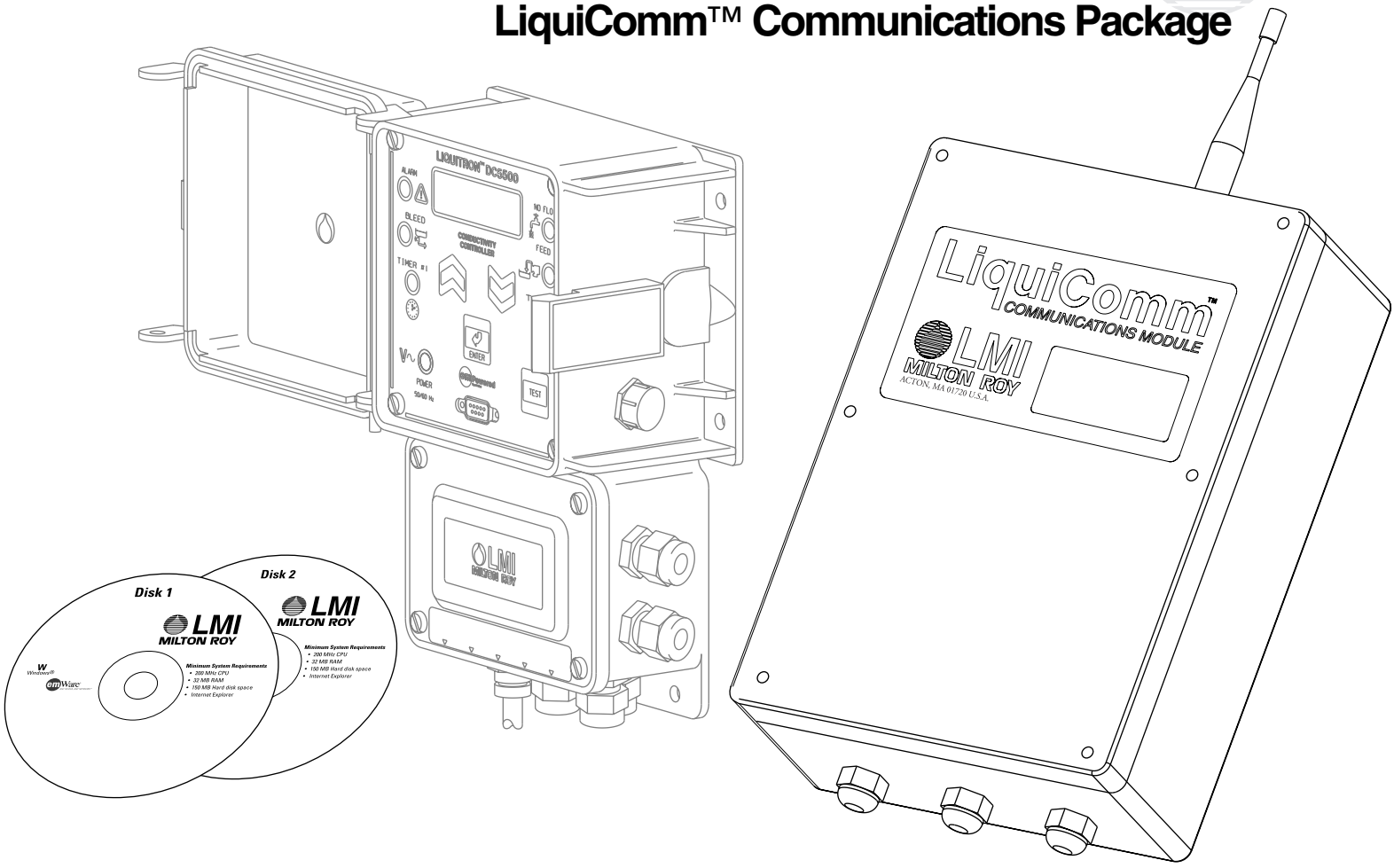
Instruction **Manual**

LiquiComm™ Communications Package



For file reference, please record the following data:

Model No: _____

Serial No: _____

Installation Date: _____

Installation Location: _____

When ordering replacement parts for your LMI LiquiComm™ Remote Communications Center, please include the complete Model Number and Serial Number of your unit.

LMI MILTON ROY

8 Post Office Square
Acton, MA 01720 USA
TEL: (978) 263-9800
FAX: (978) 264-9172
http:\\www.lmipumps.com

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FCC Required Information

1. This equipment complies with Part 68 of the FCC rules. This unit bears a label which contains the FCC registration number and ringer equivalence number (REN). If requested, this information must be provided to the telephone company.

2. This equipment uses the following standard jack types for network connection:2 wire (ring and tip) terminal block connection (i.e. stripped phone line cabling)

3. This equipment uses FCC compliant connections. It is designed to be connected to the telephone network or premises wiring using compatible modular cabling which complies with the requirements of FCC Part 68 rules

4. The ringer equivalence number, or REN, is used to determine the number of devices which may be connected to the telephone line. An excessive REN may cause the equipment to not ring in response to an incoming call. In most areas, the sum of the RENs of all equipment on a line should not exceed five (5.0).

5. In the unlikely event that this equipment causes harm to the telephone network, the telephone company can temporarily disconnect your service. The telephone company will try to warn you in advance of any such disconnection, but if advance notice isn't practical, it may disconnect the service first and notify as soon as possible afterwards. In the event such a disconnection is deemed necessary, you will be advised of your right to file a claim with the FCC.

6. From time to time, the telephone company may make changes in its facilities, equipment, or operations which could affect the operation of this equipment. If this occurs, the telephone company is required to provide advance notice so you can make modifications necessary to maintain uninterrupted service.

7. Please contact your local distributor for repair service or warranty information.

8. NO REPAIRS ARE ALLOWED BY THE USER.

"NOTICE: The Industry Canada label identifies certified equipment. This certification means that the equipment meets telecommunications network protective, operational and safety requirements as prescribed in the appropriate Terminal Equipment Technical Requirements documents(s). The department does not guarantee the equipment will operate to the user's satisfaction.

Before installing this equipment, users should ensure that it is permissible to be connected to the facilities of the local telecommunications company. The equipment must also be installed using an acceptable method of connection. The customer should be aware that compliance with the above conditions may not prevent degradation of service in some situations.

Repairs to certified equipment should be coordinated by a representative designated by the supplier. Any repairs or alterations made by the user to this equipment, or equipment malfunctions, may give the telecommunications company cause to request the user to disconnect the equipment.

Users should ensure for their own protection that the electrical ground connections of the power utility, telephone lines and internal metallic water pipe system, if present, are connected together. This precaution may be particularly important in rural areas. Caution: Users should not attempt to make such connections themselves, but should contact the appropriate electric inspection authority, or electrician, as appropriate."

"NOTICE: The Ringer Equivalence Number (REN) assigned to each terminal device provides an indication of the maximum number of terminals allowed to be connected to a telephone interface. The termination on an interface may consist of any combination of devices subject only to the requirement that the sum of the ringer equivalence Numbers of all the devices does not exceed 5."

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Microsoft Data Access Components 2.5

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Quick Start

This Quick Start Procedure will help you get the LMI Liquitron™ DC5500 Controller and LiquiComm™ Communications Module set up as quickly as possible. Details on each of the steps in the procedure below are found in the corresponding sections of this Manual. This Quick Start Procedure is not intended to be complete, nor a substitute for the remainder of this Manual. For safe and proper use of the LiquiComm™ and Liquitron™ Controllers, LMI recommends that the manual be read in its entirety.

1. Before installation of any software, please refer to *Section 1.1 System Requirements* for PC system requirements.
2. Upon completion of hardware installation, refer to *Section 3.0 LMI Software Installation – Disk 1 – LMI DataComm*™ and *Section 4.0 LMI Software Installation – Disk 2 – LMI emGateway*®.
3. Restart the computer after software installation.
4. Open Internet Explorer 4.5 or higher. Enter the URL address of the Liquitron™ DC5500 Controller or LiquiComm™

    a) For modem connection to a Liquitron™ Controller through the LiquiComm™:

    HTTP://127.0.0.1/EMNET.RS232M+COMX/PHONE#.RS485#/LIQUITRON.HTML

    b) For modem connection to the LiquiComm™:

    HTTP://127.0.0.1/EMNET.RS232M+COMX/PHONE#/LIQUICOMM.HTML

    c) For a direct RS232 connection to a Liquitron™ Controller:

    HTTP://127.0.0.1/EMNET.RS232+COMX/0/LIQUITRON.HTML
5. Create a shortcut and short name of URL address for all Liquitron™/LiquiComm™ devices, and place in folder on PC Desktop.
6. Open DataComm™ software to download, store, and view data from the Liquitron™ DC5500 Controller(s).
7. In the DataComm™ software, select "SAMPLE" data from the DEVICE drop-down menu (upper right corner). All four tabs of the DataComm™ software will load with the sample data. Configure settings to become familiar with the DataComm™ software.
8. To download data from a Liquitron™ DC5500 Controller using manual polling, the ID, OUI, and SHORT NAME fields must be completed in the device maintenance table, which is found in the ***Configuration*** menu on the tool bar. To download data using automatic polling the host, DLM, Password (if one is set), LOCAL/REMOTE, RS485#, and PHONE# fields must be filled in as well. The "Auto Polling" check box must also be checked.
9. Two options are provided for downloading device data — Manual Download (Polling) and Automatic Download (Polling).

    a) For Manual Download, select Manual Download from the Data Readers menu. Fill in the appropriate fields and download file.

    b) For Automatic Download, locate C:/Program Files/LMI/LMI3.exe and place in the Windows Scheduler, which is found at ***Start*** → ***Programs*** → ***Accessories*** → ***System Tools*** → ***Scheduled Tasks.***

Section 1.0 - System Overview and Requirements

1.0 System Overview

Figure 1-1 depicts the overall components of the various LiquiComm™ communications options, how they are interconnected, and which components are available for each communications option package.

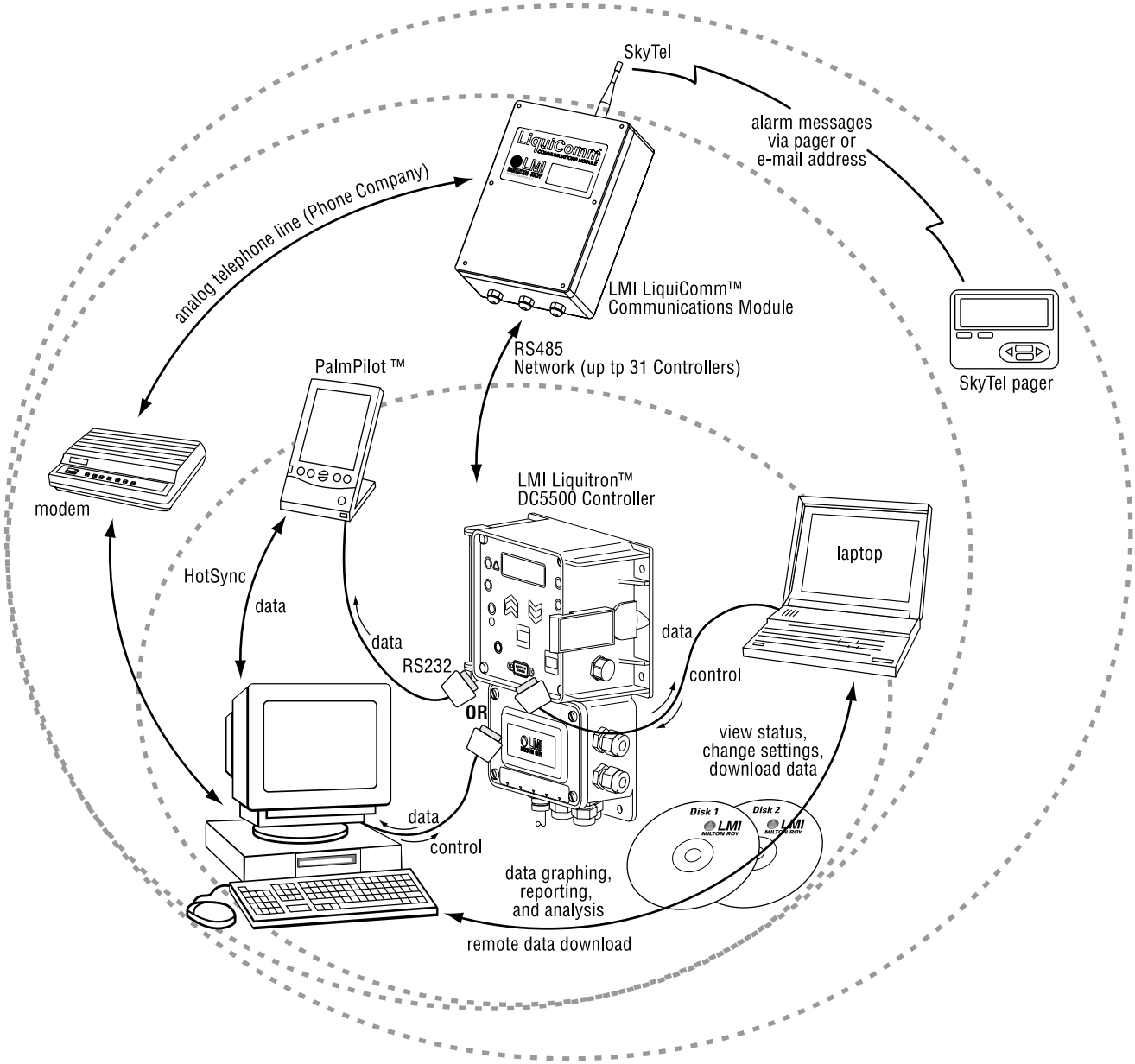


Figure 1-1: System Overview

1.0.1 Local and Remote Communications Options

The local communications option enables the RS232 port on the LMI Liquitron™ DC5500 Controller. This provides a local serial cable connection to the RS232 port of the Controller. With that physical connection established, the LMI DataComm™ software package provides status verification, the setting of control parameters, and downloading of LMI Controller data to the laptop.

A PalmPilot™ may also be connected to the LMI Liquitron™ DC5500 Controller to download data and later HotSync to a laptop or desktop PC for data graphing, reporting, and analysis using the LMI DataComm™ software.

The remote communications option provides the functions of the RS232 Communications Option, plus enables the RS485 port on the LMI Liquitron™ DC5500 Controller, and provides an LMI LiquiComm™ Communications Module. With these additions, 1) up to 31 LMI Controllers can be networked to the LMI LiquiComm™ using the RS485 loop protocol by wiring the LiquiComm™ and Liquitron™ DC5500 Controller RS485 terminals together in a daisy-chain configuration, 2) remote access to the LMI Controllers through the LMI LiquiComm™ is provided over a standard analog telephone line, and 3) remote control and data downloading is enabled via a PC (or laptop).

These communications options are activated by obtaining a single passcode from LMI for each Liquitron™ DC5500 Controller.

1.0.2 SkyTel Alarm Notification Communications Option

The SkyTel Alarm communications option adds to the other communication capabilities the ability to receive pages from the Controller, network, or LiquiComm™ alarm notifications via SkyTel pager or email.

1.1 System Requirements

1.1.1 PC Requirements

Almost any PC or laptop is suitable for use in communicating with the LMI Liquitron™ DC5500 Controller or LiquiComm™ Communications Module. Windows 95c, NT 4.0 (SP5 or higher), or 98 Second Edition is required, with a minimum processor speed of 200 MHz, 64 MB of RAM (96 MB recommended), 180 MB of free hard disk space (80 MB for the software and 100 MB additional free space), an unused RS232 serial Comm Port, a CDROM drive, and a video adapter with 256 colors and 800x600 display resolution. Microsoft Internet Explorer 4.5 or later should also be installed.

Note that as data from the Liquitron™ DC5500 Controllers is downloaded to the laptop or PC, approximately 3 MB of hard disk space per device, per year is required.

1.1.2 PDA Requirements (PalmPilot™)

If you will be using a PDA to access data directly from the LMI Liquitron™ DC5500 Controllers and subsequently download to the PC or laptop, a PalmPilot™ III or better is required, running Palm OS 2.0 or higher. Other types of PDAs or those from other manufacturers are not compatible.

1.1.3 SkyTel Account

If your LMI LiquiComm™ Communications Module is equipped with the SkyTel Alarm Notification option, you will need a 2-way pager account from SkyTel. To set up the account, you will need the serial number and Cap Code for the pager system that is a subsystem within the LMI LiquiComm™. These two numbers are located on a sticker on the inside of the LMI LiquiComm™ enclosure. Give these two numbers to the Customer Service representative from SkyTel when you are asked for them. SkyTel will give you instructions so that the pager account may be activated. A SkyTel wireless account application is provided in *Section 11.0 SkyTel Activation Procedure*.

To contact SkyTel Customer Service to set up an account for the LMI LiquiComm™, call toll-free 1-866-SKY-LMI0 (1-866-759-5640). Refer to the following section, *Section 11.0 SkyTel Activation Procedure*, for a detailed explanation of the activation procedure and associated SkyTel forms.

Section 2.0 - Hardware Installation

This section describes the installation of the LMI LiquiComm™ Communications Module and its associated interconnections to the LMI Liquitron™ DC5500 Controller, analog telephone line and SkyTel Pager Account.

2.1 Mounting the LMI LiquiComm™ Communications Module

The LMI LiquiComm™ Communications Module (LiquiComm™) can be mounted in any convenient location near both AC power and an analog telephone line. The LiquiComm™ must be mounted in a location considered non-hazardous (NEMA 4X). While the LiquiComm™ enclosure is water-resistant, it must not be subjected to submersion in water, or temperatures outside the range of 0° C to 50°C.

If you are connecting multiple Liquitron™ DC5500 Controllers together using the RS485 network, the maximum cable distance of 4000 feet for reliable RS485 communications between the LiquiComm™ and the Liquitron™ DC5500 Controller(s) must be observed. The RS485 connection should be made using AWG#22 twisted pair cable.

If your LiquiComm™ has the SkyTel Alarm Notification option installed, you must locate the LiquiComm™ in an area where SkyTel service is available. Note that some installation areas may have excessive noise or poor signal acquisition from the SkyTel network. If this is the case, and the LiquiComm™ is installed within a SkyTel service area, an extension antenna will be required to bring the signal up to operating minimums. Contact your local LMI distributor for information regarding the extension antenna.

Upon installation, the telephone line must first be connected to a Listed L.I.U. (such as a UL listed router that has its own overvoltage protection), or to current limiting devices that comply with UL497A (Secondary Protectors for Communications Circuits) or CSA C22.2 No. 226 (Protectors in Telecommunications Networks).

When installed outdoors, installations must follow 410-57 of the National Electrical Code; also, the plug should be attached to a weather-proof outlet box. Furthermore, outdoor installations require that both the telephone line and the AC line should be used with a Transient Voltage Surge Suppressor (i.e. a surge strip that can handle both AC and Telco lines).

The power cord of the LiquiComm is the disconnect device for the entire unit.

2.2 LMI LiquiComm™-Liquitron™ RS485 Interconnect

Remove the cover from the LiquiComm™. Using AWG#22 twisted pair cable appropriate for RS485 connections, thread the cable up through the PG9 connector in the bottom of the LiquiComm™ enclosure, and make the connections to the appropriate terminal blocks on the LiquiComm™ terminals as shown in Figure 2-1.

Repeat this process at the other end of the cable at the LMI Liquitron™ DC5500. Consult the Liquitron™ DC5500 instruction manual for the proper terminals.

2.3 LMI LiquiComm™ Analog Telephone Line Connection

The LiquiComm™ connects to the analog telephone line. Thread the end of the cable through a PG9 connector on the bottom of the LiquiComm™ enclosure, and connect the red and green wires to the corresponding terminal blocks inside the LiquiComm™ enclosure.

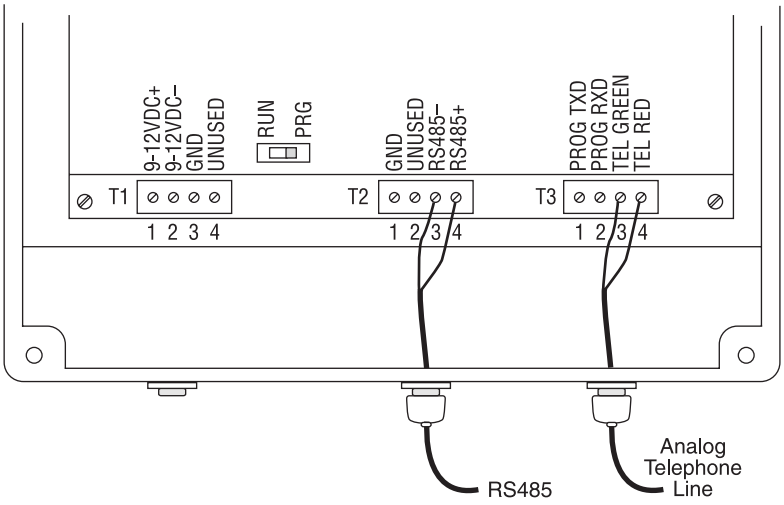


Figure 2-1: LiquiComm™ Terminal Blocks

Replace the cover on the LiquiComm™.

2.4 SkyTel Alarm Notification Option

If your LiquiComm™ is equipped with the SkyTel Alarm Notification option, you must install the antenna for the SkyTel Paging System, which is supplied with the LiquiComm™. Remove the protective dustcap from the antenna terminal located on the top of the LiquiComm™ enclosure. Screw the antenna onto the terminal finger tight. DO NOT OVERTIGHTEN.

2.5 RS232 Connections

2.5.1 PC or Laptop

If you will be connecting directly to the LMI Liquitron™ DC5500 Controller using an RS232 connection, you must have an unused RS232 serial communications port (Comm Port) on your PC or laptop. Determine which port is available on your machine. Use a standard 9-pin RS232 serial cable to connect between the RS232 port on the Controller and the Comm Port on your PC or laptop. If your laptop requires an adapter, use the appropriate device as recommended by your laptop manufacturer.

Note that as the length of the RS232 connection increases, the speed (data rate) of the serial connection must be reduced to maintain reliable communications. For example, at a distance of 50 feet, reliable communications can be maintained at a 57,600 baud rate; this is the default baud rate of the LMI Liquitron™ DC5500 Controller. For instructions on using serial connections longer than 50 feet, and adjusting the serial communications data rate of the Controller, please refer to the Instruction Manual for the Controller.

2.5.2 PalmPilot™

If you will be connecting directly to the LMI Liquitron™ DC5500 Controller using a PalmPilot™, connect the PalmPilot™ RS232 cable between the Controller and your PDA, making sure it is firmly connected at both ends and the two adapters are properly connected, as shown in Figure 2-2. To complete the connection, you will need both a female-to-male null modem and a male-to-male adapter.

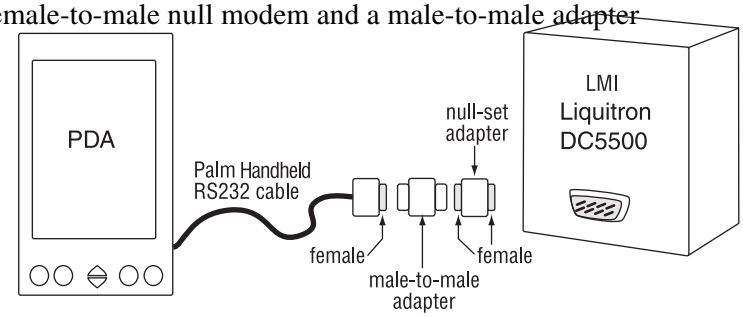


Figure 2-2: PalmPilot™ Direct Connection

If you will be using a modem with your PC or laptop to remotely connect to the LMI LiquiComm™ using an analog telephone line, install the modem according to the manufacturer's instructions.

Section 3.0 - LMI Software Installation – Disk 1 – LMI DataComm™

The software necessary to enable communications between your PC or laptop and the LMI Liquitron™ DC5500 Controller or LiquiComm™ Communications Module is contained on two CDs. Disk 1 contains the LMI DataComm™ software, which provides 1) the data downloading application, and 2) the data graphing and reporting software. **Disk 1 is a two (2) part installation.**

Almost any PC or laptop is suitable for use in communicating with the LMI Liquitron™ DC5500 Controller or LiquiComm™ Communications Module. Windows 95c, NT 4.0 (SP5 or higher), or 98 Second Edition is required, with a minimum processor speed of 200 MHz, 64 MB of RAM (96 MB recommended),180 MB of free hard disk space (80 MB for the software and 100 MB additional free space), an unused RS232 serial Comm Port, a CDROM drive, and a video adapter with 256 colors and 800x600 display resolution. Microsoft Internet Explorer 4.5 or later should also be installed.

Note: As data from the Liquitron™ DC5500 Controllers is downloaded to the laptop or PC, approximately 3 MB of hard disk space per device, per year is required.

Insert Disk 1 in your CDROM drive. The LMI Installer main window will appear within a few moments of inserting the disk in the CDROM drive. If it does, skip to step 2 below; otherwise, proceed with step 1 below.

1. If the LMI Installer does not launch automatically,

   a) from the Start menu select "***Run...*** "

   b) In the Run dialog box type *:\Setup.exe, where *:\ is the drive letter for your CDROM drive (G:\ is shown in this example).

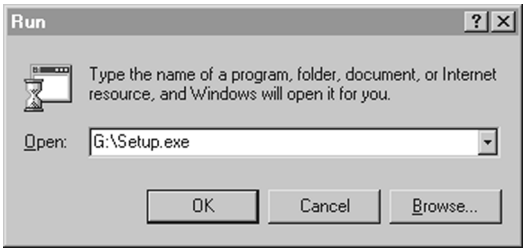


Figure 3-1: Run Dialog Box

Click on ***OK***.

The LMI Installer will now run and will automatically install the DataComm™ software.

2. When completed, the Installer will then install the Microsoft Data Access Components. The installer will ask if you Accept the License Agreement for the Data Access Components. If you do, click on the check box next to the "Yes, I agree with the terms of the preceding license agreement." Then click ***NEXT.***

3. The Installer will now install the Data Access Components.

Figure 3-2: Data Access Components Installation

Click ***NEXT***.

4. Installation is complete. The Installer will now ask you to restart your computer. Make sure the option button next to "Let setup restart the system now." is selected, then click ***FINISH***.

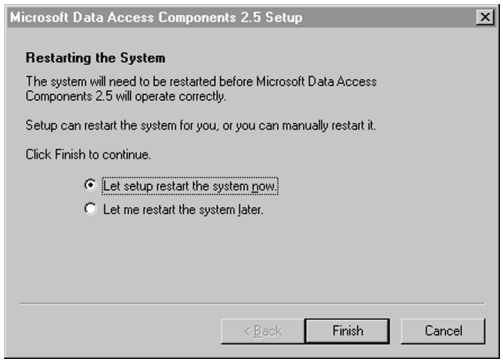


Figure 3-3: Restart

5. After the PC restarts, manually click on the CDROM drive to continue. Complete installation of the DataComm™ software. DataComm™ will continue to install files neccessary for proper operation. Click on the disk drive and the software will finish loading.
6. Restart the PC one last time before using the software. An icon will appear on the desktop confirming successful installation.

Section 4.0 - LMI Software Installation – Disk 2 – LMI emGateway®

Disk 2 contains a set of communication programs that 1) enable checking the status or configuring the LMI Liquitron™ DC5500 Controller and LiquiComm™ using Microsoft Internet Explorer, and 2) provide data download to a PalmPilot™ through a direct RS232 connection, with subsequent HotSync and transfer of the data to the PC or laptop.

Note: Use with Microsoft Internet Explorer 4.5 or later is supported. Use with Netscape Navigator or Communicator, or earlier versions of Internet Explorer is not supported.

Almost any PC or laptop is suitable for use in communicating with the LMI Liquitron™ DC5500 Controller or LiquiComm™ Communications Module. Windows 95c, NT 4.0 (SP5 or higher), or 98 Second Edition is required, with a minimum processor speed of 200 MHz, 64 MB of RAM (96 MB recommended), 180 MB of free hard disk space (80 MB for the software and 100 MB additional free space), an unused RS232 serial Comm Port, a CDROM drive, and a video adapter with 256 colors and a minimum of 800x600 display resolution. Microsoft Internet Explorer 4.5 or later should also be installed.

Note that as data from the Liquitron™ DC5500 Controllers is downloaded to the laptop or PC, approximately 3 MB of hard disk space per device, per year is required.

4.1 LMI Web Application

Before proceeding, close any programs in the Task Bar that may be using the Comm Port you selected to be used with your RS232 or modem connection (i.e. HotSync Manager, etc.). You should also find out which com ports are being utilized by RS232 serial and modem devices. **It is strongly recommended that you close any programs that may be running before performing the installation.**

Insert Disk 2 in your CDROM drive. The LMI Installer main window will appear within a few moments of inserting the disk in the CDROM drive. If it does, skip to step 2 below; otherwise, proceed with step 1 below.

1. If the LMI Installer does not launch automatically,

    a) from the Start menu select "***Run***..."

    b) In the Run dialog box type *:\LMI\Installer.exe, where *:\ is the drive letter for your CDROM drive (G:\ is shown in this example).

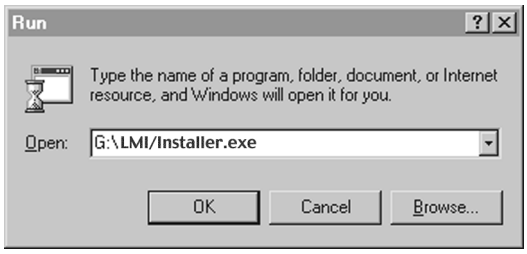


Figure 4-1: Run Dialog Box

c) Click on ***OK***. The LMI Installer will now run and you should see the main screen as shown in step 2.

2. Click on the Install LMI Web Applications (second) bar. This will install the emGateway® components, which enable communications using Microsoft Internet Explorer 4.5 or later.

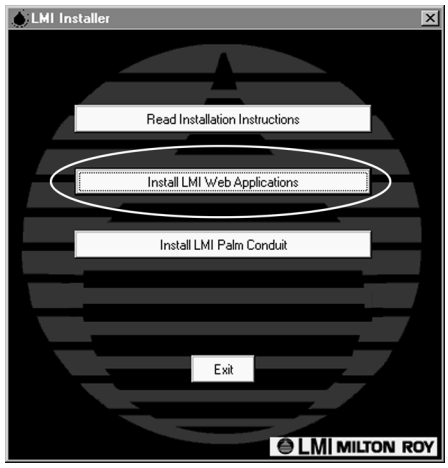


Figure 4-2: LMI emGateway® Installer

3. The License Agreement screen will be displayed. If you agree to its terms, click on ***NEXT***.
4. The Installer will ask if you wish to choose a destination folder for the software. You must leave the destination at its default. Click ***NEXT***.
5. The Installer next displays the installation options screen. For a successful installation of the emGateway® component, there are no options other than a Full installation. Click ***NEXT***.
6. The Installer will ask you to select a Program Folder. Do not override the default folder. Click ***NEXT***.
7. To begin the file copying process, click ***NEXT***.

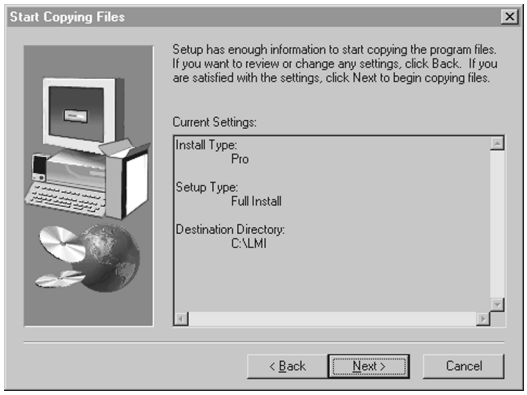


Figure 4-3: Installation Verification

8. The InstallShield Wizard will copy the emGateway® component files from the CDROM to your hard drive.

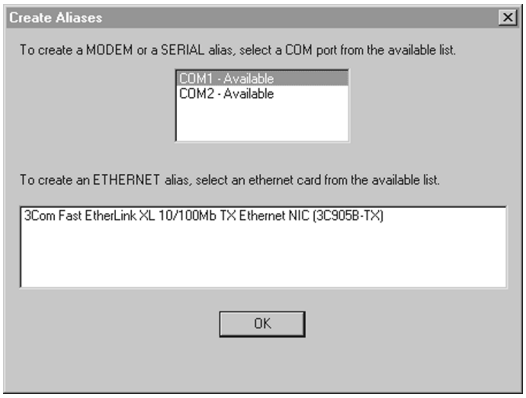


Figure 4-4: Comm Port Selection

Click ***OK***. The selected Comm Port will be configured for use by the software for RS232/Modem communications with the LMI LiquiComm™ and Liquitron™ DC5500 Controller. To change to a different Comm Port later, refer to the procedure in *Section 10.0 Troubleshooting*.

9. When the Setup is complete, the Installer will prompt you to restart your computer. Do not restart your computer at this time. Make sure the radio option button is selected next to the selection "No, I will restart my computer later." Click ***FINISH.***

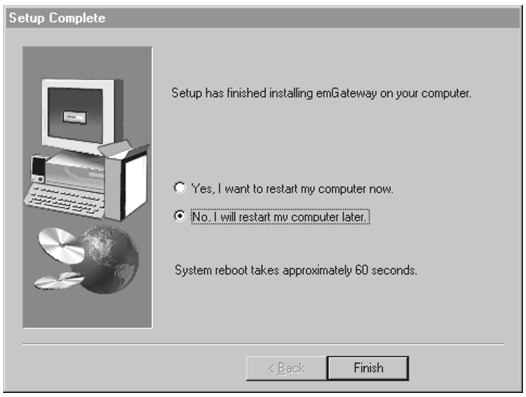


Figure 4-5: Setup Complete/Restart Request

If you plan to use a PalmPilot™ to access Liquitron™ DC5500 data directly, proceed to the next section, *Section 4.2 LMI PalmPilot™ Conduit Utility Installation*. If not, proceed to *Section 5.0 Setting Up the emGateway®/emManager™*.

4.2 LMI PalmPilot™ Conduit Utility Installation

The LMI PalmPilot™ Conduit Utility provides connectivity between your PC and your PalmPilot™. It will install the Palm Program (*.prc file) in the Add-On folder. The next time you run the HotSync utility, this automatically gets installed on your PalmPilot™. It can be found under ALL/LMI. With the LMI application on your PDA, you can connect it to the LMI Liquitron™ DC5500 Controller and download its data to your PalmPilot™, and later upload the data to your PC or laptop by Hot Syncing for subsequent analysis, reporting, and graphing using the LMI DataComm™ software. Refer to *Section 8.2 Logging on to the LMI Liquitron™ DC5500 Controller Using a Direct R5232 Connection to Your PalmPilot™*.

Note: Be sure to install Palm HotSync Manager first before installing the Palm Conduit software. If you do not, the LMI emGateway® Palm Conduit software may not install correctly and/or you may get a Palm registry key error during installation.

1. Make sure the LMI Communications Utility Installer is running from Disk 1.

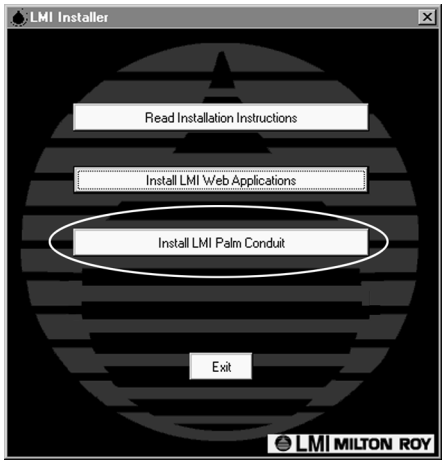

LMI Installer
Read Installation Instructions
Install LMI Web Applications
Install LMI Palm Conduit
Exit
LMI MILTON ROY

Figure 4-6: LMI PalmPilot™ Installer

2. Click on the third bar, entitled “Install LMI Palm Conduit”. The Setup screen will appear.

Click ***NEXT***.

3. When the Conduit Files Destination window appears, click ***NEXT***. **Do not change the destination for these files.**
4. The Conduit software will install. When the Setup Complete window appears, click ***FINISH***.
5. After rebooting, make sure the DataComm™ shortcut is on your desktop. If it does not appear, the installation is not complete. Run the setup again so the DataComm™ installation will add any remaining necessary components to run your DataComm™ software package.

Section 5.0 - Setting Up the emGateway®/emManager™

5.1 Verify emGateway®

When the computer restarts, it will automatically load and run the emGateway® application, which allows communication with the LMI LiquiComm™ Communications Module and Liquitron™ DC5500 Controller(s) using Microsoft Internet Explorer 4.5 or later. You can verify that the emGateway® application is loaded by looking for the red emWare® logo on the task bar, as shown in Figure 5-1.

Figure 5-1:Task Bar

If the icon is present, you are ready to log onto the LiquiComm™ or Liquitron™ DC5500 Controller. If the icon is not present, do the following.

1. From the start menu, select ***Start Programs*** ⟶ ***emWare®*** ⟶ ***emGateway®***. emGateway® will launch, and its icon will appear in the Task Bar. If the icon still does not appear, do the following:

   Remove and re-install the emGateway® software. Go to ***Start*** ⟶ ***Settings*** ⟶ ***Control Panels***, and launch Add/Remove Programs. Find and select "LMI emGateway®" in the list, and click ***REMOVE***. Repeat for "LMI Application." Run the Disk 2 Installation procedure in *Section 4.0 LMI Software Installation – Disk 2 – LMI emGateway®*. When removing emGateway®, you may be prompted with several files that are being shared with other software on your PC. Be sure that you DO NOT remove a file that another program needs to support it.

   If when you restart the computer, you cannot get emGateway® to run, either automatically or by using the procedure at the beginning of this section, contact your local LMI distributor.

Section 6.0 - Logging Onto and Programming The LMI LiquiComm™ Communications Module

6.1 Logging Onto The LMI LiquiComm™ Communications Module

The LMI LiquiComm™ Communications Module (LiquiComm™) can be accessed from your PC or laptop. Once communications is established, you can modify settings related to the connection, security, the emergency/alarm conditions reported via the SkyTel pager account, and the RS485 network (subnet) of Controllers (up to 31) connected to the LiquiComm™.

1. Verify that the telephone cable is firmly connected at both ends.
2. Verify that the emGateway® icon is present in the Task Bar at the lower right hand corner of your monitor. If the icon is not present, do the following:

   From the start menu, select ***Start*** ⟶ ***Programs*** ⟶ ***emWare®*** ⟶ ***emGateway®***. EmGateway® will launch, and its icon will appear in the Task Bar. If the icon still does not appear, contact your local LMI distributor.
3. Launch Internet Explorer. In the address bar type the following URL, without the quotes, replacing the following as appropriate:

   a) Replace the "x" at "COMx" with the Comm Port that is assigned to the modem.

   b) The "PHONENUMBER" portion is the telephone number of the analog telephone line to which the LiquiComm™ is connected. Include a "1" and the area code if needed. Be sure to insert a comma "," between the main phone number and any required extension. This allows the modem to pause for several seconds to wait for the connection to be completed before dialing the extension number. Multiple commas may be inserted if a longer pause is required. Each comma results in an approximate two second pause.

Make sure the address is all UPPER CASE:

"HTTP://127.0.0.1/EMNET.RS232M+COM**x**/PHONENUMBER /LIQUICOMM.HTML"

   c) Hit the ***ENTER*** key to initiate the connection.

If a connection cannot be established, the following screen will appear as shown in Figure 6-1 below. Go to *Section 10.0 Troubleshooting*.

Figure 6-1: No Connection

4. When the connection with the LMI LiquiComm™ is established, you'll be asked for a password:

    a) If this is the first time you are logging in to the LiquiComm™, no password will have been established. You will be granted access immediately. Refer to the following section, *Section 6.2.2 Security Page*, for instructions on enabling password access to the LiquiComm™.

    b) If a password has already been established, type in the password and then click ***SUBMIT***. Passwords are case sensitive, so be careful to match the case of each letter carefully.

If you enter an incorrect password, you will be informed that you have entered an invalid password. Re-enter the password and click ***SUBMIT***. If you make an error the third time, the LiquiComm™ will lock-out, and you will have to wait several minutes for the security lock-out condition to clear in order to try again. Quit Internet Explorer, and start again at Step 3 above.

If your password entry is correct, access to the LiquiComm™ will be enabled and your connection will be confirmed.

With the connection established with the LiquiComm™, its status can be verified and its operating parameters can be configured as described in the following sections.

6.2 Programming The LMI LiquiComm™ Communications Module

6.2.1 Connection Page

To access the Connection Page, click on the "Connections" tab at the top of the screen. The Connection Page provides controls that will automatically terminate the connection if either 1) the emGateway® software component fails to keep the connection alive, such as might happen if the PC or laptop crashed, or 2) no activity on the part of the user occurred for a defined interval of time. Both of these controls are designed to protect the LiquiComm™ and the Liquitron™ Controllers attached to it from unauthorized tampering if they were accidently left in an insecure condition.

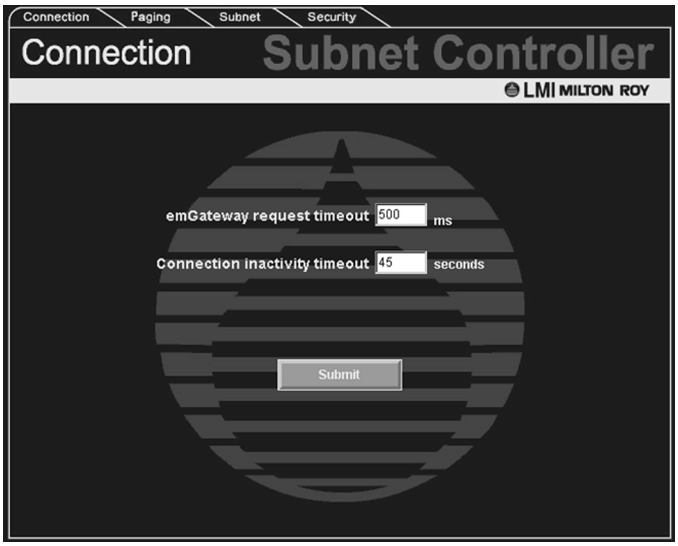


Figure 6-2: Connection Page

Typical default settings for these two controls are:

EmGateway® request timeout = 500 ms

Connection inactivity timeout = 45 seconds

6.2.2 Security Page

To access the Security Page, click on the "Security" tab at the top of the screen. The Security Page provides controls for password access to the LiquiComm™ and the Controllers attached to it, determining what type of access will be granted (Read-Only or Read/Write), and defining the password for the type of entry required.

Figure 6-3: Security Page

When the LiquiComm™ is first accessed, no passwords have been established. Since there is no old password, that field is null. Enter and re-enter the new password(s) in the fields provided under the type of access you require. When the entries are complete, click ***SUBMIT***. Using a different password for each type of

access allows more levels of controlled access. Passwords may be left blank. When logging onto the LiquiComm™, whatever is in the Password Entry field when the SUBMIT button is clicked, including a blank field, is compared to these two passwords, and the matching access is then granted.

To change the password, follow the procedure above, but first enter the old password in the OLD field. The check box ("Password required for access") should be checked to enable password-protected access, regardless of which type is selected.

6.2.3 Subnet Page

To access the Subnet Page, click on the "Subnet" tab at the top of the screen. The Subnet Page provides controls for setting the upper and lower polling limit and a Subnet timeout interval.

The upper and lower polling limits are set based on the quantity of Liquitron™ DC5500 Controllers connected to the LiquiComm™, and the specific device addresses assigned to each one by the user. The lower and upper polling limits must include the lowest and highest device addresses if all of the Controllers are to be included on the subnet.

The Subnet timeout controls how the delay that the LiquiComm™ allows between polling an individual Controller and receiving an answer. This functions to establish that an RS485 network failure has occurred. If the interval is exceeded after two attempts to initiate communication, an alarm condition is established. A typical value for this interval is 100 ms.

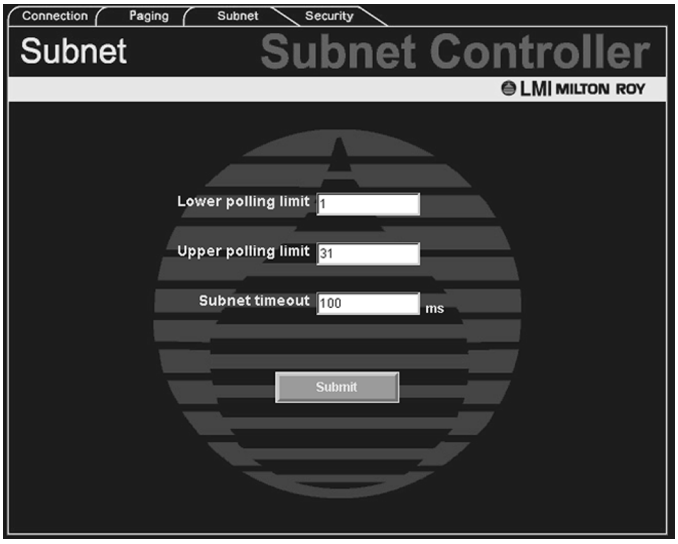


Figure 6-4: Subnet Page

6.2.4 Paging Page

To access the Paging Page, click on the "Paging" tab at the top of the screen. The Paging Page allows you to define the general and specific alarm conditions which will generate an email or pager message.

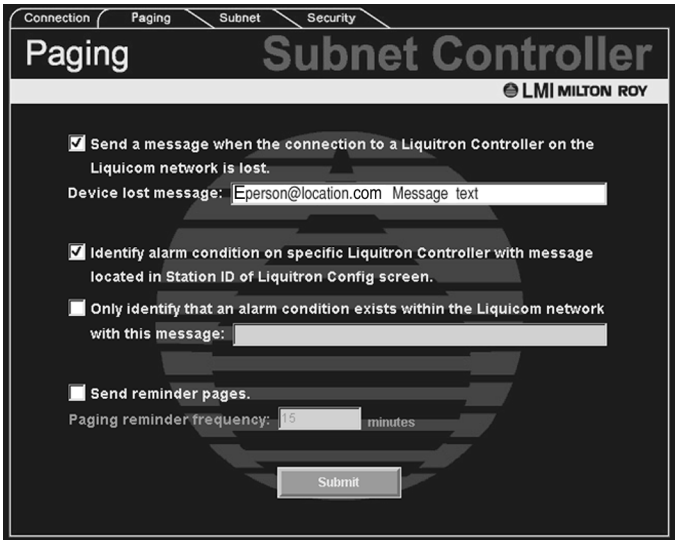


Figure 6-5: Paging Page

The first check box enables a “Device Lost” email or pager message to be sent when any Liquitron™ Controller is not responding, i.e. is lost on the subnet (RS485 network). The message format should read as follows:

Email: E*anyperson*@location.com_Message_Text; with the underscore (_) replaced by a space
Pager: P*pagernumber*_Message; with the underscore (_) replaced by a space

Note that the Email message must start with a capital "E", and the Pager message with a capital "P". The message text appears as the subject of the email or pager message text. To ensure the message will fit in the pager window, keep the total number of message text characters to 20 characters, including spaces.

The second check box enables a device-specific message. Each Liquitron™ DC5500 Controller can be programmed with a unique message in the Station Info section of the Controller's Configuration Page, which identifies that specific Controller. If this second check box is selected and a Liquitron™ DC5500 Controller "goes down", the message sent consists of 1) the device OUI, 2) three lines of text, and 3) a specific error message. Refer to *Section 7.3.3 Setting the SkyTel Alarm Email/Pager Message* for information on programming this message. This checkbox overrides the third checkbox (described below), even if the third checkbox is selected. If the Station Info is filled in for a Liquitron™ that fails, that Station Info is sent as described above. If the Station Info is not filled in for a Liquitron™ that fails, the third checkbox takes precedence.

The third checkbox enables a message that only indicates a general alarm condition somewhere on the subnet (RS485 network) of that LiquiComm™ device. No Liquitron™ device-specific alarm is sent. The format for this message is the same as that for the Device Lost message.

The last checkbox enables whatever messages are enabled with the previous three check boxes to be sent at a repetitive interval. The interval, in minutes, is set in the field just below the checkbox.

Click ***SUBMIT*** to have the entries made above accepted.

Note: Remember that the LMI LiquiComm™ will not send a page if the modem is engaged. It will also not send a page if the alarm condition existed while the modem was connected, thus elminating redundant alarm notification.

Section 7.0 - Logging Onto And Programming The LMI Liquitron™ DC5500 Controller

7.1 Logging On Using An RS232 Connection To Your PC or Laptop

This section describes how to establish communications from your PC or laptop with the LMI Liquitron™ DC5500 Controller using a direct RS232 connection.

1. Verify that the RS232 cable is firmly connected at both ends.
2. Verify that the emWare®™ logo is present on the right side of the Task Bar on your monitor.
3. Launch Internet Explorer. In the address bar type the following URL, without the quotes, replacing the "x" at "COMx" with the Comm Port that is assigned to the modem.

Make sure the address is all UPPER CASE:

"HTTP://127.0.0.1/EMNET.RS232+COM**x**/0/LIQUI**TRON**.HTML"

Hit the ***ENTER*** key to initiate the connection.

The following screen will be displayed while the connection is being established.

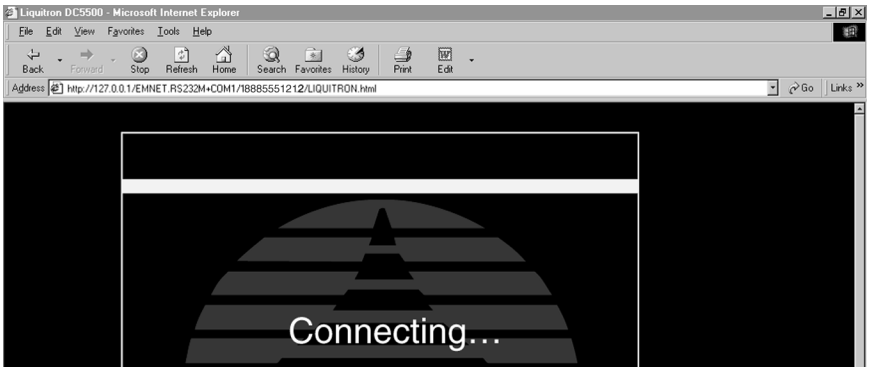


Figure 7-1: Connection In Process

If a connection cannot be established, the following screen will appear as shown in Figure 7-2 below.

Figure 7-2: No Connection

Refer to *Section 10.0 Troubleshooting*.

4. When the connection with the Controller is established, you'll see the DC5500 Status screen shown in Figure 7-3 below.

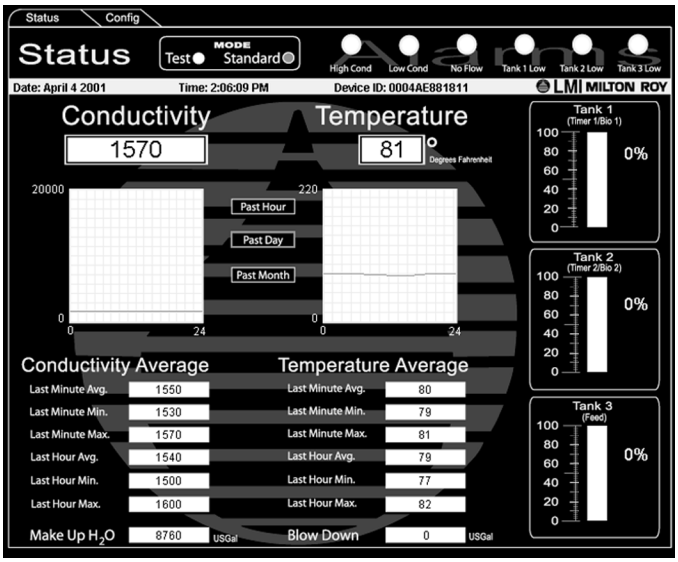


Figure 7-3: Controller Status Screen

Please refer to the following section, *Section 7.3 Programming The LMI Liquitron™ DC5500 Controller* for information on configuring the DC5500.

7.2 Logging On Through The LMI LiquiComm™ Communications Module Via A Modem Connection

1. Verify that the telephone cable is firmly connected at both ends.
2. Verify that the emGateway® icon is present in the Task Bar at the lower right hand corner of your monitor.
3. Launch Internet Explorer. In the address bar type the following URL, without the quotes, replacing the following as appropriate:

    a) Replace the "x" at "COMx" with the Comm Port that is assigned to the modem.

    b) The "PHONENUMBER" portion is the telephone number of the analog telephone line to which the LMI LiquiComm™ Communications Module (LiquiComm™) is connected. Include a "1" and the area code if needed. Be sure to insert a comma "," between the main phone number and any required extension. This allows the modem to pause for several seconds to wait for the connection to be completed before dialing the extension number. Multiple commas may be inserted if a longer pause is required. Each comma results in an approximate two second pause.

    c) Replace the "D" with the RS485 number of the LMI Liquitron™ DC5500 Controller to which you want to connect. Since the LRCC can be connected to up to 31 Controllers through the RS485 network connection, the RS485 number for the specific Controller to be accessed is required. To access multiple Controllers, establish communications with each in turn, changing the RS485 number at "D" each time.

Make sure the address is all UPPER CASE:

"HTTP://127.0.0.1/EMNET.RS232**M**+COM**x**/PHONENUMBER.**D**/LIQUI**TRON**.HTML"

Hit the ***ENTER*** key to initiate the connection.

If a connection cannot be established, the following screen will appear as shown in Figure 7-4 below. Go to *Section 10.0 Troubleshooting*.

Figure 7-4: No Connection

4. When the connection with the LMI Liquitron™ DC5500 Controller is established, you'll be asked for a password:

    a) If this is the first time you are logging in to this Liquitron™ Controller, no password will have been established. You will be granted access immediately.

    b) If a password has already been established, type in the password and the click ***SUBMIT***. Passwords are case sensitive, so match the case of each letter carefully.

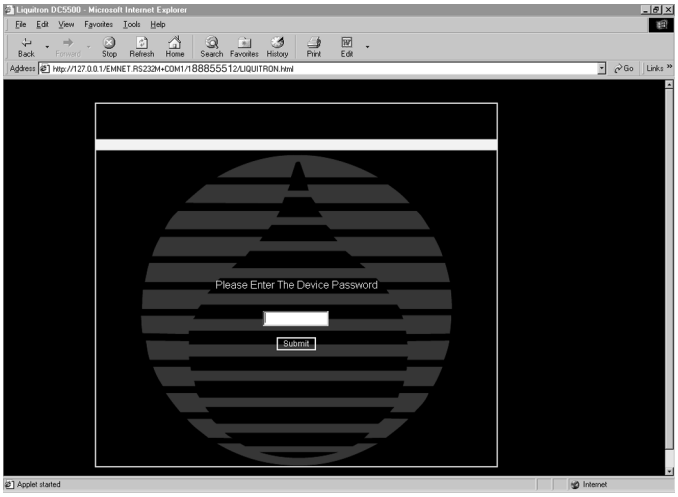


Figure 7-5: Password Entry

5. When asked for the password, type in the password and click ***SUBMIT***. If you enter an incorrect password, you will be informed that you have entered an invalid password. Reenter the password and click ***SUBMIT***. If you make an error the third time, the Liquitron™ will lock-out, and you will have to wait several minutes for the security lock-out condition to clear in order to try again. Quit Internet Explorer, and start again at Step 3 above.

If your password entry is correct, access to the Liquitron™ DC5500 Controller will be enabled and your connection will be confirmed.

Click ***OK*** to view the Liquitron™ DC5500 Controller Status screen.

Please refer to the following section, *Section 7.3 Programming The LMI Liquitron™ DC5500 Controller* for information on configuring the Controller.

7.3 Programming The LMI Liquitron™ DC5500 Controller

7.3.1 Liquitron™ DC5500 Status Page

Figure 7-6 shows the Status Page for the LMI Liquitron™ DC5500 Controller. Summary plots of conductivity and temperature data are displayed, as well as averages for a variety of settings and parameters. By selecting either PAST MONTH, PAST DAY, or PAST HOUR, the time interval of the data displayed can be changed. In all cases, when the cursor is moved over the plotted data, the coordinates of the point over which the cursor is sitting is displayed next to the cursor. This display is updated dynamically as the cursor is moved over the plot area. Note that the ON/OFF indicators for FEED, BLEED, BIO1, and BIO2 are only available when PAST HOUR is selected (Figure 7-7).

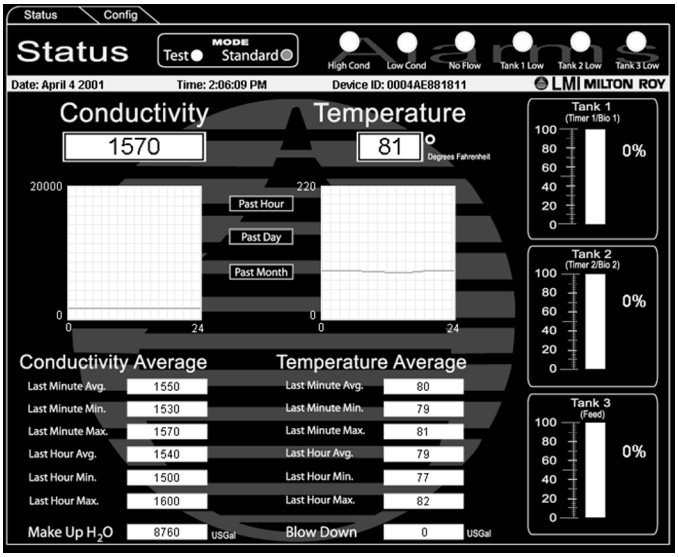


Figure 7-6: Controller Status Screen

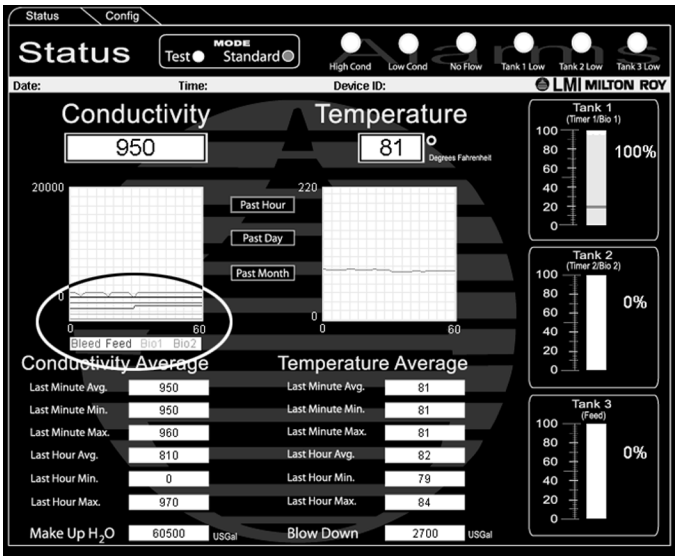


Figure 7-7: Status-Past Hour

To change the configuration of the Controller, click on the “Config” tab at the top of the display. The next section describes how to reconfigure the Controller.

7.3.2 Liquitron™ DC5500 Configuration Page

Click on the “Config” tab at the top of the display. The Configuration Page will be displayed as shown in Figure 7-8.

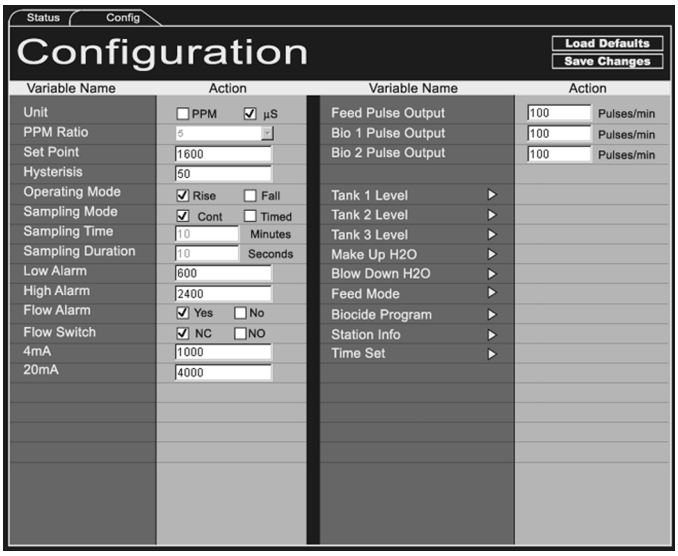


Figure 7-8: Controller Configuration Screen

Data entry is straightforward for the various parameters that can be controlled on the DC5500. New values are typed into the various fields as needed, check boxes are selected as needed, and selections from pull-down menus are made as required. Click on the arrowhead next to parameters where the arrowhead appears to reveal additional settings. When you are satisfied with the changes, the changes can be saved by clicking on the ***SAVE CHANGES*** button at the top right corner of the Configuration Page. Note that the changes will not be saved unless you save them using the ***SAVE CHANGES*** button. The only things that cannot be done remotely are calibration mode, test mode, and to manually trigger the outputs.

If you wish to re-load the factory default settings, click on the ***LOAD DEFAULTS*** button at the top right corner of the Configuration Page.

While the Web Application GUI is extensive in its control of the LMI Liquitron™ DC5500 Controller, there are a few parameters that it cannot control; these functions can only be controlled locally:

1. Resetting the Water Meters
2. The “TEST” function
3. The setting for the Biocide Weekly Repeat Cycle (see DC5500 Liquitron™ manual pg. 23 for significance)

7.3.2.1 PPM Versus µS Unit Setup

The LMI Liquitron™ DC5500 Controller can be configured using either PPM or µS as the units in which to work. When setting a setpoint, keep the following in mind:

1. If you start with the UNIT in µS, and enter a value (e.g. 2,000), click the PPM checkbox to change the units, and then click on ***SAVE CHANGES***, the value will be changed to half of the entered value, since the conversion from µS to PPM multiplies by $^{5}/_{10}$ up to $^{9}/_{10}$.
2. If you change a value, then change the unit and SAVE, the value will change to reflect the new unit.
3. If you change the unit first, then the value and SAVE, the value will not be changed.

Example:

If the current setting is Conductivity=2000 PPM, if you change the unit to µS and the ratio is 5, then ***SAVE CHANGES***, the Conductivity will change to 4000 µS (2000 x [10/5]).

If the current setting is Conductivity=4000 µS, if you change the unit to PPM and change the Conductivity to 2000, then click ***SAVE CHANGES***, the Conductivity will stay at 2000 because the changed value occurred *after* the change to PPM, which tells the software that the value should be changed in PPM.

7.3.2.2 Biocide Program Setup and Modification

Clicking on the Biocide Program triangle opens the Biocide Program dialog box as shown in Figure 7-9.

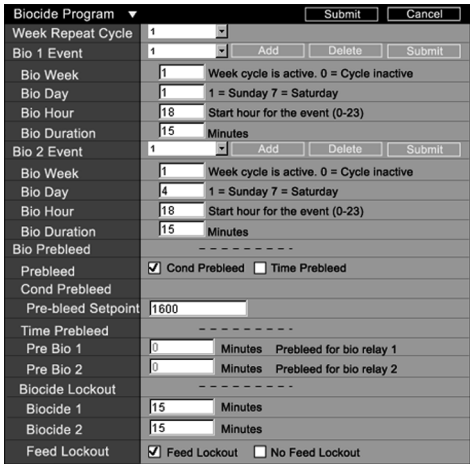


Figure 7-9: Biocide Program Main Screen

Two independent Biocide programs can be configured from this dialog box. Each program can have up to 56 events associated with it. For each event, several control parameters are set. First, the week within the overall four-week control cycle that the program is to be active is selected in the BIO WEEK field. The day of the week and hour (24-hour time) that the event is to be executed is set in the BIO DAY and BIO HOUR fields respectively. The duration, in minutes, of the event is set in the BIO DURATION field. Pre-bleed and lockout parameters can also be set.

Parameters for the various events associated with each Biocide program are accessed by selecting the event in the pull-down as shown in Figure 7-10.

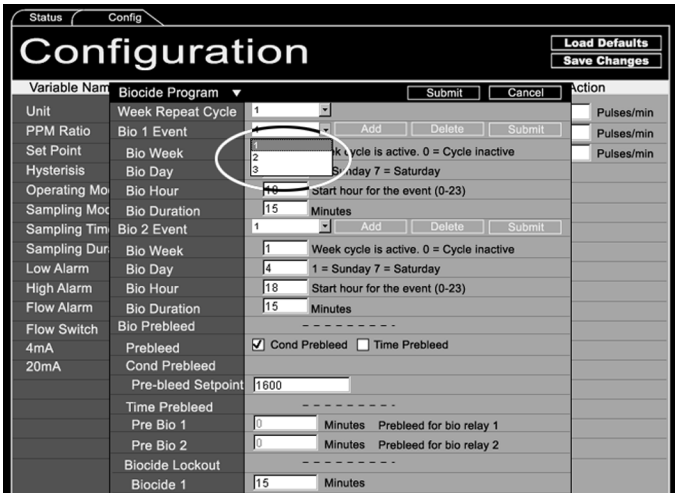


Figure 7-10: Event Pull-Down

To ADD a Bio Event, click on the ***ADD*** button.

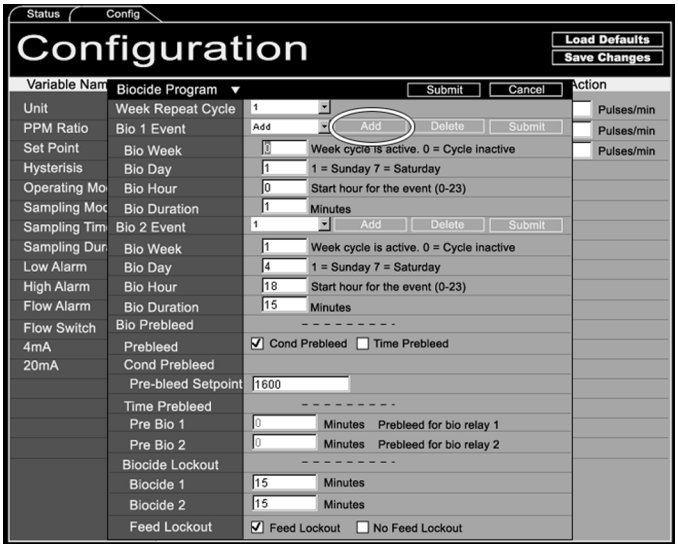


Figure 7-11: Adding Events

The pull-down will change to read "Add". Make the appropriate entries. When you are satisfied, click ***SUBMIT***. The new event will take the next sequential number in the pull-down. To delete an event, select it from the pull-down and click ***DELETE***.

7.3.3 Setting the SkyTel Alarm Email Message

Each LMI Liquitron™ DC5500 Controller can be programmed to send a unique message via the SkyTel pager when an alarm condition occurs. To set up this device-specific message, select the "***Config***" tab at the top of the screen to display the Configuration page.

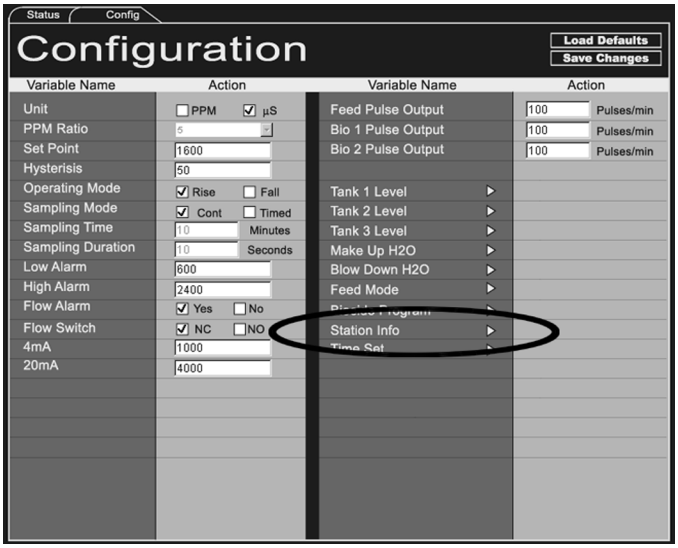


Figure 7-12: Configuration Page

At the bottom of the right-hand column, locate the "Station Info" entry, and click on its triangle to reveal the Station Info display area.

Enter the appropriate information into the fields provided:

Station ID: Liquitron™ DC5500 Controller OUI number. Refer to the LMI Liquitron™ DC5500 Controller Instruction Manual.

Message Text: This can be alphanumeric information, usually the specific equipment or process that this Controller is monitoring.

Service Engineer: As appropriate.

Pager PIN #: Email address or pager number of person to receive alarm message. Note that this message does not require the capital "P" or "E" at the beginning of the address. The program recognizes the format of the message and handles it appropriately.

LiquiComm Phone #: The telephone number of the analog telephone access line connected to the LIM LiquiComm™ Communications Module that is connected to this Controller via the RS485 loop. This information will be displayed on your page or email, and can be used by entering it in the url to connect to your device so that you can troubleshoot the alarm.

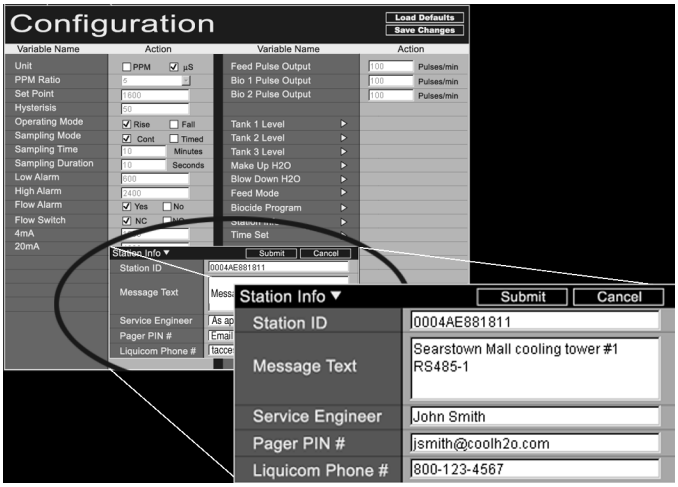


Figure 7-13: Station Info Display

Click ***SUBMIT*** for the entries to be accepted.

Note: Remember that the LMI LiquiComm™ will not send a page if the modem is engaged. It will also not send a page if the alarm condition existed while the modem was connected, thus elminating redundant alarm notification.

Section 8.0 - Connecting to the LMI Liquitron™ DC5500 Controller Using a PalmPilot™ Personal Digital Assistant (PDA)

8.1 Transferring the LMI Application To Your PalmPilot™ PDA

The LMI Application was installed in the Add-Ons folder on your PC or laptop during the LMI DataComm™ software installation process from Disk 1. To transfer the application to your PalmPilot™, dock the PDA and enable the HotSync Manager. The next time you use the PDA, the LMI application will be available.

8.2 Logging On To The LMI Liquitron™ DC5500 Controller Using A Direct RS232 Connection To Your PalmPilot™

If you are connecting a PalmPilot™ directly to the Liquitron™ DC5500, use an RS232 cable designed for your PDA. You will also need two adapters — a male-to-male adapter, and a null-modem adapter, both of which are included with the LMI Liquitron™ DC5500 Controller. These adapters are connected together as shown in Figure 8-1 below.

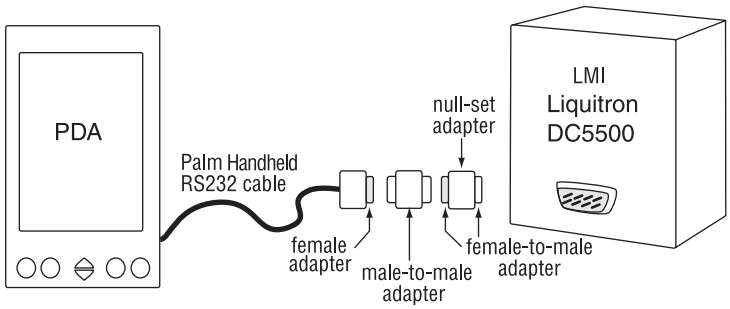


Figure 8-1: PalmPilot™ RS232 Connection

1. Verify that the RS232 cable is firmly connected at both ends and the two adapters are properly connected.
2. Launch the LMI Application. Specify the name of the file you are downloading, the Application will then download the data from the LMI Liquitron™ DC5500 Controller.

Section 9.0 - LMI DataComm™ Data Downloading, Analysis, Reporting, and Graphing Software

9.1 Starting the LMI DataComm™ Application

Note: Prior to launching the DataComm™ application, for best results, change your display resolution to 1024 x 768.

Find the LMI DataComm™ shortcut on your desktop

, and double-click to launch the DataComm™ software. The main window will be displayed as shown in Figure 9-1.

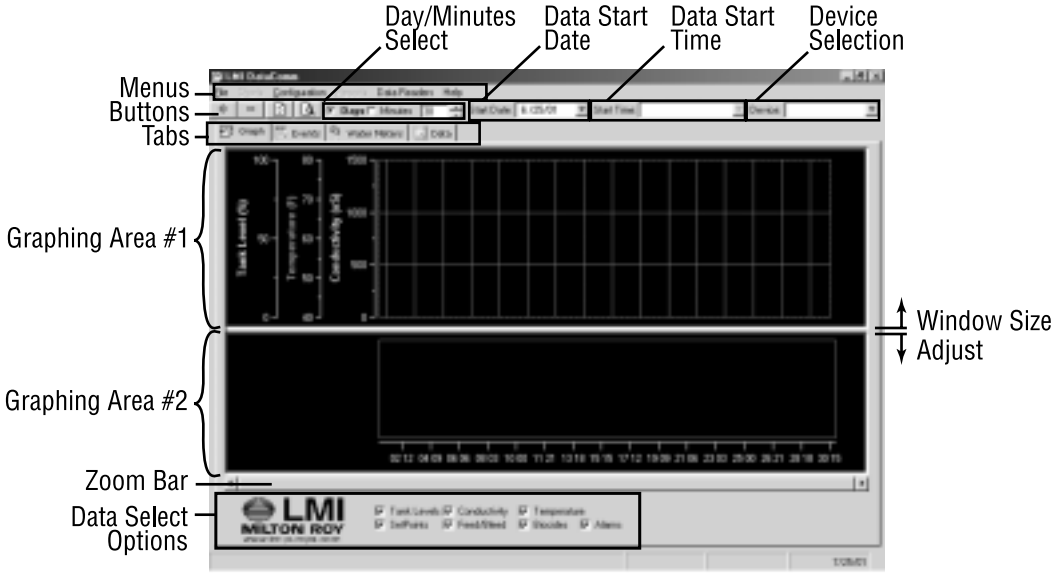


Figure 9-1: Main DataComm™ Window

The DataComm™ software provides data downloading, graphing, reporting, and analysis functions. By default, the DataComm™ software opens to the Graphing Function mode. Those areas of the main window and functions specific to the Graphing Functions are described in a following section.

The uppermost area of the window contains the menus and basic controls for zooming in and out of a graph, selecting the interval of time and starting date of the data to be analyzed, and selecting the specific device whose data is to be analyzed.

The four Function Tabs select the specific group of functions to be used — Graphing, Event/Alarm Logs, Water Meter Logs, and Data Logs.

The bottommost area provides check boxes to control what specific data is loaded for analysis.

9.2 Menu and Button Functions

The functions of the various menu items and control buttons are described here. When specific menu items or control buttons only work when a specific Function Tab is selected, those restrictions are noted.

9.2.1 Menus

File _Exit	Exits the DataComm™ application.
Charts	Non-functional (grayed out) until device data is loaded and either the Events, Water Meter, or Data Function Tab is selected.
Charts_Zoom In	Reduces the time interval of the data displayed.
Charts_Zoom Out	Increases the time interval of the data displayed.
Charts_Change Color	The graphs are normally plotted in color on a black background. Selecting Charts_Change Color_Black&White changes the plot background to white. Selecting Charts_Change Color_Color reverts the plots to a black background.
Charts_Copy Top to Clipboard	Copies the upper graphing area to the clipboard; use to then paste upper graph into a word processor or other application for printing the graph.
Charts_Copy Bottom to Clipboard	Copies the lower graphing area to the clipboard; use to then paste lower graph into a word processor or other application for printing the graph.
Configuration _Options Setup	Opens options setup dialog box, where a variety of options can be set controlling graphing and data reporting functions.

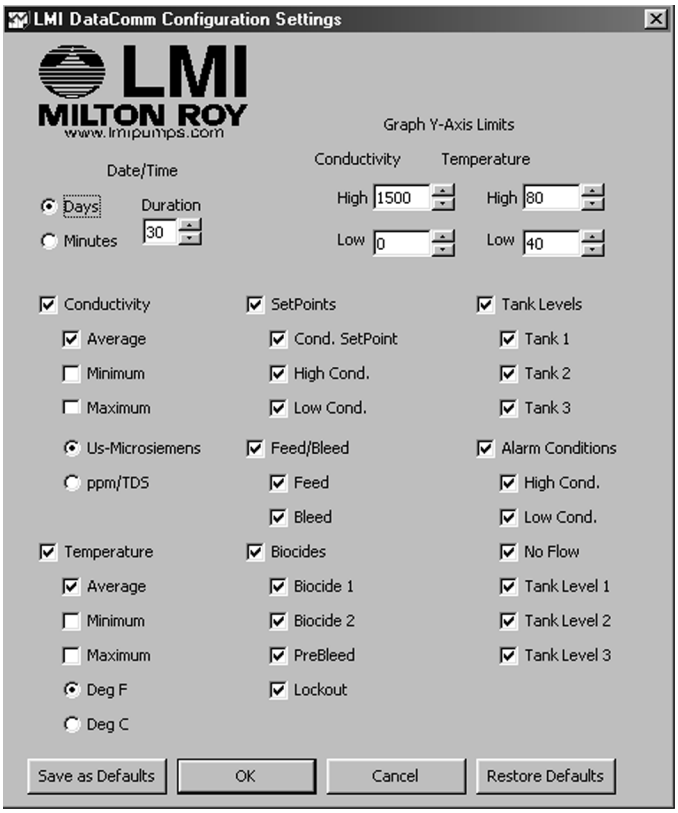


Figure 9-2: Configuration Options Dialog

Configuration_Device Maintenance	Displays a list of all devices currently in the device database. Clicking on a device ID number loads the information for that device in the fields above the device list. The information can then be edited. Click on ***Save*** to save any changes.

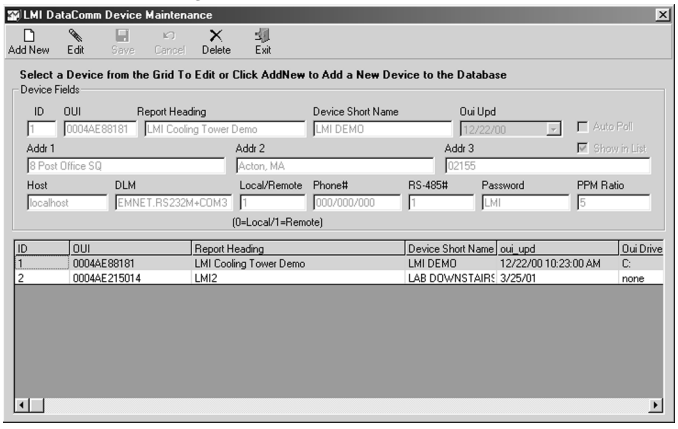


Figure 9-3: Device Maintenance

Configuration_Database Maintenance	Verifies the integrity of the device maintenance database, and automatically corrects any errors in any of its records. It is recommended that this command be used every few months, or at any time the DataComm application seems to run slower than normal, or errors are constantly generated. This process takes 15-20 seconds to complete. All other DataComm functions must be shut down before starting the Database Maintenance function, including Manual or Auto Polling.
Reports	Non-functional (grayed out) until device data is loaded.
Reports_Events Report	Generates an Event Report and displays a preview of the report in a separate window overlay. The report can be printed or refreshed by clicking on control

icons at the top of the window. See Figure 9-4.

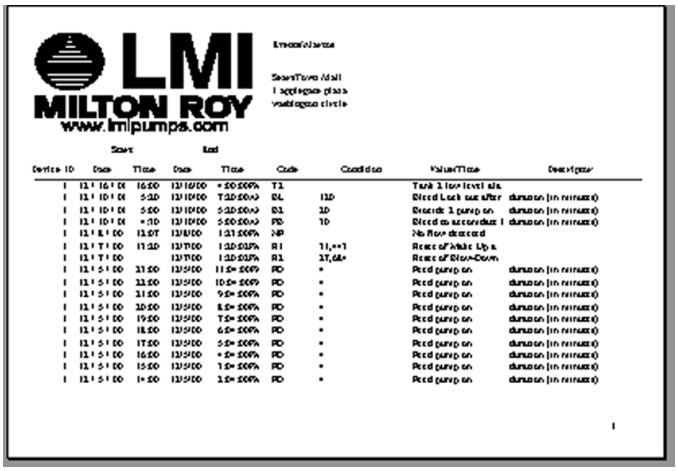


Figure 9-4: Event/Alarm Report Sample

Reports_Water Meter Report

Generates a Water Meter Report and displays a preview of the report in a separate window overlay. The report can be printed or refreshed by clicking on control icons at the top of the window. See Figure 9-5.

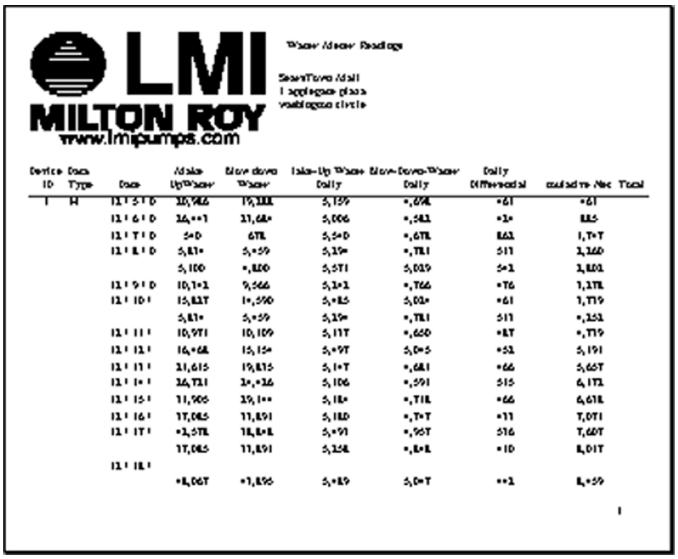
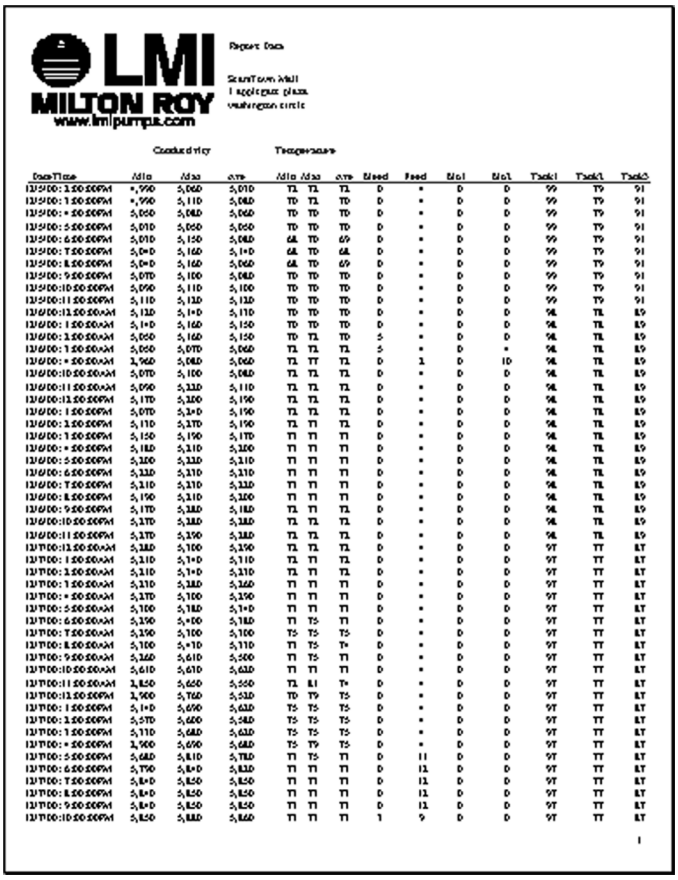


Figure 9-5: Water Meter Report Sample

Reports_Data Report

Generates a Data Report and displays a preview of the report in a separate window overlay. The report can be printed or refreshed by clicking on control icons at the top of the window. See Figure 9-6.



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Report Data

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1 eggleguac plaza
washington circle

Conductivity | Temperature

Date/Time	Alla	Alla	ave	Alla	Alla	ave	Bleed	Feed	Bal	Bal	Tank1	Tank1	Tank0
12/5/00: 1:00:00PM	*,990	5,060	5,010	T1	T1	T1	0	*	0	0	99	T9	91
12/5/00: 1:00:00PM	*,990	5,110	5,040	T0	T1	T0	0	*	0	0	99	T9	91
12/5/00: * :00:00PM	5,050	5,040	5,040	T0	T0	T0	0	*	0	0	99	T9	91
12/5/00: 5:00:00PM	5,010	5,050	5,050	T0	T0	T0	0	*	0	0	99	T9	91
12/5/00: 6:00:00PM	5,010	5,150	5,080	6&	T0	69	0	*	0	0	99	T9	91
12/5/00: T:00:00PM	5,0*0	5,160	5,1*0	6&	T0	6&	0	*	0	0	99	T9	91
12/5/00: 8:00:00PM	5,0*0	5,160	5,060	6&	T0	69	0	*	0	0	99	T9	91
12/5/00: 9:00:00PM	5,0T0	5,100	5,080	T0	T0	T0	0	*	0	0	99	T9	91
12/5/00:10:00:00PM	5,090	5,110	5,100	T0	T0	T0	0	*	0	0	99	T9	91
12/5/00:11:00:00PM	5,110	5,120	5,120	T0	T0	T0	0	*	0	0	99	T9	91
12/6/00:12:00:00AM	5,120	5,1*0	5,110	T0	T0	T0	0	*	0	0	9&	TE	89
12/6/00: 1:00:00AM	5,1*0	5,160	5,150	T0	T0	T0	0	*	0	0	9&	TE	89
12/6/00: 2:00:00AM	5,060	5,160	5,150	T0	T1	T0	5	*	0	0	9&	TE	89
12/6/00: 3:00:00AM	5,060	5,0T0	5,060	T1	T1	T1	5	*	0	*	9&	TE	89
12/6/00: * :00:00AM	2,960	5,080	5,060	T1	T*	T1	0	1	0	10	9&	TE	89
12/6/00:10:00:00AM	5,0T0	5,100	5,080	T1	T1	T1	0	*	0	0	9&	TE	89
12/6/00:11:00:00AM	5,090	5,120	5,110	T1	T1	T1	0	*	0	0	9&	TE	89
12/6/00:12:00:00PM	5,1T0	5,200	5,190	T1	T1	T1	0	*	0	0	9&	TE	89
12/6/00: 1:00:00PM	5,0T0	5,1*0	5,190	T1	T1	T1	0	*	0	0	9&	TE	89
12/6/00: 2:00:00PM	5,1T0	5,2T0	5,190	T1	T1	T1	0	*	0	0	9&	TE	89
12/6/00: 3:00:00PM	5,150	5,190	5,1T0	T1	T1	T1	0	*	0	0	9&	TE	89
12/6/00: * :00:00PM	5,1E0	5,210	5,200	T1	T1	T1	0	*	0	0	9&	TE	89
12/6/00: 5:00:00PM	5,200	5,220	5,210	T1	T1	T1	0	*	0	0	9&	TE	89
12/6/00: 6:00:00PM	5,220	5,210	5,210	T1	T1	T1	0	*	0	0	9&	TE	89
12/6/00: T:00:00PM	5,210	5,210	5,220	T1	T1	T1	0	*	0	0	9&	TE	89
12/6/00: 8:00:00PM	5,190	5,210	5,200	T1	T1	T1	0	*	0	0	9&	TE	89
12/6/00: 9:00:00PM	5,1T0	5,2E0	5,1E0	T1	T1	T1	0	*	0	0	9&	TE	89
12/6/00:10:00:00PM	5,2T0	5,2E0	5,2E0	T1	T1	T1	0	*	0	0	9&	TE	89
12/6/00:11:00:00PM	5,2T0	5,190	5,2E0	T1	T1	T1	0	*	0	0	9&	TE	89
12/7/00:12:00:00AM	5,2E0	5,200	5,190	T1	T1	T1	0	*	0	0	9T	TT	8T
12/7/00: 1:00:00AM	5,210	5,1*0	5,110	T1	T1	T1	0	*	0	0	9T	TT	8T
12/7/00: 2:00:00AM	5,210	5,1*0	5,210	T1	T1	T1	0	*	0	0	9T	TT	8T
12/7/00: 3:00:00AM	5,210	5,2E0	5,160	T1	T1	T1	0	*	0	0	9T	TT	8T
12/7/00: * :00:00AM	5,2T0	5,100	5,190	T1	T1	T1	0	*	0	0	9T	TT	8T
12/7/00: 5:00:00AM	5,100	5,1E0	5,1*0	T1	T1	T1	0	*	0	0	9T	TT	8T
12/7/00: 6:00:00AM	5,190	5,*00	5,1E0	T1	T5	T1	0	*	0	0	9T	TT	8T
12/7/00: T:00:00AM	5,190	5,100	5,100	T5	T5	T5	0	*	0	0	9T	TT	8T
12/7/00: 8:00:00AM	5,100	5,*10	5,110	T1	T5	T*	0	*	0	0	9T	TT	8T
12/7/00: 9:00:00AM	5,160	5,610	5,500	T1	T5	T1	0	*	0	0	9T	TT	8T
12/7/00:10:00:00AM	5,610	5,610	5,6E0	T1	T1	T1	0	*	0	0	9T	TT	8T
12/7/00:11:00:00AM	2,E50	5,650	5,560	T1	E1	T*	0	*	0	0	9T	TT	8T
12/7/00:12:00:00PM	2,900	5,T60	5,5E0	T0	T9	T5	0	*	0	0	9T	TT	8T
12/7/00: 1:00:00PM	5,1*0	5,690	5,6E0	T5	T5	T5	0	*	0	0	9T	TT	8T
12/7/00: 2:00:00PM	5,5T0	5,600	5,5E0	T5	T5	T5	0	*	0	0	9T	TT	8T
12/7/00: 3:00:00PM	5,T10	5,6E0	5,6E0	T5	T5	T5	0	*	0	0	9T	TT	8T
12/7/00: * :00:00PM	2,900	5,690	5,6E0	T5	T9	T5	0	*	0	0	9T	TT	8T
12/7/00: 5:00:00PM	5,6E0	5,E10	5,TE0	T1	T5	T1	0	11	0	0	9T	TT	8T
12/7/00: 6:00:00PM	5,T50	5,E*0	5,E30	T1	T1	T1	0	12	0	0	9T	TT	8T
12/7/00: T:00:00PM	5,E*0	5,E50	5,E50	T1	T1	T1	0	12	0	0	9T	TT	8T
12/7/00: 8:00:00PM	5,E*0	5,E50	5,E50	T1	T1	T1	0	12	0	0	9T	TT	8T
12/7/00: 9:00:00PM	5,E*0	5,E50	5,E50	T1	T1	T1	0	12	0	0	9T	TT	8T
12/7/00:10:00:00PM	5,E50	5,E30	5,E60	T1	T1	T1	1	9	0	0	9T	TT	8T

Figure 9-6: Data Log Report Sample

Reports_Select a report…	In each of the report windows described above, there are three icons located at the upper left hand corner of each window that control printing, data export, and data refresh functions.
	The Print Function will print the data displayed in the report.
	The Export Function provides options for exporting the displayed report data in a number of formats including Microsoft® Excel® or tab-delimited text, as well as selecting the location for the exported file to be written.
	The Refresh function (and the <ENTER> key as well) refresh the current display with the most recently selected set of data.
Data Readers_Auto Polling	Automatically initiates a connection with and downloads the data from every device in the Device Maintenance list. No entries are required in any fields. By using the Windows Task Scheduler to automatically run the Auto Polling application (LMI3.EXE), downloading of data from all devices can be fully automated.
Data Readers_Manual Polling	Opens the Data Downloading dialog box. After all fields are filled in with connection information, and clicking the Download button, a connection in made with the specified device and its data is downloaded.
Data Readers_Palm Conversion	Allows selection of the data file to be appended to the device database from among those data files transferred from the PalmPilot™ to the PC or laptop.
Data Readers_Refresh All Data	After completing a data download, selecting this menu item refreshes the data that appears on your screen, adding the new data.
Help_About	Displays information about the revision number for LMI DataComm™ software. Provides access to the Microsoft System Information utility.

9.2.2 Control Buttons

Activates the Zoom Bar below the graphing areas and reduces the time interval of the data displayed, effectively zooming in on the plotted data.

Increases the time interval of the data displayed, effectively zooming out on the plotted data.

Acts like a reset button by repositioning graphical plots to their original position.

Prints the reports.

Selects resolution of data to be displayed. When “Days” is selected, the numeric field defaults to 30. When “Minutes” is selected, the numeric field defaults to 60. The defaults can be overwritten by typing a new value into the numeric field, or using the up/down arrow keys to change the numeric value. These values will change as the zoom functions are used.

Selecting “Minutes” accesses only those files which contain data saved at the minute-by-minute resolution for the selected device. The “Start Time” drop-down menu will then list all start dates for which minute-by-minute data is available for the selected month (in the “Start Date” drop-down box). **It is important to note that when there is no minute-by-minute data for a particular month, a message indicating this will be displayed in the bottom right corner of the graphing screen.**

Selects the starting date of the data to be analyzed. Selecting the pull-down displays a calendar that can be used to select the starting date, or a date can be entered manually into the date field.

Selects the starting timestamp of the minute-by-minute data to be analyzed. Selecting the pull-down displays all of the starting times of the minute-by-minute data that are available for that month. **It is important to note that when there is no minute-by-minute data for a particular month, a mesage indicating this will be displayed in the bottom right corner of the graphing screen.**

Selects the device whose data is to be analyzed from a list of devices for which data is available. This list is maintained in **Configuration_Device**

Maintenance. The devices you would like displayed in your drop-down list can be added and removed by the check box “Show in List”.

Sliding the zoom bar left and right increases or decreases the time interval of the data displayed, effectively zooming in and out on the data plots. The zoom bar is activated by clicking on the ZOOM IN or ZOOM OUT buttons located just under the menus at the top of the screen.

9.3 Downloading Functions

The downloading functions work regardless of the Function Tab selected. Downloading is controlled from the ***Data Readers*** menu item. Data can be downloaded from a Controller directly, through the LMI LiquiComm™, or transferred from a PalmPilot™. Data can be downloaded from one Controller at a time (manually), or in conjunction with the Windows Task Scheduler application, can be programmed to automatically poll all of the Controllers connected to a LiquiComm™ Communications Module at a specified time of the day, week, or some other specified interval.

Note: Data can only be downloaded from devices which have a complete entry in the Device Maintenance list. Access the list under the Configuration menu.

9.3.1 Device Maintenance

Prior to initiating a data download, verify that all of the information is correct in the device maintenance table. To open the device maintenance table, select ***Configuration*** ⟶ ***Device Maintenance***. A list of all devices currently in the device maintenance table will be displayed. Clicking on a device ID number in the first column loads the information for that device in the fields above the device list. The information can then be edited.

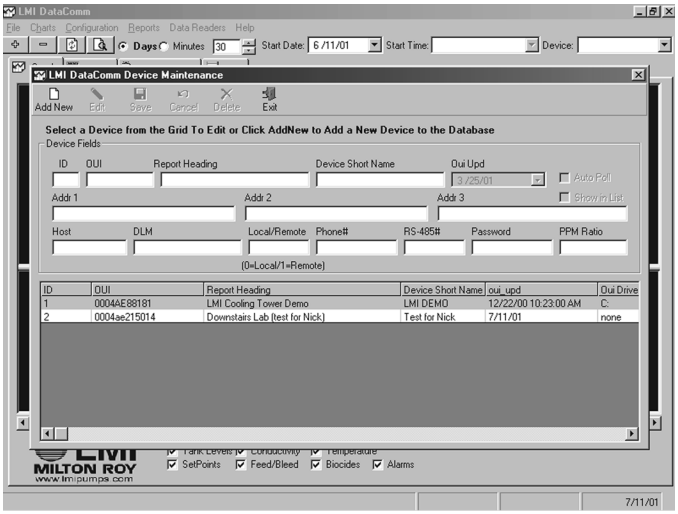


Figure 9-7: Device Maintenance

If manual polling will be used, the ID, OUI and SHORT NAME fields must be filled in.

If automatic polling will be used, AUTO POLLING, HOST, DLM, PASSWORD (if one is set), LOCAL/REMOTE, RS485#, and PHONE# must also be filled in. The “AUTO POLLING” check box must also be checked.

1. **ID** – the unique number used to identify your Liquitron™
2. **OUI** – the OUI from your Liquitron™ (see DC500 Liquitron™ manual for details)
3. **Heading** – the heading you would like to see at the top of printed reports

4. **Device Short Name** – the name that you would like to appear in the "DEVICE" drop-down field
5. **Oui Upd** – date of last update. This is configurable by the user, and only changes when the user manually changes it.
6. **Addr 1** – Line 1 of the address in your header at the top of printed reports
7. **Addr 2** – Line 2 of the address in your header at the top of printed reports
8. **Addr 3** – Line 3 of the address in your header at the top of printed reports
9. **Host** – enter "localhost" in this field
10. **DLM** – the DLM string that you would enter in your web address to gain access to the Liquitron™. (e.g. EMNET.RS232+COMx)
11. **Local/Remote** – This refers to local or remote communication. If you want to connect via the RS232 cable to your serial port (local) then choose "0", if you want to connect using your computers modem and a LiquiComm™ (remote), then choose "1".
12. **Phone#** – the phone number of the device you are trying to connect to (only applies if using the "remote" setting of "1" on **Local/Remote**, otherwise it should remain blank)
13. **RS485#** – the RS485 address of your Liquitron™ (see the DC5500 Liquitron™ manual for details)
14. **Password** – the password for the particular LiquiComm™ you are calling (only applies if using the "remote" setting of the "1" on **Local/Remote**, otherwise it should remain blank)
15. **PPM Ratio** – the PPM ratio that you would like to see on the data for that particular Liquitron™
16. **Auto Poll** check box – check inicates you would like this Liquitron™ to be included in your Auto Polling schedule
17. **Show in List** check box – check inicates you would like this Liquitron™ to be included on the device drop-down list

A database maintenance function is provided to repair errors to the device database files. It is recommended that this command be used every few months, or at any time the DataComm application seems to run slower than normal, or errors are constantly generated. Select ***Configuration*** ⟶ ***Database Maintenance***. The database will be repaired. This process takes 15-20 seconds to complete. All other DataComm functions must be shut down before starting the Database Maintenance function, including Manual or Auto Polling.

9.3.2 Manual Downloading

To manually download data from a controller, follow the appropriate procedure in this section.

9.3.2.1 Downloading Data To Your PC Or Laptop

Prior to attempting to download data to your PC or laptop, make sure that at all devices for which you intend to collect data are setup in the Device Maintenance table, per *Section 9.3.1.*

1. To download data to your PC, go to the ***Data Readers*** menu, and pull down to select the ***Manual Polling*** option.

The dialog box shown in Figure 9-8 will be displayed.

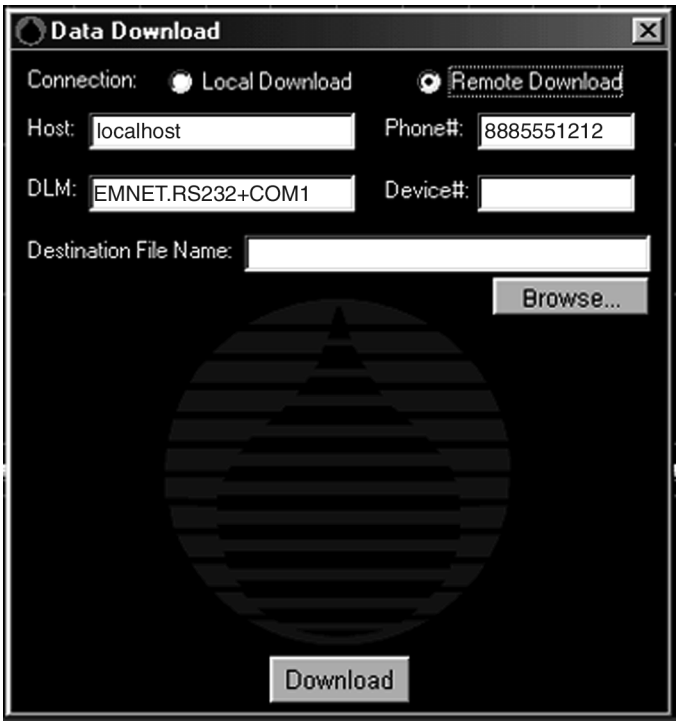


Figure 9-8: Data Download Dialog Box

If you are using a direct RS232 serial cable connection to the LMI Liquitron™ DC5500 Controller, follow the steps below. If you are using a modem to make your connection to the Controller through the LMI LiquiComm™ Communications Module, skip to Step 6 below.

2. If you have a direct RS232 connection to the LMI Liquitron™ DC5500 Controller, make sure that next to CONNECTION: the LOCAL DOWNLOAD option button is selected.
3. The field next to HOST: should read "localhost", without the quotes.
4. For the field next to DLM:, the field should read "EMNET.RS232+COMx" without the quotes, where the "x" is replaced by the number of the Comm Port which was assigned during the software installation.
5. Click on the ***DOWNLOAD*** button. The connection will be made and the data downloaded to your PC or laptop. Skip to Step 12.
6. If you are using a modem to make your connection to the Controller through the LMI LiquiComm™ Remote Communication Center, make sure that next to CONNECTION: the REMOTE DOWNLOAD option button is selected.
7. The field next to HOST: should read "localhost", without the quotes.
8. In the PHONE #: field, insert the phone number of the analog telephone line connected to the LMI LiquiComm™ Remote Communication Center.
9. For the field next to DLM:, the field should read "EMNET.RS232M+COMx" without the quotes, where the "x" is replaced by the number of the Comm Port to which the modem was assigned during the software installation.
10. The field next to DEVICE: should contain the RS485 number for the Controller whose data you want to download.
11. The Destination File Name is provided by the user. This is a file on the user's PC hard drive or network where this data is saved.
12. Click on the ***DOWNLOAD*** button. The connection will be made and you will be asked for a password. Enter the password, being aware that the password is case-sensitive. (This process is the same as described in *Section 6.0 Logging Onto and Programming The LMI LiquiComm™ Communications Module*.) Click ***OK***.
12. When finished, a message will appear that the download is complete. Close the Data Download application.

9.3.2.2 Transferring Data To Your PC or Laptop From Your PalmPilot™

Data downloaded directly to your PalmPilot™ from one or more LMI Liquitron™ DC5500 Controllers can be transferred to your PC or laptop. Dock your PDA to your PC or laptop, and enable HotSync to transfer the data file(s) to your PC or laptop. After the files are transferred, from the ***Data Readers*** menu, select ***Palm Conversion***.

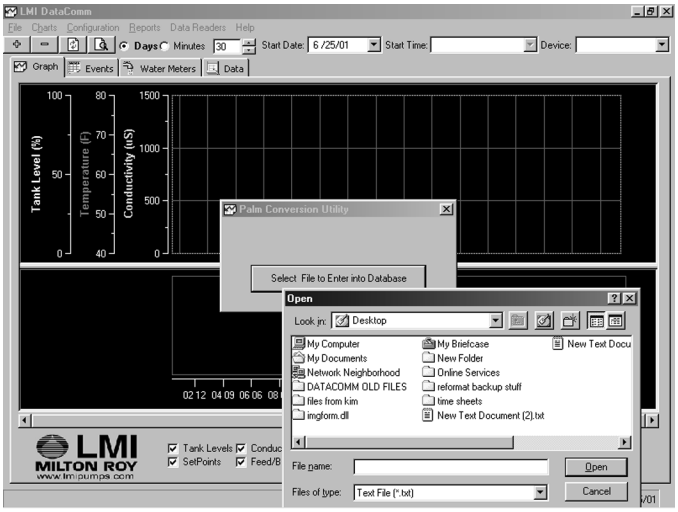


Figure 9-9: Palm Conversion/File Navigation Dialog Boxes

Click on ***Select File To Enter Into DataBase***. A standard Windows file navigation dialog box will appear. The transferred files should be located in C:\Palm*YourUserName*\LMI\filename. Select the file and click ***OPEN***. The contents of the file will be added to the device database. Repeat this procedure for any other files you wish to transfer. Once the files are transferred, you can open each device file and view its data.

9.3.3 Automatic Data Downloading To Your PC or Laptop

If you have a number of LMI Liquitron™ DC5500 Controllers tied to an LMI LiquiComm™ Communications Module, you can automate the processing of connecting to each one in turn and downloading their data.

The automatic polling/data download function looks at the database of Controllers, automatically establishes communications with each in sequence, and downloads its data to the main data file on your PC or laptop. The access information, i.e. telephone access number for the LiquiComm™ and RS485 number for each Controller, contained in the device database is used during the automatic data download process.

9.3.3.1 Immediate Automatic Downloading

1. From the ***Data Readers*** menu, select ***Automatic Polling***. The dialog box shown in Figure 9-10 will appear.

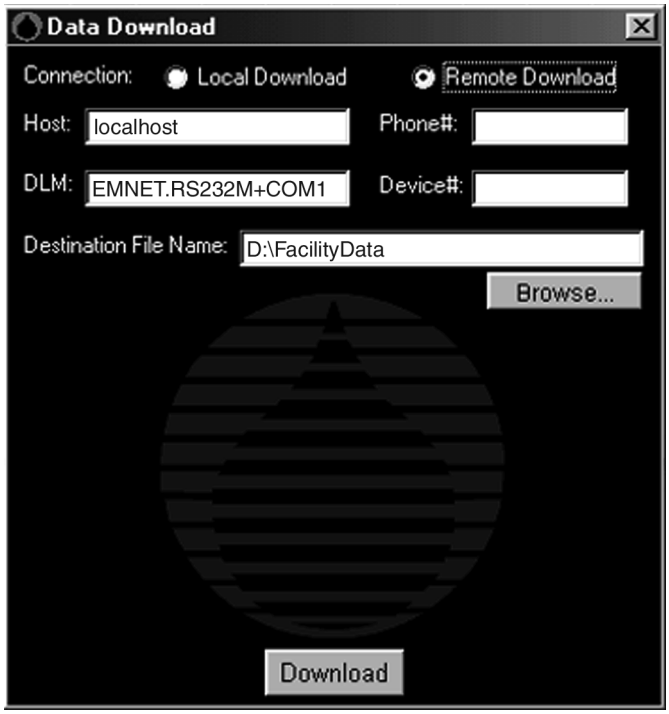


Figure 9-10: Automatic Polling Dialog Box

2. The LMI DataComm™ software will automatically fill in the fields for each device in the DEVICE MAINTENANCE table in sequence, initiate the connection, and download the data. Various status dialog boxes will appear to confirm the specific steps within the process. When all of the devices in the database have been accessed, close the Data Download window.

Note: At least one device must have a check mark nest to "Auto Poll" in the Device Maintenance table.

9.3.3.2 Scheduling Automatic Downloading

The automatic polling/data download function can be programmed to execute automatically from the Windows Task Scheduler program. To access the Task Scheduler, go to ***Start*** ⟶ ***Programs*** ⟶ ***Accessories*** ⟶ ***System Tools*** ⟶ ***Scheduled Tasks***, as shown in Figure 9-11.

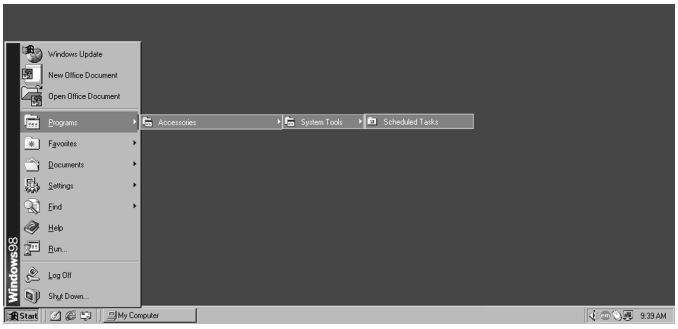


Figure 9-11: Task Scheduler

The Task Schedule program will open. Click on ***Add Scheduled Task*** to open the Task Scheduler Wizard.

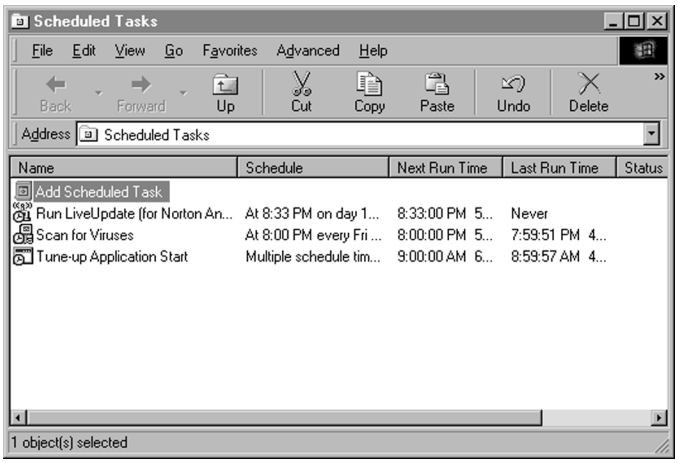


Figure 9-12: Add Scheduled Task

Click ***NEXT***.

Select the "***LMI3.exe***" application from the Application List. Follow the on-screen instructions to schedule the automatic polling function.

In the Task Scheduler, set the task interval and time you want the data collection to occur. Click OK and close out the Task Scheduler.

9.4 Data Loading

Data to be analyzed, graphed, or formatted for reports must first be loaded into the DataComm™ software. At the top and bottom of the DataComm™ window are several controls for selecting the data to be loaded.

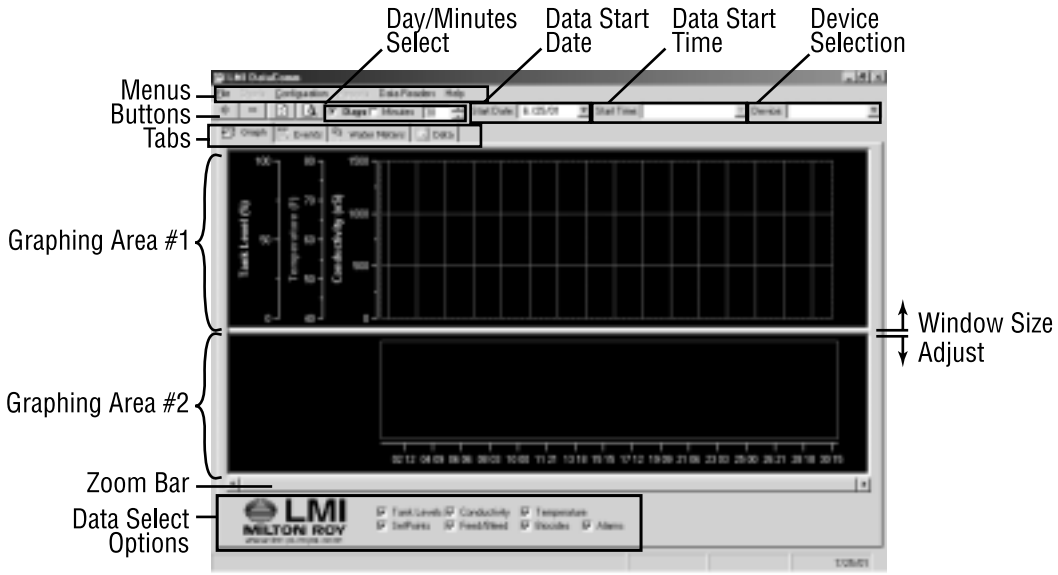


Figure 9-13: Data Loading

1. In the START DATE pull-down, specify the date that starts the interval of time over which you want to load data.
2. Next, select the resolution of the data to be loaded by selecting either the Days or Minutes options button. Override the default value to choose a time interval different from the default.
3. At the bottom of the window, check/uncheck the appropriate checkboxes for the types of data to be viewed on graphs.
4. Click on the ***DEVICE*** pull-down at the top right to select the specific device data to be loaded. Once the data is loaded, select among the Function Tabs to view graphs and the various data logs.

9.5 Graphing Functions

The ***GRAPHING*** Function Tab is selected by default at application launch.

The upper graphing area contains a graphical display of tank level, temperature, and conductivity. The scale for the temperature and conductivity displays can be dragged up-and-down, and its corresponding data will move along with it. This allows each of the three separate plots to be moved to eliminate overlap to facilitate analysis. The high and low limits of the scales may be adjusted in the Configuration Menu as described in *Section 9.2.1 Menus*.

The lower graphing area contains a graphical display of events and alarm conditions plotted over time. A mouse-over function shows the corresponding event/alarm condition with duration when the mouse cursor is placed over the symbol on the event/alarm graph line.

Note that the splitter bar between the two graph display areas can be dragged up and down to change the relative size of the two areas.

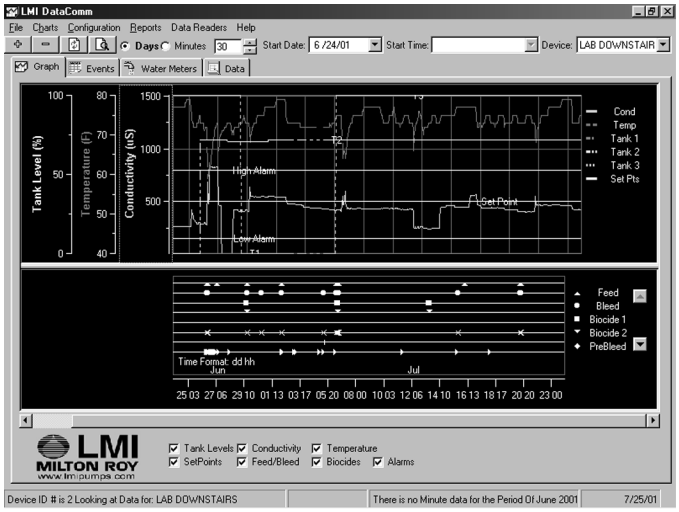
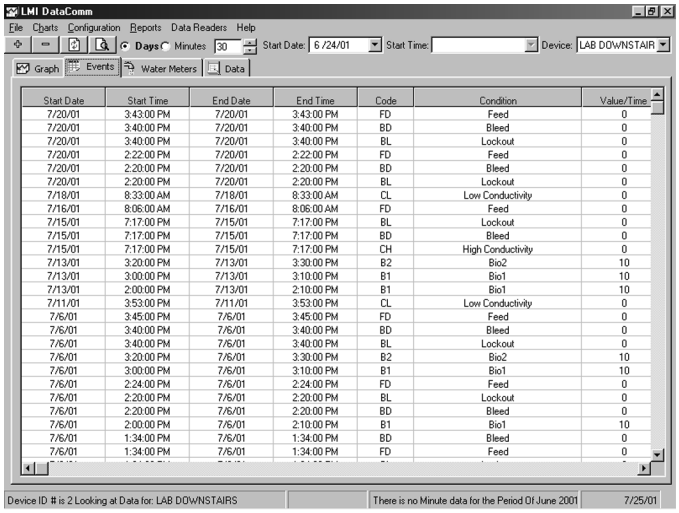


Figure 9-14: Data Load Complete

9.6 Event/Alarm Data Logs

Clicking the ***EVENT*** tab at the top of screen displays the event/alarm data log as shown in Figure 9-15.



Start Date	Start Time	End Date	End Time	Code	Condition	Value/Time
7/20/01	3:43:00 PM	7/20/01	3:43:00 PM	FD	Feed	0
7/20/01	3:40:00 PM	7/20/01	3:40:00 PM	BD	Bleed	0
7/20/01	3:40:00 PM	7/20/01	3:40:00 PM	BL	Lockout	0
7/20/01	2:22:00 PM	7/20/01	2:22:00 PM	FD	Feed	0
7/20/01	2:20:00 PM	7/20/01	2:20:00 PM	BD	Bleed	0
7/20/01	2:20:00 PM	7/20/01	2:20:00 PM	BL	Lockout	0
7/18/01	8:33:00 AM	7/18/01	8:33:00 AM	CL	Low Conductivity	0
7/16/01	8:06:00 AM	7/16/01	8:06:00 AM	FD	Feed	0
7/15/01	7:17:00 PM	7/15/01	7:17:00 PM	BL	Lockout	0
7/15/01	7:17:00 PM	7/15/01	7:17:00 PM	BD	Bleed	0
7/15/01	7:17:00 PM	7/15/01	7:17:00 PM	CH	High Conductivity	0
7/13/01	3:20:00 PM	7/13/01	3:30:00 PM	B2	Bio2	10
7/13/01	3:00:00 PM	7/13/01	3:10:00 PM	B1	Bio1	10
7/13/01	2:00:00 PM	7/13/01	2:10:00 PM	B1	Bio1	10
7/11/01	3:53:00 PM	7/11/01	3:53:00 PM	CL	Low Conductivity	0
7/6/01	3:45:00 PM	7/6/01	3:45:00 PM	FD	Feed	0
7/6/01	3:40:00 PM	7/6/01	3:40:00 PM	BD	Bleed	0
7/6/01	3:40:00 PM	7/6/01	3:40:00 PM	BL	Lockout	0
7/6/01	3:20:00 PM	7/6/01	3:30:00 PM	B2	Bio2	10
7/6/01	3:00:00 PM	7/6/01	3:10:00 PM	B1	Bio1	10
7/6/01	2:24:00 PM	7/6/01	2:24:00 PM	FD	Feed	0
7/6/01	2:20:00 PM	7/6/01	2:20:00 PM	BL	Lockout	0
7/6/01	2:20:00 PM	7/6/01	2:20:00 PM	BD	Bleed	0
7/6/01	2:00:00 PM	7/6/01	2:10:00 PM	B1	Bio1	10
7/6/01	1:34:00 PM	7/6/01	1:34:00 PM	BD	Bleed	0
7/6/01	1:34:00 PM	7/6/01	1:34:00 PM	FD	Feed	0

Figure 9-15: Event/Alarm Data Log

Use the Chart menu controls to zoom in and out to display the data of interest. The tabular information in this data log replicates the information from the lower graphing area.

In applications where there are a large number of bleed and feed events, note that the DataComm™ does not display all of these on the Graphing tab. The Liquitron™only saves 200 of each per month (for download time-saving reasons). All of the bleed and feed duration information for every hour of downloaded information is located under the Data tab, under “bleed” and “feed”.

Note: To see the correct header above the report on your computer screen, hit the refresh *icon when you select a new device.*

9.7 Water Meter Data Logs

Clicking the ***WATER METER*** tab at the top of screen displays the water meter data log as shown in Figure 9-16.

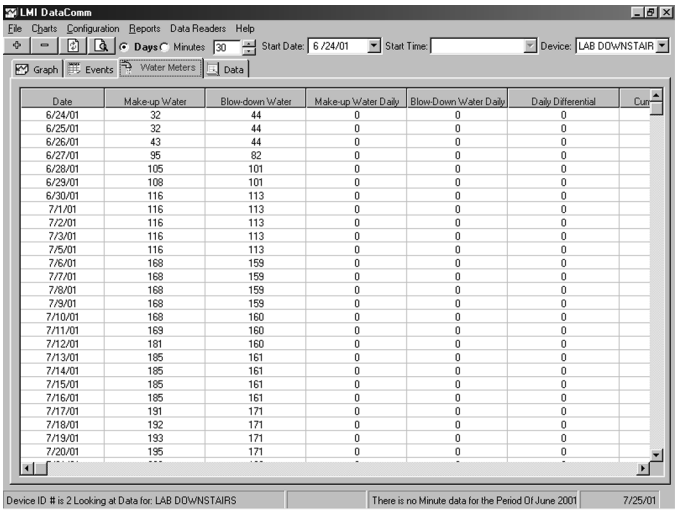


Figure 9-16: Water Meter Data Log

All of the menus and buttons work the same in this Mode as they did in the Event/Alarm Data Log Mode.

Note: To see the correct header above the report on your computer screen, hit the refresh *icon when you select a new device.*

9.8 Data Logs

Clicking the ***DATA*** tab at the top of screen displays the data log as shown in Figure 9-17.

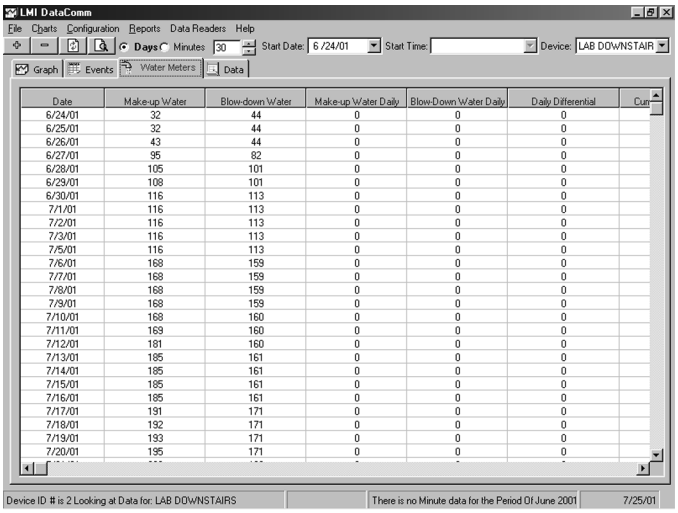


Figure 9-17: Data Log

All of the menus and buttons work the same in this Mode as they did in the Event/Alarm Data Log Mode. The tabular information in this data log replicates the information from the upper graphing area, including FEED, BLEED, BIO1, and BIO2 additions.

Note: To see the correct header above the report on your computer screen, hit the refresh *icon when you select a new device.*

Section 10.0 - Troubleshooting

10.1 Sections 3.0 and 4.0: LMI Software Installation

10.1.1 The Setup Wizard did not run automatically when I inserted the disk in my CDROM drive.

If the setup wizard does not launch automatically, do the following:

a) from the ***Start*** menu select ***Run...***

b) In the Run dialog box type the following, depending on which disk did not run when inserted in the CDROM drive:

LMI DataComm™ Disk – *:\Setup.exe

LMI emGateway® Disk – *:\LMI/Installer.exe, where *:\ is the drive letter for your CDROM drive (G:\ is shown in this example)

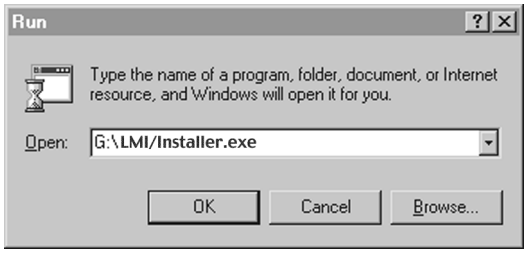


Figure 10-1: Run Dialog Box

Click on ***OK***. The setup Wizard will now run and you should see the welcome screen as shown above.

10.1.2 Installation Errors

If installation errors occur and the program(s) will not complete installation, retry the installation. If the installation still does not complete successfully:

1. Check for a partial installation. Go to ***Start*** → ***Settings*** → ***Control Panels*** → ***Add/Remove Software*** and look in the list of installed programs. If any of the LMI or emGateway® programs are listed, remove them.
2. Clear out your TEMP directory. Open your C:/ drive, and locate the Temp folder:

   C:/Windows/Temp

   Throw the contents of the Temp folder in the Recycle Bin and empty it.
3. Remove any shortcuts associated with the LMI or emGateway® programs from your desktop.
4. Retry the installation.

10.1.3 I got a "Palm Registry Key" error while installing the Palm Conduit software.

You must install a current version of Palm HotSync Manager before installing the LMI emGateway® Palm Conduit.

10.2 Section 5.0: Setting Up the LMI emGateway®/emManager™

10.2.1 The emWare® icon does not show up in the Task Bar.

If the icon is not present as shown in Figure 10-2, do the following:

1. From the start menu, select ***Start*** → ***Programs*** → ***emWare®*** → ***emGateway®***. EmGateway® will launch, and its icon will appear in the Task Bar. If the icon still does not appear, do the following:

   Remove and re-install the emGateway® software. Go to ***Start*** → ***Settings*** → ***Control Panels*** , and launch Add/

Remove Programs. Find and select "LMI emGateway®" in the list, and click ***REMOVE***. Repeat for "LMI Application." Run the Disk 2 Installation procedure in *Section 4.0 LMI Software Installation – Disk 2 – LMI emGateway®*.

If when you restart the computer, you still either cannot get emGateway® to run, either automatically or by using the procedure at the beginning of this section, contact your local LMI distributor.

10.3 Section 6.0: Logging Onto and Programming The LMI LiquiComm™

10.3.1 I can't connect to the LiquiComm™

1. Verify that the telephone cable is firmly connected at both ends, both at the LiquiComm™, and at the computer/modem.
2. Verify that the URL you typed in the Internet Explorer address bar is correct. It should be ALL CAPS, and be in the format below, without the quotes:

   "HTTP://127.0.0.1/EMNET.RS232M+COM**x**/PHONENUMBER /LIQUICOMM.HTML"

Replace the "x" at "COMx" with the Comm Port that is assigned to the modem. Make sure the address is all UPPER CASE.

The "PHONENUMBER" portion is the telephone number of the analog telephone line to which the LMI LiquiComm™ Communications Module is connected. Include a "1" and the area code if needed. Double-check that the telephone number is correct.

3. Verify that the emGateway® icon is present in the Task Bar at the lower right hand corner of your monitor. If the icon is not present, do the following:

   From the start menu, select ***Start*** → ***Programs*** → ***emWare®*** → ***emGateway®***. EmGateway® will launch, and its icon will appear in the Task Bar.

   Remove and re-install the emGateway® software. Go to ***Start*** → ***Settings*** → ***Control Panels*** , and launch Add/Remove Programs. Find and select "LMI emGateway®" in the list, and click ***REMOVE***. When removing emGateway®, you may be prompted with several files that are being shared with other software on your PC. Be sure that you DO NOT remove a file that another program needs to support it. Run the Disk 2 Installation procedure in *Section 4.0 LMI Software Installation – Disk 2 – LMI emGateway®*.

   If when you restart the computer, you still either cannot get emGateway® to run, either automatically or by using the procedure at the beginning of this section, contact your local LMI distributor.
4. Verify that you are using version 4.5 or later of Microsoft Internet Explorer. Use of other browsers, or earlier versions of Internet Explorer are not supported.
5. If you can hear your modem attempting to dial out, verify the URL in your Internet Explorer browser as in Step 2 above. If you cannot hear your modem, verify that the URL has an "M" after the "RS232" at "…EMNET.RS232**M**+…." If the URL is confirmed, verify that the modem and telephone line are operating correctly.

10.3.2 I didn't need a password to gain access to the LiquiComm™.

If this is the first time you have attempted access since the system was installed, you must set up the password system. No password is pre-installed in the LiquiComm™. *Go to Section 6.2.2 Security Page* and follow the procedure for setting the password.

10.3.3 I can't see data for some of the Controllers hooked to the LiquiComm™.

1. Access the LiquiComm™ and go to the Subnet Page. Verify that the upper and lower polling limits include all of the RS485 numbers for all of the units connected to the RS485 network. Make the upper limit equal to the highest RS485 number, and the lower limit equal to the lowest RS485 number.
2. Verify that the RS485 number for each Controller is set properly, and that all Liquitron™ Controllers are enabled correctly. A unique password obtained from LMI is required for each Controller to enable the RS232 and RS485 communication options for that Controller.

10.4 Section 7.0: Logging Onto And Programming The LMI Liquitron™ DC5500 Controller

10.4.1 I get the "A connection cannot be established" dialog box.

Figure 10-2: No Connection

1. Check the URL very carefully in Internet Explorer's address bar. It should read as follows, without the quotes:

"HTTP://127.0.0.1/EMNET.RS232M+COM**x**/PHONENUMBER.**D**/LIQUITRON.HTML"

Replace the "x" at "COMx" with the Comm port that is assigned to the modem. Make sure the address is all UPPER CASE.

The "PHONENUMBER" portion is the telephone number of the analog telephone line to which the LMI LiquiComm™ is connected. Delete the "1" and the area code if not needed.

Replace the "D" with the RS485 number of the LMI Liquitron™ DC5500 Controller to which you want to connect. Since the LiquiComm™ can be connected to a number of Controllers through the RS485 network connection, the RS458 number for the specific Controller to be accessed is required. To access multiple Controllers, establish communications with each in turn, changing the RS485 number at "D" each time.

2. In the emManager™, verify that the DLM** is correctly configured for the Comm Port you are using for the modem connection as follows:

    a. Double-click on the emWare® icon located in the Task Bar in the lower right hand corner of your monitor. The emManager™ software will open, showing no connection has been established.

    b. Select Open Connection from the emManager™ menu.

    c. The Connection dialog box will appear. Leave all fields set to their default entries as shown. Click ***OK***.

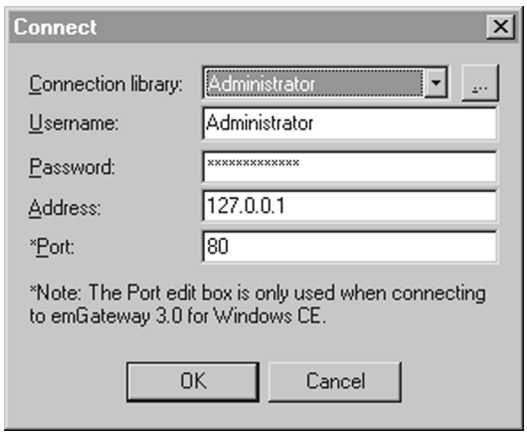


Figure 10-3: Connection Dialog Box

*** For a brief discussion of what a DLM is, and how to add, modify, and delete a DLM, please refer to Section 10.8 at the end of this Troubleshooting section.*

d. The Running DLMs screen will appear. On the left-hand side, click on the red icon (third down) labeled "DLMs".

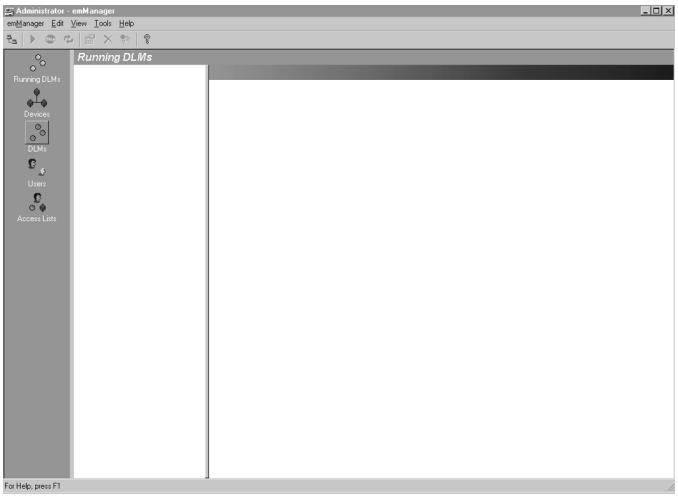


Figure 10-4: Running DLMs

e. The right side of the DLMs screen shows a single entry list that should say MODEM on the left, and "RS232M+COMx", where "x" is the number of the Comm port presently being used, in this case, Comm Port 1.

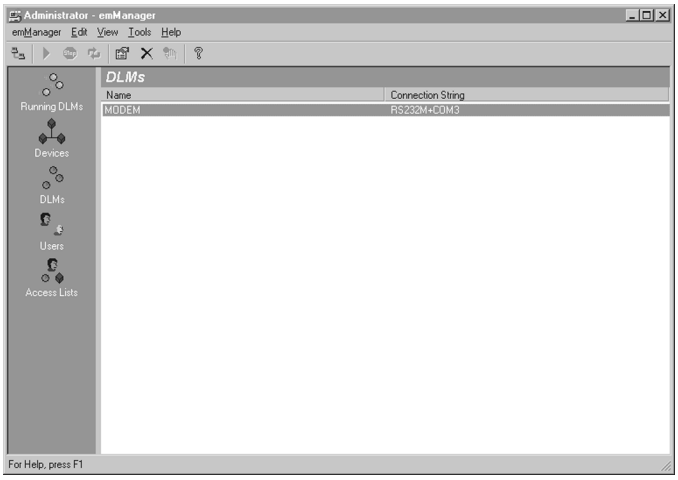


Figure 10-5: DLMs

f. If the last digit of the Connection String does not agree with the Comm Port you are using, you will need to modify the DLM as described in the following steps. If the last digit agrees, close the emManager™, and call your local LMI distributor.

g. Select the entry and right click your mouse and select "***Modify***..." from the pop-up menu.

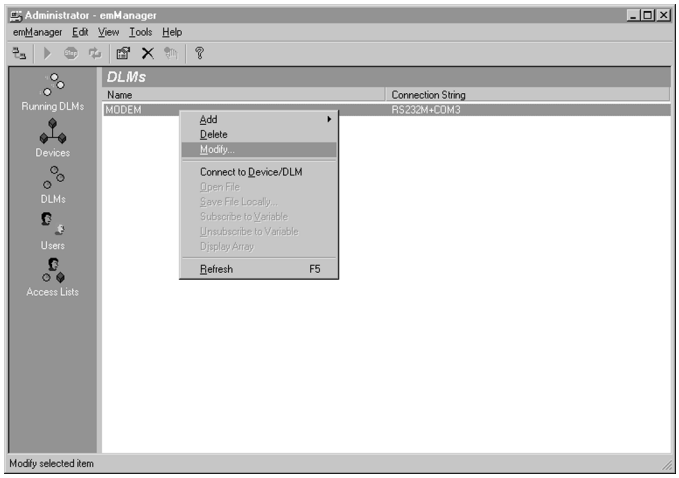


Figure 10-6: Modify On Pop-Up Menu

h. The properties dialog box will open. In the second line labeled “Connection” change the number at the end of the entry (the “x” in the “...COMx”) to match the new Comm port. Click ***OK*** to exit the dialog box.

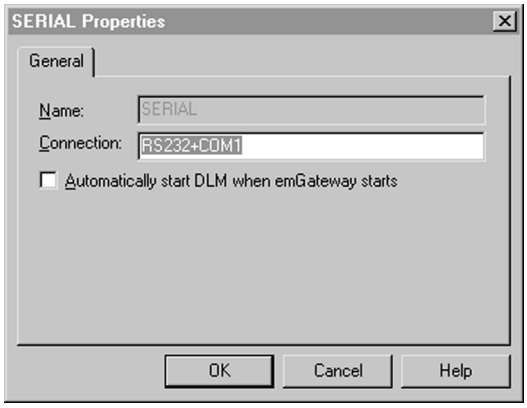


Figure 10-7: Properties Dialog Box

i. Select ***EXIT*** from the emManager™ menu.

10.4.2 I can’t establish reliable communications with an RS232 connection to the Liquitron™ DC5500 Controller.

Note that as the length of the RS232 connection increases, the speed (data rate) of the serial connection must be reduced to maintain reliable communications. For example, at a distance of 50 feet, reliable communication can be maintained at a 57600 baud rate; at a distance of 300 feet, the data rate must be reduced to between 4800 and 9600. For instructions on adjusting the serial communication data rate of the Liquitron™ DC5500 Controller, please refer to the Instruction Manual for the Controller.

10.4.3 I received an “Invalid Password. Try Again.” screen.

If you enter an invalid password, you will receive this message. Passwords are case sensitive. Re-enter the password, paying close attention to the whether the characters are upper or lower case, or some combination.

10.4.4 I received the “Access Denied-Security Lock-Out” screen.

If you enter an incorrect password three times in a row, the Liquitron™ DC5500 Controller will enter a Security Lock-Out mode. If this occurs, close down Internet Explorer, verify the password, and restart the connection procedure. The Lock-Out mode may take two or three minutes to clear.

10.4.5 The changes I made to the configuration of the DC5500 weren't saved.

After making changes to the configuration page of the LMI Liquitron™ DC5500, you must click on the ***SAVE CHANGES*** button at the top right corner of the Configuration Page. The changes will not be saved otherwise.

10.4.6 When I switch to PPM from µS, my conductivity drops to zero.

One of the fields in the DEVICE MAINTENANCE table is linked to your PPM ratio. Whatever value you enter into that field is used to determine your ratio. This works in exactly the same way as the LMI Liquitron™ DC5500 Controller (refer to the Instruction Manual for the Controller.) e.g. If you enter a "5" in the field, and your conductivity was 2000µS, then the new PPM value will be 1000µS (2000 x [5/10]=1000).

10.4.7 I can connect to the LiquiComm™, but not to the Liquitron™.

1. Make sure that you have set up the RS485 cable with the correct polarity.
2. If you have multiple DC5500's running and communicating on one LiquiComm™, make sure you have entered different RS485 addresses into each of the Controllers that are on the RS485 loop (up to 31).

10.5 Section 8.0: Connecting to the LMI Liquitron™ DC5500 Controller Using a PalmPilot™ Personal Digital Assistant (PDA)

10.5.1 My PalmPilot™ doesn't have the LMI Application on it.

After all of the software is installed on your PC (or laptop), you must dock the PDA with your PC and enable Hot Sync in order for the LMI Application to be loaded into the PalmPilot™ from the Add-Ons folder on the PC.

10.5.2 I successfully downloaded data onto my PalmPilot™, but it doesn't show up in my PC.

You must place the PalmPilot™ in its cradle and select Palm Conversion from the Data Readers menu in the DataComm™ software to transfer the data from your PalmPilot™ to your PC or laptop.

10.6 Section 9.0: LMI DataComm™ Data Downloading, Analysis, Reporting, and Graphing Software

10.6.1 My PC/laptop won't connect to the Liquitron™ DC5500 Controller to download data.

1. To download data to your PC, go to the Data Readers menu, and pull down to select the Manual Polling option.

If you are using a direct RS232 connection to the LMI Liquitron™ DC5500 Controller, follow the steps below. If you are using a modem to make your connection to the Controller through the LMI LiquiComm™ Communication Module, skip to Step 8 below.

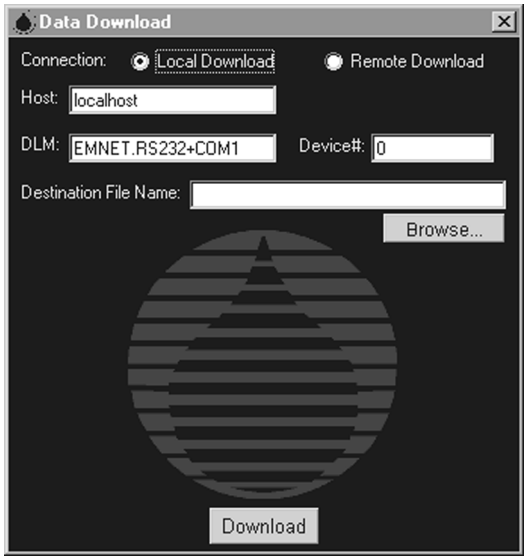


Figure 10-8: Local Data Download Dialog Box

2. If you have a direct RS232 connection to the LMI Liquitron™ DC5500 Controller, make sure that next to CONNECTION: the LOCAL DOWNLOAD option button is selected, as shown in Figure 10-9.
3. The field next to HOST: should read "localhost", without the quotes.
4. Ignore the contents of the PHONE #: field.
5. For the field next to DLM:, the field should read "EMNET.RS232+COMx" without the quotes, where the "x" is replaced by the number of the Comm Port which was assigned during the software installation.
6. Click on the ***DOWNLOAD*** button. The connection will be made and the data downloaded to your PC or laptop. Proceed to the section, *Section 9.4 Data Loading* to load the data for analysis, graphing, and generating reports.
7. If you are using a modem to make your connection to the Controller through the LMI LiquiComm™ Communication Module, make sure that next to CONNECTION: the REMOTE DOWNLOAD option button is selected, as shown in Figure 10-10.

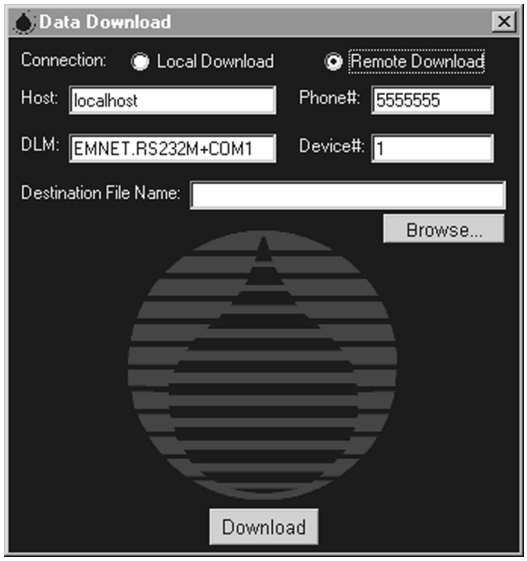


Figure 10-9: Remote Data Download Dialog Box

8. The field next to HOST: should read "localhost", without the quotes.

9. In the PHONE #: field, insert the phone number of the analog telephone line connected to the LMI LiquiComm™.
10. For the field next to DLM:, the field should read "EMNET.RS232M+COMx" without the quotes, where the "x" is replaced by the number of the Comm Port to which the modem was assigned during the software installation.
11. The field next to DEVICE: should contain the RS485 number for the Controller whose data you want to download.
12. In the field next to DESTINATION FILE NAME, enter the name for the file to be downloaded. Use the BROWSE button to navigate to the location where you would like the downloaded file saved. If you don't specify a location, the file is saved to the C:\ drive.
13. Click on the ***DOWNLOAD*** button. The connection will be made and you will be asked for a password. Enter the password, being aware that the password is case-sensitive. Click ***OK***.
14. When finished, a message will appear that the download is complete. Close the Data Download application.

10.6.2 I can't find the file that I downloaded from the Liquitron™ DC5500.

You probably didn't specify where the file was to be stored. Either:

1. Look on the C:\ drive for the file or,
2. Make sure that you specify the location where you want the file stored and the name to be used in the Data Download dialog box:
    a. In the last field next to DESTINATION FILE NAME, enter the name for the file to be downloaded.
    b. Use the BROWSE button to tell the Data Download software the location where you would like the downloaded file saved.
3. Try a search or "Find File" for the file name that was downloaded.

Try downloading the file again.

10.6.3 The Chart_Zoom In and Chart_Zoom Out menus don't seem to work in the Graphing Mode.

The Chart menu is non-functional in the Graphing Mode. Using these menu items may distort your graphs. Use these menu selections in the other three Modes only. If the graphs appear to be 'squeezed', hit the ***REFRESH*** button and the graph will be restored.

10.6.4 In the Graphing Mode, the upper (tank, temperature, and conductivity) graphs are all on top of one another.

Refer to Figure 10-10. The three plots can be separated by clicking and dragging your mouse up and down over any of the three scale ranges on the left side of the graphical plot area.

10.6.5 Automatic Polling doesn't work, either when it is scheduled, or in response to selecting Automatic Polling from the DataComm drop down menu.

If the Data Download dialog box doesn't appear either when it is scheduled in the Task Scheduler, or in response to selecting ***Automatic Polling*** from the DataComm drop down menu, verify that at least one device has a check mark next to "Auto Poll" in the Device Maintenance table.

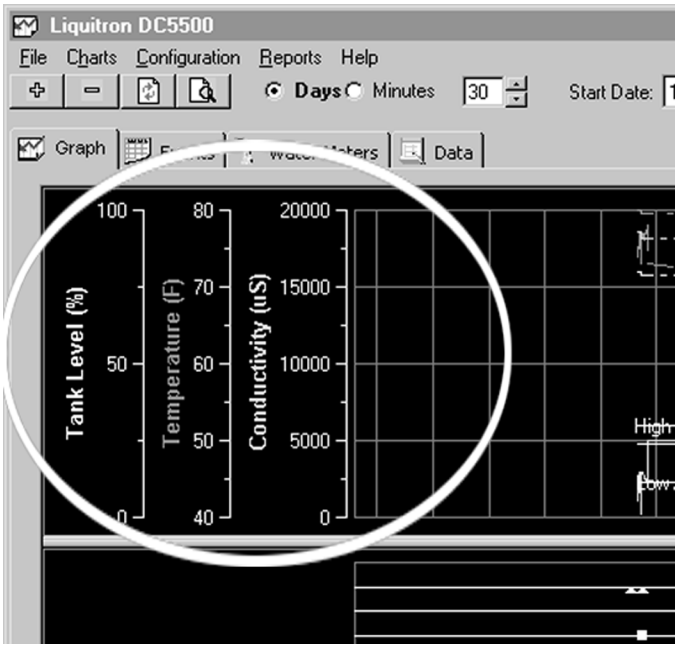


Figure 10-10: Graphing Mode Window Movable Scales

10.6.5 I wanted to print a set of reports without selecting a device in the DEVICE: field.

Reports can only be printed for a device whose data has been loaded by selecting the device in the DEVICE: field.

10.6.6 The displayed graphical plots are very small and compressed.

1. Try using the Zoom Out button or the Zoom Bar to return the display to where you started.

2. Restart the DataComm™ application and reload the data.

10.7 Other

10.7.1 I'm not receiving notification of emergency or alarm conditions via my SkyTel email or pager.

1. Check the Paging Page in the LiquiComm™ and verify the entries, especially the first and third check boxes.
2. Check the specific device Station Info on the Configuration Page for the LMI Liquitron™ DC5500 Controller whose alarm messages are not being received.
3. Contact SkyTel to ensure the account is active.

10.7.2 The DataComm application seems to be running slower than normal. OR I am constantly getting error messages.

Run the Database Maintenance routine, located in the ***Configuration*** ⟶ ***Database Maintenance*** menu.

10.7.3 I can't access an extension when using a modem to dial a telephone number when connecting to either the Liquitron™ or LiquiComm™.

Be sure to insert a comma "," between the main phone number and any required extension. This allows the modem to pause for several seconds to wait for the connection to be completed before dialing the extension number. Multiple commas may be inserted if a longer pause is required. Each comma results in an approxi-

mate two second pause.

10.7.4 I get error messages when I try to access information on devices listed in the Device Maintenance table.

A database maintenance function is provided to repair errors to the device database files. It is recommended that this command be used every few months, or at any time the DataComm application seems to run slower than normal, or errors are constantly generated. Select ***Configuration*** ⟶ ***Database Maintenance***. The database will be repaired. This process takes 15-20 seconds to complete. All other DataComm functions must be shut down before starting the Database Maintenance function, including Manual or Auto Polling.

10.7.5 I can't get the header to appear on my reports.

To see the correct header above the report on your computer screen, hit the refresh icon when you select a new device.

10.8 What Is A DLM?

"DLM" is an acronym for Dynamic Link Module. A DLM essentially tells Internet Explorer how to use, and where to look for, the RS232 or modem Comm Port to communicate with the outside world. When you installed the emGateway® software from Disk 2, a DLM was automatically created. The particular type depends on whether you had set up a direct RS232 connection, or had installed a modem for remote communications. At least one DLM is required to use the LMI software to connect to the LMI Liquitron™ DC5500 Controller or LiquiComm™ Communication Module.

10.8.1 Viewing a Running DLM

1. Double-click on the emWare® icon located in the Task Bar in the lower right hand corner of your monitor. The emManager™ software will open, indicating no connection has been established.
2. Select ***OPEN CONNECTION*** from the emManager™ menu.
3. When the Connection dialog box appears, leave the fields at their default settings and click ***OK***.

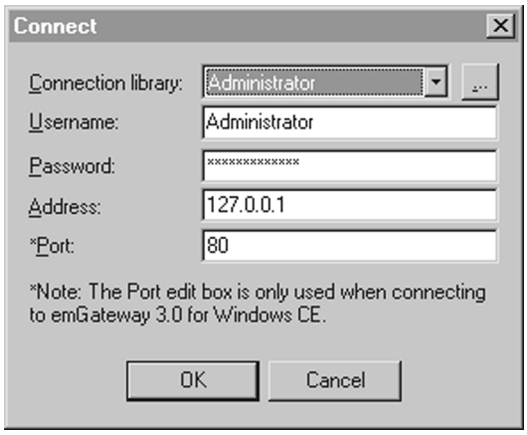


Figure 10-11: Connection Dialog Box

4. The Running DLMs screen will appear.

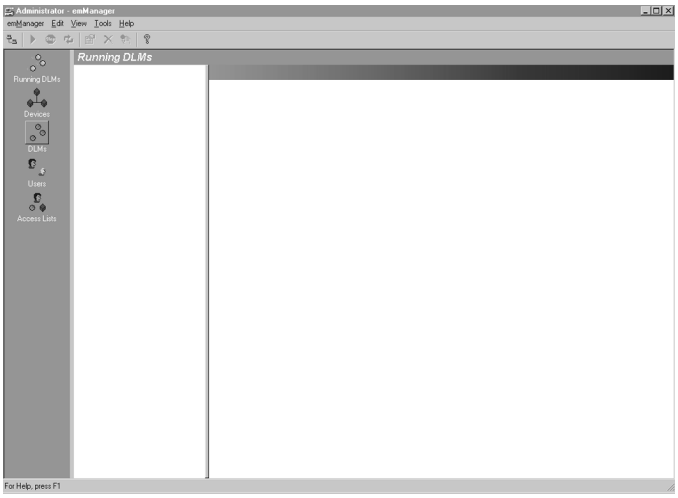


Figure 10-12: Running DLMs

5. On the left-hand side, click on the red DLM icon

.

The right side of the DLMs screen shows a list of the DLMs that have been created and are currently running on your PC or laptop. In this particular case, a modem connection was established when the software was installed, so the entry has MODEM on the left, and “RS232M+COMx”, where “x” is the number of the Comm Port presently being used, in this case Comm Port 3.

6. Select ***EXIT*** to close emManager®.

10.8.2 Setting Up/Modifying a DLM

If you need to modify a DLM, such as when changing the Comm Port used for either RS232 or modem communications, or you need to set up a new DLM, such as when expanding the capabilities of a basic system (e.g. by adding Remote Modem communications or SkyTel Alarm Notification capability), follow the procedure below.

1. Double-click on the emWare® icon located in the Task Bar in the lower right hand corner of your monitor. The emManager™ software will open, indicating no connection has been established.
2. Select ***OPEN CONNECTION*** from the emManager™ menu.
3. When the Connection dialog box appears click ***OK***.
4. The Running DLMs screen will appear. On the left-hand side, click on the red DLM icon

.

The right side of the DLMs screen shows a list of the DLMs that have been created and are currently running on your PC or laptop. In this particular case, a modem connection was established when the software was installed, so the entry has MODEM on the left, and "RS232M+COMx", where "x" is the number of the Comm Port presently being used, in this case Comm Port 3.

Follow the procedures below to either modify or add a DLM, or activate a different DLM.

To MODIFY a DLM:

1. Select the entry in the list and right click your mouse and select "***Modify...***" from the pop-up menu.

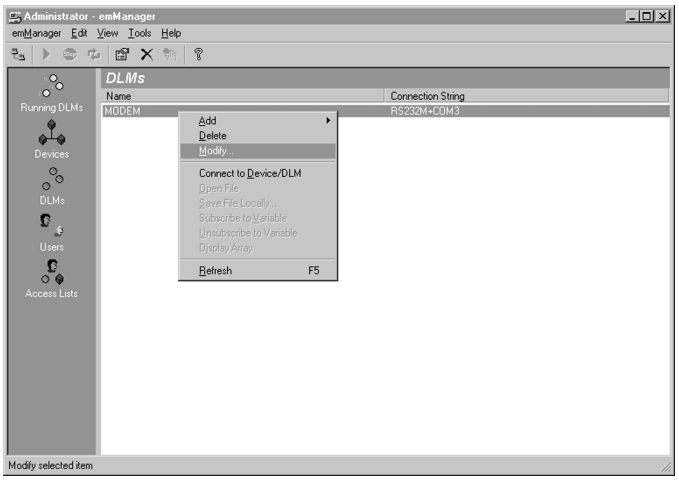


Figure 10-13: Modify On Pop-Up Menu

2. The properties dialog box will open. In the second line labeled "Connection" change the number at the end of the entry (the "x" in the "...COMx") to match the new Comm port. Click ***OK*** to exit the dialog box.

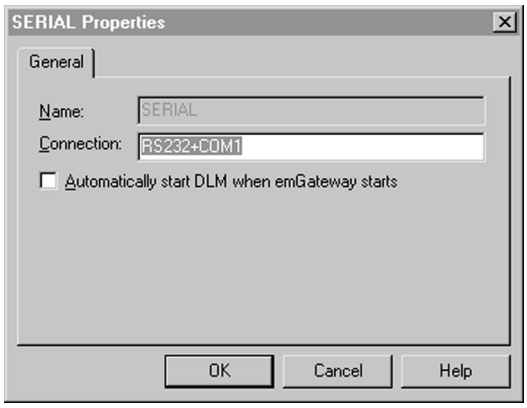


Figure 10-14: Properties Dialog Box

3. Select ***EXIT*** from the emManager™ menu.

To CREATE a DLM:

1. Right-click the mouse and select "***Add***..." from the pop-up menu.

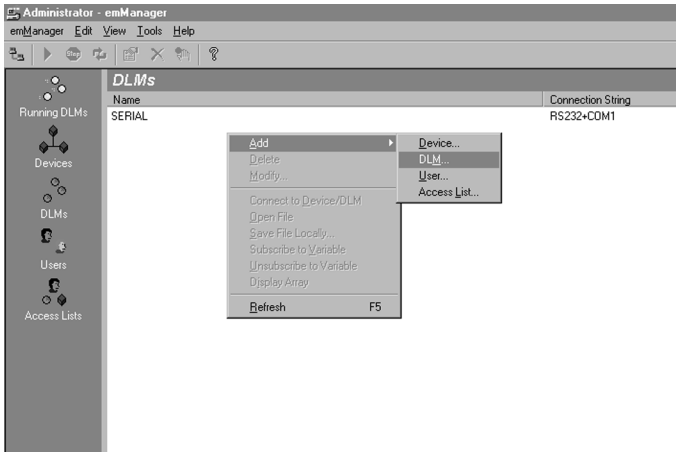


Figure 10-15: Right Click To Add DLM

2. Fill in the name and connection string in the Add DLM dialog box.

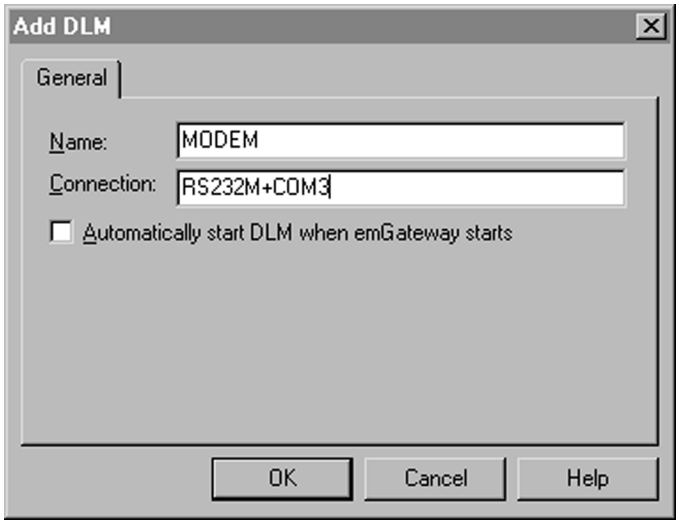


Figure 10-16: Add DLM Dialog Box

The Connection string must take the form:

Skytel Fixed Wireless Service Credit Application

BUSINESS NAME:_____
BILLING ADDRESS:_____
(PHYSICAL STREET ADDRESS ONLY)

HEADQUARTERS ADDRESS:_____
(IF DIFFERENT THAN ABOVE)

BUSINESS TELEPHONE NUMBER:_____ FACSIMILE:_____
BANK REFERENCE:_____
FEDERAL TAX ID#:_____ DUN & BRADSTREET#_____
TYPE OF BUSINESS ORGANIZATION: CORPORATION_____ D. B. A._____
IF CORPORATION, LIST NAMES OF CORPORATE OFFICERS:

_____ _____
_____ _____

IF D. B. A, LIST NAMES AND SOCIAL SECURITY NUMBERS OF PRINCIPAL(S):

_____ _____

CONTACTS	NAME	TITLE	TELEPHONE NUMBER
PRIMARY CONTACT:*			
MARKETING CONTACT:			
ADMINISTRATIVE CONTACT:			

***AUTHORIZED TO MAKE PURCHASES**

TARGET MARKETS:_____ANNUAL REVENUES:_____
EXISTING AGENT FOR:_____
NUMBER OF UNITS IN SERVICE:_____NUMBER OF UNITS ADDED PER MONTH:_____
MONTHLY PAGER VOLUME EXPECTED WITH SKYTEL CORP.:_____
TRADE REFERENCES: (Acceptable trade references include companies that provide goods/services to the business. Banks, insurance companies, attorneys and utility companies are not acceptable.)

COMPANY NAME	CONTACT	TELEPHONE NUMBER
1.		
2.		
3.		
4.		
5.		

The information provided on this form is true & correct. I understand that SkyTel may review a copy of our credit information from the credit bureau(s). SkyTel will hold all information contained in this credit application, as well as the credit investigation, in strict confidence.

_____

AUTHORIZED SIGNATURE TITLE DATE

DEVICE INFORMATION	CAP CODE	SERIAL NUMBER	RATE PLAN
Device #1			
Device #2			
Device #3			

Are you interested in Paging Services from SkyTel? Yes or No