Honeywell E-Mon

E-Mon Energy Software

USER GUIDE

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SECTION 1: INTRODUCTION

What is E-Mon Energy™?

E-Mon Energy software package is designed as an energy monitoring system that reads and monitors energy consumption easily and effectively onsite or offsite (via modem or remote access computer).

E-Mon Energy has significant features:

- Operates on most PCs running with Microsoft®Windows® 10 & Windows Server.
- Reads all E-Mon data recorders and meters directly (IDR and Class 3000).
- Virtual meters for adding/subtracting consumption based on real meters.
- Provides a wide variety of data link connections, such as Direct COM Port, Ethernet, FTP (File Transfer Protocol), File Import, File Import (via a program), with enabling communication substitute.
- Gives the administrator the capability to set up and assign user passwords via the System Administrative Password Tool.
- Multiple meters (different types - electric, gas, water, etc) to the same user, one billing statement; option for detail billing.
- Supports Time-Of-Use (TOU) meter readings.
- Runs a statistical analysis of energy consumption through graphs and charts.

Benefits of E-Mon Energy

E-Mon Energy has a number of key benefits:

- Energy Savings
- Environmental Friendly and Positive Environmental Impact
- Automatic Meter Reading System (watchdog)
- Cost Allocation
- True Tenant Billing
- Multi-Point Metering Aggregation -Virtual Meter and Aggregation
- Metering Flexibility and Performance Contracting
- Additional Revenue Opportunities and Expanded Services.

About This Manual

This manual assumes you have a working knowledge of Windows and its operations and menus. It also assumes you have knowledge on using a mouse, opening, closing and saving files.

Using This Manual

This manual provides information you need to understand and use E-Mon Energy™. If you have never used E-Mon

Energy, read the entire manual to familiarize yourself with its concepts, operation, software and hardware. This guide contains the following information:

Section	Description
Section 1	Introduction – contains an overview of E-Mon Energy and how to use this manual. It also discusses notation conventions and calling Technical Support.
Section 2	System Configuration Overview – provides Software and Hardware Configurations. Briefly describes AMR System Configuration for Onsite and Offsite Monitoring.
Section 3	Software Installation and System Startup – contains instructions for installing and setting up E-Mon Energy. It also provides instructions for login and logout, administrative and password.
Section 4	Windows Components and Navigation – provides descriptions on E-Mon Energy GUI buttons, menus, screen layouts and how to use them. It also provides screen shortcuts and diagrams.
Section 5	Connection Parameters – defines and tells how to set up, add and delete different data links (Connections) for Groups and Locations.
Section 6	Automatic Meter Reading (AMR) – defines how it works and tells how to create an AMR schedule, task, and assign a server.

Section	Description
Section 7	Groups and Locations – tells how to create a group, navigate down to the location level, add /delete new locations and meters. It also explains how to get a location.
Section 8	Recorder – describes how to set up recorder configurations. It also explains how to initialize a recorder.
Section 9	Meter – describes how to set up meter configurations.
Section 10	Virtual Meter – defines and tells how to set up a virtual meter profile.
Section 11	Customer – provides instructions on setting up a customer and assigning devices.
Section 12	Rate Table and TOU Schedule – describes and tells how to enter different rates, and set up a TOU schedule.
Section 13	Other Features – tells how to create load control, recorder and security setup file.
Section 14	Access Location – defines and illustrates the Function and Hardware to Access Groups, along with connection control and panel action buttons.
Section 15	Errors and Flags – provides data on how to identify potential error flags and clear flags.
Section 16	Demand Profile Graph – describes how to load the profile and generate a graph. It also explains how to use the Demand Profile Graph features.
Section 17	Real-Time Graphs – describes how to load a device, graph the device, and start the load monitor. It also explains how to use the power graph and start the power monitor.
Section 18	Billing and Report – describes the billing and report software process. It tells you how to set up, create, open, and save an automatic and manual billing cycle and then generate a bill. It also discusses creating, opening and saving a report.
Section 19	Troubleshooting – contains information for resolving errors and issues.
Appendix A	Start Up Checklist and Forms – provides a checklist and system configuration forms that are required prior to system installation and startup.
Appendix A	Samples of Bills and Reports – contains examples of bills and E-Mon Energy reports.
Glossary	The Glossary list contains the word or abbreviation of the short forms used in this guide with the definition.
Index	The Index is a directory of terms and where they are used.

Notation Conventions

Before working with E-Mon Energy™, familiarize yourself with the notation conventions used in this and all E-Mon software user guides:

Convention	Example	What It Means
Italic type	*host-name* *password* *E-Mon determines the ability to fail over.*	A displayed variable or a variable that represents information you must type. Italics are also used for emphasis.
SMALL CAPS	TAB, BUTTON	Keys you press on the keyboard or Screen Buttons to click on.
`Courier font`	`Terminal Server`	Text displayed on a terminal window
Key + key	alt+tab	Key combinations indicating that you hold down the first key and then press the second key.

Usage Conventions

These additional conventions are in the E-Mon Energy library and will help you correctly identify and enter information into the system:

Convention	Usage
Accessing menus and windows	When multiple ways to access menus and windows exist, only the mouse method is documented.
Required fields	You must type information in a data field unless stated otherwise in the text.
Commands and filenames	Type commands and filenames exactly as they appear in the instructions.

Icons in the Margins

In addition to the user and notation conventions, you will see a number of icons in the margins of the text. These icons have two purposes:

- They identify another source of information.
- They highlight tasks that should be performed with great care or with the assistance of Technical Support.

	Helpful Tips are placed throughout the manual to assist or aid you in the using of this software
	Notes or Reminders in the Manual.
	The procedure or actions described can result in a critical system problem if performed incorrectly.
	Pay particular attention to the associated text.
	Call for assistance from Technical Support.

Related Documentation

The following manuals, installation sheets, catalogs and forms are optional depending on your company's system configuration. However, all libraries should include the:

- E-Mon Submetering and Energy Monitoring Product Catalog

If You Need Help

If you need assistance while working with E-Mon Energy™, call the E-Mon Energy Technical Support Center at 1-800-334-3666. The Technical Support Center is open from 8:00 AM to 7:30 PM Eastern Time, Monday through Friday. When the Technical Response Center is closed, emergency service only is available on a call-back basis.

SECTION 2: SYSTEM CONFIGURATION OVERVIEW

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What Are E-Mon Energy™ System Configurations?

There are several types of E-Mon Energy system configurations using the hardware, Automatic Meter Reading (AMR) and E-Mon Energy program. Each system configuration depends on the communication interface (onsite or offsite non-dedicated). With any of the AMR system configurations you will be able to read E-Mon KWH and KWH/Demand meters through a compatible PC onsite or offsite. Another common relationship between the configurations is that they all use RS-485 cabling with maximum length of 4000 feet.

What are the Computer Hardware and Software requirements?

E-Mon Energy software operates with a PC with the following minimum specifications:

- CD-ROM Drive
- 128MB RAM, 20GB Hard Drive Space Available
- Color Monitor
- RS-232 Serial Port or Ethernet
- Real-Time Clock
- Microsoft Windows 10 Windows Server
- E-Mon Energy Version 1.0

NOTE: Your software configuration would always depend on system speed and memory. E-Mon Energy software will support up to 32767 X 32767 locations.

What are the System Communication Interfaces?

There are several types of E-Mon Energy communication options:

- Direct Serial Port Connection via a E-Mon Energy Key (RS-485 to RS-232)
- Ethernet to a Host Computer 10Base-2 or 10Base-T via an EKM-E (RS-485 to Ethernet)

NOTE: The RS-485 cable maximum length is 4000 feet total.

Understanding the AMR On-site and Off–site configuration

AMR On-Site Configuration

The *AMR On-Site* configuration is a direct connect from the computer's RS-232 serial port or Ethernet port to the recorders or meters via the E-Mon Energy™ Key or EKM-E. The computer and the hardware are all in one location.

The direct serial COM port On-Site Configuration uses the E-Mon Energy Key (RS-232/RS-485) that converts the RS-485 cable to a RS-232 cable for compatibility with computer communication port.

The Ethernet LAN AMR On-Site Configuration uses the EKM-E (Ethernet/RS-485) that converts the RS-485 cable to an Ethernet TCP/IP cable for compatibility with computer LAN port.

The illustrations below display the direct serial COM port AMR on-site configuration.

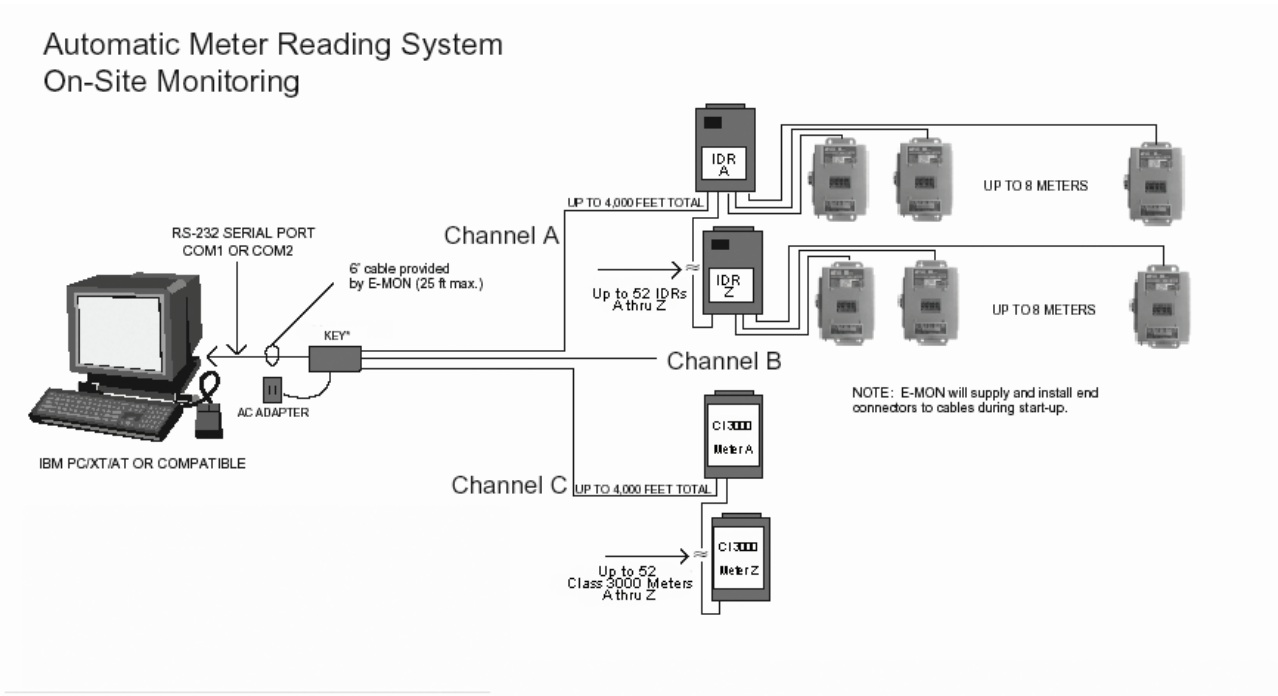


Fig. 1. AMR system on-site monitoring.

AMR Off-Site Configuration

The *AMR Off-site* configuration can have one E-Mon Energy™ – AMR software platform and multiple remote groups and locations using E-Mon Energy Key RM/Telephone modem, or EKM-E/10-baseT or 10-base-T line, or a Wireless E-Mon Energy Key RM/with a cellular modem at 800 MHz or 1900 MHz. The illustrations below display the AMR off-site configuration.

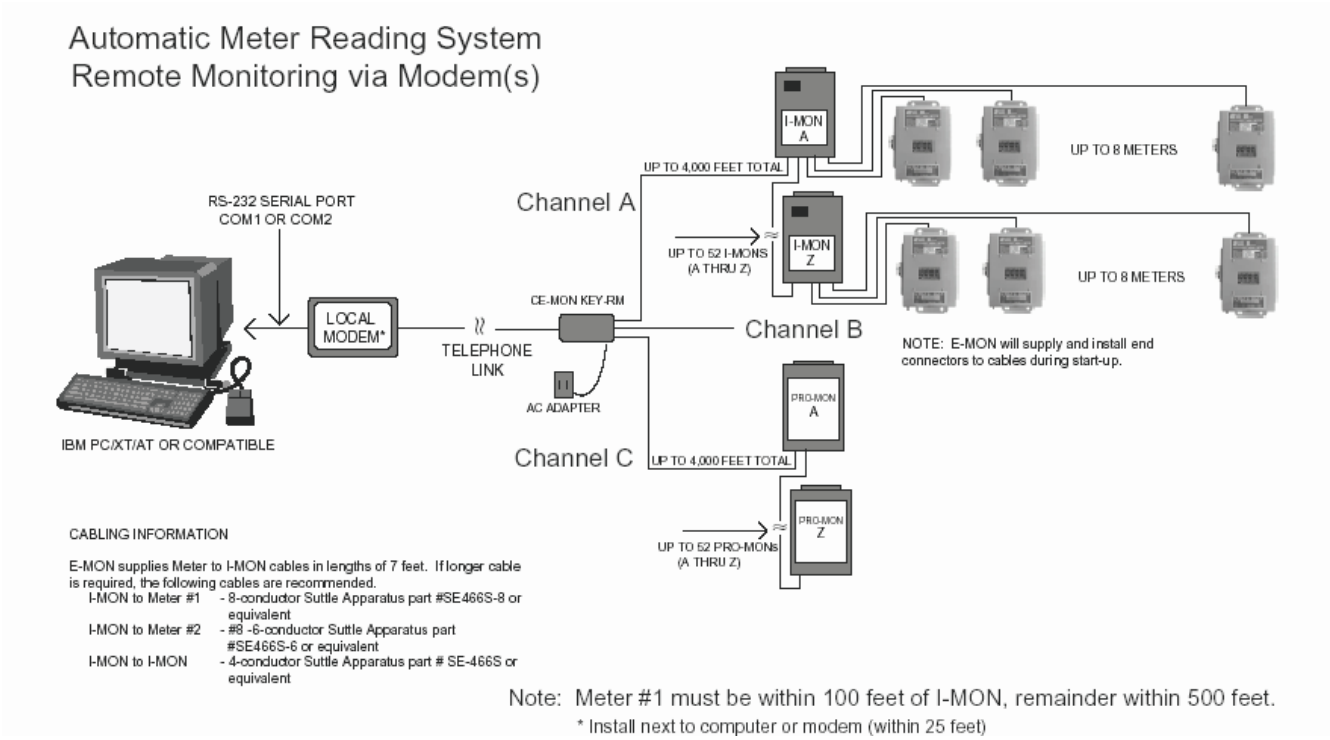


Fig. 2. AMR system remote monitoring.

Understanding E-Mon Energy Architecture

The software is a 32-bit Windows driven application designed in object oriented programming tool and utilizes a self-contained database engine without needing to install a separate driver. There are 4 main components:

- Database Engine and Data Entry forms – storing device information and meter data
- Serial Communication – Serial port, Ethernet, etc.
- Graph/Chart – Historical and real-time
- Spreadsheet - Utilize Excel programming

SECTION 3: SYSTEM AND SOFTWARE INSTALLATION

How Do I Install and Startup E-Mon Energy™ Software?

Before installing and setting up the software, you should check and verify that all system and site requirements have been met. It is recommended that any hard installations, such as wiring, communications, and other devices, be installed. If your system requires generating bills, you may also want to obtain the rates and schedules from your local utility.

Within the Appendix section of this manual, we do provide you with a “Startup Checklist and Forms” that we recommend completing, signing, and returning (via mail or fax) prior to E-Mon final transaction and startup.

NOTE: Note: The initial installation of E-Mon Energy software is often performed by an authorized E-Mon representative.

With completion of system and hardware requirements, you are now ready to install and start up the E-Mon Energy application.

Installing E-Mon Energy

To install E-Mon Energy:

1. Power system up and log into Windows.
   a. Type User Name
   b. Type Password
   c. Click OK.
2. Obtain E-Mon Energy CDROM that came with your software package.
3. Insert the CD-ROM into the CD-ROM drive and close the door. The system should automatically boot the CD-ROM and the Install Shield Self-extracting EXE dialog box will open.

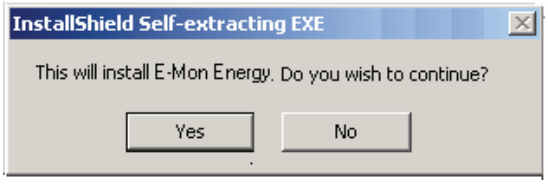


Fig. 3. Install Shield Self-Extracting EXE

The Setup window will begin processing the Install Shield.

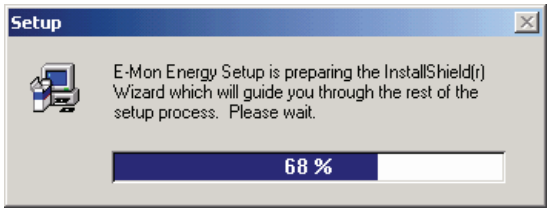


Fig. 4. Setup Dialog

A Wizard opens to welcome you to the E-Mon Energy Setup program.

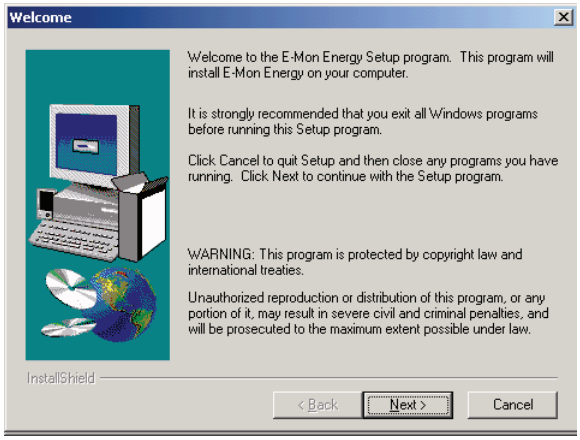


Fig. 5. Setup Wizard

4. Click on the NEXT >button. The *User Information* wizard dialog opens.

NOTE: *To return to the previous dialog window, click on the* < BACK *button. To exit the Wizard, click on the* CANCEL *button.*

5. Type in your Name.
6. Tab down, and type in your Company name.

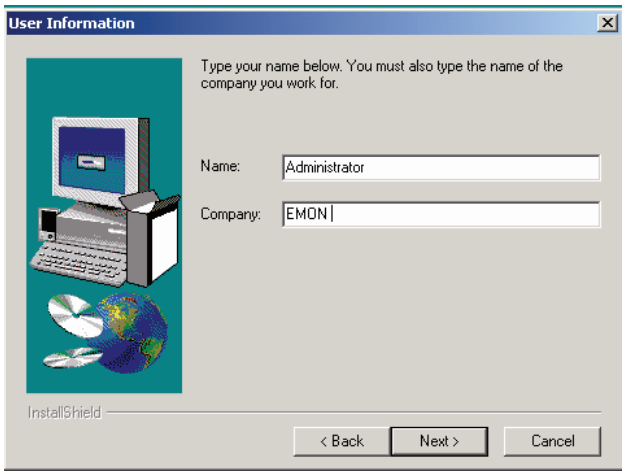


Fig. 6. User Information

7. Click on the NEXT > button. The *Choose Destination Location* wizard dialog opens.

NOTE: If you want to install the software to your program directory, E-Mon Energy™ chooses the C:\Program Files\E-Mon Energy as the default location.

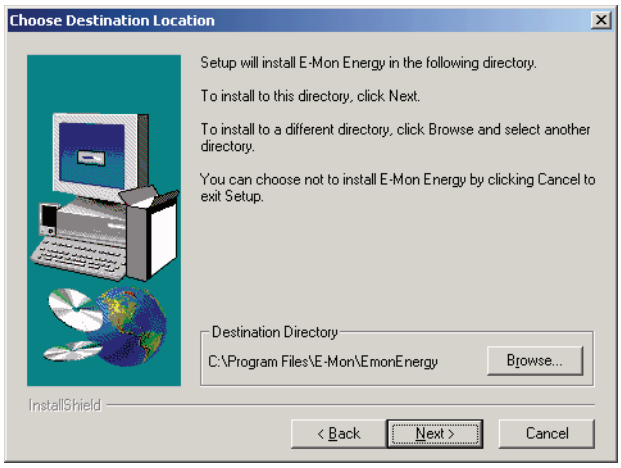


Fig. 7. Choose Destination Location

8. Click on NEXT > to install in your local *C:\Program Files* directory or click BROWSE to select a different directory.
9. After selecting the different directory, click NEXT > to continue. The *Select Program Folder* wizard dialog opens.

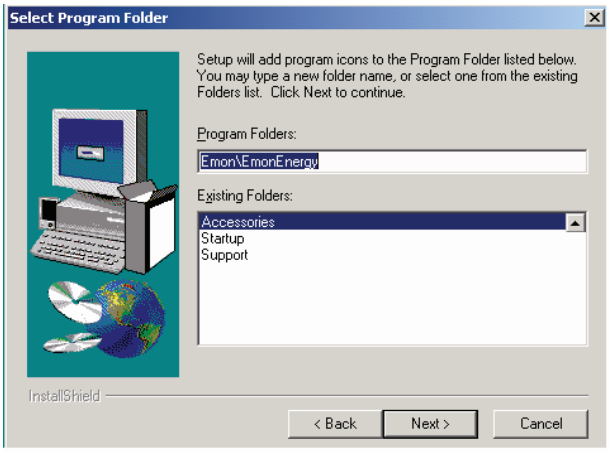


Fig. 8. Select Program Folder

Setup needs to create a *Program Folder Name* for your E-Mon Energy™ software.

10. Type in a *Program Folder Name*, or select from the *Existing Folders* in the list box below. (e.g. we have chosen E-Mon\ E-Mon Energy)
11. Click on the NEXT > button to continue. Setup now has sufficient information to begin copying the programs files. The *Start Copying Files* dialog opens to displays the selected Current Settings.
12. If you are satisfied with the settings, click on the NEXT > button.
13. If you wish to change any of the settings, click on the < BACK button.

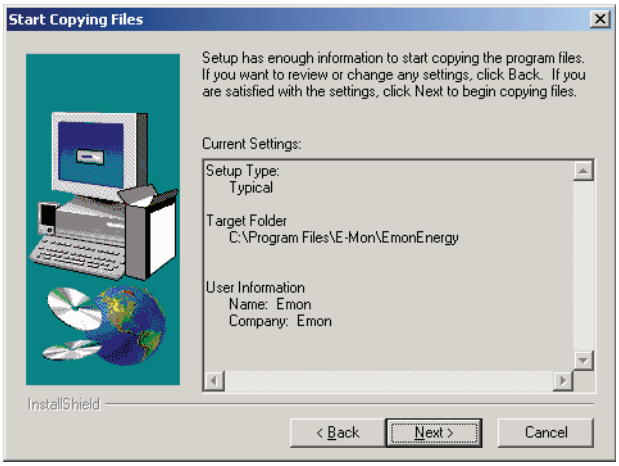


Fig. 9. Start Copying Files

E-Mon Energy™ begins installing the software.

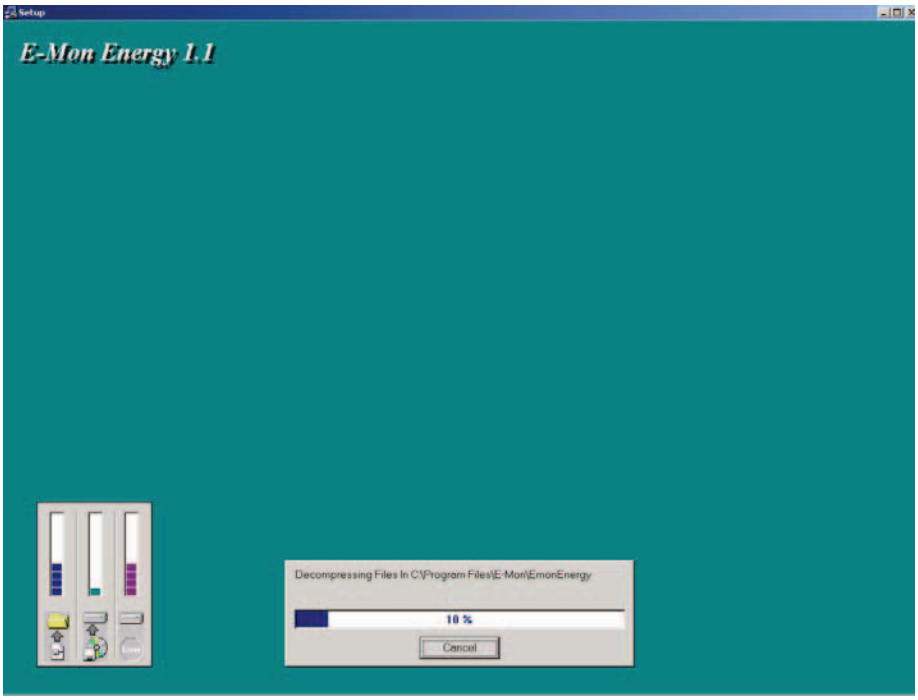


Fig. 10. Setup Creates Icons

The *Setup Complete* dialog opens, to indicate *Setup has finished copying the files to your computer* and is ready to launch your application.

14. Click inside the box, “Yes, Launch the program file”, and click on the FINISH button.

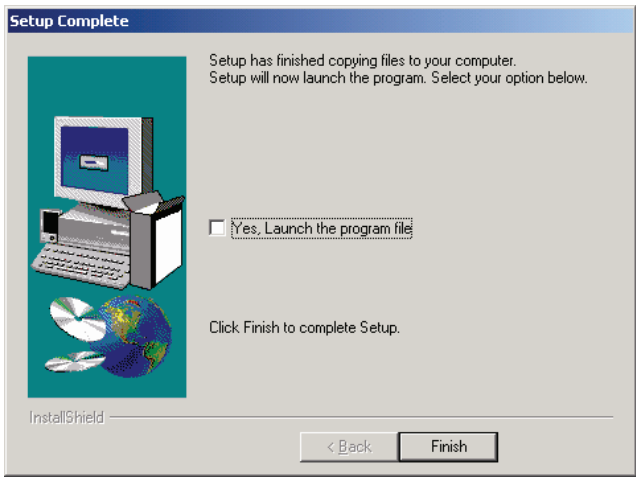


Fig. 11. Finish To Complete Setup

Setup launches program and opens the application folder. E-Mon Energy™ program shortcut is displayed.

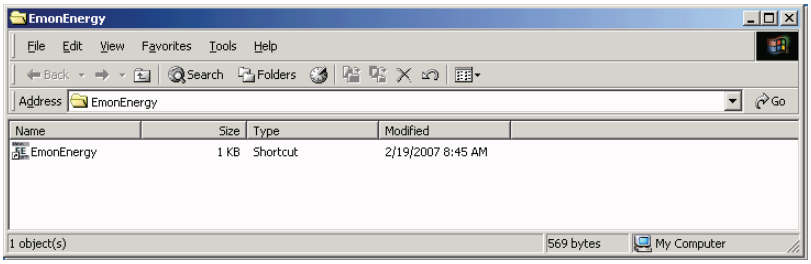


Fig. 12. Setup Launches Program

To verify program installation, open *Start\Programs\E-Mon\ E-Mon Energy / E-Mon* Energy

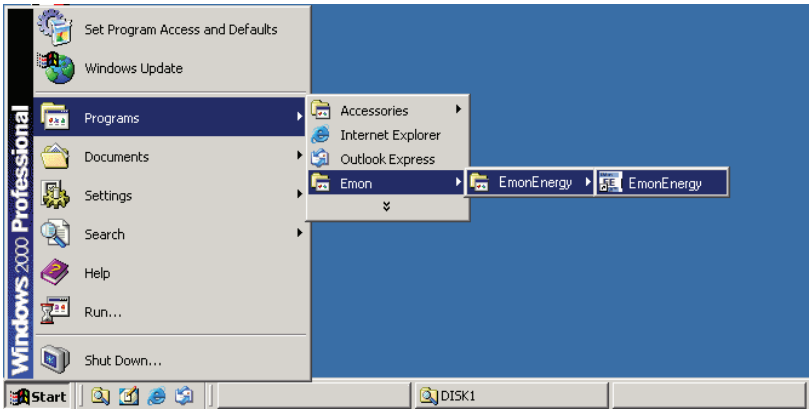


Fig. 13. Program Menu

How Do I log into E-Mon Energy™?

The data within E-Mon Energy can be confidential, and access can be restricted to certain authorized users. If you require a User ID, see your systems administrator prior to logging into software. Your User ID, along with your

password, allows you to access and perform certain functions within the software. Your access rights, is set by the administrator.

NOTE: As a user it is your responsibility to retain the security of your User ID and password by keeping it confidential.

Logging into the System

Logging into the software can be done from the E-Mon desktop icon or through the Windows *Start\Programs* menu.

To log into E-Mon Energy:

1. Power System up and log into Windows.
   a. Type User Name
   b. Type Password
   c. Click OK
2. From the Start menu, click START button, Programs\E-Mon\ E-Mon Energy \ E-Mon Energy. The E-Mon Energy opens to display the software version number.

Next, the Login dialog to E-Mon Energy will open.

NOTE: *If your E-Mon Energy is not configured to require password access, this screen will not be displayed.*

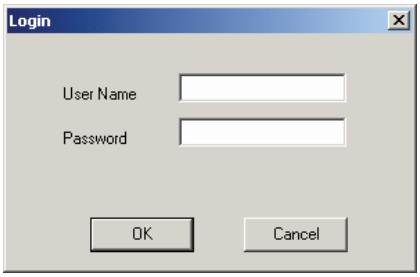


Fig. 14. Login to E-Mon Energy

3. Enter your E-Mon Energy User Name and Password, and click on the OK button. The E-Mon Energy main window opens.

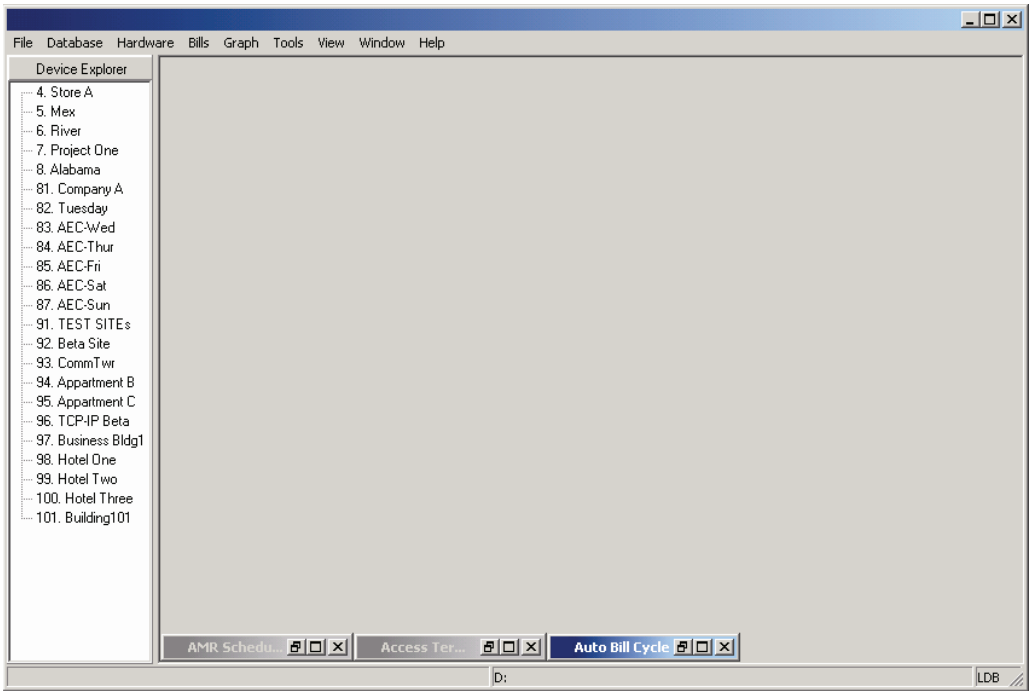


Fig. 15. E-Mon Energy™ main window

Logging out of the System

To log out from E-Mon Energy:

4. Select Tools\Log Out from the menu bar.

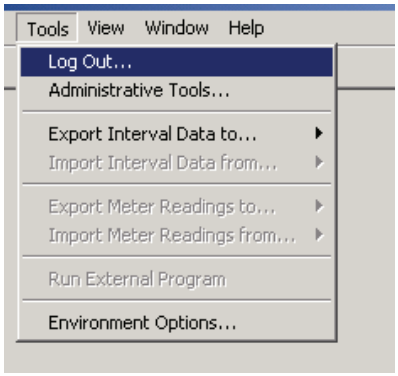


Fig. 16. Logout

5. A Logout dialog box opens prompting you, "*Are you sure you want to logout?*" Click YES to logout or click NO button to resume working in E-Mon Energy.

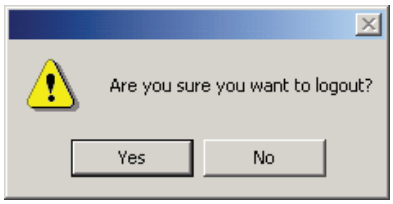


Fig. 17. Logout Dialog

How do I Set Up Passwords and Access Rights?

Setting up users on E-Mon Energy™ system is usually assigned to the Administrator or Owner. These features are not normally assigned to a user. The Administrative Tools can be accessed through the main menu under Tools. Be sure to check the "Enable Password Access" box to activate this feature.

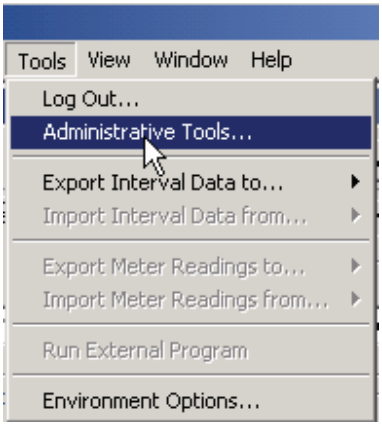


Fig. 18. Tools\Administrator drop-down menu

If you are a user on the system, you will *not* have access to this feature.

If you select *Tools/Administrative Tools*, you'll be prompted with the *Administrator Password* dialog window.

Fig. 19. Enter Administrator Password dialog

If you try to access with the wrong password, the dialog displays, “Invalid Administrator name or password, try again.”

Fig. 20. Enter Administrator Password dialog – Wrong Password

NOTE: Maximum Characters for Password is 18.

The System Password Screen will display. When changing passwords remember to never change the Administrator Rights. The Administrator should always have “FULL” access. The following illustrations display the System Password window and field values.

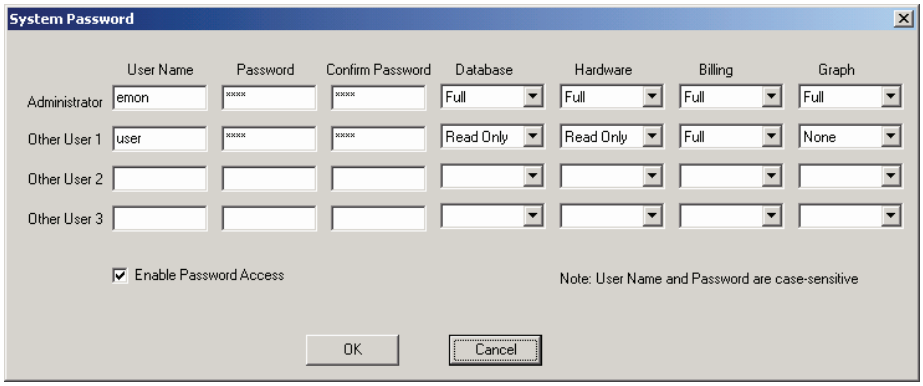


Fig. 21. System Passwords Window

DROP-DOWN FIELDS AND VALUES

- *Database = None, Read Only, and Full.*
- *Hardware = None, Read Only, Read/Bill, and Full.*
- *Billing= None, Read Only, and Full.*
- *Graph = None, Read Only, and Full*

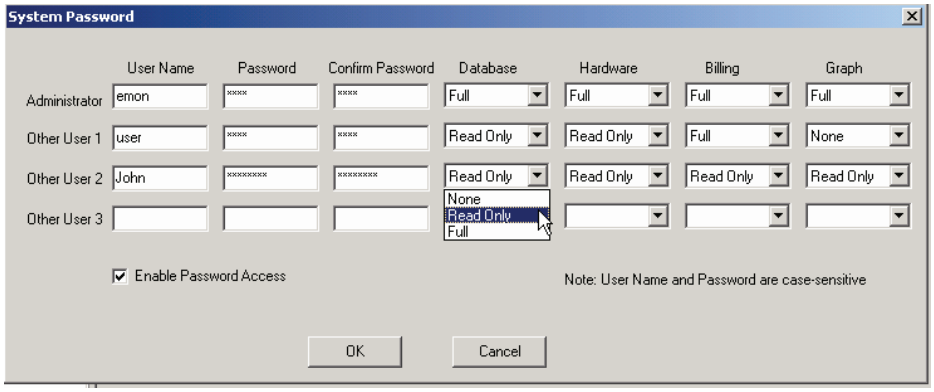


Fig. 22. System Password Window–Assigning User Access Rights

Remember to click OK, to save the new passwords and privileges.

NOTE: If the user has a *Read Only* access, they can't access the Database.

Table 1. Access Rights Description

Access	Description
None	The user has no access to any function.
Read Only	Able to view and read hardware and data, but cannot modify.
Full	Able to view, read, and modify hardware and data, graph data and perform billing.
Read/Bill	Read and reset meters for billing.

SECTION 4: WINDOWS COMPONENTS AND NAVIGATION

How do I use E-Mon Energy™?

If you are familiar with most basic Windows applications, this section should be easy for you to follow. Although, this section explains basic window layout and components, it also describes the customized window components.

It is recommended that you review this section to become familiar with these components prior to using E-Mon Energy.

What are the Main Window Components?

The E-Mon Energy main window is comprised of several window components. Most of these components are typical to any window application such as the title and menu bar, minimize and maximize buttons, scroll bars, and a directory list. The following illustrates each of the window components of the software.

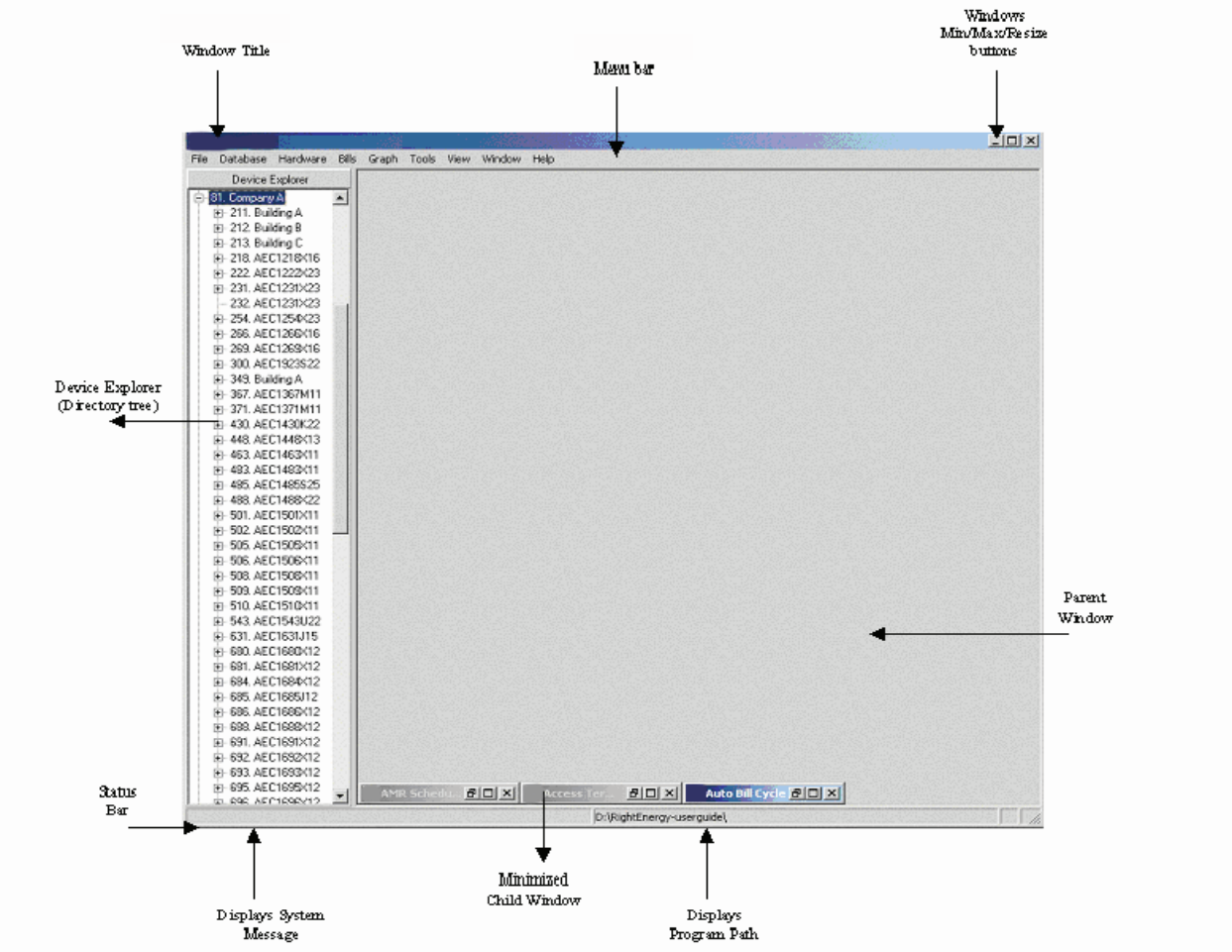


Fig. 23. Main Window Components

What is the Menu Bar?

E-Mon Energy™ Menu Bar drop-downs are commands and actions available to the user from the main menu bar. Within this manual, you will find explanations for the different menu choices. The exceptions to these menu items are the File, Hardware, and Bill menus, which become available depending on certain actions that are performed. When there is no activity, they are grayed-out (or dimmed).

NOTE: The Database drop-down menu is used for opening the Database Group; see “Understanding E-Mon Energy Database Group” within this section.

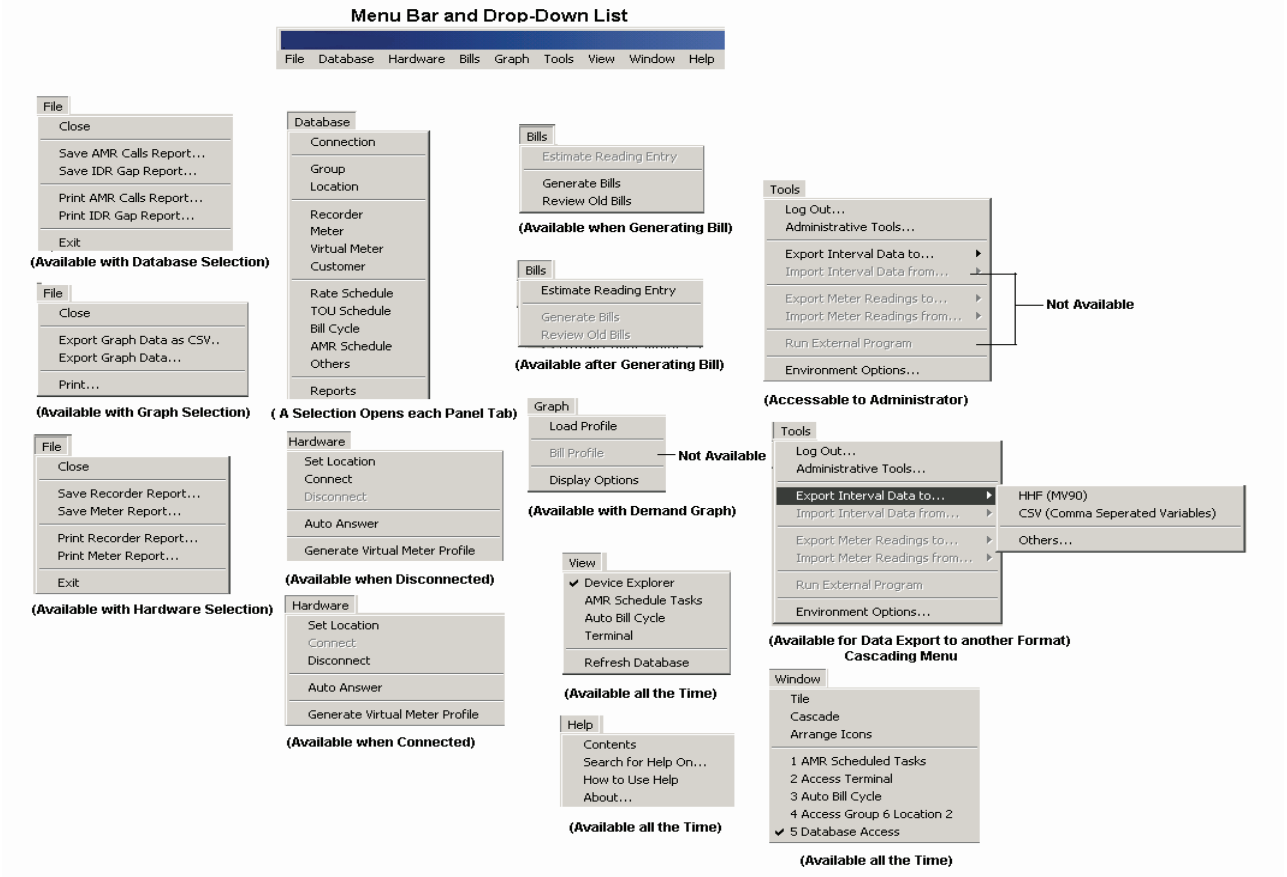


Fig. 24. Main Bar and Drop-Down Cascading Menus

There are several cascading menus in E-Mon Energy. One is under the Tool, next to *Export Interval Data to...* which allows you to export data to several file formats. The following figure illustrates an example of the cascading menu.

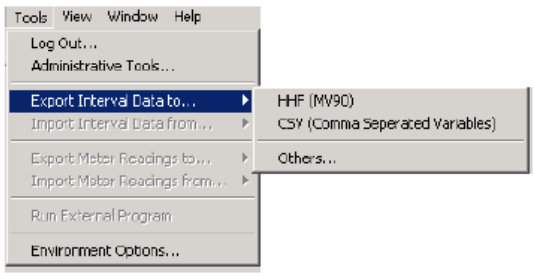


Fig. 25. Cascading Menu

What is the Device Directory?

The Device Directory is located on the left side of the E-Mon Energy™ main window. The directory tree allows the user to click and drill down from a group level, location, and down to an actual meter(s). The directory tree is comprised of the group level, location level, recorder level, and meter level. The following table describes each of these levels.

Table 2. Device Directory

Directory Level	Description
Group Level	Commercial or Residential Name (Group Number\Group Name)
Location Level	Physical location of the equipment (Location Number\Location Name)
Recorders	Recorder(s) at the location (Device ID\Recorder Name)
Meter	Meter(s) in the Recorder (Device ID\Meter Name)

Device Explorer Button

The *Device Explorer* button is located right beneath the Menu Bar. The Device Explorer button is used to refresh the directory tree after adding/deleting devices from the database.

Fig. 26. Device Explorer Button

What are the Window Components?

The E-Mon Energy™ application is designed to use parent (Main Viewing Window) and child (Task Window) windows. The parent window is the main viewing window. Within the parent window are child windows that open when a user selects a menu item. The following figure illustrates an example of the parent and child windows.

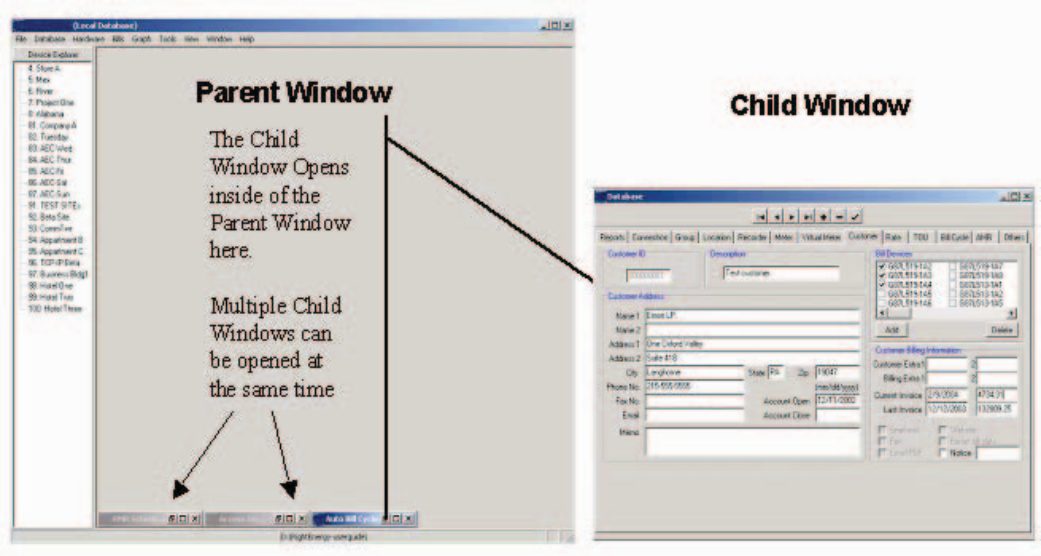


Fig. 27. Parent and Child Window

Parent Window

The Parent Window is the primary area within the E-Mon Energy window. The Parent Window is where the child window opens to perform a command or action. Multiple child windows can be open at the same time or sized, minimized or maximized like other window applications. When first opened, there are three child windows minimized within the Parent window at the bottom, AMR Scheduled Task, Access Terminal, and Auto Billing Cycle.

NOTE: For additional information on the AMR Schedule Task, Access Terminal and Auto Billing Cycle windows, refer to the related sections within this manual.

Child Windows

E-Mon Energy uses child windows to perform many of its tasks. The user can open multiple child windows depending on the menu selections. As an example, the user selects *Database* and *Connection*; a child window opens within the parent window.

The child windows can be resized by clicking on the minimized button or maximize at the top righthand corner of the title bar. To minimize and close the window temporarily, the user can click on the control windows button and the window will reduce to a title bar within the parent window. The user needs only to click on the maximize button, to open the window again.

Pop-Up Dialog Boxes

Throughout E-Mon Energy™ there are other types of windows that pop up in response to a command. A pop-up dialog or message box provides a status message, instructions, or requests an action before performing an operation. For example, after clicking Initialize recorder button on the Access window, the *Initialize recorder to factory* pop-up dialog opens. The following illustrates an example of the pop-up box.

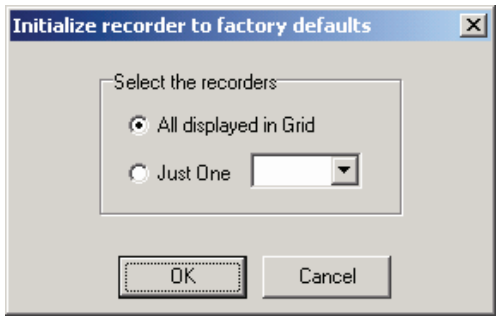


Fig. 28. Pop-Up Dialog Box

Pop-Up Menus

Within the E-Mon Energy device directory and child windows, there are *Pop-Up Menus* that display commands. Right click on an item on the Device Explorer or on a Graph to select from the pop-up menu. The following figures are examples of pop-up menus.

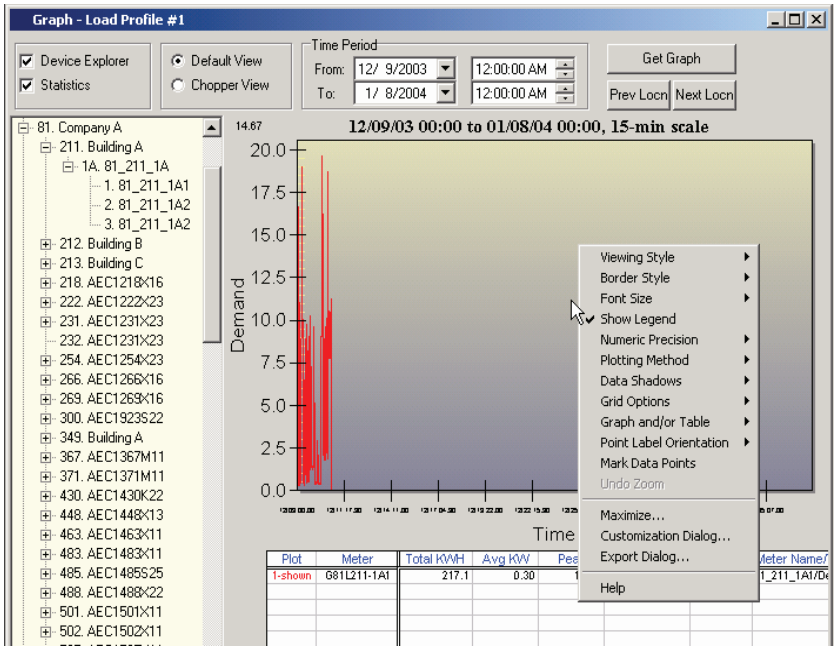


Fig. 29. Graph Pop-Up

WARNING

It is not recommended to use the pop-up menu on the graph. Altering these views from here may cause problems with viewing the charted data. We recommend using the Graph\Display Options from the menu bar.

Fig. 30. Device Directory Pop-UP

Pop-Up Calendars

On many of the Database Access Panels are data fields that require the user to enter a month, day, and year. The software provides easy access to pop-up calendars for quick look up and clickable selections to populate these date fields. The following illustrates an example of the pop-up calendar.

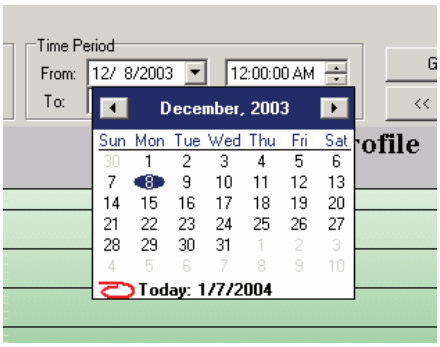


Fig. 31. Pop-Up Calendar

Messages Dialogs

Throughout E-Mon Energy™ there are warning and error messages that pop up, depending on actions and commands. The following illustrates two examples of these message dialogs.

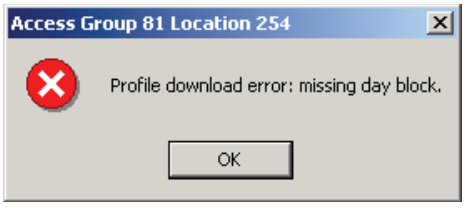


Fig. 32. Error Message Dialog

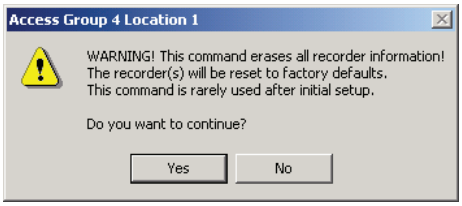
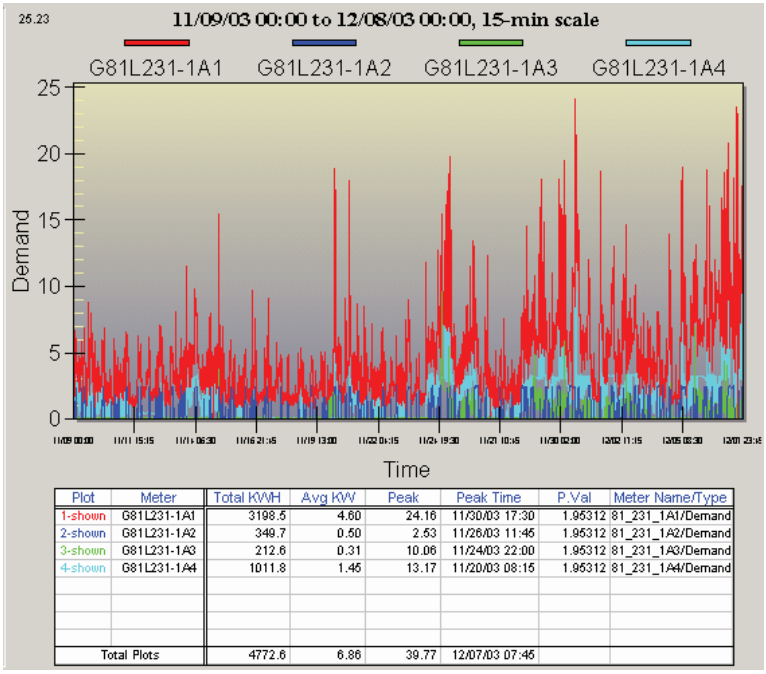


Fig. 33. Warning Message Dialog

What are the Interactive Graphs?

E-Mon Energy™ provides several interactive graphs - the Demand Profile, Power Graphs, and Real-Time Load Profile graphs. The following illustrates two examples of these graphs.



Plot	Meter	Total KWH	Avg KW	Peak	Peak Time	P.Val	Meter Name/Type
1-shown	G81L231-1A1	3198.5	4.60	24.16	11/30/03 17:30	1.95312	81_231_1A1/Demand
2-shown	G81L231-1A2	349.7	0.50	2.53	11/26/03 11:45	1.95312	81_231_1A2/Demand
3-shown	G81L231-1A3	212.6	0.31	10.06	11/24/03 22:00	1.95312	81_231_1A3/Demand
4-shown	G81L231-1A4	1011.8	1.45	13.17	11/20/03 08:15	1.95312	81_231_1A4/Demand
Total Plots		4772.6	6.86	39.77	12/07/03 07:45		

Fig. 34. Demand Profile

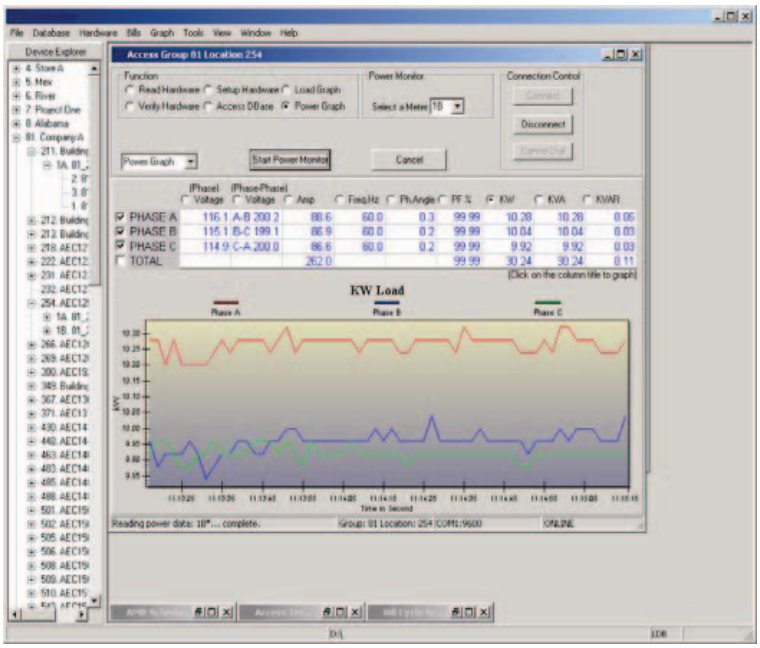


Fig. 35. Power Graph

What are the E-Mon Energy™ Database Groups?

In the E-Mon Energy application, data is grouped into related tasks, which are presented on one or more related panel tabs. A set of panels is referred to as the *Database Group*, and presented as a series of tabbed panels within the Database window. The name of each panel relates to the Database drop-down menu, which shows the navigation required to get to the panels. Each panel has groups of fields and individual fields. The following illustrations show each of the components on the Database Groups.

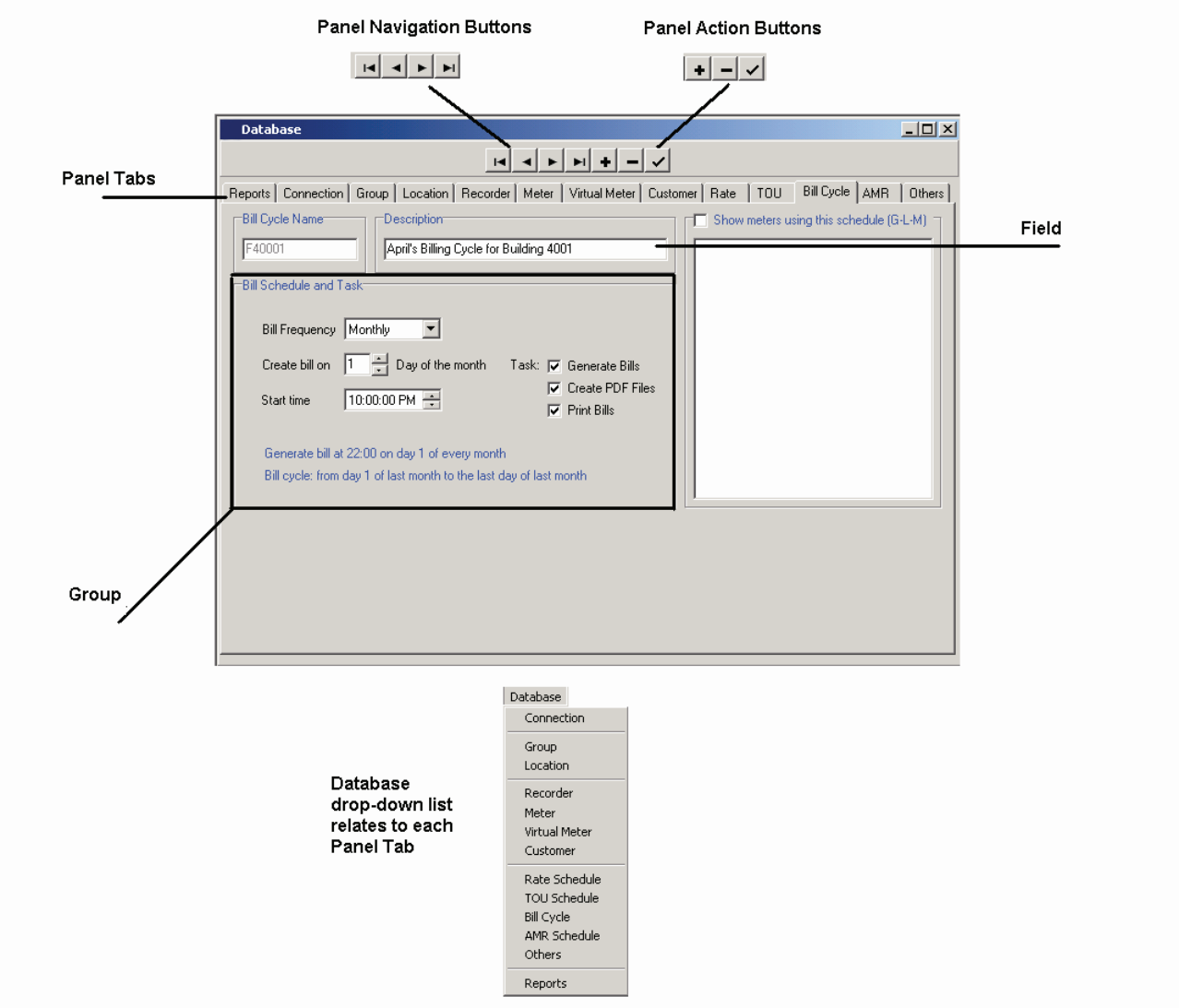


Fig. 36. Database Group

How do I use the Panel Navigation and Action Buttons?

To display any of the panel tabs in the Database group, the user can click on the tab for that panel, rather than selecting from the Database menu. Above the panel tabs are a set of buttons that serve as the data navigation and function keys.

Navigation Buttons

The first set is the *Panel Navigation* buttons, allowing the user to view and navigate forward and backward between stored data fields for a single panel. To move to the beginning of the stored data for that panel, click button. To move back only one, click the button. To move to the next stored data, click button. To move forward to the last stored data for that panel, click . These navigation buttons, also serve as a way to search for stored data for that particular panel task.

Action Buttons

The second set is the *Action* buttons, allowing the user to perform an action such as add, delete, or save a record.

When the Add button is selected, the panel clears all fields and a new record can be added to the selected panel. Clicking the *Add* button activates this mode.

When a user wants to delete a record, the user selects the record and selects the Delete button and a record is removed from the panel. Clicking the *Delete* button activates this mode. To save or update a record that has been changed or added, the user selects the Save button. Clicking the *Save* button activates this mode.

SECTION 5: CONNECTION PARAMETERS

What are Connection Parameters?

The Connection Parameters are the communication settings needed to connect between the host computer and the recorder(s) and meter(s). These settings are an essential part of the E-Mon Energy™ application. This section will show you how to set up the E-Mon Energy connection parameters and communicate with the actual hardware.

This all begins after you install the data communication device(s) and E-Mon Energy. Setting up these connection parameters is done on the Connection panel of the Database Group. On the connection panel, there are several Data Links to choose from, a Direct COM Port connection by way of a RS-485/RS-232 converter, a TCP/IP (Transmission Control Protocol/Internet Protocol) via an Ethernet connection.

Direct COM Port

The Direct COM Port connection is primarily a single point connection using a RS-232 from the computer into a multi-point communication network using a RS-485 converter (E-Mon Energy Key). The RS-485 converter allows connection to the recorder(s) and meter(s). The RS-232/RS-485 connection is used for an On-Site connection. The following illustrates the Direct COM Port connection.

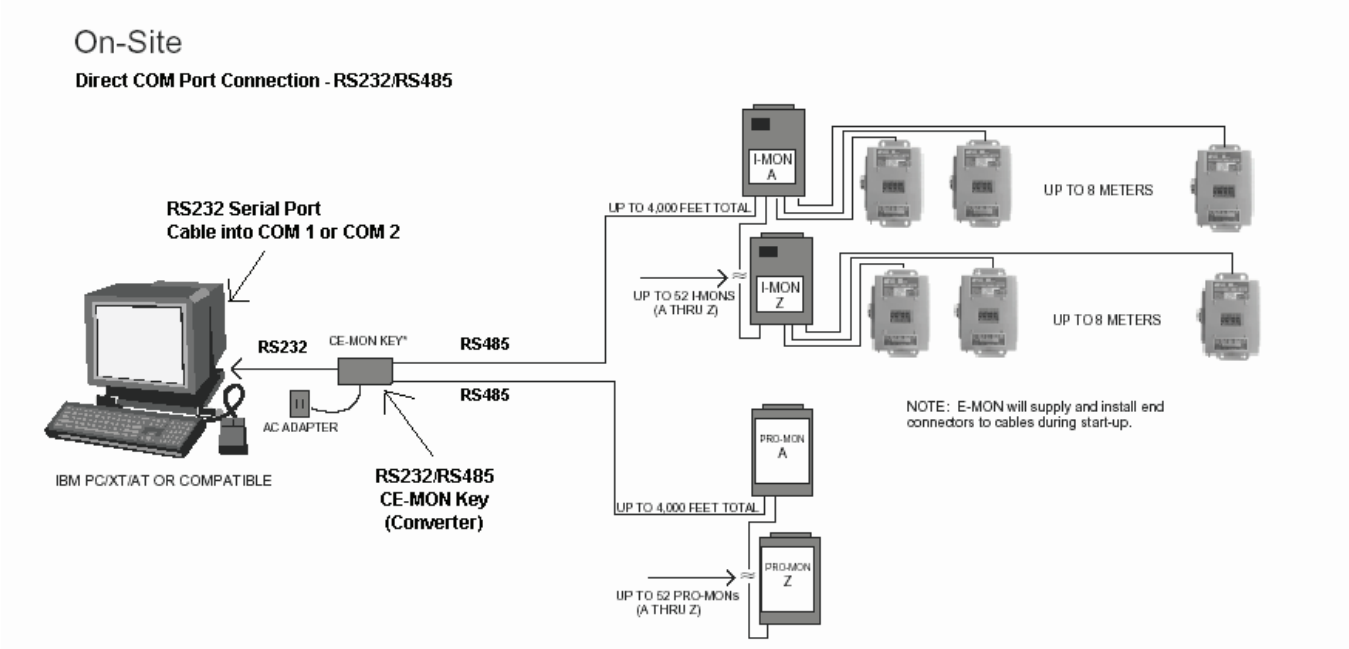


Fig. 37. Direct COM Port Diagram

Modem

The Modem connection uses the RS-232/RS-485 connection, but the converter now includes an external modem (i.e. communication device) to plug into the communicate port of your host computer. A dedicated internal modem can be used, which does not require a RS-232 connection, just a phone line connection. This Data Link type is used for remote connections to and from the recorder(s) and meter(s). See the illustration below.

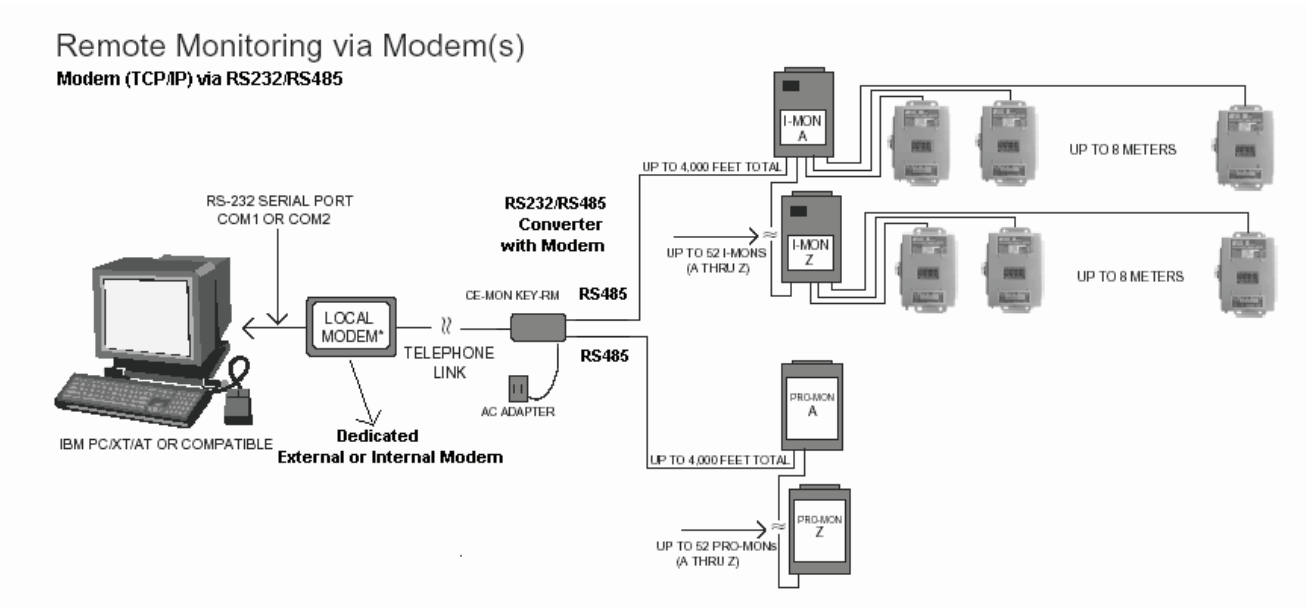


Fig. 38. Modem Diagram

Ethernet

The *Ethernet (10-base-2 or 10-base-T)* connection uses a 10-base-T or 10-base-2/RS-485 router (EKM-E) at each location that is IP addressable.

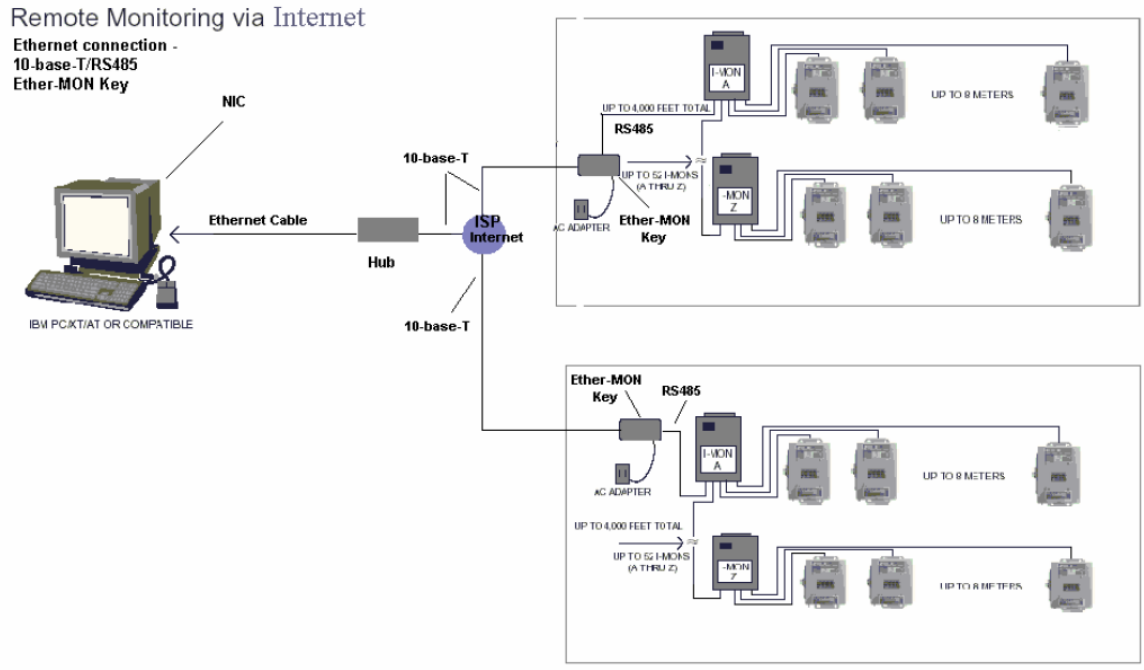


Fig. 39. Ethernet Diagram

NOTE: At this time, E-Mon Energy™ does not support the following connection types; USB Port, FTP (File-Transfer-Protocol), File Import, File Import via a program and Other.

What is the Connection Panel?

The *Database Group* provides a *Connection* panel for managing and creating your connection parameters. The following table describes fields on the *Connection* panel.

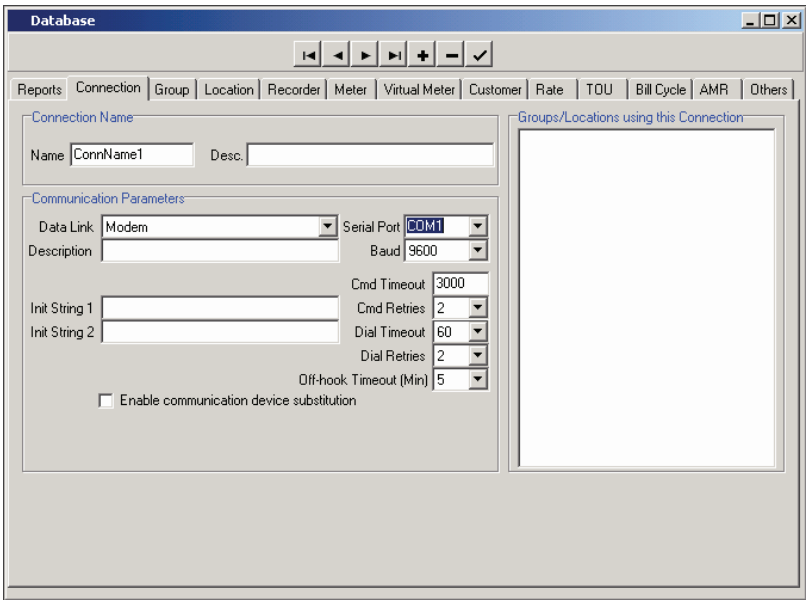


Fig. 40. Connection Panel

Panel Group/Field Name	Description
Connection Name	Panel Group.
Name*	Type in a unique name to identify your connection. The name can be up to 20 characters. This is a required field.
Desc.	Type in a description for your connection.
Communication Parameters	Panel Group.
Data Link*	Select the type of connection you are using. We will describe the 3 most frequently used connections – direct, modem, and Ethernet. This is a required field. Depending on your data link type, the parameters may or may not be applicable.
Description	Type in a description for your connection.
Serial Port	Your physical computer serial COM port for Direct connection or Modem connection.
Baud Rate	The transmission speed for the serial communication.
Cmd Timeout	Type in the preset time period when the transmission error will occur when E-Mon Energy doesn't receive a response from the recorder.
Cmd Retries	Select the number of times E-Mon Energy will retry sending a request to the recorder.
Dial Timeout	Select the time period for E-Mon Energy to wait to establish the connection.
Dial Retries	Select the number of times you want E-Mon Energy to redial to establish the connection should the call fail.
Off-hook Timeout (Min)	Specify the period of time that will be allowed to elapse with no communication activities. Thereafter, E-Mon Energy™ will drop the line. If you want the connection to stay on indefinitely, select 0.
Init String 1, Init String 2	The dialing string to force your modem to comply with your connection. Most modem manufacturers can supply this information.
Enable communication device substitution	Allows E-Mon Energy to utilize a similar connection type to establish the connection when the assigned connection is in use; e.g. modem.
Groups/Locations using these connections	The list box displays the Group assigned number, and the Location number for the devices along with the recorder(s) and meter(s) numbers.

* = Required Field

How Do I Set Up a New Connection?

Before setting up your connection parameters, make sure you have the following information available.

- Direct COM port – Serial Port, Baud Rate
- Modem – Serial Port, Init String 1, 2, Baud Rate
- Ethernet - IP address, Port No.

Setting up a Direct COM Port Connection

This connection is used for a direct connection to the recorder and meters.

To set up a Direct Com Port connection:

1. From the E-Mon Energy explorer window, click and select Database\Connection to display the Database window.

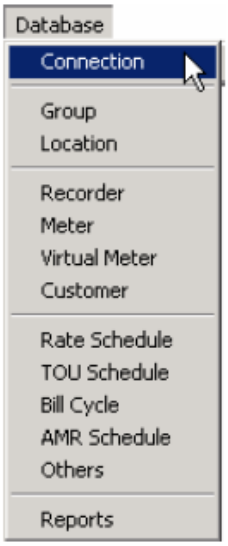


Fig. 41. Database\Connection Drop down menu

2. Click on the Panel Action "+" button to create a new connection.
3. In the Name field, type the Name of the connection link.

NOTE: This is a required field and must be unique.

4. Tab across, and type a short description in the Description field for your connection.

Fig. 42. Direct Comport Connection Name

5. From the Data Link drop-down list, select a Direct COM Port.

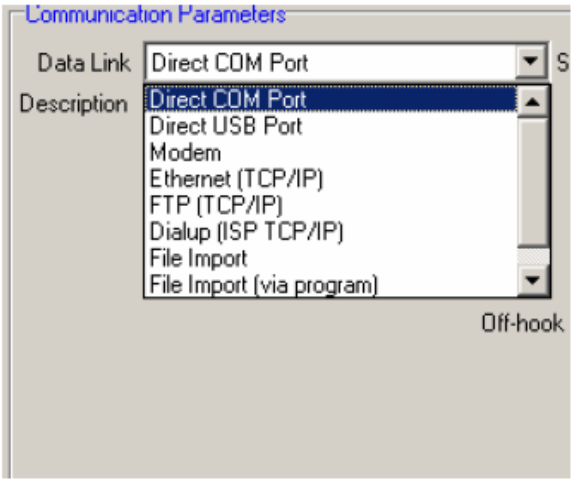


Fig. 43. Direct Comport Connection Data Link

6. In the Description field type a description for your connection type (i.e. Serial Port A).
7. From the *Serial Port* drop-down, select the serial port; usually COM1 or COM2. COM3 is usually for the internal modem. Consult your computer hardware configuration for the specifics of your computer setup.

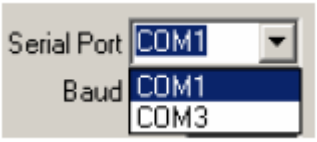


Fig. 44. Connection Serial Port

8. From the Baud Rate drop-down, select the correct Baud Rate for your hardware configuration. This baud rate must be the same as the recorder (device) baud rate.

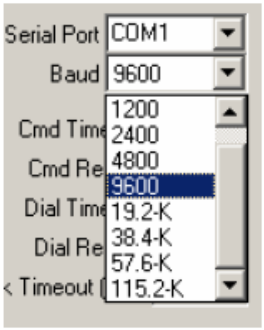


Fig. 45. Connection Baud Rate

NOTE: Be sure to check your system, recorder and meter configurations for the correct baud rate.

9. In the *Cmd Timeout* field, type in the pre-set time period allowed for E-Mon Energy™ to wait for a response to a command from the recorder. *(Default setting is 3000 ms)*

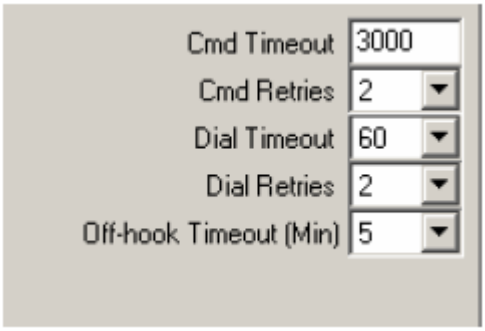


Fig. 46. Command Timeout

10. From the *Cmd Retries* drop-down, select the number of times you want E-Mon Energy to retry sending the command to the recorder, should it not get a response after Cmd Timeout. (Default setting is 2)
11. From the *Dial Timeout* drop-down, select the pre-set time allowed for E-Mon Energy to wait for a connection before giving up and going to a Dial Retry. *(This option is applicable* to modems only)
12. From the *Dial Retries* drop-down, select the pre-set time allowed for E-Mon Energy to attempt to connect to the remote system. *(This option is applicable to modems only)*
13. From the *Off-hook Timeout (Min.)* drop-down, select the time when you want E-Mon Energy™ to drop the line when there are no communication activities between E-Mon Energy and the recorder. *(Default setting is 5 minutes. This option is intended for use with a* modem connection.)
14. Click on "√ " button to accept/save the connection record. The Name field for the connection will become a fixed field and cannot be change.

Setting up a Modem Connection

To set up a *Modem* Connection:

1. From E-Mon Energy explorer window, click and select Database\Connections to display the Database Access window. See Figure
2. Click on the Panel Action "+" button, to create a new connection.
3. In the Name field, type the Name of the connection link. Note: This is a required field and must be unique.
4. Tab across, and type a short description in the Description field for your connection.

Fig. 47. Modem Connection Name

5. From the Data Link drop-down list, select *Modem.*

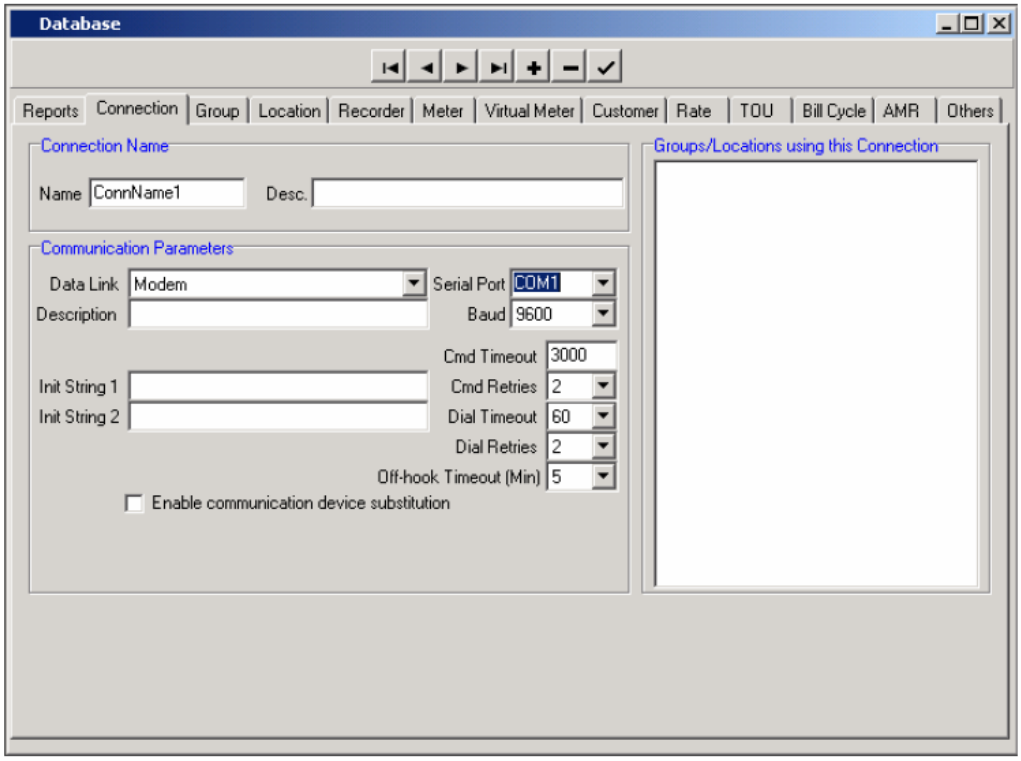


Fig. 48. Modem Connection Data Link

6. In the Description field, type a description for the connection type (i.e. Modem A).
7. From the Serial Port drop-down, select the serial port. COM3 is usually for an internal modem. Consult your computer hardware configuration for the specifics of your computer setup.

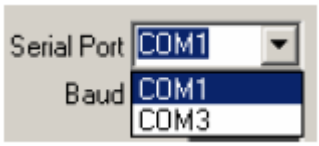


Fig. 49. Connection Serial Port

8. From the Baud Rate drop-down, select the correct Baud Rate for your modem configuration. This baud rate must be the same as the recorder (device) baud rate.

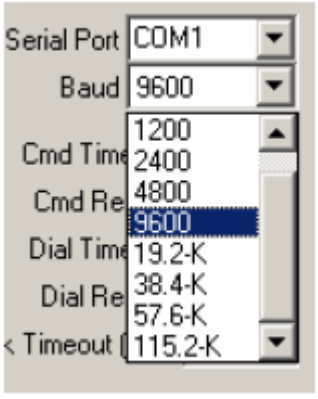


Fig. 50. Connection Baud Rate

NOTE: Be sure to check with your modem manufacturer for the correct baud rate.

9. In the *Cmd Timeout* field, type in the pre-set time period allowed for E-Mon Energy™ to wait for a response to a command from the recorder. *(Default setting is 3000 ms)*

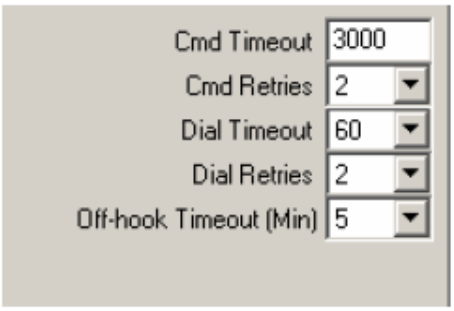


Fig. 51. Command Time Out

10. From the *Cmd Retries* drop-down, select the number of times you want E-Mon Energy to retry sending the command to the recorder, should it not get a response after Cmd Timeout. (Default setting is 2)
11. From the *Dial Timeout* drop-down, select the pre-set time allowed for E-Mon Energy to wait for a connection before giving up and going to a Dial Retry. *(Default setting is 60* seconds)
12. From the *Dial Retries* drop-down, select the pre-set time allowed for E-Mon Energy to attempt to connect to the remote system. *(Default setting is 2)*
13. From the *Off-hook Timeout (Min.)* drop-down select the time when you want E-Mon Energy to drop the line when there are no communication activities between E-Mon Energy and the recorder. *(Default setting is 5 minutes)*
14. In the Init String 1 field, type in the dialing string to force your modem to comply with the connection. Contact or check with your manufacturer for this information. Repeat this step for Init String 2 if you have additional settings.
15. Click on "√ " button to accept/save the connection record. The *Name* field for the connection will become a fixed field and cannot be changed.
16. From the E-Mon Energy explorer window, click and select Database\Connections to display the Database Access window.

Setting up an Ethernet Connection

To set up an Ethernet connection:

1. From the E-Mon Energy™ explorer window, click and select Database\Connections to display the Database Access window. See Figure
2. Click on the Panel Action "+" button to create a new connection.
3. In the Name field, type the Name of the connection link. Note: This is a required field and must be unique.
4. Tab across, and type a short description in the Description field for your connection.

Fig. 52. Connection Name

5. From the Data Link drop-down list, select *Ethernet.*

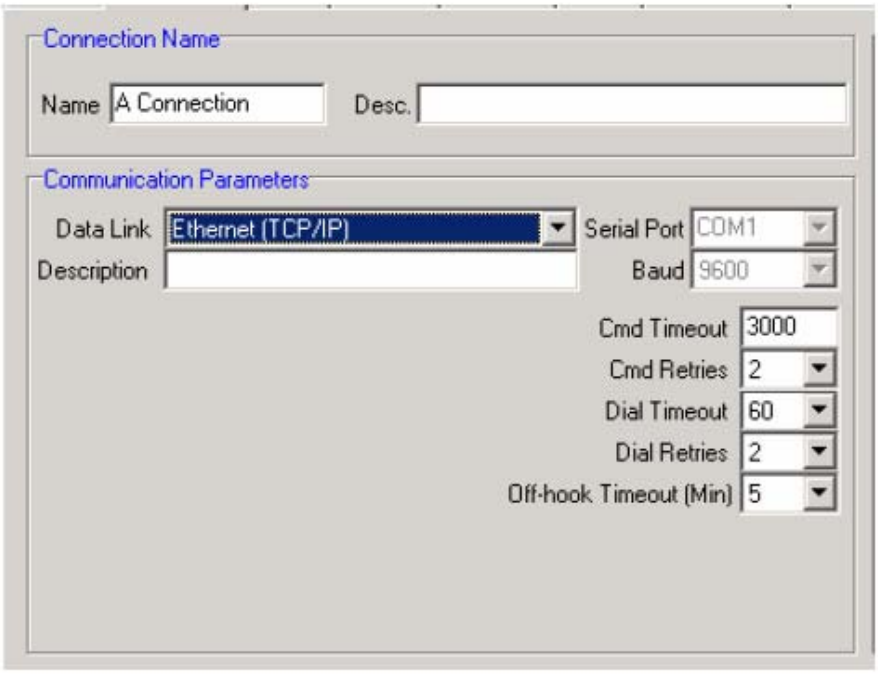


Fig. 53. Ethernet Connect

6. In the Description field, type a description for your connection type (i.e., MyCompany Network)

NOTE: You will notice that the Ethernet connection does not use the Serial Port or Baud fields.

7. In the *Cmd Timeout* field, type in the pre-set time period allowed for E-Mon Energy to wait for a response to a command from the recorder. *(Default setting is 3000 ms)*

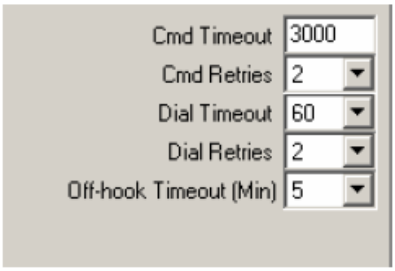


Fig. 54. Command Timeout

8. From the *Cmd Retries* drop-down, select the number of times you want E-Mon Energy to retry sending the command to the recorder, should it not get a response after Cmd Timeout. (Default setting is 2)
9. From the *Dial Timeout* drop-down, select the pre-set time allowed for E-Mon Energy to wait for a connection before giving up and going to a Dial Retry. *(This option is applicable* to modems only)
10. From the *Dial Retries* drop-down, select the pre-set time allowed for E-Mon Energy to attempt to connect to the remote system. *(This option is applicable to modems only)*
11. From the *Off-hook Timeout (Min.)* drop-down, select the time when you want E-Mon Energy™ to drop the line when there are no communication activities between E-Mon Energy and the recorder. *(Default setting is 5 minutes. This option is intended for use with a* modem connection.)
12. Click on "√ " button to accept/save the connection record. The *Name* field for the connection will become a fixed field and cannot be changed.

NOTE: If at anytime you need assistance, please contact our Technical Support at 1-800-334-3666.

Can I Have Multiple Connections?

No, only one connection type can be assigned to a location.

Can I Use the Same Connection for Multiple Locations?

Yes, you can use the same connection type for multiple locations. Select a location, click on the connection tab and navigate to the connection type, and click on "√ " button to accept and save. Once refreshed, the location will display in the *Groups/Location using this Connection* list box.

Can I Modify or Delete a Connection?

If you created a connection and need to change the communication parameter(s), you can make the change by navigating to the connection and making the change, then clicking on "√ " button to accept/save the changes.

If you created a connection and no longer need to use it, you can delete it from the database. Prior to deleting, ensure there is no location using this connection by checking the "Groups/Locations using this Connection" list box in the Connection database panel.

SECTION 6: AUTOMATIC METER READING (AMR) SYSTEM

What is Automatic Meter Reading (AMR)?

Automatic Meter Reading (also known as AMR) is a data collection module of E-Mon Energy™ that can be programmed to automatically receive incoming calls and/or initiate outgoing calls to the local and/or remote devices. With AMR, you can constantly monitor your meters by setting up a pre-determined schedule based on frequency and time.

The AMR application runs the schedule based on your pre-determined configurations and communicates using any basic phone line (i.e. modem). Creating this type of environment allows you to maximize data collection around the clock and/or during off-peak hours. Once the schedule is set, the scheduler works by itself, and does not require an operator.

This section covers how an AMR schedule works, how to create an AMR (Call-In and Call-Out) schedule, and running/maintaining an AMR schedule.

AMR components include:

- Schedule – Configure the call-in/out frequency and time – hourly, daily, weekly, or monthly.
- Task – Assign various functions for E-Mon Energy to perform once the connection is established.
- Server – Configure the telephone or IP Address number for the recorder to use for calling in.

How does the AMR Schedule Work?

The AMR schedule is created through E-Mon Energy. For AMR Call-in, the schedule is sent to the primary recorder (Device ID 1A). For AMR call-out, the schedule is placed in the AMR Scheduled Task window, which is normally minimized. When E-Mon Energy receives a call and the connection is established, it will first query the Group and Location from the primary recorder. Once received, E-Mon Energy will look in the database for the record. If not found, it prompts the user to add the unknown device into the system. If the record is found, E-Mon Energy looks up the Task that's been programmed, and performs the various functions automatically. When completed, E-Mon Energy will logoff and issue the "Goodbye" command set to the recorder. See the illustration below.

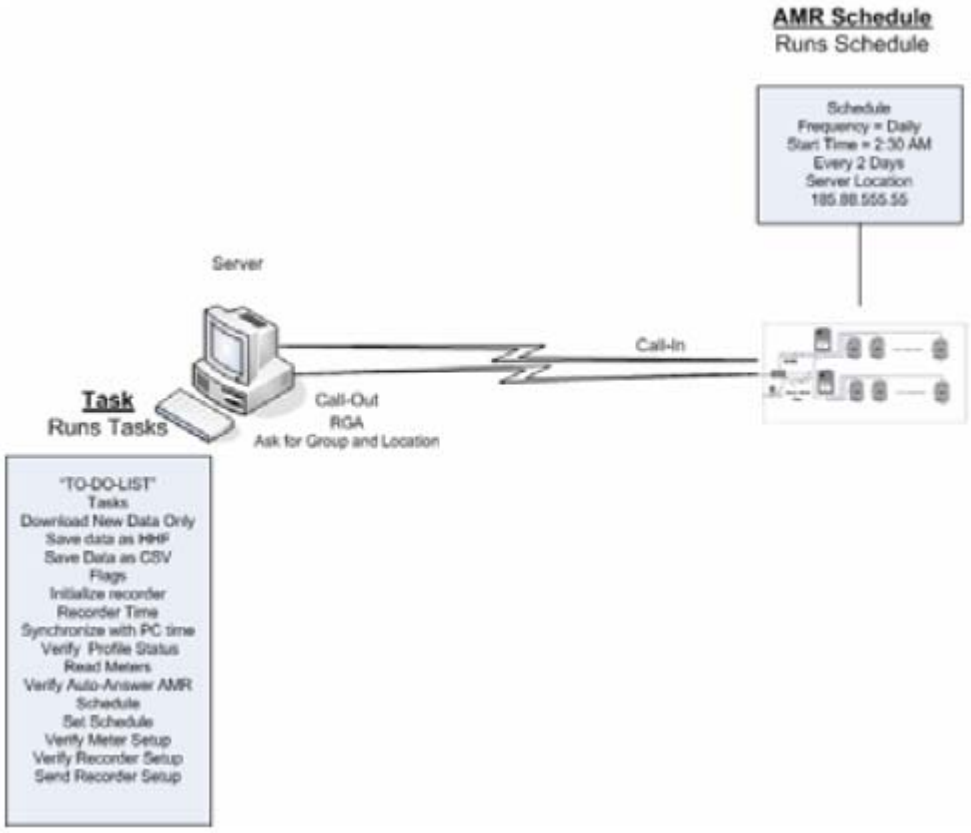


Fig. 55. AMR Schedule Call-In Diagram

What is the AMR Panel?

The AMR Panel is where you will create an AMR schedule, task, and server. Select the AMR Schedule from the Database drop-down menu.

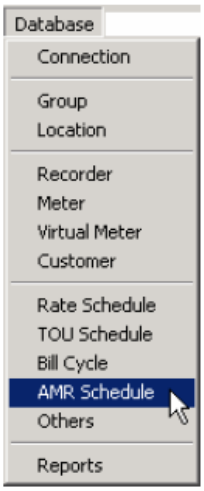


Fig. 56. Database AMR schedule menu

What are AMR Icons?

The AMR panel is divided into three categories: *Schedule*, *Task*, and *Server*. To the left of the panel group is a box with three icons, each representing a category. The clock icon represents the *Schedule*; the gear represents *Task*, and the telephone represents the *Server*. Clicking on any one of these icons will take you to that particular panel.

Fig. 57. AMR Icons

What is the Schedule Panel?

The Schedule Panel contains settings for the call-in/call-out frequency and time.

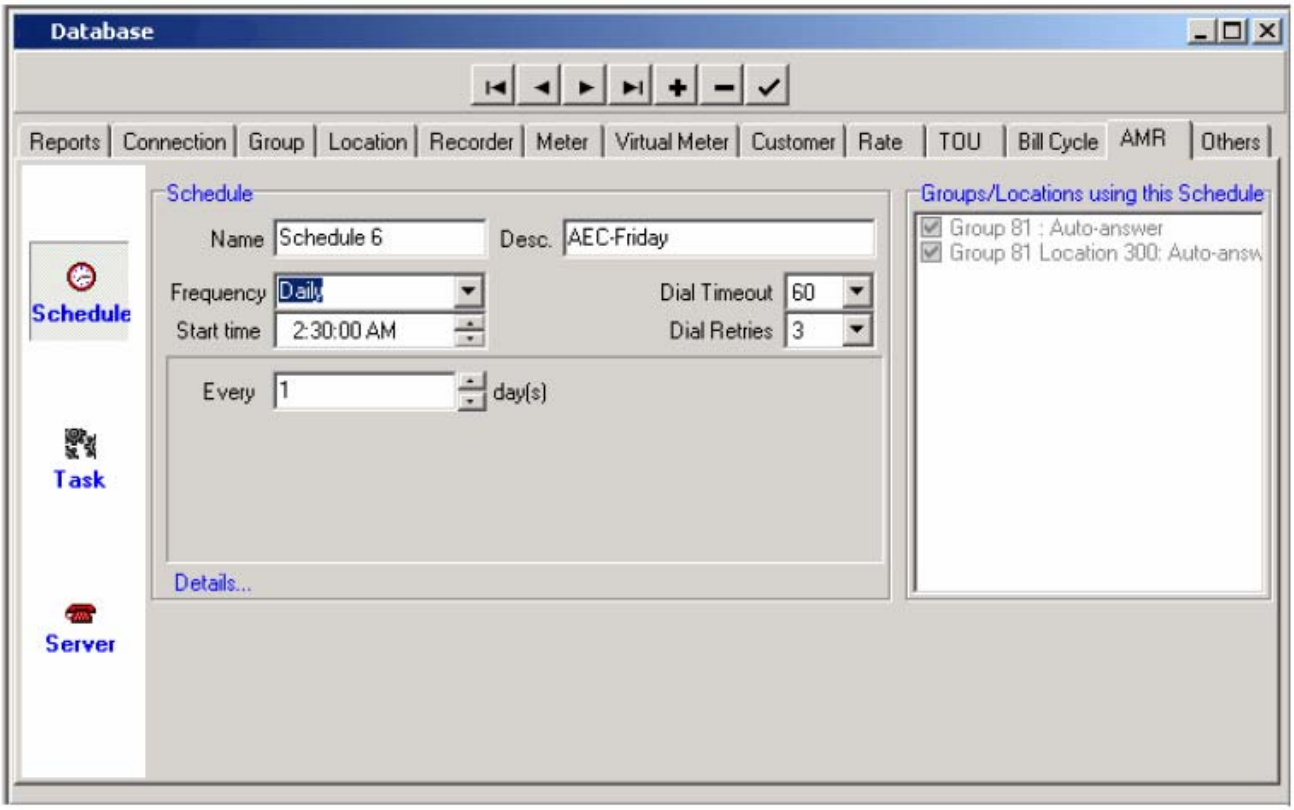


Fig. 58. Schedule Panel

Panel Group/Field	Description
Schedule	**Panel Group**
Name*	Type in the name of your schedule. This is a required field and must be unique. This name will be used in setting up recorders for calling in (call-home). This name will be referenced in the Group and/or Location tabs of the Database window.
Desc.	Description for your schedule.
Frequency*	From this drop-down you can select the time frame you want the schedule to activate – Hourly, Daily, Weekly, or Monthly. This is a required field.
Start Time*	The Start Time criteria changes depending on your selection of the Frequency drop-down field, with the exception of hourly having incremental settings of 15, 30, 45, and 60 minutes. Daily = hours, minutes, AM/PM and Every 1, 2, 3, ... 31 day(s) Weekly = hours, minutes, AM/PM and Every 1, 2, 3, ... week(s), and every Monday, Tuesday, Wednesday, Thursday, Friday, Saturday, and Sunday. Monthly = hours, minutes, AM/PM and Day of the Month(s) or The First, Second, Third, Fourth, Last and Monday, Tuesday, Wednesday, Thursday, Friday of the month(s). Check boxes are provided to choose and select months you want to run the schedule.
Details	Once the "√ " button is pressed, the schedule is printed in an easy-to-read format.
Dial Timeout	From this drop-down, you can select the time period. The application will wait to establish the connection, e.g. modem. If the connection is not successfully established within this time period, E-Mon Energy™ will perform a dial retry.
Dial Retries	From this drop-down, you can select the number of times the application will redial or connect to establish a connection, e.g. modem.
Groups/Location Using this Schedule	Panel Group. This list box displays the groups and locations utilizing the current schedule. Note: Prior to deleting a schedule, ensure that there is no location utilizing it. (Make sure this list is emptied).

* = Required field.

What is the TASK Panel?

The Task Panel contains “To-Do List” selections that we can program in E-Mon Energy™ to perform during the AMR call-in or AMR call-out session.

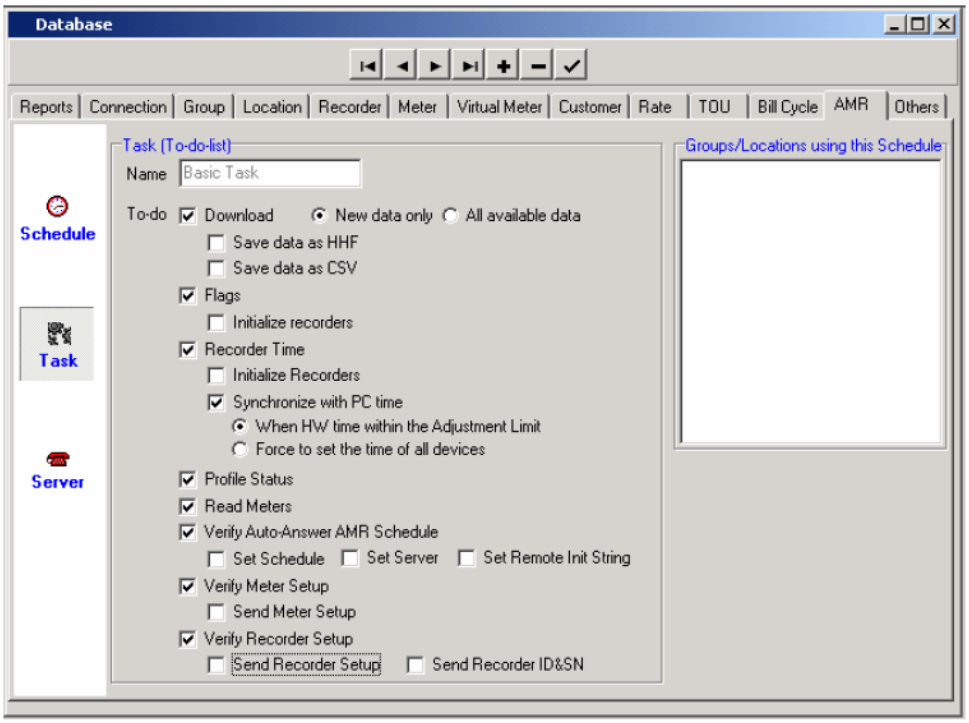


Fig. 59. Task Panel

Panel Group/Field/Checkbox	Description
Task (To-do-list)	**Panel Group**
Name*	A Name for your To-do list. This is a required field and must be unique. This name will be used in setting up recorders for calling in/out. This name will be referenced in the Group and/or Location tabs of the Database window.
Download	Checked = Download interval data from recorder. Not Checked = No Download. Select “New data only” = E-Mon Energy downloads only new data. Or select “All available data” = E-Mon Energy downloads all data, overwriting the ones in the database. Save data as HHF = Will save data as HHF format (Hand-Held Format). MV-90 normally imports this format for interval data. Save data as CSV =Will save data as CSV format (Comma-Separated Value). Collects data from the table so that it can be put into another table-oriented program (i.e., Excel, or a relational database application).
Flags	Checked = Will check flags (i.e., status, power failure, tamper alarm, over load) Not Checked = Will not check flags (i.e., status, power failure, tamper alarm, over load) Initialize Recorder = If recorder configurations are corrupted (RAM corruption or real-time clock is bad), E-Mon Energy will initialize the recorder. Not Checked *Initialize recorder* = Will not initialize the recorder.
Recorder Time	Checked = Will automatically check the date and/or time for the recorder. Not Checked = Will not check the date/time for the recorder. Initialize Recorder = If recorder configurations are corrupted (RAM corruption or real-time clock is bad), E-Mon Energy™ will initialize the recorder. Synchronize with PC time = Will synchronize the recorder date/time with the PC date/time depending on which selection has been made at the recorder. Options include Adjustment Limit, where minimums and maximums are set; as well as Force, where the recorder always synchronizes at a particular time period.
Profile Status	Checked = Will check the profile status. Not Checked = Will not check the profile status.
Read Meters	Checked = Will read meter displays (usage accumulation and peak demand). Not Checked = Will not read meter displays.
Verify AMR Schedule (Call-in)	Checked Box = Will verify the programmed AMR Schedule. Not-Checked Box = Will not verify the programmed AMR Schedule. Note: The AMR Schedule and Server are created on the AMR tab in the Database Access window. Set Schedule = Will set the AMR Schedule (Dial-in), if the programmed AMR Schedule is different from the database. Set Server = Will set the dial-in number into the recorder. Set Remote Init String = Will set the init string into the recorder (e.g., modem init string).
Verify Meter Setup	Checked = Will verify settings programmed into the meter with settings stored in the database. Not Checked = Will not verify settings. Send Meter Setup = If the meter setup is not the same as the database setup, E-Mon Energy will send the setup to the meter.
Verify Recorder Setup	Checked = Will verify settings programmed into the recorder with settings stored in the database. Not Checked = Will not verify settings. Send Recorder Setup = If the recorder setup is not the same as the database setup, E-Mon Energy will send the setup to the recorder. Send Recorder ID&SN = If the recorder ID and Serial Number is not the same as the database setup, E-Mon Energy will send the setup to the recorder.
Groups/Location Using this Schedule	Panel Group. This list box displays the groups and locations utilizing the current schedule, task, and server. Note: Prior to deleting a task, ensure that there is no location utilizing it. (Make sure this list is emptied).

* = Required field.

What is the Server Panel?

The Server Panel contains settings for a telephone number or IP address for programming the remote device to call home to E-Mon Energy™.

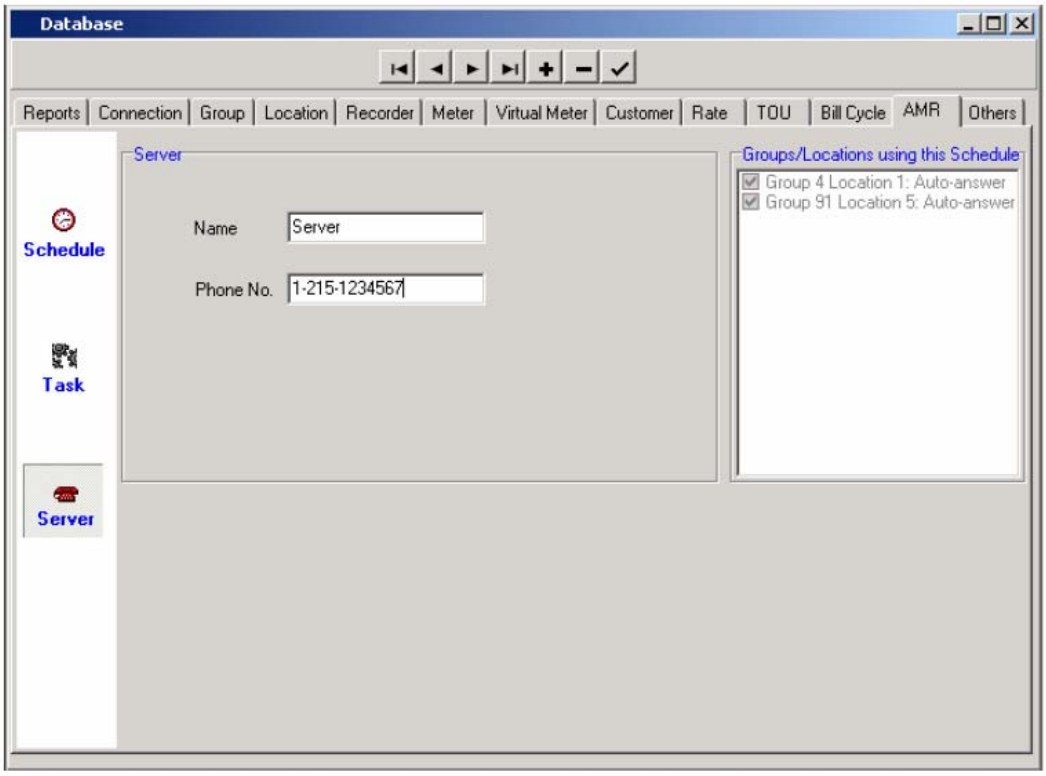


Fig. 60. AMR Server Panel

Group/Field/Checkbox	Description
Server	**Panel Name**
Name*	Type in the server name. This is a required field and must be unique. This name will be used in setting up recorders for calling in (call-home). This name will be referenced in the Group and/or Location tabs of the Database window.
Phone No.*	Type in the server phone number for the recorder to call-in. This is the number that the server will call. This is a required field.
Groups/Location Using this Schedule	Panel Group. This list box displays the groups and locations utilizing the current server. Note: Prior to deleting a server, ensure that there is no location utilizing it. (Make sure this list is emptied).

* = Required field.

How do I Create an AMR Schedule?

With the AMR system, the user can create a schedule to call in or call out, or retrieve data from the meters at any time, day or night. Creating the AMR schedule begins by knowing what group and location you want to assign.

Creating an AMR Schedule

To create an AMR Schedule

1. Select Database\AMR from the drop-down menu or click on the AMR tab in the Database window.
2. Click on the Panel Action “+” button, to create a new connection.
3. Under Schedule, type in a schedule Name.
4. Type in a Desc. (Description) for the schedule.

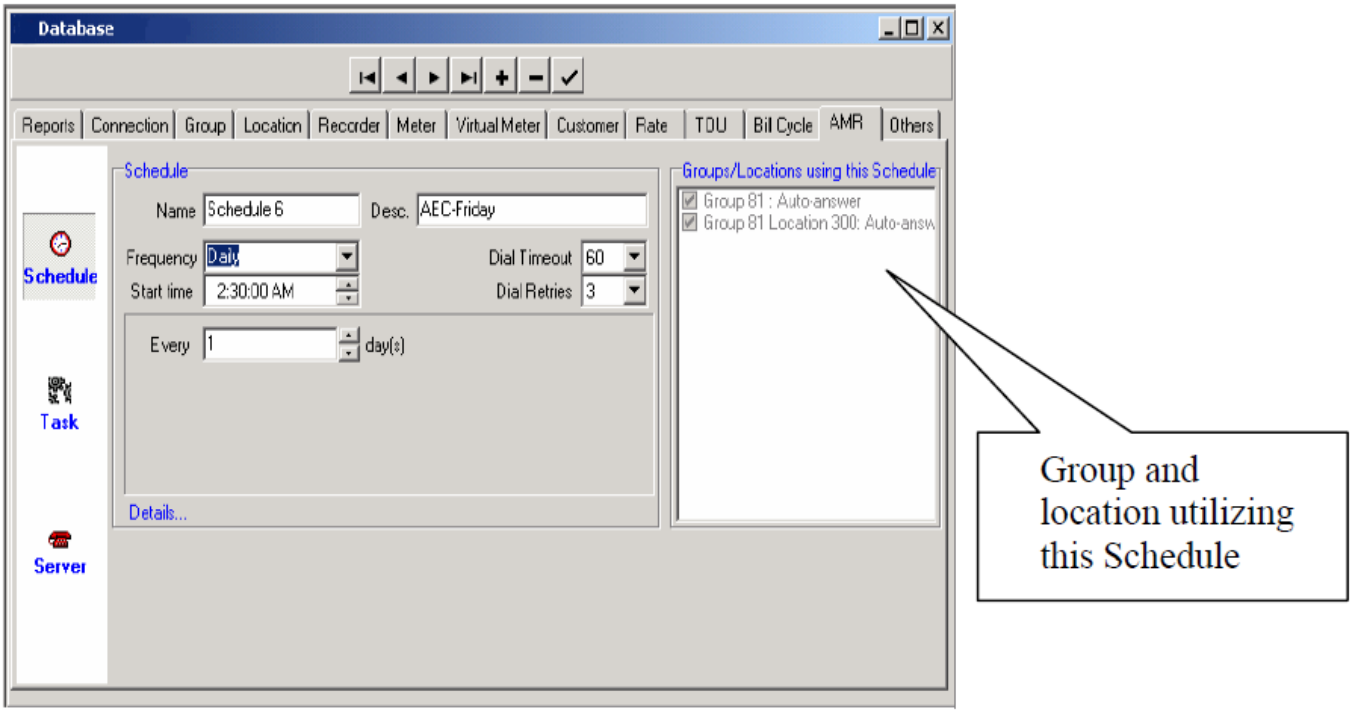


Fig. 61. AMR Schedule

5. From the Frequency drop-down list, select how often you want the schedule to run.

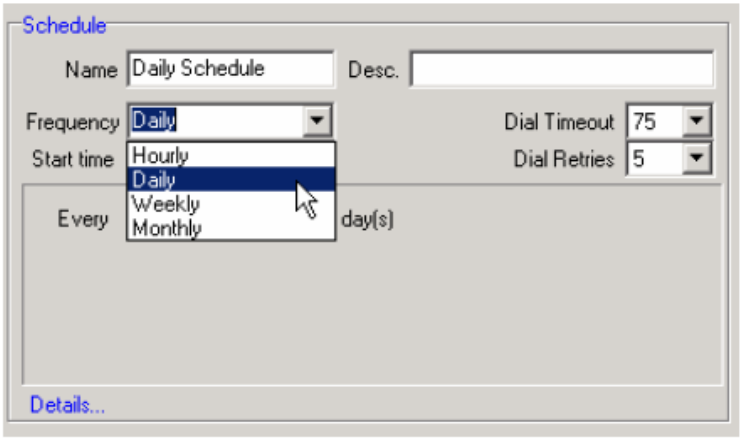


Fig. 62. AMR Schedule Frequencies

NOTE: Depending on Frequency selection, the setup details will change accordingly. Note: Hourly will not have a Start time; it will have 15 minute increments.

6. Select Daily. Click and type inside the text box to change each time increment or click on the up down arrows to adjust the timeframe for each increment.
7. Select Dial Timeout from the drop-down list.
8. Select Dial Retries from the drop-down list.
9. Next to Every, select up down arrows or type in a number for how often on a daily basis you want to run the schedule (e.g., every 1, 2...days).
10. Click on the check button to accept/save the AMR schedule record.

How do I Set Up the Tasks?

With AMR, the user can create a schedule for the recorder to call in or call out from a list of “To-do” tasks.

To set up a task list:

1. From the AMR tab, click on the Task icon on the white panel.
2. Click on the Panel Action "+" button, to create a new task.
3. Under the Task (To-do-list), type in a Name for the schedule task.

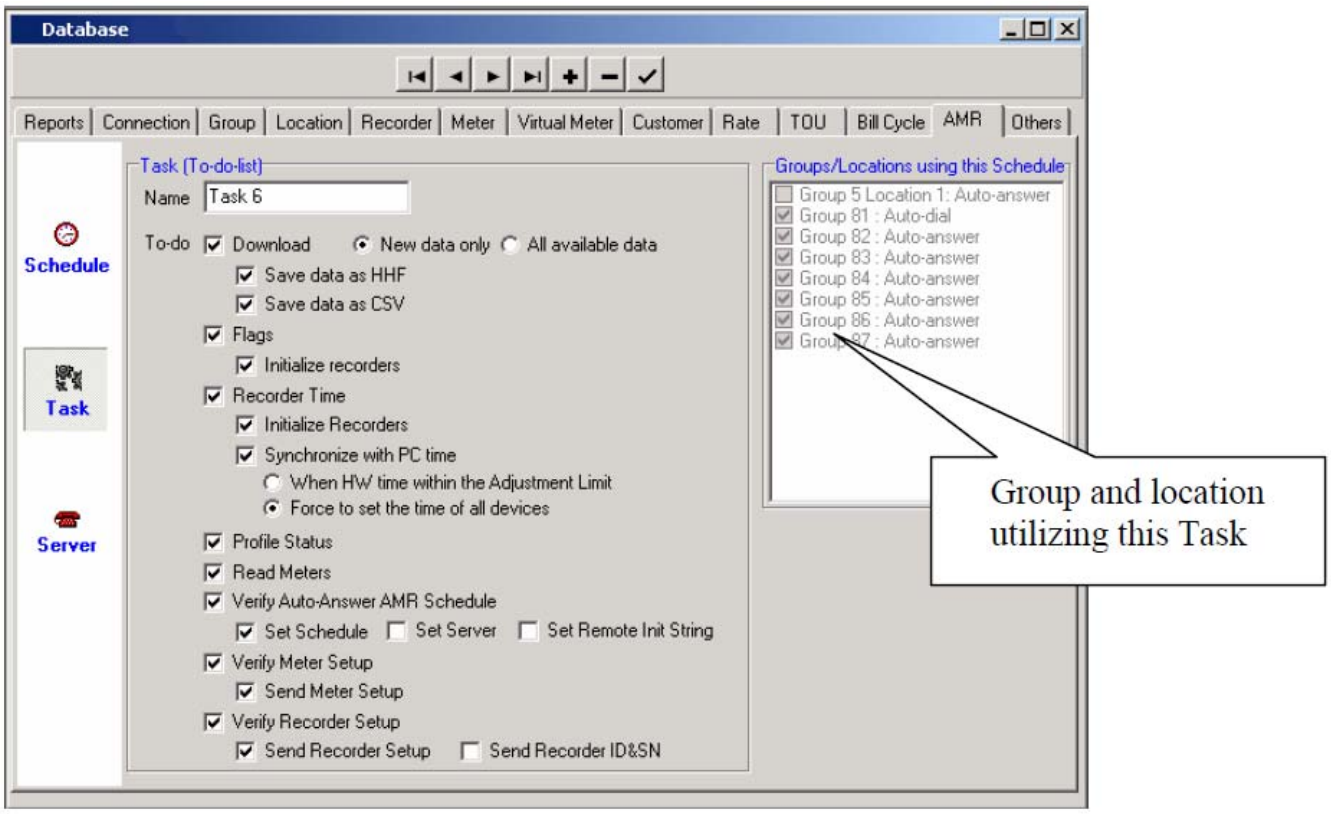


Fig. 63. AMR Task (To-do-list)

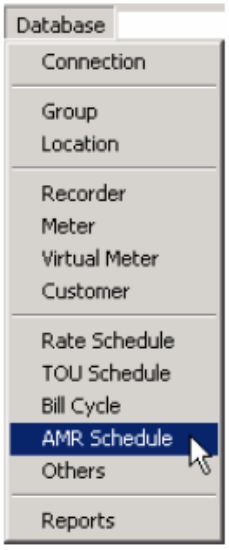
4. In the To-do group, click and check the to-do items for the schedule. *For details on these to-do* items, refer to the E-Mon Energy™ User Manual section entitled _(Kantol to provide).
5. Click on the check button to accept/save the task record.

How do I Set Up the Server?

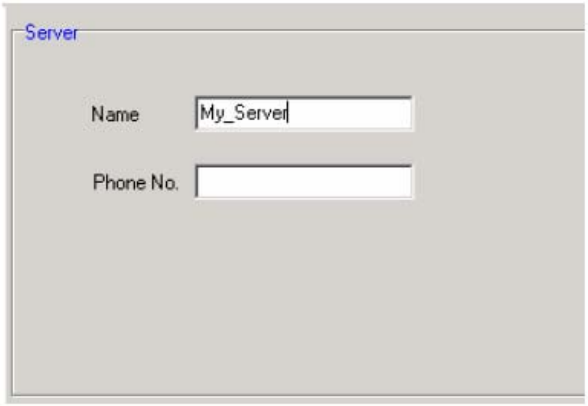
With AMR, the user can create a call-in server for the recorder.

To set up a Server

1. Select Database/AMR Schedule from the E-Mon Energy™ menu.



2. Select the *Server* Icon from the panel.
3. Click on the Panel Action "+" button to create a new server.
4. Type the Name for the Server. (Note: The Name will be referenced from Group and Location.



5. Type the phone number for the recorder to call-in. (Note: This will be used in setting the AMR).

6. Click on the "√ " button to accept/save the task record.
7. Click on the *Group* tab, and ensure that the AMR schedule's Call-In group fields are selected for the Schedule, Task and Server (i.e. *My_Server*) you created.
8. Check the "Enable AMR" box.
9. Click on the check button to accept/save the task record.

SECTION 7: GROUP AND LOCATION

What are Group and Location?

The *Group* is a collection of locations. It is used for organizing the locations so that they're easier to manage in E-Mon Energy™. For example, when utilizing the automatic scheduler for data collection and/or billing, we can manage a group of locations, rather than every location individually. In turn setup time is reduced. Each *Group* may consist of one or more locations. A group does not store site-specific information, such as a phone number to the recorder. Site-specific information is stored in the Location tab.

The *Location* is the physical location or site of the hardware – data recorder/meter. Within the group are the *Location(s)* where the recorders and meters are installed. E-Mon Energy essentially uses the *Groups* and *Location* as a site matrix for tracking, connecting, and monitoring the physical equipment. A location must have information on how to connect to the hardware (e.g., COM port, phone number, IP address, etc.).

How does it work? It begins with the software and communication setup. The user enters and assigns a *Group Number* between 1 and 32767. This acts as a tracking system within the software. To each group, the user assigns the *Location Number*(s) between 0 and 32767. With these parameters established, the user sets the location, connects, scans hardware, and configures the recorder. All this data is then added to a database to set up the Manual or Automatic Meter Reading System (AMR) for the Location's recorders and meters.

The illustration below displays a group configuration and how it looks in the Device Explorer directory of the software.

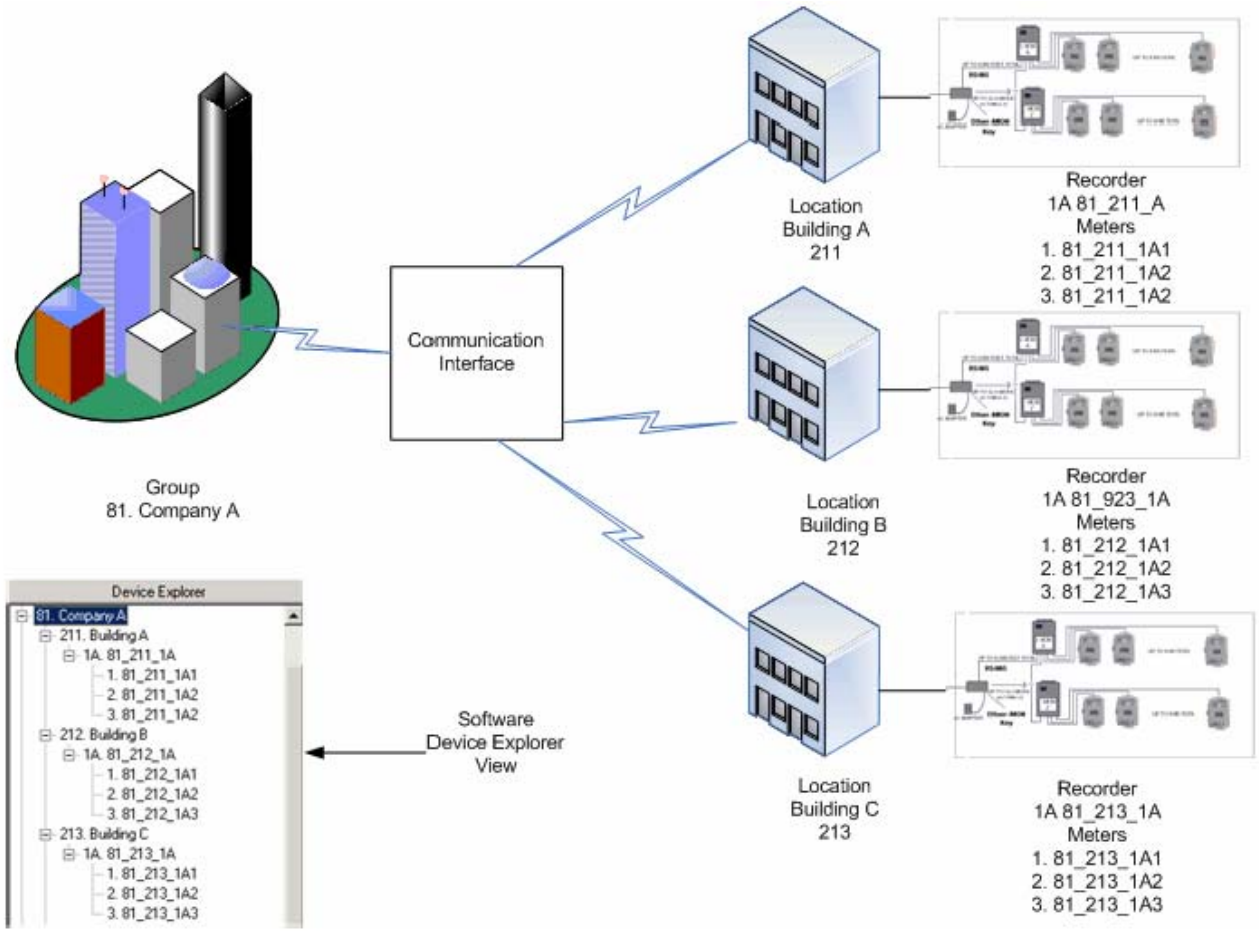


Fig. 64. Group And Location Example

This section covers how to create, use, and manage *Groups* and *Locations* within E-Mon Energy software.

Where do I setup a Group and Location?

The *Group* and *Location* setup is created on the *Database* window of the software. The *Group* and *Location* panels can be accessed from the *Database* drop-down menu on the menu bar.

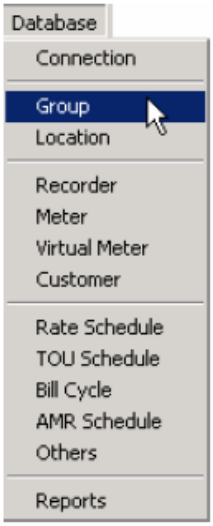


Fig. 65. Database drop-down menu

From the Group panel, a new group can be added or modified and saved. Similarly, from the Location panel, a new location can be added or modified and saved.

What is the Group Panel?

The *Group Panel* is where you assign the Group Numbers and set up profile characteristics. These profile characteristics include the assigned group number and name, address, AMR schedule, password security, load control, recording parameters, billing structure and the auto-bill cycle.

NOTE: If you have already set up an existing AMR schedule, Rate Table, TOU Schedule or Billing Cycle for other Groups, you can select and use those profiles.

The Group Number is required to save and create a position in the Device Explorer. We strongly suggest that you provide a meaningful name for each group. All other field selections can be created later. The following illustration and table describes the fields on the Group Panel.

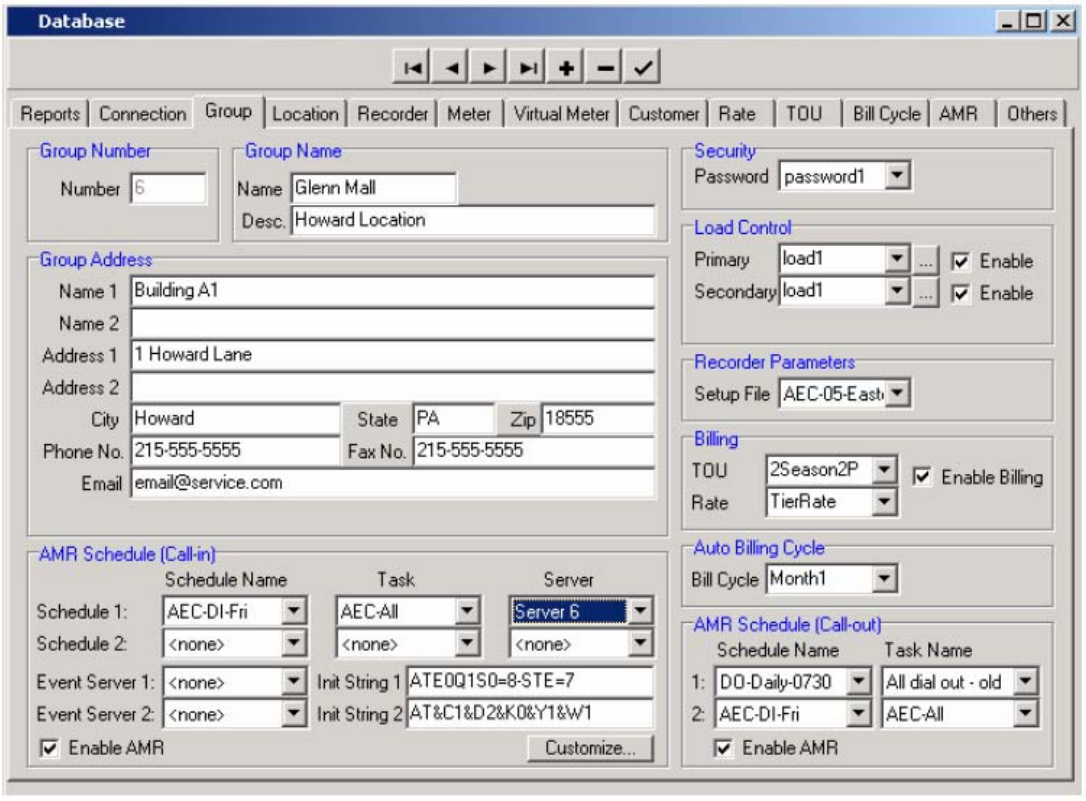


Fig. 66. Database Group Panel

Panel Group / Field	Description
Group Number	Panel Group
Number*	Type in a unique number to identify the Group. The number must be between 1 and 32767. Note: Once refreshed, the Group Number will display in the Device Explorer window. This is a required field.
Group Name	Panel Group
Name	Type in a name for the Group. Once refreshed, the Group Name will display next to the group number in the Device Explorer window. This is an optional field, however we suggest you provide a meaningful name.
Description	Type in a brief description of the Group.
Group Address	Panel Group
Name 1	Type in the contact name or owner of the Group.
Name 2	Type in the company name or any other name that may be a second owner or partner.
Address 1	Type in the address.
Address 2	Type in the address.
City	Type in the city.
State	Type in the state.
Zip	Type in the 5-digit zip code.
Phone No.	Type in the 10-digit phone number. This is the contact phone number. The field format is 555-555-5555.
Fax No	Type in the fax number. The field format is 555-555-5555.
AMR Schedule (Call-In or Call-Home)	Panel Group. This panel is required if you are planning to program the recorder to call-home (E-Mon Energy™). Refer to “AMR” tab for details on how to create Schedule, Task, and Server. Each of the locations within this group has the option of inheriting this setup. Note: Schedule 2, Task 2, and Server 2 are reserved.

Panel Group / Field	Description
Schedule	Select the AMR schedule name that is created on the Schedule panel of the AMR tab in the Database window. This field will be used to program to the remote hardware via the Set Call-in AMR button in the Access Location window.
Task	Select the Task name that is created on the Task panel of AMR tab in the Database window.
Server	Select the Server name that is created on the Server panel of AMR tab in the Database window. This field will be used to program the remote hardware via the Set Call-in AMR button in the Access Location window.
Event Server	This is a reserved field.
Init String 1	Type in the primary init string to program the remote hardware for setting up the communication module, (e.g., modem).
Init String 2	Type in the secondary init string to program the remote hardware for setting up the communication module, (e.g., modem).
Enable AMR	Check “Enable AMR” to activate this feature for the recorder.
Customize	This button provides access to a dialog box, such as Call Intervals and Time period, for customizing the AMR schedule. It also displays location details for call-in start times.
Security	Panel Group. Each of the locations within this group have the option of inheriting this setup. This is a reserved feature.
Security Password	Select the preset password assigned for that Group. The security setup is used to program the recorder(s) and for software log-on. Refer to the “Others” tab for details.
Load Control	Panel Group. This panel is required if utilizing the Load Control feature. Refer to “Others” tab for details on how to create Load Control parameters. Each of the locations within this group have the option of inheriting this setup. This is a reserved feature.
Primary	Select a primary Load Control name. Check the “Enable” box to activate this feature.
Secondary	This is a secondary Load Control name, similar to the primary. Check the “Enable” box to activate this feature.
Recorder Parameters	Panel Group. If most of the locations in this group are using the same recorder configuration, we highly recommend you utilize this feature. Each of the locations within this group has the option of inheriting this setup.
Setup Files	From this drop-down, you can select a Recorder setup name. Refer to “Others” tab for details.
Billing	Panel Group. If most of the locations in this group are using the same billing rate structure, we highly recommend you utilize this feature. Check “Enable Billing” to activate this feature. Each of the locations within this group has the option of inheriting this setup.
TOU	Select a TOU Schedule name that is created on the TOU tab of the Database window. Refer to Rate Table and TOU Schedule sections for details.
Rate	Select a Rate name that is created on the “Rate” tab of the Database window. Refer to Rate Table and TOU Schedule sections for details.
Auto Billing Cycle	Panel Group. If most of the locations in this group are using the same billing cycle, we highly recommend you utilize this feature. Each of the locations within this group has the option of inheriting this setup.
Bill Cycle	Select a Bill Cycle name that is created on the Bill Cycle tab of the Database window. Refer to Bill Cycle tab for details.
AMR Schedule (Call-out)	Panel Group. This panel is required if you are planning to program RightEnergy to call out to the recorders. If most of the locations in this group are using the same call-out schedule, we highly recommend you utilize this feature. Each of the locations within this group have the option of inheriting this setup.
Schedule Name	Select the AMR Schedule name that is created on the Schedule panel of the AMR tab in the Database window.
Task Name	Select the Task that is created on the Task panel of the AMR tab in the Database window.
Enable AMR	Check “Enable AMR” to activate this feature.

* = Required field.

How do I Add New Group?

Adding a New Group

To add a new Group:

1. Select Database\Group from the drop-down menu or click on the Group tab in the *Database* window.

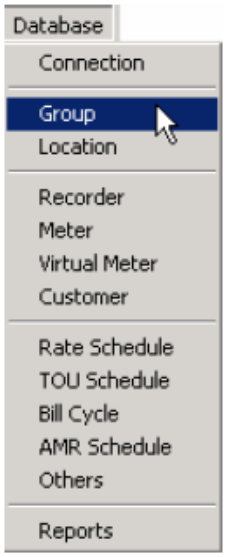


Fig. 67. Database\Group drop-down menu

2. Click on the Panel Action"+" button to add a new group.

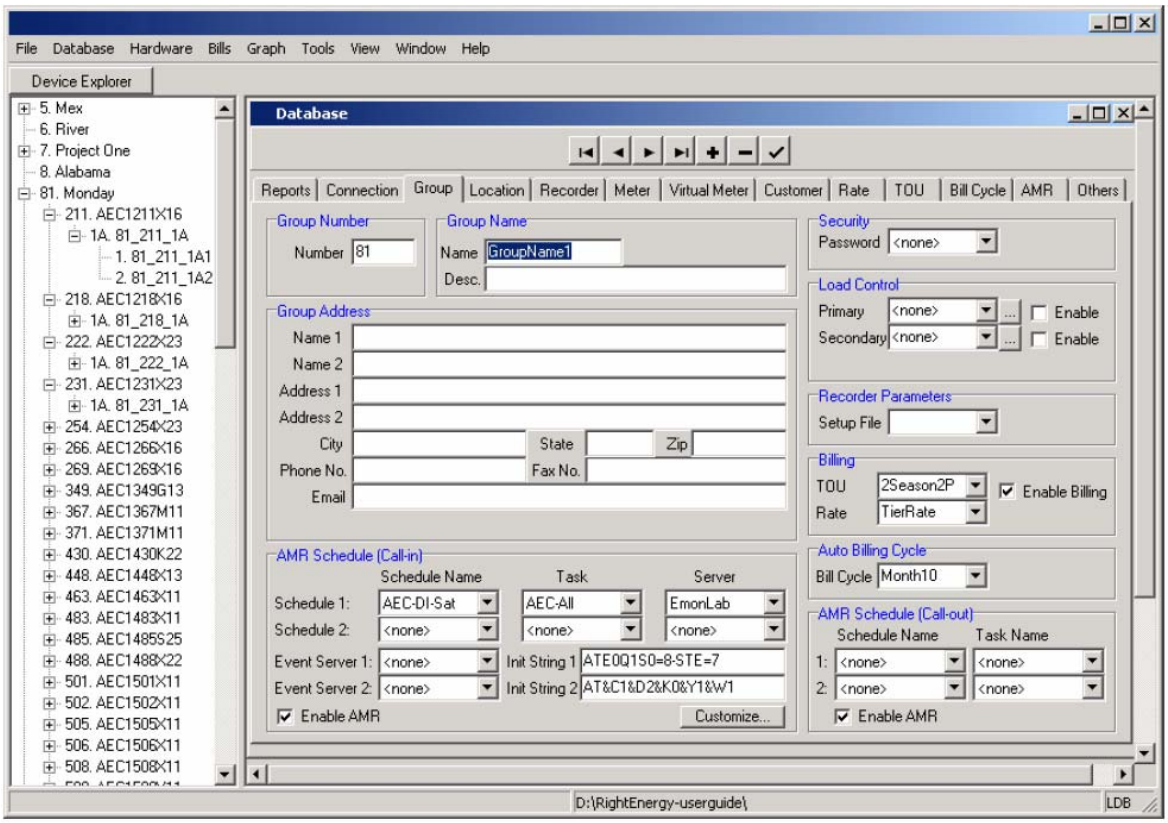


Fig. 68. Group Tab

3. In the Number field, type a Group Number.

NOTE: Must be a unique number between 1 and 32767. This field is required.

4. In the Name field, type a Group Name. This field is not required; however, we highly recommend you provide a meaningful name up to 12 characters in length.
5. You may want to set other fields, such as AMR Schedule (Call-in or Call-out), Security, Load Control, Recorder Parameters, Billing, and Auto Billing Cycle.
6. At this point, you can click on the "√"button to accept/save the group record or continue to complete the remaining fields.

Updating the Device Explorer

7. Every time you add a new group, location, recorder, or meter, click the DEVICE EXPLORER button, to update the device directory. *Note: You will notice that the Group number and* Group name have been added to the device directory.

Selecting the AMR Schedule Call–In (If using with Group Option)

To select an AMR Schedule Call-In:

8. From the AMR Schedule (Call-In) group fields, select Schedule Name, Task, and Server from each drop-down list for only Schedule 1. *Note: If you created and saved an AMR* schedule, Task, and Server, it should appear in the drop-down list. Refer to "AMR" tab for details. The Event Server is not available.
9. Check the "Enable AMR" box.

Selecting the AMR Schedule Call-Out (If using with Group Option)

To select an AMR Schedule Call-Out:

10. In the AMR Schedule (Call-out) group fields, select Schedule Name, Task Name from each drop-down lists for only Schedule 1.
11. Check the "Enable AMR" box.
12. Click the check button to accept/save the group record.

Can I Customize the Group AMR Schedule?

Yes, you can customize the default time for AMR call-in intervals. When "Use Group AMR" is checked, E-Mon Energy™ will automatically assign a call-in time for each of the locations in the group. The initial schedule time will be assigned to the first location, and subsequent location times will be offset by E-Mon Energy using the "AMR Call Interval." If you wish to customize these default times, see the procedure below.

Customizing the Group AMR Schedule

To customize the AMR Schedule Call-Out:

1. To further customize the AMR Schedule group, click on the CUSTOMIZE button. Customize Group AMR dialog box should open.

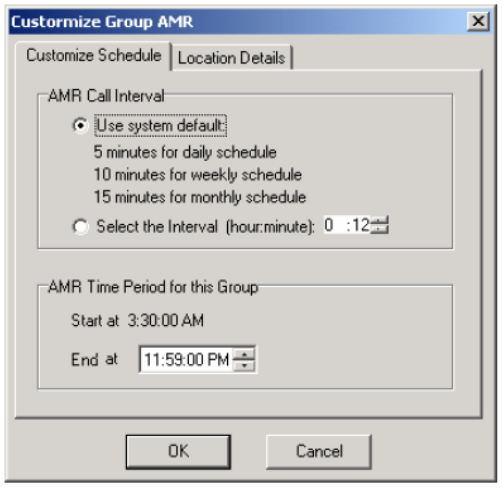


Fig. 69. Customize Group AMR Schedule (Customize Schedule Tab)

2. From the Customize Schedule tab, under AMR Call Interval, select either “Use system default” or “Select the Interval (hour:minute).”
3. If setting the interval, enter or click on the up and down arrows for minutes or hours.

NOTE: Default intervals are based on a single modem. If your computer has multiple modems for auto answer, you may decrease the interval proportionally. Under the AMR Time Period for this Group, to change hrs: min: sec: AM/PM for Ends at:

4. Click and type inside the text box to change each time increment or click on the up and down arrows to adjust the time frame for each increment.

NOTE: The Start Time cannot exceed the End Time.

5. To view the Location details, click on the Location Tab.

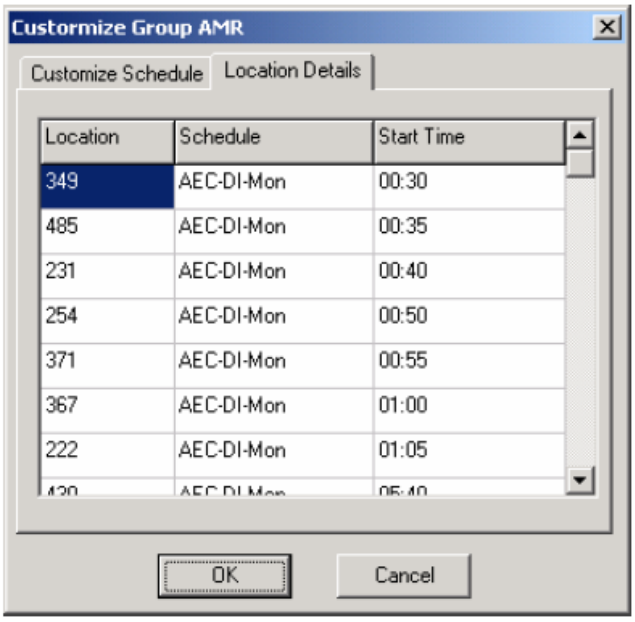


Fig. 70. Customize Group AMR-Location Detail

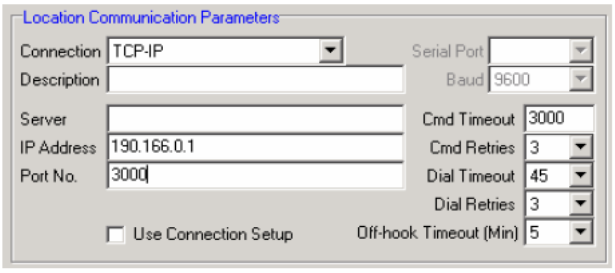
What is the Location Panel?

The *Location* panel is where you will assign the Location numbers and set up profile characteristics. These profile characteristics include the assigned location number and name, communication parameters, AMR schedule, password security, load control, recorder parameters, billing structure and the auto-bill cycle.

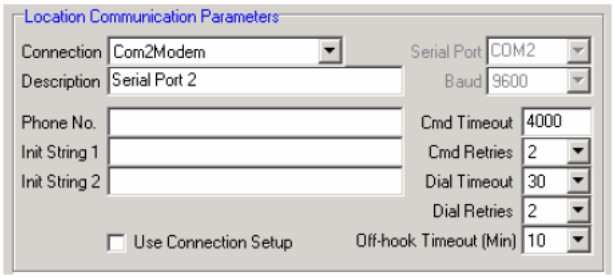
NOTE: If you have already set up the AMR schedule, Rate Table, TOU Schedule or Billing Cycle on the Group panel, you can select the Use Group checkboxes next to the feature.

The Location Number is required to create and save a position in the Group. We strongly suggest that you provide a meaningful name for each location. All other fields can be selected later.

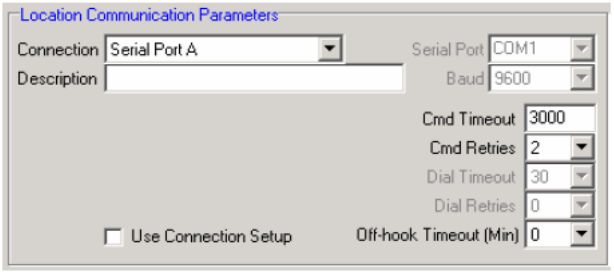
On the Location panel is the Communication Parameter group. These group fields can change depending on the type of communication that you are using. The fields that cannot be changed are the Serial Port and Baud; these must be changed from the Connection tab. The figure below illustrates the different connection groups.



TCP/IP connection



Modem



Serial Port

To understand the Location Panel, the following illustration and table briefly describe the fields on the panel.

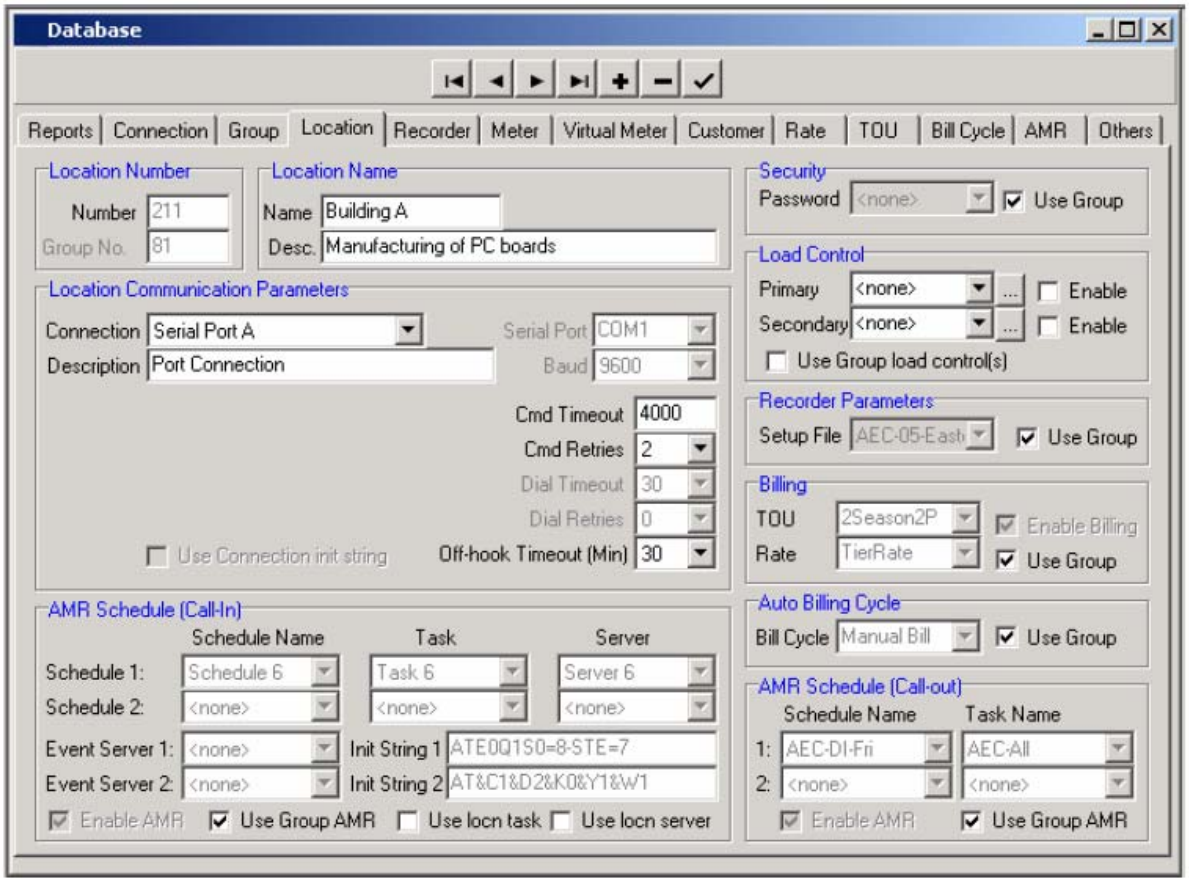


Fig. 71. Database – Location Panel

Panel Group / Field	Description
Location Number	Panel Group
Number*	Type in a unique number to identify the Location. The number must be between 1 and 32767. Note: Once refreshed, the Location number will display in the Device Explorer window. This is a required field.
Group No.	This is a fixed field, indicating the group in which you are creating the location under. Note: Use the Device Explorer to select the group number under which you wish to create the location.
Location Name	Panel Group
Name	Type in a name for the location. Once refreshed, the Location name will display next to the location number in the Device Explorer window. This is an optional field; however, we suggest you provide a meaningful name.
Desc.	Type in a brief description of the location.
Location Communication Parameters	Panel Group. If you want the location to inherit the Connection setup file, check the "Use Connection Setup" and all communication parameter fields in this panel group will be populated with information from the Connection setup tab.
Connection*	Select the connection name that is created on the Connection tab in the Database window. This is a required field. Depending on the type of connection you're selecting, different fields will be required.
Description	Type in a description for your communication parameter.

* = Required field.

Modem Connection	
Phone Number*	Type in the phone number of the remote modem.
Init String 1	Type in the dial string to force your modem to comply with your connection. Refer to your modem documentation.
Init String 2	Type in the dial string to force your modem to comply with your connection.
Dial Timeout	From this drop-down, select the time period for E-Mon Energy™ to wait while attempting to establish the connection.
Dial Retries	From this drop-down, select the number of times you want E-Mon Energy to redial to establish the connection, should the call fail.

* = Required field.

Ethernet Connection	
Server	Type in the server name.
IP address*	Type in the IP address for each remote device. E-Mon Energy will establish a TCP/IP connection to the device over the intranet or Internet.
Port No.*	Type in the Port number of the remote device.

* = Required field.

Apply to All Connection Types	
Off-hook Timeout (Min)	Select the period of time that will be allowed to lapse with no communication activities. Thereafter, E-Mon Energy will drop the line. If you want the connection to stay on indefinitely, select 0.
Cmd Timeout	Type in the preset time period when transmission error message will occur, should E-Mon Energy not receive a response from the recorder.
Cmd Retries	Select the number of times E-Mon Energy will retry sending a request to the recorder.
Use Connection Setup	If you want the location to inherit the Connection setup file, check the "Use Connection Setup" and all communication parameter fields in this panel group will be populated with information from the Connection setup tab.

Apply to All Connection Types	
AMR Schedule (Call-In or Call-Home)	Panel Group. This panel is required if you are planning to program the recorder to call home. Refer to “AMR” tab for details on how to create Schedule, Task, and Server. Each of the locations within this group have the option of inheriting this setup. Note: Schedule 2, Task 2, and Server 2 are reserved. If you want the location to inherit the Group AMR Schedule, check the “Use Group AMR” and all fields in this panel group will be populated with information from the Group tab. Using this feature allows E-Mon Energy to automatically space the call-in times between each location.
Schedule Name	Select the AMR schedule name that is created on the Schedule panel of AMR tab in the Database window. This field will be used to program the remote hardware via the Set Call-in AMR button in the Access window.
Task	Select the Task name that is created on the Task panel of AMR tab in the Database window.
Server	Select the Server name that is created on the Server panel of AMR tab in the Database window. This field will used to program the remote hardware via the Set Call-in AMR button in the Access window.
Event Server	This is a reserved field.
Init String 1	Type in the primary init string to program the remote hardware for setting up the communication module, (e.g., modem).
Init String 2	Type in the secondary init string to program the remote hardware for setting up the communication module, (e.g., modem).
Enable AMR	Check “Enable AMR” to activate this feature.
Use Group AMR	If you want the location to inherit the Group AMR Schedule, check the “Use Group AMR” and all fields in this panel group will be populated with information from the Group tab. Using this feature allows E-Mon Energy™ to automatically space the call-in times between each location.
Use Locn Task	When using the “Use Group AMR” option, if you want to overwrite the Group AMR Task with the Location AMR Task, check this box and select the Task name from the drop-down box. This option is useful in programming some of the locations in the group to perform special functions when calling in.
Use Locn Server	When using the “Use Group AMR” option, if you want to overwrite the Group AMR Server with the Location AMR Server, check this box and select the Server name from the drop-down box. This option is useful in configurations where some of the remote sites in the group need to dial a special code to get out side access, (i.e., dialing a ‘9’ first prior to dialing the number).
Security	Panel Group
Password	Select the preset password assigned for that Group. The security setup is used to program the recorder(s) and for software log-on. Refer to the “Others” tab for details.
Use Group	If you want the location to inherit the Group security, check the “Use Group” and the field in this panel group will be populated with information from the Group tab.
Load Control	Panel Group. This panel is required if utilizing the Load Control feature. Refer to “Others” tab for details on how to create Load Control parameters. Each of the locations within this group have the option of inheriting this setup. This is a reserved feature.
Primary	Select a primary Load Control name. Check the “Enable” box to activate this feature.
Secondary	This is a secondary Load Control name, similar to the primary. Check the “Enable” box to activate this feature.
Use Group Load Control	If you want the location to inherit the Group Load Control, check the “Use Group Load Control” and all fields in this panel group will be populated with information from the Group tab.
Recorder Parameters	Panel Group
Setup File	Select a Setup Recorder Parameter that is created on the Other tab, Recorder panel of the Database window.
Use Group	If you want the location to inherit the Group setup file, check the “Use Group” and all fields in this panel group will be populated with information from the Group tab.
Billing	Panel Group. Check “Enable Billing” to activate this feature. If you check “Use Group,” the fields in this panel group will be populated with data from the Group tab.
TOU	From this drop-down, you can select a TOU Schedule name that is created on the TOU tab of the Database window. Refer to Rate Table and TOU Schedule sections for details.

Apply to All Connection Types	
Rate	From this drop-down, you can select a Rate name that is created on the “Rate” tab of the Database window. Refer to Rate Table and TOU Schedule sections for details.
Enable Billing	Check “Enable Billing” to activate this feature.
Use Group	If you check “Use Group,” the fields in this panel group will be populated with data from the Group tab.
Auto Billing Cycle	Panel Group. If you check “Use Group,” the fields in this panel group will be populated with data from the Group tab.
Bill Cycle	Select a Bill Cycle name that is created on the Bill Cycle tab of the Database window. The Billing Cycle is required to create a billing statement.
Use Group	If you check “Use Group,” the fields in this panel group will be populated with data from the Group tab.
AMR Schedule (Call-out)	Panel Group. This panel is required if you are planning to program E-Mon Energy™ to automatically call the recorder. Refer to “AMR” tab for details on how to create Schedule, Task, and Server. Check the “Use Group AMR” and all fields in this panel group will be populated with information from the Group tab. Using this feature allows E-Mon Energy to automatically space the call-out times to each location.
Schedule Name	Select the AMR schedule name that is created on the AMR tab, Schedule panel of the Database window.
Task Name	Select the AMR Schedule name that is created on the Schedule panel of the AMR tab in the Database window.
Enable AMR	Check “Enable AMR” to activate this feature.
Use Group AMR	If you want the location to inherit the Group AMR Schedule, check the “Use Group AMR” and all fields in this panel group will be populated with information from the Group tab. Using this feature allows E-Mon Energy to automatically space the call-out times to each location.

How do I Set up a New Location?

Setting up a New Location

To set up a new location:

1. Select Database\Location from the drop-down menu or click on the Location tab in the Database window.

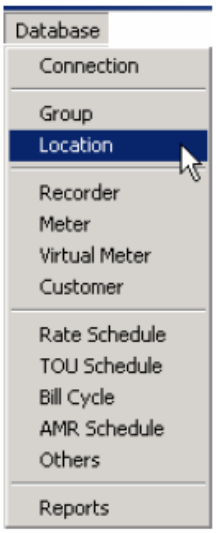


Fig. 72. Database\Location drop-down menu

2. From the Device Explorer window, highlight and select the Group Number to add location.
3. Click on the Panel Action “+” button to add a new location.

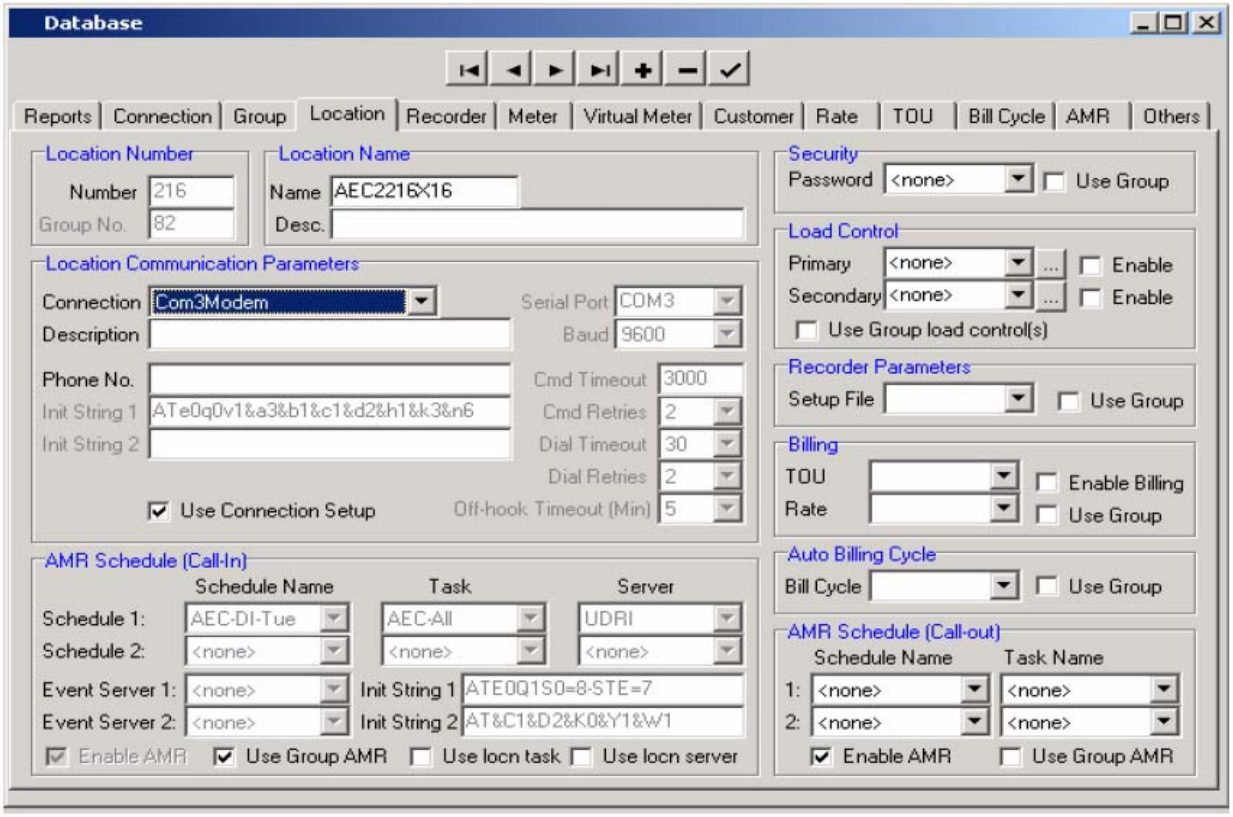


Fig. 73. Location Tab

4. In the Number field, type in a Location Number. Location 0 is reserved for the virtual recorders and meters location.

NOTE: Must be a unique number between 0 and 32767. This field is required.

5. In the Name field, type a Location Name. This field is not required; however, we highly recommend you provide a meaningful name up to 12 characters in length.
6. Tab down from the Connection drop-down list and select a connection name that is created in the Connection tab of the Database.
7. Tab down in the Description field. Type a description for your connection.
8. You may want to set other fields, such as AMR Schedule (Call-in or Call-out), Security, Load Control, Recorder Parameters, Billing, and Auto Billing Cycle.
9. At this point, you can click on the "√" button to accept/save the location record or continue to complete the remaining fields.

Updating the Device Explorer

Every time you add a new group, location, recorder, or meter, click the DEVICE EXPLORER button, to update the device directory.

NOTE: You will notice the Location number and name has been added to the Group.

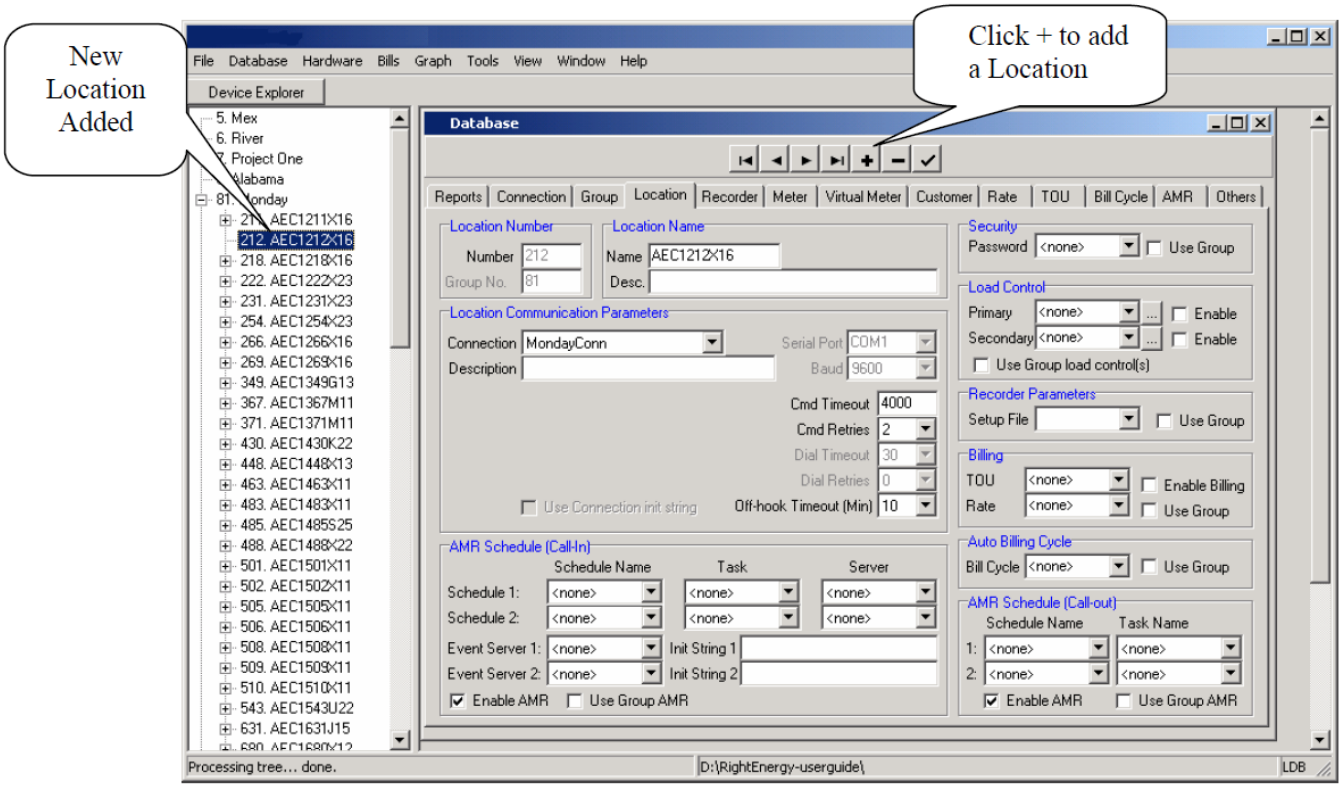


Fig. 74. Device Explorer New Location

Selecting the AMR Schedule Call–In (If you are not using the Group Option)

NOTE: If you plan to use the “Use Group AMR” option, check the “Use Group AMR” box and proceed to How to Set a Location and Scan for Meters.

To select an AMR Schedule Call-In Schedule:

1. From the AMR Schedule (Call-In) group fields, select Schedule Name, Task, Server, and Event Server from drop-downs for only Schedule 1.

NOTE: If you create and save a new AMR schedule, Task, and Server, it should appear in the drop-down list. Refer to AMR tab for details.

2. Check the “Enable AMR” box.

Selecting the AMR Schedule Call–Out (If you are not using the Group Option)

NOTE: If you plan to use the “Use Group AMR” option, check the “Use Group AMR” box and proceed to How to Set a Location and Scan for Meters

To select an AMR Schedule Call-In Schedule:

1. In the AMR Schedule (Call-out) group fields, select Schedule Name, Task Name from drop-down for only Schedule 1.
2. Check the “Enable AMR” box.
3. Click on the check button to accept/save the location record.

How do I Modify a Group or Location?

Modifying a Group or Location

To modify a Group or Location:

1. From the Device Explorer window, highlight and select *either* the Group Number or Location Number.

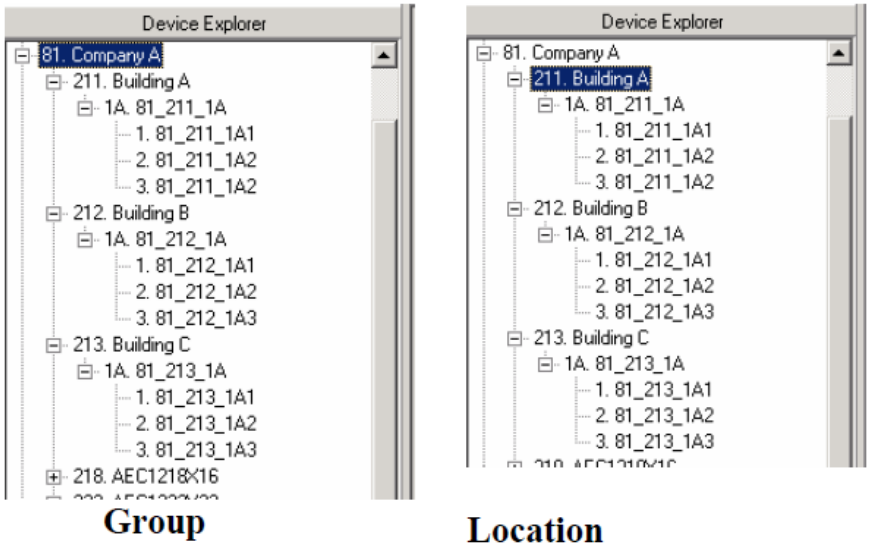


Fig. 75. Selecting Group Number or Location Number

2. With Group or Location Number selected and highlighted, click on the Database drop-down menu and select either group or location. In the following illustration, we selected Group from the drop-down menu.

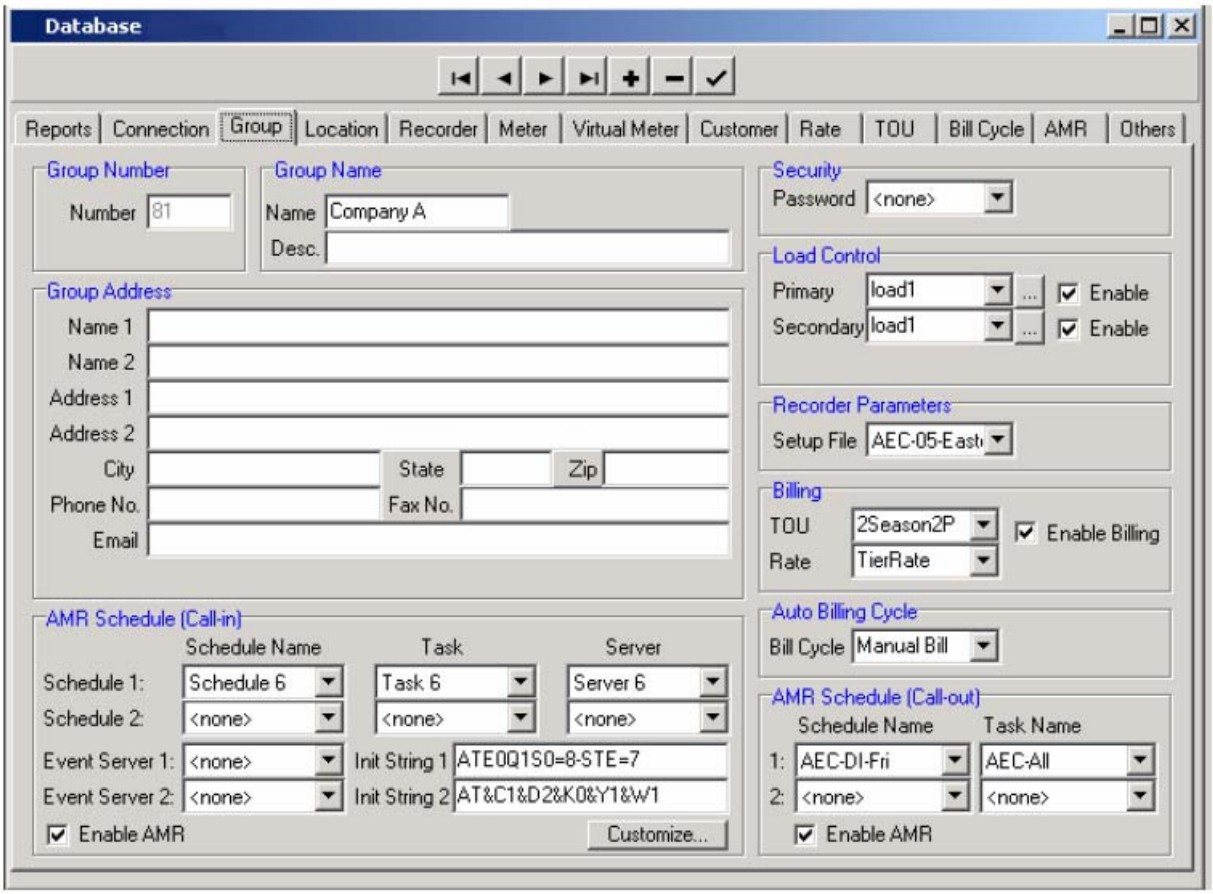


Fig. 76. Group Tab displays group information

3. Type in or change the fields you want to modify.
4. At this point, you can click on the "√ " button to accept/save the changes to fields.

How do I Select a Location and Scan for Meters?

Select Location

To select location:

1. From E-Mon Energy™ Explorer Window, click and select Hardware\Set Location from the drop-down menu. The *Select Location* Dialog opens.

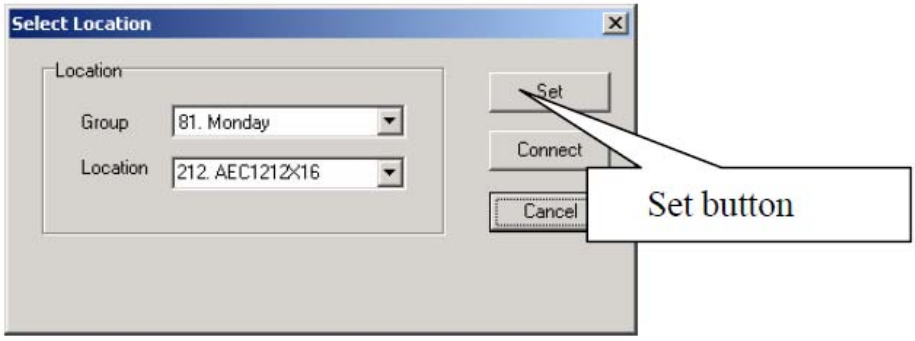


Fig. 77. Select Location Dialog

2. From the Group drop-down list, select a Group.
3. From the Location drop-down list, select a Location you want to scan and with which you want to communicate.
4. Click on Set button. The Access window opens.

NOTE: The Group and Location displays in the window's status bar area.

Fig. 78. Access Window

5. Click on the Connect button to establish connection and access the Function and Hardware to Access Groups.

Scanning for Meters (Devices)

To scan for Meters (Devices):

6. From the Function group box, click on Setup Hardware.
7. From the Hardware to Access group box, click on All possible.

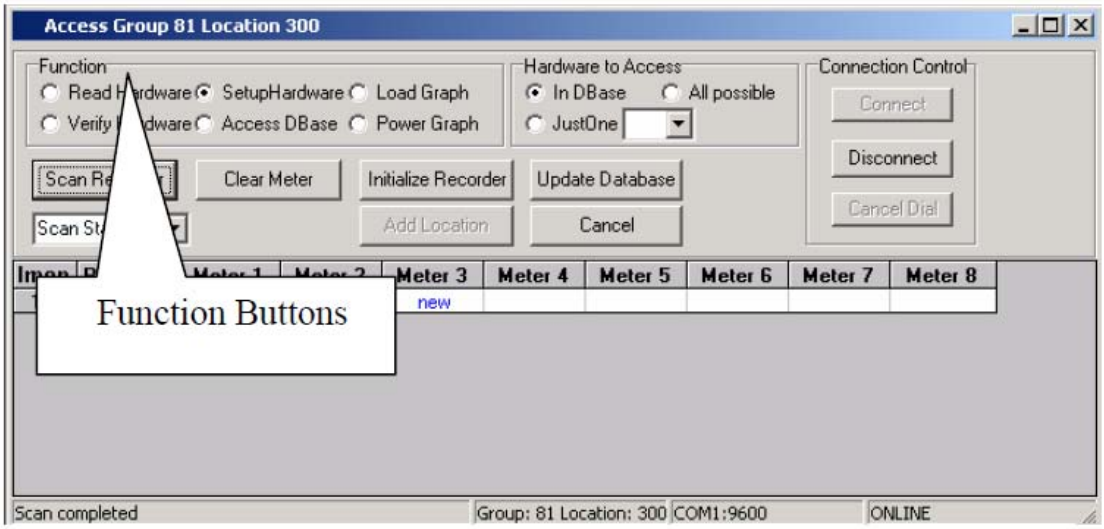


Fig. 79. Scan Recorder and Status Window

8. Click on the SCAN RECORDER button. By default, E-Mon Energy™ will start scanning for any new devices starting with IDs of 1A, 1B, ... Once the new devices are detected, the grid will display the Recorder ID and the Meter Channel Status (OK, New, Bad....)
9. Once E-Mon Energy scans and moves past the last installed device ID, wait a few seconds and click CANCEL. At this point, it will allow you to update the database.

How do I Update the Database with the Devices?

After complete scanning and system detection of meters, you can now add your devices to the Database.

Adding Devices (Meters) to the Database?

To add Devices to Database:

1. Click on the UPDATE DATABASE button. A dialog box displays with 4 list boxes: New Device, Add to DB, Bad Device, and Delete from DB.

NOTE: The “New Device” list box displays all new devices detected during the scan. The Bad devices will display under “Bad Device” list box. The database list boxes allow you to add a new device or remove a bad device from that location.

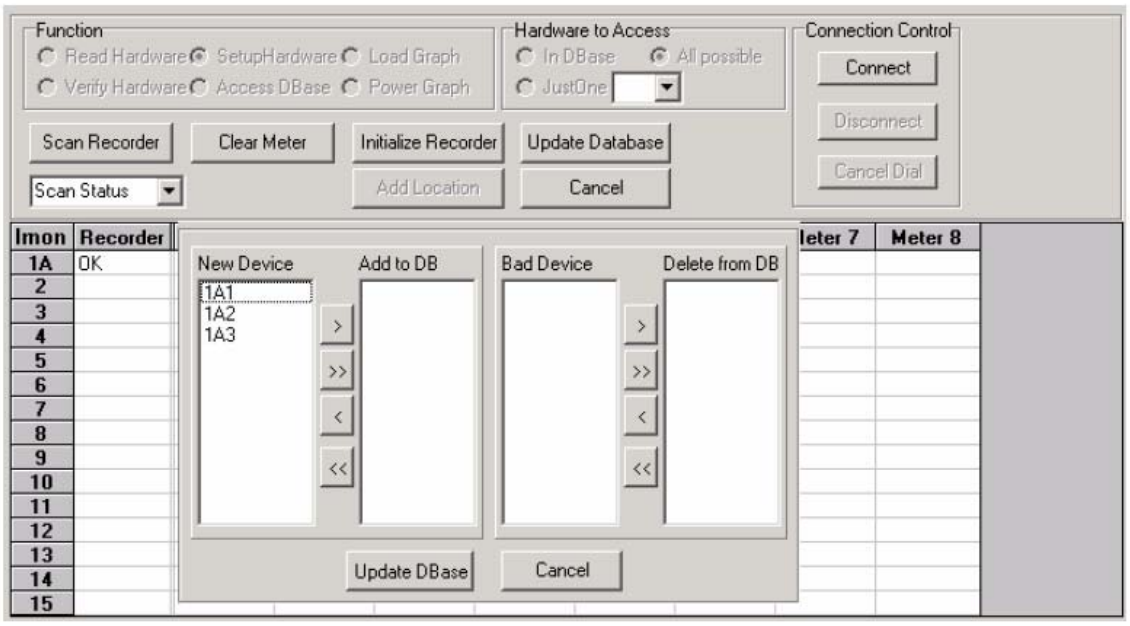


Fig. 80. Update Database

2. In the New Device list box, click on a device (e.g., 1A1).
3. Click on the > right arrow button to move a new device into the Add to DB list box. To add *all* devices, click the >> right double arrow button and all devices will move to the Add to DB list box.

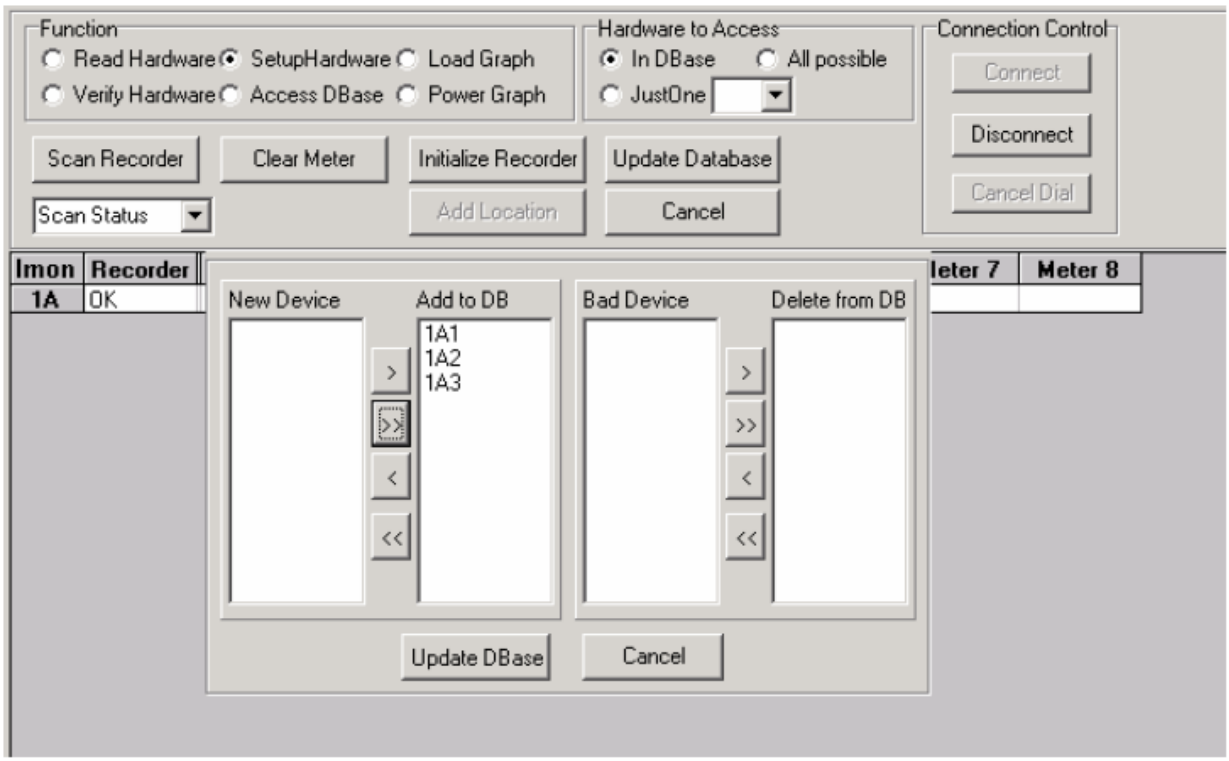


Fig. 81. Adding New Devices to Database

4. Click on the UPDATE DBASE button to add the devices to the database. The Access window now displays meters as OK rather than NEW.

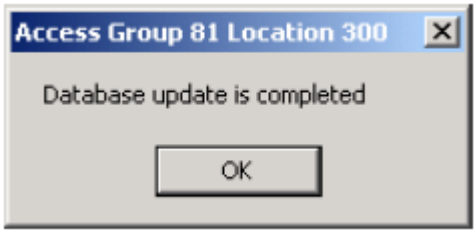


Fig. 82. Database Update

SECTION 8: RECORDER

What is a Recorder?

The recorder is a microcontroller base hardware consisting of components like ROM, RAM, real-time clock, and battery backup. Most recorders are designed for use with the AMR software. Some models are capable of automatically calling in at a programmed schedule – hourly, daily, weekly, or monthly. Recorders can be installed at a single location or multiple locations depending on the site configurations. Each recorder works independently and is capable of reading 4, 8, or 16 meters. A number of these recorders have a built-in meter. Some of the recorders are:

- IDR (Interval Data Recorder) – This recorder reads and records data. Typically, there are two configurations – standalone unit for use with standalone meters or mounted inside a MMU cabinet with E-Mon meters. To communicate with E-Mon Energy™, the recorder needs an E-Mon Energy Key (Communication Device).
- Class 3000 – An all-in-one recorder and meter, the Class 3000 is available as a standalone unit. The Class 3000 is capable of providing detailed information on power – amperage, voltage, power factor, phase angle, etc. To communicate with E-Mon Energy, the Class 3000 needs an E-Mon Energy Key (Communication Device).

IDRs and Class 3000s can be connected within the same physical network. They both utilize the same EZ7 protocol.

What is the Recorder Panel?

The Database Group provides a recorder panel for managing and creating recorder parameters. The *Recorder* tab will display the Device ID and Name, along with the Data Recorder Parameters. The following table describes fields on the Recorder tab.

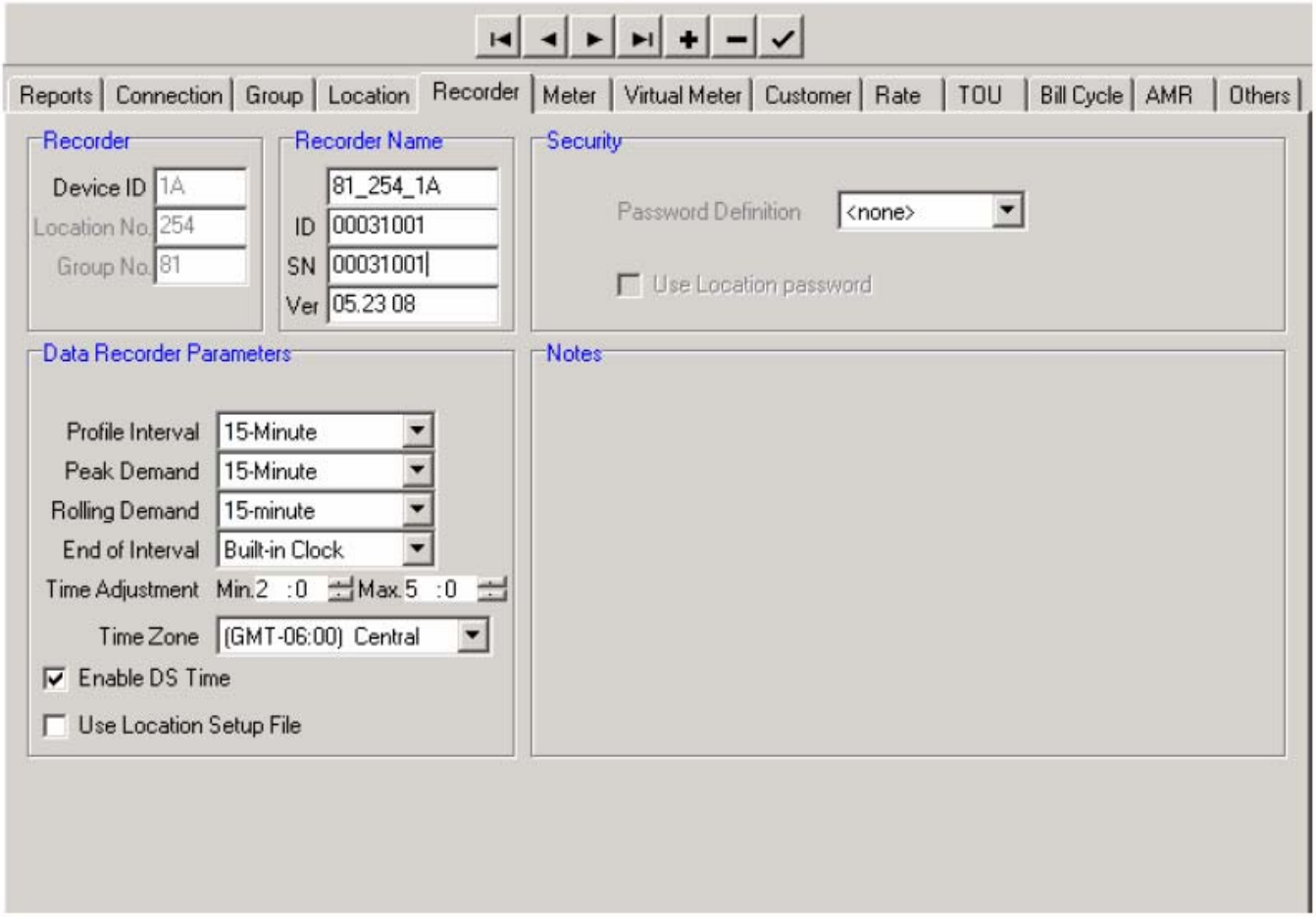


Fig. 83. Data Access – Recorder Panel

Panel Group/Field	Description
Recorder	Panel Group
Device ID*	This entry field is fixed and cannot be changed. You can add a new recorder if you click on the + panel button. This will clear all fields ready for new recorder information. It is highly recommended not to add recorders manually. Instead, make use of the Scan new hardware option.
Location No.	This field is fixed and cannot be changed. This field will always display the current Location number selected.
Group No.	This field is fixed and cannot be changed. This field will always display the current Group number selected.
Recorder Name	Panel Group
Recorder Name	Type in a recorder name. This is an optional field; however, we suggest you provide a meaningful name. By default, E-Mon Energy™ will assign group, location, and recorder ID.
ID	Type in an identification number for the recorder.
SN	Type in the serial number for the recorder. The serial number is located on the actual hardware label.
Ver.	This field is normally populated by E-Mon Energy after scanning the device. It is used for keep tracking of the recorder firmware.
Data Recorder Parameters	Panel Group
Profile Interval	Select the sampling rate for recording interval data with date/time stamp.
Peak Demand	Select the peak demand interval (15, 30, or 60 minutes) to calculate peak usage.
Rolling Demand	Select the rolling demand window period (values = 5-minute, 15-minute, Reset at EOI).
End of Interval	At the present time, this setting is defaulted to “Built-In Clock.”
Time Adjustment	These two fields allow you to set the minimum and maximum time range for automatic real-time clock adjustment.
Time Zone	Select the Time Zone where the recorder is physically located.
Enable DS Time	This checkbox allows you to choose Daylight Savings if this is pertinent to your time zone.
Use Location Setup	If you want the recorder to inherit the Location setup, check the “Use Location Setup” and all fields in this panel group will be populated with information from the Location tab.
Password Definition	Select the Password Definition name that is created on the Security panel of the Others tab in the Database window.
Use Location Password	If you want the recorder to inherit the Location setup, check the “Use Location Password” and all fields in this panel group will be populated with information from the Location tab.

* = Required field.

How does the Recorder Communicate?

E-Mon Energy™ communicates with the recorders in several ways, depending on your recorder type. Typically there are 2 types of setups:

- • On-site – PC connecting to recorders via a direct serial port or LAN (intranet).
- • Off-site – PC connecting to recorders via a modem (telco or cellular) or WAN (Internet).

For additional information see the section on *Communication Parameters.*

How does E-Mon Energy Recognize a Recorder?

E-Mon Energy communicates with the recorders via a serial protocol known as EZ7. EZ7 is a character-oriented protocol with request and response capabilities. It operates in the half-duplex, stop-and-wait mode. Each block of message is terminated by a 16-bit CRC. EZ7 is used to communicate between multipoint/multi-drop in which there is a single master (computer). E-Mon Energy controls all message transfers to and from a community of slave devices – IDR/Class 3000. Each device must have a unique ID code (1A through 8Z for recorders and 1A1 through 8Z8 for meters), in a physical connection. When a new recorder is added, E-Mon Energy will scan by querying the ID code. Once a new device is detected, it will provide the option to add that device to the database.

Communication Setup

Baud Rate: 2400, 4800, 9600, 19200 (default 9600)

Parity: None

Parity Bits: 8

Stop Bits: 1

⚠ WARNING

Within the same physical connection, if more than one recorder has the same ID code, the response to a command will result in data and errors. In such case, none of the duplicated recorders are able to communicate successfully.

When a recorder is first brought online, it can be preconfigured from the factory or locally at an installed time by a technician or it can be in an un-initialized state. If the recorder is in an un-initialize mode, it must be initialized in order for it to collect and store data correctly. Refer to the *Initializing a Recorder* procedure within this section.

The *Data Recorder Parameters* include:
- Real-time clock – Each recorder has its own clock with battery backup for time keeping.
- Profile Interval – Sets the sampling rate for recording interval data with date/time stamp.
- Peak Demand – Sets the peak demand interval of 15, 30, or 60 minutes to calculate peak usage.
- Rolling Demand – Sets the demand window to 5, 15 minutes, or none.
- End of Interval – At the present time, this setting is defaulted to “Built-In Clock.”
- Time Adjustment – Sets time range for automatic real-time clock adjustment.
- Time Zone – Sets time zone where recorder is physically located.

The Recorder parameters are configured in the E-Mon Energy Access window. After configuring, a user can send the information to the recorder. The following diagram illustrates the Data Recorder process.

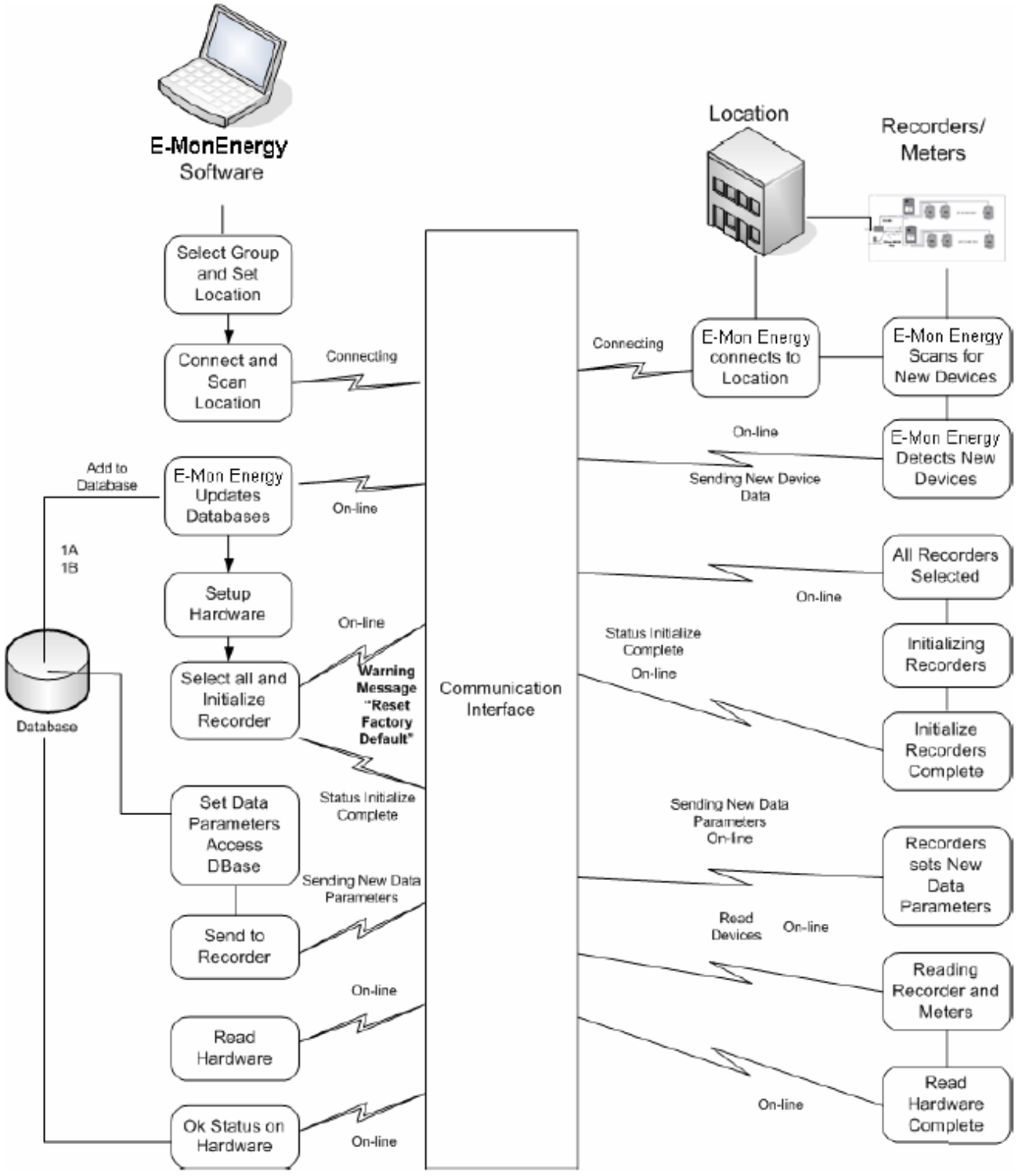


Fig. 84. Setup and Initialize Recorder Process

Can I Set a Password for Recorder?

Yes, normally the recorder does not have the password security enabled, but you can set up a password. To set up password, you will need to select the *Others* tab on the Database window, and then select the *Security* icon. Refer to the *Section on Other Features* for details.

NOTE: This feature may not be accessible to everyone. The E-Mon Energy™ user must have administrator rights to configure these security parameters. Keep your password in a secure place.

Once the Password Definition is created, the password can be utilized in the *Group*, *Location*, or *Recorder* tab. Sending the security setup to the recorder is performed when you're connected to the recorder via the Set Password in the Access Database function.

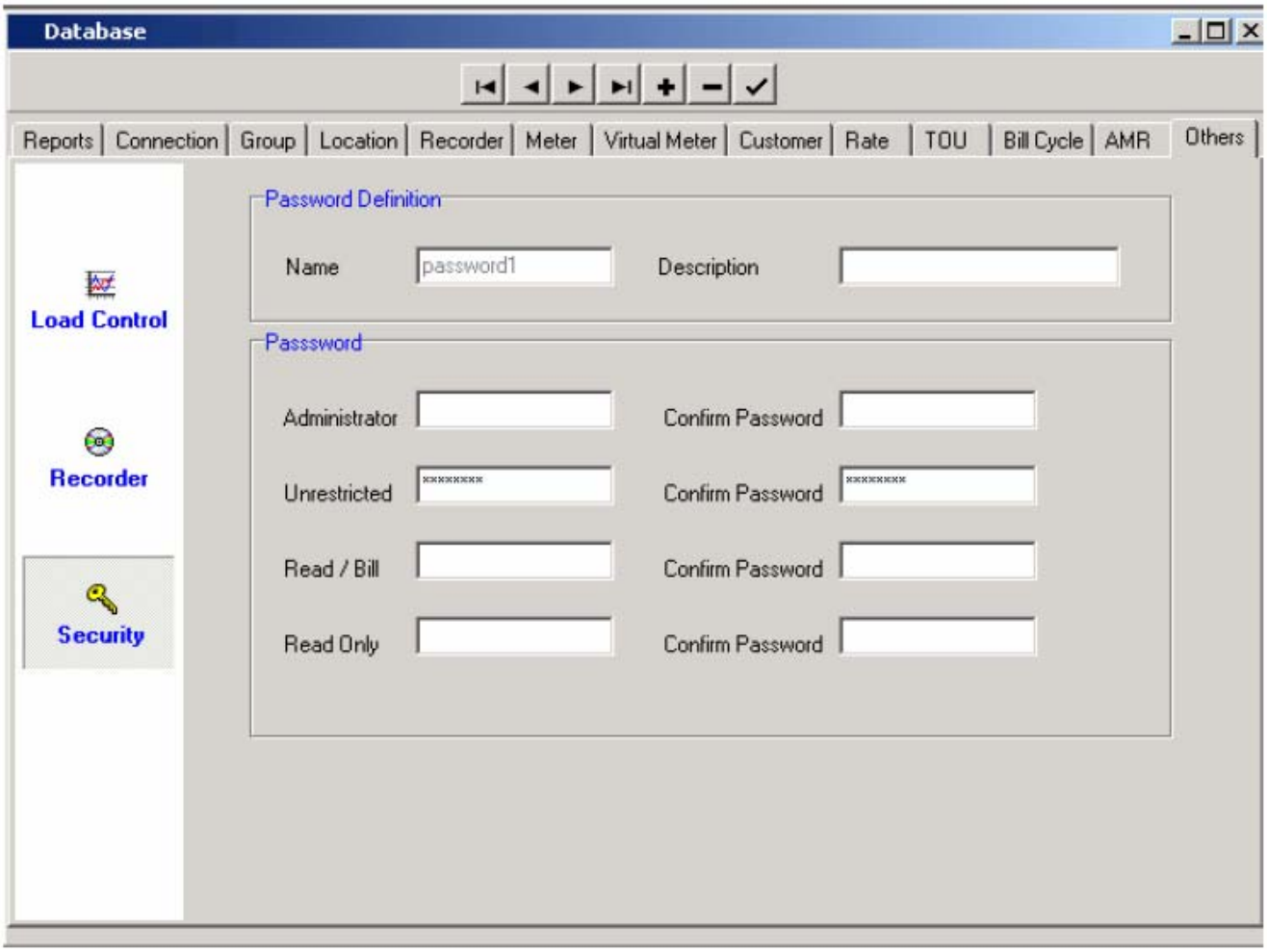


Fig. 85. Recorder Security Password

How do the Recorders use the AMR schedule?

Some models of the recorder are capable of running automatic scheduler for calling-in (call-home). You would use E-Mon Energy to set up the schedule, task, and server via the AMR tab. Once configured, E-Mon Energy can send the setup to the recorder. E-Mon Energy will send the schedule and call-in number (phone/IP Address). For information on setting up an AMR schedule, see the section on *Automatic Meter Reading*.

Where do I Set Location and Scan Recorders?

There are two ways of accessing the *Set Location* feature: first by drilling down to the location level in the E-Mon Energy™ Device Explorer window and right-clicking on select "Set Location," *or* selecting Set Location from the Hardware menu.

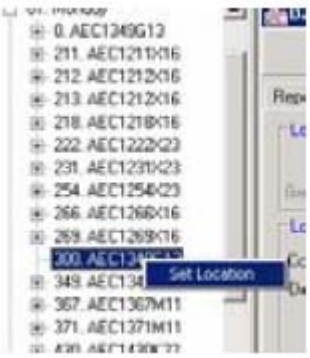


Fig. 86. Explorer Window

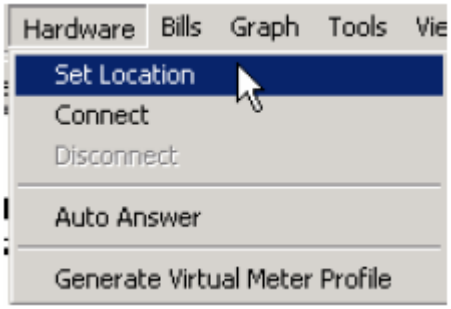


Fig. 87. Hardware Drop-Down Menu

The *Select Location* dialog opens to display the *Group* and *Location*. The *Select Location* dialog allows you to select the *Group Number/Name* and *Location Number/Name* from the drop-down list. Clicking the Set button will open the *Access* window to a *Ready* and *Standby* state. Clicking the Connect button will open the Access window to an *On- Line* state. Note: If the location is via modem, allow time for E-Mon Energy to establish the connection. To learn more about how to select a Group and Location refer to the *Setting Location* procedure within this section.

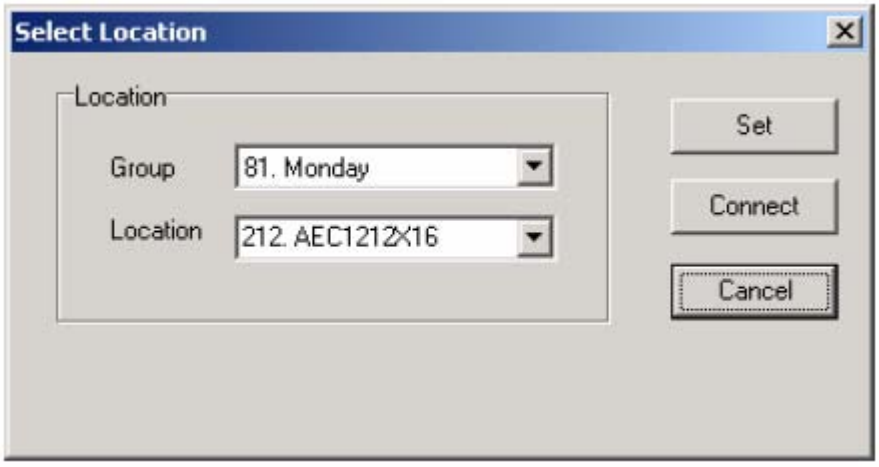


Fig. 88. Select Location Dialog

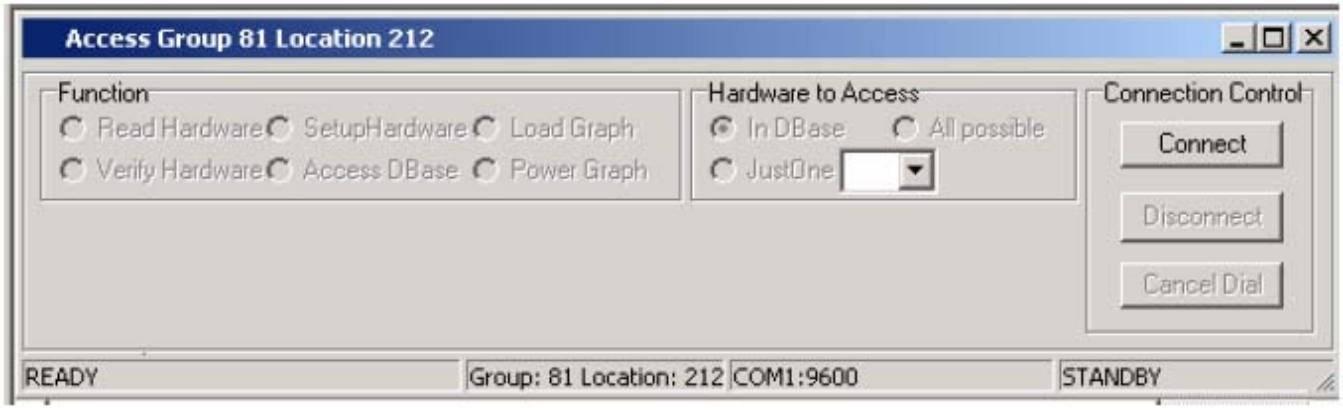


Fig. 89. Access Group Window

What is the Access Window?

The *Access* window is the doorway to connecting to the location's hardware. The *Access* window is divided into groups – *Function*, *Hardware to Access*, and *Connection Control*. The *Function* and *Hardware to Access* groups are available when you're online with the location. Click the Connect button to start the connection. For additional information on the access, window and functions, refer to the *Access Function*s and *Hardware Group* section.

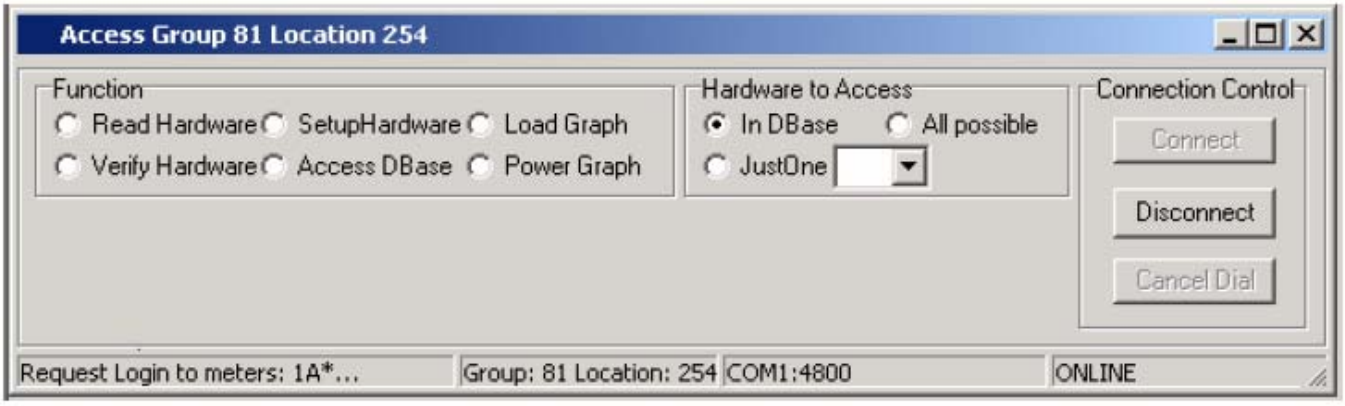


Fig. 90. Access Group Window Description

How do I scan for the Recorder?

Once the connection to the recorder is on-line, scanning the recorders and meters is the first thing you will do at startup or when adding a new recorder or meter(s). From the Access window, selecting the *Setup Hardware* radio button will display the Scan Recorder button. If a new recorder is added, select *All Possible*, then click on the Scan Recorder button. This sends a command to the Recorder and Meters to verify their functional states. The recorders and meters respond back to the system and the Access window opens a status table response. See illustration below. For complete steps, refer to *Scanning Recorder and Meters* within this section.

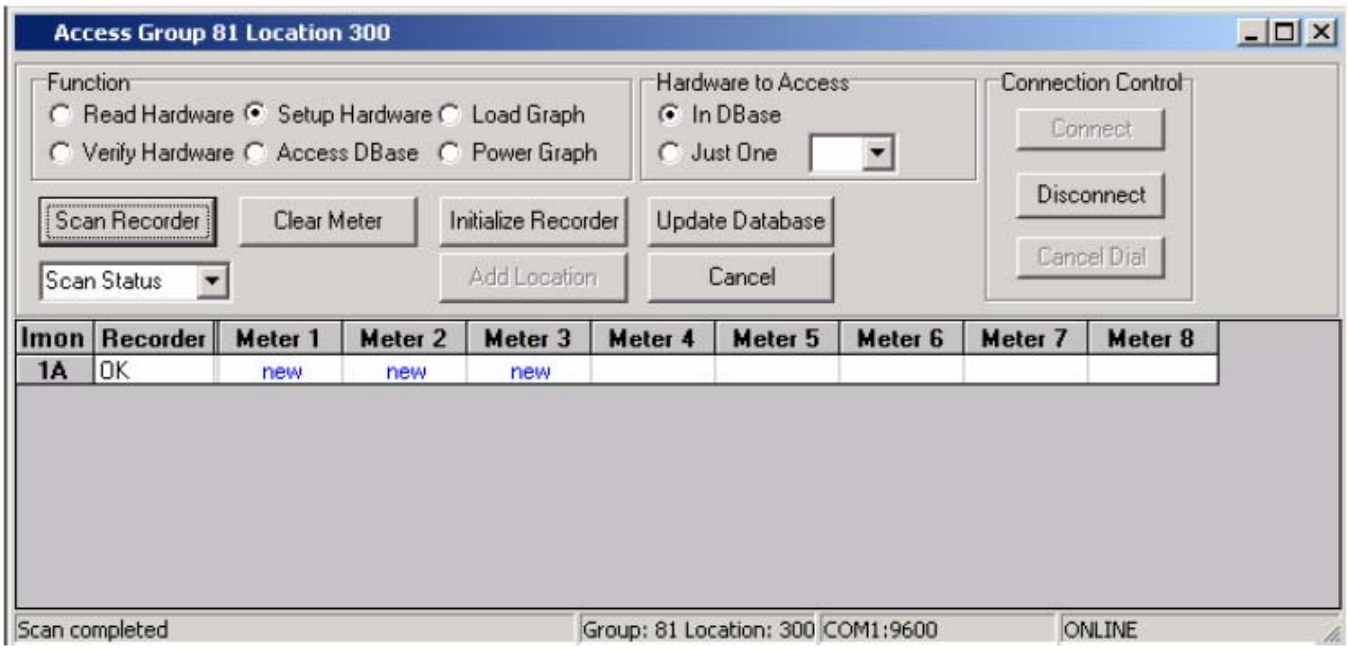


Fig. 91. Scan Recorder Button

What is Updating the Database?

Once E-Mon Energy™ identifies the recorder through the scanning process, the recorder will need to be added to the Database. This is accomplished through the Access group window using the Update Database button. The Update Database button opens a drop-down window that displays new, bad, and current devices in the database. Once scanned, the user can view the new devices and add them to the database. If a device scans “bad,” the user can remove the device from the database. See the illustrations below, and for complete steps, refer to *Updating the Database* within this section.

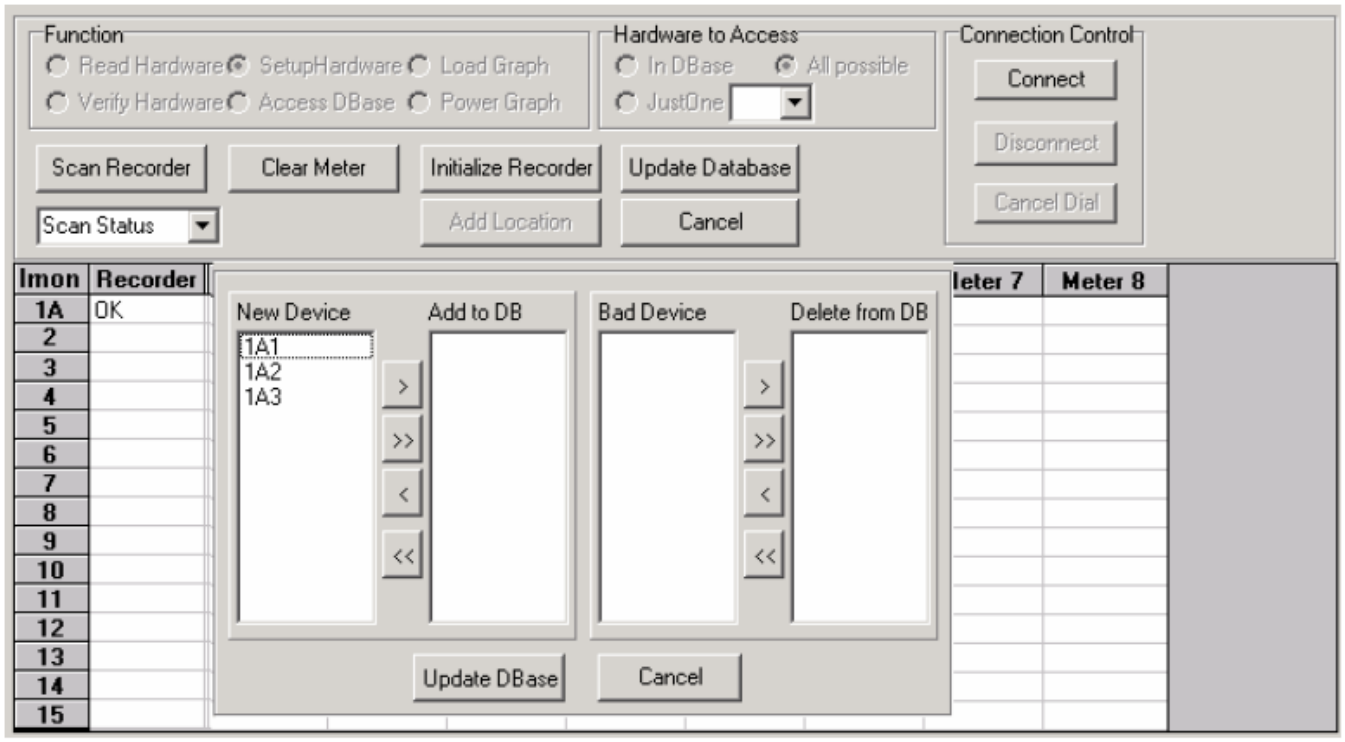


Fig. 92. Scan Database –New Device

What is initializing a Recorder?

The process of initializing a recorder is seldom done, except for system startup or when adding a new recorder. Initializing a recorder is like resetting any electronic device, such as a DVD, to the factory default settings. When initializing, the parameters are set to factory default, the register is cleared from the recorder, as well as from the meter display. This process is done from the Access Location window under *Setup Hardware.* During the initializing process, the Access Location window displays the initialization in the status bar area. See illustrations below, and for complete steps, see *Initializing the Recorder* within this section.

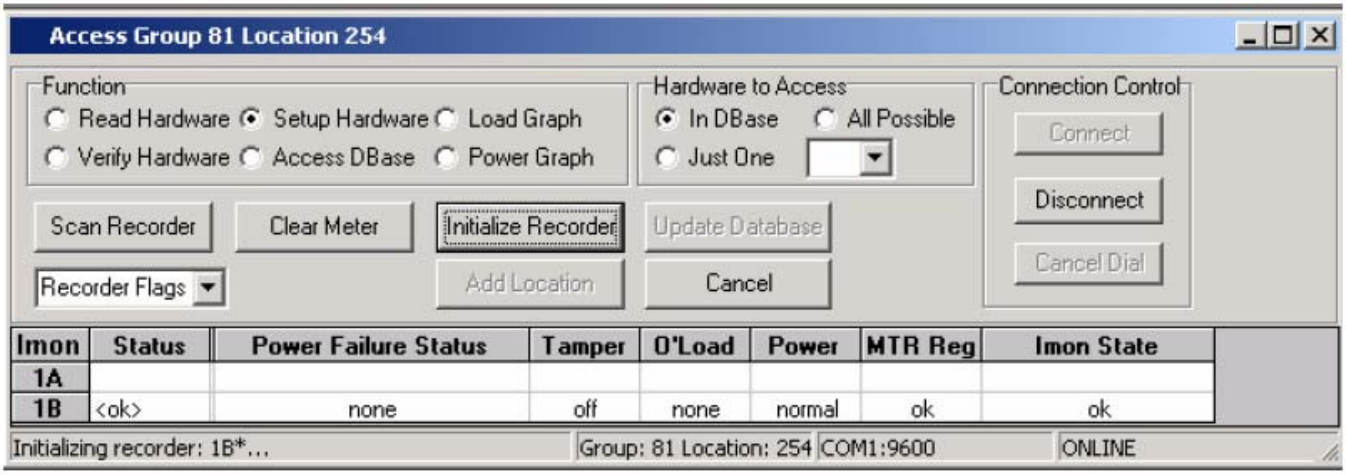
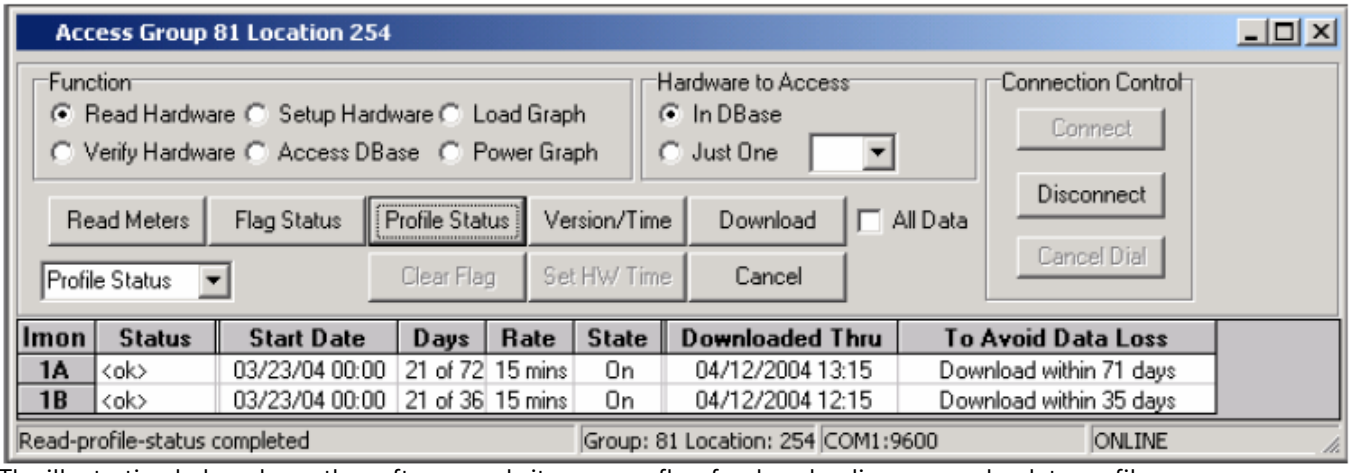


Fig. 93. Initializing the Recorders

How do I check and download the Recorder Profile?

The recorder stores meter readings and interval data. Depending on your recorder model, data storage space is limited based on memory size and sampling rate. (An IDR can store data up to 36 or 72 days at 15-minute intervals, or 12, or 24 days at 5-minute interval. In the 36-day 15-minute interval case, downloading time is required before the 36th day is reached.) We recommend you download data weekly. Data storage is first-in-first-out, meaning once storage limit is reached, the oldest interval data will be cleared, making room for new data. That is why it is necessary to check the profile status often to ensure that the computer data is current. Downloading the current data is done from the Read Hardware function on the Access Location window. The illustration below shows that recorder 1A has 7 days out of the 72 days of stored data and its sampling rate is 15 minutes. The status indicates that it is functioning, the download thru “date” indicates the last time we downloaded the data, and the last column indicates how many day are left until data will be lost. Note: When downloading, the progress is shown under the “Download Thru” column and in the status bar area. After downloading, all interval data is saved in the hard drive. Interval data is used for the load profile graphs and to generate consumption for billing.



The illustration below shows the software and site process flow for downloading a recorder data profile.

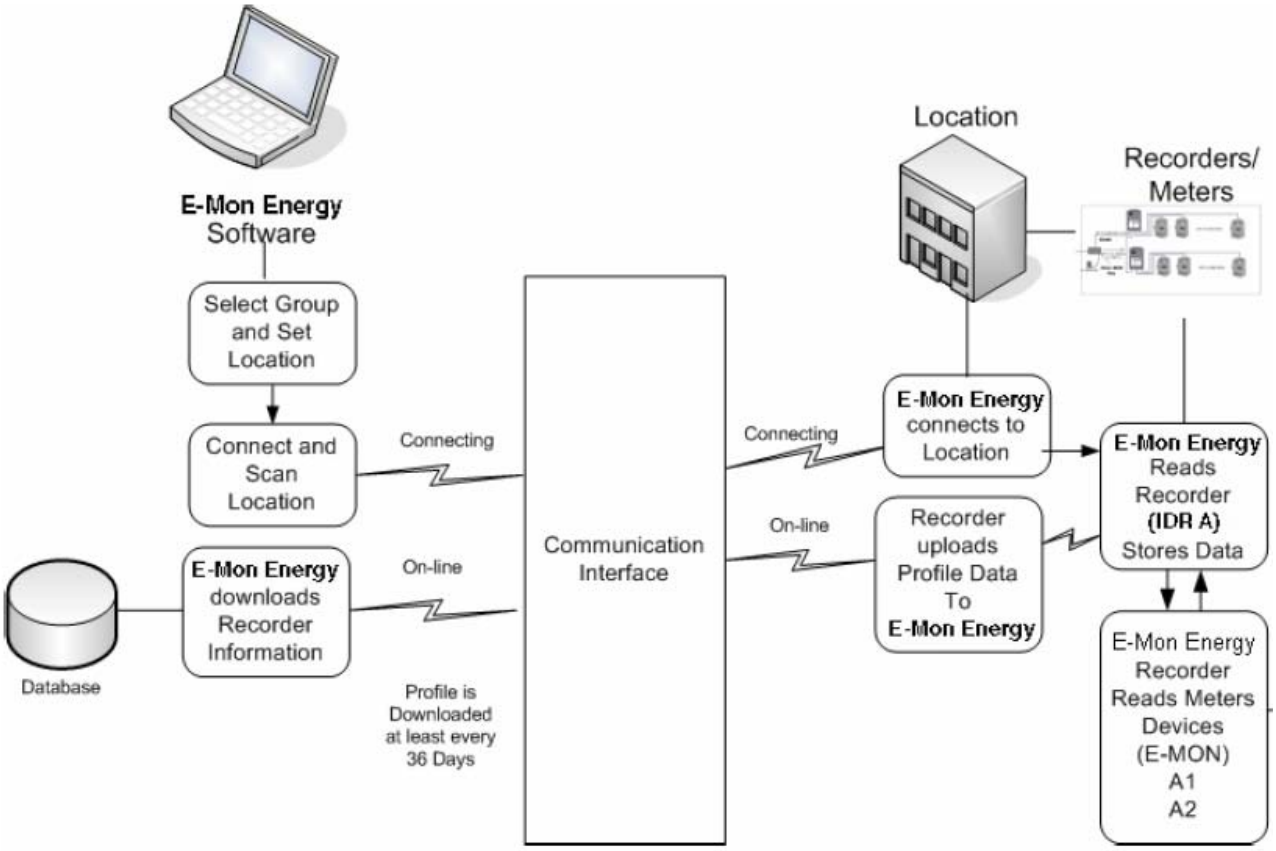


Fig. 94. Adding a Recorder Profile

How do I Verify the Recorder?

When a connection is established to a location using the Access Location window, E-Mon Energy™ communicates directly with the recorder to check the status and daily functionality of the device(s). To verify the recorder, the user can select the *Verify Hardware* function to check whether the profile mode, sampling rate, the demand interval, and demand window are functioning properly. If a problem occurs with the recorder, a warning will display in this window. The illustration below shows that the recorder is functioning properly.

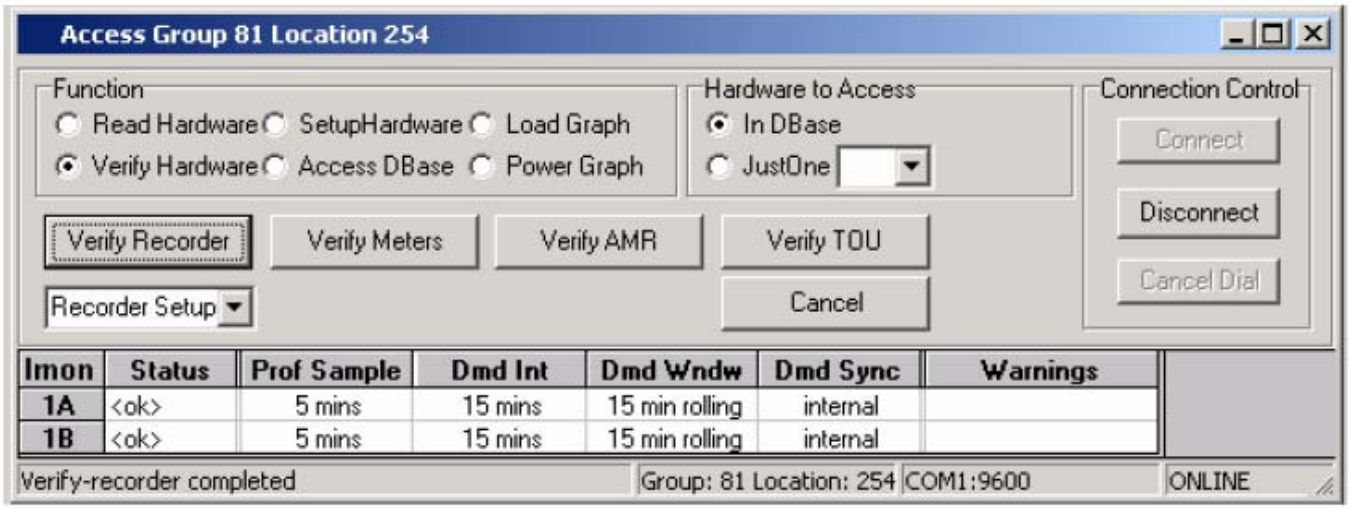


Fig. 95. Verifying the Recorder Profile

Recorder Procedures

Setting a Location

To Set the Location:

1. From the E-Mon Energy Explorer Window, click and select Hardware\Set Location from the drop-down menu. The *Select Location* dialog opens.

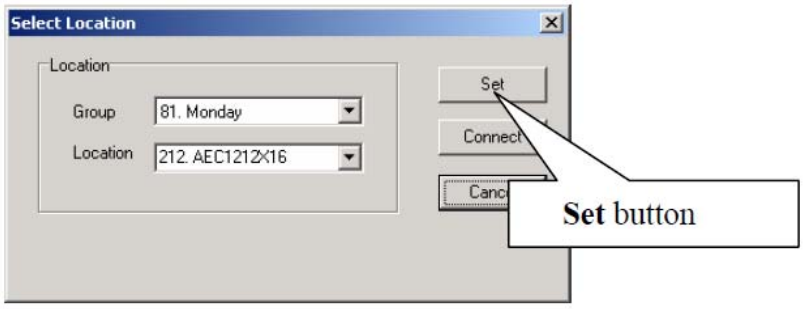


Fig. 96. Select Location Dialog

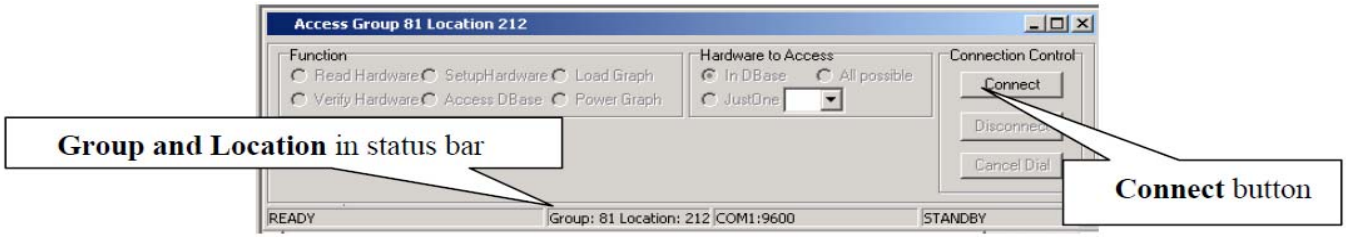


Fig. 97. Access Window

2. Click on the Connect button to establish a connection and access the *Function* and *Hardware to Access* Groups.

Scanning Recorder

To scan Recorder and Meter Devices:

3. From the *Function* group box, click on Setup Hardware.
4. From the *Hardware to Access* group box, click on All Possible.

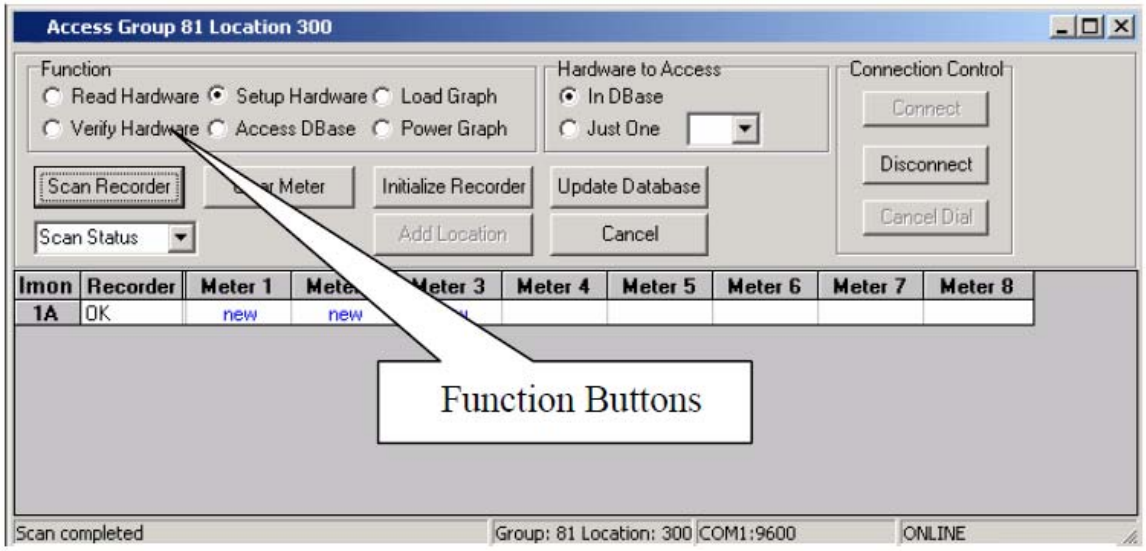


Fig. 98. Scan Recorder and Status Window

1. Click on the SCAN RECORDER button. By default, E-Mon Energy™ will start scanning for any new devices starting with IDs of 1A, 1B..... Once the new devices are detected, the grid will display the Recorder ID and the Meter Channel Status (OK, New, Bad....).

Updating the Database

To update the Database:

2. After the Scan Recorder process, wait until E-Mon Energy scans and moves past the last installed device ID. Wait a few seconds and click CANCEL. At this point, it will allow you to update the database.

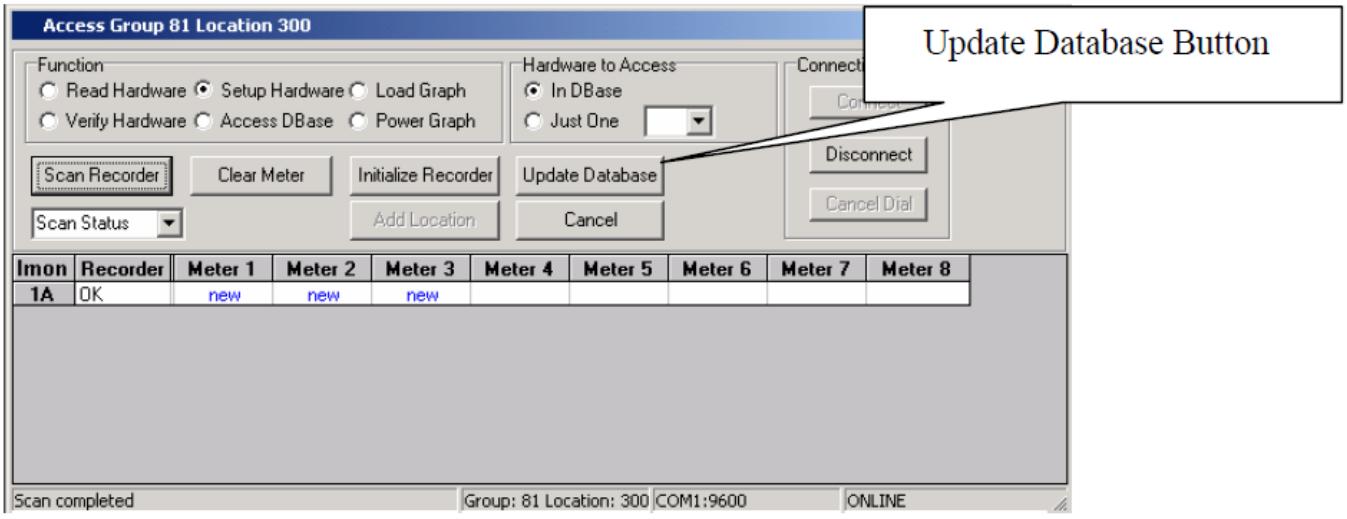


Fig. 99. Access Window Update Database

3. Click on the UPDATE DATABASE button. A dialog box displays with 4 list boxes New Device, Add to DB, Bad Device, and Delete from DB.

NOTE: The “New Device” list box displays all new devices detected during the scan.

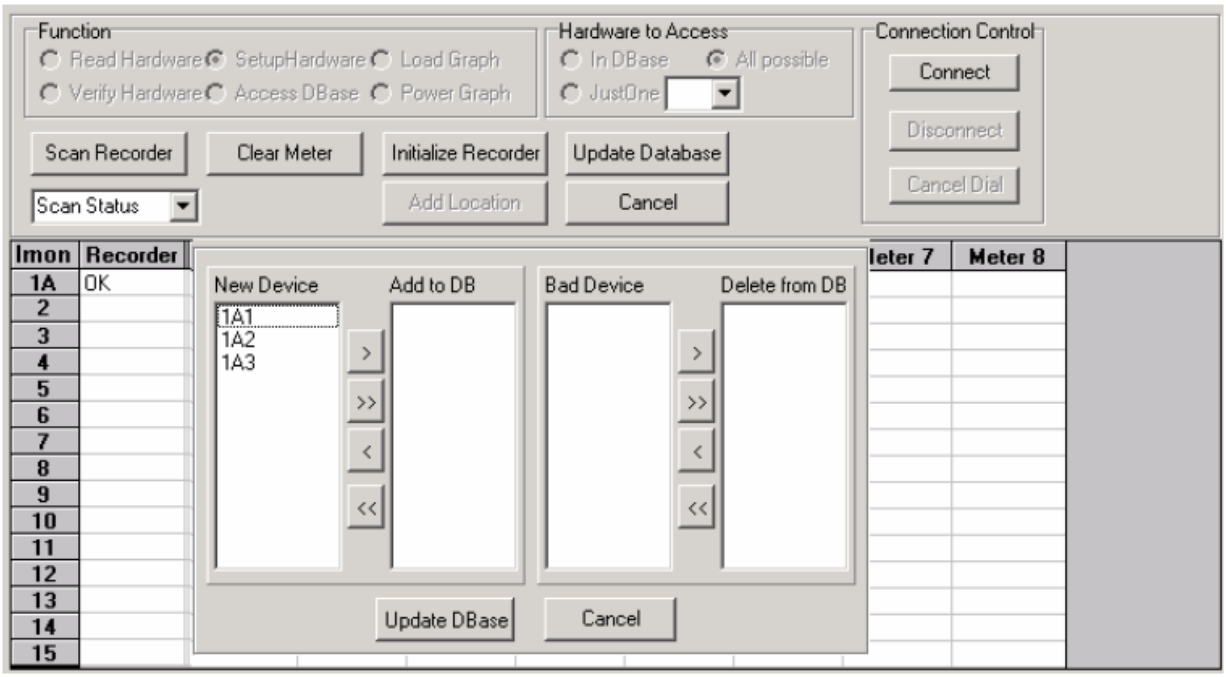


Fig. 100. Update Database

4. In the New Device list box, click on a device (e.g., 1A1).
5. Click on the > right arrow button to move the new device into the Add to DB list box. To add all devices, click the >> right double arrow button and all devices will move to the Add to DB list box.

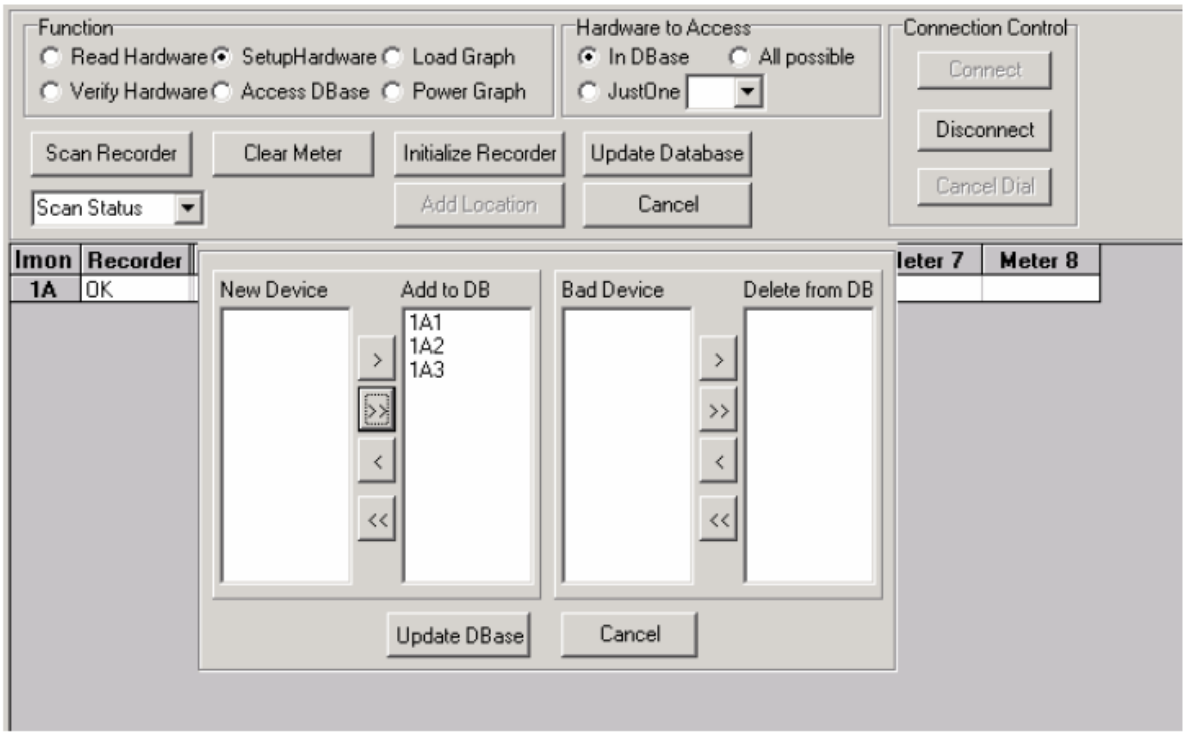


Fig. 101. Adding New Devices to Database

6. Click on the UPDATE DBASE button to add the devices to the database. The "*Database update is complete*" dialog box will open. Click ok. The Access window now displays meters as OK rather than NEW.

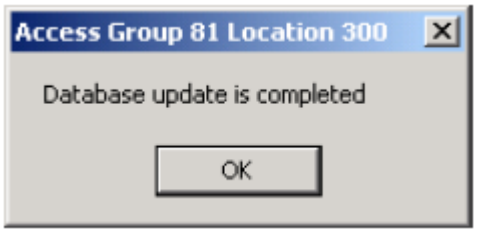


Fig. 102. Database update complete message dialog

Deleting a Device from the Database

To delete a Recorder for Database:

1. After the Scan Recorder process, wait until E-Mon Energy™ scans and moves past the last installed device ID. Wait a few seconds and click CANCEL. At this point, it will allow you to update the database.
2. Click on the UPDATE DATABASE button and a dialog box displays with 4 list boxes New Device, Add to DB, Bad Device, and Delete from DB.

NOTE: The Bad devices will display under "Bad Device" list box. The database list boxes allow you to add a new device or remove a bad device from that location.

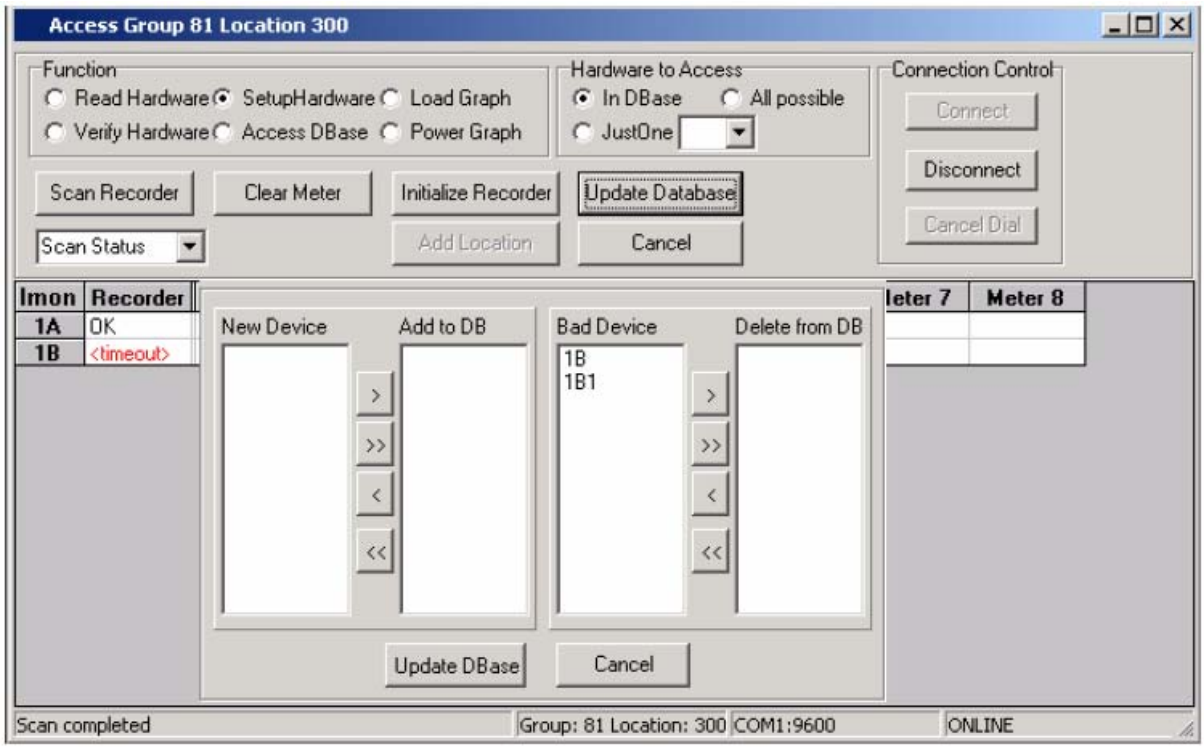


Fig. 103. Bad Devices in Database

3. In the Bad Device list box, click on a device (e.g., 1B1).
4. Click on the >> right arrow button to move the bad device into the Delete from DB list box. To add all devices, click the >> right double arrow button and all devices will move to the Delete from DB list box.

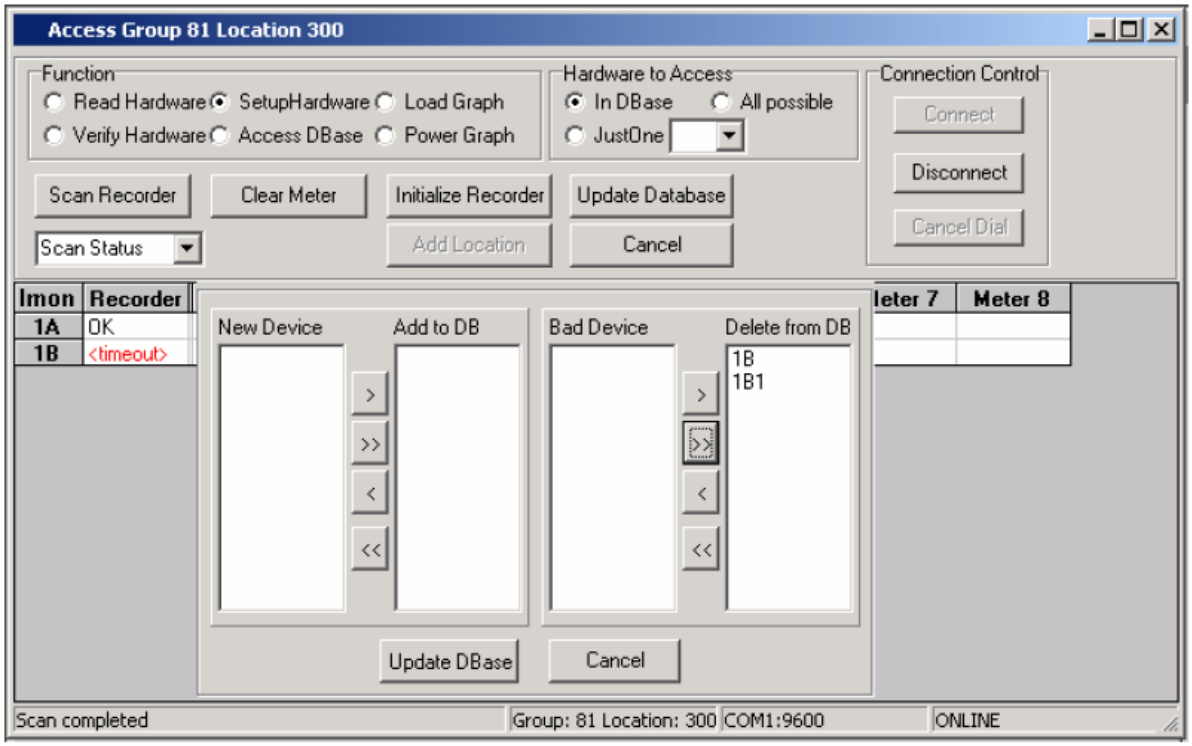


Fig. 104. Delete Devices from Database

5. Click on the UPDATE DBASE button to add the devices to the database. The "*Database update is complete*" dialog box will open. Click ok. The Access window now displays only one Recorder in the table rather than two (e.g., 1B removed).

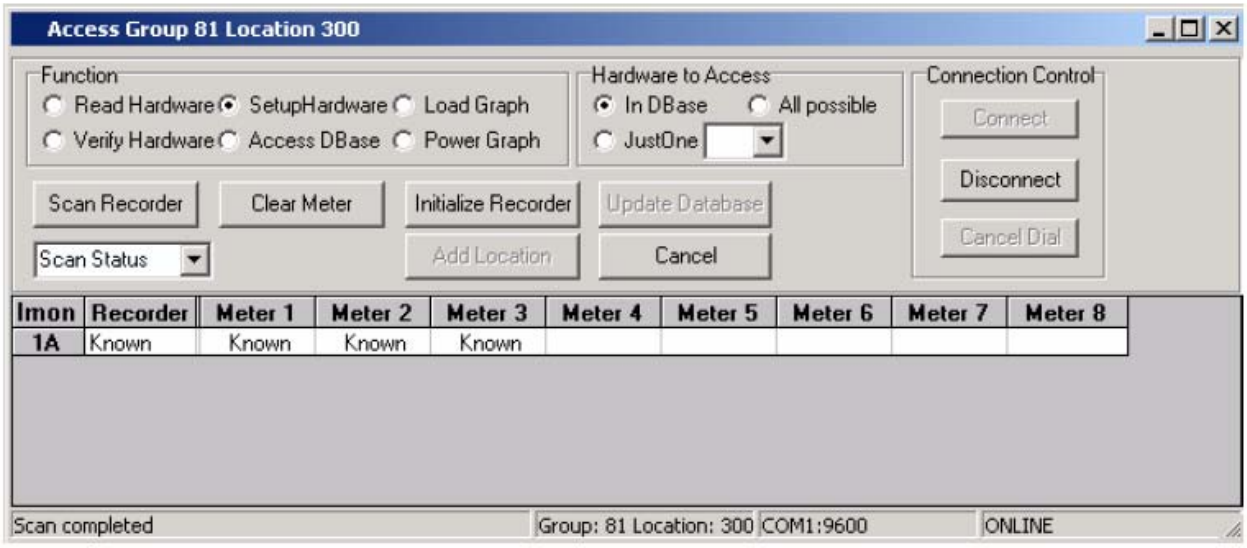


Fig. 105. Access view of removed Recorder

Initializing the Recorder

To Initialize the Recorder:

1. With ONLINE status, click on SetupHardware, and click on INITIALIZE RECORDER Button. The Initialize recorder to factory dialog box opens.

Fig. 106. Initialize recorder to factory defaults dialog

2. Select either the All displayed in Grid or Just One and choose from the drop-down list. Since this is a New Location, we are selecting All displayed in Grid. A Just One example can be an existing location where another recorder is added to it.
3. Click OK or CANCEL to exit. A message dialog box opens, warning that this command erases all record information and resets back to factory default settings.

Fig. 107. Warning Dialog

4. Click the YES button. The Access Group opens with an Initializing recorder status.

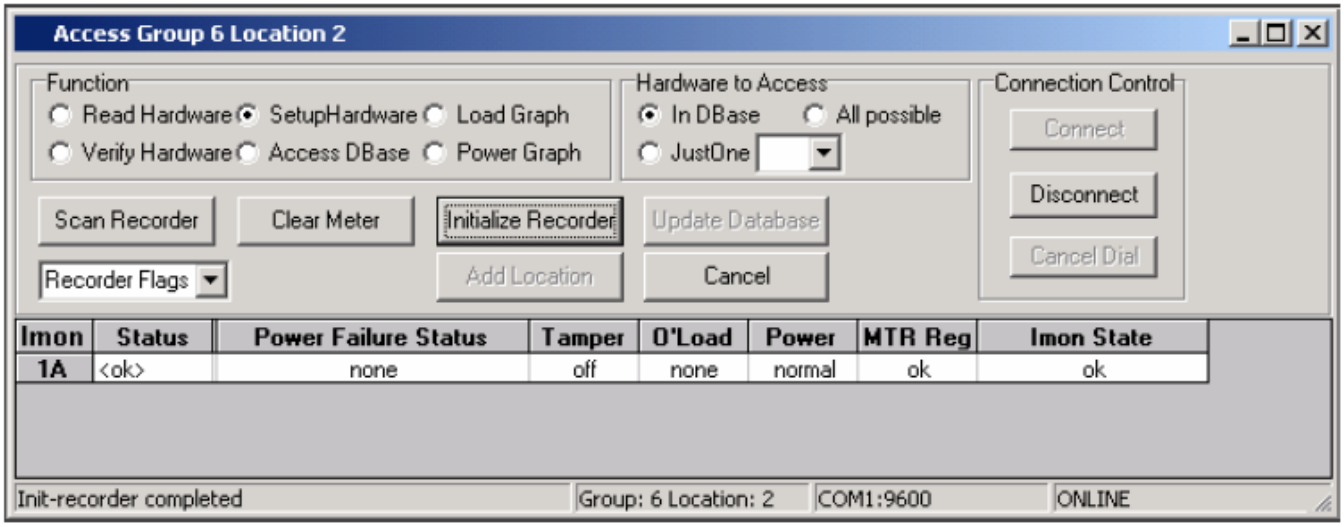


Fig. 108. Access Group Initializing recorder status

Setting the Data Recorder Parameters

To Set the Data Recorder Parameters

1. Click on the Access DBase button.
2. Click on the Recorder Tab. In the Data Recorder Parameters group, select the Profile Interval from drop-down.
3. Select the Peak Demand from the drop-down.
4. Select the Rolling Demand from the drop-down.

NOTE: The End of Interval is built in and it is not necessary to select from the drop-down.

5. Click inside the list box on each time increment and enter the min. and max. Time Adjustment or click on the up and down arrows to adjust the time frame for each increment.
6. Select the Time Zone from the drop-down list.
7. Click on Enable DS Time.
8. Click on the SEND RECORDER button, to accept/send the data to the recorder.

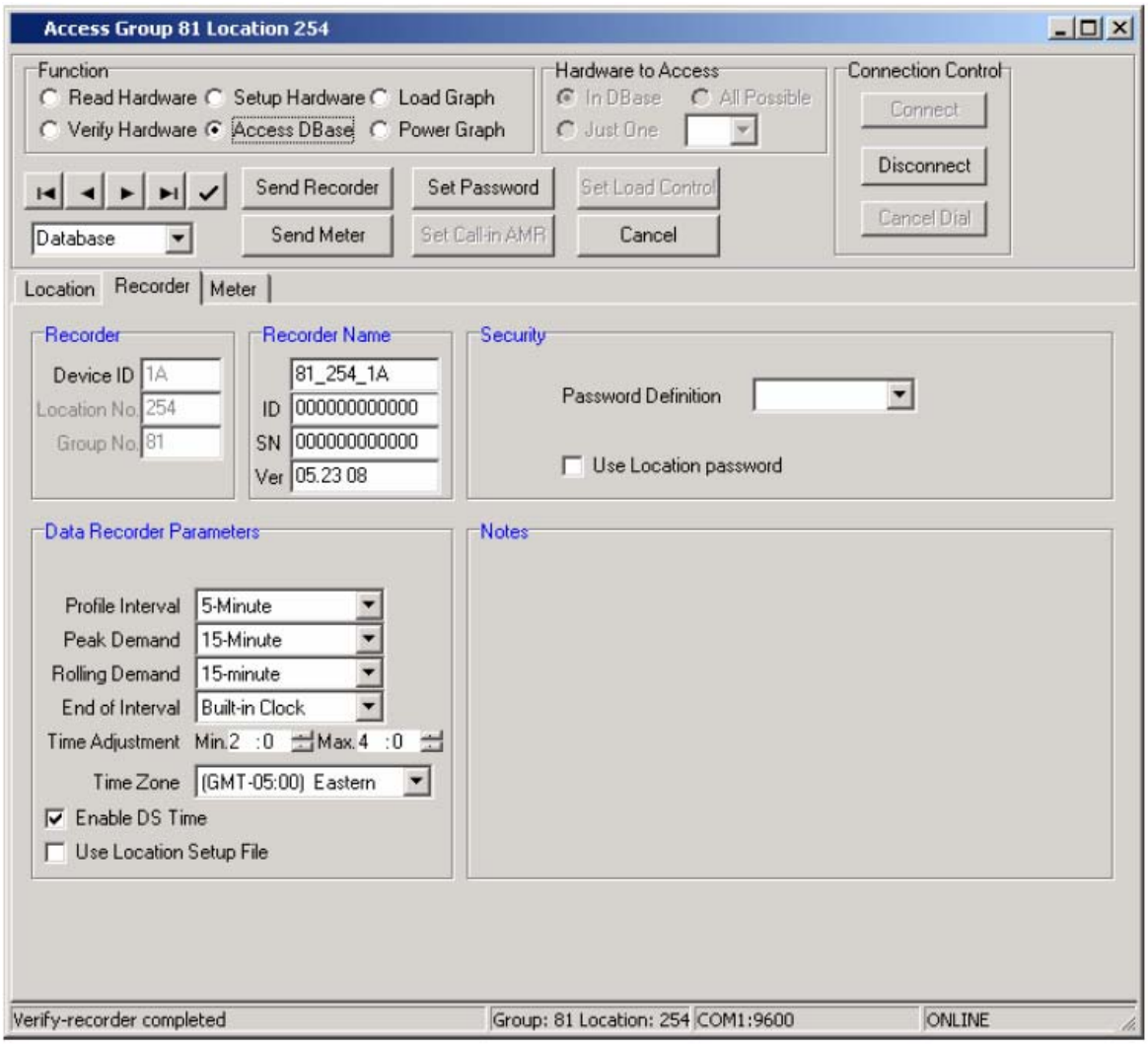


Fig. 109. Access Dbase Send Recorder Parameters

Changing the Data Recorder Parameters

To change the Data Recorder Parameters:

1. Click on the Access DBase button.
2. Click on the Recorder Tab, in the Data Recorder Parameters group, select the Profile Interval from drop-down.
3. Select the Peak Demand from the drop-down.
4. Select the Rolling Demand from the drop-down.

NOTE: The End of Interval is built in and it is not necessary to select from the drop-down

5. Click inside list box on each time increments and enter the min. and max. Time Adjustment or click on the up and down arrows to adjust the time frame for each increment.
6. Select the Time Zone from the drop-down list.
7. Click on Enable DS Time.
8. Click on the SEND RECORDER button, to accept/send the data to the recorder.

Reading and Downloading the Hardware Profile

To download the Hardware Profile:

1. From the Access Function Group, click on Read Hardware. The system will read the meters and display profile status (i.e., Status, Start Date, Days left from last Download, Sampling Rate, State (On/Off), Last Time downloaded data (Download Thru), and how many Days left to Download to Avoid Data Lost). Optional: If only reading one meter, select JustOne and choose from the drop-down list to the right.

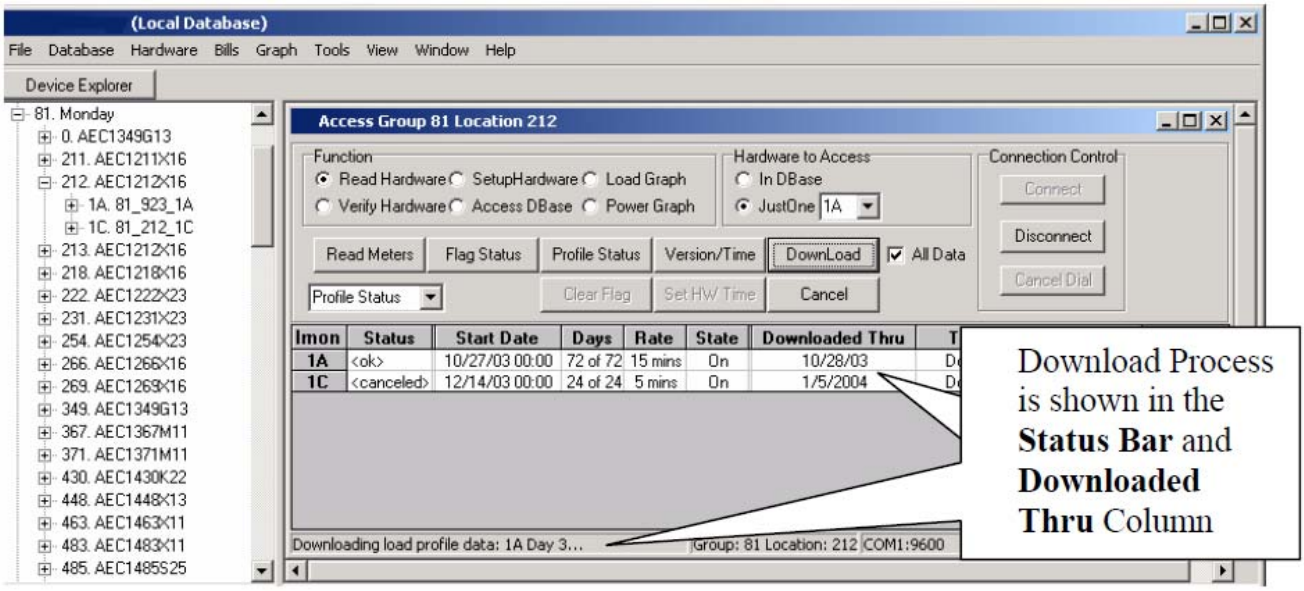


Fig. 110. Access Group Profile Status

2. If you want to force a download of all data from the recorder, check All data from the recorder prior to clicking the Download Button. *The download process will begin and be* shown in the Downloaded Thru and status bar in the lower left hand corner. When download is complete, the status bar will indicate – status complete.

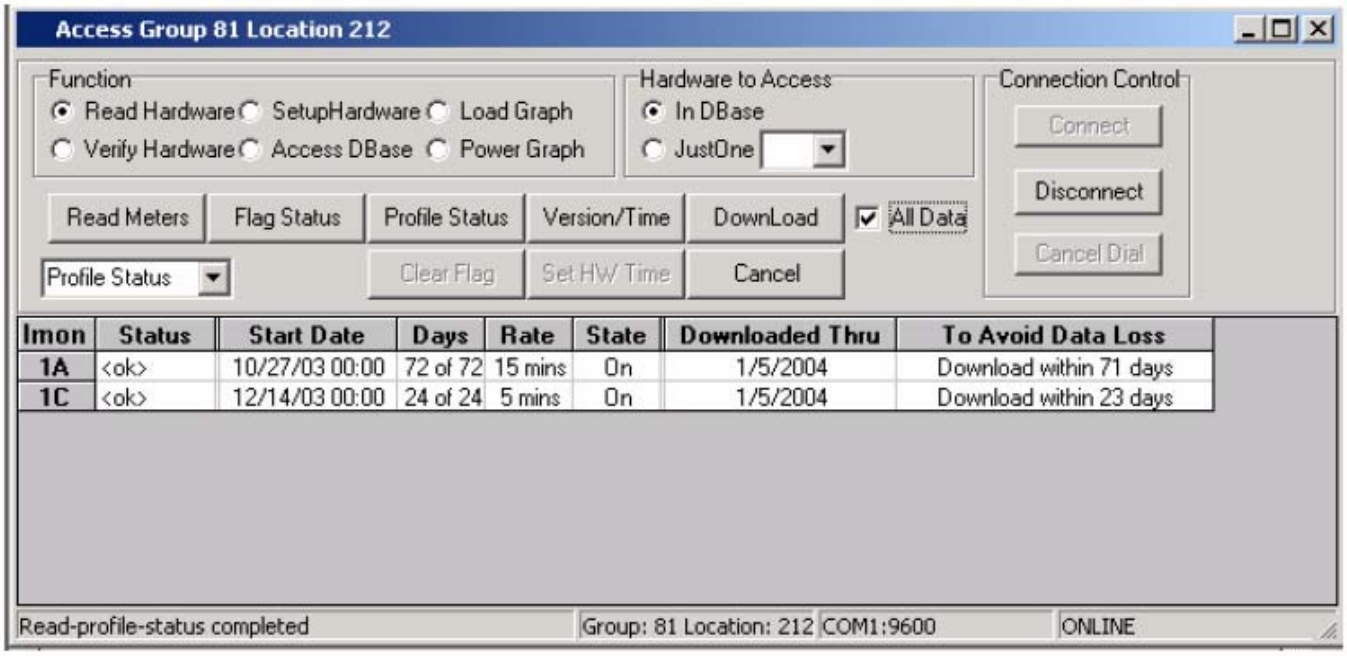


Fig. 111. Access Group Profile Status Complete

3. Click on the VERSION/TIME button and verify if the version is correct.

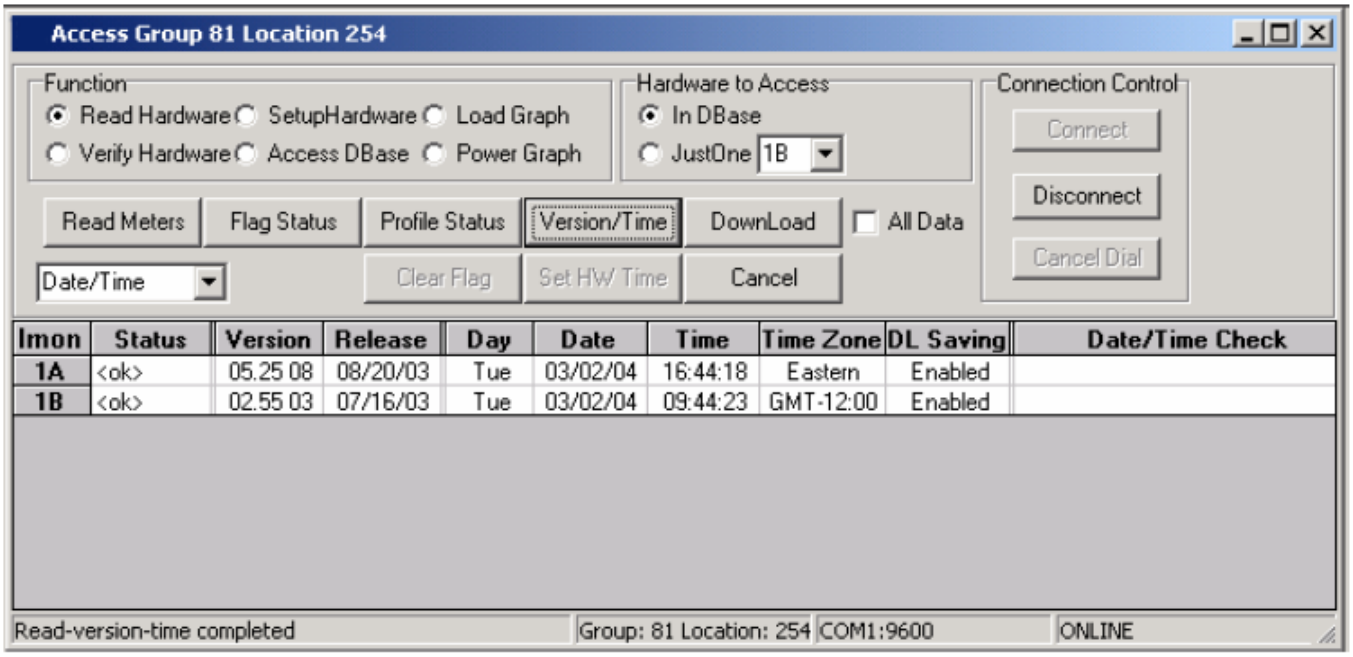


Fig. 112. Access Group Version/Time

Verifying the Recorders

To Verify the Recorder:

1. To verify the Recorder, click on Verify Hardware.
2. From the Hardware to Access group box, click on All possible.
3. Click on the Verify Recorder button. E-Mon Energy™ will start scanning for any recorders starting with IDs of 1A, 1B.....Once the devices are detected, the grid will display the Recorder status and profile.

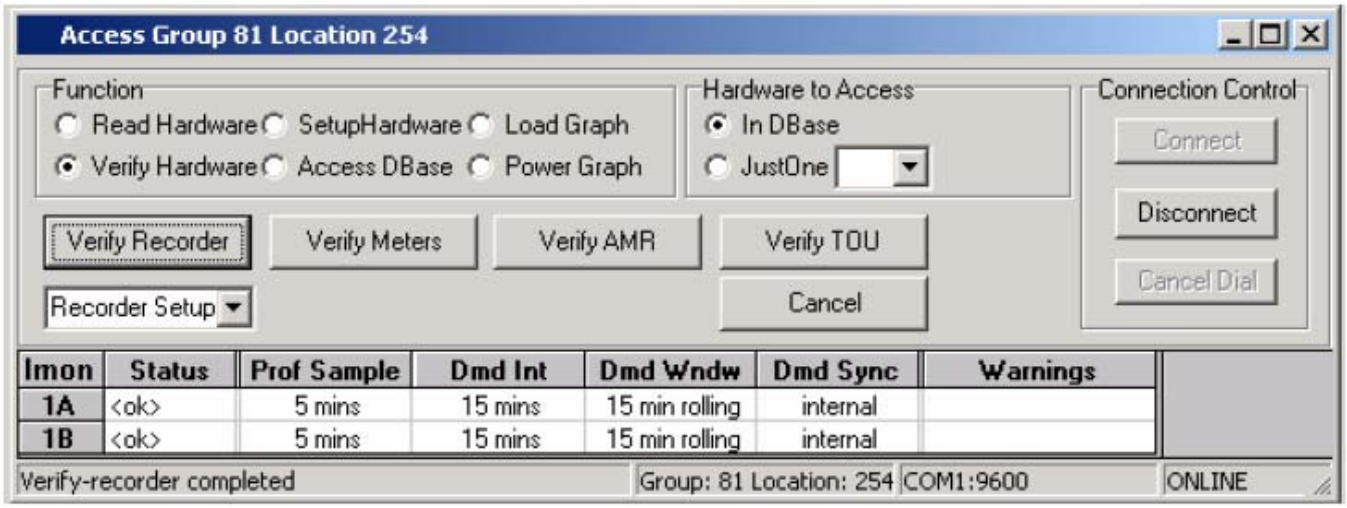


Fig. 113. Access Group Verifying Recorders

SECTION 9: METER

What is a Meter?

A meter is a device that measures the energy usage (i.e., electricity, gas, and water). Typically, there are 2 types of electric meters. In a simple metering application, a kWh meter or kW Demand meter with or without display and energy usage pulse output is sufficient. Sometimes, your existing “glass” type meters can provide energy pulse output – KYZ. Utilizing the KYZ pulse output, we can connect to a data recorder for capturing and storing the pulse. For more complex metering, a meter will also capable of providing information on voltage, amperage, power factor, phase angle, etc; meters such as the Class 3000. These high-end meters have a high performance microcontroller capable of calculating various elements of energy. E-Mon offers several meter types:

- KWh Meter with pulse output capable of connecting to a data recorder
- KWh/KW Demand Meter with pulse output capable of connecting to a data recorder
- Class 3000 with built-in data recorder and communications

What is a Submeter?

A submeter is a meter that’s installed after the master meter (a master meter is usually a utility meter) for the purpose of defining the energy use a specific location. As an example, a shopping mall owner could have a master meter that measures the electric use for the entire shopping mall. Thus, the mall owner would receive a single bill. An issue that frequently arises from the single meter is how to recover the usage charge from each store. To make matters worse, each store can have different types, (e.g., clothing, pizza, computer, ice cream, etc.). Therefore, the actual usage each store contributes to the total bill is unknown. To resolve this obstacle, submetering can be installed to monitor the actual usage for each individual store. The shopping mall owner will then be able to read the meters and generate a bill for each store in order to recover the cost of the master meter bill.

How does E-Mon Energy™ Recognize the Meters?

E-Mon Energy recognizes the meters through an address assigned and associated with the recorder at each group and location. Each meter gets an assigned address that determines one of the eight positions associated with the recorder (IDR) in the site location. If the recorder (IDR) has an address of 1A, then the meter address would be 1A1, 1A2, and continue up to eight meters. When E-Mon Energy scans for recorders, the recorder will report back the number and position of the input jacks that are being connected to the meters. If the recorder or meters are new to E-Mon Energy, it will also query the recorder and meter information in preparation for adding to the database.

What is the Meter Information?

The meter information consists of voltage, amperage, sets of sensors in parallel, and pulse factor. This information is normally taken from the *Meter Information Form*, and entered into E-Mon Energy (see Appendix section for the Meter Information Form). The meter information is normally entered into E-Mon Energy during a first-time configuration setup. This information is then uploaded to the IDR (recorder) for each meter. The meter information, such as units of measure, can be different, depending on the energy resource you are using. If your system involves connecting other pulse output meters into the recorder (IDR), you will need to get the pulse value for these meters.

Where do I enter the Meter Information?

The meter information can be entered in two places: from the *Meter tab of the Database* or the *Meter tab of the Access Group.* Both windows have the same information, except that the Access Group window is where you can send the meter information to the recorder. The following illustration describes the Meter tab on the Database Access window and Access location window.

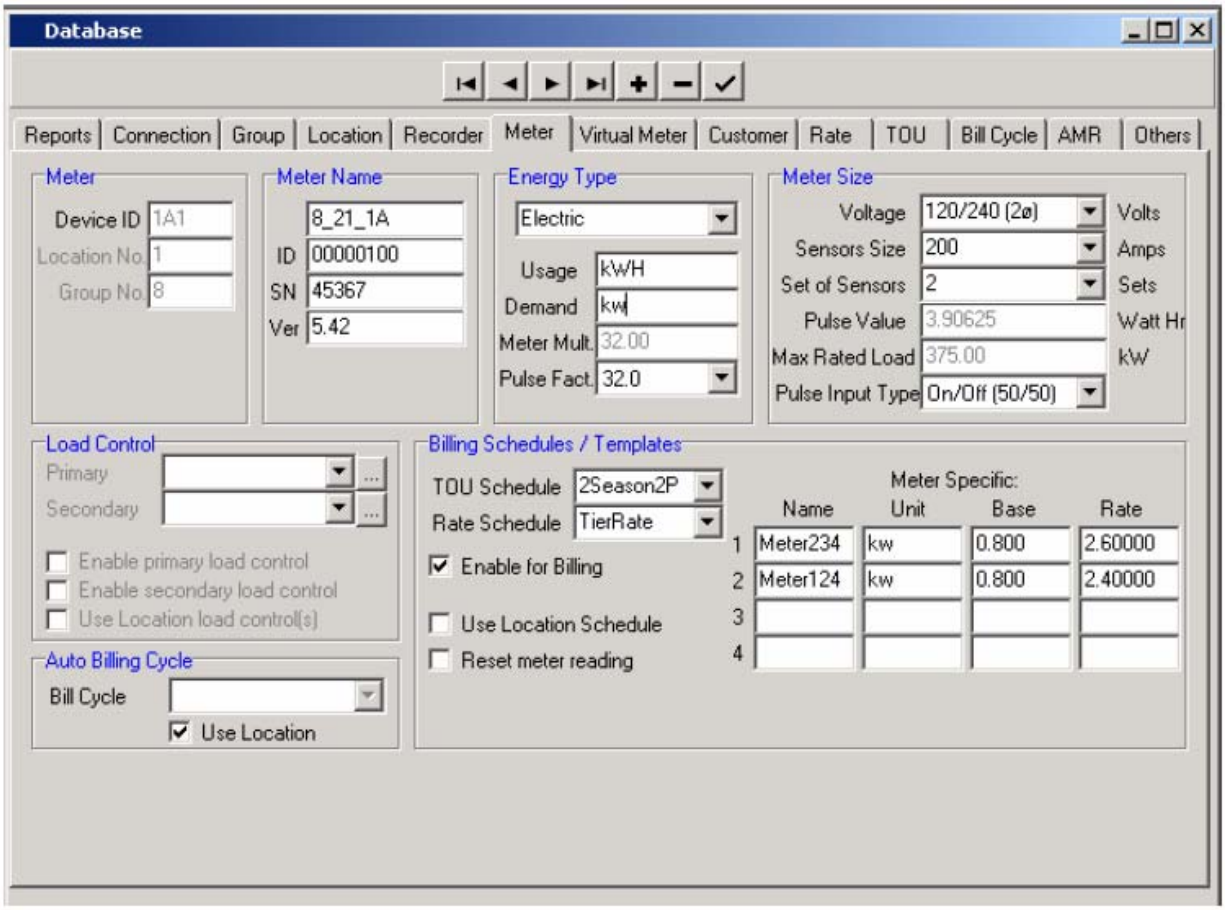


Fig. 114. Database Access - Meter Tab

Panel Group/Field	Description
Meter	Panel Group
Device ID*	Type in the meter ID (only if you're adding a new meter manually). This field is required.
Location No.	This field is fixed and cannot be changed. This field will always display the current Location number selected.
Group No.	This field is fixed and cannot be changed. This field will always display the current Group number selected.
Meter Name	Panel Group
Name	Type in the meter name. This is an optional field; however, we suggest you provide a meaningful name. By default, E-Mon Energy™ will assign group, location, recorder ID, and meter number.
ID	Type in an ID number.
S/N	Type in the serial number.
Ver.	Type in the version number.
Energy Type	Panel Group
Energy Type	This is a drop-down field. Select the type of energy (i.e., electric, gas, water).
Usage	Type in the usage unit of measure (e.g., KWH, GAL).
Demand	Type in the demand unit of measure (e.g., KW).
Meter Mult	This field is populated based on the voltage measurement, sensor size, and sets of sensors in parallel.

Panel Group/Field	Description
Pulse Factor	This is a drop-down field. Select pulse factor (i.e. 1, 16, 32, or 64). Older generation E-Mon meters are normally 1, newer are 16, rare cases 32. For other types of meters utilizing pulse output such as KYZ, this field should be 1.
Meter Size	Panel Group
Voltage	This is a drop-down field. Select the rated line voltage.
Sensor Size	This is a drop-down field. Select the rated sensor size.
Set of Sensors	This is a drop-down field. Select the number of sets of sensors in parallel. EMon meters can have multiple sets of sensors installed in parallel monitoring various circuits by a single meter. Thus, the totalize energy usage is captured.
Pulse Value	This field is populated based on the voltage measurement, sensor size, and sets of sensors in parallel. If this is a third-party meter, type in the pulse value. (Make sure to select Energy Type as Other).
Max Rated Load	This field is populated based on the voltage measurement, sensor size, and sets of sensors in parallel.
Pulse Input Type	Select Pulse Input Type. E-Mon meters and most of the other inputs use On/Off (50/50) for contact closure of 50% and open 50%. If your application requires run-time, select run-hour; thus when the contact is closed, the recorder will produce internal pulses of 5 pulses per second (5 Hz).
Load Control	Panel Group. This panel is required if utilizing the Load Control feature. Refer to “Others” tab for details on how to create Load Control parameters. If you want this meter to inherit the load control setup from the location tab, check the “Use Location Load Control.” This is a reserved feature.
Primary	Select a primary load control name. Then check the primary box to enable this feature.
Secondary	Select a secondary load control name. Then check the secondary box to enable this feature.
Auto Billing Cycle	Panel Group. If you check “Use Location,” the fields in this panel group will be populated with data from the Location tab.
Billing Cycle	From this drop-down, you can select a Bill Cycle name that is created on the Bill Cycle tab of the Database Access window. The Billing Cycle is required for creating a billing statement.
Use Location	If you want this meter to use the same Billing Cycle name as specified in the location tab, check “Use Location.”
Billing Schedule and Templates	Panel Group. If you want this meter to use the same billing rate structure as specified in the location tab, Check “Use Location Schedule.” Otherwise, check the “Enable for Billing” to activate this feature and specify the TOU Schedule name and Rate Schedule name.
TOU Schedule	Select a TOU Schedule name that is created on the TOU tab of the Database Access window. Refer to Rate Table and TOU Schedule sections for details.
Rate Schedule	Select a Rate name that is created on the “Rate” tab of the Database Access window. Refer to Rate Table and TOU Schedule section for details.
Meter Specific	In the Name, Unit, Base, Rate, type in specific meter information you would like to add, (e.g., square foot, usage allowed). This information will be passed to the billing forms for bill calculations.
Use Location Schedule	Check “Use Location Schedule.” The fields in this panel group will be populated with data from the Location tab.
Reset Meter Readings	If you want the meter reading to reset to 0 after each billing cycle, check “Reset Meter Readings.” Otherwise, the subsequent reading will be accumulated, (i.e., “current read” and “previous read” will be non-zero).

* = Required field.

⚠ WARNING

Entering incorrect meter information will cause faulty readings.

The Access location has the same fields except for the buttons above the meter panel. *Note: Before sending* information to the Meter or Recorder, ensure that all information is correct.

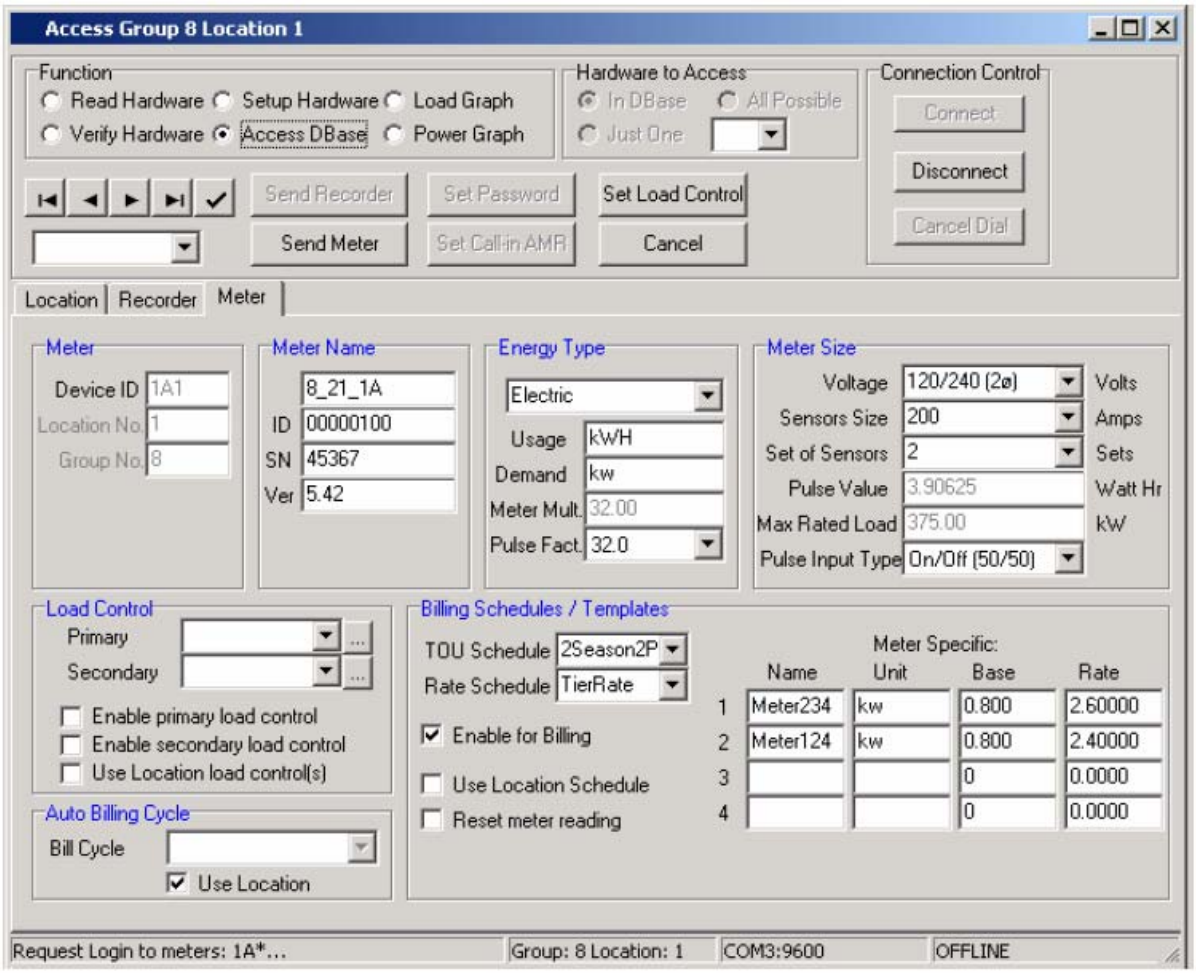


Fig. 115. Access Location – Access Dbase Meter Tab

Panel Group/Field	Description
Send Recorder	Click this button to send the recorder configuration to the recorder. You must be on the Recorder or Location tab to perform this step. If you're on the Location tab, recorder configurations for all recorders at this location will be sent respectively. If you're on the Recorder tab, configuration for the current recorder will be sent.

Panel Group/Field	Description
Send Meter	Click this button to send the meter configuration to the recorder. You must be on the Meter, Recorder, or Location tab to perform this step. If you're on the Location tab, configurations for all the meters at this location will be sent respectively. If you're on the Recorder tab, configuration for all meters in the current recorder will be sent. If you're on the Meter tab, configuration of the current meter will be sent.
Set Password	Click this button to send the password setup to the recorder. You must be on the Recorder or Location tab to perform this step. If you're on the Location tab, the password will be sent to all the recorders at this location. If you're on the Recorder tab, the password will be sent to the current recorder.
Set Call-in AMR	Click this button to send the call-in (call-home) setup to the recorder. You must be on the Location tab to perform this step. Call-in AMR schedule will only be sent to the recorder with Device ID "1A." If you are utilizing the Call-in AMR (also referred to as Call-home), the Device 1A is responsible to initiate the calling in. If the location has multiple recorders in the same RS-485 network, the additional recorders will tack along the 1A once connected.
Set Load Control	Click this button to send the load control setup to the recorder/meter. You must be on the Meter, Recorder, or Location tab to perform this step. If you're on the Location tab, settings for all the meters at this location will be sent respectively. If you're on the Recorder tab, settings for all meters in the current recorder will be sent. If you're on the Meter tab, settings of the current meter will be sent.

Select Meter Location

To select the Meter Location:

1. 1 From the E-Mon Energy™ Explorer window, click and select Hardware\Set Location from the drop-down menu. The *Select Location* dialog box opens.

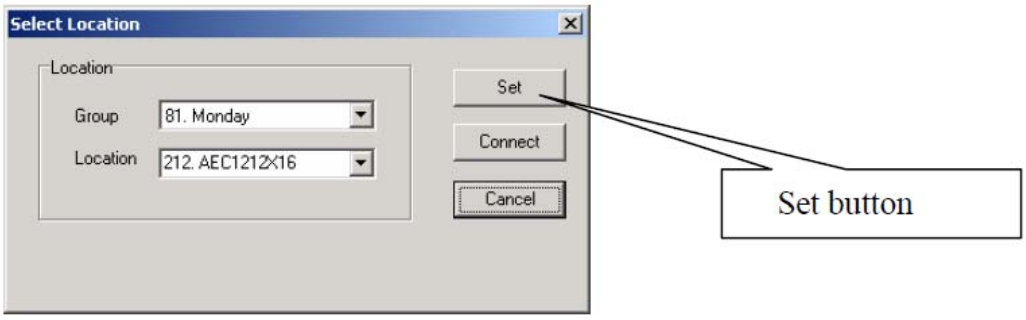


Fig. 116. Select Location Dialog

2. From the Group drop-down list, select a Group.
3. From the Location drop-down list, select a Location you want to scan and with which you wish to communicate.
4. Click on the SET button. The Access window opens.

NOTE: The Group and Location display in the window's status bar area.

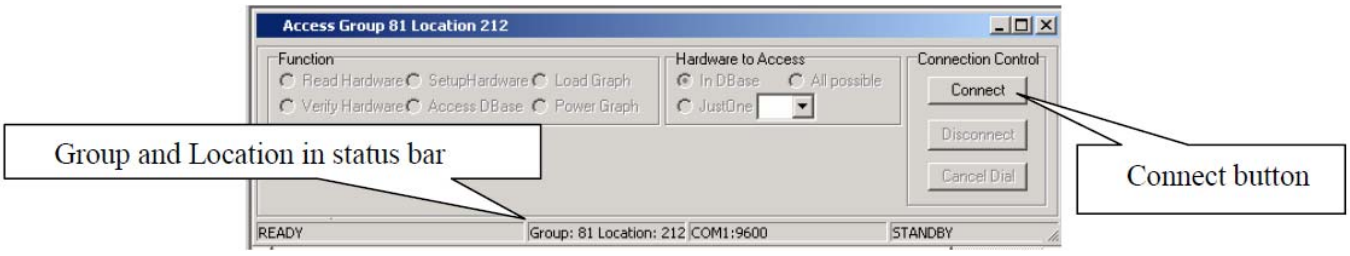


Fig. 117. Access Window

5. Click on the CONNECT button to establish a connection and access the Function and Hardware to Access Groups.

Scanning Devices

6. From the Function group box, click on SetupHardware.
7. From the Hardware to Access group box, click on All possible.

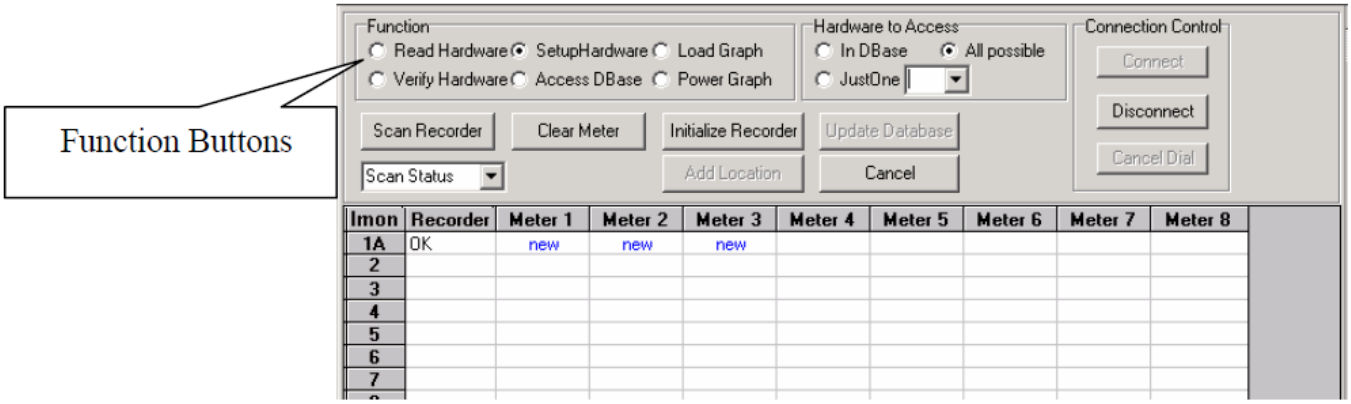


Fig. 118. Scan Recorder and Status Window

8. Click on the SCAN RECORDER button. By default, E-Mon Energy will start scanning for any new devices starting with IDs of 1A, 1B..... Once the new devices are detected, the grid will display the Recorder ID and the Meter Channel Status (OK, New, Bad....)
9. Once E-Mon Energy™ scans and moves past the last installed device ID, wait a few seconds and click CANCEL. At this point, it will allow you to update the database.
10. Click on the UPDATE DATABASE button and a dialog box displays with 4 list boxes: New Device, Add to DB, Bad Device, and Delete from DB. *Note: The "New Device" list box* displays all new devices detected during the scan. The Bad devices will display under the "Bad Device" list box. The database list boxes allow you to add a new device or remove a bad device from that location.

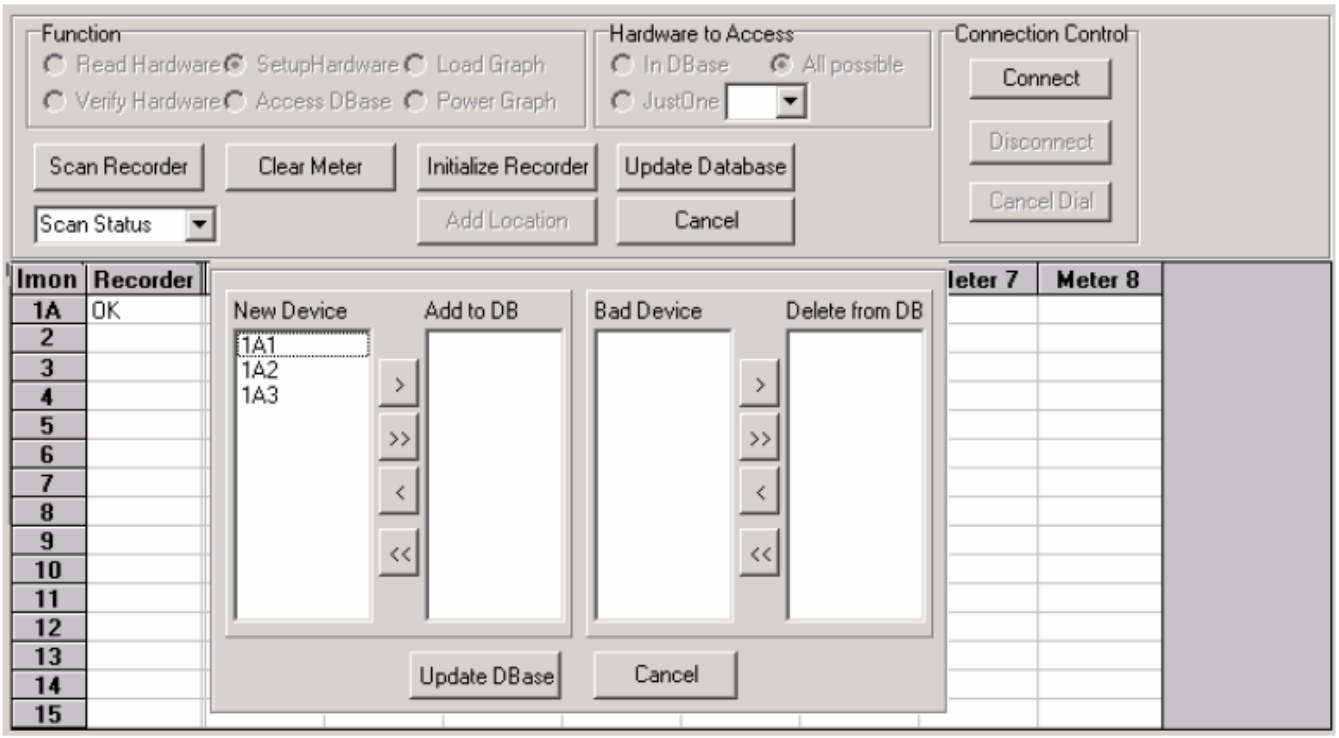


Fig. 119. Update Database

11. In the New Device list box, click on a device. (e.g., 1A1).
12. Click on the > right arrow button to move the new device into the Add to DB list box. To add *all* devices, click the >> right double arrow button and all devices will move to the Add to DB list box.

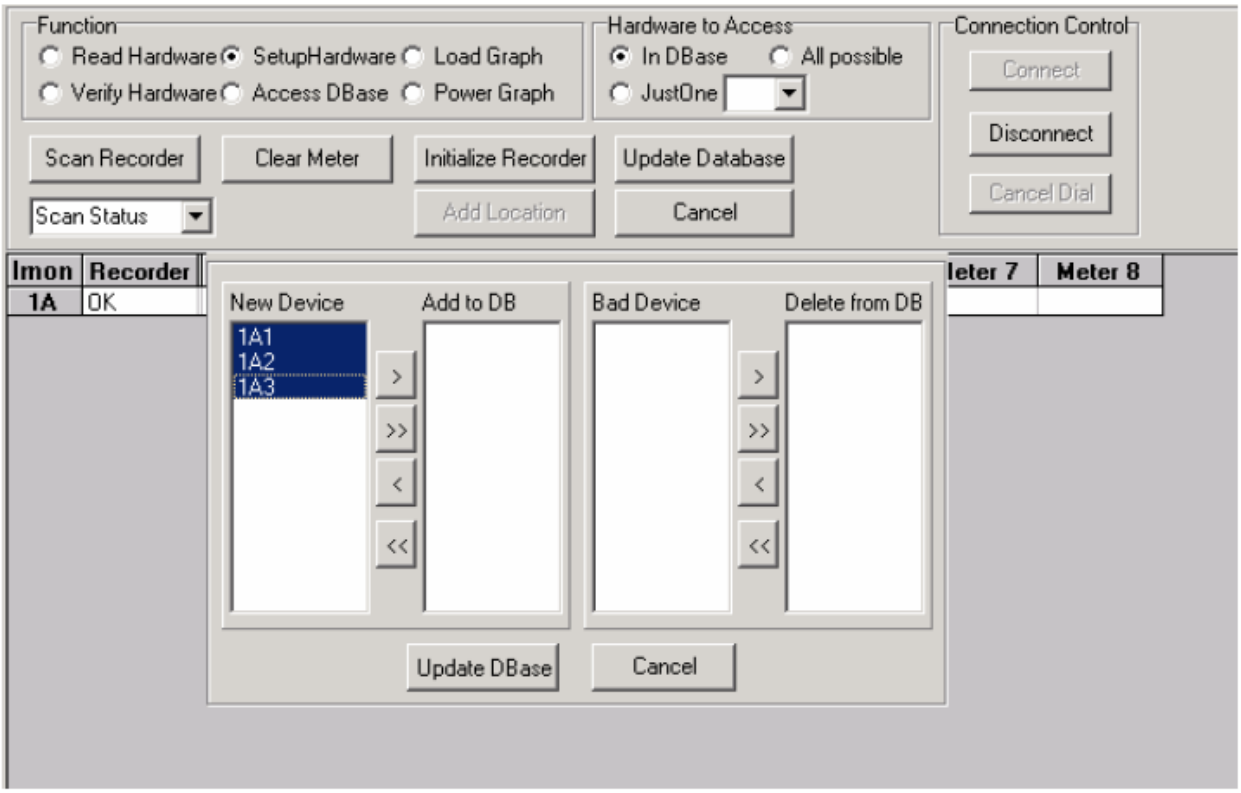


Fig. 120. Adding New Devices to Database

13. Click on the UPDATE DBASE button to add the devices to the database. The Access window now displays meters as OK rather than NEW.

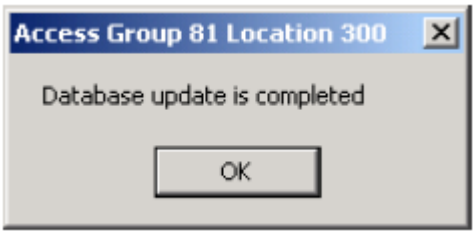


Fig. 121. Database update complete message dialog

Setting up the Meter Information

To select the Meter Location:

1. Click on Meter Tab. In the Meter Size group, select the Voltage from the drop-down.
2. Select the Sensor Size (Amps) from the drop-down.
3. Select the Set of Sensors (Sets) from the drop-down.
4. Select the Pulse Input Type (kWh Meter) from the drop-down.

NOTE: Under the Pulse Input Type, the default setting most commonly used is 50/50. The On/Off (50/50) must be selected.

5. From the Energy Type group, select the Pulse Fact.

NOTES: The Meter Multiplier is pre-set and is automatically calculated.

6. Click on the Send Meter button to accept/send the data to the meter.

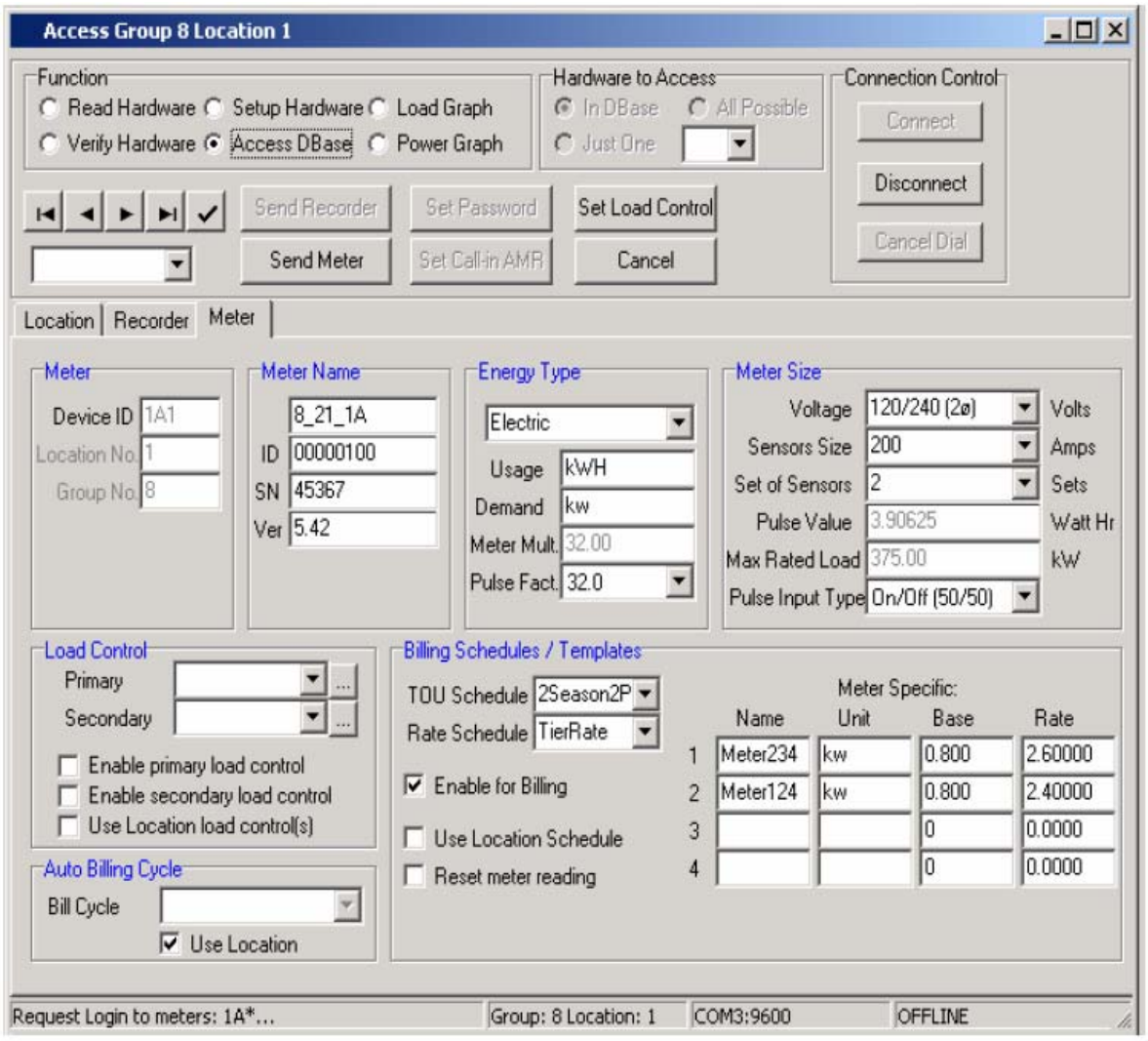


Fig. 122. Access DBase Send Meter Parameters

Reading the Meter Hardware

To read the Meter Hardware:

1. From the Access Function Group, click on Read Hardware. Click on Profile Status to display the status (i.e. Status, Start Date, Days left from last Download, Sampling Rate, State [On/Off], Last Time downloaded data [Download Thru], and how many Days left to Download to Avoid Data Lost). If you want to read only one meter, select Just One and choose the Device ID from the drop-down list to the right.

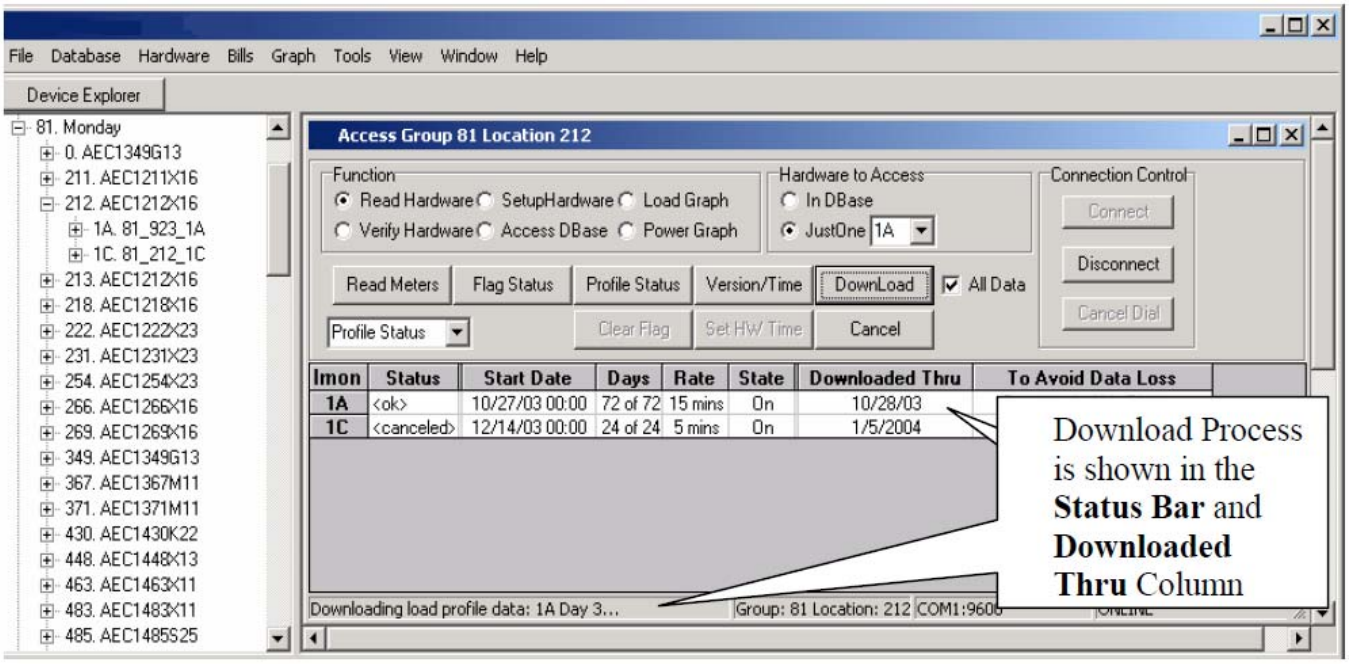


Fig. 123. Access Location Profile Status

2. If you want to download all data from the recorder, check All Data and then click the Download button. The download process will begin. The download progress is shown in Downloaded Thru and the status bar in the lower left.

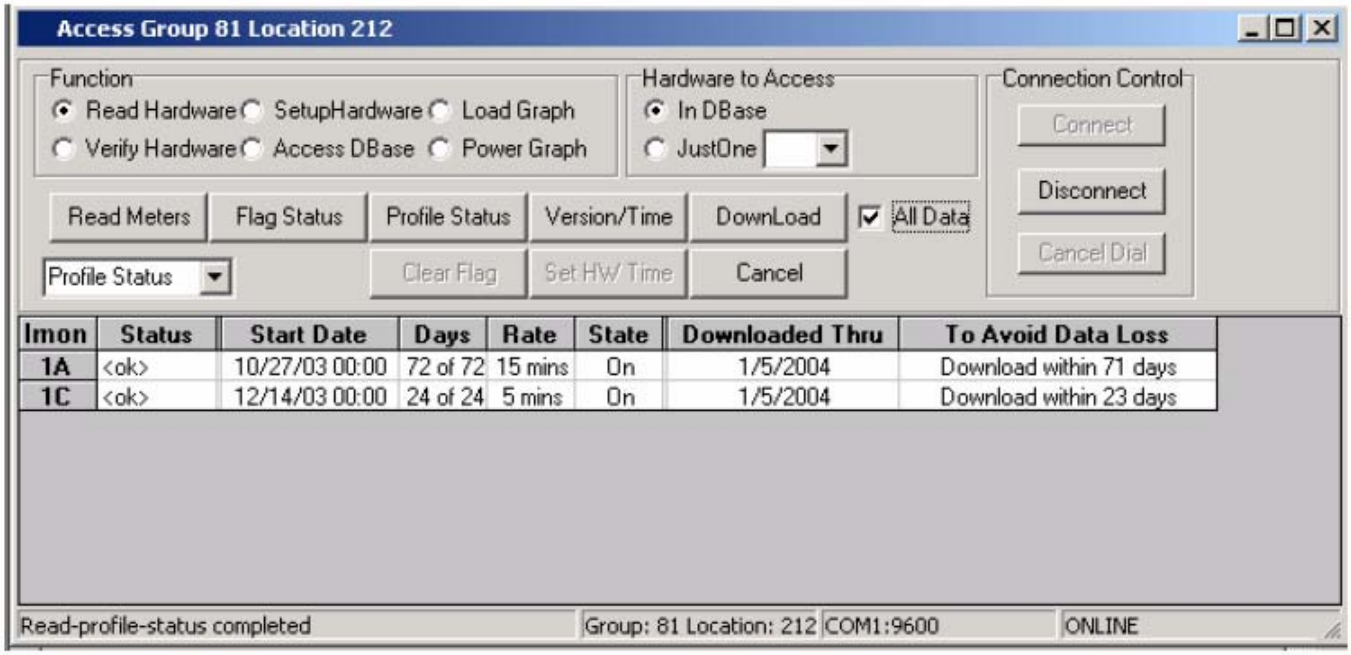


Fig. 124. Access Location Profile Status Complete

3. Click on the VERSION/TIME button and verify if the version is correct.

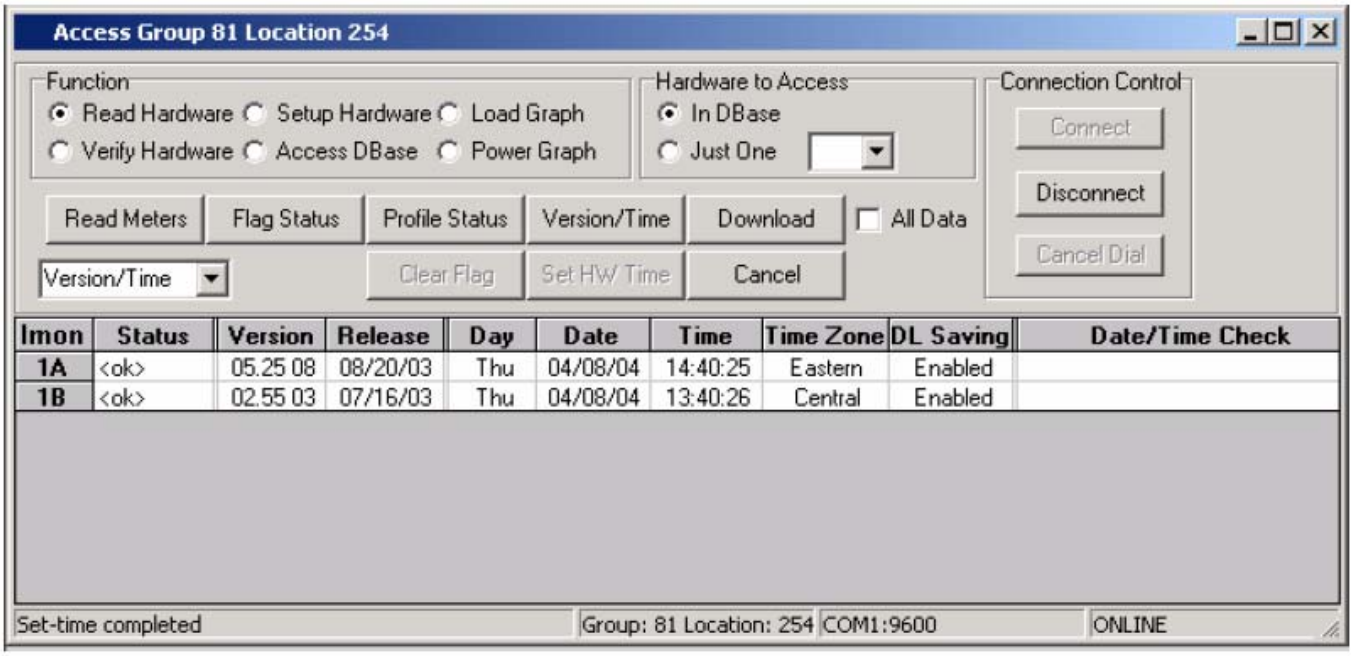


Fig. 125. Access Location Version/Time

SECTION 10: VIRTUAL METER

What is a Virtual Meter?

A virtual meter is a software meter that we create within E-Mon Energy™ to store calculated data from one or more hardware meter(s). A virtual meter can have whole and/or partial readings from multiple hardware meters. In order to create a virtual meter(s), we must first create a virtual recorder. Similar to a virtual meter, a virtual recorder is a software recorder that we create within E-Mon Energy to have the same configurations as a hardware recorder. A virtual recorder can have up to 8 virtual meters. Virtual recorders and meters only exist in E-Mon Energy database. Within a group location, there can be up to 1664 virtual meters, i.e. 8 x 26 x 8 – 1A1, 1A2, ..., 1Z1,..., 1Z8 up to 8A1, 8A2, ..., 8Z1,..., 8Z8. Virtual meters must be created in Location 0 of any Group number. This location can have multiple virtual recorders and virtual meters. All of the virtual meter definition is done within the Virtual Meter tab on the Database window. A virtual meter doesn't have voltage, amperage, etc, settings comparing to the hardware meter; instead, it has a virtual meter definition list box where you can add/define hardware meter(s). Once the virtual hardware is added, a profile is generated for this virtual meter. These profiles are generated using the current data from the database. The virtual meter profiles are done from the "*Generate Virtual Meter Profile*" window.

Can I Change a Virtual Meter Definition?

Yes, once the virtual meter is created, you can add or delete a meter definition or modify an existing meter definition. The following illustrates and describes the Virtual Meter tab on the Database Access window.

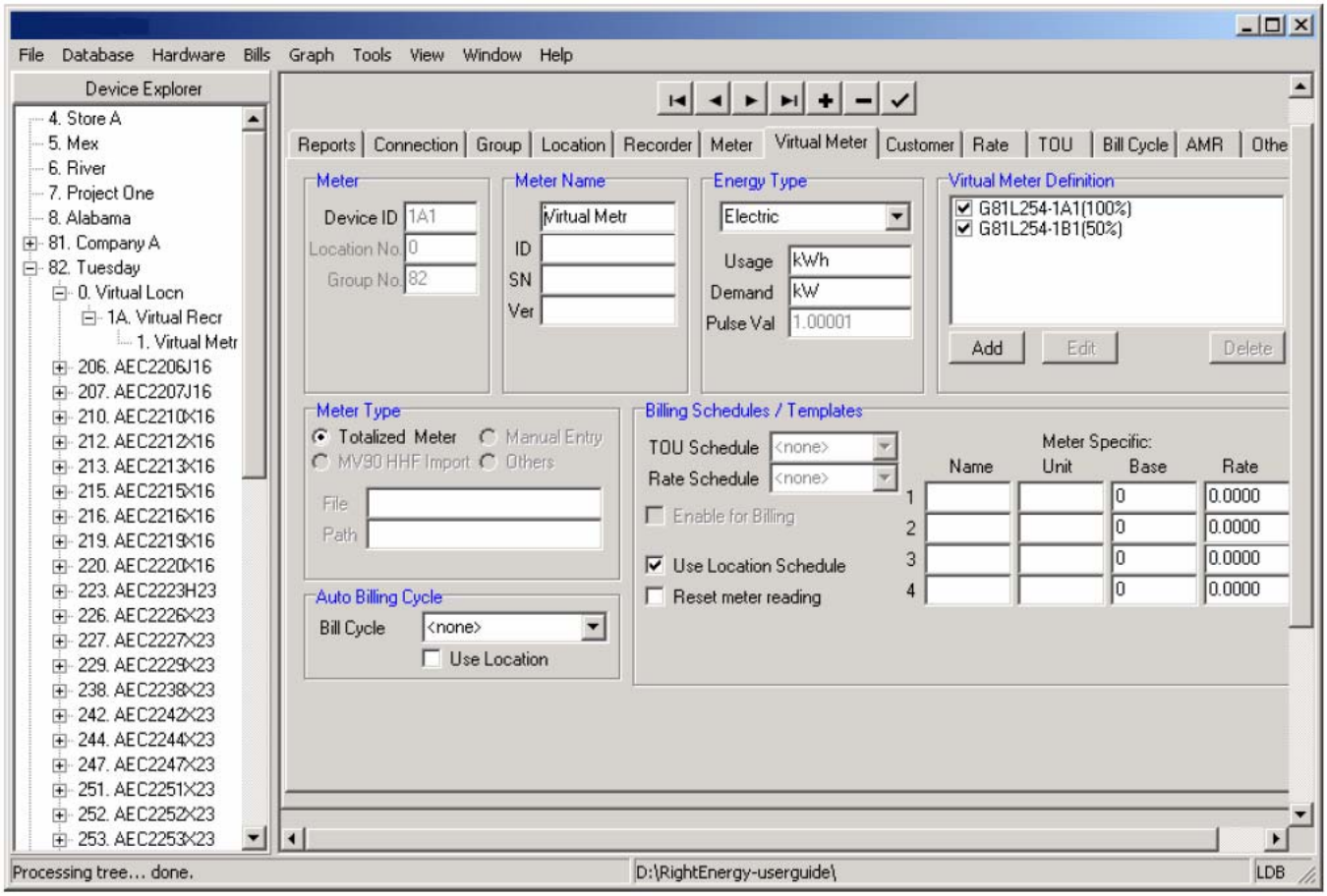


Fig. 126. Virtual Meter Tab

Panel Group/Field	Description
Meter	Panel Group
Device ID*	Type in the meter ID (only if you're adding a new meter manually). This is a required field.
Location No.	This field is fixed and cannot be changed. This field will always display the current Location number selected. For virtual meters, this location must be 0.
Group No.	This field is fixed and cannot be changed. This field will always display the current Group number selected.
Meter Name	Panel Group
Name	Type in the meter name. This is an optional field; however, we suggest you provide a meaningful name.
ID	Type in an ID number.
S/N	Type in the serial number.
Ver.	Type in the version number.
Energy Type	Panel Group
Energy Type	This is a drop-down field. Select the type of energy (i.e. electric, gas, water).
Usage	Type in the usage unit of measure (i.e. KWH, GAL).
Demand	Type in the demand unit of measure (i.e. KW).
Pulse Val	This is field is automatically calculated base on hardware meter information.
Virtual Meter Definition	Panel Group. The list box displays all the meter definitions of the hardware meter(s). Use the Add/Edit/Delete buttons to add, edit, or delete the configuration.
Add/Edit/Delete Buttons	The Add button will open the Virtual Meter Dialog Box for hardware meter selection. The Edit button will allow you to open the selected meter definition for editing. The Delete button will allow you to remove the selected meter from the list box.
Meter Type	Panel Group
Totalized Meter	This panel group is preset and cannot be changed.
Auto Billing Cycle	Panel Group. If you check "Use Location," the fields in this panel group will be populated with data from the Location tab.
Billing Cycle	Select a Bill Cycle name that is created on the Bill Cycle tab of the Database Access window. The Billing Cycle is required for creating a billing statement.
Use Location	If you want this meter to use the same Billing Cycle name as specified in the location tab, Check "Use Location."
Billing Schedule and Templates	Panel Group. If you want this meter to use the same billing rate structure as specified in the location tab, Check "Use Location Schedule." Otherwise, check the "Enable for Billing" to activate this feature and specify the TOU Schedule name and Rate Schedule name.
TOU Schedule	Select a TOU Schedule name that is created on the TOU tab of the Database Access window. Refer to Rate Table and TOU Schedule sections for details.
Rate Schedule	Select a Rate name that is created on the "Rate" tab of the Database Access window. Refer to Rate Table and TOU Schedule sections for details.
Meter Specific	In the Name, Unit, Base, Rate, type in specific Meter information you would like to add, (i.e. square foot, usage allowed, etc). This information will be passed to the billing forms for bill calculations.
Use Location Schedule	Check "Use Location Schedule." The fields in this panel group will be populated with data from the Location tab.

* = Required field.

How do I Create a Location for the Virtual Meter?

Setting up a Location Tab

To set up the location:

1. Select Database\Location from the drop-down menu or click on the Location tab in the Database window.

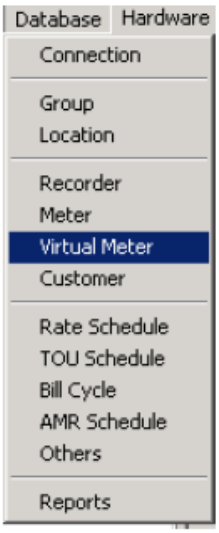


Fig. 127. Database/Virtual Meter Menu

2. Select a Group from the Device Explorer (e.g., Tuesday).

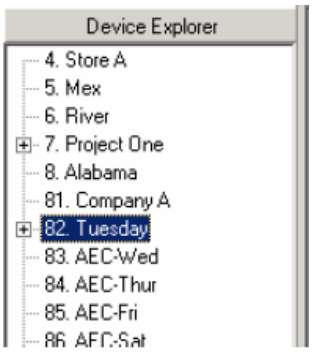


Fig. 128. Device Explorer - Selecting Group

3. Select the Location tab, and click on the Panel Action“+” button to add a new location.

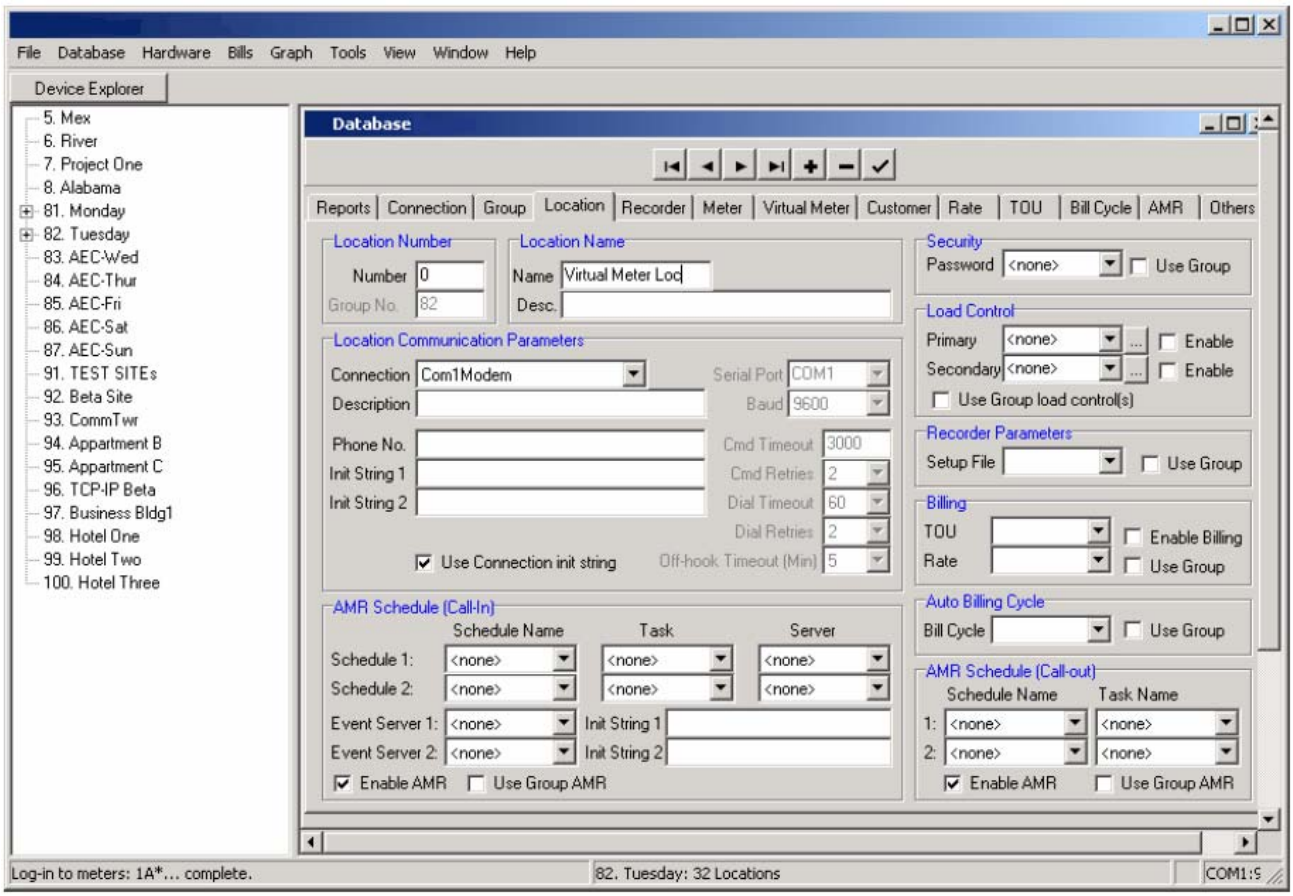


Fig. 129. Virtual Meter Location

4. In the Location Number type in “0.” Note: Location “0” is required for Virtual Meters.
5. Tab across and type in a Location Name.
6. Click on the check button to accept/save the location record.

Update the Device Explorer

7. Click the DEVICE EXPLORER button to refresh the device directory. You will notice that the Location Number “0”and Name have been added under the Group Name.

How do I create a Virtual Recorder?

Creating a Virtual Recorder

To create a Virtual Recorder:

1. Select the Virtual Location from the Device Explorer.
2. Click on the Recorder tab and click on the Panel Action “+” button to add a new recorder.

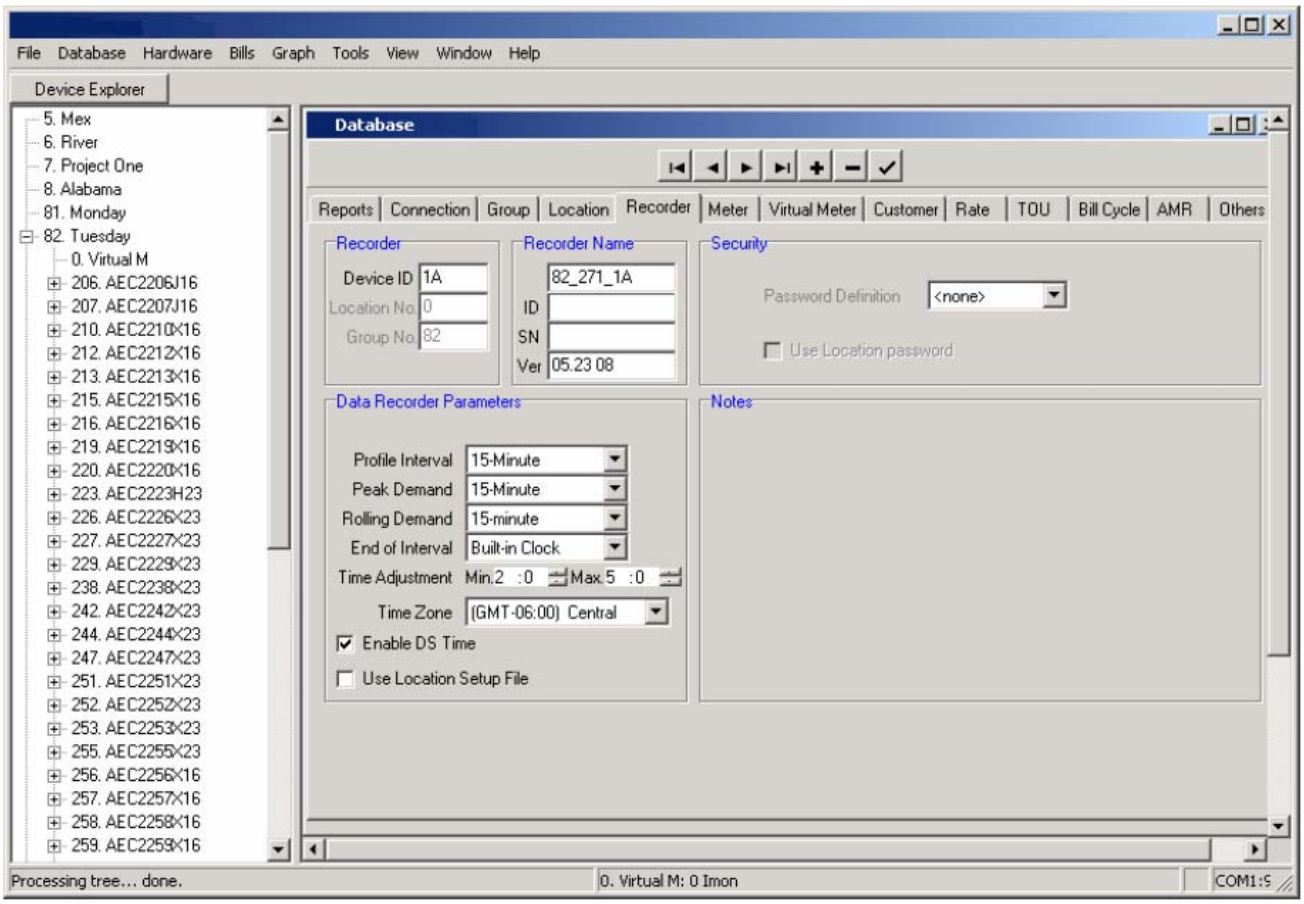


Fig. 130. Virtual Meter Recorder

3. In the Device ID, type in (1A, 1B, ..., 8Z).

NOTE: *Note: This field is required and must be unique* within each location.

4. Tab across and type in a Recorder name.
5. Click on the check button to accept/save recorder record.

Update the Device Explorer

6. Click the DEVICE EXPLORER button to refresh the directory.

NOTE: You will notice that the Recorder Device ID and Name have been added under the Location Name.

Creating a Virtual Meter

To select a Virtual Meter:

1. Select a Recorder from the Virtual Location in the Device Explorer.
2. Click on the Virtual Meter tab and then click on the Panel Action"+" button to add a new meter.

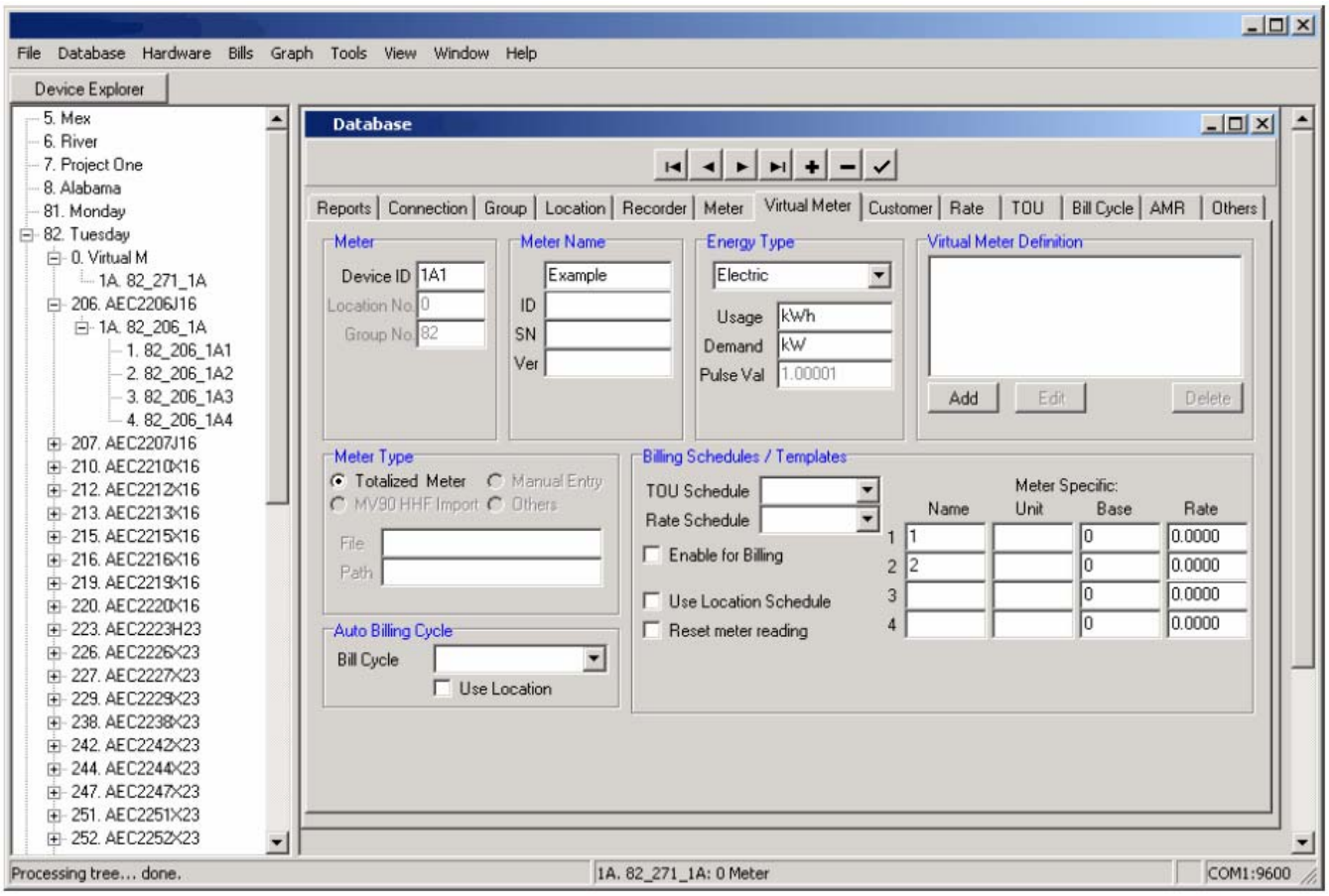


Fig. 131. Virtual Meter Tab

3. In the Device ID, type in (1A1, 1A2, ..., 1Z1,..., 1Z8 up to 8A1, 8A2, ..., 8Z1,..., 8Z8).

NOTE: This field is required and must be unique within each location.

4. Tab across and type in a Meter name.
5. In the Virtual Meter Definition list box, click the ADD button. The Virtual Meter dialog box opens.
6. From the Select Meter Node device directory tree, drill-down and select the meter you want. The Meter fields on the right will populate with the meter profile. If you need to add total readings, in the Percent (%) field, type in “100.” If you need to subtract total readings, in the Percent (%) field, type in “-100.” If you need to add/subtract partial readings, type in the percentage number.
7. Click OK. The meter will display in the Virtual Meter Definition list box.

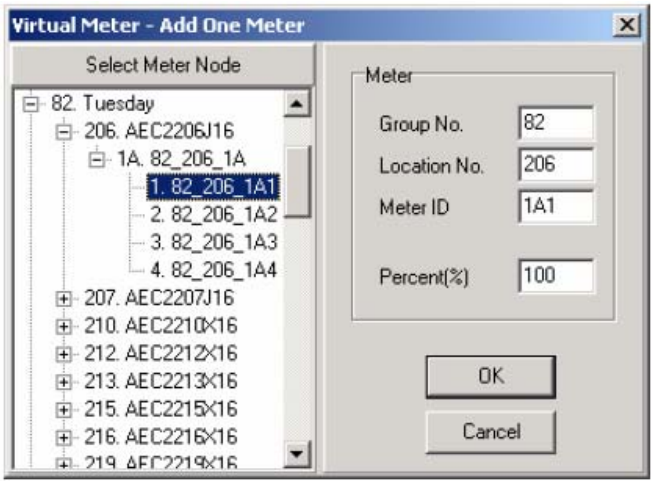


Fig. 132. Virtual Meter – Add One Meter Dialog

8. Ensure the check box next to the meter is checked. Repeat the steps to add additional meter(s).

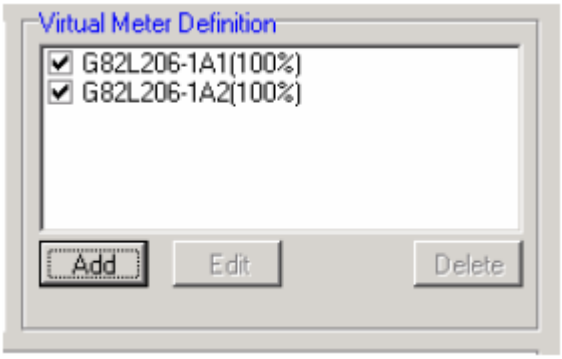


Fig. 133. Virtual Meter Definition Dialog

9. From the Meter tab, click on the "√ " button to accept/save the meter record.

Update the Device Explorer

10. Click the DEVICE EXPLORER button, to refresh the device directory.

NOTE: You will notice that the Meter Device ID and Name have been added under the Recorder Name.

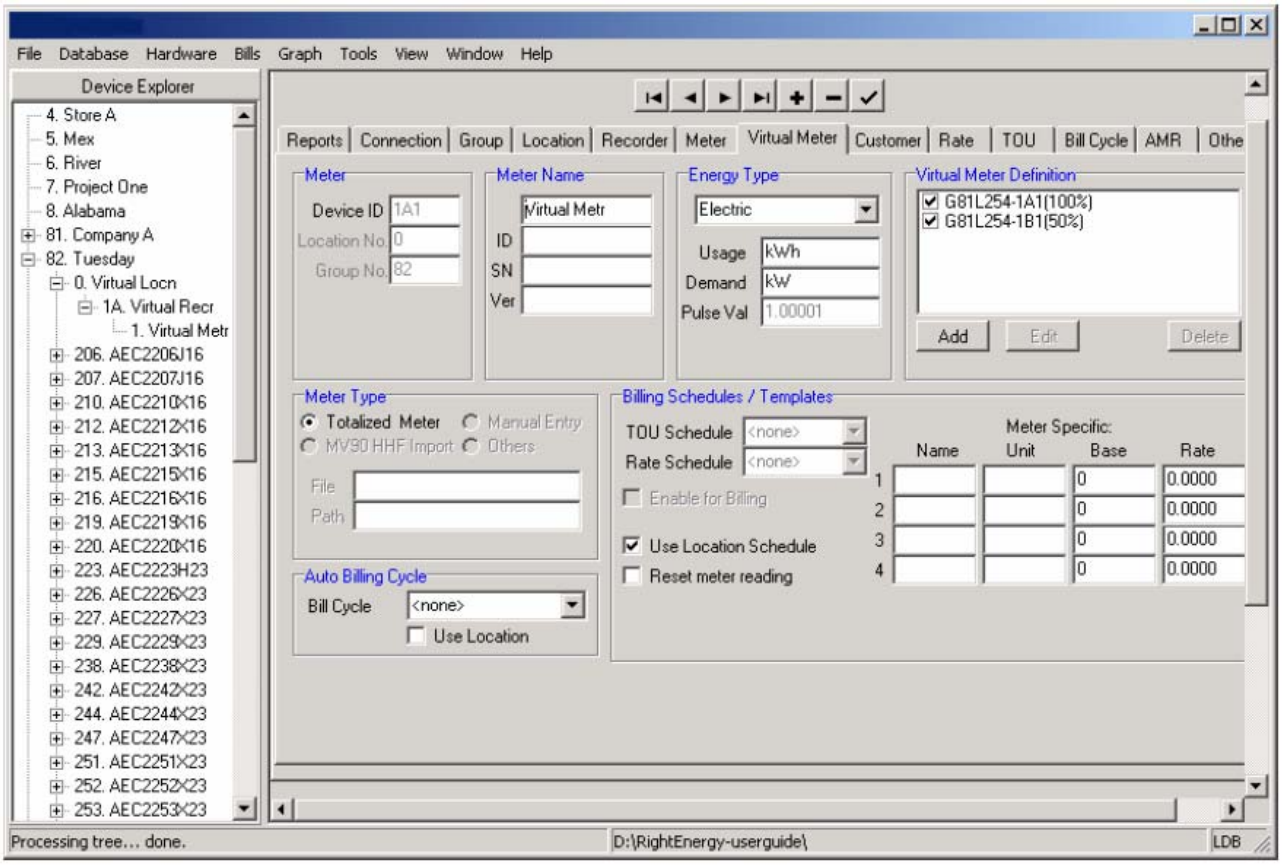


Fig. 134. Virtual Meters

Creating the Virtual Meter Profile

To create a Virtual Meter Profile automatically:

1. Select the Hardware\Generate Virtual Meter Profile from the drop-down menu. The Generate Virtual Meter Profile window opens.

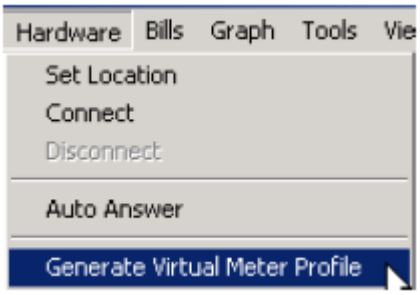


Fig. 135. Virtual Meter - Hardware - Generate Virtual Profile Menu

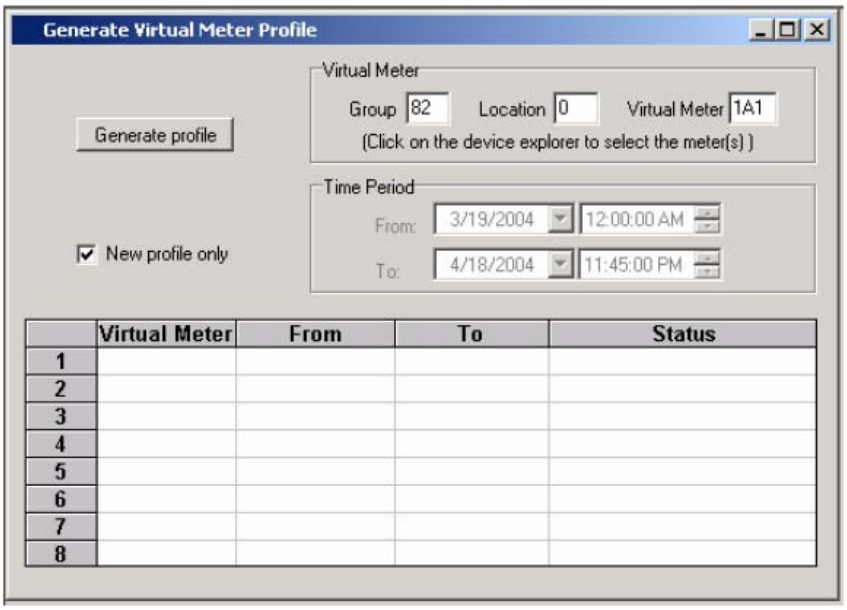


Fig. 136. Virtual Meter - Generate Virtual Profile Window

2. From the Device Explorer, select Location and drill down to the Virtual Meter.
3. Click on a Virtual Meter. The Virtual Meter panel will display the Group, Location, and Virtual Meter ID.

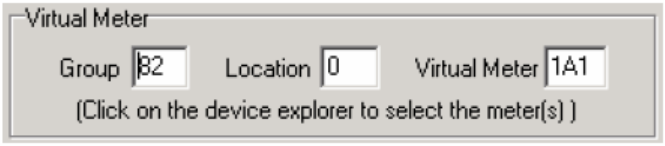


Fig. 137. Virtual Meter ID

4. Click on the checkbox to mark *New Profile Only* to automatically generate the Virtual Meter Profiles.

Fig. 138. Check -New Profile Only

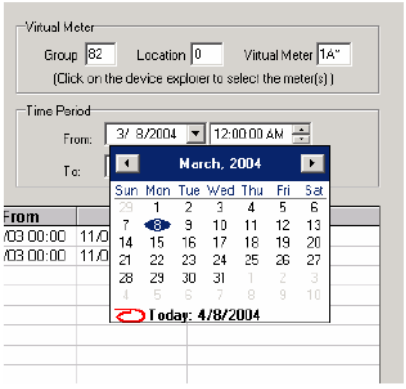


Fig. 139. Virtual Meter Profile Time Period

5. Click on Generate Profile button. The Virtual Meter table below will search and retrieve the data from the database.

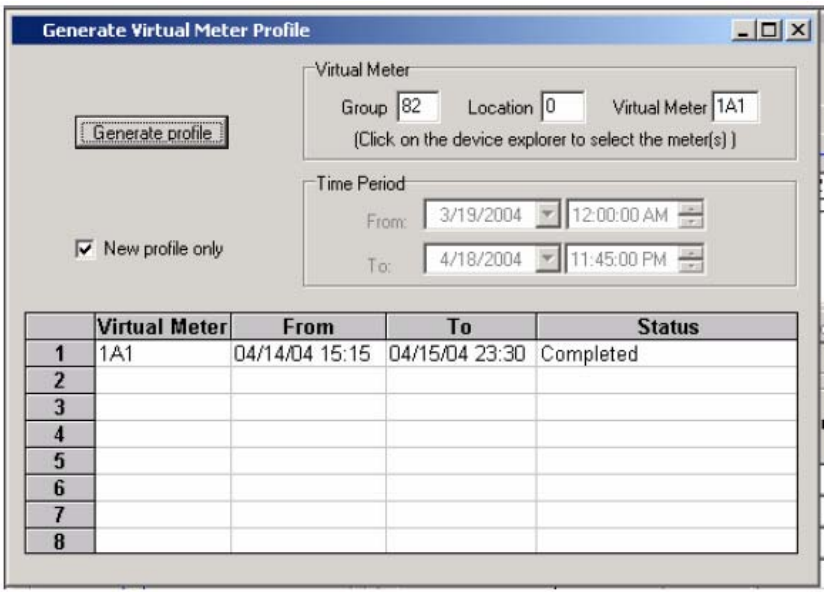


Fig. 140. Generate Virtual Meter Profile - Automatically

To create a Virtual Meter Profile manually:

1. From the Device Explorer, select Location and drill down. Click on the Virtual Meter you want to manually add.
2. The Virtual Meter panel should display in the Group, Location, and Virtual Meter ID.

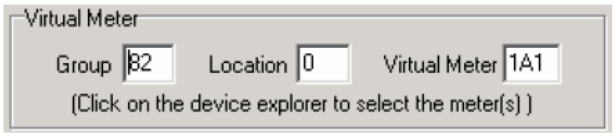


Fig. 141. Virtual Meter ID

3. Uncheck the checkbox *New ProfileOnly* to manually generate the Virtual Meter Profile.

Fig. 142. Uncheck -New Profile Only

4. Next, select from the drop-down the calendar or type in the *From* and *To* Profile Time Period for the Virtual Meter.
5. Click on the Generate Profile button. The Virtual meter will be added.

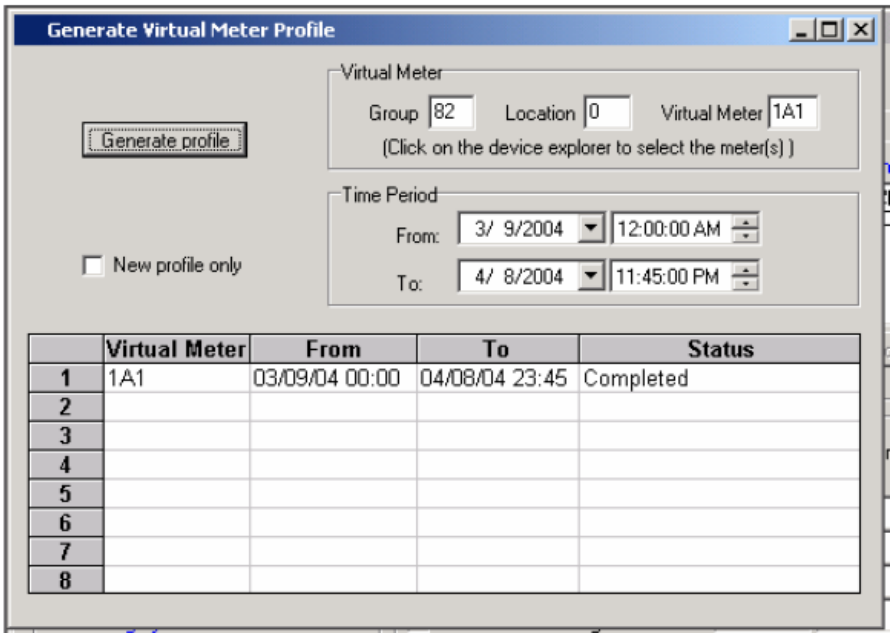


Fig. 143. Generate Virtual Meter Profile Manually

SECTION 11: CUSTOMER

What is A E-Mon Energy™ Customer?

The customers are the tenants or businesses to which you provide the meter reading/billing service. Tracking the customer's information and energy consumption is the key element in analyzing data and energy patterns for a complete energy management system. Your customer's locations can virtually be read anywhere as long as they are tied to a meter billing device(s). With this enhancement, it provides a good communication with your customers.

E-Mon Energy maintains information on each customer account by a sequence number identifier and meter numbers. The system allows you to define multiple account groups to a single customer or to define a single customer to just one meter. Along with these features, the E-Mon Energy software can monitor each group or customer from a remote location. The customer information is entered into the customer panel and stored in the database. The illustration below shows a typical configuration of a single customer owning a single meter and multiple customers sharing the same meter(s).

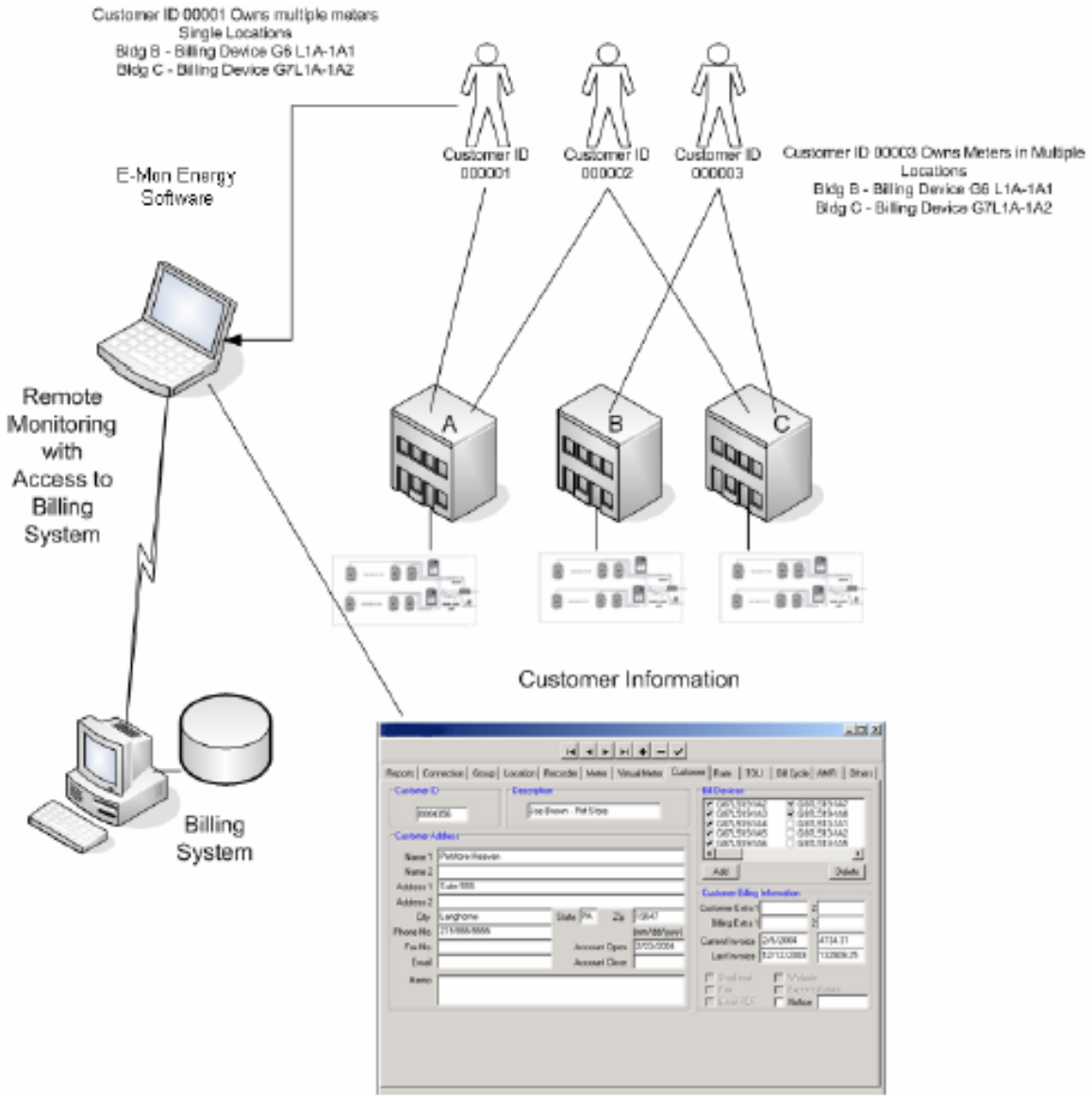


Fig. 144. E-Mon Energy Customer and Device configuration

What is the Customer Panel?

The *Database Group* provides a *Customer* panel for assigning and managing your customer's information. The following table describes fields on the *Customer* panel.

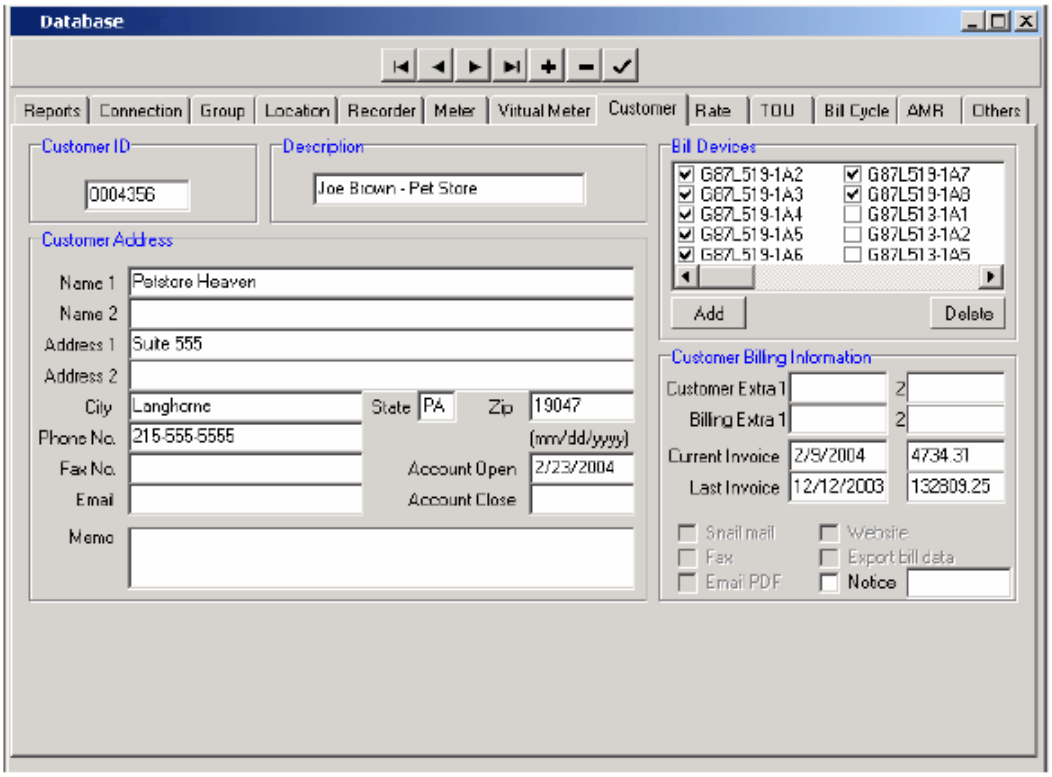


Fig. 145. Customer Tab

Panel Group/Field	Description
Customer ID*	Type in the Customer's Sequence Number Identifier. This is a required field.
Description	Type in a brief explanation of the customer (i.e. Business Name, Service).
Customer Address	Panel Group
Name1	Type in the customer or business name (i.e. Joe's Pet Store).
Name2	This is optional. Type a second name for the customer (i.e. Joe Smith).
Address1	Type in the customer's address.
Address2	Type in a second address, if applicable.
City	Type in the city location for the customer's address.
State	Type in the state for the customer's address.
Zip	Type in the zip code for the customer's address.
Fax No.	Type in the fax number for the customer.
Email Account	Type in an email address, if applicable.
Account Open	Type in the date when the customer opened the account. The field format is mm/dd/yyyy.
Account Close	This field will always be empty unless the customer has been discontinued.
Billing Devices	Panel Group
Billing Devices	This is a multi-functional list box that displays the customer meters and the check allows you to click to select or deselect a meter.
Add Button	This button opens a Customer Billing Device dialog box to add the meter devices to the customer.

Panel Group/Field	Description
Delete Button	This button functions with the list box. When highlighting and clicking on a device, it removes the device from the box.
Customer Billing Information	Panel Group
Customer Extra 1 & 2	In these fields, enter any customer extras.
Billing Extra 1	In these fields, enter any billing extras.
Current Invoice	This field is pre-populated based on the current bill.
Last Invoice	This field is pre-populated based on the prior bill.
Notice	Type in this field any important notices regarding the bill (i.e. Overdue, Overpayment) The Billing template can be modified to print the notice onto the bill. See Billing and Report section for details.

* = Required field.

What is the Customer's Billing Device?

The Customer's Billing Device is the group of devices (meters) or a single device owned by the customer. Through the customer information panel, the user can access the *Customers Billing Devices* dialog box. The *Customer Billing Devices* dialog box opens to display the devices. *Click the node to select device(s)* explorer directory. Here the user can drill down to the actual meter and click OK to select. When the device is selected and highlighted, the Group No, Location No., and Meter ID appear in the Device group on the left side of the dialog box.

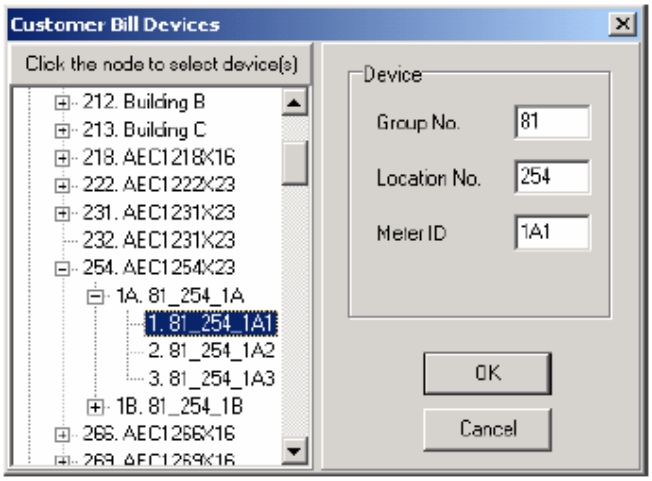


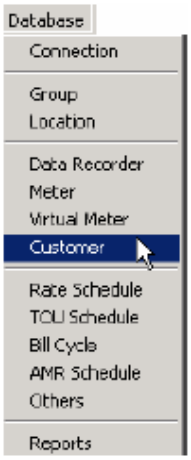
Fig. 146. Customer Billing Devices

How do I add a Customer?

Adding a Customer

To add a customer:

1. Select Database\Customer from the drop-down menu or click on the Customer tab in the *Database* window.



2. Click on the Panel Action "+" button to add a new customer.
3. Type in a Customer ID (1…9999999). *Note: This field is required and must be unique.*
4. Tab across and type in a Description for the customer.

Customer Address (Optional)

5. Tab down and type in the customers:

- Name (1, 2)
- Address (1, 2)
- City
- State
- Zip
- Phone No.
- Fax No.
- Email
- Account Open (Format: mm/dd/yyyy)

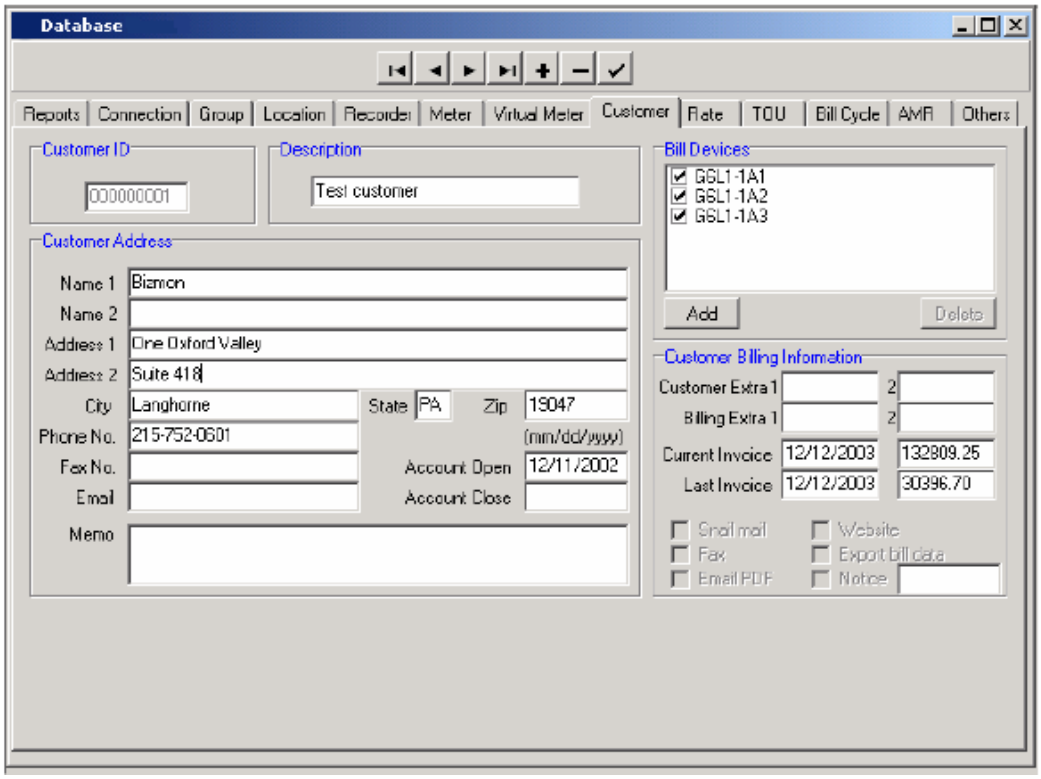


Fig. 147. Customer Tab

Adding a Billing Device

To add a Billing Device:

6. Check the Bill Devices that applies to the customer. Uncheck devices that do not apply tothe customer.
7. To add a Bill Device, click on the ADD button and the Customer Bill Devices window opens.

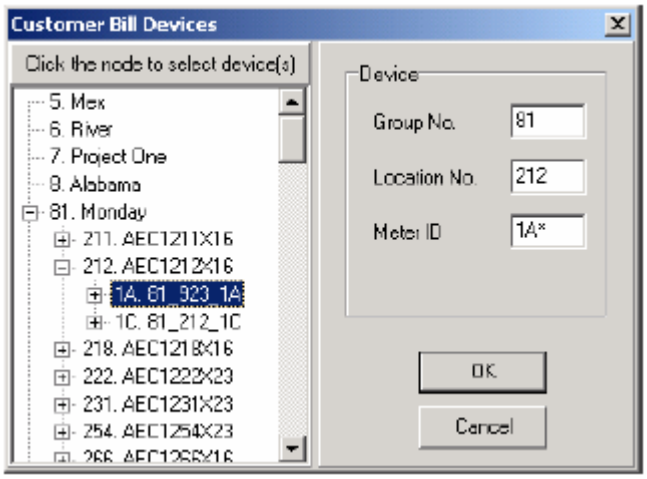


Fig. 148. Customer Bill Devices Dialog

8. From the Customer Bill Device Directory, right click and drill down to the actual device.
9. Click and select the device you want to add.
10. Click OK. The device now displays in the Bill Devices list box.

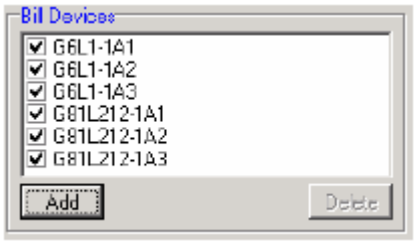


Fig. 149. Bill Devices

11. To assign the device to the customer, ensure the check box next to the device is checked. The device is now added to the customer.
12. To delete a device from the list box, click on the one you want to delete. Click the DELETE button.
13. Click on the check button to accept/save customer record.

SECTION 12: RATE TABLE AND TOU SCHEDULE

What Is a Rate Table and TOU Schedule?

The *Rate Table* and *Time-of-Use (TOU) Schedule* both work hand-in-hand with the billing, reporting, andmonitoring features. In preparation for generating bills, you must setup your Schedule and your Rate table for the TOU schedule.

The *TOU Schedule*, allows you to setup your time-periods for capturing consumption occurring at various times of the day, week, month, and season. A typical TOU schedule would have on-peak and off-peak usage and demand.

Some would have weekdays, weekends, and holidays. Others would also have summer, winter, spring, and falls. Another somewhat different type of schedule is tier. The tier imposes limits on energy usage. It sets the different usage range to be charged at different rates. (e.g. The first 200 kWh costs $0.025 per kWh, anything over costs $0.012 per kWh.) This is an example of a 2-tier. There are different flavors of tiers – 2, 3, or 4 levels. Some also calculates the tier limits based on the kW demand. (e.g. The first 25 kWh per kW Demand cost $0.020 per kWh, anything over costs $0.015.) This is an example of a 2-tier per kW Demand. *Note: In this example, if the kW* Demand is 15 kW, the first tier would be 375 kWh (or 25 kWh times 15 kW).

The *Rate Table* allows you to setup the cost associates with the consumption for the various time-periods according to the TOU schedule. The setup screen for entering the rates is based on the TOU schedule you use.

E-Mon Energy™ supports multiple TOU schedules and Rate tables. Using the Database window, you can assign the TOU schedule and Rate table setup to the whole group of meters, the whole location of meters, and/or to each meter individually. *Note: You can assign up to 4 different TOU schedules within the same bill cycle name.*

How is the Time of Use (TOU) schedule used?

A *Time of Use* (TOU) schedule is used to specify time periods for determining energy usage and demand for different time-of-day, day of the week, and seasons. Typically, the cost of energy usage and demand are higher during the day than night. Therefore, the need to separate the usage and demand between various time periods is needed in order to apply the corresponding rates.

The TOU schedule can be setup to incorporate seasons, (up to 4 seasons per year) with a defined start and end date. The illustration below displays the TOU schedule setup screen.

NOTE: When incorporating the start and end date, the “End date” or “Start Date” cannot overlap or have gap. All the seasons time periods should cover one whole year.

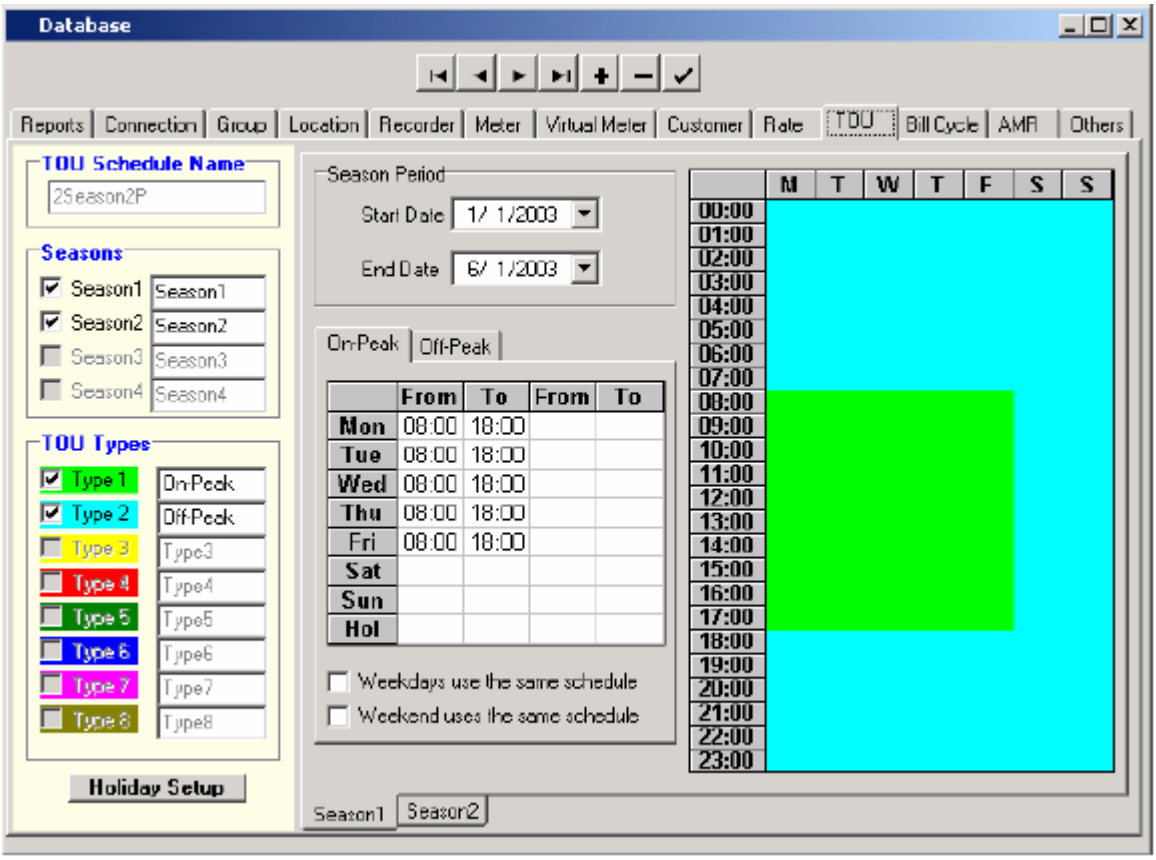


Fig. 150. TOU Schedule

In this example, the TOU shows each season (Season1 and Season2) and each TOU types (On-Peak, Off-Peak, and Mid-Peak) are listed on individual tabs and displays the “time allocation” grid as *Monday* through *Sunday-Holiday* with a *From* and *To* time entry. Each schedule is broken down into a 24-hour day and 30-minute intervals from 00:00 to 24:00. The illustration below shows Season1, On-Peak time, and day table schedule.

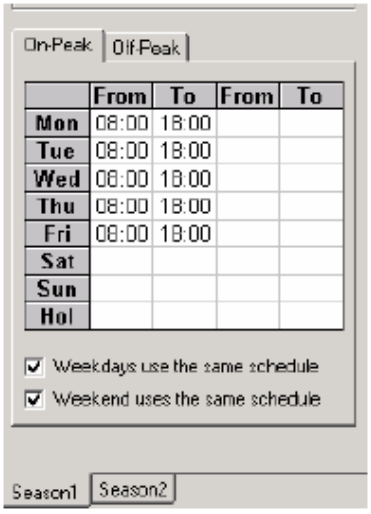


Fig. 151. TOU Seasons

The TOU setup displays a color chart. The TOU has a color-coded graph, which displays the entire schedule based on Days and Time. The “time allocation” specified, will be displayed to help you visually verify the correctness of the settings. Should there be a time slot unaccounted for, the graph will display reflecting the missing slot.

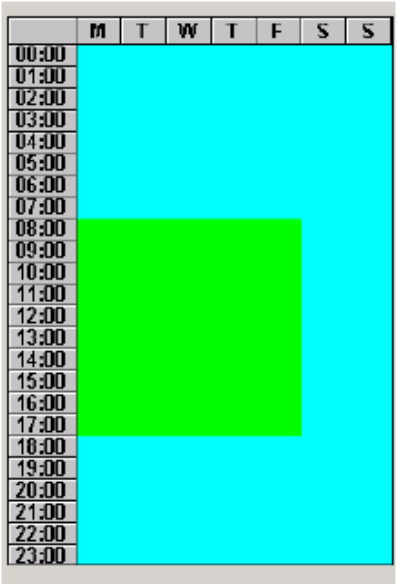


Fig. 152. TOU Graph View

The TOU schedule supports up to eight programmable TOU Types to accommodate the different times of the day (i.e. On-Peak, Off-Peak or Mid-Peak) for energy usage and demand. For specific events such as holidays or off days (weekends) a *Weekend* and *Holiday* option is accessible for the TOU schedule. A dialog box is provided to incorporate the Holiday schedule through the “Holiday Setup” button. The illustration below displays the Holiday Setup dialog.

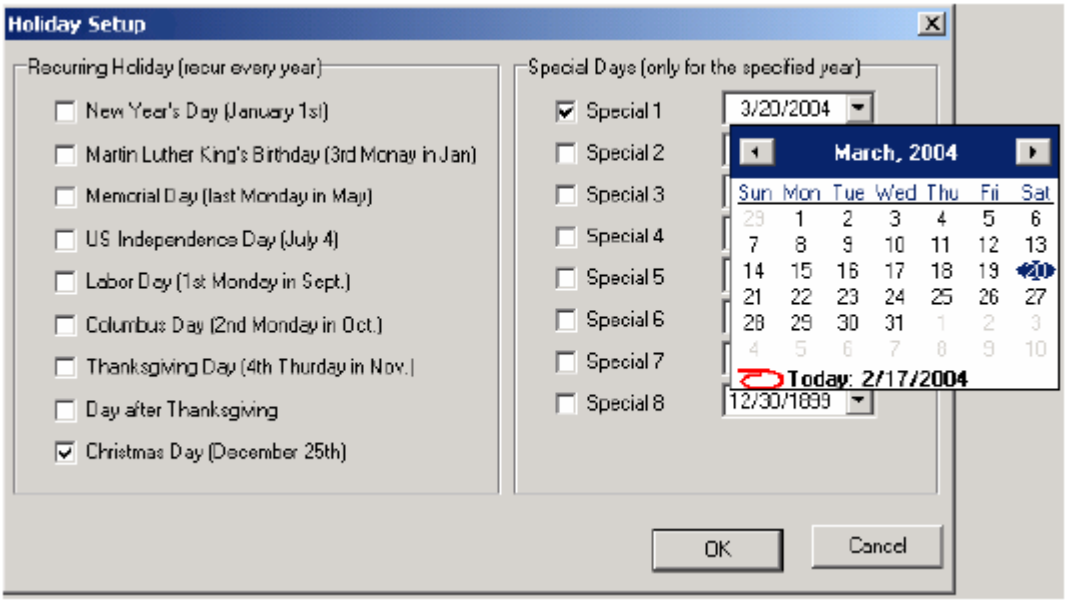


Fig. 153. Holiday Setup

How does the TOU schedule know Daylight Savings?

To enable the Daylight savings, you must check “Enable DS Time” on the Recorder panel; by default DST is enabled. This DS time adjustment uses the first Sunday in April and the Last Sunday in October. If your AMR system does not utilize daylight saving, be sure to disable this option.

NOTE: When setting up the daylight savings time, remember to adjust the min. and max. “time adjustment” for a sliding window average. This option allows E-Mon Energy™ to automatically synchronize the recorder time to the PC time when the clocks drift within the specified range.

How do I create a TOU Schedule and Time Periods?

Create a TOU Schedule Procedures

To add a TOU Schedule and Seasons:

1. Select Database\TOU from the drop-down menu or click on the TOU tab in the Database window.
2. Click on the Panel Action"+" button to add a new TOU schedule.
3. In the TOU Schedule Name field, type a *Name* for the Schedule. *Note: This field is* required and must be unique.

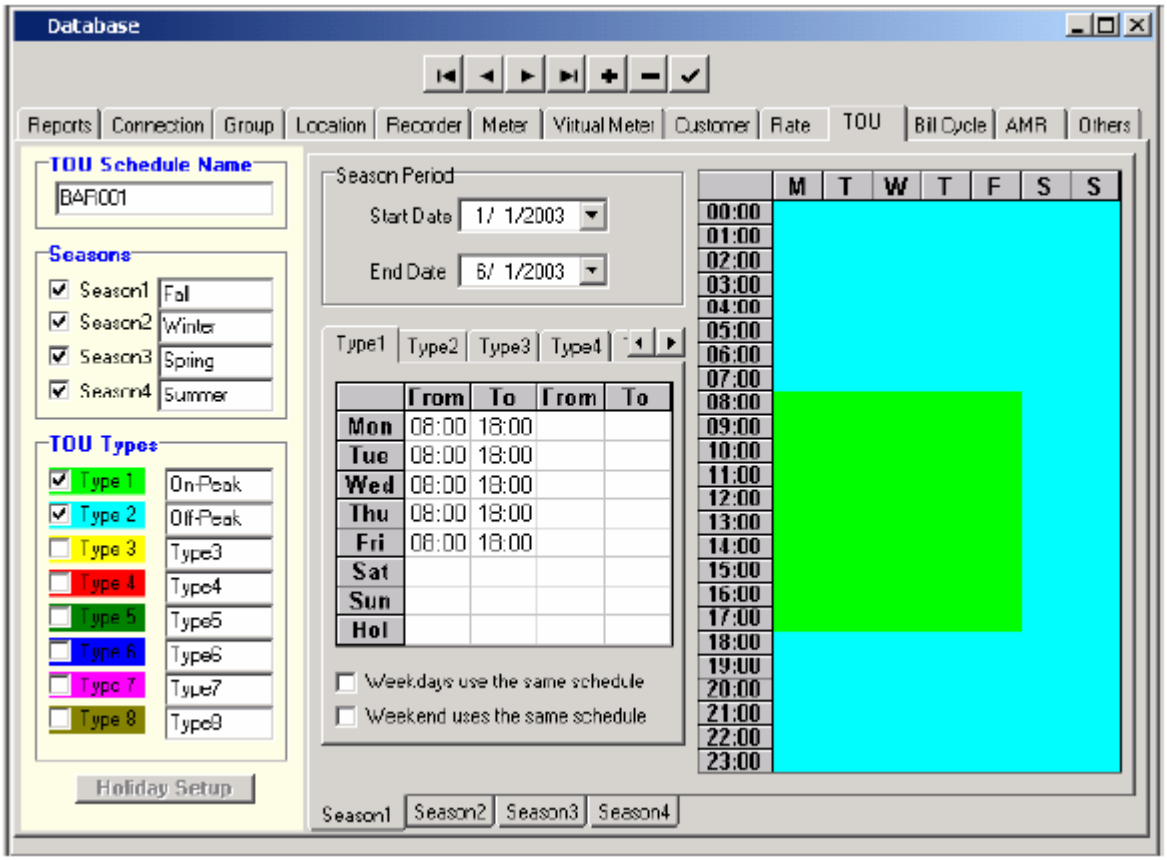


Fig. 154. TOU Tab

4. Click on Season 1, type in the *Name* for Season 1. If your TOU requires multiple seasons, repeat the steps for Season 2, 3, and 4.

NOTE: E-Mon Energy supports up to 4 seasons.

5. Click on Type 1, type in the period names (e.g. On-Peak, Off Peak). If your TOU requires multiple periods, repeat the steps for Type 2, 3, 4, 5, 6, 7, and 8.

NOTE: E-Mon Energy supports up to 8 periods.

6. Under Season, select Type 1, Season 1 Tab.
7. Type in or select from Calendar, a Start Date and End Date for Type1, Season 1 schedule

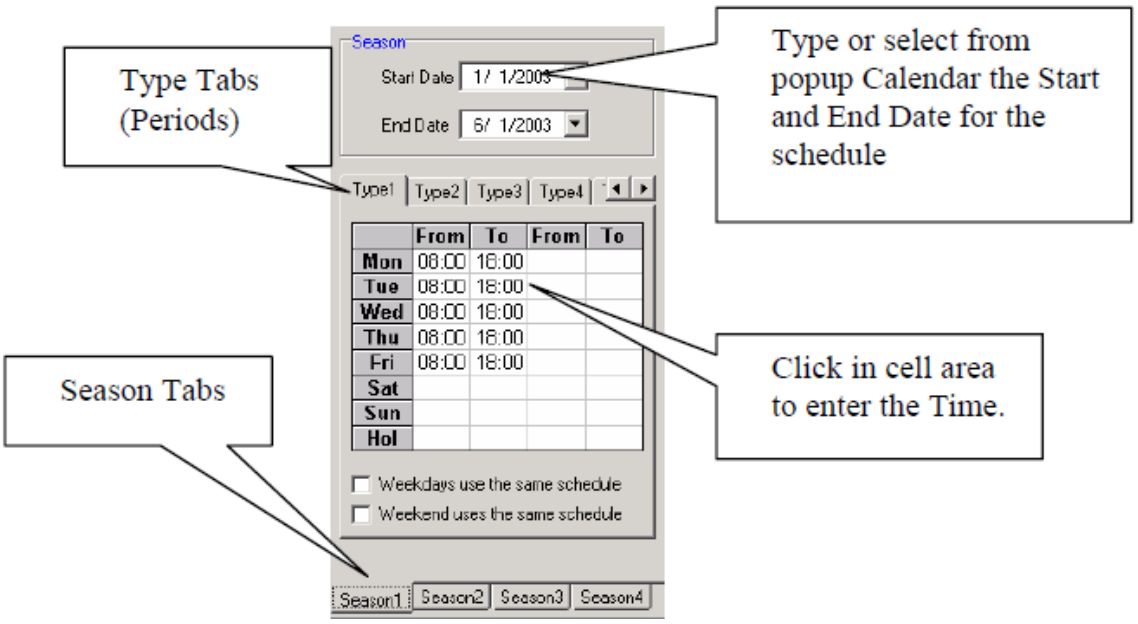


Fig. 155. Schedule Setup Group

8. In the From\Mon cell, type in the starting time for Monday.

NOTES: *The schedule uses military time.* (e.g. 13:00 = 1:00 PM)

9. In the To\Mon cell, type in the time the schedule will stop on Monday.

10. Repeat the same steps for each day of the week, up to the last day for the schedule.

11. If you want to run this schedule on the weekdays, click Weekdays use the same schedule.

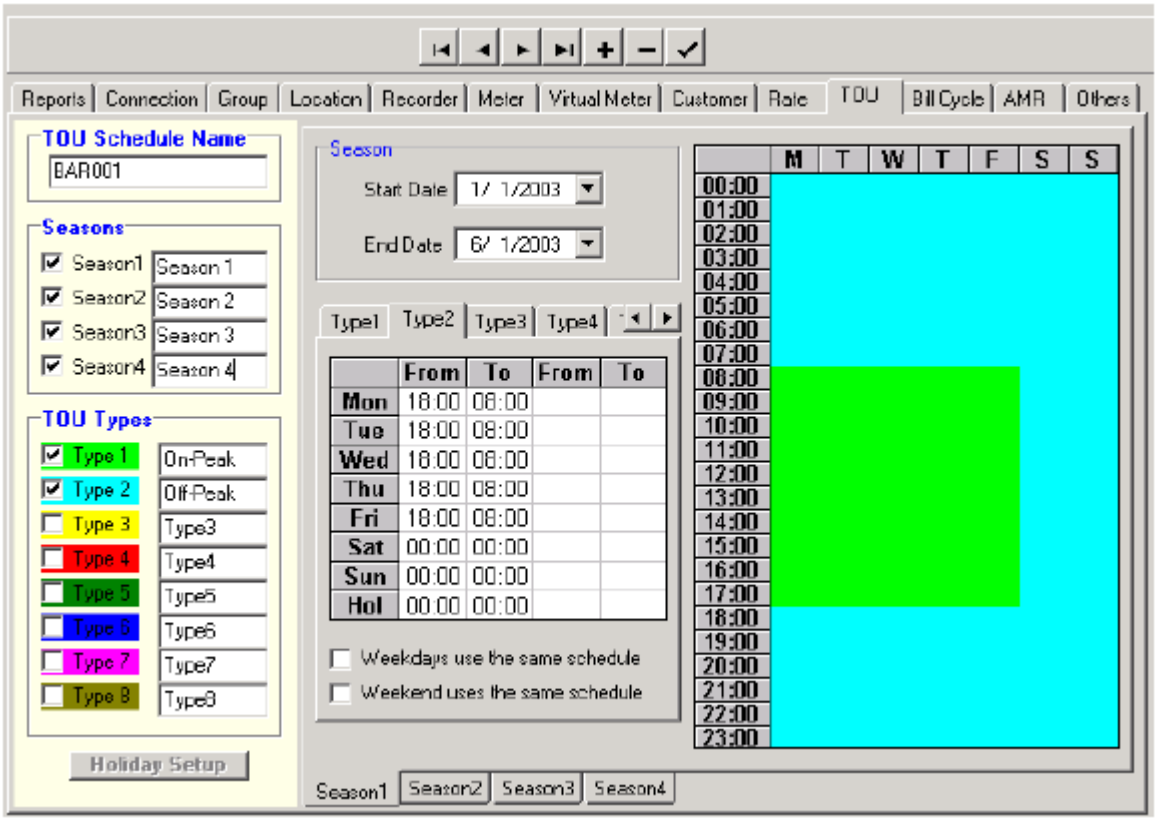


Fig. 156. TOU Schedule View

12. Repeat the Steps 6 to 12 again for each Type and Season tabs that applies to the TOU type and Seasons entered.
13. Click on "√ " button to accept/save the TOU schedule record. The Time/Day of the Week graph displays the day and time frame related to the Type and Season schedule.

How is the Rate Table used?

A *Rate Table* is used to specify the cost associated with the energy usage and demand for TOU. Typically, usage for each period has different rate, similarly demand for each period has a different rate. Therefore, we need to be able to specify separate different rates for the usage and demand between various time periods.

The *Rate Table* allows you to setup the cost associates with the consumption for the various time-periods according to the TOU schedule. The setup screen for entering the rates is based on the TOU schedule you use.

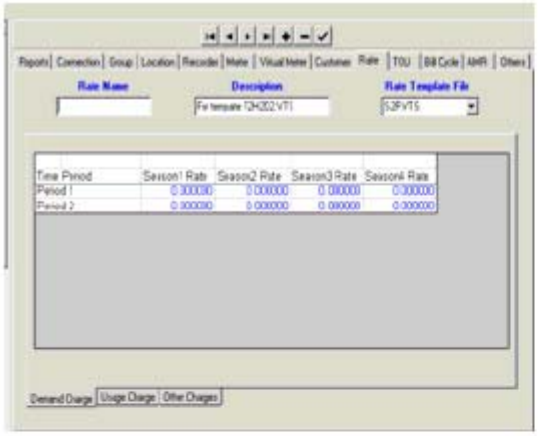
E-Mon Energy™ supports multiple rate tables. Using the Database window, you can assign the Rate table setup to the whole group of meters, the whole location of meters, and/or to each meter individually. Note: you can assign up to 4 rate tables within the same bill cycle name.

These rates table is broken down into three different tabs:

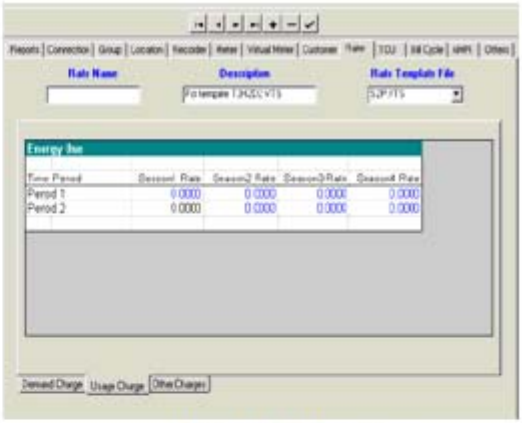
Usage Charge – the rates for energy usage (e.g. kWh).

Demand Charge – the rates for peak demand (e.g. kW).

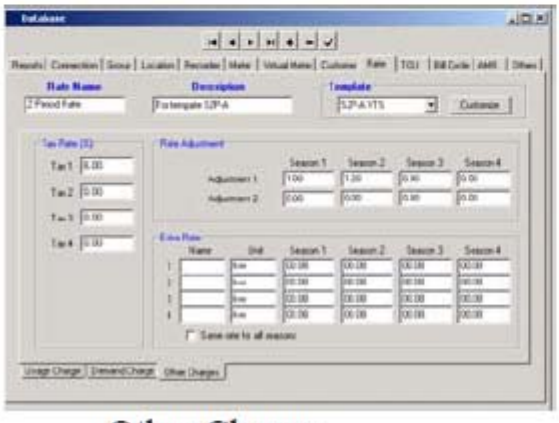
Other Charges – charges are comprised of rate and tax adjustments. These adjustments are changes in rates or total charges with changes in specific items of cost, square footage, like taxes and fuel prices. These charges can also include recover fees imposed by state and local regulatory agencies or refund credit to a customer.



Demand Charge



Usage Charge



Other Charges

The illustration below shows a rate table setup for one season:

Table 3. Rate Table Example

USAGE CHARGES			
Time Period	Season 1		
Period 1	0.058470		
DEMAND CHARGES			
Time Period	Season 1		
Period 1	2.70		
OTHER CHARGES (Energy Usage or User Specific (e.g. square footage)			
Rate Number 0000011 Rate Template S2P.VTS			
Tax Rate	Tax 1 (%)		
	6.00		
Rate Adjustment	Season 1		
Adjustment 1			
Adjustment 2			
Extra Rate	Name	Unit	Season 1
	Facility Demand	KW	6.60

What is a Rate Template File?

E-Mon Energy™ provides 80+ rate templates to choose from, depending on your rate schedule, you can have TOU and/or tier structure. The rate template can be used with or without modifications or revised by you to reflect the actual applicable rate structure and tier. For a list of all the Rate templates and descriptions refer to the README.PDF file located in your FORMBILL folder of your E-Mon Energy™ application. After you modify a rate structure, you can assign a unique name for your rate structure.

NOTE: The custom rate template is stored in a common rate database and can also be shared and used by other. It is highly recommended that once you modify a supplied rate structure, save it as a different name.

How to setup a New Rate Table?

To setup a Rate Name and Description

1. Select Database\Rates Schedule from the drop-down menu or click on the Rates tab in the Database window.

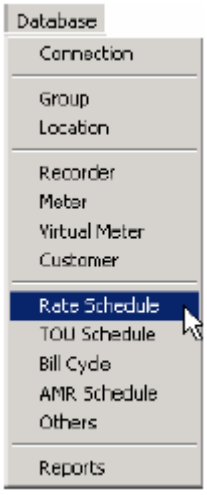


Fig. 157. Database\Rate Schedule menu

2. Click on the Panel Action “+”button, to add a new Rate Table.
3. Type in a Rate Name. Note: This field is required and must be unique.
4. Tab across and type in a Description for the Rate Table.

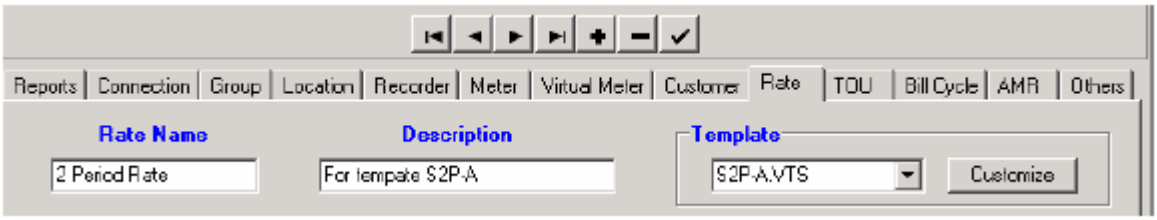


Fig. 158. Rate Name and Description

To select a Rate Template File:

5. Select a Rate Template File from the drop-down list. The Rate Template file name displays in the field.

NOTE: This can be a standard E-Mon Energy™ template or your customized rate template file.

6. Click on the Usage Charge tab, at the bottom of the panel.
7. Within the Energy Use grid, type in each energy rate, based on per time period and per season.

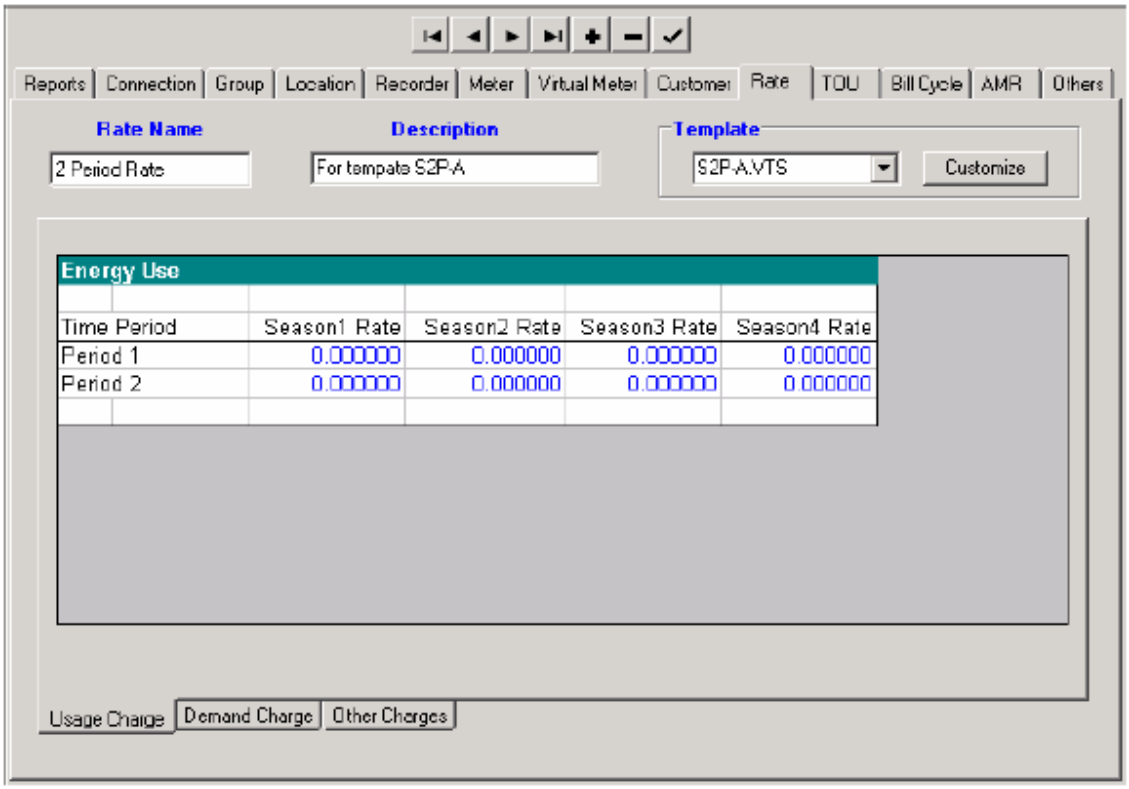


Fig. 159. Rate Tab –Usage Charge

To setup the Demand Charges:

8. Click on the Demand Charge tab, at the bottom of the panel.
9. Within the grid, type in the cell the season rate, the sum of all period charges.

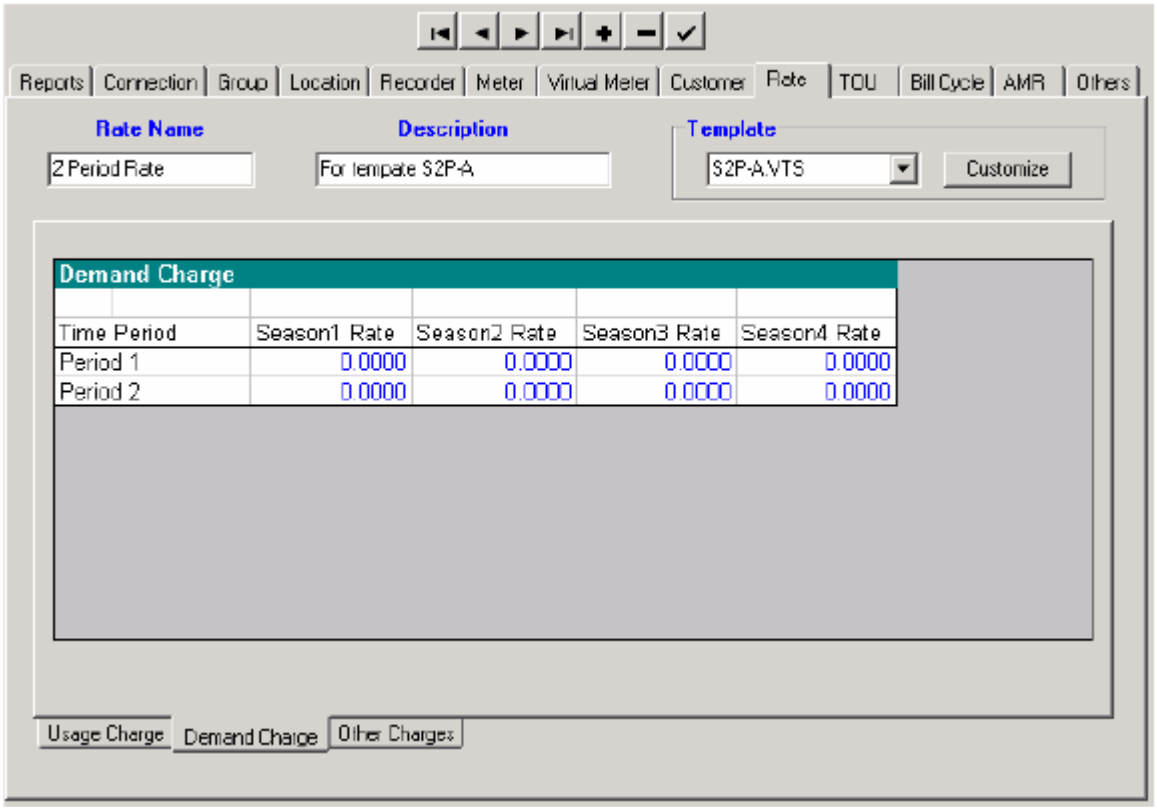


Fig. 160. Rate Tab – Demand Charge

To Setup the Other Charges:

10. 10 Click on the Other Charges tab, at the bottom of the panel.
11. 11 Under the Tax Rate (%), type in a tax rate percentage(s) (i.e. 6% is shown).

NOTE: Note: Four different Tax fields are provided to allow for tax adjustments based on rates.

12. From the Rate Adjustment, under Season 1, Adjustment 1, type in the energy cost adjustment rate for the season. (e.g. Season 1 = Fall, Season 2 = Winter).

NOTE: E-Mon Energy™ provides two Adjustment fields per season.

13. If you use a customized bill form, type in the Name, Unit, Season (1, 2, 3, and 4) based on your rate schedule.

NOTE: Only enter information into those fields if you have a customized bill form

Or

14. If you use the same rates for all seasons, check “Same Rate for all seasons”.
15. Click the check button to accept/save the rate record.

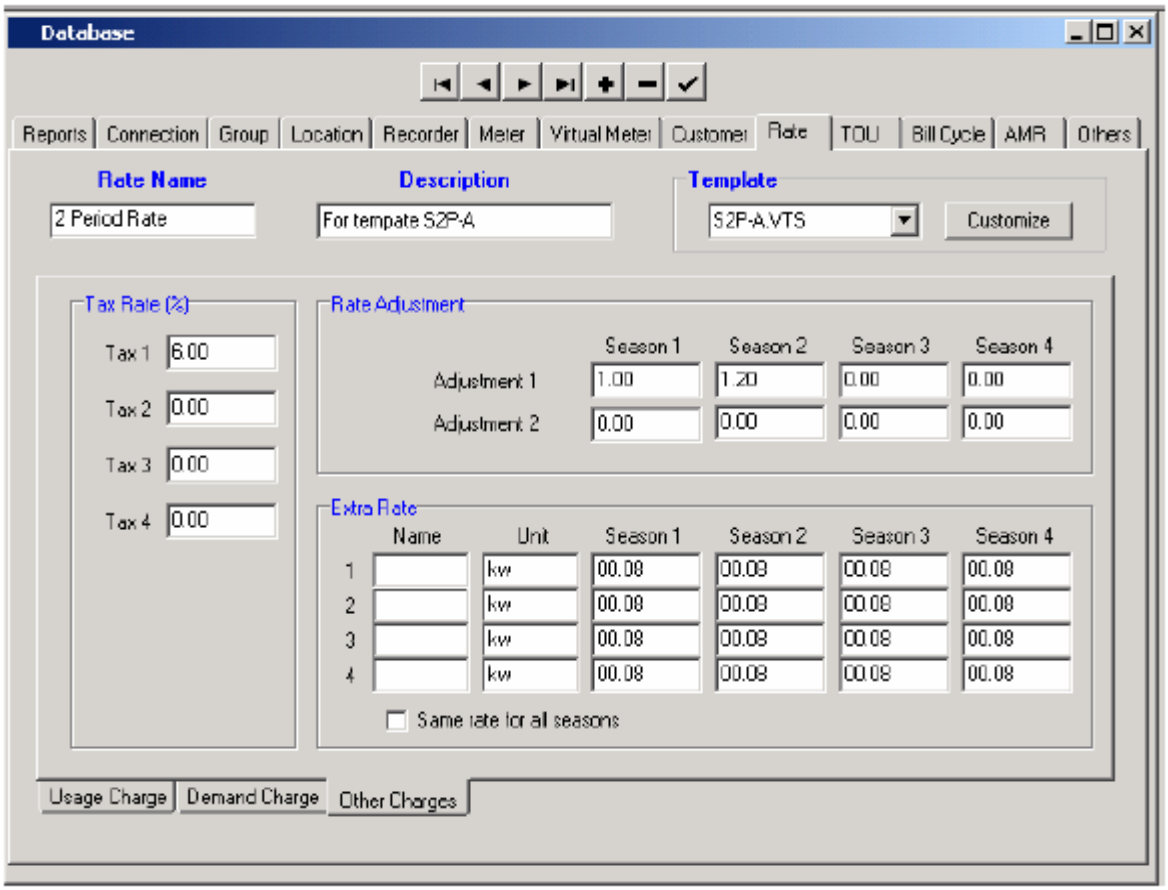


Fig. 161. Rate Tab – Other Charges

What is the Demand Charge Panel?

The *Database* group provides a *Demand Charge* panel for entering the rates associated with peak demand. This screen panel can vary depending on the associated Rate Template File selected. In this example we are using the S2P.VTS template. The following table describes fields on the Demand Charge Panel based on a Rate Template file.

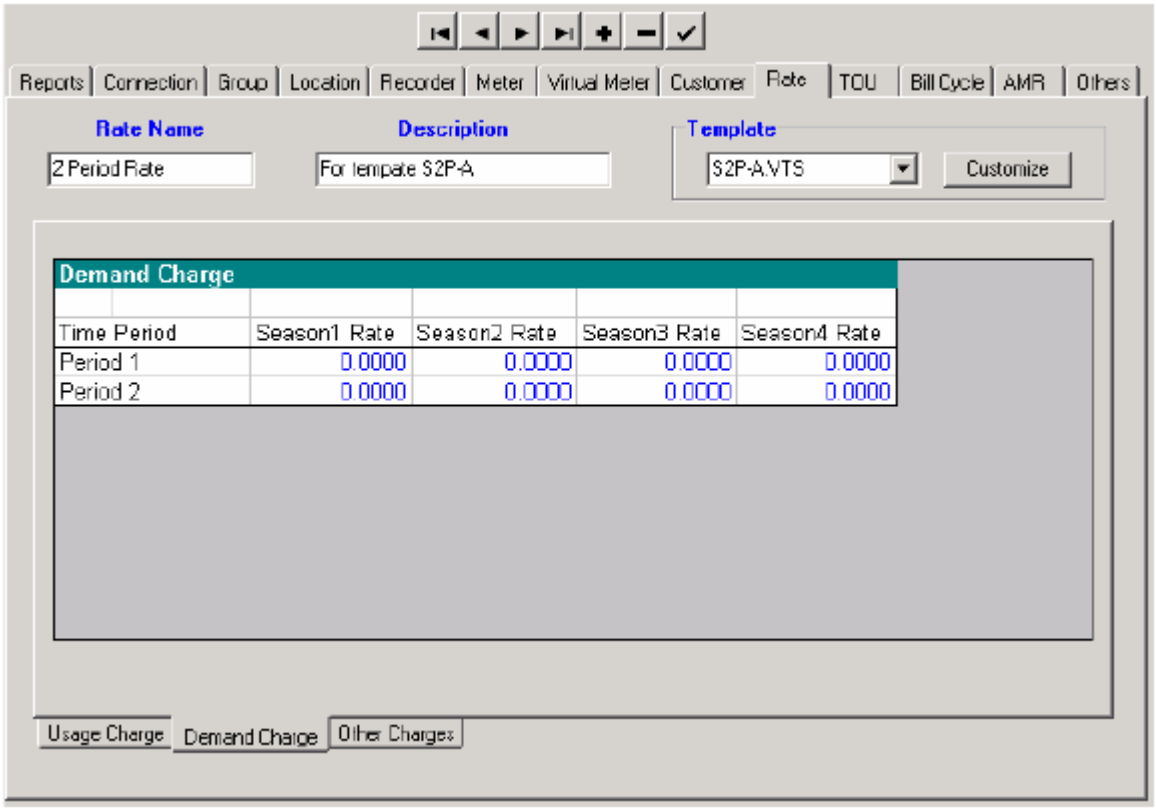


Fig. 162. Demand Charge Tab

Panel Group/Field	Description
Period 1	In the Season 1 Rate, Season 2 Rate, Season 3 Rate and Season 4 Rate columns enter the rates.
Period 2	In the Season 1 Rate, Season 2 Rate, Season 3 Rate and Season 4 Rate columns enter the rates.

What is the Other Charges Tab?

The *Database* group provides *Other Charges* panel for entering the charges.

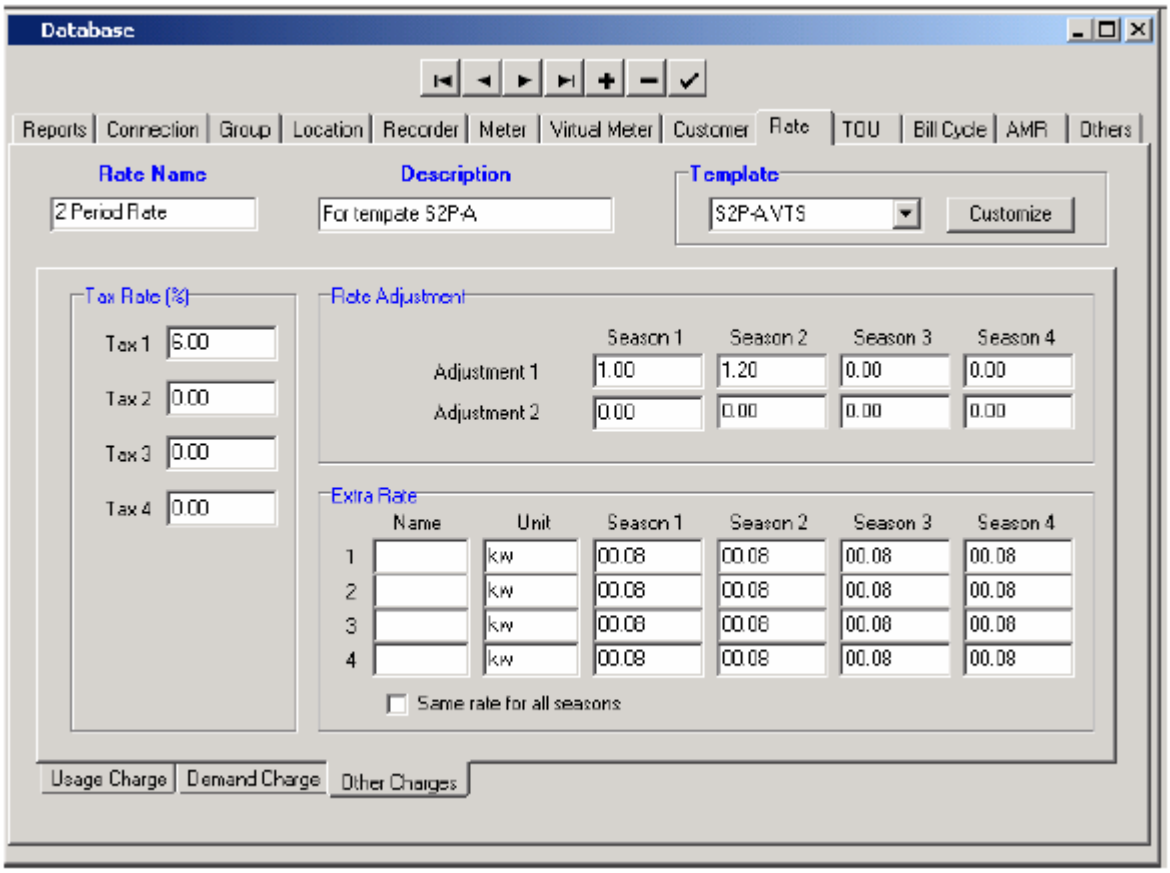


Fig. 163. Rate Tab and Other Charges

Panel Group/Field	Description
Rate Name*	Type in the Name for your Rate table. This is a required field and must be unique.
Description	Type a brief description of your Rate table.
Rate Template File	Select the Rate Template file. These items showing in this list comes from the \formbill folder within E-Mon Energy™ directory/folder. The data entry area for Usage Charge and Demand Charge depends on the selection of this rate template file.
Tax Rate %	Group Panel.
Tax 1, 2, 3, 4	Type in the tax rate in percentage.
Rate Adjustment	Group Panel.
Adjustment 1, 2	Type in the adjustment rate.
Extra Rate	Group Panel.
1, 2, 3, 4	Type in the extra rate for customization purposes.

SECTION 13: OTHER FEATURES

What are the Other Features?

In addition to the AMR schedule the user has an option to set up global schedules for load control, recorder parameters, and security access features. With these global features the user can eliminate setup redundancy for the recorder's parameters and the security access features. The following briefly describes each of these features.

Load Control

The *Load Control* feature allows the user to setup a global *Load Control* that will set the high and low threshold set points before an alarm is activated. Each Load Control can be saved with a unique name for selection on the meter tab. Once selected, these configurations are then set to the meter. For additional information, see section on *Meters* within this manual.

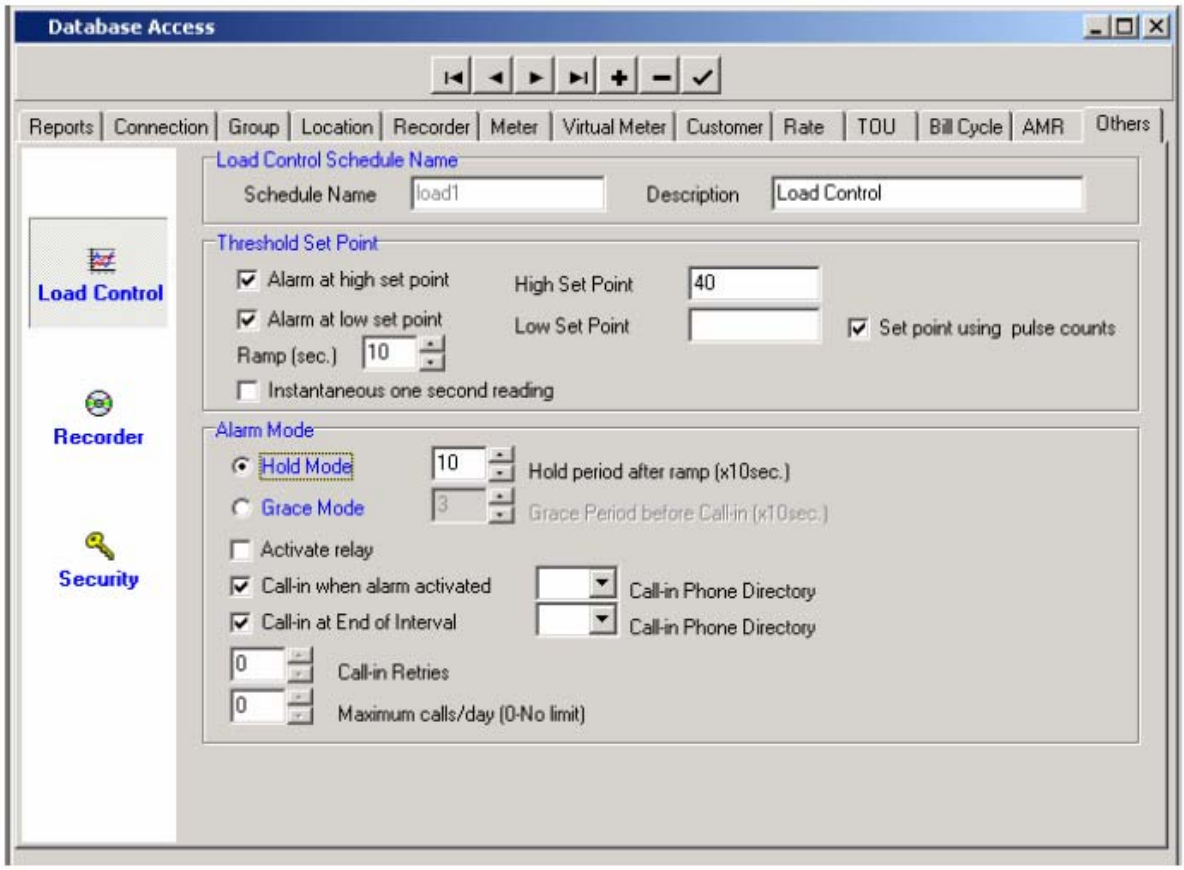


Fig. 164. Recorder Load Control

Panel Group/Field	Description
Load Control	Panel Group
Name*	Type in a unique name to identify your Load Control. The name can be up to 20 characters. This is a required field. This name will be referenced in the Group and/or Location tabs of the Database window.
Description	Type in a description to identify the Load Control.
Threshold Set Point	Panel Group
Alarm at high set point	Check this box if you want to enter the High Set point value.
High Set Point	Type in the High Set Point value.

Panel Group/Field	Description
Alarm at low set point	Check this box if you want to enter the Low Set Point value.
Low Set Point	Type in the Low Set Point value.
Set point using pulse count	Check this box if the set point unit of measure is in raw pulses.
Ramp	Select or enter the seconds waited until the load control will begin checking the threshold set points.
Instantaneous one second reading	Check this box if you prefer to have an instant one second reading without the ramp.
Alarm Mode	Panel Group
Hold Mode	Check this radio button if you want the alarm to be held for a period of time, once activated. This option prevents the alarm from short cycling in a fluctuated load type.
Hold Period after Ramp	Type in or select the seconds for the hold period after the ramp.
Grace Mode	Check this radio button if you want the alarm to add a grace holding period before the system will call-in.
Grace Period before Call-in	Type in or select the seconds for the grace period.
Activate Relay	Check this box if you want the relay to be controlled by the alarm.
Call in when alarm activated	Check this box if you want the recorder to call home when the alarm is activated.
Call in at End of Interval	Check this box if you want the recorder to call home at the end of the interval when the alarm is activated.
Call in Retries	Select the number of retries to call-in.
Maximum Call/Days	Select how many times you want the recorder to call home on alarm basis. Enter 0 to disable.

* = Required field.

Recorder

The *Recorder* feature allows the user to set up global parameters for the Sampling Rate, Peak Demand Interval, Rolling Demand window, and the Demand Synchronized Window. For additional information, see the section on *Recorders* within this manual.

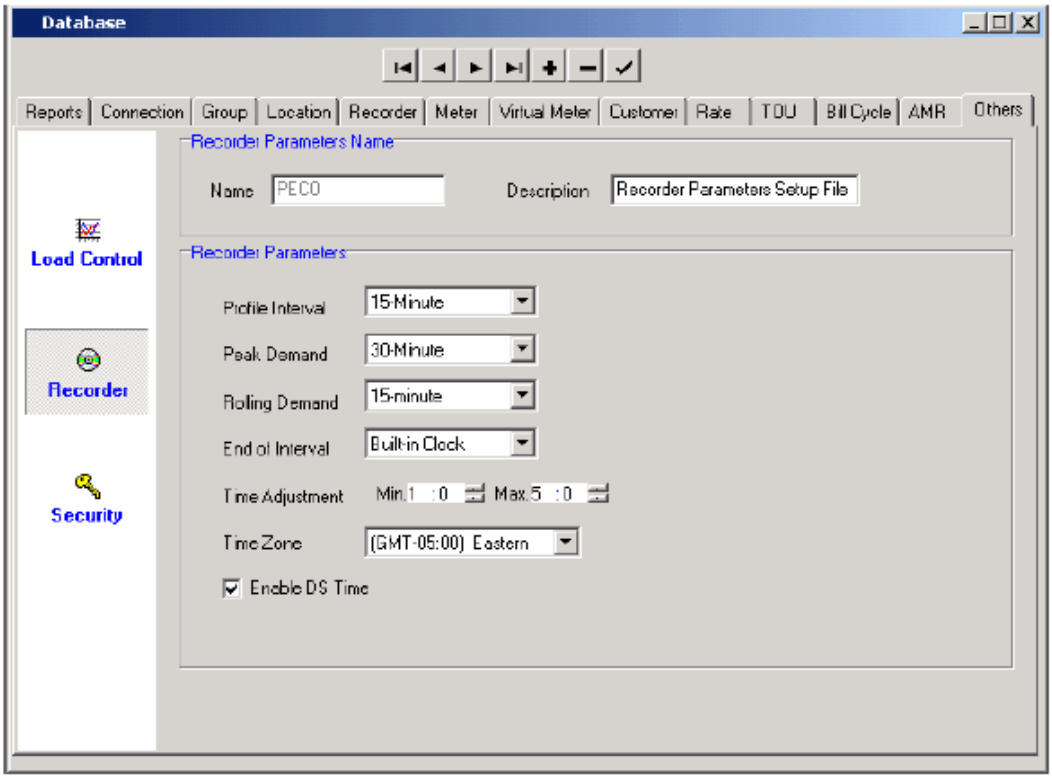


Fig. 165. Recorder Parameters

Panel Group/Field	Description
Recorder Parameters	Panel Group
Name*	Type in a unique name to identify your Recorder Parameters. The name can be up to 20 characters. This is a required field. This name will be referenced in the Group and/or Location tabs of the Database window.
Description	Type in a description to identify the Recorder Parameters.
Profile Interval	Select the profile interval of 5-Minute or 15-minute. This sets the sampling rate for the recorder. The sampling rate will affect the number of days that can be stored inside the recorder. When the storage is used up, the recorder will flush out the oldest data on a day block basis. This is also known as FIFO (first-in-first-out).
Peak Demand	Select the Peak Demand window of 15-minute, 30-minute, or 60- minute. This selection will affect the calculation for peak demand.
Rolling Demand	Select the Rolling Demand window of 5-minute, 15-minute, or Reset at EOI. This selection will affect the calculation for peak demand. Note: The Rolling Demand window cannot be less than the Profile Interval.
End of Interval	Select the End of Interval signal using Built-in Clock or External Clock. Note: Some hardware does not support an External Clock.
Time Adjustment	Select Time Adjustment for synchronizing the recorder/meter clock with the PC clock. When the time is within this range, E-Mon Energy™ will set the recorder/meter clock to the same time as the PC.
Time Zone	Select the Time Zone where the recorder/meter is installed. E-Mon Energy™ uses the PC time zone along with recorder/meter time zone when adjusting the time. It is very important that both time zones are set up correctly, otherwise incorrect time adjustment will occur.
Enable DS Time	Check this box to enable automatic Day Light Savings Time adjustment.

* = Required field.

Security

The *Security* feature allows the user to setup a global password in order to access the devices. Once the Password(s) are created the user can save and synchronize them with the devices. All passwords allow a maximum of 8 characters.

NOTE: This feature may not be accessible to everyone. You must have administrator rights.

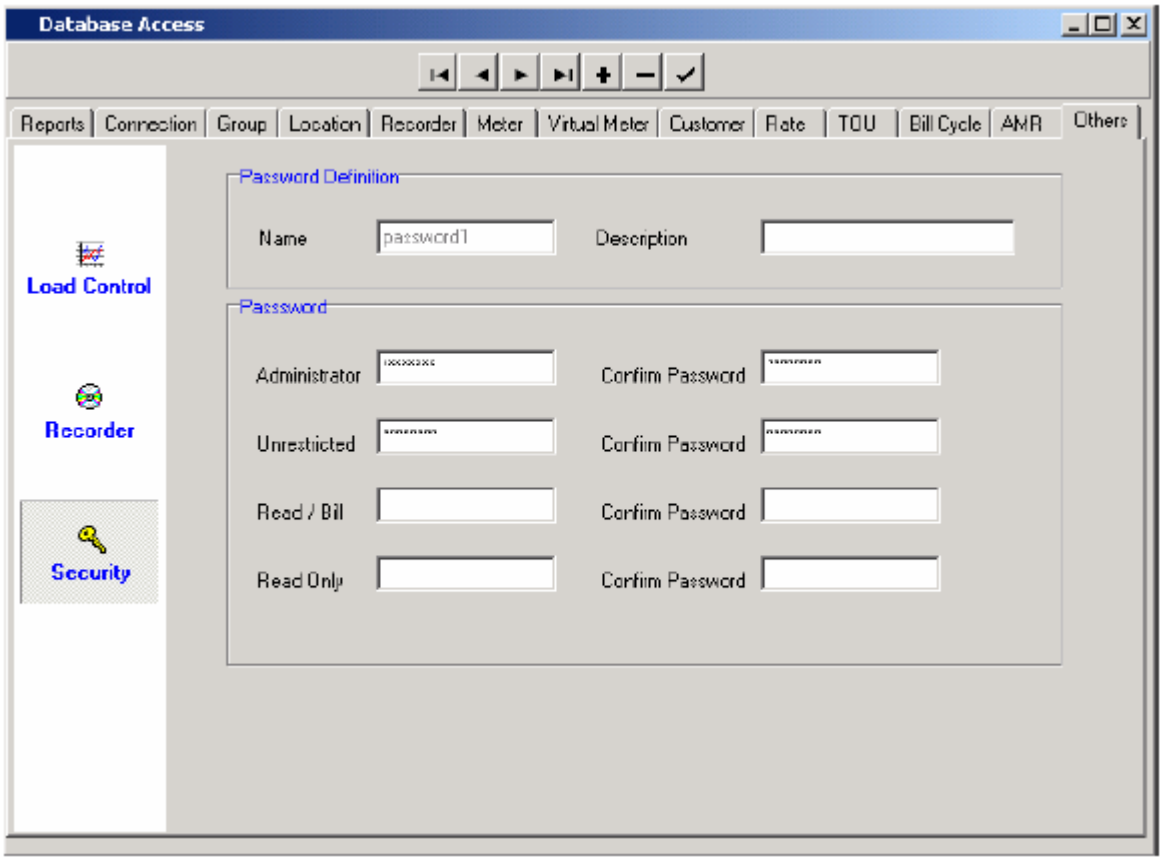


Fig. 166. Recorder Security Password

Panel Group/Field	Description
Password Definitions	Panel Group
Name*	Type in a unique name for your password setup. This is a required field. This name will be referenced in the Group and/or Location tabs of the Database window.
Description	Type in a description for your password setup.
Password	Panel Group
Administrator	Limited access to configurations. Type in the Administrator password. Then retype to confirm the password. Must be 8 characters. *Note:* When changing password, remember to never change the Administrator rights. The Administrator should always have “Full” Access.
Unrestricted	Full access to all functions. Type in the Unrestricted password. Then retype to confirm the password. Must be 8 characters
Read/Bill	Limited access to Read and Bill functions. Type in the Read/Bill password. Then retype to confirm the password. Must be 8 characters
Read Only	Limited access to Read Only functions. Type in the Read Only password. Then retype to confirm the password. Must be 8 characters

* = Required field.

SECTION 14: ACCESS LOCATION

What Is the Access Location?

The *Access Location* is the primary link between E-Mon Energy™ software and the physical devices. In the *Access Location* you will:

- Establish a connection to the devices.
- Set up new hardware.
- Read and verify hardware.
- Monitor real-time load and power usage.
- Download interval data from the devices.
- Access the database for the location.

The *Access Location* window is divided into groups – *Function*, *Hardware to Access*, and *Connection Control*. The *Function* and *Hardware to Access* groups are available when you are online with the location: Click the Connect button to start the connection. The illustration below shows the *Access Location* window with the *Functions* and *Hardware* to access groups. Note: If you are not online, the function selections will be disabled.

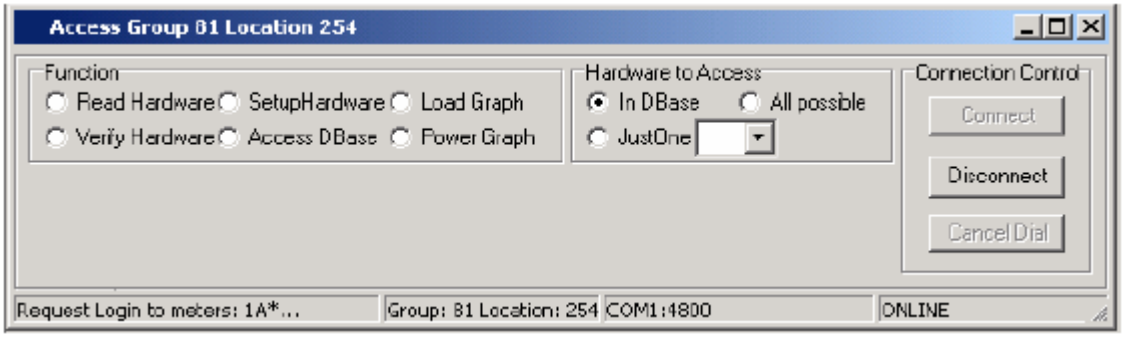


Fig. 167. Access Location Window

What Are the Functions?

The *Functions* are a collection of tasks to perform when accessing the hardware. The *Functions* are divided into seven high-levels. Under each of these high-level functions are sub-tasks, which manage and control the hardware.

This section will describe each of the seven high-level functions and their sub-tasks.

Connection Control

Before a connection is made with the hardware, the user must first set a location. This means the devices you want to connect to must first be selected as the location before connecting. There are two ways to set a location. The first way is from the main menu by selecting *Hardware*, then *Set Location*. The *Select Location* dialog will open prompting you to select a *Location*, then click on the Set button.

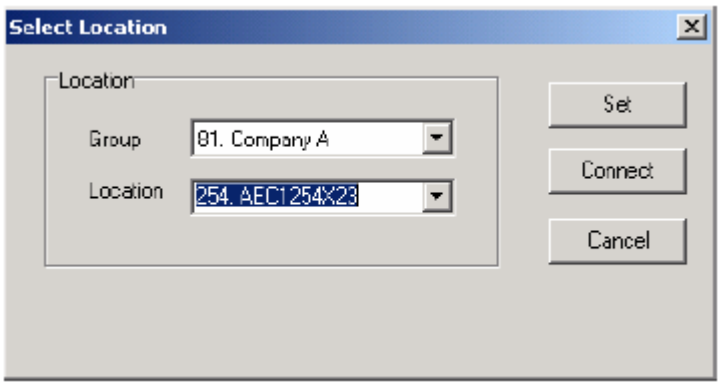


Fig. 168. Select Location Dialog

The second way is to select a location from the Device Explorer and right-click to display the *Set Location* menu and select a location. See illustration below.

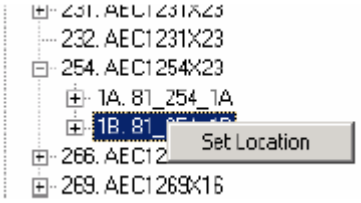


Fig. 169. Set Location -Device Explorer

After you have set the location, you must connect to the devices in order to communicate. Here you also have two options, either through the *Select Location* dialog or wait until the *Access Location* window opens, then in the Connection Control group area, click on the Connect button.

Fig. 170. Connection Control – Connect

To stop communication and disconnect from the devices you can click the Disconnect button located in the Connection Control group or just click Cancel Dial.

Fig. 171. Connection Control - Disconnect

Access Location Window Status Bar

The status bar is located at the bottom of the Access Location window. The status bar displays the current Function, Group and Location, Communication, and System status.

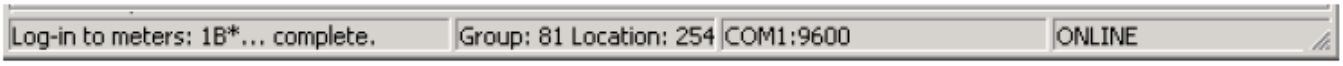


Fig. 172. Access Location Window Status Bar

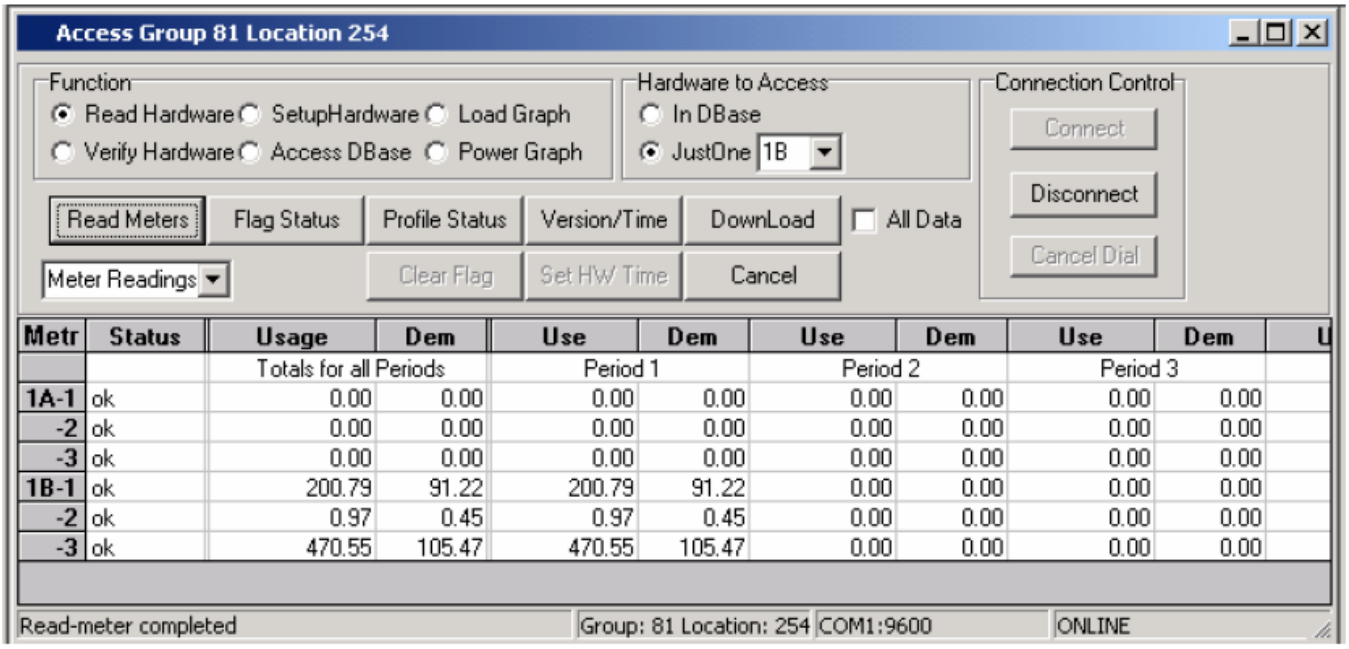
Read Hardware Functions

Now that you are connected to the hardware (devices) you will want to read meters, check and clear any flags, check the profile status and versions, or download interval data from the devices. This section describes each of the Read Hardware functions. The following explains each column of data returned from the devices.

Read Meters Button

Reading the meters is a way to see the energy usage and peak demands of the meter. The meters are broken up into various periods. The illustration below displays the KWH and peak demands as totals and then it is broken down by periods. For complete instructions, see the *Meter* section within this manual.

NOTE: Before reading the meters you may want to set up a schedule. See the Rate Table and TOU schedule section within this manual for details.



Metr	Status	Usage	Dem	Use	Dem	Use	Dem	Use	Dem	U
		Totals for all Periods		Period 1		Period 2		Period 3		
1A-1	ok	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
-2	ok	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
-3	ok	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
1B-1	ok	200.79	91.22	200.79	91.22	0.00	0.00	0.00	0.00	
-2	ok	0.97	0.45	0.97	0.45	0.00	0.00	0.00	0.00	
-3	ok	470.55	105.47	470.55	105.47	0.00	0.00	0.00	0.00	

Fig. 173. Access Location Function - Read Meters

Columns	Description
Status	This column displays the condition of the device: If the condition states “Bad,” there is a possible error in reading the device and there may be a hardware or communication issue. If the condition is “ok,” the hardware is functioning normally.
Total for all Periods	Usage – This column displays the total *Usage* for all the periods. The number represents the total accumulation since it was last reset. Demand – This column displays the *Peak Demand* across all the periods. The number represents the highest rate of consumption in the specified demand window time period, since it was last reset. Typically, the Peak Demand is reset every billing cycle (i.e. monthly). E-Mon Energy™ does not use this demand for generating bills. It will create demand readings from the interval data (profile).
Period 1	Usage – This column displays the *Usage* for the period (i.e. period 1). The number represents the total accumulation since it was last reset. Demand – This column displays the *Peak Demand* for the period (i.e. period 1). The number represents the highest rate of consumption in the specified demand window time period, since it was last reset. Note: If you have multiple periods, the readings will be displayed in the remaining columns.

Flag Status Button

The *Flag Status* provides an alert in the E-Mon Energy™ software of a problem or power failure. The two failures illustrated below indicate the date and time of the last failure. The *Power Failure Status* indicates that the IDR has lost power at some point. To reset (clear) the flags, click on the Clear Flag button. For complete instructions, see *Error Flag* section within this manual.

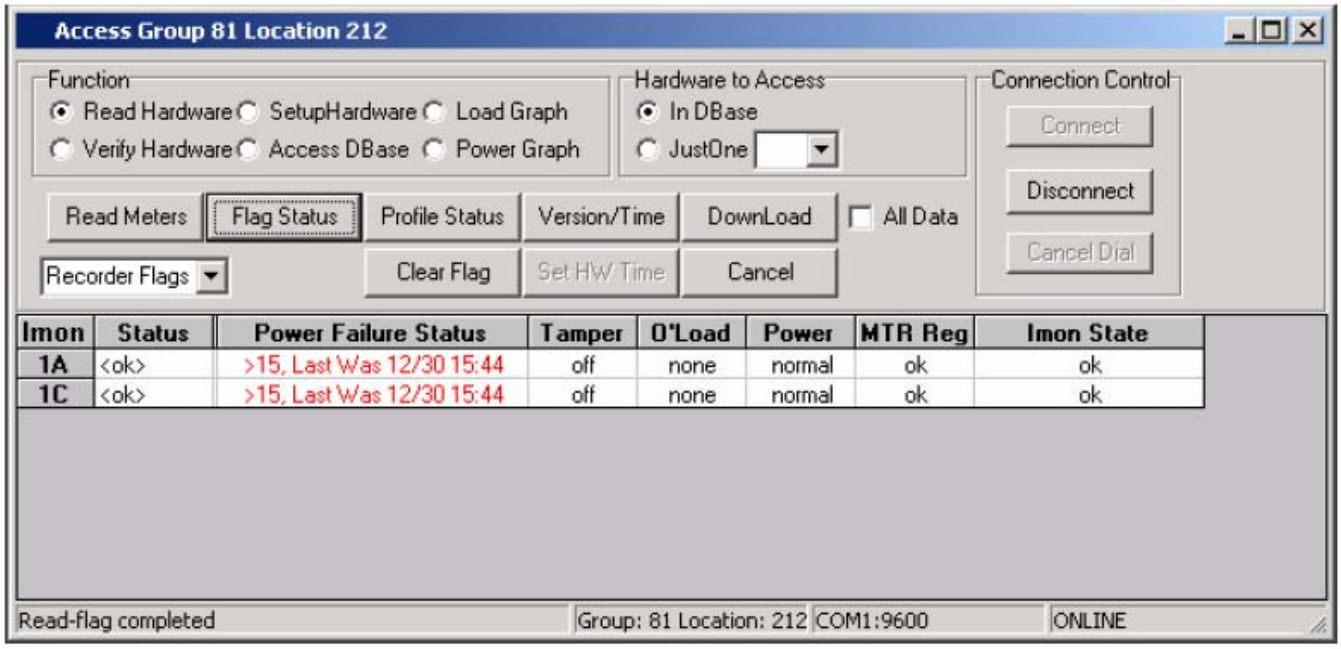


Fig. 174. Access Location Function – Flag Status

Columns	Description
Status	This column displays the condition of the device. If the condition states “Bad” or “Timeout,” there is a possible error in reading the device and there may be a hardware or communication issue. If the condition is “ok,” the hardware is functioning normally.
Power Failure Status	This column displays the total number of Power Failures and the date/time of the last occurrence, since it was last reset. In this example, there were more than 15 power failures and the last time occurred on 12/30 at 15:44.
Tamper Alarm	This column displays an active <on> flag when a door is open on the recorder. If the Tamper Alarm is not on, the column will display <off>.
O’Load (Over Load)	This column displays an overload flag when the meter has excessive amperage (i.e. 200 amp load through the sensors on a 100 amp meter). When no problem exist the column display <none>.
Power	This column displays any general power/voltage errors with the meter (i.e. low, noisy or unstable). Low = voltage drop below nominal level, noisy = dirty power supply, harmonics) unstable = fluctuating levels. When no problems exist, the column displays <normal>.
MTR Reg	This column displays any malfunctions with the recorder real-time clock (i.e. <Bad>). When no problems exist, the column displays <ok>.
IDR State	This column will display any problems that may exist with the functionality of the IDR. When no problems exist, the column displays <ok>

Profile Status Button

The *Profile Status* tells us when and how far into the “Moving” window we are before we need to upload the current sampling rate data from the Recorder. It also tells us how many days we have left before data will be lost. The following describes each column of data returned from the devices.

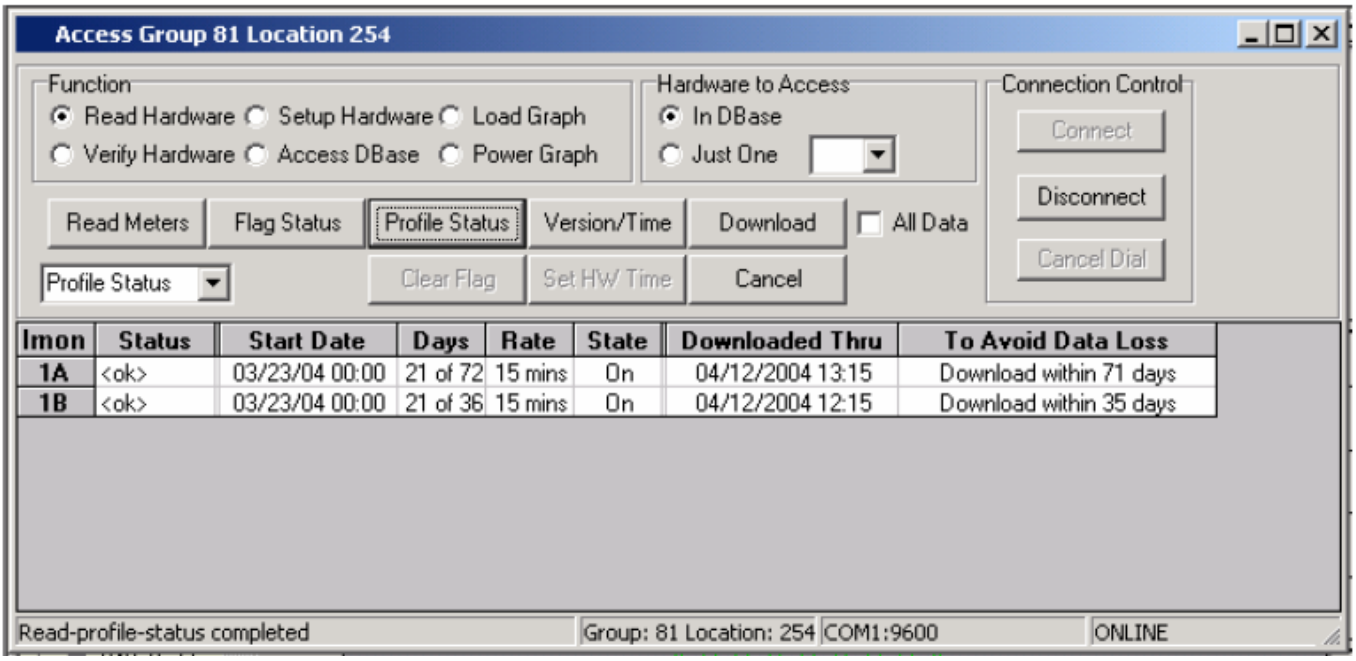


Fig. 175. Access Location Function – Profile Status

Columns	Description
Status	This column displays the condition of the device. If the condition states “Bad” or “Timeout,” there is a possible error in reading the device and there may be a hardware or communication issue. If the condition is “ok,” the hardware is functioning normally.
Start Date	This column displays the date and time of the first day block that is currently in the data recorder storage. If all day blocks are used, this date/time will start to flush the oldest data out making room for new data.
Days	This column displays how many day blocks of interval data are stored.
Rate	This column displays the sampling rate. Typically, we default to 15- minute interval storage.
State	This column displays the current profile status. It should always be “on”.
Downloaded Thru	This column displays the last time you downloaded the data.
To Avoid Data Lost	This column is a “Reminder” which displays how many days are remaining until a required download is needed.

The illustration below indicates that an immediate download is required. It is recommended not to exceed the required window span (days) before downloading. If so, the oldest profile data will be lost.

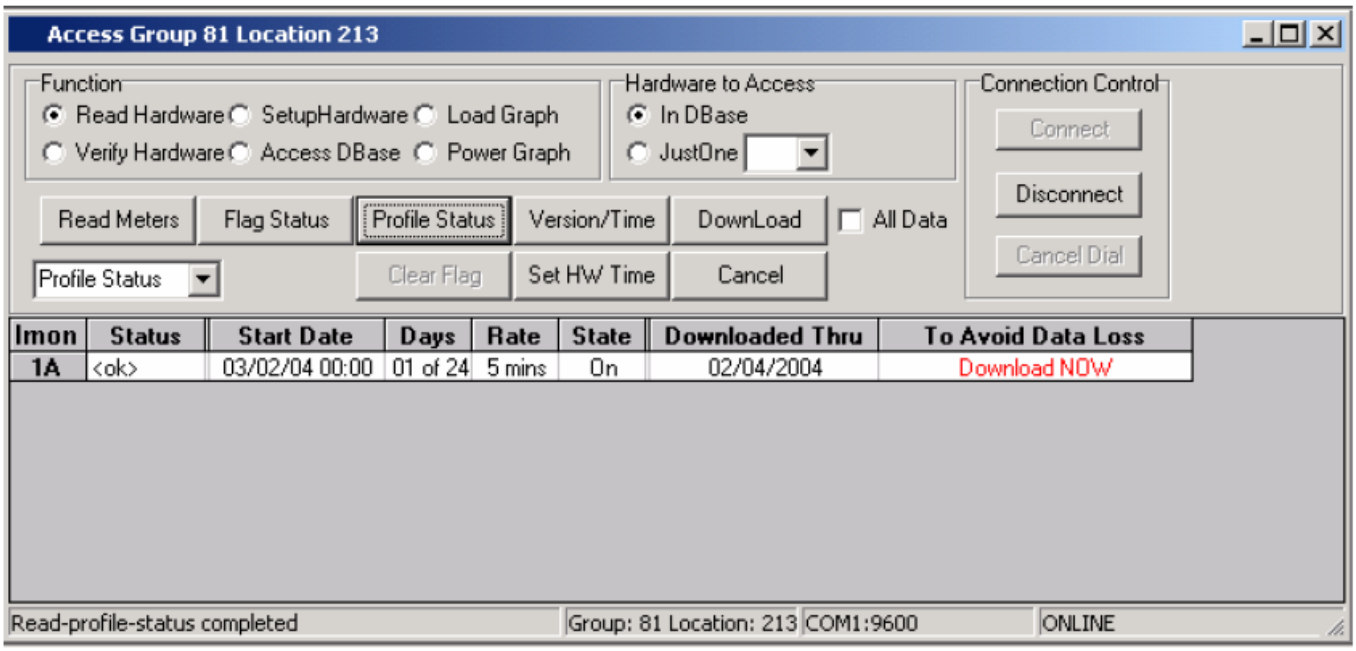


Fig. 176. Access Location Function – Profile Status with Error

Version/Time Button

The *Version and Time* tells us about the firmware of the devices, current calendar, and time zone.

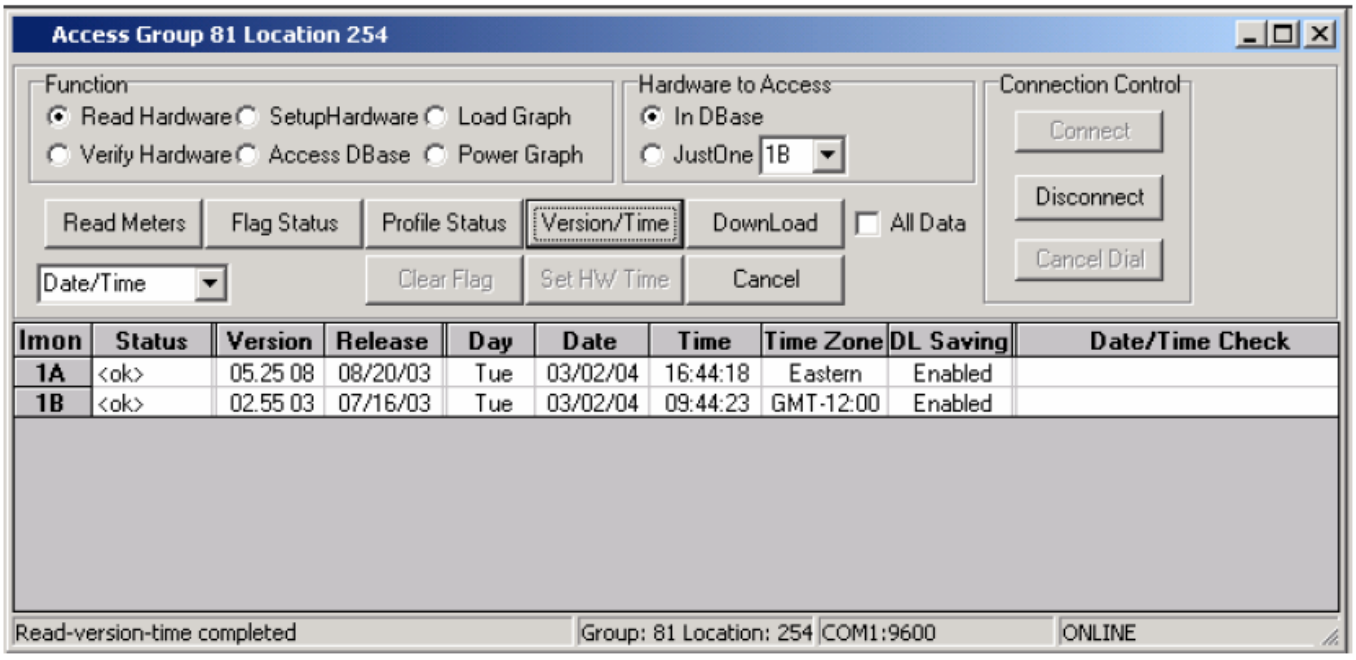


Fig. 177. Access Location Function – Version/Time

Columns	Description
Status	This column displays the condition of the device. If the condition states “Bad” or “Timeout,” there is a possible error in reading the device and there may be a hardware or communication issue. If the condition is “ok,” the hardware is functioning normally.
Version	This column displays the firmware version of the device.
Release	This column displays the release date for the firmware.
Day	This column displays the current calendar day of the device clock.
Date	This column displays the current calendar date of the device clock.
Time	This column displays the current local time of the device.
Time Zone	This column displays the current time zone of the device.
DL Savings	This column displays the daylight savings setting. “Enable” means the clock follows daylight saving time. (This option may not pertain to every country and may only pertain to the United States.)
Date/Time Check	This column displays any errors that may occur with the date and/or time.

Verify Hardware Functions

E-Mon Energy™ software can verify the configurations of the recorder, meter, and AMR schedule. It queries the configurations programmed in the recorder and compares it to the information stored in the database. This acts as a maintenance feature to check the status and functionality of the devices. To verify the devices, the user can open the Access Location window under *Verify Hardware.* The following describes each column of returned data from the devices.

Verify Recorder Button

The *Verify Recorder* tells us if the status, profile mode, and demand interval are functioning properly. If a recorder configuration mismatch occurs, a warning will display in this window. The illustration below shows the recorders functioning properly.

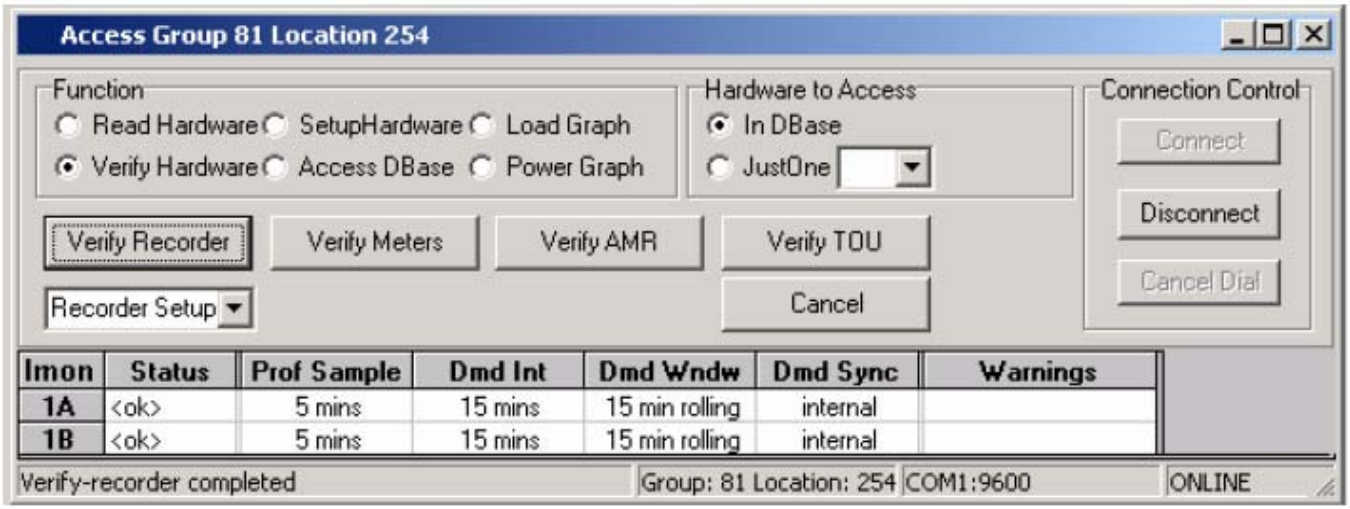


Fig. 178. Access Location Function – Verify Recorder

Columns	Description
Status	This column displays the condition of the device. If the condition states “Bad” or “Timeout,” there is a possible error in reading the device and there may be a hardware or communication issue. If the condition is “ok,” the hardware is functioning normally.
Prof (Profile) Sample	This column displays the profile data interval.
Dmd Int (Demand Interval)	This column displays the peak demand interval period.
Dmd (Demand) Window	This column displays the peak demand interval calculation.
Dmd Sync (Demand Syncronize)	This column displays the signal used to indicate the end of an interval. At the present time, we support an “internal” built-in clock.
Warnings	This column displays any alarms and/or configuration errors with the recorder. Note: E-Mon Energy compares settings programmed into the recorder with settings stored in the database. They should be identical.

Verify Meters Button

The *Verify Meter* tells us the condition and if the services are functioning properly. If a meter configuration mismatch occurs, a warning will display in this window. The illustration below shows that the Meters are functioning properly.

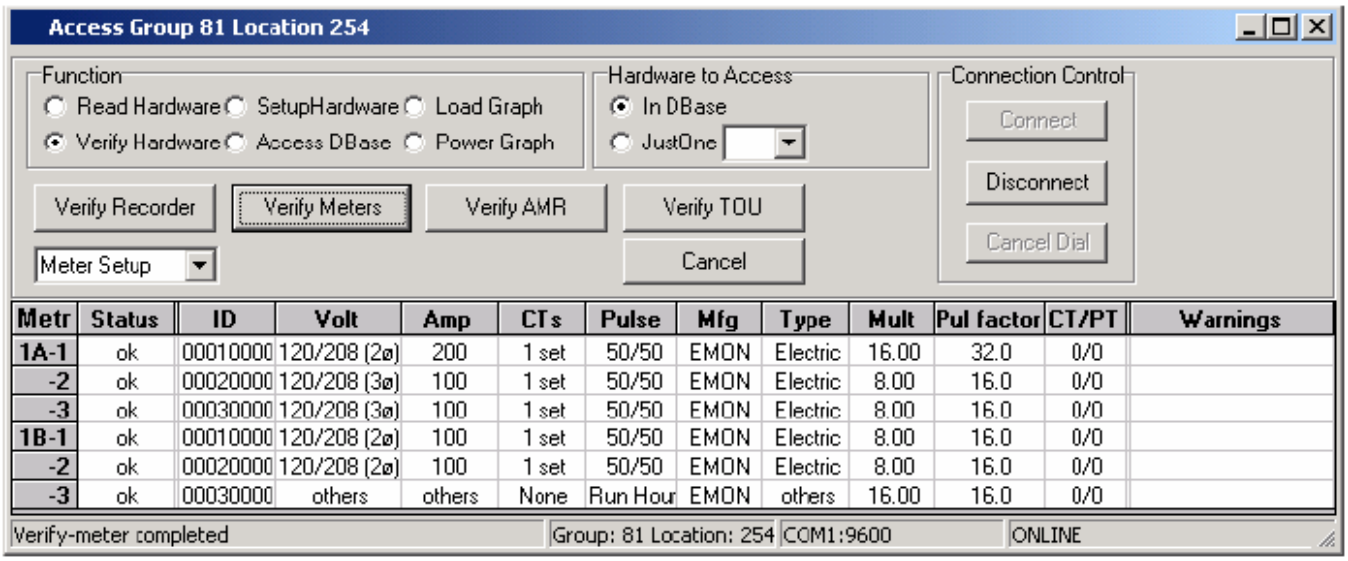


Fig. 179. Access Location Function – Verify Meters

Columns	Description
Status	This column displays the condition of the device. If the condition states “Bad” or “Timeout,” there is a possible error in reading the device and there may be a hardware or communication issue. If the condition is “ok,” the hardware is functioning normally.
ID	This column displays the meter ID number.
Volt	This column displays the rated voltage setting.
Amp	This column displays the rated amperage setting.
CTs	This column displays the number of sets of current sensors.
Pulse	This column displays the pulse input type setting (i.e. 50/50, Runhour, Analog).
Mfg (manufacture)	This column displays the manufacture name of the meter.
Type	This column displays the type of service of the meter (i.e. Electric, Gas).

Columns	Description
Mult (Multiplier)	This column displays the meter multiplier.
Pul (Pulse) Factor	This column displays the meter pulse factor setting.
CT/PT	This column displays the “current transformer” and “potential transformer” setting.
Warnings	This column displays any alarms and/or configuration mismatch with the meter. Note: E-Mon Energy™ compares settings programmed into the meter with settings stored in the database. They should be identical.

Verify AMR Button

The *Verify AMR* tells us the schedule, call-ins, and if the AMR is enabled and functioning properly. If an AMR configuration mismatch occurs, a warning will display in this window. The illustration below shows a schedule functioning properly.

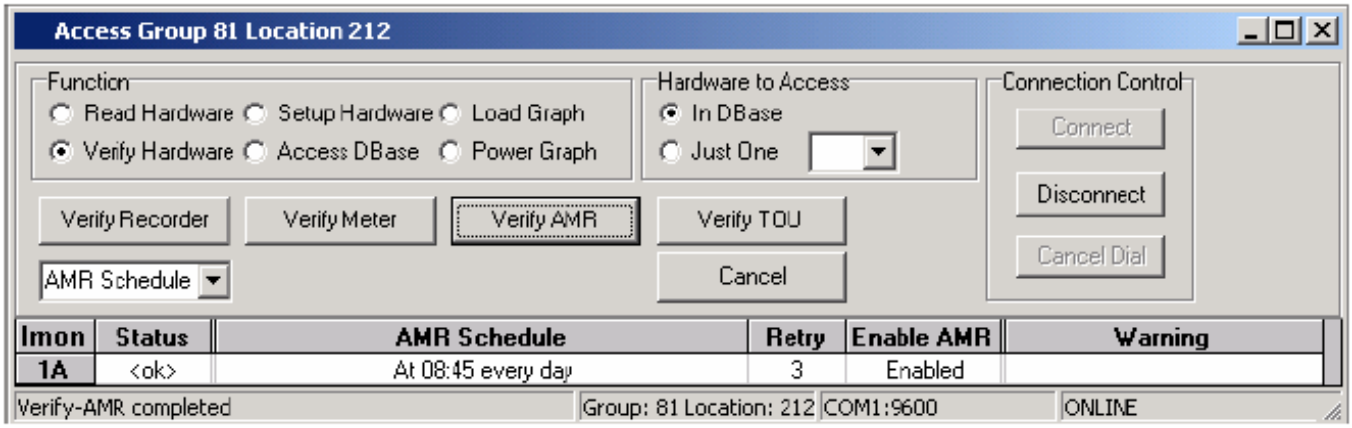


Fig. 180. Access Location Function – Verify AMR

Columns	Description
Status	This column displays the condition of the device. If the condition states “Bad” or “Timeout,” there is a possible error in reading the device and there may be a hardware or communication issue. If the condition is “ok,” the hardware is functioning normally.
AMR Schedule	This column displays the AMR schedule setting.
Retry	This column displays the number of retries the recorder will attempt, should the call fail to go through the first time.
Enable AMR	This column indicates if the Automatic Meter Reading is “enabled” or “disabled.” Enable allows the recorder to automatically call home at the programmed AMR Schedule. Note: Only recorders with ID code “1A” are capable of calling home.
Warning	This column displays any alarms and/or configuration errors for the AMR setting. Note: E-Mon Energy™ compares settings programmed into the recorder with settings stored in the database. They should be identical.

Setup Hardware Functions

When the devices are on-line, they are required to send commands and receive information to and from the devices while they are scanning, initializing, clear readings and updating the database. E-Mon Energy™ software provides you with an Access Location window to configure the recorder and meters under *Setup Hardware*. The following describes each column of data returned from the devices.

Scan Recorder Button

The *Scan Recorder* is used to look for new recorders/meters and to check existing recorders/meters to ensure they are functioning correctly. If a problem occurs with the connection or a mechanical malfunction, the column under the device will display “Bad.” The illustration below shows that the existing recorders and meters are functioning properly.

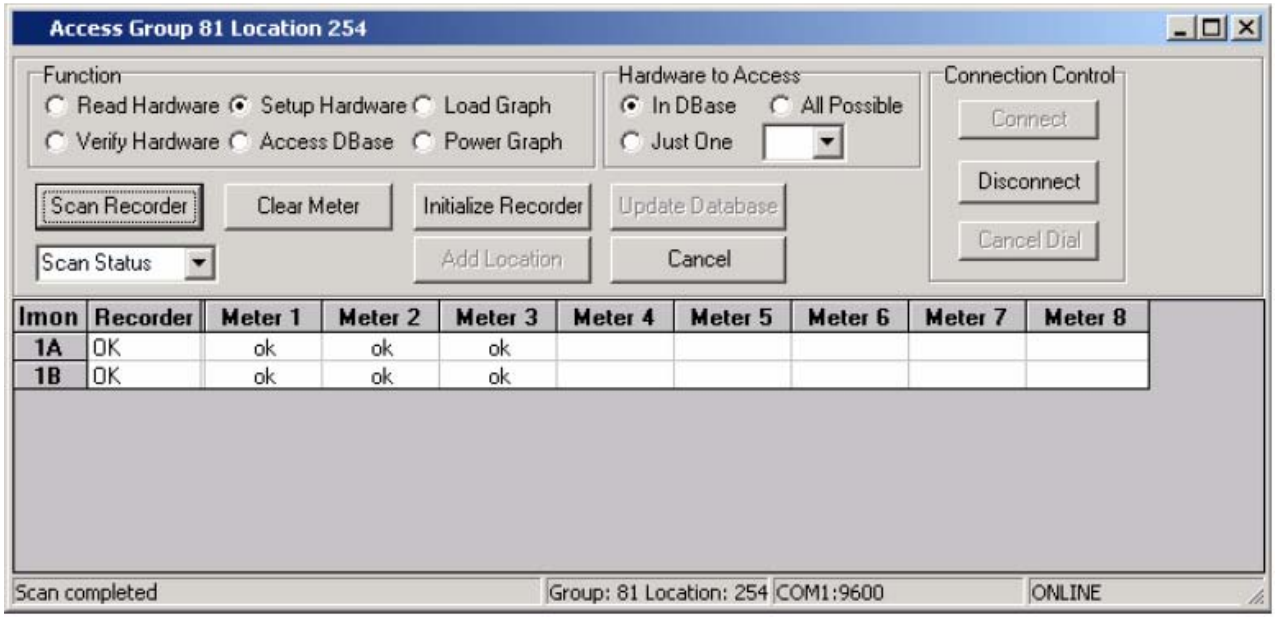


Fig. 181. Access Location Function – Verify Scan Recorder

Columns	Description
Recorder	This column displays the condition of the device. If the condition states “Bad” or “Timeout,” there is a possible error in reading the device and there may be a hardware or communication issue. If the condition is “ok,” the hardware is functioning normally.
Meter 1 - Meter 8	This column indicates communication with meters has been established and the operation status is ok. If the meter column is showing “bad,” check the meter wiring and ensure the meter is powered.

Clear Meter Button

At some point, you may want to reset the meter readings to zero for usage and/or demand displays. This function can be accessed from the Setup Hardware function using the Clear Meter button. From the *Clear Meter Readings* dialog, you can select “all meters for the recorder” just “one of the eight,” or “all the meters at the location.”

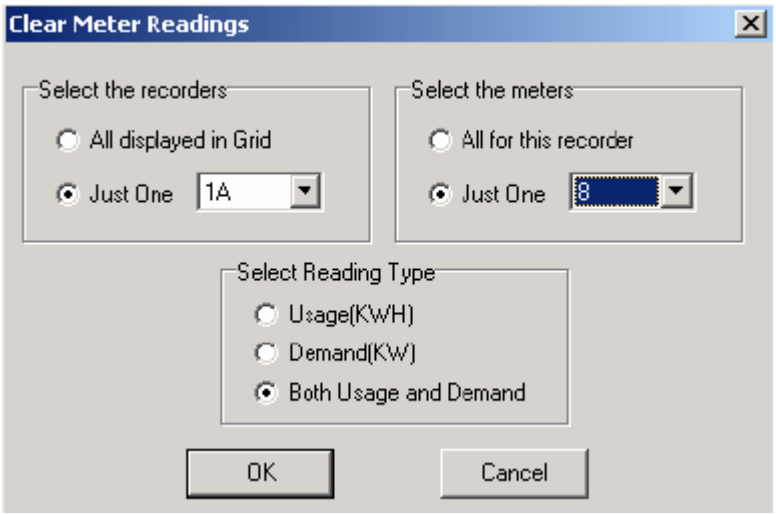


Fig. 182. Access Location Function – Clear Meter Reading

Initialize Recorder Button

As explained in the *Recorder* section of this manual, initializing a recorder is seldom done except for during system startup or when adding a new recorder. When initializing, the parameters are set to the default, the register is cleared from the recorder, and the meter display is cleared as well. This is done from the *Setup Hardware* function by clicking on the Initialize Recorder button. A dialog window will open that allows you to reset the Recorder to its factory default settings.

Fig. 183. Access Location Function – Initializing Recorder

Update Database Button

After scanning the device, the database may need to be updated to add or remove a device. The table column will indicate a condition state of "new" or "bad." If either of these conditions occurs, the Update Database button will become available to access. The illustration below shows that Meter 4 is bad and we want to remove it from the database since the meter is no longer needed for service.

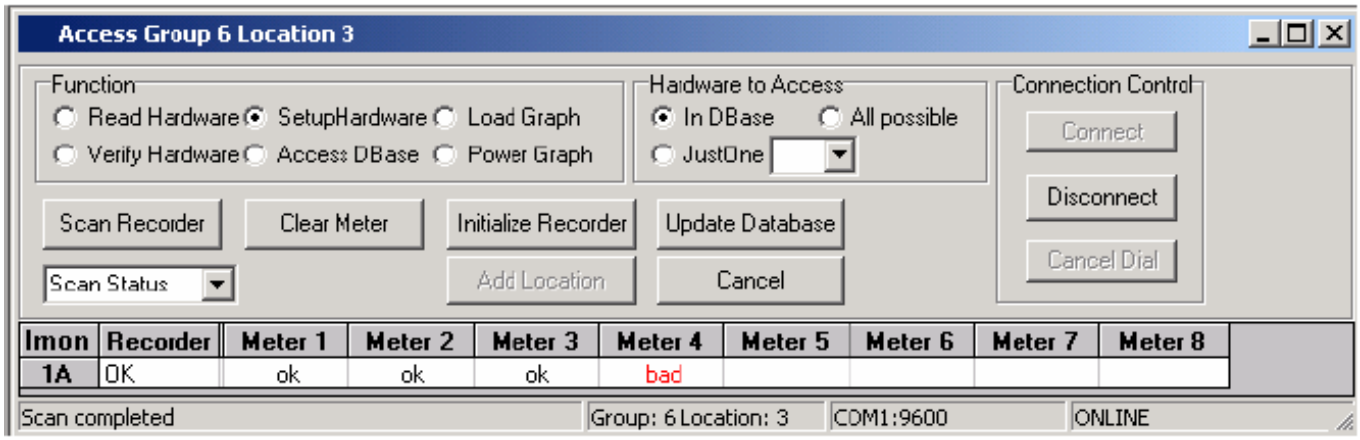


Fig. 184. Access Location Function – Update Database

Columns	Description
Recorder	This column displays the condition of the device. If the condition states "Bad" or "Timeout," there is a possible error in reading the device and there may be a hardware or communication issue. If the condition is "ok," the hardware is functioning normally.
Meter 1 thru 8	This column displays the condition of the device. If the condition states "Bad," there is possible error with the device and may be a hardware issue.

The *Update Database* drop-down window will displays any new or bad devices. The new devices can be added to the database by using the bi-directional buttons between the two list boxes. The bad devices can be removed by using the bi-directional buttons to delete them from the database. Once the devices are added or removed, the user can update the database by clicking the Update Database button.

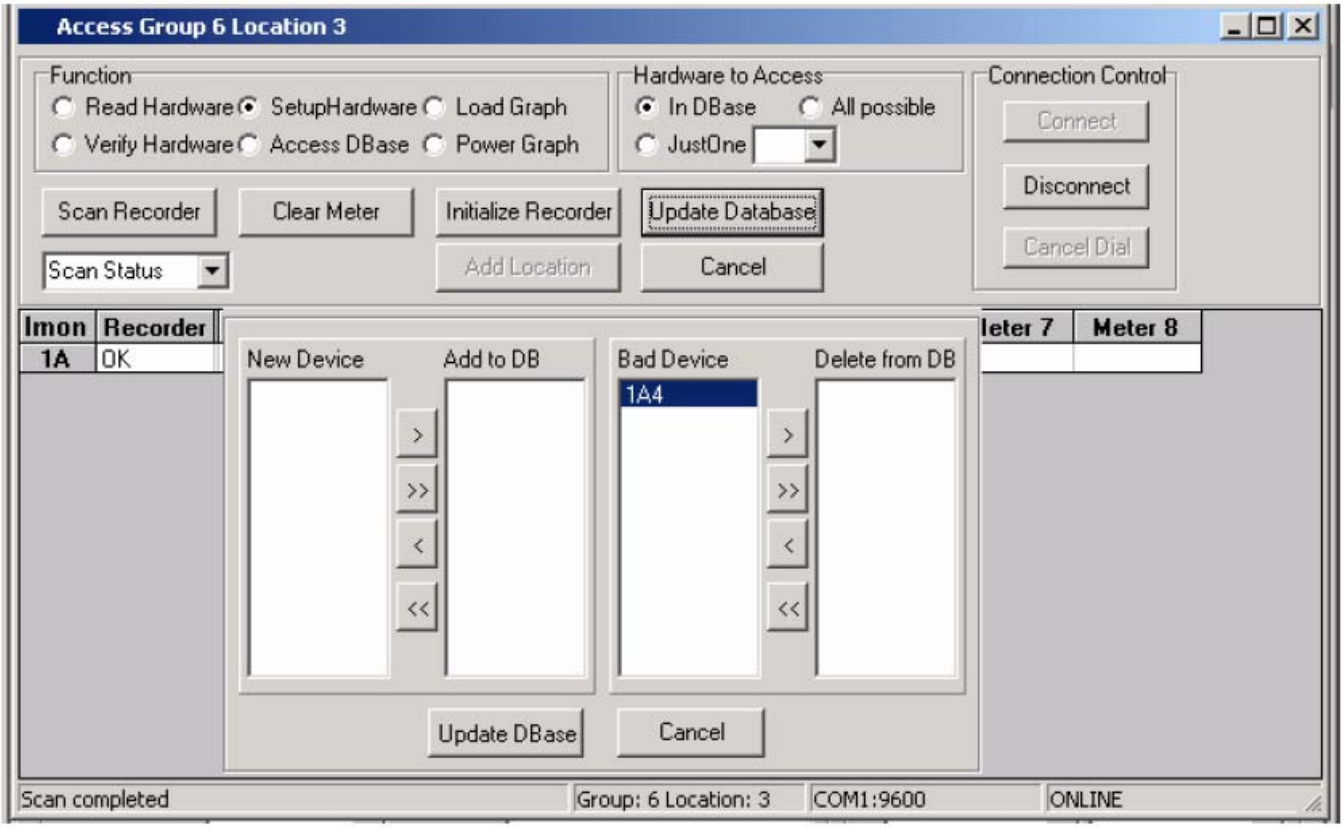


Fig. 185. Access Location Function – Update Database

Access Database Functions

E-Mon Energy™ software provides you with the Access Database to modify, save, and send device information to the recorders or meters at the location. Individual procedures and steps on how to setup information can be found within the *Recorder* or *Meter* section of this manual.

NOTE: Modifications to the devices are restricted to the selected location.

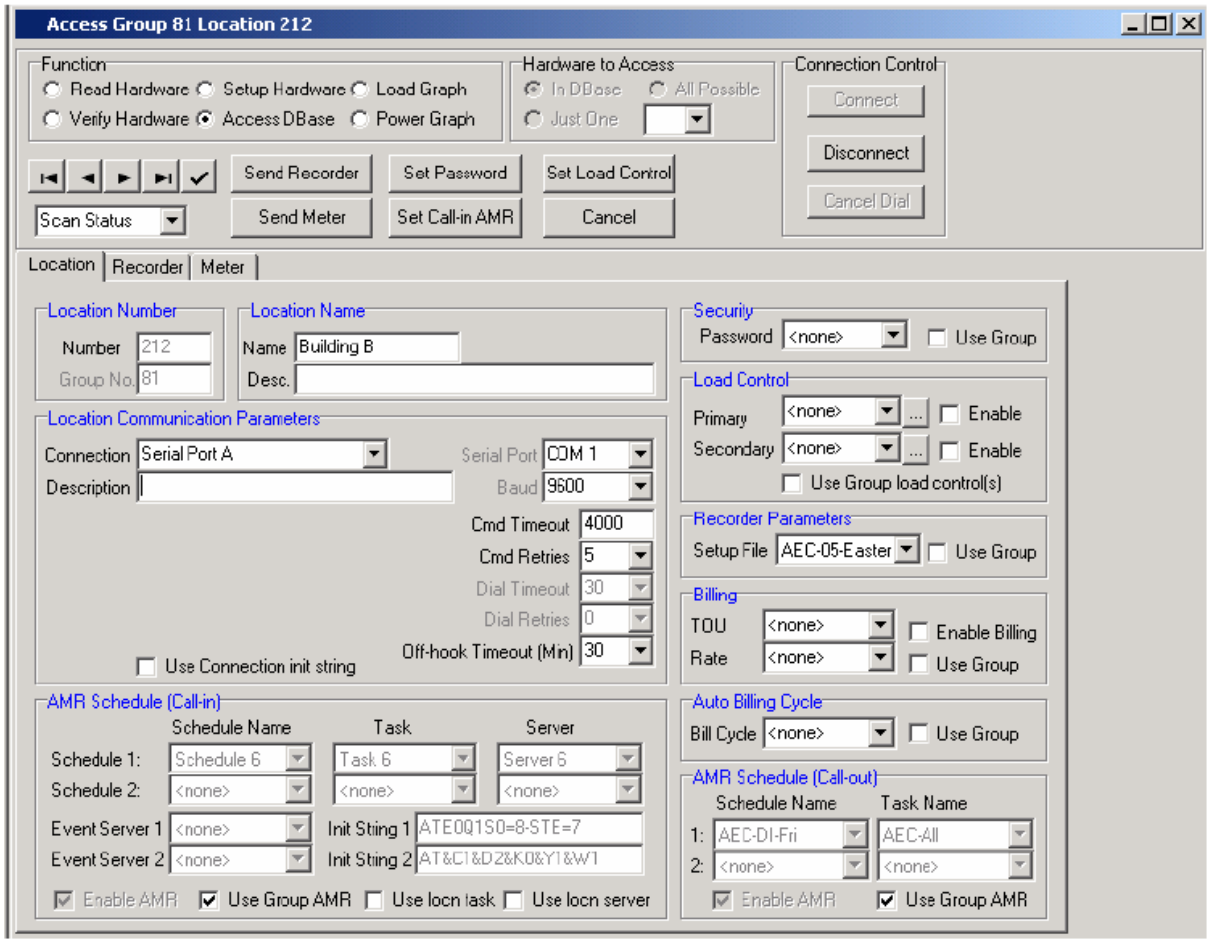


Fig. 186. Access DBase Function – Update Database

Load Graph Functions

E-Mon Energy™ software provides a real-time *Load Graph* that plots meter load as a ratio of the average load per minute. The real-time *Load Graph* can monitor up to eight meters from within the current location. The *Load Graph* screen can be viewed by clicking on the Load Graph radio button at the top of the window. For information on how to use the Load Graph, see the *Real-Time Load Graph* section.

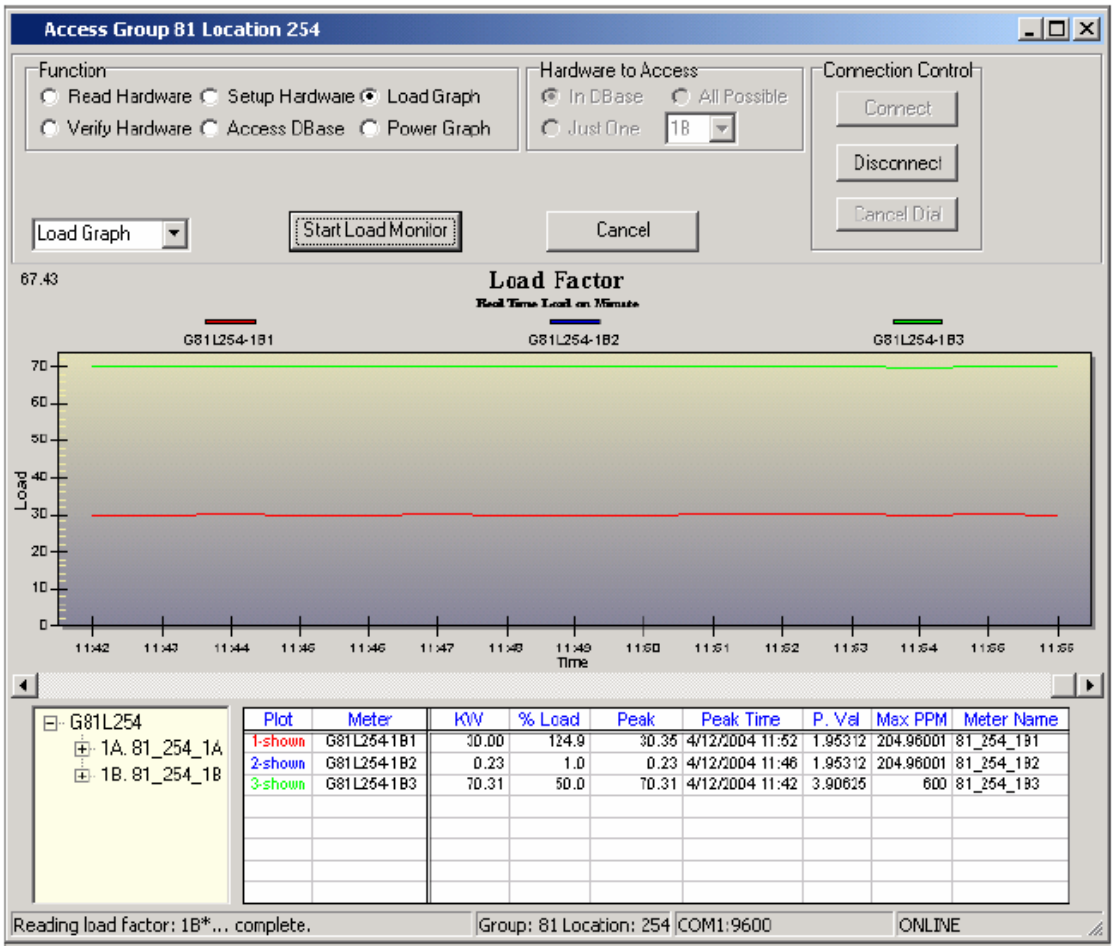


Fig. 187. Access Location Function – Load Graph

Power Graph Functions

E-Mon Energy software provides real-time *Power Graph* that displays different graphs for phase voltage, Amps, Phase Angles, PF%, kW, kVA, and kVAR. The *Power Graph* screen can be viewed by clicking on the Power Graph radio button at the top of the window. For information on how to use the Power Graph, see the *Real-Time Load Graph* section.

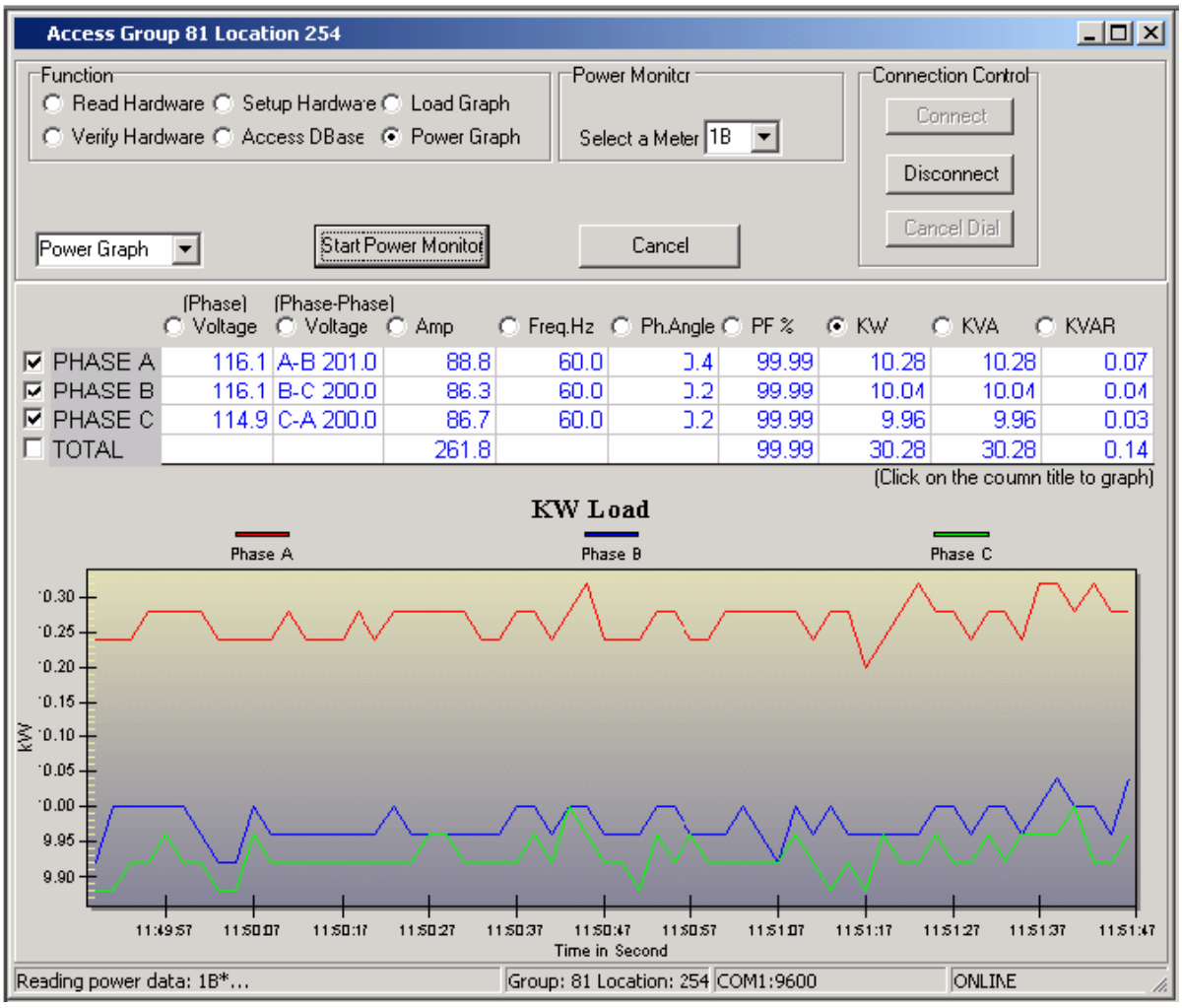


Fig. 188. Access Location Function – Power Graph

SECTION 15: ERROR AND FLAGS

What Are the Error Flags?

Most error flags indicate that a problem or event has occurred in the system. In E-Mon Energy™, the error flags indicate a problem or an event with either the communications, devices, or data. With E-Mon Energy, the error flags are divided into categories: Connection, Protocol, Profile, or Billing.

What Is a Connection Error?

The *Connection Errors* usually indicate that communication has been lost either *locally* or *remotely* to the meter or recorder. These errors can vary from "*Auto Answer Setup Failed to get Comport*." These error flags appear in either a dialog message or the status bar area. The dialog messages usually indicate that you must respond by clicking the OK button to confirm. The status bar error messages usually mean that you may need to fix or reset the hardware before clearing the flag. The illustrations below show a dialog message error and a status bar message error.

Fig. 189. Connection Dialog Error Message

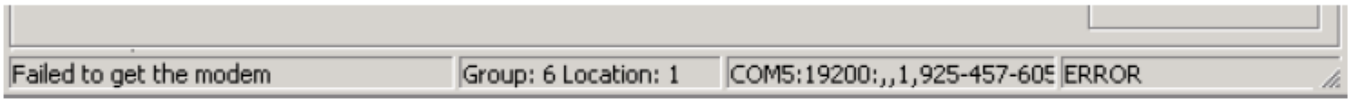


Fig. 190. Connection Status Bar Error Message

What Is a Protocol Error?

The Protocol Errors are usually high level errors that occur between the request and response of messages transferred to and from the meters and recorders (IDR/Class 3000). These types of errors usually require technical personnel to resolve them due to the high level commands that must initiate through a terminal to the device.

What Is a Profile Error?

The Profile errors are problems that occur with the recorder or the meter due to incorrect download data such as the recorder (i.e.*"Err: missing day block or meter not found in DB (database)."* These types of errors also appear in either a dialog message or the status bar. The illustration below shows a dialog message error.

Fig. 191. Profile Dialog Error Message

What Is a Billing Error?

The Billing errors are usually caused by invalid information which does not allow the Billing process to continue. These error messages can be a dialog error message or a display on the generated consumption spreadsheet (shown in red print as an error prior to generating a bill).

Fig. 192. Billing Dialog Error Message

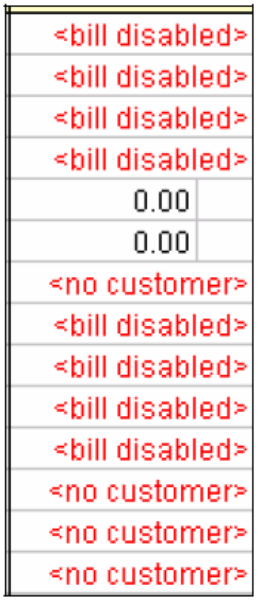


Fig. 193. Spreadsheet-Meter Consumption for Billing

How Do I resolve Error Flags?

With most problem resolving, it is a matter of either resetting the device or entering the proper information. If you are not sure how to resolve an error, please call our technical support team.

NOTE: If at any time you need assistance, please contact our Technical Support at 1-800-334-3666.

All our error codes have a code number to identify the problem, when calling our technical support team please have the code handy to provide to our support personnel. For a complete list of errors, codes and solutions see our Troubleshooting and Appendix C Section within this manual.

What Is a Flag Status?

The Flag Status is the condition of a meter within E-Mon Energy™. With most of our meters (IDRs) we provide several features that are actually built into the meter, like the tamper alarm. With E-Mon Energy, we can view a problem or an error by simply accessing the group and viewing the hardware. The *Flag Status* function is accessible through the Access Location window, under the Read Hardware function. From this view a user can access the condition of a meter by clicking on the Flag Status button. These flag errors are usually displayed in *red* and range from power failure, load, tamper, and the current state of the meter. The illustration below shows a Power Failure.

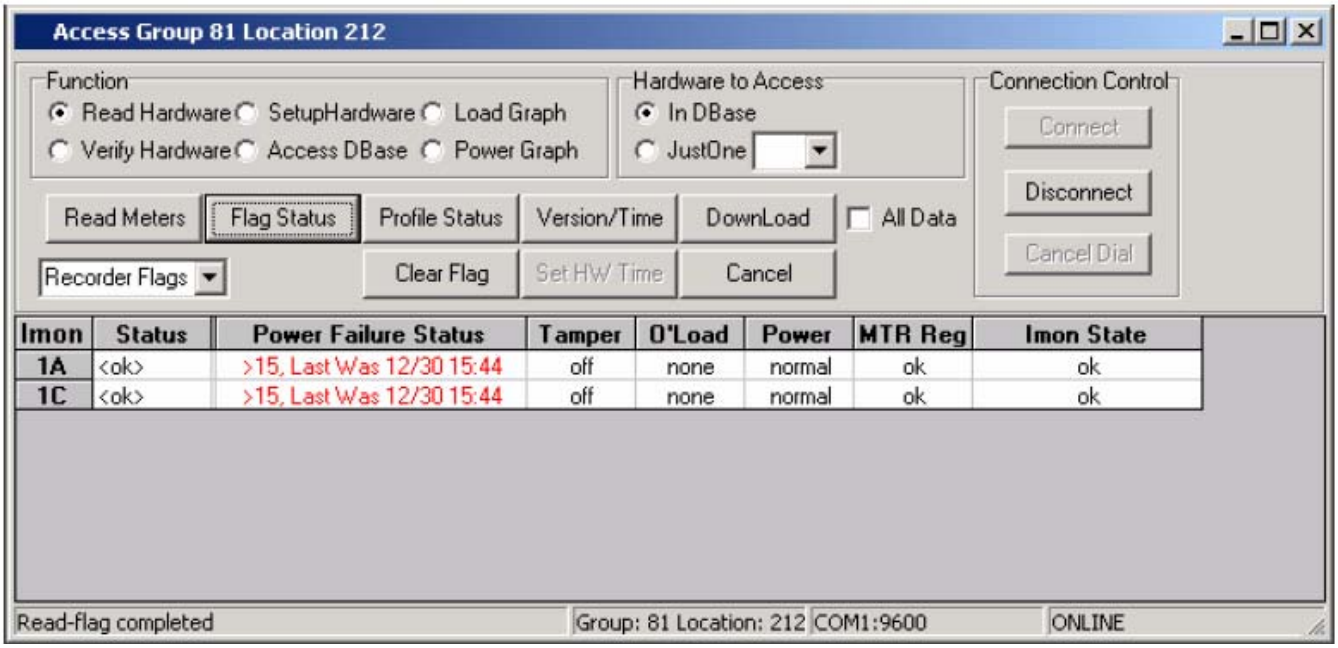


Fig. 194. Access Group Flag Status

Panel Group/Field	Description
Flag Status	This button allows you to access the meter's current condition regarding flags.
Status	This field displays the condition of the Meter. If the condition states "<Bad>, there is no connection and there may be a serious problem. If the condition is <ok>, then communication is enabled with the meter.
Power Failure Status	This field will display any power failures at any point with the meter. If the voltage drops past the required power factor threshold a flag will display how many times it has occurred (i.e. >15), the last time it occurred by date (i.e. 12/30), and the last reading recorded (i.e. 15.44). When no power failures exist, the field will display <none>.
Tamper Alarm	This field will display an active <on> flag when a door is open on the meter. If the Tamper Alarm is not on, the column will display <off>.
O'Load (Over Load)	This field will display an Overload flag when the meter has excessive amperage (i.e. 200 amps through the sensors on a 100 amp meter). When no problems exist, the field displays <none>.
Power	This field will display any general power/voltage errors with the meter (i.e. low, noisy or unstable). Low = voltage drop below nominal level, noisy = dirty power supply, harmonics, unstable = fluctuating levels. When no problems exist, the field displays <normal>.
MTR Reg	This field will display any malfunctions with the internal meters realtime clock (i.e. <Bad>). When no problems exist, the field displays <ok>.
IDR State	This field will display any problems that may exist with the functionality of the IDR. When no problems exist the field displays <ok>.

How Do I Check and Clear a Flag Status?

Checking the Flag Status

To check the flag status:

At this point you have a connection to the Group Devices

1. Click on the Read Hardware radio button.
2. Click on the Flag Status button. E-Mon Energy™ will check the recorder for any potential errors and post a flag. Note: *If any columns within the grid show a "Red" flag, this* indicates a problem or failure.

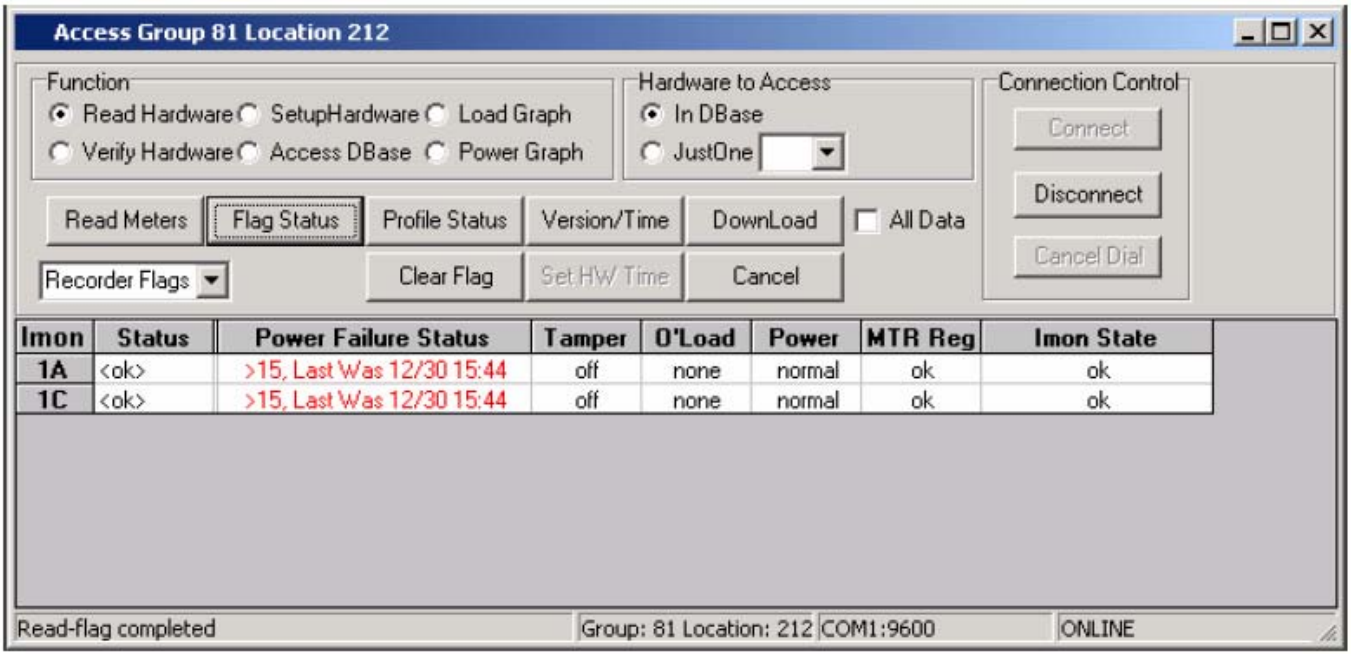


Fig. 195. Flag Status Error

The flag shown in the above illustration is a Power Failure. A Power Failure indicates that the meter has lost power at some point. The Power Failure Status displays the last power failure *date and time*.

Clearing a Flag Status

To clear a flag status:

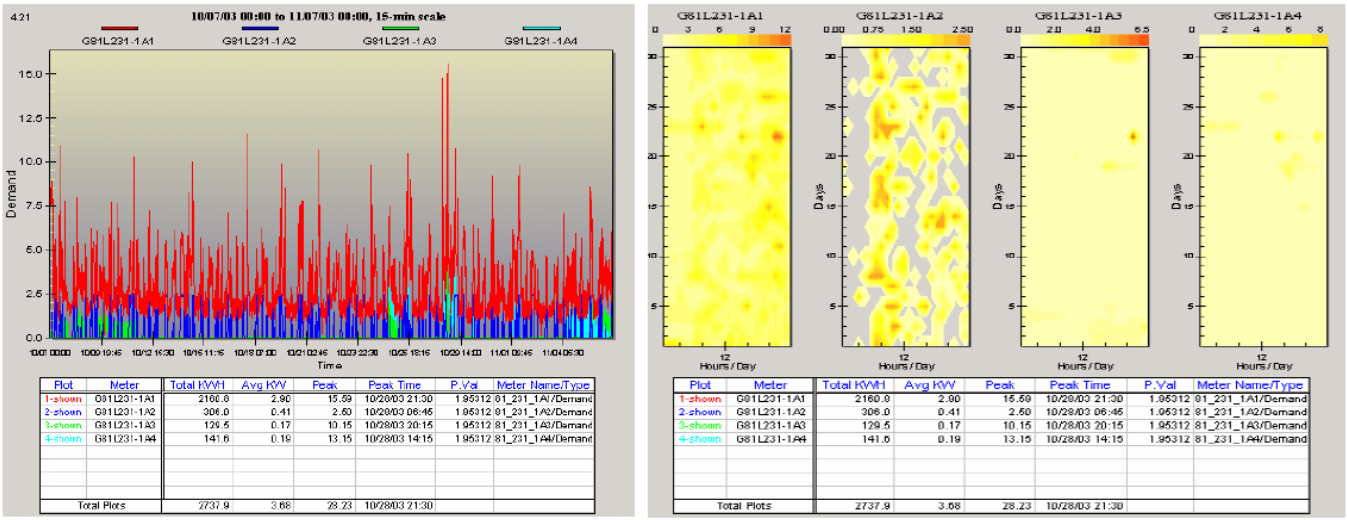
3. After correcting the failure, you can reset and clear the flags by clicking on the Clear Flag button. The columns will reset to normal conditions.

SECTION 16: DEMAND PROFILE GRAPH

What Is the Demand Profile Graph?

The Demand Profile Graph is a graphic view of the meter's energy usage (or demand) over a specific time interval. E-Mon Energy™ will plot the graph, which is based on downloaded interval data, for up to eight meters with any combination of groups and locations. E-Mon Energy can display demand intervals of 5, 15, 30, or 60 minutes, depending on the setup of the device parameters. The software plots the rise and fall of the load as Kilo Watts in relation to date and time. The Demand Profile Graph window is interactive, allowing the user to customize different views. The graph views include:

- Default View – Displays the load as KW based on time and date from highest to lowest point.
- Chopper View –Displays the load as KW based on a vertical bar that is color-coded to indicate load levels. The very top of the bar provides the intensity of the color for the load range. The vertical axis (y-axis) lists the day number. The "from" day is at the bottom of the bar, going up to the "to" day at the top of the bar. Each day slice of the bar has a horizontal axis (x-axis) that lists the hour of the day. Midnight is shown at the left of the bar, covering the 24-hour day as it goes across to the right.



Default View **Chopper View**

Fig. 196. Default View and Chopper View

How Is the Data Stored?

E-Mon Energy™ retrieves the interval data (demand and energy related data) from the devices and stores it in a database file. The data is downloaded using the Access Location window from each of the devices. Once the interval data is stored, it can be used to create load profile graphs to analyze energy usage and/or create billing statements. The illustration below shows the interval data retrieved from the devices, stored, and viewed.

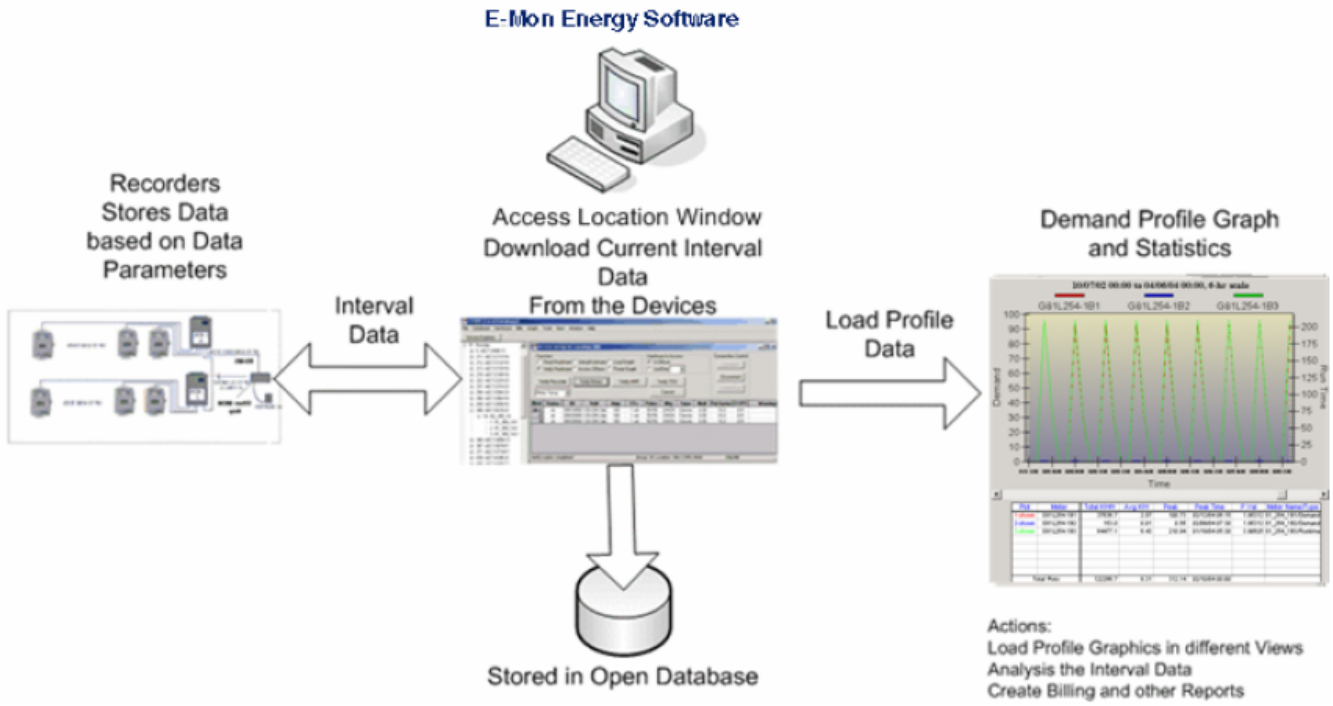


Fig. 197. Interval Data Retrieval process

What Is the Statistics Table?

Besides using the load profile graph view, the user can analyze the statistical energy data for the time period they select. The energy data populates onto the Statistics Table, which displays the Total Energy Usage, Average Daily Demand, Peak Demand, and Date/Time of the peak. The table also acts as a legend for the profile graph, indicating each meter plot in a different color. The only way to clear the table is to right click on the grid area and select “Delete this plot” or “Delete All”. The following illustration shows a populated Statistics Table.

Plot	Meter	Total KWH	Avg KW	Peak	Peak Time	P.Val	Meter Name/Type
1-shown	G81L254-1B1	37636.7	12.85	100.73	02/12/04 06:15	1.95312	81_254_1B1/Demand
2-shown	G81L254-1B2	153.0	0.05	0.55	02/09/04 07:30	1.95312	81_254_1B2/Demand
3-shown	G81L254-1B3	84477.1	28.85	210.94	01/19/04 05:30	3.90625	81_254_1B3/Runtime
Total Plots		122266.7	41.76	312.14	02/10/04 00:00		

Fig. 198. Demand Statistics Table

Columns	Description
Total kWh	This column displays the Total Energy Usage (Kilo Watt Hour).
Avg. kW	This column displays the Average Daily Energy Demand.
Peak	This column displays the highest energy demand (Peak Demand).
Peak Time	This column displays the date and time of highest demand (Peak Date/Time)
P. Val	This column displays the Pulse Value, (i.e. WHrs per pulse for electricity).
Meter Name	This column displays the Meter Name that is inherited from the database.

Can I Export the Interval Data to Other Applications?

Yes. E-Mon Energy™ has the capability of exporting data as a Comma Separated File (CSV file extensions) as well as other compatible spreadsheet applications. To export the data for the selected device, you must have selected from the main menu bar *File to Export Graph Data as CSV* or *Export Graph Data*. At this point, a save dialog box will open to save the file.

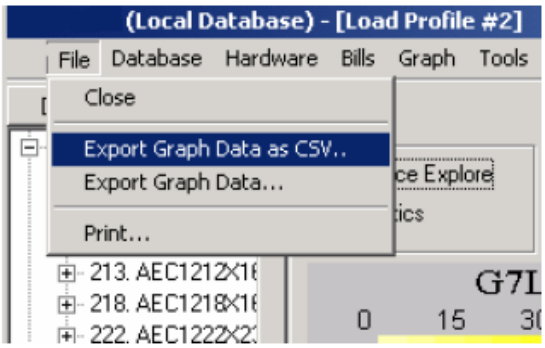


Fig. 199. Export Graph Data

Can I Change the Graph Display View?

Yes. E-Mon Energy provides several graph options to view different plot styles. From the main menu, select *Graph* then *Display Option* to open the dialog. There are several display options to choose from – Line, Stacked Bar, Stacked Area, Bar, and Area. The illustration and table below describes each of the graph options.

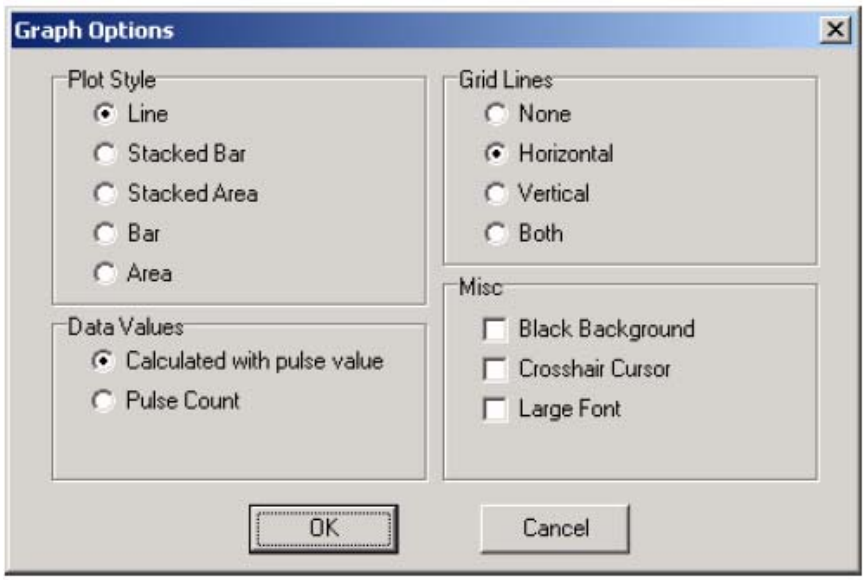


Fig. 200. Graph Options

Panel Group / Field	Description
Plot Style	Panel Group. Select a radio button. *Line* = Displays each kW Demand per date/time. *Stacked Bar* = Displays total kW Demand per date/time (all plots). *Stacked Area* = Displays total kW Demand per date/time (all plots). *Bar* = Displays side by side each kW Demand per date/time. *Area* = Displays area kW Demand per date/time (all plots).
Data Values	Panel Group. Select a radio button. *Calculated with pulse value* = Graph data with multiplier factored in. *Pulse Count* = Graph data using raw pulse.
Grid Lines	*Panel Group*. Select a radio button. *None* = No grid on the graph. *Horizontal* = Add horizontal grid lines on the graph. *Vertical* = Add vertical grid lines on the graph. *Both* = Add both horizontal and vertical grid lines on the graph
Misc.	Panel Group. Check boxes (Multi-selections). *Black Background* = Displays the graph with a black background. *Crosshair Cursor* = Changes the cursor to a “+” instead of an arrow. *Large Font* = Enlarges the font on the display screen.

Can I See the Data in a Pie Chart?

Yes. By double-clicking on the data point, a pie chart will open. The chart below shows the percentage of each meter graphed, which contributes to the total kW demand registered at the time chosen. The date/time of the period is shown at the top of the window. On the right-hand side of the window is the Show group, by selecting the radio button marked Values, the actual values in kW will be shown instead of the percentages. A Print button is provided if you wish to print the pie chart.

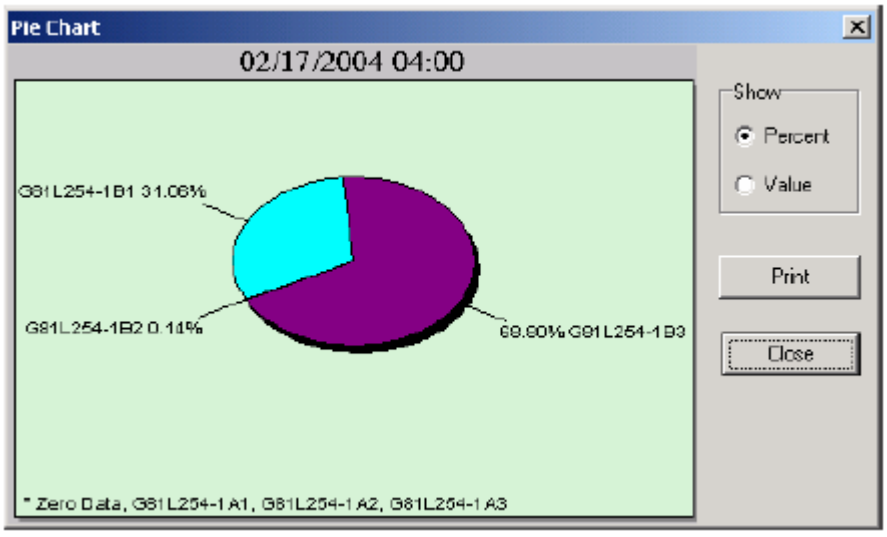


Fig. 201. Pie Chart View

Can I Print the Graph?

Yes. You can print just by selecting File\Print from the main menu.

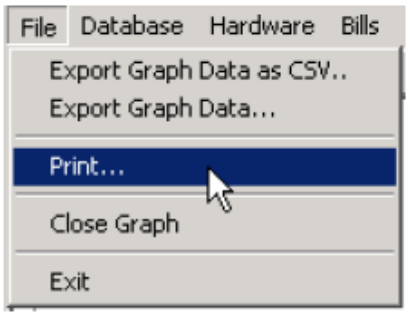


Fig. 202. Print Graph Menu

How Do I Load a Profile and Generate a Demand Profile Graph?

To Load a Profile

To load a profile:

1. From the E-Mon Energy™ explorer window, click and select Graph\Load Profile from the drop-down menu. The following illustration shows the Load Profile Graph displays.

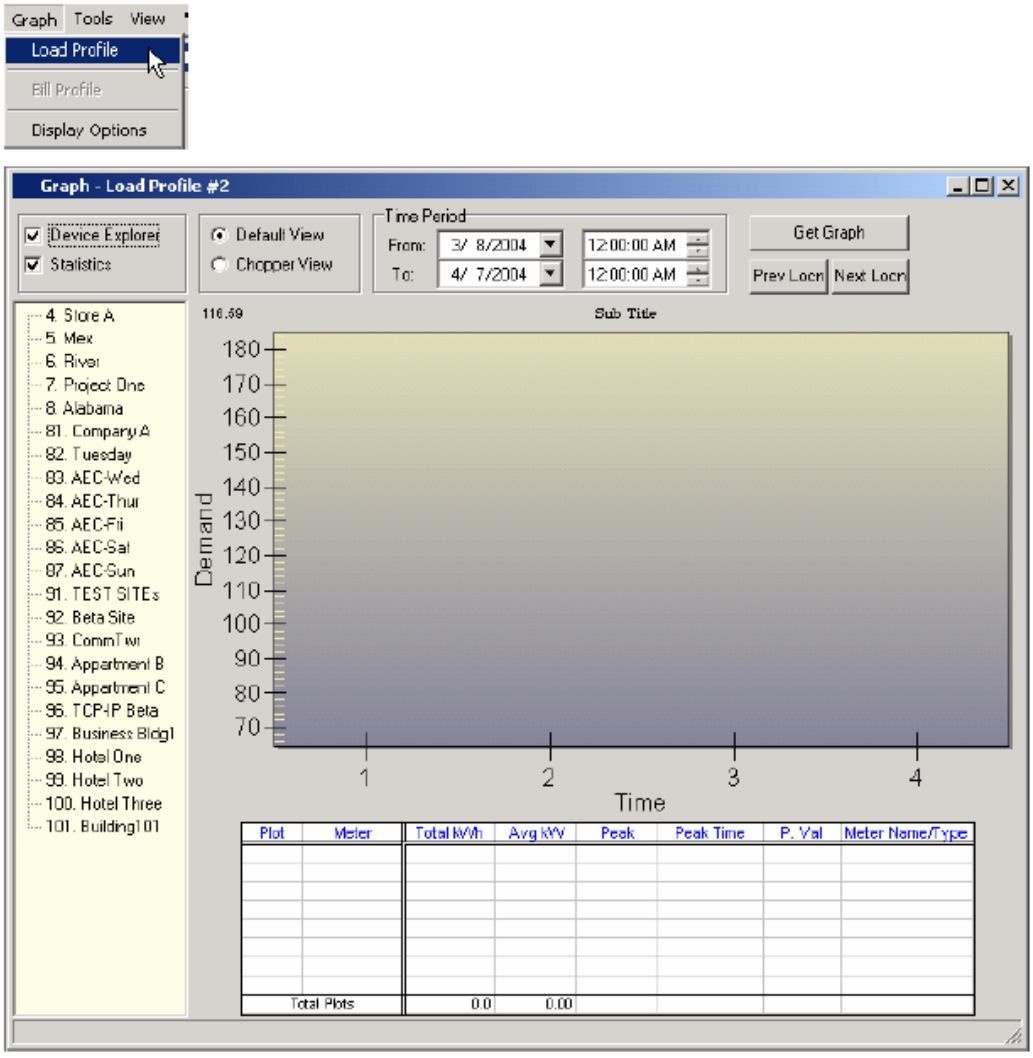


Fig. 203. Load Demand Profile

2. In the From (date) field, click on the drop-down arrow, then select a day, month, and year to *start* plotting the meters.

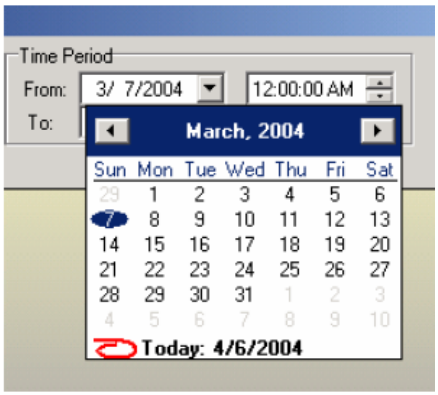


Fig. 204. Time Period Calendar

3. In the To (date) field, click on the drop-down arrow, then select the day, month, and year to *stop* plotting the meters.
4. In the From (time) field, select the time (hrs: min: sec AM/PM) to *Start at*:
   a. Click and type inside the text box to change each time increment or click on the up and down arrows to adjust the time frame for each increment.
   Note: The Start Time cannot exceed the End Time.
5. In the To (time) field, set the time (hrs: min: sec: AM/PM) to *Stop* at.
6. In the shaded device directory, select a Group, click and drill-down to the Recorder Level. Then click and drag to the Meter Level, if you wish to graph a single meter.

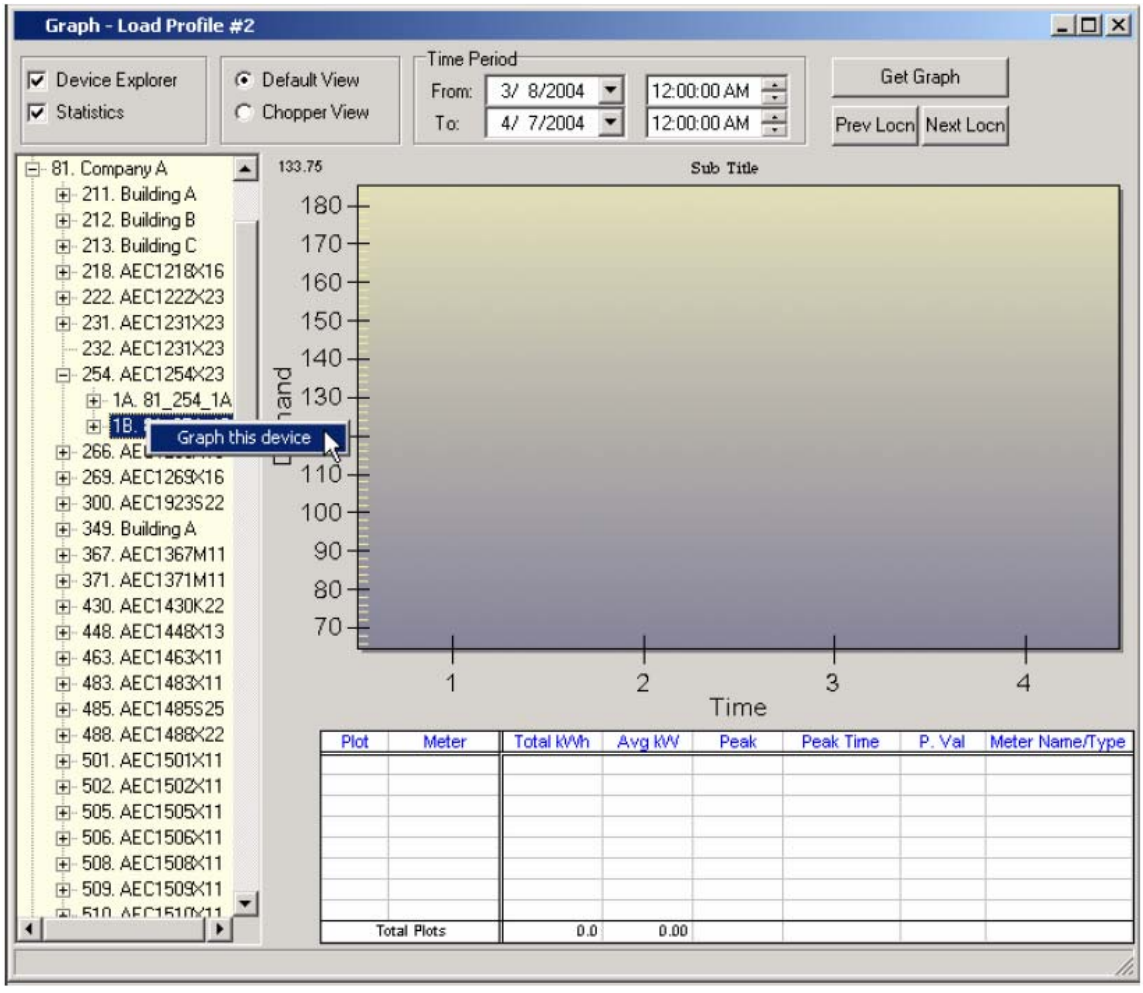


Fig. 205. Demand Profile Device Selection

7. Right-click on the Recorder ID and highlight it, then left-click on Graph this Device button. The illustration below shows a statistic table populated with all the meters within the selected recorder.
Note: Each Meter is shown with a specific color to correspond with the plot number.

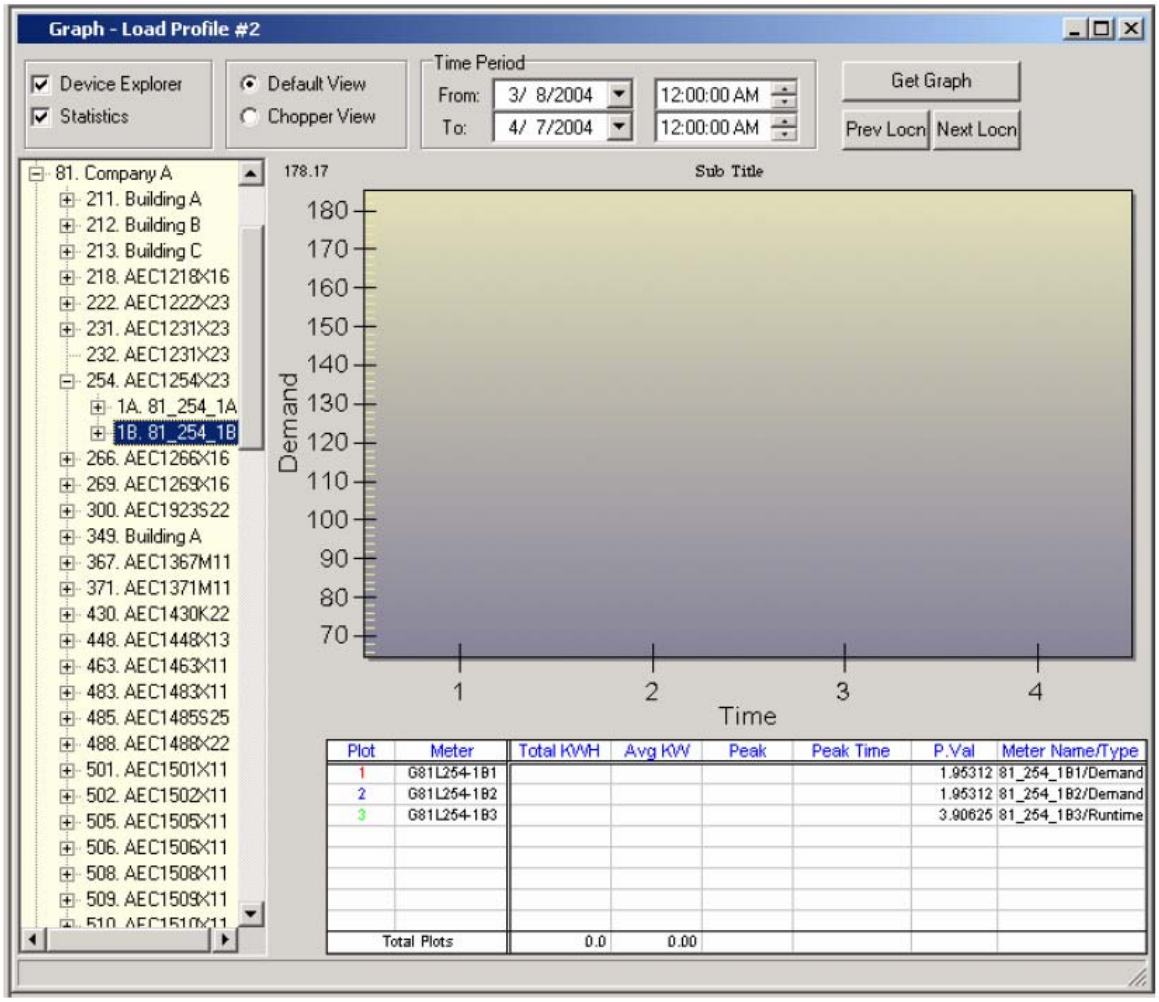


Fig. 206. Demand Profile Statistic Table

Plotting the Graph

8. Click on the Get Graph button. The statistic table refreshes and populates with the Total KWH, Average KW, Peak, and Peak Time during the selected Time Period. The graph above plots the rise and fall of the load as KWs on a Date/Time frame. Above the plotted graph it displays the meter ID(s) and color code.

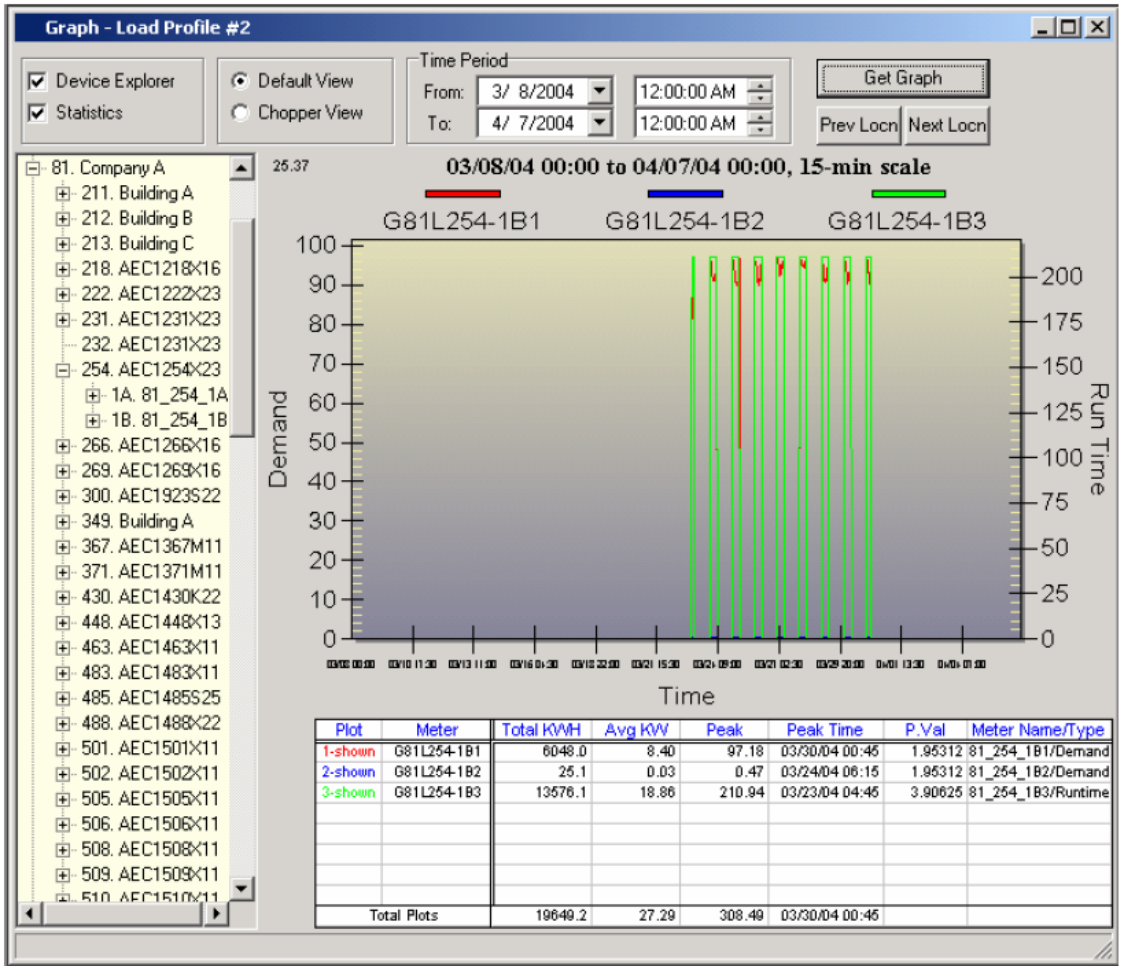
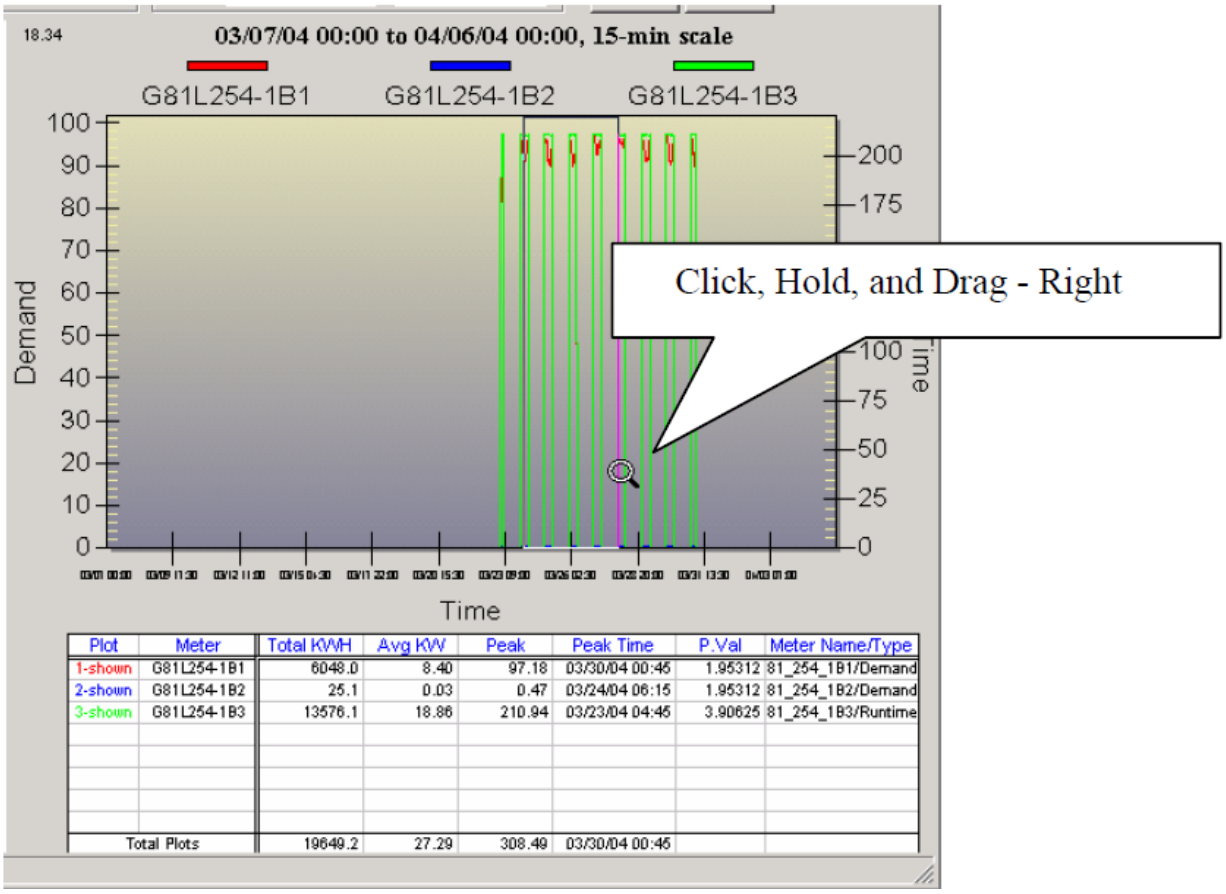


Fig. 207. Demand Profile Graph

9. 9 To expand the graph for a clearer view, click, hold, and drag your mouse within the graph area.
Note: A gray vertical line will appear and the mouse pointer will change to a magnifying glass. See illustration of Expand View (1 and 2) below.



Plot	Meter	Total KWH	Avg KW	Peak	Peak Time	P.Val	Meter Name/Type
1-shown	G81L254-1B1	6048.0	8.40	97.18	03/30/04 00:45	1.95312	81_254_1B1/Demand
2-shown	G81L254-1B2	25.1	0.03	0.47	03/24/04 06:15	1.95312	81_254_1B2/Demand
3-shown	G81L254-1B3	13576.1	18.86	210.94	03/23/04 04:45	3.90625	81_254_1B3/Runtime
Total Plots		19649.2	27.29	308.49	03/30/04 00:45		

Fig. 208. Demand Profile Graph Expand View (1)

Navigating in the Graph

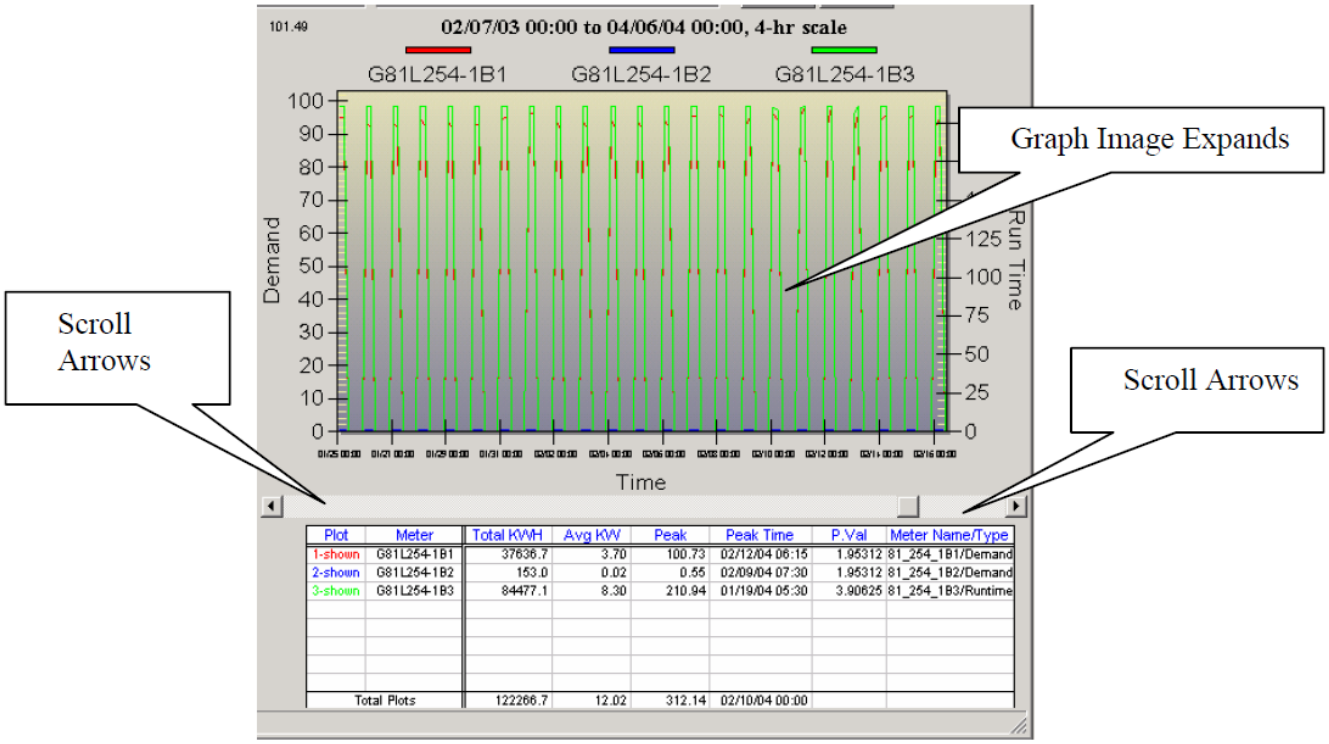


Fig. 209. Demand Profile Graph Expand View (2)

In the Zoom view, use the scroll arrows/bar to view the whole entire graph from left to right.

To return to the original graph size, right click within the graph area, and select Undo Zoom from the drop-down menu.

NOTE: The other drop-down menu items are not supported at this time.

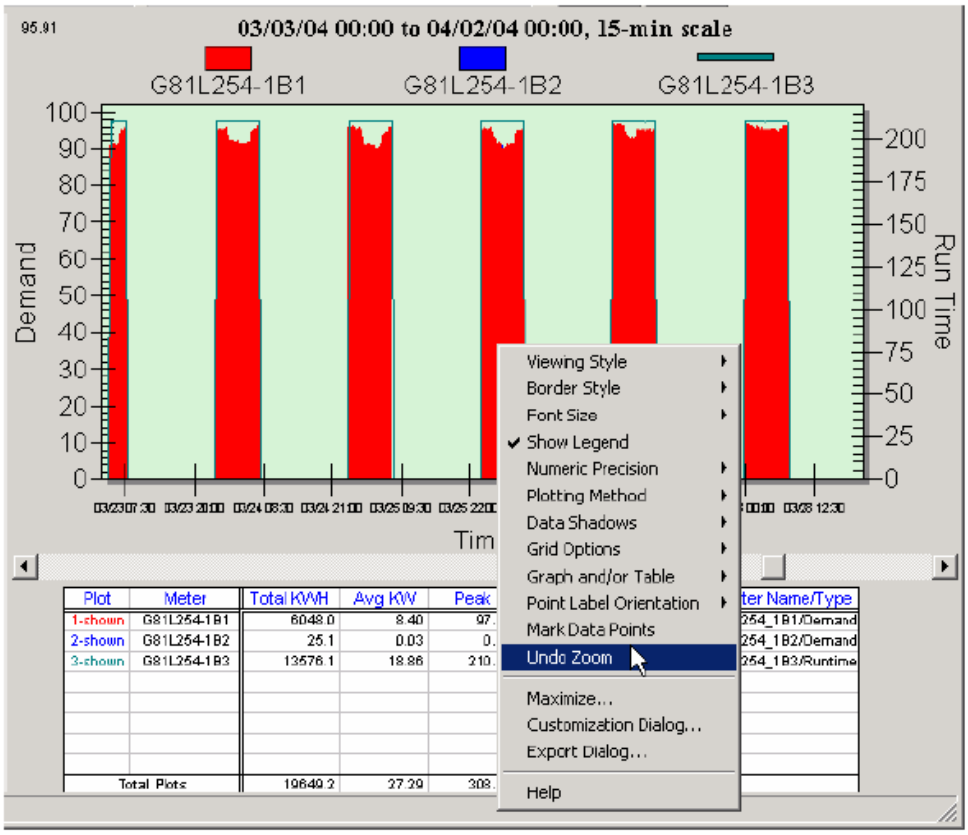


Fig. 210. Demand Profile Graph- Undo Zoom Feature

Other viewing options are:
Device Explorer – Uncheck to remove Device Explorer from window view.

Statistics – Uncheck to remove Statistics Table from window view.

Default View – Click to change the graph view to a line graph. *Note: This is the* default graph view.

Chopper View – Click to change the graph view to a Daily Demand view based on your Time Period selection.

Prev Locn – Click to return to the previous location within the Device Explorer to view other meter locations.

Next Locn – Click to go to the next location within the Device Explorer to view other meter locations.

Printing a Graph

1. To print a graph, click and select File/Print from the drop-down menu.
2. Select Use default printer or Customize to customize the printer setup.
3. Click the OK button to print or the Cancel button to exit.

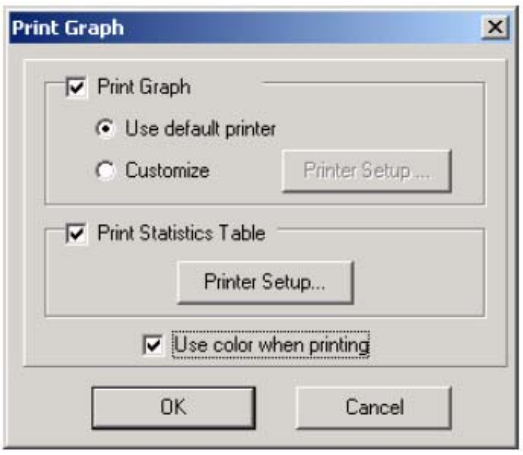


Fig. 211. Print Graph Dialog

Exporting Graph Data

1. To export graph data as a CSV (common-separated variable) file, select File/Export Graph Data as CSV. A Save As dialog opens to save with a CSV extension.
   Note: The CSV file format is used to exchange data between different applications (i.e. MS Excel).
2. Enter a *File Name* and click the Save button.

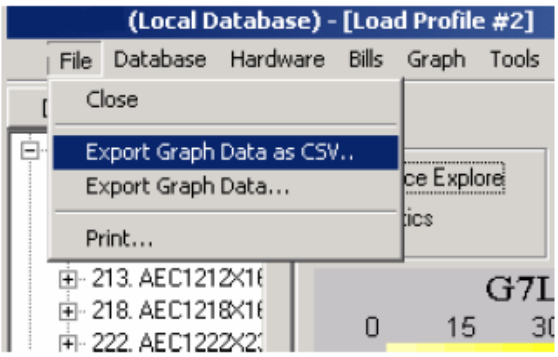


Fig. 212. Export Graph Data as CSV Menu

3. To export graph data in other formats, select Export Graph Data. An Exporting Demand Profile dialog opens.

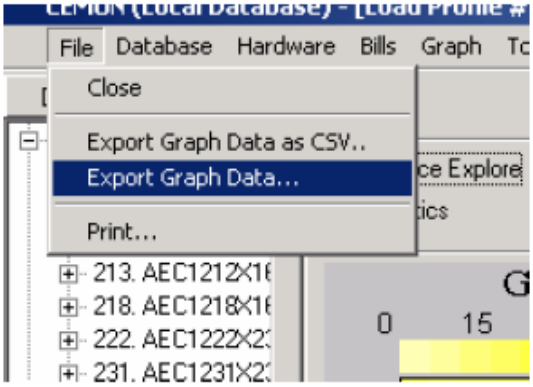


Fig. 213. Export Graph Data Menu

4. Select an Export format. *The Exporting Demand Profile dialog displays several format* options to use. Metafile, BMP, JPEG, PNG, and a Text delimited file that can be imported into a spreadsheet.
5. Select an Export Destination location (to a Clip Board, as a File, or send to a Printer).
6. If saving as an image, select the object size or Pixel.

7. Click on Export to save the file and complete the file parameters.
8. To Print the graph image, click on Print. (The print button appears when the Printer radio button is selected)

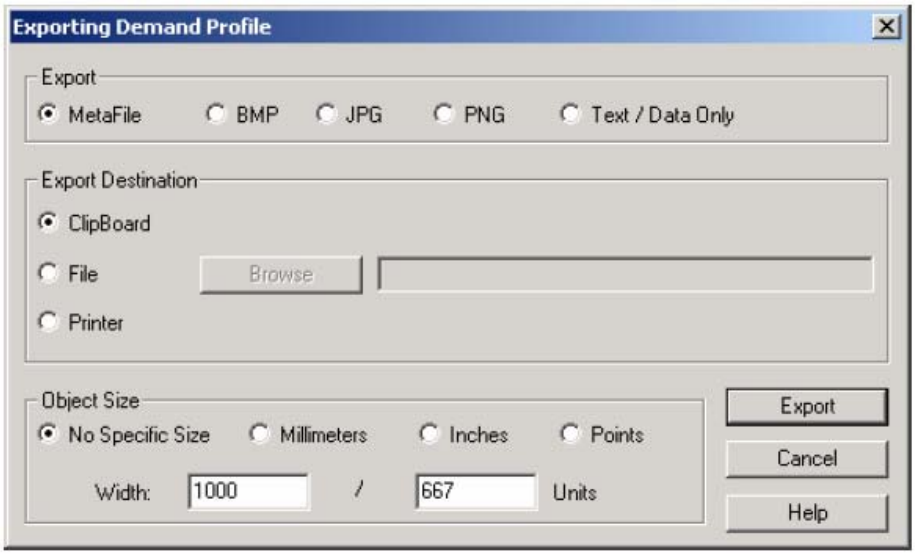


Fig. 214. Exporting Demand Profile Dialog

Creating a Pie Chart

1. To open a Pie Chart view from the graph, move the cursor to the area where you wish to view the pie chart. When the cursor changes to a hand sign, click the mouse button.
   Note: Select from any two viewing options: Percent or Value.

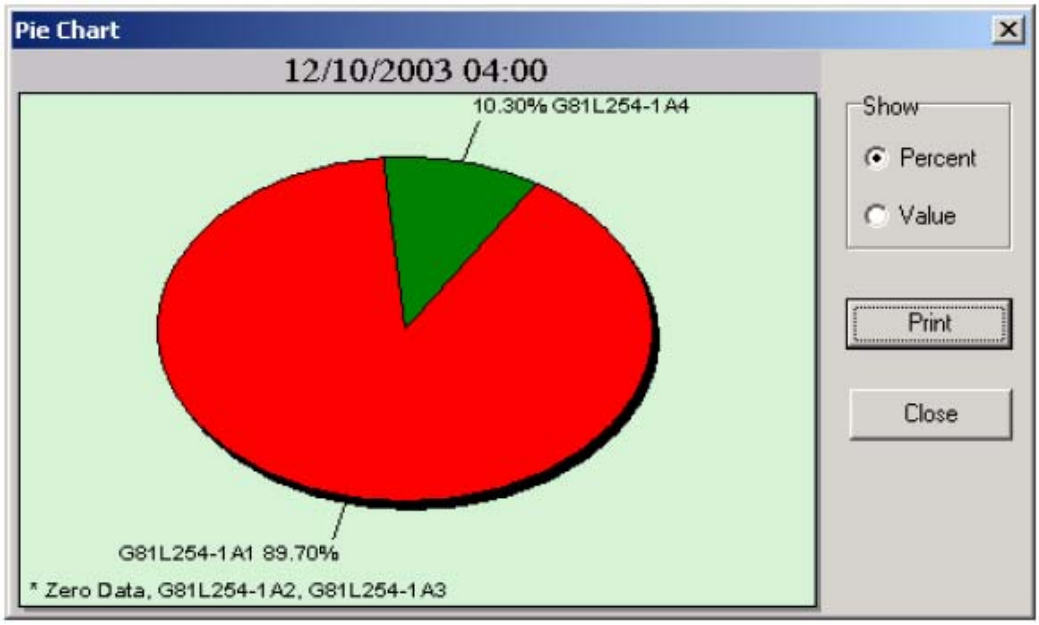


Fig. 215. Pie Chart

2. Click the Print button to print the pie chart, or click the Close button to exit.

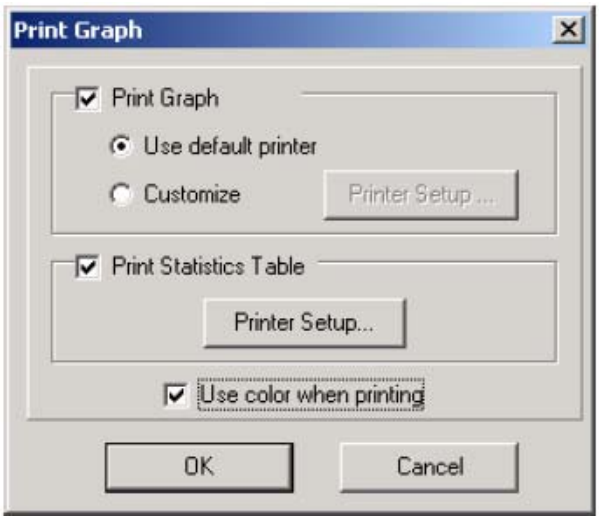


Fig. 216. Print Pie Chart Graph

Selecting Graph Options

1. From the Graph drop-down list, select Display Options. The *Graph Options* dialog will open.
2. Select the Plot Style for the Graph (Line, Stacked Bar, Stacked Area, Bar, and Area).
   Note: The Line Style is the default setting for the graph.

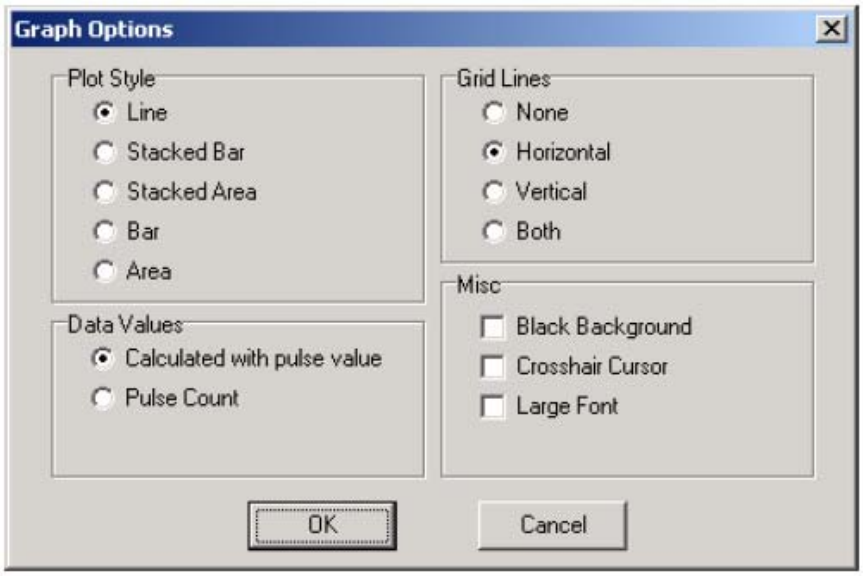


Fig. 217. Graph Viewing Options

3. Select the Data Values (Calculated with pulse value or Pulse Count).
   Note: Calculated with pulse value is the default.
4. Select the Grid Lines (None, Horizontal, Vertical, or Both).
   Note: This is an option.
5. Select Misc. (Black Background, Crosshair Cursor, or Large Font)
   Note: The Black Background is used mainly for viewing purposes; Crosshair Cursor is useful in locating specific spots on a graph; and the Large Font changes font size on the profile screen.
6. Click OK, or click Cancel to exit the dialog.

SECTION 17: REAL-TIME GRAPHS

What Is the Real-Time Load Factor?

The Real-Time Load Factor is a graph that provides information on the current KW load. The Real-Time Load Factor graph plots meter load at a refreshing rate of once per minute. The Real-Time Load Graph can monitor up to eight meters from any combination. Refer to the Power Graph function if you need to graph for phase voltage, Amps, Phase Angles, Power Factor, KW, KVA, and/or KVAR.

The Load Factor Graph is available under the Access Location window and is comprised of three elements – the *Load Factor Graph*, *Access Device Explorer*, and the *Statistic Table*. Each device is plotted with different colors and shown with its ID number and color above the graph. The graph will plot the different devices in their assigned color. The illustration below shows a Load Factor Graph.

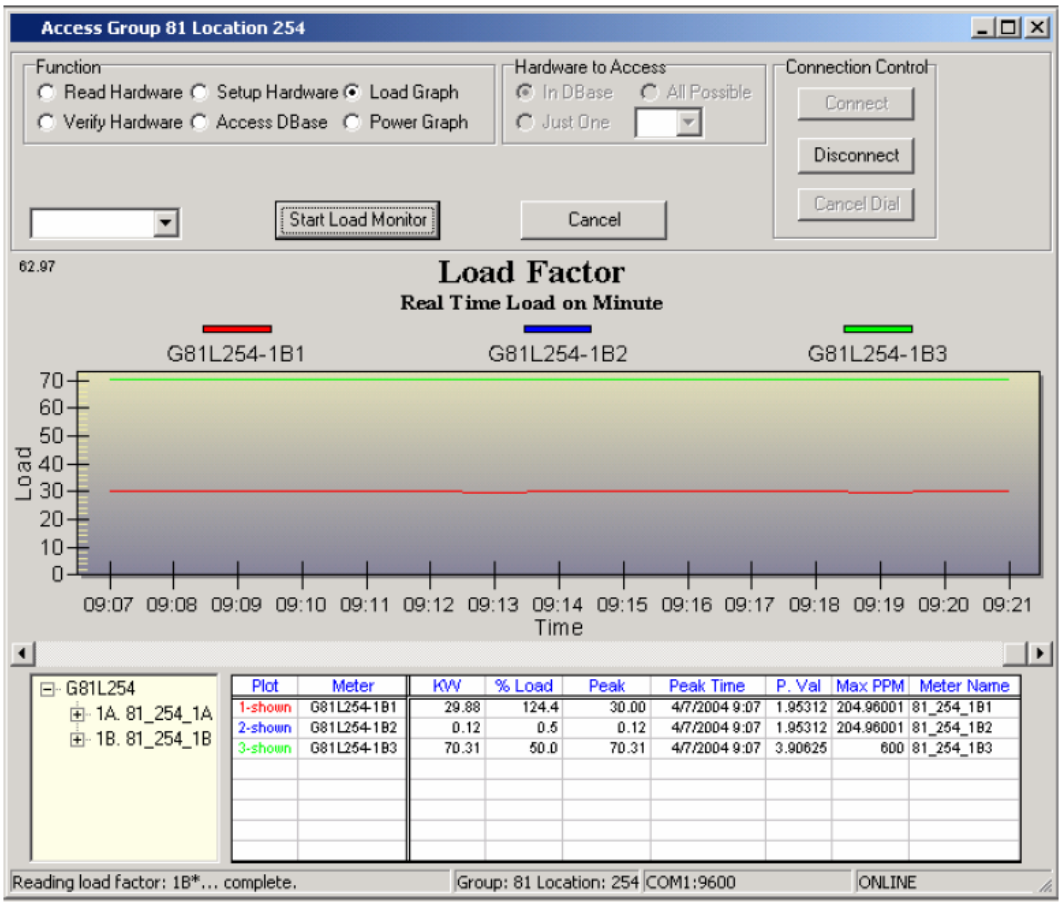


Fig. 218. Load Factor Graph

What Is the Access Device Explorer?

Under the graph is a green list box. This is referred to as the *Access Device Explorer*. The device explorer is used to select the device(s) to graph and display. The user can right click on the location or individual devices, then select *Graph this Device* from the popup menu. This right-click option allows you to populate the data into the *Statistic Table* of the current meter data.

What Is the Statistic Table?

The *Statistic Table* is a chart that provides a real-time data view of each device in tabular representation – KW, Percentage Load, Peak, Peak Time, P. Val (Pulse Value), Max PPM (Pulse Per Minute), and Meter Name. The table acts as a legend for the graph, with each device color-coded under the plot column. These colors can be associated with the graph. To clear

the table, right-click on the grid area and select “Delete this plot” or “Delete All”. The following illustration shows a populated Statistic Table.

Plot	Meter	KW	% Load	Peak	Peak Time	P. Val	Max PPM	Meter Name
1-shown	G81L254-1B1	29.77	123.9	29.88	4/7/2004 10:11	1.95312	204.96001	81_254_1B1
2-shown	G81L254-1B2	0.12	0.5	0.12	4/7/2004 10:11	1.95312	204.96001	81_254_1B2
3-shown	G81L254-1B3	70.31	50.0	70.31	4/7/2004 10:11	3.90625	600	81_254_1B3

Fig. 219. Statistic Table

Columns	Description
KW	This column displays the instantaneous KW demand, which is updated every minute.
% Load	This column displays the percent of rated load of the particular meter. (i.e. a meter has an amperage rating of 200 amps. The % Load column shows 10 %. This means that 20 amps is the current draw.)
Peak	This column displays the maximum Kilo-watts for each meter since the graph started.
Peak Time	This column displays the date and time of the Peak kW within 15 minutes.
P. Val	This column displays the rated Pulse Value for the meter.
Max PPM	This column displays the rated Maximum Pulse Per Minute.
Meter Name	This column displays the Meter Name as specified in the database.

The data cannot be populated into the table until the Start Load Monitor button is selected. Once selected, the table will populate and the Load Factor Graph will begin to move and chart the KW load in minutes. A scroll-bar is provided to move left or right to review previous data or view actual recorded measurements.

What Is the Power Graph?

The *Power Graph* is a graph that provides information on power quality. The Power Graph displays different power measurements. The user can view each measurement by clicking on the radio button next to each power measurement (Phase Voltage, Phase-Phase Voltage, Amps, Freq. Hz, PH. Angles, PF%, KW, KVA and KVA).

Above the graph is a table grid that displays the real-time power phases (Phase A, B, and C) along with the Total for some of the measurements. The user has an option on which real-time power phases and totals to view by clicking on the corresponding check box. To run the Power Graph, a recorder (Class 3000 or MeterSmart 5000) device must be first selected from the *Just One* drop-down field under the *Hardware to Access* group. Once the device is selected, you can begin monitoring by clicking the Start Power Monitor button. The illustration below shows a Power Graph.

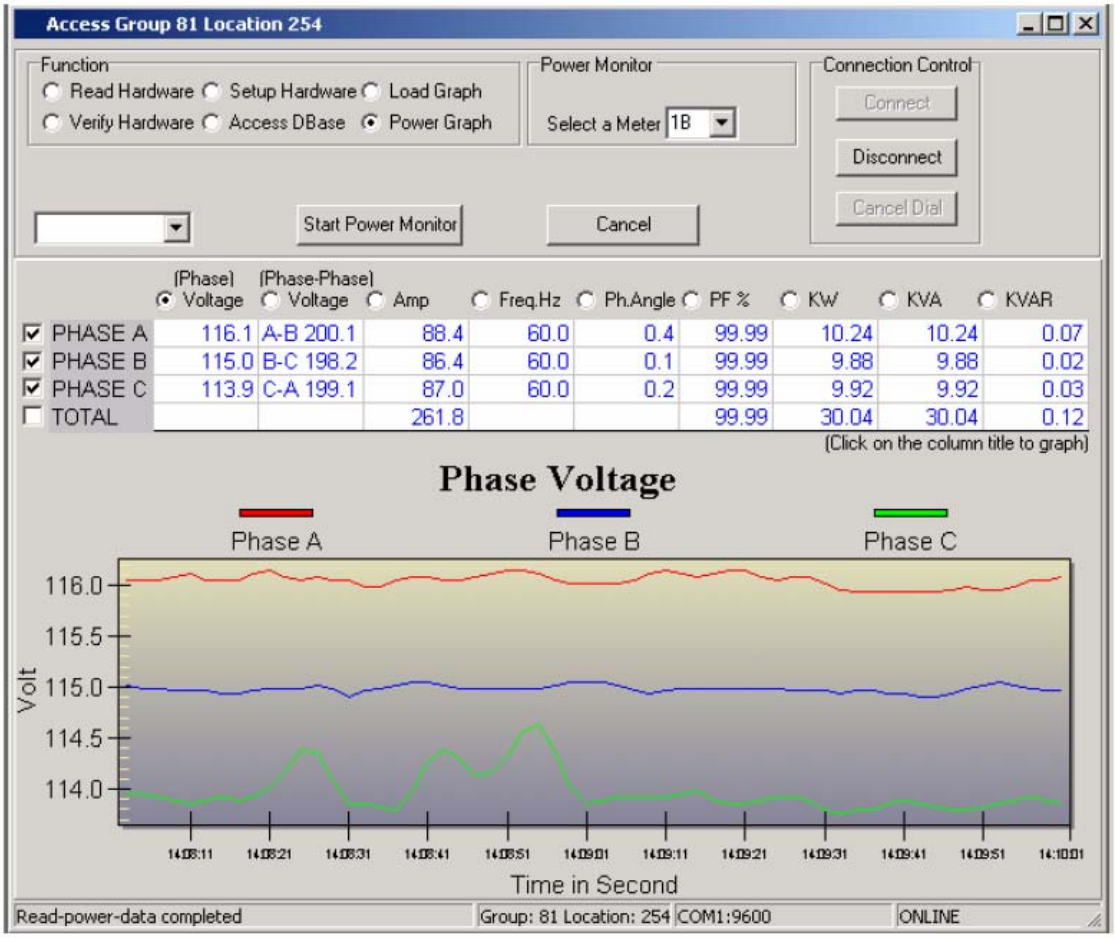


Fig. 220. Power Phase Voltage Graph

Can I Change the Graph Display View?

Yes, E-Mon Energy™ provides Graph Viewing Options to plot different styles. This feature is accessible from the main menu under *Graph*, then from the *Graph* drop-down menu select *Display Option.* There are several display options to choose – *Line*, *Stacked Bar*, *Stacked Area*, *Bar*, and *Area*. See the Demand Graph section for definitions of each radio buttons.

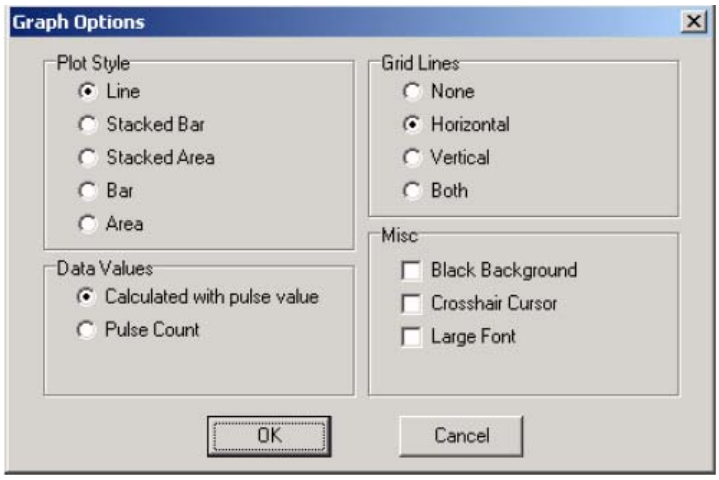


Fig. 221. Graph Options

How Do I Load the Real-Time Load Factor Graph?

To Load the Real-Time Load Factor Graph

1. From the E-Mon Energy™ menu, click and select Hardware\Set Location from the drop down menu. The *Select Location* dialog opens.

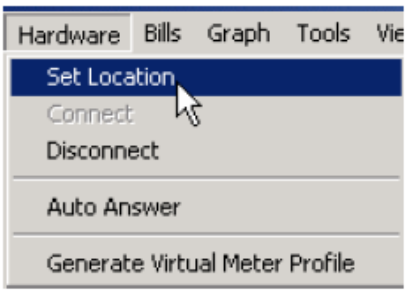


Fig. 222. Hardware\Set Location Menu

2. From the Group drop-down list, select a Group.

Fig. 223. Select Location

3. From the Location drop-down list, select Location you want to communicate with and scan.
4. Click on the Connect button. The Access Location window opens.
   Note: The Group and Location displays in the window's bar/status area.

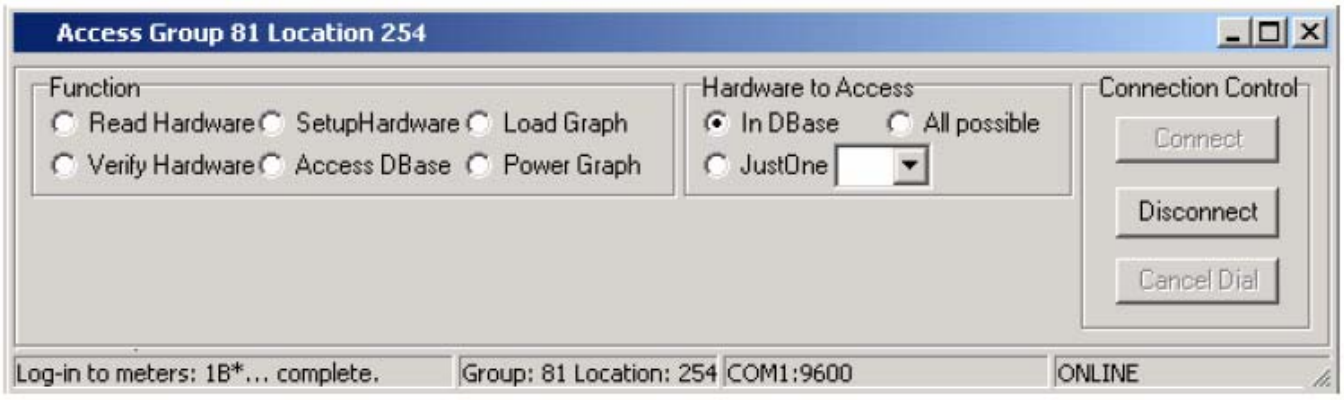


Fig. 224. Access Location Window

5. Click on the Load Graph radio button and the Load Factor graph will display.

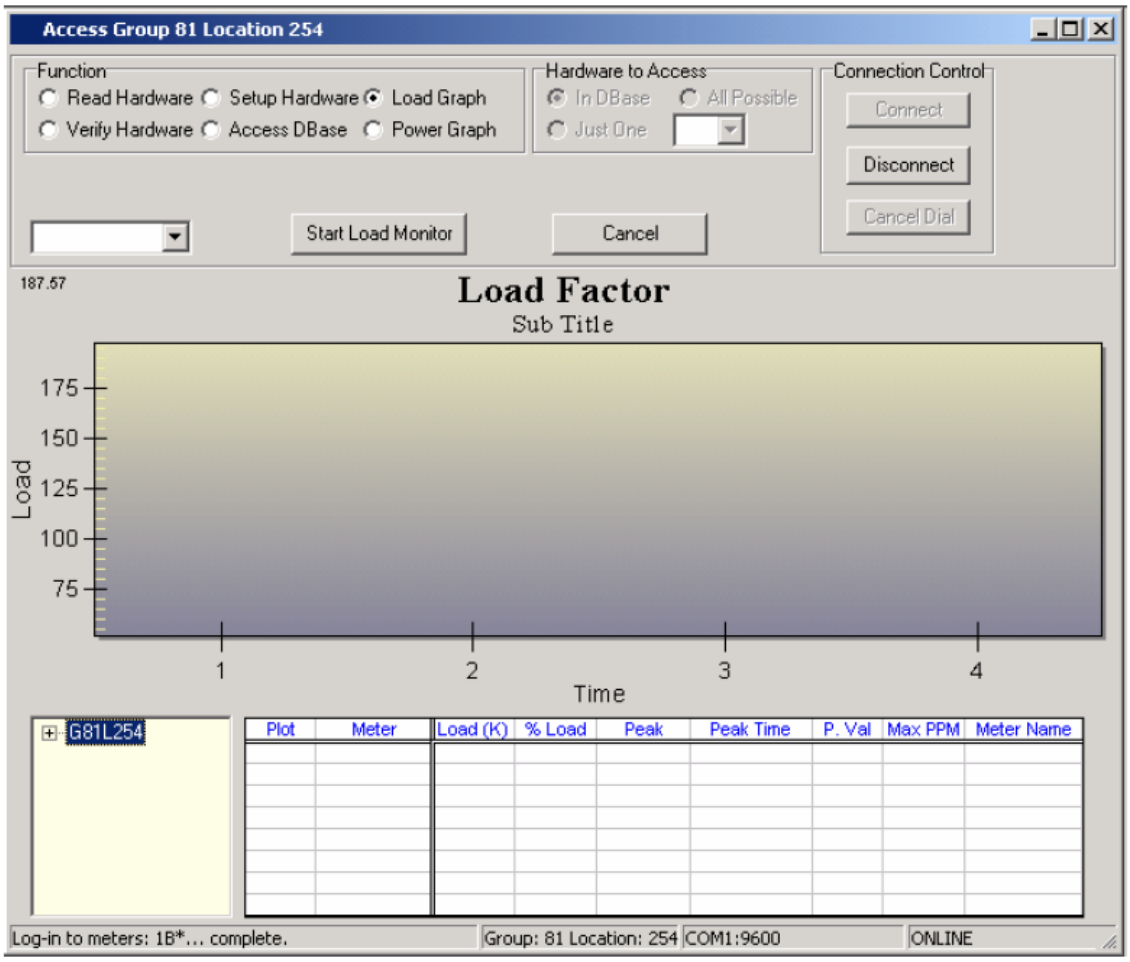


Fig. 225. E-Mon Energy™ Load Factor Graph – Real-Time

6. From the Device Explorer list box, drill down and right-click on the Recorder ID, then click on Graph this Device. The Statistic Graph will populate with the meter data.

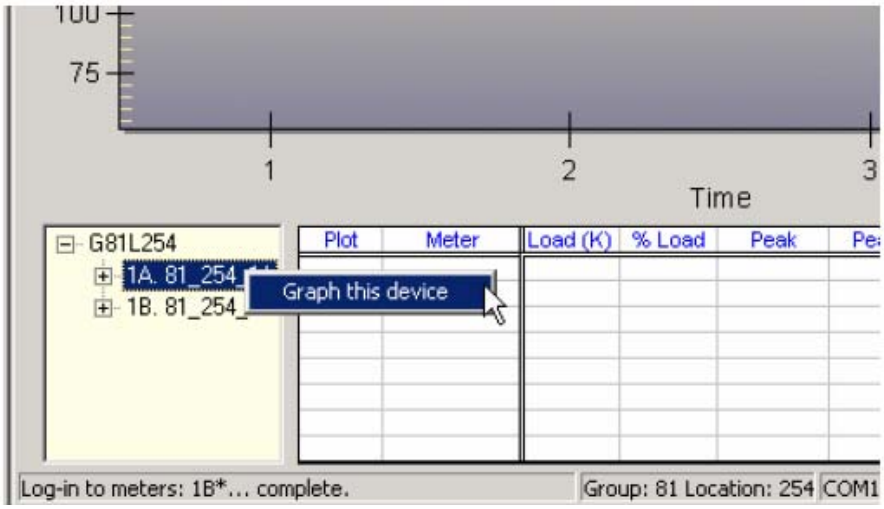


Fig. 226. Device Explorer - Get Device

7. Click Start Load Monitor. The Load Factor graph displays real-time load in minutes.

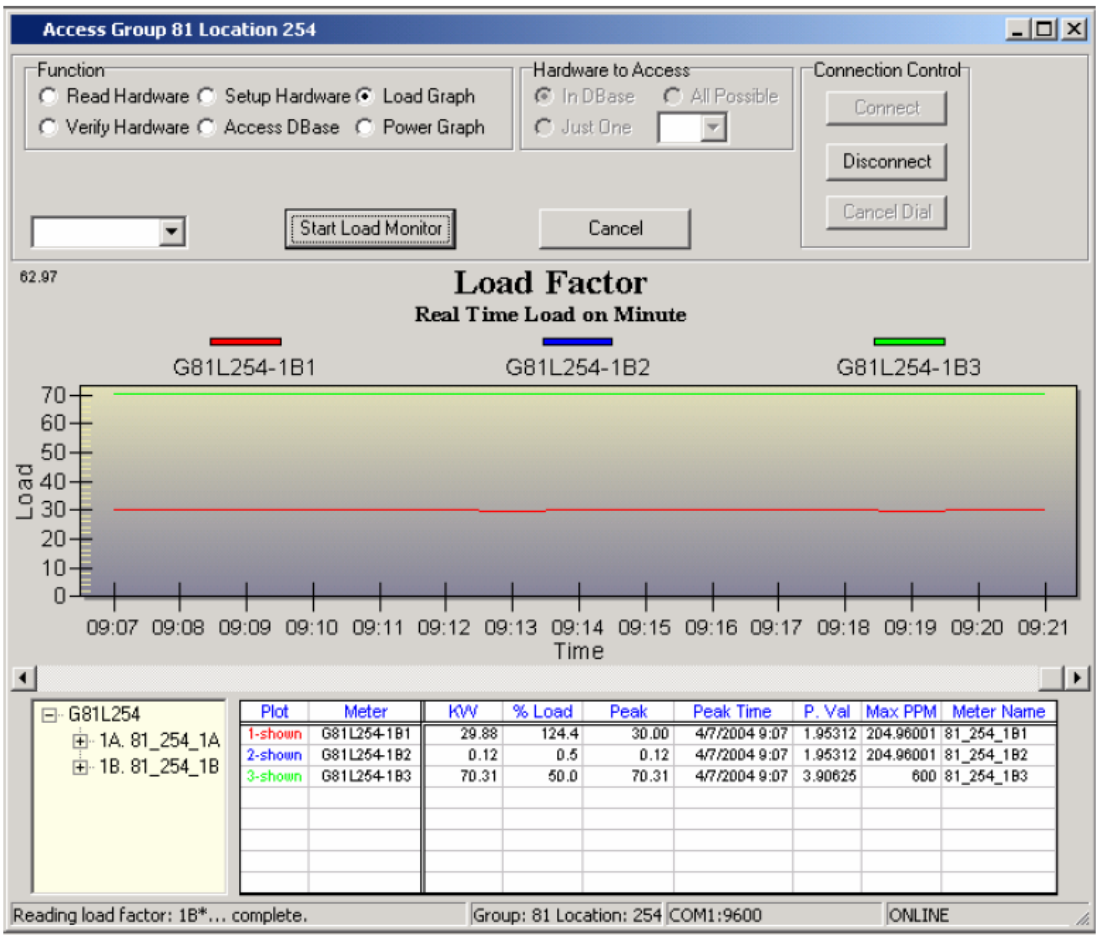


Fig. 227. Start Load Monitoring

To Load the Power Graph

1. Click on Power Graph. The graph below switches to a Phase Voltage graph.
2. Click Cancel to exit the graph.

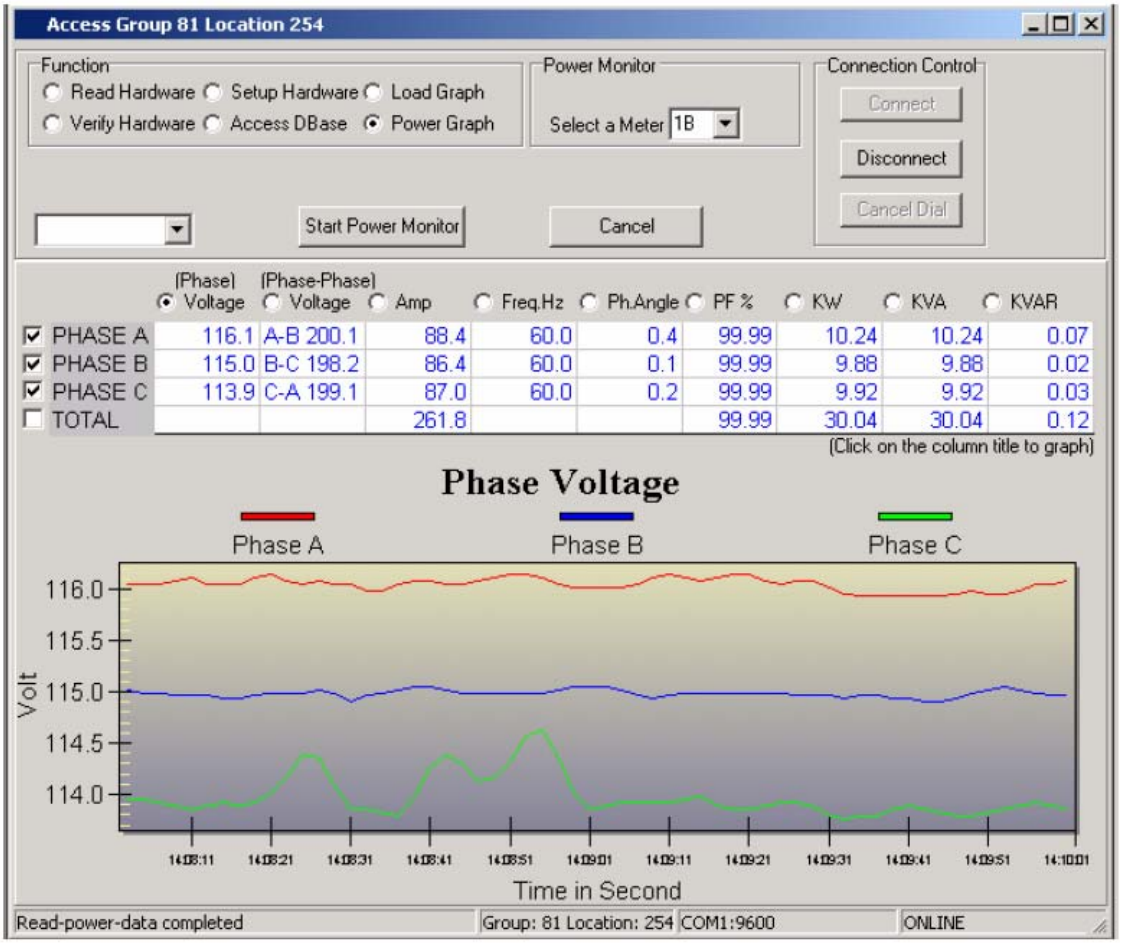


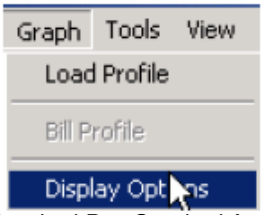
Fig. 228. E-Mon Energy™ Phase Voltage Graph – Real-Time

How Do I Use the Display Options?

How to Use the Display Options?

To use the Display options:

1. From the Graph drop-down list, select Display Options. The *Graph Options* dialog will open.



2. Select the Plot Style for the Graph (Line, Stacked Bar, Stacked Area, Bar, and Area).
   Note: The Line style is the default setting for the graph.

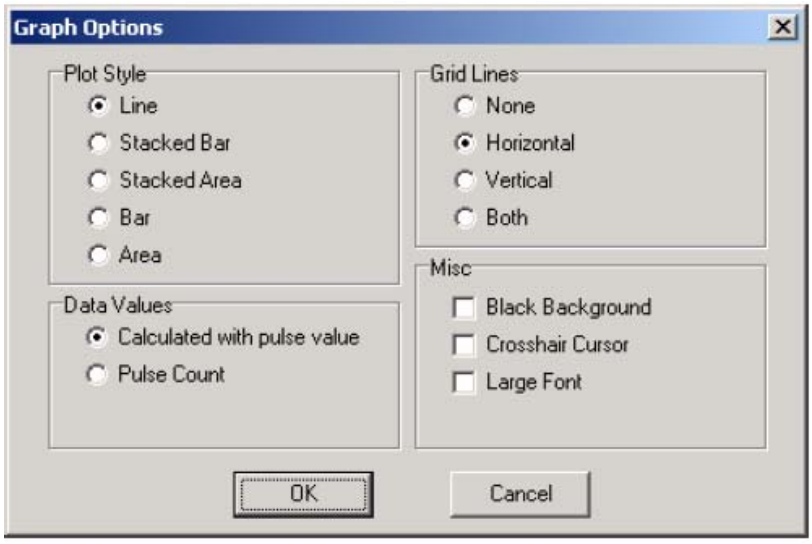


Fig. 229. E-Mon Energy™ Graph Viewing Options

3. Select the Data Values (Calculated with pulse value or Pulse Count).
   Note: Calculated with pulse value is the default.
4. Select the Grid Lines (None, Horizontal, Vertical, or Both).
   Note: This is an option.
5. Select Misc (Black Background, Crosshair Cursor, or Large Font).
   Note: The Black Background is used mainly for viewing purposes, the Crosshair Cursor is useful in locating specific spots on a graph, and the Large Font changes the font size on the profile screen.
6. Click OK, or click Cancel to exit the dialog.

SECTION 18: BILLING AND REPORTS

What Is the Billing Function?

The Billing function supports real-time consumption, flat rate billing, rate changes, tier rates, pre-defined tax rates and miscellaneous billing charges. The billing function in E-Mon Energy ™ allows you to customize your bill schedule by choosing from a variety of schedules and tiered billing cycle structures. There are two ways of setting up the billing process, but several options for generating bills. The two ways to set up the billing in E-Mon Energy are the *Automatic Bill Cycle* and the *Manual Bill Cycle*. With the *Automatic Bill Cycle,* a pre-set day/month and time are established for selective Groups and Locations, and run automatically. With the *Manual bill cycle*, you can generate a bill(s) by predefining a set of customers and meters that may require an individual billing statement.

Generating these bills requires attention to the profile data. The profile data must be present for the period that you are generating the bill. If the profile data is not present for this period, consumption will show zero usage and demand. In preparation you must create the Time-Of-Use (TOU) and Rate structure in the Database window. Also, it is required that you assign these setups to the Group, Location, Meter, or Virtual Meter.

What Is the Reporting Function?

The Reporting function provides several different types of report, *Recorder Report*, *Meter Report*, *AMR Calls Report*, *IDR Gap Report,* and *Consumption Report*. Accessing each of these reports and generating the results vary within the E-Mon Energy software.

The following is a brief description of the reports that you can generate.

Recorder or Meter Report – These reports are generated via the Access window on the status of the recorder and meters. The user can generate the Recorder or Meter reports by selecting File from the main menu, and then clicking on *save* or *print* Meter/Recorder report.

AMR Calls Report or IDR Gap Report – These reports are generated through the Database window on the Report Tab. Clicking on the Group in the Device Explorer generates the AMR Calls Report. The report spreadsheet will populate with the Profile Start and End\Date\Time, Last Call, Last Initialize, and Total Initialize. The IDR Gap Report is accessed the same way but populates the spreadsheet with the gaps of electricity consumption interval data. Results show the Oldest to the Newest Gap, Total and Last Convert. Both reports can be saved or printed by selecting File from the main menu and then clicking on Save or Print Selection.

Consumption Report – This report can be accessed from the *Bill/Generate Bill* drop-down menu that opens the *Get Consumption* dialog. From the dialog, the user can select the meter(s) and the billing period to generate the report. Although this spreadsheet cannot be printed or saved, it can be edited by selecting *Estimate Reading Entry.* You can generate a bill by clicking on the *Generate Bill* button. This report is mainly used for future reference, analysis, hardware failure, or hardware and software history.

NOTE: All reports can be opened in Formula One, in VTS spreadsheet format, and in MS Excel.

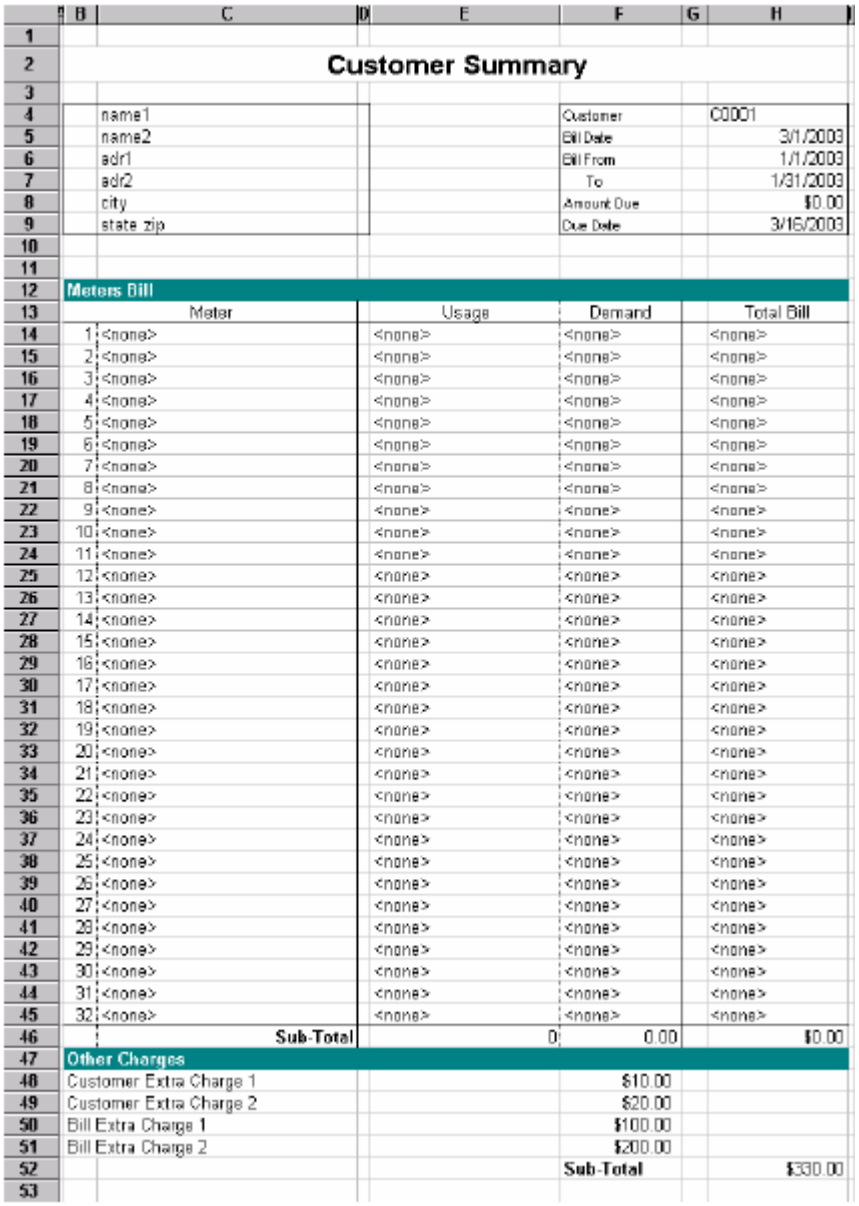
Where Do I Begin Creating a Bill Statement?

The bill process begins with a combination of several functions, rates, TOU schedule, billing template and billing cycle. These processes are all done from the Rates, Time-Of-Use (TOU) schedule, and Bill Cycle tabs on the *Database* window. As you know, setting up the customer or tenant billing statements requires a utility rate structure, time-of-use for the billing schedule, and template. For information on how to establish a rate structure and TOU schedule, see the TOU and Rate Section within this manual.

The bill templates (forms) are spreadsheets used in the E-Mon Energy™ software to generate bills and summary sheets. These templates are designed in Formula One 4.0 Workbook and can be edited to create an estimated bill to fit your billing profile. E-Mon provides several standard templates that can be used as is or can be customized to fit your customer's needs.

NOTE: Each billing template can have any filename, but it must have a VTS extension.

The illustrations that follow are template examples of the Customer Summary and Meter Billing Statement.



Customer Summary

name1		Customer	C0001
name2		Bill Date	3/1/2003
adr1		Bill From	1/1/2003
adr2		To	1/31/2003
city		Amount Due	$0.00
state zip		Due Date	3/16/2003

Meters Bill

	Meter	Usage	Demand	Total Bill
1	<none>	<none>	<none>	<none>
2	<none>	<none>	<none>	<none>
3	<none>	<none>	<none>	<none>
4	<none>	<none>	<none>	<none>
5	<none>	<none>	<none>	<none>
6	<none>	<none>	<none>	<none>
7	<none>	<none>	<none>	<none>
8	<none>	<none>	<none>	<none>
9	<none>	<none>	<none>	<none>
10	<none>	<none>	<none>	<none>
11	<none>	<none>	<none>	<none>
12	<none>	<none>	<none>	<none>
13	<none>	<none>	<none>	<none>
14	<none>	<none>	<none>	<none>
15	<none>	<none>	<none>	<none>
16	<none>	<none>	<none>	<none>
17	<none>	<none>	<none>	<none>
18	<none>	<none>	<none>	<none>
19	<none>	<none>	<none>	<none>
20	<none>	<none>	<none>	<none>
21	<none>	<none>	<none>	<none>
22	<none>	<none>	<none>	<none>
23	<none>	<none>	<none>	<none>
24	<none>	<none>	<none>	<none>
25	<none>	<none>	<none>	<none>
26	<none>	<none>	<none>	<none>
27	<none>	<none>	<none>	<none>
28	<none>	<none>	<none>	<none>
29	<none>	<none>	<none>	<none>
30	<none>	<none>	<none>	<none>
31	<none>	<none>	<none>	<none>
32	<none>	<none>	<none>	<none>
33	<none>	<none>	<none>	<none>
34	<none>	<none>	<none>	<none>
35	<none>	<none>	<none>	<none>
36	<none>	<none>	<none>	<none>
37	<none>	<none>	<none>	<none>
38	<none>	<none>	<none>	<none>
39	<none>	<none>	<none>	<none>
40	<none>	<none>	<none>	<none>
41	<none>	<none>	<none>	<none>
42	<none>	<none>	<none>	<none>
43	<none>	<none>	<none>	<none>
44	<none>	<none>	<none>	<none>
45	<none>	<none>	<none>	<none>
46	**Sub-Total**	0	0.00	$0.00

Other Charges

Customer Extra Charge 1	$10.00	
Customer Extra Charge 2	$20.00	
Bill Extra Charge 1	$100.00	
Bill Extra Charge 2	$200.00	
	Sub-Total	$330.00

Fig. 230. Customer Summary Template

Meter Billing Statement

Emon LP.
One Oxford Valley
Suite 418
Langhorne PA 19047

Meter:	1-1-1A1
Customer No:	C00001
Billing Date:	11/7/2003
Due Date:	11/22/2003
Amount:	$5,461.65

Energy Use

Time Period	Season1 Rate	Season2 Rate	Season3 Rate	Season4 Rate	Meter Display 07/01/03	Meter Display 08/01/03		Actual kWh	Rate	Charge
Period 1	0.000000	0.000000	0.000000	0.000000	100	110	est	10	0.100000	1.00
Period 2	0.000000	0.000000	0.000000	0.000000	200	210		10	0.200000	2.00
									Sub-Total	**$3.00**

Demand Charge

Time Period	Season1 Rate	Season2 Rate	Season3 Rate	Season4 Rate	Peak Time	Peak kW	Actual kW	Rate	Charge
Period 1	0.0000	0.0000	0.0000	0.0000	07/29/03 11:00	100.00	100.00	10.0000	1,000.00
Period 2	0.0000	0.0000	0.0000	0.0000	07/29/03 12:00	200.00	200.00	20.0000	4,000.00
Coincidental					07/29/03 12:00	88.00	88.00	1.5000	132.00
Distribution Demand							125.00		
								Sub-Total	**$5,132.00**

Peak-Demand Interval is 15-minute

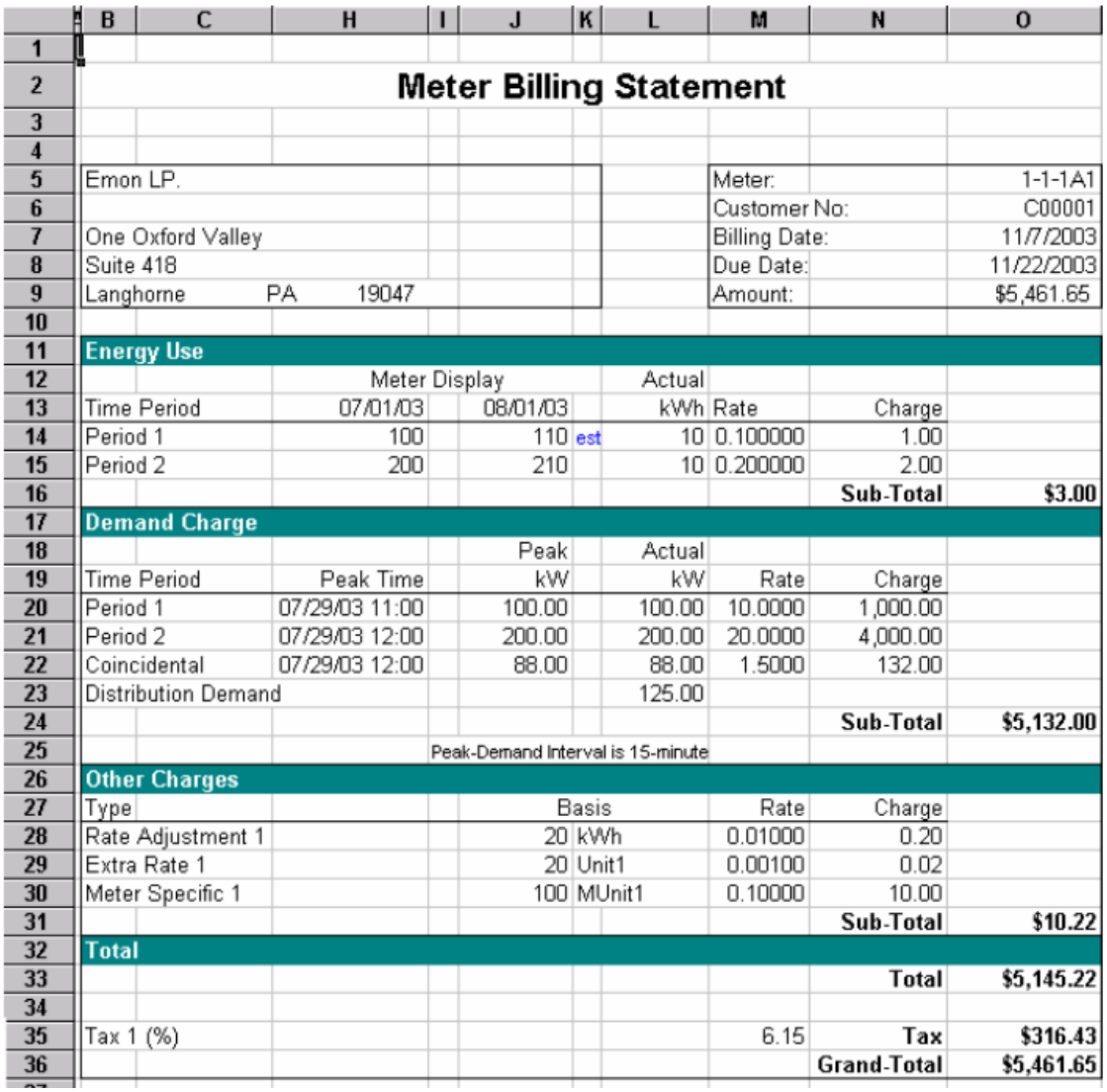
Other Charges

Type	Basis		Rate	Charge
Rate Adjustment 1	20	kWh	0.01000	0.20
Extra Rate 1	20	Unit1	0.00100	0.02
Meter Specific 1	100	MUnit1	0.10000	10.00
			Sub-Total	**$10.22**

Total

	Total	**$5,145.22**
Tax 1 (%) 6.15	**Tax**	**$316.43**
	Grand-Total	**$5,461.65**

Fig. 231. Meter Billing Statement Template 1



Meter Billing Statement

5	Emon LP.						Meter:		1-1-1A1	
6							Customer No:		C00001	
7	One Oxford Valley						Billing Date:		11/7/2003	
8	Suite 418						Due Date:		11/22/2003	
9	Langhorne	PA	19047				Amount:		$5,461.65	
10										
11	**Energy Use**									
12			Meter Display			Actual				
13	Time Period		07/01/03		08/01/03	kWh	Rate	Charge		
14	Period 1		100		110 est	10	0.100000	1.00		
15	Period 2		200		210	10	0.200000	2.00		
16								**Sub-Total**	**$3.00**	
17	**Demand Charge**									
18					Peak	Actual				
19	Time Period		Peak Time		kW	kW	Rate	Charge		
20	Period 1		07/29/03 11:00		100.00	100.00	10.0000	1,000.00		
21	Period 2		07/29/03 12:00		200.00	200.00	20.0000	4,000.00		
22	Coincidental		07/29/03 12:00		88.00	88.00	1.5000	132.00		
23	Distribution Demand					125.00				
24								**Sub-Total**	**$5,132.00**	
25					Peak-Demand Interval is 15-minute					
26	**Other Charges**									
27	Type					Basis		Rate	Charge	
28	Rate Adjustment 1					20	kWh	0.01000	0.20	
29	Extra Rate 1					20	Unit1	0.00100	0.02	
30	Meter Specific 1					100	MUnit1	0.10000	10.00	
31								**Sub-Total**	**$10.22**	
32	**Total**									
33								**Total**	**$5,145.22**	
34										
35	Tax 1 (%)						6.15	**Tax**	**$316.43**	
36								**Grand-Total**	**$5,461.65**	

Fig. 232. Meter Billing Statement Template 2

SUMMARY SHEET

<G/L/C/MG1L1>

Billing Date:		3/1/2003
Billing Period:	From	1/1/2003
	To	1/31/2003
Due Date		3/16/2003
Total Due:		$0.00

Customer ID	Customer Name	Meters	Usage	Demand	Bill Total
Billed Devices	Billed Devices	0	0	0.00	$0.00

Fig. 233. Summary Sheet Template

How Do Bill Templates (or Forms) Work?

The billing template consist of four areas – the *Meter Bill*, *Customer Summary*, *Summary Sheet*, and *Data Table* which are shown in the table below. When bills are generated, E-Mon Energy™ creates one row of the Data Table for each meter.

NOTE: The User cannot directly view the Data Table.

METER BILL	CUSTOMER SUMMARY	SUMMARY SHEET	DATA TABLE (USER CAN NOT VIEW)
<a billing statement>	<summary title>	<summary title>	<Rowcurr, etc>
			<name (in text form>
<sample data>	<sample data>	<sample data>	<sample data + names>
	<meter 1 summary>	<Customer 1 summary>	<meter 1 values>
	<meter 2 summary>	< Customer 2 summary>	<meter 2 values>
	<meter 3 summary>	< Customer 3 summary>	<meter 3 values>

The Data Tables use this data to create the other three tables the *Meter Bill, Customer Summary, and Summary Sheet.*

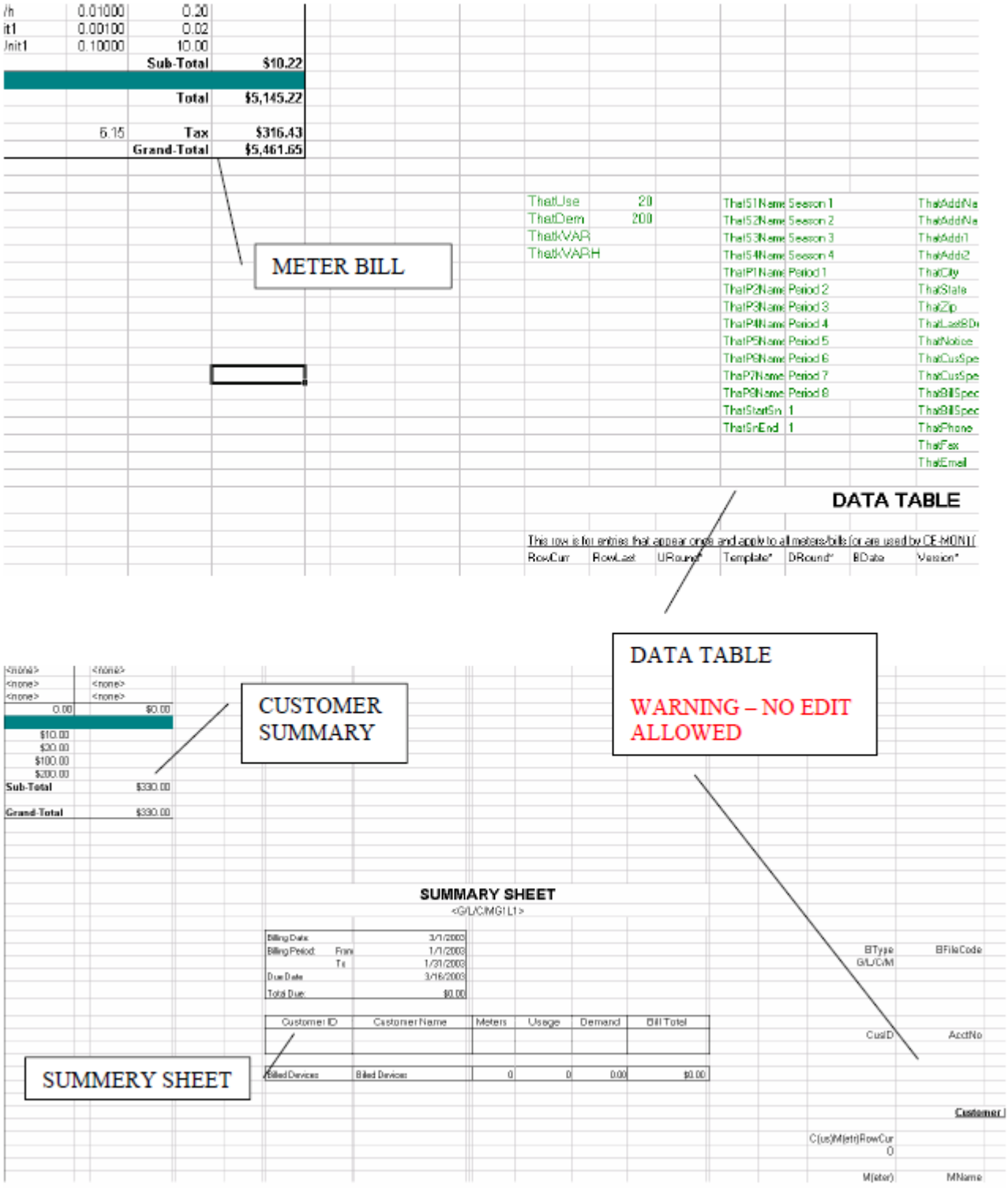


Fig. 234. Billing Template Example

All billing templates contain "*Defined Names*" to name cells so that both the billing form itself and the E-Mon Energy™ application can access those cells regardless of site-specific customization. Although some are used by E-Mon Energy to read data from the form, most are used by E-Mon Energy to write data to the template (form) when bills are generated (such as Name1 and Meter). The illustration below displays the "*Define Name*".

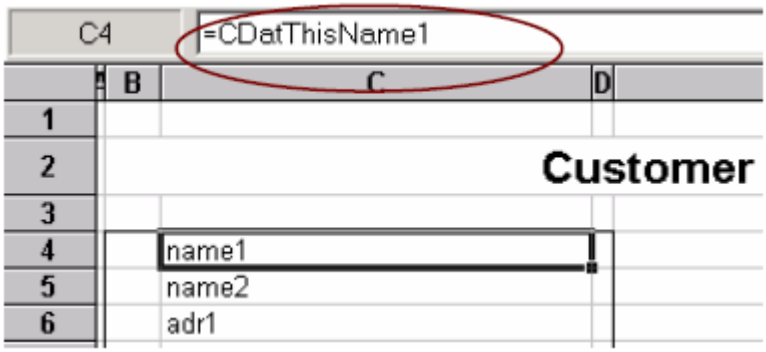


Fig. 235. Billing Template - Define Name

The defined name, “RowCurr,” is an index into the Data Table and defines the ‘Current Meter’ (the one currently displayed in the bill.) This is triggered by E-Mon Energy™ when the user selects First Bill, Next Bill, Previous Bill or Last Bill through the E-Mon Energy software. The defined name ‘Row Last’ defines the last index in the Data Table. This is set when E-Mon Energy generates a bill.

Row “0” of the data table (which is usually hidden) is not used to define a bill. It contains sample data, the defined names for the Data Table, and the formats for the Summary Sheet and Edit Table. In Table 1, Name, is shown under Data Table <sample data>.

To make customizing the Templates easier, the standard bill templates distributed by E-Mon have:

- Defined Name (in the Text Form) that are actually the names in the Data Table
- Sample Data in row “0” is ignored during billing

To begin customizing a Bill template (form), see Procedure on *How to Customize a Bill Template (form)* within this section.

Where Do I Set Up An Automatic/Manual Billing Cycle?

Setting up the Automatic or Manual Billing Cycle is done from the Bill Cycle tab on the Database Access window. The Bill Cycle window allows you to customize a bill cycle based on how often you want to run a billing schedule and tasks. The Automatic Billing Schedule allows you to create a bill cycle on a weekly bases or monthly bases. The following illustration and table describes the billing tab fields.

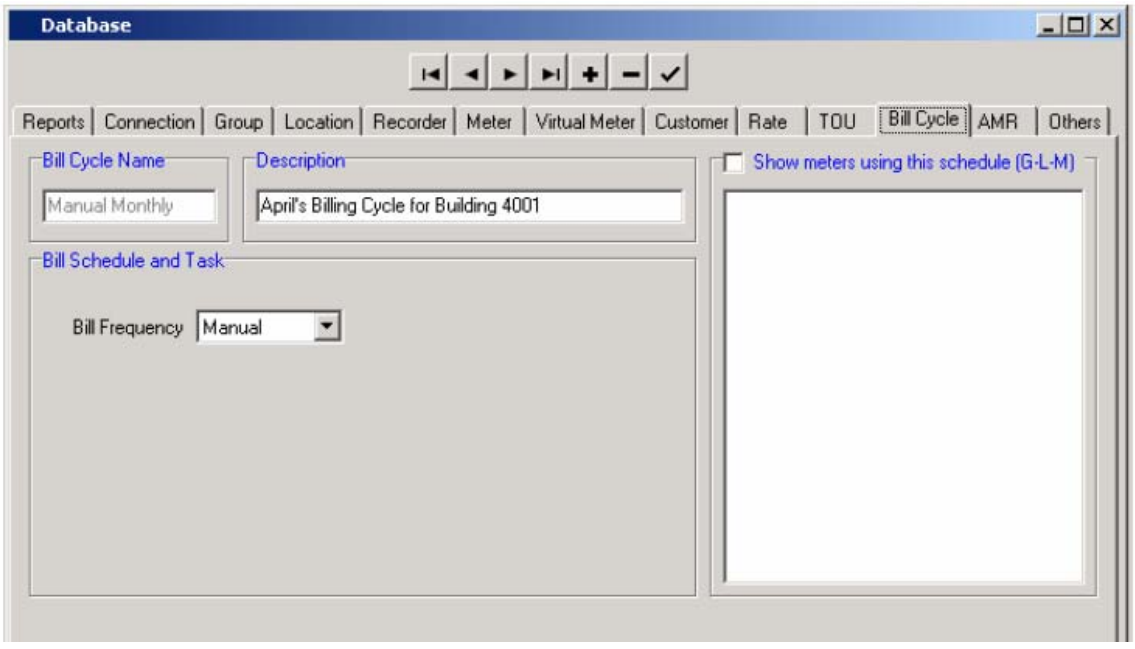


Fig. 236. Bill Cycle Tab

Panel Group/Field	Description
Bill Cycle Name*	Type in a unique name for your Bill Cycle. This is a require field.
Description	Type in a brief Description for your Bill Cycle.
Bill Schedule and Task	Panel Group
Bill Frequency	From this drop-down you can choose three options, Manual, Monthly, and Weekly, depending how often you want to run you billing schedule.
Show meters using this schedule (G-L-M)	Click this check box to display the meter(s) using this Bill Cycle.

* = Required field.

Where Do I Begin to Generate a Report?

In order to generate, save or print a report, you must be in direct communication with the hardware, either remotely, through a modem or a direct connection. On the Device Explorer, you must select a group and location to read the hardware, then select “Get Location” and “Connect.” Once communication is established, there are several reports that you can generate. The first two are the Recorder and Meter reports that are accessible once the Access window to the Function groups is available and scanning, verifying, or the profile status of the hardware is selected. To get into the save or print report feature, click on the File drop-down menu and select Save Recorder Report or Save

Meter Report (also Print Meter\Recorder Report). The save feature allows you to save the file as a Formula One VTS spreadsheet and open it in MS Excel. The following is a brief description of the two reports.

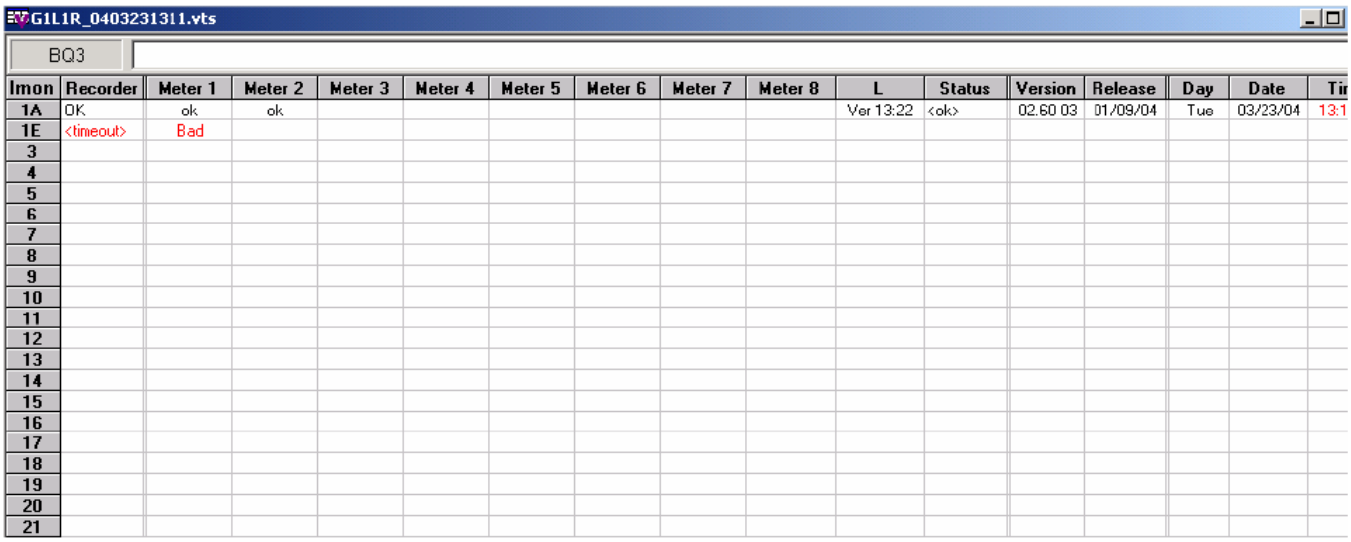
- Recorder Report – Saves the results on the status of the recorder and meters and, provides version/date, time, flags, and profile status.
- Meter Report - Saves the results on the status of the meters, readings, and flags.

The other two reports reside on the Database Access window under the Report Tab. These two reports are the

Automatic Meter Reading (AMR) Calls Report and the *Interval Data Recorder (IDR) Gap* Report. These reports are saved and printed the same way as the Reports and Meters reports, except that the spread is displayed on the panel window after processing. The following is a brief description of the two reports.

- *AMR Calls Report* – Saves the results on selected groups, locations, and the recorders for Profile Start and End Date\Time, Last Call, Last Initialize, and Total Initialize.
- *IDR Gap Report* – Saves the results on selected locations and recorders, which record the gaps of electricity consumption interval data. Results show the Oldest to the Newest Gap, Total, and Last Convert. Depending on the size of the system and the type of report, the program may take several minutes to complete the report.

Here are examples of all four reports:



Imon	Recorder	Meter 1	Meter 2	Meter 3	Meter 4	Meter 5	Meter 6	Meter 7	Meter 8	L	Status	Version	Release	Day	Date	Ti
1A	OK	ok	ok							Ver 13:22	<ok>	02.60 03	01/09/04	Tue	03/23/04	13:1
1E	<timeout>	Bad														
3																
4																
5																
6																
7																
8																
9																
10																
11																
12																
13																
14																
15																
16																
17																
18																
19																
20																
21																

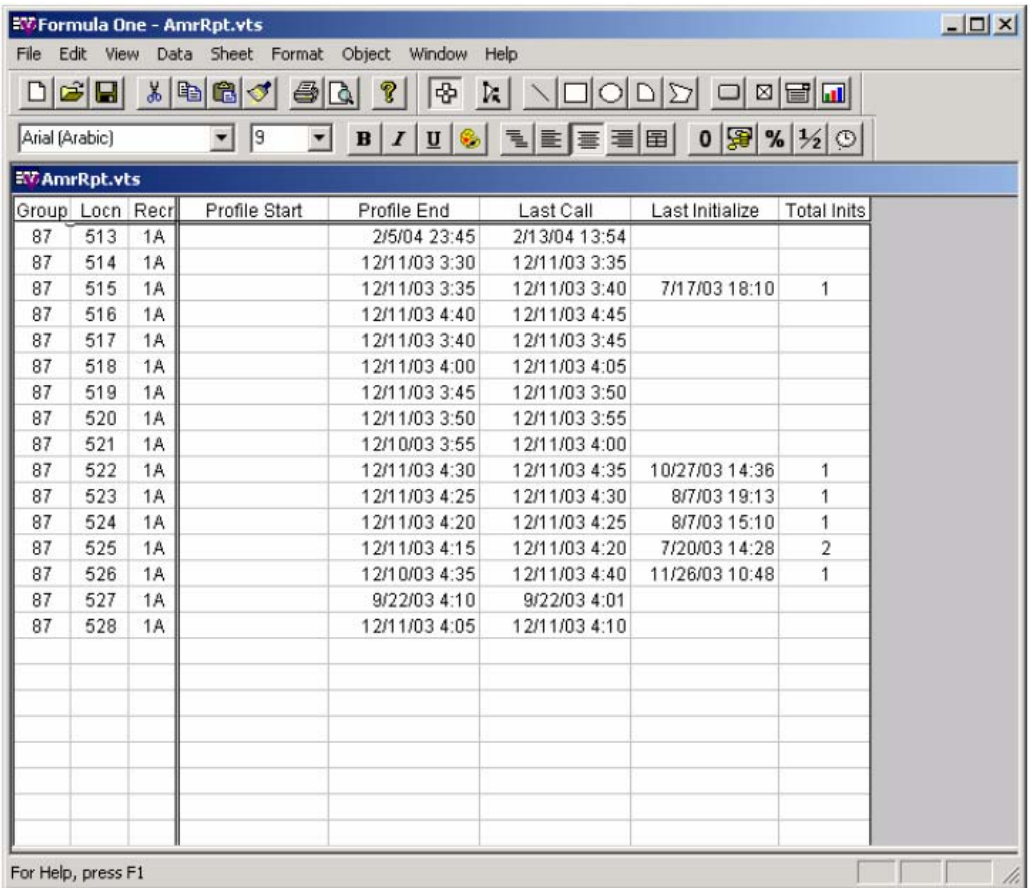
Fig. 237. Recorder Report

NOTE: In the Recorder Report illustration above Meter 1 is “bad” this is a Flag.

G97L3M_0401191555.vts

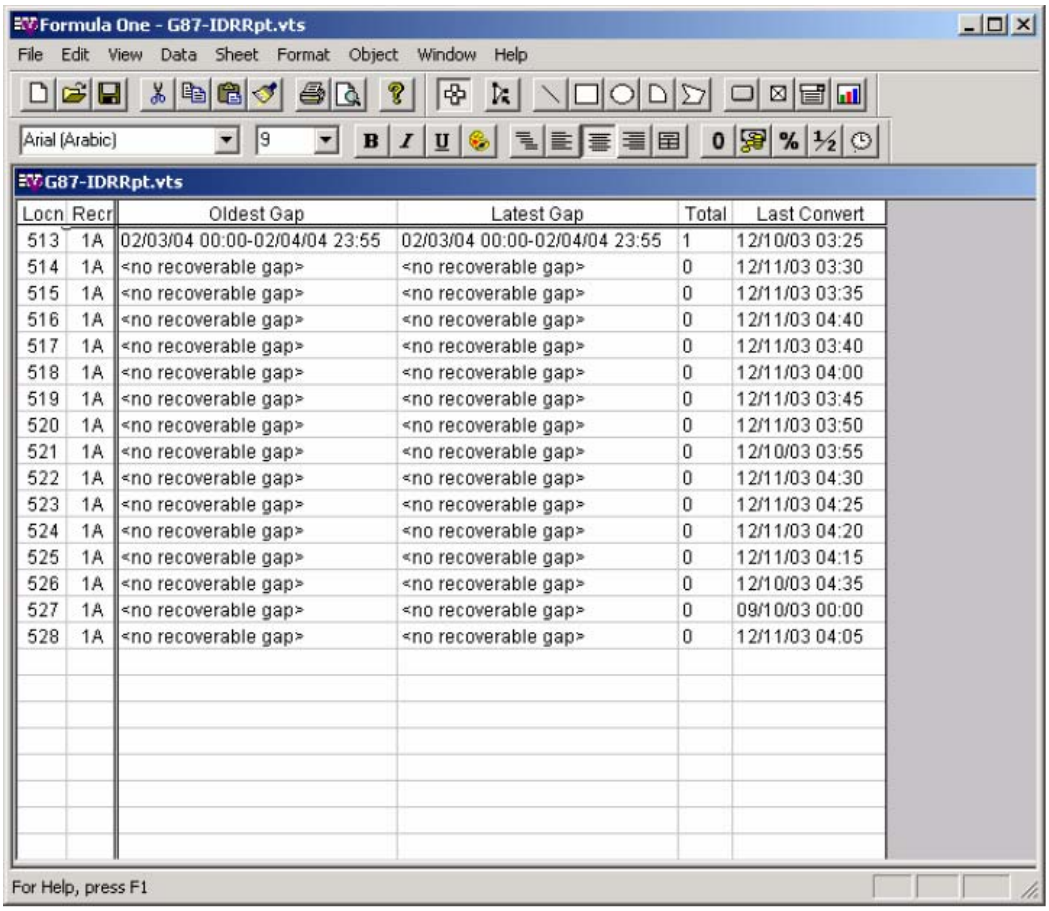
Metr	Status	Usage	Dem	Use	Dem	Use	Dem	Use	Dem	Use	Dem	U
		Totals for all Periods		Period 1		Period 2		Period 3		Period 4		
1A-1	ok	0.47	0.38	0.41	0.38	0.00	0.00	0.06	0.38	0.00	0.00	
-2	ok	2,860,058.75	936.00	1,681,938.75	936.00	309,636.75	840.00	868,483.25	759.00	0.00	0.00	
-3	ok	2,919,359.75	975.00	1,719,663.00	780.00	301,665.00	642.00	898,031.75	975.00	0.00	0.00	
-4	ok	5,920,921.00	1,104.00	3,301,974.00	1,104.00	588,711.00	1,020.00	2,030,236.00	984.00	0.00	0.00	
-5	ok	8,552,612.00	1,524.00	4,582,037.00	1,524.00	825,708.50	1,404.00	3,144,866.50	1,356.00	0.00	0.00	
-6	ok	6,316,844.50	1,500.00	3,353,747.00	1,494.00	559,428.00	1,302.00	2,403,669.50	1,500.00	0.00	0.00	
-7	ok	131,896.19	40.88	67,509.53	25.88	11,930.66	22.88	52,456.00	40.88	0.00	0.00	
-8	ok	178,166.34	39.75	112,990.84	39.75	20,087.41	27.75	45,088.09	27.00	0.00	0.00	
1B-1	ok	1.00	0.38	0.84	0.38	0.06	0.38	0.09	0.38	0.00	0.00	
-2	ok	235,179.06	54.00	163,436.16	54.00	28,372.16	49.50	43,370.75	53.25	0.00	0.00	
-3	ok	101,637.25	31.13	70,640.09	31.13	12,294.53	19.13	18,702.63	21.75	0.00	0.00	
-4	ok	28,241.47	15.75	15,319.66	15.75	4,929.16	14.25	7,992.66	13.88	0.00	0.00	
-5	ok	541,502.13	98.25	282,249.69	98.25	53,348.06	74.25	205,904.38	73.50	0.00	0.00	
-6	ok	581,794.28	108.38	354,954.28	108.38	62,246.00	106.88	164,594.00	96.38	0.00	0.00	
-7	ok	90,840.03	45.00	60,605.13	44.63	7,622.22	42.00	22,612.69	45.00	0.00	0.00	
-8	ok	0.41	2.25	0.38	2.25	0.00	0.00	0.03	0.38	0.00	0.00	
1C-1	ok	77,038.59	53.63	37,411.78	53.63	4,023.41	50.63	35,603.41	50.63	0.00	0.00	
-2	ok	228,849.53	51.75	116,650.72	51.75	22,932.53	50.63	89,266.28	50.63	0.00	0.00	
-3	ok	1,032,847.94	201.00	406,004.94	198.75	68,425.69	199.50	558,417.31	201.00	0.00	0.00	
-4	ok	996,351.25	133.50	542,376.13	133.50	96,458.88	130.50	357,516.25	129.75	0.00	0.00	
-5	ok	170,473.00	188.25	77,500.13	188.25	10,067.81	187.50	82,905.06	182.25	0.00	0.00	
-6	ok	1,446,485.00	639.00	940,443.50	540.00	173,319.75	543.00	332,721.75	639.00	0.00	0.00	
-7	ok	204,399.25	123.00	138,662.13	123.00	28,949.06	118.50	36,788.06	123.00	0.00	0.00	

Fig. 238. Meter Report



Group	Locn	Recr	Profile Start	Profile End	Last Call	Last Initialize	Total Inits
87	513	1A		2/5/04 23:45	2/13/04 13:54		
87	514	1A		12/11/03 3:30	12/11/03 3:35		
87	515	1A		12/11/03 3:35	12/11/03 3:40	7/17/03 18:10	1
87	516	1A		12/11/03 4:40	12/11/03 4:45		
87	517	1A		12/11/03 3:40	12/11/03 3:45		
87	518	1A		12/11/03 4:00	12/11/03 4:05		
87	519	1A		12/11/03 3:45	12/11/03 3:50		
87	520	1A		12/11/03 3:50	12/11/03 3:55		
87	521	1A		12/10/03 3:55	12/11/03 4:00		
87	522	1A		12/11/03 4:30	12/11/03 4:35	10/27/03 14:36	1
87	523	1A		12/11/03 4:25	12/11/03 4:30	8/7/03 19:13	1
87	524	1A		12/11/03 4:20	12/11/03 4:25	8/7/03 15:10	1
87	525	1A		12/11/03 4:15	12/11/03 4:20	7/20/03 14:28	2
87	526	1A		12/10/03 4:35	12/11/03 4:40	11/26/03 10:48	1
87	527	1A		9/22/03 4:10	9/22/03 4:01		
87	528	1A		12/11/03 4:05	12/11/03 4:10		

Fig. 239. AMR Calls Report



Locn	Recr	Oldest Gap	Latest Gap	Total	Last Convert
513	1A	02/03/04 00:00-02/04/04 23:55	02/03/04 00:00-02/04/04 23:55	1	12/10/03 03:25
514	1A	<no recoverable gap>	<no recoverable gap>	0	12/11/03 03:30
515	1A	<no recoverable gap>	<no recoverable gap>	0	12/11/03 03:35
516	1A	<no recoverable gap>	<no recoverable gap>	0	12/11/03 04:40
517	1A	<no recoverable gap>	<no recoverable gap>	0	12/11/03 03:40
518	1A	<no recoverable gap>	<no recoverable gap>	0	12/11/03 04:00
519	1A	<no recoverable gap>	<no recoverable gap>	0	12/11/03 03:45
520	1A	<no recoverable gap>	<no recoverable gap>	0	12/11/03 03:50
521	1A	<no recoverable gap>	<no recoverable gap>	0	12/10/03 03:55
522	1A	<no recoverable gap>	<no recoverable gap>	0	12/11/03 04:30
523	1A	<no recoverable gap>	<no recoverable gap>	0	12/11/03 04:25
524	1A	<no recoverable gap>	<no recoverable gap>	0	12/11/03 04:20
525	1A	<no recoverable gap>	<no recoverable gap>	0	12/11/03 04:15
526	1A	<no recoverable gap>	<no recoverable gap>	0	12/10/03 04:35
527	1A	<no recoverable gap>	<no recoverable gap>	0	09/10/03 00:00
528	1A	<no recoverable gap>	<no recoverable gap>	0	12/11/03 04:05

Fig. 240. IDR GAP Report

How Do I Set Up the Automatic Bill Cycle?

Setting up the Automatic Bill Cycle

To setup the Automatic Bill Cycle:

1. Select Database\Bill Cycle from the drop-down menu or click on the Bill Cycle tab in the Database Access window.

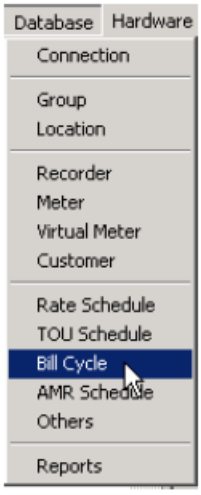


Fig. 241. Database\Bill Cycle Menu

2. Click on the Panel Action "+" button, to create a new Bill Cycle.

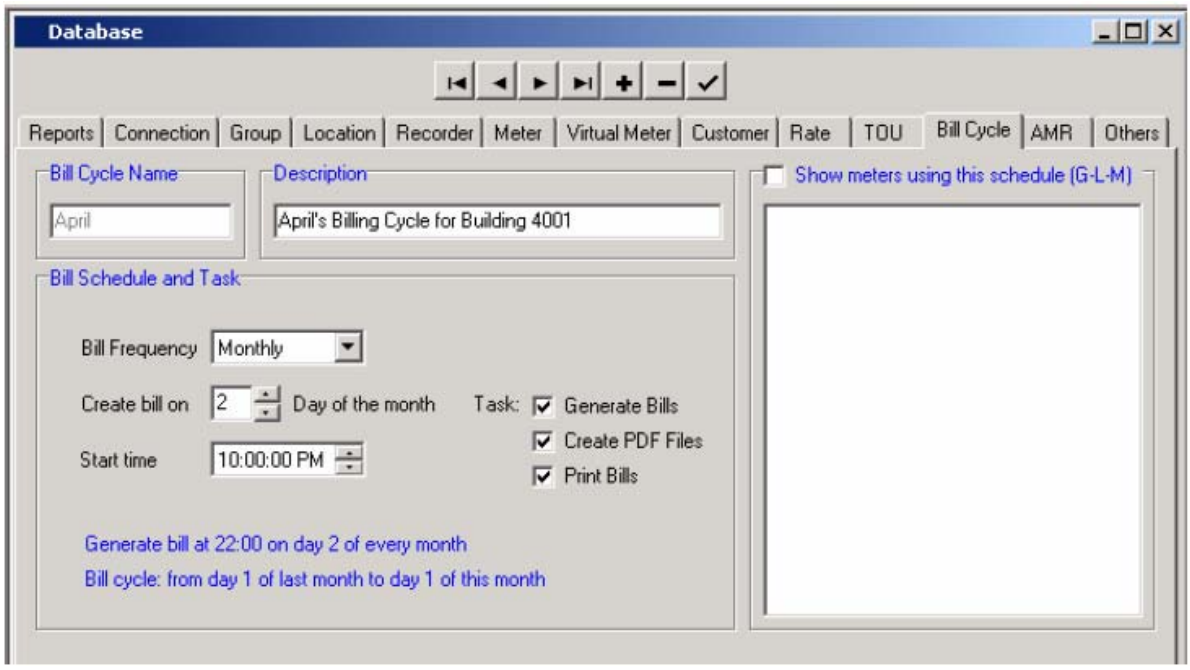


Fig. 242. Bill Cycle Tab

3. Type in a Bill Cycle Name.
   Note: This field is required and must be unique.
4. Tab across and enter a Description for the Bill Cycle.

Bill Cycle Definition

5. From the Bill Schedule and Task group, select the Bill Frequency from the drop-down list (Manual, Monthly or Weekly).
6. Click on the up and down arrows to adjust the (Day of the Month to Create the bill on.)
7. Click on the up and down arrows to adjust the Start Time to begin generating the bill.
8. Click on the Task for the Bill Cycle (Generate Bills, Create PDF Files and, Print Bills.)
9. Click on the check button to accept/save the Bill Cycle record.

Auto Bill Cycle Setup

10. Utilize the Bill Cycle for a Group or Location by selecting the Group or Location tab under the Auto Billing Cycle group box, then select the name of the bill cycle from the drop-down list.
    Note: This enables E-Mon Energy™ to automatically generate billing statements.

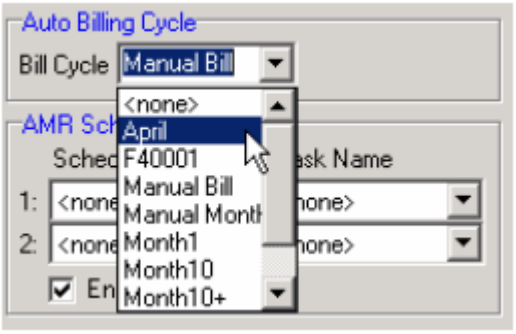


Fig. 243. Auto Bill Cycle Setting

11. Click on the check button to accept/save the record.

Meters using the Bill Cycle

12. Click on the Bill Cycle tab, then check on Show meters using this schedule. A processing message displays while querying the database for the group/location of the meters and refreshes the list box.

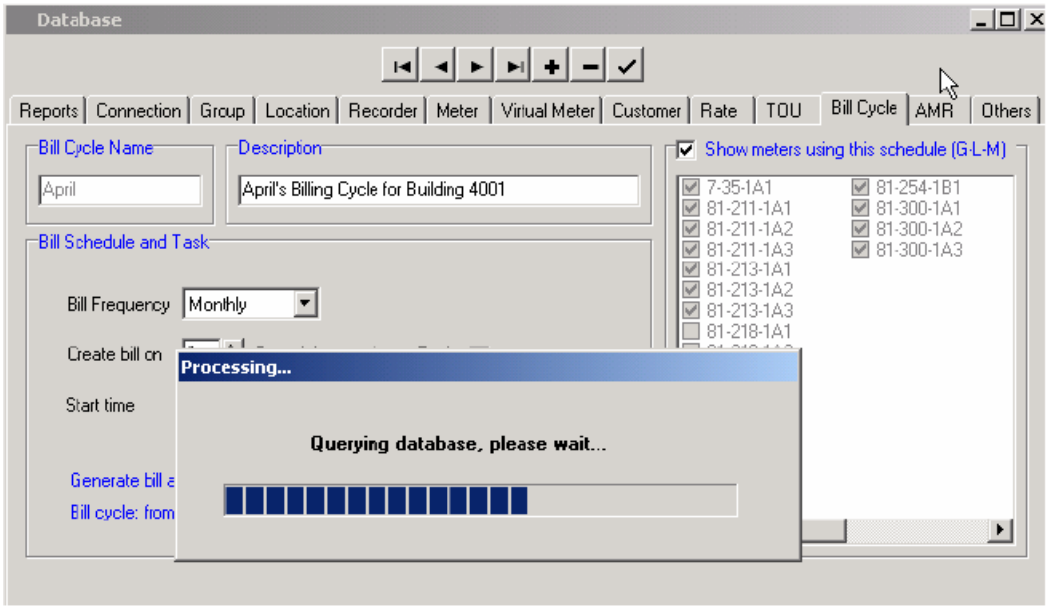


Fig. 244. Query Database for Meters

Auto Bill Cycle Scheduler

13. From the *E-Mon Energy* menu, select View/Bill Cycle Scheduled Task.

14. Ensure that the checkbox is checked for the Enable Auto Bill Cycle and click on the Refresh List button. The list will refresh with the new Bill Cycle added. *Note: By default* the Auto Bill Cycle window is always running in a minimized mode. If you wish to temporarily disable the Auto Bill generation, uncheck the Enable Auto Bill Cycle.

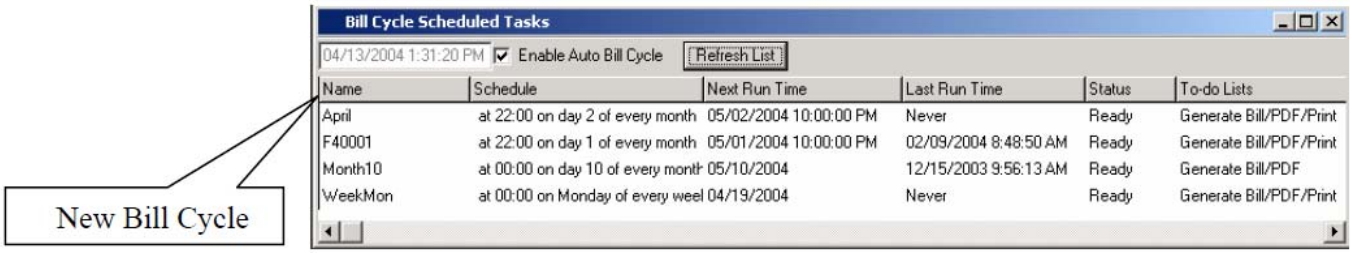


Fig. 245. Auto Bill Cycle List

How Do I Set Up a Billing Schedule /Template?

Setting Up a Billing Schedule/Template

To set up the Billing Schedule/Template:

1. Select Database\Meter from the drop-down menu or click on the Meter tab in the Database Access window.

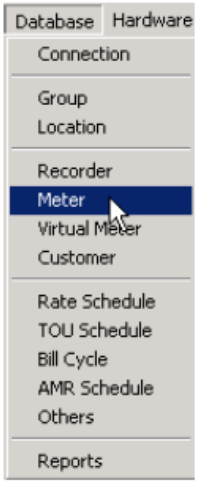


Fig. 246. Database\Meter Menu

2. From the Device Explorer, drill-down and click on a meter.
3. In the Bill Schedules/Templates group box, click on Enable for Billing.
4. From the TOU Schedule drop-down list, select a schedule.
5. From the Rate Schedule drop-down list, select a rate schedule.
6. In the Auto Billing Cycle group box, select a Bill Cycle from the drop-down list.
7. Click on the check button to accept/save the Bill Cycle record.

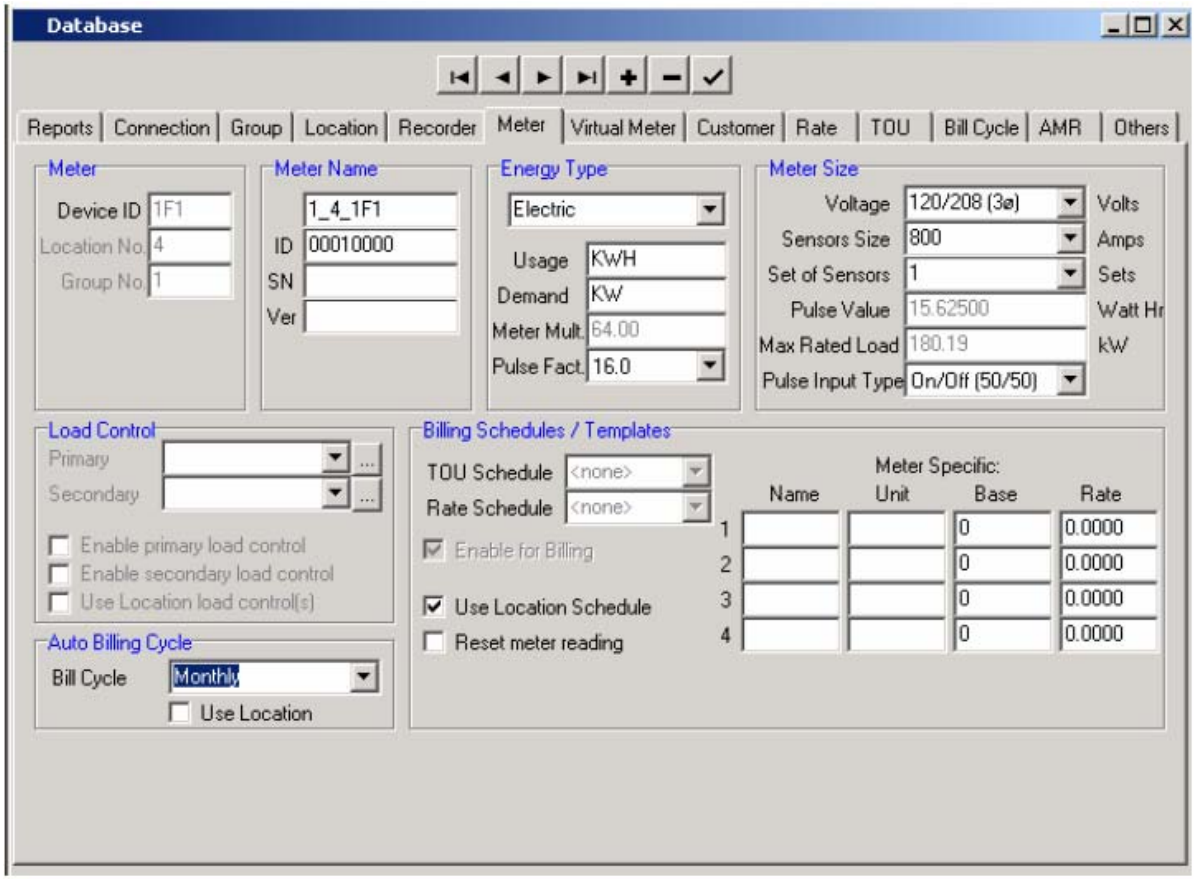


Fig. 247. Assigning Bill Cycle

Generating Meter Readings/Bills

To generate a Meter Reading/Bills:

1. From the E-Mon Energy™ menu, select Bills\Generate Bills. The Get Consumption for Billing dialog opens.

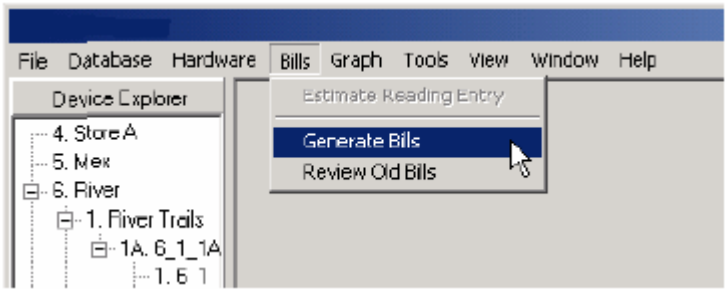


Fig. 248. Generate Bills

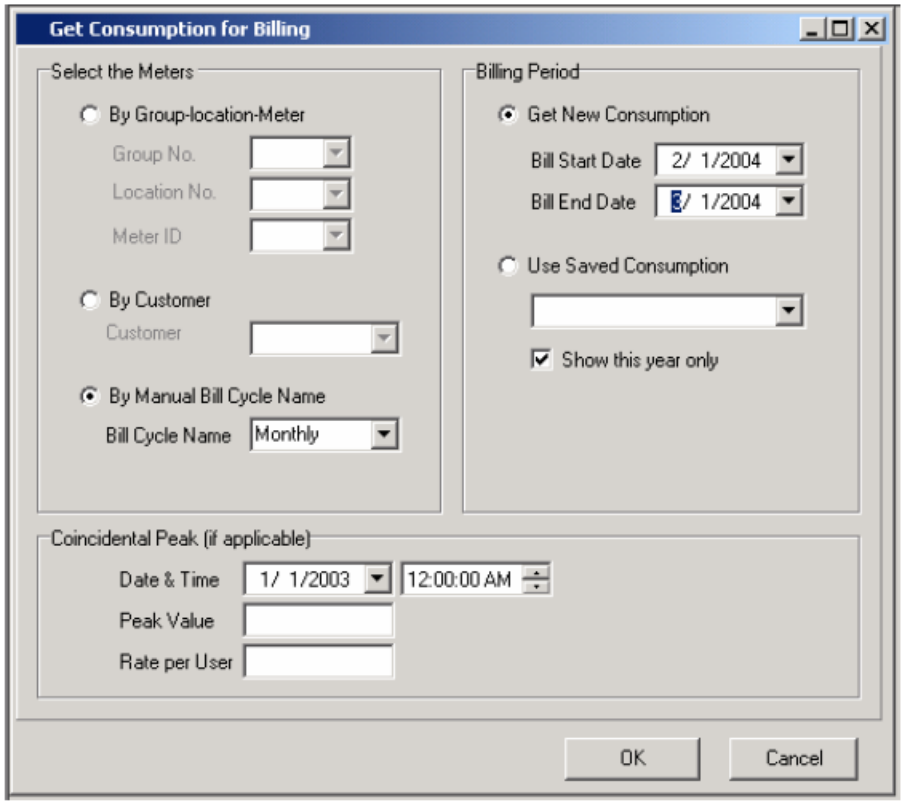


Fig. 249. Get Consumption for Billing Dialog

There are options for generating bills:

- By Group, Location, and Meter – select a particular group, location, or meter.
- By Customer – select a customer, which can have multiple bills to generate.
- By Manual Bill Cycle Name – select a predefined set of customers/meters to generate.

In this manual, we will use By Manual Bill Cycle Name.

2. From the Select the Meters group box, click on By Manual Bill Cycle Name and select a Bill Cycle Name from the drop-down list.
3. From the Bill Period group box, click on Get New Consumption.
4. Click on the drop-down arrow next to the Bill Start Date field and select the month, day, and year.
5. Click on the drop-down arrow next to the Bill End Date field and select the month, day, and year.
6. Click OK. The Meter Consumption for Billing spreadsheet will open.

Consumption Report(s)

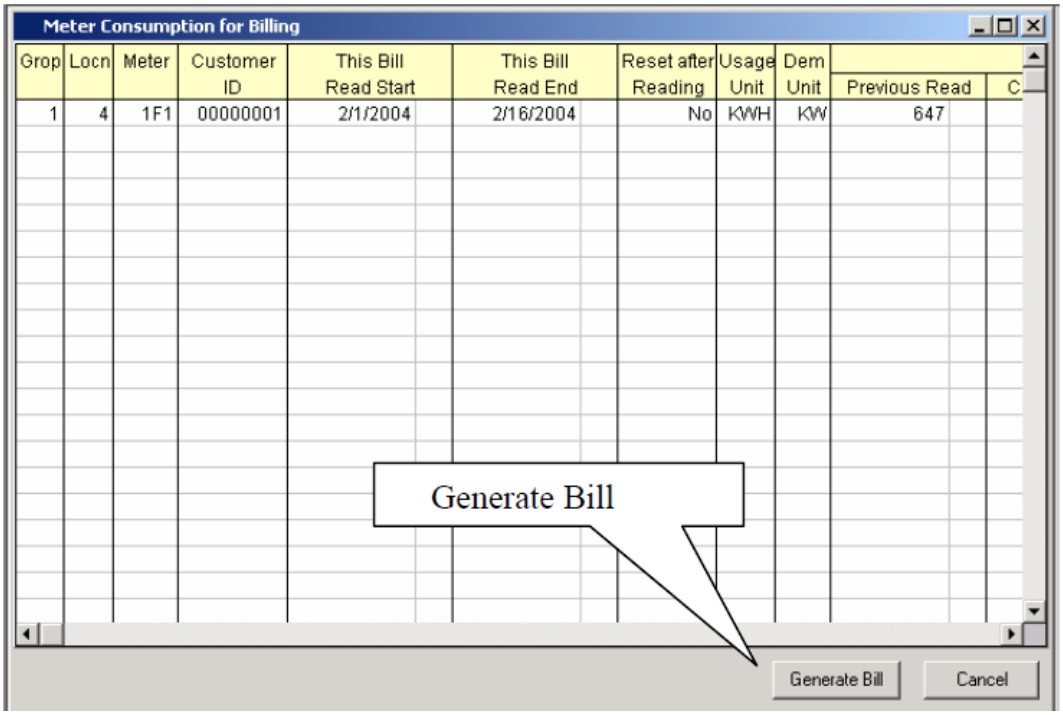


Fig. 250. Meter Consumption for Billing (spreadsheet View 1)

TOU Type 1				TOU Type 2			
Previous Read	Current Read	Demand		Previous Read	Current Read	Demand	
647	1550	17.56	2/8/2004 12:15	368	796	16.81	2/6/2004 11

Fig. 251. Meter Consumption for Billing (spreadsheet View 2)

7. Click on the Generate Bill button. A Summary Sheet will open listing the Customer IDs, Name, Total Meters, Total Usage, Total Demand, and Bill Total.

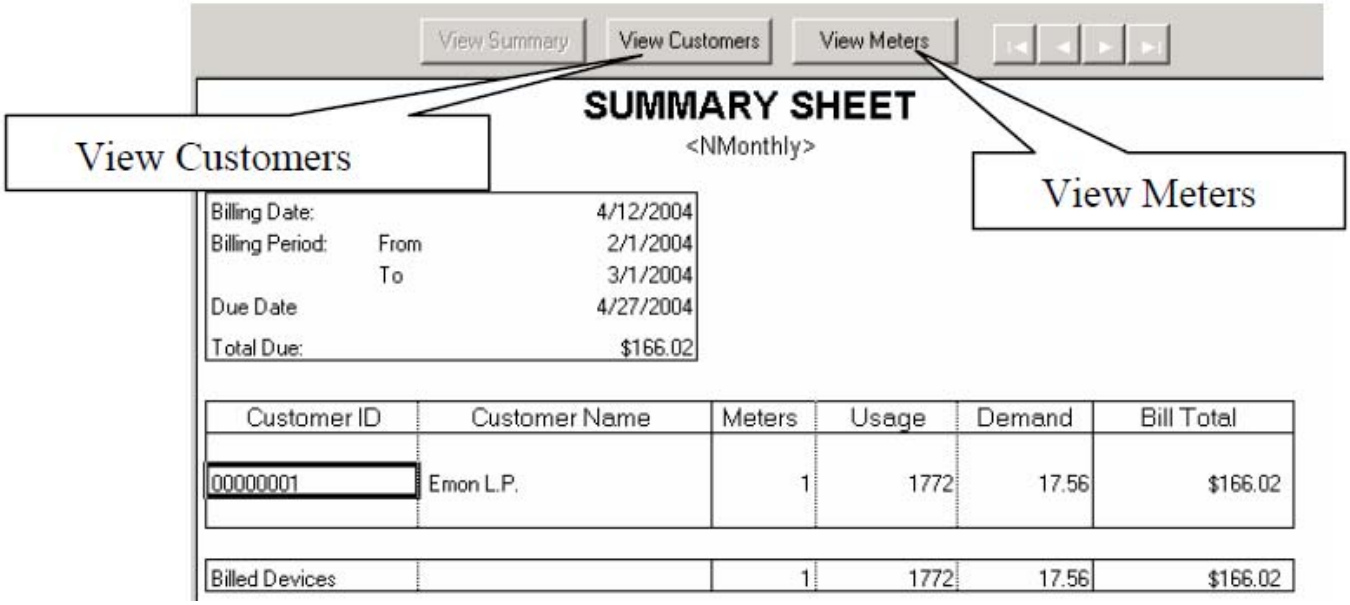


Fig. 252. Summary Sheet

8. Click on the View Customers button. The Customer Summary will open listing the Meter Name, Usage, Demand, and Bill Total. *Note: A customer can have multiple billing* statements (e.g. gas bill, electric bill, water bill, etc).

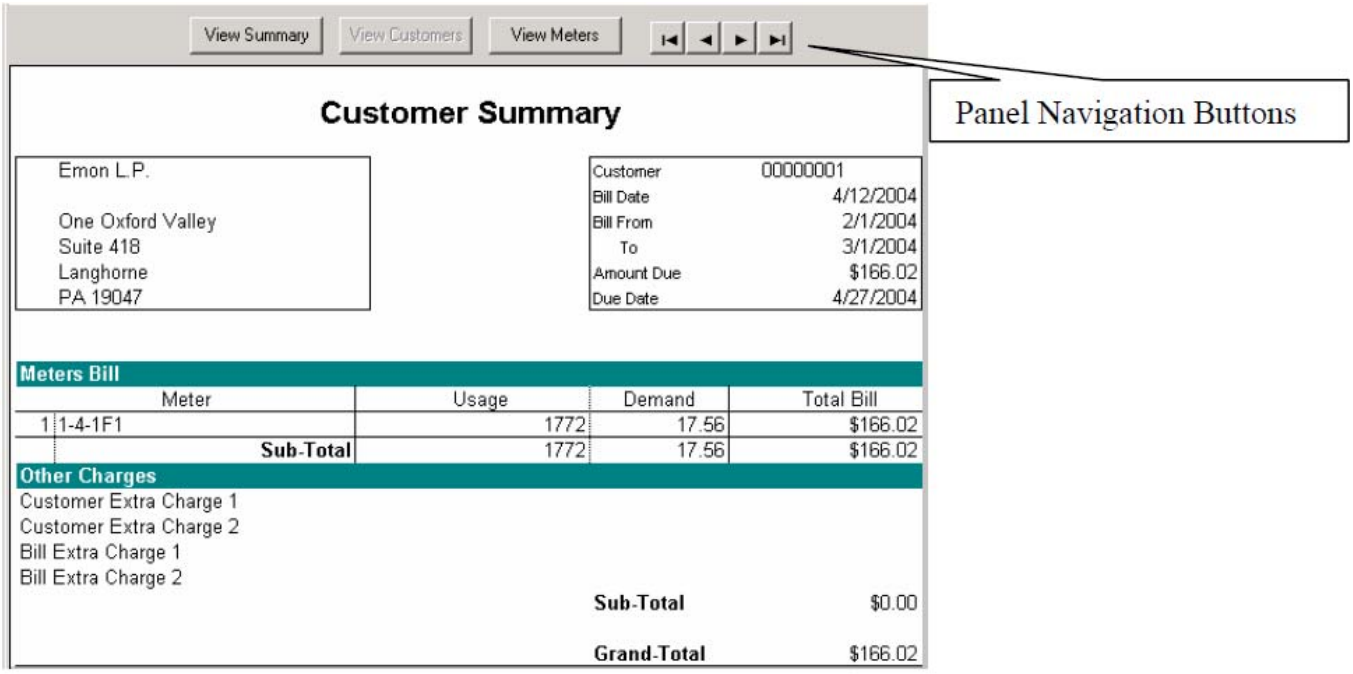


Fig. 253. Customer Summary

9. Click the View Meters button. The Meter Billing Statement will open showing billing calculations. The Panel Navigation Buttons will let you navigate to view different meters.

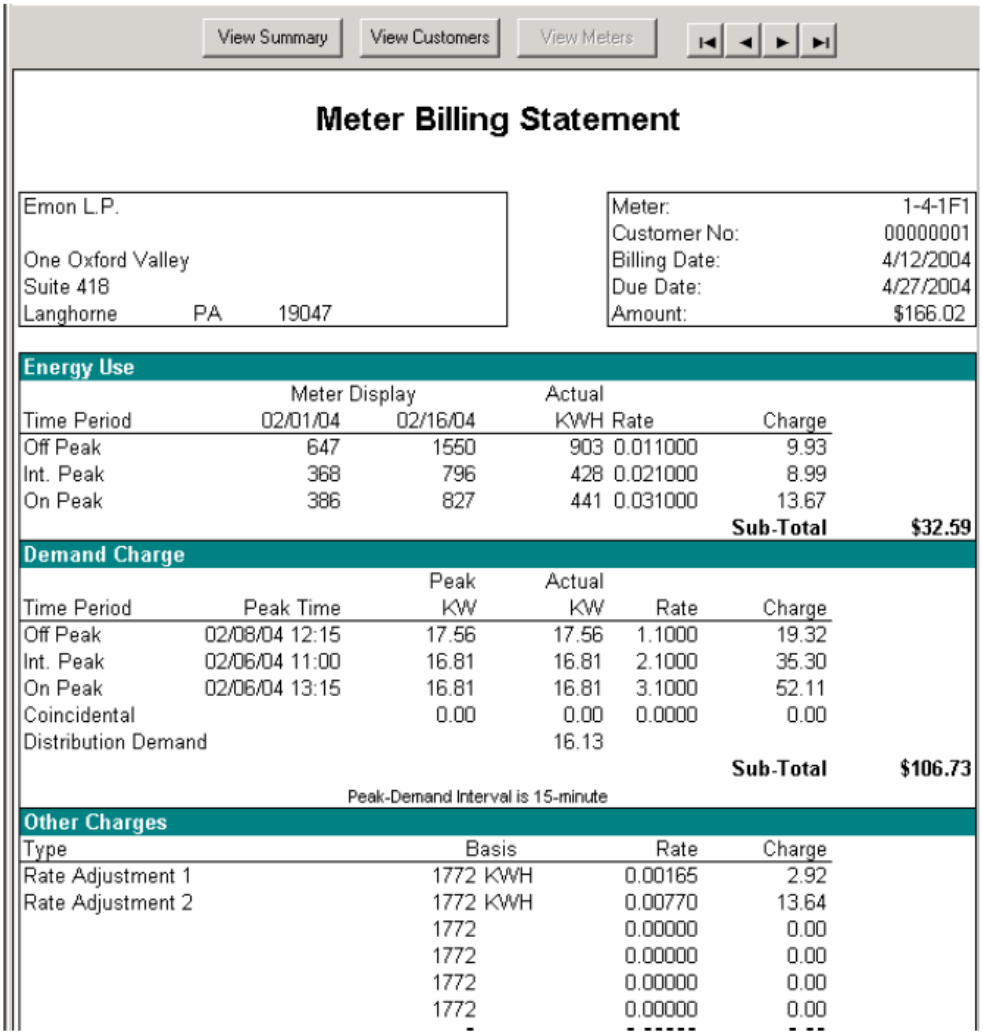


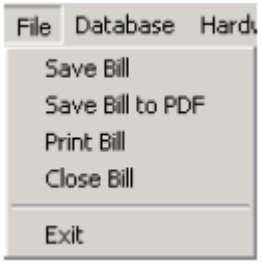
Fig. 254. Meter Billing Statement

Saving or Printing the Bill

NOTE: This procedure is performed after generating the statements.

To save the Bill:

1. Select File\Save Bill from the drop-down menu.



Billing Period Options

When you generate bills, the dialog box will prompt for the Bill Start Date and the Bill End Date. It does not prompt for the Bill Start Time and the Bill End Time. There are 2 billing period options. The first option is to generate bills starting at Noon and ending at Noon. The second option is to generate bills starting at Midnight time and ending at Midnight. There are advantages/disadvantages to each of the options.

Fig. 255. Bills Environment Option

SECTION 19: TROUBLESHOOTING

How Do I Resolve a Problem with the E-Mon Energy™ Software?

Within this section, you will find some basic steps that can be taken to isolate and correct problems encountered with the E-Mon Energy software. The problems within this section only represent the most common problems and errors that the user may encounter.

NOTE: Note: This section does not cover every possible error or problem and you may need to contact our Technical Support Team for additional assistance. If you need assistance while working with the E-Mon Energy software, please call our Technical Support at 1-800-334-3666.

NOTE: For a list of E-Mon Energy error messages see Appendix B.

Does the Software Support Help Functions?

Yes. Help functions are available through the main menu drop-down under *Help*. These help files are in relation with the contents of this manual. The E-Mon Energy content help window is divided three categories, Contents, Index, and Search. The Contents tab provides main topics and 'how to' instructions for the E-Mon Energy software. The Index tab provides you with an alphabetic listing of words commonly used throughout the manual. The Search tab provides you with the functionality to search for a particular word or phrase.

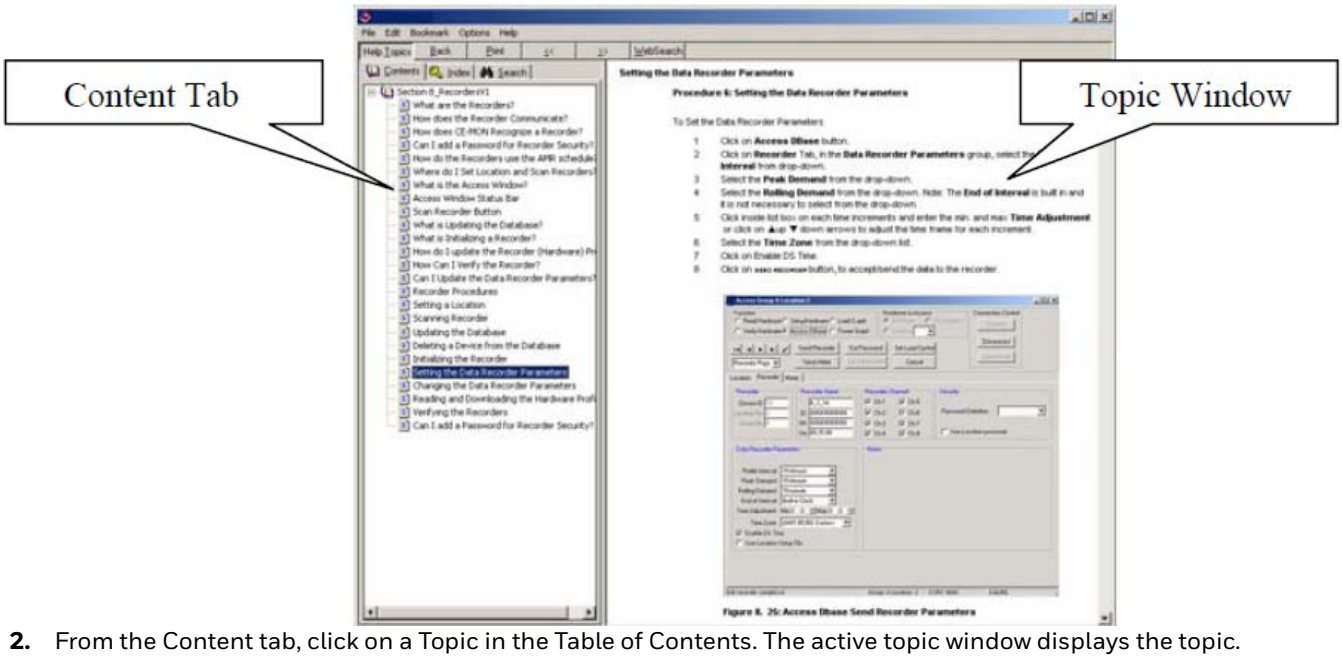
The help content topic window has two window areas, the Table of Contents on the left side and the relevant active topic area on the right. When a topic is chosen from the Table of Contents, the active topic area displays the relevant topic. The help index works by selecting from the directory or entering the first few letters to get the alphabetic listing of those relevant words. The search works similarly to the index, you type in a keyword and click on the list topics button to view the topics relevant to the keyword.

NOTE: This section does not cover standard window functions. Please reference your Windows operating guide.

Using Help

To use the Help Topics:

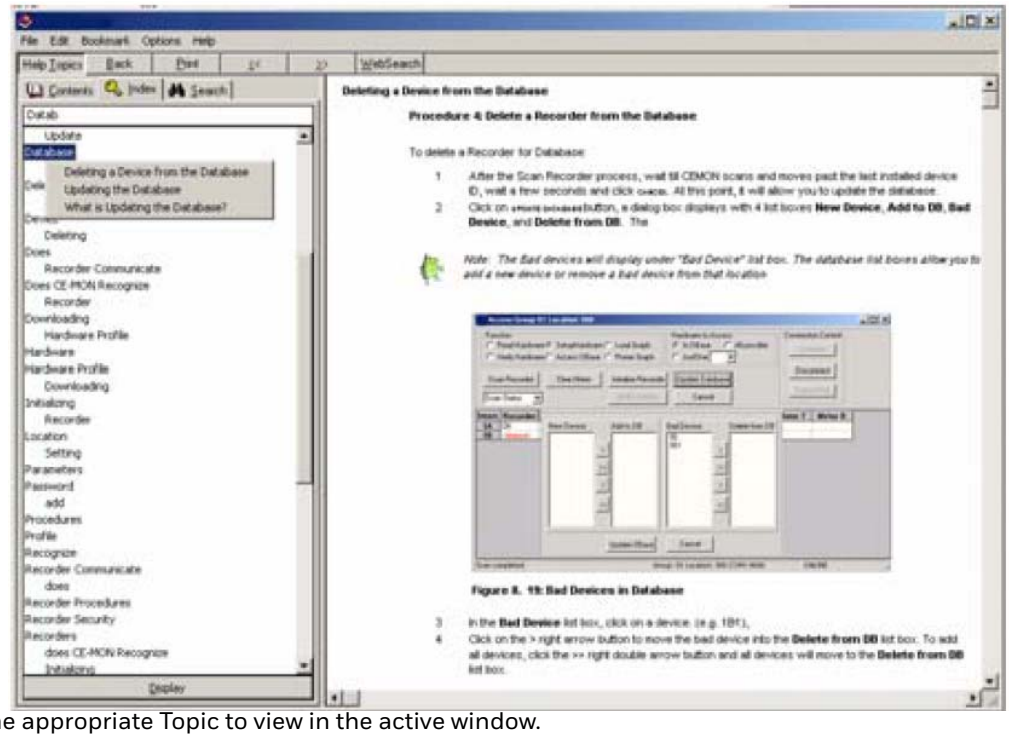
1. From the E-Mon Energy™ menu, select Help and highlight Content. The E-Mon Energy Content Help tab will open. (Note: The F1 key will also open the Help Content Window.)



2. From the Content tab, click on a Topic in the Table of Contents. The active topic window displays the topic.

To use the Help Index:

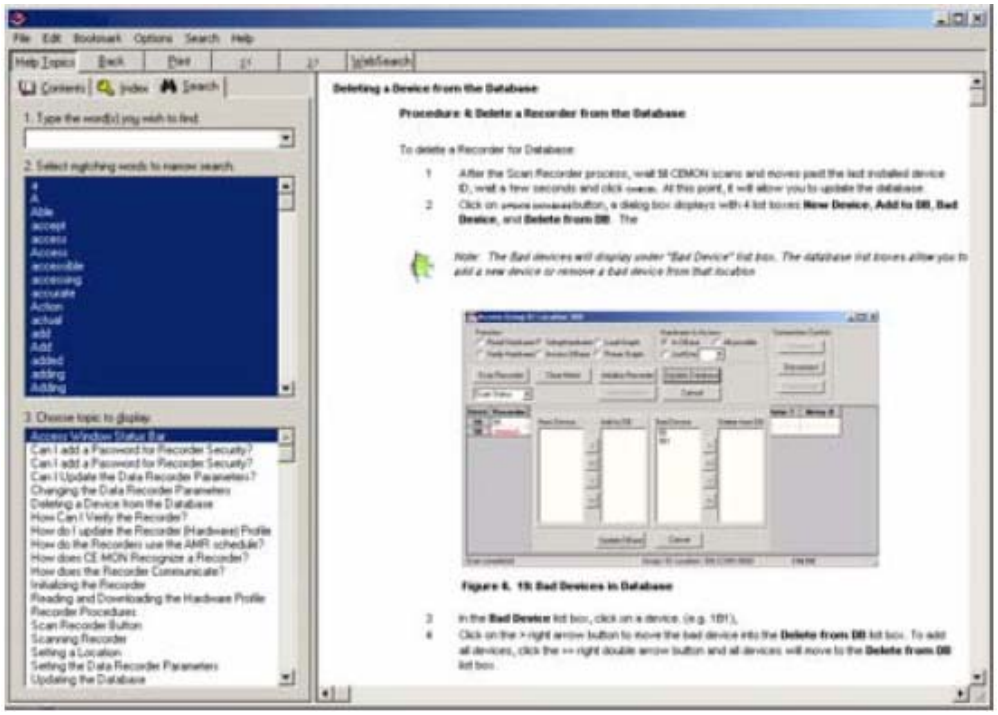
1. From the E-Mon Energy menu, select Help and highlight Content. The E-Mon Energy Content Help tab will open.
2. From the Content tab, click on the Index Tab.
3. Type in the first few letters (i.e. datab = database). The Help Index searches the directory and list all relevant topics.



4. Click on the appropriate Topic to view in the active window.

To use the Help Search:

1. From the E-Mon Energy™ menu, select Help and highlight Content. The E-Mon Energy Content Help tab will open.
2. From the Content tab, click on the Search Tab.
3. Type in a keyword (i.e. virtual meters). The Help Search finds and lists all relevant topics in the directory.



Click on the appropriate topic to view in the active window.

APPENDIX A: GLOSSARY

A

AGGREGATION
Combining loads of multiple end-users or customers for facilitating the sale and purchase of an energy source and/or transmission services. (Multi-Point Metering) (See Virtual Meter)

AMPS
Amperage or Current – Volume of electricity flowing through a conductor.

AMR
See Automatic Meter Reading.

AMR CALLS REPORT
E-Mon Energy™ Report that saves the results on a selected group, location, and recorder for Profile Start and End Date/Time, Last Call, Last Initialize, and Total Initialization.

AMR SCHEDULE
AMR scheduling is a call-in and/or call-out by means of frequency and time of day. A device can be programmed to call-in every night, or E-Mon Energy can be programmed to call-out to the device every 2 days, etc. This feature provides un-attended data collection to take place automatically.

ACCESS RIGHTS
Granted permission to perform certain functions configured by the Administrator for the E-Mon Energy software.

AUTOMATIC METER READING (AMR)
A system capable of reading and managing meter data automatically.

AVG KW
The average kilowatt for an individual meter.

AUTOMATIC BILL CYCLE
A scheduled bill generation by means of frequency and time of day. E-Mon Energy can be programmed to generate billing statements (reports). This feature provides un-attended bill generation to take place automatically.

B

BAUD RATE
The rate of data transfer over the serial communication line (9600 baud is typically for E-Mon devices).

BILLING DEMAND
The demand that is being used for billing. Billing demand can be based on the previous 12 month demands in some billing rate structure.

BILLING SYSTEM
E-Mon Energy™ software module is designed for generating bills, flat rate billing, rate changes, tiered rates, pre-defined tax rates and miscellaneous billing charges.

BILLING TEMPLATES
E-Mon Energy comes with more than 80 billing templates for use. These templates can be customized to fit your requirements. The template consists of the bill, summary sheet, edit table, and data table; should you need to customize, edit only the template area.

C

CHANNEL
Metering input to data recorder.

CE-MON KEY
A hardware device that converts signal between the RS-485 and RS-232.

CE-MON KEY RM
A hardware device that converts signal between the RS-485 and RS-232. It also includes a built-in modem for remote data collection.

CHOPPER VIEW
Displays a color-coded bar graph showing 24-hours horizontally and days (specified) vertically.

COINCIDENTAL DEMAND
The sum of two or more demands that occur at the same time interval.

COINCIDENTIAL PEAK VIEW
Combines the KW demands for all meters selected.

COM PORT
The serial communication port on the computer. A COM Port can be used to connect to a E-Mon Energy Key or local modem to establish a connection to the data recorder/meter.

CSV
Comma Separated Value. This format is commonly used to export and import data from different applications. E-Mon Energy is capable of exporting interval data in CSV format.

CT
A Current Transformer is a sensor with current output. E-Mon metering hardware normally uses Current Sensor, which is a sensor with voltage output.

D

DATA ENGINE
The Built-in Database Management System that automatically stores and retrieves data.

DATA LINK
The way communication is made between two devices, e.g. a computer (E-Mon Energy) and the metering device.

DAY LIGHT SAVINGS
Automatic time change (season) used to adjust the “Built-in Clock.” Some recorders can be programmed to automatically adjust its time by an hour in the falls and spring.

DEMAND CHARGE
A charge for demand usage.

DEMAND PROFILE
Energy usage in different times of day, also known as interval data. This data is commonly used to plot graphs or generate bills (usage and demand).

DEMAND STATISTICS
A Statistic table, which displays the Total KWh, Avg. KW, Peak, and Peak Time.

DEVICE EXPLORE
An E-Mon Energy™ main window component that displays the group and site location down to the devices (recorders and meters).

E

ENERGY USE
Energy consumption. E.g. electricity is usually measured in kWh (kilo watt-hour).

E-MON TECHNICAL SUPPORT
E-Mon Energy support group, 1-800-334-3666.

EXPORT DATA
An E-Mon Energy capability to export data as a Comma Separated File (CSV file extensions) into other applications.

ETHERNET
One of E-Mon Energy’s communication options is a Local Area Network connection with two or more devices on a communication backbone utilizing 10BaseT or 100BaseT line.

F

FLAGS
Flags indicate a power failure or error with the hardware. Error Flags are usually shown in Red.

FREQUENCY
Rate of variation of voltage and current, typically 60.0 Hertz (i.e. cycles per second).

FIRMWARE
A program (ROM, EPROM, or Flash) within the hardware device used to store software instructions for the metering device.

G

GRAPH
A visual and interactive image that displays a chart based on x by y data values. In E-Mon Energy, the x-axis values are usually represented in date/time.

GROUP
In the E-Mon Energy™ software, a group is a collection of locations. There can be up to 32,767 locations in a group.

GROUP – WINDOWS
A window area that displays several items.

GROUP NUMBER
A unique number assigned to identify the Group. The number must be between 1 and 32,767.

GROUP PANEL
Where you assign the Group Numbers and setup profile characteristics.

H

HARDWARE
Physical devices (IDR or Class 3000) or desktop computers.

I

ICON
A graphic symbol or image on a display screen with the purpose of an available function (See AMR or Other Features tab).

IDR GAP REPORT
E-Mon Energy Report that saves the results on selected locations and recorders, which record the gaps of interval data. Results show the Oldest to the Newest Gap, Total, and Last Convert. This feature is useful in identifying missing data.

IDR
The Interval Data Recorder (IDR) reads and records up to 4, 8, or 16 channels (inputs).

INITIALIZE
Sets all the parameters for recorder to factory defaults and clears the register in the recorder as well as the meter display.

J

K

KILOWATT HOURS (KWH)
One-thousand watt hours (1,000). This is usually the unit of measurement for electricity usage.

KILOVOLT (KV)
One-thousand volts (1,000). This is the unit of measurement for the potential.

L

% LOAD (PERCENT LOAD)
The percent of a meter's rated load, which is represented by the load factor graph.

LINEVIEW
Uses a line graph to plot the load in KW.

LISTBOX
A window or dialog component, which lists available choices.

LOAD
The amount of electric power delivered or required at any specific point.

LOAD FACTOR
The percentage difference between the amount used during a specific time period, and the amount that would have been used if the usage stayed at the highest demand level during the entire time.

LOCATION
In the E-Mon Energy™ software a location is a collection of recorders/meters. There can be up to 208 recorders and 1,664 meters per physical location.

LOCATION PANEL
Where you assign the location numbers and set up profile characteristics.

M

MANUAL BILL CYCLE
Generates a bill(s) by predefining a set of customers and meters that may require an individual billing statement.

MAXIUM PERIOD
(1-8) Refers to the Time of Use periods your day may be divided into in your utility rate structure.

MAXIUM SCHEDULE
(1-8) Refers to the different seasons that may apply from your rate structure, (i.e. summer weekdays, winter weekends, etc.) each having different rates.

METER
A meter is a device that measures the customer's level and volume of energy resources (i.e. electricity, gas, and water) used.

METER REG
Indicates that the Meter is delivering pulses to the recorder.

METER REPORT
E-Mon Energy Report that saves the results on the status of meters, readings, and flags.

MID PEAK
The energy or demand rate usually applied during weekday business hours.

MODEM
Internal or external serial device that supports the transmission and communication via telephone lines.

N

O

OTHER CHARGES
Charges are comprised of rate and tax adjustments.

OFF PEAK
The energy or demand rate applied during hours that are not covered by On Peak or Mid Peak. These rates are usually applied during evenings and weekends.

ON PEAK
The energy or demand rate applied during the time when utilities or distribution charges are the highest, which is usually during business hours from mid-morning to mid-afternoon.

P

PARAMETER
The characteristics of the device or software.

PEAK KW
The highest Kilowatt usage within a demand period (e.g. 15-, 30-, or 60-minute). Typically, a peak KW should be reset every month.

PEAK TIME
The time of peak demand KW.

PEAK DEMAND
The maximum load during a specific period of time or the highest electric requirement occurring in a given period (i.e. day, hour, mouth, year).

PIE CHART
A circular chart divided into color-coded slices the indicating meter's percentage or value in kW demand registered at a chosen date and time.

PLOT STYLES
Line = Displays each demand KW per date and time.

Stacked Bar = Displays each demand period as a sum of all the meters currently graphed.

Stacked Area = Displays each demand period as a sum of all the meters currently graphed.

Bar = Displays each meter's kW level per time segment side by side rather then stacked.

POP-UP
A window that displays in a response to a command or action.

POWER
In electricity, power is represented as kW or watts.

POWER MONITOR
The real-time graph for monitoring various power measurements (such as phase voltage, Amps, PH. Angles, PF%. KW, KVA and KVA).

POWER FAILURE
Occurs if the voltage drops past the required threshold (a flag).

POWER FLAG
Indicates that the state of the voltage powering the meters is low (voltage has fallen below a nominal level); noisy (dirty, power, harmonics); and unstable (fluctuating).

PROFILE (DATA)
Interval data over a period of time. Some E-Mon recorders can store interval data at 5- or 15-minute sampling rates. A profile is normally used for graphing and generating bills.

PROFILE STATUS
The profile status provides the "moving" window before we need to upload the current sampling rate data and how many days are left before the data will be lost from the recorder.

PROFILE INTERVAL
The interval sampling rate for the recorder (Values = 5 minute or 15 minutes).

PT
Potential Transformer.

PULSE
Input type setting (Values = 50/50 or Run-hour).

Q

R

RATE ADJUSTMENT
Changes in rates or total charges with changes in specific items of cost and square footage (e.g. taxes and fuel prices).

RATE TABLE
An E-Mon Energy™ module for incorporating the monetary utility amounts or adjustments that will govern the billing costs to the customer.

RECORDER
A data collector which is capable of counting and storing pulses. Some recorders are capable of storing interval data. Some recorders have a built-in meter.

RECORDER REPORT
An E-Mon Energy Report that saves the results on status of recorders and meters, provides version/date, time, flags, and profile status.

RECORDER TIME
IDR or Class 3000 time. E-Mon Energy uses the PC time to send to the recorder.

REMOTE MONITORING
A remote terminal (PC or Laptop) emulating the host system using E-Mon Energy software via a dialup telephone line or Ethernet to communicate with the site devices.

ROLLING DEMAND
Rolling demand window period (values = 5 minute, 15 minute, and Reset at EOI).

RS-484/RS-232 CONNECT ION
Used as a Direct COM port connection, a single point connection using an RS-232 from the computer into a multi-point communication network using an RS-485 converter. E-Mon RS-485 converters allows a connection to the recorder(s) and meter (s). RS-485 is a multidrop communication link with a speed range of 2,400 bits per second to 19,200 bits per second

S

SENSORS
Measurement device that detects the energy flow (magnetic field) through the metal core. The volume of energy flow is converted to voltage and relays to the metering chip for calculating energy and various factors.

SET OF SENSORS
Some E-Mon meters are capable of supporting multiple sets of sensors in parallel. This feature allows a single meter to monitor more than one circuit.

SCANNING
E-Mon Energy™ has the scan feature to automatically query the recorders/meters in the system. Once a new device is detected, you have the option of adding it to the database.

STATISTICS TABLE
The table that populates with the demand data used to plot the graphs (i.e. Total KWh, Avg. KW, Peak, Peak Time ,WHrs).

STATUS
The current condition of the device.

STATUS BAR
Located at the bottom of the window display, it shows the present Function, Group and Location, Communication, and System status.

SCAN RECORDERS
The process of sending a signal request for an authorization responses from the recorder.

SCROLL BAR
A bar that is on the right-side or bottom of the window for extending content viewing. E-Mon Energy software provides two arrows for left or right scrolling (i.e. Load Graph).

SLIDING WINDOW
E-Mon Energy's set time interval that is derived from a predefined number of sub-intervals, each at a specified time.

T

TAX (%)
Added to the E-Mon Energy rate table as recover fees by the utility company, state or municipal regulation. Based on a percentage of the net energy cost.

TCP
Transmission Control Protocol, a communication protocol for routing IP addresses.

TIME ZONE
Since E-Mon Energy™ is capable of reading recorders/meters world wide, you must specify the correct time zone for each location/recorder. The PC running E-Mon Energy must also have the correct time zone setup, since the PC time will be used to set to the recorder/meter time.

TOU
Time-of-Use (TOU), a usage structure that takes into account the quantity of energy used at a specified time period. E.g. Off-peak, On-Peak, Weekends, Weekdays, Summer, Winter, etc.

TOU SCHEDULE
An E-Mon Energy module for setting up the time-of-use for specific days and seasons.

U

UPDATE DATABAS E
The process for adding a meter or recorder to the E-Mon Energy database.

USAGE CHARGE
The rates charged on per unit of energy (kWh) for a specific time period and season.

V

VERIFY HARDWARE
Access window function that checks the profile mode and sampling rate, demand interval, and demand window.

VERSION
The number assigned to the software or firmware to track the current release.

VOLTAGE
The potential of energy (electricity).

VIRTUAL METER
A virtual meter is a collection of adding/subtracting real meter consumption.

W

WATTS
A unit of measure for electricity power. Volts x Amps = Watts

WATT- HOUR
A unit of measure for electricity energy. Power being used in a 1 hour period. E.g. a 1-watt light bulb running for an hour yields a 1 watt hour usage.

X

Y

Z

APPENDIX B: STATUS BAR FUNCTION CODES AND ERROR FLAG CODES

Window Status Bar Definitions

Status Locations (Status Loc)

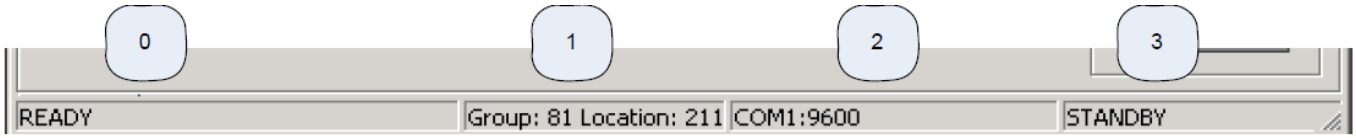


Table 4. Access Functions

No	Status Loc	Status Code	Description
1	0	READY	Successfully gets the data from the database for location access.
2	0	Setting up Auto Answer...Database Error	Exception in getting the connection parameters from the database.
3	0	Setting up Auto-Answer...	Select comport and Initialize modem.
4	0	Auto Answer Setup failed	Cannot get comport object, or comport init function failed.
5	0	Database Error, cannot establish connection	Cannot open the database for location access.
6	0	Failed to get the comport	Failed to instantiate the direct comport object.
7	0	Failed to setup the comport	The init function of Direct comport object failed, possible cause: comport in use; allocate comport failed; or setting terminal failed.
8	0	Failed to setup the modem	The init function of Modem comport object failed, possible cause: comport in use; allocate comport failed; setting terminal failed; or sending modem init command failed.
9	0	Failed to setup the IP object	Failed to instantiate TCP/IP comport object.
10	0	Failed to prepare the IP connection	The init function of IP port object failed, possible cause: allocate port failed; or setting terminal failed.
11	0	Recorder not found in DB	Cannot find the recorder record in the database.
12	0	Recorder parameter not found in DB	Cannot find the recorder parameter record in the database.
13	0	Convert to integer exception	Cannot retrieve Meter ID when reading meters.
14	0	Meter not found in DB	Cannot find the meter record in the database.
15	0	Read power - data canceled	Cancel button clicked, or clicking other function buttons will also cancel the current function button process.
16	0	Read-load-factor canceled	Cancel button clicked, or clicking other function buttons will also cancel the current function button process.
17	0	Canceled	Cancel button clicked, or clicking other function buttons will also cancel the current function button process.
18	0	Error: No connection	Lost connection before command was complete.
19	0	Error: Time out	Did not get the proper response from Hardware in the specified time.
20	0	Invalid cmd	An unknown command was sent to the Hardware or security level not allowing it.

Table 4. Access Functions

No	Status Loc	Status Code	Description
21	0	Re-download	For high resolution meter, the profile data exceeds the max pulse limit. The day block will be re-downloaded one more time.
22	0	Err: data over limit	At least one of the interval data exceeds the rated pulse. Check the Meter configuration in the database, especially the Pulse Factor.
23	0	Err: missing day block	At least one day block of interval profile data is missing during download. The download date will be updated.
24	0	Err: data length	The profile data block has the wrong length. Software keeps downloading but it won't update the download date.
25	0	Error: recr param	During download, cannot get the recorder parameter from database, download failed.
26	0	Error: database update	When sending Recorder or Meter information, failed to update the database with the information sent. Or when download failed to update the profile to the database.
27	0	New Location! Click [Add Location] button to setup	When a remote recorder calls-in, E-Mon Energy™ will query the group/location from the device, if E-Mon Energy can not find it in the database, it will prompt you to add a location.
28	3	STANDBY	E-Mon Energy is waiting to receive in-coming calls (AMR). Or Access location is ready to make the connection.
29	3	Error	Refer to status bar panel 0 for the cause.

Table 5. Modem Functions

No	Status Loc	Status Code	Description
1	0	Modem Init Error	Transmission Modem will not dial out.
2	0	Auto Answer READY	E-Mon Energy is waiting to receive in-coming calls (AMR).
3	0	Error in Auto Answer setup	Failed to set the modem to "not waiting" ring.
4	0	Set Dial-Timeout Error	Modem return error when sending the modem dial timeout command.
5	0	Modem Init Timeout	Modem timeout when sending the init string to Modem.
6	0	Bad data	Data is Corrupted.
7	0	Unexpected Data	Data Received has wrong Check Sum.
8	0	Auto Answer completed at (time stamp)	Bye command sent to Hardware.
9	0	Auto Answer terminated at (time stamp)	Other disconnection than sending Bye command.
10	0	Auto Answer line dropped at (time stamp)	Line disconnected when neither hardware nor software initiates the disconnection.
11	0	Register comport status'	Auto-answer synchronizes the comport status with modem.
12	3	Initialize Modem...	Sending initialization and configuration command to modem.
13	3	Modem Dialing...	Modem is dialing the destination phone number.
14	3	Hanging Up...	Wait while the modem is hanging up.
15	3	Not Connected	Refer to status bar panel 0 for the cause.
16	3	ONLINE	Connection is established, ready to transmit data.
17	3	Modem Busy	The dialed number is busy.

Table 5. Modem Functions

No	Status Loc	Status Code	Description
18	3	No Carrier	Failed to establish connection, possible cause: the dialed number is answered by voice.
19	3	No Carrier	Can be generated if connection handshaking began but was aborted, if the modem timed out internally, or if a connection was established and subsequently lost.
20	3	No Dial Tone	No dial tone when a dial attempt began, may indicate a cabling problem.
21	3	Connect failed:	A connection attempt fails for any reason (i.e., busy signal, handshaking error).
22	3	Dial Canceled/Standby	Modem dial canceled and is ready to make connection.
23	3	STANDBY	Ready to make the connection.
24	3	Hangup/Standby	Modem hung up and is ready to make connection.
25	3	Modem Cmd Error	Modem return error occurred when sending command to it (Modem Configuration or Hardware Error).
26	3	Modem Init Error	Modem return error occurred when sending init string to it.
27	3	Dial Error	Error in dialing the number, possible cause: invalid phone number.
28	3	DialCancel Error	Failed to cancel the Modem dialing.
29	3	Hangup Error	Modem return error when hang-up occurs.
30	3	DialCmd Timeout	Modem timeout when dialing.
31	3	DialCancelCmd Timeout	Modem timeout when canceling the dial.
32	3	HangupCmd Timeout	Modem timeout when hang-up occurs.
33	3	Modem is Connected	Online Output data can now be transmitted.
34	3	Offline	No transmission.

Table 6. TCP Functions

No	Status Loc	Status Code	Description
1	0	Bad data	Data is Corrupted.
2	0	Unexpected data	Data Received has wrong Check Sum.
1	3	Connecting...	Wait, making connection.
3	3	Disconnecting	Wait, disconnecting.
4	3	ONLINE	Connection is established, ready to transmit data.
5	3	STANDBY	Ready to make the connection.
6	3	Error... Code	(Example: Error...Code:10004) *See TCP/IP* Connection Error Codes within this section.

Table 7. Direct Com port Functions

No	Status Loc	Status Code	Description
2	0	Bad Data	Data is Corrupted.
3	0	Unexpected data	Data Received has wrong Check Sum.
4	3	Connecting...	Wait, making connection.
5	3	OFFLINE	Not detecting the online signal, could be still online depending on actual hardware configuration.

Table 7. Direct Com port Functions

No	Status Loc	Status Code	Description
6	3	ONLINE	Data can now be transmitted.
7	3	STANDBY	Ready to make the connection.
8	3	Offline	No Connection.
7	3	Disconnecting	Wait, disconnecting.

Table 8. E-Mon Energy Main Window Function

No	Status Loc	Status Code	Description
1	0	Delete tree....done	Refresh the Tree.
2	0	Processing tree....done	Refresh the Tree.
3	1	(file path)	E-Mon Energy™ program path.
4	2	LDB	Local Database.
5	2	RDB	Remote Database thru database server.
6	0	Error: creating file	Error in creating HHF file or CSV file during HHF conversion.

Table 9. TCP/IP Connection Error Codes

Error Code	Description
10004	Interrupted function call.
10009	Bad file number.
10013	Permission denied.
10014	Unknown error.
10022	Invalid argument.
10024	Too many open files.
10035	Warning: The socket would block on this call.
10036	A blocking call is in progress.
10037	WSAEALREADY: Watch out, Al is ready.
10038	Socket descriptor is (1) not a socket, or (2) is of wrong type.
10039	The destination address is required for this operation.
10040	The datagram was too large to fit into the buffer and was truncated.
10041	WSAEPROTOTYPE:
10042	The option is unknown or not supported.
10043	Either (1) no buffer space is available so the socket cannot be created or (2) protocol is not supported.
10044	Specified socket type not supported in this address family.
10045	Operation is not supported by this socket.
10046	Specified protocol family is not supported.
10047	Specified address family is not supported by this protocol.
10048	The address is already in use for this operation.
10049	The address is not available from this machine.
10050	The network subsystem has failed.
10051	The network is unreachable from this machine at this time.
10052	The network has been reset.
10053	The virtual circuit has been aborted due to timeout, etc.
10054	The virtual circuit has been reset by the partner.
10055	The descriptor is not a socket, or no buffer space is available.

Table 9. TCP/IP Connection Error Codes

Error Code	Description
10056	The socket is already connected.
10057	The socket is not connected.
10058	The socket has been shutdown.
10059	WSAETOOMANYREFS
10060	The operation timed out.
10061	The attempt to connect was forcibly refused.
10062	WSAELOOP: See WSAELOOP.
10063	The name is too long.
10064	The host machine is down.
10065	The host machine is unreachable.
10066	WSAENOTEMPTY:
10067	WSAEPROCLIM:
10068	WSAEUSERS:
10069	WSAEDQUOT:
10070	WSAESTALE:
10071	WSAEREMOTE:
10091	Network subsystem is unusable.
10092	Version requested by WSAStartUp is not supported by loaded Winsock DLL.
10093	WSAStartUp not yet called.
10101	WSAEDISCON:
11001	Host not found.
11002	Host not found, or SERVERFAIL, can try again.
11003	Non-recoverable errors, FORMERR, REFUSED, or NOTIMP.
11004	Valid name, but no data record of requested type.

APPENDIX C: REFERENCE GUIDE

Connect and Read Meters

1. From the E-Mon Energy™ Explorer window, click and select Hardware\Set Location from the dropdown menu.
2. From the Group drop-down list, select a Group.
3. From the Location drop-down list, select the Location you want to connect.
4. Click on the Set button. The Access window opens.
5. Click on the Connect button to establish connection.
6. From the Function group box, click on Setup Hardware.
7. Click on Scan Recorder to verify recorder/meter status. Verify that all devices are ok.
8. From the Function group box, click on Read Hardware.
9. Click on Read Meters to take meter readings.
10. Click on Flag Status to check the status of the recorder.
11. Click on Profile Status to check the profile (interval data) storage status.
12. Click on Version\Time to check the recorder time; click on Set HW Time if need be.
13. Click on Download to transfer profile (interval data) from recorder to the PC. This step may take a while to complete, depending on the number of recorders and/or days.
14. You may proceed to Verify Hardware and Verify Recorder, Meters, AMR, and TOU.
15. Click on Disconnect to terminate the connection; then close the window.

Generate Bills

1. From the E-Mon Energy Explorer window, click and select Bills\Generate Bills from the drop-down menu. A dialog box displays various options for generating bills, (e.g. By Group-location-Meter, By Customer, and By Manual Bill Cycle Name).
2. Select the Billing option.
3. Select the Billing Period.
4. Select Coincidental Peak, if applicable.
5. Click on OK. E-Mon Energy will generate consumptions. Once finished, the Meter Consumption for Billing window will open showing Group, Location, Meter, Customer ID, Billing Periods, Meter Readings, etc.
6. Click on Generate Bill. The Meter Consumption for Billing window minimizes; E-Mon Energy will generate bills. Once finished, the Bill window will open showing the Customer ID, Customer Name, Total Meters, Total Usage, Total Demand, and Bill Total.
7. Click on View Customers to view the Customer Summary sheet. Use the navigation buttons to view different customers.
8. Click on View Meters to view the Meter Billing Statement in detail. Use the navigation buttons to view different meters.
9. Click on View Summary or View Customers to perform other functions as need be.
10. Select File\Print Bill to get a hard copy of the bill or File\Save Bill to save the bill.
11. Select File\Close Bill to close.

Graph Load Profile

1. From the E-Mon Energy™ Explorer window, click and select Graph\Load Profile from the drop-down menu. A Load Profile graph window displays a blank graph with various options.
2. In the shaded device directory, select Group, click and drill-down to the Recorder level, and then to the Meter level, if you wish to graph a single meter.
3. Right-click on the device (Recorder or Meter) and highlight, then left-click on Graph this device.
4. In the Time Period, select the From date/time and To date/time.
5. Click on the Get Graph button. The statistic table refreshes with new data and the graph will display the load.
6. Use the mouse to navigate through various options (zoom in, zoom out, scroll left and right, etc.).
7. Select File\Print to get a hard copy of the graph.
8. Select File\Close to close the graph window.

APPENDIX D: BILLING TEMPLATES

Formbill Filename Convention and Definitions

STANDARD FORMS
S1P-A.VTS - 1 Period variation A (24-hour monitoring, single period)

S1P-B.VTS - 1 Period variation B (24-hour monitoring, single period)

NOTE: Variation A doesn't have customization options, whereas variation B does.

S2P-A.VTS - 2 Periods variation A (On-Peak/Off-Peak, 2 periods)

S2P-B.VTS - 2 Periods variation B (On-Peak/Off-Peak, 2 periods)

S3P-A.VTS - 3 Periods variation A (On-Peak/Intermediate/Off-Peak, 3 periods)

S3P-B.VTS - 3 Periods variation B (On-Peak/Intermediate/Off-Peak, 3 periods)

S8P-A.VTS - Standard 8 Periods variation A (On-Peak/Intermediate/Off-Peak, etc, 8 periods)

S8P-B.VTS - Standard 8 Periods variation B (On-Peak/Intermediate/Off-Peak, etc, 8 periods)

NOTE: Some TOU schedule requires multiple periods with multiple seasons.

TIER FORMS: 1 PERIOD
T1H2D.vts - 1 Period, 2 Level Tier kWh, Single kW Demand

T1H3D.vts - 1 Period, 3 Level Tier kWh, Single kW Demand

T1H4D.vts - 1 Period, 4 Level Tier kWh, Single kW Demand

T1H5D.vts - 1 Period, 5 Level Tier kWh, Single kW Demand

T1H2D2.vts - 1 Period, 2 Level Tier kWh, 2 Level Tier kW Demand

T1H3D2.vts - 1 Period, 3 Level Tier kWh, 2 Level Tier kW Demand

T1H4D2.vts - 1 Period, 4 Level Tier kWh, 2 Level Tier kW Demand

T1H5D2.vts - 1 Period, 5 Level Tier kWh, 2 Level Tier kW Demand

T1H3D3.vts - 1 Period, 3 Level Tier kWh, 3 Level Tier kW Demand

T1H4D3.vts - 1 Period, 4 Level Tier kWh, 3 Level Tier kW Demand

T1H5D3.vts - 1 Period, 5 Level Tier kWh, 3 Level Tier kW Demand

T1H4D4.vts - 1 Period, 4 Level Tier kWh, 4 Level Tier kW Demand

T1H5D4.vts - 1 Period, 5 Level Tier kWh, 4 Level Tier kW Demand

T1H5D5.vts - 1 Period, 5 Level Tier kWh, 5 Level Tier kW Demand

TIER FORMS: 2 PERIODS
T2H2D.vts - 2 Period, 2 Level Tier kWh, 2 kW Demand

T2H3D.vts - 2 Period, 3 Level Tier kWh, 2 kW Demand

T2H4D.vts - 2 Period, 4 Level Tier kWh, 2 kW Demand

T2H5D.vts - 2 Period, 5 Level Tier kWh, 2 kW Demand

T2H2D2.vts - 2 Period, 2 Level Tier kWh, 2 Level Tier kW Billing Demand

T2H3D2.vts - 2 Period, 3 Level Tier kWh, 2 Level Tier kW Billing Demand

T2H4D2.vts - 2 Period, 4 Level Tier kWh, 2 Level Tier kW Billing Demand

T2H5D2.vts - 2 Period, 5 Level Tier kWh, 2 Level Tier kW Billing Demand

T2H3D3.vts - 2 Period, 3 Level Tier kWh, 3 Level Tier kW Billing Demand

T2H4D3.vts - 2 Period, 4 Level Tier kWh, 3 Level Tier kW Billing Demand

T2H5D3.vts - 2 Period, 5 Level Tier kWh, 3 Level Tier kW Billing Demand

T2H4D4.vts - 2 Period, 4 Level Tier kWh, 4 Level Tier kW Billing Demand

T2H5D4.vts - 2 Period, 5 Level Tier kWh, 4 Level Tier kW Billing Demand

T2H5D5.vts - 2 Period, 5 Level Tier kWh, 5 Level Tier kW Billing Demand

TIER FORMS: 1 PERIOD,KWH PER KW TIER

T1P2D.vts - 1 Period, 2 Level Tier kWh per kW Billing Demand, Single kW Demand

T1P3D.vts - 1 Period, 3 Level Tier kWh per kW Billing Demand, Single kW Demand

T1P4D.vts - 1 Period, 4 Level Tier kWh per kW Billing Demand, Single kW Demand

T1P5D.vts - 1 Period, 5 Level Tier kWh per kW Billing Demand, Single kW Demand

T1P2D2.vts - 1 Period, 2 Level Tier kWh per kW Billing Demand, 2 Level Tier kW Billing Demand

T1P3D2.vts - 1 Period, 3 Level Tier kWh per kW Billing Demand, 2 Level Tier kW Billing Demand

T1P4D2.vts - 1 Period, 4 Level Tier kWh per kW Billing Demand, 2 Level Tier kW Billing Demand

T1P5D2.vts - 1 Period, 5 Level Tier kWh per kW Billing Demand, 2 Level Tier kW Billing Demand

T1P3D3.vts - 1 Period, 3 Level Tier kWh per kW Billing Demand, 3 Level Tier kW Billing Demand

T1P4D3.vts - 1 Period, 4 Level Tier kWh per kW Billing Demand, 3 Level Tier kW Billing Demand

T1P5D3.vts - 1 Period, 5 Level Tier kWh per kW Billing Demand, 3 Level Tier kW Billing Demand

T1P4D4.vts - 1 Period, 4 Level Tier kWh per kW Billing Demand, 4 Level Tier kW Billing Demand

T1P5D4.vts - 1 Period, 5 Level Tier kWh per kW Billing Demand, 4 Level Tier kW Billing Demand

T1P5D5.vts - 1 Period, 5 Level Tier kWh per kW Billing Demand, 5 Level Tier kW Billing Demand

TIER FORMS: 2 PERIODS,KWH PER KW TIER

T2P2D.vts - 2 Period, 2 Level Tier kWh per kW Billing Demand, 2 kW Demand

T2P3D.vts - 2 Period, 3 Level Tier kWh per kW Billing Demand, 2 kW Demand

T2P4D.vts - 2 Period, 4 Level Tier kWh per kW Billing Demand, 2 kW Demand

T2P5D.vts - 2 Period, 5 Level Tier kWh per kW Billing Demand, 2 kW Demand

T2P2D2.vts - 2 Period, 2 Level Tier kWh per kW Billing Demand, 2 Level Tier kW Billing Demand

T2P3D2.vts - 2 Period, 3 Level Tier kWh per kW Billing Demand, 2 Level Tier kW Billing Demand

T2P4D2.vts - 2 Period, 4 Level Tier kWh per kW Billing Demand, 2 Level Tier kW Billing Demand

T2P5D2.vts - 2 Period, 5 Level Tier kWh per kW Billing Demand, 2 Level Tier kW Billing Demand

T2P3D3.vts - 2 Period, 3 Level Tier kWh per kW Billing Demand, 3 Level Tier kW Billing Demand

T2P4D3.vts - 2 Period, 4 Level Tier kWh per kW Billing Demand, 3 Level Tier kW Billing Demand

T2P5D3.vts - 2 Period, 5 Level Tier kWh per kW Billing Demand, 3 Level Tier kW Billing Demand

T2P4D4.vts - 2 Period, 4 Level Tier kWh per kW Billing Demand, 4 Level Tier kW Billing Demand

T2P5D4.vts - 2 Period, 5 Level Tier kWh per kW Billing Demand, 4 Level Tier kW Billing Demand

T2P5D5.vts - 2 Period, 5 Level Tier kWh per kW Billing Demand, 5 Level Tier kW Billing Demand

TIER FORMS: 1 PERIOD, KWH PER KW TIER WITH SUB-TIER KWH

T1P3H3D2.vts - 1 Period, 3 Level Tier kWh per kW Billing Demand with 3 sub-tier kWh, 2 Level Tier kW Billing Demand

T1P3H3D3.vts - 1 Period, 3 Level Tier kWh per kW Billing Demand with 3 sub-tier kWh, 3 Level Tier kW Billing Demand

TIER FORMS: 2 PERIODS, KWH PER KW TIER WITH SUB-TIER KWH
T2P3H3D2.vts - 2 Period, 3 Level Tier kWh per kW Billing Demand with 3 sub-tier kWh, 2 Level Tier kW Billing Demand

T2P3H3D3.vts - 2 Period, 3 Level Tier kWh per kW Billing Demand with 3 sub-tier kWh, 3 Level Tier kW Billing Demand

NOTE: When customizing the form, please save as a different filename, so the original can be preserved.

CROSS SEASON STANDARD FORMS:
S1P-2XA.VTS - 1 Periods for each season, 2 seasons, variation A

S1P-2XB.VTS - 1 Periods for each season, 2 seasons, variation B

Note: Variation A doesn't have customizations, whereas variation B does.

S2P-2XA.VTS - 2 Periods for each season, 2 seasons, variation A

S2P-2XB.VTS - 2 Periods for each season, 2 seasons, variation B

S3P-2XA.VTS - 3 Periods for each season, 2 seasons, variation A

S3P-2XB.VTS - 3 Periods for each season, 2 seasons, variation B

S4P-2XA.VTS - 4 Periods for each season, 2 seasons, variation A

S4P-2XB.VTS - 4 Periods for each season, 2 seasons, variation B

NOTE: Within a billing period, there should only be a maximum of 2 seasons cross over.

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Honeywell
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