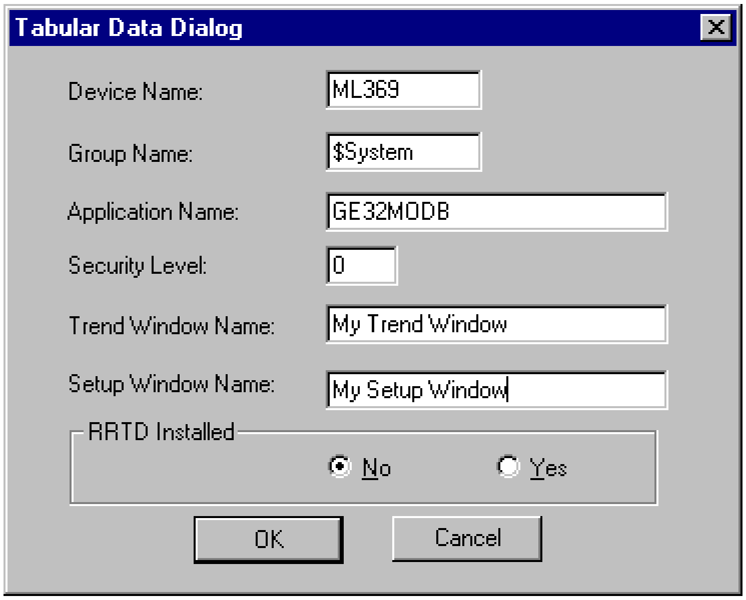
Finally, the EPM 7700 device type requires special InTouch scripting for the tabular data screen wizard. Refer to the section at the end of this chapter titled *Special Scripting Considerations for the EPM 7700.*

Refer to DEH-40035 for information on the Communications Server and 7700 Gateway Server.

369 Motor Management Relay

The 369 Motor Management Relay offers an optional Remote RTD module, which can provide support for up to 12 additional RTDs. Accordingly, the 369 Tabular

Data Dialog box has an extra field for indicating when the RRTD option is installed. Be sure to select the correct RRTD option when completing the 369's Tabular Data Dialog window. If you are not planning to use an RRTD module with your relay, select the "No" button. This minimizes the number of I/O tags created by the wizard, providing better performance.



Universal Relay

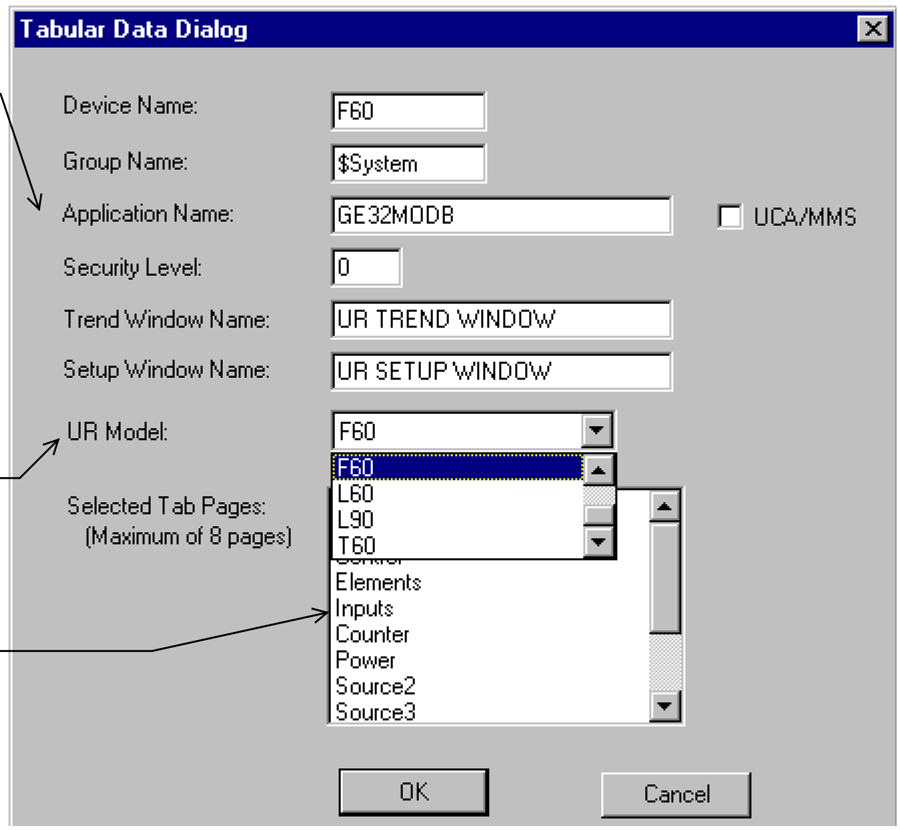
The Universal Relay device comes in several different models, and each model supports different capabilities, which are reflected by the various tabs available for each model. When configuring a Universal Relay device, you first select the UR Model, then choose which tabs will be displayed for the particular device.

The UR devices are also capable of communicating with a different type of PMCS DDE Server than the other PMCS Advanced Wizards. By selecting the UCA/MMS checkbox, you indicate that you wish the UR wizard to retrieve its data for display from the MMS Server whose name is entered in the Application Name field.

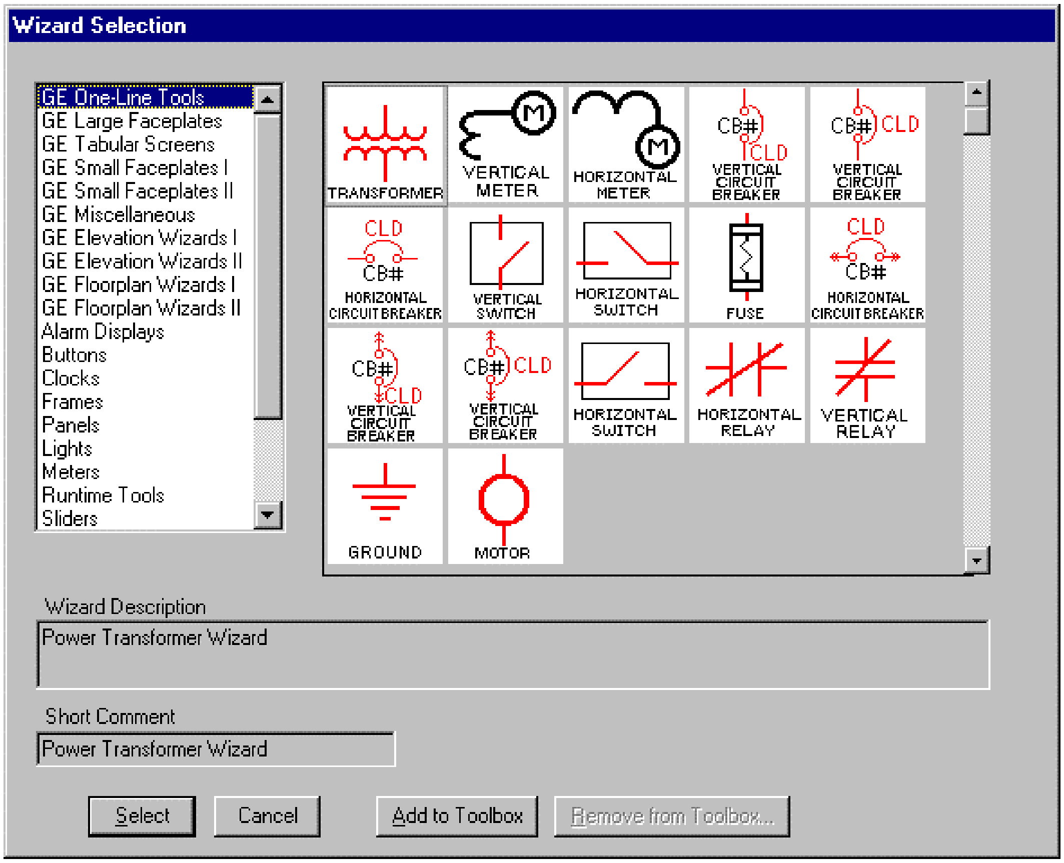
Complete the Application Name field; typically GE32MODB or GE32MTCP.
Special Note:
The UCA/MMS is not supported in this version. So don't Check this checkbox.

Select the Model of UR which you are configuring. This determines the contents of the Available Tabs list.

Highlight the tabs you wish to display on the Tabular Data Screen wizard. Use the control key to select multiple tabs.



One-Line Wizards



Usage

You can use one-line wizards to create animated one-line diagrams that represent an electrical schematic of the devices monitored by the software. These wizards are provided with logic to either open another window or display device status.

One-Line wizards are divided into five functional groups according to the type of animation:

- Horizontal and Vertical Meter wizards display another window, such as a 3-D faceplate.
- Transformer, Fuse, Ground Symbol, and Motor Symbol wizards have a discrete color-change animation indicating the On/Off state of the device.
- Horizontal and Vertical Relay wizards also have discrete color-change animation indicating the On/Off state of the device.
- Horizontal and Vertical Switch wizards have four discrete animations; two are color changes indicating the On/Off state of the device and two are used for a three-state display (Open, Closed, and Error conditions).

- Circuit Breaker wizards have two discrete color-change animations for On/Off status display and one analog animation for a five-state display (Open, Closed, Out, Trip, and Error conditions).
- Lockout/Tagout symbols have discrete visibility animations for various tags. Refer to the section **Using and Configuring PMCS Wizards: Lockout/Tagout Wizard** for more information.

Configuration

In development mode, after placing the one-line device icon, double-click on the icon to open its configuration dialog box. All one-line wizards have two configuration items in common:

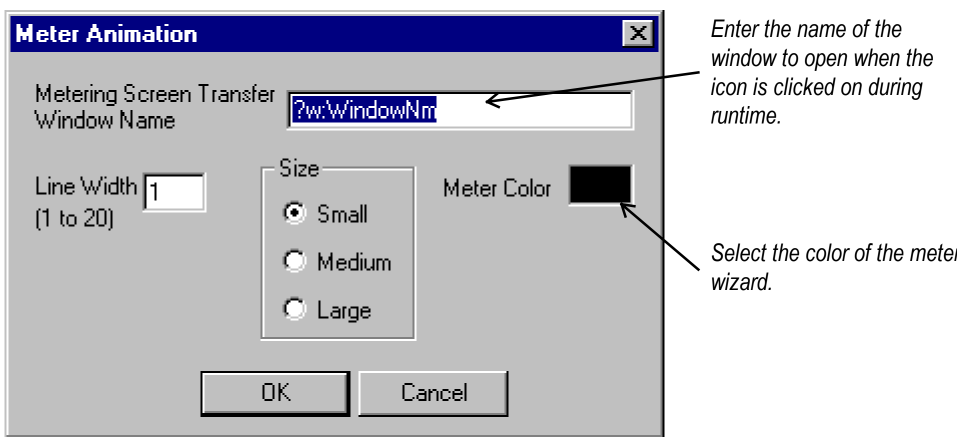
- `Line Size` is a number between 1 and 20 that sets the pixel width of the lines in the wizard.
- `Size` configuration consists of three radio buttons (`Small`, `Medium`, and `Large`) that determine the overall size of the wizard on the screen.

Use the snap-to-grid feature in InTouch to quickly align One-Line wizards.

Configuration of each of the five classes of One-Line wizards is described below.

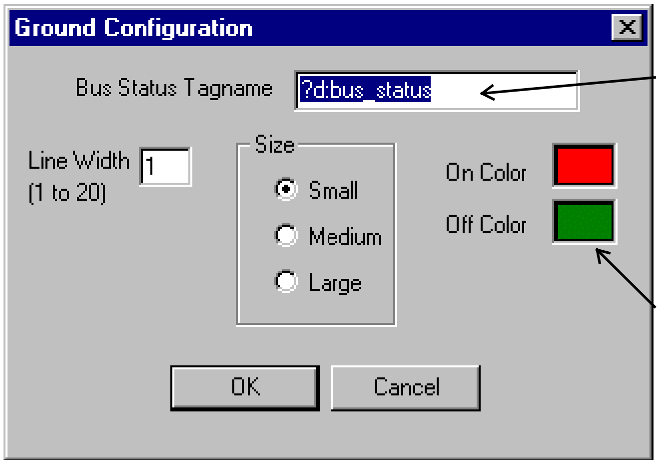
Meter One-Line Wizards

After placing a meter wizard in a window, double-click on it to display the dialog box shown below. Configure the wizard by entering the appropriate information into each of the boxes.



Transformer, Fuse, Ground, and Motor One-Line Wizards

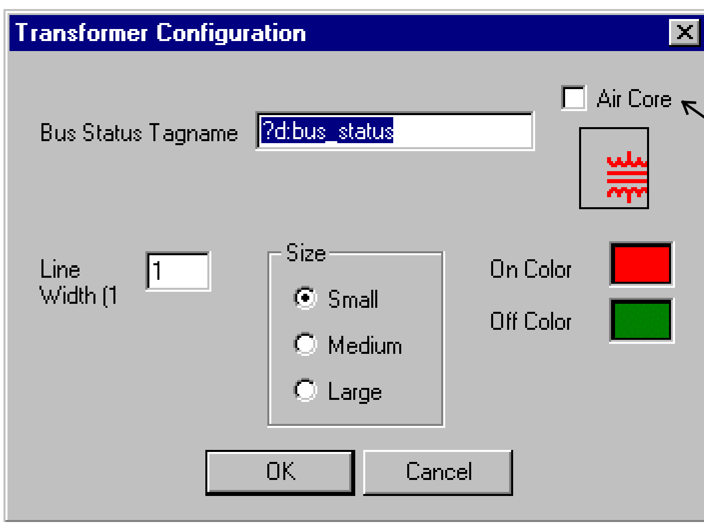
After placing a Fuse, Ground, or Motor wizard in a window, double-click on it to display the dialog box shown below. Configure the wizard by entering the appropriate information into each of the boxes.



Enter the name of the InTouch discrete tag that determines the state of the line colors during runtime.

Specify the colors of the lines when the Bus Status is On and Off. The wizard is displayed in the On Color when the Bus Status Tagname = 1, Off Color when the Bus Status Tagname = 0.

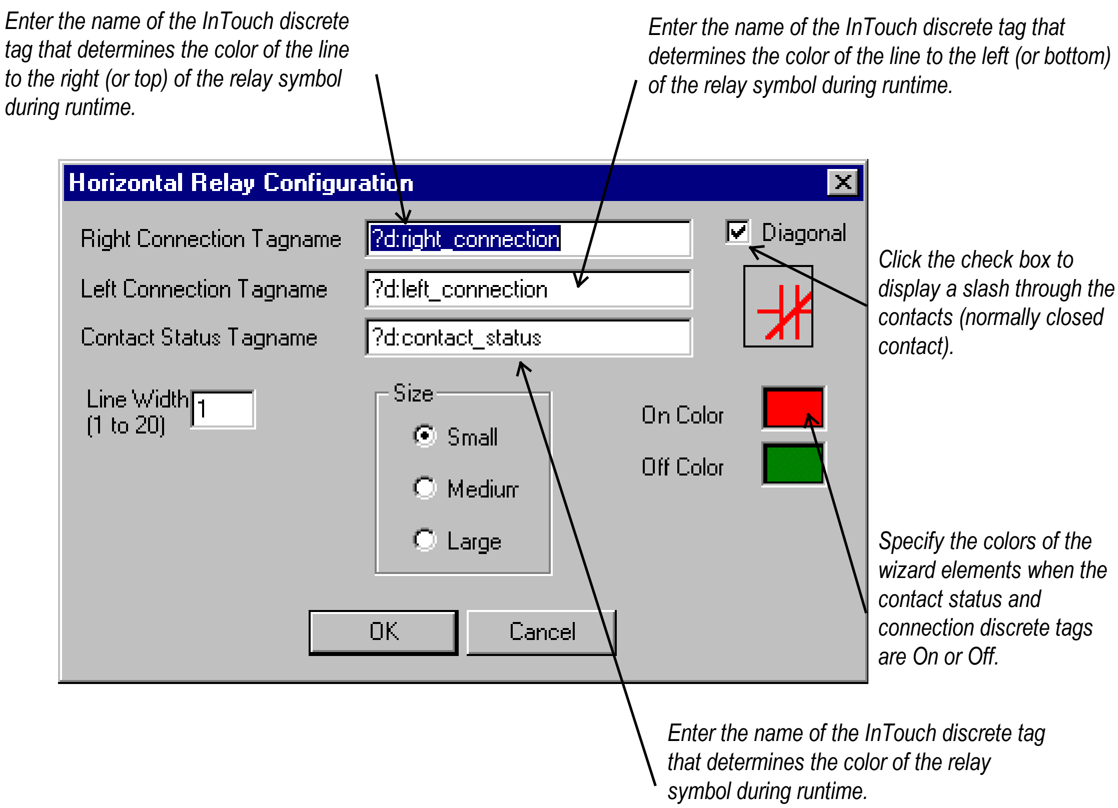
The dialog box for the Transformer wizard has an extra check box that specifies either an air-core or iron-core transformer, as shown below.



Click on the check box to specify an air-core transformer.

Horizontal and Vertical Relay One-Line Wizards

After placing a Horizontal or Vertical Relay wizard in a window, double-click on it to display the dialog box shown below. Configure the wizard by entering the appropriate information into each of the boxes.

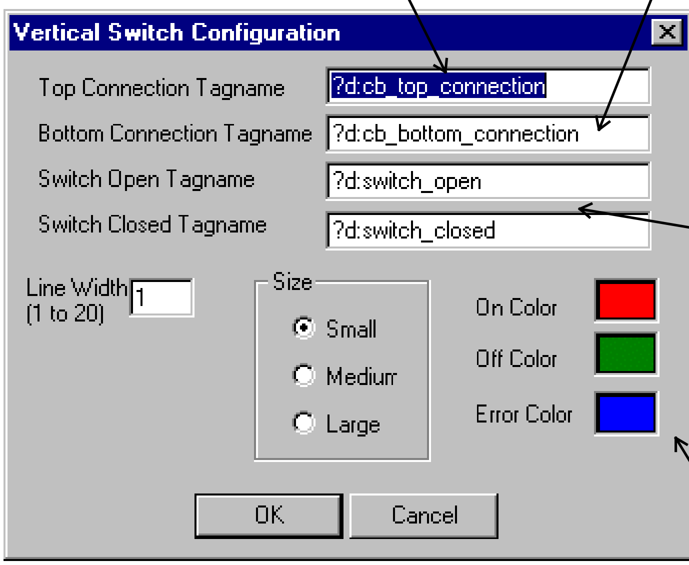


Horizontal and Vertical Switch One-Line Wizards

After placing a Horizontal or Vertical Switch wizard in a window, double-click on it to display the dialog box shown below. Configure the wizard by entering the appropriate information into each of the boxes.

Enter the name of the InTouch discrete tag that determines the color of the line to the right (or top) of the switch symbol during runtime.

Enter the name of the InTouch discrete tag that determines the color of the line to the left (or bottom) of the switch symbol during runtime.



Enter the names of the InTouch discrete tags that determine the state of the switch during runtime.

Specify the colors of the wizard elements when the connection and switch discrete tags are On and Off and when there is an Error condition. The switch symbol color is determined by the following logic:

SwOpen	*SwClosed*	*Color*
0	*0*	*error*
0	*1*	*on*
1	*0*	*off*
1	*1*	*error*

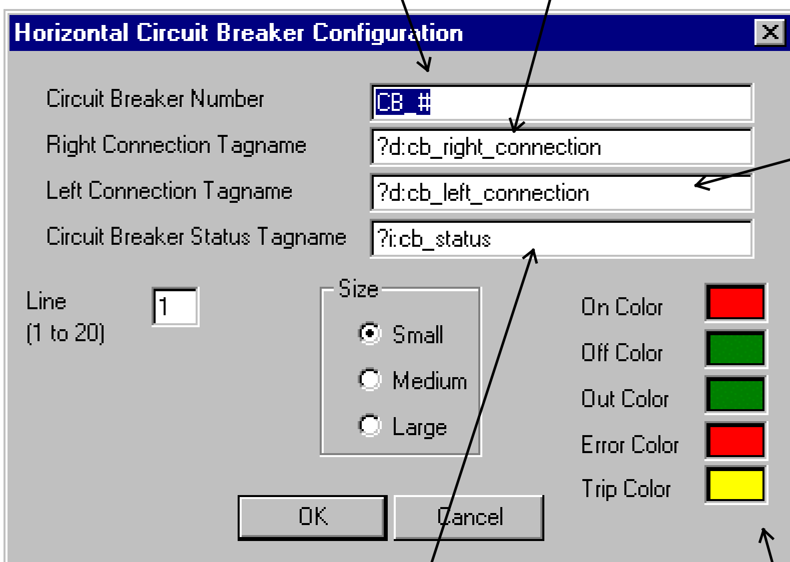
Circuit Breaker One-Line Wizards

After placing a Horizontal or Vertical Circuit Breaker wizard in a window, double-click on it to display the dialog box shown below. Configure the wizard by entering the appropriate information into each of the boxes.

Enter text to display next to the breaker graphic during runtime (optional).

Enter the name of the InTouch discrete tag that determines the color of the line to the right (or top) of the breaker symbol during runtime.

Enter the name of the InTouch discrete tag that determines the color of the line to the left (or bottom) of the breaker symbol during runtime.



Enter the name of the InTouch analog tag that determines the color of the circuit breaker symbol, the state of the breaker, and the status text displayed next to the breaker icon during runtime.

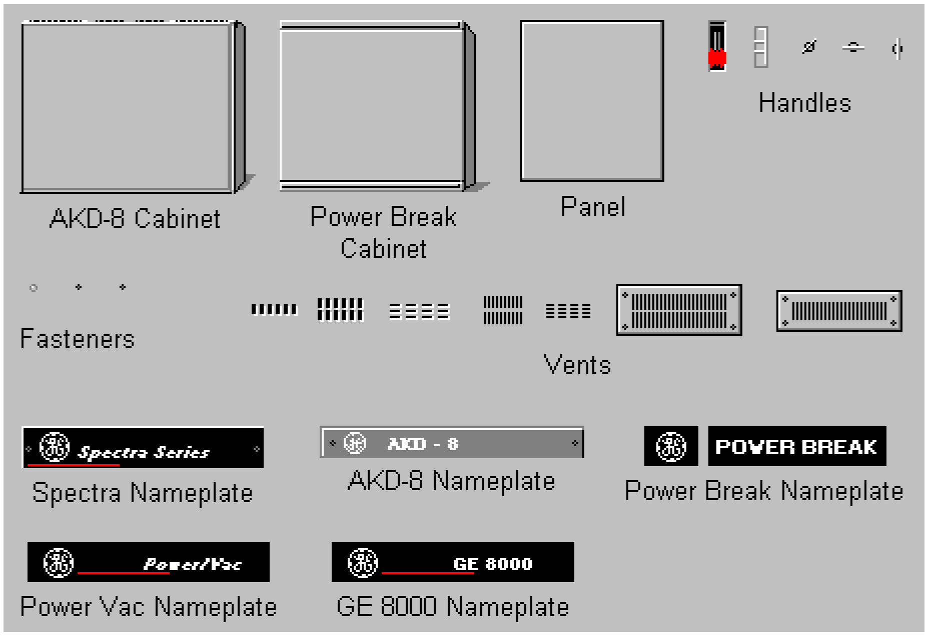
Specify the colors of the wizard elements and status text for the breaker states during runtime. See the table below for default status/color mappings.

The breaker status values and the associated default colors are listed in the table below. Error status indicates that the breaker status inputs create an indeterminate state for the breaker.

Breaker Status	Value	Text	Default Color
Open	1	OPN	Green
Closed	3	CLD	Red
Drawn Out	5	OUT	Green
Tripped	7	TRP	Yellow
Error	9	ERR	Flashing Red

Breaker status values & display colors.

Elevation Wizards



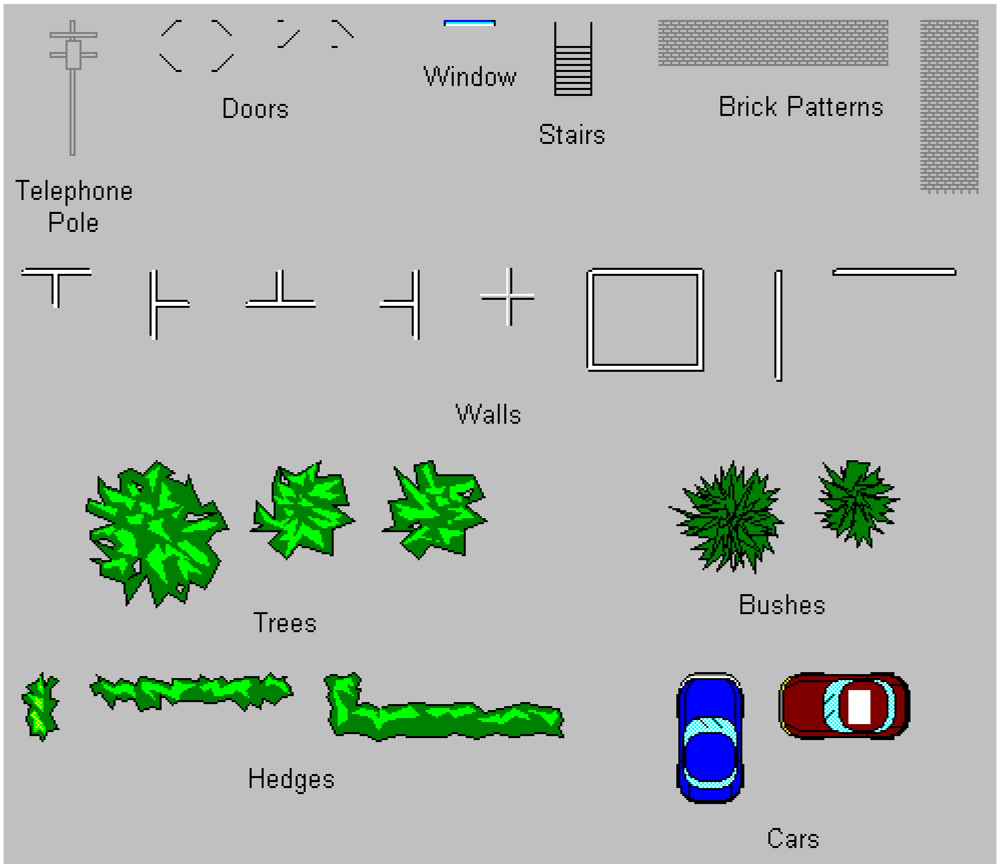
Usage

Elevation wizards are graphical elements that represent switchgear components useful for creating 3-D elevation views. These wizards are not associated with any logic or animation, but are provided to create more visually accurate screens and representations of equipment. Device icon wizards are typically placed on the Elevation wizards to show the breakers, trip units, and meters and provide navigation to device 3-D wizards, tabular displays, or arbitrary windows.

Configuration

After placing an Elevation wizard in an open window, it may be moved or resized, but no other configuration is possible. Elevation wizards are not provided with logic for opening another window.

Floor Plan Wizards



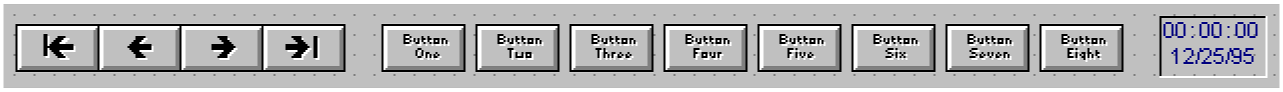
Usage

Floor Plan wizards are graphical elements that are useful for creating accurate representations of a facility layout. You can use a floor layout as an overview display of an entire plant, with animated areas for navigation to various switchgear elevation views or one-line diagrams. You can paste miniature elevation views as bitmap objects onto the floor layout, sized to fit, and then animate them as push buttons to display elevation views or one-line diagrams (see Chapter 3).

Configuration

After placing a Floor Plan wizard in an open window, it may be moved or resized, but no other configuration is possible. Floor Plan wizards are not provided with logic for opening another window.

Toolbar Wizard



Usage

The Toolbar wizard is a navigational tool which allows the user to move between recently-used or frequently-used windows, and provides a clock for quick reference.

The first/last arrows jump to the first or last window in the windows list (see Configuration below); the inner forward and back arrows move to the next or previous window in the list. The window buttons to the right of the arrows provide quick access to the windows assigned to each button.

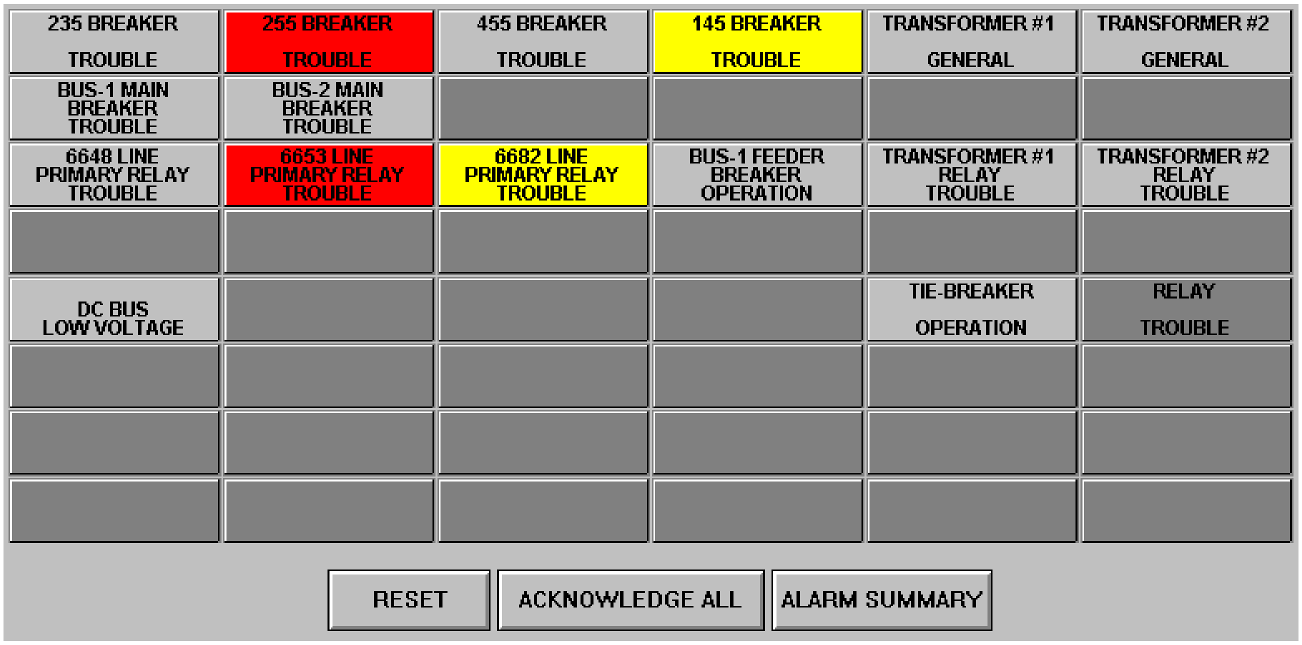
Configuration

The arrow buttons on the Toolbar wizard operate by maintaining a list of windows for access by the toolbar navigational controls. To allow a window to be added to the windows list when viewed by a user, a call to WLAddWindow( ) must be placed in the OnShow window script. This call must be placed in each window that you want to have on the window list.

The eight hot buttons are configured by double clicking on the wizard, and completing the Toolbar Wizard Edit dialog box:

For each button, you can set the top and bottom caption, and specify the window to be opened when that button is clicked.

Annunciator Panel Wizard



Usage

The Annunciator Panel wizard provides an industrial-style annunciator display panel, consisting of a bank of 48 indicator lights which change colors and blink to indicate various device conditions. For instance, a circuit breaker could be associated with an annunciator panel wizard to display grey when closed and change to red if it trips.

This wizard requires the PMCS Event Logger software to be installed and properly configured before it can be used, because it operates by monitoring special DDE tags which change state based on alarms or events recorded by the Event Logger.

The panel consists of an array of 48 buttons (six columns by eight rows), each of which may be labeled with up to three lines of text, and each of which is associated with a particular device (topic) at the PMCS DDE Server.

The annunciator panel wizard provides buttons for acknowledging alarms, resetting acknowledged alarms, and for viewing an alarm summary via the PMCS Event Logger.

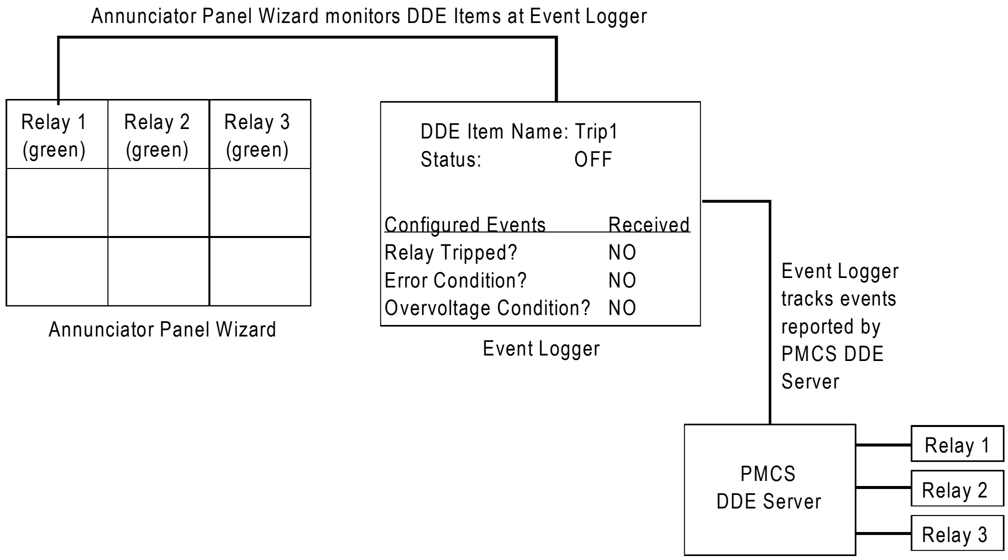
Annunciator Panel Theory of Operation

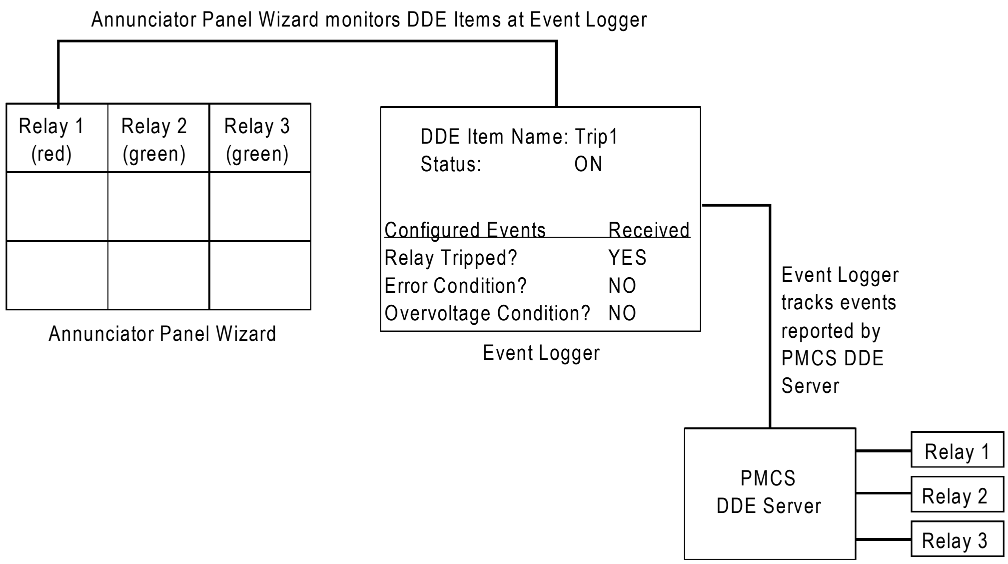
The Annunciator Panel wizard provides a screen full of indicator tiles, each relating to a particular device, event, or group of events. These tiles are displayed in different colors to indicate different alarm conditions. The Annunciator Panel wizard monitors selected DDE items in the Event Logger and responds to changes of state in these items by changing the colors of individual indicator tiles. For example, you might configure a relay trip event to have a tile in the Annunciator Panel wizard. The wizard monitors a DDE tag at the Event Logger corresponding to the trip status of the relay and displays a grey indicator if the relay is operating properly, and a red indicator if the relay has tripped.

From the Event Logger's perspective, there are two parts to configuring the Annunciator Panel. First, each DDE Item that will be displayed on the Annunciator Panel wizard must be added (using the Add Items dialog). For the example we're discussing, we'll assume you've created a DDE Item named Trip1. Each DDE item will connect to an individual tile in the Annunciator Panel wizard.

The second part consists of defining events which will turn individual DDE items ON or OFF. Each DDE item (or Annunciator Panel tile) can be turned on or off by any number of device events you define. The events are logically ORed together to determine ON or OFF conditions; i.e., if any of the events occurs, the DDE item is ON; if none of the events have occurred, the DDE item remains OFF.

We'll continue the relay example we began above. For example, you might configure the Trip1 DDE Item to be ON if any of the following events occurs: the relay is tripped, or the relay reports an error condition, or the relay senses an overvoltage condition. The Annunciator Panel wizard displays a grey indicator tile for the relay for as long as the DDE item remains in the OFF condition. If the Annunciator Panel wizard sees the DDE Item change from OFF to ON, it reacts by changing the indicator tile from grey to red. The Event Logger Annunciator Panel logic will also change the state of a DDE Item in response to actions performed at the Annunciator Panel Wizard. The user can both acknowledge and reset individual Annunciator DDE Items. The following diagram shows the relationship of the Annunciator Panel wizard, the Event Logger, and the PMCS DDE Server.





In the upper illustration, the Event Logger watches for any of the three events configured to cause a change of state to the Trip 1 DDE Item. None of these three events have occurred, so the status of the Trip 1 DDE Item is at OFF. The Annunciator Panel wizard is monitoring the configured DDE Items at the Event Logger, but all DDE Items are “OFF” so the Annunciator Panel displays green indicator tiles.

In the lower illustration, the Event Logger has recorded a “Trip” event for the unit in question, and changed the state of the Trip 1 DDE Item to “ON”. The Annunciator Panel wizard sees this change, and responds by changing the color of the annunciator panel tile for Relay 1 to red.

Each "Alarm indicator" as defined by the Event Logger will appear to InTouch as a DDE Integer item which can have the following values/states:

State	**Tag Value**	**Default Color**
Normal (no alarm)	10 - 19	Solid Gray
Alarm Active - Unacknowledged	20 - 29	Red Blinking
Alarm Active - Acknowledged	30 - 39	Solid Red
Alarm Reset - Unacknowledged (alarm occurred but later went off before being acknowledged)	40 - 49	Solid Yellow
Alarm Disabled (Event Logger has disabled this alarm indicator)	0	Dark Gray

Each panel button displays one of five different colors, based on the states defined above. A fill color animation link controlled by an indirect integer tag is used to change colors. The fill color link is set as follows:

<= 9: Dark Grey

10 -> 19: Grey

20-> 29: Grey (will also have a flashing Red animation link)

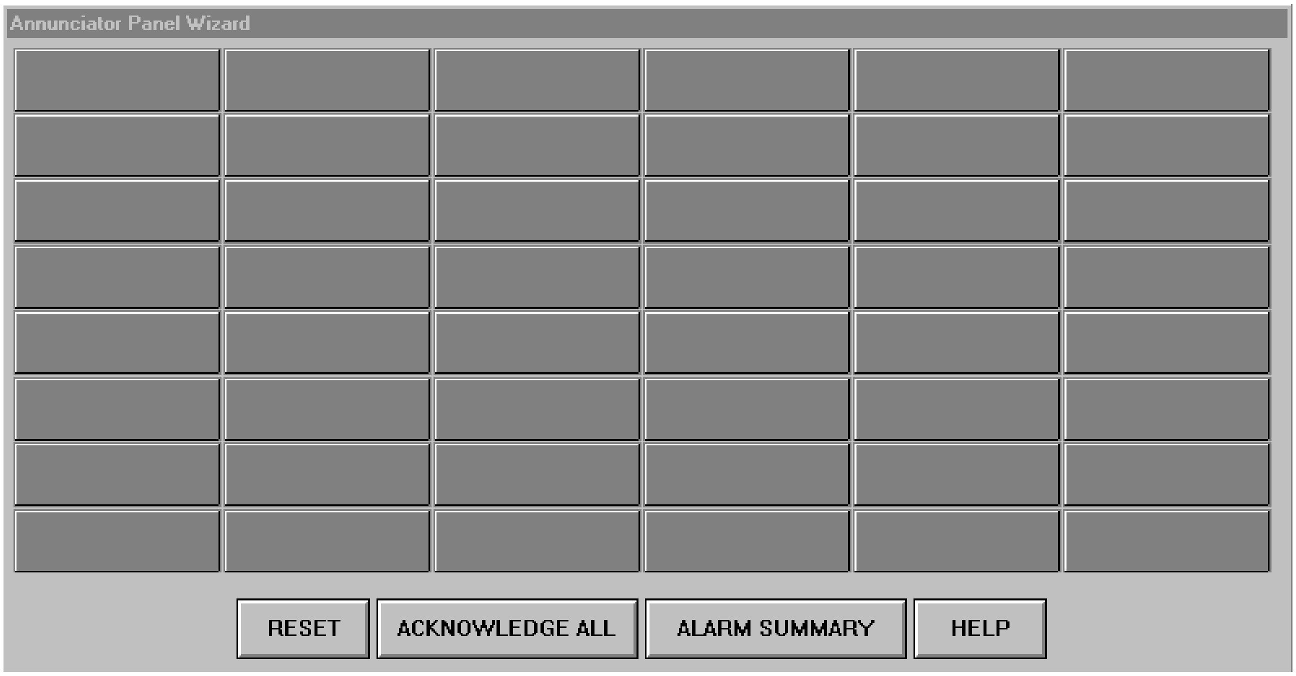
30 -> 39: Red

>= 40: Yellow

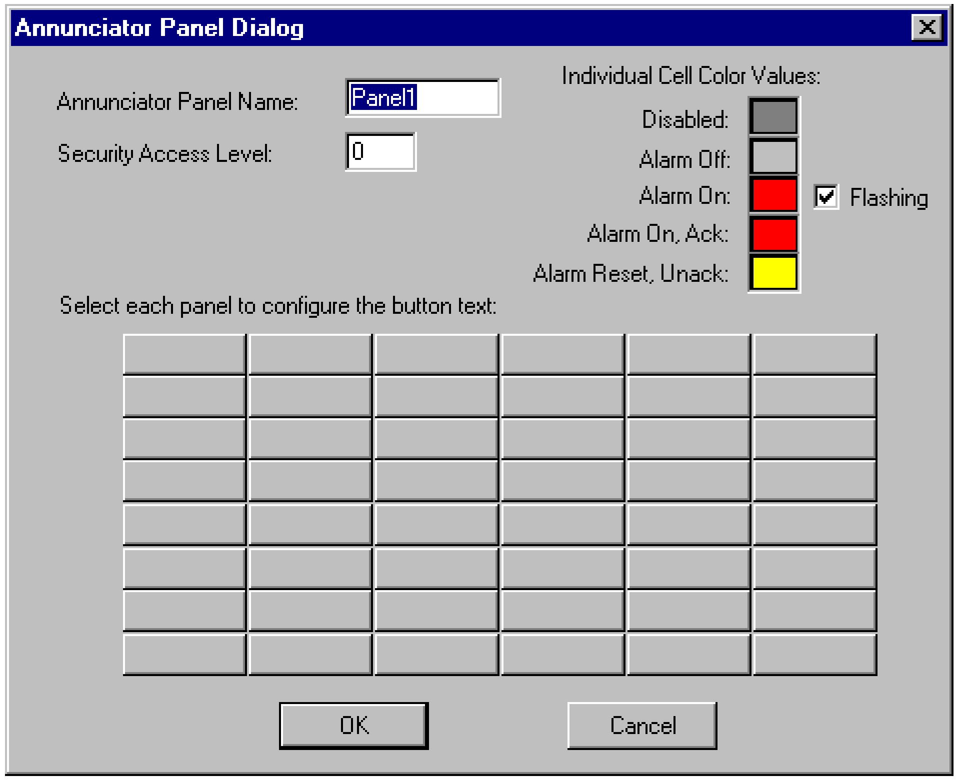
Configuration

Note: Prior to configuring an Annunciator Panel Wizard, you should have completed configuration of the Annunciator Panel Items at the PMCS Event Logger. Refer to GEH-6512, *PMCS Event Logger Users Guide*, for details.

When the Annunciator Panel wizard is dropped, it appears as a blank panel of 48 indicators:



Double-click on the wizard to display the Annunciator Panel Dialog:

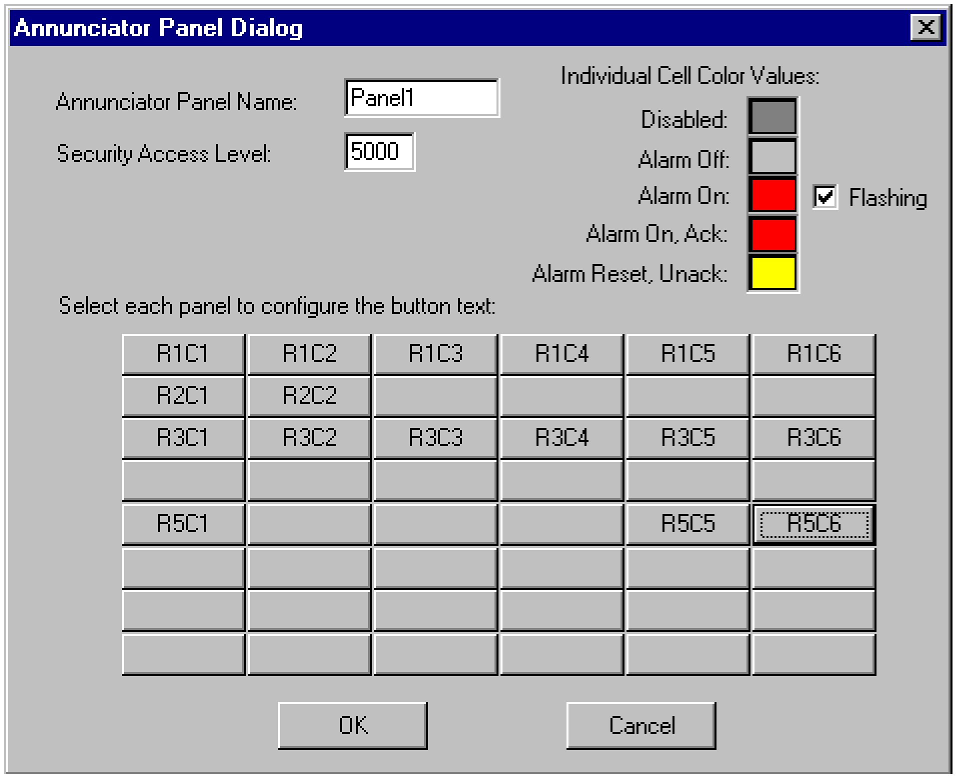


Complete the Annunciator Panel Name field (up to 8 characters), and the Security Access Level (level of security required to Reset any Acknowledged alarms. The color codes for different alarm states can be modified by clicking on each color. Note that the color codes apply to all 48 indicators on the annunciator panel wizard.

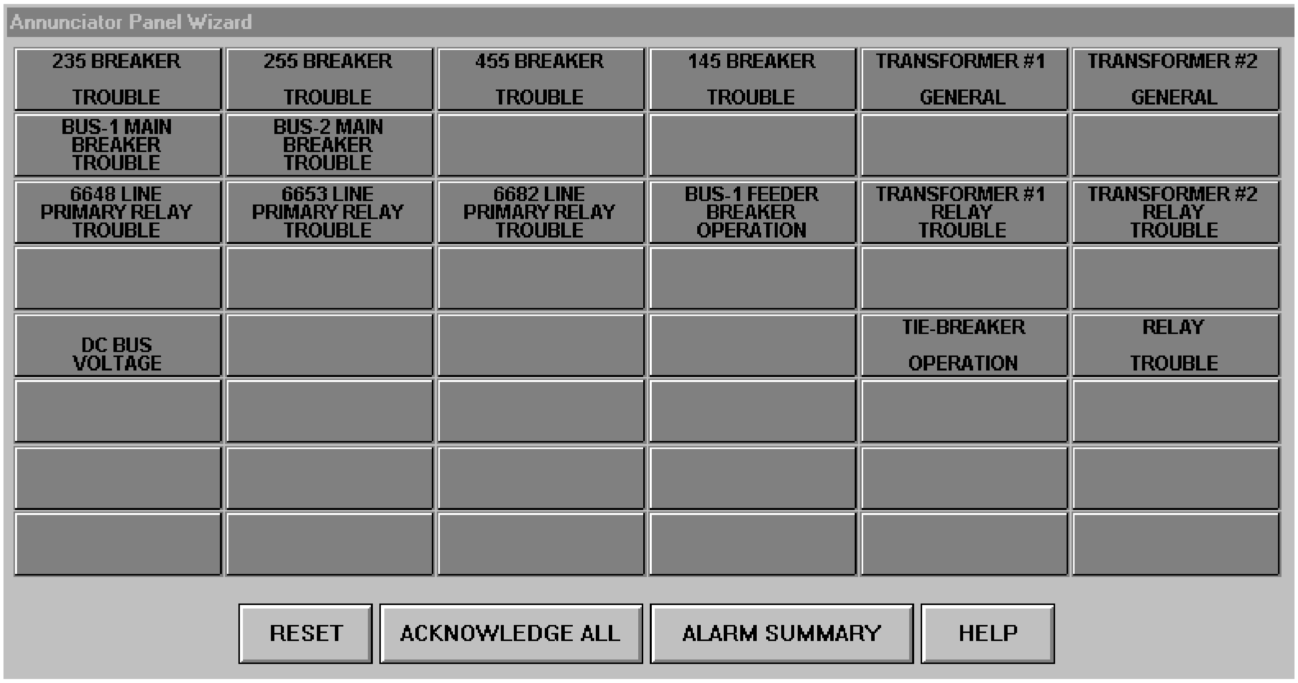
Finally, click on an indicator to display the configuration dialog for that individual button:

Enter the text to display on any of the three lines available for the selected button. It is not necessary to enter text on all three lines. Click OK when you have finished assigning text labels to the button.

As each annunciator panel button is labeled, the Annunciator Panel Dialog reflects these changes by showing the Row/Column coordinates of the labeled buttons:

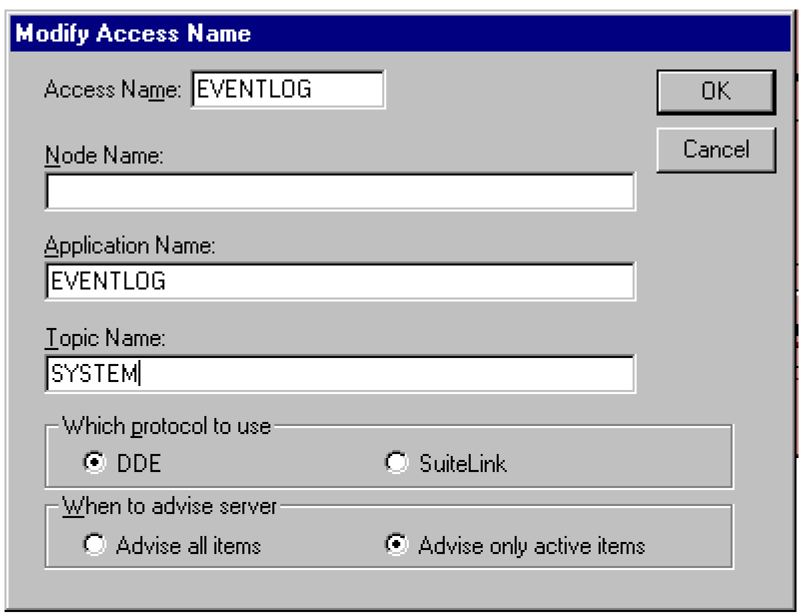


When you have finished labeling your annunciator panel buttons, click OK to close the Annunciator Panel Dialog box. When you close this dialog box, InTouch automatically creates indirect analog tags for each panel button. These tags are named xxx_R1C1 through xxx_R8C6, where xxx is the name assigned to the wizard (for example, Panel1), and R1C1 indicates the row and column position on the annunciator panel.



Two steps remain after the wizard has been configured.

First, InTouch DDE Integer tags must be created for the DDE items configured in the Event Logger corresponding to the Alarm Panels. Make sure the DDE Item names created in InTouch match the DDE Item names configured in Event Logger. (If you are unsure of how to create DDE tags in InTouch, please refer to WonderWare's documentation.) The DDE Access name for the Event Logger should be configured in InTouch as follows:



Second, an InTouch script must be written to associate the InTouch indirect tags created by the wizard with the InTouch DDE tags created for DDE Items in Event Logger. Typically, this script is placed in the InTouch "On Startup" application script.

An example of a simple script is shown below:

```
Panel1_R1C1.Name = ANN_P_1A.Name;
Panel1_R1C2.Name = ANN_P_1B.Name;
Panel1_R1C3.Name = ANN_P_2A.Name;
```

At run-time, InTouch will receive DDE data from the Event Logger which will control the colors of all indicators that have been configured properly.

Troubleshooting Tips for the Annunciator Panel Wizard

- Make sure that all DDE Items associated with the annunciator panel have been created in the Event Logger.
- You must create associated InTouch DDE Integer Tags by hand in the InTouch tagname database. The DDE Access name for the tags should use “EVENTLOG” for the Application Name and “SYSTEM” for the Topic Name. Make sure the “Request Initial Data” option is selected for this DDE Access name.
- Check the WWLogger at runtime for possible DDE errors.
- Make sure your application script is mapping the proper DDE tags with the proper indirect tags.
- Make sure the Event Logger is running before starting InTouch Windowviewer.

Custom Table Wizard

Line1_760_X3: Cell 3 Corner device, near Fred's desk

Phase A Current	####.###	Amps
Phase B Current	####.###	Amps
Power Factor	####.###	Ld/Lag
Phase N Current	####.#	Amps
Phase G Current	####.#	Amps
Line Voltage A-N	####.#	kVolts
Line Voltage B-N	####.#	kVolts
Line Voltage C-N	####.#	kVolts
Phase Voltage A-N	####.#	kVolts
Phase Voltage B-N	####.#	kVolts
Phase Voltage C-N	####.#	kVolts

Usage

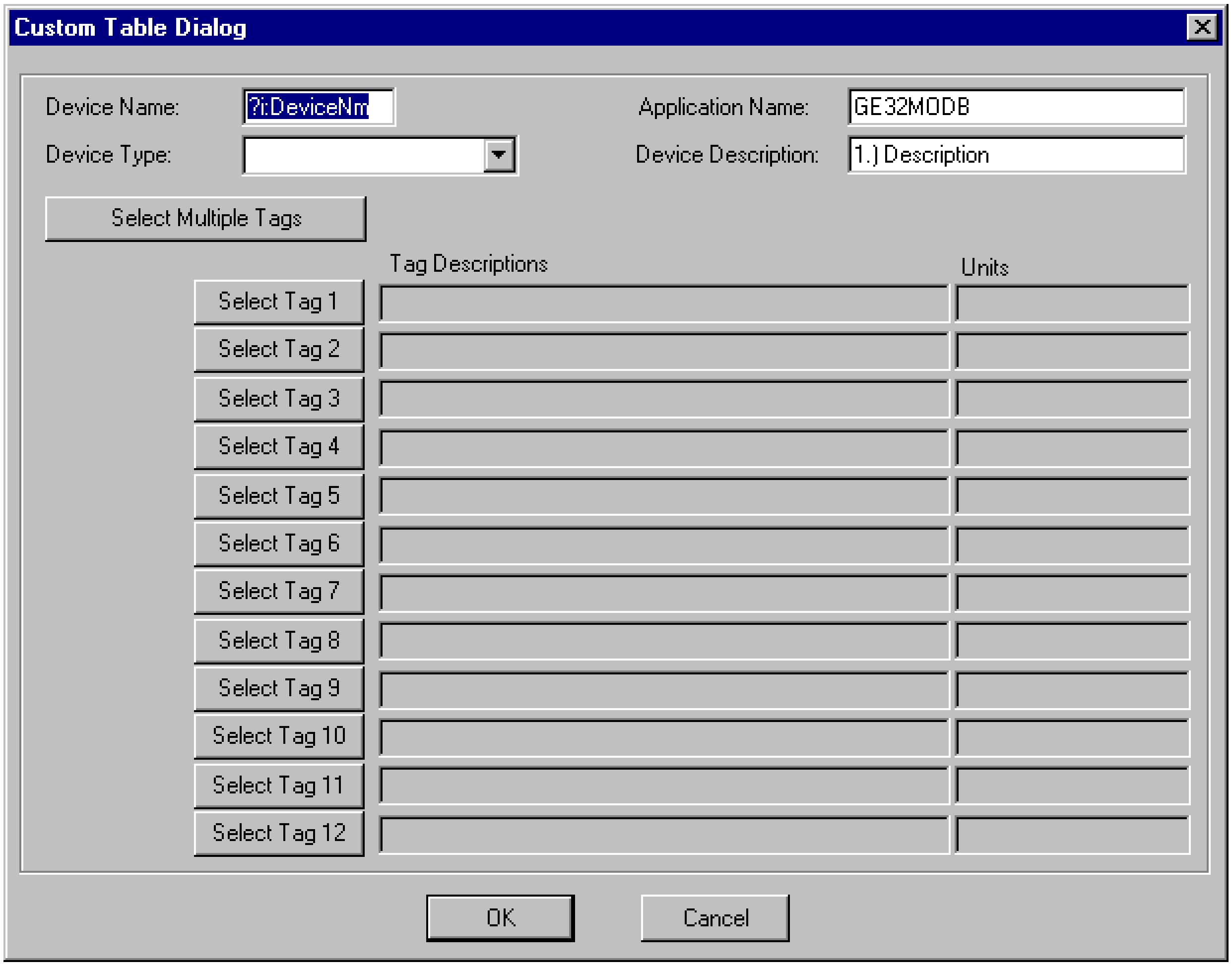
The Tabular Data Screen wizards provide the ability to view extensive device data in tabular form. However, they do not allow you to select the data to view - you must view all the data presented and locate the particular data points you are interested in.

The Custom Table wizard differs from the Tabular Data wizards by providing an easy-to-use, highly-flexible way to view a limited number of registers for a particular device. It presents only the data you are interested in, displaying it in a convenient table format as shown above. Each table consists of 1 to 12 rows of information, one register per row.

Each table takes up approximately one-quarter of an average display, so up to four Custom Table wizards may be placed on a screen.

Configuration

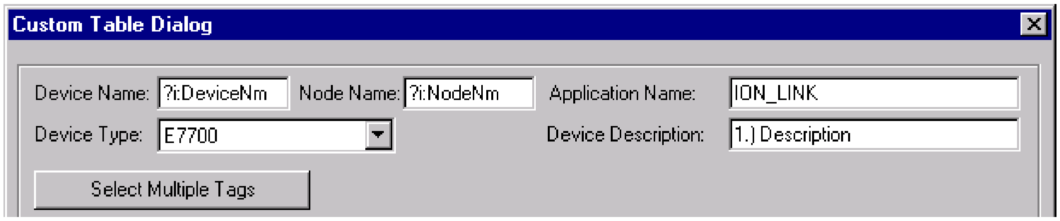
When the Custom Table wizard is dropped, it appears as a blank screen. Double-click on the wizard to display the Custom Table Dialog:



Begin configuring the Custom Table by completing the following fields:

Field	**Description**
Device Name	Enter the name of the device (topic). Must exactly match the topic name at the DDE Server.
DDE Server Name	Enter the name of the PMCS DDE Server.
Device Description	Optionally, enter a brief description of this device, up to 32 characters maximum.
Device Type	Select the device type corresponding to this topic.

EPM 7700 Users Only: When the EPM 7700 device type is selected, an additional field appears in the Custom Table Dialog box, adjacent to the Device Name (shown below).



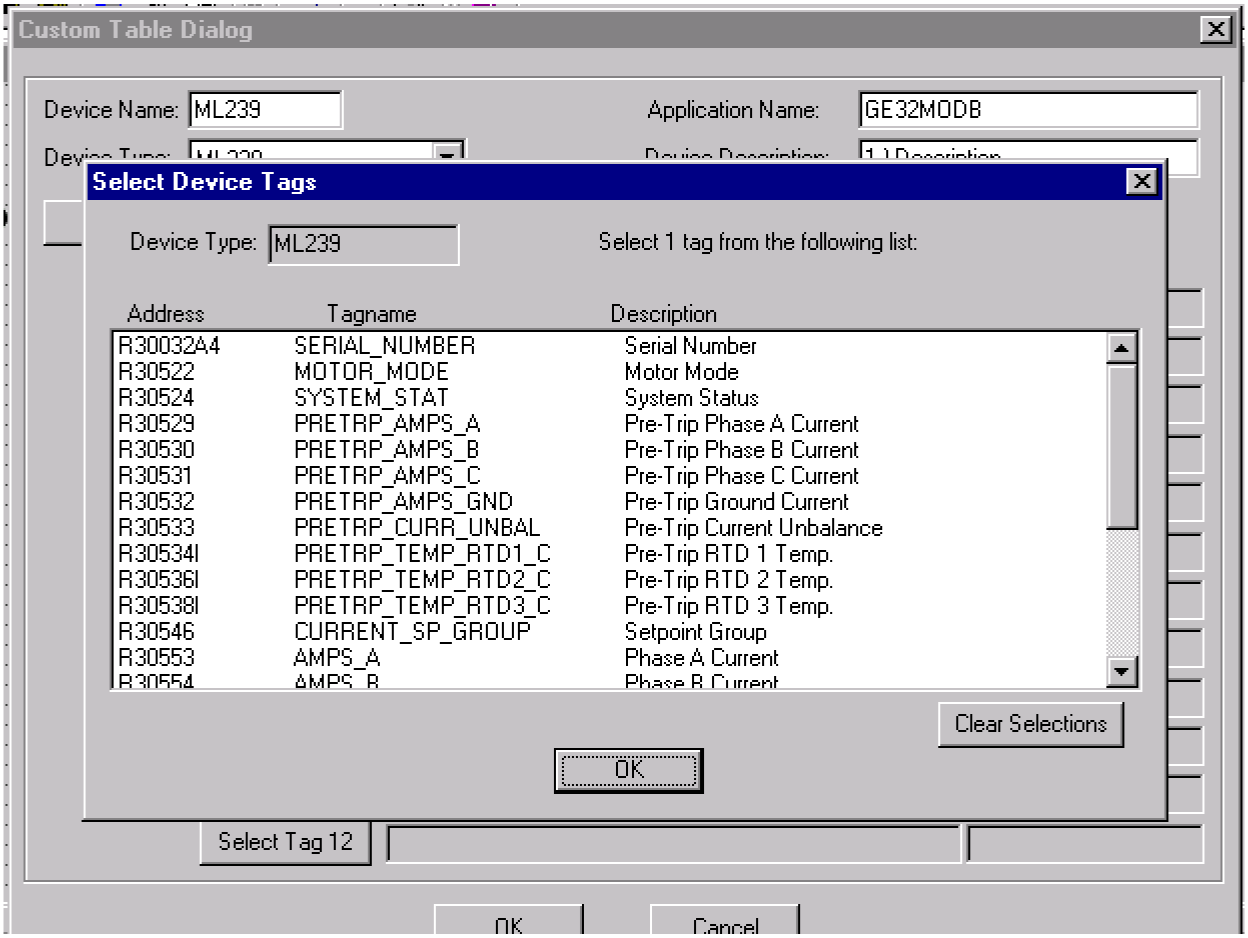
The Node Name field requires that you enter the name of the computer on which the meter's Communications Server is located, either the Primary Node or a Full Station Secondary Node. This field is required because the EPM 7700 does not use the same DDE Server as the rest of the standard PMCS devices, and the wizard must be directed to the location of the correct Communications Server for proper configuration of DDE topic names. For more information on configuring EPM7700 networks, refer to DEH-40035, the *GE 7700 Gateway Users Guide*, and GEH-6514, *PMCS Read This Book First*.

Also, the Application name field must be completed as ION_LINK rather than GE32MODB or GE32MTCP for the EPM7700 device. The ION LINK program is installed during initial PMCS setup if the EPM7700 software option is selected.

When configuring Custom Tabular wizards on Secondary nodes, the Application Name field entry does not follow the PMCS wizard convention of "\\RemoteComputer\ION_LINK". EPM7700 Secondary nodes run a local copy of the ION LINK server; thus the application name is always "ION_LINK" whether the wizard is installed on the Primary node or a Secondary node.

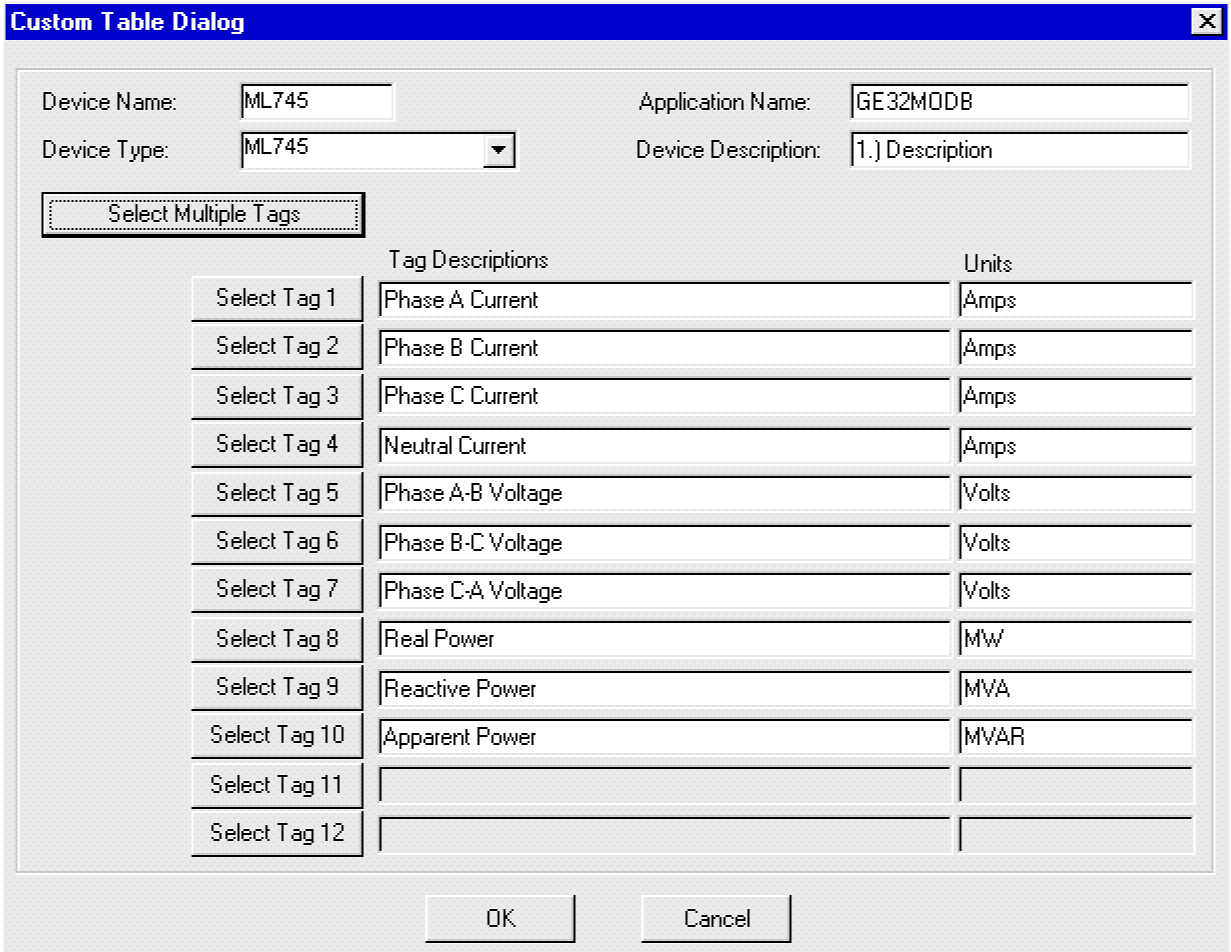
Finally, the EPM 7700 device type requires special InTouch scripting for the custom tabular wizard. Refer to the section at the end of this chapter titled *Special Scripting Considerations for the EPM 7700.*

When these fields are completed, click the Select Multiple Tags button to select several tags at once, or click the Select Tag X button to assign tags one at a time. The Select Device Tags dialog appears:



The Select Device Tags dialog shows a list of all the pre-configured tags which the Custom Table wizard supports for the selected device type, sorted by address, and displaying the tagname and description. Most tags are metering value registers.

Select up to twelve tags from the list by clicking (high-lighting) each one. To de-select a tag, simply click it a second time. When you have selected up to 12 tags, click OK to return to the Custom Table dialog box. The selected tags will now be displayed as shown in the following example:



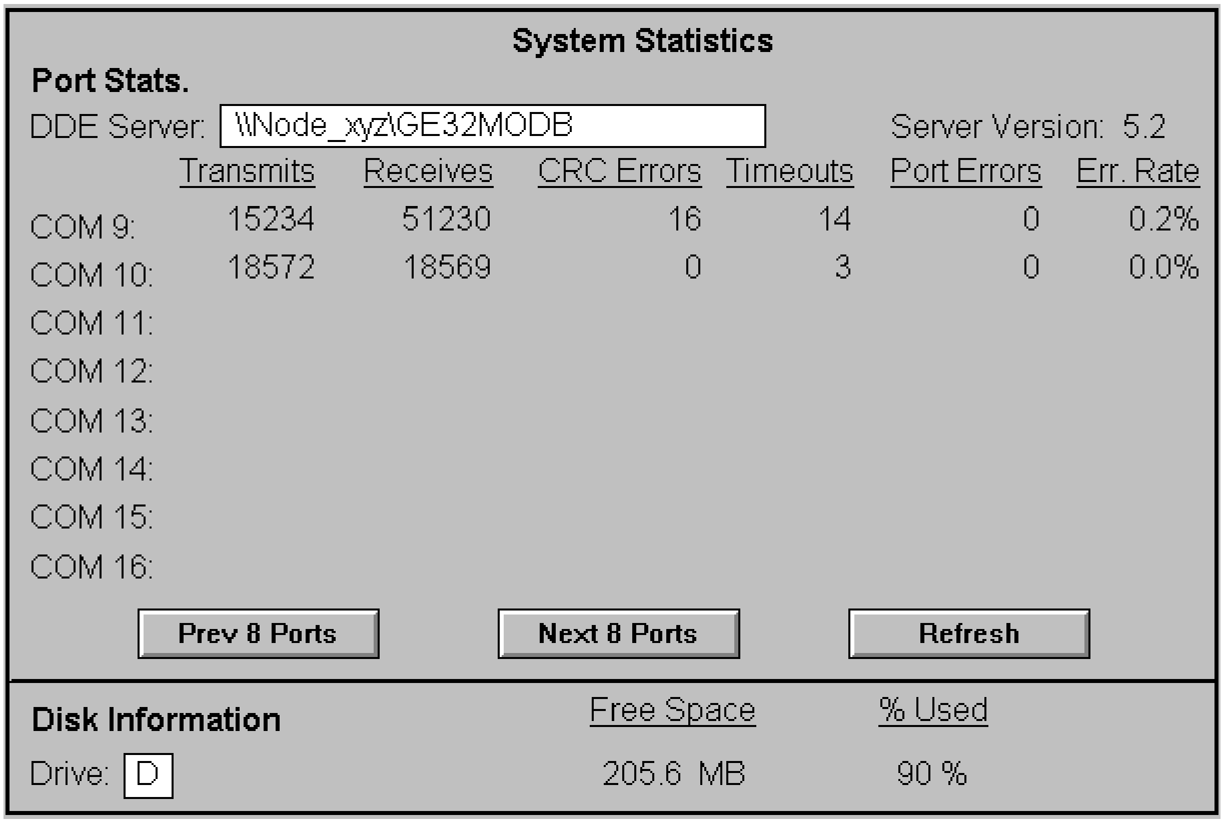
You may select OK to select this table configuration, or you may edit the tags one at a time using the Select Tag X buttons (for instance, if you wish to change the order the tags appear in).

The tag descriptions and units may also be edited (useful for non-English applications), but caution is urged when modifying descriptions or units; it may be difficult to remember what they were originally if needed.

Note for users of the MDP device type: This device uses a memory tag to scale many of the data values displayed in the wizard.: "DeviceName_CTRatio" (where DeviceName is the name entered for the device within the wizard). The wizard creates this tag within InTouch (memory tag with a format type of "Real"). The InTouch application must provide a value for this tag (usually entered by the user at run-time). If no value is entered at runtime, a value of zero will be used as the default value for this tag, and many of the metering data registers (AMPS A, B, C, etc) on this device type will appear as zero as well. See the MDP Tabular Data wizard for additional information. If the application has a Tabular Data Screen Wizard with the same device name as this wizard, then the end user can set the CTRatio tag value via the MDP Tabular Data Screen wizard.

Note for users of the EPM7300 device type: The custom table wizard will display **N/A** for certain metering values when the PM Volts Mode parameter is set to **Demo** in the device. Please use the EPM 7300 Tabular Data Wizard to view these values when the device is in Demo mode.

System Statistics Wizard



Usage

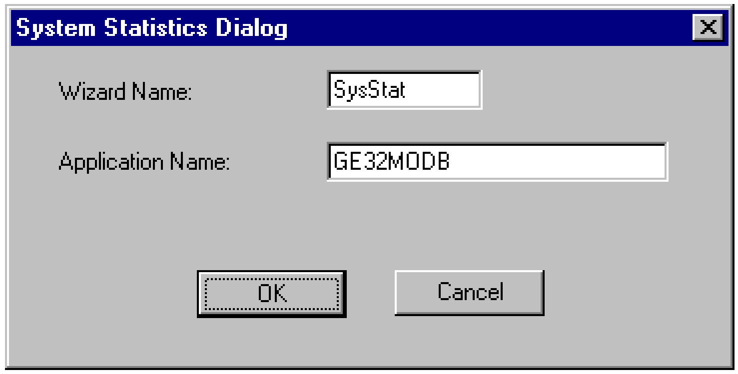
The System Statistics wizard is an informational tool which allows the user to view detailed statistics about the system, including port information from the DDE Server and disk information.

The wizard consists of a single screen displaying Port Statistics on the top portion and disk information on the bottom. Statistics on up to eight COM ports are displayed. The user may page forward or backward eight ports at a time by clicking the Prev 8 Ports or Next 8 Ports button.

Whenever a new DDE Server name is entered, the user must click the Refresh button to update the DDE links to correspond to the new parameters.

Configuration

When the wizard is dropped, the following dialog box appears:

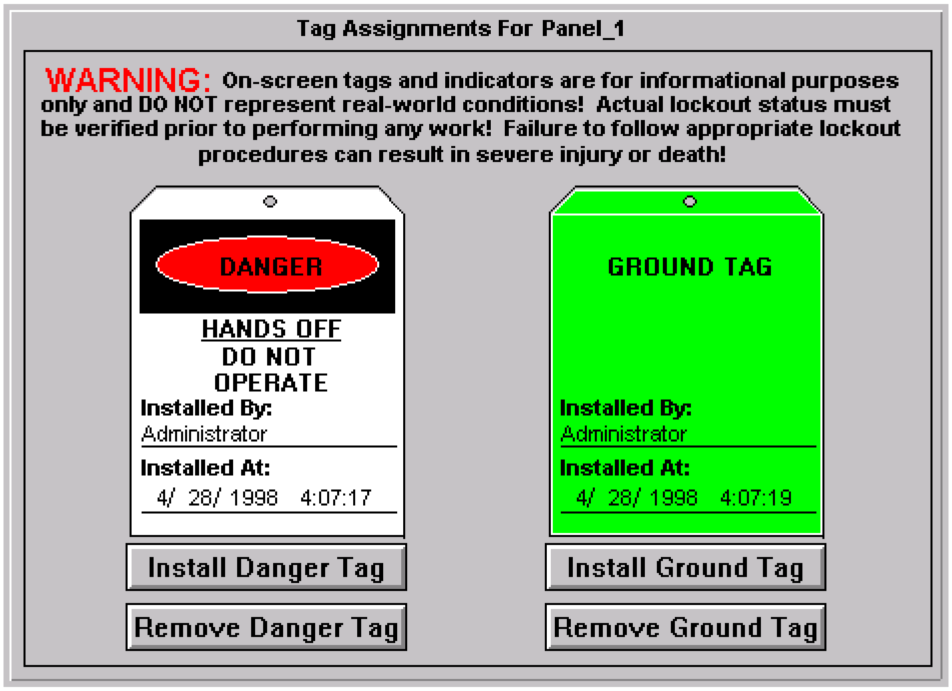


The System Statistics wizard requires a name itself, and also the name of a DDE Server to access.

By default, the System Statistics wizard assumes that the DDE Server is located locally and is named GE32MODB. You may change this to access a DDE Server located on a networked PC by entering the name as \\NODENAME\SERVER, where NODENAME is the name of the host PC and SERVER is the name of the PMCS DDE Server, which will be GE32MODB.

During runtime, the default drive letter is C, corresponding to the local hard drive. You may change this value to any valid drive letter corresponding to either a fixed local drive or a mapped network drive.

Lockout/Tagout Wizard



Usage

The Lockout/Tagout provides a method for assigning danger or ground tag graphics to various one-line diagrams or wizards.

⚠ WARNING! ⚠

On-screen tags and indicators are for informational purposes only and DO NOT represent real-world conditions! Actual lockout status must be verified prior to performing any work. Failure to follow appropriate lockout procedures can result in SEVERE INJURY or DEATH!

⚠ WARNING! ⚠

The Wizard consists of a single screen (shown above) displaying the presence or absence of danger and ground tags for a particular device. The user installs or removes Danger and/or Ground Tags using the Install/Remove buttons on the Tag Assignment window shown above. Any wizards belonging to the same Status Group will display Danger and/or Ground Tag indicators mirroring the tags installed in the Tag Assignment window.

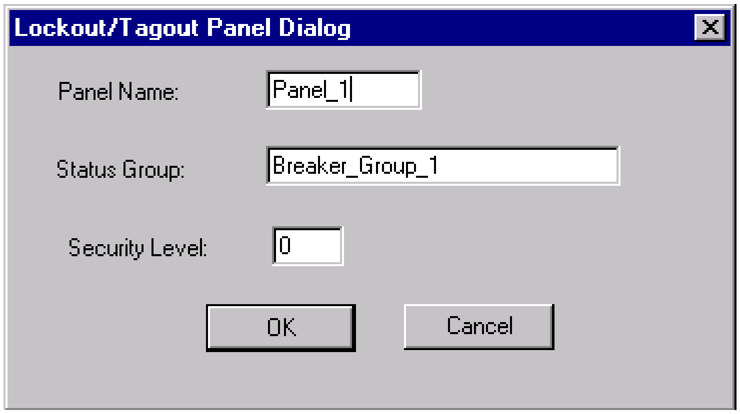
Supported Devices

Several PMCS breaker management devices support the Lockout/Tagout Wizard in their Large Faceplate and Tabular Data Screen wizards. These devices are:

- 750 / 760 Feeder Management Relay

Configuration

When Lockout/Tagout wizard is dropped and double-clicked, the following dialog box appears:

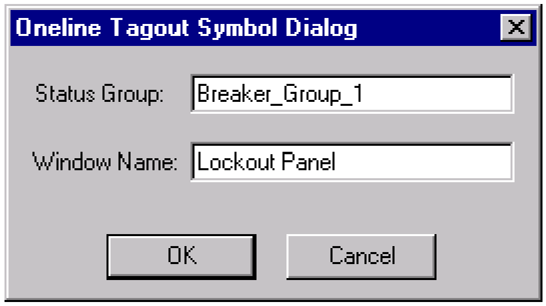


Complete the following fields to configure the Lockout/Tagout Panel Display:

- Enter a name for this panel. The Panel Name is used to distinguish the tags used internally by a particular instance of a panel from other panels within an application. Each panel within an application should have a unique Panel Name.
- Enter the name of the Status Group associated with this Lockout/Tagout Panel. The Status Group is the name that links this panel to Lockout/Tagout Online Symbols and the breaker management device wizards that can support it. It is important to remember the Status Group assignment since it must be used to configure the associated Oneline Symbols and IED wizards.
- Enter the minimum Security Level required to add and remove Danger or Ground tag symbols within the application.

The second part of the Lockout/Tagout wizard that can be configured is the Oneline Tagout Symbol.

The Oneline Tagout Symbol is a small wizard for placement in oneline diagrams, to be associated with a circuit breaker. It displays the presence or absence of any Danger or Ground tag symbols assigned to the breaker symbol by the PMCS user. After dropping the Oneline Tagout Symbol wizard onto a oneline diagram, associate it with a particular circuit breaker and any other devices you wish to have the tags displayed at by making it a member of a Status Group. The Oneline Tagout Symbol Dialog box is displayed when you double-click the wizard:



Complete the following fields:

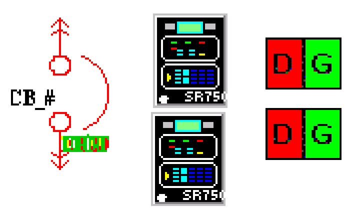
- Enter the name of the Status Group associated with this Lockout/Tagout symbol. The Status Group is the name that links this symbol to the Lockout/Tagout panel and the breaker management device wizards that can support it. It is important to remember the Status Group assignment since it must be used to configure the associated panel and IED wizards.
- Enter the name of the window to open when the Oneline Tagout Symbol wizard is clicked on during runtime. It should be the name of the window in which the Lockout/Tagout Panel is located.

Example of Lockout/Tagout Wizard

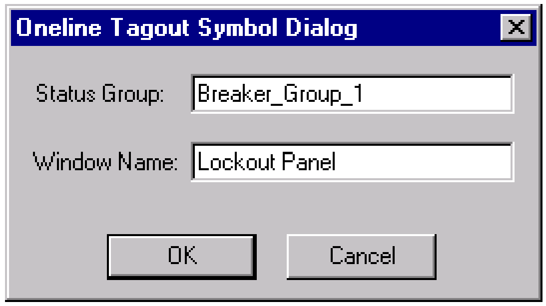
The following example may help clarify the use of the Lockout/Tagout wizard.

Suppose that we have a breaker being monitored by a redundant pair of ML 750/760 devices in our system. We wish to be able to display Lockout/Tagout symbols for this breaker.

We create a oneline diagram in InTouch which represents this configuration, placing the circuit breaker wizard, then each of the ML 750/760 small faceplate wizards, then a Lockout/Tagout wizard for each ML 750/760 device. It looks like this:

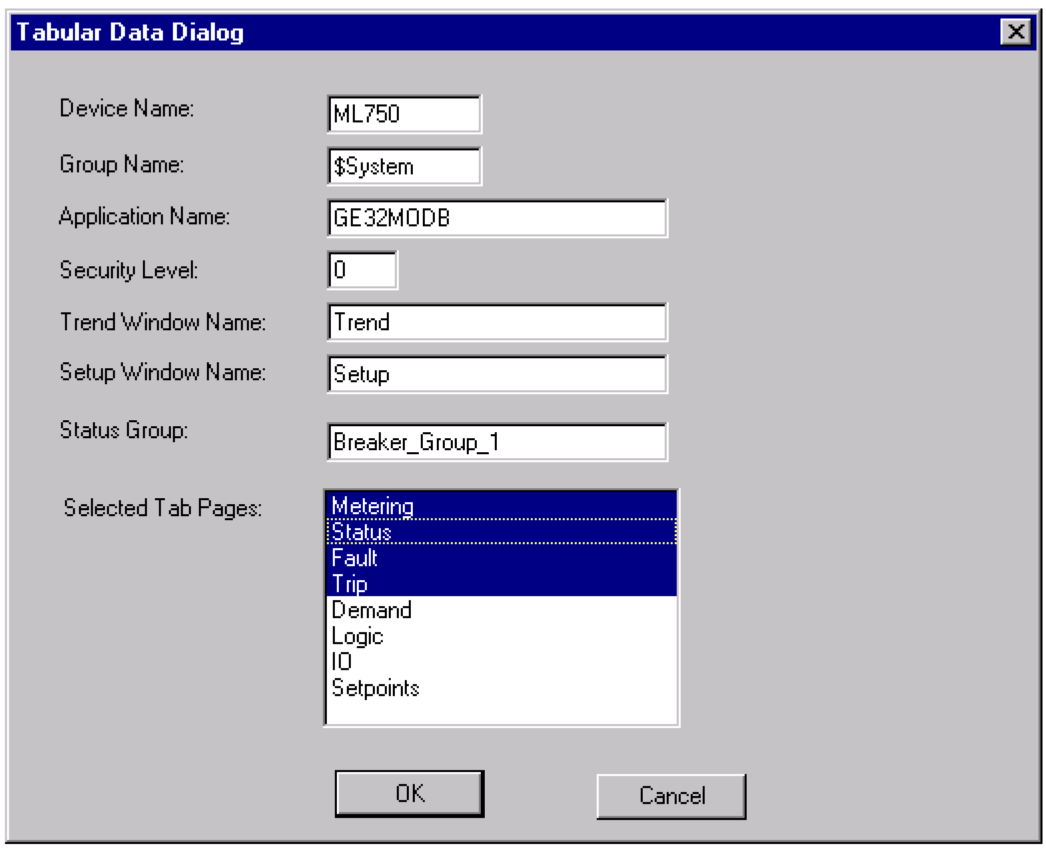


When configuring the Lockout/Tagout wizard in the oneline diagram, we complete the Oneline Tagout Symbol dialog as follows:

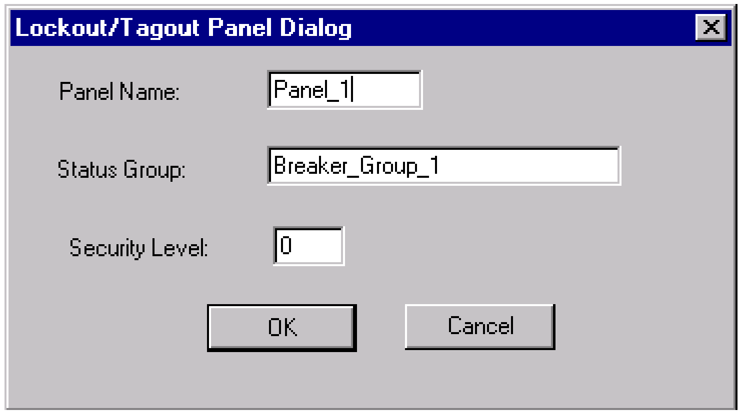


Breaker_Group_1 is the name of the Status Group we'll assign to all wizards associated with this breaker; Tag Window is the name of the window we want to appear when someone clicks on the Oneline Tagout wizard during runtime.

Next, we create separate screens containing Large Faceplate wizards and Tabular Data screen wizards for each ML 750/760 device. While configuring each wizard, we make sure that each one is given the Status Group "Breaker_Group_1". This ensures that any Danger or Ground tag symbols present will be shown on any large faceplate, tabular data screen, or oneline wizards associated with this group. An example of the Tabular Data configuration dialog box is shown below; note that the Status Group field is assigned to Breaker_Group_1, the same Status Group as our Oneline Tagout Symbol wizard. Do not confuse the Status Group parameter with the Group Name parameter. The Group Name parameter is not used for configuring Lockout/Tagout Status Groups.

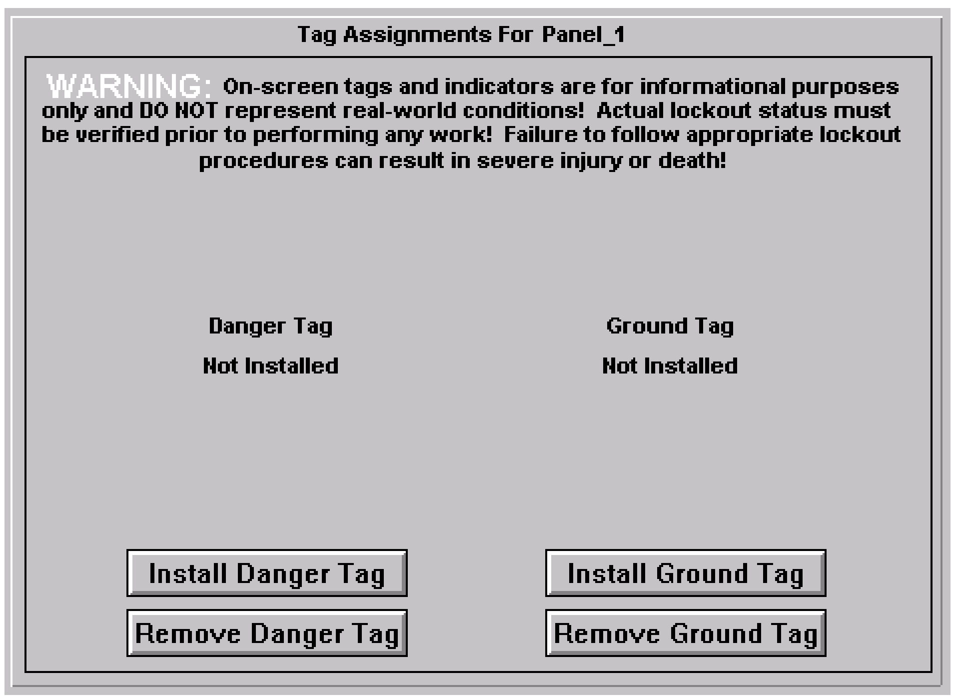


We drop and configure our Lockout/Tagout Wizard next; double clicking this wizard, the Lockout/Tagout Panel dialog appears:

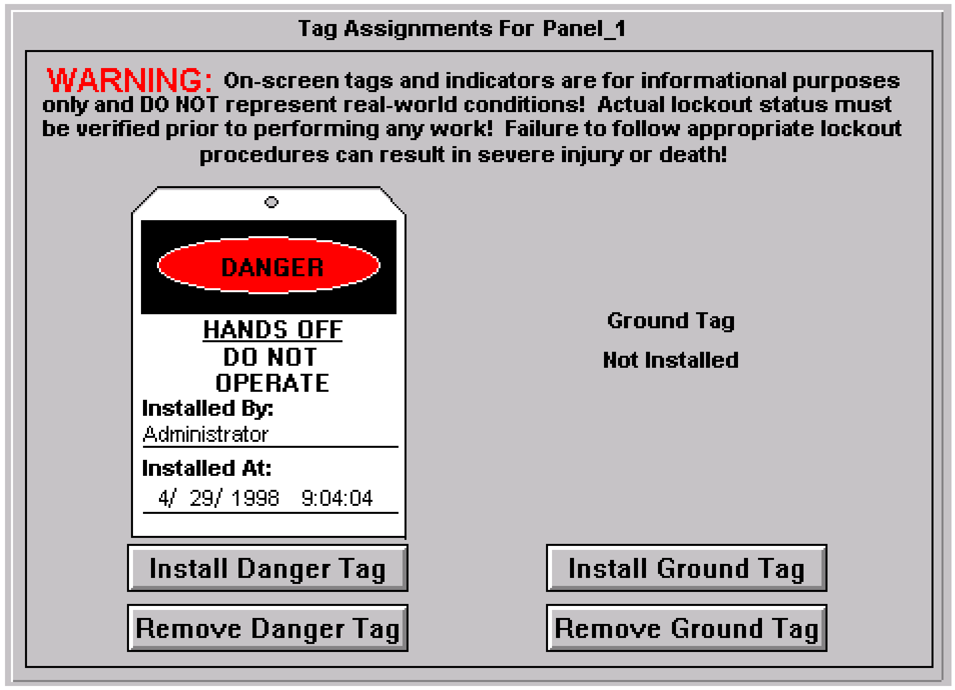


We name the Lockout/Tagout panel Panel_1. We associate the Panel with the same Status Group as our other wizards, Breaker_Group_1. Finally, we set the minimum security level required to add or remove tags.

Now in Runtime mode, when the Tag Assignments dialog is displayed, it appears as follows:

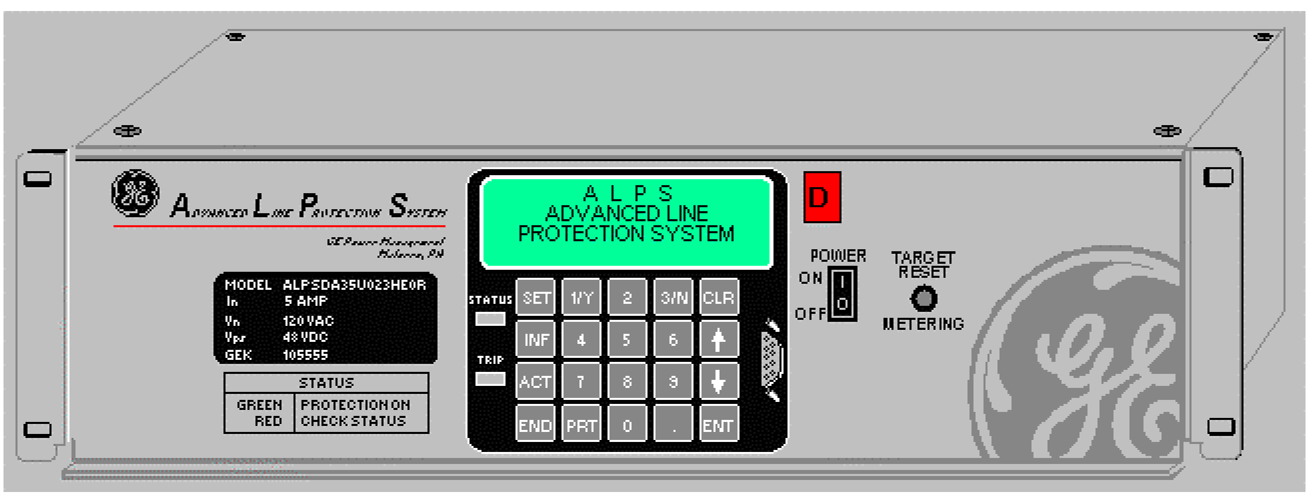


Clicking Install Danger Tag checks our security level, and if we have sufficient access, displays a Danger Tag for the breaker as follows:



The Installed By field on the tag shows the name of the current operator who installed the tag; the Installed At field shows the time and date stamp of the tag's installation.

When we view a wizard which belongs to this group, for example the Large Faceplate wizard of one of our ALPS devices, the Danger tag shows up as a red indicator with a "D" in it, as shown below:



Special Scripting Considerations for the EPM 7700

This section describes the special InTouch scripting which is required for the EPM 7700 device's Large Faceplate, Tabular Data Screen, and Custom Tabular wizards. The EPM 7700 is a powerful and highly flexible device, supporting hundreds of discrete data items. This scripting is required due to the large number of DDE items available for this device type. For performance reasons, not all DDE items are kept active simultaneously by the EPM 7700 Tabular Data Screen wizard; at any given moment, DDE items which are not used may be disconnected to save the Server the additional overhead of monitoring unused items. The scripts described in this section automatically configure the DDE links used by the Tabular Data Screen wizard when it is displayed, and enable the Large Faceplate wizard to re-connect to items which may have been disabled by the Tabular Data Screen wizard.

NOTE: Failure to install these scripts for the Large Faceplate and Tabular Data Screen wizards may result in faulty behavior of the wizard!

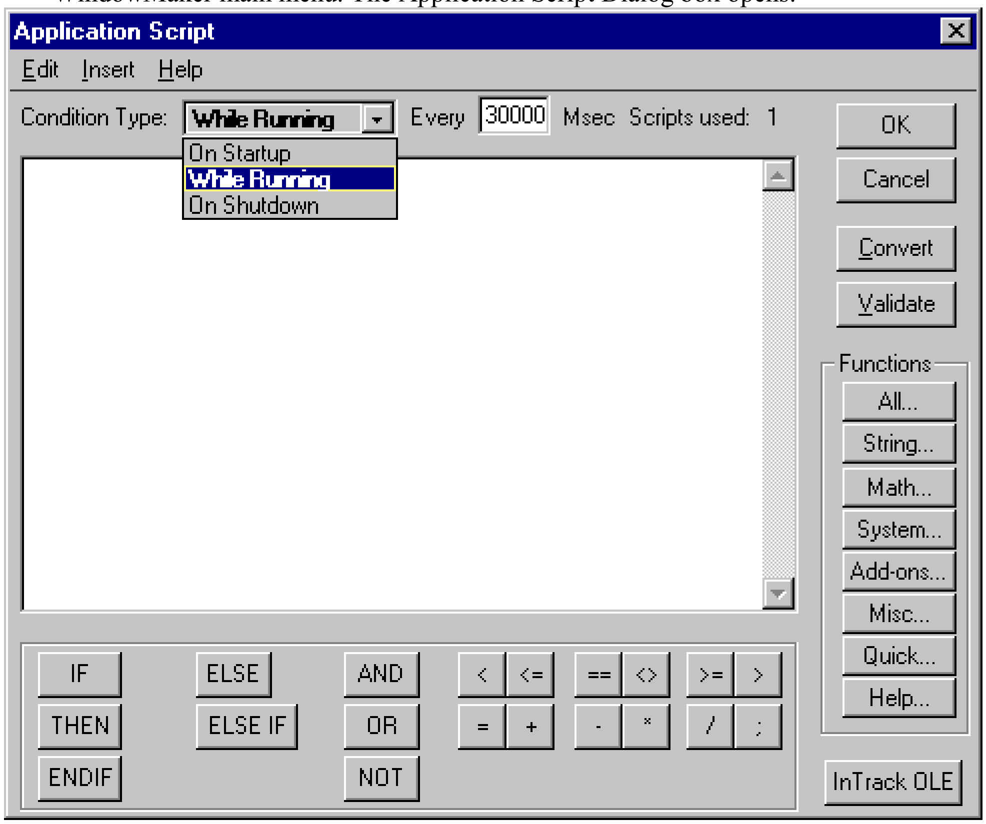
Templates for the required scripts are automatically installed in the InTouch directory when PMCS is installed with the EPM 7700 Software Components option selected. You may use the Notepad accessory program to open the files, then copy the text from the file to InTouch when appropriate.

There are three scripts described in this section. The first script is an InTouch *Application Script* that is required whenever a Large Faceplate or Tabular Data Screen wizard is installed for a given device. The purpose of this script is to provide communication status indication on the wizard. If the application script is not installed, the "Communications Failed" indicator on the Large Faceplate and Tabular Data wizards will not function. The second script, the EPM 7700 Large Faceplate/Custom Table Script, is an InTouch *Window Script* that must be applied to each Large Faceplate and Custom Tabular wizard window. This script ensures that any tags which were disabled by the Tabular Data wizard are properly restored when switching to a Large Faceplate or Custom Table screen. The third script, the Tabular Data Screen Script, also an InTouch Window Script, applies only to the EPM 7700 Tabular Data Screen wizard. Its purpose is to automatically initialize the wizard for optimum performance whenever its window is displayed.

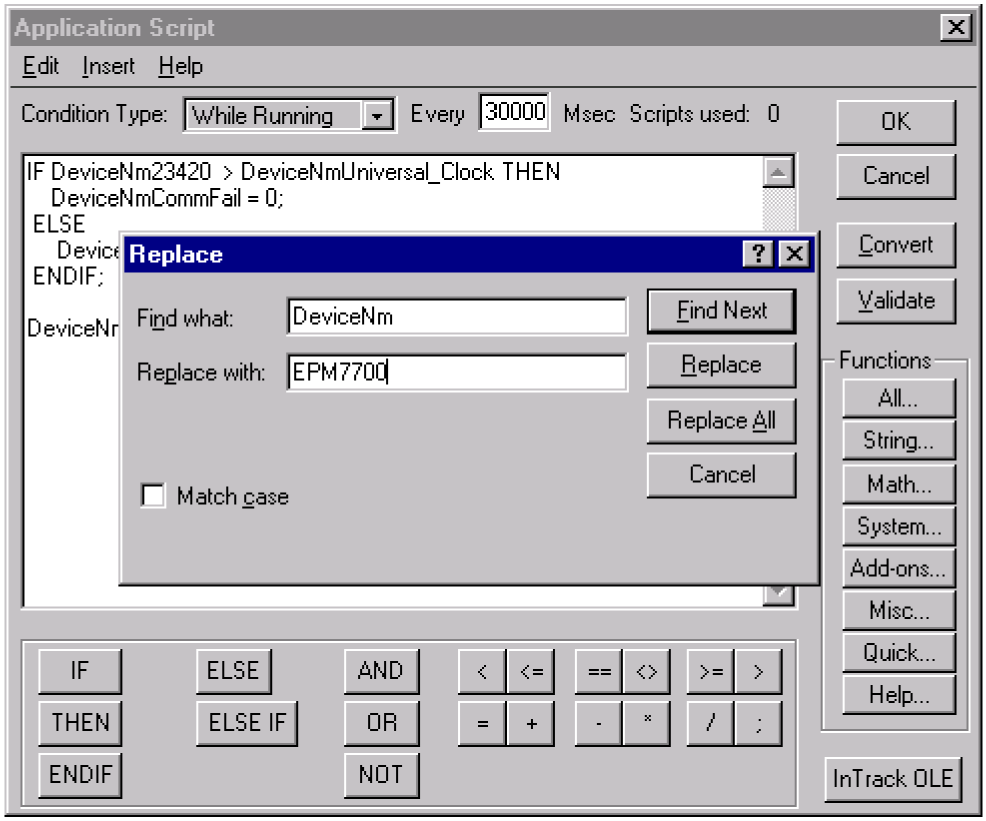
Note that the application script is *required* whenever a Large Faceplate or Tabular wizard is installed. The Windows scripts are *required* whenever your application uses Tabular Data wizards.

Installing the Application Script

1. After configuring the EPM 7700 Large Faceplate wizard or Tabular Data Screen wizard, select "Special \ Scripts \ Application Scripts…" from the WindowMaker main menu. The Application Script Dialog box opens:



2. Select "While Running" from the Condition Type drop down list, and enter "30000" in the "Every … Msec" text box next to the Condition Type drop down list.
3. Use Notepad.exe to open the file "EPM7700 Application Script.txt", located in the Intouch directory of the PC. Select (highlight) all the file text and copy it to the clipboard using the CTRL-C keyboard command.
4. Switch back to WindowMaker and paste the clipboard contents into the Application Script dialog text box, using the CTRL-V keyboard command.
5. From the dialog box menu, select Edit \ Find… to bring up the Replace dialog box as shown in the example below. In the "Find What" field, type in "DeviceNm". In the "Replace With" field type in the Device Name used to configure the Large Faceplate wizard. Click the "Replace All" button to modify the text, then click the Cancel button to close the Replace dialog.

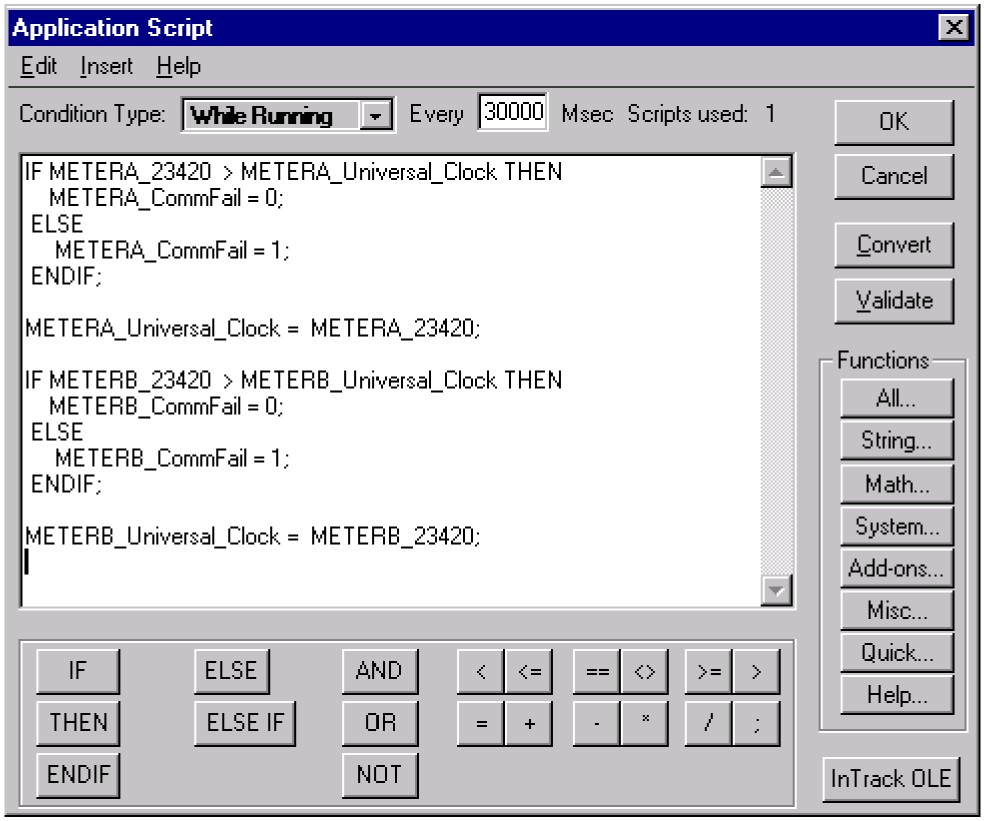


1. Click the OK button to close the Application Script Dialog.

NOTE: The application script text is only needed once for each configured device. If you are installing more than one wizard for a particular EPM7700 device (for example, a Large Faceplate and a Tabular Wizard), you only need to copy the application script once. If you are installing more than one EPM7700 device in your InTouch application, the application script window must contain a copy of the application script text for each configured device. See the example below:

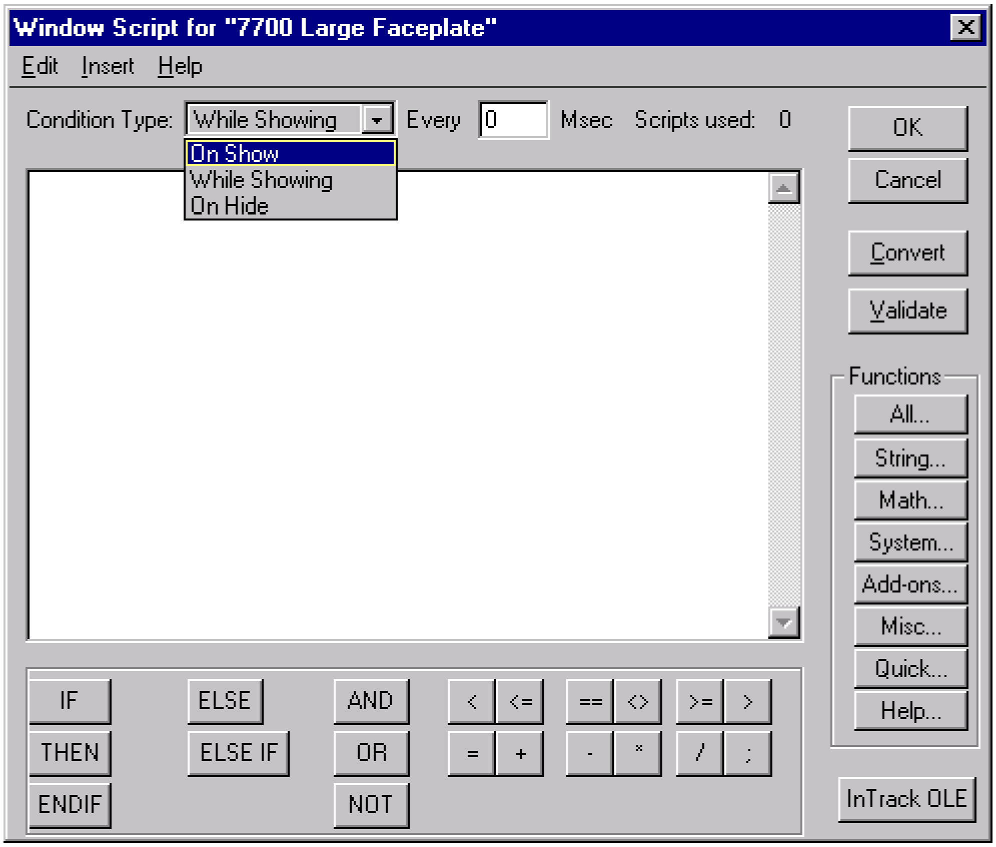
Application Script text for METERA device.

Application Script text for METERB device.

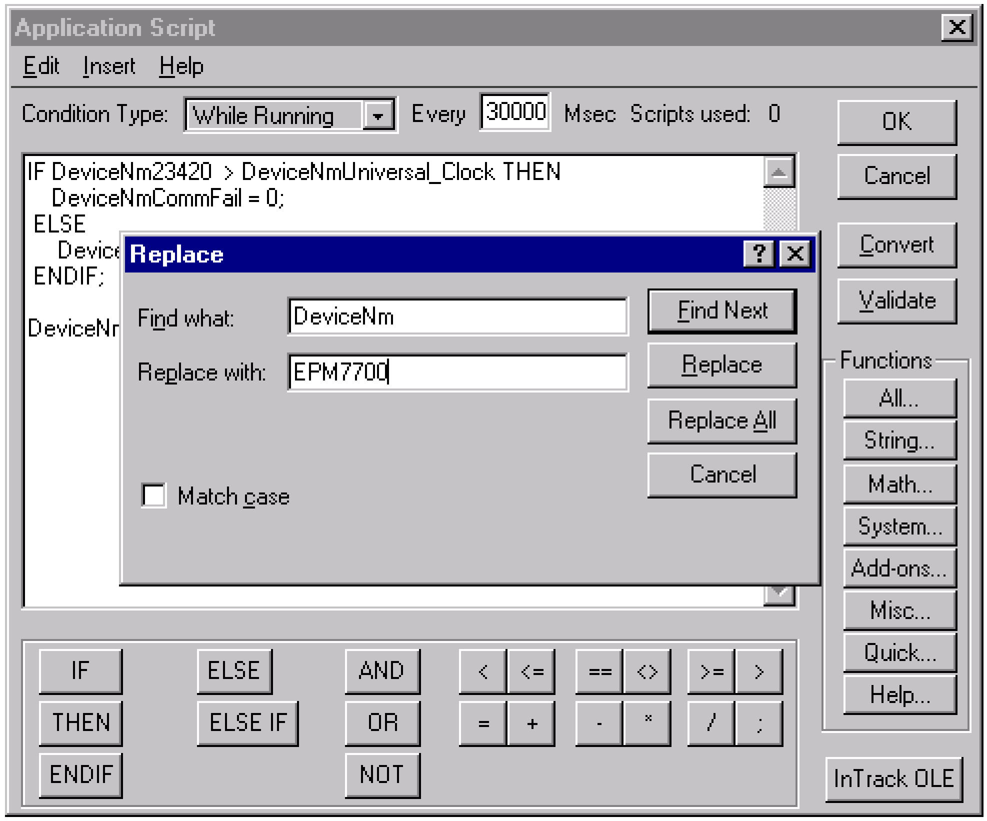


Configuring the Large Faceplate/Custom Table Script

1. After configuring the Large Faceplate or Custom Table wizard, and with its window displayed, select "Special \ Scripts \ Window Scripts… from the WindowMaker main menu. The Window Script Dialog box opens:



2. Select "On Show" from the Condition Type drop down list.
3. Use Notepad.exe to open the file "EPM7700 Non-Tabular Window Script.txt", located in the Intouch directory of the PC.
4. Select (highlight) all the file text and copy it to the clipboard using the CTRL-C keyboard command.
5. Switch to WindowMaker and paste the clipboard contents into the Window Script dialog text box, using the CTRL-V keyboard command.
6. From the dialog box menu, select Edit \ Find… to bring up the Replace dialog box as shown in the following example. In the "Find What" field, type in "DeviceNm". In the "Replace With" field, enter the Device Name used to configure the Large Faceplate wizard. Click the "Replace All" button to modify the text. Click the Cancel button to close the Replace dialog. Click the OK button to close the Window Scripts Dialog.

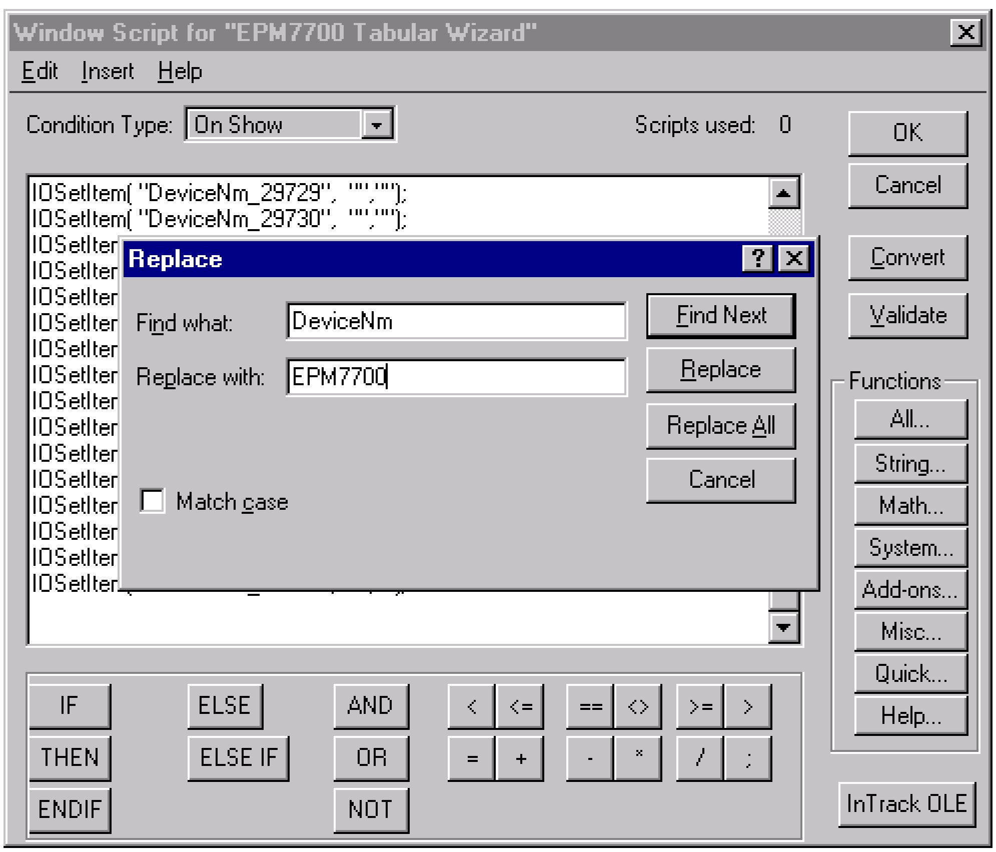

Application Script
Edit Insert Help
Condition Type: While Running
Every 30000 Msec Scripts used: 0
OK
Cancel
Convert
Validate
IF DeviceNm23420 > DeviceNmUniversal_Clock THEN
DeviceNmCommFail = 0;
ELSE
Devic
ENDIF;
DeviceNr
Replace
Find what: DeviceNm
Replace with: EPM7700
Find Next
Replace
Replace All
Cancel
Match case
Functions
All...
String...
Math...
System...
Add-ons...
Misc...
Quick...
Help...
IF
THEN
ENDIF
ELSE
ELSE IF
AND
OR
NOT
InTrack OLE

EPM 7700 Tabular Data Screen Scripting

All EPM7700 Tabular wizards require the creation of a Window Script in InTouch. The Window Script automatically configures DDE Links used by the Tabular Wizard when it is displayed. The script must first be configured, then installed, per the following procedures.

Configuring the Tabular Data Screen Script

1. After configuring the Tabular wizard, and with its window displayed, select "Special \ Scripts \ Window Scripts… from the WindowMaker main menu. The Window Script Dialog box opens.
2. Select "On Show" from the Condition Type drop down list.
3. Use the Notepad.exe accessory program to open the file "EPM7700 Tabular Window Script.txt", located in the Intouch directory of the PC. Select (highlight) all the file text and copy it to the clipboard using the CTRL-C keyboard command.
4. Switch back to WindowMaker and paste the clipboard contents into the Window Script dialog text box, using the CTRL-V keyboard command.
5. From the dialog box menu, select Edit \ Find… to bring up the Replace dialog box, as shown in the example below. In the "Find What" field, type in "DeviceNm". In the "Replace With" field type in the Device Name used to configure the Tabular wizard. Click the "Replace All" button to modify the text. Click the Cancel button to close the Replace dialog. Click the OK button to close the Window Scripts Dialog.



Creating Floor Plans, Elevation Views, and One-Line Diagrams

Introduction

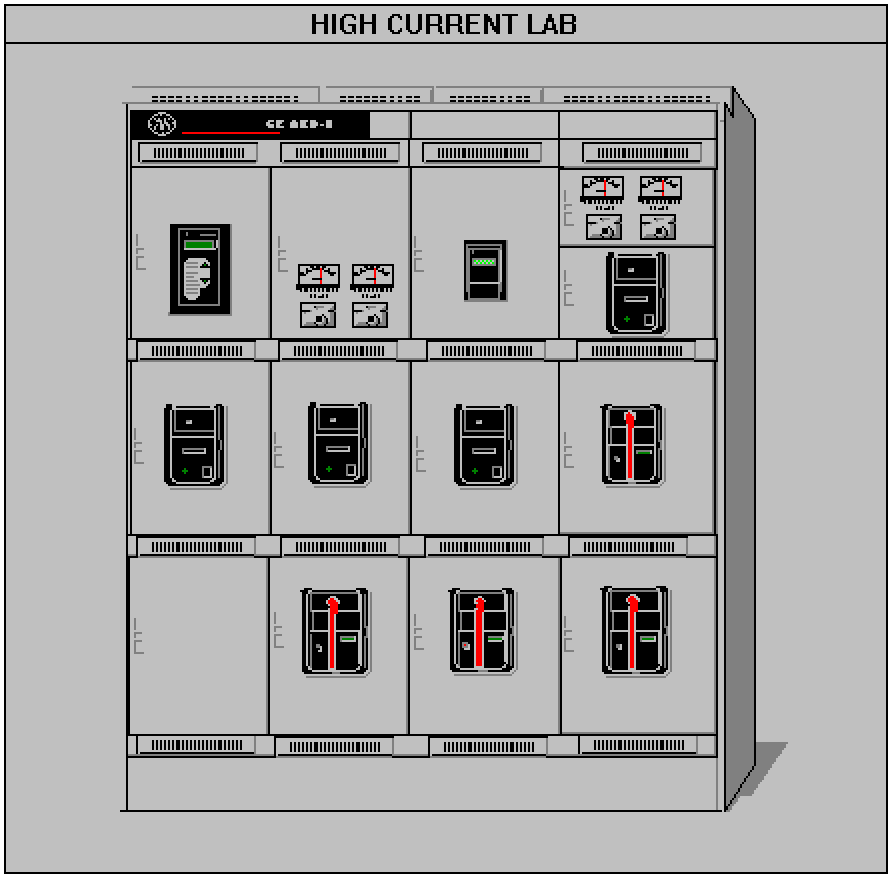
This chapter illustrates how to use the GE wizards described in Chapter 2 to create animated displays of the facility floor plan, switchgear elevations, and system one-line diagrams. These examples are typical, but are not intended to display the limits of creative system design.

Elevation Views

Elevation views of switchgear and switchboards are typically created first, because miniature bitmaps of the elevations can be conveniently placed in floor plans as navigation items.

To build an elevation view, place GE Elevation and Small Faceplate wizards into the window, as follows:

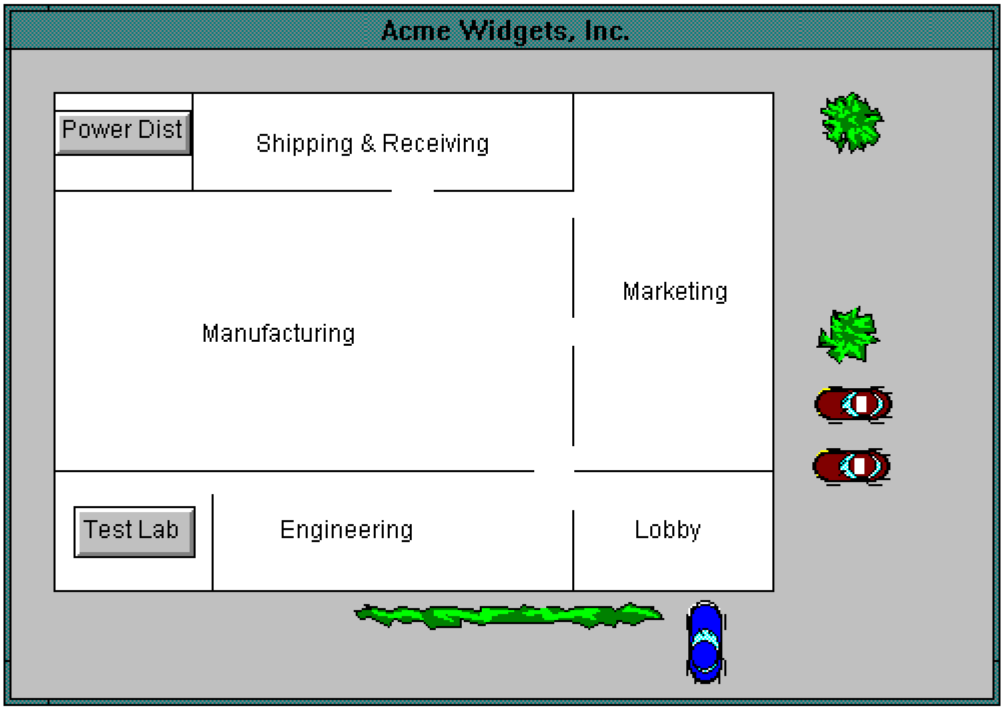
1. Place the appropriate cabinet.
2. Place panels onto the cabinet.
3. Add nameplates, louvers, handles, and fasteners to create the desired level of detail.
4. Place GE Small Faceplate wizards representing the components installed in the equipment on top of the elevation wizards, as shown in the figure on the following page.
5. Configure each of the Small Faceplate wizards to open a window containing an appropriate Large Faceplate or Tabular Data Screen for the device.



6. You can add additional navigation buttons (using standard InTouch controls) to open windows containing one-line views or other information.
7. If the switchgear shown in the elevation view is fed from or feeds another lineup, you can add buttons to navigate to elevation views representing those lineups.

Floor Plans

A floor plan should be a recognizable overhead representation of a facility. These windows are built using the GE Floor Plan wizards, described in Chapter 2. They can be made as detailed or as simple as desired. The example below shows an overview of a facility, showing all of the areas containing equipment.



You can link each of these areas in the main window to a more detailed window by adding a labeled navigation button (using standard InTouch controls) that is configured to show that window. In this way, you can provide paths to move up and down through a complete floor plan hierarchy.

Floor plans may be as detailed as you desire and may include miniature bitmaps of equipment elevations. The procedure for creating a miniature bitmap in a floor plan view is as follows:

1. In the floor plan window, use the toolbox to create a bitmap object with the desired size of the miniature switchgear.
2. Switch to the desired elevation window.
3. Select and copy the elevation view.
4. Switch back to the floor plan window.
5. In the floor plan window, use the Paste Bitmap command to insert the elevation view into the bitmap object.
6. Double-click on the miniature elevation bitmap to configure a link to the full-sized elevation view window.
7. You can add additional buttons, using standard InTouch controls, to navigate to windows containing one-line views of the switchgear or other information.

Electrical One-Line Diagrams

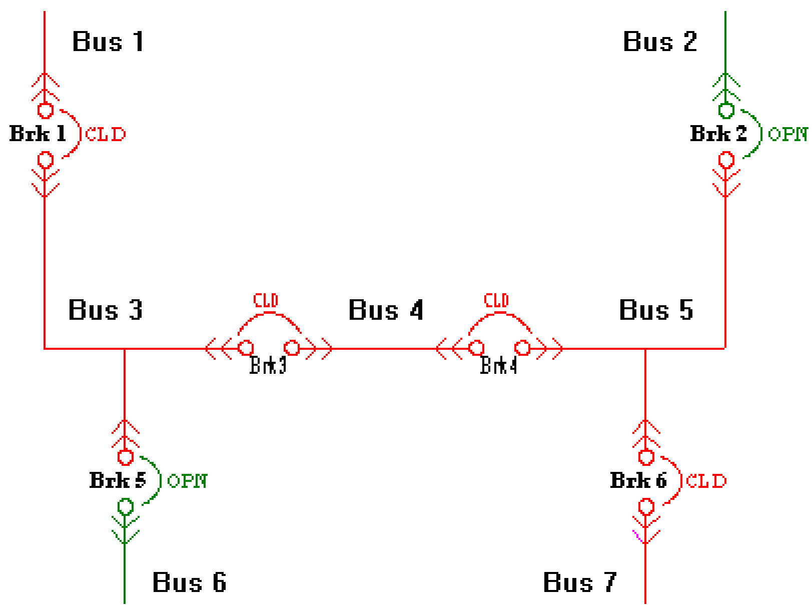
One-line diagrams are built by placing and linking circuit elements using the One-Line wizards, then creating scripts to provide animation for those wizards whose status can be determined or controlled, such as breakers and switches.

A one-line diagram is drawn by placing GE One-Line wizards into a window. All animated One-Line wizards have at least one discrete tag to indicate the status of the bus feed to the device, while others may have tags for in and out connections and for device status. If you do not require animation, link the wizard's discrete tags to a constant tag with a value of true.

After the device wizards have been placed and configured, they may be connected by standard InTouch line graphics. Double-click on lines to configure them for animation. You can link a line to a discrete variable, with the colors set to indicate on (typically green) and off (typically red). If several lines are used to indicate one section of bus, animate them together with the **Make Symbol** toolbox selection.

When a one-line diagram is too large to comfortably fit into a single window, place navigation buttons with links to other windows near each bus line that continues to another screen. This allows intuitive navigation up and down a distribution system hierarchy.

To accurately animate your one-line diagram once all the graphics are in place, *condition scripts* must be written with the logic for the distribution system. See the InTouch documentation for details of the scripting language. The following example shows a simple double-ended substation with a tie breaker and the scripting that animates it.



An example of the scripting for this one-line diagram is shown below:

```
{ Set values of local discrete variables based
on state of integer status of breaker. This
section sets the breaker status memory
discretes to true if the breaker's analog
status value is 3 (closed).}
brk1_s = (brk1 == 3 OR brk1 ==9);
brk2_s = (brk2 == 3 OR brk1 ==9);
brk3_s = (brk3 == 3 OR brk1 ==9);
brk4_s = (brk4 == 3 OR brk1 ==9);
brk5_s = (brk5 == 3 OR brk1 ==9);
brk6_s = (brk6 == 3 OR brk1 ==9);
```

Sets the breaker status memory discretes to true if the breaker's analog status value is 3 (closed).

```
{ set the bus status for the incoming feeds to
the dependent bus above in the
 distribution hierarchy. This section sets the
dependencies of the bus pieces to other
sections of the one-line diagram and resets
pieces of the bus located entirely on this
screen to false.}
bus1 = feed1;
bus2 = feed2;

{ set the bus status for the incoming feeds to
the dependent bus above in the
 distribution hierarchy. This section sets the
dependencies of the bus pieces to other
sections of the one-line diagram and resets
pieces of the bus located entirely on this
screen to false.}
bus1 = feed1;
bus2 = feed2;

{ reset internal bus pieces to off for
computations }
bus3 = 0;
bus4 = 0;
bus5 = 0;
```

Sets the dependencies of the bus pieces to other sections of the one-line diagram and resets the pieces of the bus located entirely on this screen to false.

```
{ set the bus status for the incoming feeds to
the dependent bus above in the
 distribution hierarchy. This section sets the
dependencies of the bus pieces to other
sections of the one-line diagram and resets
pieces of the bus located entirely on this
screen to false.}
bus1 = feed1;
bus2 = feed2;

{ reset internal bus pieces to off for
computations }
bus3 = 0;
bus4 = 0;
bus5 = 0;
```

IF…THEN statements traverse the hierarchy from top to bottom, left to right, and then bottom to top, right to left.

```
{ set the bus status for the incoming feeds to
the dependent bus below in the
  distribution hierarchy. The IF_THEN
statements in this section traverse the
hierarchy from top to bottom, left to right,
and then bottom to top, right to left.}
bus6 = 0;
bus7 = 0;

{ two main feeds }
IF (bus1  AND brk1_s) THEN
   bus3 = 1;
ENDIF;
IF (bus2  AND brk2_s) THEN
   bus4 = 1;
ENDIF;

{ left to right across tie breaker }
IF (bus3  AND brk3_s) THEN
   bus4 = 1;
ENDIF;
IF (bus4  AND brk4_s) THEN
   bus5 = 1;
ENDIF;

{ two outgoing feeders }
IF (bus3  AND brk5_s) THEN
   bus6 = 1;
ENDIF;
IF (bus5  AND brk6_s) THEN
   bus7 = 1;
ENDIF;

{ back feed from two outgoing feeds }
IF (bus7  AND brk6_s) THEN
   bus5 = 1;
ENDIF;
IF (bus6  AND brk5_s) THEN
   bus3 = 1;
ENDIF;

{ right to left across tie breaker }
IF (bus5  AND brk4_s) THEN
   bus4 = 1;
ENDIF;
IF (bus4  AND brk3_s) THEN
   bus3 = 1;
ENDIF;

{ two incoming feeds }
IF (bus5 AND brk2_s) THEN
   bus2 = 1;
ENDIF;
IF (bus3  AND brk1_s) THEN
   bus1 = 1;
ENDIF;
```

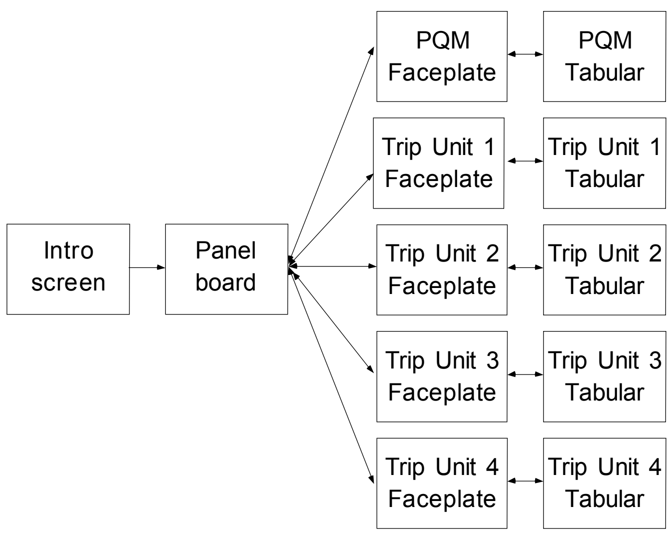
Sample Application

Creating a basic interface

We've learned about the various parts and pieces of the Interface Toolkit; now let's put it to work.

Suppose we have a very basic power management system installed at our corporate home office. The system consists of four trip units and a PQM (Power Quality Meter). We'd like to set up a computer in the front office to provide a front end to this system, allowing us to monitor all these devices at one station without having to walk back to the individual devices on the plant floor.

We plan the application on paper first so that we know how many screens to create and what each screen will look like. This will help us save time when in development by providing a starting point and a map of what we're trying to create. This 'storyboard' for our application looks something like this:



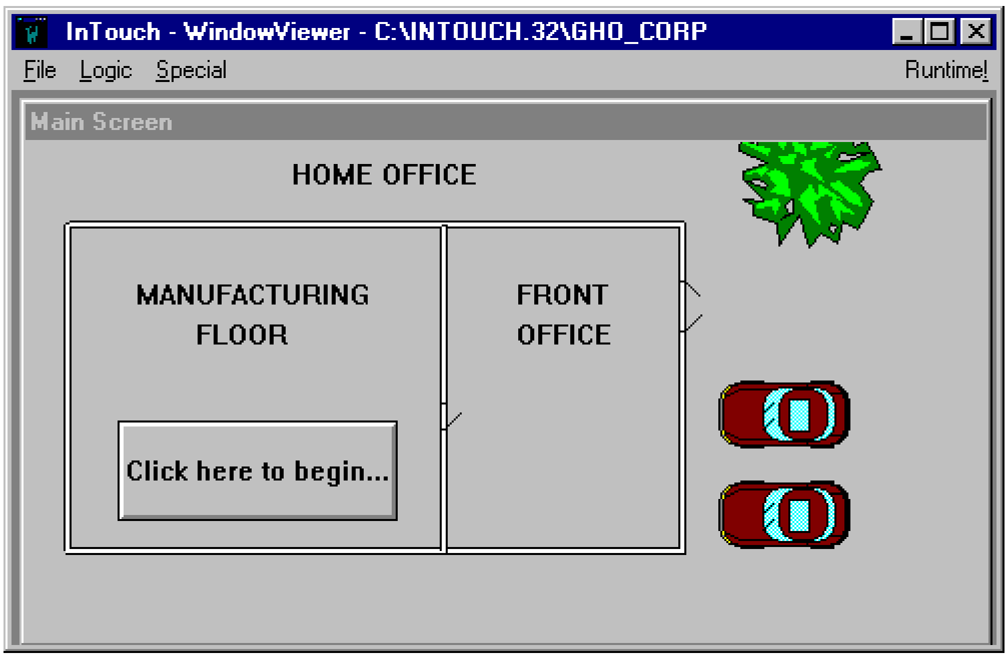
As shown above, for this basic application, we'll need 12 screens — an introduction screen, a shot of the panelboard showing all five of our power management devices, and then a large faceplate and tabular screen for each device. We'll link the Large Faceplate screen for each unit to the Small Faceplate wizard shown on the Panelboard screen, and, from the Large Faceplate, we can click on the device's display to jump to the Tabular data screen for that device. To make it easier to navigate the screens, we'll create extra buttons on the bottom of the Faceplate and Tabular screens that will jump back to the Panelboard screen.

With our plan in hand, and after completing the installation procedures described in Chapter 1, we're ready to begin development. Launch InTouch and select the button to create a new file, then click the Development button.

First, we'll create all our new windows and name them, then we'll go back and flesh them out with their contents and add links between them. Create the following twelve windows:

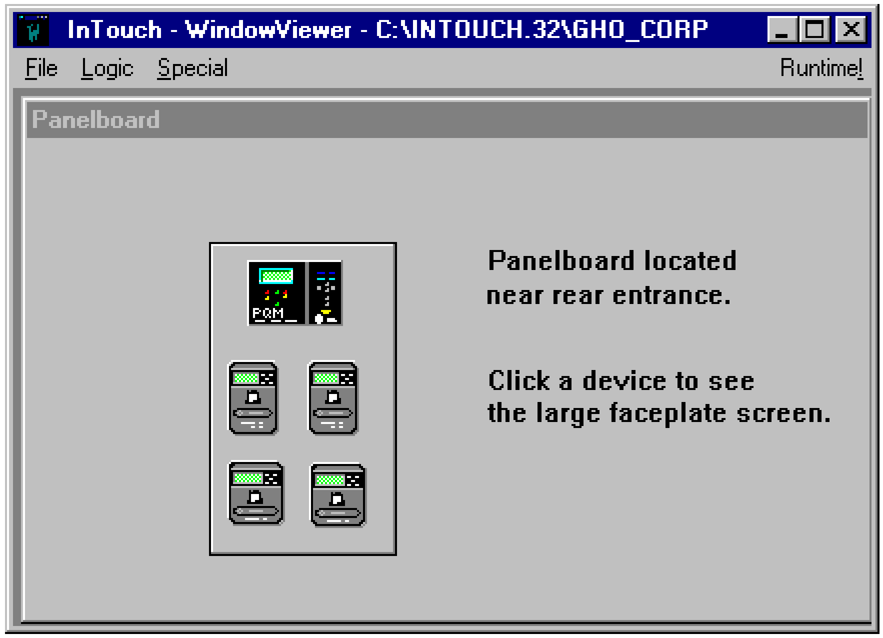
- Main Screen
- Panelboard
- PQM_Face
- PQM_Tab
- Trip1_Face
- Trip1_Tab
- Trip2_Face
- Trip2_Tab
- Trip3_Face
- Trip3_Tab
- Trip4_Face
- Trip4_Tab

Select the window named Main Screen, and use the Wonderware tools to sketch a floorplan of the facility, as shown below.



In the Manufacturing Floor area, we place a button labeled "Click here to begin…," and give it an animation link to the window named Panelboard.

Select the Panelboard window. Use the PMCS Elevation wizards to create a mock-up of the panelboard, then use the PMCS Small Faceplate wizards to populate the panelboard with our PQM meter and the four trip units. The Panelboard screen should look like this:

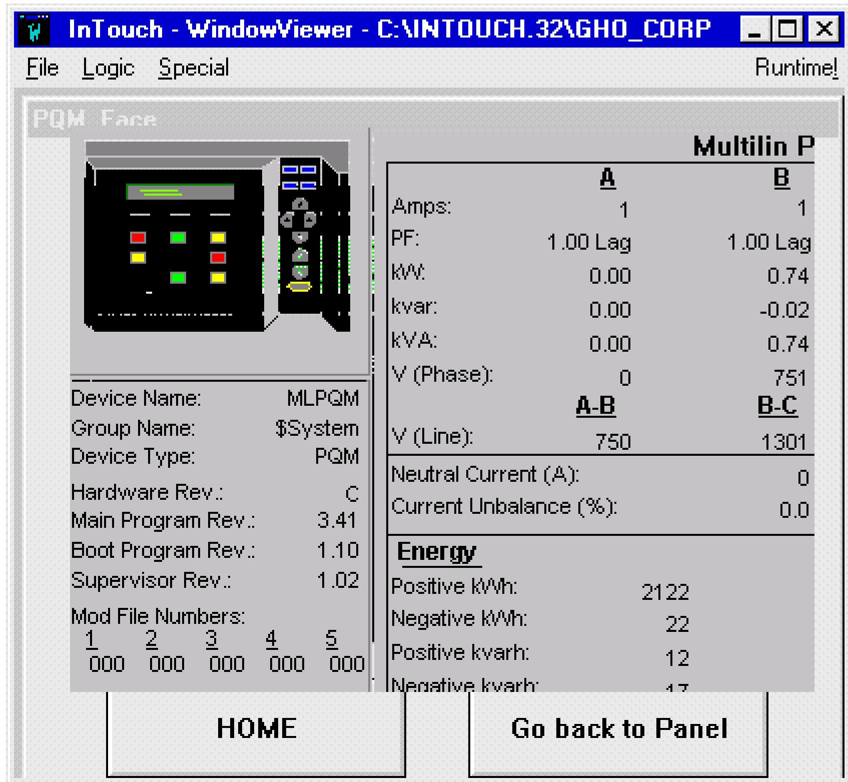


We'll include a note about the panelboard's location, describing where to find the real panel, and also a note of instruction: "Click a device to see the large faceplate screen."

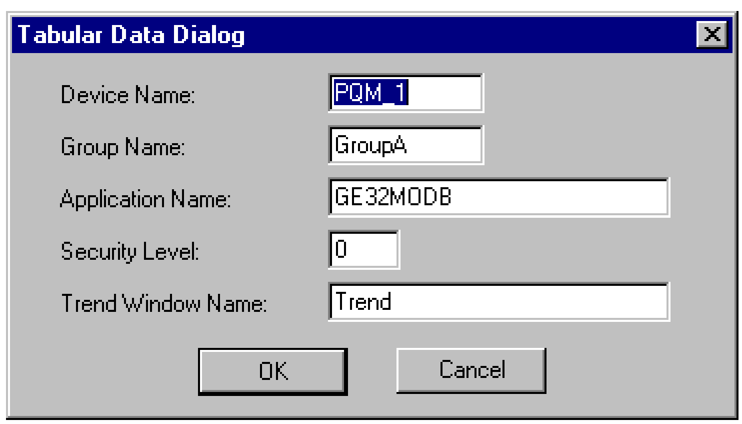
Create the links to the device screens by double-clicking on each small faceplate and entering the name of the device's Large Faceplate screen. For example, double-click on the PQM's Small Faceplate on the panelboard; then, in the resulting dialog box, type the name of the PQM_Face window. Complete these links for the remaining devices.

Next we'll develop the device screens. For the purposes of this chapter, we'll just walk through the two PQM screens. The development of the trip unit screens follows the same procedure.

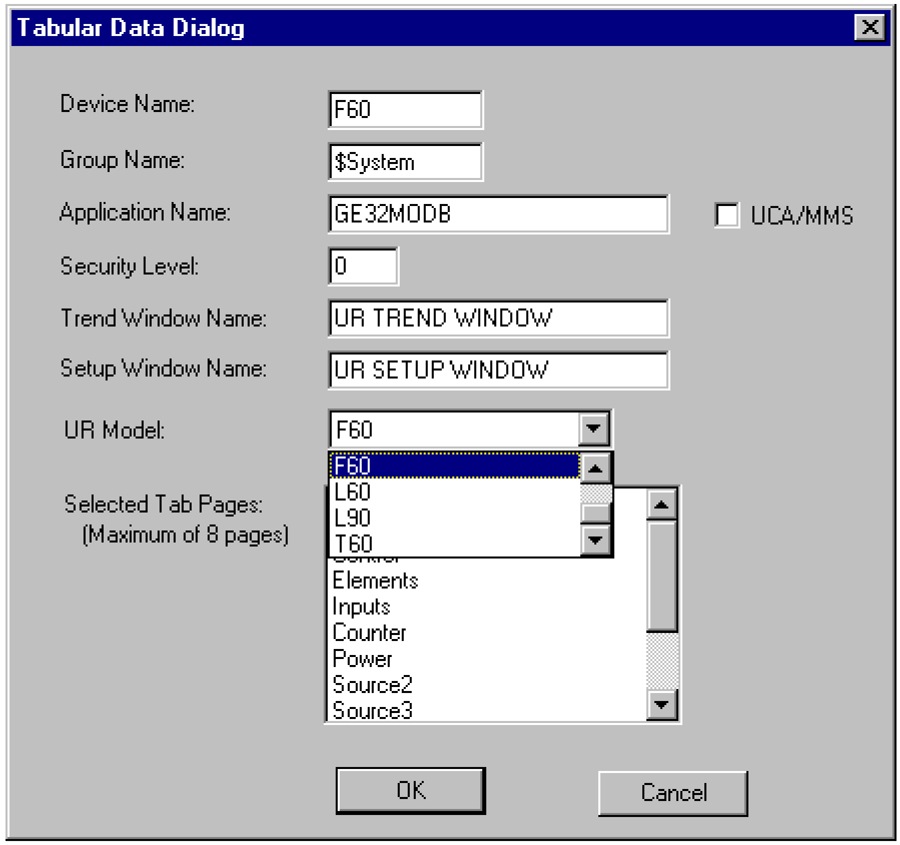
Select the PQM_Face window, then use the Wonderware Button tool found on the Toolbox to create two new buttons, "HOME" and "Go back to Panel." Use the Animation Links command to tie these buttons to the Main Screen and Panelboard windows, respectively. Now use the Wizards tool to place the PQM Large Faceplate wizard on the PQM_Face window. The screen should look similar to the following:



Now we'll develop the PQM Tabular data screen. Select the PQM Tab window and use the Wizards tool to place the PQM Tabular Data wizard on the screen. Double click the wizard and fill in the Device Name and the Trending windows as shown below. Click OK.



Finally, add some navigation buttons to the Tabular screen for returning to the Main Screen (HOME), to the Panelboard (Go to Panel), or to the Large Faceplate screen (Go back to Faceplate). Link each button to the appropriate screen, and you're all set!



Complete the application by developing the Faceplate and Tabular screens for each of the four trip units and that's it — we've just developed a PMCS application using the GE Wonderware Wizards.

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Features of GE Large Faceplate Wizards

About the Large Faceplate Wizards

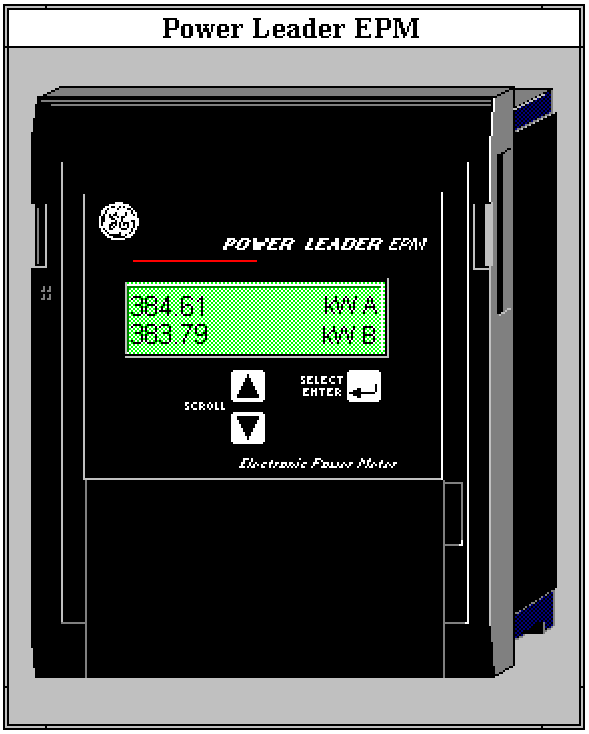
This chapter contains descriptions of the functions available with each of the GE Large Faceplate wizards. While a majority of the most popular data available at each device have been made available in the Wizards, some functions available with the actual devices are not provided in the Large Faceplate representations, such as the following:

- Test Mode or Simulation Mode on some devices is not fully supported
- Details on status/alarm/trips other than the information displayed by the front LEDs and a brief text message (see Tabular Data Screens for detailed status/alarm/trip information)
- Any flashing status messages which may be produced by a device
- Some actual values are not displayed on the Large Faceplate Wizard, but can be found on Tabular Data Screen Wizards

Users should be aware that not all values displayed by the GE Large Faceplate Wizards are automatically updated. Also, some rapidly changing values, especially those requiring calculation, cannot be displayed as rapidly on the wizard as on the actual device's screen.

For a more detailed description of the functions of a device, see the user's guide for that device.

POWER LEADER EPM



The large faceplate representation of the POWER LEADER EPM provides the following animated functions:

Click on...	Function
Display Window	Clicking on the display area opens the tabular data window specified during wizard configuration and sets the view to the Normal Metering page.
GE Logo	Clicking the GE logo opens the tabular data window specified during wizard configuration and sets the view to the Setup page.
SELECT/ENTER Button	Toggles the display between the normal and alternate lists of metering parameters.
SCROLL Buttons	Loop through all metered parameters for the current mode, displaying two values at a time. The down arrow scrolls down through the parameter list, with the new value appearing on the lower line of the display. The up arrow scrolls up through the parameter list with the new value appearing on the display's upper line. Depending on whether the EPM has been configured as a Delta or Wye device, certain parameters display either line-to-line or line-to-neutral values.

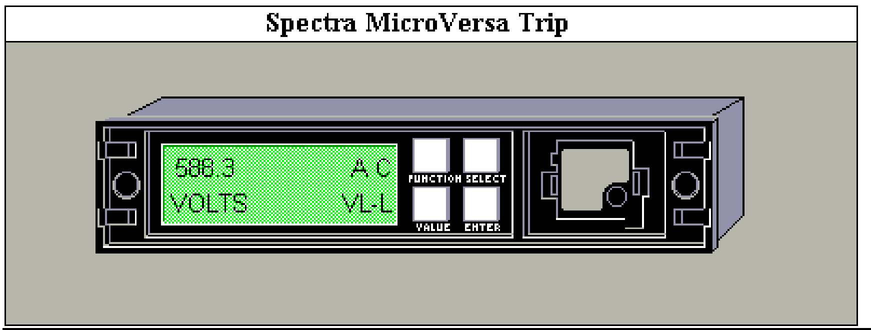
Table 1. PLEPM Faceplate animated functions.

The electrical parameters and status information displayed by the EPM are listed below for both the normal and alternate scrolls. Note that the displayed parameters differ depending on whether the EPM is configured as Wye or Delta. Please note that the Normal Scroll Delta and Alternate Scroll Delta lists contain several parameters marked with an asterisk; these parameters were included in the wizard for programming reasons, but are not valid for Delta configurations and should not be used.

Normal Scroll, Wye	Normal Scroll, Delta
Current, RMS Phase A	Current, Phase A
Current, RMS Phase B	Current, Phase B
Current, RMS Phase C	Current, Phase C
Current, RMS Neutral	Current, RMS Neutral *
Voltage, RMS Phase A–N	Voltage, RMS Phase A–N *
Voltage, RMS Phase B–N	Voltage, RMS Phase B–N *
Voltage, RMS Phase C–N	Voltage, RMS Phase C–N *
Voltage, RMS Phase A–B	Voltage, RMS Phase A–B
Voltage, RMS Phase B–C	Voltage, RMS Phase B–C
Voltage, RMS Phase C–A	Voltage, RMS Phase C–A
Watts, Phase A	Watts, Phase A–B
Watts, Phase B	Watts, Phase B–C
Watts, Phase C	Watts, Total
Watts, Total	Watts, Demand
Watts, Demand	Watts, Peak Demand
Watts, Peak Demand	Vars, Phase A–B
Vars, Phase A	Vars, Phase B–C
Vars, Phase B	Vars, Total
Vars, Phase C	Volt-amperes, Phase A–B
Vars, Total	Volt-amperes, Phase B–C
Volt-amperes, Phase A	Volt-amperes, Total
Volt-amperes, Phase B	Power Factor, Total
Volt-amperes, Phase C	Watthours, Total
Volt-amperes, Total	Varhours, Total Lag (+)
Power Factor, Total	Varhours, Total Lead (–)
Watthours, Total	Volt-ampere-hours, Total
Varhours, Total Lag (+)	Frequency, in hertz
Varhours, Total Lead (–)	
Volt-ampere-hours, Total	
Frequency, in hertz	

Alternate Scroll, Wye	Alternate Scroll, Delta
Current, Phase A Demand	Current, Phase A Demand
Current, Phase A Peak Demand	Current, Phase A Peak Demand
Current, Phase B Demand	Current, Phase B Demand *
Current, Phase B Peak Demand	Current, Phase B Peak Demand *
Current, Phase C Demand	Current, Phase C Demand
Current, Phase C Peak Demand	Current, Phase C Peak Demand
Watts Demand at Peak VA Demand	Watts Demand at Peak VA Demand
Vars, Demand Lag (+)	Vars, Demand Lag (+)
Vars, Demand Lead (–)	Vars, Demand Lead (–)
Vars, Peak Demand Lag (+)	Vars, Peak Demand Lag (+)
Vars, Peak Demand Lead (–)	Vars, Peak Demand Lead (–)
Volt-amperes, Demand	Volt-amperes, Demand
Volt-amperes, Peak Demand	Volt-amperes, Peak Demand
Q-hours, Total	Q-hours, Total
Power Factor, Phase A	Power Factor, Phase A–B
Power Factor, Phase B	Power Factor, Phase B–C
Power Factor, Phase C	Power Factor, Average Since Reset
Power Factor, Average Since Reset	Power Factor, Demand Average
Power Factor, Demand Average	Power Factor at Peak VA Demand
Power Factor at Peak VA Demand	Number of Demand Resets
Number of Demand Resets	Time Left in Demand Subinterval
Time Left in Demand Subinterval	Number of Power Outages
Number of Power Outages	Potential Transformer Ratio
Potential Transformer Ratio	Current Transformer Ratio
Current Transformer Ratio	

Spectra MicroVersaTrip Trip Unit



The large faceplate representation of the Spectra MicroVersaTrip trip unit provides the following animated functions:

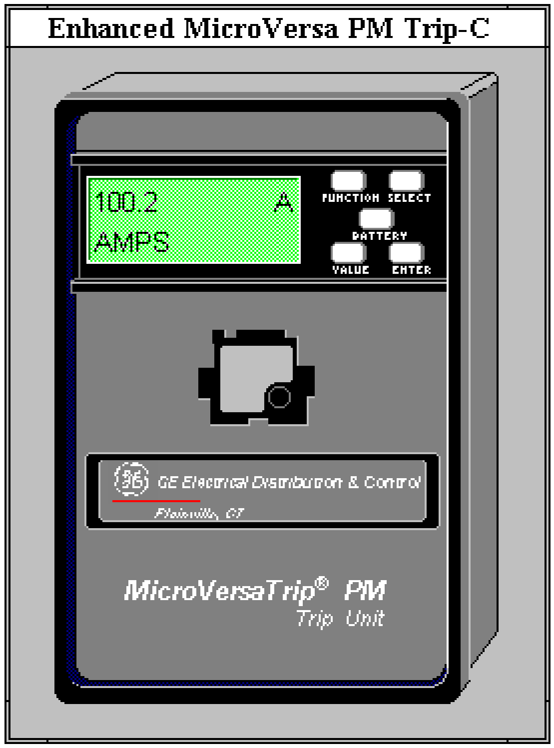
Click on...	Function
Display Window	Opens the tabular data window specified during wizard configuration and sets the view to the Normal Monitoring page.
FUNCTION Button	Opens the tabular data window specified during wizard configuration and sets the view to the Setup page.
ENTER Button	Opens the tabular data window specified during wizard configuration and sets the view to the Setup page.
VALUE Button	Changes phases in appropriate modes, depending on whether the device has been configured as Wye or Delta Phase is indicated by letters in the upper right of the display; press VALUE to display a different phase.
SELECT Button	Rotates among six different modes, as shown in the lower left of the display, with units in the lower right.

Table 2. Spectra MVT Faceplate animated functions.

The metering modes available with the SELECT button are as follows:

Mode	Description
AMPS	Current, with no label in the units area of the display. Phase shifting in both Delta and Wye configurations.
VOLTS	Voltage, displayed as line-to-line (V_{L-L}) for Delta and line-to-neutral (VL-N) for Wye. Phase shifting in both configurations.
ENGY	Energy, displayed in kWh; no phase shifting.
PWR	Real power indicated by non-blinking units symbol (kW). Apparent power indicated by blinking units symbol. Phase shifting in Wye configuration.
FREQ	Frequency, displayed in Hz. Phase shifting in both Delta and Wye configurations.

Enhanced MicroVersaTrip-C Trip Unit



The large faceplate representation of the Enhanced MicroVersaTrip-C trip unit provides the following animated functions:

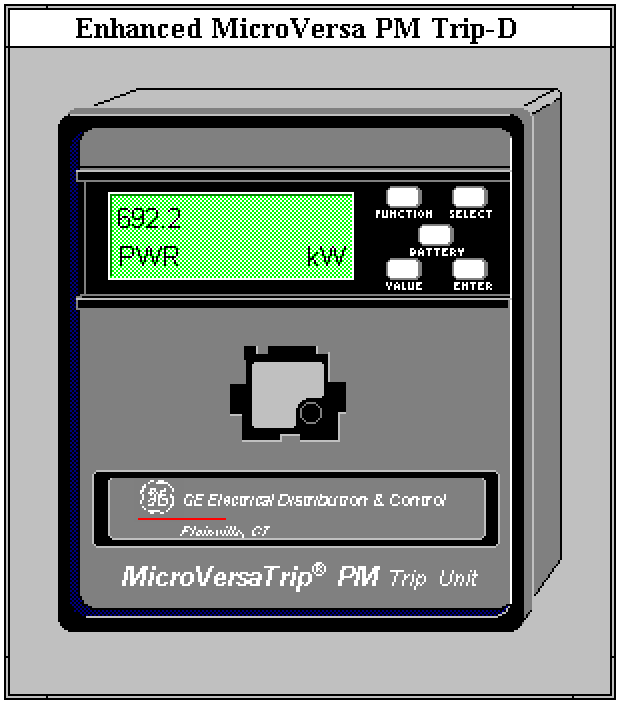
Click on ...	Function
Display Window	Opens the tabular data window specified during wizard configuration and sets the view to the Monitoring page.
FUNCTION Button	Opens the tabular data window specified during wizard configuration and sets the view to the Setup page.
ENTER Button	Opens the tabular data window specified during wizard configuration and sets the view to the Setup page.
BATTERY Button	Opens the tabular data window specified during wizard configuration and sets the view to the Setup page.
VALUE Button	Changes phases in appropriate modes, depending on whether the device has been configured as Wye or Delta, Phase is indicated by numbers in the upper right of the display; press VALUE to display a different phase.
SELECT Button	Rotates among eight different modes, as shown in the lower left of the display, with units in the lower right.

Table 3. EMVT-C Faceplate animated functions.

The EMVT-C's metering modes available with the SELECT button are as follows:

Mode	Description
AMPS	Current, with no label in the units area of the display. Phase shifting in both Delta and Wye configurations.
VOLTS	Voltage, displayed as line-to-line (Ph-Ph) for Delta and line-to-neutral (Ph-N) for Wye. Phases shown as 01, 02, or 03 for Wye and 01 02, 01 03, or 02 03 for Delta.
kWh	Energy; no phase shifting.
kW	Real power; no phase shifting.
kVA	Apparent power; no phase shifting.
Demand	Power demand, displayed with steady kW symbol. Peak power demand, displayed with blinking kW symbol. No phase shifting.
FREQ	Frequency, displayed in Hz. Phase shifting in both Delta and Wye configurations.

Enhanced MicroVersaTrip-D Trip Unit



The large faceplate representation of the Enhanced MicroVersaTrip-D trip unit provides the following animated functions:

Feature	Function
Display Window	Opens the tabular data window specified during wizard configuration and sets the view to the Monitoring page.
FUNCTION Button	Opens the tabular data window specified during wizard configuration and sets the view to the Setup page.
ENTER Button	Opens the tabular data window specified during wizard configuration and sets the view to the Setup page.
BATTERY Button	Opens the tabular data window specified during wizard configuration and sets the view to the Setup page.
VALUE Button	Changes phases in appropriate modes, depending on whether the device has been configured as Wye or Delta Phase is indicated by numbers in the upper right of the display; press VALUE to display a different phase.
SELECT Button	Rotates among eight different modes, as shown in the lower left of the display, with units in the lower right.

Table 4. EMVT-D Faceplate animated functions.

The metering modes available with the SELECT button are as follows:

Mode	Description
AMPS	Current, with no label in the units area of the display. Phase shifting in both Delta and Wye configurations.
VOLTS	Voltage, displayed as line-to-line (Ph-Ph) for Delta and line-to-neutral (Ph-N) for Wye. Phases shown as 01, 02, or 03 for Wye and 01 02, 01 03, or 02 03 for delta.
kWh	Energy; no phase shifting.
kW	Real power; no phase shifting.
kVA	Apparent power; no phase shifting.
Demand	Power demand, displayed with steady kW symbol. Peak power demand, displayed with blinking kW symbol. No phase shifting.
FREQ	Frequency, displayed in Hz. Phase shifting in both Delta and Wye configurations.

POWER LEADER Meter

The large faceplate representation of the POWER LEADER Meter provides the following animated functions:

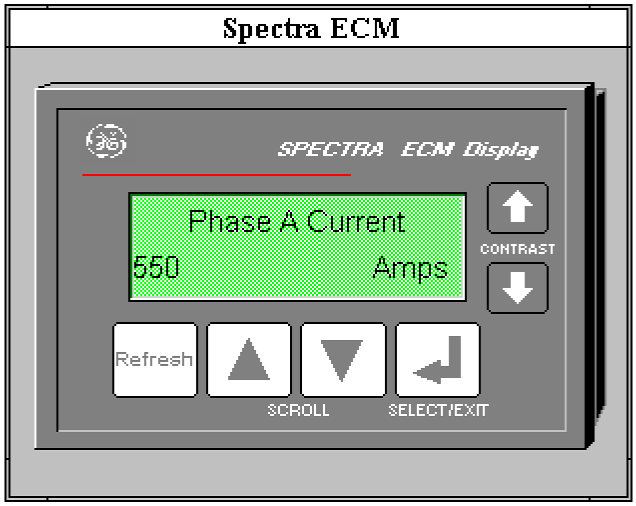
Feature	Function
Display Window	Opens the tabular data window specified during wizard configuration and sets the view to the Monitoring page.
GE Logo	Opens the tabular data window specified during wizard configuration and sets the view to the Setup page.
RESET/ENTER Button	Opens the tabular data window specified during wizard configuration and sets the view to the Setup page.
PHASE Button	Rotates among phase readings for appropriate modes, indicated by the phase LEDs below the display window.
SCROLL UP and SCROLL DOWN Buttons	Loop through display modes either down or up the list of parameters. Fourteen modes available with a Delta-configured device; one additional with Wye.

Table 5. PL Meter Faceplate animated functions.

The parameters available with the SCROLL buttons are listed below:

Mode	Description
RMS Current	Units in Amps; phase shifting among A, B, and C.
RMS Voltage L-N	Units in Volts; available only in Wye configuration, with phase shifting among A, B, and C.
RMS Voltage L-L	Units in Volts; phase shifting among AB, BC, and CA.
Watts	Units in kW; phase shifting among A, B, C, and total.
Vars	Units in kVARs; phase shifting among A, B, C, and total.
Volt-Amps	Units in kVA; phase shifting among A, B, C, and total.
Power Factor	No units; no phase shifting.
Watt-Hours	Units in kWH; no phase shifting.
VAR-Hours	Units in kVARH; no phase shifting.
Current Demand	Units in A; phase shifting among A, B, and C.
Peak Current	Units in A; phase shifting among A, B, and C.
Watt Demand	Units in kW; no phase shifting.
Peak Watt Demand	Units in kW; no phase shifting.
Frequency	Units in Hz; no phase shifting.
Harm Distortion	Value area of display is blank; degree of harmonic distortion is shown as negligible, mild, moderate, or severe.

Spectra ECM



The large faceplate representation of the Spectra ECM provides the following animated functions:

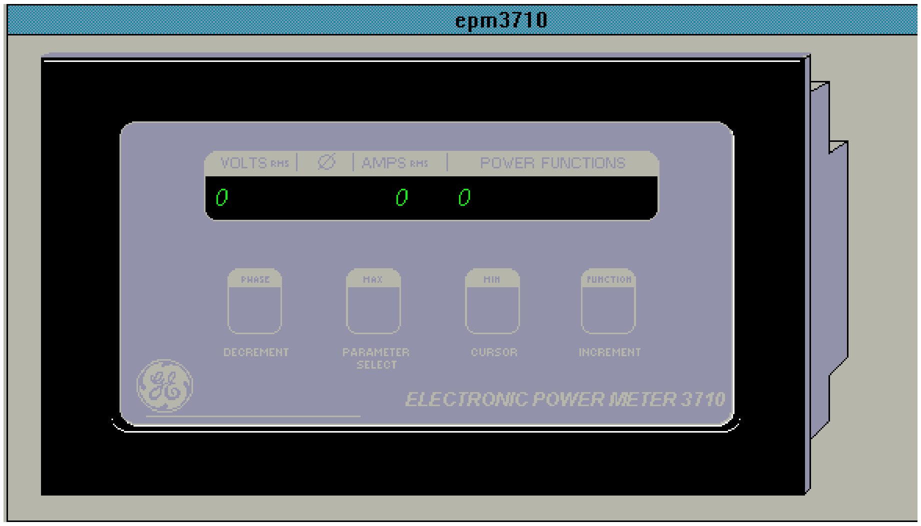
Feature	Function
Display Window	Opens the tabular data window specified during wizard configuration and sets the view to the Monitoring page.
CONTRAST Buttons	Open the tabular data window specified during wizard configuration and sets the view to the Setup page.
Refresh Button	Updates the display to the most current readings.
SCROLL Buttons	Loop through all selections for each of the valid modes accessed by the SELECT/EXIT button.
SELECT/EXIT Button	Displays the top-line message “Press SELECT for”. Press one of the SCROLL buttons to rotate among the four modes. Press SELECT/EXIT to display the first value of the current mode and the SCROLL buttons for all other values available in that mode. Press again to redisplay the “Press SELECT for” prompt for mode selection.

Table 6. Spectra ECM Faceplate animated functions.

The modes and the parameters available in each mode are as follows:

Mode	Parameters and Units
STATUS	Motor Status ECM Status Trip Status
SETPOINTS	FLA Setting, amps Rating Plug, amps Phase Unbalance, disabled/enabled Ground Fault, disabled/enabled Commnet Address
METERING	Phase A Current, amps Phase B Current, amps Phase C Current, amps Average Current, amps Phase Unbalance, percent Ground Current, amps Motor Load, percent
LAST TRIP INFO	Last Trip Cause Phase A @ Trip, amps Phase B @ Trip, amps Phase C @ Trip, amps Unbalance @ Trip, percent Ground Current @ Trip, amps

EPM 3710 Meter



The large faceplate representation of the EPM 3710 provides the following animated functions:

Feature	Function
Display Window	Opens the tabular data window specified during wizard configuration and sets the view to the Monitoring page.
MIN/MAX Buttons	Open the tabular data window specified during wizard configuration and set the view to the Setup page.
PHASE Button	Rotates the left side of the display through eight sets of instantaneous values, as described in the table below.
FUNCTION Button	Rotates the right side of the display through 13 accumulated values.

Table 7. EPM 3710 Faceplate animated functions.

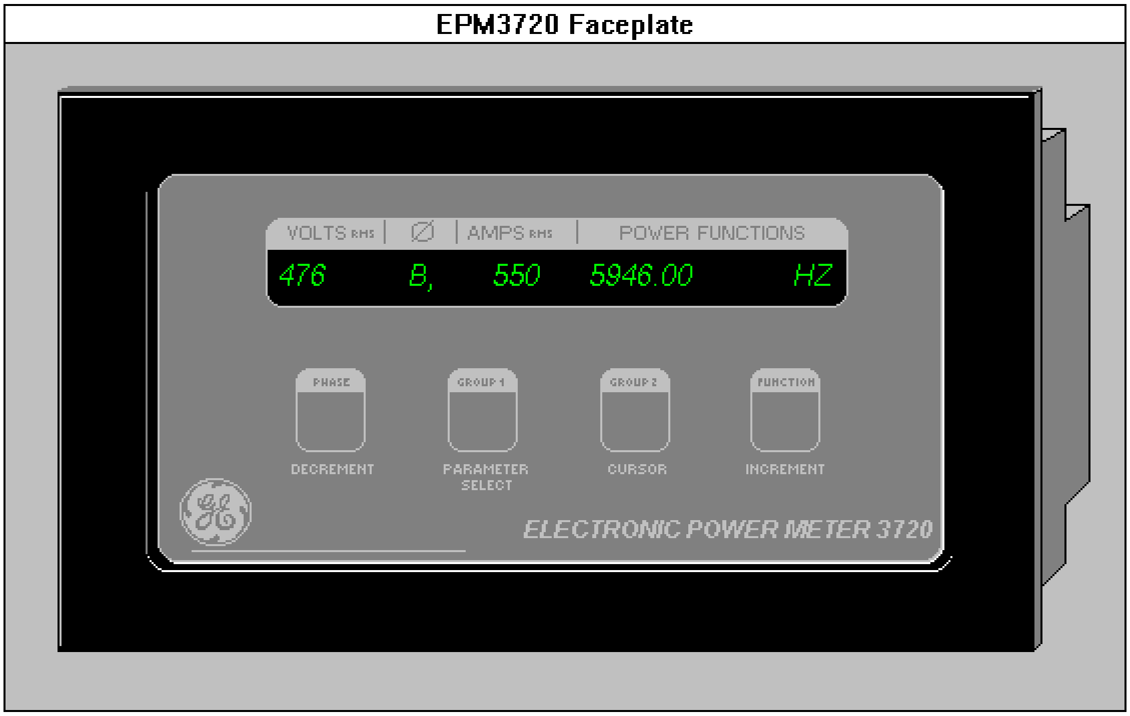
The parameters displayed by the PHASE button are listed in the following table.

Display Indication	Parameters
A	Phase A current and line-to-neutral voltage
B	Phase B current and line-to-neutral voltage
C	Phase C current and line-to-neutral voltage
*	Average current and line-to-neutral voltage
A,	Phase A current and A-B line-to-line voltage
B,	Phase B current and B-C line-to-line voltage
C,	Phase C current and C-A line-to-line voltage
*,	Average current line-to-line voltage

The parameters displayed by the FUNCTION button are listed in the following table. If any of the import or export values are zero, they are not displayed and the next nonzero value is shown. When any of these parameters are displayed, the AMPS portion of the display window is used to allow display of the complete value.

Display Indication	Parameter
kW	Total real power
kVA	Total apparent power
kQ	Total reactive power
PFLG or PFLD	Power factor; lagging or leading
Hz	Frequency
kWD	Kilowatt total demand
A or kVA	Current average demand or apparent power demand
VX	RMS auxiliary voltage
I4	RMS neutral current
kWH-F	Import energy
kWH-R	Export energy
kVARH-F	Import reactive energy
kVARH-R	Export reactive energy

EPM 3720 Meter



The large faceplate representation of the EPM 3720 meter provides the following animated functions:

Feature	Function
Display Window	Opens the tabular data window specified during wizard configuration and sets the view to the Monitoring page.
GROUP Buttons	Opens the tabular data window specified during wizard configuration and sets the view to the Setup page.
PHASE Button	Rotates the left side of the display through eight sets of instantaneous values, as described in the table below. May also affect the POWER FUNCTIONS portion of the display, depending on the FUNCTION selection.
FUNCTION Button	Rotates the right side of the display through 24 accumulated values, in conjunction with the PHASE button.

Table 8. EPM 3720 Faceplate animated functions.

The parameters displayed by the PHASE button are listed in the following table.

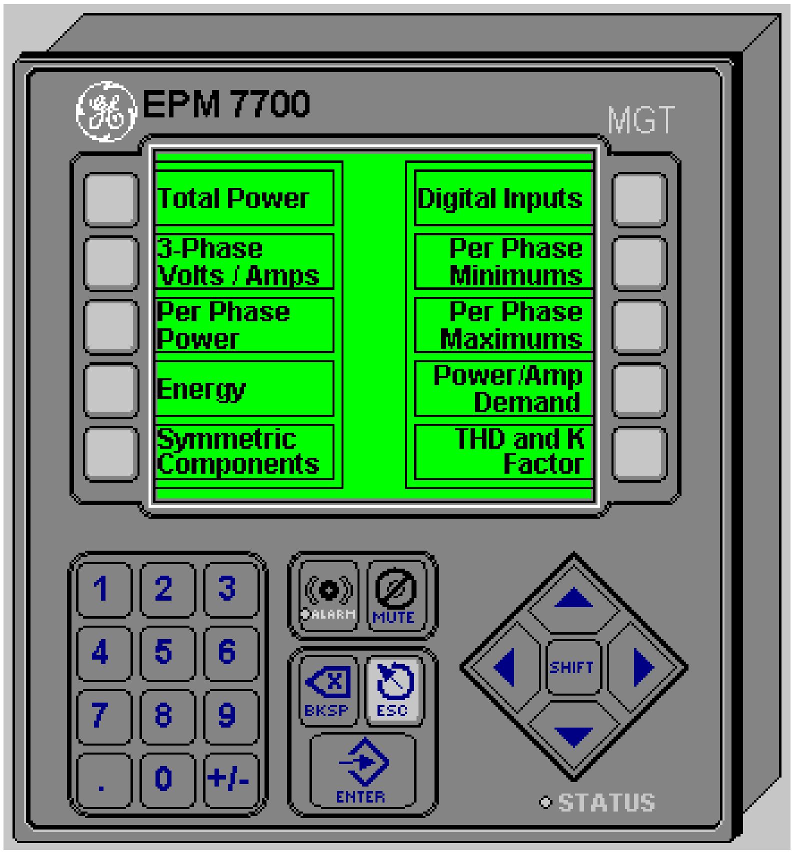
Display Indication	Parameters
A	Phase A current and line-to-neutral voltage
B	Phase B current and line-to-neutral voltage
C	Phase C current and line-to-neutral voltage
*	Average current and line-to-neutral voltage
A,	Phase A current and A-B line-to-line voltage

Display Indication	Parameters
B,	Phase B current and B-C line-to-line voltage
C,	Phase C current and C-A line-to-line voltage
*,	Average current line-to-line voltage

The parameters displayed by the FUNCTION button are listed in the following table. When any of the import, export, or net parameters are displayed, the AMPS portion of the display window is used to allow display of the complete value.

Display Indication	Parameter
kW	Real power for phase A, B, or C as set by PHASE button, or total real power if PHASE is set to * or *,.
kVR	Reactive power for phase A, B, or C as set by PHASE button, or total reactive power if PHASE is set to * or *,.
kVA	Apparent power for phase A, B, or C as set by PHASE button, or total apparent power if PHASE is set to * or *,.
PFLG or PFLD	Power factor, lagging or leading, for phase !A, B, or C as set by PHASE button, or total power factor if PHASE is set to * or *,.
I4	RMS neutral current
Hz	Frequency
VX	RMS auxiliary voltage
kWH IM	Import energy
kWH EX	Export energy
kVARH IM	Import reactive energy
kVARH EX	Export reactive energy
kVAH NET	Net reactive energy

EPM 7700 Meter



The large faceplate representation of the EPM 7700 meter provides the following animated functions:

Feature	Function
LCD display window	Opens the tabular data window specified during wizard configuration and sets the view to the Metering page.
ESC	Opens the displays the main menu on the faceplate as shown above.
Blank Buttons	Pressing the keys adjacent to the LCD Display window displays the selected screen. For instance, selecting the Total Power button displays the Total Power screen of data.

Table 9. EPM 7700 Faceplate animated functions.

The parameters displayed by the various data screen buttons are listed in the following table.

Screen Selected	Description
1 - Total Power	• KW Total • KVAR Total • KVA Total • PF Signed Total
2 - Three-Phase Measurements	• Vln a; Vln b: n/a when Voltage Mode is DELTA • Vln c: n/a when Voltage Mode is DELTA or SINGLE • Vln Avg: n/a when Voltage Mode is DELTA • Vll ab • Vll bc; Vll ca; Vll avg: n/a when Voltage Mode is SINGLE • Ia, Ib, I4, Iavg • Ic: n/a when Voltage Mode is SINGLE • V unbal • I unbal • Line Frequency
3 - Per-Phase Power	• KW a; KW b: n/a when Voltage Mode is DELTA • KW c: n/a when Voltage Mode is DELTA or SINGLE • KW Total • KVAR a; KVAR b: n/a when Voltage Mode is DELTA • KVAR c: n/a when Voltage Mode is DELTA or SINGLE • KVAR Total • KVA a; KVA b: n/a when Voltage Mode is DELTA • KVA c: n/a when Voltage Mode is DELTA or SINGLE • KVA Total • PF Signed a; PF Signed b: n/a when Voltage Mode is DELTA • PF Signed c: n/a when Voltage Mode is DELTA or SINGLE
4 - Energy	• KWh Import; KWh Export; KWh Total; KWh Net • KVARh Import; KVARh Export; KVARh Total; KVARh Net • KVAh Total • KW Total Min; KVAR Total Min; KVA Total Min • KW Total Max; KVAR Total Max; KVA Total Max
5 - Symmetrical Components	• I ZeroSeqMag; I PosSeqMag; I NegSeqMag • V ZeroSeqMag; V PosSeqMag; V NegSeqMag • I ZeroSeqPhs; I PosSeqPhs; I NegSeqPhs • V ZeroSeqPhs; V PosSeqPhs; V NegSeqPhs
6 - Digital Inputs	• Status Inputs 1 - 8

Screen Selected	Description
7 - Per-Phase Minimums	• Vln a Min; Vln b Min: n/a when Voltage Mode is DELTA • Vln c Min: n/a when Voltage Mode is DELTA or SINGLE • Vln Avg Min: n/a when Voltage Mode is DELTA • Vll ab Min • Vll bc Min; Vll ca Min; Vll Avg Min: n/a when Voltage Mode is SINGLE • Ia Min; Ib Min • Ic Min: n/a when Voltage Mode is SINGLE • I Avg Min
8 - Per-Phase Maximums	• Vln a Max; Vln b Max : n/a when Voltage Mode is DELTA • Vln c Max: n/a when Voltage Mode is DELTA or SINGLE • Vln Avg Max: n/a when Voltage Mode is DELTA • Vll ab Max • Vll bc Max; Vll ca Max; Vll Avg Max: n/a when Voltage Mode is SINGLE • Ia Max; Ib Max • Ic Max: n/a when Voltage Mode is SINGLE • I Avg Max
9 - Power & Amp Demand	• KW SWD; KVAR SWD; KVA SWD** • KW PD; KVAR PD; KVA PD** • KW Total; KVAR Total; KVA Total
10 - THD and K-Factor	• V1 THD; V2 THD; V3 THD: n/a when Source is n/a • I1 THD; I2 THD; I3 THD; I4 THD: n/a when Source is n/a • I1 K Factor; I2 K Factor; I3 K Factor; I4 K Factor: n/a when Source is n/a

**NOTE: If the Sliding Demand Reset is initiated, or a SWD setup register is changed, SWD values are "N/A" in the meter until the number of sub-intervals specified in the #sub intervals setup register have expired. The 3D faceplate and Tabular wizard will display 0 for these values during this state.

269 Plus Motor Management Relay

The large faceplate representation of the 269 Plus provides the following animated functions:

Feature	Function
Display Window	Opens the tabular data window specified during wizard configuration and sets the view to the Monitoring page.
SET POINTS Button	Opens the tabular data window specified during wizard configuration and sets the view to the Setup page.
RESET Button	Opens the tabular data window specified during wizard configuration and sets the view to the Setup page.
CLEAR Button	Opens the tabular data window specified during wizard configuration and sets the view to the Setup page.
VALUE Buttons	Open the tabular data window specified during wizard configuration and set the view to the Setup page.
HELP Button	Displays a Windows help screen for PMCS.
ACTUAL VALUES Button	Brings the meter to an initial setting point and displays ACTUAL VALUES HAS SEVEN PAGES OF DATA.
REFRESH Button	Updates the display to the current meter reading.
STORE Button	Resets the meter at two special points in the display of values. Press STORE to toggle the response on the bottom line.
PAGE Buttons	Rotate among seven pages of parameter data. Press one of the arrow keys to display PAGE #: ACTUAL VALUES on the top line, a description on the bottom, and reset to the first parameter value. The seven pages are listed in the table below.

Feature	Function
LINE Buttons	Rotate among parameters within a page. Certain configurations or meter values may prevent display of all parameters within a page. The parameters in each page are listed in the table below.
Panel Display Lights	Display animation that shows the status of the 269 Plus relay. If a trip or alarm has occurred, auxiliary relay 1 or 2 is active. If the meter fails its self-test, the dark red square to the left of the label appears bright red.

Table 10. 269+ Faceplate animated functions.

The following table lists the pages that can be accessed with the PAGE buttons, with the parameters available in each page that can be accessed with the LINE buttons.

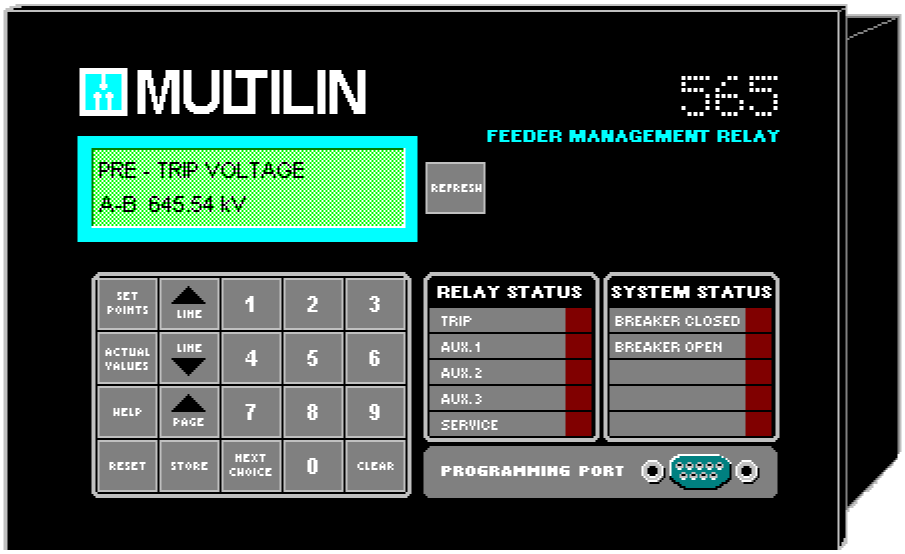
Page	Value	Text Displayed	Description
1	1	PAGE 1: ACTUAL VALUES PHASE CURRENT DATA	Page header
	2	I1=xxx I2=xxx I3=xxx (AMPS)---	Phase current in amps; --- or RUN based on motor status
	3	I(3 Ph avg.)=xxx AMPS Max Stator RTD=xxx C	Average phase current Hottest stator temperature
	4	UNBALANCE RATIO (In/Ip) U/B=xx PERCENT	
	5	GROUND FAULT CURRENT G/F=xxx.0 AMPS	Units = *.1 if G/F CT ratio = 2000:1
	6	ST/HR TIMERS (MIN) xx xx xx xx xx	Starts per hour
	7	TIME BETWEEN STARTS TIMER = xxx MIN	
	8	END OF PAGE ONE ACTUAL VALUES	Page footer
2	1	PAGE 2: ACTUAL VALUES RTD TEMPERATURE DATA	Page header
	2	HOTTEST STATOR RTD RTD #xx = xxx	
	3-12	RTD TEMPERATURE RTD # xx = xxx	Displays temperatures of RTDs #1-10
	13	MAX STATOR SINCE LAST ACCESS: RTD #x = xxx DEGREES C	
	14-17	MAXIMUM RTD #x TEMP SINCE LAST ACCESS: xxx DEGREES C	Displays #7-10 max
	18	CLEAR LAST ACCESS DATA? NO	Press STORE to clear; message changes to YES
	19	END OF PAGE TWO ACTUAL VALUES	Page footer

Page	Value	Text Displayed	Description
	1	PAGE 3: ACTUAL VALUES MOTOR CAPACITY DATA	Page header
	2	ESTIMATED TIME TO TRIP = xxx SECONDS	
3	3	MOTOR LOAD AS A PERCENT FULL LOAD = xxx PERCENT	
	4	THERMAL CAPACITY USED = xxx PERCENT	
	5	END OF PAGE THREE: ACTUAL VALUES	Page footer
	1	PAGE 4: ACTUAL VALUES STATISTICAL DATA	Page header
	2	RUNNING HOURS SINCE LAST COMMISSIONING xxx HOURS	
	3	MEGAWATTHOURS SINCE LAST COMMISSIONING xxx MWHR	Displayed only if MTM unit is installed in 269
	4	# OF STARTS SINCE LAST COMMISSIONING xxx	
	5	# OF TRIPS SINCE LAST COMMISSIONING xxx	
	6	# O/L TRIPS SINCE LAST COMMISSIONING xxx	Overload trips
	7	# RAPID TRIPS SINCE LAST COMMISSIONING xxx	
	8	# U/B TRIPS SINCE LAST COMMISSIONING xxx	Unbalance trips
4	9	# G/F TRIPS SINCE LAST COMMISSIONING xxx	Ground-fault trips
	10	# RTD TRIPS SINCE LAST COMMISSIONING xxx	
	11	# S/C TRIPS SINCE LAST COMMISSIONING xxx	Short-circuit trips
	12	# START TRIPS SINCE LAST COMMISSIONING xxx	
	13	# U/V TRIPS SINCE LAST COMMISSIONING xxx	Undervoltage trips
	14	# O/V TRIPS SINCE LAST COMMISSIONING xxx	Overvoltage trips
	15	# PF TRIPS SINCE LAST COMMISSIONING xxx	Power-failure trips
	16	VOLTAGE PHASE REVERSALS SINCE COMMISSIONING xxx	
	17	START NEW COMMISSIONING NO	Press STORE to start; message changes to YES
4	18	END OF PAGE FOUR: ACTUAL VALUES	Page footer
	1	PAGE 5: ACTUAL VALUES PRE-TRIP DATA	Page header

Page	Value	Text Displayed	Description
	2	CAUSE OF LAST TRIP message	Message is a brief explanation of trip cause
	3	PRE-TRIP AVERAGE MOTOR CURRENT = xxx AMPS	
	4	PRE-TRIP U/B RATIO (lI/Ip) xxx PERCENT	Unbalance
	5	PRE-TRIP G/F CURRENT G/F=xxx.0 AMPS	Units = *.1 if G/F CT ratio = 2000:1
5	6	PRE-TRIP MAX STATOR RTD RTD #XX = xxx C	
	7	PRE-TRIP AVERAGE VOLTAGE VOLTS = xxx	Displayed only if MTM unit is installed in 269
	8	PRE-TRIP KWATTS KW = xxx	Displayed only if MTM unit is installed in 269
	9	PRE-TRIP KVARS KVAR = xxx	Displayed only if MTM unit is installed in 269
	10	PRE-TRIP POWER FACTOR PF = xxx	Displayed only if MTM unit is installed in 269
	11	PRE-TRIP FREQUENCY HZ = xxx	Displayed only if MTM unit is installed in 269
	12	END OF PAGE FIVE ACTUAL VALUES	Page footer
	1	PAGE 6: ACTUAL VALUES LEARNED PARAMETERS	Page header
	2	LEARNED Istart (AVG OF 4 STARTS)=xxx AMPS	
	3	LEARNED Istart (last one) =xxx AMPS	
	4	LEARNED K FACTOR K = xxx AMPS	
6	5	LEARNED RUNNING COOL TIME-xxx MIN	
	6	LEARNED STOPPED COOL TIME = xxx MIN	
	7	LEARNED ACCEL TIME ACCEL TIME = xxx SEC	
	8	LEARNED Start Capacity Required = xxx PERCENT	
	9	END OF PAGE SIX ACTUAL VALUES	Page footer
	1	PAGE 7: ACTUAL VALUES METERING DATA	Page header
	2	Vab = xxx Vbc = xxx Vac = xxx (VOLTS) or MTM METER MODULE NOT INSTALLED	Displayed only if MTM unit is on line
	3	3 PHASE KWATTS KW = xxx	Displayed only if MTM unit is on line

Page	Value	Text Displayed	Description
7	4	3 PHASE KVARS KVAR = xxx	Displayed only if MTM unit is on line
	5	POWER FACTOR PF = xxx	Displayed only if MTM unit is on line
	6	FREQUENCY HZ = xx.x	Displayed only if MTM unit is on line
	7	END OF PAGE SEVEN ACTUAL VALUES	Page footer

565 Feeder Management Relay



The large faceplate representation of the 565 provides the following animated functions:

Feature	Function
Display Window	Opens the tabular data window specified during wizard configuration and sets the view to Monitoring page.
SET POINTS Button	Opens the tabular data window specified during wizard configuration and sets the view to the Setup page.
RESET Button	Opens the tabular data window specified during wizard configuration and sets the view to the Setup page.
CLEAR Button	Opens the tabular data window specified during wizard configuration and sets the view to the Setup page.
NEXT CHOICE	Opens the tabular data window specified during wizard configuration and sets the view to the Setup page.
0 to 9 Buttons	Open the tabular data window specified during wizard configuration and set the view to the Setup page.
HELP Button	Displays a Windows help screen for PMCS.
ACTUAL VALUES Button	Brings the meter to an initial setting point and displays ACTUAL VALUES HAS NINE PAGES OF DATA.
REFRESH Button	Updates the display to the current meter reading.
STORE Button	Resets the meter at six special points in the display of values. Press STORE to toggle the response on the bottom line.
PAGE UP Button	Rotates among nine pages of parameter data. Press the key to display ACTUAL VALUES on the top line, a description on the bottom, and reset to the first parameter value. The nine pages are listed in the table below.
LINE Buttons	Rotate among parameters within a page. Certain configurations or meter values may prevent display of all parameters within a page. The parameters in each page are listed in the table below.
Panel Display Lights	Display animation that shows the status of the 565 relay. The dark red square to the left of the label appears bright red to indicate an active state. The TRIP bar shows the current trip condition. Auxiliary relays 1, 2, and 3 show user-selected function status. The BREAKER CLOSED and BREAKER OPEN bars show the status of the monitored feeder breaker. The SERVICE bar is not animated.

Table 11. 565 Faceplate animated functions.

The following table lists the pages that can be accessed with the PAGE UP button, with the parameters available in each page that can be accessed with the LINE buttons.

Page	Value	Text Displayed	Description
	1	ACTUAL VALUES CURRENT	Page header
	2	PHASE A CURRENT xxx	Value in amps
	3	PHASE B CURRENT xxx	Value in amps
1	4	PHASE C CURRENT xxx	Value in amps
	5	GROUND CURRENT xxx	Value in amps
	6	PHASES A = xxx B = xxx C = xxx	Value in amps
		or PHASES A<1% FS B<1% FS C<1% FS	Breaker is closed and current <1% of trip level in all phases
	7	CURRENT END OF PAGE	Page footer
	1	ACTUAL VALUES ANALOG INPUT	Page header
2	2	<analog input name> xxx <units>	Name entered by user, value given in user-defined units
		or	
		ANALOG INPUT DISABLED	Displayed if disabled
	3	ANALOG INPUT END OF PAGE	Page footer
	1	ACTUAL VALUES MAINTENANCE DATA	Page header
	2	BRKR mm/dd/yy DATE: xx/xx/xx	
	3	BREAKER TRIPS xxx	Number of trips since last reset
	4	ACCUMULATED KA PHASE A xxx	
3	5	ACCUMULATED KA PHASE B xxx	
	6	ACCUMULATED KA PHASE C xxx	
	7	MAINTENANCE DATA CLEAR NO	Press STORE button to reset trip counter
	8	DATA CLEARED LAST: xx/xx/xx	Date of last reset
	9	MAINTENANCE DATA END OF PAGE	Page footer
	1	ACTUAL VALUES OPERATIONS DATA	Page header
	2	TIMED PHASE O/C TRIPS ###	

Page	Value	Text Displayed	Description
	3	INST PHASE O/C TRIPS ###	
	4	TIMED GROUND O/C TRIPS ###	
4	5	INST GROUND O/C TRIPS ###	
	6	OVERVOLTAGE TRIPS ###	
	7	UNDERVOLTAGE TRIPS ###	
	8	ANALOG INPUT TRIPS ###	
	9	CLEAR OPERATIONS DATA? NO	Press STORE button to clear trip counters
	10	DATA CLEARED LAST 0/0/0	
	11	OPERATIONS DATA END OF PAGE	Page footer
	1	ACTUAL VALUES PRE-TRIP DATA	Page header
	2	ALARM PHASE O/C	
	3	ALARM: GROUND O/C	
	4	ALARM: OVERVOLT	
	5	ALARM: UNDERVOLT	
	6	ALARM: ANALOG INPUT	
	7	ALARM: ACCUMULATED KA	
	8	SWITCH ALARM 1	
	9	ALARM: AMPS DEMAND	
	10	ALARM: KW DEMAND	
	11	ALARM: KVAR DEMAND	
	12	ALARM: POWER FACTOR	
	13	ALARM: FREQUENCY	
	14	ALARM: TRIP COIL	
5	15	ALARM: MTM COMM	
	16	CAUSE OF LAST TRIP:	

Page	Value	Text Displayed	Description
	17	TIME OVERCURRENT PHASE ABC or TIME OVERCURRENT GROUND or INST OVERCURRENT PHASE ABC or UNDERVOLTAGE FAULT or OVERVOLTAGE FAULT or EXTERNAL TRIP #x or ANALOG INPUT or POWER FACTOR FAULT or FREQUENCY FAULT	Only phases in alarm are displayed x is in range 1-4
	18	PHASE A PRE-TRIP CURRENT xxx A	Value in amps
	19	PHASE B PRE-TRIP CURRENT xxx A	Value in amps
	20	PHASE C PRE-TRIP CURRENT xxx A	Value in amps
	21	GROUND PRE-TRIP CURRENT xxx A	Value in amps
	22	PRE -TRIP VOLTAGE A-B xxx.xx kV or A-N xxx.xx kV	 If configured as Delta or If configured as Wye
	23	PRE -TRIP VOLTAGE B-C xxx.xx kV or B-N xxx.xx kV	 If configured as Delta or If configured as Wye
	24	PRE -TRIP VOLTAGE C-A xxx.xx kV or C-N xxx.xx kV	 If configured as Delta or If configured as Wye
	25	FREQUENCY AT TRIP xxx.xx Hz	
	26	DATE OF TRIP xx/xx/xx	mm/dd/yy
	27	TIME OF TRIP xx:xx:xx	hh:mm:ss
	28	PRE-TRIP DATA END OF PAGE	Page footer

Page	Value	Text Displayed	Description
	1	ACTUAL VALUES VOLTAGE	Page header
	2	VOLTAGE A-B xxx.xx kV	
6	3	VOLTAGE B-C xxx.xx kV	
	4	VOLTAGE C-A xxx.xx kV	
	5	FREQUENCY OF FEEDER xxx.xx Hz	
	6	VOLTAGE END OF PAGE	Page footer
	1	ACTUAL VALUES EVENT	Page header
	2	NO OF EVENTS xxx	Displayed only if enabled
		or	
		EVENT RECORDING DISABLED	
7	3	CLEAR EVENTS? NO	Press STORE button to clear event counter
	4	EVENTS CLEARED LAST: xx/xx/xx	Date of last reset: mm/dd/yy
	5	EVENT END OF PAGE	Page footer
	1	ACTUAL VALUES DEMAND DATA	Page header
	2	PH-A PEAK DEMAND xxx A	Value in amps
		or	or
		AMPS DEMAND DISABLED	Next prompt is CLEAR AMP DEMAND
	3	PH-B PEAK DEMAND xxx A	Value in amps
	4	PH-C PEAK DEMAND xxx A	Value in amps
	5	CLEAR AMP DEMAND DATA? NO	Press STORE button to reset amp data
	6	DATA CLEARED LAST: xx/xx/xx	Date of last reset: mm/dd/yy
8	7	PEAK KW DEMAND xxx kW	
		or	or
		KW DEMAND DISABLED	Displayed if disabled
	8	CLEAR KW DEMAND DATA? NO	Press STORE button to reset kilowatt data
	9	KW DEMAND DATA CL'D: xx/xx/xx	Date of last reset: mm/dd/yy

Page	Value	Text Displayed	Description
	10	PEAK KVAR DEMAND xxx kVAR	
		or	or
		KVAR DEMAND DISABLED	Displayed if disabled
	11	CLEAR KVAR DEMAND DATA? NO	Press STORE button to reset kVAR data
	12	KVAR DEMAND DATA	Date of last reset: mm/dd/yy
		CL’D: xx/xx/xx	
	13	DEMAND DATA END OF PAGE	Page footer
	1	METERING DATA DEMAND DATA	Page header
	2	POWER FACTOR LAGGING: x.xx	 If PF < 0
		or	or
		LEADING: x.xx	If PF > 0
	3	FREQUENCY MTM x.xx Hz	
9	4	REAL POWER xxx kW	
	5	REACTIVE POWER xxx kVAR	
	6	ENERGY USED xxx MWHRS	
	7	METERING DATA END OF PAGE	Page footer

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Features of Tabular Data Screen Wizards

Introduction

This chapter describes the features available with tabular data screens. The set of features basic to all tabular data screens is described first, then any unique features are described for each device.

Features of Tabular Data Screens

The upper left-hand area of every tabular data screen contains a 3-D graphic of the device faceplate. This graphic is simply to verify identification and is not animated.

The middle area on the left-hand side displays common information about the device. It provides a quick indication of how the device is configured and contains no animation.

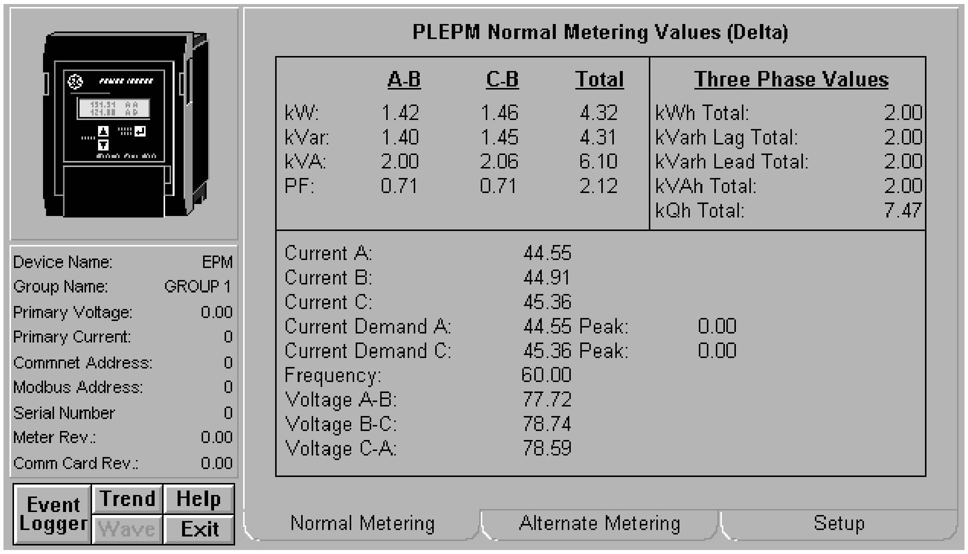
The buttons on the lower-left of the screen provide features described below. Not all devices support all of these buttons, so on some screens one or more of the buttons may be grayed out.

- The Help button calls up the PMCS help file with regard to the current device.
- The Exit button closes the tabular data screen.
- The Events button starts or jumps to the PMCS Event Logger client program and displays its window in the foreground.
- The Trend button displays the trend window that was specified in the configuration dialog. The button will be disabled if no trend window was specified during configuration of the Wizard.
- The Wave button runs the PMCS Waveform Capture client program for that device. This button is only enabled for devices supporting waveform capture.
- The Setup button displays the trend window that was specified in the configuration dialog. The button will be disabled if no setup window was specified during configuration of the Wizard.

The right side of the screen contains a display of the device data. The tabs at the bottom enable you to select among the various data tables which can be displayed. The number of tabs (screens) varies according to the type and amount of data available from the device. The two main types of data are *metering*, which shows the data being monitored by the device, and *setup*, which is used to configure the device. Other tabs may be available depending on the device’s capabilities.

Some devices have push buttons that reset events or clear accumulated data; these will be discussed below in the individual device sections. These functions are represented by 3-D push buttons on the tabular data screens. When a button is pressed, a dialog box appears that either asks for confirmation of the action or states that the operator has an insufficient access level to perform the operation. If security is enabled in your InTouch application, the current operator must have an Access level greater than or equal to the Access level configured for each tabular wizard in order to issue device commands. See the Wonderware InTouch documentation for more information on how to use security features within InTouch.

Power Leader EPM



The Power Leader EPM Tabular Data Screen wizard provides the following command buttons:

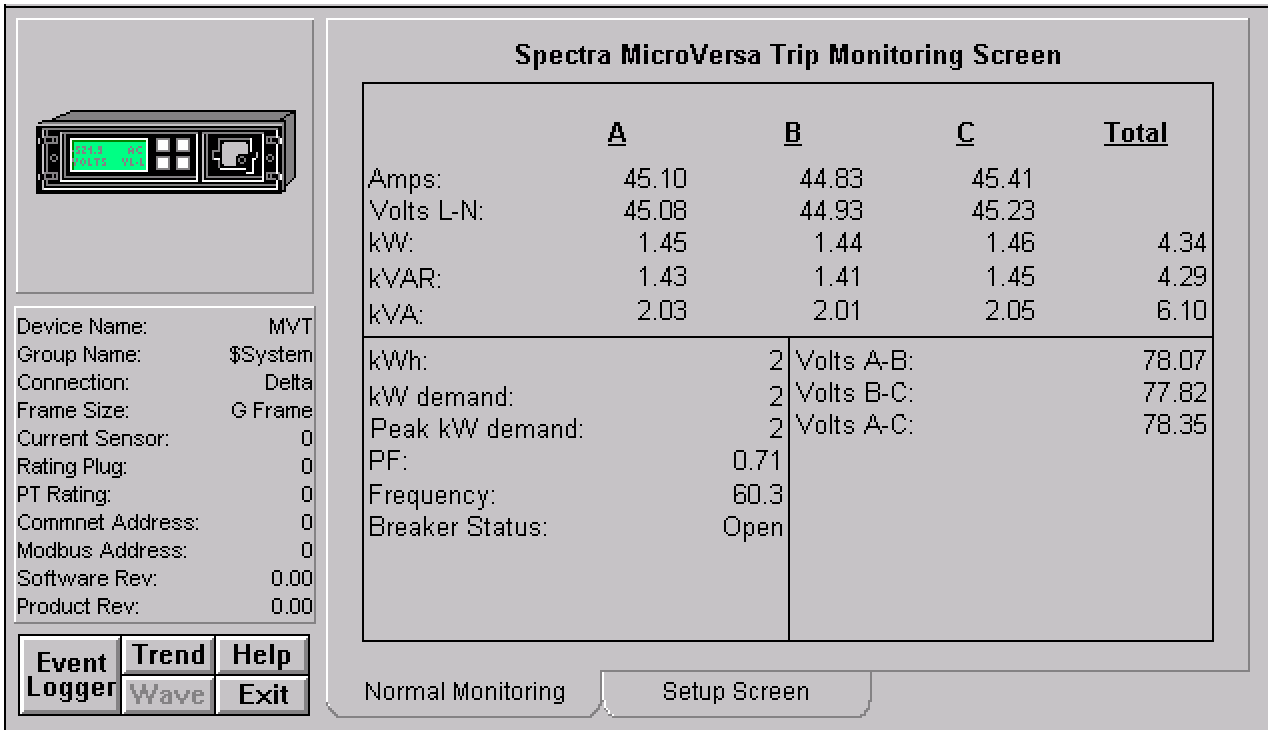
Tab	Button	Function
Setup	Meter Initialize	Performs a complete meter reset
	Clear Errors	Clears the event log in the meter
	Demand Reset	Clears the watt demand register in the meter
	Energy Reset	Clears the accumulated energy registers in the meter

Table 12. PLEPM Tabular data screen commands.

Another feature to bear in mind when working with the PLEPM tabular wizard is:

- The Normal Metering screen displays one of two tables depending on whether the meter is configured as Delta or Wye.

Spectra MicroVersaTrip



The Spectra MicroVersaTrip Tabular Data Screen wizard provides the following command buttons on the Setup screen:

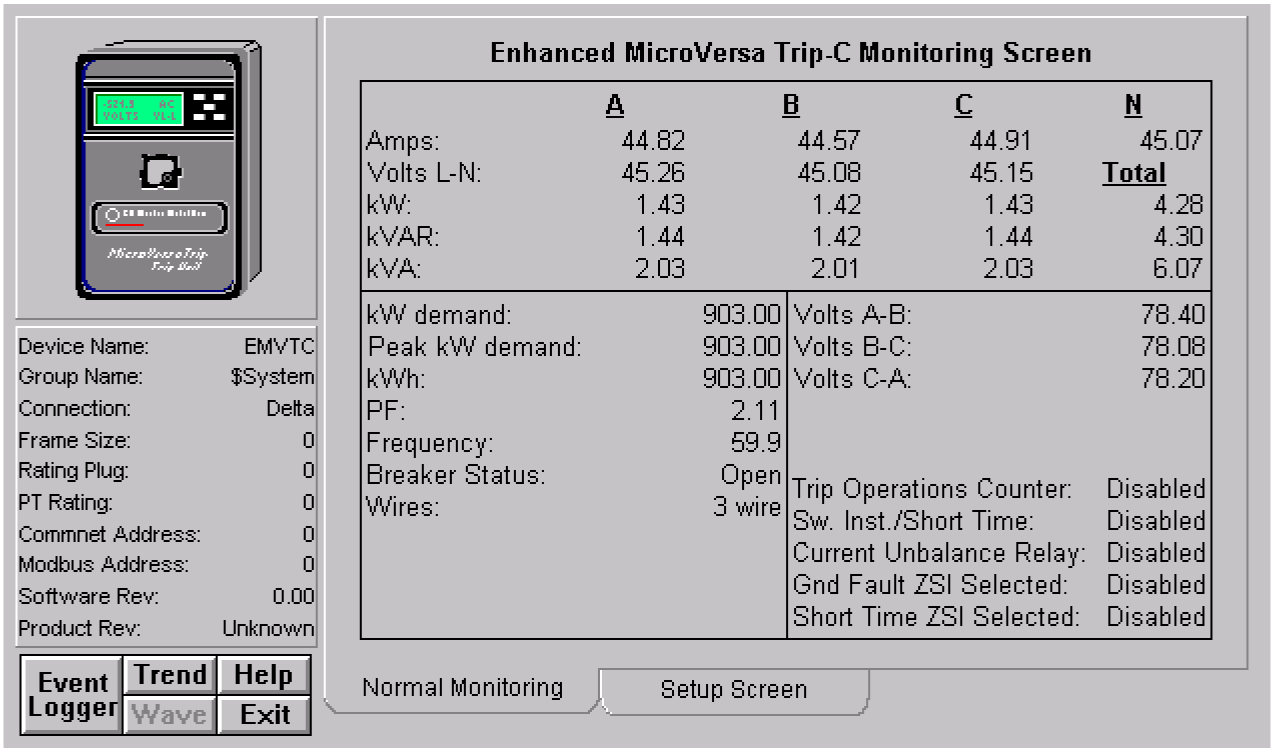
Tab	Button	Function
Setup	Download	Downloads the energy demand interval to the DDE Server
	Refresh	Loads the energy demand interval from the DDE Server into the screen display
	Clear Demand	Clears the accumulated energy

Table 13. Spectra MVT Tabular data screen commands.

Another feature to bear in mind when working with the Spectra MicroVersaTrip tabular wizard is:

- The data entry field for the energy demand interval can be set to values of 5 to 60 minutes in increments of 5 minutes.

Enhanced MicroVersaTrip-C Trip Unit

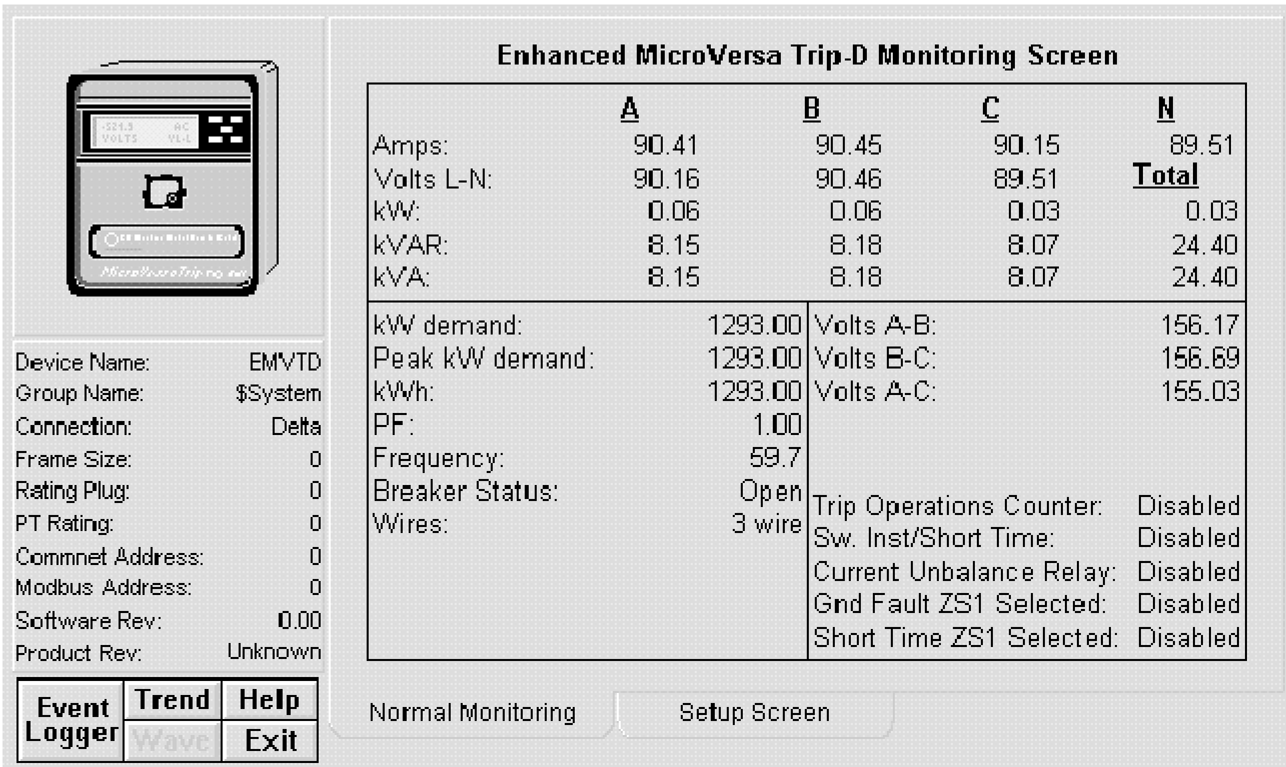


The Enhanced MicroVersaTrip-C Tabular Data Screen provides six push buttons on the Setup screen:

Tab	Button	Function
Setup	Energy	Clears the accumulated energy registers in the trip unit
	Demand	Clears the peak demand register in the trip unit
	Inst. Trip	Resets the instantaneous trip counter in the trip unit
	Short Trip	Resets the short-time trip counter in the trip unit
	Long Trip	Resets the long-time trip counter in the trip unit
	Ground Fault	Resets the ground fault trip counter in the trip unit

Table 14. EMVT-C Tabular data screen commands.

Enhanced MicroVersaTrip-D Trip Unit

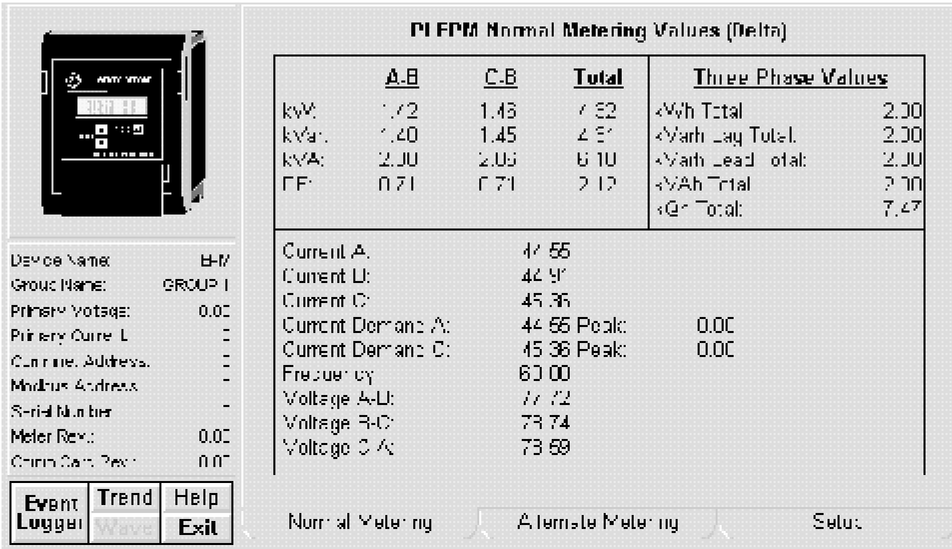


The Enhanced MicroVersaTrip-D Tabular Data Screen provides six push buttons on the Setup tab:

Tab	Button	Function
Setup	Energy	Clears the accumulated energy registers in the trip unit
	Demand	Clears the peak demand register in the trip unit
	Inst. Trip	Resets the instantaneous trip counter in the trip unit
	Short Trip	Resets the short-time trip counter in the trip unit
	Long Trip	Resets the long-time trip counter in the trip unit
	Ground Fault	Resets the ground fault trip counter in the trip unit

Table 15. EMVT-D Tabular data screen commands.

POWER LEADER Meter

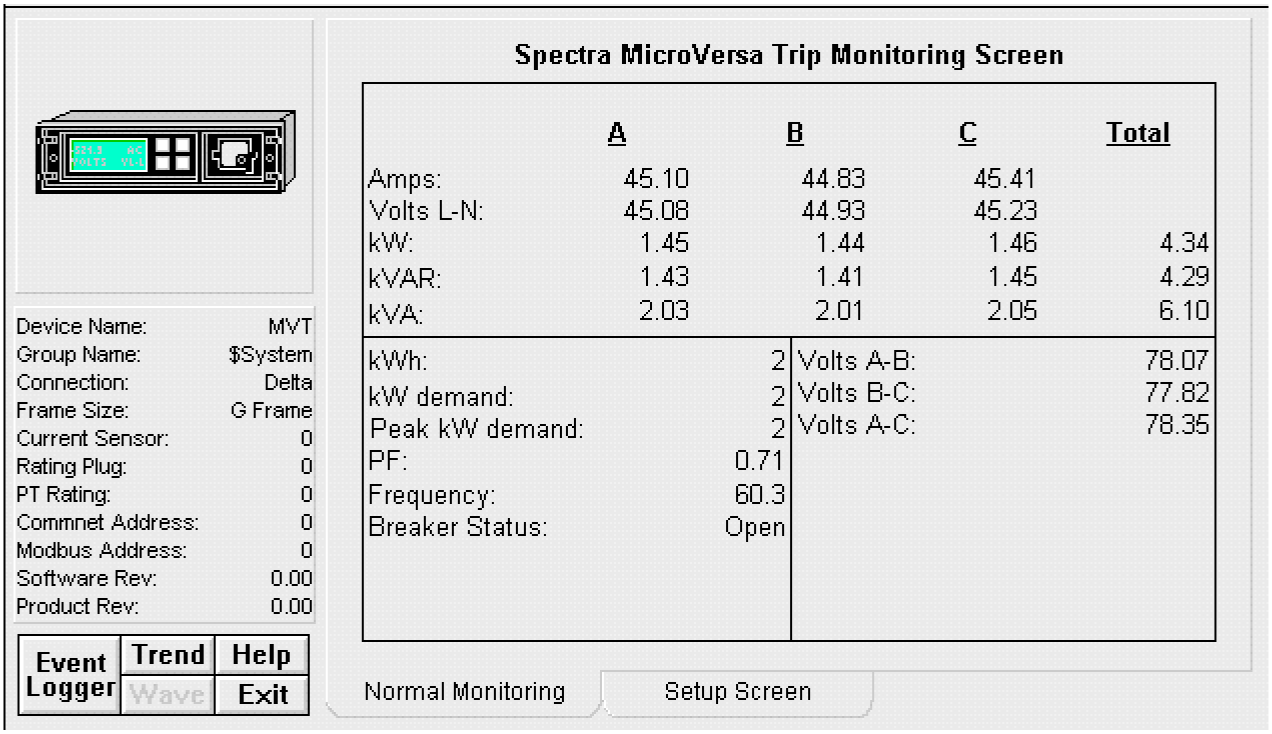


The POWER LEADER Meter Tabular Data Screen wizard provides three push buttons on the Command screen:

Tab	Button	Function
Command	Energy /VARH Clear	Clears the accumulated energy registers in the meter
	Peak Current Clear	Clears the peak current register in the meter
	Peak Watt Demand Clear	Clears the peak demand in the meter

Table 16. PL Meter Tabular data screen commands.

Spectra ECM



The Spectra ECM Tabular Data Screen wizard performs the following actions with push buttons on the Command screen:

Tab	Button	Function
Command	Contactor 1 Start	Closes contactor 1
	Contactor 2 Fast Start	Initiates a fast start of contactor 2
	Contactor 2 Rev Start	Reverse closes contactor 2
	Stop 1 & 2	Opens contactors 1 and 2
	ECM Reset	Completely resets the ECM
	Initialize Temperature	Resets the temperature memory in the ECM
	Trip ECM Contactor	Trips the ECM contactors

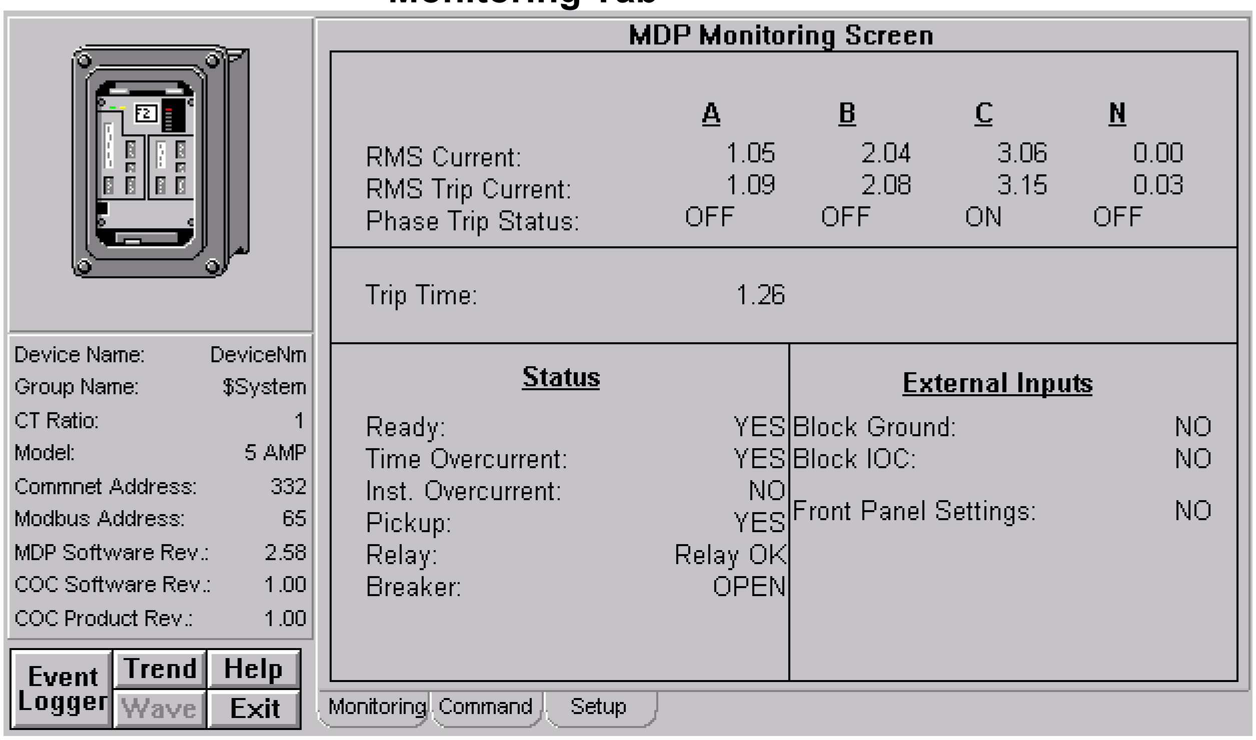
Table 17. Spectra ECM Tabular data screen commands.

MDP Digital Overcurrent Relay

The feature to bear in mind when working with the MDP tabular wizard is:

- On the Setup screen, you must enter a value into the CT Ratio box. This value is multiplied by the values in the amp registers to convert the latter into user units. If you do not enter a value for the CT Ratio, the message "CT Ratio has not been entered" appears on the bottom of the Tabular Data Screen and on the Large Faceplate wizard.

Monitoring Tab

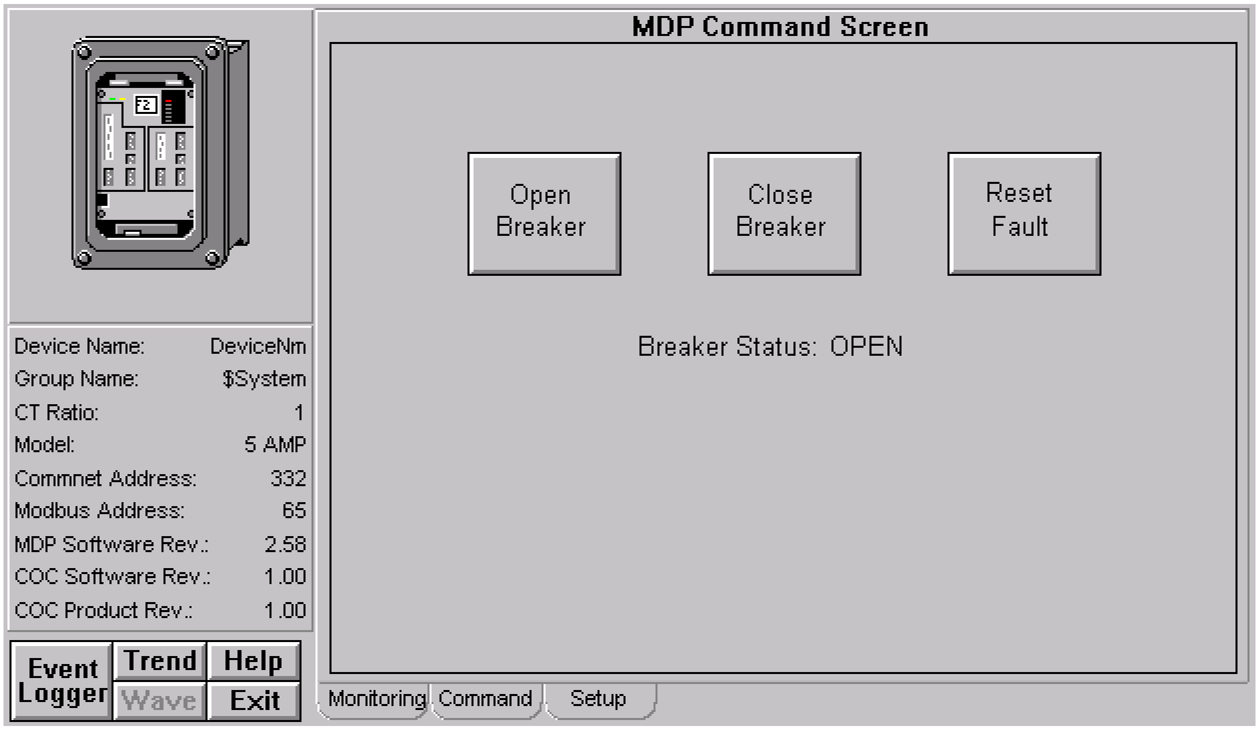


The MDP Monitoring Screen shows the following:

- Metering values of RMS Current, RMS Trip Current and Phase Trip Status
- Trip Time
- Status
- External Inputs

The message "CT Ratios has not been entered!" will appear when no CT Ratio entered on the Setup tab. Click on Setup Screen Tab to enter the CT Ratio.

Command Tab



The MDP Tabular Data Screen wizard has three command buttons:

Tab	Button	Function
Command	Open Breaker	Opens the breaker.
	Close Breaker	Closes the breaker.
	Reset Fault	Clears the event table in the MDP

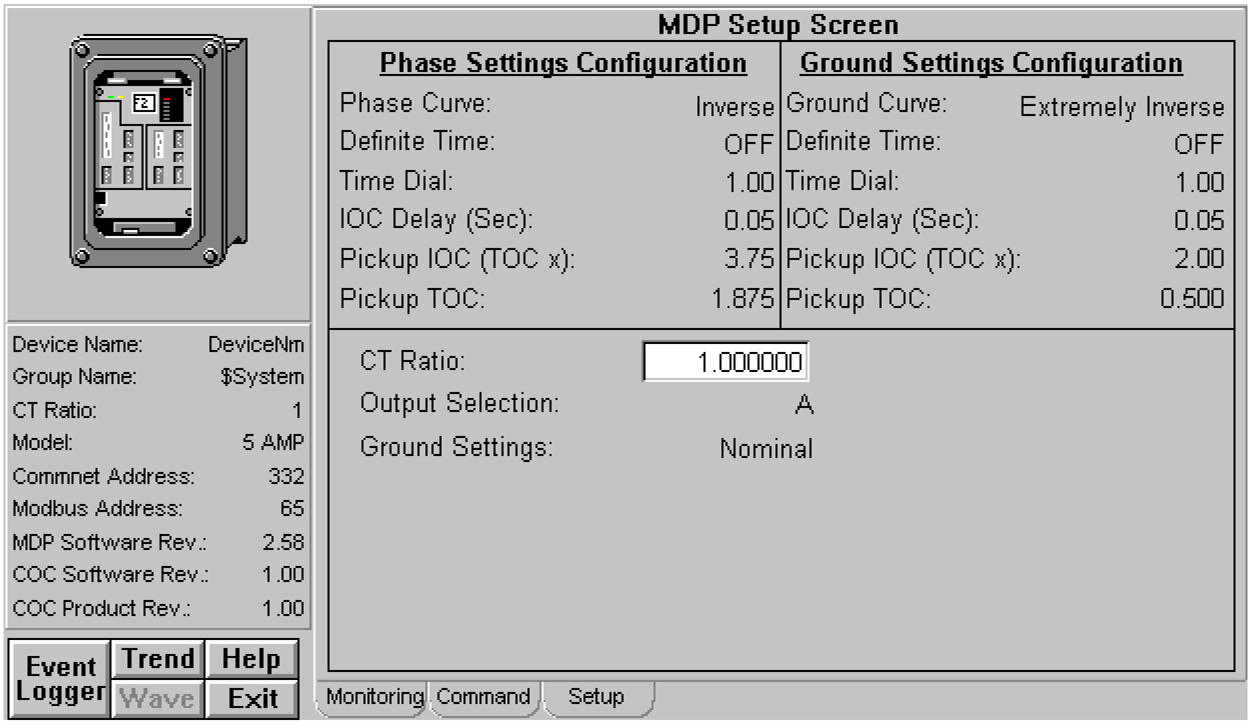
Table 18. MDP Tabular data screen commands.

The MDP Command Screen shows 3 buttons:

- **Open Breaker:** Opens the Breaker
- **Close Breaker:** Closes the Breaker
- **Reset Fault:** Clears the Event Table in the MDP

The screen also shows the Breaker Status, for example OPEN.

Setup Tab



The MDP Setup Screen shows:

- Phase Settings Configuration
- Ground Settings Configuration

You must enter CT Ratio in the relevant field.

PQM (Power Quality Meter)

All six function buttons under the Info box are enabled for the PQM.

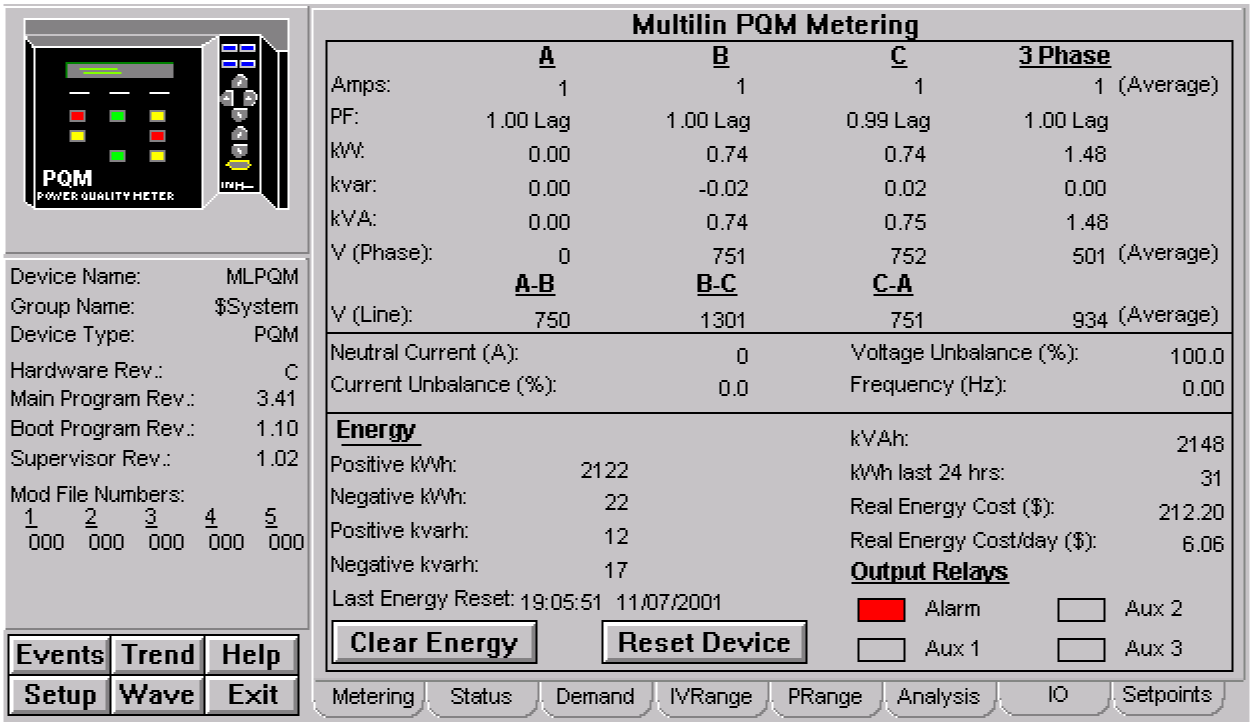
The PQM Tabular Data Screen wizard has nine command buttons, described below.

Tab	Button	Function
Metering	Clear Energy	Clears the PQM’s energy counters
	Reset Device	Issues a RESET command to the PQM
Demand	Clear Max Demand Values	Clears the PQM’s Max Demand values from memory
	Clear Frequency Values	Clears the PQM's Max Frequency values from memory
I, V Range	Clear Current Min/Max	Clears the PQM’s Current Min/Max values from memory
	Clear Voltage Min/Max	Clears the PQM’s Voltage Min/Max values from memory
P Range	Clear Power Min/Max	Clears the PQM’s Power Min/Max values from memory
Analysis	Clear Max THD Values	Clears the PQM’s Max THD values from memory
I/O	Reset Pulse Counter	Resets the PQM’s pulse counter

Table 19. PQM Tabular data screen commands.

See the PQM Instruction Manual (Chapter 5, *Actual Values*) for information on the display of data values under different device configurations. Values not configured for use are displayed as N/A.

Metering Tab

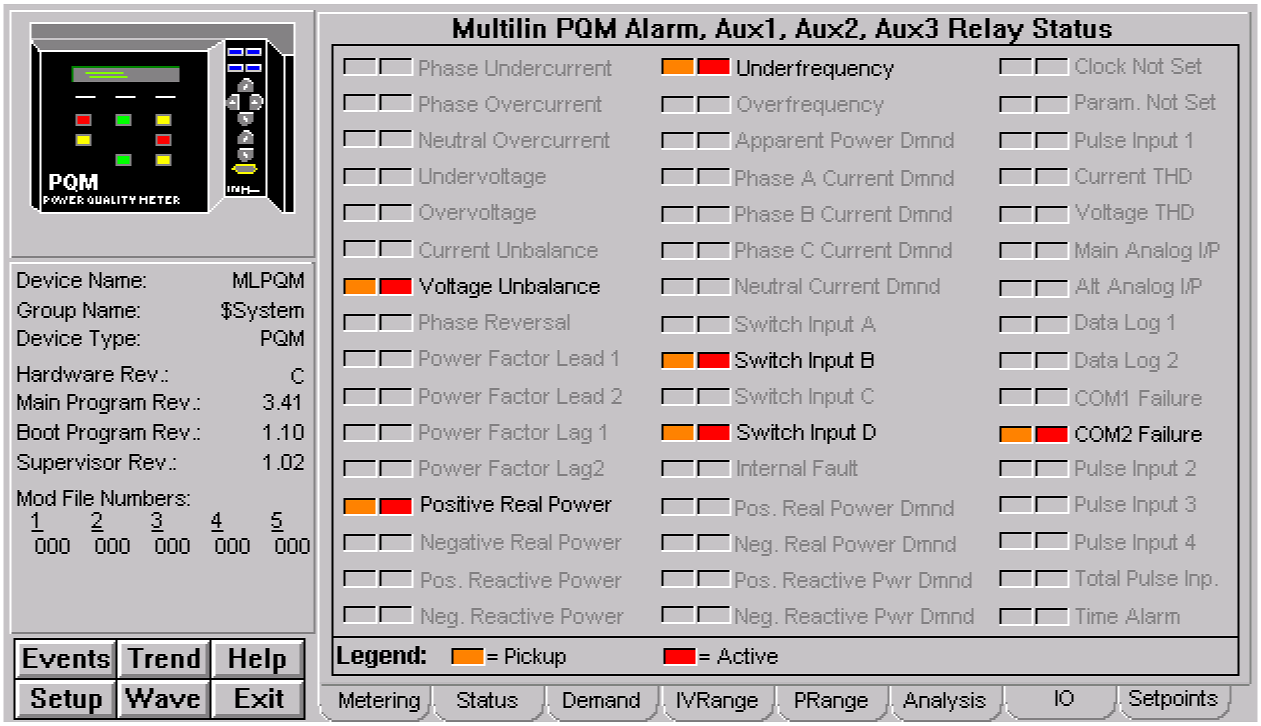


The Multilin PQM Metering tab shows:

- **Metering values:** For A, B, C and 3 Phase
- **Energy:** In various values
- **Output Relays:** Alarm, Aux 1, Aux 2 and Aux 3

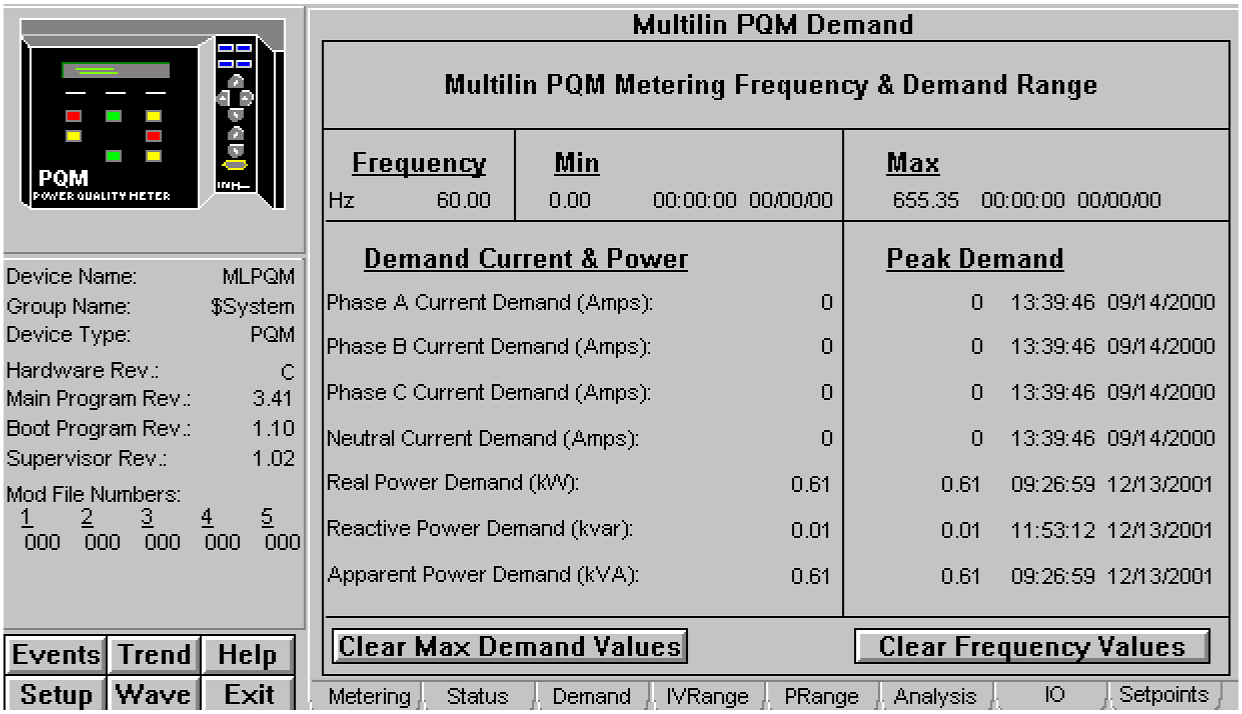
The **Clear Energy** button, when clicked, will clear all energy values. The **Reset Device** button, when clicked, will reset the Device.

Status Tab



The Multilin Status tab shows the status of Alarms, Aux1, Aux2, Aux3 Relays.

Demand Tab

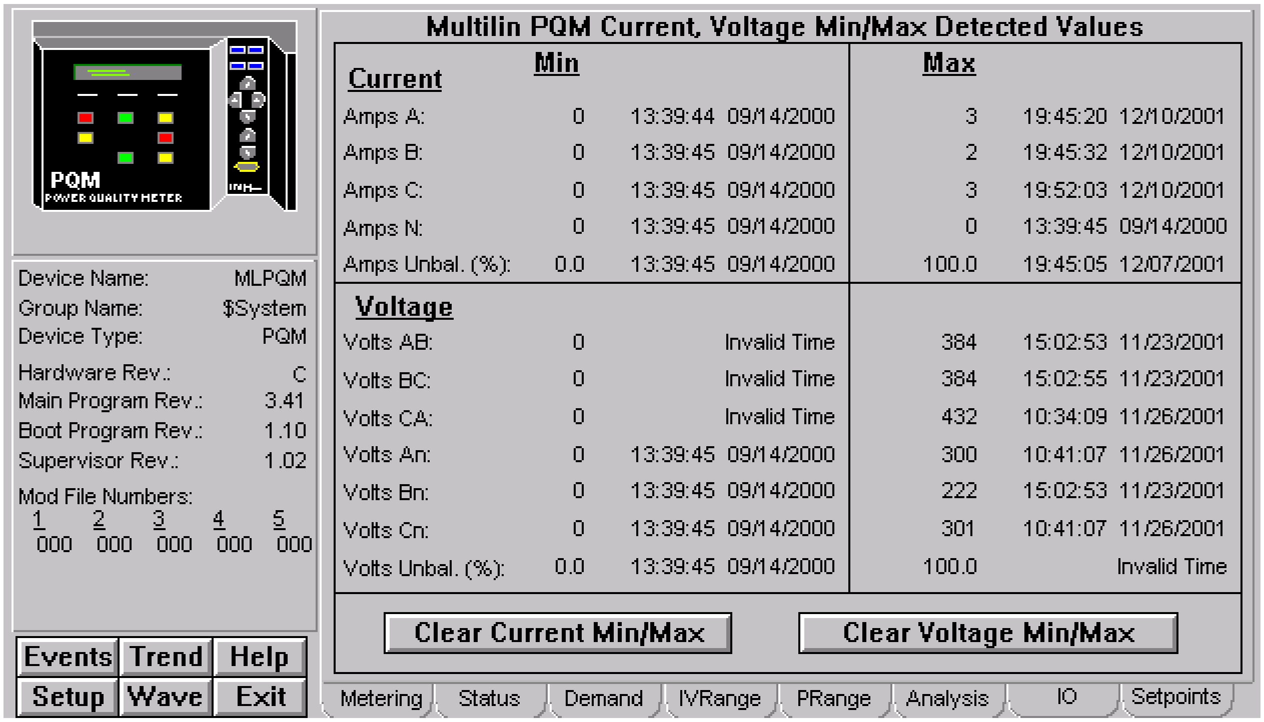


The Multilin PQM Demand screen shows :

- Demand Current & Power
- Peak Demand
- Minimum and Maximum Frequency and their Time Stamps.

The Clear Max Demand Values button, when clicked, will clear all the maximum demand values. The Clear Frequency Values button, when clicked, will clear all the frequency values.

IV Range Tab

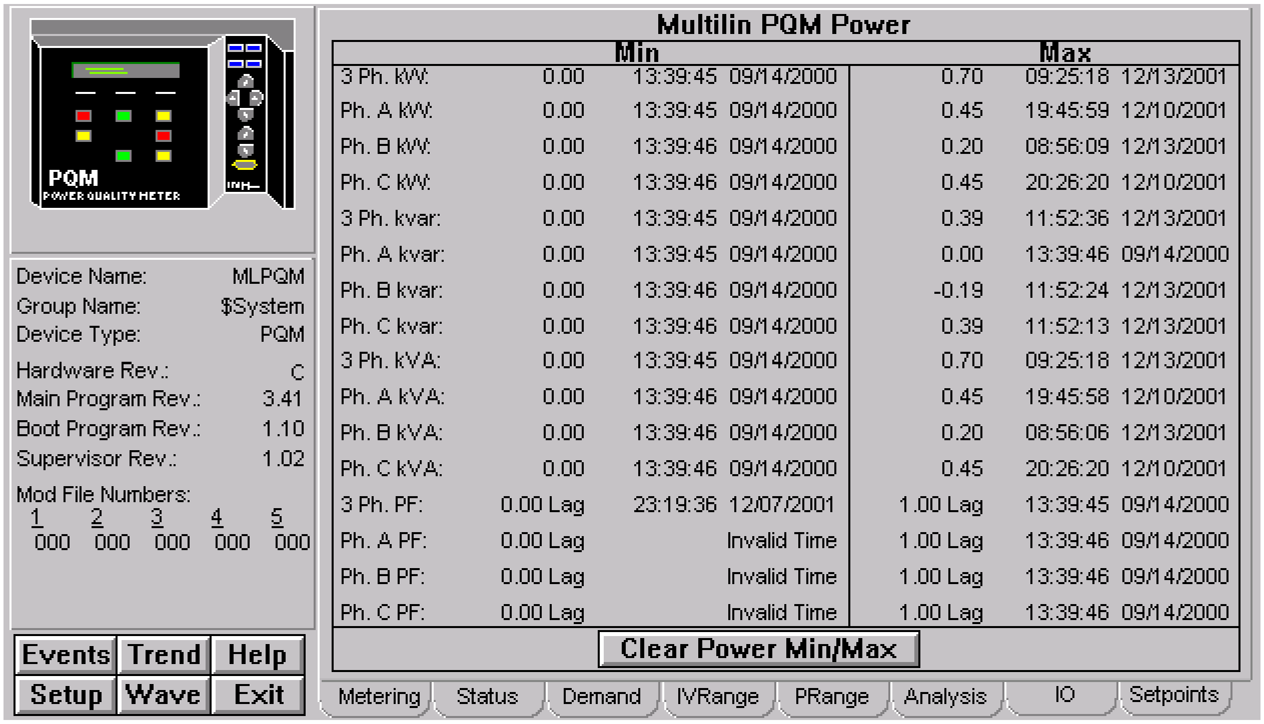


The Multilin PQM IV Range tab shows the Minumum and Maximum Current, Voltage Values.

The **Clear Current Min/Max** button, when clicked, will clear all the minimum and maximum values of the current.

The **Clear Voltage Min/Max** button, when clicked, will clear all the minimum and maximum values of voltage.

P Range Tab

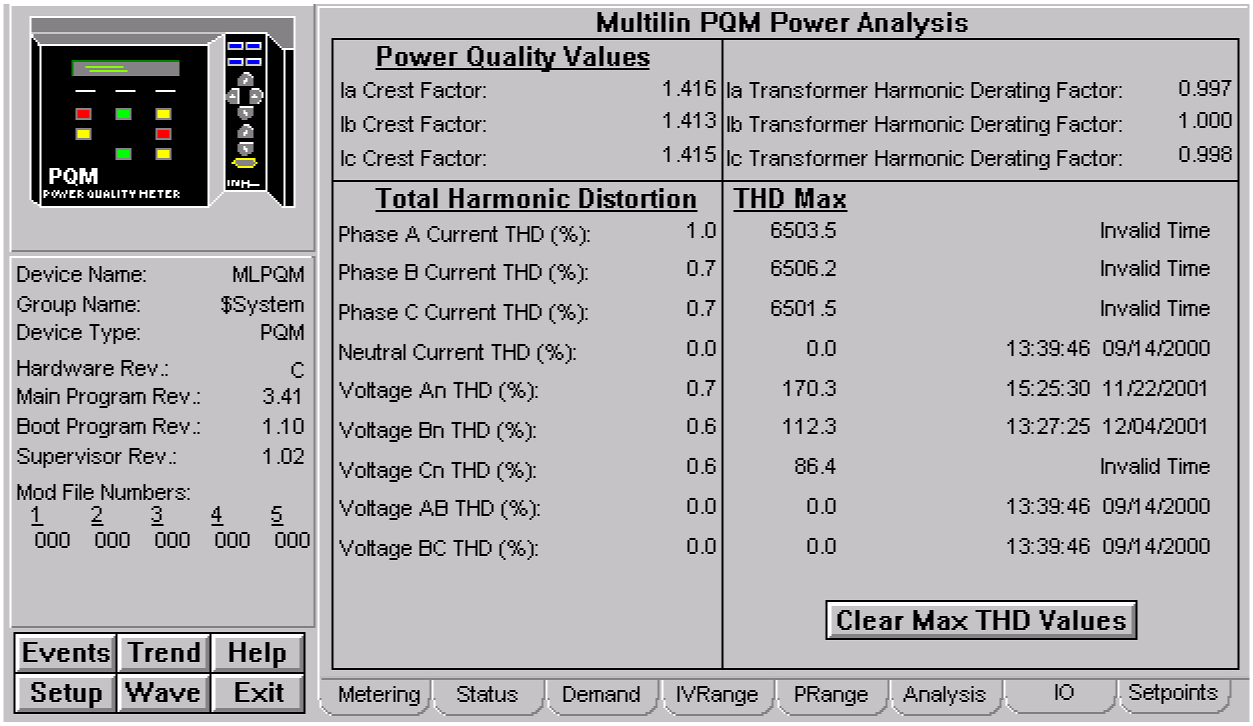


	Min		Max	
3 Ph. kW:	0.00	13:39:45 09/14/2000	0.70	09:25:18 12/13/2001
Ph. A kW:	0.00	13:39:45 09/14/2000	0.45	19:45:59 12/10/2001
Ph. B kW:	0.00	13:39:46 09/14/2000	0.20	08:56:09 12/13/2001
Ph. C kW:	0.00	13:39:46 09/14/2000	0.45	20:26:20 12/10/2001
3 Ph. kvar:	0.00	13:39:45 09/14/2000	0.39	11:52:36 12/13/2001
Ph. A kvar:	0.00	13:39:45 09/14/2000	0.00	13:39:46 09/14/2000
Ph. B kvar:	0.00	13:39:46 09/14/2000	-0.19	11:52:24 12/13/2001
Ph. C kvar:	0.00	13:39:46 09/14/2000	0.39	11:52:13 12/13/2001
3 Ph. kVA:	0.00	13:39:45 09/14/2000	0.70	09:25:18 12/13/2001
Ph. A kVA:	0.00	13:39:46 09/14/2000	0.45	19:45:58 12/10/2001
Ph. B kVA:	0.00	13:39:46 09/14/2000	0.20	08:56:06 12/13/2001
Ph. C kVA:	0.00	13:39:46 09/14/2000	0.45	20:26:20 12/10/2001
3 Ph. PF:	0.00 Lag	23:19:36 12/07/2001	1.00 Lag	13:39:45 09/14/2000
Ph. A PF:	0.00 Lag	Invalid Time	1.00 Lag	13:39:46 09/14/2000
Ph. B PF:	0.00 Lag	Invalid Time	1.00 Lag	13:39:46 09/14/2000
Ph. C PF:	0.00 Lag	Invalid Time	1.00 Lag	13:39:46 09/14/2000

The Multilin PQM Power Range screen shows the Power minimum and maximum values.

The **Clear Power Min/Max** button, when clicked, will clear all the minimum and maximum values of the power.

Analysis Tab

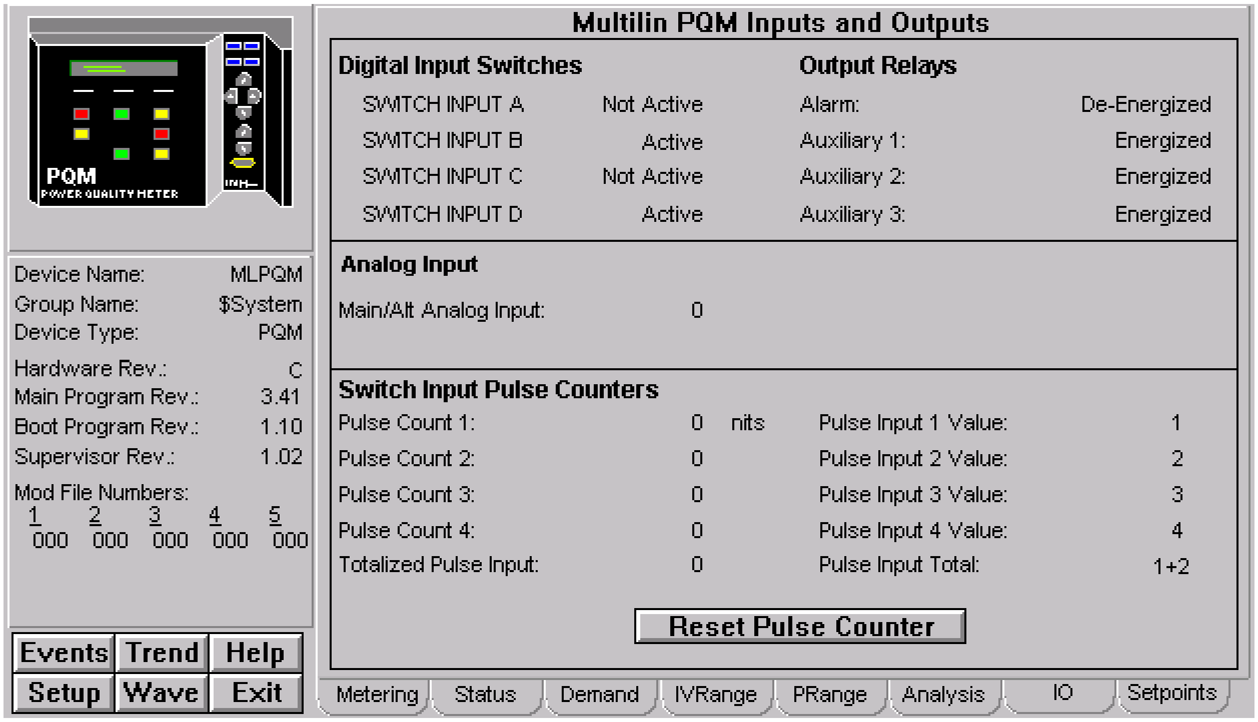


The Multilin PQM Power Analysis screen shows:

- Power Quality Values
- Total Harmonic Distortion
- THD Max

The **Clear Max THD Values** button, when clicked, will clear all maximum THD values.

IO Tab

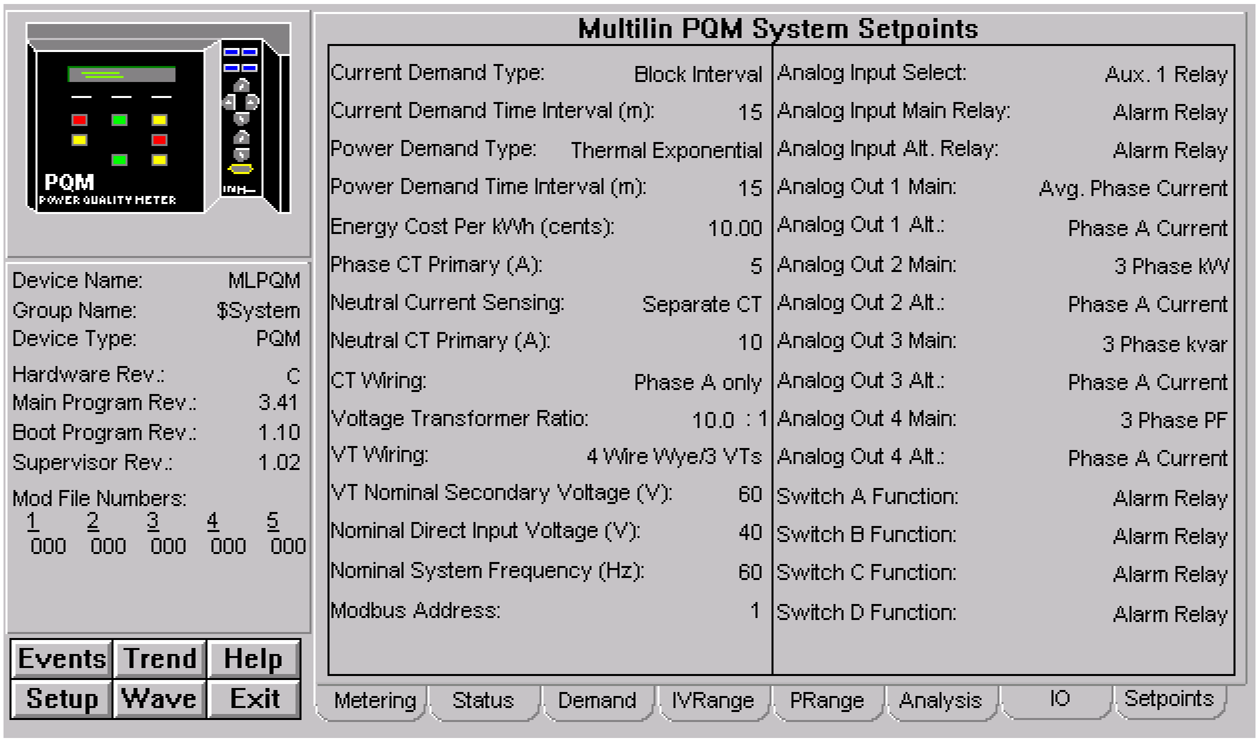


The Multilin PQM Inputs and Outputs screen shows:

- Digital Input Switches
- Output Relays
- Analog Input
- Switch Input Pulse Counters

The **Reset Pulse Counter** button, when clicked, will reset all the pulse counter values.

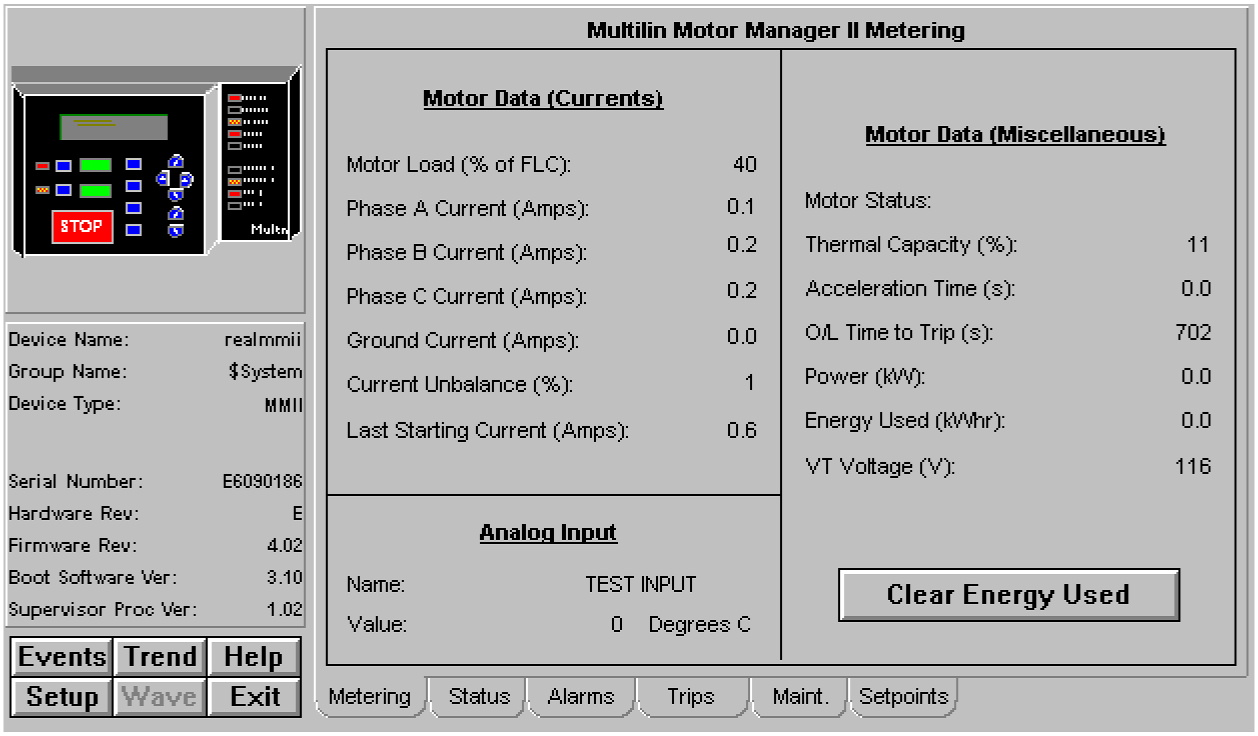
Setpoints Tab



The Multilin PQM System Setpoints screen shows:

- Current Demand Type
- Current Demand Time Interval (m)
- Power Demand Type
- Power Demand Time Interval (m)
- Energy Cost Per kWh (cents)
- Neutral Current Sensing
- Analog Input Main Relay
- Analog Input Alt Relay
- Switch A Function
- Switch B Function
- Switch C Function
- Switch D Function

Motor Manager II (MMII)



Five of the six function buttons under the Info box are enabled for the MMII; the Wave button is not supported for the MMII.

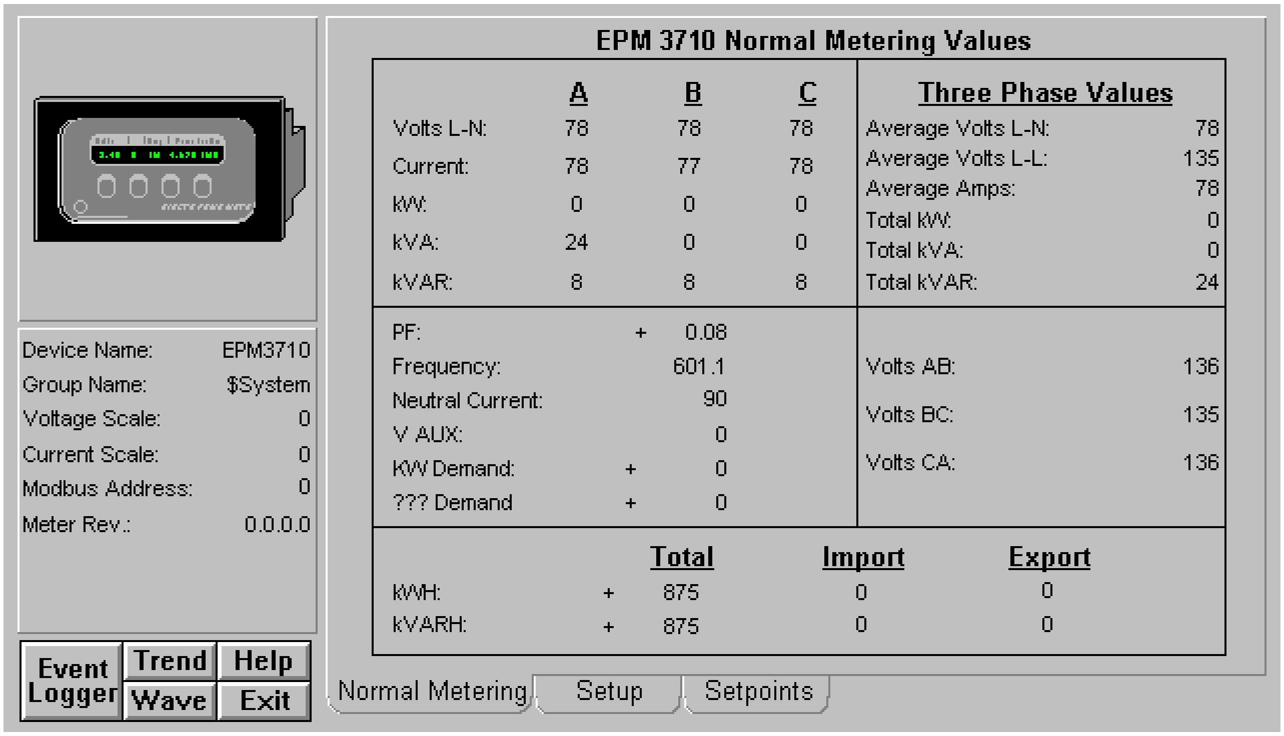
The MMII Tabular Data Screen wizard has four command buttons, described below.

Tab	Button	Function
Metering	Clear Energy	Clears the MMII's energy counters
Maintenance	Clear Start/Trip Counters	Clears the MMII's Start and Trip count values from memory
	Clear Timers	Clears the MMII's Timer values from memory
	Clear Interlock Counter	Clears the MMII’s Interlock Counter values from memory

Table 20. MMII Tabular data screen commands.

See the MMII's Instruction Manual (Chapter 5, *Actual Values*) for information on the display of data values under different device configurations. Values not configured for use are displayed as N/A.

EPM 3710 Meter

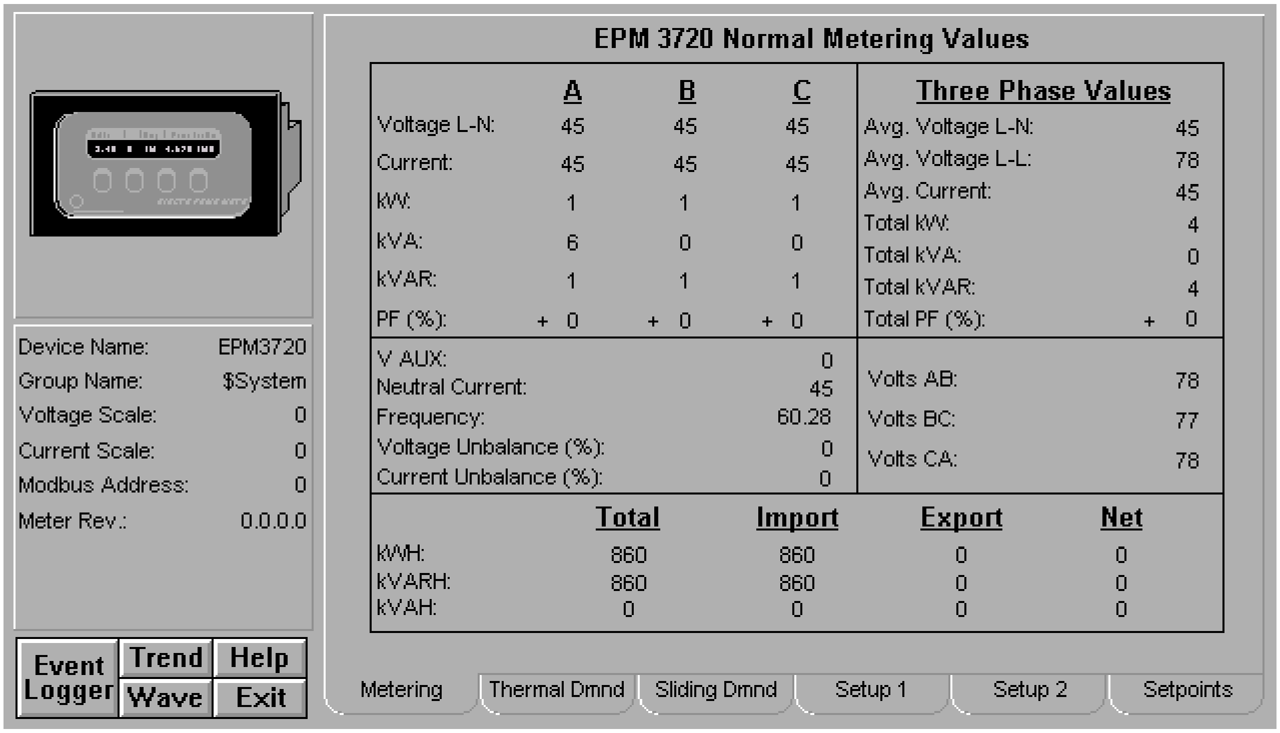


The EPM 3710 Tabular Data Screen wizard provides the following special features:

- The Normal Metering Values screen has a label that displays either kVA Demand or Amps Demand, depending on how the meter is configured.
- The Setpoints screen has two scroll buttons that determine which setpoint is displayed.
- The Setup tab contains a field "Iout Key" corresponding to the Iout Key display on the actual device. On the actual device, this field displays text messages such as "Voltage A" or "Current C". In the Tabular Data Screen wizard, these messages are presented as a numeric code and must be referenced against the following table.

Code	Meaning	Code	Meaning	Code	Meaning
0	Voltage A	9	KVA A	18	KVA Total
1	Voltage B	10	KVA B	19	KVAR Total
2	Voltage C	11	KVA C	20	PF
3	Current A	12	KVAR A	21	KW Demand
4	Current B	13	KVAR B	22	Amp Demand
5	Current C	14	KVAR C	23	Frequency
6	KVA	15	VOLTAGE AVG	24	Vaux
7	KWB	16	CURRENT AVG	25	Current I4
8	KWC	17	KW Total		

EPM 3720 Meter



The EPM 3720 Tabular Data Screen wizard has several special features. You can use the Setup 1, Setup 2, and Setpoints screens to change the meter configuration. Values displayed in white boxes are changeable. Some are changed by clicking on the displayed value, while others provide scroll buttons, and some have both.

- The Download and Refresh buttons on the Setup 1 and Setup 2 screens upload and download the values for all of the setup parameters.
- The Download and Refresh buttons on the Setpoints screen upload and download all of the setpoints from the device.
- The Reset Energy Integrators and Reset All Min/Max buttons on the Setup 1 screen provide the named functions.
- The Sliding Demand tab supports downloading of up to 10 sliding demand measurements to the device. See Appendix B for information on setting the sliding demand keys.

To change setpoints at the device, first press the Refresh button to upload current setpoint values from the device (otherwise the defaults are shown and used for download). Modify setpoints as desired, then press the Download button to send all setpoints to unit.

When you first open the EPM 3720 Tabular Data Screen, you may see values of zero in all fields. The EPM 3720 Tabular Data Screen requires some user interaction (such as pressing a key) to update its values.

EPM 7300 Meter

The EPM 7300 Tabular Data Screen wizard has several special features. You can use the Setup screen to change the meter configuration. Values displayed in white boxes are changeable. Some are changed by clicking on the displayed value, while others are changed by clicking on the associated scroll button. The Download and Refresh buttons on the setup screen upload and download all of the setpoints from the device.

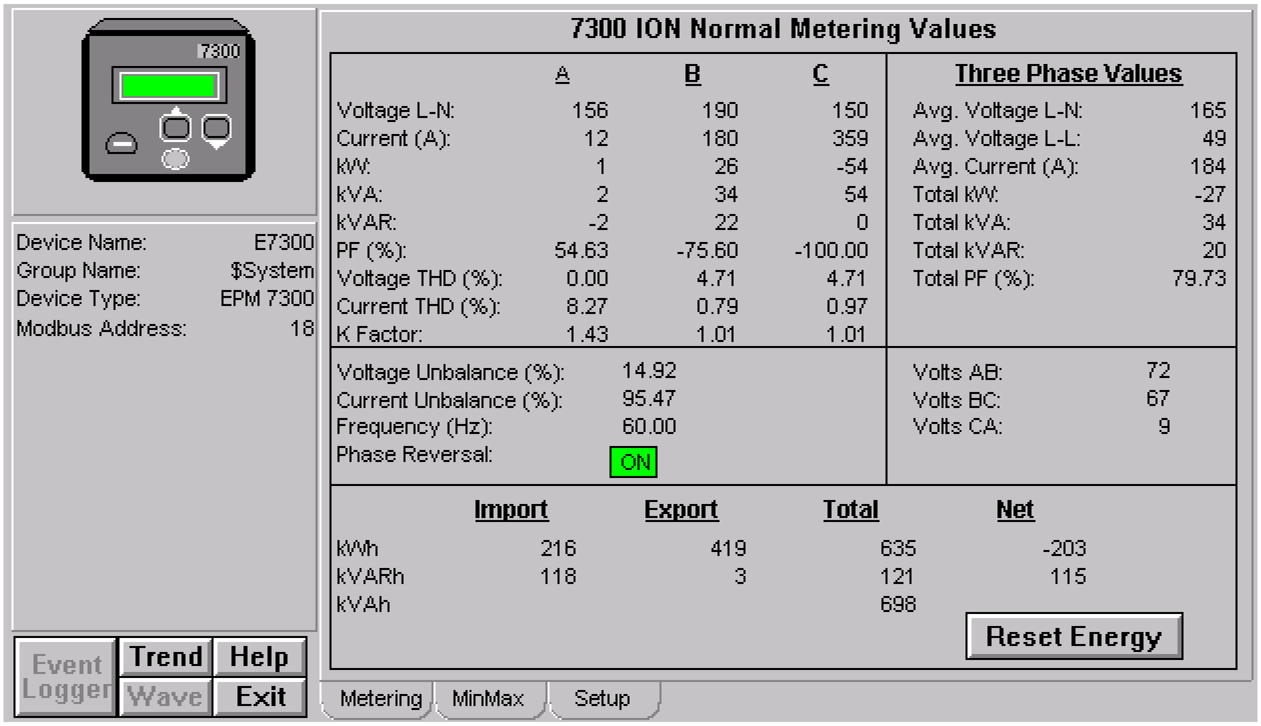
To change setpoints at the device, first press the refresh button to upload current setpoint values from the device (otherwise the defaults are shown and used for download). Modify setpoints as desired, then press the download button to send all setpoints to the unit.

The EPM 7300 Tabular Data Screen's command buttons are described below:

Tab	Button	Function
Metering	Reset Energy	Resets all Energy Integrators in the meter.
MIN/MAX Demand	Digital Input Labels	The user can enter descriptive text (up to 20 characters) for each digital input. These labels are retentive.
	Force ON	For each digital output, this button will force the output to the ON state.
	Force OFF	For each digital output, this button will force the output to the OFF state.
	Reset Sliding Demand	Resets all Sliding Demand Values in the device.
	Reset Min/Max	Resets all Min/Max values in the device.

Table 21. EPM 7300 Tabular data screen commands.

Metering Tab

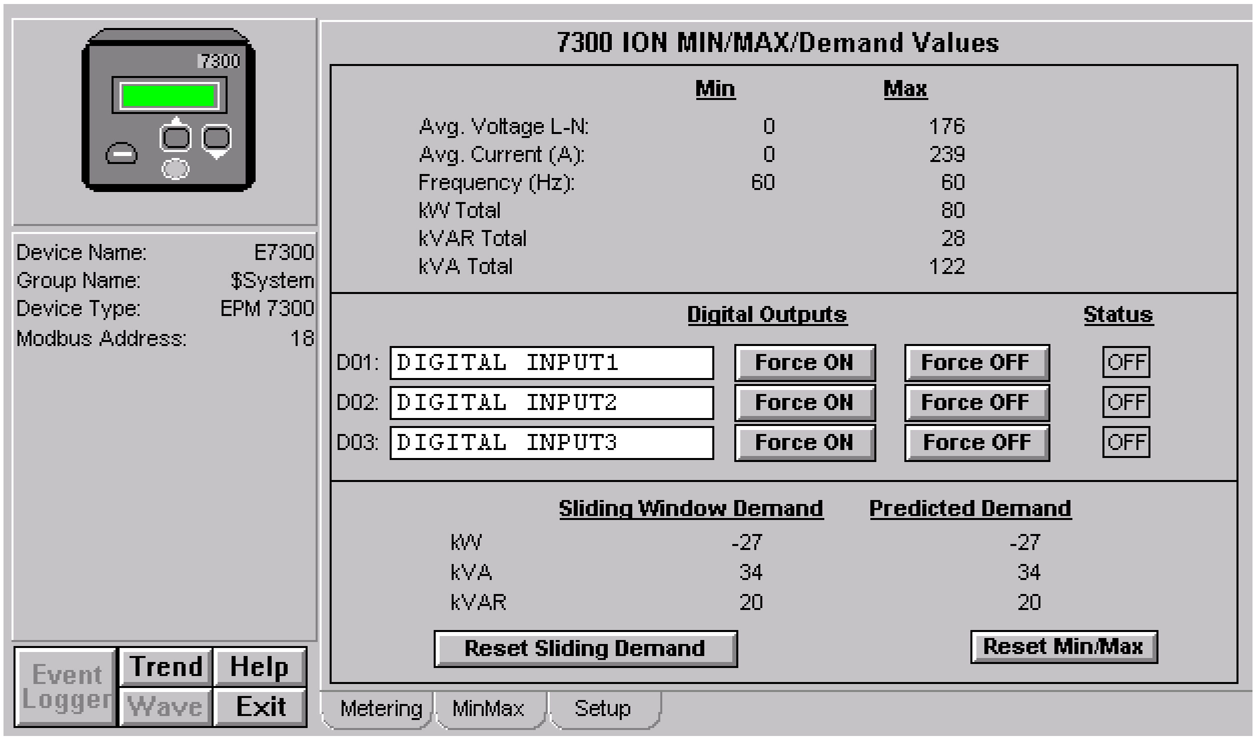


The 7300 ION Normal Metering Values screen shows the metering values:

- A, B and C
- Three Phase Values
- Voltage Imbalance
- Current Imbalance
- Frequency (Hz)
- Phase Reversal
- Energy

The **Reset Energy** button will reset the energy.

Min/Max Tab



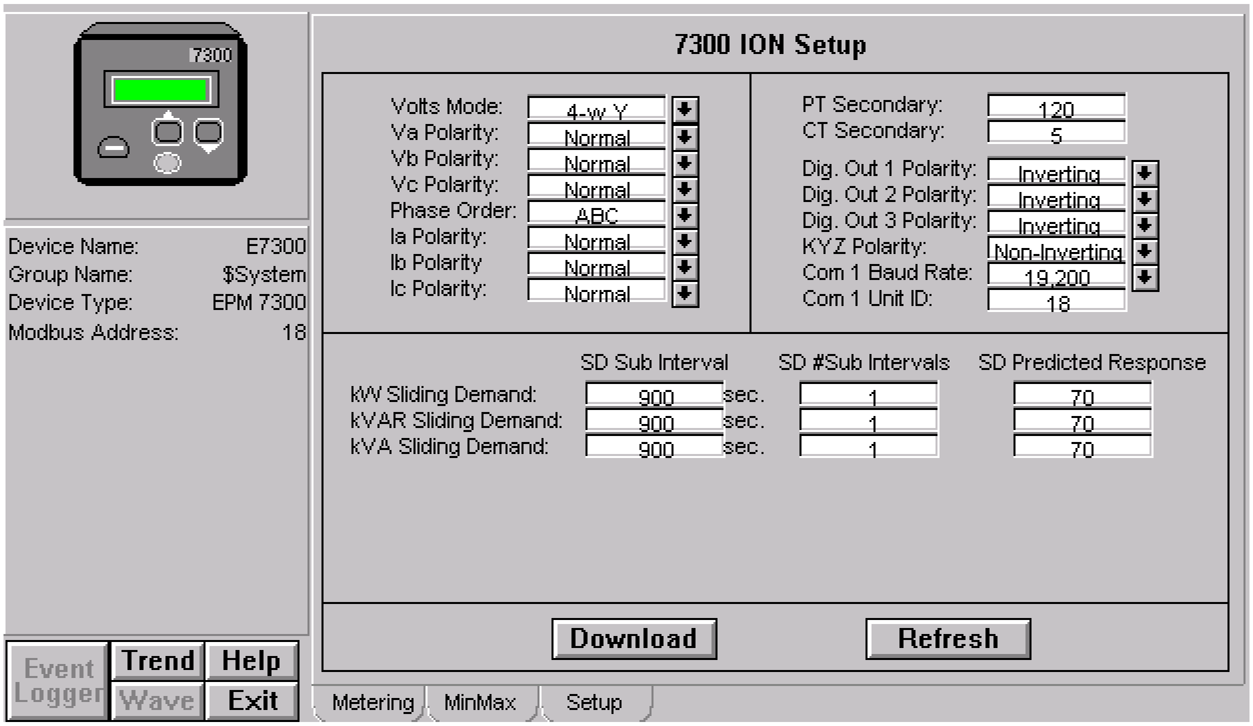
The 7300 ION Min/Max/Demand Values screen shows:

- Minimum and maximum metering values
- Digital Outputs
  1. By clicking on the Text box provided, a popup box will be appeared where text can be entered.
  2. By clicking on Force ON and Force OFF the status can be seen as ON or OFF respectively.
- Sliding Window Demand and Predicted Windows Demand

The Reset Sliding Demand button, when clicked, will reset all Sliding Demand values in the device.

The Reset Min/Max button, when clicked, will reset all Min/Max values in the device.

Setup Tab



The 7300 ION Setup screen shows various setup values of the device such as Volts Mode, Phase Order, PT Secondary and CT Secondary.

The **Download** button, when clicked, will download all relevant values in the device.

The **Refresh** button, when clicked, will refresh all the values coming from the device.

EPM 7330 Meter

The EPM 7330 Tabular Data Screen wizard has several special features. You can use the Setup screen to change the meter configuration. Values displayed in white boxes are changeable. Some are changed by clicking on the displayed value, while others are changed by clicking on the associated scroll button. The Download and Refresh buttons on the setup screen upload and download all of the setpoints from the device.

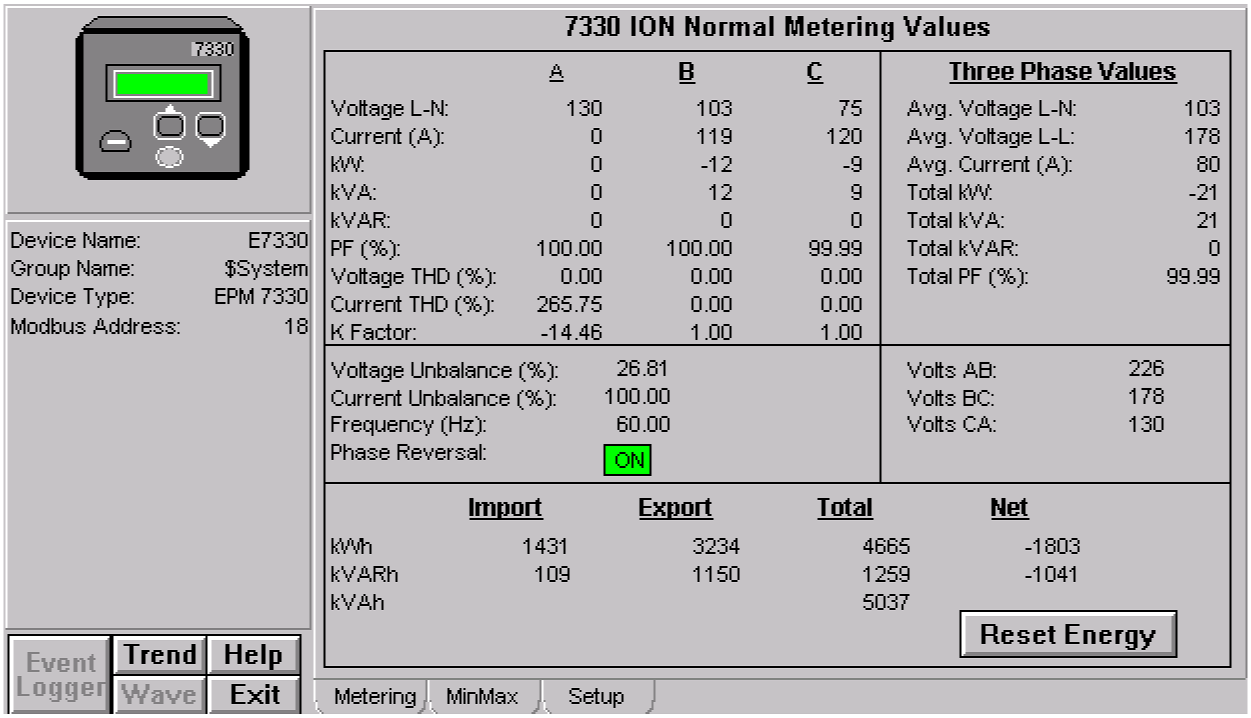
To change setpoints at the device, first press the refresh button to upload current setpoint values from the device (otherwise the defaults are shown and used for download). Modify setpoints as desired, then press the download button to send all setpoints to the unit.

The EPM 7330 Tabular Data Screen's command buttons are described below:

Tab	Button	Function
Metering	Reset Energy	Resets all Energy Integrators in the meter.
MIN/MAX Demand	Digital Input Labels	The user can enter descriptive text (up to 20 characters) for each digital input. These labels are retentive.
	Force ON	For each digital output, this button will force the output to the ON state.
	Force OFF	For each digital output, this button will force the output to the OFF state.
	Reset Sliding Demand	Resets all Sliding Demand Values in the device.
	Reset Min/Max	Resets all Min/Max values in the device.

Table 22. EPM 7330 Tabular data screen commands

Metering Tab

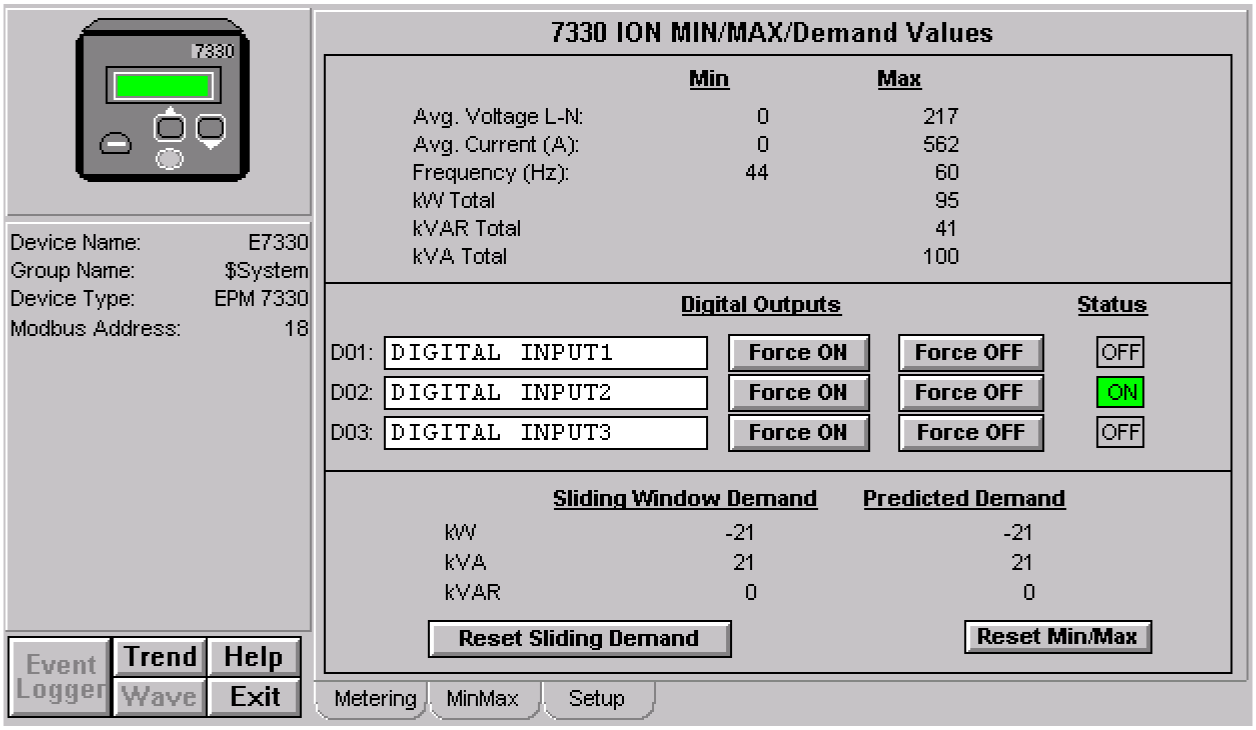


The 7330 ION Normal Metering Values screen shows the metering values:

- A, B and C
- Three Phase Values
- Voltage Imbalance
- Current Imbalance
- Frequency (Hz)
- Phase Reversal
- Energy

The **Reset Energy** button will reset the energy.

Min/Max



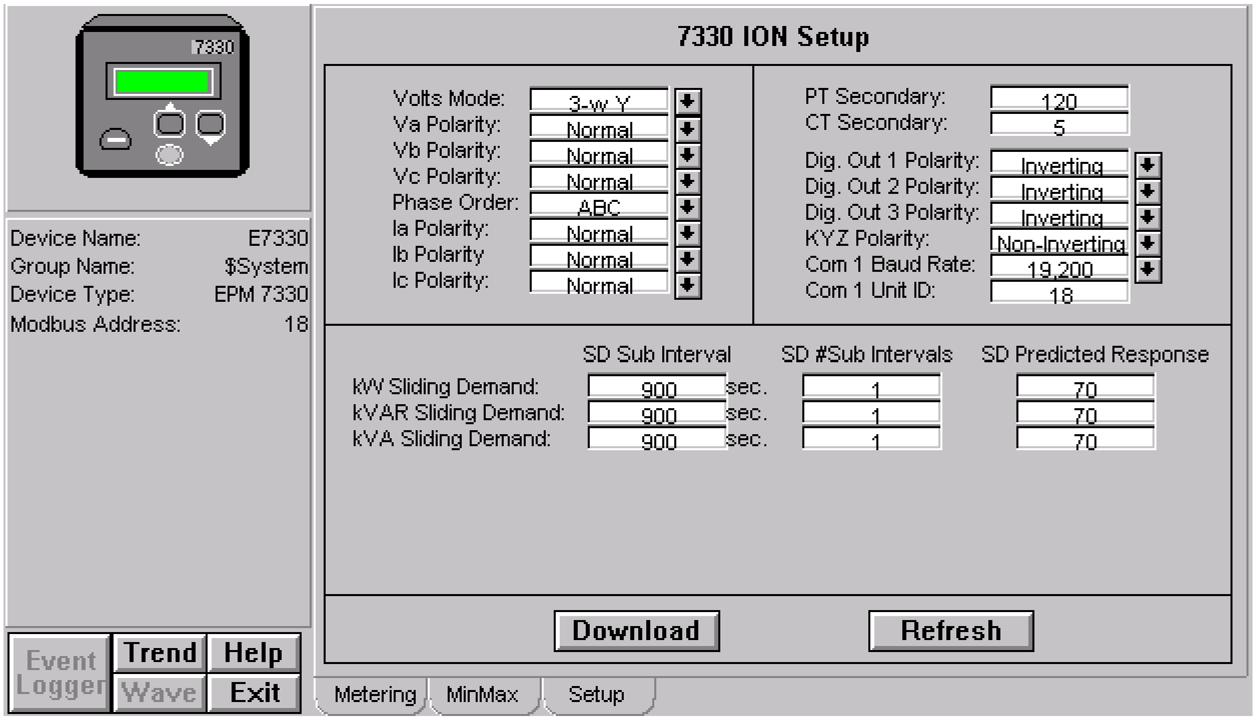
The 7330 ION Min/Max/Demand Values screen shows:

- Minimum and maximum metering values
- Digital Outputs
  1. By clicking on the Text box provided, a popup box will be appeared where text can be entered.
  2. By clicking on Force ON and Force OFF the status can be seen as ON or OFF respectively.
- Sliding Window Demand and Predicted Windows Demand

The Reset Sliding Demand button, when clicked, will reset all Sliding Demand values in the device.

The Reset Min/Max button, when clicked, will reset all Min/Max values in the device.

Setup Tab



The 7330 ION Setup screen shows various setup values of the device such as Volts Mode, Phase Order, PT Secondary and CT Secondary.

The **Download** button, when clicked, will download all relevant values in the device.

The **Refresh** button, when clicked, will refresh all the values coming from the device.

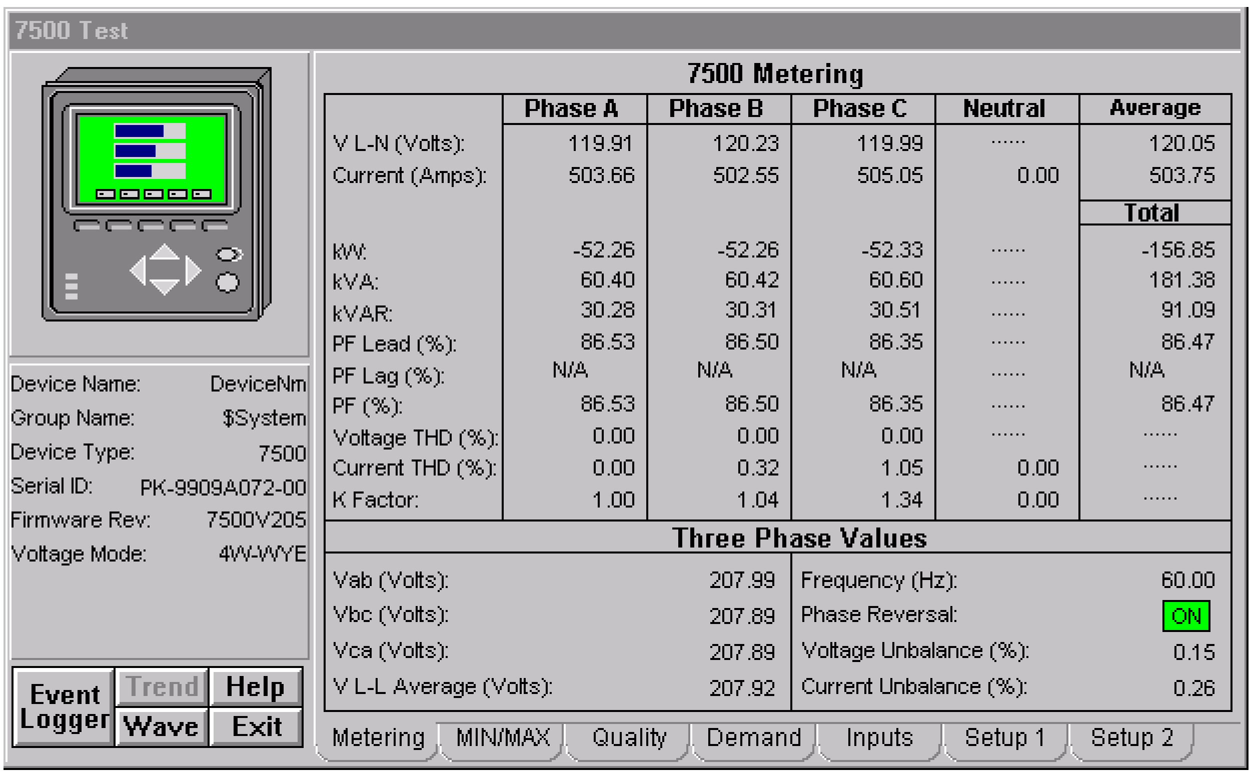
EPM 7500/7600 Meter

The EPM 7500/7600 Tabular Data Screen wizard has several special features. You can use the Setup screen to change the meter configuration. Values displayed in white boxes are changeable. Some are changed by clicking on the displayed value, while others are changed by clicking on the associated scroll button. The Download and Refresh buttons on the setup screen upload and download all of the setpoints from the device.

To change setpoints at the device, first press the refresh button to upload current setpoint values from the device (otherwise the defaults are shown and used for download). Modify setpoints as desired, then press the download button to send all setpoints to the unit.

In the following pages, each of the 7500/7600 Meter's Tabular Data Screen Wizards' tabs will be displayed and detailed.

Metering Tab



EPM 7500/7600 Meter - Metering Data Screen

The Metering tab displays the following metered values from the EPM 7500/7600.

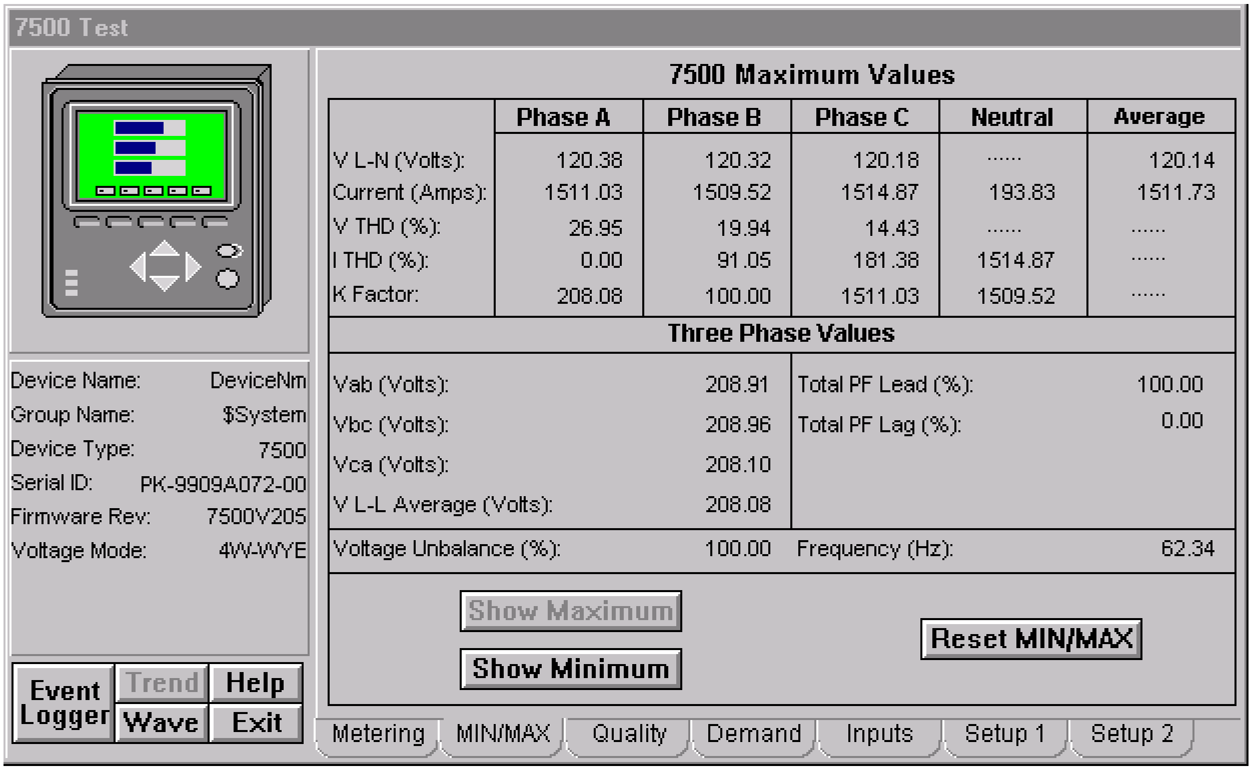
- Vln A, B: n/a when Voltage Mode is DELTA
- Vln C: n/a when Voltage Mode is DELTA or SINGLE
- Vln Avg: n/a when Voltage Mode is DELTA
- Vll AB
- Vll BC, CA, and Avg: n/a when Voltage Mode is SINGLE
- I A, B, Neutral, and Avg

- I C: n/a when Voltage Mode is SINGLE
- KW A, B: n/a when Voltage Mode is DELTA
- KW C: n/a when Voltage Mode is DELTA or SINGLE
- KW Total
- KVA A, B: n/a when Voltage Mode is DELTA
- KVA C: n/a when Voltage Mode is DELTA or SINGLE
- KVA Total
- KVAR A, B: n/a when Voltage Mode is DELTA
- KVAR C: n/a when Voltage Mode is DELTA or SINGLE
- KVAR Total
- Power Factor Lead A, B: n/a when Voltage Mode is DELTA or PF is Lagging
- Power Factor Lead C: n/a when Voltage Mode is DELTA or SINGLE or PF is Lagging
- Power Factor Lead Total: n/a when PF is Lagging
- Power Factor Lag A, B: n/a when Voltage Mode is DELTA or PF is Leading
- Power Factor Lag C: n/a when Voltage Mode is DELTA or SINGLE or PF is Leading
- Power Factor Lag Total: n/a when PF is Leading
- Power Factor Total A, B: n/a when Voltage Mode is DELTA
- Power Factor Total C: n/a when Voltage Mode is DELTA or SINGLE
- Power Factor Total
- Total Harmonic Distortion – Voltage A, B, and C: n/a when Source is n/a.
- Total Harmonic Distortion – Current A, B, C, and Neutral: n/a when Source is n/a.
- K Factor A, B, C, and Neutral: n/a when Source is n/a.

Three-Phase Values

- Vab, Vbc, Vca
- Voltage Unbalance
- Current Unbalance
- Frequency
- Phase Reversal (On, Off) : n/a when Voltage Mode is SINGLE

Min/Max Tab



EPM 7500/7600 Meter - Min/Max Tab

The Minimum/Maximum Values tab displays a variety of minimum and maximum values recorded by the EPM 7500/7600. Select Show Minimum or Show Maximum buttons to display either the minimum or maximum values for the displayed parameters. To reset all min/max values, select the Reset Min/Max button.

Min/Max values may be displayed for the following parameters:

Phase A, B, C, Neutral and Average Values

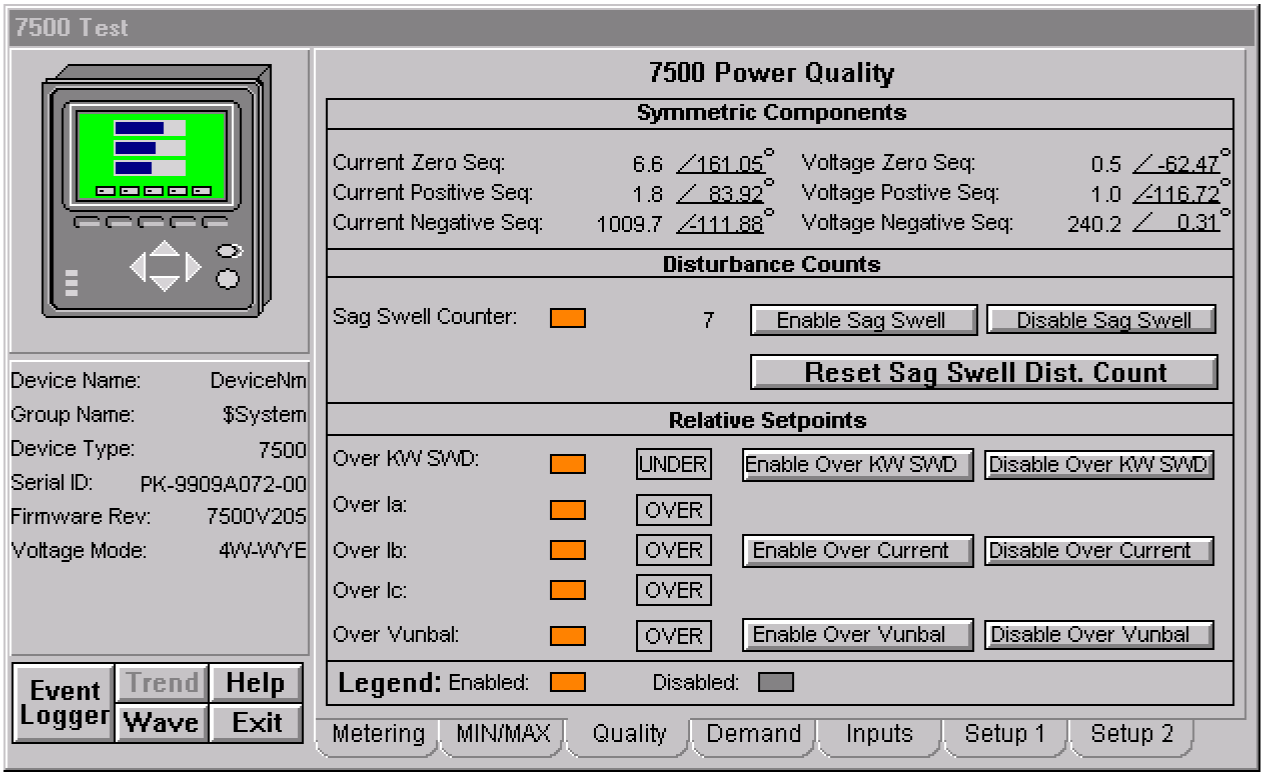
- Vln A, B: n/a when Voltage Mode is DELTA
- Vln C: n/a when Voltage Mode is DELTA or SINGLE
- Vln Avg: n/a when Voltage Mode is DELTA
- Vll AB
- Vll BC, CA, and Avg: n/a when Voltage Mode is SINGLE
- I A, B, Neutral, and Avg
- I C: n/a when Voltage Mode is SINGLE
- Total Harmonic Distortion – Voltage A, B, and C: n/a when Source is n/a.
- Total Harmonic Distortion – Current A, B, C, and Neutral: n/a when Source is n/a.
- K Factor A, B, C, and Neutral: n/a when Source is n/a.

Three-Phase Values

- Vab, Vbc, Vca
- Power Factor Lead Total: n/a when PF is Lagging
- Power Factor Lag Total: n/a when PF is Leading
- Voltage Unbalance

- Frequency

Power Quality Tab



EPM 7500/7600 Meter - Power Quality Tab

The Power Quality tab displays the following power quality values from the EPM 7500/7600.

Symmetric Components

- Zero Sequence Phase and Magnitude for Current and Voltage
- Positive Sequence Phase and Magnitude for Current and Voltage
- Negative Sequence Phase and Magnitude for Current and Voltage

Disturbance Counts

- Sag / Swell Counter

Relative Setpoints

- Over KW Sliding Window Demand Status
- Over Current Phase A Status
- Over Current Phase B Status
- Over Current Phase C Status
- Over Voltage Unbalance Status

*Note: no color code is used for the Relative Setpoint Status.

The Power Quality tab also provides push buttons for performing the following commands:

Reset Sag Swell Disturbance Counter – Resets Sag Swell Counter.

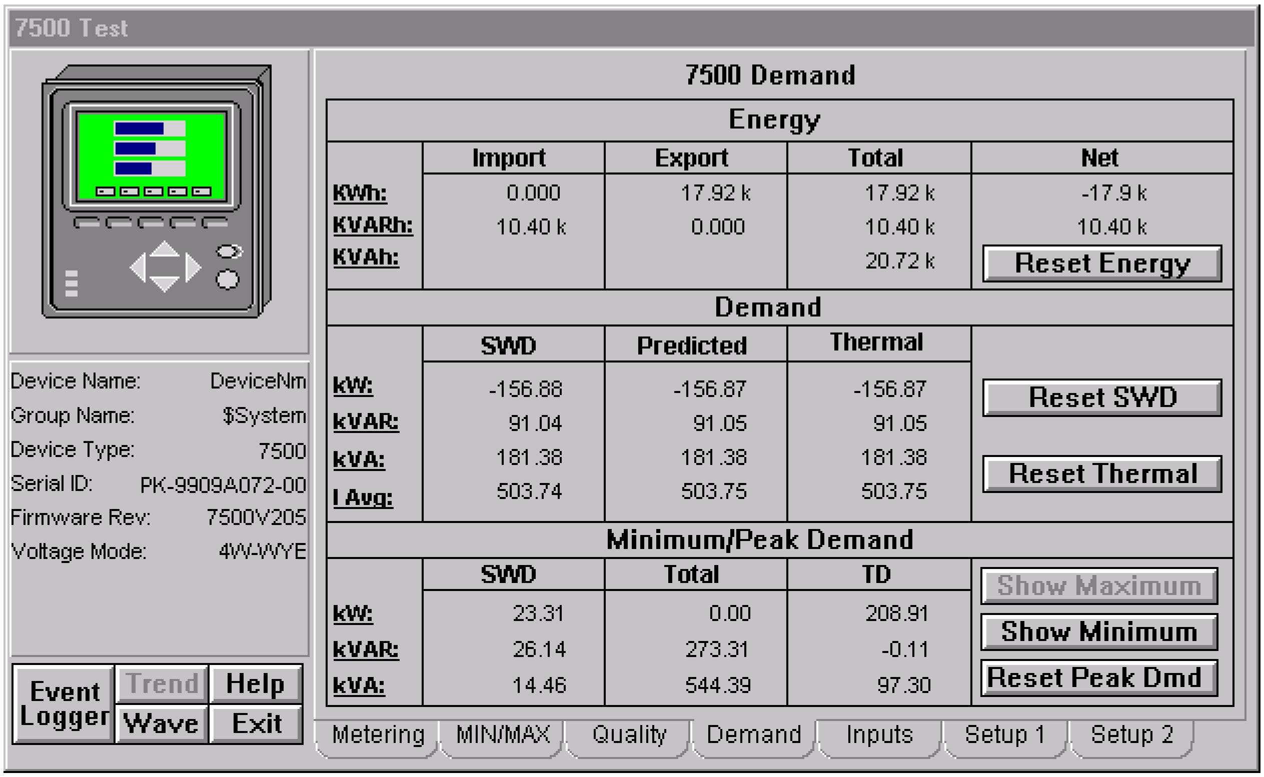
Enable/Disable Sag Swell – Enables or Disables Sag Swell Tracking.

Enable/Disable Over KW SWD – Enables or Disables Over Real Power Sliding Window Demand for Relative Setpoint Tracking.

Enable/Disable Over Current – Enables or Disables Over Current for Phases A, B, and C for Relative Setpoint Tracking.

Enable/Disable Over Vunb – Enables or Disables Over Voltage Unbalance for Relative Setpoint Tracking.

Demand Tab



EPM 7500/7600 Meter - Demand Tab

The Demand tab displays the following demand values from the EPM 7500/7600.

Energy

- Real Energy Import, Export, Total, and Net
- Reactive Energy Import, Export, Total, and Net
- Apparent Energy Total

Demand

- Real Power Sliding Window Demand, Predicted Demand, and Thermal Demand
- Reactive Power Sliding Window Demand, Predicted Demand, and Thermal Demand
- Apparent Power Sliding Window Demand, Predicted Demand, and Thermal Demand

- Average RMS Current Sliding Window Demand, Predicted Demand, and Thermal Demand

Minimum/Peak Demand

- Minimum or Peak Real Power Sliding Window Demand, Total Demand, and Thermal Demand
- Minimum or Peak Reactive Power Sliding Window Demand, Total Demand, and Thermal Demand
- Minimum or Peak Apparent Power Sliding Window Demand, Total Demand, and Thermal Demand

The Demand tab also provides push buttons for performing the following commands:

Reset Energy – Resets Energy Demand values identified above.

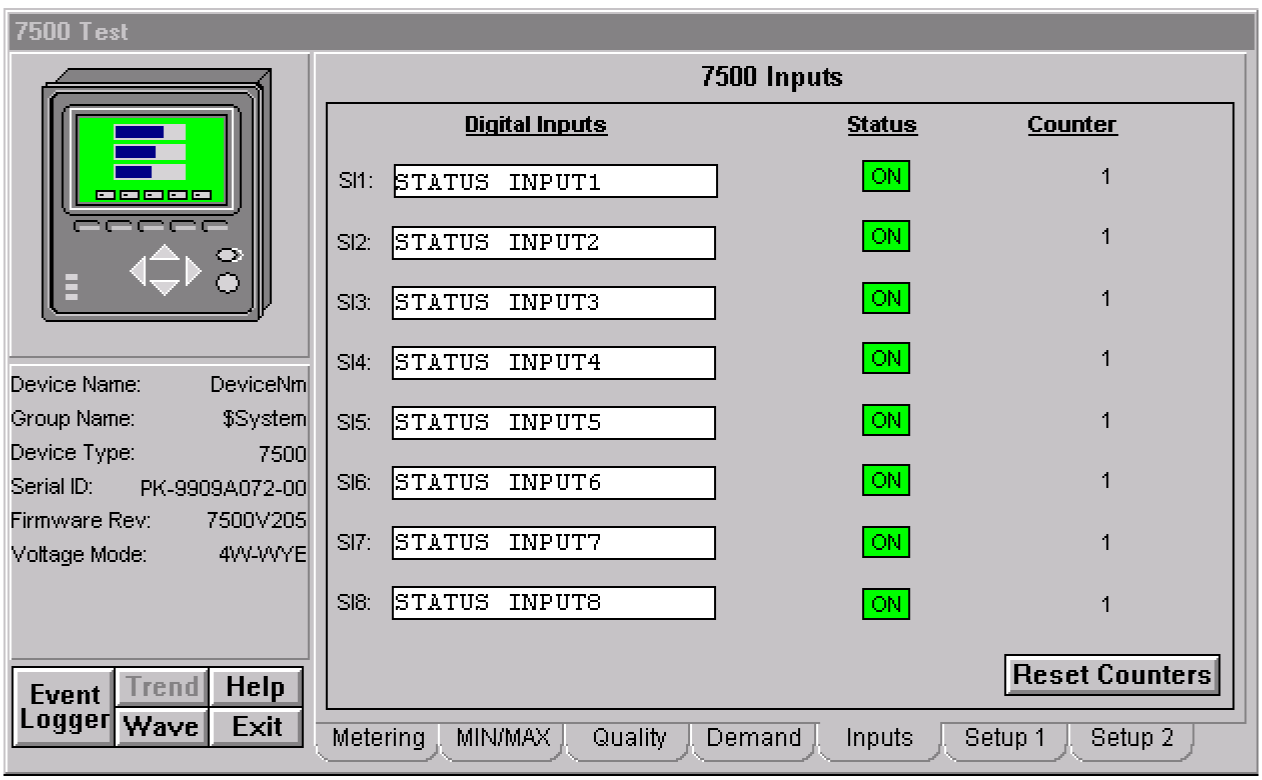
Reset SWD– Resets Sliding Window Demand values identified above.

Reset Thermal – Resets Thermal Demand values identified above.

Reset Peak – Resets Peak Demand values identified above.

The Minimum/Peak panel's Show Maximum and Show Minimum buttons can be used to toggle the display between minimums and peaks.

Inputs Tab



EPM 7500/7600 Meter - Inputs Tab

The Inputs tab displays the following values from the EPM 7500/7600.

Digital Inputs

- Status (On, Off) for Status Inputs (SI) 1-8. (Color Code: Green – ON, Grey – OFF).
- Counters for SI1-8.

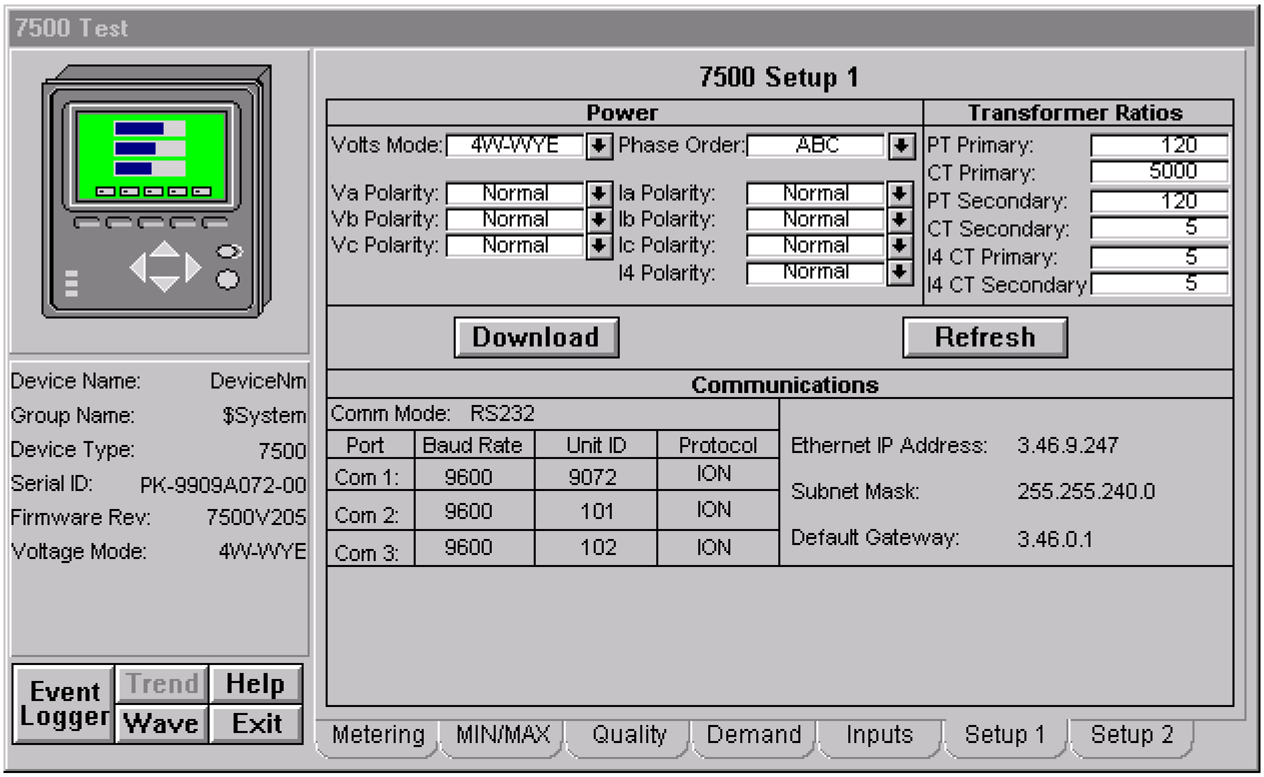
The Inputs tab also provides push buttons for performing the following commands:

Reset Counters – Resets Digital Input Status Counters for SI1-8.

The Inputs tab also provides retentive memory inputs for the following:

Digital Input Names for SI1-8.

Setup 1 Tab



EPM 7500/7600 Meter - Setup 1 Tab

The Setup 1 tab displays the following demand values from the EPM 7500/7600.

Power Settings

- Volts Mode
- Phase Order
- Voltage Polarity for A, B, and C
- Current Polarity for A, B, C, and Neutral

Transformer Ratio Settings

- PT and CT Primary
- PT and CT Secondary

- Neutral CT Primary and Secondary

Communications

- Baud Rate for Comm 1, 2, and 3.
- Unit ID for Comm 1, 2, and 3.
- Protocol for Comm 1, 2, and 3.
- Mode for Comm 1.
- IP Address, Subnet Mask, and Default Gateway.

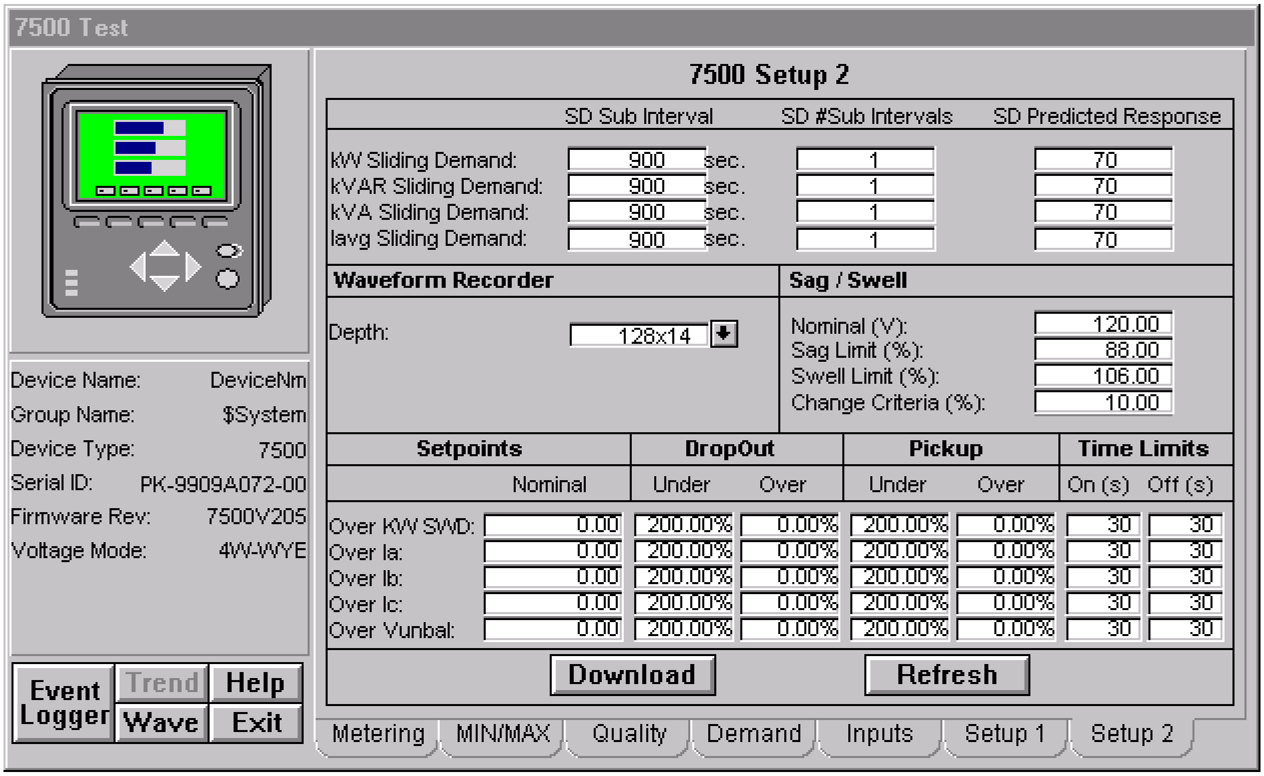
The Setup 1 tab also provides push buttons for performing the following commands:

Download – Executes a script to check for values that have changed and downloads those values to the device via the GE 7700 Gateway.

Refresh – Executes a script to upload all of the meter values for the settings on the screen.

Note: Be sure to click the Refresh button prior to changing or downloading any settings to the EPM7500 or EPM7600, as the latest settings may not be displayed.

Setup 2 Tab



EPM 7500/7600 Meter - Setup 2 Tab

The Setup 2 tab displays the following demand values from the EPM 7500/7600.

Sliding Window Demand Settings

- Sliding Demand Sub Interval Settings for KW, KVAR, KVA, and Iavg.
- Sliding Demand Number of Sub Intervals for KW, KVAR, KVA, and Iavg.
- Sliding Demand Predicted Response for KW, KVAR, KVA, and Iavg.

Waveform Recorder Settings

- Depth of Waveform Recorder

Sag / Swell / Transient Settings

- Sag / Swell Nominal
- Sag Limit
- Swell Limit
- Change Criteria

Relative Setpoint Settings

- Nominal value for Over KW, Over Current, and Over Vunbal.
- Under Dropout for Over KW, Over Current, and Over Vunbal.
- Over Dropout for Over KW, Over Current, and Over Vunbal.
- Under Pickup for Over KW, Over Current, and Over Vunbal.

- Over Pickup for Over KW, Over Current, and Over Vunbal.
- Time On for Over KW, Over Current, and Over Vunbal.
- Time Off for Over KW, Over Current, and Over Vunbal.

The Setup 2 tab also provides push buttons for performing the following commands:

Download– Executes a script to check for values that have changed and downloads those values to the device via the GE 7700 Gateway.

Refresh– .Executes a script to upload all of the meter values for the settings on the screen.

Note: Be sure to click the Refresh button prior to changing or downloading any settings to the EPM7500 or EPM7600, as the latest settings may not be displayed.

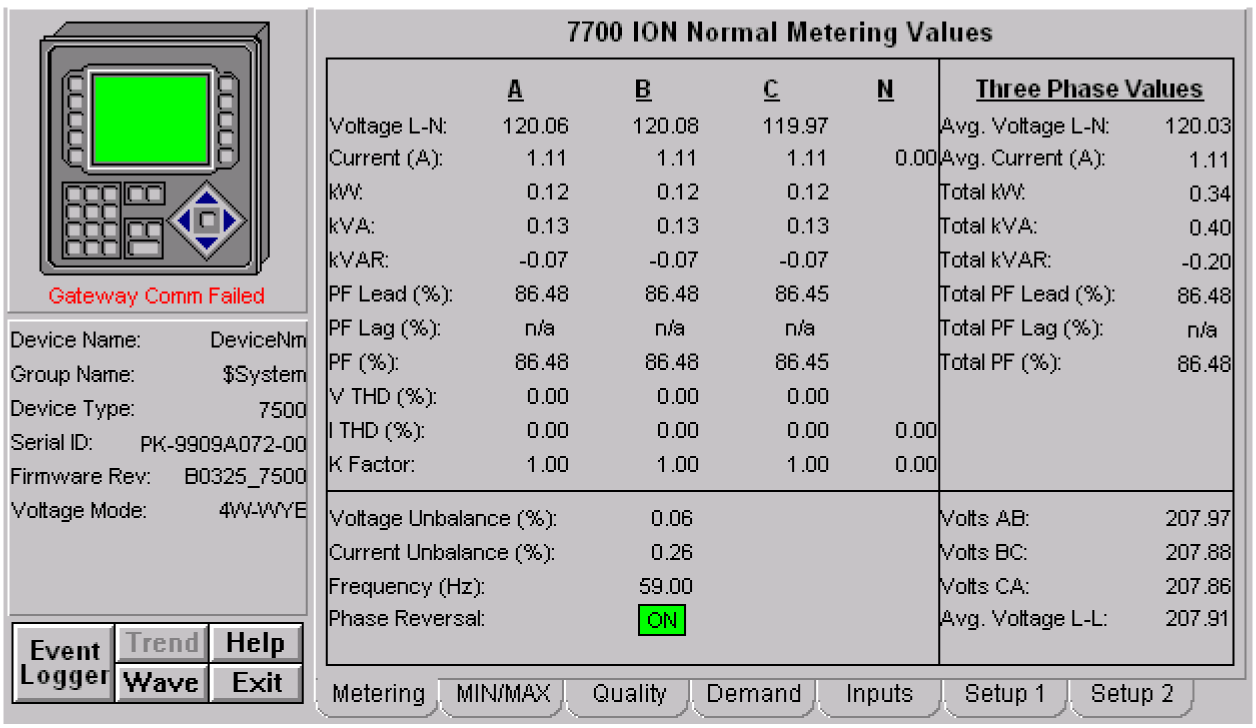
EPM 7700 Meter

The EPM 7700 Tabular Data Screen wizard has several special features. You can use the Setup screen to change the meter configuration. Values displayed in white boxes are changeable. Some are changed by clicking on the displayed value, while others are changed by clicking on the associated scroll button. The Download and Refresh buttons on the setup screen upload and download all of the setpoints from the device.

To change setpoints at the device, first press the refresh button to upload current setpoint values from the device (otherwise the defaults are shown and used for download). Modify setpoints as desired, then press the download button to send all setpoints to the unit.

In the following pages, each of the 7700 ION Meter's Tabular Data Screen Wizards' tabs will be displayed and detailed.

Metering Tab



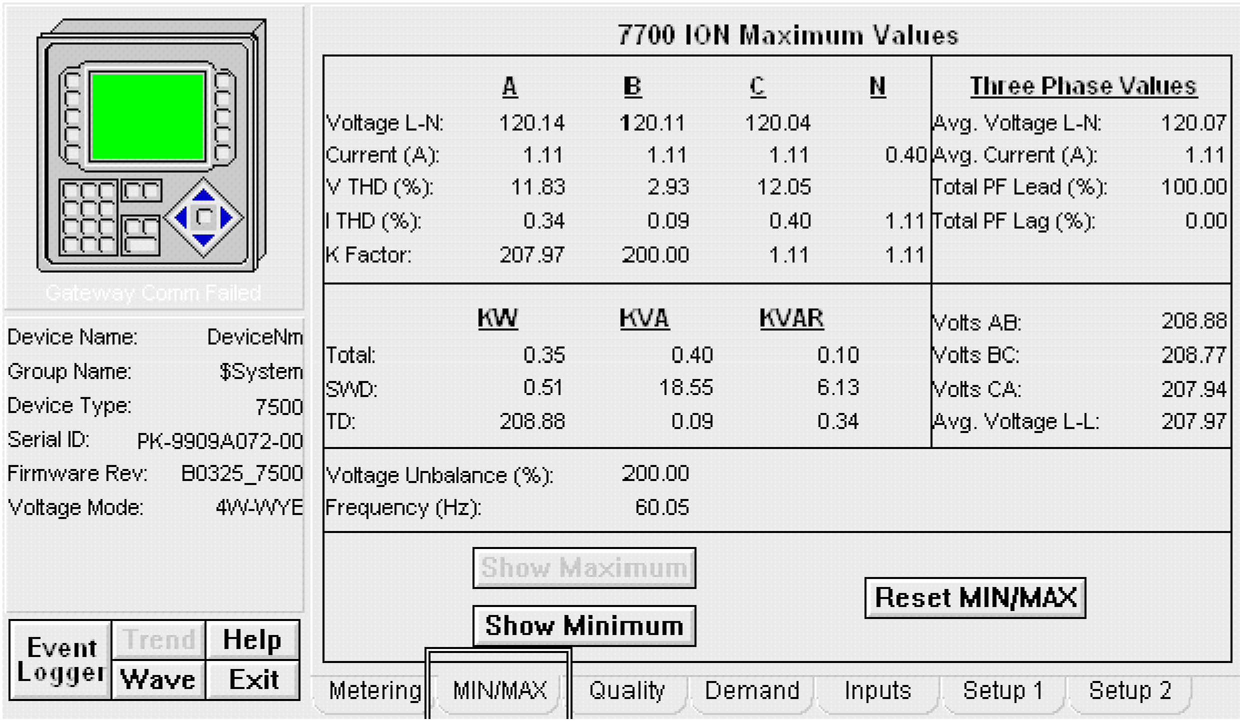
EPM 7700 ION Meter - Metering Data Screen

The Metering tab displays the following metered values from the EPM 7700.

- Vln A, B: n/a when Voltage Mode is DELTA
- Vln C: n/a when Voltage Mode is DELTA or SINGLE
- Vln Avg: n/a when Voltage Mode is DELTA
- I A, B, Neutral, and Avg
- I C: n/a when Voltage Mode is SINGLE
- Vll AB
- Vll BC, CA, and Avg: n/a when Voltage Mode is SINGLE

- KW A, B: n/a when Voltage Mode is DELTA
- KW C: n/a when Voltage Mode is DELTA or SINGLE
- KW Total
- KVAR A, B: n/a when Voltage Mode is DELTA
- KVAR C: n/a when Voltage Mode is DELTA or SINGLE
- KVAR Total
- KVA A, B: n/a when Voltage Mode is DELTA
- KVA C: n/a when Voltage Mode is DELTA or SINGLE
- KVA Total
- Power Factor Lead A, B: n/a when Voltage Mode is DELTA or PF is Lagging
- Power Factor Lead C: n/a when Voltage Mode is DELTA or SINGLE or PF is Lagging
- Power Factor Lead Total: n/a when PF is Lagging
- Power Factor Lag A, B: n/a when Voltage Mode is DELTA or PF is Leading
- Power Factor Lag C: n/a when Voltage Mode is DELTA or SINGLE or PF is Leading
- Power Factor Lag Total: n/a when PF is Leading
- Power Factor Total A, B: n/a when Voltage Mode is DELTA
- Power Factor Total C: n/a when Voltage Mode is DELTA or SINGLE
- Power Factor Total
- Total Harmonic Distortion – Voltage A, B, and C: n/a when Source is n/a.
- Total Harmonic Distortion – Current A, B, C, and Neutral: n/a when Source is n/a.
- K Factor A, B, C, and Neutral: n/a when Source is n/a.
- Voltage Unbalance
- Current Unbalance
- Frequency
- Phase Reversal (On, Off) : n/a when Voltage Mode is SINGLE

Min/Max Tab



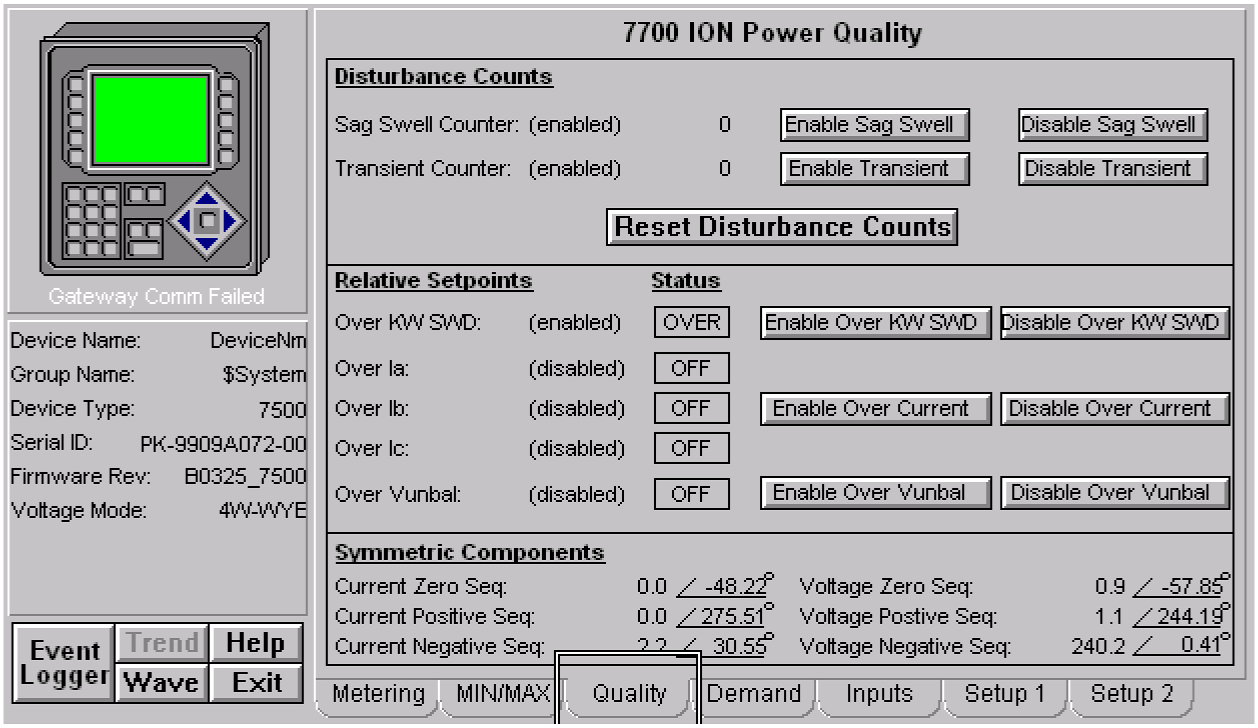
EPM 7700 ION Meter - Min/Max Tab

The Minimum/Maximum Values tab displays a variety of minimum and maximum values recorded by the EPM 7700. Select Show Minimum or Show Maximum buttons to display either the minimum or maximum values for the displayed parameters. To reset all min/max values, select the Reset Min/Max button.

Min/Max values may be displayed for the following parameters:

- Vln A, B: n/a when Voltage Mode is DELTA
- Vln C: n/a when Voltage Mode is DELTA or SINGLE
- Vln Avg: n/a when Voltage Mode is DELTA
- I A, B, Neutral, and Avg
- I C: n/a when Voltage Mode is SINGLE
- Vll AB
- Vll BC, CA, and Avg: n/a when Voltage Mode is SINGLE
- KW Total
- KVAR Total
- KVA Total
- Power Factor Lead Total: n/a when PF is Lagging
- Power Factor Lag Total: n/a when PF is Leading
- Power Factor Total Total
- Total Harmonic Distortion – Voltage A, B, and C: n/a when Source is n/a.
- Total Harmonic Distortion – Current A, B, C, and Neutral: n/a when Source is n/a.
- K Factor A, B, C, and Neutral: n/a when Source is n/a.
- Voltage Unbalance
- Frequency

Power Quality Tab



EPM 7700 ION Meter - Power Quality Tab

The Power Quality tab displays the following power quality values from the EPM 7700.

Disturbance Monitoring

- Sag / Swell Counter
- Transient Counter
- Over KW Sliding Window Demand Status
- Over Current Phase A Status
- Over Current Phase B Status
- Over Current Phase C Status
- Over Voltage Unbalance Status

*Note: no color code is used for the Relative Setpoint Status.

Symmetric Components

- Zero Sequence Magnitude for Current and Voltage
- Zero Sequence Phase for Current and Voltage
- Positive Sequence Magnitude for Current and Voltage
- Positive Sequence Phase for Current and Voltage
- Negative Sequence Magnitude for Current and Voltage
- Negative Sequence Phase for Current and Voltage

The Power Quality tab also provides push buttons for performing the following commands:

Reset Disturbance Counters – Resets Sag Swell and Transient Counters.

Enable/Disable Sag Swell – Enables or Disables Sag Swell Tracking.

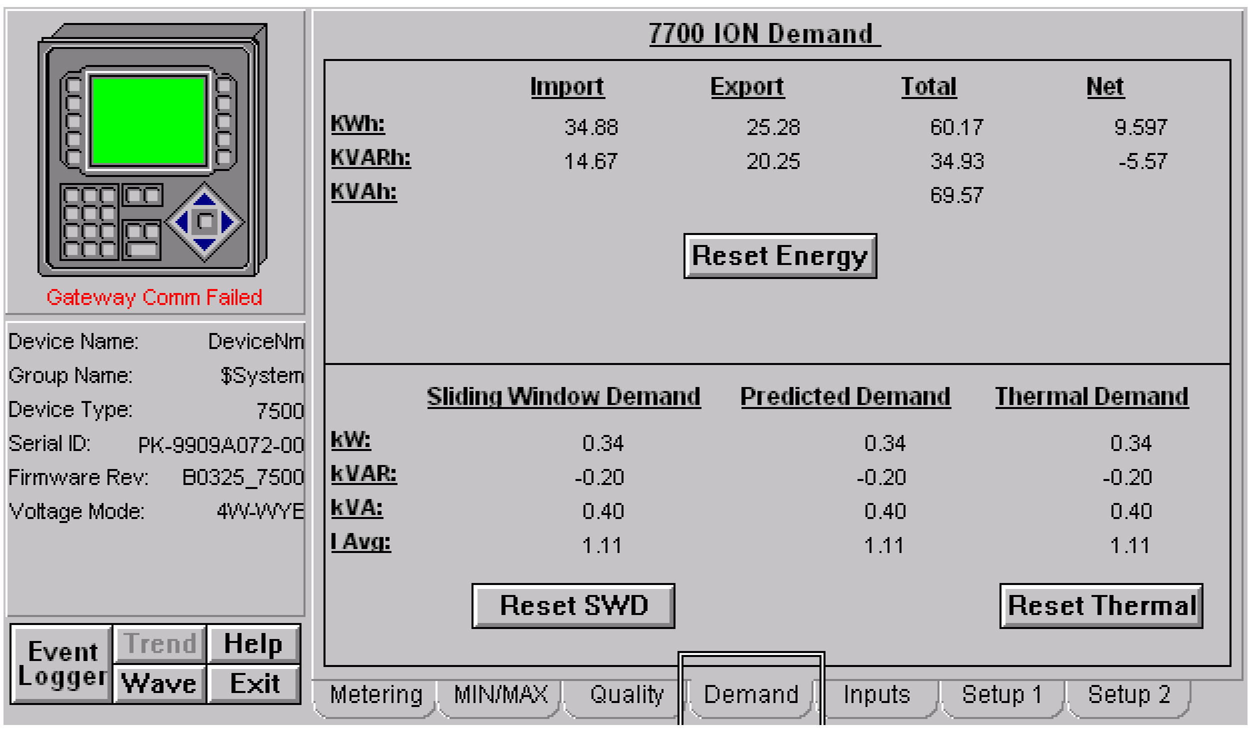
Enable/Disable Transient – Enables or Disables Transient Tracking.

Enable/Disable Over KW – Enables or Disables Over Real Power Sliding Window Demand for Relative Setpoint Tracking.

Enable/Disable Over Amps – Enables or Disables Over Current for Phases A, B, and C for Relative Setpoint Tracking.

Enable/Disable Over Vunb – Enables or Disables Over Voltage Unbalance for Relative Setpoint Tracking.

Demand Tab



EPM 7700 ION Meter - Demand Tab

The Demand tab displays the following demand values from the EPM 7700.

Energy

- Real Energy Import, Export, Total, and Net
- Reactive Energy Import, Export, Total, and Net
- Apparent Energy Total

Sliding Window Demand (SWD)

- Real Power Sliding Window Demand and Predicted Demand
- Reactive Power Sliding Window Demand and Predicted Demand
- Apparent Power Sliding Window Demand and Predicted Demand

- Average RMS Current Sliding Window Demand and Predicted Demand

Thermal Demand

- Real Power Thermal Demand
- Reactive Power Thermal Demand
- Apparent Power Thermal Demand
- Average RMS Current Thermal Demand

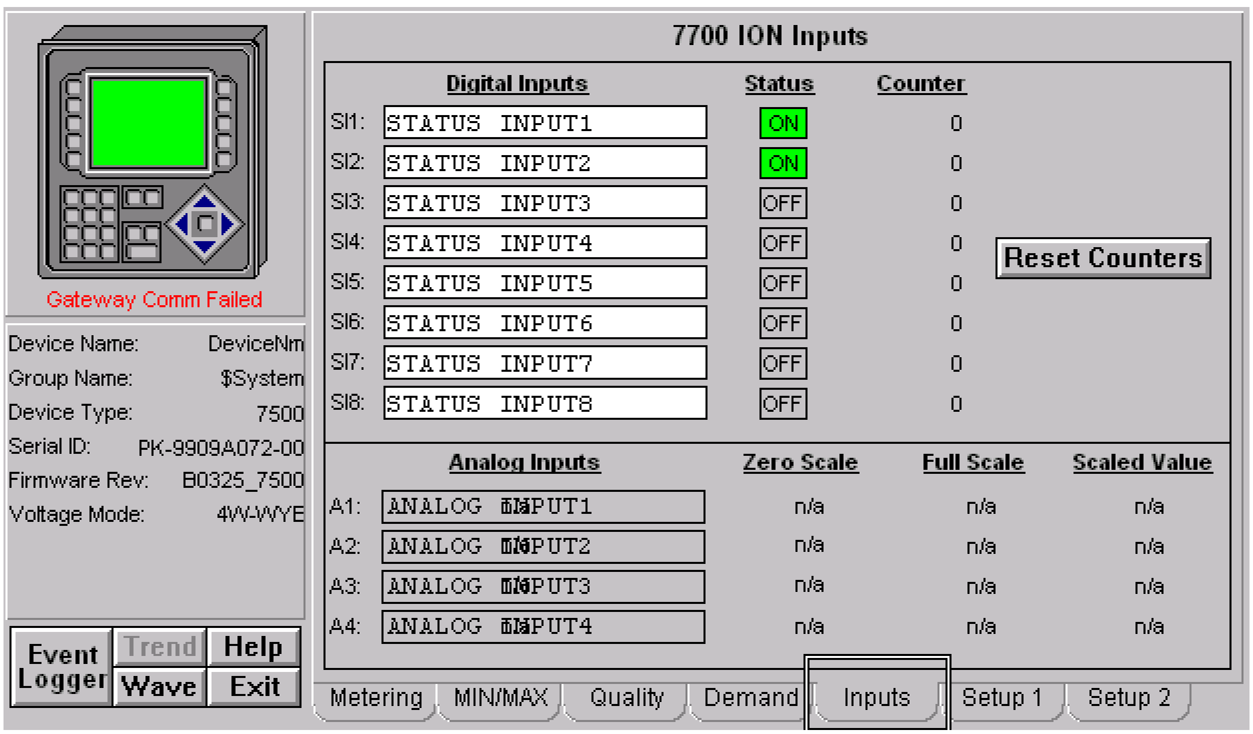
The Demand tab also provides push buttons for performing the following commands:

Reset Energy – Resets Energy Demand values identified above.

Reset SWD– Resets Sliding Window Demand values identified above.

Thermal Demand – Resets Thermal Demand values identified above.

Inputs Tab



EPM 7700 ION Meter - Inputs Tab

The Inputs tab displays the following values from the EPM 7700.

Digital Inputs

- Status (On, Off) for Status Inputs (SI) 1-8. (Color Code: Green – ON, Grey – OFF).
- Counters for SI1-8.

Analog Inputs

- Zero Scale Setting for AI1-4. : n/a when doesn't exist on the meter

- Full Scale Setting for AI1-4. : n/a when doesn't exist on the meter
- Scaled Value for AI1-4. : n/a when doesn't exist on the meter

The Inputs tab also provides push buttons for performing the following commands:

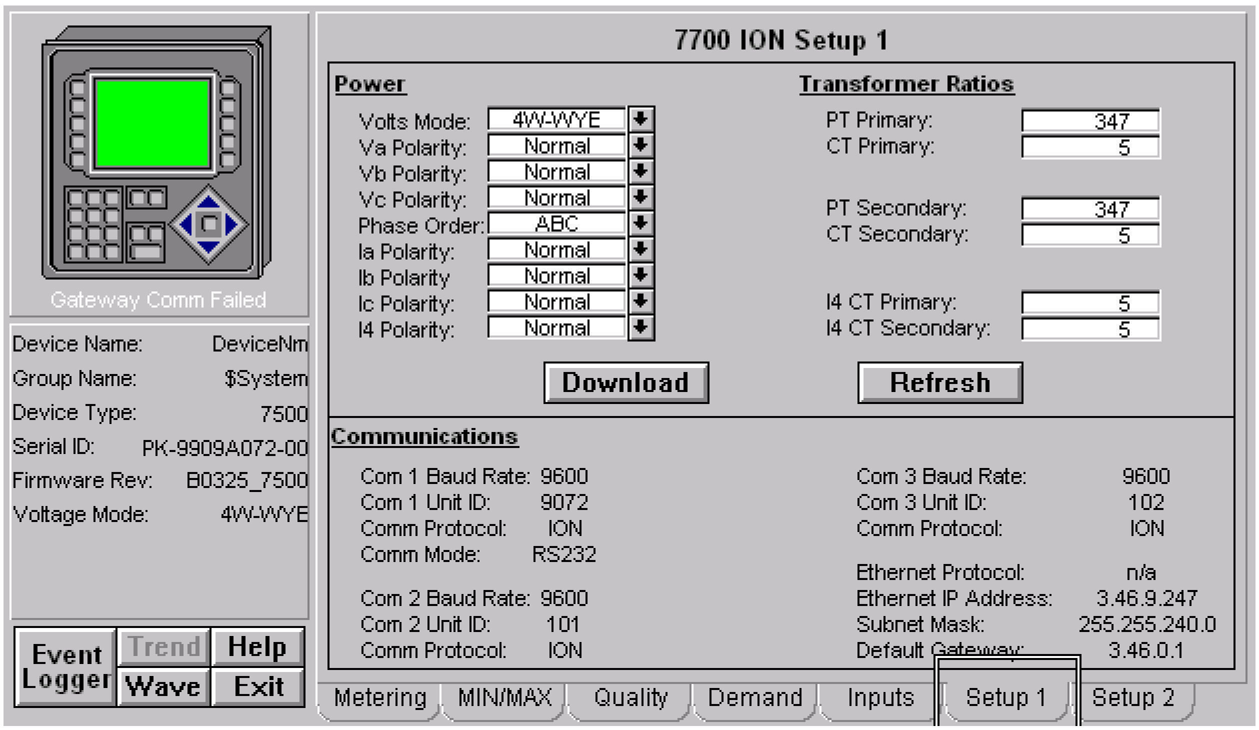
Reset Counters – Resets Digital Input Status Counters for SI1-8.

The Inputs tab also provides retentive memory inputs for the following:

Digital Input Names for SI1-8.

Analog Input Names for AI1-4. : n/a when doesn't exist on the meter

Setup 1 Tab



EPM 7700 ION Meter - Setup 1 Tab

The Setup 1 tab displays the following demand values from the EPM 7700.

Power Settings

- Volts Mode
- Phase Order
- Voltage Polarity for A, B, and C
- Current Polarity for A, B, C, and Neutral

Transformer Ratio Settings

- PT and CT Primary
- PT and CT Secondary
- Neutral CT Primary and Secondary

Communications

- Baud Rate for Comm 1, 2, and 3.
- Unit ID for Comm 1, 2, and 3.
- Protocol for Comm 1, 2, and 3.
- Mode for Comm 1.
- Ethernet Protocol, IP Address, Subnet Mask, and Default Gateway.

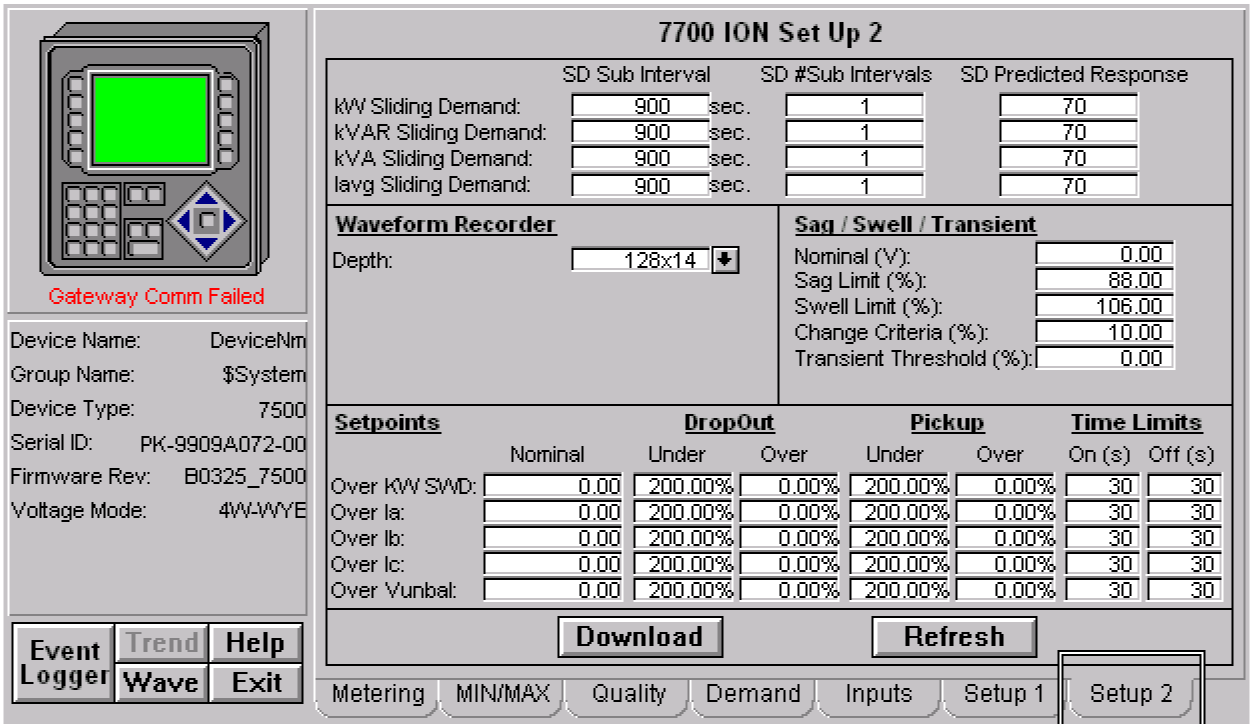
The Setup 1 tab also provides push buttons for performing the following commands:

Download – Executes a script to check for values that have changed and downloads those values to the device via the GE 7700 Gateway.

Refresh – Executes a script to upload all of the meter values for the settings on the screen.

Note: Be sure to click the Refresh button prior to changing or downloading any settings to the EPM7700, as the latest settings may not be displayed.

Setup 2 Tab



EPM 7700 ION Meter - Setup 2 Tab

The Setup 2 tab displays the following demand values from the EPM 7700.

Sliding Window Demand Settings

- Sliding Demand Sub Interval Settings for KW, KVAR, KVA, and Iavg.
- Sliding Demand Number of Sub Intervals for KW, KVAR, KVA, and Iavg.
- Sliding Demand Predicted Response for KW, KVAR, KVA, and Iavg.

Waveform Recorder Settings

- Depth of Waveform Recorder

Sag / Swell / Transient Settings

- Sag / Swell Nominal
- Sag Limit
- Swell Limit
- Change Criteria
- Transient Threshold

Relative Setpoint Settings

- Nominal value for Over KW, Over Current, and Over Vunbal.
- Under Dropout for Over KW, Over Current, and Over Vunbal.
- Over Dropout for Over KW, Over Current, and Over Vunbal.
- Under Pickup for Over KW, Over Current, and Over Vunbal.

- Over Pickup for Over KW, Over Current, and Over Vunbal.
- Time On for Over KW, Over Current, and Over Vunbal.
- Time Off for Over KW, Over Current, and Over Vunbal.

The Setup 2 tab also provides push buttons for performing the following commands:

Download– Executes a script to check for values that have changed and downloads those values to the device via the GE 7700 Gateway.

Refresh– .Executes a script to upload all of the meter values for the settings on the screen.

Note: Be sure to click the Refresh button prior to changing or downloading any settings to the EPM7700, as the latest settings may not be displayed.

Universal Relay

The Universal Relay devices are a highly-flexible family of power management devices based on the concept of a backplane and CPU supporting a wide variety of plug-in modules. These modules provide metering, monitoring, protection and control functions, and other abilities.

A UR tabular wizard can display between one and eight screens of data – the number of screens is determined by the user during wizard configuration. There are a total of Twenty Three screens available, depending on the type of UR device connected. For example, the C30 device does not support any metering functions, so the metering an source tabs are not available for this device.

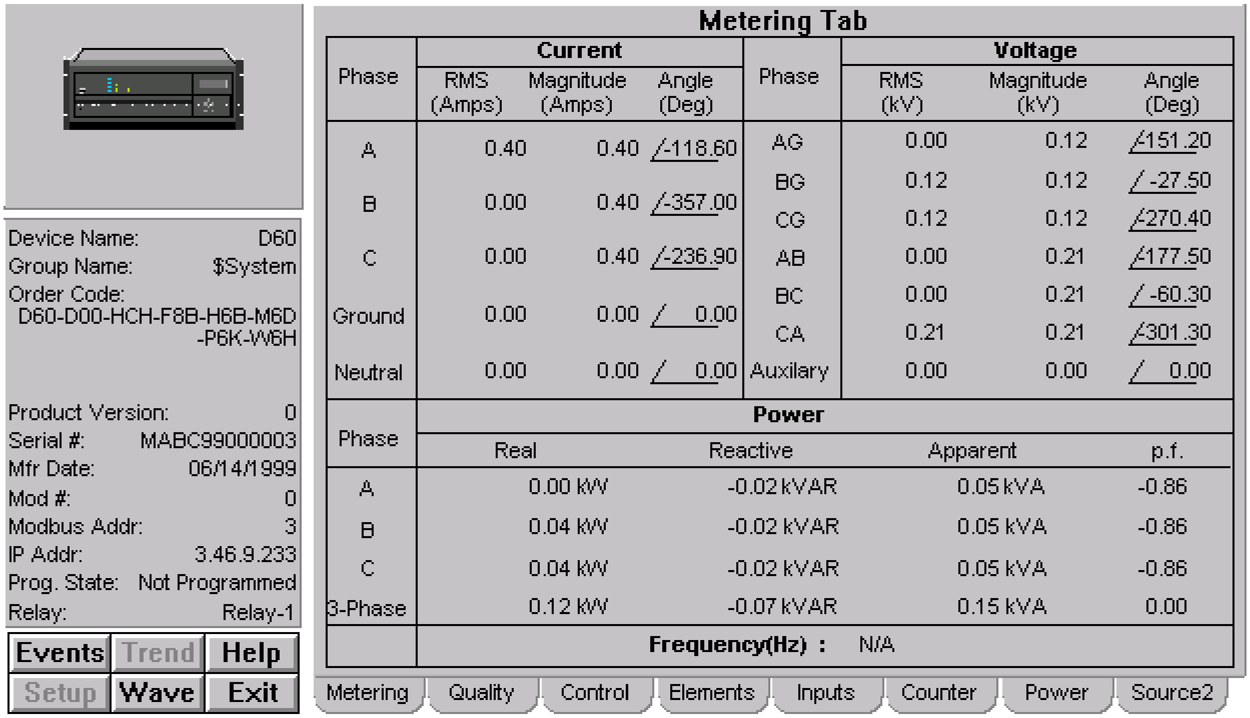
The UR wizard supports connection to the PMCS Modbus and Ethernet servers and third party MMS servers. A UCA/MMS check box is provided on the wizard configuration dialog to correctly set up the Intouch tag names for use with MMS.

Special Note: UCA/MMS support for PMCS 6.11a is removed**. Do not**check this checkbox.

Note: If WindowViewer is running when the wizard configuration dialog is called up, a message appears warning that any changes made to the UR wizard configuration will not take effect until WindowViewer is shut down and restarted. For example, if a user elects to change the number of tabs configured for a device, the changes will not be reflected in the runtime environment until WindowViewer is restarted.

In the following pages, each of the Tabular Data Screen Wizards' tabs will be displayed and described.

Metering Tab



Universal Relay - Metering Data Screen

The Metering tab displays the following metered values from the B30, C60, D60, F30, F35, F60, G60, L60, L90, M60 and T60 devices: Actual Values for Voltage, Current, Power, Power Factor, and Frequency. These values are detailed below.

Current

RMS Current for each phase, ground, and neutral

Phasor magnitude and angle for each phase, ground and neutral

Voltage

RMS voltage for each phase-to-phase, phase-to-neutral, and auxiliary voltage value.

Phasor magnitude and angle for phase-to-phase, phase-to-neutral and auxiliary voltage value.

Phase-to-neutral voltages are displayed as "N/A" if derived from a source wired in a delta configuration.

Power

Shows Real (Watts), Reactive (VAR), and Apparent (VA) power values per phase and 3-phase.

By default, all power values are displayed in terms of kW, kVAR, and kVA. These values will scale as appropriate to MW, MVAR, and MVA.

Power values derived from a source wired in a delta configuration are displayed as "N/A".

Power Factor

Shows the signed power factor value in percent.

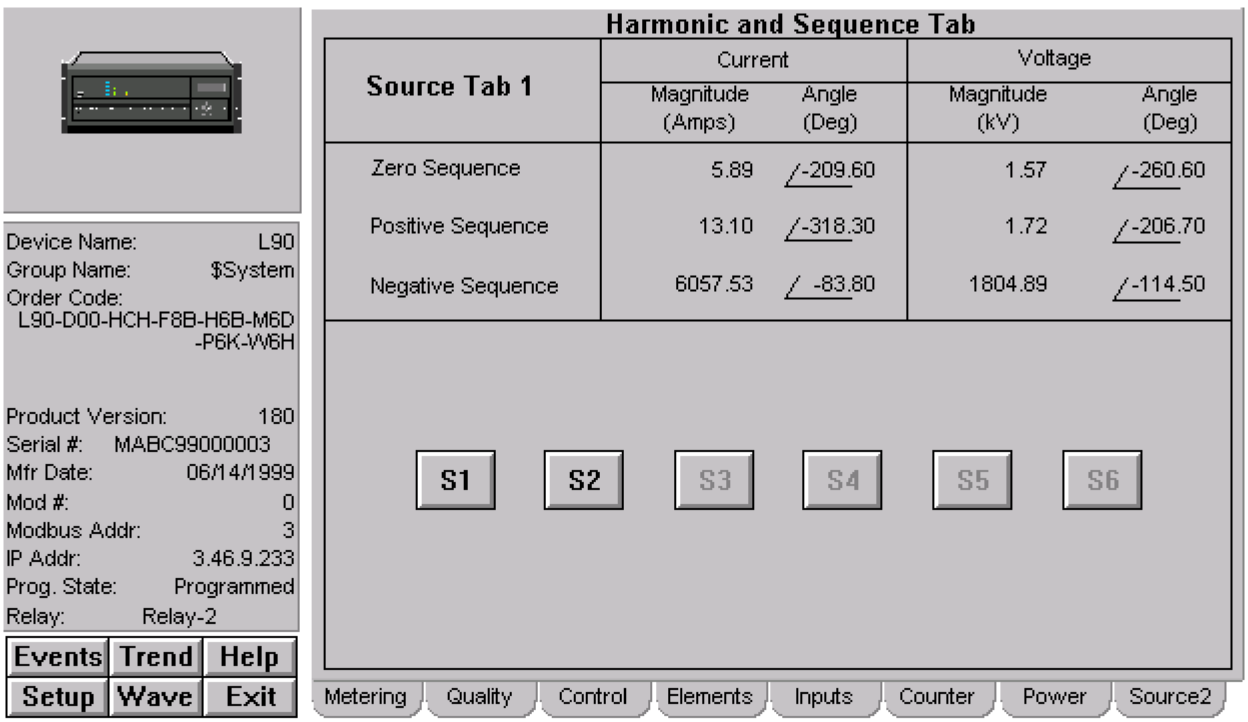
Power Factor values derived from a source wired in a delta configuration are displayed as "N/A".

Frequency

Frequency is shown in units of hertz.

Frequency is only displayed if the Frequency Tracking Reference setpoint is set to a non-zero value.

Power Quality Tab



Universal Relay - Quality Tab

The Quality tab provides six buttons labeled S1 – S6. These buttons enable you to select the source (1 – 6) for display. The text in the upper left corner of the tab indicates which source is currently displayed. Buttons are disabled for sources that have not been configured or enabled in the attached device. The Voltage parameters displayed are dependent on CT/VT configuration of the device hardware.

For the selected source, the Quality tab displays actual values for Zero Sequence, Positive Sequence, and Negative Sequence currents and voltages. The following devices are supported: B30, C30, C60, D60, F30, F35, F60, G60, L60, L90, M60 and T60. The displayed values are described below.

Current

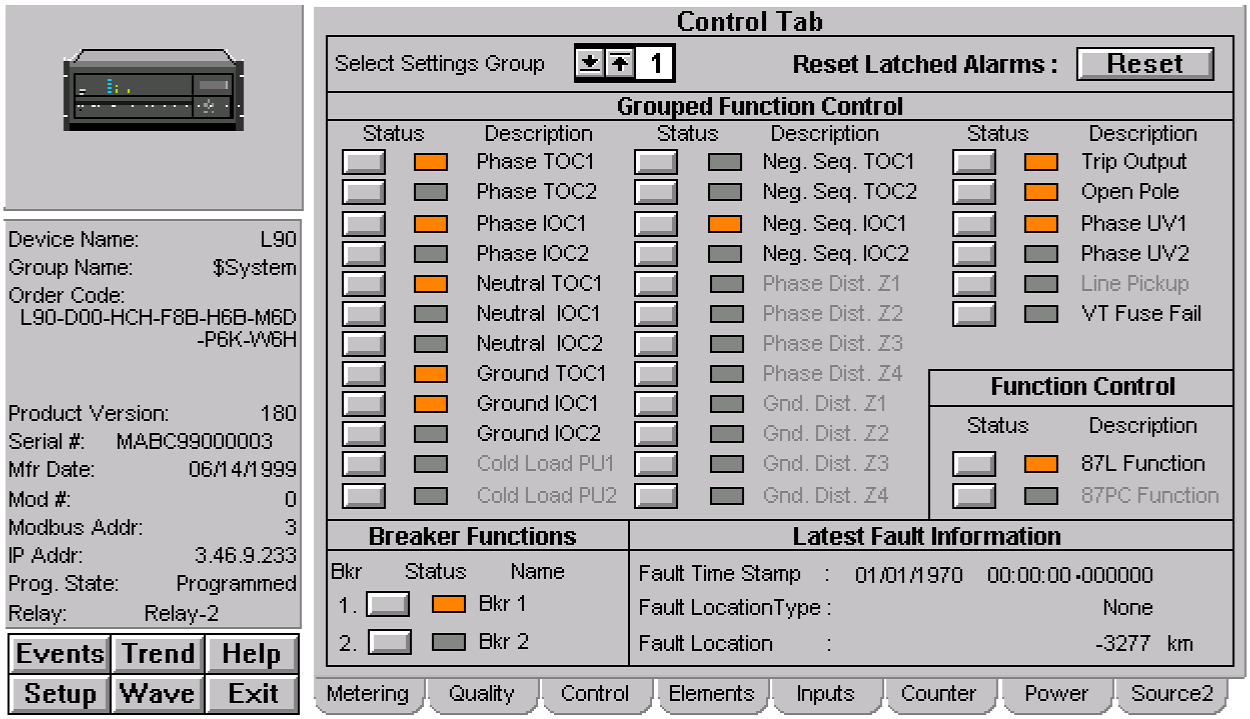
Phasor magnitude and angle for negative, positive and zero sequence currents.

Voltage

Phasor magnitude and angle for negative, positive and zero sequence voltages.

Voltage values derived from a source wired in a delta configuration will appear as "N/A".

Protection Control Tab

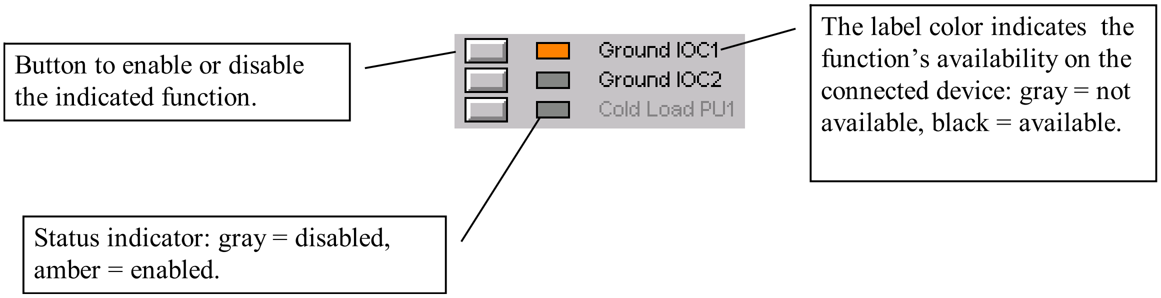


Universal Relay - Protection Control Tab

The Protection Control tab is supported for the following devices: B30, C30, C60, D60, F30, F35, F60, G60, L60, L90, M60 and T60. The Protection Control tab provides the features described below.

Grouped Protection Settings

There are eight identical groups of protection settings in the UR - this tab provides an enable/disable status indication of selected protection elements, as well as a pushbutton to change the enable/disable status of those elements in each group. Function availability is determined by the Order Code read from the device – those functions that are not available in the connected device will be grayed out and disabled, as shown below:

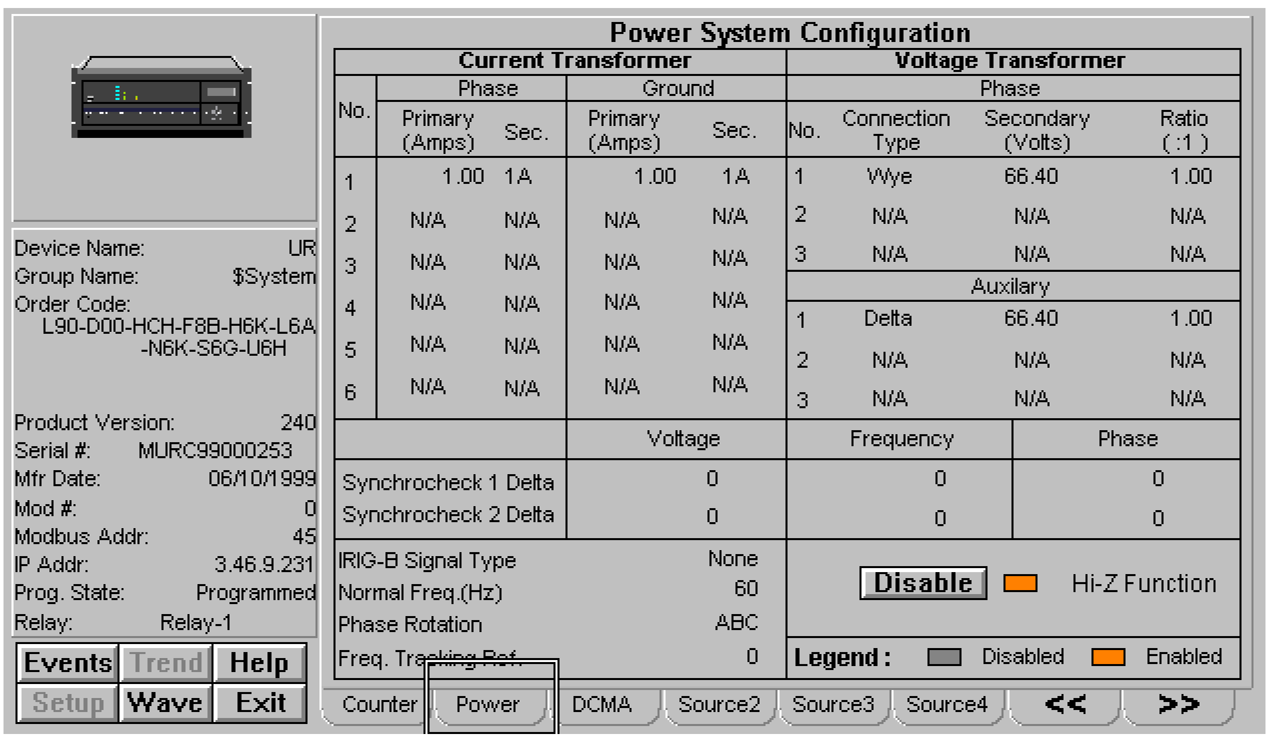


To use this tab, the user selects one of the eight settings groups for editing using the control labeled "Select Settings Group". The status of the settings in the selected group will then be displayed, and the user can enable/disable functions without affecting settings in the other seven groups. Note that the displayed group may not be the active group currently in use by the relay's protection algorithms. The pushbuttons are subject to user level security in Intouch.

Phase TOC and IOC Settings

The Phase, Neutral, and Ground buttons in this section may be used to select the display of the TOC and IOC values.

Power System Configuration Tab



Universal Relay - Power System Configuration Tab

The Power System Configuration tab supports the B30, C60, D60, F30, F35, F60, G60, L60, L90, M60 and T60 UR devices, and shows the source CT and VT configuration of the entire relay. The supported UR devices can be configured with one to three DSP cards containing voltage and/or current transformers for measurement purposes.

Current Transformers (CT)

Primary: indicates the current rating of the CT primary.

Secondary: indicates the output current of the CT secondary, either 1A or 5A.

Displays "N/A" if the Order Code indicates no CT is installed in the affected location.

Voltage Transformers (VT)

Secondary: indicates the output voltage of the VT.

Ratio: the turns ratio of the VT.

Displays "N/A" if the Order Code indicates no VT is installed in the affected location.

Synchrocheck 1/2 Delta

The Delta values for Synchrocheck 1 and 2, voltage frequency, and phase.

IRIG-B Signal Type

Displays the IRIG-B signal type in use, if applicable.

Normal Frequency

The system nominal frequency in hertz.

Phase Rotation

The system phase rotation, ABC or ACB.

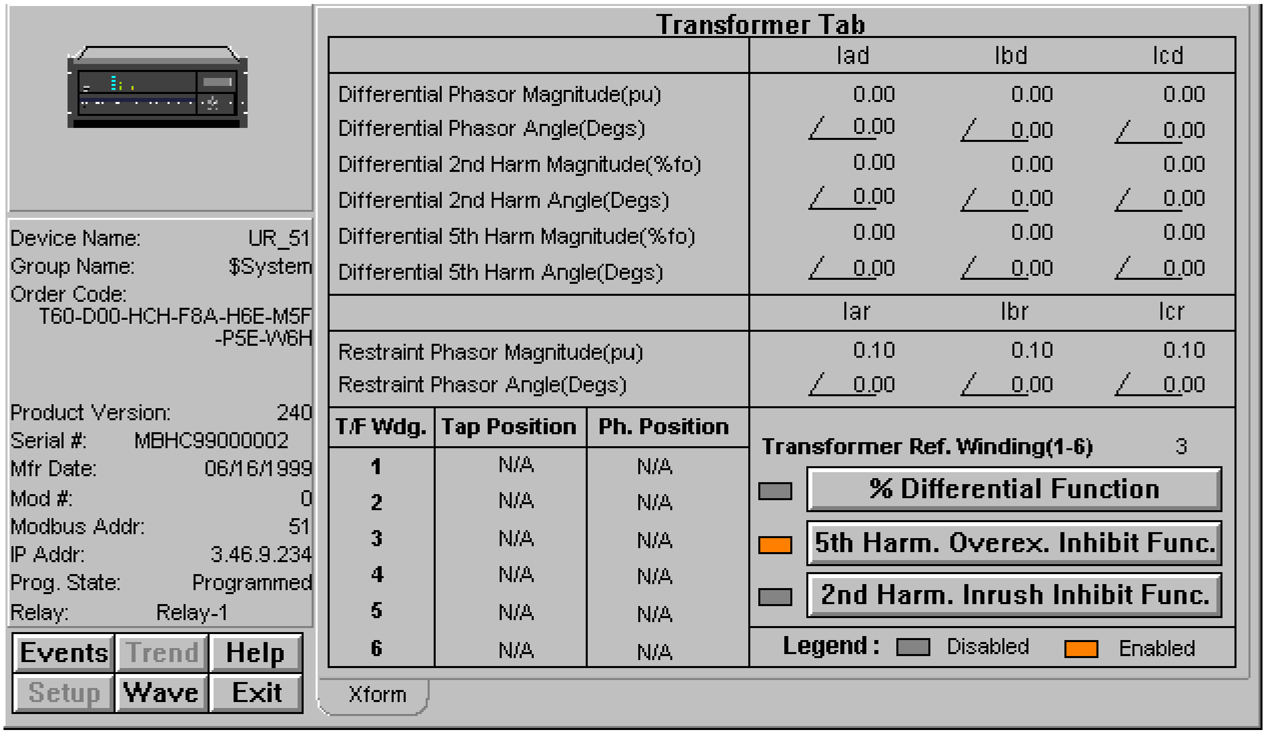
Frequency Tracking Reference

A numerical setpoint value associated with a specific source. The indicated source is used by the relay for developing frequency metering information. A value of zero indicates that the relay is not intended to meter frequency.

Hi-Z Function

Enable or Disable the device's High Impedance (Hi-Z) function, if equipped.

Transformer Tab



Universal Relay - Transformer Tab

The T60 device alone supports a Transformer Tab on its wizard. This tab is unique to the T60 device type. The following values are shown:

Differential Current

Phasor magnitude and angle.

Differential 2nd Harmonic

Phasor magnitude and angle

Differential 5th Harmonic

Phasor magnitude and angle

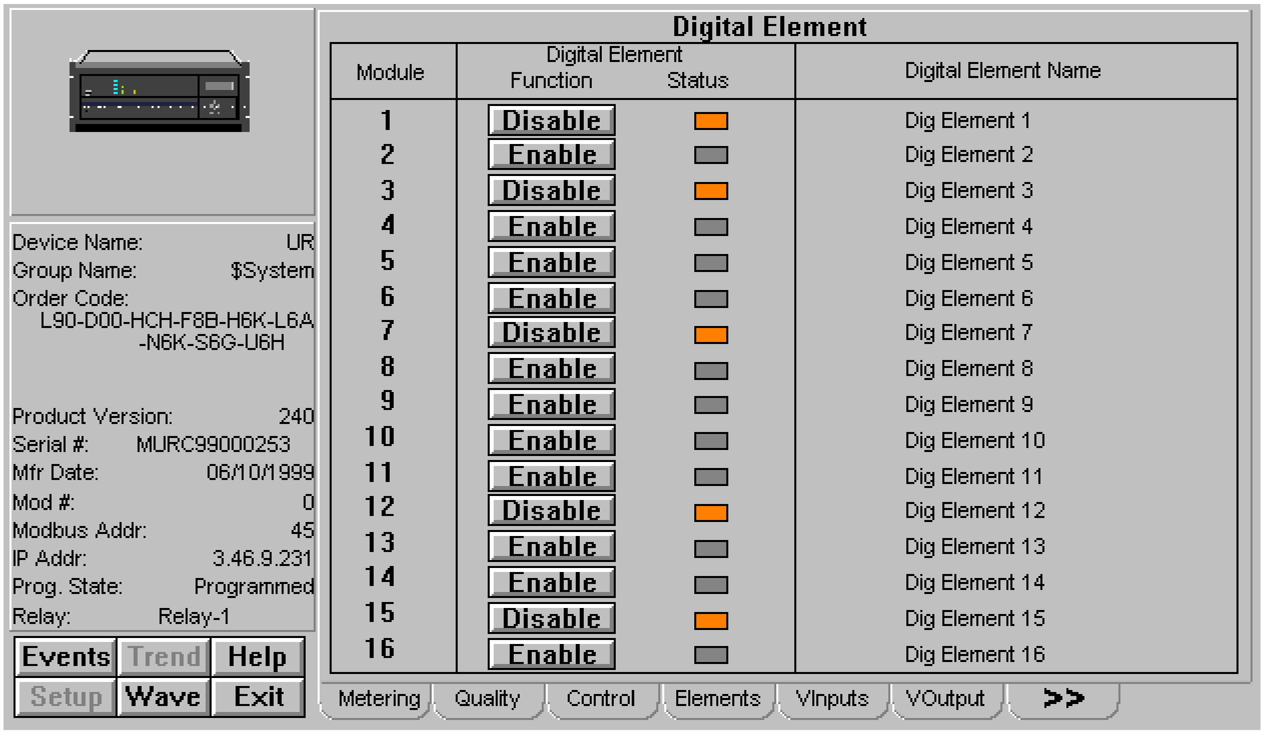
Restraint Current

Phasor Magnitude and angle

Transformer Winding Reference

Indicates which of the six possible transformer windings will serve as the reference winding.

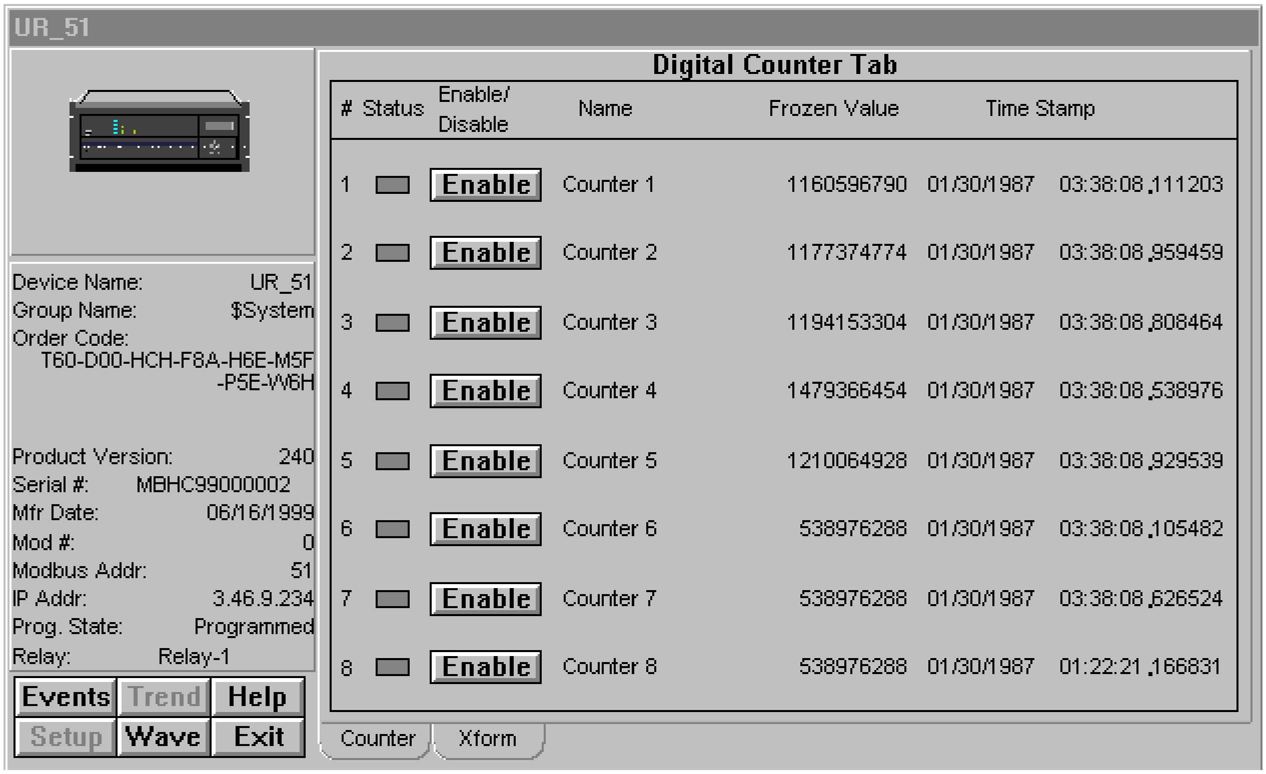
Elements Tab



Universal Relay - Digital Elements Tab

The Elements tab displays user-defined name and current status of the sixteen digital elements in the UR. The status indicator color is amber if an element is enabled, gray if it is disabled. The B30, C30, C60, D60, F30, F35, F60, G60, L60, L90, M60 and T60 devices are supported.

Digital Counter Tab



Universal Relay - Digital Counter Tab

The digital counter tab supports B30, C30, C60, D60, F30, F35, F60, G60, L60, L90, M60 and T60 device types, showing information about the eight digital counters provided in each UR.

Status – this indicator is amber if the counter is enabled, gray if disabled.

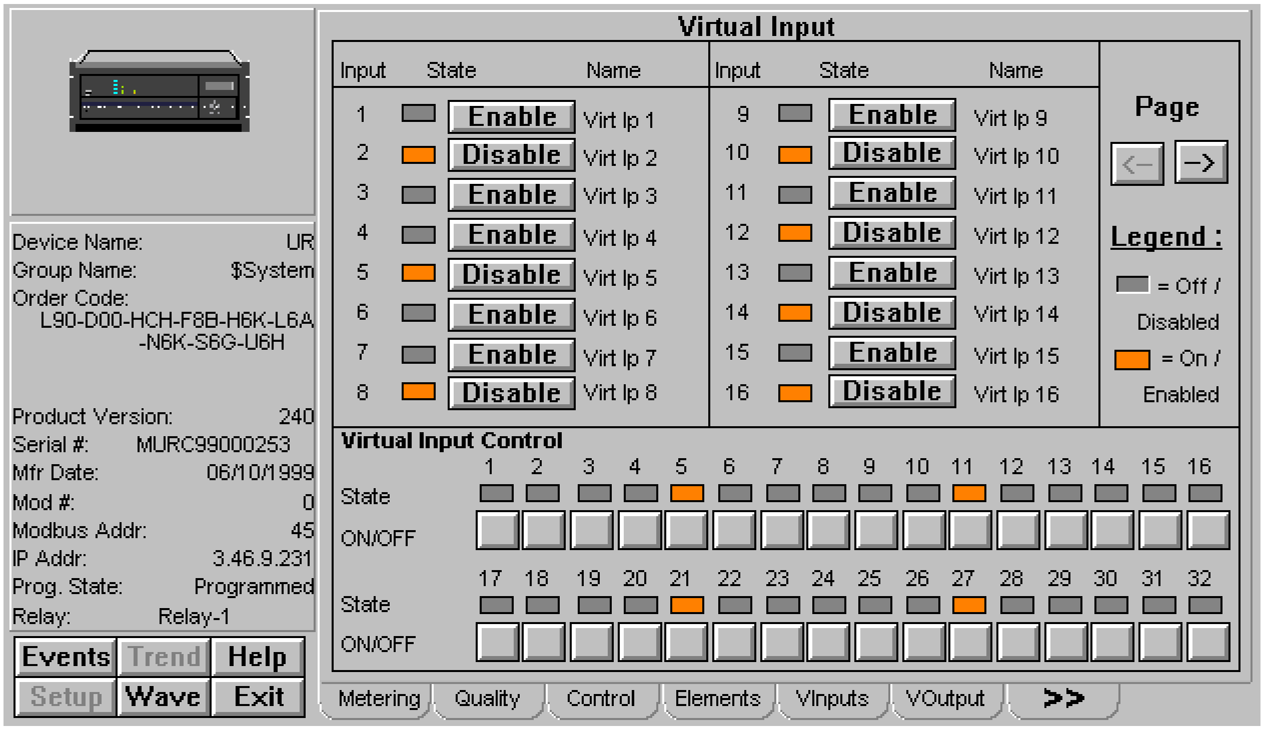
Enable/Disable – this button gives the user the ability to enable or disable the specified counter.

Name – displays the user-defined name assigned to the counter.

Frozen Value – shows the counter's value when last frozen.

Time Stamp – shows the time and date when the frozen count was acquired.

Virtual Inputs Tab



Universal Relay - Virtual Inputs Tab

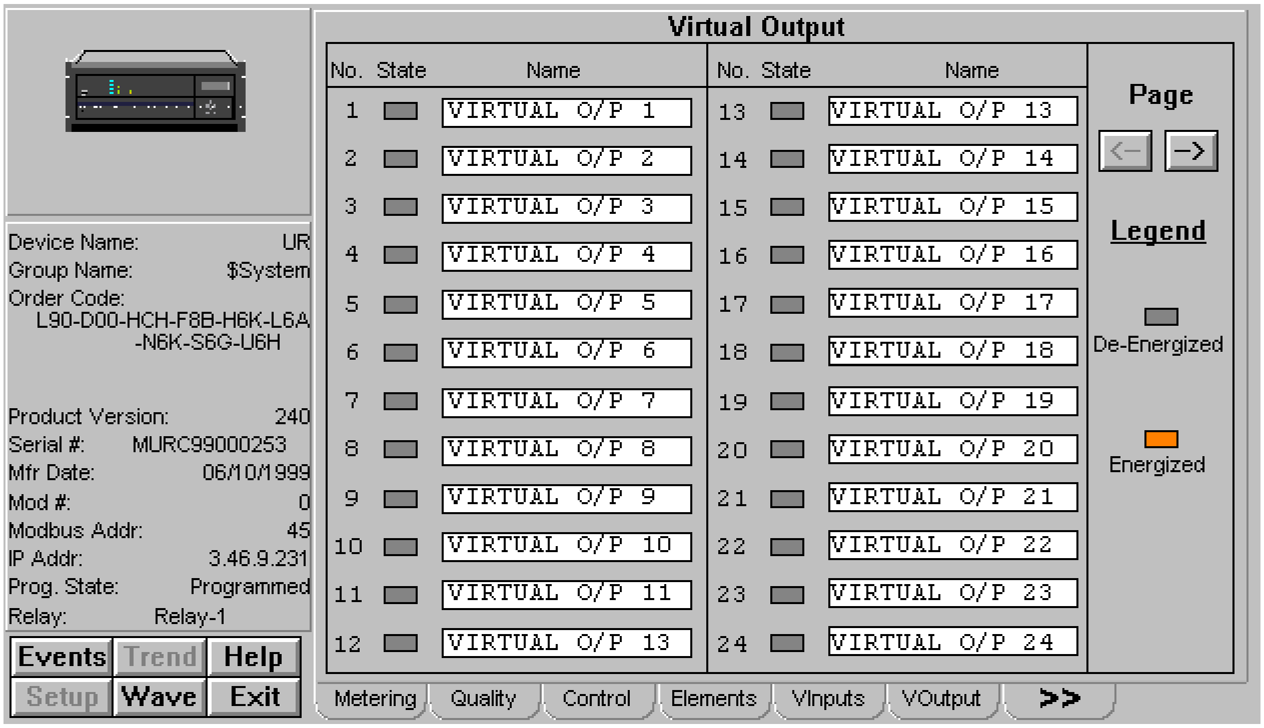
The Virtual Inputs (VInputs) tab allows the user to enable/disable all configured virtual inputs in the connected device and provides indication of their status. The 32 virtual inputs can be manually operated with the pushbuttons provided at the bottom of the screen. This tab supports the B30, C30, C60, D60, F30, F35, F60, G60, L60, L90, M60 and T60 devices.

Virtual Inputs

The enable/disable controls and status indicators are presented as a series of pages. To view the virtual inputs, the use the Page arrow keys provided to navigate between the pages. The arrow keys are disabled when the virtual inputs are not being displayed.

The state of each virtual input can be controlled with the pushbuttons along the bottom of the screen. Clicking one of these buttons toggles the status of the virtual input, changing its state as shown in the indicator blocks associated with each button. Note that a virtual input must be enabled before the toggling action will take effect in the relay.

Virtual Outputs Tab



Universal Relay - Virtual Outputs Tab

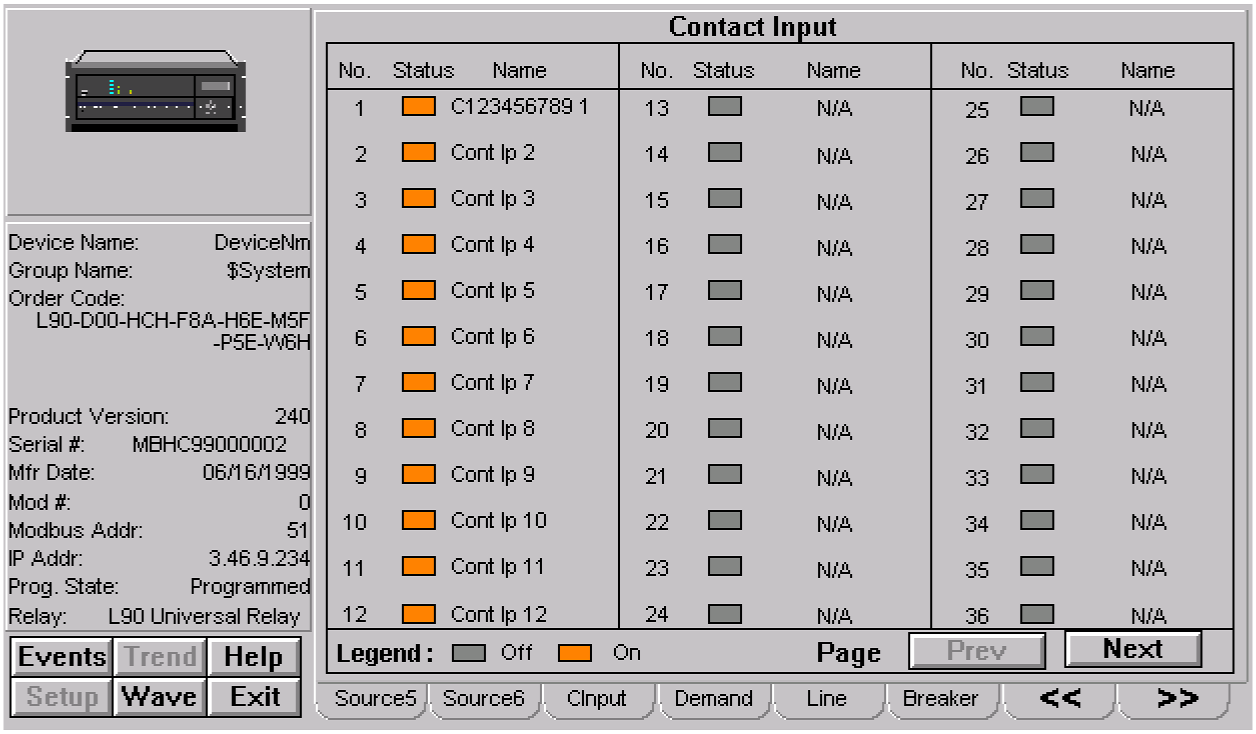
The Virtual Outputs (VOutput) tab allows the user to view the status (energized/de-energized) of all available virtual outputs on the device. The user can also assign a textual name to each of the outputs. Up to 64 virtual outputs can be diplayed. This tab supports the B30, C30, C60, D60, F30, F35, F60, G60, L60, L90, M60 and T60 devices.

Virtual Outputs

The outputs and their status indicators are presented as a series of pages. To view the virtual outputs, the use the Page arrow keys provided to navigate between the pages.

To assign a name to a virtual output, click in the text field to the right of the output number label. The field becomes editable; make any desired changes, then press Enter.

Contact Inputs Tab



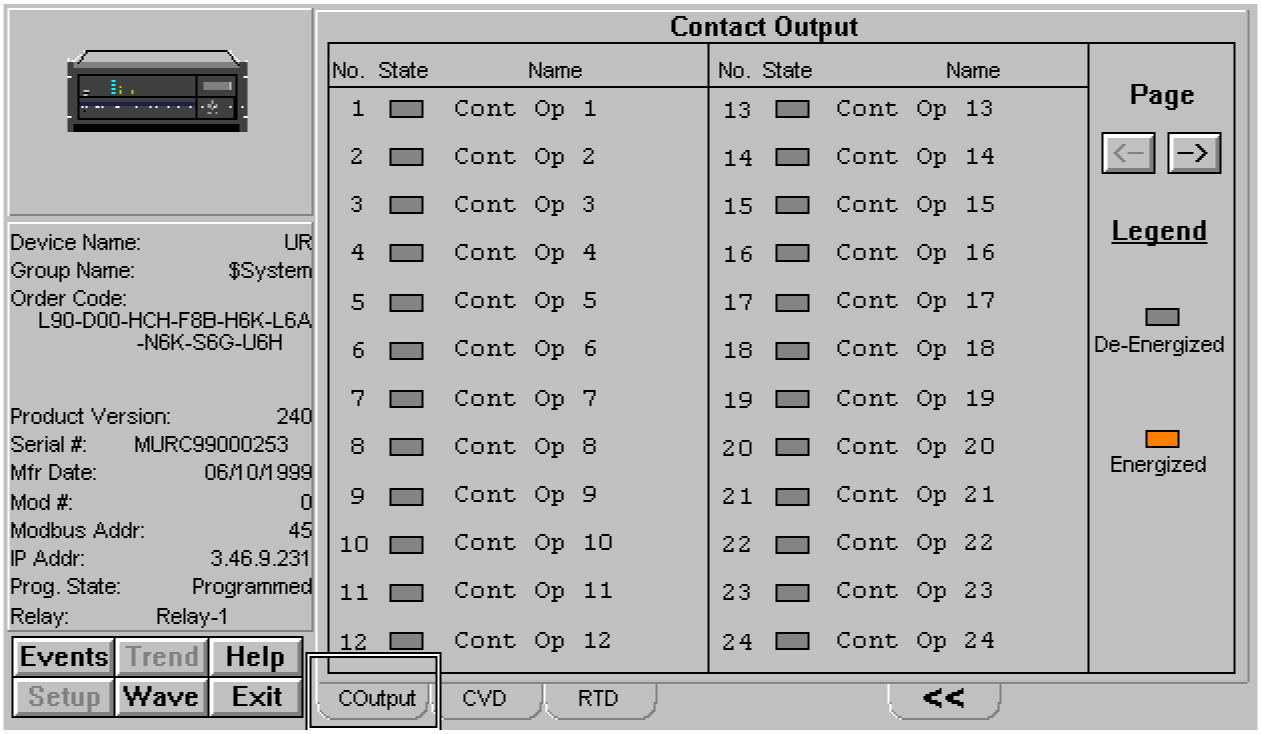
Universal Relay - Contact Input Tab

The Contact Input tab supports the B30, C30, C60, D60, F30, F35, F60, G60, L60, L90, M60 and T60 UR devices, and shows the contact inputs installed on the selected relay. Up to 96 contact inputs may be displayed.

Contact Inputs

The contacts are presented as a series of pages. To view the contact inputs, use the Prev(ious) and Next keys provided to navigate among the pages. The number of contact inputs available is determined from the Order Code read from the device, and is dependent on the number of digital I/O cards installed in the relay. If a contact input is not available in the connected relay, the associated control button is grayed and disabled, and the input name field shows "N/A". If the corresponding Contact Input State is Energized then the LED is lit with an amber color; otherwise the LED remains gray (un-energized).

Contact Output Tab



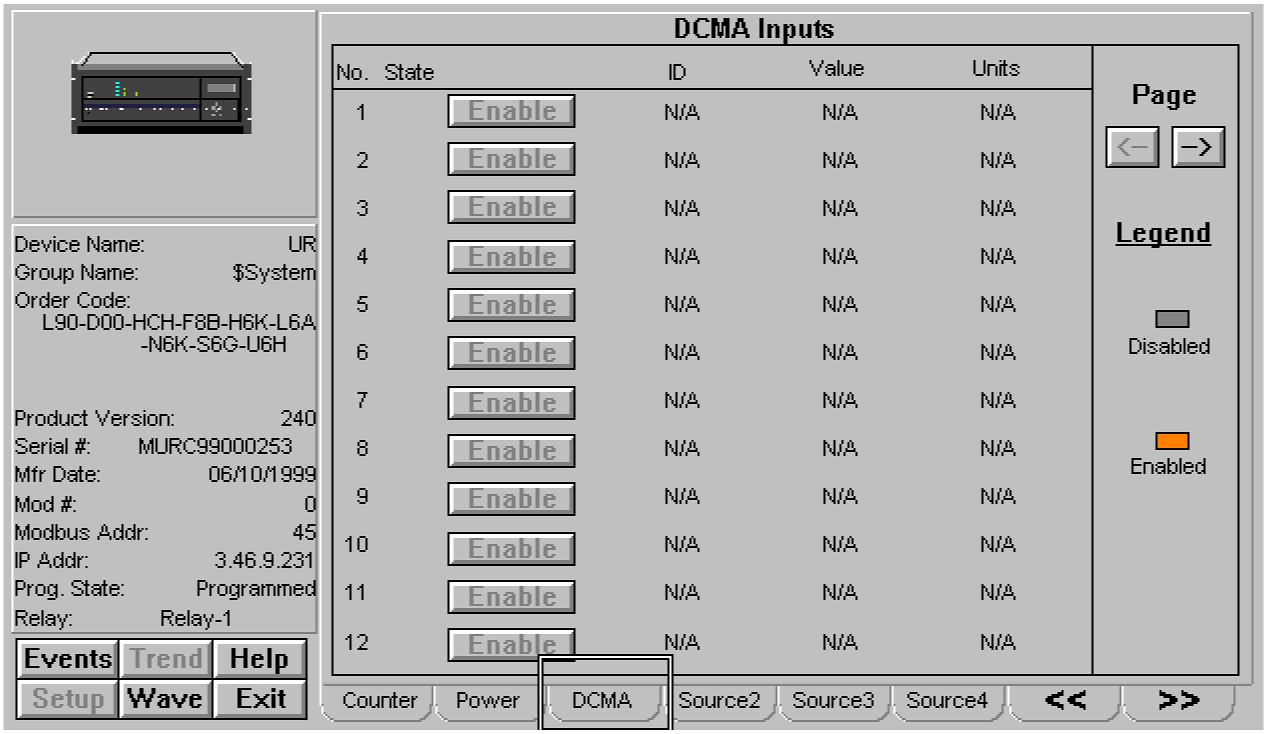
Universal Relay - Contact Output Tab

The Contact Output tab supports the B30, C30, C60, D60, F30, F35, F60, G60, L60, L90, M60 and T60 UR devices, and shows the contact outputs installed on the selected relay. Up to 64 contact outputs may be displayed.

Contact Output

The contacts are presented as a series of pages. To view the contact outputs, use the Page arrow keys provided to navigate among the pages. The number of contact outputs available is determined from the Order Code read from the device, and is dependent on the number of digital I/O cards installed in the relay. If a contact output is not available in the connected relay, the associated control button is grayed and disabled, and the output name field shows "N/A".

DCMA Tab



Universal Relay - DCMA Tab

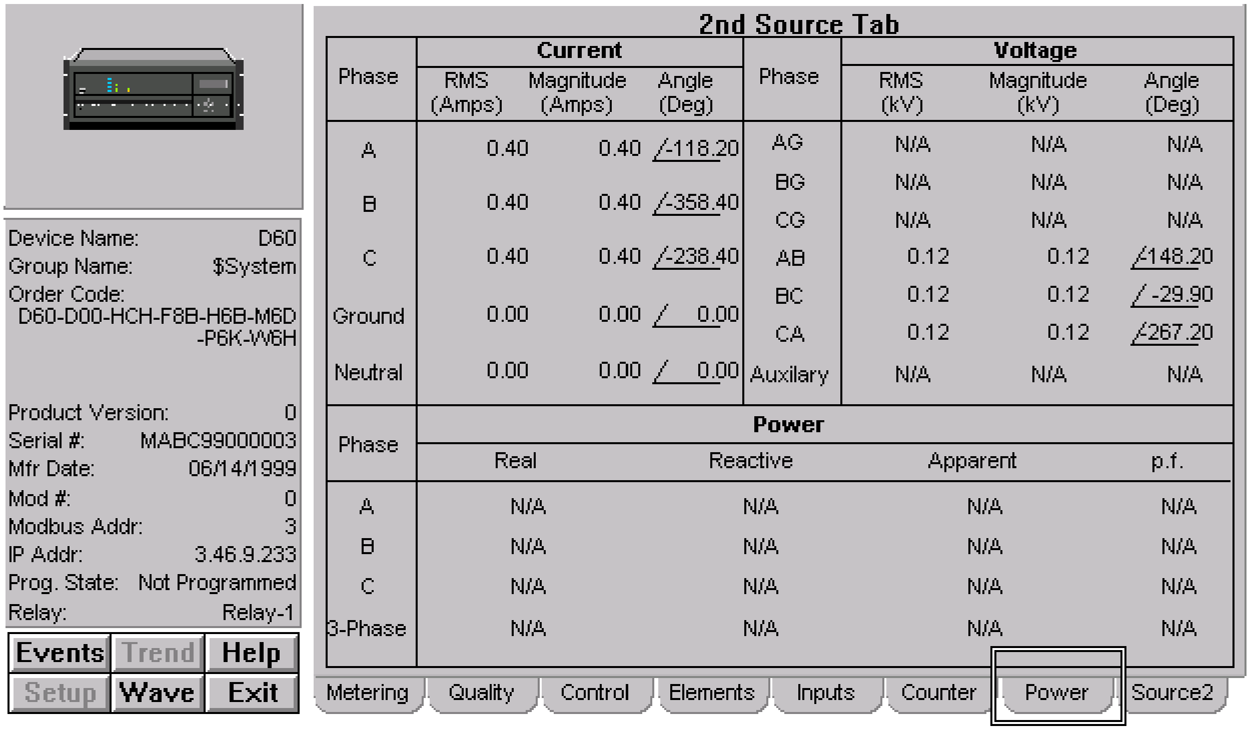
The Direct Current MilliAmperes (DCMA) tab supports the B30, C30, C60, D60, F30, F35, F60, G60, L60, L90, M60 and T60 UR devices, and shows the state of the relay's DCMA inputs. DCMA inputs are analog inputs used to read external transducer values. An example might be rotational speed on a generator, translated into a 4-20 mA current loop. Up to 24 inputs may be enabled or disabled.

DCMA Inputs

The DCMA inputs and their parameters are presented as a series of pages. To view the inputs, the use the Page arrow keys provided to navigate between the pages.

For each DCMA input, its ID number, value, and units are displayed as read from the device. To enable or disable a selected input, click the Enable button next to its ID number.

Source Tabs

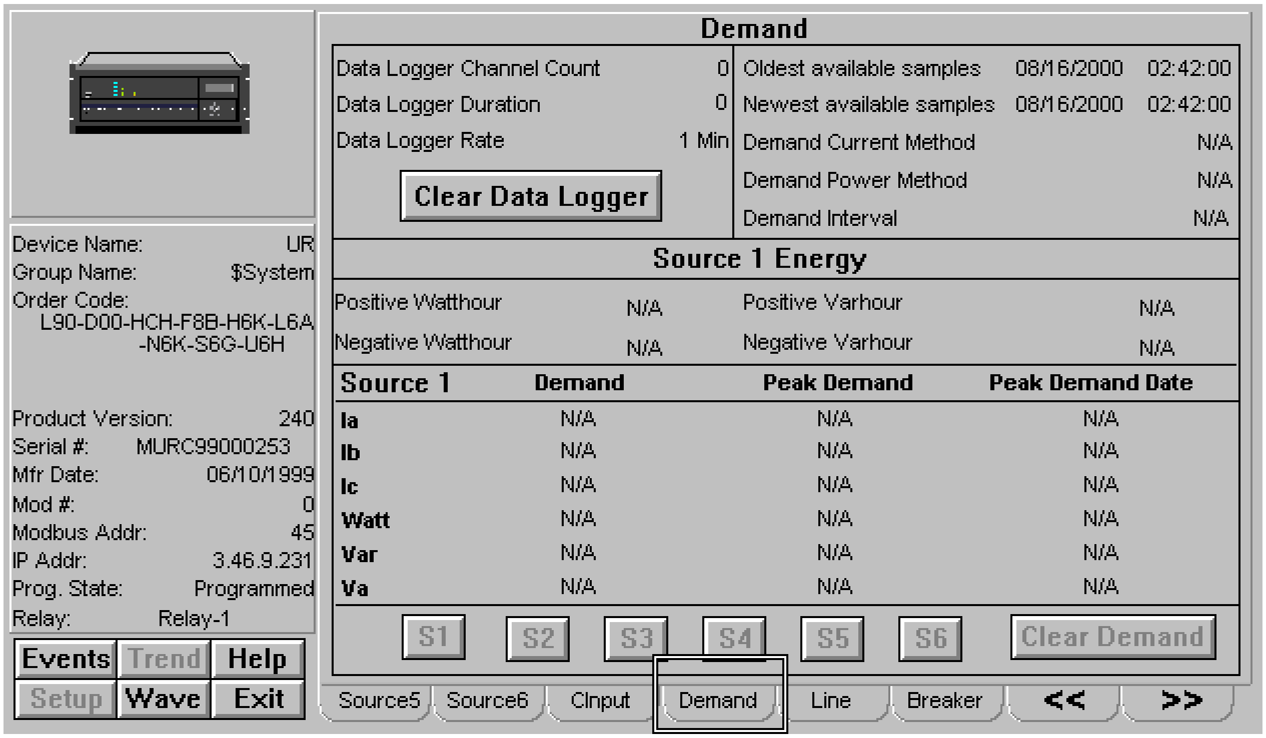


Universal Relay - Source Tab Example

Similar in operation to the metering tab (except that frequency information is not displayed), there are five identical "Source" tabs (2 – 6) which display actual values information specific to the indicated source. There is no "Source 1" tab, since the Metering tab serves as the "Source 1" display. The B30, C60, D60, F30, F35, F60, G60, L60, L90, M60 and T60 UR device types are supported.

The display rules for the metering tab also apply to each Source tab.

Demand Tab



Universal Relay - Demand Tab

The Demand tab supports the B30, C60, D60, F30, F35, F60, G60, L60, L90, M60 and T60 UR devices, and shows a variety of energy measurements and demand parameters for a selected source.

These values are displayed for up to six sources, which may be toggled between using the S1 - S6 buttons. The Clear Demand button clears the values for the selected source. Note: Energy data is displayed as N/A for the L90 and L60 device types, and data logger data is displayed as N/A for the B30 device type.

Demand Values

The Demand panel shows the Data Logger parameters, which may be cleared using the Clear Data Logger button, the time/date stamps of the oldest and newest samples available, and information on the Demand Current and Demand Power Methods, and Demand Interval (if applicable).

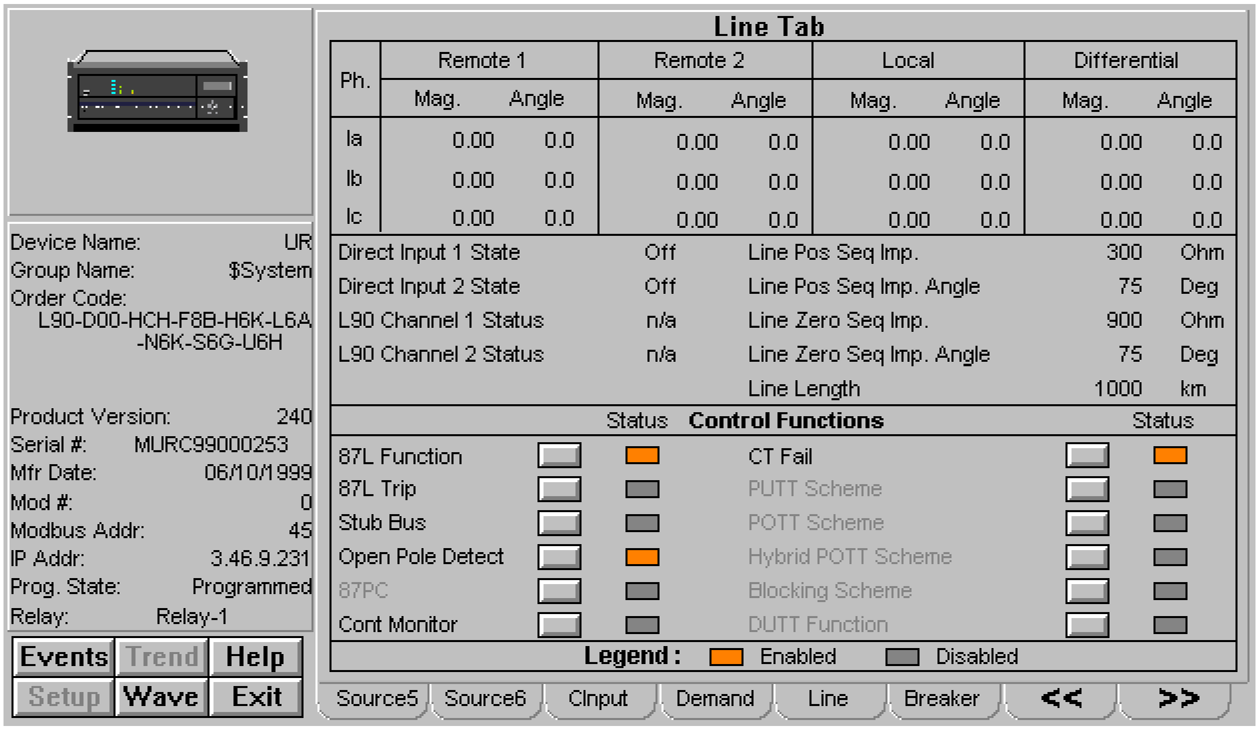
Source (x) Energy

Displays positive and negative Watthour and Varhour values for the selected source.

Source (x) Demand, Peak Demand, Peak Demand Date

Displays Demand, Peak Demand, and Peak Demand Date values for a variety of measurements for the selected source.

Line Tab



Universal Relay - Line Tab

The Line tab supports the D60, F30, F60, G60, L60, L90 and UR devices, and shows a variety of energy measurements and demand parameters for a selected source.

These values are displayed for up to six sources, which may be toggled between using the S1 - S6 buttons. The Clear Demand button clears the values for the selected source.

Line Tab

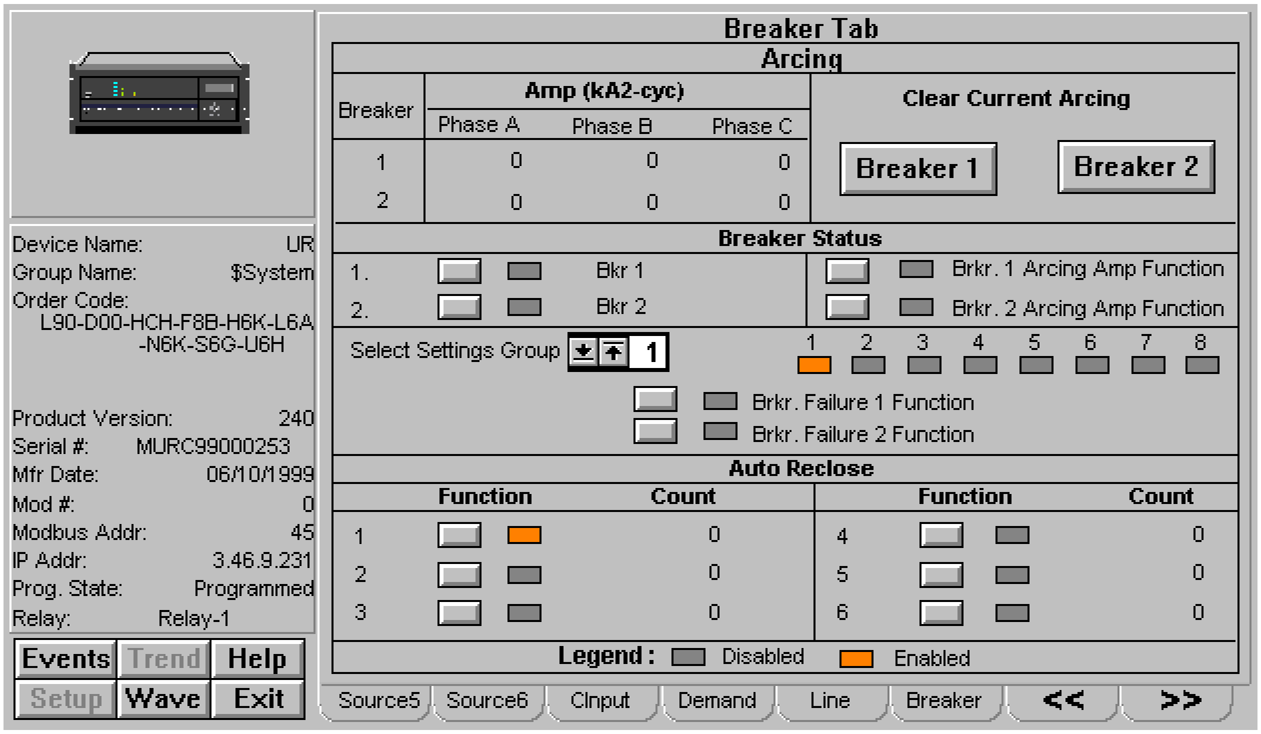
Displays (for Remote 1, Remote 2, Local, and Differential) the magnitude and angle on phase A, B, and C.

Also displays information on various Direct Inputs, L90 Channels 1 and 2, and Line Position and Line Zero values.

Control Functions

The Control Functions panel displays status (enabled/disabled) and allows control of various relay elements, for example 87L and 87PC protection elements. Elements are greyed out if not installed or applicable to the device type. Each element's may be enabled or disabled by clicking the button next to its name.

Breaker Tab



Universal Relay - Breaker Tab

The Breaker tab supports the B30, C30, C60, D60, F30, F35, F60, G60, L60, L90, M60 and T60 UR devices, and shows a variety amperage measurements and breaker status, as well as allowing control of breaker functions and auto reclosers.

Arcing

Amperage at Breaker 1 and 2 is displayed for Phases A, B, and C. The Clear Current Arcing functions allow current arcing conditions to be cleared.

Breaker Arcing Current features are available for Breakers 1 and 2. This element calculates an estimate of the per-phase wear on the breaker contacts by measuring and integrating the current squared passing through the breaker contacts as an arc. These per-phase values are added to accumulated totals for each phase and compared to a programmed threshold value. When the threshold is exceeded in any phase, the relay can set an output operand to "1". The accumulated value for each phase can be displayed as an actual value.

Breaker Functions

Breaker control can be enabled or disabled using these controls, and the Breaker Arcing Amp function can be enabled or disabled for Breakers 1 and 2. These controls will be disabled if the connected device does not support breaker control.

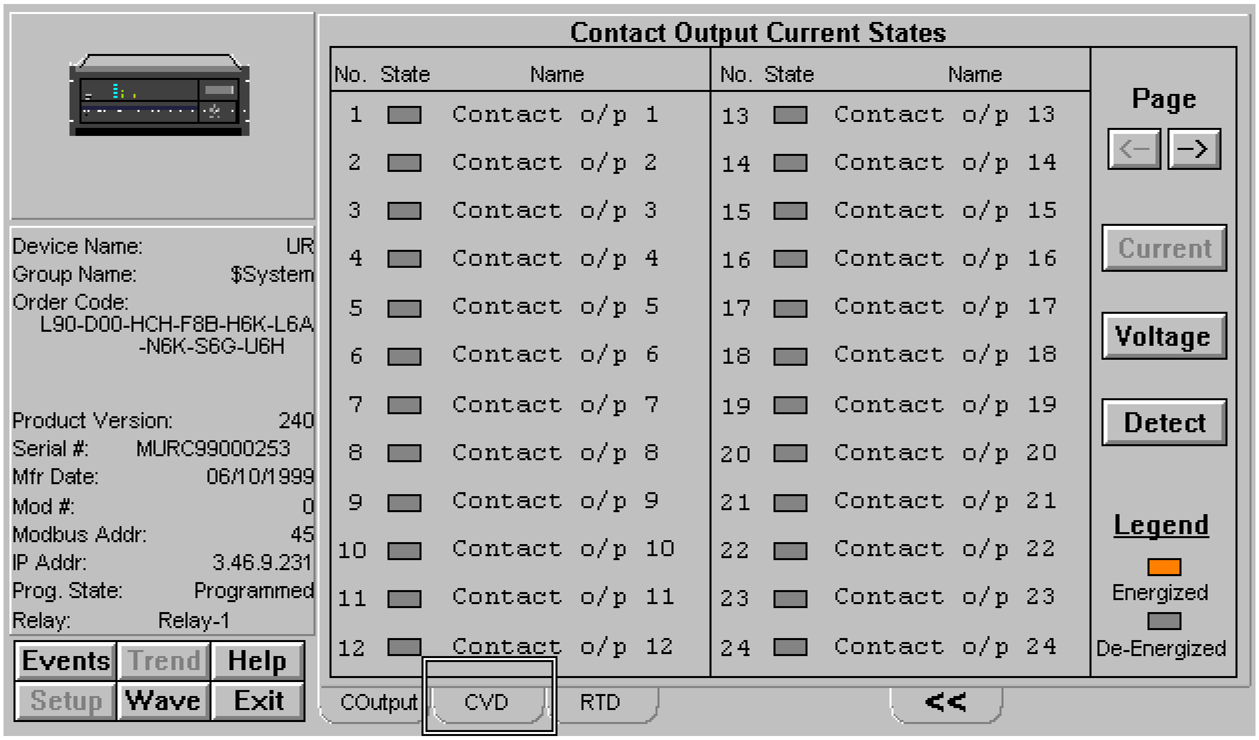
Breaker Status

Selecting a settings group changes the display of functions. Up to 8 settings groups are available for display.

Auto Reclose

If the breaker is so equipped, the status of and reclose count for up to six Auto Reclose functions can be displayed, and each recloser may be enabled or disabled. Click the button next to each ID number to enable/disable the autorecloser.

Contact Output Current States Tab



Universal Relay - Contact Output Current States Tab

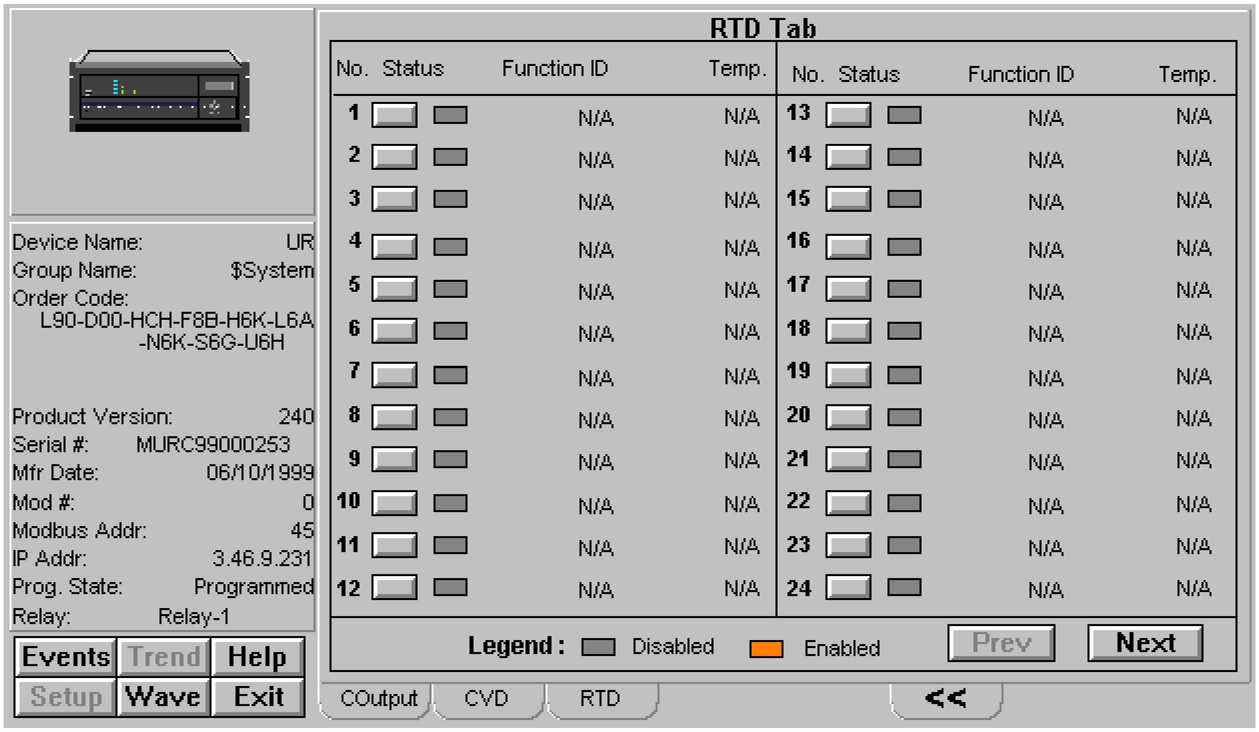
The Contact Output Current State tab supports the B30, C30, C60, D60, F30, F35, F60, G60, L60, L90, M60 and T60 UR devices, and indicates the current state of the contact outputs installed on the selected relay. Up to 64 contact outputs may be displayed.

Contact Output Current State

The Current, Voltage, and Detect buttons enable the user to shift the viewing mode of the contacts displayed.

The contacts are presented as a series of pages. To view the contact outputs, use the Page arrow keys provided to navigate among the pages. The number of contact outputs available is determined from the Order Code read from the device, and is dependent on the number of digital I/O cards installed in the relay. If a contact output is not available in the connected relay, the associated control button is grayed and disabled, and the output name field shows "N/A".

Remote Temperature Detection Tab



Universal Relay - Contact Output Tab

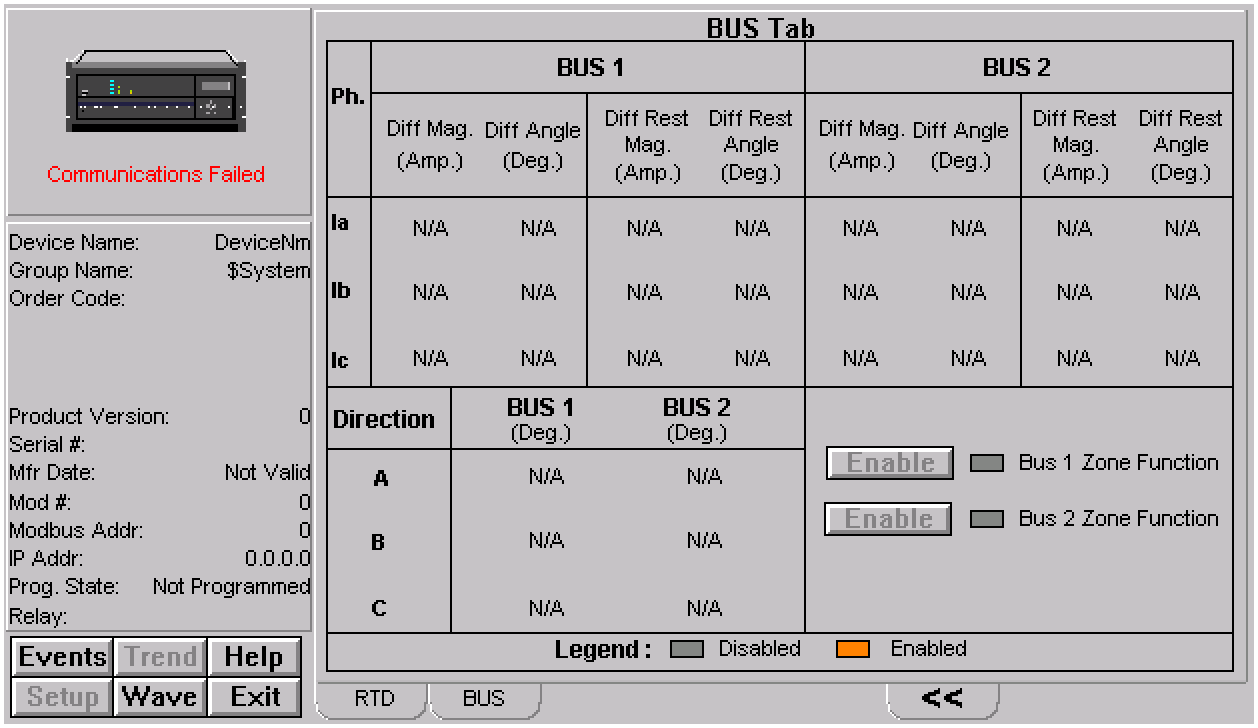
The RTD tab supports the B30, C30, C60, D60, F30, F35, F60, G60, L60, L90, M60 and T60 UR devices, and shows the RTD sensors installed on the selected relay. Up to 48 input sensors may be displayed.

RTD Tab

Each RTD sensor's status, function (name), and current temperature are shown. Individual RTD's may be disabled or enabled using the control button next to the RTD number.

The sensors are presented as a series of pages. To view each page of RTD's, use the Prev(ious) and Next keys provided to navigate among the pages. The number of parameters displayed is determined from the Order Code read from the device, and is dependent on the number of RTD sensors wired to the relay. If a sensor is not available in the connected relay, the associated control button is grayed and disabled, and the name field shows "N/A".

Bus Tab



Universal Relay - Bus Tab

The Bus tab is supported for the B30 UR device only. It displays Phase Magnitude and Angle measurements on Bus 1 and Bus 2 for phases A, B, and C.

Current direction is shown in degrees for each phase, and the Zone function can be enabled or disabled on each Bus.

239 Motor Protection Relay

The 239 does not support Waveform Capture or Event generation, therefore these buttons are disabled beneath the Info box.

The 239 Tabular Data Screen's command buttons are described below:

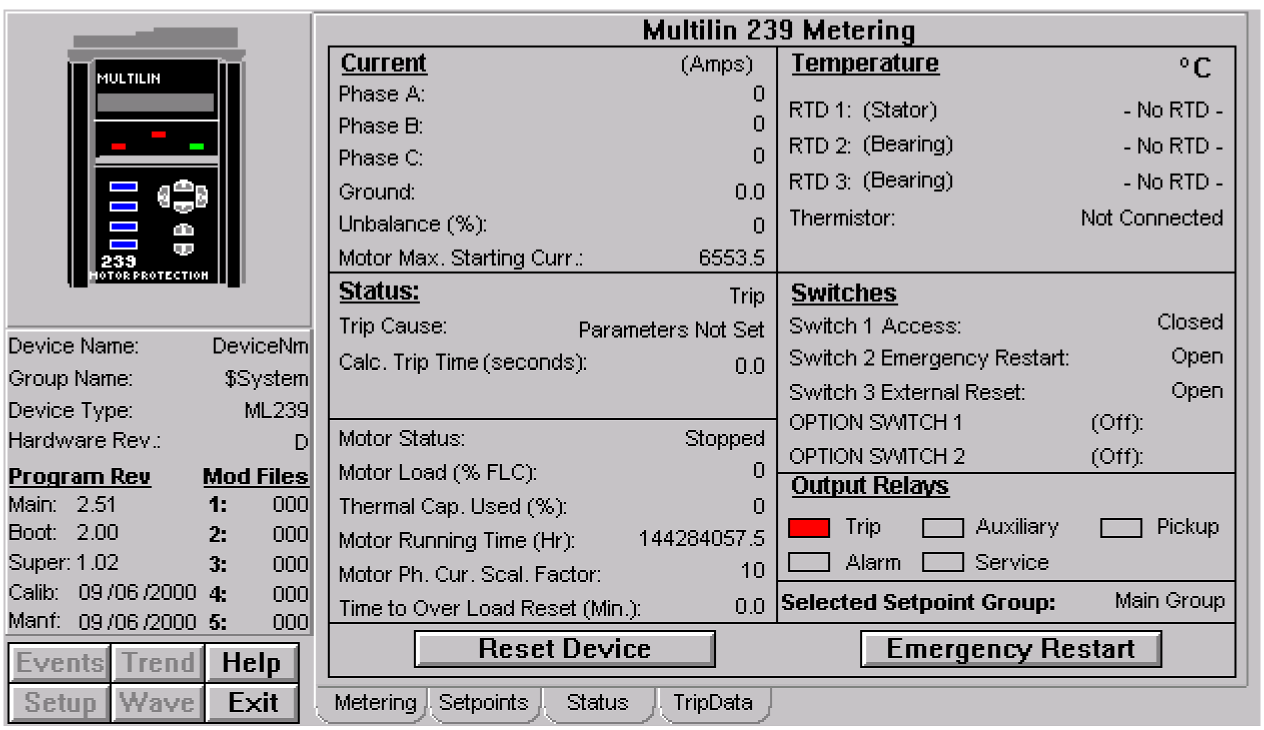
Tab	Button	Function
Metering	Reset Device	Issues a RESET command to the 239
	External Restart	Issues an External Restart command to the 239
Trip Data	Clear Trip Data	Clears the last 5 trip causes from the 239's memory

Table 23. 239 Tabular data screen commands.

- The Status tab displays 35 Pickup LEDs (amber) and 35 Alarm LEDs (red), along with a text string for each alarm condition on the Status tab.

See the 239 Motor Protection Relay Instruction Manual (Chapter 5, *Actual Values*) for information on the display of data values under different device configurations. Values not configured for use are displayed as N/A.

Metering tab

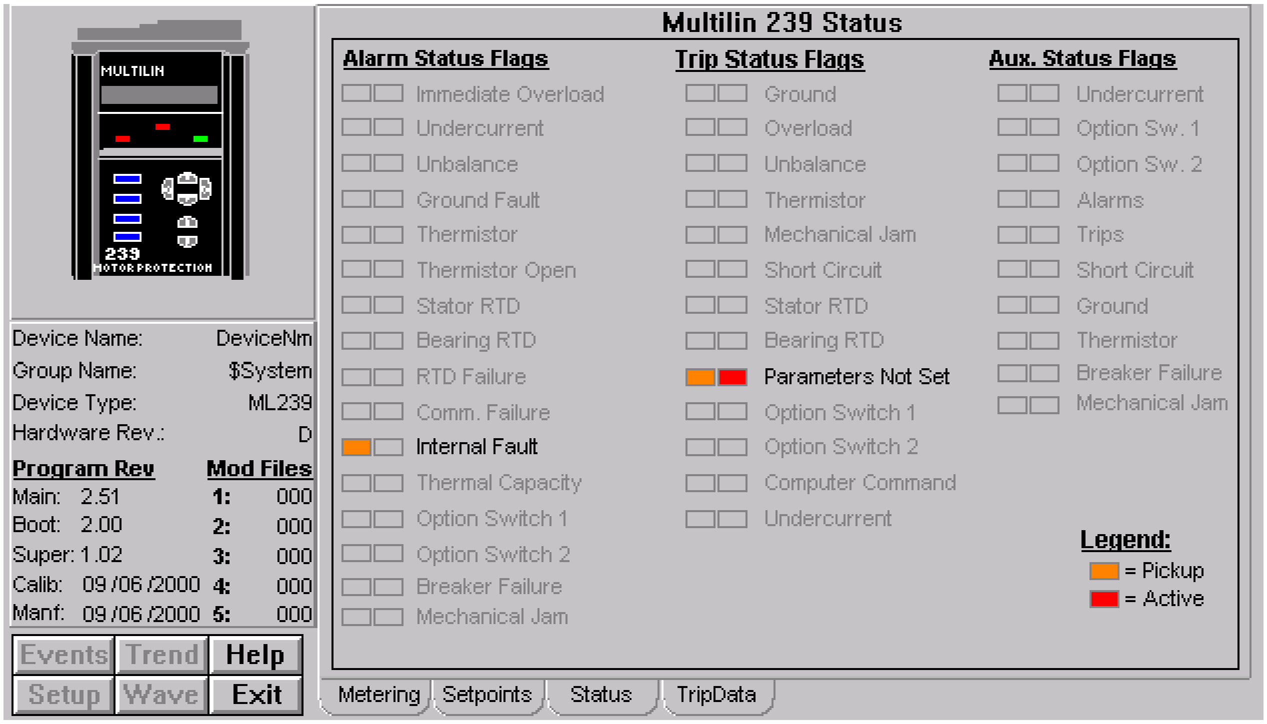


The Multilin 239 Metering screen shows:

- Current
- RTD Status and Temperature
- Motor Status
- Switches
- Output Relays

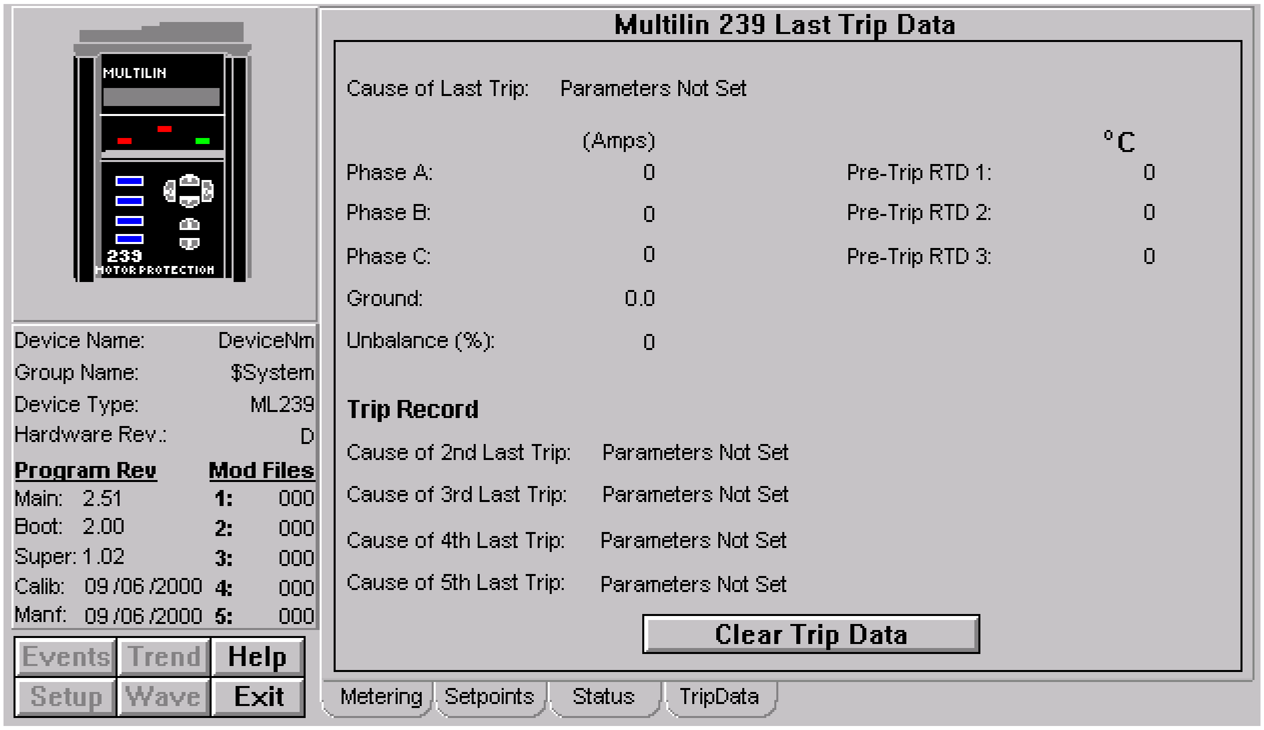
The **Reset Device** button, when clicked, will issue a RESET command to the 239.
The **Emergency Restart** button, when clicked, will issue a RESTART command to the 239.

Status Tab



- The Status tab displays Alarm, Trip, Auxilary Status Pickup is shown in Amber color and Active Alarm shown in Red, along with a text string for each alarm condition.
- See the 239 Motor Protection Relay Instruction Manual (Chapter 5, *Actual Values*) for information on the display of data values under different device configurations. Values not configured for use are displayed as N/A.

Trip Data

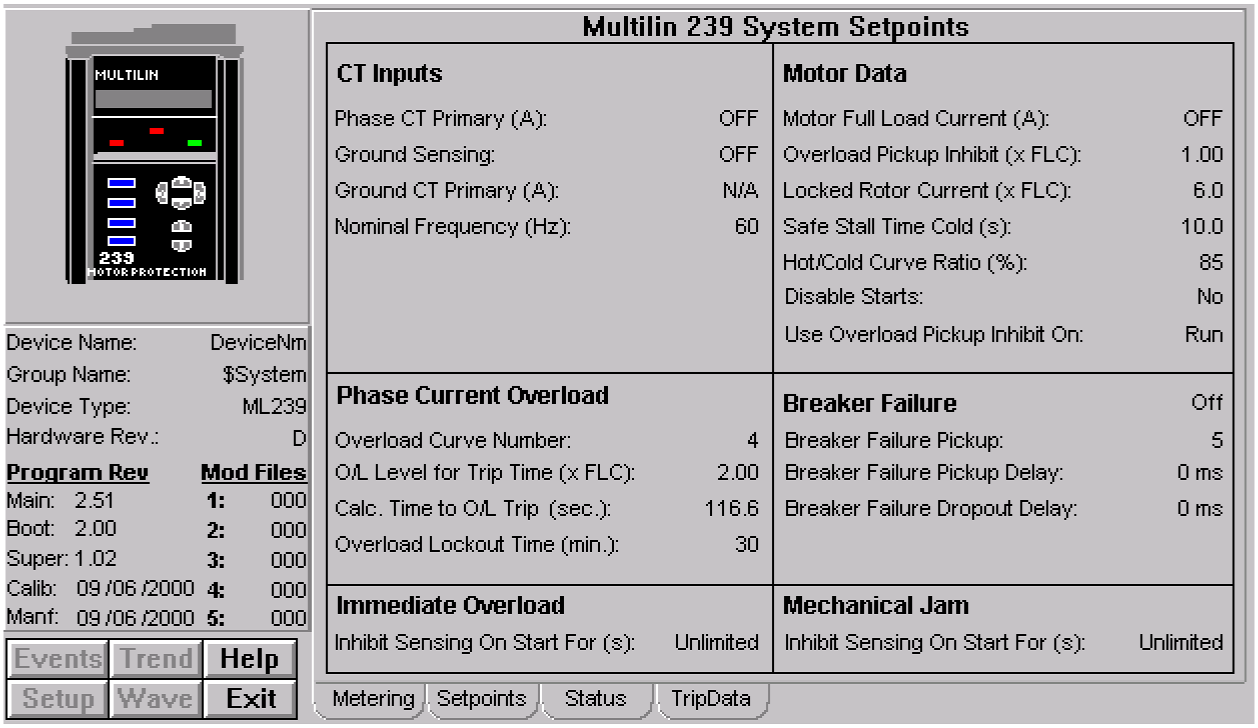


The Multilin 239 Last Trip Data screen shows:

- Cause of Last Trip and their corresponding currents and RTD Temperatures at the time of trip.
- Trip Record

The **Clear Trip Data** button, when clicked, will clear all the trip data.

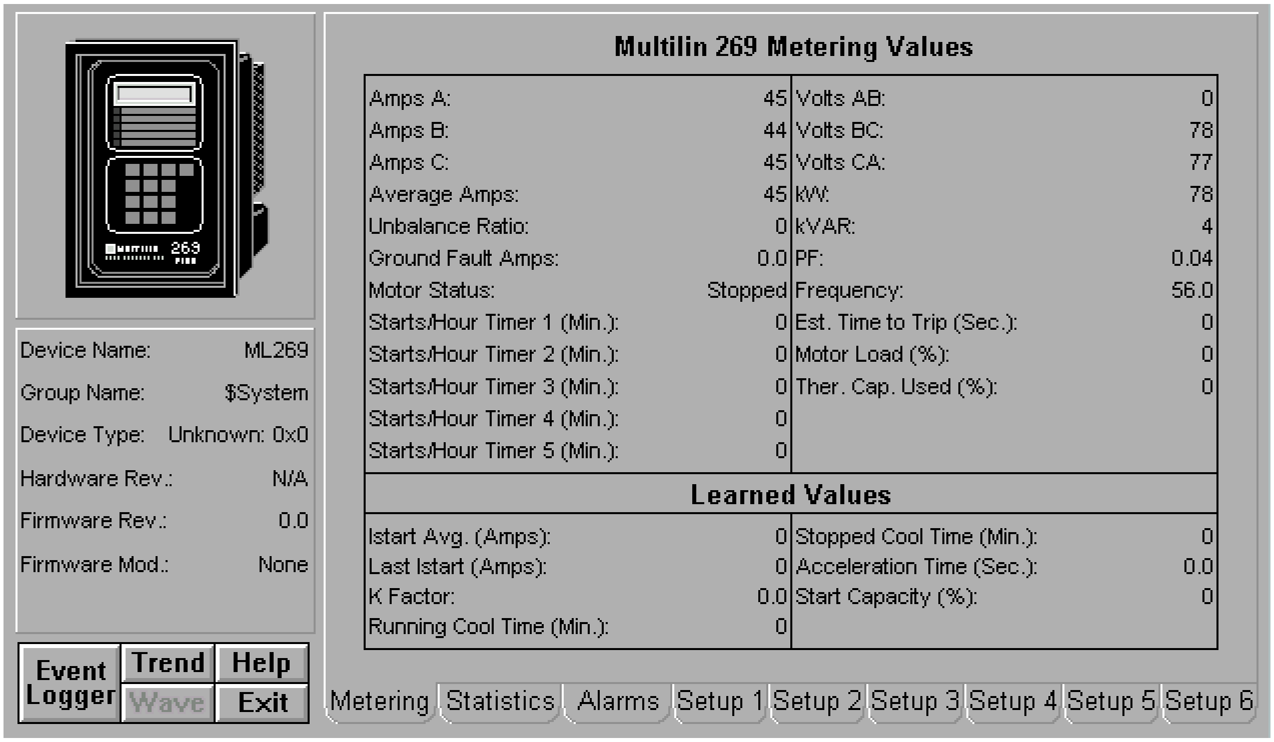
Setpoints Tab



The Multilin 239 System Setpoints screen shows:

- CT Inputs
- Motor Data
- Phase Current Overload
- Breaker Failure
- Immediate Overload
- Mechanical Jam

269 Plus Motor Management Relay



The 269 Tabular Data Screen wizard provides two reset push buttons on the Setup 6 tab.

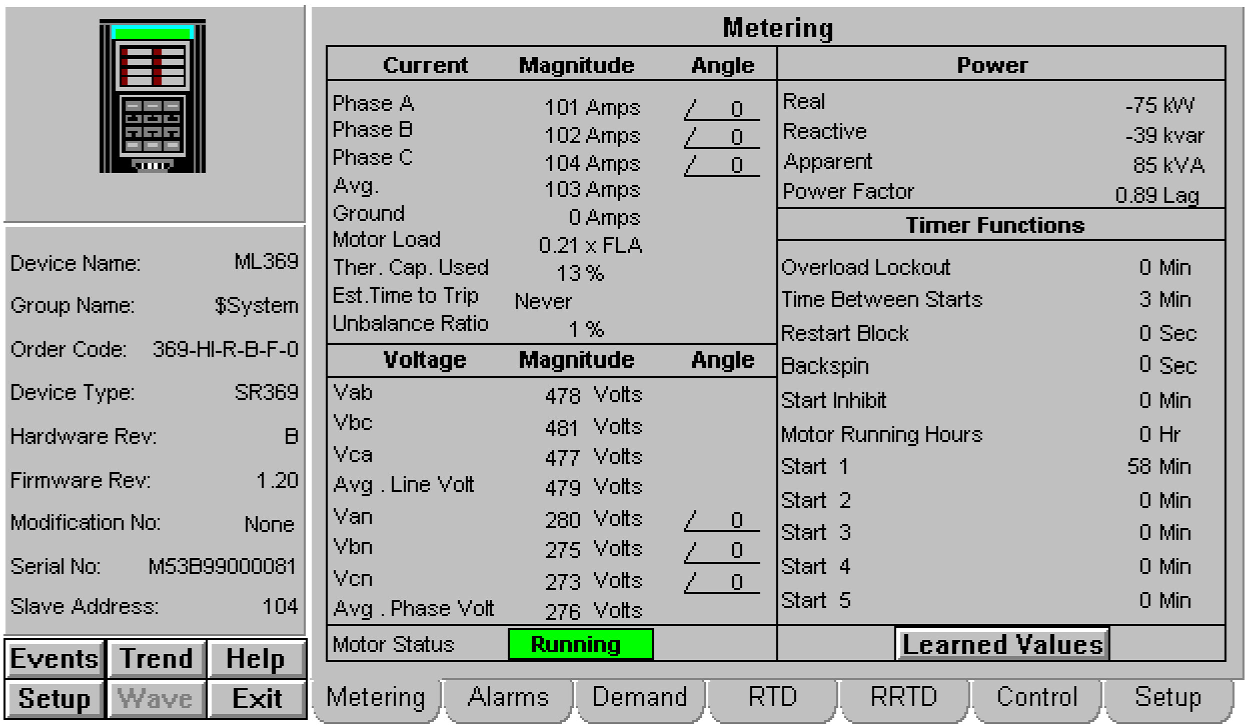
Tab	Button	Function
Status 6	Clear Last RTD Data	Clears the RTD last access registers
	Clear Commissioning Data	Clears the commissioning data registers

Table 24. 269+ Tabular data screen commands.

For complete explanations of parameters, refer to the 269+ *Users Guide*.

369 Motor Management Relay

Metering Tab



369 - Metering Data Screen

The Metering tab displays the following metered values from the 369 device: Actual Values for Voltage, Current, Power, Power Factor, and Frequency. These values are detailed below.

Current

- Per phase magnitude and angle
- Phase average
- Ground current
- Motor Load as a percentage of the Full Load Current rating defined in setpoints.
- Thermal Capacity used in percent
- Estimated time to trip
- Current Unbalance ratio

Voltage

Voltage values are only displayed if the Metering or Backspin option is installed in the relay, and if a voltage transformer (VT) connection has been programmed in the relay.

Line - Line voltage magnitude.

Average Line-Line voltage.

Line – Neutral voltage magnitude and angle (only shown for wye configurations)

Average Line-Neutral voltage. (only shown for wye configurations)

Power

Power values are displayed only if the Metering or Backspin option is installed in the relay and a VT connection has been programmed.

- Real power
- Reactive power
- Apparent power
- Power Factor

Motor Status

The current status of the motor is shown in a colored indicator block

Timer Functions & Learned Values

The lower right quadrant of the metering tab has two pages – Timer Functions and Learned Values. You can toggle between these two displays by clicking on the button located in the bottom right corner of the metering tab display.

Timer Functions: this section displays the current values of several internal timers within the device. Most of these functions must be programmed in the relay in order to function. Refer to the device manual for specific usage details.

Learned Values: this section displays items tracked by the relay. For full details on their usage, consult the relay manual.

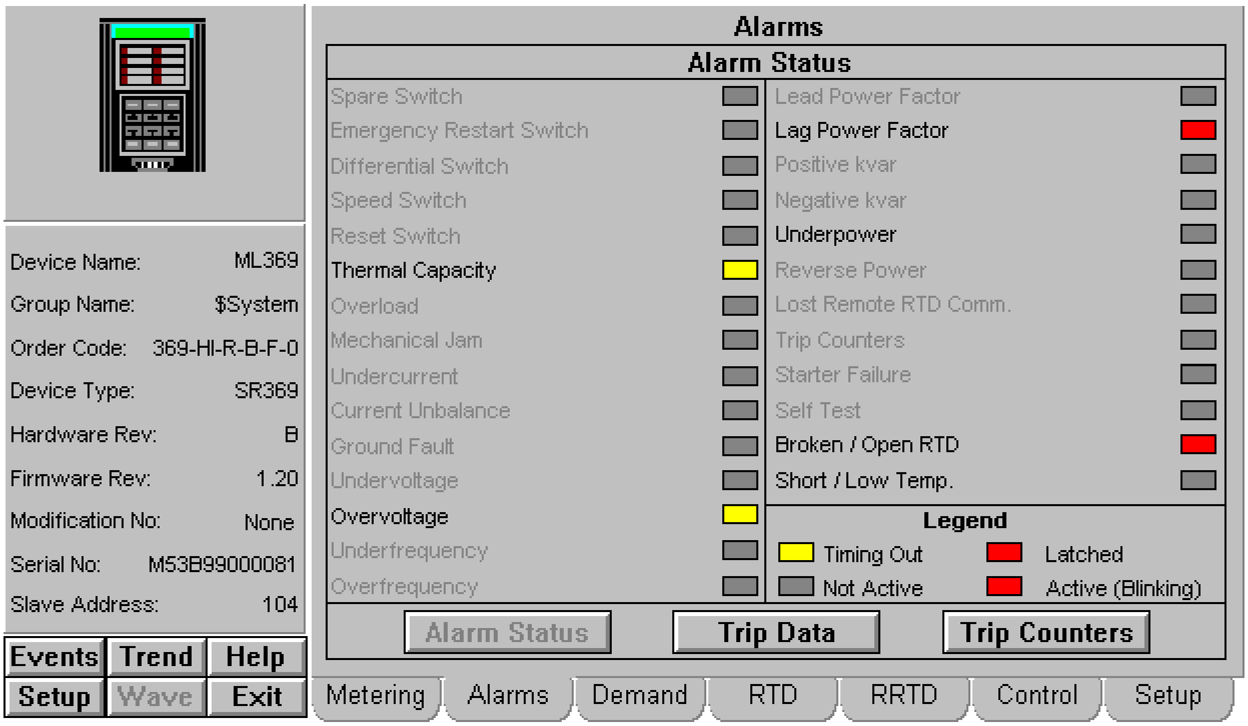
Backspin features – these are only enabled when the Backspin option is installed in the relay.

Learned cool time constants – these are enabled only if the "Enable Learned Cool Times" feature is programmed.

Learned k factor is only enabled by setting the unbalance biasing of thermal capacity to on/learned.

Clearing Motor Data (see control tab) will set all these values to their defaults.

Alarms Tab



369 Relay - Alarms Tab

The Alarms tab consists of three pages – Status, Trip Data, and Trip Counters. You can navigate between pages by clicking the buttons located along the lower edge of the tab display.

Alarm Status

This page displays the current status of the alarm functions within the relay.

If a function is disabled or not programmed, its label appears as dark gray text, and its associated indicator will be dark gray at all times.

If a function is enabled, its label appears as black text, and its indicator will show the current status of that function.

Trip Data

This page displays information about the last trip event.

Voltage, power, and power factor values are only indicated if the Metering or Backspin option is installed and a VT connection has been programmed in the relay.

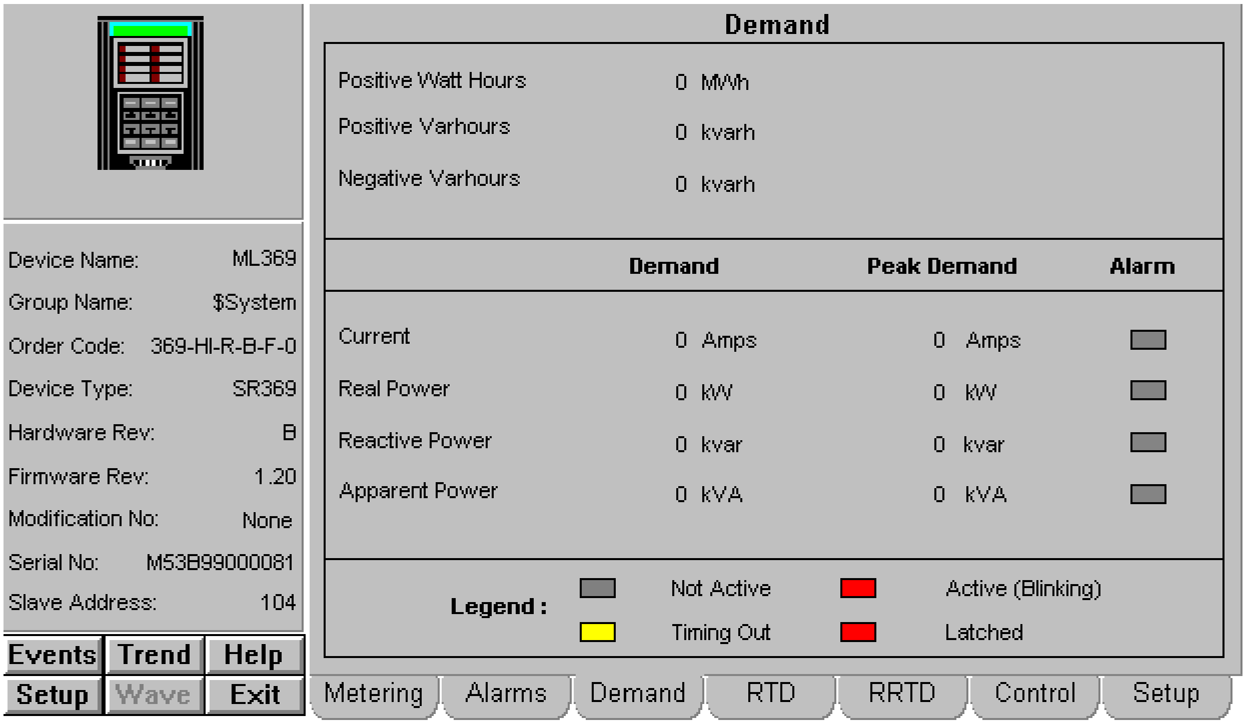
Line-Neutral voltages are only displayed when the VT is connected in a wye configuration.

The Hottest Stator RTD field is only shown if a Stator RTD is programmed.

Trip Counters

This page displays information about the accumulated trips experienced by the relay. Data on this page can be cleared using the Clear Last Trip Data button on the Control tab.

Demand Tab



369 Relay - Demand Tab

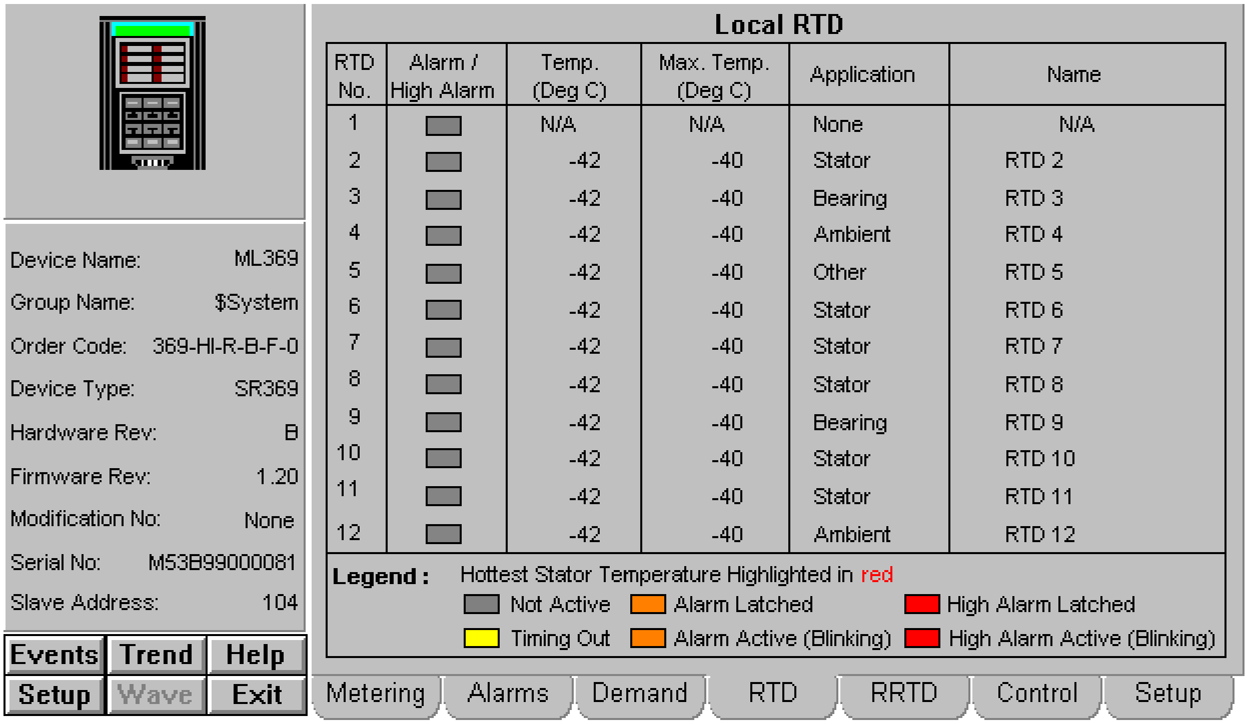
This tab displays current and power demand metering information.

Current demand is indicated regardless of options/VT settings.

Power demand values are only available when the Metering or Backspin option is installed on the relay and a VT connection is programmed.

Peak demand values may be cleared using the Clear Peak Demand Data button on the Control tab.

Local RTD Tab



RTD No.	Alarm / High Alarm	Temp. (Deg C)	Max. Temp. (Deg C)	Application	Name
1		N/A	N/A	None	N/A
2		-42	-40	Stator	RTD 2
3		-42	-40	Bearing	RTD 3
4		-42	-40	Ambient	RTD 4
5		-42	-40	Other	RTD 5
6		-42	-40	Stator	RTD 6
7		-42	-40	Stator	RTD 7
8		-42	-40	Stator	RTD 8
9		-42	-40	Bearing	RTD 9
10		-42	-40	Stator	RTD 10
11		-42	-40	Stator	RTD 11
12		-42	-40	Ambient	RTD 12

369 Relay - Local RTD Tab

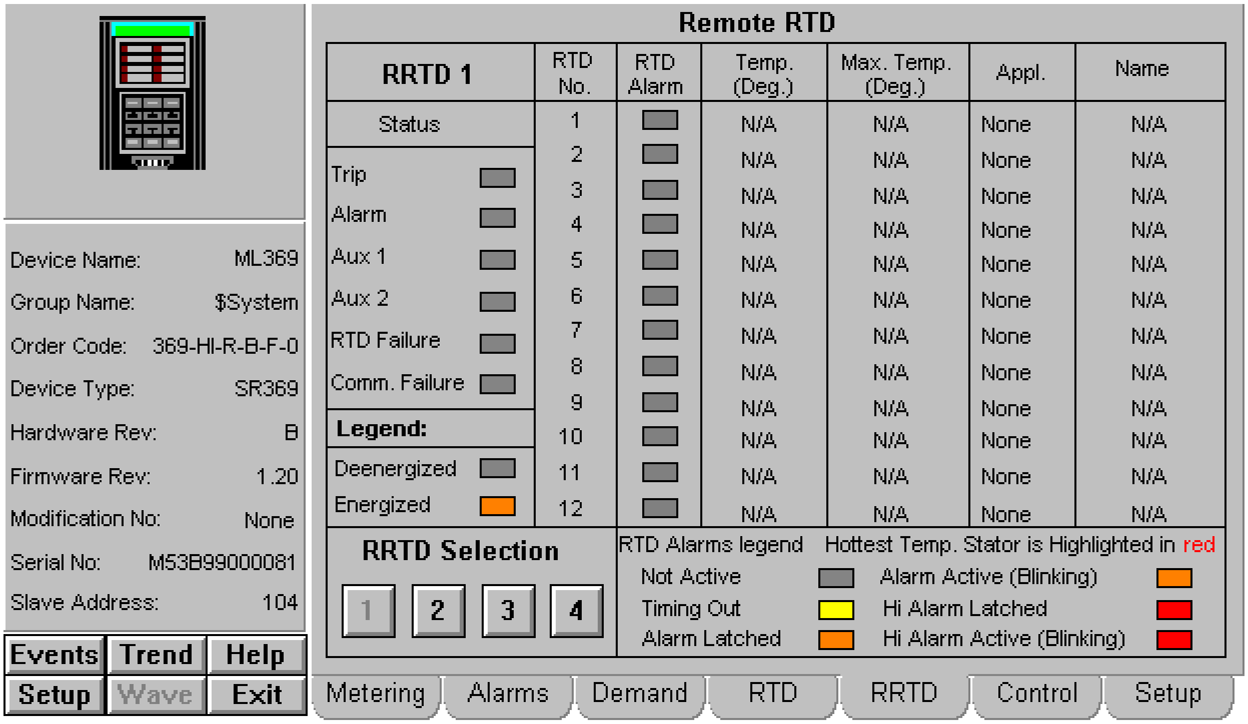
This tab displays information about any RTD temperature probes connected directly to the device. Information on this tab is only available if the RTD option is installed in the relay.

Information and alarm indication for each RTD is only available when that RTD is programmed for operation. If an RTD's Application is set to "none" then all fields for that RTD display "N/A".

The hottest Stator RTD indicates which RTD is currently returning the highest temperature. This condition is indicated by red text in the Temperature field.

Only one alarm condition can be displayed at a time – highest priority alarms are displayed in the alarm indicator. For example, if a "High Alarm" was triggered and latched and the RTD value returned to the "Alarm Active" state, the "High Alarm" latched indicator would persist.

Remote RTD Tab



369 Relay - Remote RTD Tab

This tab displays information about any RTD temperature probes connected to one or more Remote RTD units. These external accessories connect via Modbus to the 369 relay. A maximum of four RRTD modules can be connected to a 369 relay – each module is assigned a page on this tab. Use the RRTD Selection buttons in the lower left corner of the tab to navigate between pages. Information on this tab is only available if an RRTD module is connected to the relay.

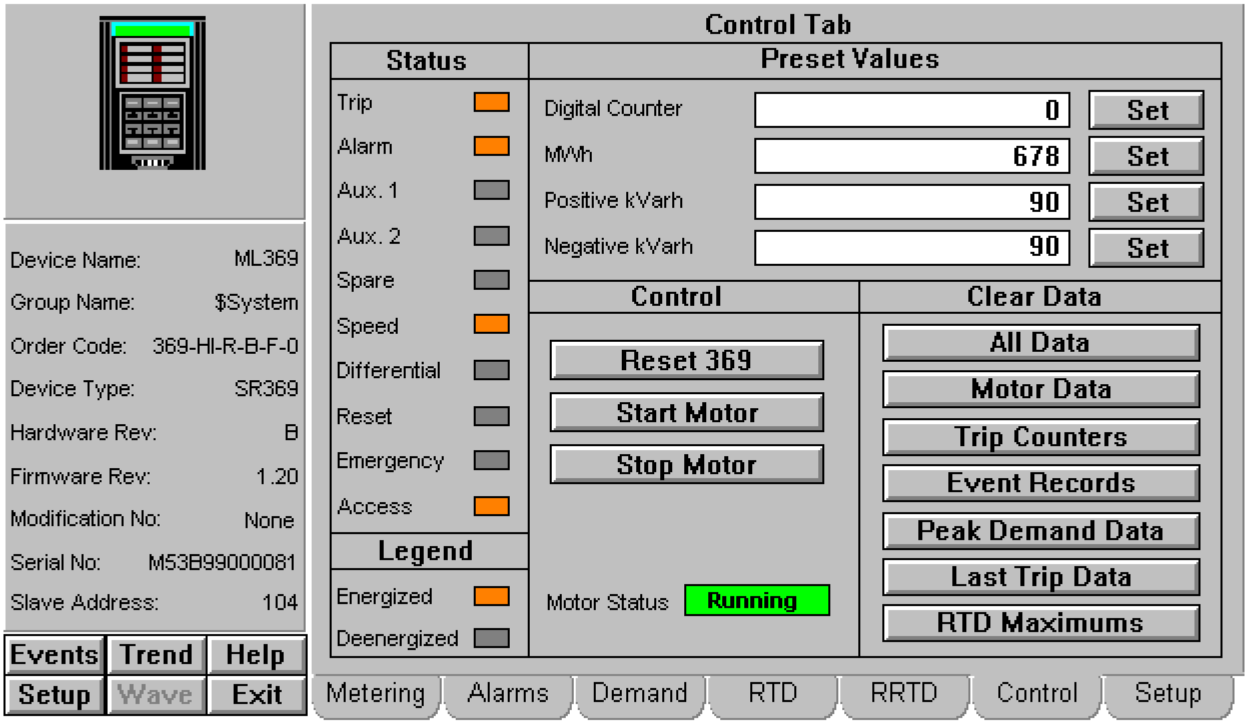
Information and alarm indication for each RTD is only available when that RTD is programmed for operation. If an RTD's Application is set to "none" then all fields for that RTD display "N/A".

The hottest Stator RTD indicates which RTD is currently returning the highest temperature. This condition is indicated by red text in the Temperature field.

Only one alarm condition can be displayed at a time – highest priority alarms are displayed in the alarm indicator. For example, if a "High Alarm" was triggered and latched and the RTD value returned to the "Alarm Active" state, the "High Alarm" latched indicator would persist.

The Status indicators are dedicated to the indicated RRTD module, except for the Comm. Failure indicator – this will be energized if any configured RRTD module stops communicating.

Control Tab



369 Relay - Control Tab

This tab provides limited control functionality over Modbus.

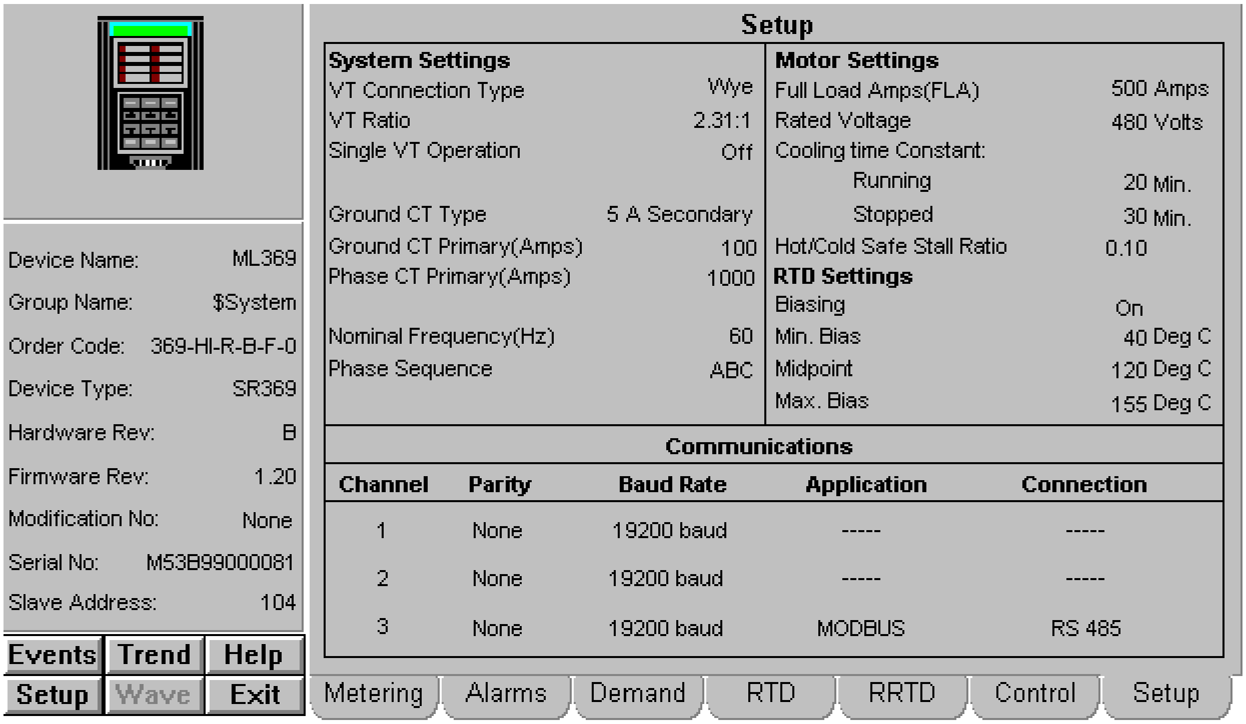
Status – indicates the current status of the output relays and general digital inputs.

Preset Values – shows the current value of the indicated field. Note that these values are only updated when the tab is first displayed – not continuously. To preset a new value, click the white box containing the value you want to change. The Intouch Calculator window appears – type in the new value and click OK. The new value is now displayed in the Control tab, but has not yet been sent to the device. Click the Set button to store the new value in the device.

Control – These buttons are disabled unless the Serial Communications Control setpoint in the relay is programmed to "On". These buttons are subject to Intouch user level security. The security level is set during wizard configuration.

Clear Data – These buttons clear the designated values within the device. All buttons are subject to Intouch user level security which is set during wizard configuration.

Setup Tab



369 Relay - Setup Tab

This tab displays selected setpoints from the device. All fields on this tab are read-only. Setpoints may be changed via the relay's own setup program or manually via the front panel.

SR469 Motor Management Relay

All six function buttons under the Info area are enabled for the SR469.

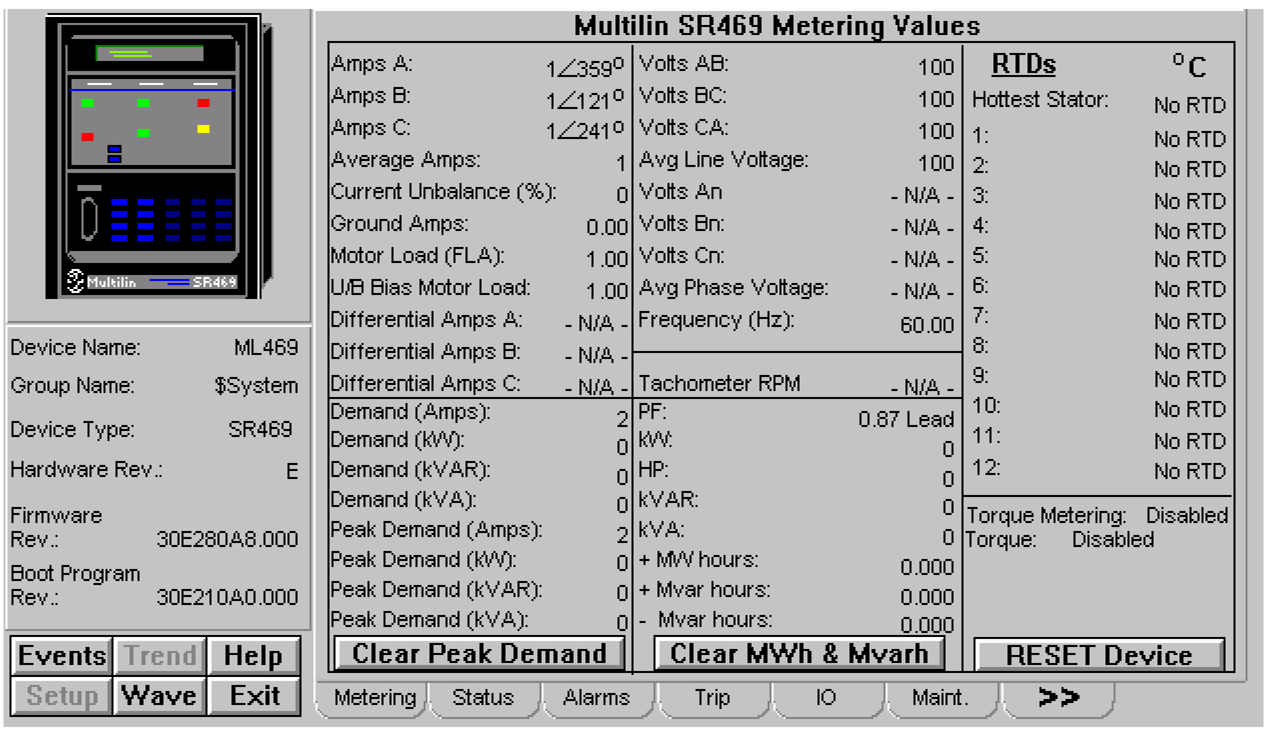
The SR469 Tabular Data Screen wizard has nine command buttons, described below.

Tab	Button	Function
Metering	Reset Device	Issues a RESET command to the SR469
	Clear MWh and Mvarh	Clears these values from the SR469's memory
	Clear Peak Demand	Clears this data from memory
Status	Motor Start/Motor Stop	Issues Motor Start or Motor Stop commands
	Clear RTD Maximums	Resets the RTD Maximums data
Trip	Clear Last Trip Data	Clears this data from memory
I/O	Clear Analog Input Min/Max Data	Clears this data from memory
Maintenance	Preset Digital Counter	Allows presetting of digital counters.
	Clear Trip Counters	Clears the trip count data from memory.

Table 25. SR469 Tabular data screen commands.

See the SR469 Motor Management Relay manual (Chapter 5, *Actual Values*) for information on the display of data values under different device configurations. Values not configured for use are displayed as N/A.

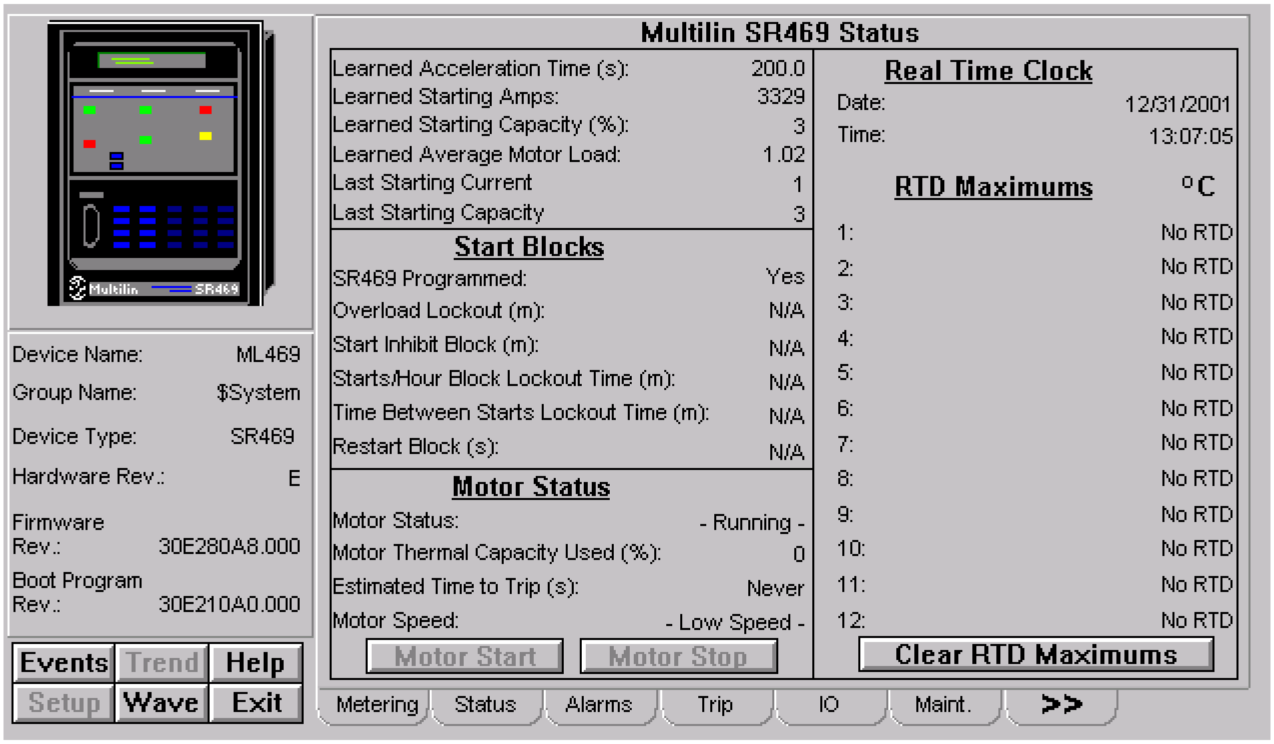
Metering Tab



The Multilin SR469 Metering Values screen shows the metering values, for example, Amps A, Amps B and Amps C; and

Volts AB, Volts BC and Volts CA. Also shows Power, Energy, Motor Data and RTD information.
The **Clear Peak Demand** button will clear all Peak Demand data
The **Clear MWh & Mvarh** button will clear all MWh and Mvarh values.
The **RESET Device** button will issue a RESET command to the SR469.

Status Tab

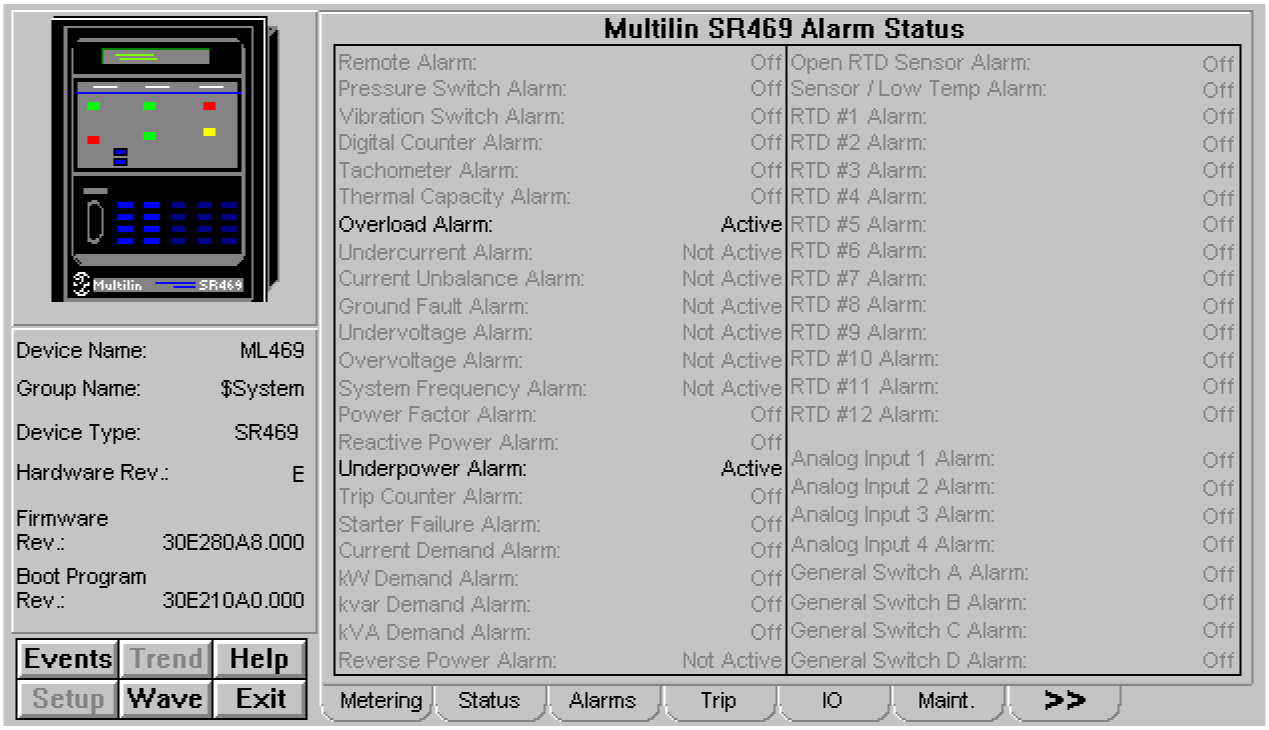


The Multilin SR469 Status screen shows:

- Start Blocks
- Motor Status
- Real Time Clock
- RTD Maximums

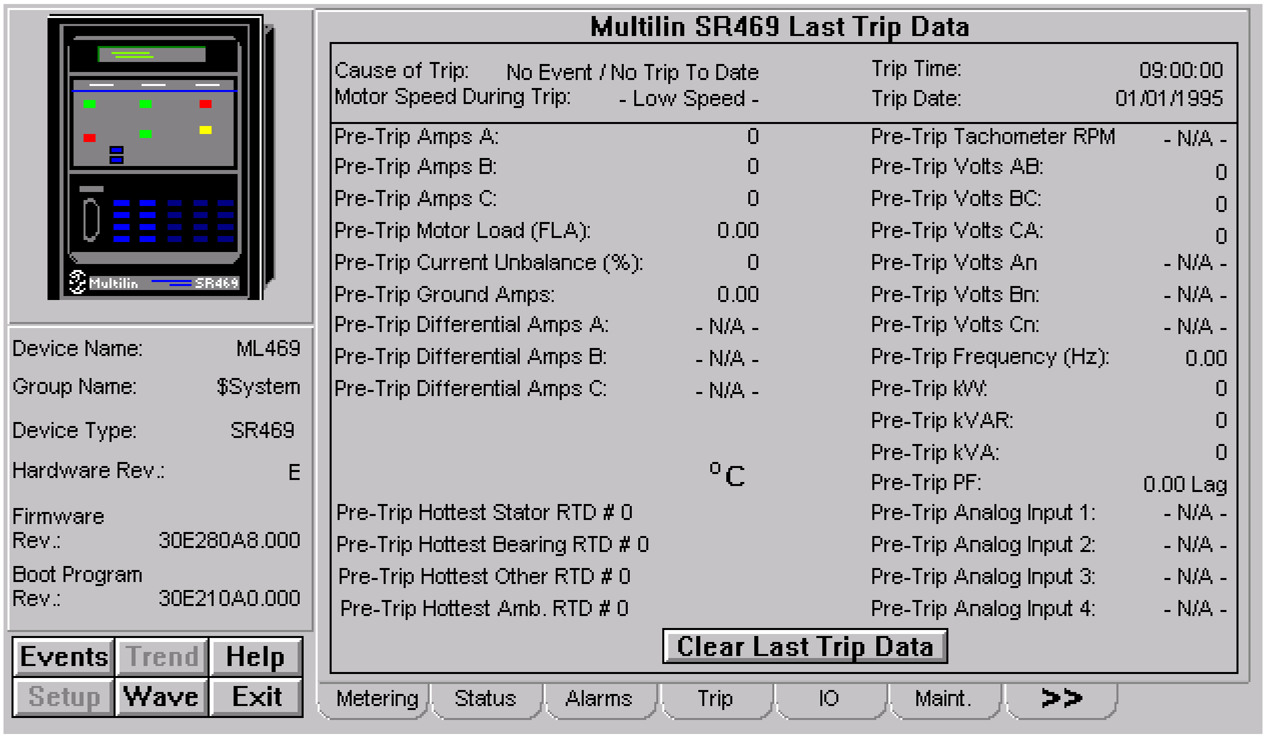
The **Clear RTD Maximums** button will clear all maximum RTD values.

Alarms Tab



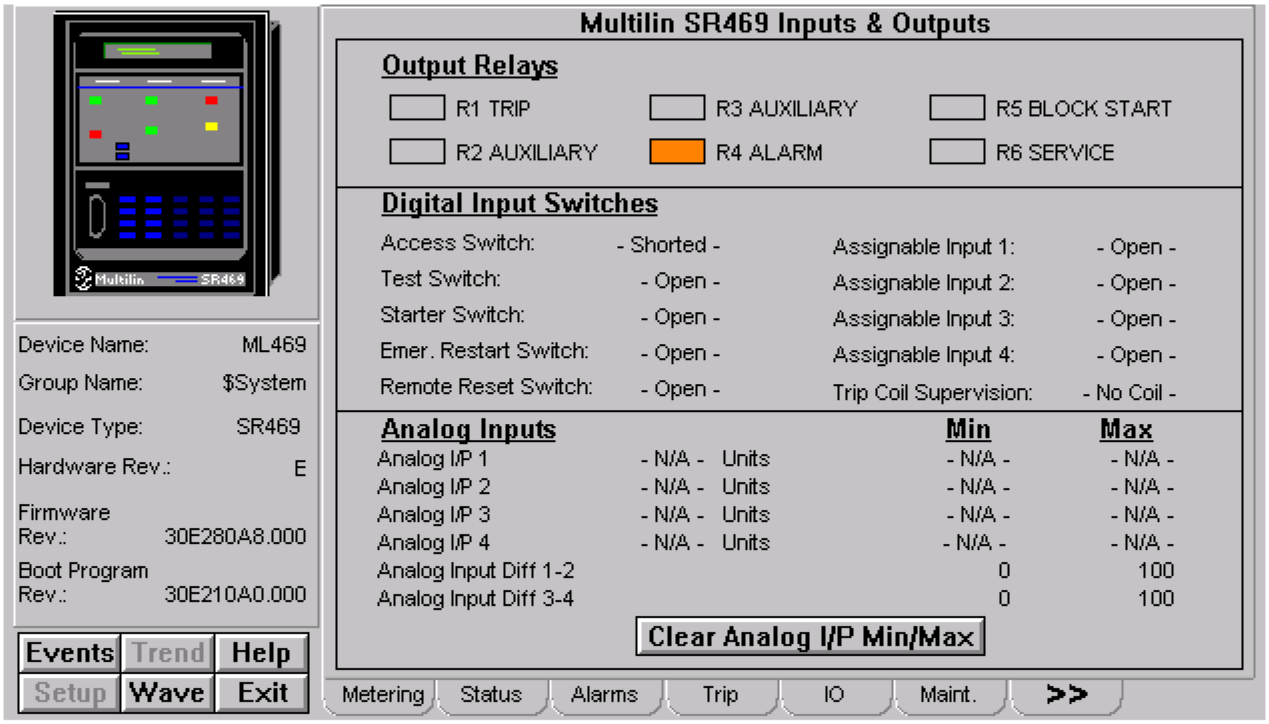
The Multilin SR469 Alarm Status screen shows the status of various alarms such as Overload Alarm and Underpower Alarm.

Trip Tab



The Multilin SR469 Trip screen shows the values of last trip data.
The **Clear Last Trip Data** button will clear all values of the last trip data.

IO Tab

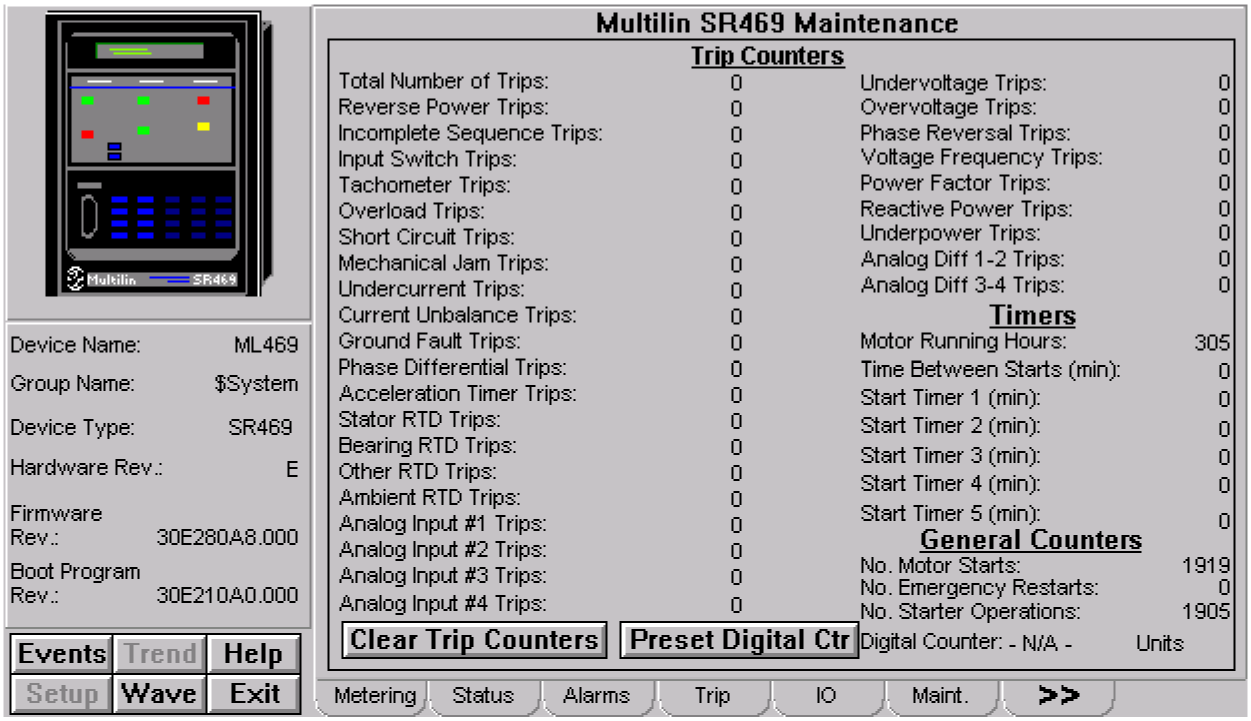


The Multilin SR469 Inputs & Outputs screen shows values related to:

- Output Relays
- Digital Input Switches
- Analog Inputs

The **Clear Analog I/P Min/Max** button will clear all minimum and maximum values of Analog I/P.

Maintenance Tab

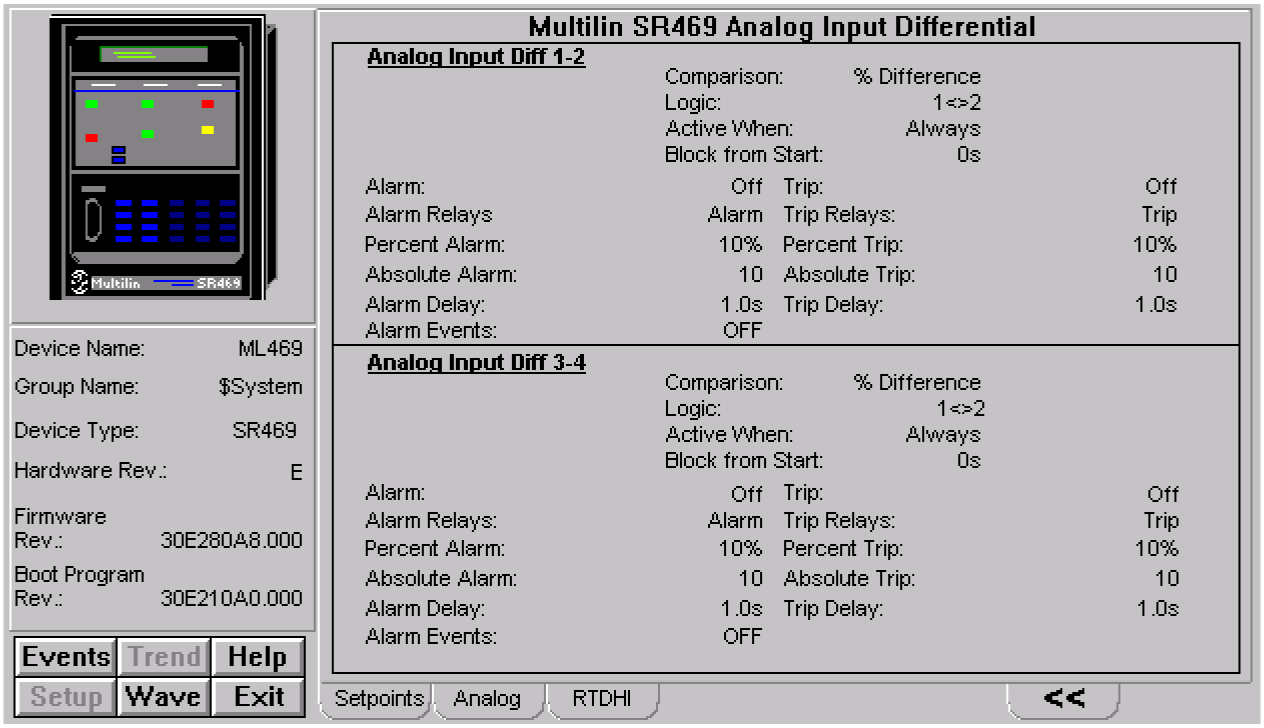


The Multilin SR469 Maintenance screen shows values related to:

- Trip Counters
- Timers
- General Counters

The **Clear Trip Counters** button will clear all values of trip counters and the Preset Digital Ctr will preset trip counters.

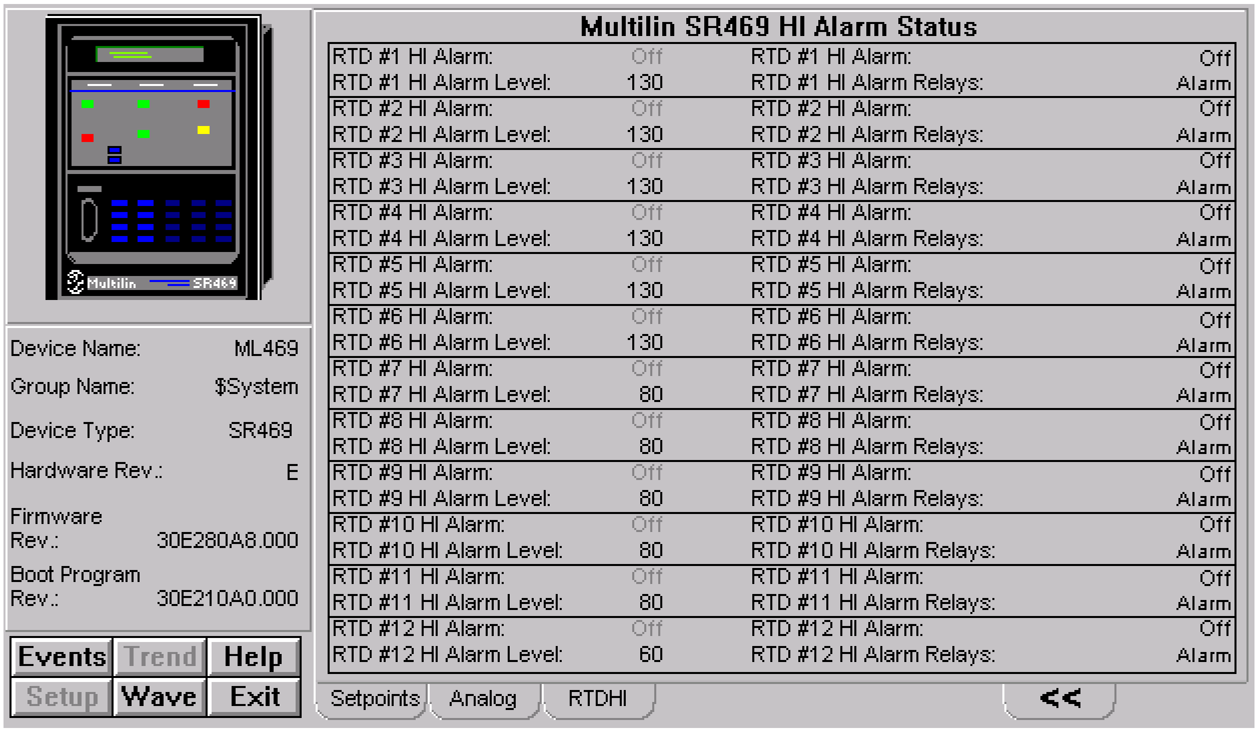
Analog Tab



The Multilin SR469 Analog Input Differential screen shows:

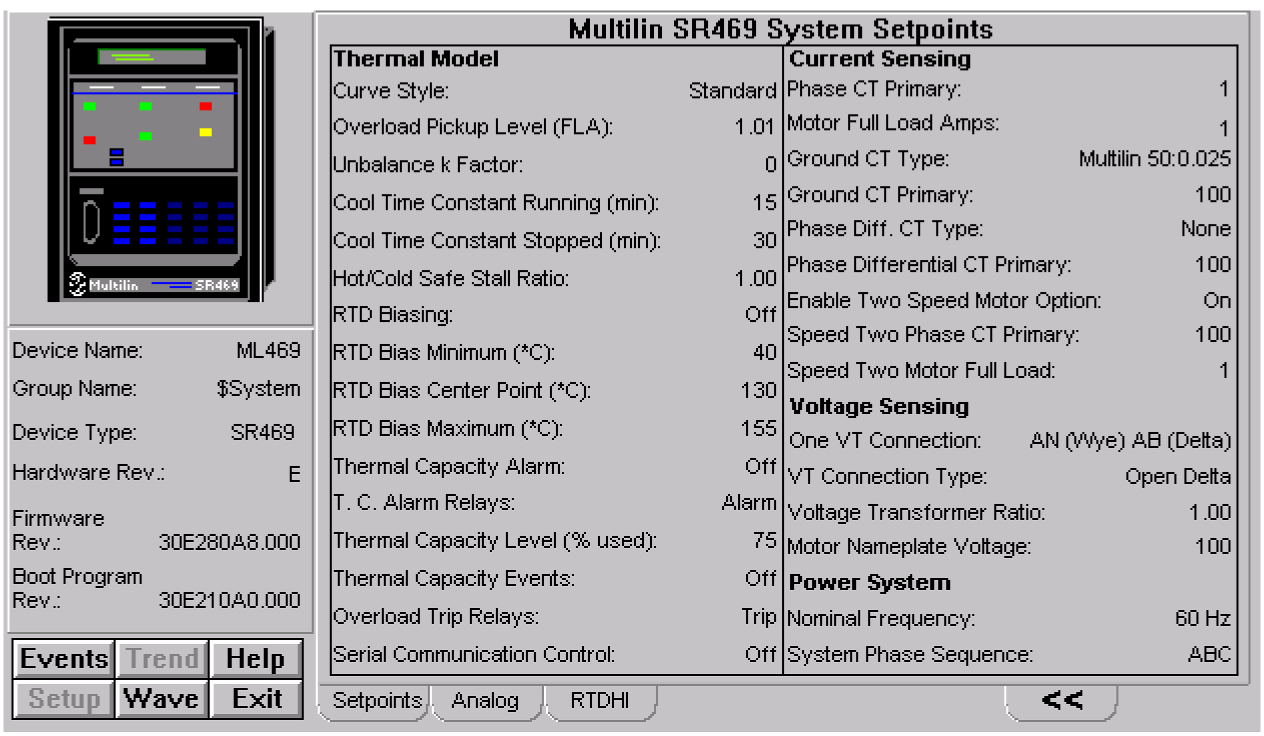
- Analog Input Diff 1-2
- Analog Input Diff 3-4

RTD HI Tab



The Multilin SR469 HI Alarm Status screen shows various RTD values.

Setpoints Tab



The Multilin SR469 System Setpoints screen shows values of Thermal Model, Current, Voltage Sensing, Power System

SR489 Generator Management Relay

All the SR489's function buttons below the Info box are enabled.

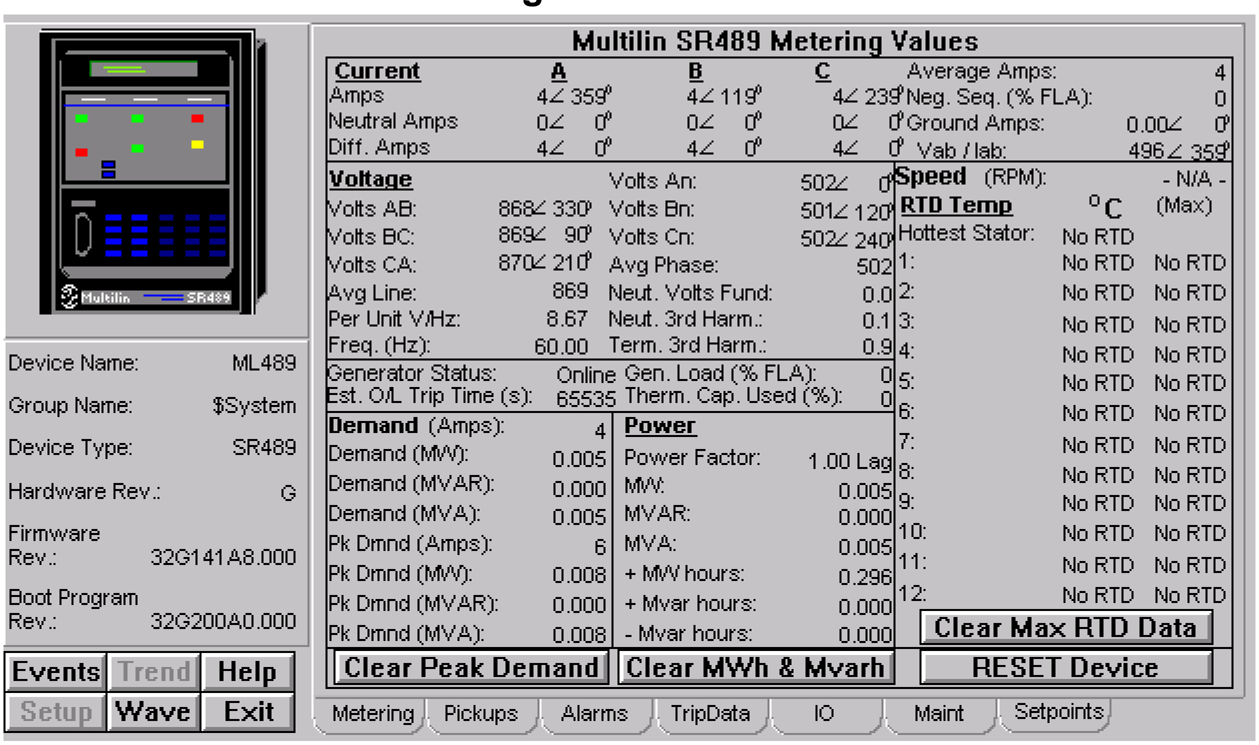
The SR489 Tabular Data Screen wizard has nine command buttons, described below.

Tab	Button	Function
Metering	Reset Device	Issues a RESET command to the device.
	Clear Peak Demand	Clears the peak demand data from memory.
	Clear MWh and Mvarh	Clears the MWh and Mvarh data from memory.
	Clear Max RTD Data	Clears the maximum RTD data from memory.
Trip Data	Clear Last Trip Data	Clears the last trip data from memory.
I/O	Clear Analog I/P Min/Max Data	Clears the analog input minimum/maximum data from memory.
Maintenance	Clear Trip Counters	Clears the trip counter data from memory.
	Clear Generator Information	Clears the generator data from memory.
	Clear Breaker Information	Clears the breaker data from memory.

Table 26. SR489 Tabular data screen commands.

See the SR489 Generator Management Relay manual (Chapter 5, *Actual Values*) for information on the display of data values under different device configurations. Values not configured for use are displayed as N/A.

Metering Tab



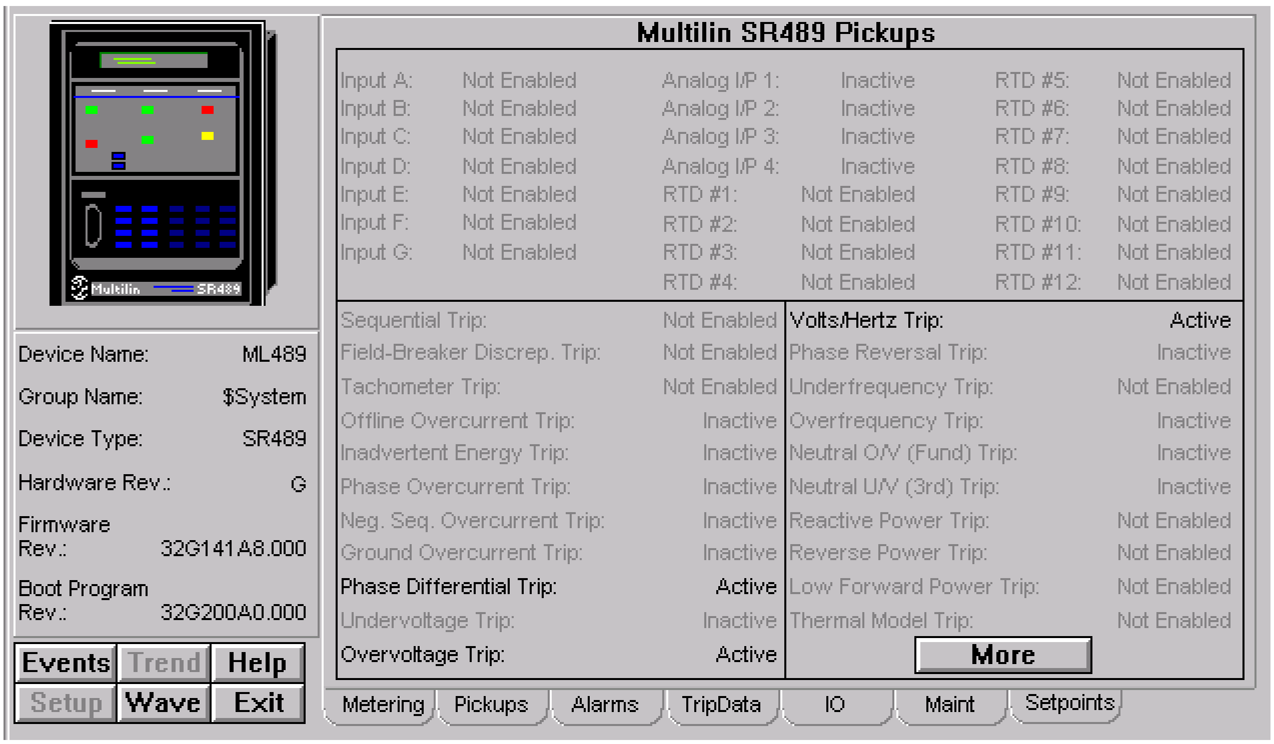
The Multilin SR489 Metering Values screen shows various metering values:

- Current
- Voltage

- Demand
- Power
- RTD Information
- Motor Data

The **Clear Peak Demand** button clears all peak demand values.
The **Clear MWh & Mvarh** button clears all MWh and Mvarh data
The **Clear Max RTD Data** button clears the maximum RTD data and
The **RESET Device** button will issue a RESET command to the device.

Pickup Tab

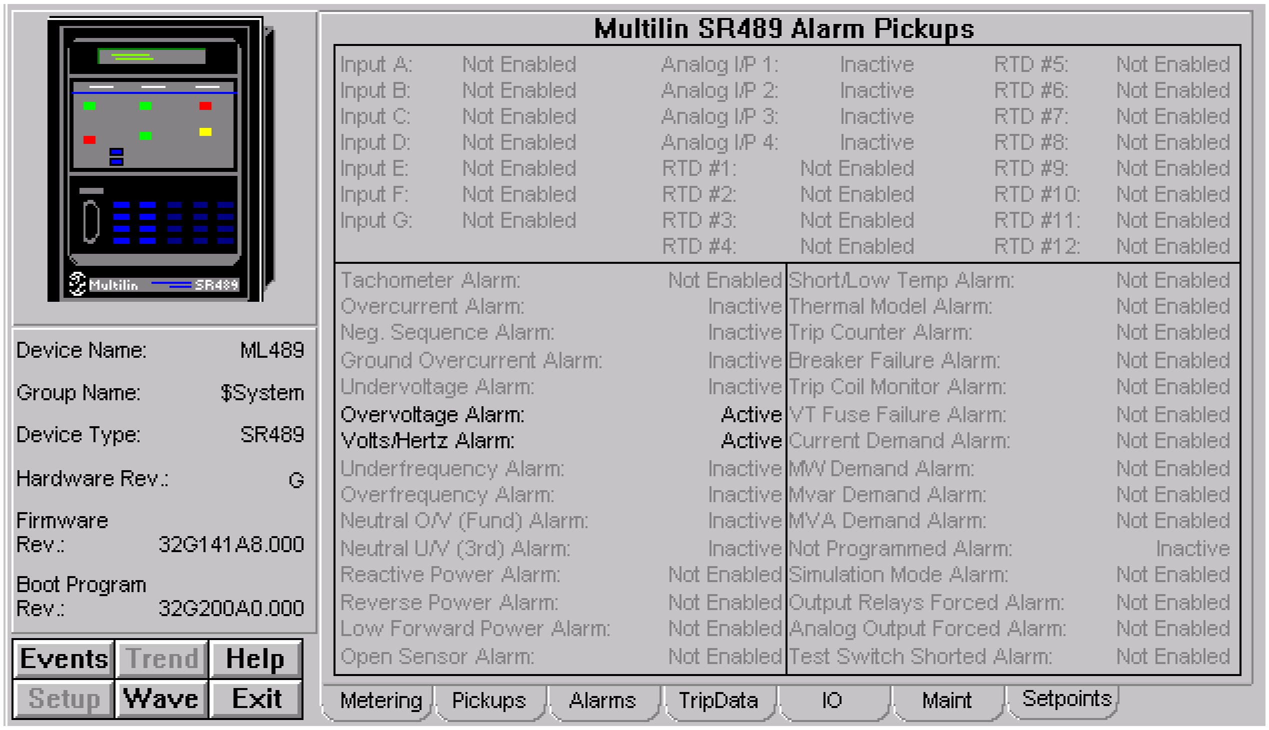


The Multilin SR489 Pickups screen shows:

- Phase Differential Trip
- Overvoltage Trip
- Volts/Hertz Trip

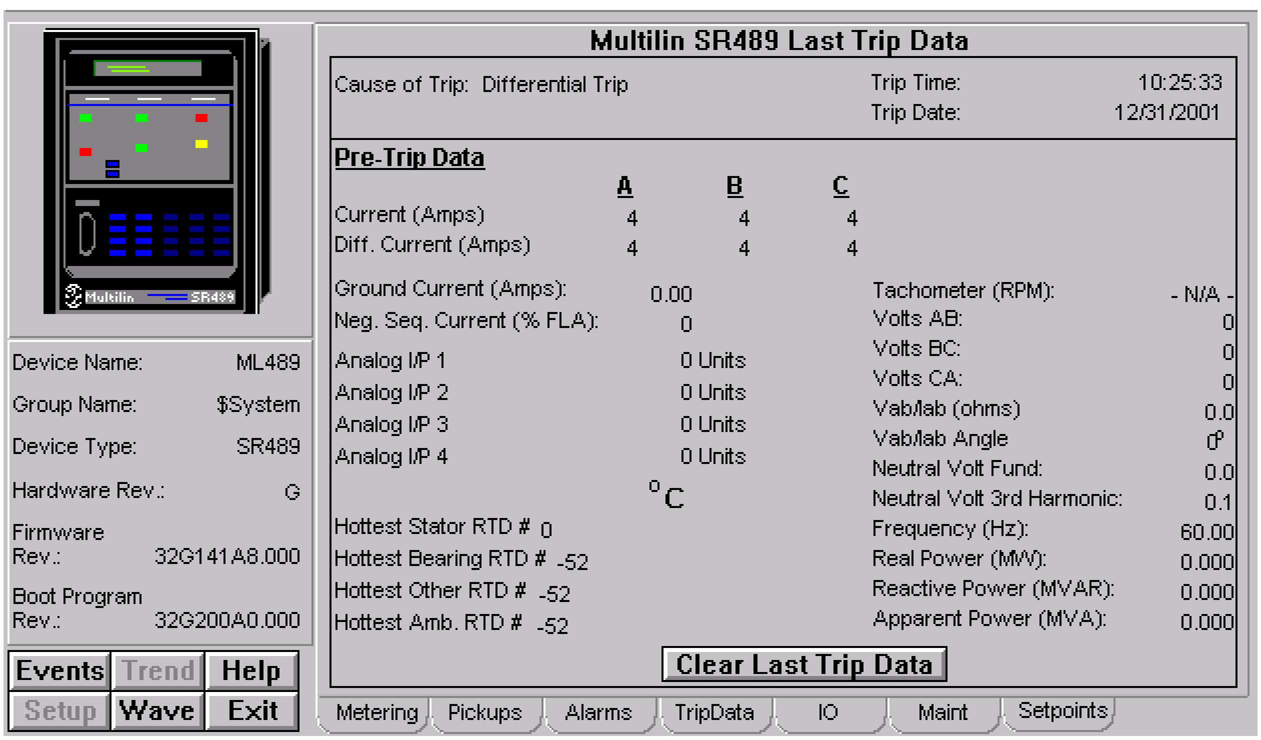
CLICK MORE BUTTON TO SEE MORE PICKUPS

Alarms Tab



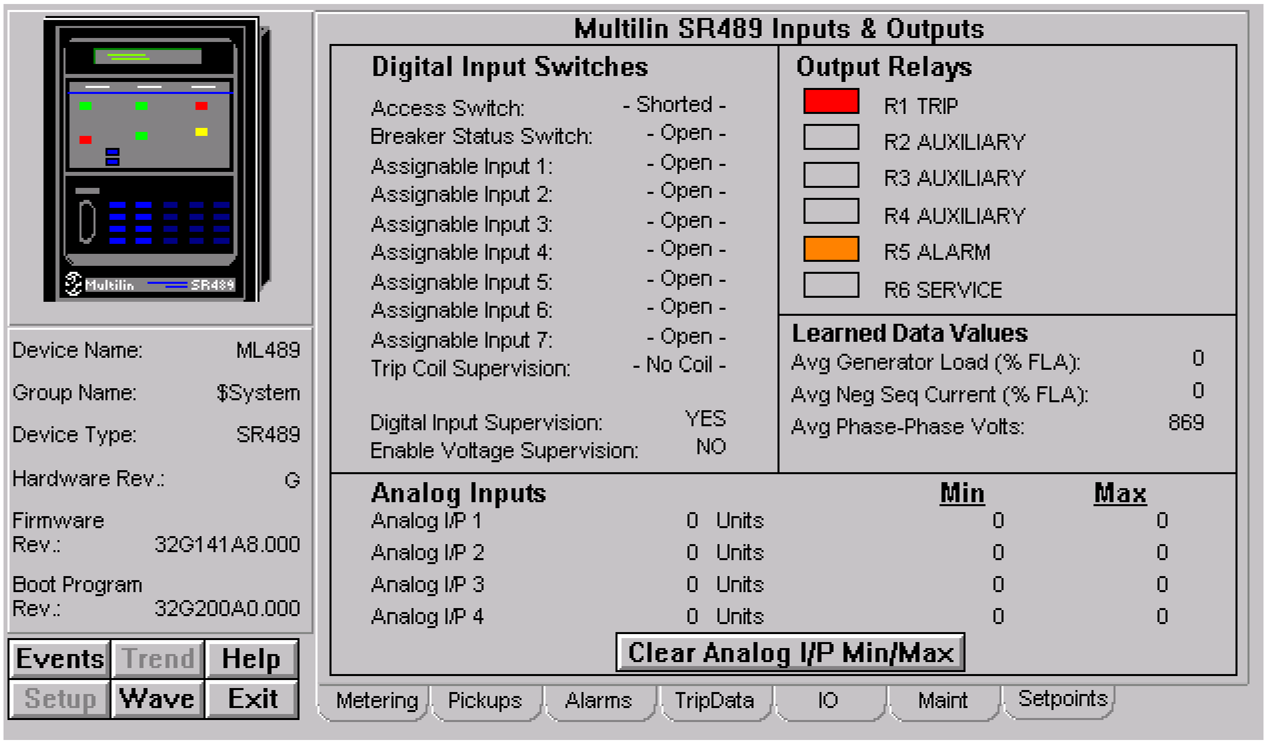
The Multilin SR489 Alarm Pickups screen shows all the Alarms.

Trip Data Tab



The Multilin SR489 Last Trip Data screen shows the values of last trip data and the corresponding values at the time of trip.
The **Clear Last Trip Data** button clears all values of the last trip data.

IO Tab

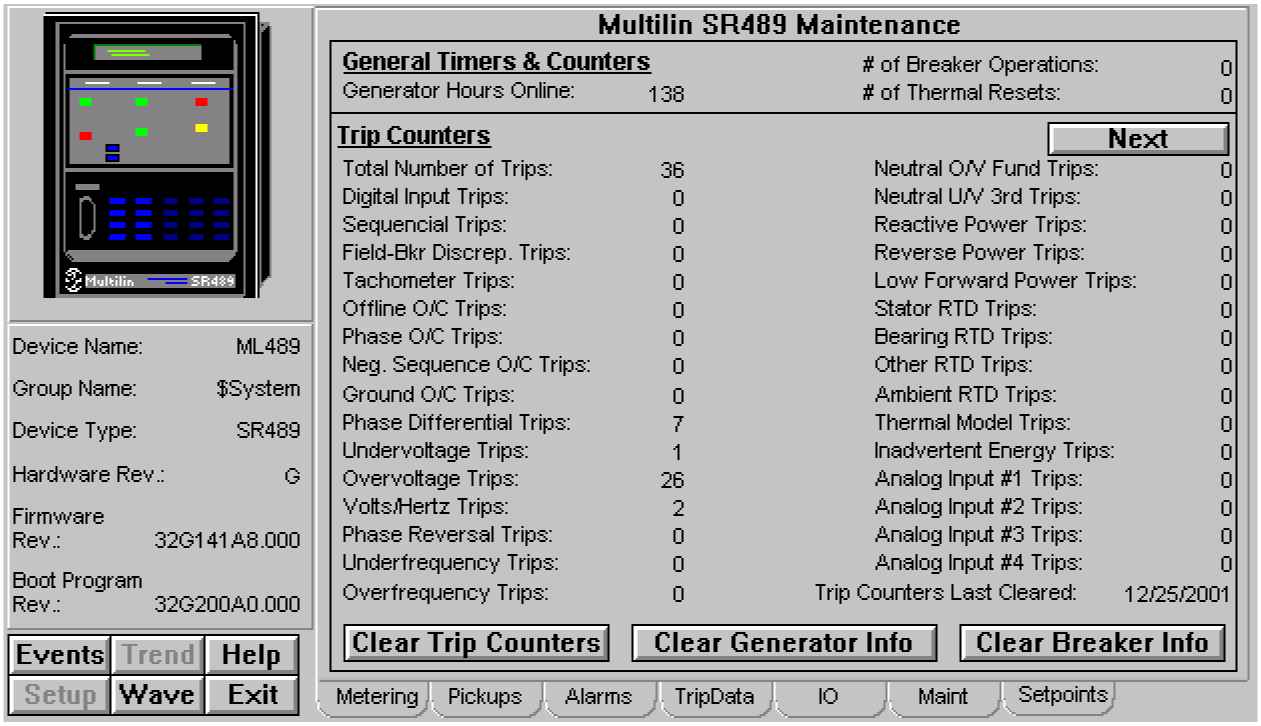


The Multilin SR489 Inputs & Outputs screen shows:

- Digital Input Switches
- Analog Inputs
- Output Relays
- Learned Data Values

The Clear Analog I/P Min/Max button clears all the minimum and maximum analog I/P.

Maintenance Tab

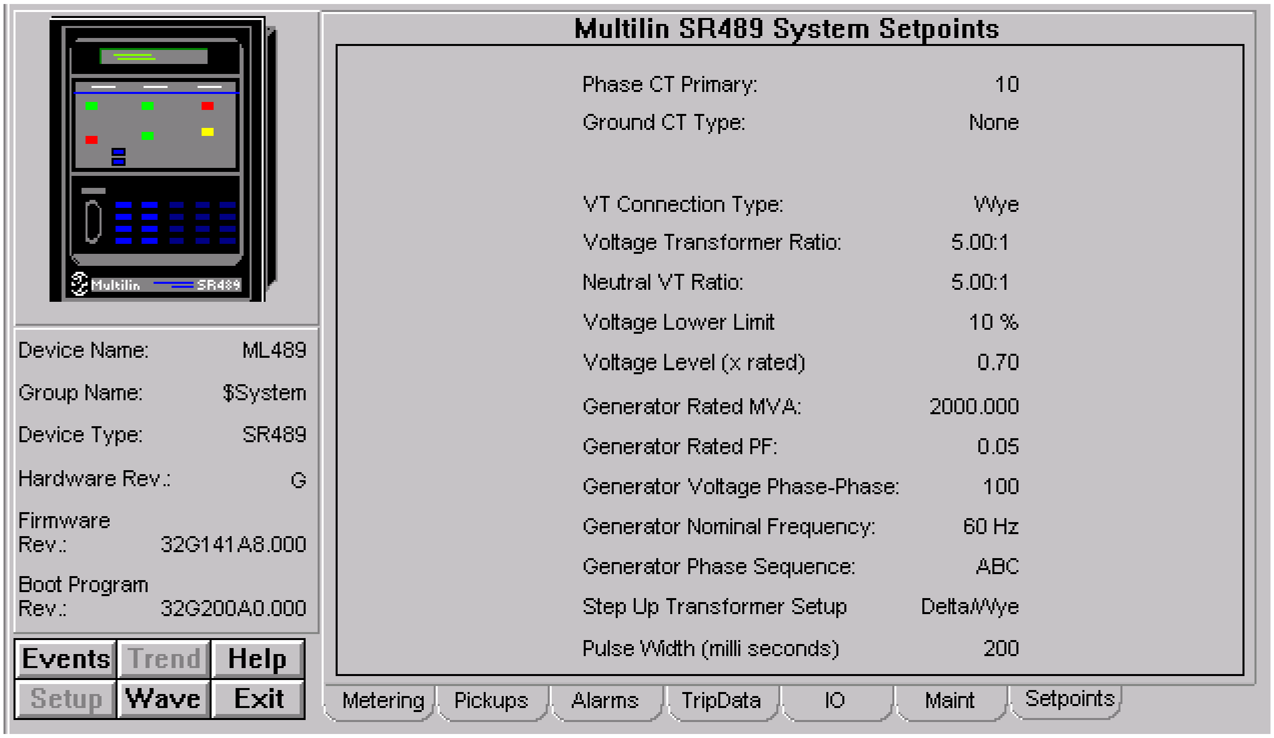


The Multilin SR489 Maintenance screen shows:

- General Timers & Counters
- Trip Counters

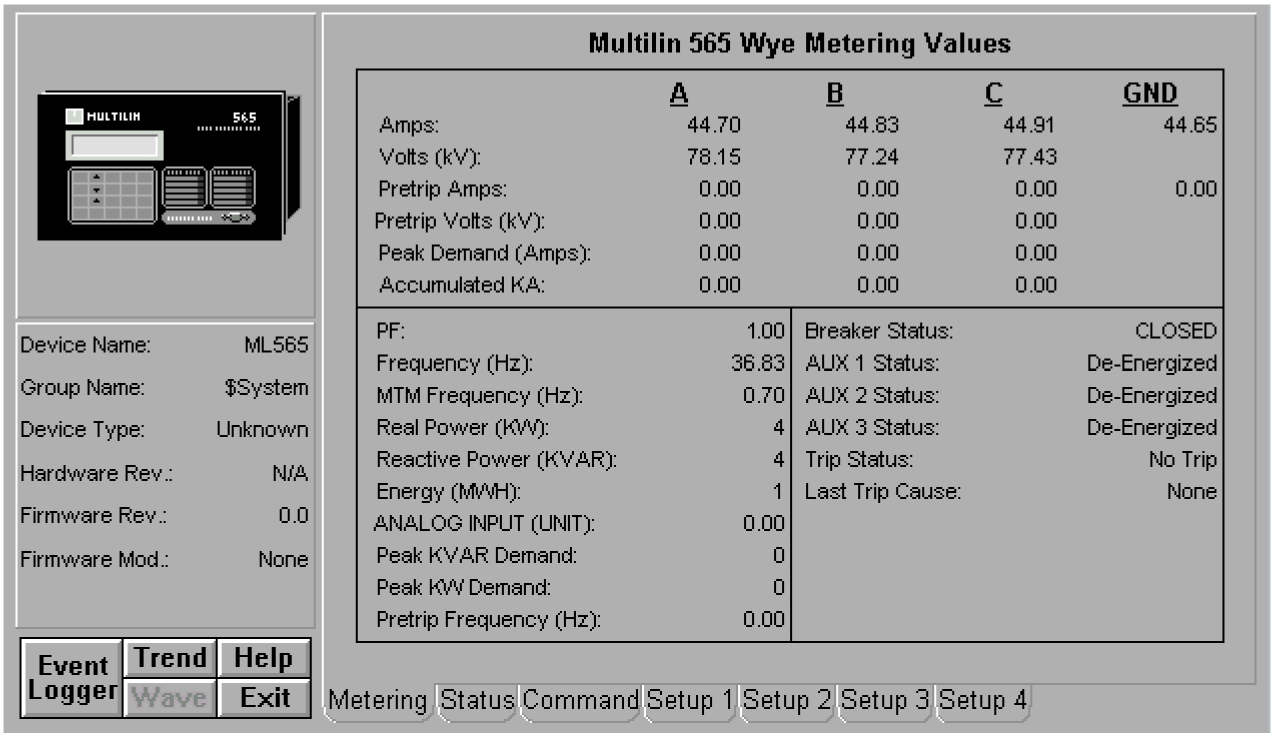
The Clear Trip Counters button will clear all values of trip counters; the Clear General Info button will clear all general information; and the Clear Breaker Info button will clear all breaker information from the memory.

Setpoints Tab



The Multilin SR489 System Setpoints screen shows various values related to the setpoints such as Phase CT Primary, Ground CT Type, VT Connection Type, Voltage Transformer Ratio etc.

565 Feeder Management Relay



The 565 Tabular Data Screen wizard has the following buttons on the Command tab:

Tab	Button	Function
Command	Maint Data	Clears the maintenance data
	Operation Data	Clears the operation data
	Amp Demand	Clears the amp demand registers
	KW Demand	Clears the kW demand registers
	KVAR Demand	Clears the kVAR demand registers
	Events	Clears the events table
	Energy	Clears the energy used data
	Reset Keypad	Performs a keypad reset
	End of Relay Test	Ends the relay test
	End of LED Test	Ends the LED test
	End of Analog Output Test	Ends the analog output test
	Test LCD Display	Sends a test pattern to the LCD
	Test LEDs	Starts the LED test

Table 27. 565 Tabular data screen commands.

The Setup 2 tab has two data input areas. Analog Input Title creates a user label for the analog input used in the device. Analog Input Units performs the same function for the units of the analog input. These labels appear on the Metering tab and on the Large Faceplate wizard when the analog input is displayed. The analog input can be scaled to display any desired units from the front of the device, but these labels are not sent to the DDE Server.

For complete explanations of parameters, refer to the 565 *Users Guide*.

735 Feeder Relay

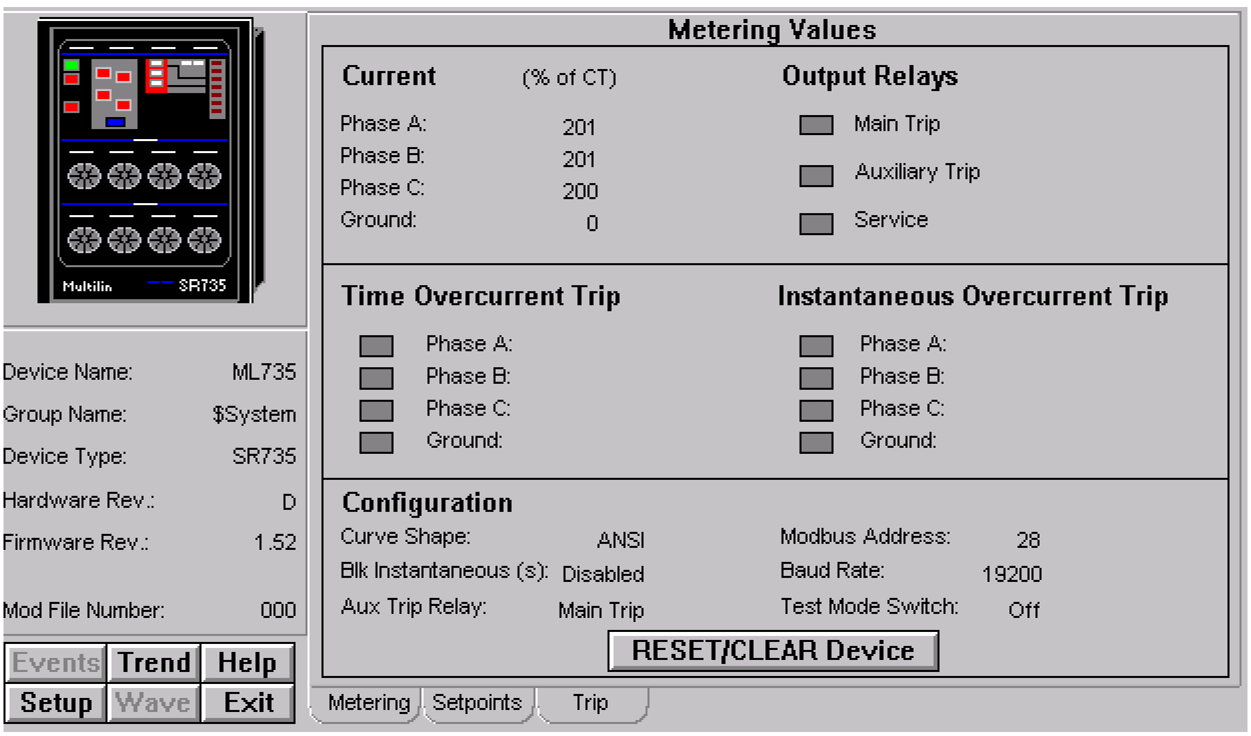
The Events and Wave function buttons below the Info box are disabled since the 735 does not support Waveform Capture or Event generation.

The 735 Tabular Data Screen wizard has two command buttons, described below.

Tab	Button	Function
Metering	Reset Device	Issues a RESET command to the 735
Trip	Clear Last Trip Data	Clears the trip causes log

Table 28. 735 Tabular data screen commands.

Metering Tab

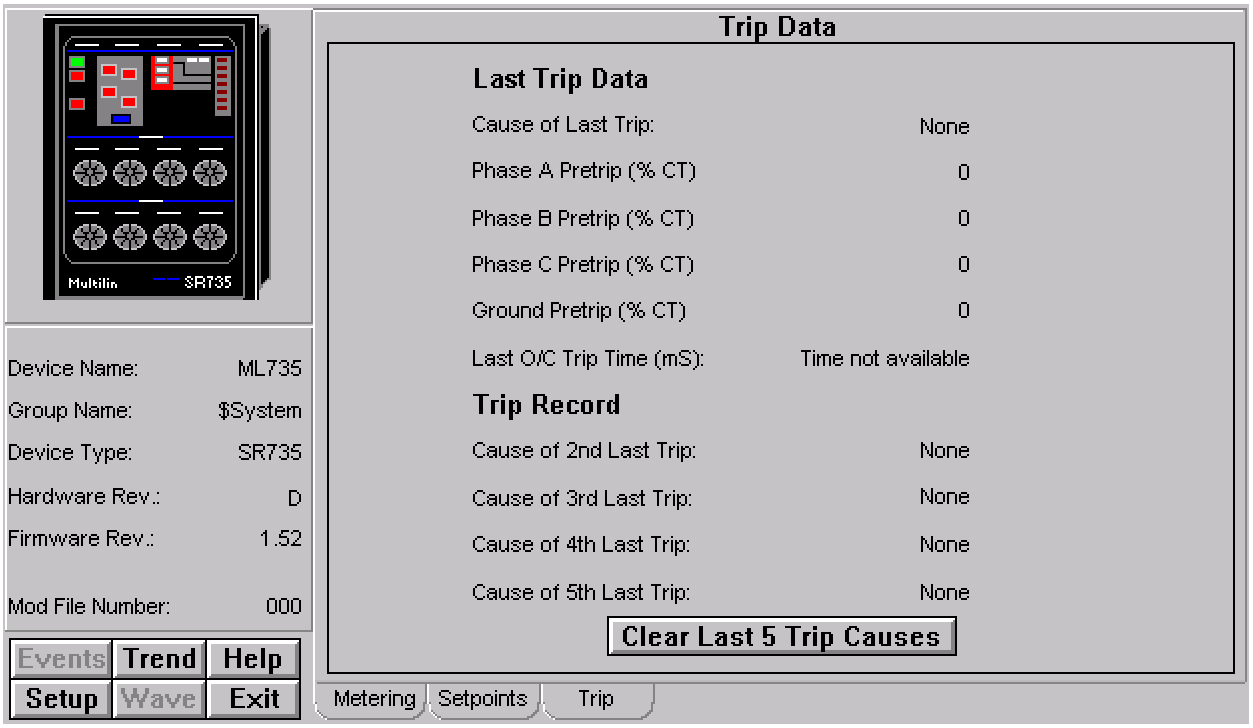


The 735 Metering screen shows:

- Current and Output Relays
- Time Overcurrent Trip and Instantaneous Overcurrent Trip
- Configuration

The RESET/CLEAR Device button will issue a RESET command to 735.

Trip Data Tab

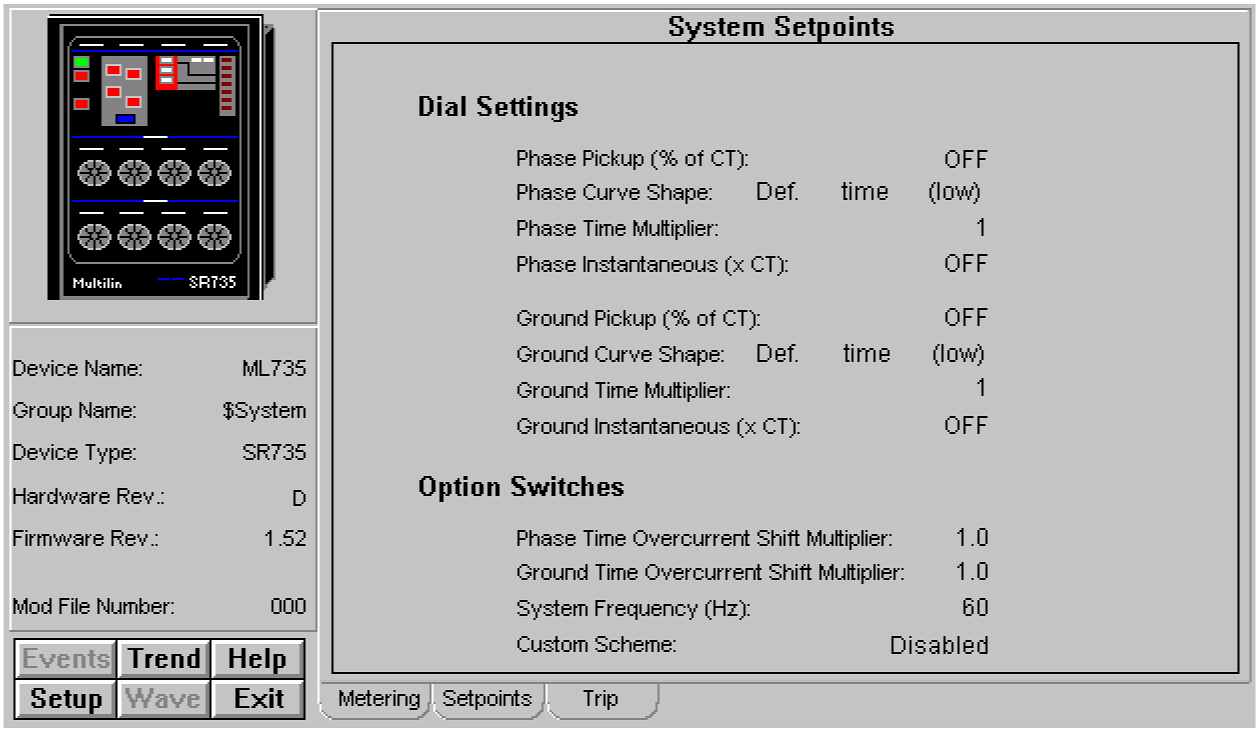


The 735 Trip Data screen shows trip data information such as:

- Last Trip Data
- Trip Record

The Clear Last 5 Trip Causes button will clear values of last 5 trip causes.

Setpoints Tab



The 735 System Setpoints screen shows setpoints information such as:

- Dial Settings
- Option Switches

SR745 Transformer Management Relay

Under the Info area, the SR745's function buttons are all enabled.

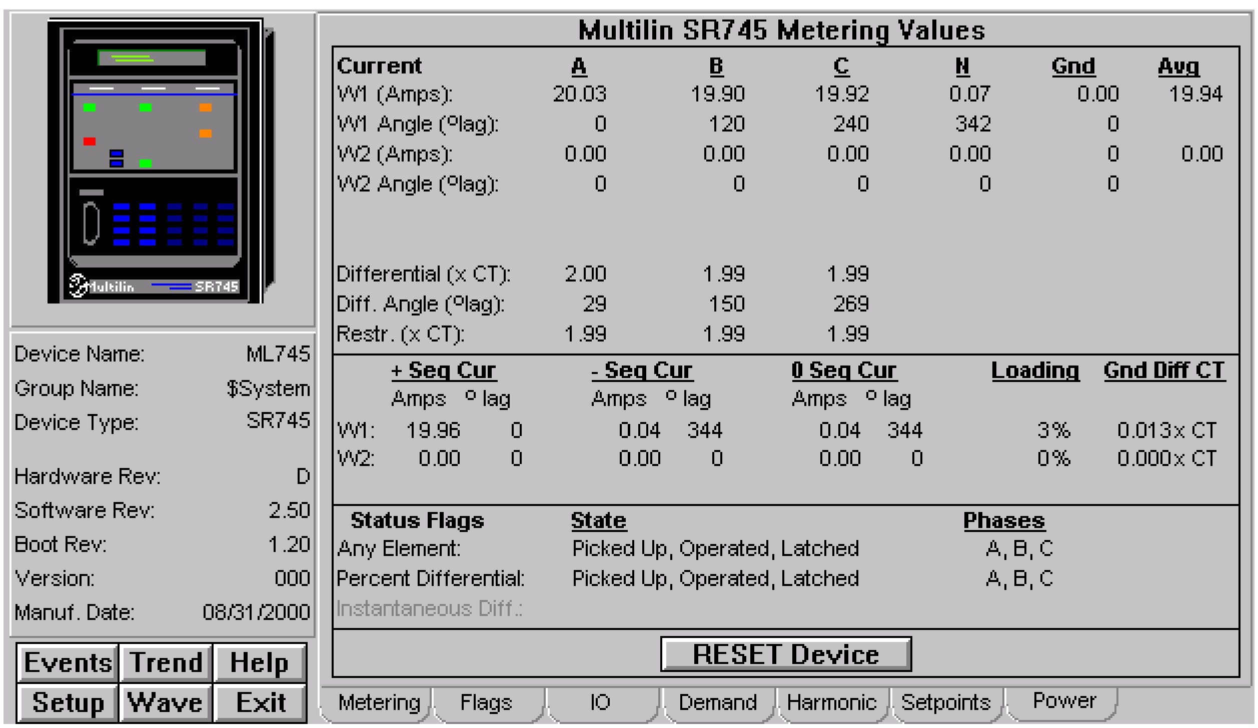
The SR745 Tabular Data Screen wizard has three command buttons:

Tab	Button	Function
Metering	Reset Device	Issues a RESET command to the device
Demand	Clear Max Demand Data	Clears the maximum demand data from the SR745's memory
Harmonics	Clear Loss-of-Life Data	Clears loss-of-life data from the SR745's memory

Table 29. SR745 Tabular data screen commands.

See the SR745 Transformer Management Relay Instruction Manual (Chapter 6, *Actual Values*) for information on the display of data values under different device configurations. Values not configured for use are displayed as N/A. When configured for only 2 Windings, the Winding 3 fields on the Tabular Data wizard are not visible.

Metering Tab

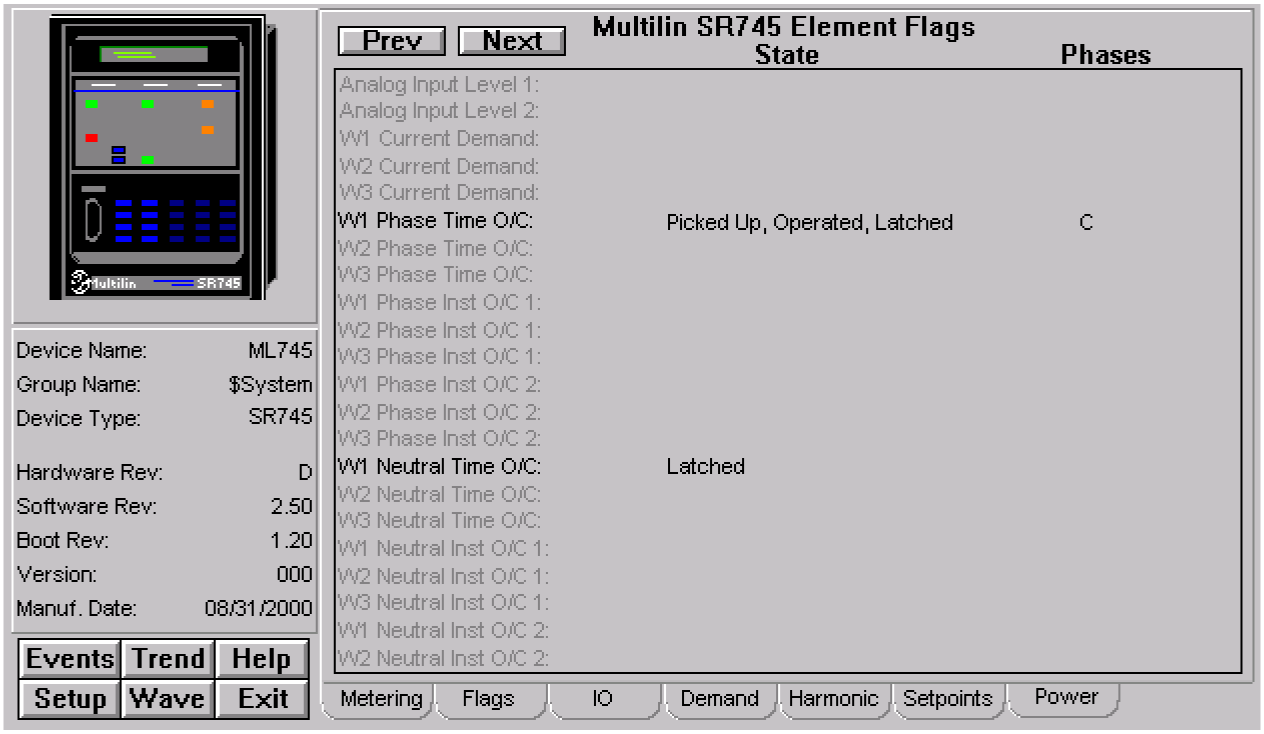


The Multilin SR745 Metering Values screen shows:

- Current
- Sequence Current
- Status Flags

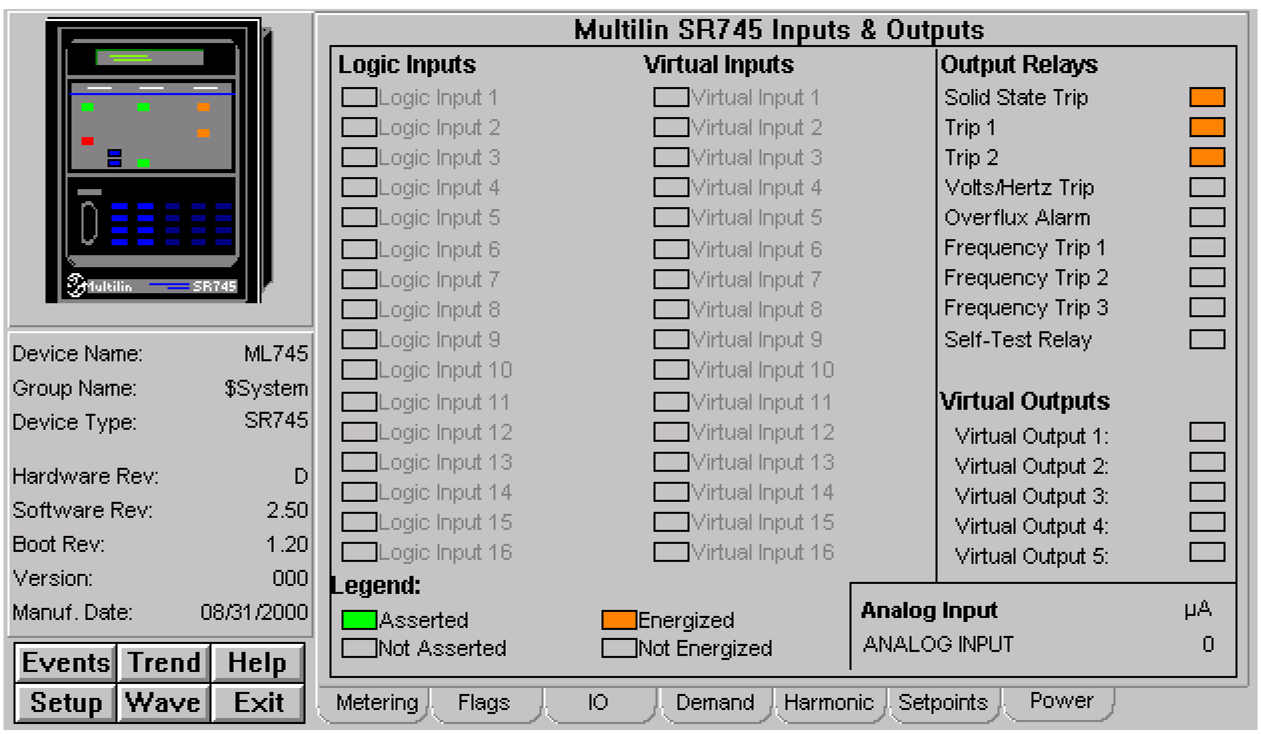
The **RESET Device** button will issue a RESET command to the device.

Flags Tab



The Multilin SR745 Element Flags screen shows the state and phases of various elements.

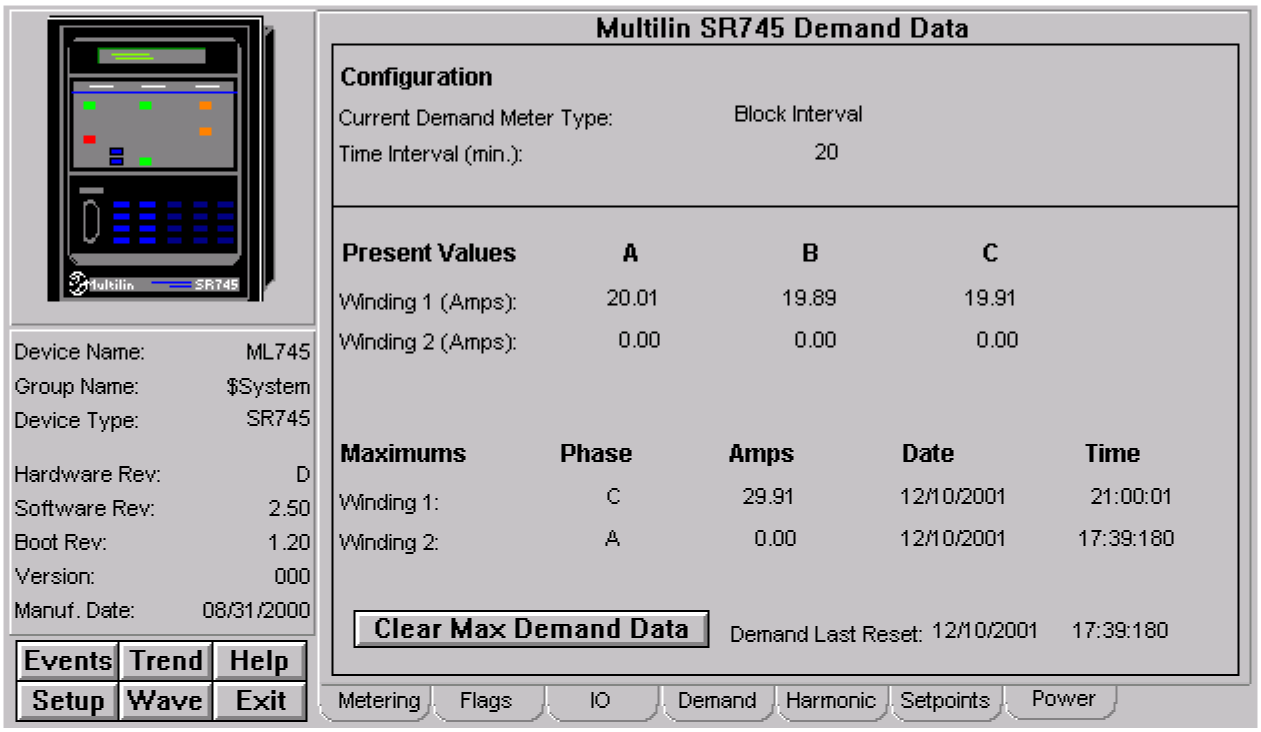
IO Tab



The Multilin SR745 Inputs & Outputs screen shows:

- Logic Inputs
- Virtual Inputs
- Output Relays
- Virtual Outputs
- Analog Input

Demand Tab

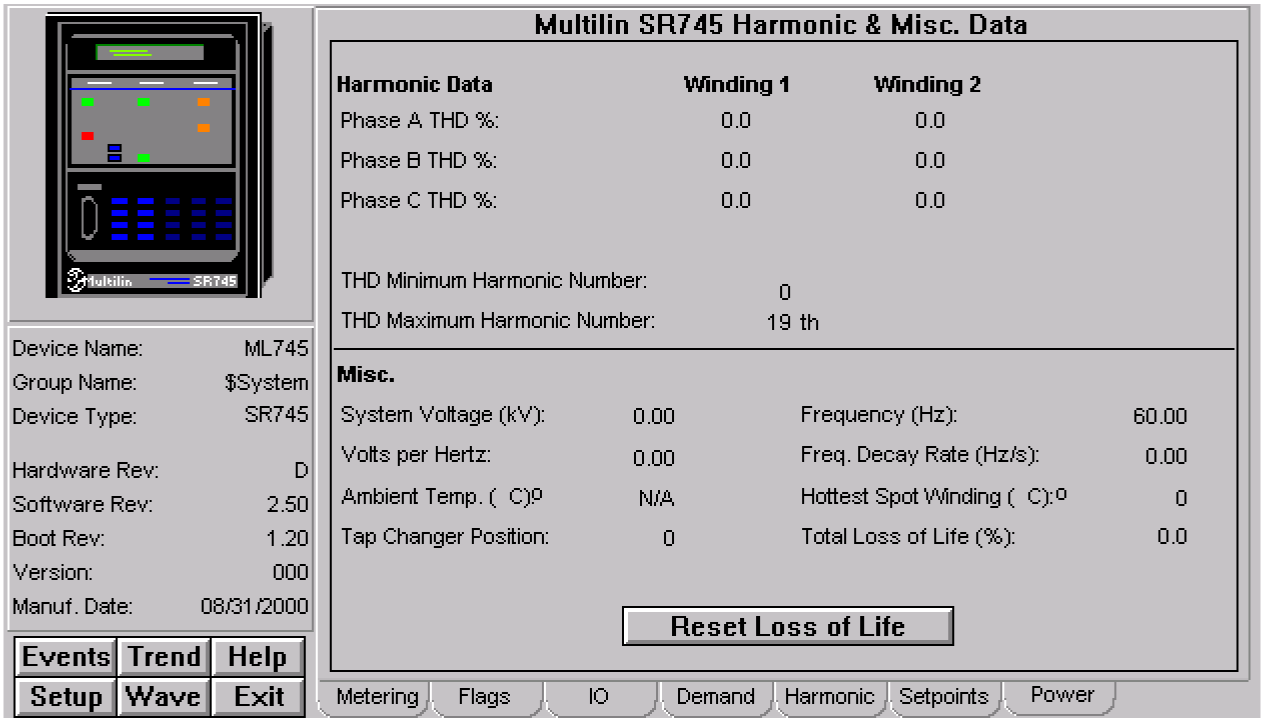


The Multilin SR745 Demand Data screen shows:

- Configuration
- Present Values
- Maximums

The **Clear Max Demand Data** button will clear all maximum values of the demand data.

Harmonic Tab

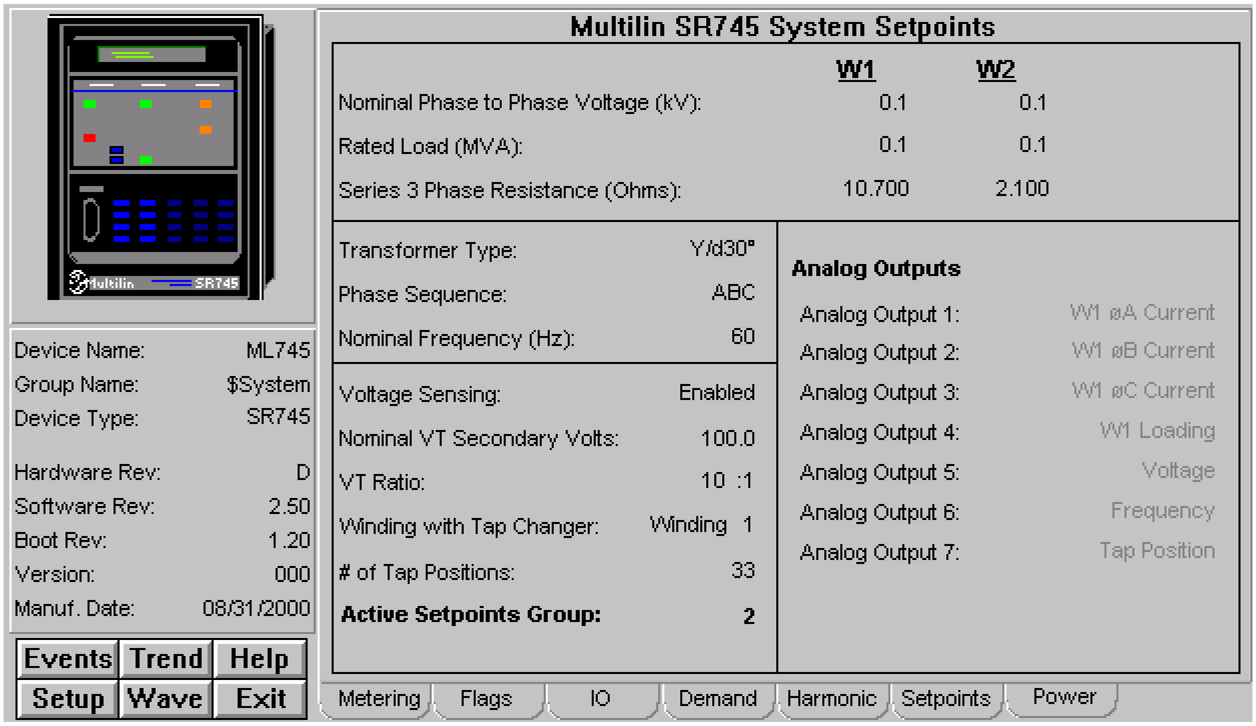


The Multilin SR745 Harmonic & Misc Data screen shows:

- Harmonic Data
- Misc

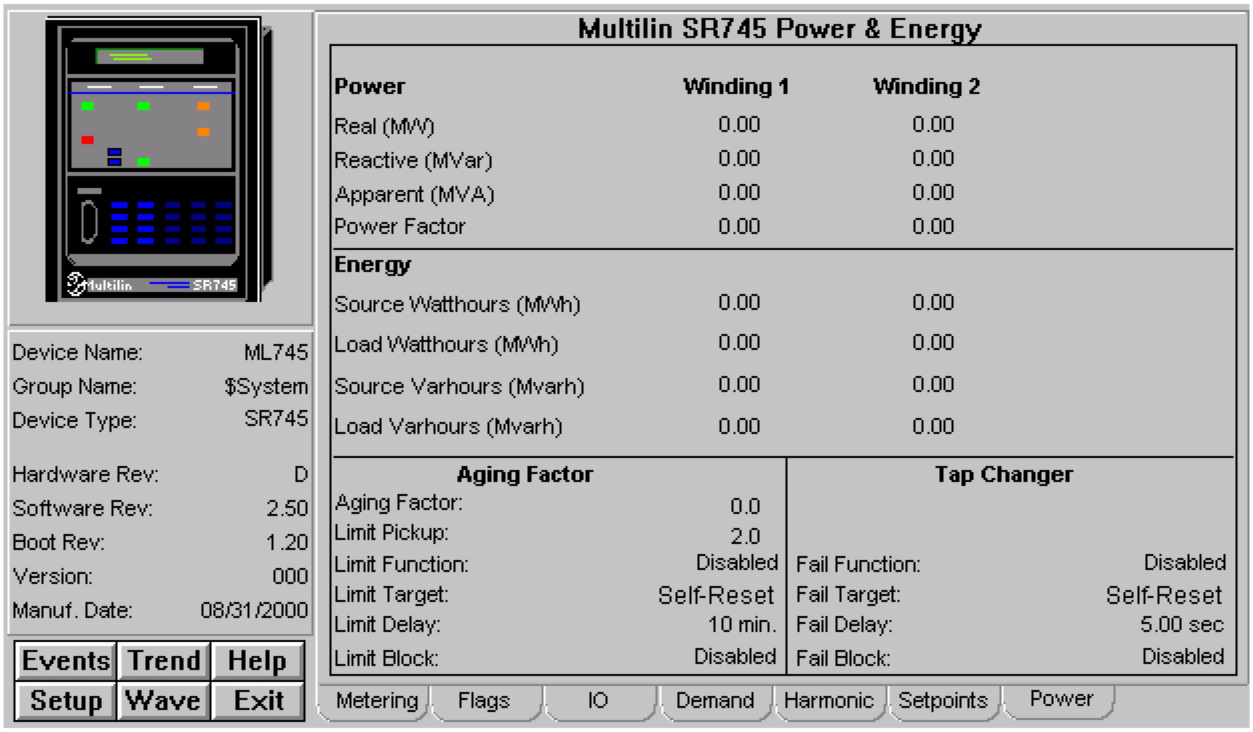
The **Reset Loss of Life** button will clear loss-of-life data from the SR745's memory.

Setpoints Tab



The Multilin SR745 System Setpoints screen shows information such as Nominal Phase to Phase Voltage, Rated Load (MVA), Transformer Type and Analog Outputs.

Power Tab



The Multilin SR745 Power & Energy screen shows:

- Power
- Energy
- Aging Factor
- Tap Changer

SR750/760 Feeder Management Relay

The SR750 and SR760 are very similar devices and share a common Tabular Data Screen wizard. During wizard configuration, select which type of device the wizard represents (SR750 or SR760) by selecting the corresponding radio button in the Tabular Data Screen Configuration dialog box.

Under the Info area, the SR750/760's function buttons are all enabled.

The SR750/760 Tabular Data Screen wizard has eight command buttons:

Tab	Button	Function
Metering	Clear Energy	Resets the energy counters to zero.
	Reset Device	Issues a RESET command to the SR750/760.
Demand	Reset Max Demand	Clears the Max Demand data from the SR750/760's memory.
Trip	Reset Trip Counters	Resets the SR750/760's trip counters to zero.
I/O	Open Breaker	Issues Open Breaker command.
	Close Breaker	Issues Close Breaker command.
	Reset Count	Resets the SR750/760's reclosure counter to zero.
Fault	Reset Arcing Current	Resets the arcing current data.

Table 30. SR750/760 Tabular data screen commands.

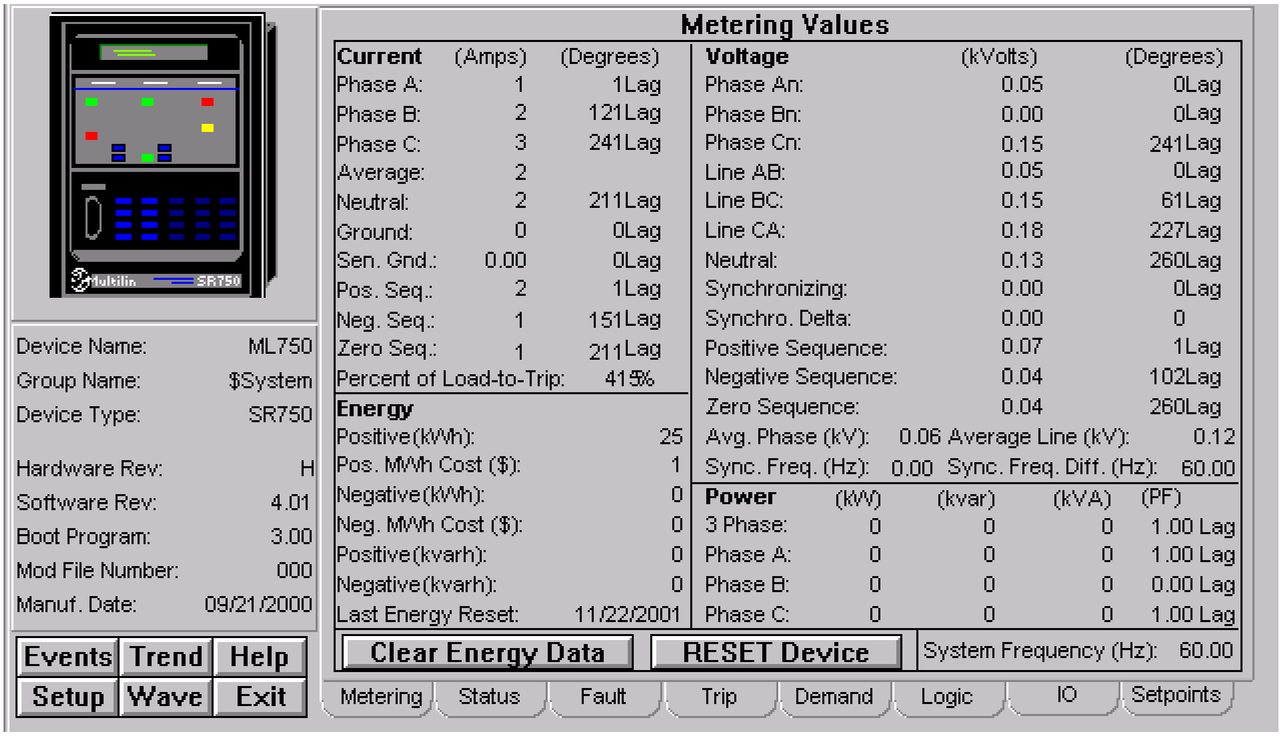
The SR750/760 Tabular screen offers a tab labeled LOGIC. This tab allows you to access the SR750/760's 20 logic inputs. You can use these logic inputs to operate a variety of logic functions for circuit breaker control, external trips, blocking of protection elements, etc., and use the PCMS Wizard to monitor the status of the logic inputs. For more information, refer to the SR750 or SR760 user manual, in the section titled *Setpoints - S3 Logic Inputs*.

The SR750/SR760 Tabular Data Screen Wizard supports the Lockout/Tagout wizard. Please refer to the section titled **Using and Configuring PMCS Wizards: Lockout/Tagout Wizard** for details.

If a Danger or Ground Lockout/Tagout symbol is installed on this wizard, attempts to issue a Breaker Open or Breaker Close command will generate an error message.

See the SR750/760 Feeder Management Relay Instruction Manual (Chapter 5, *Actual Values*) for information on the display of data values under different device configurations. Values not configured for use are displayed as N/A.

Metering Tab

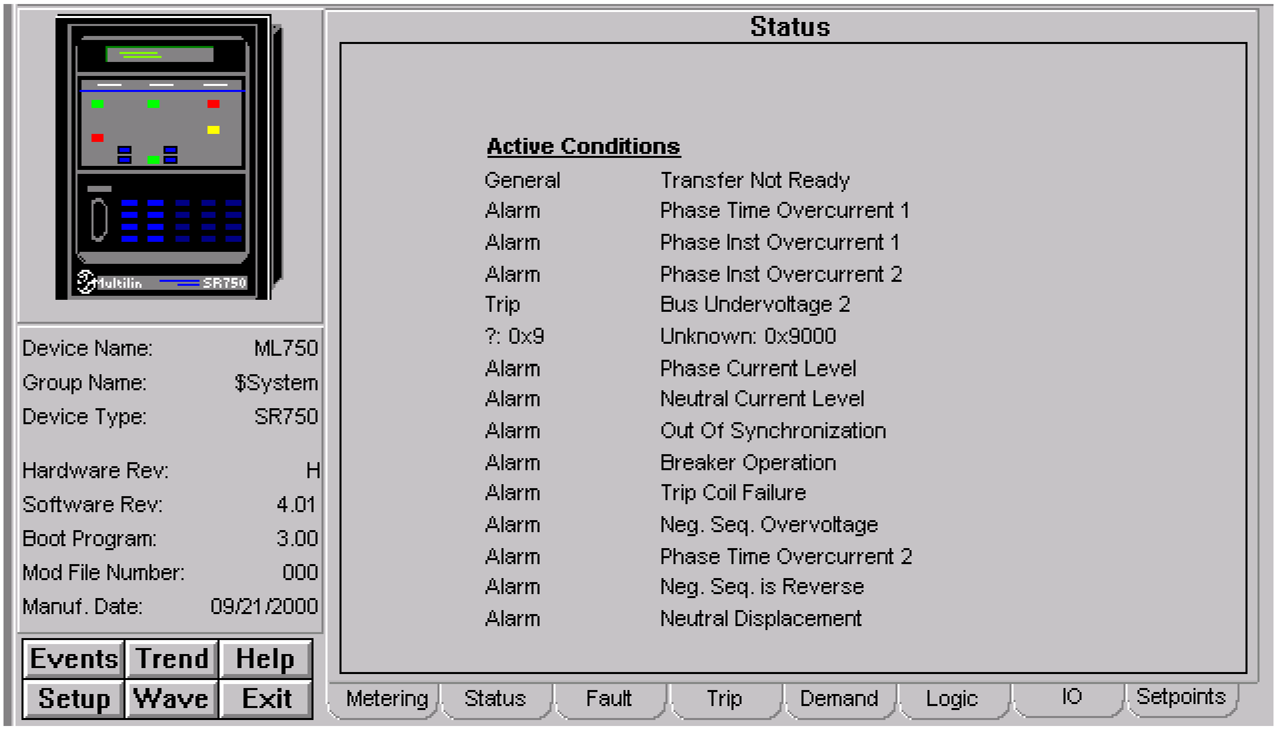


The SR750/760 Metering screen shows:

- Current
- Energy
- Voltage
- Power

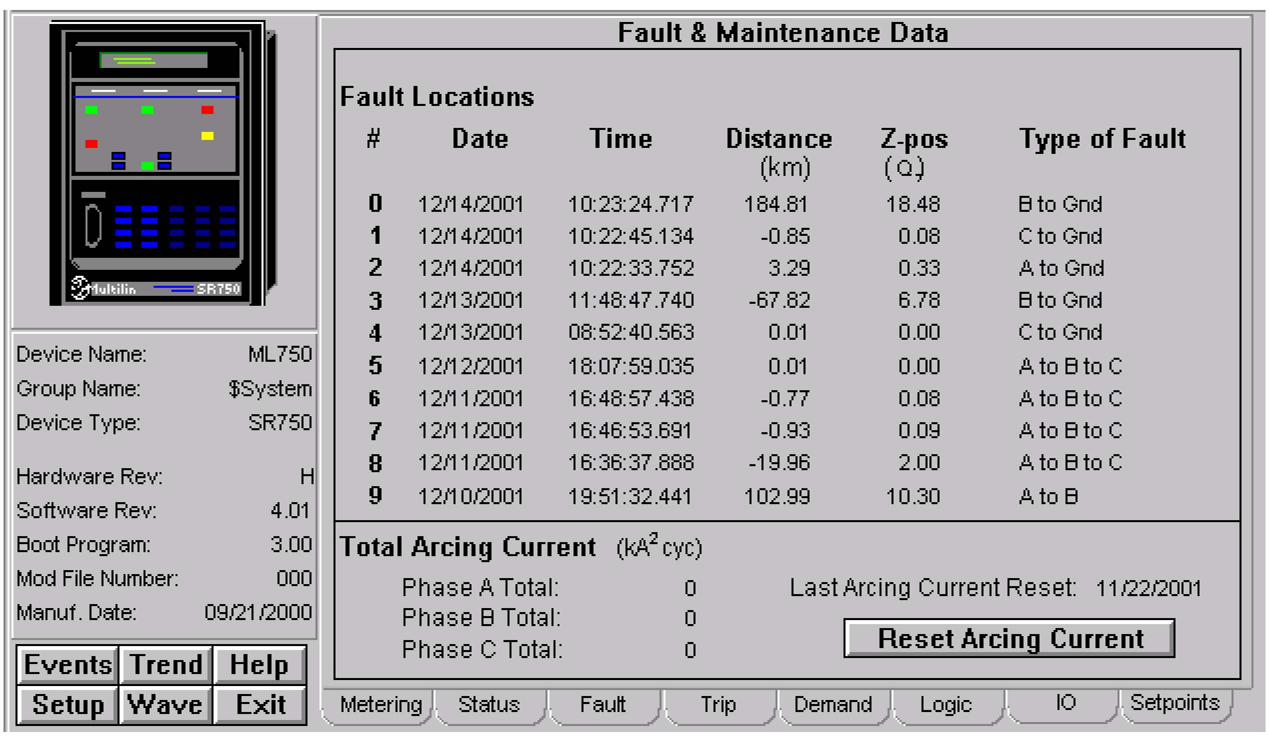
The **Clear Energy Data** button will clear all values of energy data. The **RESET Device** button will issue a RESET command to the device.

Status Tab



The SR750/760 Status screen shows Active Conditions.

Fault Tab

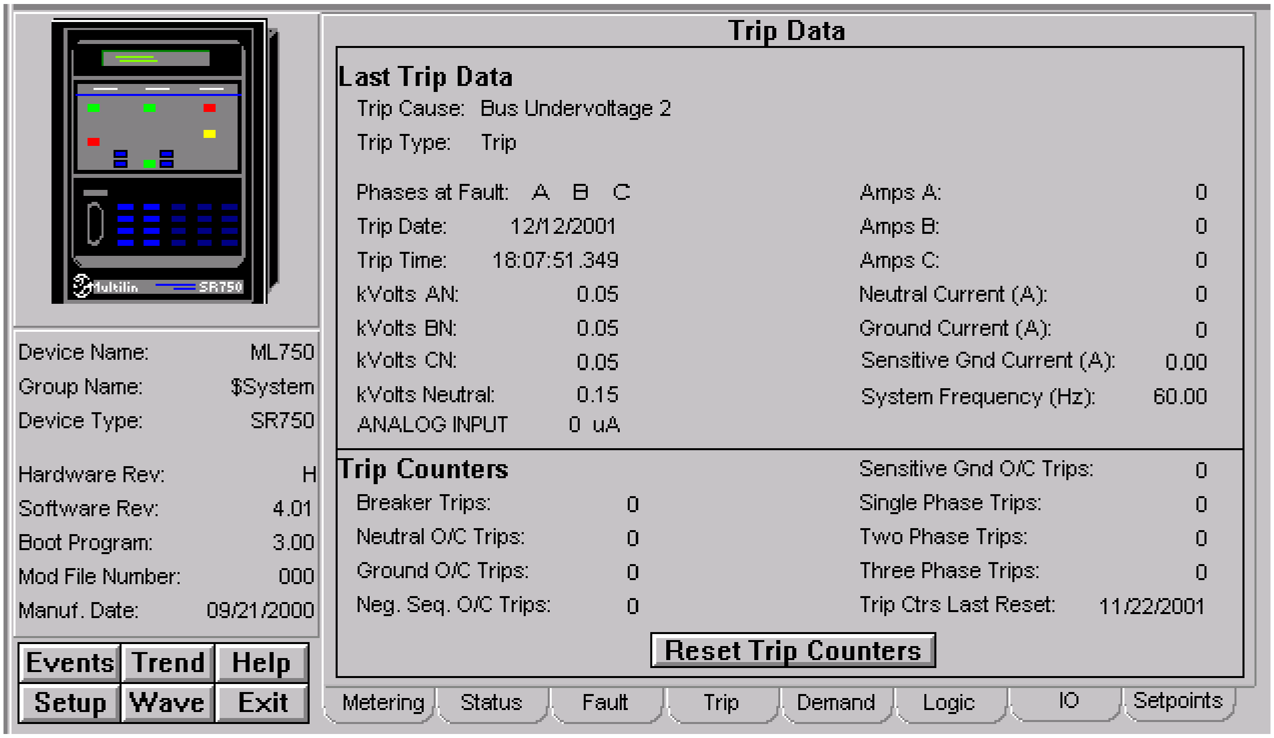


The SR750/760 Fault & Maintenance Data screen shows:

- Fault Locations
- Total Arcing Current

The **Reset Arcing Current** button will reset all values of the arcing current.

Trip Tab

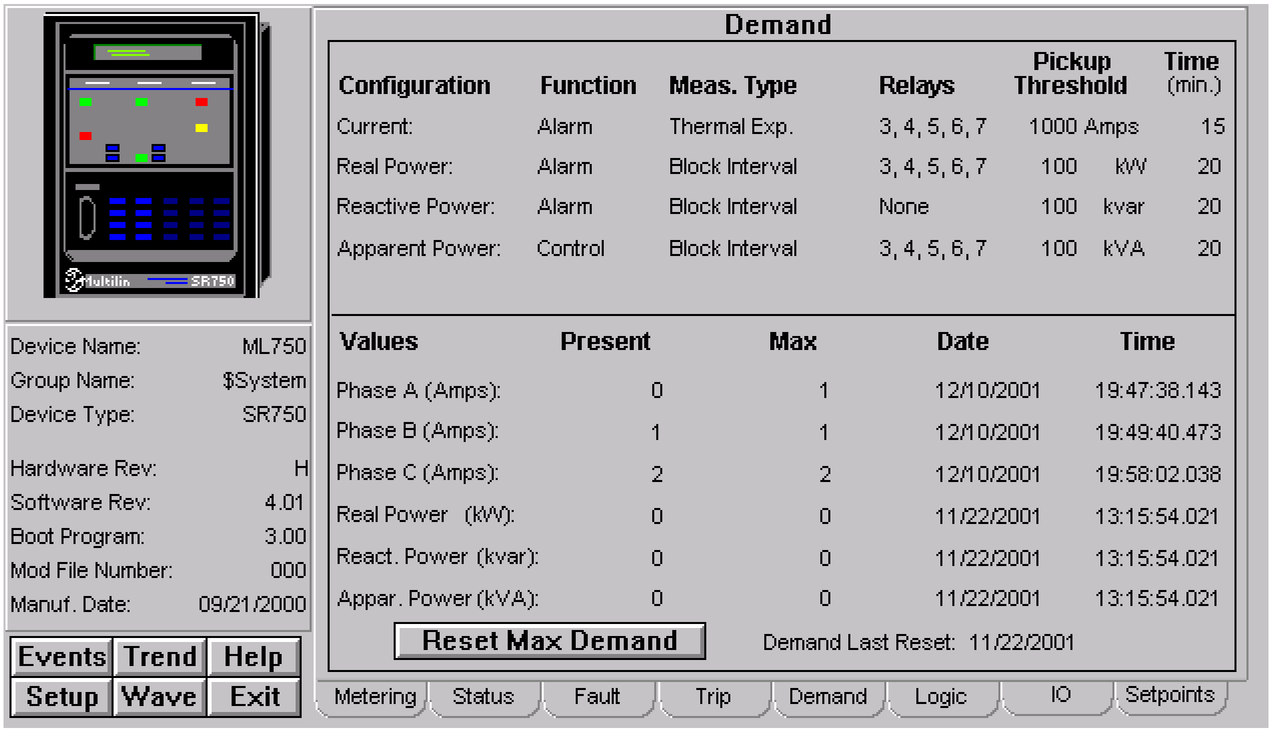


The SR750/760 Trip Data screen shows:

- Last Trip Data
- Trip Counters

The **Reset Trip Counters** button will reset all values of the trip counters.

Demand Tab

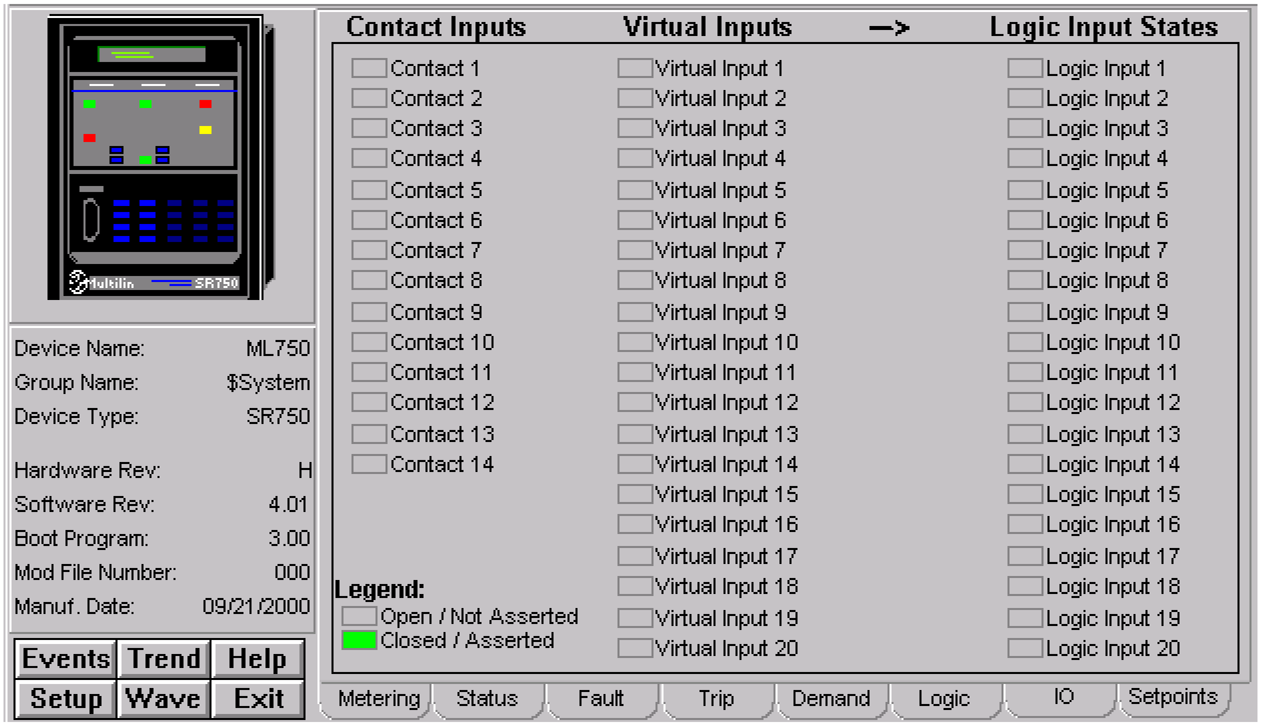


The SR750/760 Demand screen shows details of:

- Configuration
- Values

The **Reset Max Demand** button will reset all maximum values of demand.

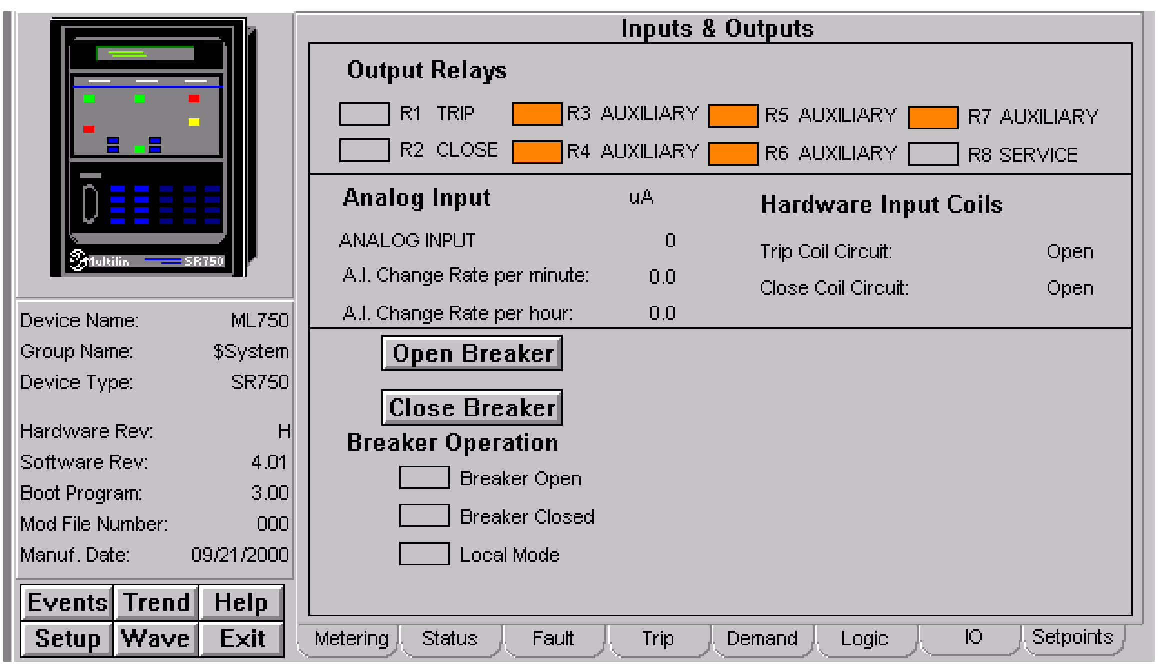
Logic Tab



The SR750/760 Logic screen shows:

- Contact Inputs
- Virtual Inputs
- Logic Input States

IO Tab

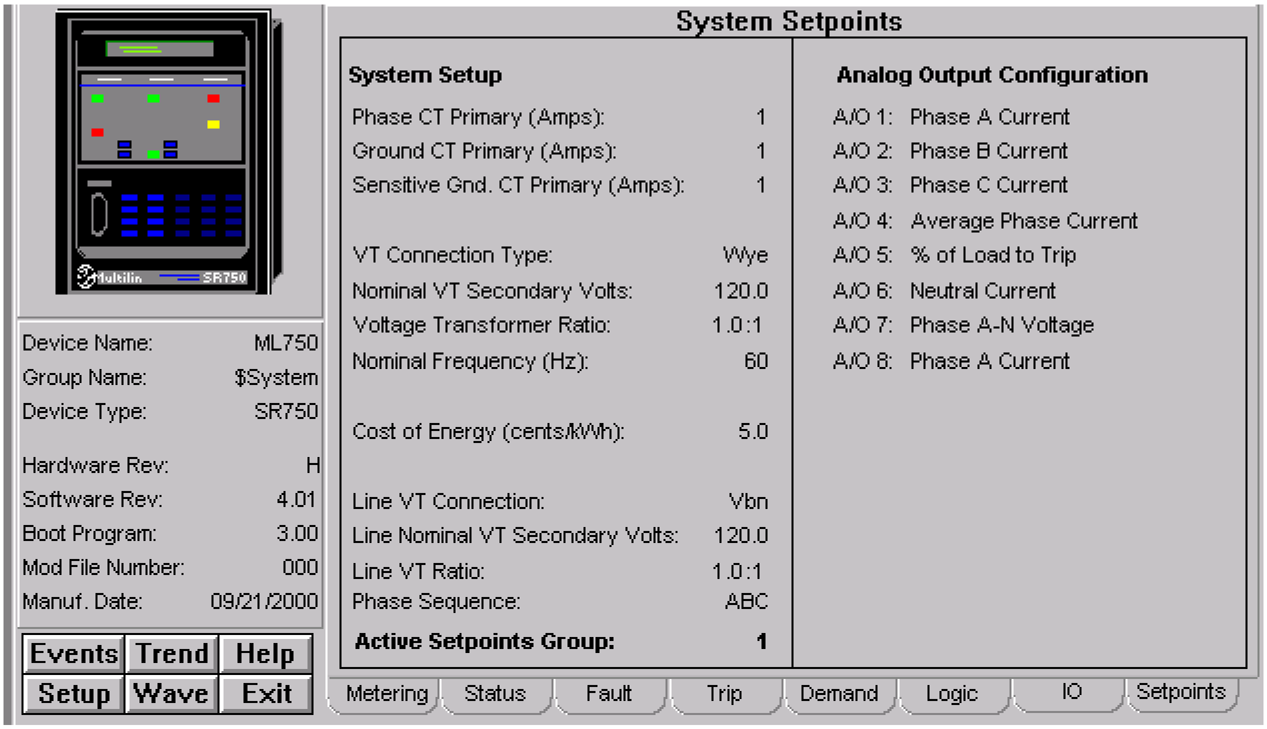


The SR750/760 Inputs & Outputs screen shows:

- Output Relays
- Analog Input
- Hardware Input Coils
- Breaker Operation

The **Open Breaker** button will issue an Open Breaker command. The **Close Breaker** button will issue a Close Breaker command.

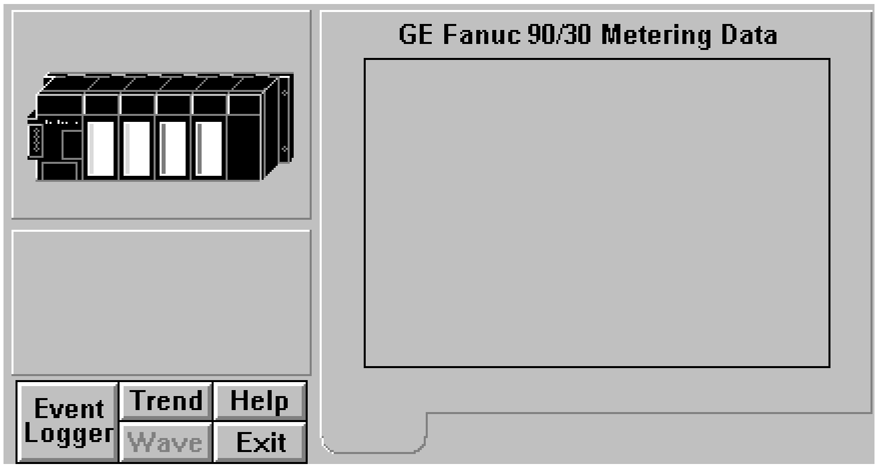
Setpoints Tab



The SR750/760 System Setpoints screen shows:

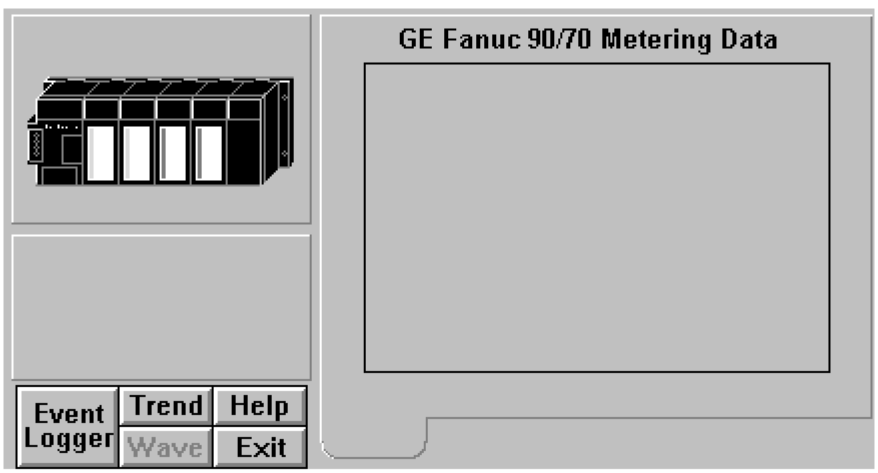
- System Setup
- Analog Output Configuration

Fanuc 90/30



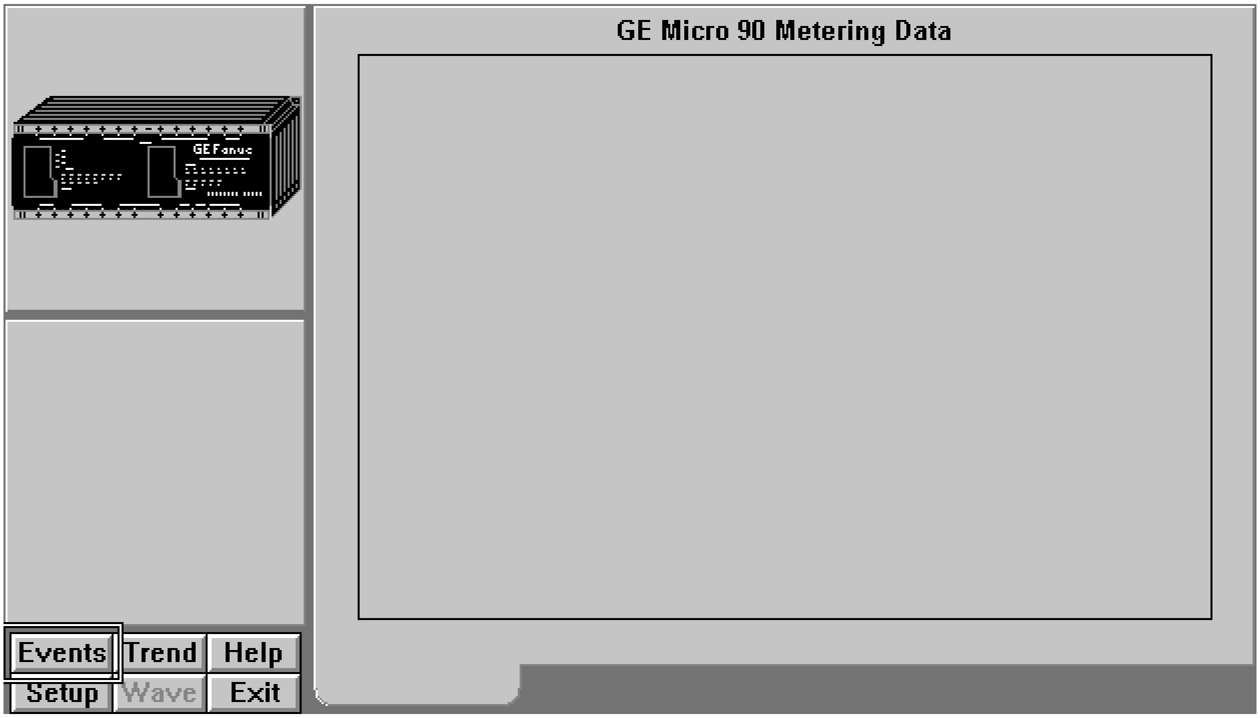
The Fanuc 90/30 Tabular Data Screen wizard is blank. This allows any desired data to be placed on the screen.

Fanuc 90/70



The Fanuc 90/70 Tabular Data Screen wizard is blank. This allows any desired data to be placed on the screen.

Fanuc Micro 90



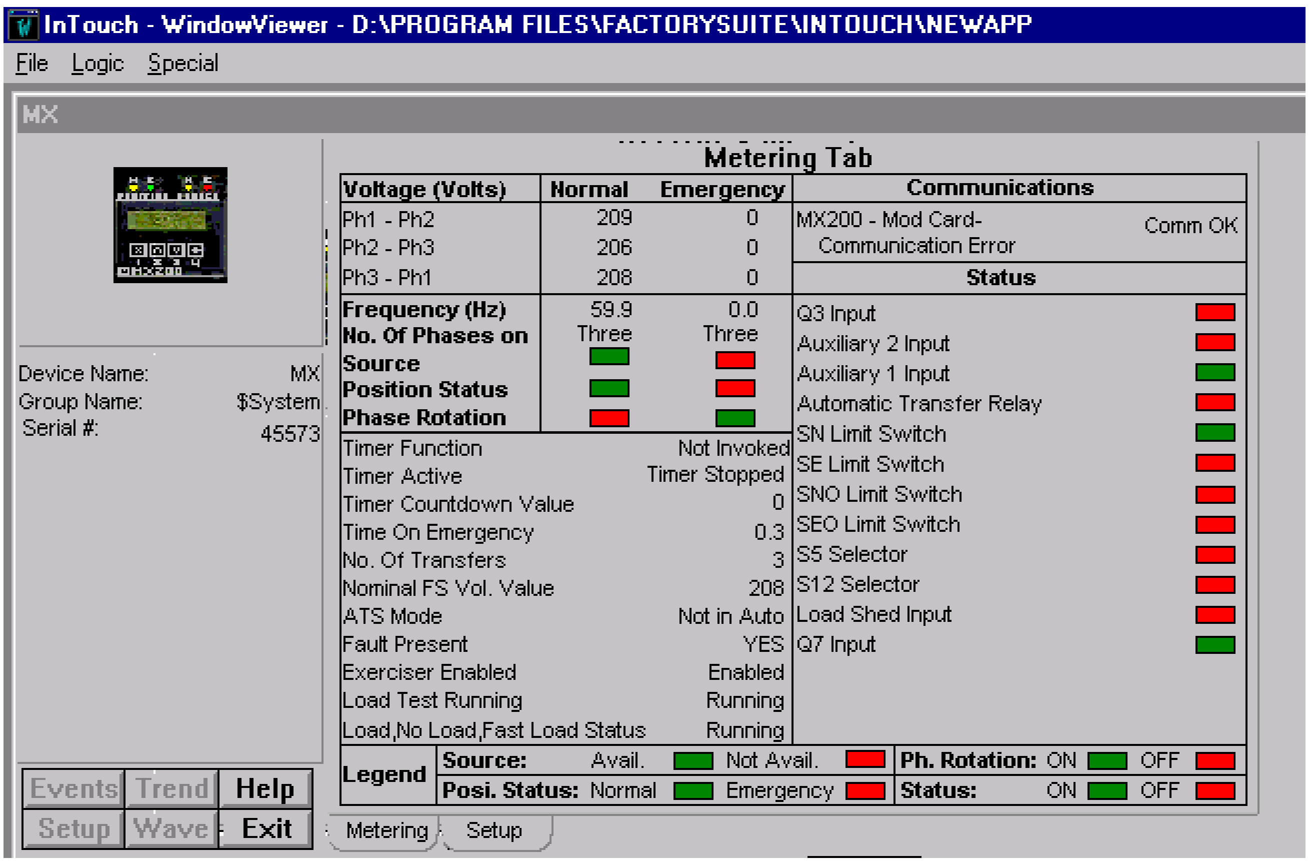
The GE Fanuc Micro 90 Tabular Data Screen is blank. This allows for any desired data to be placed on the screen.

MX200

The MX 200 device is an Automatic Transfer Switch. The Tabular Data Screen wizard has several special features. You can use the Setup screen to change the meter configuration. Values displayed in white boxes are changeable. Clicking on the displayed value changes some, while clicking on the box changes others. The Download and Refresh buttons on the setup screen upload and download all of the setpoints from the device.

To change setpoints at the device, first press the refresh button to upload current setpoint values from the device (otherwise the defaults are shown and used for download). Modify setpoints as desired then press the download button to send all setpoints to the unit. In the following pages, each of the MX 200 Meter's Tabular Data Screen Wizards' tabs will be displayed and detailed.

Metering Tab



The Metering tab displays the following metered values from the MX 200 device.

Voltages

Normal and Emergency Voltage values for all the phases.

Timer Functions

- Timer Active
- Timer Countdown Value
- Time on Emergency
- No. of Transfers
- Nominal FS Vol. Value
- ATS Mode
- Fault Present
- Exerciser Enabled
- Load Test Running
- Load, No Load, Fast Load Status

Communications

- MX-200 – Modcard – Communication Status
  Displays communication status, for example, Comm OK

Status

- Q3 Input
- Auxiliary 2 Input
- Auxiliary 1 Input
- Automatic Transfer Relay
- SN Limit Switch
- SE Limit Switch
- SNO Limit Switch
- SEO Limit Switch
- S5 Selector
- S12 Selector
- Load Shed Input
- Q7 Input

The status is either ON or OFF. If the relay is ON, the status is displayed in green and if relay is OFF, it is displayed in red.

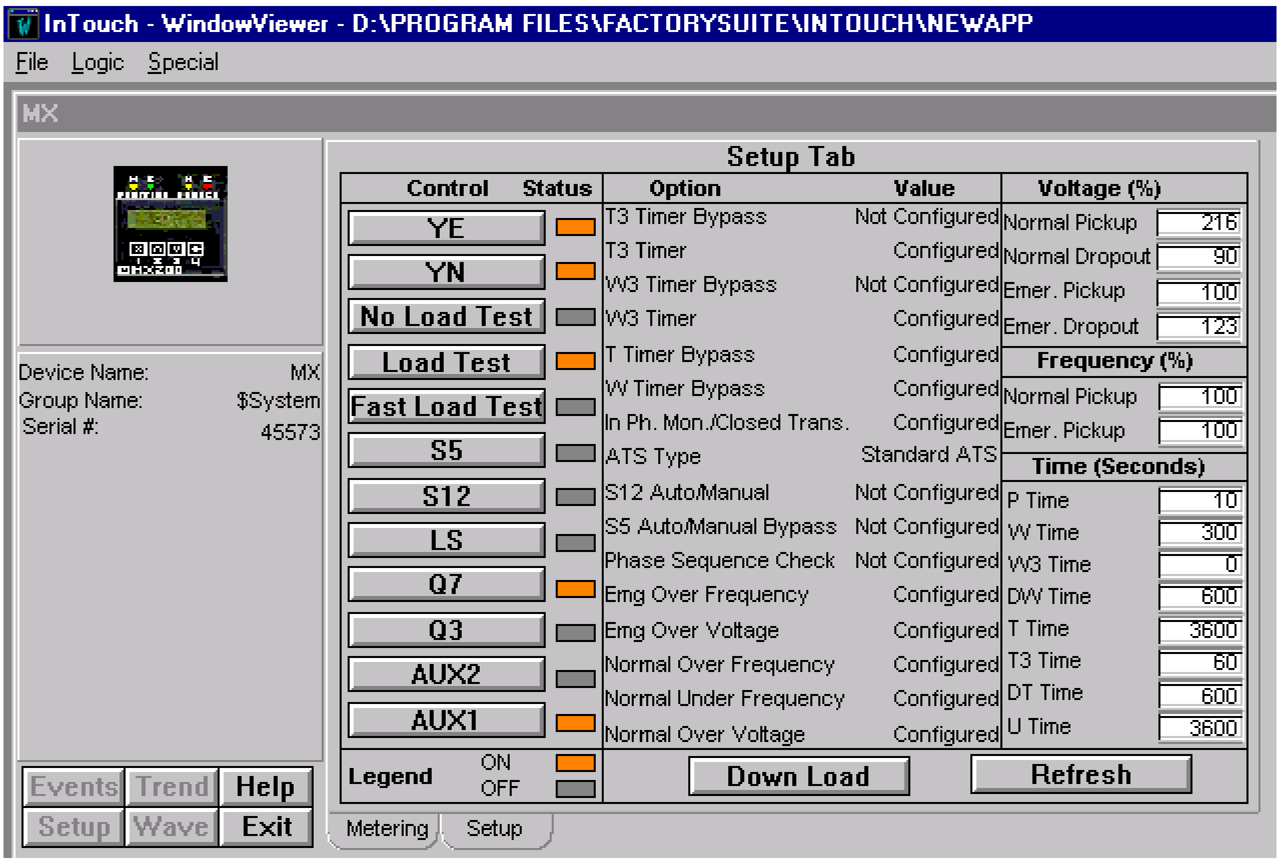
Others

The tab shows frequency and number of phases on source:

- Position Status
- Phase Rotation

The status for Source is displayed as Available (displayed in green) or Not Available (displayed in red). The Position Status is displayed as Normal (displayed in green) or Emergency (displayed in red). The Phase Rotation is displayed as ON (displayed in green) or OFF (displayed in red).

Setup Tab



The Setup tab displays the following demand values from MX 200 device.

Control

- YE
- YN
- No Load Test
- Load Test
- Fast Load Test
- S5
- S12
- LS
- Q7
- Q3
- Aux2
- Aux1

The legend is ON and OFF. If ON, it is indicated by amber and if OFF by gray color.

Options

- T3 Timer Bypass
- T3 Timer
- W3 Timer Bypass
- W3 Timer
- T Timer Bypass
- W Timer Bypass
- In Ph. Mon/Closed Trans
- ATS Type
- S12 Auto/Manual
- S5 Auto/Manual Bypass
- Phase Sequence Check
- Emg Over Frequency
- Emg Over Voltage
- Normal Over Frequency
- Normal Under Frequency
- Normal Over Voltage

The value against each option is displayed as either as Confirmed or Not Confirmed.

Voltage (Volts)

- Normal Pickup
- Normal Dropout
- Emer Pickup
- Emer Dropout

The user can enter values against each parameter.

Frequency (Hz)

- Normal Pickup
- Emer Pickup

The user can enter values against each parameter.

Time (Seconds)

- P Time
- W Time
- W3 Time
- DW Time
- T Time
- T3 Time
- DT Time
- U Time

The Setup tab also provides push buttons for performing the following commands:

Download – Executes a script to check for values that have changed and downloads those values to the device

Refresh – Executes a script to upload all of the meter values for the settings on the screen.

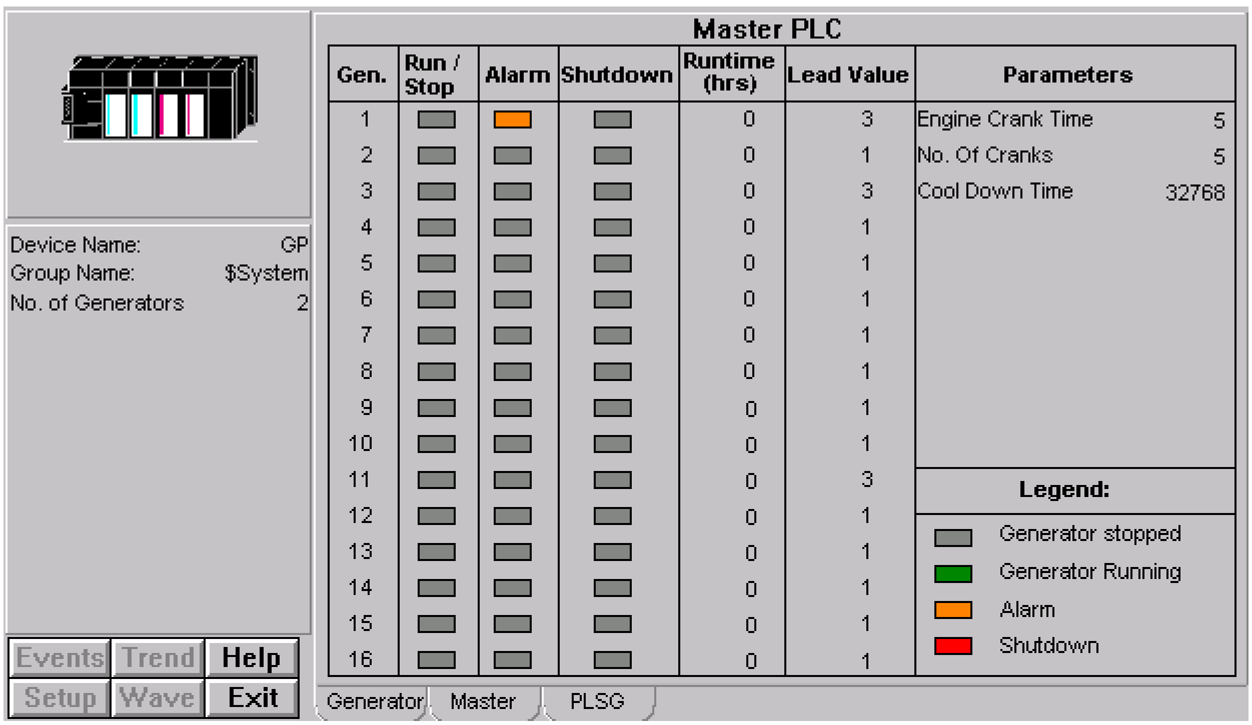
Note: Be sure to click the Refresh button prior to changing or downloading any settings to the MX 200, as the latest settings may not be displayed.

GEN PLC

The Generator Programmable Logic Controller (PLC) is a specially programmed PLC with specific number of I/O modules, controlled by a Master PLC program up to maximum number of 16 Generators.

GEN PLC Tabular wizard mainly have 3 tabs as described below.

Master Tab



The Master PLC lists 16 generators displaying status for each generator separately. The status types are:

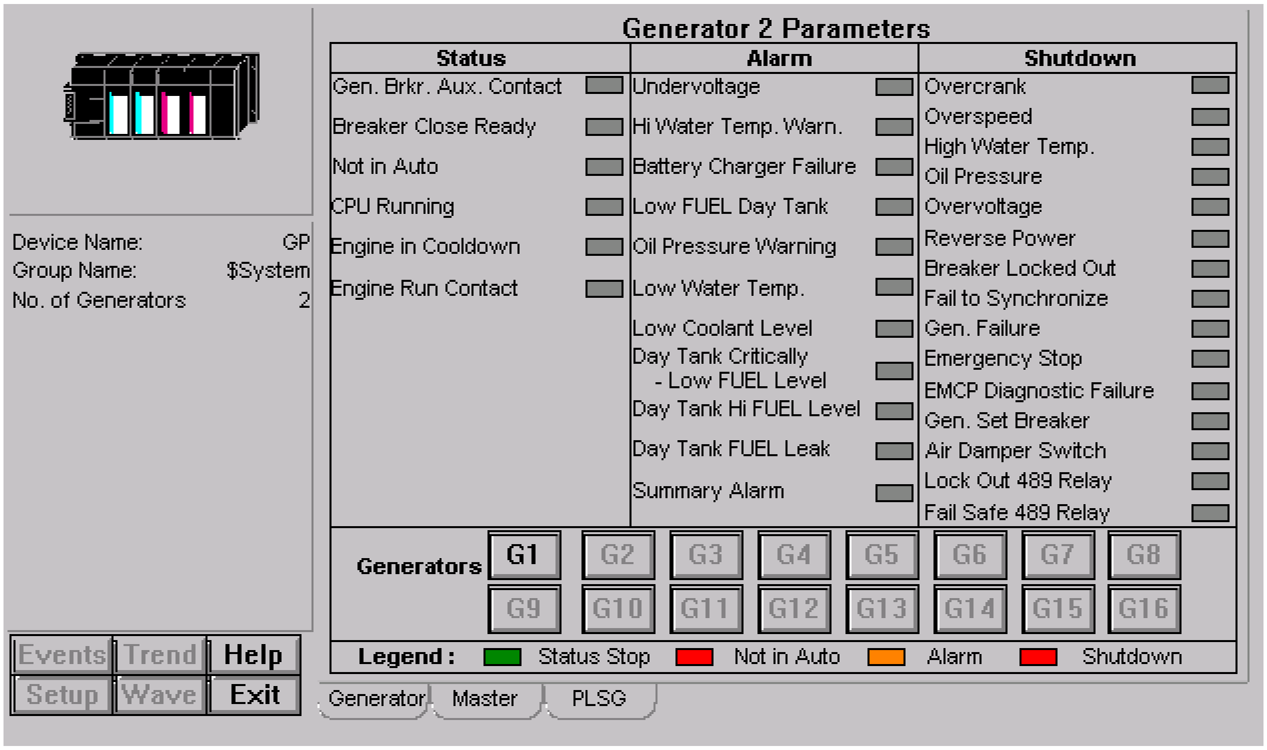
- Run/Stop
- Alarm
- Shutdown
- Runtime (in hours)
- Lead Value

If a particular generator is stopped, it is displayed in gray color; if a generator is running, in green; if there is an alarm, in amber; and shutdown of a generator in red.

The parameters of generators are:

- Engine Crank Time (In seconds)
- No. of Cranks
- Cool Down Time (In seconds)

Generator Tab



This tab displays generator parameters for 16 generators represented as G1 to G16 (buttons). When a button is clicked, the parameters of that generator are displayed on the screen. The parameters are:

Status

- Gen Brkr Aux Contact
- Breaker Close Ready
- Not in Auto
- CPU Running
- Engine in Cooldown
- Engine Run Contact

If a generator is running, the status is displayed in gray and if it is Status Stop, it is displayed as green. The status Not In Auto is displayed in red.

Alarm

- Undervoltage
- Hi Water Temp Warn
- Battery Charger Failure
- Low Fuel Day Tank
- Oil Pressure Warning
- Low Water Temp
- Low Water Level
- Day Tank Critically – Low Fuel Level
- Day Tank Hi Fuel Level
- Day Tank Fuel Leak
- Summary Alarm

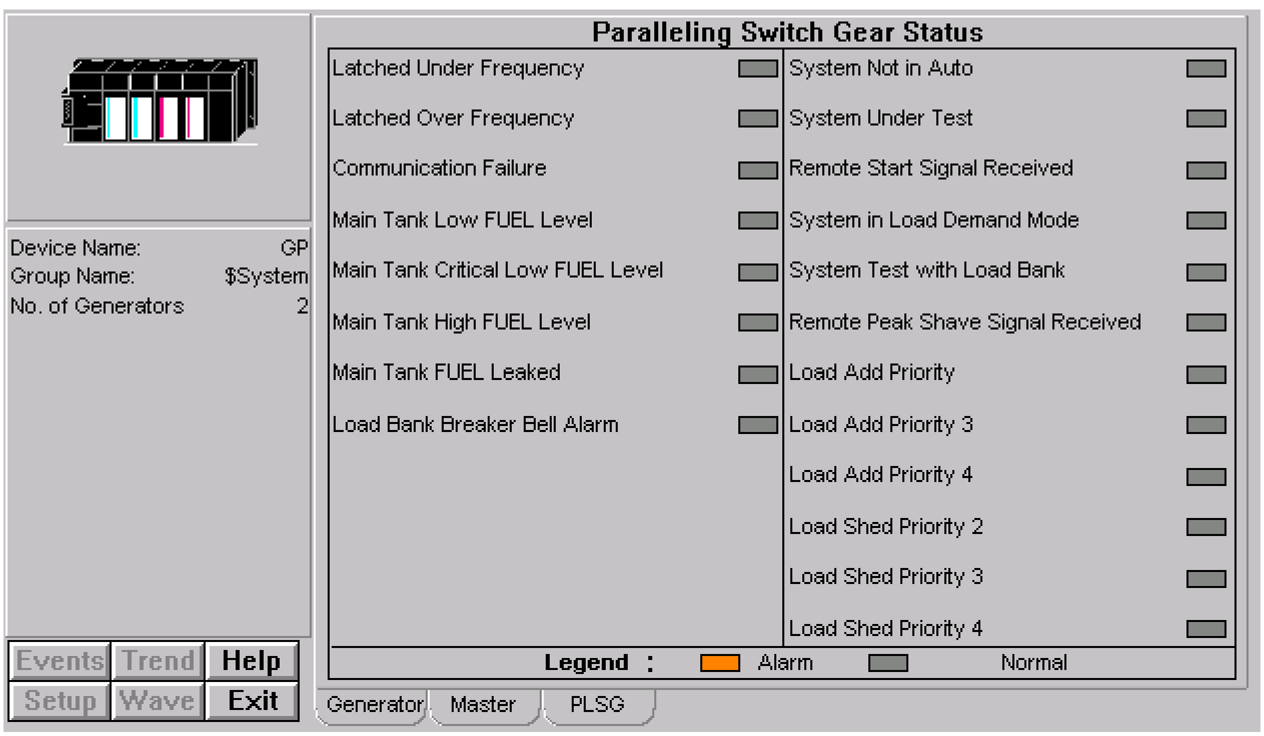
Any alarm in generator's status is displayed in amber. Otherwise the status is displayed in gray.

Shutdown

- Overcrank
- Overspeed
- High Water Temp
- Oil Pressure
- Overvoltage
- Reverse Power
- Breaker Locked Out
- Fail to Synchronize
- General Failure
- Emergency Stop
- EMCP Diagnostic Failure
- Gen Set Breaker
- Air Damper Switch
- Lock Out 489 Relay
- Fail Safe 489 Relay

Note: Any kind of shutdown is displayed in red.

PSG



The screen shows Paralleling SwitchGear Status of generators.

Status

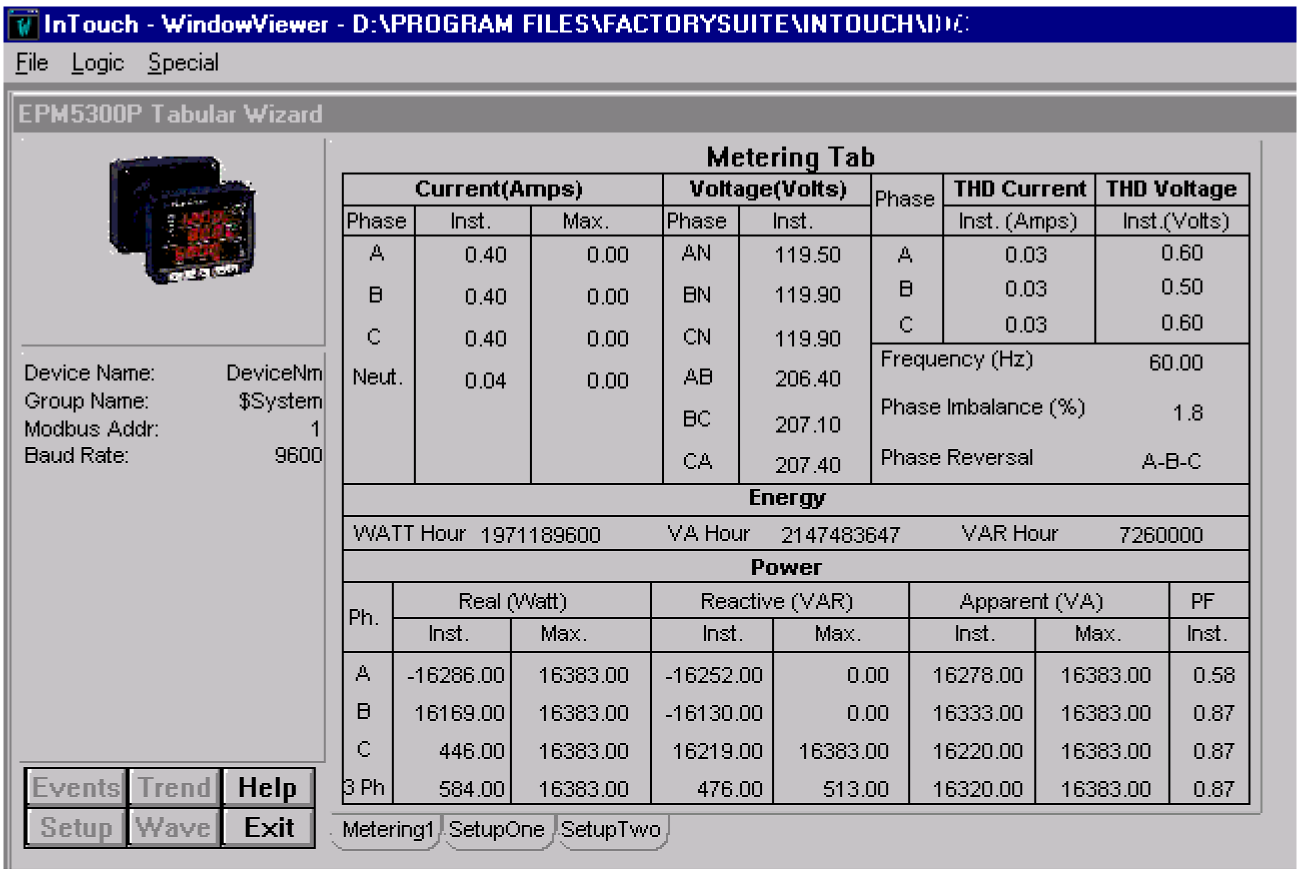
- Latched Under Frequency
- Latched Over Frequency
- Communication Failure
- Main Tank Low Fuel Level
- Main Tank Critical Low Fuel Level
- Main Tank High Fuel Level
- Main Tank Fuel Leaked
- Load Bank Breaker Bell Alarm
- System Not in Auto
- System Under Test
- Remote Start Signal Received
- System in Load Demand Mode
- System Test With Load Bank
- Remote Peak Shave Signal Received
- Load Add Priority
- Load Add Priority 3
- Load Add Priority 4
- Load Shed Priority 2
- Load Shed Priority 3
- Load Shed Priority 4

Note: Any alarm is displayed in amber, otherwise normal status is shown in gray color.

EPM5300P

This device belongs to Electro Industries family, which is tightly integrated device in to PMCS product. This device contains the following tabs.

Metering Tab



The screen explains various parameters of the device:

Current (Amps)

- Phase (A, B, C and Neutral)
- Inst
- Max

Voltage (Volts)

- Phase (AN, BN, CN, AB, BC and CA)
- Inst
- THD Current
- THD Voltage

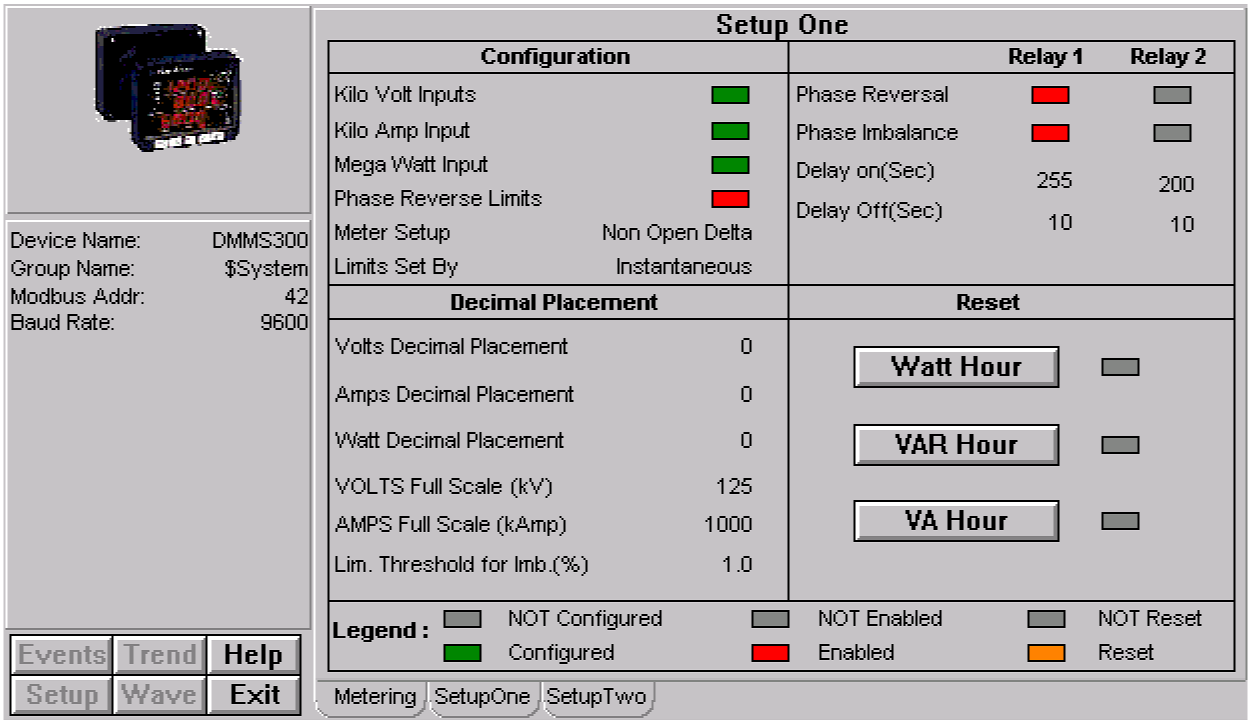
Energy

- WATT Hour
- VA Hour
- VAR Hour

Power

- Real (WATT)
- Reactive (VAR)
- Apparent (VA)
- PF

Setup One Tab



The screen explains various parameters in relation with Relay 1 and Relay 2 such as:

Configuration
- Kilo Volt Inputs
- Kilo Amp Input
- Mega Watt Input
- Phase Reverse Limits
- Meter Setup
- Limits Set By

Relay 1 / Relay 2
- Phase Reversal
- Phase Imbalance
- Delay On
- Delay Off

Decimal Placement
- Volts Decimal Placement
- Amps Decimal Placement
- WATT Decimal Placement
- VOLTS Full Scale
- AMPS Full Scale
- Lim. Threshold for lmb (%)

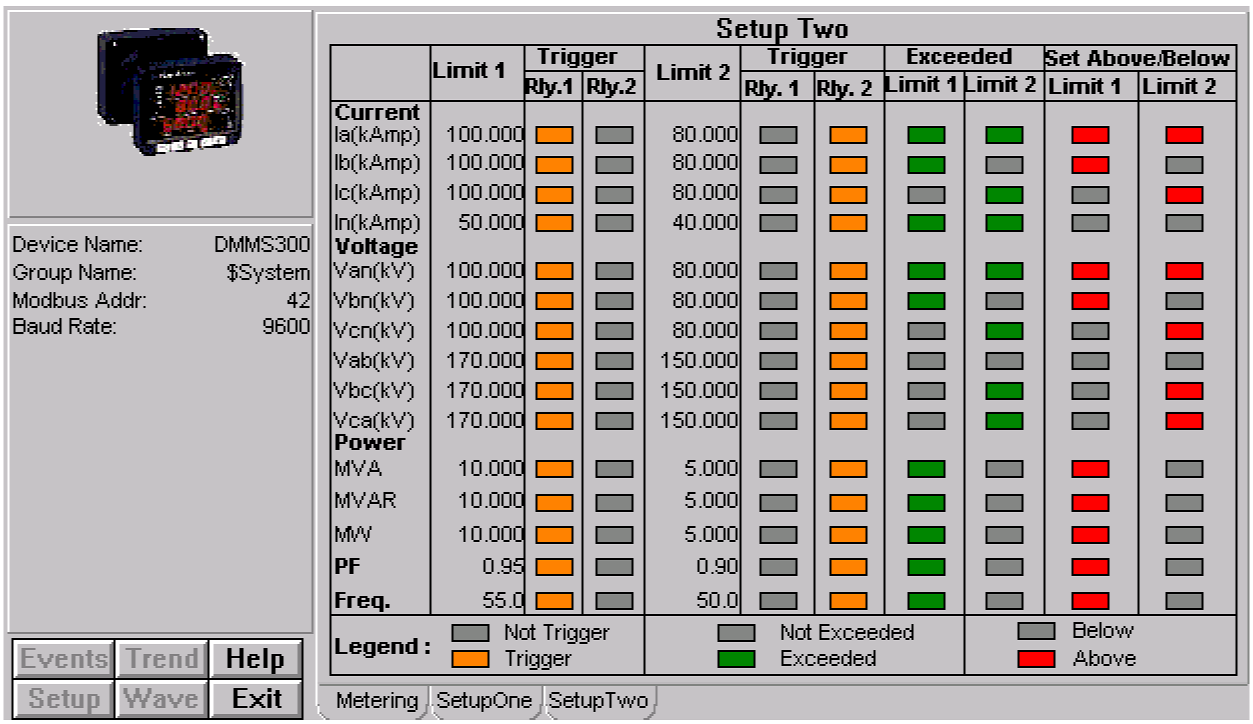
Reset

- WATT Hour
- VAR Hour
- VA Hour

If it is kilo volt inputs, the decimal placement is 2 (as shown in the screen); if kilo amp input the decimal placement is 3 and if mega watt input, it is 1.

Note: Configured is displayed in green, Enabled in red and Reset in Amber.

Setup Two Tab



The screen explains various parameters related to Limits and Triggers:
Brief explanation of each of the columns is described below

Column	Description
Limit 1	Limit 1 value for the Associated quantity (For example: Phase A Amps)
Trigger - Relay 1	LED display in Amber color : Limit 1 of the associated value will trigger Relay 1. LED display in Gray color: Limit 1 of the associated value will not trigger Relay 1.
Trigger - Relay 2	LED display in Amber color : Limit 1 of the associated value will trigger Relay 2. LED display in Gray color: Limit 1 of the associated value will not trigger Relay 2.
Limit 2	Limit 2 value for the Associated quantity (For example: Phase A Amps)
Trigger - Relay 1	LED display in Amber color : Limit 2 of the associated value will trigger Relay 1. LED display in Gray color: Limit 2 of the associated value will not trigger Relay 1.
Trigger - Relay 2	LED display in Amber color : Limit 2 of the associated value will trigger Relay 2. LED display in Gray color: Limit 2 of the associated value will not trigger Relay 2.
Set Above/Below Limit 1	LED display in RED color : Limit 1 of the associated value is Set for Above. LED display in Gray color: Limit 1 of the associated value is Set for Below.
Set Above/Below Limit 2	LED display in RED color : Limit 2 of the associated value is Set for Above.

	LED display in Gray color: Limit 2 of the associated value is Set for Below.
Exceeded Limit 1	LED display in GREEN color : The associated quantity is exceeded the Limit 1 value. LED display in Gray color: The associated quantity is NOT exceeded the Limit 1 value.
Exceeded Limit 2	LED display in GREEN color : The associated quantity is exceeded the Limit 2 value. LED display in Gray color: The associated quantity is NOT exceeded the Limit 2 value.

Example 1	Example 2
Limit1 is Set for Above	Limit 2 is Set for Below
Limit 1 is 100 Amps	Limit 2 is 80 Amps
The associated Quantity is Phase A Instantaneous value is 397 Amps	The associated Quantity is Phase A Instantaneous value is 50 Amps
Exceeded Limit 1 will show in GREEN color as 397>100	Exceeded Limit 1 will show in GREEN color as 50<80

Current

- Phase A
- Phase B
- Phase C
- Neutral

Voltage

- AN
- BN
- CN
- AB
- BC
- CA

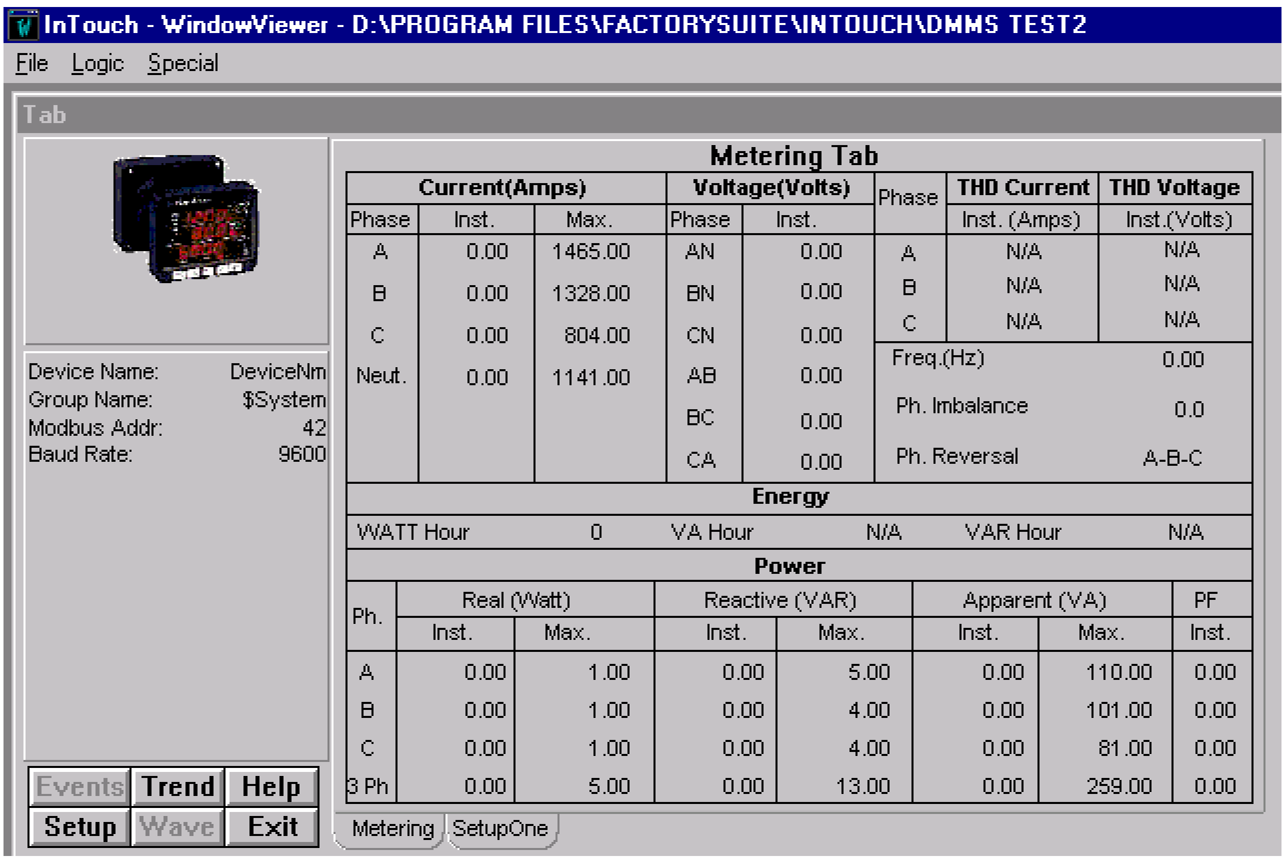
Power

- VA
- VAR
- WATT
- PF
- Frequency

EPM5200P

This device belongs to Electro Industries family, which is tightly integrated device in to PMCS product. This device contains the following tabs.

Metering Tab



The screen explains various parameters of the device:

Current (Amps)

- Phase (A, B, C, Neutral)
- Inst
- Max

Voltage (Volts)

- Phase (AN, BN, CN, AB, BC, CA)
- Inst

THD Current/THD Voltage

- Displays Phase A, Phase B and Phase C THD Current and Voltage values.

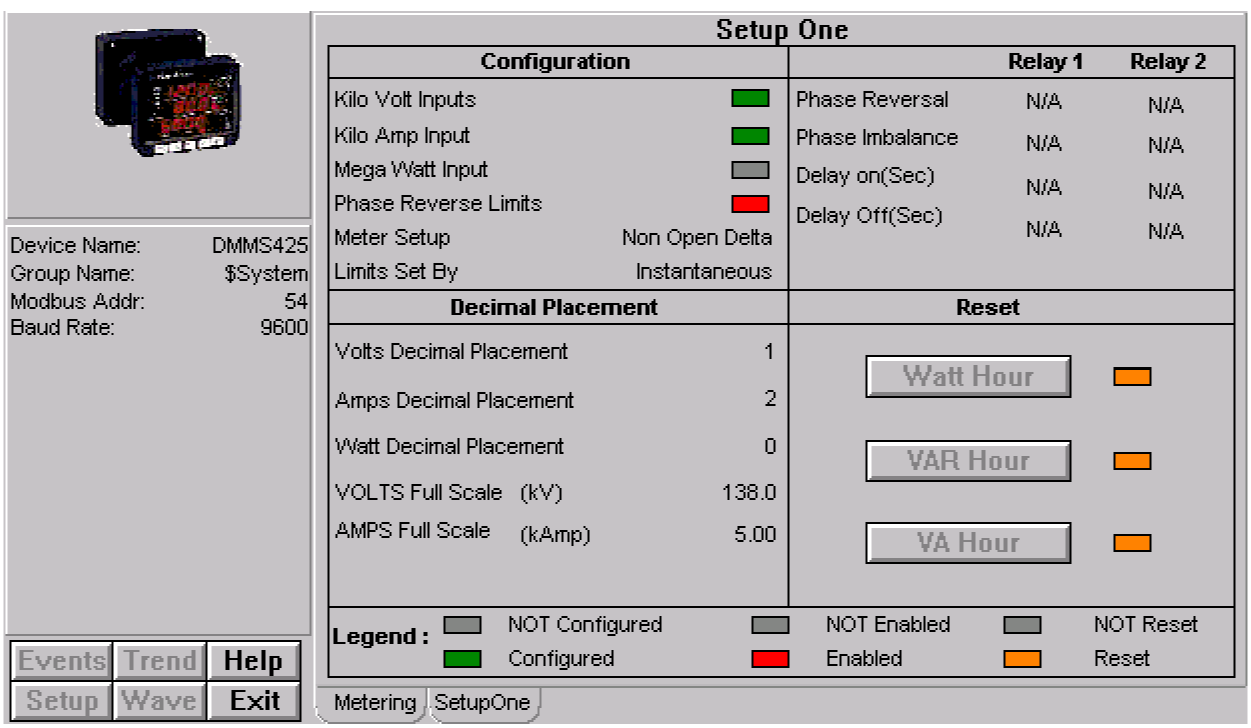
Energy

- WATT Hour
- VA Hour
- VAR Hour

Power

- Real (WATT)
- Reactive (VAR)
- Apparent (VA)
- PF

Setup One Tab



The screen explains various parameters in relation with Relay 1 and Relay 2 such as:

Configuration
- Kilo Volt Inputs
- Kilo Amp Input
- Mega Watt Input
- Phase Reverse Limits
- Meter Setup
- Limits Set By

Relay 1 / Relay 2
- Phase Reversal
- Phase Imbalance
- Delay On
- Delay Off

Decimal Placement
- Volts Decimal Placement
  This value decides the precision. User can change the values from 1 to 4.
- Amps Decimal Placement
  This value decides the precision. User can change the values from 1 to 4.
- WATT Decimal Placement
- VOLTS Full Scale

If kilo volt inputs value is set then Voltage full-scale value is divided by 1000, showing the value in Kilo Volts.
- AMPS Full Scale

If kilo Amp inputs value is set then Amps full-scale value is divided by 1000, showing the value in Kilo Amps.

Reset
- WATT Hour
- VAR Hour
- VA Hour

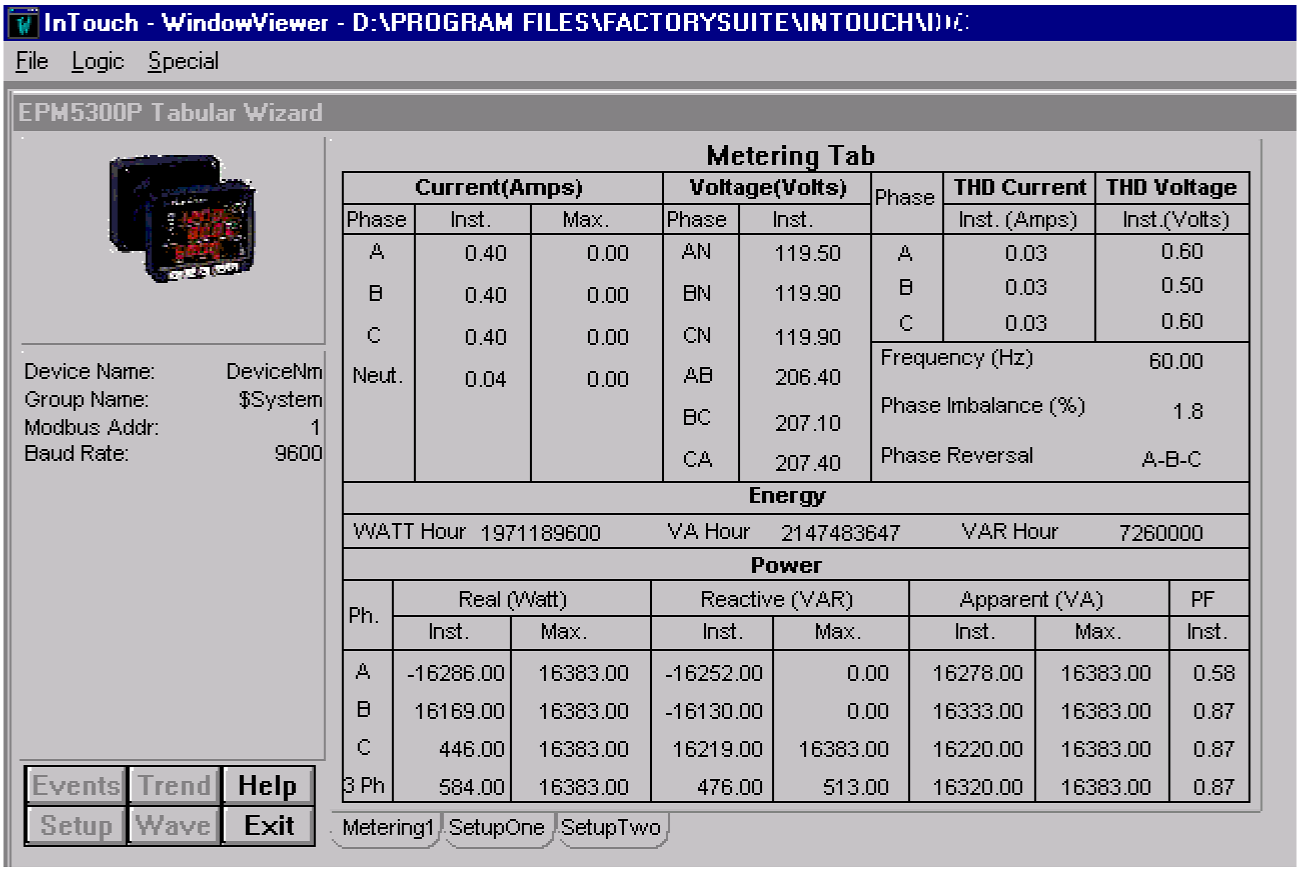
Note: Configured is displayed in green, Enabled in red and Reset in Amber.

EPM5350P

Special Note: This device supports GE32MTCP Server ONLY.

This device belongs to Electro Industries family, which is tightly integrated device in to PMCS product. This device contains the following tabs.

Metering Tab



The screen explains various parameters of the device:

Current (Amps)

- Phase (A, B, C and Neutral)
- Inst
- Max

Voltage (Volts)

- Phase (AN, BN, CN, AB, BC and CA)
- Inst

- THD Current
- THD Voltage

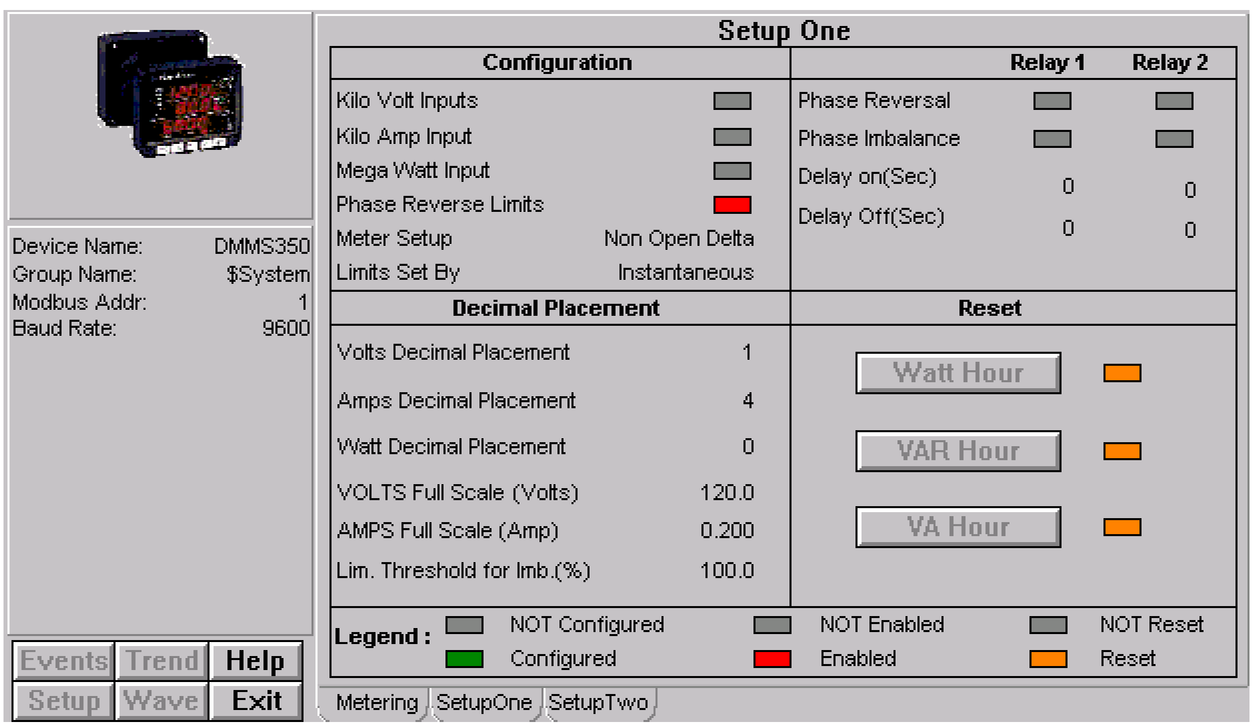
Energy

- WATT Hour
- VA Hour
- VAR Hour

Power

- Real (WATT)
- Reactive (VAR)
- Apparent (VA)
- PF

Setup One Tab



The screen explains various parameters in relation with Relay 1 and Relay 2 such as:

Configuration

- Kilo Volt Inputs
- Kilo Amp Input
- Mega Watt Input
- Phase Reverse Limits

- Meter Setup
- Limits Set By

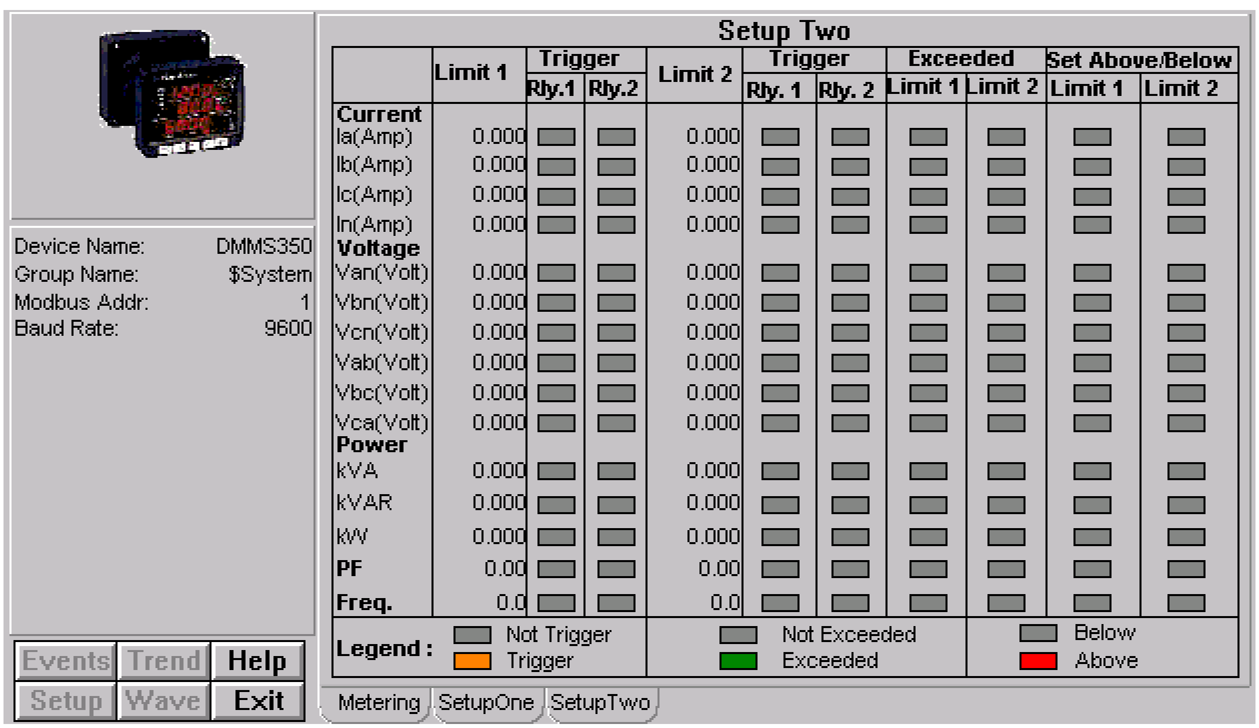
Relay 1 / Relay 2
- Phase Reversal
- Phase Imbalance
- Delay On
- Delay Off

Decimal Placement
- Volts Decimal Placement
- Amps Decimal Placement
- WATT Decimal Placement
- VOLTS Full Scale
- AMPS Full Scale
- Lim. Threshold for lmb (%)

Reset
- WATT Hour
- VAR Hour
- VA Hour

If it is kilo volt inputs, the decimal placement is 2 (as shown in the screen); if kilo amp input the decimal placement is 3 and if mega watt input, it is 1.
Note: Configured is displayed in green, Enabled in red and Reset in Amber.

Setup Two Tab



The screen explains various parameters related to Limits and Triggers:
Brief explanation of each of the columns is described below

Column	Description

Limit 1	Limit 1 value for the Associated quantity (For example: Phase A Amps)
Trigger - Relay 1	LED display in Amber color : Limit 1 of the associated value will trigger Relay 1. LED display in Gray color: Limit 1 of the associated value will not trigger Relay 1.
Trigger - Relay 2	LED display in Amber color : Limit 1 of the associated value will trigger Relay 2. LED display in Gray color: Limit 1 of the associated value will not trigger Relay 2.
Limit 2	Limit 2 value for the Associated quantity (For example: Phase A Amps)
Trigger - Relay 1	LED display in Amber color : Limit 2 of the associated value will trigger Relay 1. LED display in Gray color: Limit 2 of the associated value will not trigger Relay 1.
Trigger - Relay 2	LED display in Amber color : Limit 2 of the associated value will trigger Relay 2. LED display in Gray color: Limit 2 of the associated value will not trigger Relay 2.
Set Above/Below Limit 1	LED display in RED color : Limit 1 of the associated value is Set for Above. LED display in Gray color: Limit 1 of the associated value is Set for Below.
Set Above/Below Limit 2	LED display in RED color : Limit 2 of the associated value is Set for Above. LED display in Gray color: Limit 2 of the associated value is Set for Below.
Exceeded Limit 1	LED display in GREEN color : The associated quantity is exceeded the Limit 1 value. LED display in Gray color: The associated quantity is NOT exceeded the Limit 1 value.
Exceeded Limit 2	LED display in GREEN color : The associated quantity is exceeded the Limit 2 value. LED display in Gray color: The associated quantity is NOT exceeded the Limit 2 value.

Example 1	**Example 2**
Limit1 is Set for Above	Limit 2 is Set for Below
Limit 1 is 100 Amps	Limit 2 is 80 Amps
The associated Quantity is Phase A Instantaneous value is 397 Amps	The associated Quantity is Phase A Instantaneous value is 50 Amps
Exceeded Limit 1 will show in GREEN color as 397>100	Exceeded Limit 1 will show in GREEN color as 50<80

Current

- Phase A
- Phase B
- Phase C
- Neutral

Voltage

- AN
- BN
- CN
- AB
- BC
- CA

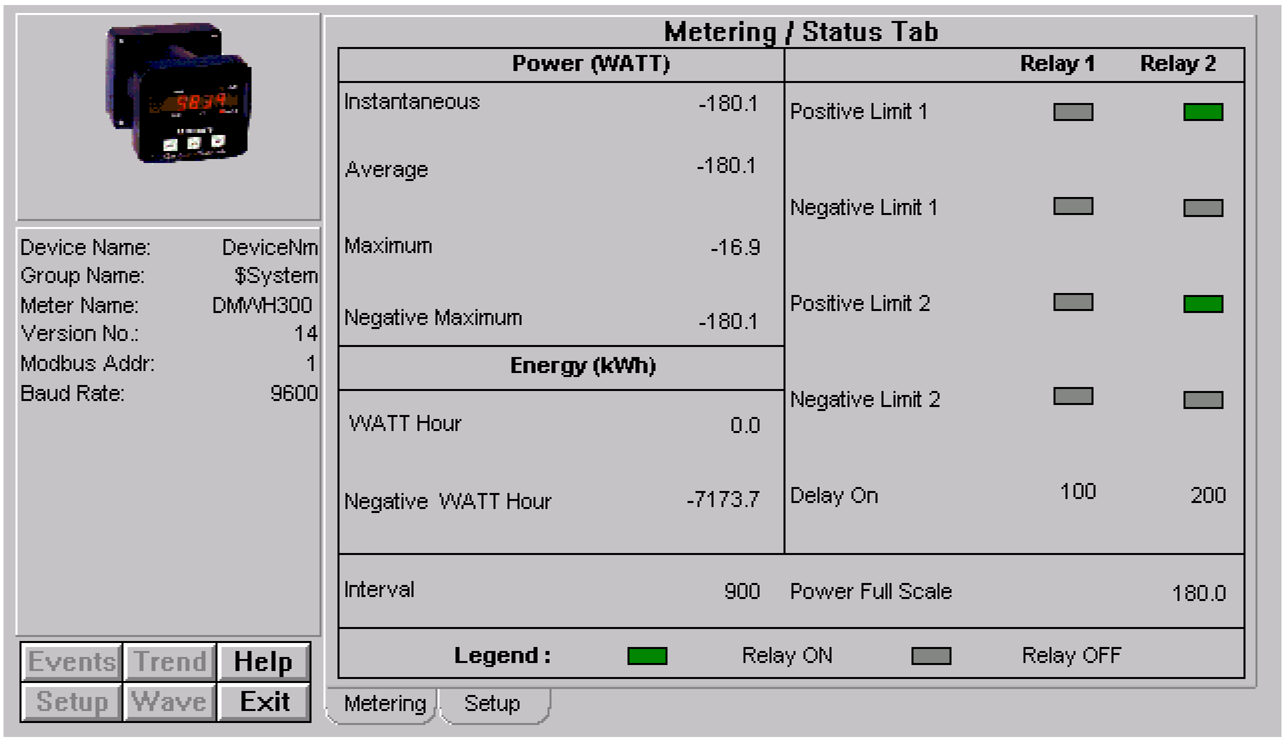
Power

- VA
- VAR
- WATT
- PF
- Frequency

EPM5000P

This device belongs to the Electro Industries family, which is a tightly integrated device in to the PMCS product. The device contains the following tabs:

Metering



The screen explains various parameters related to metering and status.

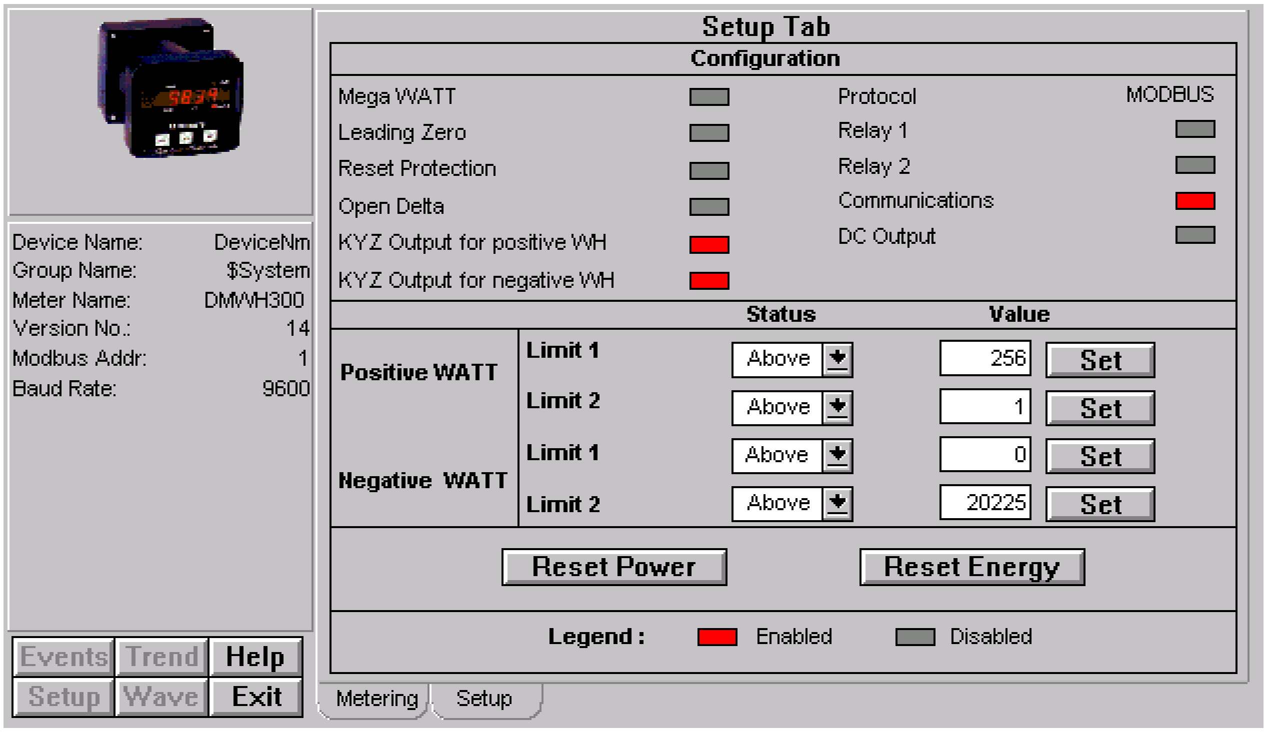
Power (WATT): Instantaneous, Average, Maximum and Negative Maximum.

Relay 1/Relay 2: Positive Limit 1, Negative Limit 1, Positive Limit 2 and Negative Limit 2. Delay On is displayed too. If the relay is on, it is displayed in green. If the relay is off, it remains in gray.

Energy (kWh): WATT Hour and Negative WATT Hour. Interval is displayed.

Power Full Scale: This value internally depends on the Power Displacement Value. Based on this the value the number of decimals will be displayed. For example
If the Power Decimal Placement is set to 1, the value will have only one decimal place.
If the Power Decimal Placement is set to 2, the value will have two decimal places, and so on and so forth. The maximum value allowed is 4.

Setup



The screen explains various parameters related to configuration and setup.

Configuration: Mega WATT, Leading Zero, Reset Protection, Open Delta, KYZ Output for positive WH, KYZ Output for negative WH.

Protocol: Relay 1, Relay 2, Communications and DC Output.

Status/Value: The user can set the values in the Status and Value fields. Under Positive WATT and Negative WATT, the status is shown as Above/Below for Limit 1 and Limit 2. The user can directly set the status to the device by clicking on the arrow buttons on respective fields to change the value from Above to Below or from Below to Above. The user can enter the set values by clicking on the field that contains the rectangular box that filled with White color on respective fields by entering the desired set values. Once the user enters the set value, by clicking on the Set button of the respective field, will set the value in to the device. Against these settings the wizard will prompt user for the conformation.

Legend: The Legend is applicable for Configuration parameters. Enabled status is displayed in red, Otherwise the status is displayed in gray.

EPM9450Q/EPM9650Q

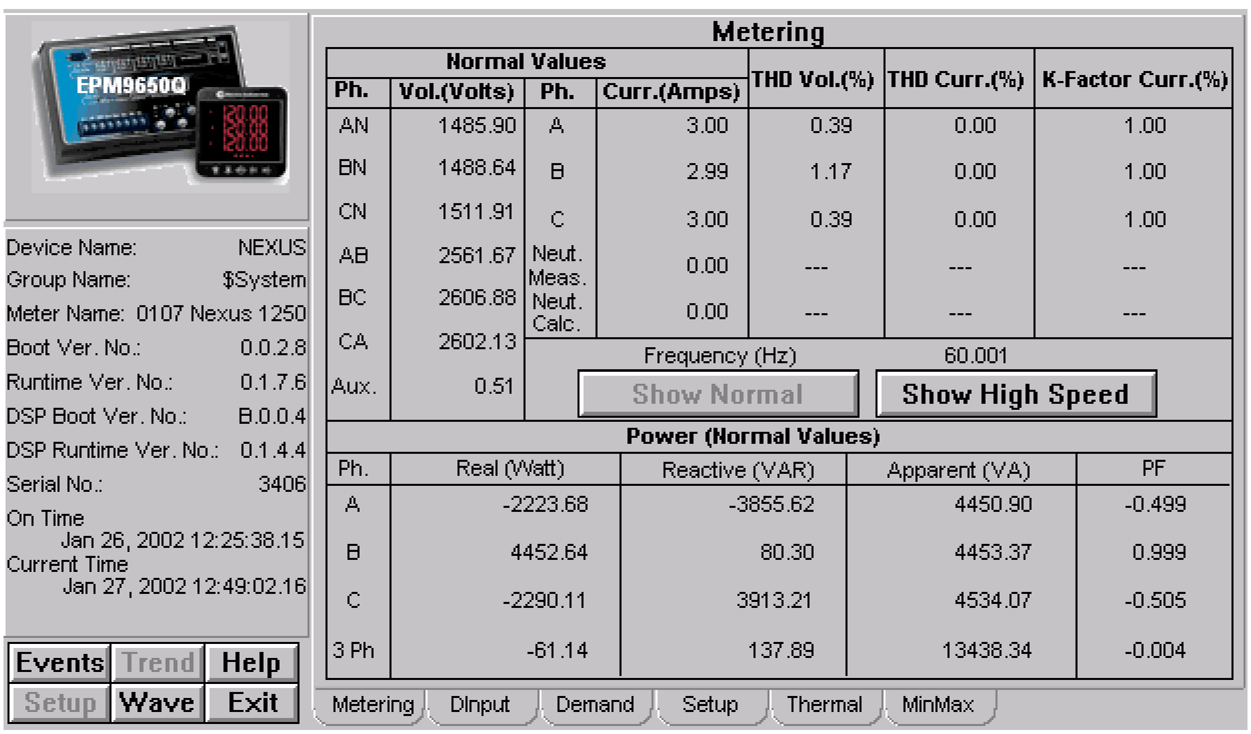
This device belongs to the Electro Industries family, which is a tightly integrated device in to the PMCS product. The device comes with 2 versions – EPM9450Q and EPM9650Q. The EPM9450Q device does not support Waveform feature. The EPM9650Q supports Waveform features.

The device offers the following features:

- **Max/Min integration:** Offers Maximum and Minimum values for every measured reading.
- **8 Built-in Digital High-Speed Status Inputs:** The device offers 8 High speed digital inputs.
- **Demand:** Measures Fixed window, Sliding window, Predictive and Themal demands.
- **4 Communication Ports:** There are 4 ports – Port 1, Port 2, Port 3 and Port 4.

The device contains the following tabs:

Metering



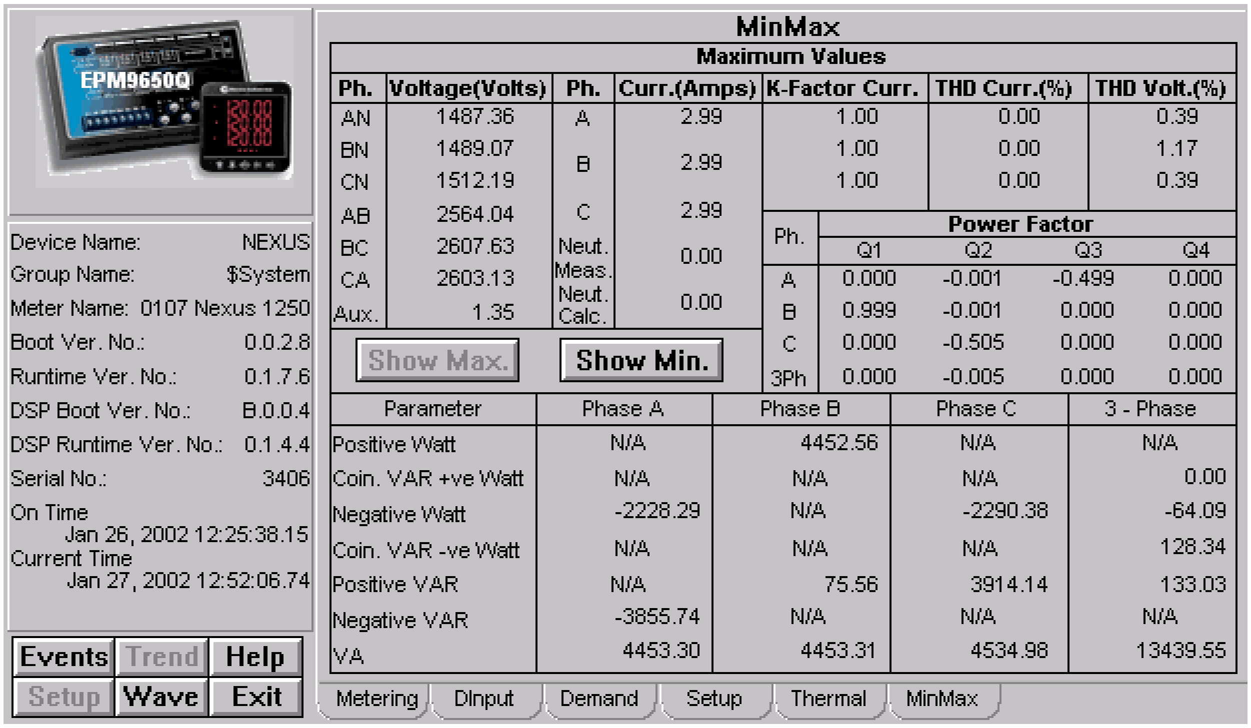
The Metering tab shows following various parameters:

- **Voltage Normal/ High Speed:** This tab displays the voltage values of AN, BN, CN, AB, BC, CA and Aux.
- **Current Normal/ High Speed:** Displays currents of Phase A, B, C, measured and calculated.
- **THD Normal/ High Speed:** Displays THD values of Phase A, B, C for Voltage and Current an d K Factor.
- **Power:** Displays Phase A, B, C and 3 Phase Power Values for Real (Watt), Reactive (VAR), Apparent (VA) and

PF.

- **Frequency Normal/ High Speed:** Displays Frequency in Hz.

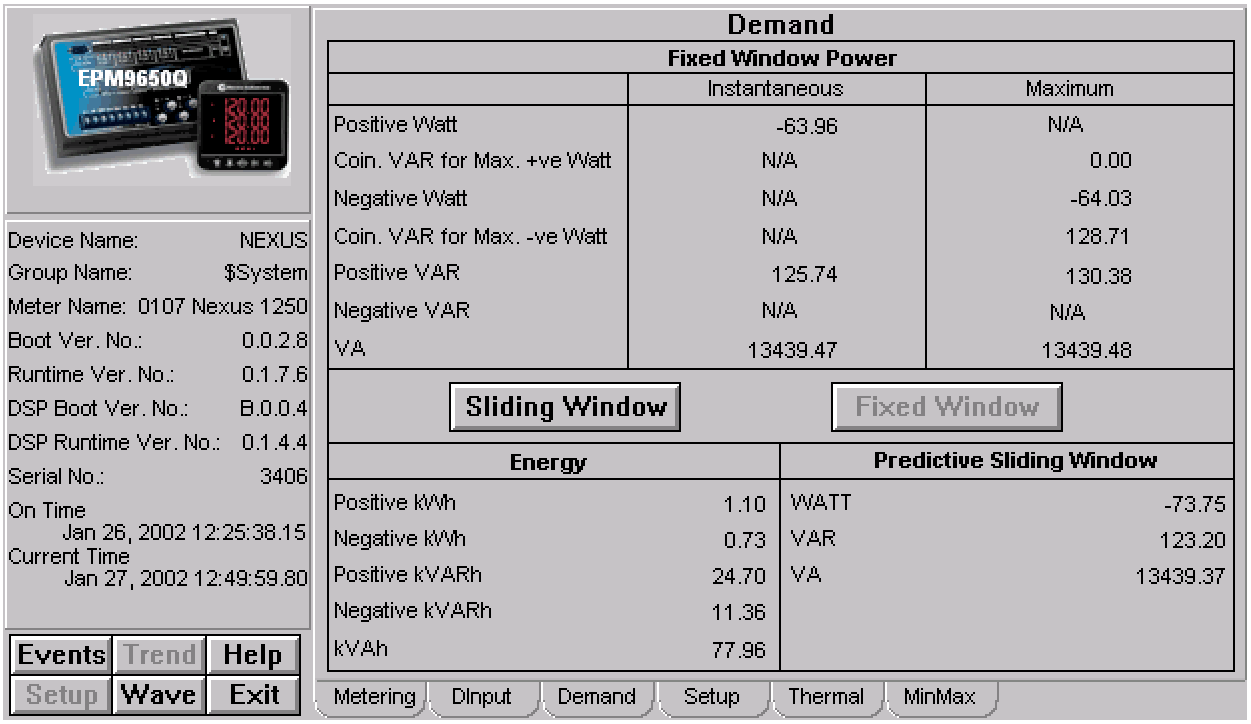
Min/Max



The tab displays Maximum and Minimum values of various parameters. The user can get maximum and minimum values by clicking on respective buttons labeled Show Max and Show Min.

- **Voltage:** This tab displays the voltage values of AN, BN, CN, AB, BC, CA and Aux.
- **Current:** Displays currents of Phase A, B, C, measured and calculated.
- **THD :** Displays THD values of Phase A, B, C for Voltage and Current an d K Factor.
- **Power Factor :** Displays PF of Phase A, B, C and 3 Phase of 4 Quadrants namely Q1, Q2, Q3 and Q4.
- **Power:** Displays Phase A, B, C and 3 Phase Power Values for Positive Watt, Coincendence VAR for Postive Watt, Negative Watt, Coincedance VAR for Negative Watt, Positive VAR, Negative VAR and VA.

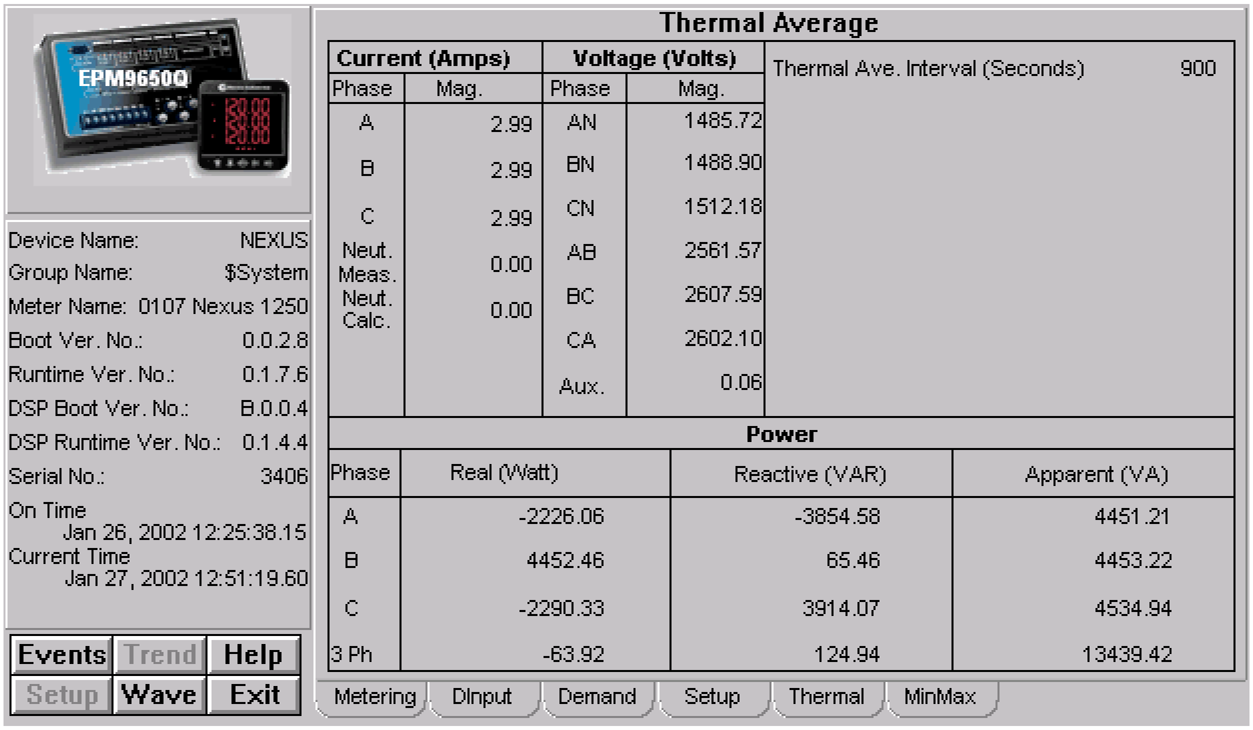
Demand



The screen explains various parameters related to demand values:

- **Sliding Window Demand:** Displays Average and Maximum Sliding window demand for Positive Watt, Coincendence VAR for Maximum Postive Watt, Negative Watt, Coincedance VAR for Maximum Negative Watt, Positive VAR, Negative VAR and VA. User can click on Sliding Window button to see the Sliding window Demand.
- **Fixed Window Demand:** Displays Average and Maximum Sliding window demand for Positive Watt, Coincendence VAR for Maximum Postive Watt, Negative Watt, Coincedance VAR for Maximum Negative Watt, Positive VAR, Negative VAR and VA. User can click on Fixed Window button to see the Fixed window Demand.
- **Predictive Sliding Window Demand:** Displays Predictive Sliding Window demand for WATT, VAR and VA.
- **Energy**: Displays Energy values for the parameters namely Positve kWh, Negative kWh, Positve kVARh, Negative kVARh and kVAh.

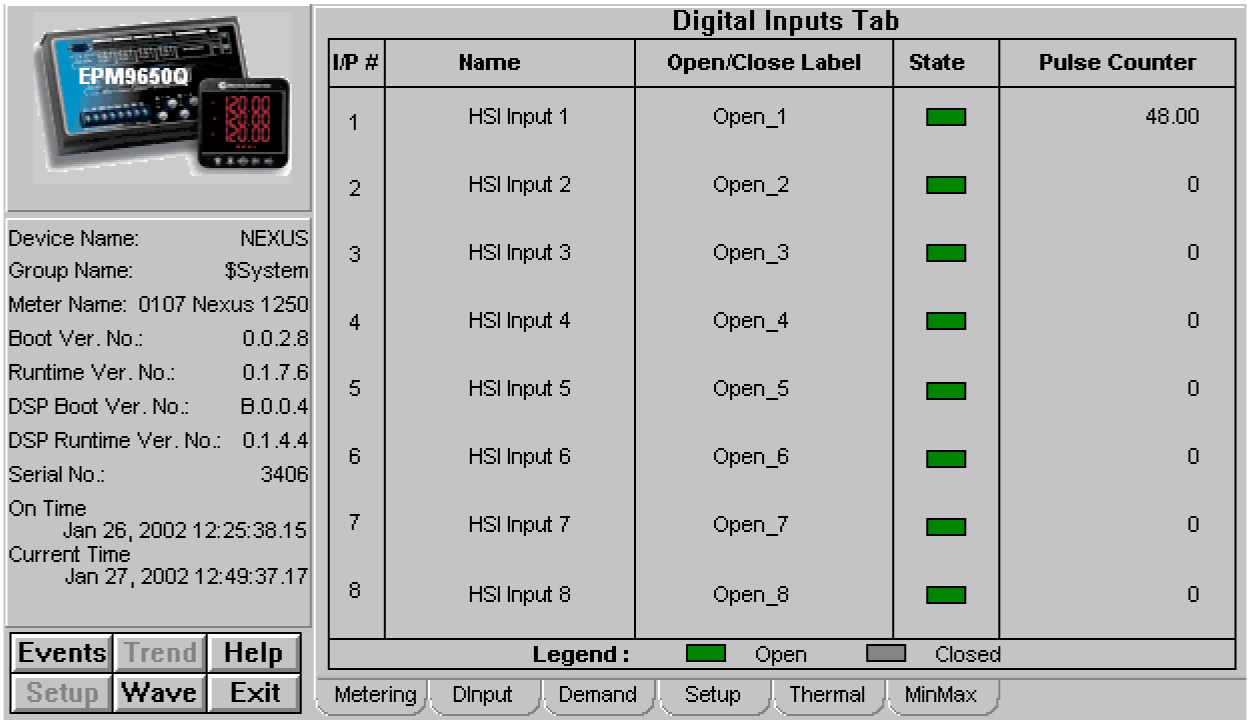
Thermal Average



The screen explains about various parameters related to thermal average:

- **Current (Amps):** Displays the current readings for the phases A, B, C, Mea. (measured) and Cal. (calculated).
- **Voltage (Volts):** Displays the Voltage readings for the phases AN, BN, CN, AB, BC, CA and Aux.
- **Power:** Displays Phase A, B, C and 3 Phase Power Values for Real (Watt), Reactive (VAR) and Apparent (VA).

Digital Inputs



The Digital Inputs tab displays the following parameters of 8 digital inputs. They are

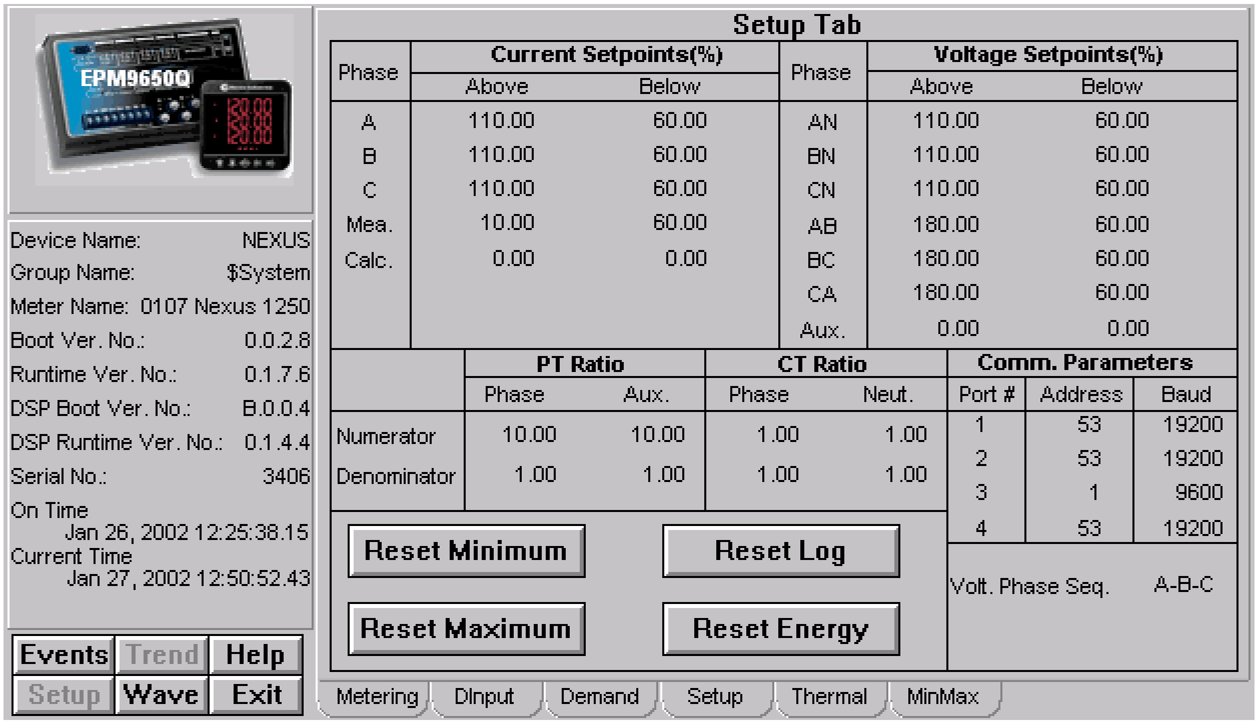
Name: Displays the name of the Digital Input. The maximum allowed is 16 Character string.

Open/Close Label: Based on the Digital input status, the corresponding label will be displayed. For example if the digital input status is OPEN then label for Open condition is displayed or if the digital input status is CLOSED then label for Closed condition is displayed.

Status: The status is displayed Open/Closed. Open status showed in green and Closed status in gray.

Counter: Displays the corresponding digital input counter value.

Setup



The screen explains various parameters related to setup.

Current Set Points: Above and Below Current Setpoints are shown for Phase A, B, C, Measured and Calculated.
Voltage Set Points: Above and Below Voltage Setpoints are shown AN, BN, CN, AB, BC, CA and Aux.
PT Ratio: Displays Phase and Auxiliary values for Numerator and Denominator.
CT Ratio: Displays Phase and Neutral values for Numerator and Denominator.
Communication Parameters: Displays Port Addresses and Baudrate for each of the 4 Ports.
Reset: This wizard allows user to reset the following Parameters.

- Energy
- Log
- Maximum and
- Minimum

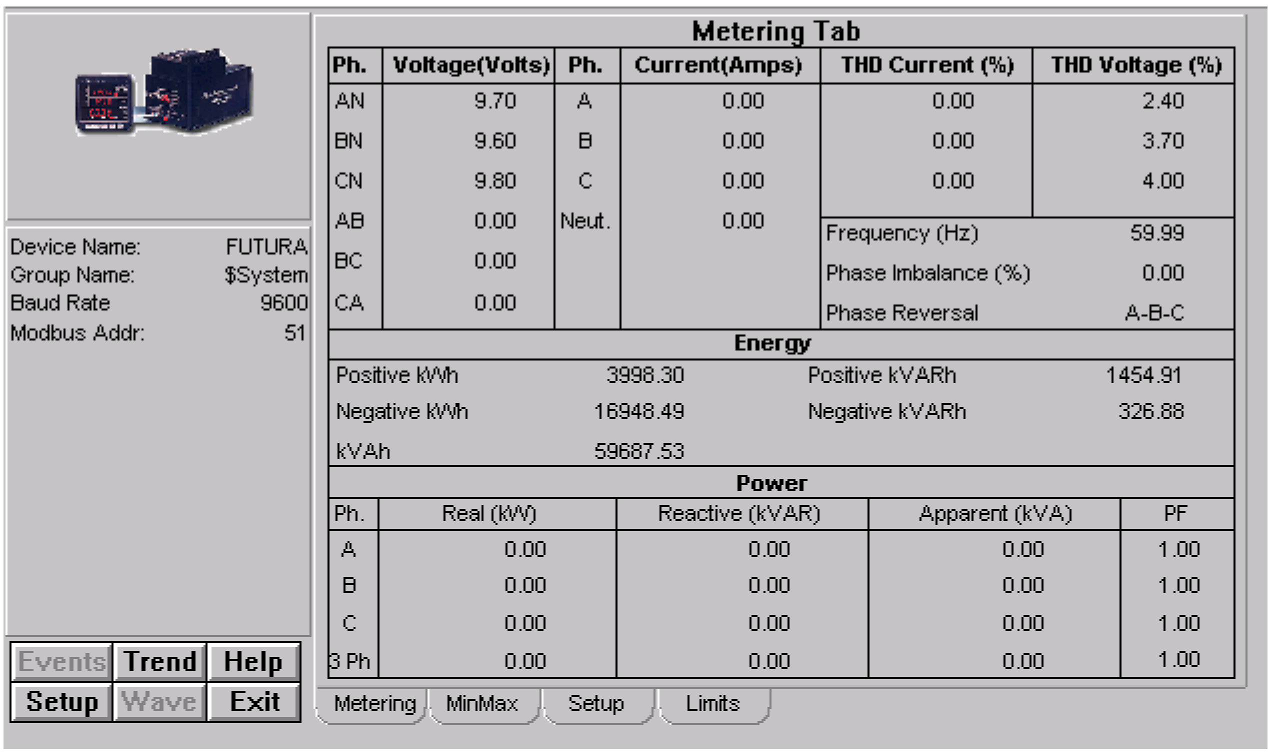
Voltage Phase Sequence: Displays Phase sequence as either C-B-A or A-B-C, based on the register value.

EPM7430D/EPM7450D

These devices belong to the Electro Industries family, which is a tightly integrated device in to the PMCS product. These devices communicate through EI Protocol (Electro Industries Protocol). The server used for these devices is **GE32EIND**.

The device comes with 2 versions – EPM7430D and EPM7450D. Both the devices does not support Waveform and events features. So these two buttons will be disabled.

Metering

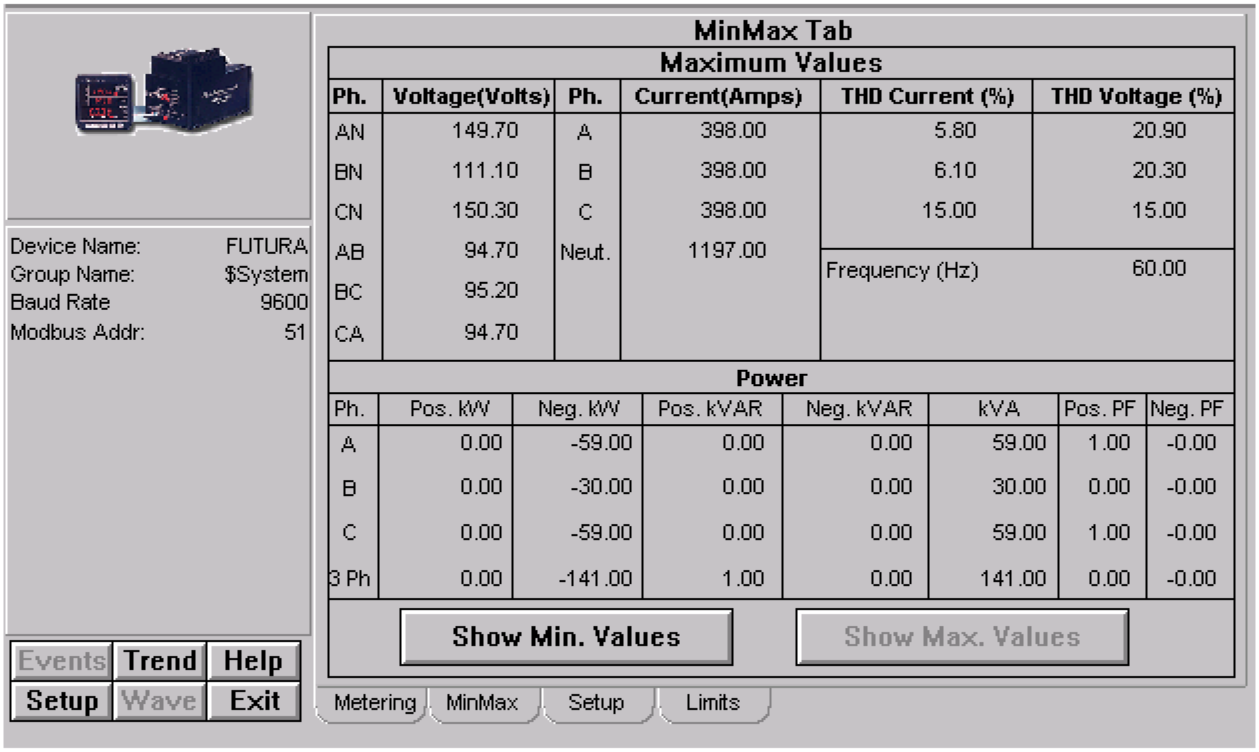


The Metering tab shows following various parameters:

- **Voltage:** This tab displays the voltage values of AN, BN, CN, AB, BC and CA.
- **Current:** Displays currents of Phase A, B, C and neutral.
- **THD Current/THD Voltage:** Displays THD values of Phase A, B and C for current and voltage.
- **Energy:** Displays values for Positive kWh, Negative kWh, Positive kVARh, Negative kVARh and kVAh,.
- **Power:** Displays Phase A, B, C and 3 Phase Power Values for Real (kW), Reactive (kVAR), Apparent (kVA) and PF.

The wizard also displays the parameters Frequency (Hz), Phase Imbalance (%) and Phase Reversal. If Phase Reversal is ON, the wizard shows CBA, if not then shows ABC.

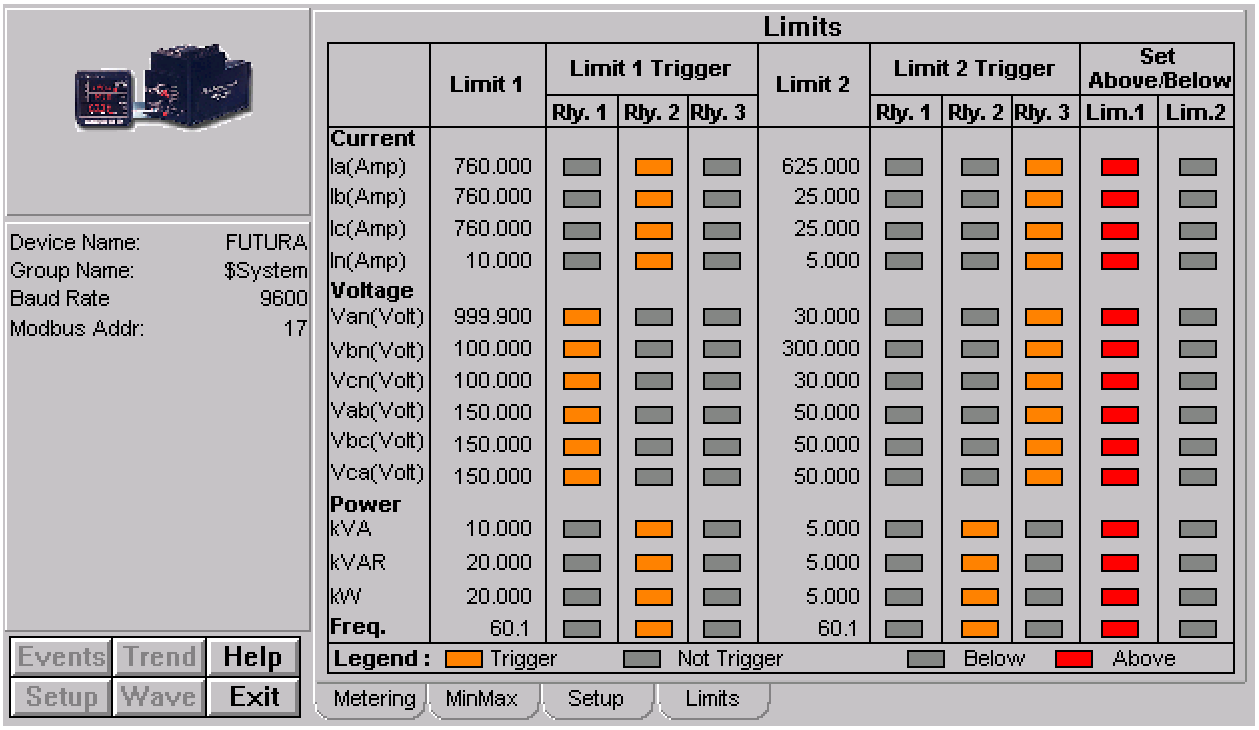
Min/Max



The tab displays Maximum and Minimum values of various parameters. The user can get maximum and minimum values by clicking on respective buttons labeled Show Max. Values and Show Min. Values.

- **Voltage:** This tab displays the voltage values of AN, BN, CN, AB, BC and CA.
- **Current:** Displays currents of Phase A, B, C and Neutral.
- **THD :** Displays THD values of Phase A, B, C for Current and Voltage.
- **Power:** Displays Phase A, B, C and 3 Phase Power Values for Positive kW, Negative kW, Positive kVAR, Negative kVAR, kVA, Positive PF and Negative PF.
- **Frequency:** Displays frequency in Hz.

Limits



The screen explains various parameters related to Limits and Triggers:

<u>Limit 1 Trigger/Limit 2 Trigger (Relay 1, Relay 2 and Relay 3)</u>

Relay 1, Relay 2 and Relay 3 are triggered depending upon the Limit 1 and Limit 2 values. The screen also displays whether the Limit 1 and Limit 2 are set above or set below.

Relay 1, Relay 2 and Relay 3 of Limit 1 and Limit 2 are displayed either as Not Triggered or Triggered. If the relay is triggered, the LED fills with amber, if not then gray.

If Limit 1 or Limit 2 are set above, then the status is displayed in red, if not gray, meaning the Limits are set below,

The Limit 1 and Limit 2 Parameters that are shown on the tab are

Current: Phase A, Phase B, Phase C and Neutral.

Voltage: AN, BN, CN, AB, BC, CA

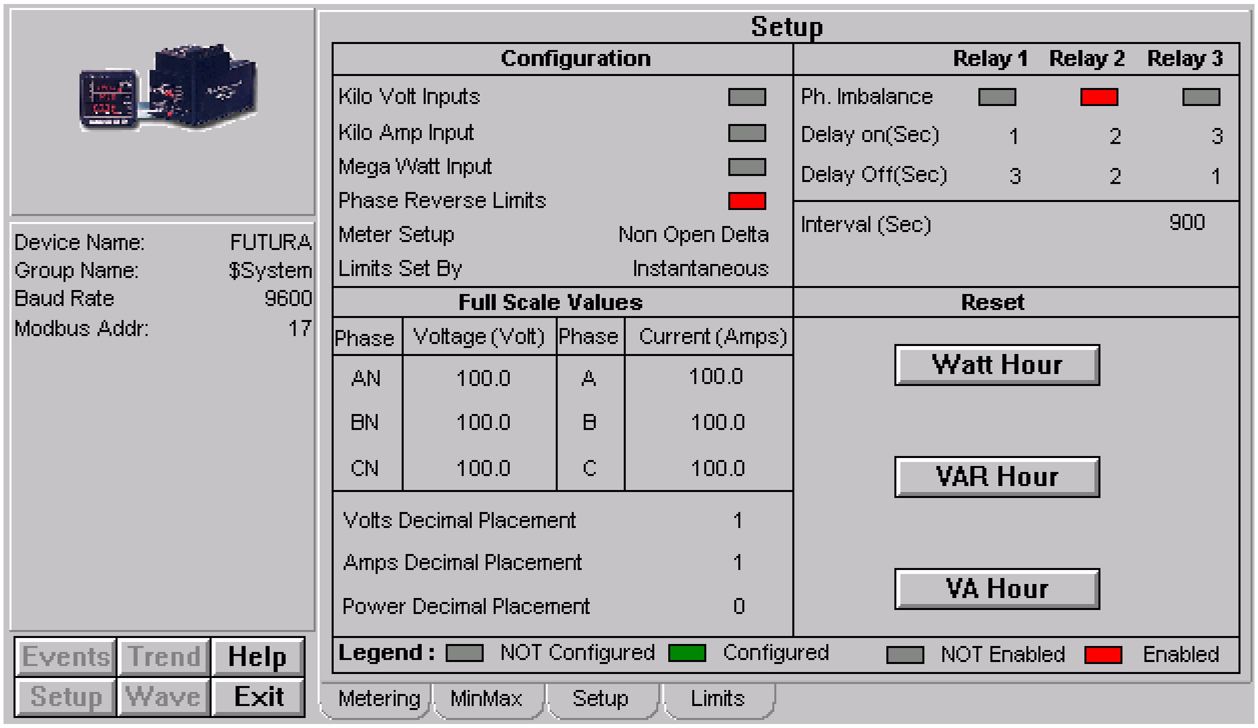
Power: VA, VAR, WATT, PF and Frequency

Brief explanation of each of the columns is described below

Column	Description
Limit 1	Limit 1 value for the Associated quantity (For example: Phase A Amps)
Trigger - Relay 1	LED display in Amber color : Limit 1 of the associated value will trigger Relay 1. LED display in Gray color: Limit 1 of the associated value will not trigger Relay 1.
Trigger - Relay 2	LED display in Amber color : Limit 1 of the associated value will trigger Relay 2. LED display in Gray color: Limit 1 of the associated value will not trigger Relay 2.

Trigger - Relay 3	LED display in Amber color : Limit 1 of the associated value will trigger Relay 3. LED display in Gray color: Limit 1 of the associated value will not trigger Relay 3.
Limit 2	Limit 2 value for the Associated quantity (For example: Phase A Amps)
Trigger - Relay 1	LED display in Amber color : Limit 2 of the associated value will trigger Relay 1. LED display in Gray color: Limit 2 of the associated value will not trigger Relay 1.
Trigger - Relay 2	LED display in Amber color : Limit 2 of the associated value will trigger Relay 2. LED display in Gray color: Limit 2 of the associated value will not trigger Relay 2.
Trigger - Relay 3	LED display in Amber color : Limit 2 of the associated value will trigger Relay 3. LED display in Gray color: Limit 2 of the associated value will not trigger Relay 3.
Set Above/Below Limit 1	LED display in RED color : Limit 1 of the associated value is Set for Above. LED display in Gray color: Limit 1 of the associated value is Set for Below.
Set Above/Below Limit 2	LED display in RED color : Limit 2 of the associated value is Set for Above. LED display in Gray color: Limit 2 of the associated value is Set for Below.

Setup



The screen shows the following parameters in relation with Relay 1, Relay 2 and Relay 3 such as:

Configuration: The Parameters under configuration are Kilo Volt Inputs, Kilo Amp Input, Mega Watt Input, Phase Reverse Limits. If any of the above parameters are configured the LED shows Green otherwise LED shows Gray in color.
Meter Setup: If this parameter is set then text displayed as Open Delta, if not then shows Non Open Delta.
Limits Set By: If this parameter is set then text displayed as Average, if not then shows Instantaneous.
Relay 1 / Relay 2/ Relay 3: This section shows the parameters Phase Imbalance, Delay On and Delay Off of Realy 1, Relay 2 and Relay 3.
The Legend applicable Phase Imbalance is if any of the above parameters are Enabled the LED shows RED otherwise LED shows Gray in color.
Full Scale Values: Displays Full Scale Voltage values for phases AN, B and CN; and Full Scale current values for phases A, B and C. Also shows Decimal Placement values of Volts, Amps and Power.

Reset of Min and Max: Resets Minimum and Maximum values.
For example:
To reset Minimum values, when the button is clicked, a dialog box will appear asking “Reset minimum values?”. The dialog box contains Ok and Cancel buttons. If the Ok button is clicked, all the minimum values of parameters are reset. If the Cancel button is clicked, no Reset will occur.
Reset of WATT Hour, VAR Hour and VA Hour:
In resetting the above parameters 2 dialog boxes will prompt user to implement the functionality.

For example:
Dialog box 1: To reset Watt Hour, when the button is clicked, a dialog box will appear asking “Do you want to reset Watt Hour?”. The dialog box contains Ok and Cancel buttons. If the Ok button is clicked, then another dialog box prompts the user. If Cancel button is clicked the Dialog box 2 will not appear and no Reset will occur.
Dialog box 2: Asking “Confirm the reset within 10 seconds”. If the Ok button is clicked the parameter is reset. If Cancel button is clicked no Reset will occur.

Troubleshooting

Assertion Error

Q: While switching between InTouch's Runtime and Development modes, the program crashed with an Assertion Error.

A: This is a problem with InTouch Wonderware, not the GE PMCS Wizards. It occurs rarely during the development phase, and is not seen once a stable application has been developed and put into use. Reboot the computer and restart the application.

EPM 3710/EPM 3720 – no data or incorrect data displayed

Q: The values on the EPM 3710/3720 wizards come up showing zeros or incorrect data.

A: The EPM 3710/3720 wizards require you to click the Refresh button on the wizard before the display is updated. Also, the first time the wizard is displayed, it may take a few moments for the DDE conversation to be established and data to be displayed.

EPM 3720 – KVAH import values incorrect

Q: On the EPM 3720 Tabular data screen, the KVAH import value does not equal the value of KVAH total or KVAH net when KVAH export equals zero.

A: Some rapidly changing values and/or values requiring extensive calculations cannot be updated on the wizards quickly enough to reflect the data displayed on the device in real time. Be patient while the software catches up with the device.

Long update when changing setpoints

Q: I attempted to change a device setpoint (such as changing the VT connection type from WYE to DELTA). It took a long time to update the Wizards setpoint tab to reflect the changes.

A: When changing setpoints, which are polled very slowly, the display may take a long time (a minute or more) to update. This means the metering data will be postponed while the display updates. Setpoint changes are a relatively rare change to make - please be patient during the delay.

PLEPM – Wrong Metering tab displayed

Q: When I double-click the display on the PLEPM's Large Faceplate wizard to go to the Tabular data screen, the DELTA metering tab is displayed, even though the PLEPM is configured as WYE.

A: Click another tab and then click back to the Metering tab. The correct configuration will now be displayed.

InTouch applications – Windows not displayed properly

Q: When an InTouch application containing PMCS Wizards has its resolution changed, the fonts in the wizard are not sized correctly. For instance, if I develop an application in 600 x 480 resolution and then convert it to 800 x 600 resolution, the screens look terrible, things extend off the screen, text formatting is changed, etc.

A: First, make sure that the TrueType fonts option is turned on in Windows 2000 SP2. If this option is off, it can cause font display problems even if windows have not been resized. Next, any time you change the resolution of an InTouch application containing PMCS Wizards, you'll need to delete the wizards from any converted Windows, and then add the wizards back in. When you add the wizard back in, it will display correctly.

Appendix A: EPM 3720 Sliding Window Demand Keys

Downloading Sliding Demand Window Keys to the EPM 3720

The EPM 3720 supports up to 10 sliding demand measurements that are user-programmable via the Tabular Data screen wizard. The Sliding Demand tab offers a set of adjustable fields, into which a user can enter a key (a unique string of values) which, when downloaded to the EPM 3720, will trigger a measurement.

For explanations of what the EPM 3720's various parameters mean, refer to the EPM 3720 Users Guide, in the section titled *Sliding Window Demand*.

To set the EPM 3720's sliding demand keys, follow the procedure below:

Locate the key code for the parameter you wish to measure in the table below.

1. Open the EPM 3720 Tabular Data screen wizard and select the Sliding Demand tab.
2. Enter the appropriate sliding demand window key by clicking the on-screen thumbwheels up or down until the key code from the table below is displayed.
3. Press the Download button to send the key to the device.
4. Allow several seconds for transmission time, then press the Refresh button to verify that the device has accepted the setup parameter. The values displayed should be those downloaded. When it receives the downloaded key, the meter will perform a sliding demand measurement for the parameter selected by the key.

#1	#2	#3 & #4	Sliding Window Key Thumbwheel Settings	
Class	**Sub-class**	**Instance**	**Measurement**	**Supported Modes**
4	3	00	Volts LN Average	HS STD TD SD PD
4	3	01	Volts LN Phase A	HS STD TD SD PD
4	3	02	Volts LN Phase B	HS STD TD SD PD
4	3	03	Volts LN Phase C	HS STD TD SD PD
4	3	04	Volts LL Average	HS STD TD SD PD
4	3	05	Volts LL Phase AB	HS STD TD SD PD
4	3	06	Volts LL Phase BC	HS STD TD SD PD
4	3	07	Volts LL Phase CA	HS STD TD SD PD
4	3	08	Amps Average	HS STD TD SD PD
4	3	09	Amps Phase A	HS STD TD SD PD
4	3	0A	Amps Phase B	HS STD TD SD PD
4	3	0B	Amps Phase C	HS STD TD SD PD
4	3	0C	Amps Neutral	HS STD TD SD PD
4	3	0D	Reserved	
4	3	0E	Volts Imbalance (0-100)	HS STD TD SD PD
4	3	0F	Amps Imbalance (0-100)	STD TD SD PD
4	3	10	kW Total	HS STD TD SD PD HRS
4	3	11	kW Phase A	HS STD TD SD PD
4	3	12	kW Phase B	HS STD TD SD PD
4	3	13	kW Phase C	HS STD TD SD PD
4	3	14	kVAR Total	STD TD SD PD HRS
4	3	15	kVAR Phase A	STD TD SD PD
4	3	16	kVAR Phase B	STD TD SD PD
4	3	17	kVAR Phase C	STD TD SD PD
4	3	18	kVA Total	HS STD TD SD PD HRS
4	3	19	kVA Phase A	HS STD TD SD PD
4	3	1A	kVA Phase B	HS STD TD SD PD
4	3	1B	kVA Phase C	HS STD TD SD PD
4	3	1C	PF Total	STD TD SD PD
4	3	1D	PF Phase A	STD TD SD PD
4	3	1E	PF Phase B	STD TD SD PD
4	3	1F	PF Phase C	STD TD SD PD
4	3	20	Frequency	HS STD TD SD PD
4	3	21-23	Reserved	
4	3	24	Phase Reversal (0 or 1)	HS STD
4	3	25-27	Reserved	
4	3	28	VAUX	STD TD SD PD

#1	#2	#3 & #4	Sliding Window Key Thumbwheel Settings	
Class	**Sub-class**	**Instance**	**Measurement**	**Supported Modes**
4	3	29-2F	Reserved	
4	3	30	I2T Avg. (0 = Off, 1= On)	HS
4	3	31	I2T Phase A (0=Off, 1=On)	HS
4	3	32	I2T Phase B (0=Off, 1=On)	HS
4	3	33	I2T Phase C (0=Off, 1=On)	HS
4	3	34-67	Reserved	
4	3	68	V1 HD - K-Factor	STD TD SD PD
4	3	69	V2 HD - K-Factor	STD TD SD PD
4	3	6A	V3 HD - K-Factor	STD TD SD PD
4	3	6B	VAUX HD - K-Factor	STD TD SD PD
4	3	6C	I1 HD - K-Factor	STD TD SD PD
4	3	6D	I2 HD - K-Factor	STD TD SD PD
4	3	6E	I3 HD - K-Factor	STD TD SD PD
4	3	6F	I4 HD - K-Factor	STD TD SD PD
4	3	70	V1 HD - Total Odd	STD TD SD PD
4	3	71	V2 HD - Total Odd	STD TD SD PD
4	3	72	V3 HD - Total Odd	STD TD SD PD
4	3	73	VAUX HD - Total Odd	STD TD SD PD
4	3	74	I1 HD - Total Odd	STD TD SD PD
4	3	75	I2 HD - Total Odd	STD TD SD PD
4	3	76	I3 HD - Total Odd	STD TD SD PD
4	3	77	I4 HD - Total Odd	STD TD SD PD
4	3	78	V1 HD - Total Even	STD TD SD PD
4	3	79	V2 HD - Total Even	STD TD SD PD
4	3	7A	V3 HD - Total Even	STD TD SD PD
4	3	7B	VAUX HD - Total Even	STD TD SD PD
4	3	7C	I1 HD - Total Even	STD TD SD PD
4	3	7D	I2 HD - Total Even	STD TD SD PD
4	3	7E	I3 HD - Total Even	STD TD SD PD
4	3	7F	I4 HD - Total Even	STD TD SD PD
4	3	80	V1 HD - Total	STD TD SD PD
4	3	81	V2 HD - Total	STD TD SD PD
4	3	82	V3 HD - Total	STD TD SD PD
4	3	83	VAUX HD - Total	STD TD SD PD
4	3	84	I1 HD - Total	STD TD SD PD
4	3	85	I2 HD - Total	STD TD SD PD
4	3	86	I3 HD - Total	STD TD SD PD
4	3	87	I4 HD - Total	STD TD SD PD

#1	#2	#3 & #4	Sliding Window Key Thumbwheel Settings	
Class	**Sub-class**	**Instance**	**Measurement**	**Supported Modes**
4	3	88	V1 HD - Harmonic #1	STD TD SD PD
4	3	89	V2 HD - Harmonic #1	STD TD SD PD
4	3	8A	V3 HD - Harmonic #1	STD TD SD PD
4	3	8B	VAUX HD - Harmonic #1	STD TD SD PD
4	3	8C	I1 HD - Harmonic #1	STD TD SD PD
4	3	8D	I2 HD - Harmonic #1	STD TD SD PD
4	3	8E	I3 HD - Harmonic #1	STD TD SD PD
4	3	8F	I4 HD - Harmonic #1	STD TD SD PD
4	3	90	V1 HD - Harmonic #2	STD TD SD PD
4	3	91	V2 HD - Harmonic #2	STD TD SD PD
4	3	92	V3 HD - Harmonic #2	STD TD SD PD
4	3	93	VAUX HD - Harmonic #2	STD TD SD PD
4	3	94	I1 HD - Harmonic #2	STD TD SD PD
4	3	95	I2 HD - Harmonic #2	STD TD SD PD
4	3	96	I3 HD - Harmonic #2	STD TD SD PD
4	3	97	I4 HD - Harmonic #2	STD TD SD PD
4	3	98	V1 HD - Harmonic #3	STD TD SD PD
4	3	99	V2 HD - Harmonic #3	STD TD SD PD
4	3	9A	V3 HD - Harmonic #3	STD TD SD PD
4	3	9B	VAUX HD - Harmonic #3	STD TD SD PD
4	3	9C	I1 HD - Harmonic #3	STD TD SD PD
4	3	9D	I2 HD - Harmonic #3	STD TD SD PD
4	3	9E	I3 HD - Harmonic #3	STD TD SD PD
4	3	9F	I4 HD - Harmonic #3	STD TD SD PD
4	3	A0	V1 HD - Harmonic #4	STD TD SD PD
4	3	A1	V2 HD - Harmonic #4	STD TD SD PD
4	3	A2	V3 HD - Harmonic #4	STD TD SD PD
4	3	A3	VAUX HD - Harmonic #4	STD TD SD PD
4	3	A4	I1 HD - Harmonic #4	STD TD SD PD
4	3	A5	I2 HD - Harmonic #4	STD TD SD PD
4	3	A6	I3 HD - Harmonic #4	STD TD SD PD
4	3	A7	I4 HD - Harmonic #4	STD TD SD PD
4	3	A8	V1 HD - Harmonic #5	STD TD SD PD
4	3	A9	V2 HD - Harmonic #5	STD TD SD PD
4	3	AA	V3 HD - Harmonic #5	STD TD SD PD
4	3	AB	VAUX HD - Harmonic #5	STD TD SD PD
4	3	AC	I1 HD - Harmonic #5	STD TD SD PD
4	3	AD	I2 HD - Harmonic #5	STD TD SD PD

#1	#2	#3 & #4	Sliding Window Key Thumbwheel Settings	
Class	**Sub-class**	**Instance**	**Measurement**	**Supported Modes**
4	3	AE	I3 HD - Harmonic #5	STD TD SD PD
4	3	AF	I4 HD - Harmonic #5	STD TD SD PD
4	3	B0	V1 HD - Harmonic #6	STD TD SD PD
4	3	B1	V2 HD - Harmonic #6	STD TD SD PD
4	3	B2	V3 HD - Harmonic #6	STD TD SD PD
4	3	B3	VAUX HD - Harmonic #6	STD TD SD PD
4	3	B4	I1 HD - Harmonic #6	STD TD SD PD
4	3	B5	I2 HD - Harmonic #6	STD TD SD PD
4	3	B6	I3 HD - Harmonic #6	STD TD SD PD
4	3	B7	I4 HD - Harmonic #6	STD TD SD PD
4	3	B8	V1 HD - Harmonic #7	STD TD SD PD
4	3	B9	V2 HD - Harmonic #7	STD TD SD PD
4	3	BA	V3 HD - Harmonic #7	STD TD SD PD
4	3	BB	VAUX HD - Harmonic #7	STD TD SD PD
4	3	BC	I1 HD - Harmonic #7	STD TD SD PD
4	3	BD	I2 HD - Harmonic #7	STD TD SD PD
4	3	BE	I3 HD - Harmonic #7	STD TD SD PD
4	3	BF	I4 HD - Harmonic #7	STD TD SD PD
4	3	C0	V1 HD - Harmonic #8	STD TD SD PD
4	3	C1	V2 HD - Harmonic #8	STD TD SD PD
4	3	C2	V3 HD - Harmonic #8	STD TD SD PD
4	3	C3	VAUX HD - Harmonic #8	STD TD SD PD
4	3	C4	I1 HD - Harmonic #8	STD TD SD PD
4	3	C5	I2 HD - Harmonic #8	STD TD SD PD
4	3	C6	I3 HD - Harmonic #8	STD TD SD PD
4	3	C7	I4 HD - Harmonic #8	STD TD SD PD
4	3	C8	V1 HD - Harmonic #9	STD TD SD PD
4	3	C9	V2 HD - Harmonic #9	STD TD SD PD
4	3	CA	V3 HD - Harmonic #9	STD TD SD PD
4	3	CB	VAUX HD - Harmonic #9	STD TD SD PD
4	3	CC	I1 HD - Harmonic #9	STD TD SD PD
4	3	CD	I2 HD - Harmonic #9	STD TD SD PD
4	3	CE	I3 HD - Harmonic #9	STD TD SD PD
4	3	CF	I4 HD - Harmonic #9	STD TD SD PD
4	3	D0	V1 HD - Harmonic #10	STD TD SD PD
4	3	D1	V2 HD - Harmonic #10	STD TD SD PD
4	3	D2	V3 HD - Harmonic #10	STD TD SD PD
4	3	D3	VAUX HD - Harmonic #10	STD TD SD PD

#1	#2	#3 & #4	Sliding Window Key Thumbwheel Settings	
Class	**Sub-class**	**Instance**	**Measurement**	**Supported Modes**
4	3	D4	I1 HD - Harmonic #10	STD TD SD PD
4	3	D5	I2 HD - Harmonic #10	STD TD SD PD
4	3	D6	I3 HD - Harmonic #10	STD TD SD PD
4	3	D7	I4 HD - Harmonic #10	STD TD SD PD
4	3	D8	V1 HD - Harmonic #11	STD TD SD PD
4	3	D9	V2 HD - Harmonic #11	STD TD SD PD
4	3	DA	V3 HD - Harmonic #11	STD TD SD PD
4	3	DB	VAUX HD - Harmonic #11	STD TD SD PD
4	3	DC	I1 HD - Harmonic #11	STD TD SD PD
4	3	DD	I2 HD - Harmonic #11	STD TD SD PD
4	3	DE	I3 HD - Harmonic #11	STD TD SD PD
4	3	DF	I4 HD - Harmonic #11	STD TD SD PD
4	3	E0	V1 HD - Harmonic #12	STD TD SD PD
4	3	E1	V2 HD - Harmonic #12	STD TD SD PD
4	3	E2	V3 HD - Harmonic #12	STD TD SD PD
4	3	E3	VAUX HD - Harmonic #12	STD TD SD PD
4	3	E4	I1 HD - Harmonic #12	STD TD SD PD
4	3	E5	I2 HD - Harmonic #12	STD TD SD PD
4	3	E6	I3 HD - Harmonic #12	STD TD SD PD
4	3	E7	I4 HD - Harmonic #12	STD TD SD PD
4	3	E8	V1 HD - Harmonic #13	STD TD SD PD
4	3	E9	V2 HD - Harmonic #13	STD TD SD PD
4	3	EA	V3 HD - Harmonic #13	STD TD SD PD
4	3	EB	VAUX HD - Harmonic #13	STD TD SD PD
4	3	EC	I1 HD - Harmonic #13	STD TD SD PD
4	3	ED	I2 HD - Harmonic #13	STD TD SD PD
4	3	EE	I3 HD - Harmonic #13	STD TD SD PD
4	3	EF	I4 HD - Harmonic #13	STD TD SD PD
4	3	F0	V1 HD - Harmonic #14	STD TD SD PD
4	3	F1	V2 HD - Harmonic #14	STD TD SD PD
4	3	F2	V3 HD - Harmonic #14	STD TD SD PD
4	3	F3	VAUX HD - Harmonic #14	STD TD SD PD
4	3	F4	I1 HD - Harmonic #14	STD TD SD PD
4	3	F5	I2 HD - Harmonic #14	STD TD SD PD
4	3	F6	I3 HD - Harmonic #14	STD TD SD PD
4	3	F7	I4 HD - Harmonic #14	STD TD SD PD
4	3	F8	V1 HD - Harmonic #15	STD TD SD PD
4	3	F9	V2 HD - Harmonic #15	STD TD SD PD

#1	#2	#3 & #4	Sliding Window Key Thumbwheel Settings	
Class	**Sub-class**	**Instance**	**Measurement**	**Supported Modes**
4	3	FA	V3 HD - Harmonic #15	STD TD SD PD
4	3	FB	VAUX HD - Harmonic #15	STD TD SD PD
4	3	FC	I1 HD - Harmonic #15	STD TD SD PD
4	3	FD	I2 HD - Harmonic #15	STD TD SD PD
4	3	FE	I3 HD - Harmonic #15	STD TD SD PD

Table A-1. EPM 3720 Sliding Window Demand Keys.

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Appendix B: Automatic Waveform Capture and Waveform Retrieval on EPM3720

Using a setpoint to trigger waveform capture or record on the EPM 3720

When a Setpoint is programmed from the MMI, the EPM3720 has the ability to automatically capture or record waveforms based on the value of a specified parameter. In order to display a Waveform Capture, the meter takes 128 samples from a full cycle of any single selected channel. For a Waveform Record, the meter takes 16 samples per cycle from multiple cycles on all 8 inputs simultaneously. The device will store 36 cycles of 1 event, 18 cycles of 2 events, or 12 cycles of 3 events, depending on the Record Depth programmed by the user. Please follow the instructions below to use a Setpoint to trigger a waveform capture or record on the EPM3720.

For explanations of what the EPM 3720's various parameters mean, refer to the EPM 3720 Users Guide, in the section titled *Sliding Window Demand*.

1. In the EPM3720 MMI tabular screen, click on the Setpoints tab.
2. Choose an unassigned setpoint number. Either Standard or High Speed may be used, but High Speed is recommended for quicker response. (See Section 6 of the 3720 ACM Installation & Operation Manual for more details on configuring Setpoints.)
3. Based on the parameter that will be set in the Trigger Key, select the Setpoint Type.
4. Set the Trigger Key. The Trigger Key is a code for the parameter that, when its value passes a set limit, triggers an Action. Refer to the table in this section for a list of Trigger Key codes.
5. Enter the High and Low Limits as well as any Time Delays to operate and release.
6. Select the required Action. To record a waveform, choose **Waveform Recorder**. For Waveform Capture, remember that the waveform of only one input may be automatically captured. Choose **Waveform**

Capture Channel X where X represents an integer between 1 and 8. Following are the Channel assignments for Wye and Delta systems.

7. Press the **Download** key. This will transmit the values entered into the Setpoints tabular screen for the selected setpoint number to the device. After several seconds press the **Refresh** button and scroll to the selected setpoint to verify that the device has accepted the setpoint entered parameters.

8. For waveform record, open the Waveform Capture program from within the MMI. On the main screen, select the appropriate Topic or device name and click on the **Record** radio button. Then, under the menu Waveform>Configure>Record Depth, select a depth of either 1 event x 36 cycles, 2 events x 18 cycles, or 3 events x 12 cycles. Press OK. The Trigger, Arm, and Retrieve buttons will become inactive as the depth is downloaded to the meter. For waveform capture proceed directly to step 9.

9. Once the **Trigger**, **Arm**, & **Retrieve** buttons become active, press the **Arm** button. The **Trigger**, **Arm**, & **Retrieve** buttons will momentarily become inactive. When the buttons become active, the meter is now ready to record/capture a waveform when the setpoint conditions are reached.

10. Once the waveform has been automatically captured or recorded and the event has been logged, choose the appropriate Topic and function; i.e., in the main screen of the Waveform Capture program, press **Retrieve**.

11. View and save waveforms as desired.

12. To rearm the meter and clear the waveform data out of the device's memory, press **Arm** on the main screen of the Waveform Capture program.

#1	#2	#3 & #4	Trigger Key Thumbwheel Setting
Class	**Sub-class**	**Instance**	**Meaning**
0	0	00	Null Object Identifier
1	0	00-05	Digital Inputs (Status Inputs)
1	1	00-02	Digital Outputs (Relays)
1	2	00-07	Analog Inputs (Voltage & Current Inputs)
1	3	00	Analog Outputs (IOUT)
1	4	00-05	Digital Inputs (Status Inputs) -- Status
1	5	00-02	Digital Outputs (Relays) -- Status
1	8	00-05	Digital Inputs (Status Inputs) -- Counter
1	9	00-02	Digital Outputs (Relays) -- Counter
1	C	00-05	Digital Inputs (Status Inputs) -- Preset/Reset
1	D	00-02	Digital Outputs (Relays) -- Reset
1	E	00-03	Digital Inputs (Status Inputs) -- Scale
1	F	00-03	Digital Inputs (Status Inputs) -- Rollover
4	0	see valid instances below	High-speed Present
4	1	see valid instances below	Standard Present
4	2	see valid instances below	Thermal Demand Present
4	3	see valid instances below	Sliding Window Demand Present
4	4	see valid instances below	High-speed Minimum
4	5	see valid instances below	Standard Minimum
4	6	see valid instances below	Thermal Demand Minimum
4	7	see valid instances below	Sliding Window Demand Minimum
4	8	see valid instances below	High-speed Maximum
4	9	see valid instances below	Standard Maximum

#1	#2	#3 & #4	Trigger Key Thumbwheel Setting	
Class	**Sub-class**	**Instance**	**Meaning**	
4	A	see valid instances below	Thermal Demand Maximum	
4	B	see valid instances below	Sliding Window Demand Maximum	
4	C	see valid instances below	Hours - Net (Import - Export)	
4	D	see valid instances below	Hours - Import	
4	E	see valid instances below	Hours - Export	
4	F	see valid instances below	Hours - Total (Import + Export)	
		⇓		
		Instance	Measurement	Supported Modes
		00	Volts LN Average	HS STD TD SD PD
		01	Volts LN Phase A	HS STD TD SD PD
		02	Volts LN Phase B	HS STD TD SD PD
		03	Volts LN Phase C	HS STD TD SD PD
		04	Volts LL Average	HS STD TD SD PD
		05	Volts LL Phase AB	HS STD TD SD PD
		06	Volts LL Phase BC	HS STD TD SD PD
		07	Volts LL Phase CA	HS STD TD SD PD
		08	Amps Average	HS STD TD SD PD
		09	Amps Phase A	HS STD TD SD PD
		0A	Amps Phase B	HS STD TD SD PD
		0B	Amps Phase C	HS STD TD SD PD
		0C	Amps Neutral	HS STD TD SD PD
		0D	Reserved	
		0E	Volts Imbalance (0-100)	HS STD TD SD PD
		0F	Amps Imbalance (0-100)	STD TD SD PD
		10	kW Total	HS STD TD SD PD HRS
		11	kW Phase A	HS STD TD SD PD
		12	kW Phase B	HS STD TD SD PD
		13	kW Phase C	HS STD TD SD PD
		14	kVAR Total	STD TD SD PD HRS
		15	kVAR Phase A	STD TD SD PD
		16	kVAR Phase B	STD TD SD PD

#1	#2	#3 & #4	Trigger Key Thumbwheel Setting	
Class	**Sub-class**	**Instance**	**Meaning**	
		17	kVAR Phase C	STD TD SD PD
		18	kVA Total	HS STD TD SD PD HRS
		19	kVA Phase A	HS STD TD SD PD
		1A	kVA Phase B	HS STD TD SD PD
		1B	kVA Phase C	HS STD TD SD PD
		1C	PF Total	STD TD SD PD
		1D	PF Phase A	STD TD SD PD
		1E	PF Phase B	STD TD SD PD
		1F	PF Phase C	STD TD SD PD
		20	Frequency	HS STD TD SD PD
		21-23	Reserved	
		24	Phase Reversal (0 or 1)	HS STD
		25-27	Reserved	
		28	VAUX	STD TD SD PD
		29-2F	Reserved	
		30	I2T Avg. (0 = Off, 1= On)	HS
		31	I2T Phase A (0=Off, 1=On)	HS
		32	I2T Phase B (0=Off, 1=On)	HS
		33	I2T Phase C (0=Off, 1=On)	HS
		34-67	Reserved	
		68	V1 HD - K-Factor	STD TD SD PD
		69	V2 HD - K-Factor	STD TD SD PD
		6A	V3 HD - K-Factor	STD TD SD PD
		6B	VAUX HD - K-Factor	STD TD SD PD
		6C	I1 HD - K-Factor	STD TD SD PD
		6D	I2 HD - K-Factor	STD TD SD PD
		6E	I3 HD - K-Factor	STD TD SD PD
		6F	I4 HD - K-Factor	STD TD SD PD
		70	V1 HD - Total Odd	STD TD SD PD
		71	V2 HD - Total Odd	STD TD SD PD
		72	V3 HD - Total Odd	STD TD SD PD
		73	VAUX HD - Total Odd	STD TD SD PD
		74	I1 HD - Total Odd	STD TD SD PD
		75	I2 HD - Total Odd	STD TD SD PD
		76	I3 HD - Total Odd	STD TD SD PD
		77	I4 HD - Total Odd	STD TD SD PD
		78	V1 HD - Total Even	STD TD SD PD
		79	V2 HD - Total Even	STD TD SD PD
		7A	V3 HD - Total Even	STD TD SD PD

#1	#2	#3 & #4	Trigger Key Thumbwheel Setting	
Class	**Sub-class**	**Instance**	**Meaning**	
		7B	VAUX HD - Total Even	STD TD SD PD
		7C	I1 HD - Total Even	STD TD SD PD
		7D	I2 HD - Total Even	STD TD SD PD
		7E	I3 HD - Total Even	STD TD SD PD
		7F	I4 HD - Total Even	STD TD SD PD
		80	V1 HD - Total	STD TD SD PD
		81	V2 HD - Total	STD TD SD PD
		82	V3 HD - Total	STD TD SD PD
		83	VAUX HD - Total	STD TD SD PD
		84	I1 HD - Total	STD TD SD PD
		85	I2 HD - Total	STD TD SD PD
		86	I3 HD - Total	STD TD SD PD
		87	I4 HD - Total	STD TD SD PD
		88	V1 HD - Harmonic #1	STD TD SD PD
		89	V2 HD - Harmonic #1	STD TD SD PD
		8A	V3 HD - Harmonic #1	STD TD SD PD
		8B	VAUX HD - Harmonic #1	STD TD SD PD
		8C	I1 HD - Harmonic #1	STD TD SD PD
		8D	I2 HD - Harmonic #1	STD TD SD PD
		8E	I3 HD - Harmonic #1	STD TD SD PD
		8F	I4 HD - Harmonic #1	STD TD SD PD
		90	V1 HD - Harmonic #2	STD TD SD PD
		91	V2 HD - Harmonic #2	STD TD SD PD
		92	V3 HD - Harmonic #2	STD TD SD PD
		93	VAUX HD - Harmonic #2	STD TD SD PD
		94	I1 HD - Harmonic #2	STD TD SD PD
		95	I2 HD - Harmonic #2	STD TD SD PD
		96	I3 HD - Harmonic #2	STD TD SD PD
		97	I4 HD - Harmonic #2	STD TD SD PD
		98	V1 HD - Harmonic #3	STD TD SD PD
		99	V2 HD - Harmonic #3	STD TD SD PD
		9A	V3 HD - Harmonic #3	STD TD SD PD
		9B	VAUX HD - Harmonic #3	STD TD SD PD
		9C	I1 HD - Harmonic #3	STD TD SD PD
		9D	I2 HD - Harmonic #3	STD TD SD PD
		9E	I3 HD - Harmonic #3	STD TD SD PD
		9F	I4 HD - Harmonic #3	STD TD SD PD
		A0	V1 HD - Harmonic #4	STD TD SD PD
		A1	V2 HD - Harmonic #4	STD TD SD PD

#1	#2	#3 & #4	Trigger Key Thumbwheel Setting	
Class	**Sub-class**	**Instance**	**Meaning**	
		A2	V3 HD - Harmonic #4	STD TD SD PD
		A3	VAUX HD - Harmonic #4	STD TD SD PD
		A4	I1 HD - Harmonic #4	STD TD SD PD
		A5	I2 HD - Harmonic #4	STD TD SD PD
		A6	I3 HD - Harmonic #4	STD TD SD PD
		A7	I4 HD - Harmonic #4	STD TD SD PD
		A8	V1 HD - Harmonic #5	STD TD SD PD
		A9	V2 HD - Harmonic #5	STD TD SD PD
		AA	V3 HD - Harmonic #5	STD TD SD PD
		AB	VAUX HD - Harmonic #5	STD TD SD PD
		AC	I1 HD - Harmonic #5	STD TD SD PD
		AD	I2 HD - Harmonic #5	STD TD SD PD
		AE	I3 HD - Harmonic #5	STD TD SD PD
		AF	I4 HD - Harmonic #5	STD TD SD PD
		B0	V1 HD - Harmonic #6	STD TD SD PD
		B1	V2 HD - Harmonic #6	STD TD SD PD
		B2	V3 HD - Harmonic #6	STD TD SD PD
		B3	VAUX HD - Harmonic #6	STD TD SD PD
		B4	I1 HD - Harmonic #6	STD TD SD PD
		B5	I2 HD - Harmonic #6	STD TD SD PD
		B6	I3 HD - Harmonic #6	STD TD SD PD
		B7	I4 HD - Harmonic #6	STD TD SD PD
		B8	V1 HD - Harmonic #7	STD TD SD PD
		B9	V2 HD - Harmonic #7	STD TD SD PD
		BA	V3 HD - Harmonic #7	STD TD SD PD
		BB	VAUX HD - Harmonic #7	STD TD SD PD
		BC	I1 HD - Harmonic #7	STD TD SD PD
		BD	I2 HD - Harmonic #7	STD TD SD PD
		BE	I3 HD - Harmonic #7	STD TD SD PD
		BF	I4 HD - Harmonic #7	STD TD SD PD
		C0	V1 HD - Harmonic #8	STD TD SD PD
		C1	V2 HD - Harmonic #8	STD TD SD PD
		C2	V3 HD - Harmonic #8	STD TD SD PD
		C3	VAUX HD - Harmonic #8	STD TD SD PD
		C4	I1 HD - Harmonic #8	STD TD SD PD
		C5	I2 HD - Harmonic #8	STD TD SD PD
		C6	I3 HD - Harmonic #8	STD TD SD PD
		C7	I4 HD - Harmonic #8	STD TD SD PD
		C8	V1 HD - Harmonic #9	STD TD SD PD

#1	#2	#3 & #4	Trigger Key Thumbwheel Setting	
Class	**Sub-class**	**Instance**	**Meaning**	
		C9	V2 HD - Harmonic #9	STD TD SD PD
		CA	V3 HD - Harmonic #9	STD TD SD PD
		CB	VAUX HD - Harmonic #9	STD TD SD PD
		CC	I1 HD - Harmonic #9	STD TD SD PD
		CD	I2 HD - Harmonic #9	STD TD SD PD
		CE	I3 HD - Harmonic #9	STD TD SD PD
		CF	I4 HD - Harmonic #9	STD TD SD PD
		D0	V1 HD - Harmonic #10	STD TD SD PD
		D1	V2 HD - Harmonic #10	STD TD SD PD
		D2	V3 HD - Harmonic #10	STD TD SD PD
		D3	VAUX HD - Harmonic #10	STD TD SD PD
		D4	I1 HD - Harmonic #10	STD TD SD PD
		D5	I2 HD - Harmonic #10	STD TD SD PD
		D6	I3 HD - Harmonic #10	STD TD SD PD
		D7	I4 HD - Harmonic #10	STD TD SD PD
		D8	V1 HD - Harmonic #11	STD TD SD PD
		D9	V2 HD - Harmonic #11	STD TD SD PD
		DA	V3 HD - Harmonic #11	STD TD SD PD
		DB	VAUX HD - Harmonic #11	STD TD SD PD
		DC	I1 HD - Harmonic #11	STD TD SD PD
		DD	I2 HD - Harmonic #11	STD TD SD PD
		DE	I3 HD - Harmonic #11	STD TD SD PD
		DF	I4 HD - Harmonic #11	STD TD SD PD
		E0	V1 HD - Harmonic #12	STD TD SD PD
		E1	V2 HD - Harmonic #12	STD TD SD PD
		E2	V3 HD - Harmonic #12	STD TD SD PD
		E3	VAUX HD - Harmonic #12	STD TD SD PD
		E4	I1 HD - Harmonic #12	STD TD SD PD
		E5	I2 HD - Harmonic #12	STD TD SD PD
		E6	I3 HD - Harmonic #12	STD TD SD PD
		E7	I4 HD - Harmonic #12	STD TD SD PD
		E8	V1 HD - Harmonic #13	STD TD SD PD
		E9	V2 HD - Harmonic #13	STD TD SD PD
		EA	V3 HD - Harmonic #13	STD TD SD PD
		EB	VAUX HD - Harmonic #13	STD TD SD PD
		EC	I1 HD - Harmonic #13	STD TD SD PD
		ED	I2 HD - Harmonic #13	STD TD SD PD
		EE	I3 HD - Harmonic #13	STD TD SD PD
		EF	I4 HD - Harmonic #13	STD TD SD PD

#1	#2	#3 & #4	Trigger Key Thumbwheel Setting	
Class	Sub-class	Instance	Meaning	
		F0	V1 HD - Harmonic #14	STD TD SD PD
		F1	V2 HD - Harmonic #14	STD TD SD PD
		F2	V3 HD - Harmonic #14	STD TD SD PD
		F3	VAUX HD - Harmonic #14	STD TD SD PD
		F4	I1 HD - Harmonic #14	STD TD SD PD
		F5	I2 HD - Harmonic #14	STD TD SD PD
		F6	I3 HD - Harmonic #14	STD TD SD PD
		F7	I4 HD - Harmonic #14	STD TD SD PD
		F8	V1 HD - Harmonic #15	STD TD SD PD
		F9	V2 HD - Harmonic #15	STD TD SD PD
		FA	V3 HD - Harmonic #15	STD TD SD PD
		FB	VAUX HD - Harmonic #15	STD TD SD PD
		FC	I1 HD - Harmonic #15	STD TD SD PD
		FD	I2 HD - Harmonic #15	STD TD SD PD
		FE	I3 HD - Harmonic #15	STD TD SD PD
		FF	I4 HD - Harmonic #15	STD TD SD PD
6	0-2	Reserved	Reserved	
6	3	see valid instances below	Predicted Sliding Window Demand Present	
6	4-6	Reserved	Reserved	
6	7	see valid instances below	Predicted Sliding Window Demand Minimum	
6	8-A	Reserved	Reserved	
6	B	see valid instances below	Predicted Sliding Window Demand Maximum	
6	C-F	Reserved	Reserved	
		⇓		
		Instance	Measurement	Supported Modes
		00	Volts LN Average	HS STD TD SD PD
		01	Volts LN Phase A	HS STD TD SD PD
		02	Volts LN Phase B	HS STD TD SD PD
		03	Volts LN Phase C	HS STD TD SD PD
		04	Volts LL Average	HS STD TD SD PD
		05	Volts LL Phase AB	HS STD TD SD PD
		06	Volts LL Phase BC	HS STD TD SD PD
		07	Volts LL Phase CA	HS STD TD SD PD
		08	Amps Average	HS STD TD SD PD
		09	Amps Phase A	HS STD TD SD PD

#1	#2	#3 & #4	Trigger Key Thumbwheel Setting	
Class	**Sub-class**	**Instance**	**Meaning**	
		0A	Amps Phase B	HS STD TD SD PD
		0B	Amps Phase C	HS STD TD SD PD
		0C	Amps Neutral	HS STD TD SD PD
		0D	Reserved	
		0E	Volts Imbalance (0-100)	HS STD TD SD PD
		0F	Amps Imbalance (0-100)	STD TD SD PD
		10	kW Total	HS STD TD SD PD HRS
		11	kW Phase A	HS STD TD SD PD
		12	kW Phase B	HS STD TD SD PD
		13	kW Phase C	HS STD TD SD PD
		14	kVAR Total	STD TD SD PD HRS
		15	kVAR Phase A	STD TD SD PD
		16	kVAR Phase B	STD TD SD PD
		17	kVAR Phase C	STD TD SD PD
		18	kVA Total	HS STD TD SD PD HRS
		19	kVA Phase A	HS STD TD SD PD
		1A	kVA Phase B	HS STD TD SD PD
		1B	kVA Phase C	HS STD TD SD PD
		1C	PF Total	STD TD SD PD
		1D	PF Phase A	STD TD SD PD
		1E	PF Phase B	STD TD SD PD
		1F	PF Phase C	STD TD SD PD
		20	Frequency	HS STD TD SD PD
		21-23	Reserved	
		24	Phase Reversal (0 or 1)	HS STD
		25-27	Reserved	
		28	VAUX	STD TD SD PD
		29-2F	Reserved	
		30	I2T Avg. (0 = Off, 1= On)	HS
		31	I2T Phase A (0=Off, 1=On)	HS
		32	I2T Phase B (0=Off, 1=On)	HS
		33	I2T Phase C (0=Off, 1=On)	HS
		34-67	Reserved	
		68	V1 HD - K-Factor	STD TD SD PD
		69	V2 HD - K-Factor	STD TD SD PD
		6A	V3 HD - K-Factor	STD TD SD PD
		6B	VAUX HD - K-Factor	STD TD SD PD
		6C	I1 HD - K-Factor	STD TD SD PD
		6D	I2 HD - K-Factor	STD TD SD PD

#1	#2	#3 & #4	Trigger Key Thumbwheel Setting	
Class	Sub-class	Instance	Meaning	
		6E	I3 HD - K-Factor	STD TD SD PD
		6F	I4 HD - K-Factor	STD TD SD PD
		70	V1 HD - Total Odd	STD TD SD PD
		71	V2 HD - Total Odd	STD TD SD PD
		72	V3 HD - Total Odd	STD TD SD PD
		73	VAUX HD - Total Odd	STD TD SD PD
		74	I1 HD - Total Odd	STD TD SD PD
		75	I2 HD - Total Odd	STD TD SD PD
		76	I3 HD - Total Odd	STD TD SD PD
		77	I4 HD - Total Odd	STD TD SD PD
		78	V1 HD - Total Even	STD TD SD PD
		79	V2 HD - Total Even	STD TD SD PD
		7A	V3 HD - Total Even	STD TD SD PD
		7B	VAUX HD - Total Even	STD TD SD PD
		7C	I1 HD - Total Even	STD TD SD PD
		7D	I2 HD - Total Even	STD TD SD PD
		7E	I3 HD - Total Even	STD TD SD PD
		7F	I4 HD - Total Even	STD TD SD PD
		80	V1 HD - Total	STD TD SD PD
		81	V2 HD - Total	STD TD SD PD
		82	V3 HD - Total	STD TD SD PD
		83	VAUX HD - Total	STD TD SD PD
		84	I1 HD - Total	STD TD SD PD
		85	I2 HD - Total	STD TD SD PD
		86	I3 HD - Total	STD TD SD PD
		87	I4 HD - Total	STD TD SD PD
		88	V1 HD - Harmonic #1	STD TD SD PD
		89	V2 HD - Harmonic #1	STD TD SD PD
		8A	V3 HD - Harmonic #1	STD TD SD PD
		8B	VAUX HD - Harmonic #1	STD TD SD PD
		8C	I1 HD - Harmonic #1	STD TD SD PD
		8D	I2 HD - Harmonic #1	STD TD SD PD
		8E	I3 HD - Harmonic #1	STD TD SD PD
		8F	I4 HD - Harmonic #1	STD TD SD PD
		90	V1 HD - Harmonic #2	STD TD SD PD
		91	V2 HD - Harmonic #2	STD TD SD PD
		92	V3 HD - Harmonic #2	STD TD SD PD
		93	VAUX HD - Harmonic #2	STD TD SD PD
		94	I1 HD - Harmonic #2	STD TD SD PD

#1	#2	#3 & #4	Trigger Key Thumbwheel Setting	
Class	**Sub-class**	**Instance**	**Meaning**	
		95	I2 HD - Harmonic #2	STD TD SD PD
		96	I3 HD - Harmonic #2	STD TD SD PD
		97	I4 HD - Harmonic #2	STD TD SD PD
		98	V1 HD - Harmonic #3	STD TD SD PD
		99	V2 HD - Harmonic #3	STD TD SD PD
		9A	V3 HD - Harmonic #3	STD TD SD PD
		9B	VAUX HD - Harmonic #3	STD TD SD PD
		9C	I1 HD - Harmonic #3	STD TD SD PD
		9D	I2 HD - Harmonic #3	STD TD SD PD
		9E	I3 HD - Harmonic #3	STD TD SD PD
		9F	I4 HD - Harmonic #3	STD TD SD PD
		A0	V1 HD - Harmonic #4	STD TD SD PD
		A1	V2 HD - Harmonic #4	STD TD SD PD
		A2	V3 HD - Harmonic #4	STD TD SD PD
		A3	VAUX HD - Harmonic #4	STD TD SD PD
		A4	I1 HD - Harmonic #4	STD TD SD PD
		A5	I2 HD - Harmonic #4	STD TD SD PD
		A6	I3 HD - Harmonic #4	STD TD SD PD
		A7	I4 HD - Harmonic #4	STD TD SD PD
		A8	V1 HD - Harmonic #5	STD TD SD PD
		A9	V2 HD - Harmonic #5	STD TD SD PD
		AA	V3 HD - Harmonic #5	STD TD SD PD
		AB	VAUX HD - Harmonic #5	STD TD SD PD
		AC	I1 HD - Harmonic #5	STD TD SD PD
		AD	I2 HD - Harmonic #5	STD TD SD PD
		AE	I3 HD - Harmonic #5	STD TD SD PD
		AF	I4 HD - Harmonic #5	STD TD SD PD
		B0	V1 HD - Harmonic #6	STD TD SD PD
		B1	V2 HD - Harmonic #6	STD TD SD PD
		B2	V3 HD - Harmonic #6	STD TD SD PD
		B3	VAUX HD - Harmonic #6	STD TD SD PD
		B4	I1 HD - Harmonic #6	STD TD SD PD
		B5	I2 HD - Harmonic #6	STD TD SD PD
		B6	I3 HD - Harmonic #6	STD TD SD PD
		B7	I4 HD - Harmonic #6	STD TD SD PD
		B8	V1 HD - Harmonic #7	STD TD SD PD
		B9	V2 HD - Harmonic #7	STD TD SD PD
		BA	V3 HD - Harmonic #7	STD TD SD PD
		BB	VAUX HD - Harmonic #7	STD TD SD PD

#1	#2	#3 & #4	Trigger Key Thumbwheel Setting	
Class	**Sub-class**	**Instance**	**Meaning**	
		BC	I1 HD - Harmonic #7	STD TD SD PD
		BD	I2 HD - Harmonic #7	STD TD SD PD
		BE	I3 HD - Harmonic #7	STD TD SD PD
		BF	I4 HD - Harmonic #7	STD TD SD PD
		C0	V1 HD - Harmonic #8	STD TD SD PD
		C1	V2 HD - Harmonic #8	STD TD SD PD
		C2	V3 HD - Harmonic #8	STD TD SD PD
		C3	VAUX HD - Harmonic #8	STD TD SD PD
		C4	I1 HD - Harmonic #8	STD TD SD PD
		C5	I2 HD - Harmonic #8	STD TD SD PD
		C6	I3 HD - Harmonic #8	STD TD SD PD
		C7	I4 HD - Harmonic #8	STD TD SD PD
		C8	V1 HD - Harmonic #9	STD TD SD PD
		C9	V2 HD - Harmonic #9	STD TD SD PD
		CA	V3 HD - Harmonic #9	STD TD SD PD
		CB	VAUX HD - Harmonic #9	STD TD SD PD
		CC	I1 HD - Harmonic #9	STD TD SD PD
		CD	I2 HD - Harmonic #9	STD TD SD PD
		CE	I3 HD - Harmonic #9	STD TD SD PD
		CF	I4 HD - Harmonic #9	STD TD SD PD
		D0	V1 HD - Harmonic #10	STD TD SD PD
		D1	V2 HD - Harmonic #10	STD TD SD PD
		D2	V3 HD - Harmonic #10	STD TD SD PD
		D3	VAUX HD - Harmonic #10	STD TD SD PD
		D4	I1 HD - Harmonic #10	STD TD SD PD
		D5	I2 HD - Harmonic #10	STD TD SD PD
		D6	I3 HD - Harmonic #10	STD TD SD PD
		D7	I4 HD - Harmonic #10	STD TD SD PD
		D8	V1 HD - Harmonic #11	STD TD SD PD
		D9	V2 HD - Harmonic #11	STD TD SD PD
		DA	V3 HD - Harmonic #11	STD TD SD PD
		DB	VAUX HD - Harmonic #11	STD TD SD PD
		DC	I1 HD - Harmonic #11	STD TD SD PD
		DD	I2 HD - Harmonic #11	STD TD SD PD
		DE	I3 HD - Harmonic #11	STD TD SD PD
		DF	I4 HD - Harmonic #11	STD TD SD PD
		E0	V1 HD - Harmonic #12	STD TD SD PD
		E1	V2 HD - Harmonic #12	STD TD SD PD
		E2	V3 HD - Harmonic #12	STD TD SD PD

#1	#2	#3 & #4	Trigger Key Thumbwheel Setting	
Class	**Sub-class**	**Instance**	**Meaning**	
		E3	VAUX HD - Harmonic #12	STD TD SD PD
		E4	I1 HD - Harmonic #12	STD TD SD PD
		E5	I2 HD - Harmonic #12	STD TD SD PD
		E6	I3 HD - Harmonic #12	STD TD SD PD
		E7	I4 HD - Harmonic #12	STD TD SD PD
		E8	V1 HD - Harmonic #13	STD TD SD PD
		E9	V2 HD - Harmonic #13	STD TD SD PD
		EA	V3 HD - Harmonic #13	STD TD SD PD
		EB	VAUX HD - Harmonic #13	STD TD SD PD
		EC	I1 HD - Harmonic #13	STD TD SD PD
		ED	I2 HD - Harmonic #13	STD TD SD PD
		EE	I3 HD - Harmonic #13	STD TD SD PD
		EF	I4 HD - Harmonic #13	STD TD SD PD
		F0	V1 HD - Harmonic #14	STD TD SD PD
		F1	V2 HD - Harmonic #14	STD TD SD PD
		F2	V3 HD - Harmonic #14	STD TD SD PD
		F3	VAUX HD - Harmonic #14	STD TD SD PD
		F4	I1 HD - Harmonic #14	STD TD SD PD
		F5	I2 HD - Harmonic #14	STD TD SD PD
		F6	I3 HD - Harmonic #14	STD TD SD PD
		F7	I4 HD - Harmonic #14	STD TD SD PD
		F8	V1 HD - Harmonic #15	STD TD SD PD
		F9	V2 HD - Harmonic #15	STD TD SD PD
		FA	V3 HD - Harmonic #15	STD TD SD PD
		FB	VAUX HD - Harmonic #15	STD TD SD PD
		FC	I1 HD - Harmonic #15	STD TD SD PD
		FD	I2 HD - Harmonic #15	STD TD SD PD
		FE	I3 HD - Harmonic #15	STD TD SD PD
		FF	I4 HD - Harmonic #15	STD TD SD PD

Table B-1. EPM 3720 Trigger Keys.

The action keys specify the instance number for an object to perform an action on. The following action keys are possible:

Action Key	Setpoint Supported	Meaning
0	-	No action
1000-1004	STD HS	Clear digital input counter 0-3 (Status input counter 1-4), 4=ALL
1100-1102	STD HS	Operate Relay #1 to 3
1C00-1C04	STD HS	same as 1000-1004
A400-A407	STD HS	Waveform Capture channels #1 to 8
A500	STD HS	Waveform Recorder

Action keys marked with STD are supported by Standard Setpoints (1–11), action keys marked with HS are supported by High Speed Setpoints (1–6).

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Appendix C: EPM 7700 - Special Considerations

EPM 7700 Tags Subject to Deactivation by Tabular Data Screen Wizard

This appendix lists the EPM 7700 tags which may be activated or deactivated by the EPM 7700 Tabular Data Screen wizard. This information is of use for developers creating their own wizards to access the EPM 7700's data. If you wish to use a tag in a custom wizard you are developing, check this table to see if it is subject to deactivation by the Tabular Data Screen wizard. If it is, you may wish to create a duplicate tag with a unique name to access the same register. Otherwise, it is possible that the tag may be deactivated by the Tabular Data Screen wizard, and the data will be unavailable for use by your custom wizard.

NOTE: It is important to keep in mind that tags which may be deactivated by the Tabular Data Screen Wizard will not work properly with InTouch's trending features.

NOTE: _Anlg or _Msg indicate Internal Tags for display use; _GWY indicates I/O Tags which talk to GE77GTWY. All others tags talk to ION_LINK

Memory Discrete	Comment	Subject to deactivation?
DeviceNm_Min	Tag to indicate whether to show min or max on min/max page	N

Memory Discrete	Comment	Subject to deactivation?
DeviceNm_CommFail	Comm Fail Indicator for Pegasys DDE Server - ION_LINK	N
I/O Discrete	**Comment**	
DeviceNm_24576	PHASE_REVERSAL	Y
DeviceNm_24577	DIO1	Y
DeviceNm_24578	DIO2	Y
DeviceNm_24579	DIO3	Y
DeviceNm_24580	DIO4	Y
DeviceNm_24581	DIO5	Y
DeviceNm_24582	DIO6	Y
DeviceNm_24583	DIO7	Y
DeviceNm_24584	DIO8	Y
DeviceNm_24721_GWY	Enable_SagSwell	N
DeviceNm_24721	External Boolean 3 - Enable Sag Swell	Y
DeviceNm_24722_GWY	Enable_Transient	N
DeviceNm_24722	External Boolean 4 - Enable Transient	Y
DeviceNm_24723_GWY	Enable_OverKW	N
DeviceNm_24723	External Boolean 5 - Enable Over SWD KW	Y
DeviceNm_24724_GWY	Enable_OverAmp	N
DeviceNm_24724	External Boolean 6 - Enable Over Current	Y
DeviceNm_24725_GWY	Enable_OverVunb	N
DeviceNm_24725	External Boolean 7 - Enable Over Vunbal	Y
DeviceNm_25053	OVER_KW	Y
DeviceNm_25054	OVER_IA_STATUS	Y
DeviceNm_25055	OVER_IB_STATUS	Y
DeviceNm_25056	OVER_IC_STATUS	Y
DeviceNm_25057	OVER_VUN_STATUS	Y
DeviceNm_25064	OVER_IA_OVER	Y
DeviceNm_25065	OVER_IB_OVER	Y
DeviceNm_25066	OVER_IC_OVER	Y
DeviceNm_25067	OVER_VUN_OVER	Y
DeviceNm_25074	OVER_IA_UNDER	Y
DeviceNm_25075	OVER_IB_UNDER	Y
DeviceNm_25076	OVER_IC_UNDER	Y
DeviceNm_25077	OVER_VUN_UNDER	Y
DeviceNm_26798_GWY	Reset_MinMax	N
DeviceNm_26799_GWY	Reset_SWD	N
DeviceNm_26800_GWY	Reset_Thermal	N
DeviceNm_26802_GWY	Reset_SCounter	N
DeviceNm_26803_GWY	Reset_Energy	N

Memory Discrete	Comment	Subject to deactivation?
DeviceNm_26804_GWY	Reset_Dist_Cnt	N

Memory Integer	Comment	
DeviceNm_28672_Anlg	PT Primary	N
DeviceNm_28673_Anlg	PT Secondary	N
DeviceNm_28674_Anlg	Ct Primary	N
DeviceNm_28675_Anlg	Ct Secondary	N
DeviceNm_28676_Anlg	I4 CT Primary	N
DeviceNm_28677_Anlg	I4 CT Secondary	N
DeviceNm_Display_Screen	Display Screen for Lrg Faceplate	N
DeviceNm_ResetButton	Reset Command Code	N
DeviceNm_Tab	Tag to indicate tab on tabular	N
DeviceNm_Result		N

I/O Integer	Comment	
DeviceNm_23420	Universal Clock	N
DeviceNm_28673	PT_SECONDARY	Y
DeviceNm_28672	PT_PRIMARY	Y
DeviceNm_28672_GWY	PT Primary	N
DeviceNm_28673_GWY	PT Secondary	N
DeviceNm_28674	CT_Primary	Y
DeviceNm_28674_GWY	Ct Primary	N
DeviceNm_28675	CT_Secondary	Y
DeviceNm_28675_GWY	Ct Secondary	N
DeviceNm_28676	I4_CT_Primary	Y
DeviceNm_28676_GWY	I4 CT Primary	N
DeviceNm_28677	I4_CT_Secondary	Y
DeviceNm_28677_GWY	I4 CT Secondary	N
DeviceNm_DEVICE_STATUS	GE77GTWY Comm Check	N

Memory Real	Comment	
DeviceNm_23260_Anlg	External Numeric 1 - Over Kw Nominal	N
DeviceNm_23261_Anlg	External Numeric 2 - Over Ia Nominal	N
DeviceNm_23262_Anlg	External Numeric 3 - Over Ib Nominal	N
DeviceNm_23263_Anlg	External Numeric 4 - Over Ic Nominal	N
DeviceNm_23264_Anlg	External Numeric 5 - Over Vunbal Nominal	N
DeviceNm_24023_Anlg	Transient Nominal	N
DeviceNm_28852_Anlg	KW SWD Sub Interval	N

Memory Real	Comment	
DeviceNm_28853_Anlg	KVAR SWD SUB INTERVAL	N
DeviceNm_28854_Anlg	KVA SWD SUBINTERVAL	N
DeviceNm_28855_Anlg	IAVG SWD SUB INTERVAL	N
DeviceNm_28868_Anlg	KW SWD #SUB INTERVALS	N
DeviceNm_28869_Anlg	KVAR SWD #SUB INTERVALS	N
DeviceNm_28870_Anlg	KVA SWD #SUB INTERVALS	N
DeviceNm_28871_Anlg	IAVG SWD #SUB INTERVALS	N
DeviceNm_28884_Anlg	KW SWD PREDICTED RESPONSE	N
DeviceNm_28885_Anlg	KVAR SWD PREDICTED RESPONSE	N
DeviceNm_28886_Anlg	KVA SWD PREDICTED RESPONSE	N
DeviceNm_28887_Anlg	IAVG SWD PREDICTED RESPONSE	N
DeviceNm_29204_Anlg	Swell Limit	N
DeviceNm_29206_Anlg	Sag Limit	N
DeviceNm_29208_Anlg	Change Criteria	N
DeviceNm_29210_Anlg	SAG SWELL NOMINAL	N
DeviceNm_29508_Anlg	Transient Threshold	N
DeviceNm_29686_Anlg	Over KW Over Pickup	N
DeviceNm_29687_Anlg	Over Ia Over Pickup	N
DeviceNm_29688_Anlg	Over Ib Over Pickup	N
DeviceNm_29689_Anlg	Over Ic Over Pickup	N
DeviceNm_29690_Anlg	Over Vunbal Over Pickup	N
DeviceNm_29696_Anlg	Over KW Over Dropout	N
DeviceNm_29697_Anlg	Over Ia Over Dropout	N
DeviceNm_29698_Anlg	Over Ib Over Dropout	N
DeviceNm_29699_Anlg	Over Ic Over Dropout	N
DeviceNm_29700_Anlg	Over Vunbal Over Dropout	N
DeviceNm_29706_Anlg	Over KW Under Pickup	N
DeviceNm_29707_Anlg	Over Ia Under Pickup	N
DeviceNm_29708_Anlg	Over Ib Under Pickup	N
DeviceNm_29709_Anlg	Over Ic Under Pickup	N
DeviceNm_29710_Anlg	Over Vunbal Under Pickup	N
DeviceNm_29716_Anlg	Over KW Under Dropout	N
DeviceNm_29717_Anlg	Over Ia Under Dropout	N
DeviceNm_29718_Anlg	Over Ib Under Pickup	N
DeviceNm_29719_Anlg	Over Ic Under Dropout	N
DeviceNm_29720_Anlg	Over Vunbal Under Dropout	N
DeviceNm_29726_Anlg	Over KW Time On	N
DeviceNm_29727_Anlg	Over Ia Time On	N
DeviceNm_29728_Anlg	Over Ib Time On	N
DeviceNm_29729_Anlg	Over Ic Time On	N

Memory Real	Comment	
DeviceNm_29730_Anlg	Over Vunbal Time On	N
DeviceNm_29736_Anlg	Over KW Time Off	N
DeviceNm_29737_Anlg	Over Ia Time Off	N
DeviceNm_29738_Anlg	Over Ib Time Off	N
DeviceNm_29739_Anlg	Over Ic Time Off	N
DeviceNm_29740_Anlg	Over Vunbal Time Off	N
DeviceNm_UniversalClock	Universal Clock Time	N

I/O Real	Comment	
DeviceNm_22528	VLN_A	N
DeviceNm_22529	VLN_B	N
DeviceNm_22530	VLN_C	N
DeviceNm_22531	VLN_AVG	N
DeviceNm_22532	VLL_AB	N
DeviceNm_22533	VLL_BC	N
DeviceNm_22534	VLL_CA	N
DeviceNm_22535	VLL_AVG	N
DeviceNm_22536	I_A	N
DeviceNm_22537	I_B	N
DeviceNm_22538	I_C	N
DeviceNm_22539	I_AVG	N
DeviceNm_22540	KWA	N
DeviceNm_22541	KWB	N
DeviceNm_22542	KWC	N
DeviceNm_22543	KWTOTAL	N
DeviceNm_22544	KVARA	N
DeviceNm_22545	KVARB	N
DeviceNm_22546	KVARC	N
DeviceNm_22547	KVARTOTAL	N
DeviceNm_22548	KVAA	N
DeviceNm_22549	KVAB	N
DeviceNm_22550	KVAC	N
DeviceNm_22551	KVATOTAL	N
DeviceNm_22552	PFSIGNED_A	Y
DeviceNm_22553	PFSIGNED_B	Y
DeviceNm_22554	PFSIGNED_C	Y
DeviceNm_22555	PFSIGNED_TOTAL	N
DeviceNm_22556	PFLEAD_A	Y
DeviceNm_22557	PFLEAD_B	Y
DeviceNm_22558	PFLEAD_C	Y

I/O Real	Comment	
DeviceNm_22559	PFLEAD_TOTAL	N
DeviceNm_22560	PFLAG_A	Y
DeviceNm_22561	PFLAG_B	Y
DeviceNm_22562	PFLAG_C	Y
DeviceNm_22563	PFLAG_TOTAL	N
DeviceNm_22564	V_UNBAL	Y
DeviceNm_22565	I_UNBAL	Y
DeviceNm_22566	I_4	Y
DeviceNm_22567	LINE_FREQUENCY	Y
DeviceNm_22656	KW_SWD	N
DeviceNm_22657	KVAR_SWD	N
DeviceNm_22658	KVA_SWD	N
DeviceNm_22659	IAVG_SWD	N
DeviceNm_22672	KW_PD	Y
DeviceNm_22673	KVAR_PD	Y
DeviceNm_22674	KVA_PD	Y
DeviceNm_22675	IAVG_PD	Y
DeviceNm_22688	KW_TD	Y
DeviceNm_22689	KVAR_TD	Y
DeviceNm_22690	KVA_TD	Y
DeviceNm_22691	IAVG_TD	Y
DeviceNm_22720	VLN_A_MIN	Y
DeviceNm_22721	VLN_B_MIN	Y
DeviceNm_22722	VLN_C_MIN	Y
DeviceNm_22723	VLNAV_MIN	Y
DeviceNm_22724	VLL_AB_MIN	Y
DeviceNm_22725	VLL_BC_MIN	Y
DeviceNm_22726	VLL_CA_MIN	Y
DeviceNm_22727	VLLAVE_MIN	Y
DeviceNm_22728	V_UNBAL_MIN	Y
DeviceNm_22729	IA_MIN	Y
DeviceNm_22730	IB_MIN	Y
DeviceNm_22731	IC_MIN	Y
DeviceNm_22732	IAVE_MIN	Y
DeviceNm_22733	KWTOTAL_MIN	Y
DeviceNm_22734	KVARTOTAL_MIN	Y
DeviceNm_22735	KVATOTAL_MIN	Y
DeviceNm_22736	KW_SWD_MIN	Y
DeviceNm_22737	KVAR_SWD_MIN	Y
DeviceNm_22738	KVA_SWD_MIN	Y

I/O Real	Comment	
DeviceNm_22739	KW_TD_MIN	Y
DeviceNm_22740	FREQ_MIN	Y
DeviceNm_22741	PF_LEAD_MIN	Y
DeviceNm_22742	PFLAG_TOTAL_MIN	Y
DeviceNm_22743	V1_THD_MIN	Y
DeviceNm_22744	V2_THD_MIN	Y
DeviceNm_22745	V3_THD_MIN	Y
DeviceNm_22746	IA_THD_MIN	Y
DeviceNm_22747	IB_THD_MIN	Y
DeviceNm_22748	IC_THD_MIN	Y
DeviceNm_22749	I4_MIN	Y
DeviceNm_22750	IA_KFACTOR_MIN	Y
DeviceNm_22751	IB_KFACTOR_MIN	Y
DeviceNm_22752	VLN_A_MAX	Y
DeviceNm_22753	VLN_B_MAX	Y
DeviceNm_22754	VLN_C_MAX	Y
DeviceNm_22755	VLNAV_MAX	Y
DeviceNm_22756	VLL_AB_MAX	Y
DeviceNm_22757	VLL_BC_MAX	Y
DeviceNm_22758	VLL_CA_MAX	Y
DeviceNm_22759	VLLAVE_MAX	Y
DeviceNm_22760	V_UNBAL_MAX	Y
DeviceNm_22761	IA_MAX	Y
DeviceNm_22762	IB_MAX	Y
DeviceNm_22763	IC_MAX	Y
DeviceNm_22764	IAVE_MAX	Y
DeviceNm_22765	KWTOTAL_MAX	Y
DeviceNm_22766	KVARTOTAL_MAX	Y
DeviceNm_22767	KVATOTAL_MAX	Y
DeviceNm_22768	KWTOT_SWD_MAX	Y
DeviceNm_22769	KVARTOT_SWD_MAX	Y
DeviceNm_22770	KVATOT_SWD_MAX	Y
DeviceNm_22771	KWTOT_TD_MAX	Y
DeviceNm_22772	FREQ_MAX	Y
DeviceNm_22773	PF_LEAD_MAX	Y
DeviceNm_22774	PFLAG_TOTAL_MAX	Y
DeviceNm_22775	V1_THD_MAX	Y
DeviceNm_22776	V2_THD_MAX	Y
DeviceNm_22777	V3_THD_MAX	Y
DeviceNm_22778	IA_THD_MAX	Y

I/O Real	Comment	
DeviceNm_22779	IB_THD_MAX	Y
DeviceNm_22780	IC_THD_MAX	Y
DeviceNm_22781	KVAR_TD_MAX	Y
DeviceNm_22782	KVA_TD_MAX	Y
DeviceNm_22783	I4_MAX	Y
DeviceNm_22847	V1_THD	N
DeviceNm_22913	V2_THD	N
DeviceNm_22979	V3_THD	N
DeviceNm_23045	I1_TOTAL_HD	N
DeviceNm_23048	I1_KFACTOR	N
DeviceNm_23112	I2_TOTAL_HD	N
DeviceNm_23115	I2_KFACTOR	N
DeviceNm_23179	I3_TOTAL_HD	N
DeviceNm_23182	I3_KFACTOR	N
DeviceNm_23246	I4_TOTAL_HD	N
DeviceNm_23249	I4_KFACTOR	N
DeviceNm_23250	STATUS1_CNT	Y
DeviceNm_23251	STATUS2_CNT	Y
DeviceNm_23252	STATUS3_CNT	Y
DeviceNm_23253	STATUS4_CNT	Y
DeviceNm_23254	STATUS5_CNT	Y
DeviceNm_23255	STATUS6_CNT	Y
DeviceNm_23256	STATUS7_CNT	Y
DeviceNm_23257	STATUS8_CNT	Y
DeviceNm_23258	SAGSWELL_COUNT	Y
DeviceNm_23259	TRANSIENT_COUNT	Y
DeviceNm_23260	Over SWD KW Nominal	Y
DeviceNm_23260_GWY	External Numeric 1 - Over Kw Nominal	N
DeviceNm_23261	Over Ia Nominal	Y
DeviceNm_23261_GWY	External Numeric 2 - Over Ia Nominal	N
DeviceNm_23262	Over Ib Nominal	Y
DeviceNm_23262_GWY	External Numeric 3 - Over Ib Nominal	N
DeviceNm_23263	Over Ic Nominal	Y
DeviceNm_23263_GWY	External Numeric 4 - Over Ic Nominal	N
DeviceNm_23264	Over Vunbal Nominal	Y
DeviceNm_23264_GWY	External Numeric 5 - Over Vunbal Nominal	N
DeviceNm_23281	VZERO_SEQ_MAG	Y
DeviceNm_23282	VZERO_SEQ_PHS	Y
DeviceNm_23283	VPOS_SEQ_MAG	Y
DeviceNm_23284	VPOS_SEQ_PHS	Y

I/O Real	Comment	
DeviceNm_23285	VNEG_SEQ_MAG	Y
DeviceNm_23286	VNEG_SEQ_PHS	Y
DeviceNm_23287	IZERO_SEQ_MAG	Y
DeviceNm_23288	IZERO_SEQ_PHS	Y
DeviceNm_23289	IPOS_SEQ_MAG	Y
DeviceNm_23290	IPOS_SEQ_PHS	Y
DeviceNm_23291	INEG_SEQ_MAG	Y
DeviceNm_23292	INEG_SEQ_PHS	Y
DeviceNm_24023	TRANSIENT_NOM	Y
DeviceNm_24023_GWY	TRANSIENT_NOM	N
DeviceNm_24074	IC_KFACTOR_MIN	Y
DeviceNm_24075	I4_KFACTOR_MIN	Y
DeviceNm_24076	I4_THD_MIN	Y
DeviceNm_24077	KVAR_TD_MIN	Y
DeviceNm_24078	KVA_TD_MIN	Y
DeviceNm_24102	IA_KFACTOR_MAX	Y
DeviceNm_24103	IB_KFACTOR_MAX	Y
DeviceNm_24104	IC_KFACTOR_MAX	Y
DeviceNm_24105	I4_KFACTOR_MAX	Y
DeviceNm_24106	I4_THD_Max	Y
DeviceNm_25063	OVER_KW_OVER	Y
DeviceNm_25073	OVER_KW_UNDER	Y
DeviceNm_28678	Analog1_ZeroScale	Y
DeviceNm_28679	Analog2_ZeroScale	Y
DeviceNm_28680	Analog3_ZeroScale	Y
DeviceNm_28681	Analog4_ZeroScale	Y
DeviceNm_28696	Analog1_FullScale	Y
DeviceNm_28697	Analog2_FullScale	Y
DeviceNm_28698	Analog3_FullScale	Y
DeviceNm_28699	Analog4_FullScale	Y
DeviceNm_28852	KW SWD Sub Interval	Y
DeviceNm_28852_GWY	KW SWD Sub Interval	N
DeviceNm_28853	KVAR SWD SUB INTERVAL	Y
DeviceNm_28853_GWY	KVAR SWD SUB INTERVAL	N
DeviceNm_28854	KVA SWD SUBINTERVAL	Y
DeviceNm_28854_GWY	KVA SWD SUBINTERVAL	N
DeviceNm_28855	IAVG SWD SUB INTERVAL	Y
DeviceNm_28855_GWY	IAVG SWD SUB INTERVAL	N
DeviceNm_28868	KW SWD #SUB INTERVALS	Y
DeviceNm_28868_GWY	KW SWD #SUB INTERVALS	N

I/O Real	Comment	
DeviceNm_28869	KVAR SWD #SUB INTERVALS	Y
DeviceNm_28869_GWY	KVAR SWD #SUB INTERVALS	N
DeviceNm_28870	KVA SWD #SUB INTERVALS	Y
DeviceNm_28870_GWY	KVA SWD #SUB INTERVALS	N
DeviceNm_28871	IAVG SWD #SUB INTERVALS	Y
DeviceNm_28871_GWY	IAVG SWD #SUB INTERVALS	N
DeviceNm_28884	KW SWD PREDICTED RESPONSE	Y
DeviceNm_28884_GWY	KW SWD PREDICTED RESPONSE	N
DeviceNm_28885	KVAR SWD PREDICTED RESPONSE	Y
DeviceNm_28885_GWY	KVAR SWD PREDICTED RESPONSE	N
DeviceNm_28886	KVA SWD PREDICTED RESPONSE	Y
DeviceNm_28886_GWY	KVA SWD PREDICTED RESPONSE	N
DeviceNm_28887	IAVG SWD PREDICTED RESPONSE	Y
DeviceNm_28887_GWY	IAVG SWD PREDICTED RESPONSE	N
DeviceNm_29204	SAGSWELL_LIMIT_MAX	Y
DeviceNm_29204_GWY	Swell Limit	N
DeviceNm_29206	Sag Limit	Y
DeviceNm_29206_GWY	Sag Limit	N
DeviceNm_29208	Change Criteria	Y
DeviceNm_29208_GWY	Change Criteria	N
DeviceNm_29210	SAG SWELL NOMINAL	Y
DeviceNm_29210_GWY	SAG SWELL NOMINAL	N
DeviceNm_29508	Transient Threshold	Y
DeviceNm_29508_GWY	Transient Threshold	N
DeviceNm_29686	OVER_KW_PUOVER	Y
DeviceNm_29686_GWY	Over KW Over Pickup	N
DeviceNm_29687	OVER_IA_PUOVER	Y
DeviceNm_29687_GWY	Over Ia Over Pickup	N
DeviceNm_29688	OVER_IB_PUOVER	Y
DeviceNm_29688_GWY	Over Ib Over Pickup	N
DeviceNm_29689	OVER_IC_PUOVER	Y
DeviceNm_29689_GWY	Over Ic Over Pickup	N
DeviceNm_29690	OVER_VUN_PUOVER	Y
DeviceNm_29690_GWY	Over Vunbal Over Pickup	N
DeviceNm_29696	OVER_KW_DOOVER	Y
DeviceNm_29696_GWY	Over KW Over Dropout	N
DeviceNm_29697	OVER_IA_DOOVER	Y
DeviceNm_29697_GWY	Over Ia Over Dropout	N
DeviceNm_29698	OVER_IB_DOOVER	Y
DeviceNm_29698_GWY	Over Ib Over Dropout	N

I/O Real	Comment	
DeviceNm_29699	OVER_IC_DOOVER	Y
DeviceNm_29699_GWY	Over Ic Over Dropout	N
DeviceNm_29700	OVER_VUN_DOOVER	Y
DeviceNm_29700_GWY	Over Vunbal Over Dropout	N
DeviceNm_29706	OVER_KW_PUUNDER	Y
DeviceNm_29706_GWY	Over KW Under Pickup	N
DeviceNm_29707	OVER_IA_PUUNDER	Y
DeviceNm_29707_GWY	Over Ia Under Pickup	N
DeviceNm_29708	OVER_IB_PUUNDER	Y
DeviceNm_29708_GWY	Over Ib Under Pickup	N
DeviceNm_29709	OVER_IC_PUUNDER	Y
DeviceNm_29709_GWY	Over Ic Under Pickup	N
DeviceNm_29710	OVER_VUN_PUUNDER	Y
DeviceNm_29710_GWY	Over Vunbal Under Pickup	N
DeviceNm_29716	OVER_KW_DOUNDER	Y
DeviceNm_29716_GWY	Over KW Under Dropout	N
DeviceNm_29717	OVER_IA_DOUNDER	Y
DeviceNm_29717_GWY	Over Ia Under Dropout	N
DeviceNm_29718	OVER_IB_DOUnder	Y
DeviceNm_29718_GWY	Over Ib Under Pickup	N
DeviceNm_29719	OVER_IC_DOUNDER	Y
DeviceNm_29719_GWY	Over Ic Under Dropout	N
DeviceNm_29720	OVER_VUN_DOUNDER	Y
DeviceNm_29720_GWY	Over Vunbal Under Dropout	N
DeviceNm_29726	OVER_KW_ON	Y
DeviceNm_29726_GWY	Over KW Time On	N
DeviceNm_29727	OVER_IA_ON	Y
DeviceNm_29727_GWY	Over Ia Time On	N
DeviceNm_29728	OVER_IB_ON	Y
DeviceNm_29728_GWY	Over Ib Time On	N
DeviceNm_29729	OVER_IC_ON	Y
DeviceNm_29729_GWY	Over Ic Time On	N
DeviceNm_29730	OVER_VUN_ON	Y
DeviceNm_29730_GWY	Over Vunbal Time On	N
DeviceNm_29736	OVER_KW_OFF	Y
DeviceNm_29736_GWY	Over KW Time Off	N
DeviceNm_29737	OVER_IA_OFF	Y
DeviceNm_29737_GWY	Over Ia Time Off	N
DeviceNm_29738	OVER_IB_OFF	Y
DeviceNm_29738_GWY	Over Ib Time Off	N

I/O Real	Comment	
DeviceNm_29739	OVER_IC_OFF	Y
DeviceNm_29739_GWY	Over Ic Time Off	N
DeviceNm_29740	OVER_VUN_OFF	Y
DeviceNm_29740_GWY	Over Vunbal Time Off	N

Memory Message	Comment	
DeviceNm_30720_Msg	Voltage Mode Message	N
DeviceNm_30721_Msg	Ia Polarity	N
DeviceNm_30722_Msg	Ib Polarity	N
DeviceNm_30723_Msg	Ic Polarity	N
DeviceNm_30724_Msg	Phase Order	N
DeviceNm_31032_Msg	Waveform Recorder Format	N
DeviceNm_31305_Msg	I4 Polarity	N
DeviceNm_31306_Msg	Va Polarity	N
DeviceNm_31307_Msg	Vb Polarity	N
DeviceNm_31308_Msg	Vc Polarity	N
DeviceNm_Status_Input1_Name		N
DeviceNm_Status_Input2_Name		N
DeviceNm_Status_Input3_Name		N
DeviceNm_Status_Input4_Name		N
DeviceNm_Status_Input5_Name		N
DeviceNm_Status_Input6_Name		N
DeviceNm_Status_Input7_Name		N
DeviceNm_Status_Input8_Name		N
DeviceNm_Analog1_Name		N
DeviceNm_Analog2_Name		N
DeviceNm_Analog3_Name		N
DeviceNm_Analog4_Name		N
DeviceNm_DownloadMessage	Download Message	N
DeviceNm_ResetMessage	Reset Message	N
DEVICENM_ErrorMessage	Error Message	N
DeviceNm_RefreshMessage	Refresh Message	N
DeviceNm_Path		N

I/O Message	Comment	
DeviceNm_4864	Device_Type	N
DeviceNm_4867	Hardware_Rev	N
DeviceNm_4868	SERIAL_NUMBER	N
DeviceNm_4936	Ethernet_IP_Address	Y

I/O Message	Comment	
DeviceNm_4937	Ethernet_Subnet	Y
DeviceNm_4938	Ethernet_DGateway	Y
DeviceNm_22608	Analog1 Value	Y
DeviceNm_22609	Analog2_Value	Y
DeviceNm_22610	Analog3_Value	Y
DeviceNm_22611	Analog 4_Value	Y
DeviceNm_22704	KWH_IMPRT	N
DeviceNm_22705	KWH_EXPRT	N
DeviceNm_22706	KWH_TOT	N
DeviceNm_22707	KWH_NT	N
DeviceNm_22708	KVARH_IMPRT	N
DeviceNm_22709	KVARH_EXPRT	N
DeviceNm_22710	KVARH_TOT	N
DeviceNm_22711	KVARH_NT	N
DeviceNm_22712	KVAH_TOT	N
DeviceNm_29161	Comm1_UID	Y
DeviceNm_29236	Comm2_UID	Y
DeviceNm_29237	Comm3_UID	Y
DeviceNm_30720	VOLT_INPUT_MODE_MSG	N
DeviceNm_30720_GWY	VOLT_INPUT_MODE_MSG	N
DeviceNm_30721	IA_POLARITY_INPUT_MS	Y
DeviceNm_30721_GWY	IA_POLARITY_INPUT_MS	N
DeviceNm_30722	IB_POLARITY_INPUT_MS	Y
DeviceNm_30722_GWY	IB_POLARITY_INPUT_MS	N
DeviceNm_30723	IC_POLARITY_INPUT_MS	Y
DeviceNm_30723_GWY	IC_POLARITY_INPUT_MS	N
DeviceNm_30724	PHASE_ORDER_INPUR_MS	Y
DeviceNm_30724_GWY	PHASE_ORDER_INPUR_MS	N
DeviceNm_31032	Waveform Recorder Format	Y
DeviceNm_31032_GWY	Waveform Recorder Format	N
DeviceNm_31110	Comm1_Mode	Y
DeviceNm_31111	Comm1_Baud	Y
DeviceNm_31305	I4_Polarity_Input_Ms	Y
DeviceNm_31305_GWY	I4_Polarity_Input_Ms	N
DeviceNm_31306	Va_POLARITY_INPUT_MS	Y
DeviceNm_31306_GWY	Va_POLARITY_INPUT_MS	N
DeviceNm_31307	VB_POLARITY_INPUT_MS	Y
DeviceNm_31307_GWY	VB_POLARITY_INPUT_MS	N
DeviceNm_31308	VC_POLARITY_INPUT_MS	Y
DeviceNm_31308_GWY	VC_POLARITY_INPUT_MS	N

I/O Message	Comment	
DeviceNm_31309	Comm2_Baud	Y
DeviceNm_31310	Comm3_Baud	Y
DeviceNm_31311	Comm1_Protocol	Y
DeviceNm_31312	Comm2_Protocol	Y
DeviceNm_31313	Comm3_Protocol	Y
DeviceNm_31314	Ethernet_Protocol	Y

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