

# DataLynx

**Version 1.3**

## **User Manual**



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### DataLynx User Manual PC-DLYNX-M

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# DataLynx User Manual

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# 1.0 Introduction

DataLynx provides an easy and inexpensive way to collect data from your PLCs. The DataLynx Server stores the information it gathers onto your PC into either a comma or tab delimited text file(s). These files can be created on a daily, monthly or yearly basis. The data can be opened in Excel, NotePad or a program of your choice. At this point, you can save the files or print the data.

DataLynx is unique in that it uses a phone line and modems compared to more expensive ethernet lines. It is ideal for long distances where the location is not easily accessible and not economical to visit the PLC and retrieve data.

## System Requirements

### Hardware Required

Pentium II with 128 megabytes of ram and 10 megabytes of hard disk space free

PLC which supports Modbus serial

Modems for PLC and PC

### Software Required

The Server can run on Windows NT (SP5 or higher), 2000 or XP

The Monitor can run on Windows 98, NT, 2000 or XP

## 2.0 Installation of DataLynx

Before you start, ensure that the PLC(s) and Server/Monitor computer(s) are connected to the network.

Decide what type of installation you want:

1. Server and Monitor on Same Computer
  - a. May be the only option if only one computer is available.
  - b. If hosting the Server and Monitor on different computers, users may install both the Server and Monitor on the Server for quick installing and configuring.
2. Server and Monitor on Different Computers
  - a. Ideal when the physical location of the Server is not easily accessible.
  - b. Must note the IP Address or name of the Server.

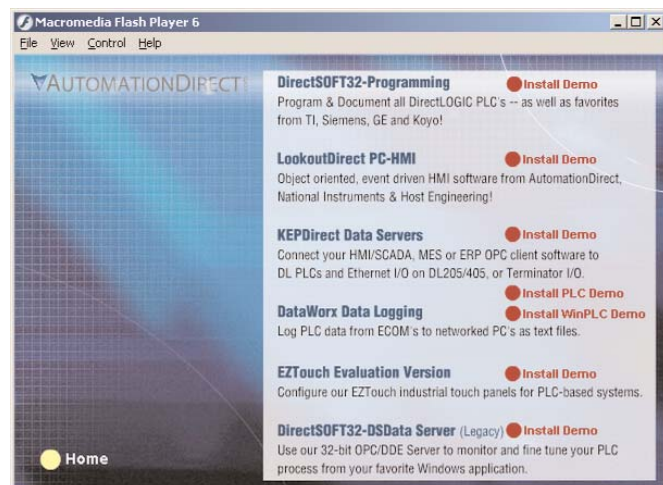
DataLynx software is available on the AutomationDirect Product Showcase CD. To install DataLynx, insert the AutomationDirect CD into your PC's CD drive. The CD should start automatically and open the installation window shown below.

### Note:

If the AutomationDirect CD does not start automatically, go to your Windows™ START button, select RUN, and type:

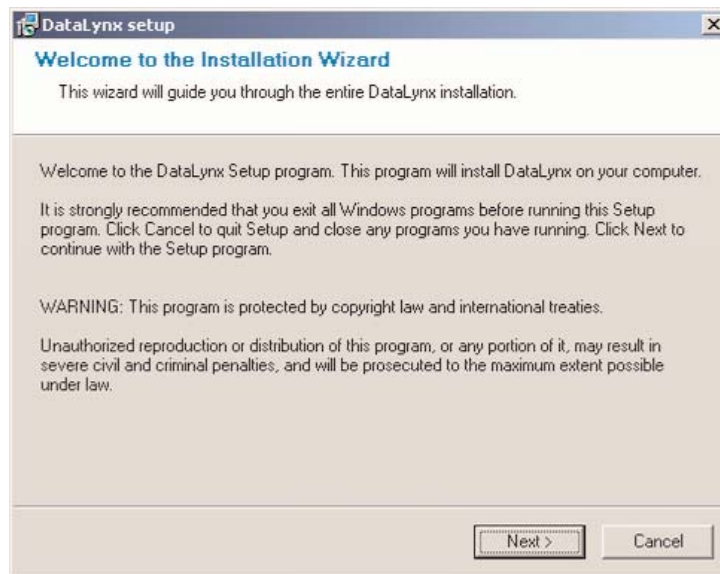
E:\setup.exe

Change the letter “E” to correspond to the letter for your CD drive. Then click on “OK,” and the program will start.



Click on “DataLynx.”

To start the installer program, click “Next.”



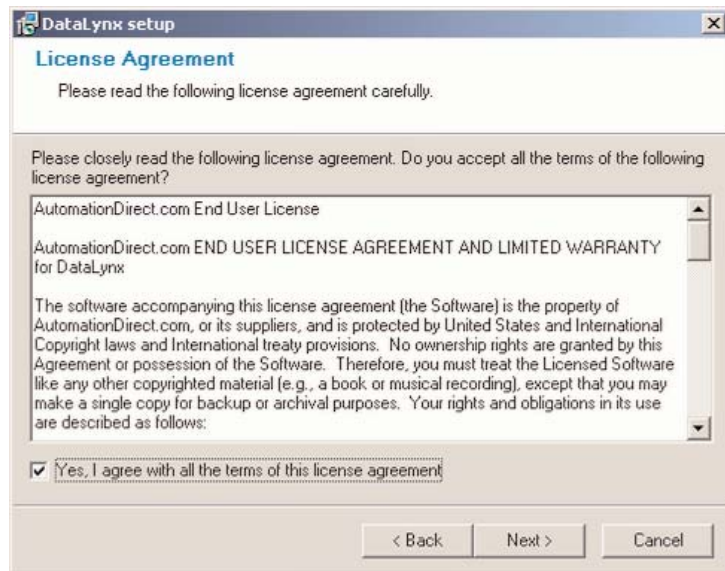
Read and make sure you understand the license agreement.



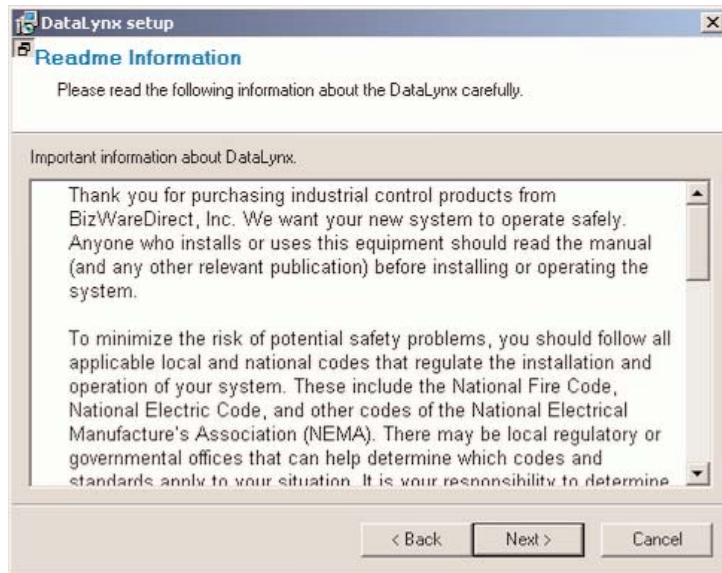
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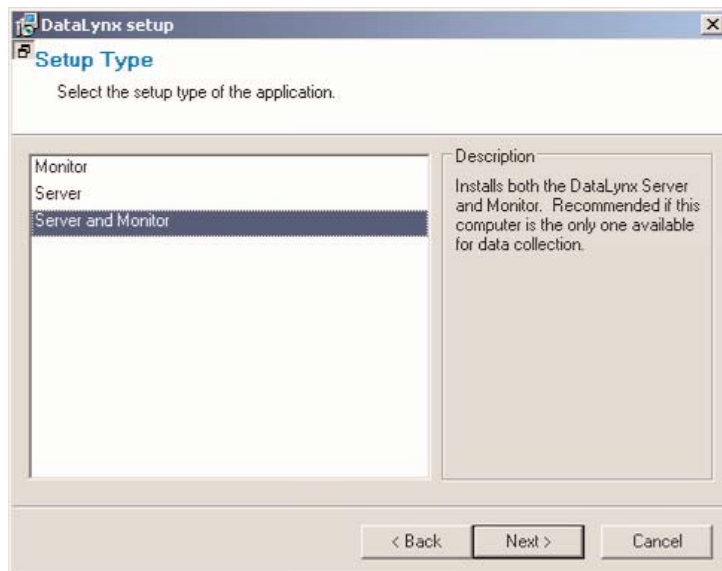
After reading and understanding the license agreement, check the "Yes, I agree with the terms of this license agreement" option, and click "Next."



The next screen contains important readme information that may be pertinent to you. After reading the "Readme" information, click the "Next" button.



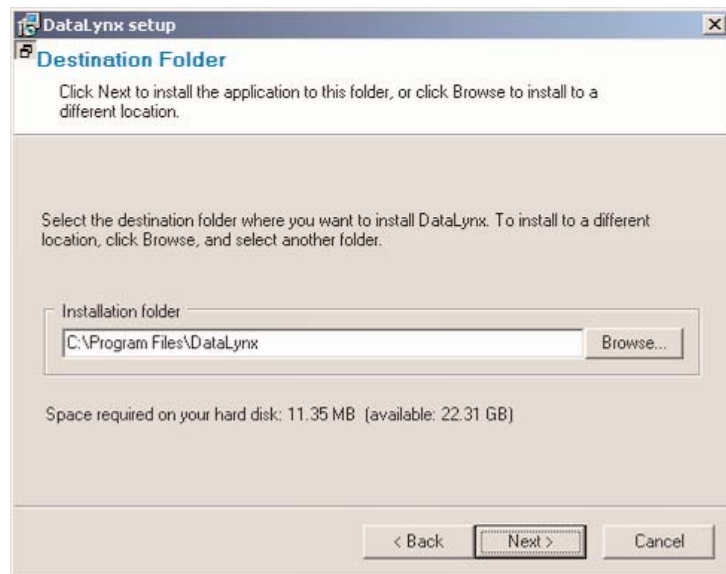
Next, a prompt for the setup type will appear. There are three types: Monitor, Server, and Server and Monitor. If a type in the list is selected, a description of the type will appear on the right hand side labeled "Description."



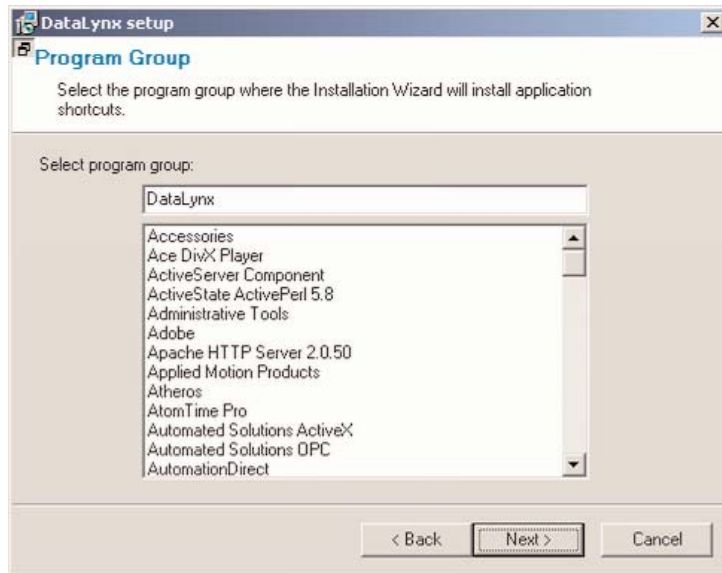
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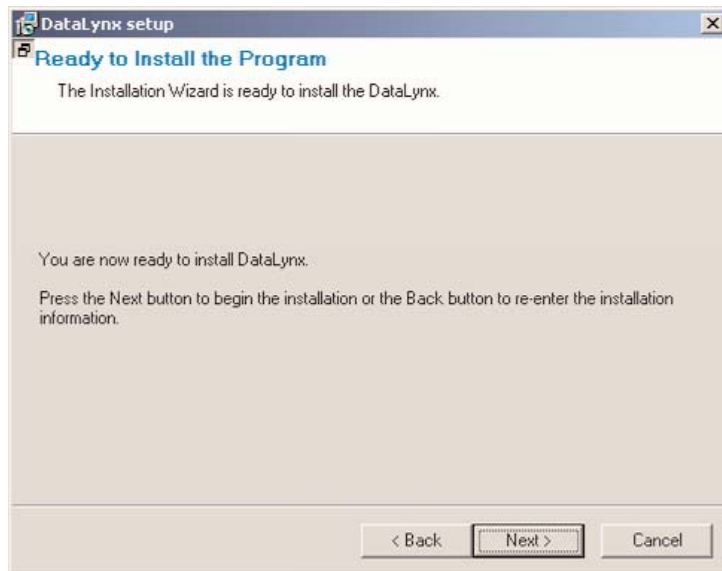
After it is determined which type of setup is wanted, click “Next,” and a prompt to save the DataLynx files will appear. By default the files will save into *c:\Program Files\DataLynx\*, but the location of the DataLynx files can be changed by clicking on the “Browse...” button.



After the location of the files has been determined, click “Next,” and a prompt for the program group will appear. By default, the program group is DataLynx, but the program group may be changed by entering it in the text box.



Click “Next,” and a prompt will appear to start the installation process. It is possible to click the “Back” button and review the installation settings before committing to the install. When satisfied with the installation settings, click the “Next” button.

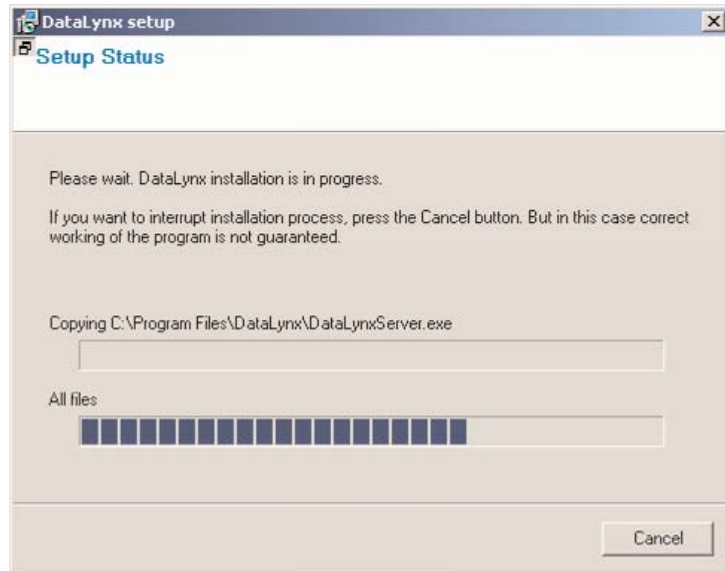




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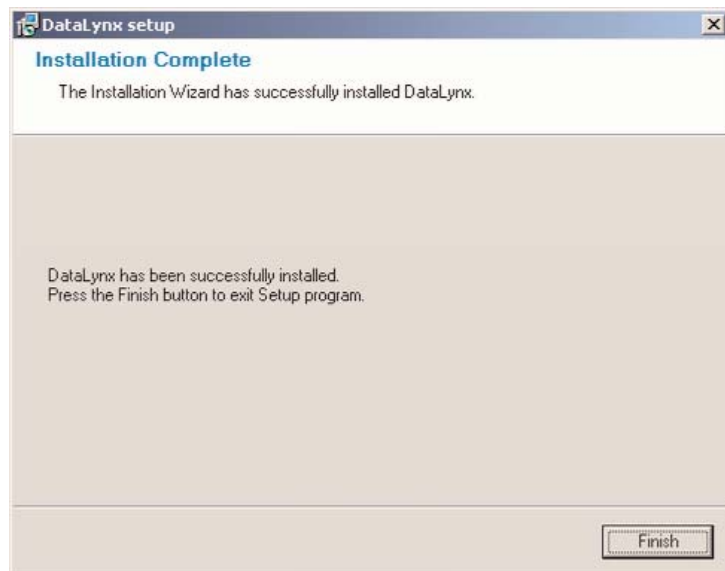
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After clicking the “Next” button, a progress meter will appear indicating install progress.



The installation can always be stopped by clicking the “Cancel” button.

After the install is complete, a notification will appear to confirm that installation has been successful. Click "Finish" to exit the DataLynx installer.



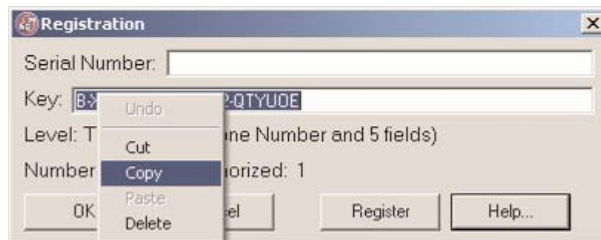
## 3.0 Registration

Registration Instructions:

- Ensure that the Server is running.
- Start the Monitor and connect to the Server.
- Go to Help -> Registration:



In the registration window, copy the registration key by selecting the key, pressing the right mouse button and selecting “Copy.”



With your browser go to the following web site: <http://www.bizwaredirect.com/datalynxregistration.aspx> and paste the registration key into the Key: field in the web form. Also enter the serial number, which is located on the back of the CD cover, and the order number.

### DataLynx Registration Form

Serial Number (From DVD Case)	<input type="text"/>
Key (From DataLynx Install)	<input type="text"/>
<input type="button" value="Create Registration"/>	

# DataLynx User Manual

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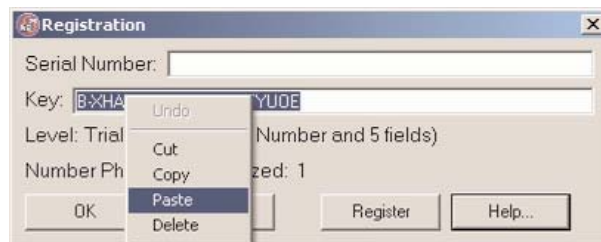
Click the "Create Registration" button. If the information has been entered correctly, the assigned key will appear:

## DataLynx Registration Form

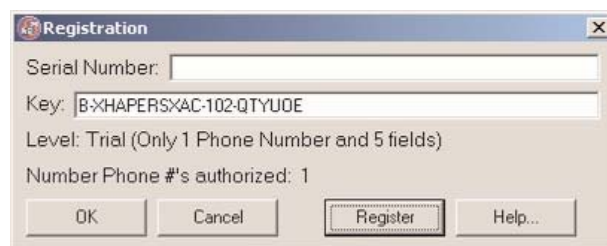
Serial Number (From DVD Case)	00000C185
Key (From DataLynx Install)	B-XHAPERSXAC-102-QTYUOE
<input type="button" value="Create Registration"/>	
Your assigned key	B-XHAPERSXAD-103-QTYUOE

Found registration for 1 device(s).

Copy the assigned key and paste into the DataLynx Monitor Registration screen by pressing the right mouse button and selecting "Paste."



- Click the "Register" button.



A success message and the registration window will show registration status:



- Click "OK"

# 4.0 Modem Connectivity

To ensure successful communication, at least two modems are required. One modem is needed for the PLC, and one modem is needed for the PC. Each PLC brand typically has a different set of requirements and procedures. Generally, an ideal modem would support parity and a baud rate of at least 56K to ensure fast and reliable connections. Please refer to the PLC's documentation on configuring modem connectivity with the PLC.

Modbus Serial must be supported on the PLC. When configuring DataLynx on what addresses to read, please take care in converting the modbus address into the PLC's native memory addressing scheme.

## 4.1 Testing Modem Configuration

To aid in configuring and troubleshooting the modem connections, use Hyperterminal and manually connect to the PLC's modem from the PC's modem. The PLC does NOT need to be connected to the modem. This test confirms that the modems can communicate with each other. To run the test, complete the following steps:

1. Start Hyperterminal by going to Start->Program Files->Accessories->Communications->Hyperterminal
2. In Hyperterminal, the user will be prompted for a session name, enter the desired session name, e.g. "Test Modem."
3. Next, the user will be prompted for the connection settings - select the PC modem's COM Port and configure the necessary settings.
4. Click "OK."
5. To confirm that the modem is working, enter "AT." An "OK" message should appear from Hyperterminal.

6. If the “OK “ appears, test the dialing by entering ATDTYYYY where YYYY is the phone number.

a. Ex: ATDT2555678 to dial 255-5678

7. Depending on the modem connection and the phone line, it may take a few minutes before receiving feedback.

a. If successful, “Connected XXXXX bps,,” where XXXXX is the baud rate, should appear.

b. If not successful, an error like one of the following will be received: “BUSY,” “NO DIALTONE,” “NO CARRIER,” etc.

## 4.2 Example Setup for AutomationDirect PLCs

The information below illustrates the configuration used for testing DataLynx:

PLC: DL05

Modem for PLC: MDM-TEL Modem

See the MDM-TEL setup wizard for configuration information.

Modem for PC: Toshiba Software Modem

DL05 PLC configured with the following:

1. Port 2 Setup
  - a. Modbus Serial
  - b. Parity = 0 (zero)
2. Modem Connected to Port 2

## 5.0 DataLynx PLC

### 5.1 Server

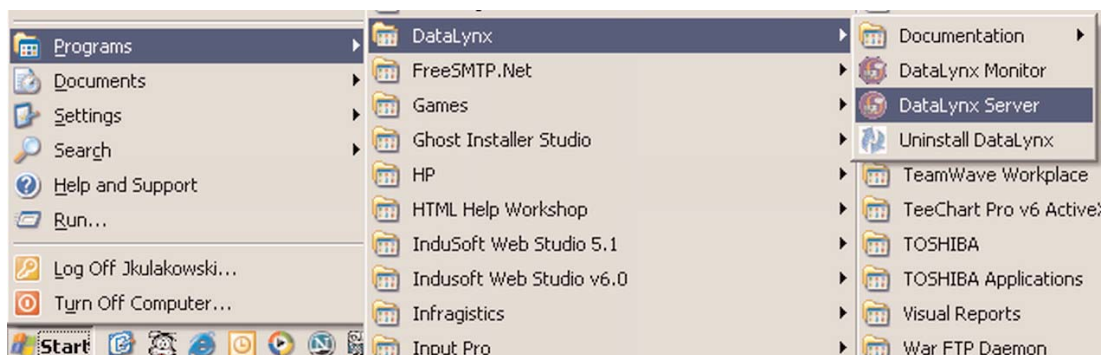
#### Overview

The DataLynx Server's primary function involves dialing up to PLC(s) and recording the data into text files in the format specified by the user.

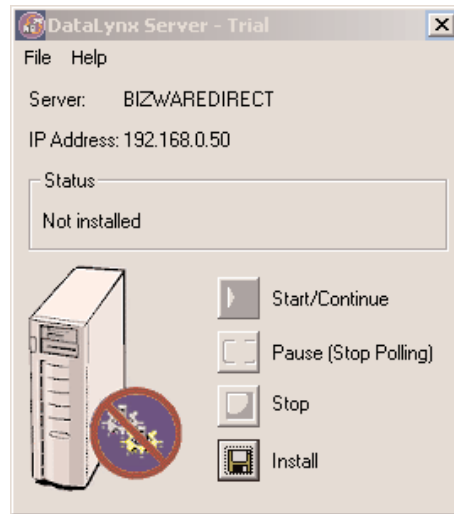
The format of the text file is set with the DataLynx Monitor. For more information on configuring the Server with the Monitor, refer to the Monitor section.

#### 5.1.1 Installing Service

The DataLynx Server needs to be installed and run in order to run without user intervention. Doing so is a simple process. Go to: Start Button -> Program Files -> DataLynx -> DataLynx Server



Click the "Install" button.

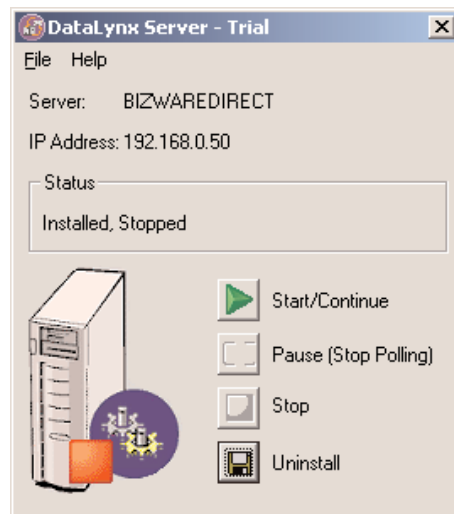


This window should appear showing "Status" as Installed, Stopped.

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*Note: This does not start the DataLynx Server. To start the Server, refer to the Running Service section.*

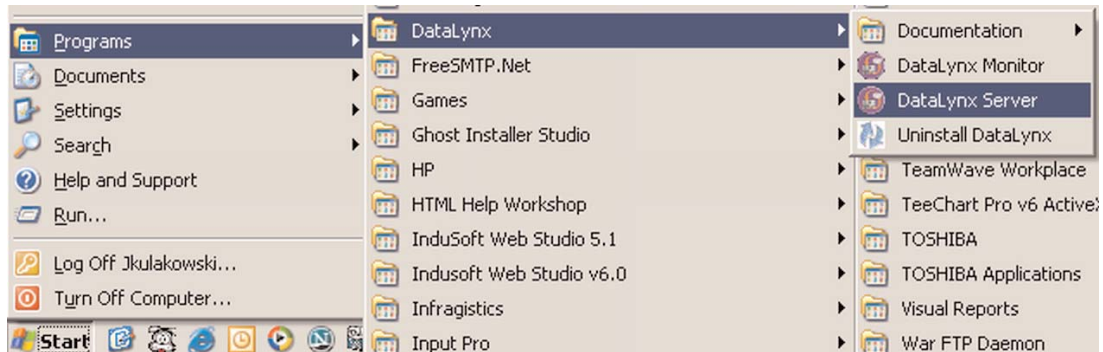
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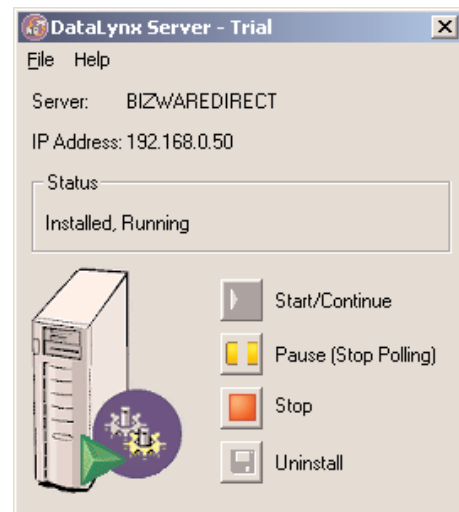
## 5.1.2 Running Service

If you do not already have the DataLynx Server Window open, go to: Start Button -> Program Files -> DataLynx -> DataLynx Server



This window will appear assuming DataLynx is not installed. Click the "Start/Continue" button.

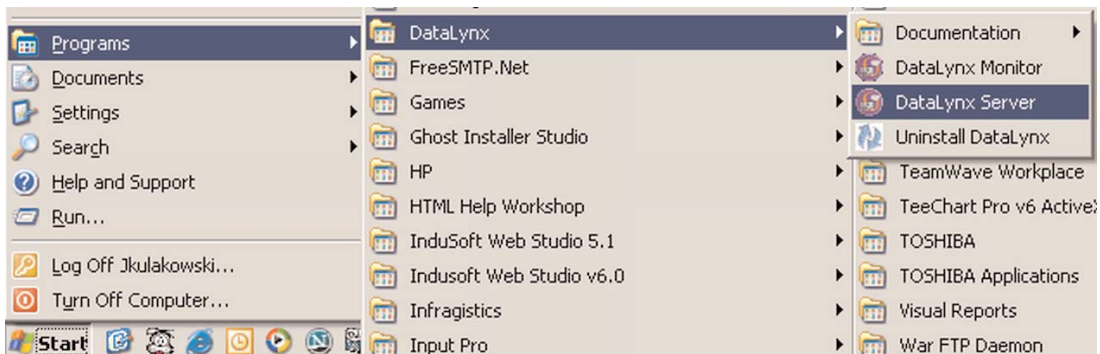
*Note: It may take a couple of minutes for the Server to start running.*



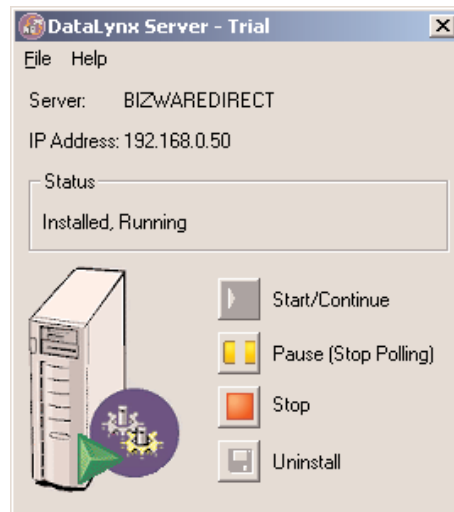
## 5.1.3 Pausing

Pausing forces the Server to stop polling for PLC input. This can be useful when configuring the Server because it will prevent irrelevant data from being stored.

If you do not already have the DataLynx Server Window open, go to: Start Button -> Program Files -> DataLynx -> DataLynx Server



This window will appear -  
Assuming Running



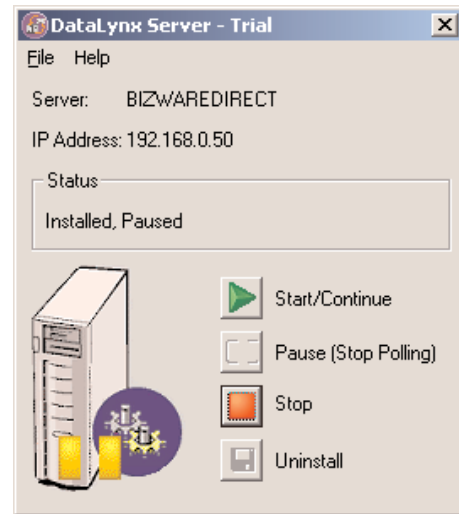
# DataLynx User Manual

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Click the "Pause (Stop Listening)" button, and this window should appear

*Note: This does not stop the DataLynx Server. To stop the Server refer to the Stopping section*

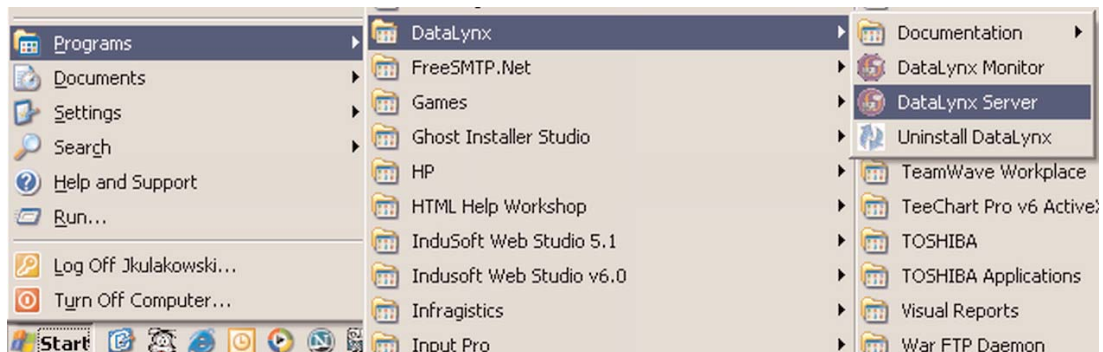
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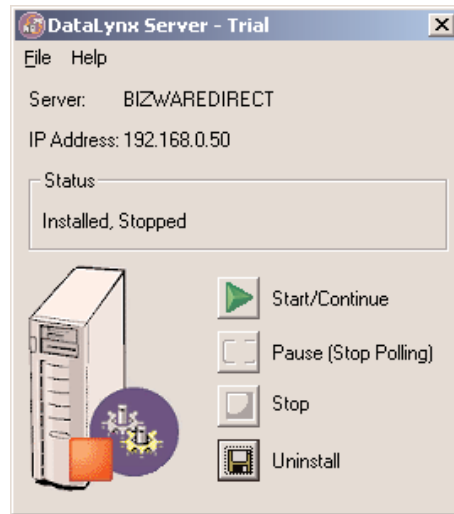
## 5.1.4 Stopping

Stopping the DataLynx Server completely stops the program, instead of stopping polling. This feature is useful because the Server must stop before you can uninstall it.

If you do not already have the DataLynx Server Window open, go to: Start Button -> Program Files -> DataLynx -> DataLynx Server



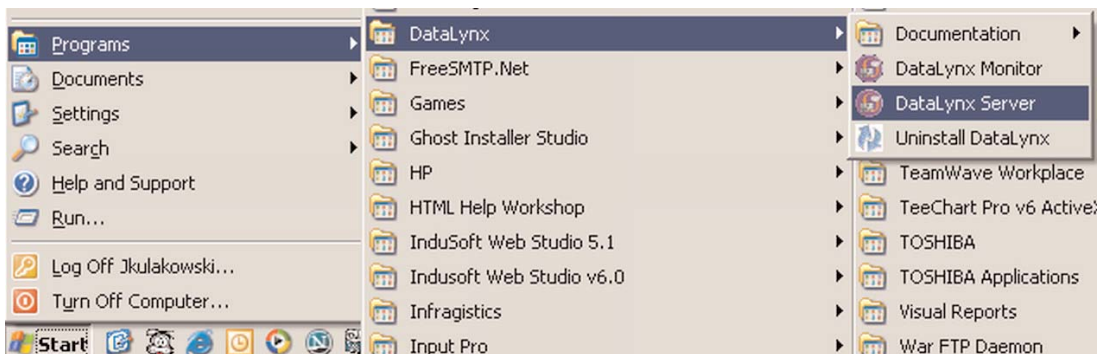
In the DataLynx Server Window, click the "Stop" button, and this window should appear.



## 5.1.5 Diagnosing

Diagnosing the DataLynx Server allows the user to troubleshoot and view real-time events.

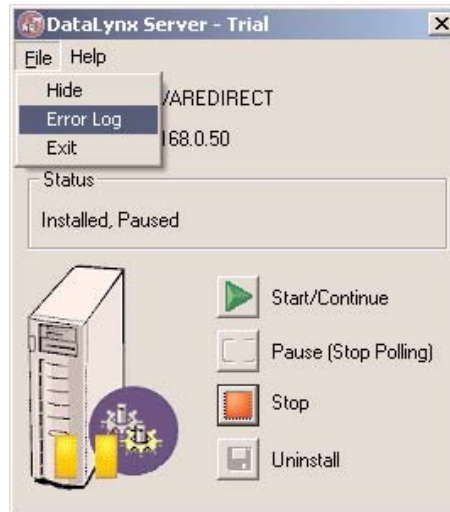
If the DataLynx Server Window is not open, go to: Start Button -> Program Files -> DataLynx -> DataLynx Server



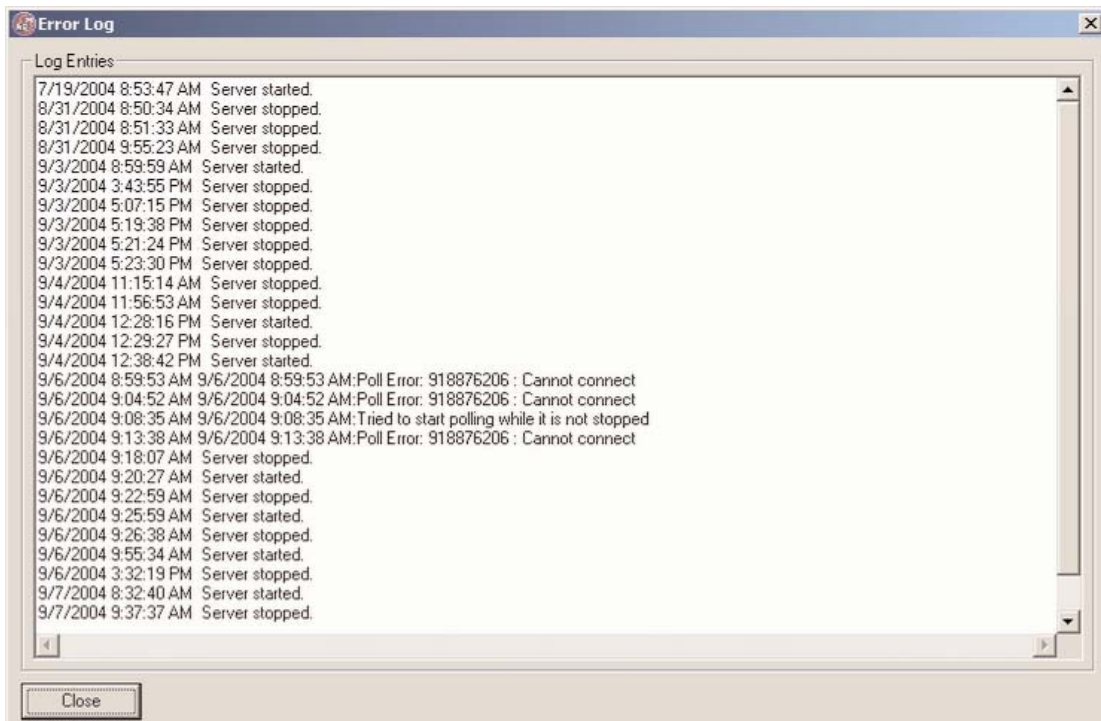
# DataLynx User Manual

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In the DataLynx Server Window, go to the menu:  
File->Error Log



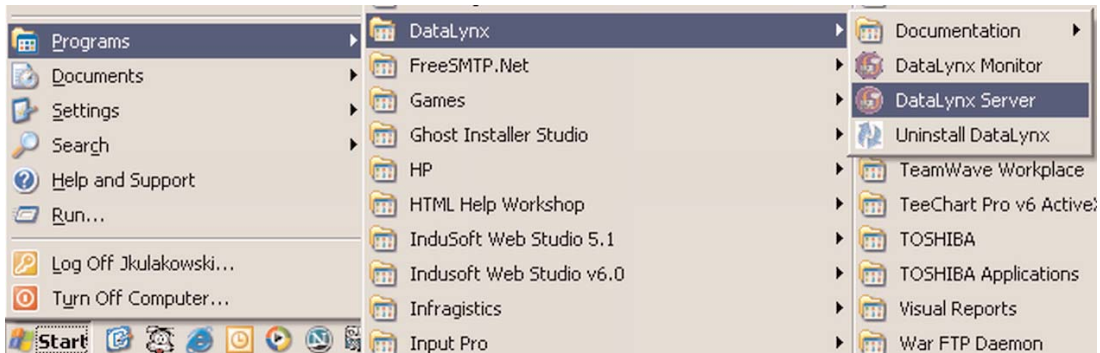
The Diagnostics Window below should appear.



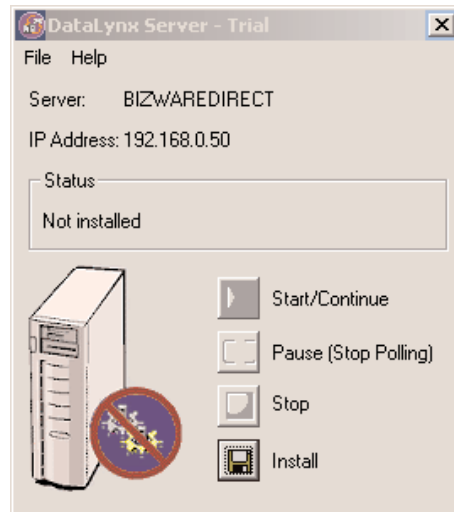
## 5.1.6 Uninstalling

For troubleshooting reasons, it is a good idea to uninstall the Server entirely.

To open the DataLynx Server Window, go to: Start Button  
-> Program Files -> DataLynx -> DataLynx Server



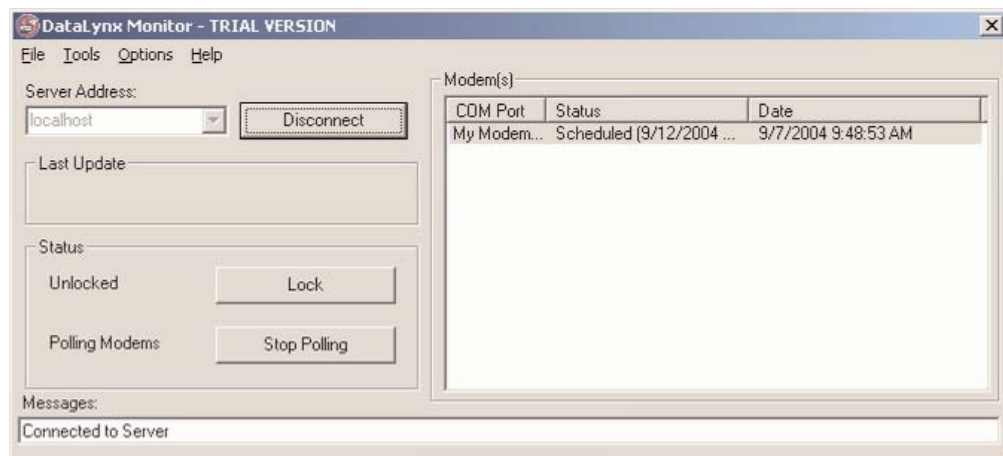
Click on the "Uninstall" button, and this window should appear.



## 5.2 Monitor

### Overview

The DataLynx Monitor allows the user to configure the DataLynx Server and retrieve its data files over the network. Also, the DataLynx Monitor permits the user to troubleshoot. Below is the main screen and the explanations of each field:



**Server Address:** Field where one enters the address of the DataLynx Server

**Last Update:** Denotes the most recent PLC input time

**Status:** Displays the Server's locked and listening state

**Modem(s):** Displays list of currently configured modems on the Server as well as each modem's status

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*Note: Modems only lists the last update. Check the date to verify if you are receiving information when expected.*

---

**Messages:** Displays updates from the Server as well as from the Monitor itself

## 5.2.1 Configuring

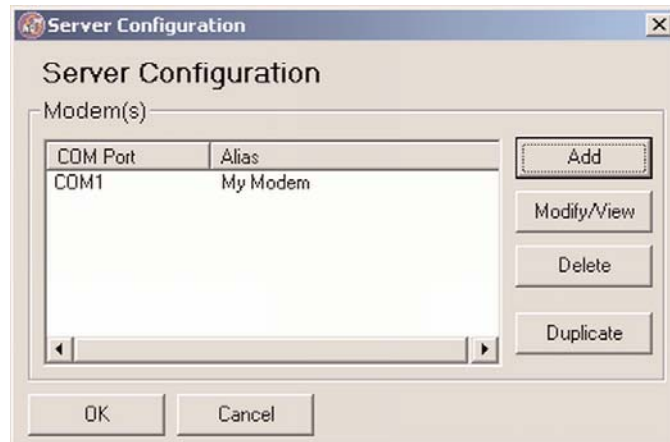
*Note: The Server must be connected in order to configure the Server.*

---

Go to the menu:  
Options -> Configure  
Server



A list of modems, if any, configured for the Server will appear.





# DataLynx User Manual

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To add a modem, click on the "Add" button, and a Modem Configuration screen like the following will appear.

Modem Configuration

Modem Configuration | Text Files | Database

Modem Settings

Alias:  Baud Rate: 9600 # Retries: 3

COM Port: COM1 Browse... Parity: None

Phone Number:  Add Delete

Data Files

Phone Number:

Data Directory:  Browse...

Alias (Optional):

Use Alias in Filename

New Data File Cycle:

Field Separation:

Log Phone Number

Display header for fields (Uses field alias for header label)

Log Time Stamp in Data Files

Example Filename:

Archiving and Deleting

Archive Files Cycle:

Archived Files Directory:  Browse...

Delete Files Cycle:

Modbus RTU

Station Number: 1 One-Dial Test

Diagnostics

One-Dial Test

Poll Interval

Timed Interval Every HH:00 MM:00

Day Interval S M T W Th F S

At Time HH:00 MM:00

Fields

Add Edit Delete

Alias	Address	Type	Attributes

Modbus RTU  DirectLogic Memory

OK Cancel

Below is an explanation of each of the Modem's Configuration Window's fields:

**Alias:** Optionally, a more descriptive name for the modem, e.g., "My PC's Modem"

**COM Port:** The port the modem will use

**Baud Rate:** The speed that the modem will connect at

**Parity:** Parity that the modem will use; "none" is the default parity and is preferred for most modems.

**# Retries:** Number of times DataLynx will try to read data before it reports an error

Below is an explanation of each of the Phone Number's Configuration fields:

**Phone Number:** The phone number DataLynx is to dial

**Data Directory:** Where the data files will be stored

**Alias:** Optional, a more descriptive name of the phone number, e.g., "Plant One in Atlanta"

**Use Alias in Filename:** Configures DataLynx to use the alias in the data logged file name

**New Data file Cycle:** Configures DataLynx's new file creation cycle

**Field Separation:** Configures either tab or comma to be used in separating individual fields

**Log Phone Number:** Configures DataLynx to log the phone number in the data file

**Log Alias:** Configures DataLynx to log the alias in the data file

**Display header for fields:** Configures DataLynx to log the headers in the first line of the data file

**Log Timestamp in Data Files:** Configures DataLynx to log the date and time in the data file

**Example Filename:** Illustrates an example file name given the current configuration

### **Archiving and Deleting:**

**Archive Files Cycle:** Configures DataLynx to archive monthly/yearly. Archives by zipping files into a zip file.

**Archived Files Directory:** Where the zipped files will be stored

**Delete Files Cycle:** How often DataLynx will delete the files

**Modbus: Station #-** the station # configured in the PLC

## DataLynx User Manual

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**Diagnostics: One-Dial Test:** Allows the user to perform a trial dial up and poll to confirm that the configuration will work

### **Poll Interval:**

**Timed Interval:** allows the user to specify the poll to occur at specific timed intervals

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*Note: If you have multiple phone numbers, each poll will dial each of the phone numbers at the poll interval. In contrast, if each phone number had an individual poll interval, there eventually would be a conflict in poll times.*

---

**Day Interval:** Allows the user to specify the poll to occur at certain days and times

**Fields:** User-entered fields that DataLynx will request when polling

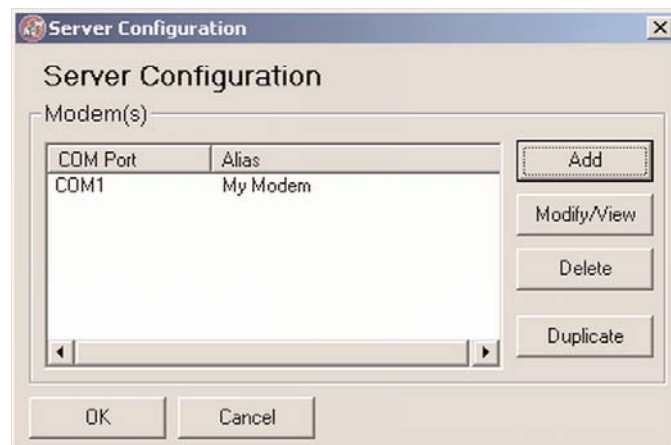
## 5.2.2 Modifying a Modem

To modify a modem, go to menu:

Options-> Configure Server



A list of modems, if any, configured for the Server will appear:

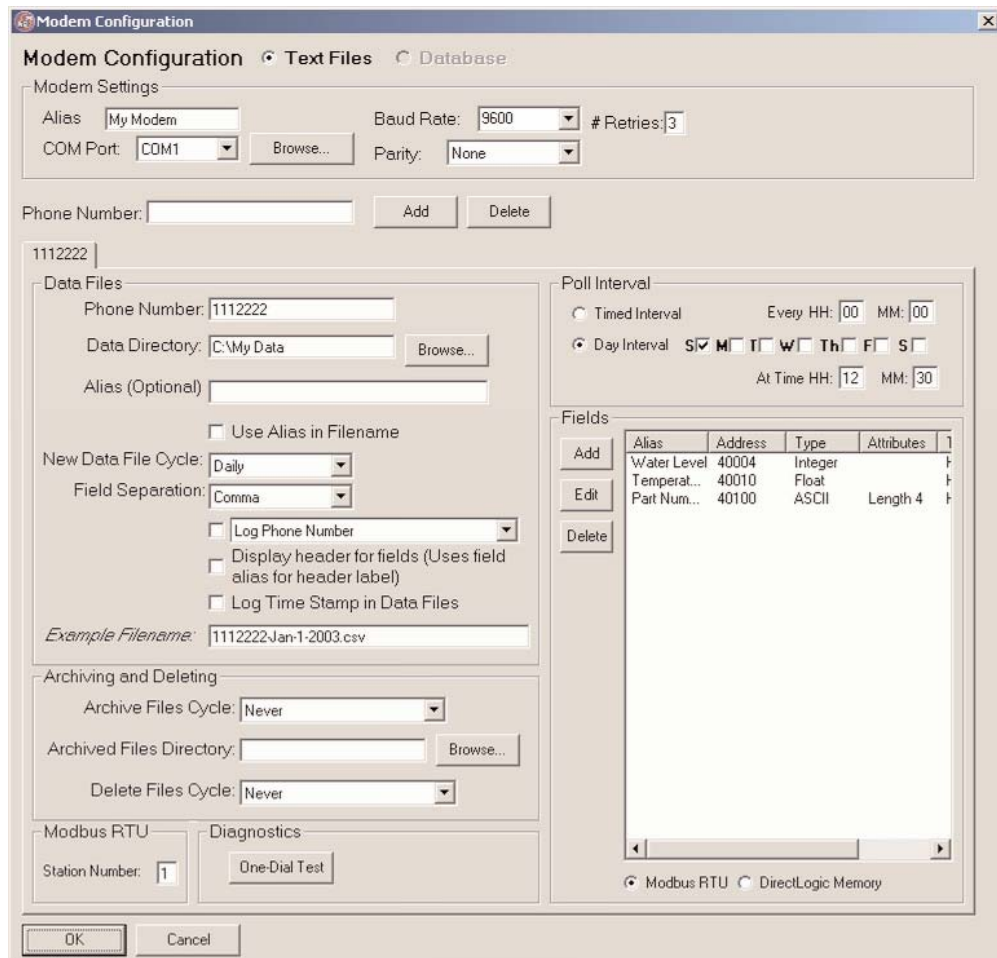


# DataLynx User Manual

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Click on the "Modify/View" button, and a Modem Configuration screen will appear with the PLC data.

The Modem Configuration window below is an example:



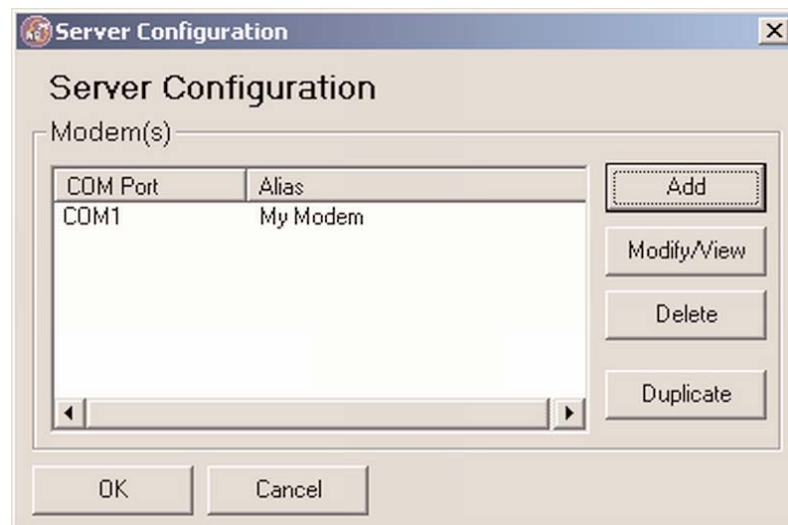
Once finished making changes, click the "OK" button or "Cancel" to discard your changes.

## 5.2.3 Deleting

To delete modems, go to menu: Options->Configure Server



A list of modems, if any, configured for the Server will appear:

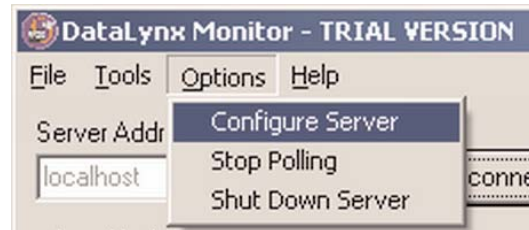


Select the modem to delete and click the "Delete" button.

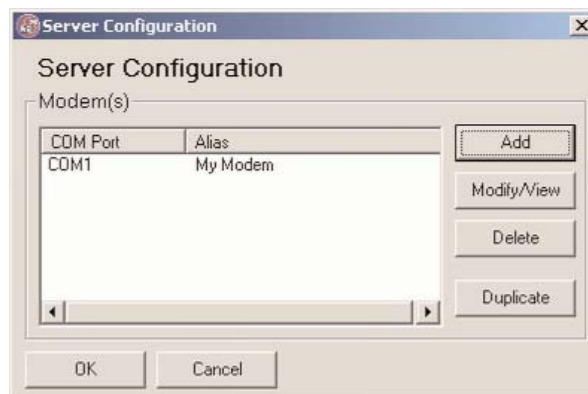
## 5.2.4 Duplicating

A modem listing may be created and duplicated. This duplicating option is a great time-saving feature for those with many modems with similar configurations.

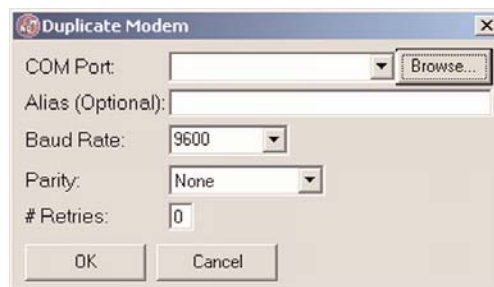
To duplicate a modem listing, go to menu: Options ->Configure Server



A list of modems, if any, configured for the Server will appear.



Click the "Duplicate" button, and a window will appear asking for COM Port, Alias , Baud Rate, Parity, and # Retries. Enter the necessary information and click "OK" to save changes, otherwise click "Cancel" to discard changes.



## 5.2.5 Connecting

Connecting to a DataLynx Server is important because it allows the user to configure the DataLynx Server and retrieve its data files.

In the main screen portion labeled Server Address: enter the Address.



A screenshot of a software interface showing a label "Server Address:" above a text input field containing "localhost" and a dropdown arrow. To the right is a button labeled "Connect".

Then press the "Connect" button. If the connection has been made, the "Connect" button text will become "Disconnect."



A screenshot of the same software interface as above, but the button now displays the text "Disconnect".



## 5.2.6 Hiding

Hiding is a convenient feature for temporarily placing the Monitor out of view for later access. To hide the Monitor, go to the menu: File->Hide



Notice that the DataLynx icon appears on the task bar:



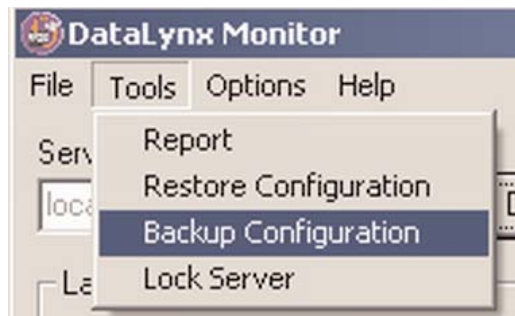
Conversely, the application may be restored by right clicking on the icon and selecting the "Restore" item:



## 5.2.7 Backing Up and Restoring

### Backing Up

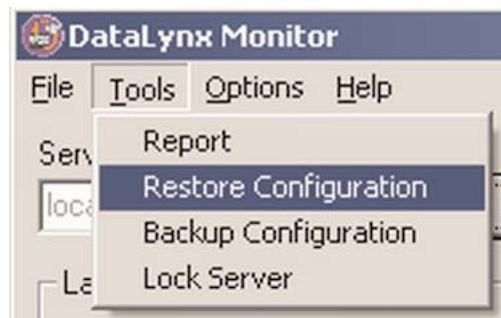
Backing up the configuration allows the user to safely restore all changes in the event of a hardware failure. To back up the configuration, go to the menu: Tools->Backup Configuration



You will be prompted for a filename. Click "Save" and note where you saved the file for a possible future restoration.

### Restoring

To restore the configuration, go to the menu: Tools->Restore Configuration The following window should appear.



You will be prompted for a filename. Click "Open" and the Server/Monitor should be restored to its original state.

### 5.2.8 Polling

The DataLynx Server maintains "polling" and "not polling" states for PLC input. The user may change the polling state from the Monitor as well as from the Server program.

Changing the polling state can be useful when in the process of installing new PLCs or changing the PLC configuration to prevent the Server from receiving irrelevant data.

Click on the "Start Polling" button (If the button states "Stop Polling" that means the Server is already listening).



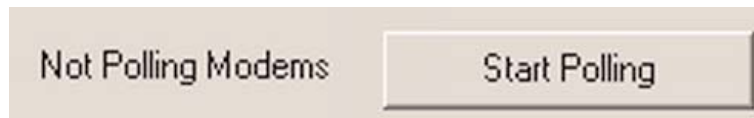
If successful, the status should now read "Polling Modems."



To Make the Server Stop Polling, click on the "Stop Polling" button.



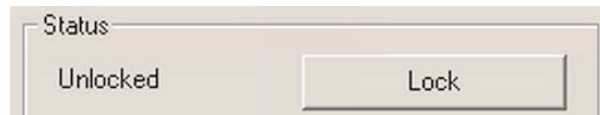
If successful the status should now read "Not Polling Modems."



## 5.2.9 Locking / Unlocking

Locking/Unlocking is a useful feature for preventing unwanted modem configurations and Server polling state changes. Steps to lock/unlock are below:

Click the "Lock" button.



A screen will appear asking for the lock code.



Enter the lock code, and Click "OK." If successful, the status section should now display a locked status:



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**Warning: If you forget/lose the lock code you will NOT be able to unlock the Server.**

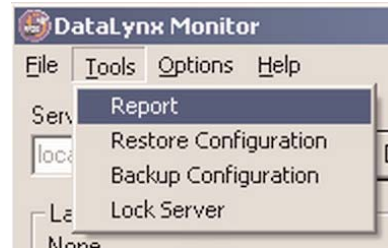
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Conversely, to unlock the Server, click the "Unlock" button, enter the code, and Click "OK."

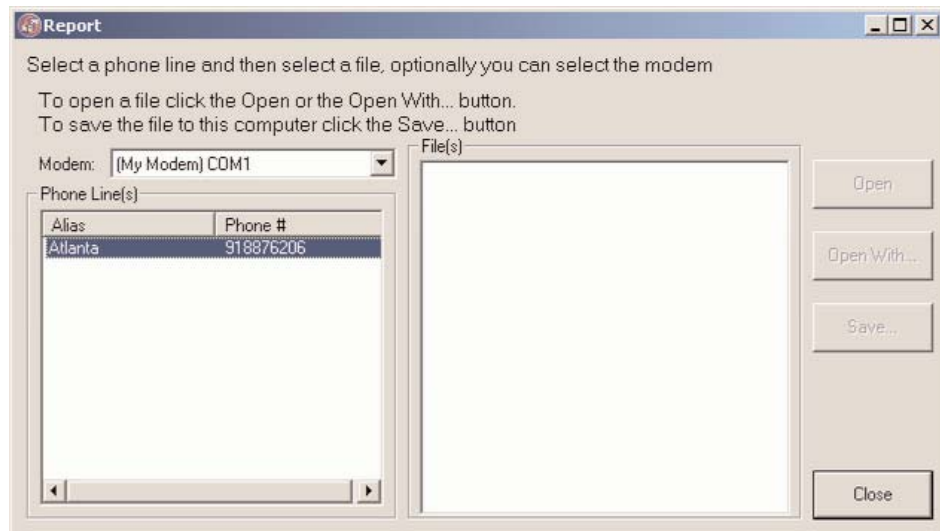
## 5.2.10 Reporting

Reporting is one of the most useful features of the Monitor. The user may view or save files generated by the Server over a network without having physical access to the Server.

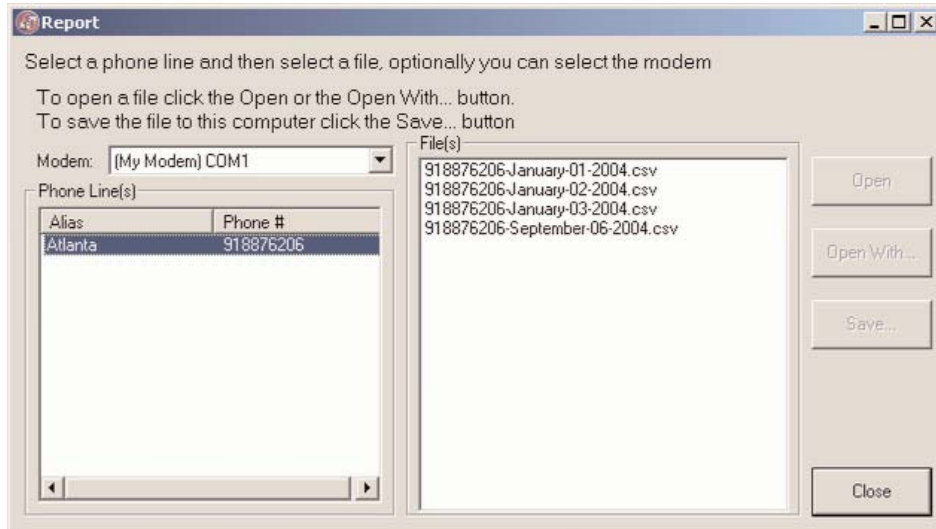
To view a report, go to menu:  
Tools -> Report



A report screen like the following dialog box should appear:



Select the desired PLC data you wish to view in the modem/phone number list:



Now select a file in the File(s) list and click either the "Open," "Open With..." or the "Save" button. There is a difference between the "Open" and "Open With..." buttons. "Open" uses the default application to open the file. "Open With..." prompts you for the application in which to open the file.

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*Note: If you open the current log file outside of DataLynx (Example: log file straight from Excel), it will lock the file and not allow DataLynx to store data.*

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## 6.0 Troubleshooting / Miscellaneous

### **Cannot Connect to Server**

Double check the Server Address - it may not be correct.

Verify that the Server and Monitor computers are online and can access network facilities such as e-mail and Internet.

Ensure that cables are connected.

Verify that computers can access the Internet by going to a test web site such as [www.yahoo.com](http://www.yahoo.com).

### **Invalid COM Port Error**

Confirm that the COM Port # is correct for the modem.

### **Poll Keeps Failing (Error Reading Data)**

Confirm that modbus serial is enabled on the PLC.

Confirm that modem is properly configured to communicate with the PLC.

### **Poll Is Not Occurring at Specific Intervals**

Because the dialing and polling usually takes more than one minute, the timed intervals may not occur at the correct time. Try extending the poll intervals to ensure that they will occur on more reliable intervals.