

**FLUKE®**

# Wireless Logger

Users Manual

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This product is classified Class III equipment by IEC 1010-1 Annex H.

### **INTERFERENCE INFORMATION**

The Wireless Logger 900 MHz and 2.4 GHz systems comply with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

### **EUROPEAN TELECOMMUNICATIONS STANDARDS INSTITUTE**

#### **Statement of Compliance Information to User**

The Wireless Logger 2.4 GHz systems have been tested and found to comply with the European Telecommunication Standard ETS 300.328. This standard covers Wideband Data Transmission Systems referred to in the CEPT recommendation T/R 10.01. This type of accepted equipment is designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications.

## SAFETY TERMS IN THIS MANUAL

This instrument has been designed and tested in accordance with IEC Publication 1010, Safety Requirements for Electrical Measuring, Control and Laboratory Equipment. This User Manual contains information, warnings, and cautions that must be followed to ensure safe operation and to maintain the instrument in a safe condition. Use of this equipment in a manner not specified herein may impair the protection provided by the equipment.

### Terms in this Manual

This instrument has been designed for IEC 664, Installation Category II use. It is not designed for use in circuits rated over 48000VA.

**Warning** statements identify conditions or practices that could result in personal injury or loss of life.

**Caution** statements identify conditions or practices that could result in damage to the equipment or other property.

### Symbols Marked on Equipment



DANGER — High Voltage



Ground (earth) terminal



Protective ground (earth) terminal. Must be connected to safety earth ground when the power cord is not used.



Attention — refer to the manual. This symbol indicates that information about the usage of a feature is contained in the manual. This symbol appears in the following two places on the instrument rear panel:

1. Ground binding Post (left of line power connector).
2. Alarm Outputs/Digital I/O Connectors.

### AC Power Source

The instrument is intended to operate from a power source that will not apply more than 264V ac rms between the supply conductors or between either supply conductor and ground. A protective ground connection by way of the grounding conductor in the power cord is essential for safe operation.

---

## **DC Power Source**

The instrument may also be operated from a 9 to 16V dc power source when either the rear panel ground binding post or the power cord grounding conductor is properly connected.

## **Use the Proper Fuse**

To avoid fire hazard, use only the fuse specified on the line voltage selection switch label, and which is identical in type voltage rating, and current rating.

## **Grounding the Instrument**

The instrument utilizes controlled overvoltage techniques that require the instrument to be grounded whenever normal mode or common mode ac voltages or transient voltages may occur. The enclosure must be grounded through the grounding conductor of the power cord. To avoid electrical shock, plug the power cord into a properly wired earth grounded receptacle before connecting anything to any of the instrument terminals. A protective ground connection by way of the grounding conductor in the power cord is essential for safe operation.

## **Use the Proper Power Cord**

Use only the power cord and connector appropriate for proper operation of this instrument in your country.

Use only a power cord that is in good condition.

Refer cord and connector changes to qualified service personnel.

## **Do Not Operate in Explosive Atmospheres**

To avoid explosion, do not operate the instrument in an atmosphere of explosive gas.

## **Do Not Remove Cover**

To avoid personal injury or death, do not remove the instrument cover. Do not operate the instrument without the cover properly installed. There are no user-serviceable parts inside the instrument, so there is no need for the operator to ever remove the cover.

## **Do Not Attempt to Operate if Protection May be Impaired**

If the instrument appears damaged or operates abnormally, protection may be impaired. Do not attempt to operate it. When in doubt, have the instrument serviced.



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# Quick Start

## **Introduction**

The 2625A/WL and the 2625A/W2 Wireless Logger are portable, easy-to-use wireless data acquisition tools that enable quick, immediate data collection and transmission to a PC from locations once considered too remote, inaccessible, or environmentally hostile for a real-time monitoring system. Each satellite accommodates up to 21 analog channels that can be set up within minutes, and is ideally suited for PC-based data acquisition applications where quick, convenient setup is important. The 2625A/WL is a 900 MHz FCC approved system intended for use primarily in the US and has a range of up to 400 meters (1/4 mile). The 2625A/W2 is a 2.4 GHz system and is ETSI approved for use in many European countries as well as the US. The 2625A/W2 has a typical line-of-site range of 240 meters (800 feet).

The Wireless Base Station consists of a wireless modem and the Wireless Logger for Windows application software which supports up to 20 satellite instruments from a single base station. The Wireless Logger for Windows software offers increased efficiency by allowing the PC to gather data in the background, while freeing the user to work with a word processor, spreadsheet, or other program in the foreground.

## **Assumptions**

This Quick Start section assumes the following conditions:

- You are already running and are familiar with Microsoft Windows 3.1 or Windows 95
- You are using COM2 (communication port 2) on your PC to communicate with the Wireless Logger satellite. (If you are using COM1, you need to change all mentions of COM2 in this Quick Start section to COM1.)

- You leave the Wireless Logger near your PC while performing the Quick Start section's exercises. This allows quick access to the Wireless Logger if you should have difficulties with any of the exercises. After performing the exercises in the Quick Start section, you can move the Wireless Logger out to its remote location.

**Use of this Quick Start Section for 2625A/WL and 2625A/W2 Modem Setup**

If you are using a 2625A/WL (900 MHz modem) for this demonstration, follow Steps 4 and 5 for base station and remote modem configuration.

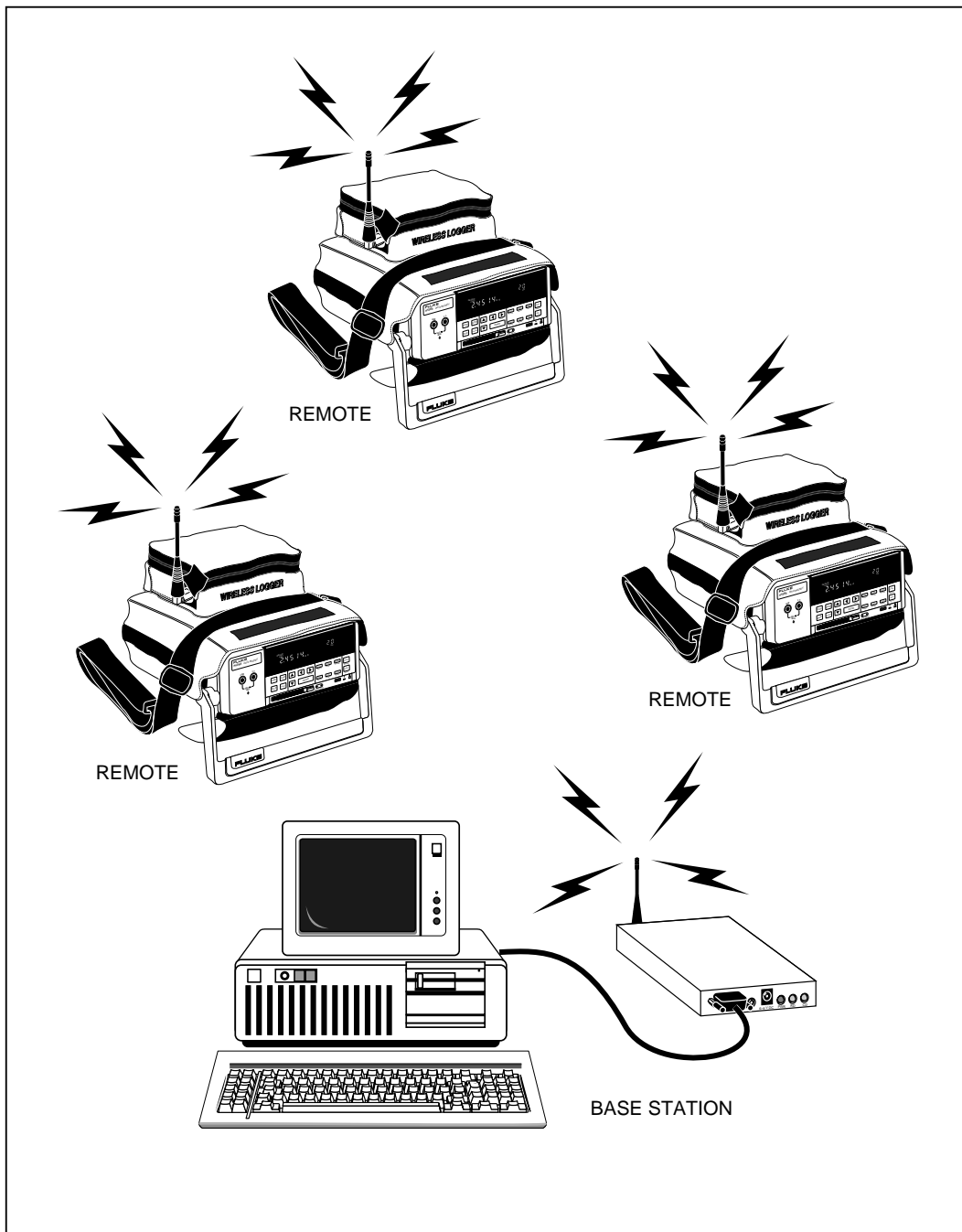
If you are using the 2625A/W2 (2.4 GHz modem), follow Steps 4a and 5a for modem configuration.

Steps 1, 2, and 6 through 16 should be performed regardless of which Wireless Logger model you are using.

*Note*

*The serial port configuration in this Quick Start section is written around Windows 3.1 terminal emulator. If you are using Windows 95, you should use Hyperterminal, which is located in your Windows 95 accessories folder. Use port settings as shown in Step 2 of this section.*



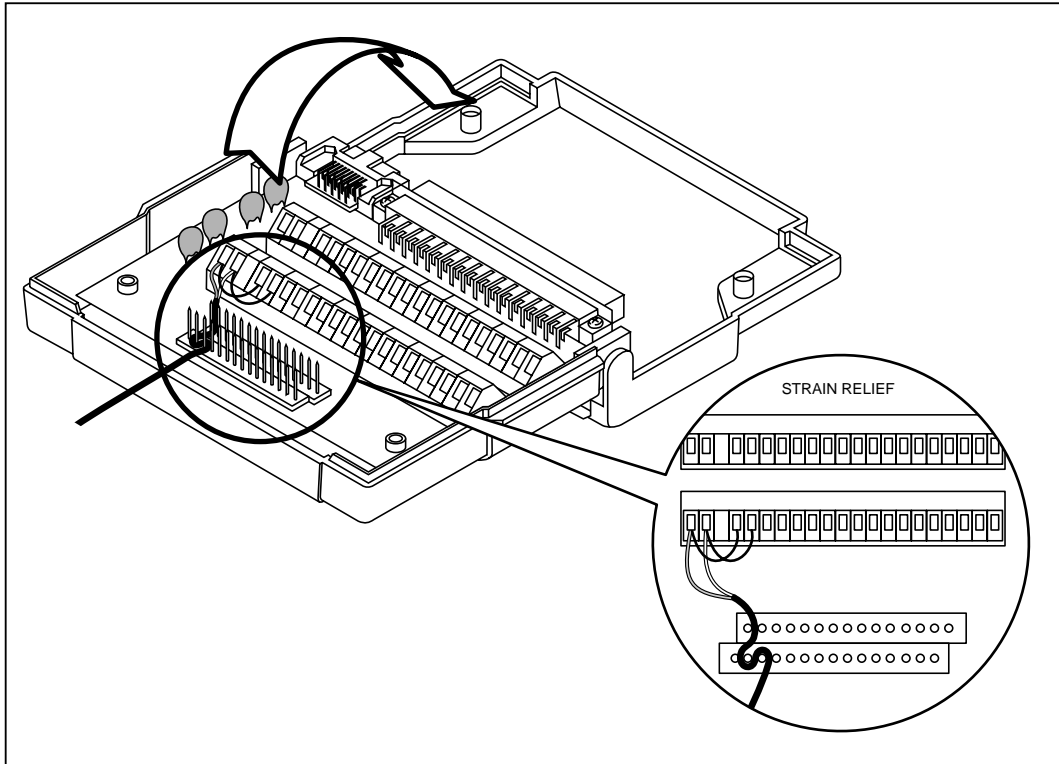


rs016f.eps

Wireless Logger System

### Step 1 Configure Hydra's Universal Input Module

Connect the type-T thermocouple provided to Channel 1 and 2 of the Universal Input Module in parallel as shown below.



rs128f.eps

Universal Input Module

### Step 2 Set the Wireless Logger's Communications Parameters

Set the Wireless Logger's communications parameters to: 9600 baud, no parity, echo off.

Perform the following actions from the Wireless Logger's front panel:

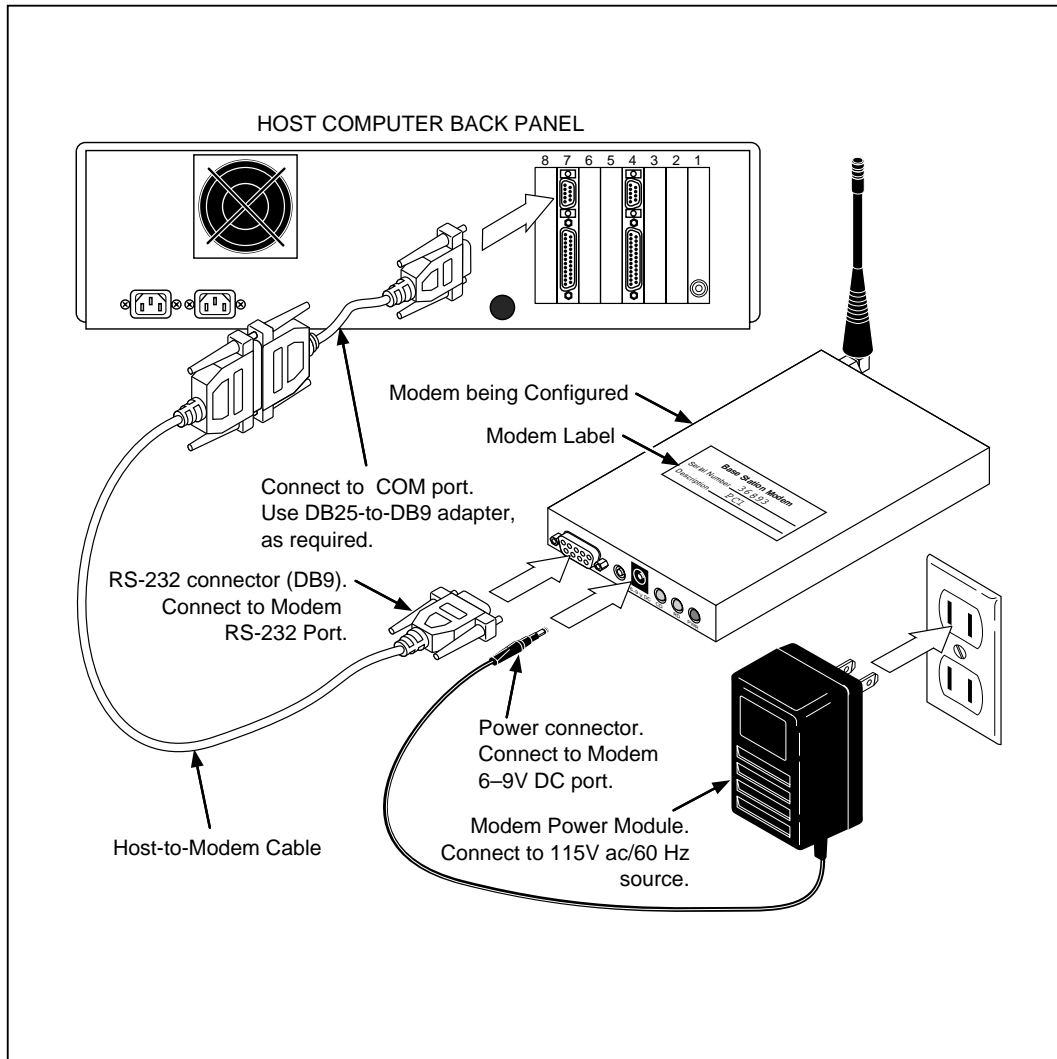
1. Press the **SHIFT** button then the **LIST**/COMM button to view the Wireless Logger's communications parameters.
2. Press the **▲** and **▼** buttons to select 9600 baud and press the **ENTER** button. Press the **▲** and **▼** buttons to select "no" parity and press the **ENTER** button. (If you are using a 2635A Data Bucket, set CTS to off.)
3. Press the **▲** and **▼** buttons to select echo off and press the **ENTER** button.

**Step 3 Install the Wireless Logger for Windows Software**

Install the Wireless Logger for Windows demo disk in your a: drive (floppy drive) and use the Run command to run A:/Setup.exe. A Windows group similar to that shown below will be created.



rs002s.bmp



rs024f.eps

### Basic Modem Connections

#### **Step 4 Configure the Base Station's Wireless Modem (900 MHz)**

The base station's modem is configured using the Terminal Emulator included with Microsoft Windows 3.1 or with Hyperterminal found in the accessories programs in Windows 95.

1. Start the Terminal Emulator or Hyperterminal.

*Note*

*The Terminal Emulator assumes you are using COM2. If you are using COM1, select Communications... under Settings and change the communication port to COM1.*

2. Press the white reset button located on the back of the modem next to the RS-232 connector. This will bring up the following main menu:

```
RF Modem U2.4
by Proxim Inc., (c) 1990,91

MAIN MENU

Serial #: 32800      Radio Channel: 4

D - Display Parameters
R - Reset Parameters to Defaults
C - Change Radio Channel
N - Network Configuration
S - Serial Configuration
A - Advanced Configuration
L - Launch Operating Mode

Enter Selection:
```

rs004s.bmp

3. Reset the modem to factory default settings by entering **R** <ENTER>. Enter **Y** <ENTER> to reset the modem.

4. Move to the Serial Port configuration menu by entering **S** <ENTER>. Configure the serial port as shown in the following table:

**Base Station Modem Serial Port Configuration**

Match the following configuration			Steps to match the configuration
B -	Baud Rate	19200	B <ENTER> 5 <ENTER>
E -	Echo Mode	None	E <ENTER> N <ENTER>
F -	Flow Control		F <ENTER>
	Generate Xon/Xoff	Disabled	<ESC>
	Generate CTS	Disabled	defaults are correct
	Generate DSR	Disabled	
	Recognize Xon/Xoff	Disabled	
M -	Maximum Line Length	300	M <ENTER> 300 <ENTER>
I -	Input Time-out	Off	Go to the next step (default is correct)
A -	Add a Delimiter	None	Go to the next step
R -	Remove a Delimiter	None	R <ENTER> 13 <ENTER> R <ENTER> 10 <ENTER>

5. Enter <ESC> to back up to the main menu. Move to the Advanced Configuration menu, by entering **A** <ENTER>. Configure the advanced communication items as shown in the following table:

**Advanced Base Station Modem Configuration**

Match the following configuration			Steps to match the configuration
B -	Broadcast Address	Base station's serial number]*	B <ENTER> [base station's serial number] <ENTER> (found on the bottom of the modem)
E -	Enable	Broadcast	Go to the next step (default is correct)
D -	Destination Serial #	None	Go to the next step (default is correct)
C -	Subchannel	1	Go to the next step (default is correct)
S -	Serial # Filter	None	Go to the next step (default is correct)
T -	Type Filter	Broadcast	T <ENTER> B <ENTER>
L -	Lost Communication	Continue	Go to the next step (default is correct)
O -	Operating Mode	Packetized	O <ENTER> This element toggles between packetized and pass-through mode

\*Each Wireless Logger network must have its own unique broadcast address and the address must be identical between the base station and each Wireless Logger satellite in the network. It is recommended to use the base station's serial number as this unique number.

6. Enter <ESC> to back up one menu level to the main menu. Enter **D** <ENTER> to display the base station's current configuration. It should be configured as shown below. If not, repeat part 4 and 5 of Step 4. Press <ENTER> to move back to the main menu.

<b>Parameter settings</b>	
Serial #: [Base station serial #]	
<b>Serial Port</b>	
Operating Mode:	Packetized
Echo Mode:	None
Baud Rate:	19200
Delimiters:	None
Max Length:	300
Input Time-out:	Off
XON/XOFF Generation:	Disabled
CTS Generation:	Disabled
XON/XOFF Recognition:	Disabled
DSR Generation:	Disabled
<hr/>	
<b>Network</b>	
Radio Channel:	4
Subchannel:	1
Radio Speed:	121K Baud
Broadcast Address:	[Base station serial #]
Dest. Serial #:	None
Serial # Filter:	None
Lost Communication:	Continue
Type Filter:	Broadcast

rs134f.eps

7. Important: Once the PC base station's wireless modem is properly configured, launch it into operating mode by entering **L** <ENTER>. At the prompt enter **Y** <ENTER> to launch the modem. Launching the modem stores its configuration in the modem's EEPROM and exits the modem's configuration mode. The base station modem is now configured and operational.

### **Step 4a Base Station Modem Configuration (2.4 GHz)**

The base station's modem is configured using the Terminal Emulator or Hyperterminal included in Microsoft Windows 3.1 and Windows 95.

1. Start Terminal Emulator or Hyperterminal.
2. Using a paperclip or similar device, press the "configure" button located on the front panel of the modem. This will bring up the following:

```
MAIN MENU
1) View configuration
2) Change configuration
3) Reset configuration to default
4) View event log
5) Resume operation
```

rs122f.eps

3. Reset the modem to factory default settings by entering **3** <ENTER>, **Y** <ENTER>, then **2** <ENTER> to change configuration.
4. Move to the Radio configuration menu by entering **1** <ENTER> and change the settings to match those shown here:

```
RADIO SETTINGS
1) Node type (Master)
2) Domain (0)
3) Channel (1)
4) Subchannel (1)
5) Transmit count (Infinite)
6) Retry interval (1000 milliseconds)
7) Receive filter (None)
8) Destination address (Broadcast)
```

rs123f.eps



5. Press <ENTER> to return to the modem configuration menu and select Serial port settings by entering **2** <ENTER>. Change the base station's serial port settings to match those shown here:

SERIAL PORT SETTINGS

- 1) Baud (19200)
- 2) Data bits (8)
- 3) Stop bits (1)
- 4) Parity (None)
- 5) Software XON/XOFF flow control (Disabled)
- 6) Hardware RTS/CTS flow control (Disabled)
- 7) Hardware DTR/DSR flow control (Disabled)

rs119f.eps

6. Enter the Data Packet settings by entering **3** <ENTER> and change the settings to match the following:

DATA PACKETING SETTINGS

- 1) Data mode (Packetized)
- 2) Line length (300)
- 3) Input timeout (10)
- 4) Delimiters (none)

rs120f.eps

7. Return to the main menu and select item 5 “Resume Operation” to review and save the changes to the modem. The menu changes should match those below. If the changes are correct enter **Y** <ENTER> to save the current configuration. To make corrections to the settings, enter <ENTER>, and return to the main menu and make corrections as needed.

**Current Configuration**

**Radio:**

Node type = Master	Domain = 0
Channel = 1	Subchannel = 1
Transmit Count = Infinite	Retry interval = 1000 milliseconds
Receive filter = None	
Destination address = N/A	

**Serial port:**

Baud = 19200  
Data bits = 8  
Stop bits = 1  
Parity = none  
Flow control = XON/XOFF: Disabled

**Data packeting:**

Protocol = Packetized  
Line length = 300  
Input timeout = 10  
Delimiters = none

rs121f.eps

**Step 5 Configure the Remote Modem (900 MHz)**

Now that the base station modem is configured, you need to configure the remote modem. Disconnect the base station modem from the PC and connect the remote modem to the PC. Be sure you do not confuse the two modems since they are configured differently. If you have not already done so, label the two modems Base Station and Remote with the labels included with the Wireless Logger.

1. Press the while reset button on the remote modem to enter the main menu.
2. Reset the modem to factory default settings by entering **R** <ENTER>. Enter **Y** <ENTER> to reset the modem.

- Move to the Serial Port configuration menu, by entering **S** <ENTER>. Configure the serial port as shown in the following table:

**Serial Port Configuration**

Match the following configuration			Steps to match the configuration
B -	Baud Rate	9600	B <ENTER> 4 <ENTER>
E -	Echo Mode	None	E <ENTER> N <ENTER>
F -	Flow Control Generate Xon/Xoff Generate CTS Generate DSR Recognize Xon/Xoff	Enabled Disabled Disabled Disabled	F <ENTER> X <ENTER> <ESC> The rest of Flow Control's parameters are correct
M -	Maximum Line Length	300	M <ENTER> 300 <ENTER>
I -	Input Time-out	Off	Go to the next step (default is correct)
A -	Add a Delimiter	10	Go to the next step
R -	Remove a Delimiter	10	R <ENTER> 13 <ENTER>

- Enter <ESC> to back up to the main menu. Move to the modem's Advanced Configuration menu, by entering **A** <ENTER>. Configure the advanced communication items as shown in the following table:

**Advanced Serial Port Configuration**

Match the following configuration		Steps to match the configuration
B -Broadcast Address	(base station's serial number*)	B <ENTER> [base station's serial number] <ENTER> Do not enter the remote modem's serial number. Enter the serial number of the base station (the modem you previously configured).
E -Enable	Broadcast	T <ENTER> B <ENTER>
D -	Destination Serial # Broadcast	Go to the next step (this was configured by the step above)
C -	Subchannel 1	Go to the next step (default is correct)
S -Serial # Filter	(base station's serial number*)	S <ENTER> [base station's serial number] <ENTER>
T -Type Filter	Directed	T <ENTER> D <ENTER>
L -Lost Communication	Continue	Go to the next step (default is correct)
O -	Operating Mode Pass-Through	Go to the next step (default is correct)
Each Wireless Logger network must have its own unique broadcast address and the address must be identical between the base station and each Wireless Logger satellite in the network. It is recommended to use the base stations serial number as this unique number.		

5. Enter <ESC> to back up one menu level to the main menu. Enter **D** <ENTER> to display the remote modem's current configuration. It should be configured as shown below. If not, repeat part 3 and 4 of Step 5.

<b>Parameter settings</b>			
Serial #: [Remote serial #]			
<b>Serial Port</b>			
Operating Mode:	Pass-Through	Delimiters:	10
Echo Mode:	None	Max Length:	300
Baud Rate:	9600	Input Time-out:	Off
XON/XOFF Generation:	Disabled	XON/XOFF Recognition:	Disabled
CTS Generation:	Disabled	DSR Generation:	Disabled
<b>Network</b>			
Radio Channel:	4	Radio Speed:	121K Baud
Subchannel:	1	Broadcast Address:	[Base station serial #]
Dest. Serial #:	Broadcast	Lost Communication:	Continue
Serial # Filter:	[Base station serial #]	Type Filter:	Directed

rs135f.eps

6. Press <ENTER> to move back to the main menu.
7. Once the remote modem is properly configured, launch it into operating mode by entering **L** <ENTER>. At the prompt enter **Y** <ENTER> to launch the modem.
8. Since both the base station modem and the remote modem are now configured, exit the terminal emulator by clicking on Exit under File in the terminal emulator's upper left hand corner. A dialog box appears asking if you want to save the terminal emulator's configuration. Click on **No**.
9. Disconnect the remote modem from the PC and reconnect the base station modem. The remote modem now can be connected to the Wireless Logger as shown above.

### **Step 5a Configure the Remote Modem (2.4 GHz)**

Now that the base station modem is configured, you need to configure the remote modem. Disconnect the base station modem from the PC and connect the remote modem to the PC. Be sure you do not confuse the two modems since they are

configured differently. If you have not already done so, label the two modems Base Station and Remote with the labels included with the Wireless Logger.

1. Start Terminal Emulator or Hyperterminal.
2. Using a paperclip or similar device, press the “configure” button located on the front panel of the modem. This will bring up the following:

MAIN MENU

- 1) View configuration
- 2) Change configuration
- 3) Reset configuration to default
- 4) View event log
- 5) Resume operation

rs122f.eps

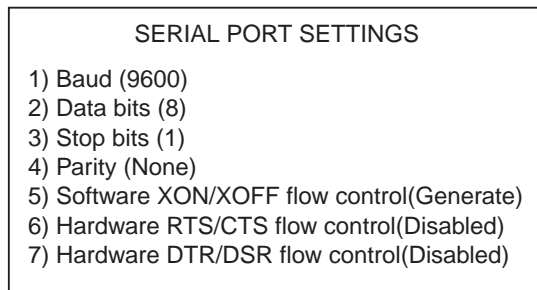
3. Reset the modem to factory default settings by entering **3** <ENTER> **Y** <ENTER>. Then **2** <ENTER> to change configuration. Move to the Radio configuration menu by entering **1** <ENTER> and change the settings to match those below. Take special note of menu selection #7 “Receive Filter” and #8 “Destination Address”. In these fields enter the serial number found on the underside of the base station modem. This will set the remote modem to listen and talk only with the base station modem.

RADIO SETTINGS

- 1) Node type (Station)
- 2) Domain (0)
- 3) Channel (1)
- 4) Subchannel (1)
- 5) Transmit count (Infinite)
- 6) Retry interval (1000 milliseconds)
- 7) Receive filter (**base station serial #**)
- 8) Destination address (**base station serial #**)

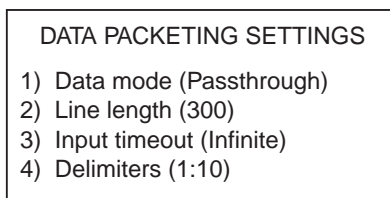
rs124f.eps

4. Press <ENTER> to return to the modem configuration menu and select serial port settings by entering **2** <ENTER>. Change the base station's serial port settings to match those shown in the following:



rs125f.eps

5. Enter the Data Packet settings by entering **3** <ENTER> and change the settings to match the following:



rs126f.eps

6. Return to the main menu and select item 5 "Resume Operation" to review and save the changes to the modem. The menu changes should match those shown below. If the changes are correct enter Y <ENTER> to save your current configuration. To make corrections to the settings enter <ENTER>, and return to the main menu and make corrections as needed.

Current Configuration	
<b>Radio:</b>	
Node type = Station	Domain = 0
Channel = 1	Subchannel = 1
Transmit count = Infinite	Retry interval = 1000 milliseconds
Receive filter = <b>(base station serial #)</b>	
Destination address = <b>(base station serial #)</b>	
<b>Serial port:</b>	
Baud = 9600	
Data bits = 8	
Stop bits = 1	
Parity = none	
Flow control = XON/XOFF: Generate	
<b>Data packeting:</b>	
Protocol = Passthrough	
Line length = 300	
Input timeout = Infinite	
Delimiters = 10	

rs127f.eps

### **Step 6 Start the Wireless Logger for Windows Software Program**

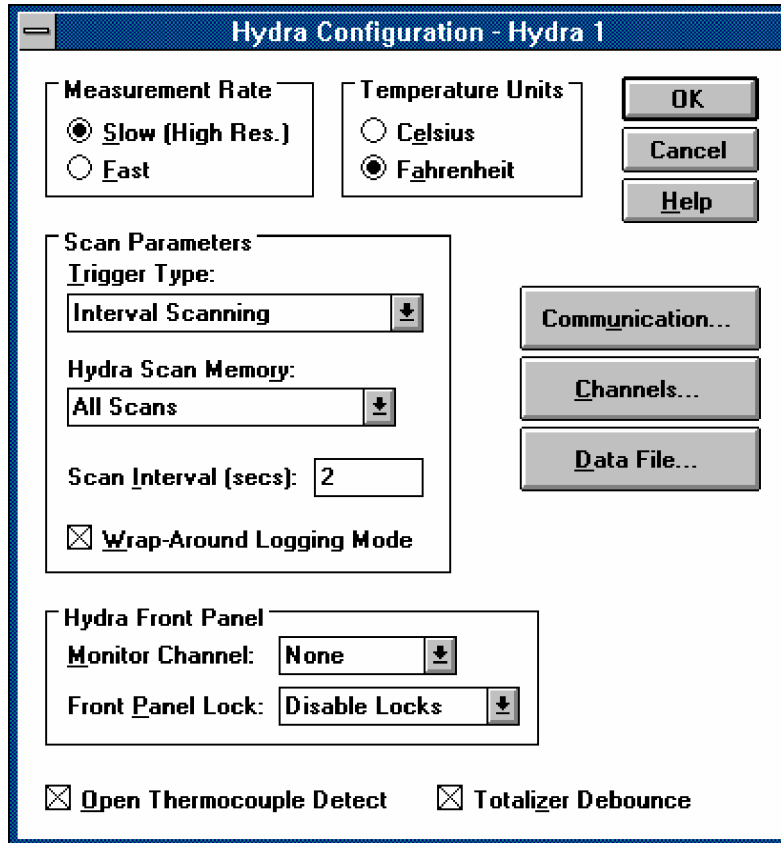
Start Wireless Logger for Windows by double-clicking on the **Wireless Logger** icon in the Fluke Wireless Logger group.

### **Step 7 Configure Hydra for Scanning**

Configure Hydra to measure the T type thermocouple you previously connected to channels 1 and 2 of the universal input module.

1. Change Hydra's configuration by clicking on the **Edit Hydra Config...** button located in the upper left hand corner of Wireless Logger for Windows. This brings up the main configuration menu for Hydra 1. With this configuration menu, you can set Hydra's measurement rate, define its channels, configure the data file, set Hydra's communication parameters, etc.
2. Change Hydra's scan interval from 5 seconds to 2 seconds by highlighting the 5 inside the Scan Parameter box and typing 2. Do not press <ENTER>.

3. Change Hydra's temperature units to Fahrenheit by clicking on **Fahrenheit** in the Temperature Units box. The "Hydra Configuration - Hydra 1" dialog box should appear as shown below:



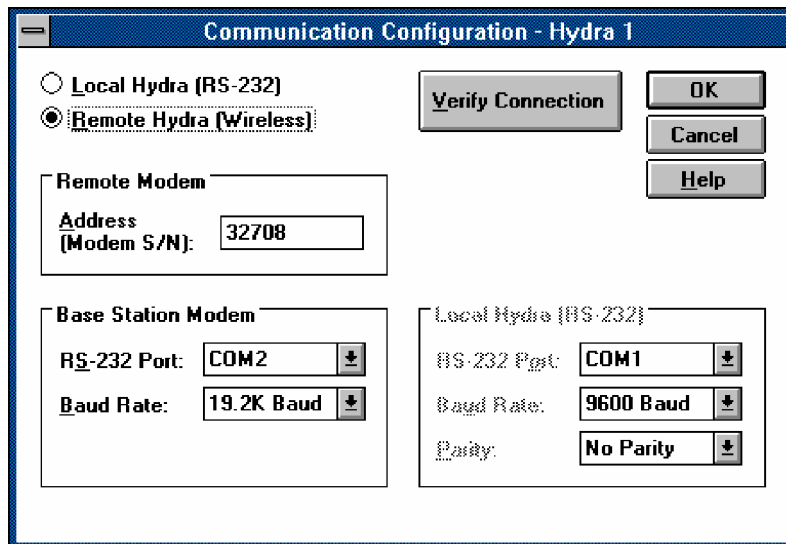
rs129s.bmp



### Step 8 Configure Hydra to Communicate via Wireless Modems

1. Move to the communications configuration dialog box by clicking on the **Communication...** button.
2. Click on **Remote Hydra (Wireless)** in the upper left hand corner to specify that you are using a Wireless Logger. Notice when you click this radio button that a number of entry boxes below become active.
3. In the “Remote Hydra” entry box, type the serial number of the remote modem in the **Address** box. Do not press <ENTER>.
4. In the “Base Station Modem” entry box, select COM2 as the **RS-232 Port** and 19.2k as the **Baud Rate**.

The “Communication Configuration - Hydra 1” dialog box should appear as shown in the following:



rs130s.bmp

### Step 9 Verify Communications

Now that the communication parameters are configured, test the connection with the Wireless Logger Satellite to verify communication.

1. Click on the **Verify Connection** button to test communications with Hydra. Wireless Logger for Windows responds with "Hydra 1: Connection Successful" if it can connect with the Satellite. Click on OK to remove the new dialog box.

If Wireless Logger for Windows does not communicate with the Satellite, check the following:

- Make sure Hydra, the base station modem, and the satellite modem are powered.
  - Check the cabling between the PC and the base station modem, referring to the “Basic Modem Connections” figure.
  - Check the cabling between the Hydra and satellite modem.
  - Check the configuration of both modems with the terminal emulator by repeating Steps 4 and 5.
  - If you still are having difficulties, refer to Chapter 2.
2. Click on **OK** to exit the communications dialog box.

### **Step 10 Configure Channels 1 and 2**

Configure Hydra for T type thermocouples on channels 1 and 2.

1. Move to the Channels configuration menu by clicking on the **Channels...** button.
2. The default settings for Wireless Logger configure channels 1, 2, and 3 for VDC in the 3V range.

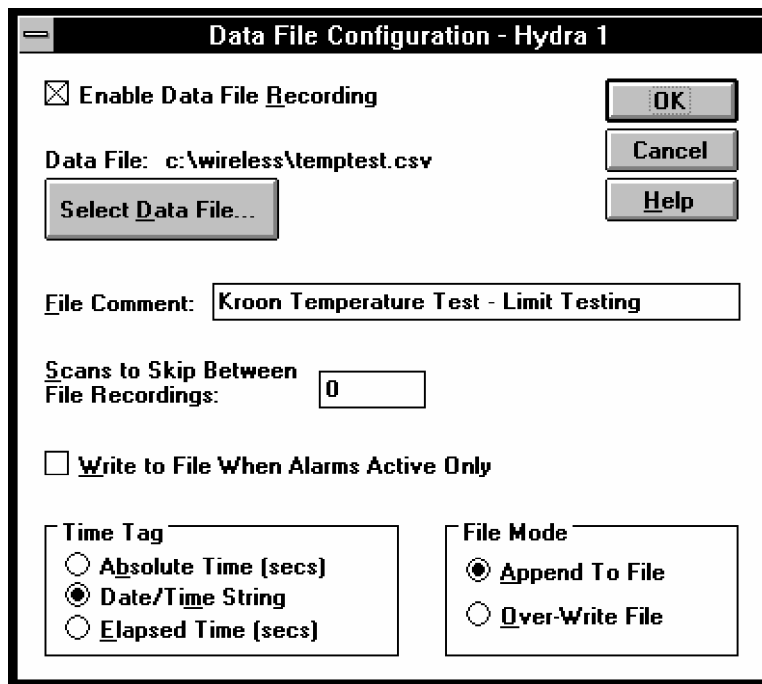
Configure channels 1 and 2 for type T thermocouples. Select channels 1 and 2 by dragging the mouse over channels 1 and 2. Both channels should now be selected. Click on the **Function...** button. Under **Function**, select “THERMOCOUPLE”. Under **Range**, select T. Select **OK** to enter the function configuration.

3. Turn channel 3 off by selecting Channel 3. Next, click on the **Function...** button. Under **Function**, select “Off”. Select **OK** to enter the function configuration.
4. Change channel 1’s label from Ch1 Label to Temp 1 by selecting channel 1. Next highlight the **Channel Label** field and enter “Temp 1”. Click on the **Apply Label** button to save the new label. Repeat this step for channel 2 and change its label to “Temp 2”.
5. Click on **OK** to exit out of the channels configuration dialog box.

### Step 11 Create a Data File

Next, create a data file to store all the data collected by Hydra.

1. Click on the **Data File...** button to move to the data file menu. The following dialog box appears:



rs050s.bmp

2. Click on **Enable Data File Recording** box to create a data file. Click on **Select Data File...** button to enter the name of the data file. Enter “TUTORIAL.CSV” for the data file name. Select **OK**.
3. Select **OK** again to move back to the Hydra configuration dialog box.
4. Click on **OK** to exit the Hydra configuration dialog. You are now back at the main window of Wireless Logger for Windows. This window provides you with a summary of how the current Hydra is configured.

### **Step 12 Save the Wireless**

Logger Setup Save the current Wireless Logger setup to a file so you can retrieve it at a later date.

1. Select **S**ave **L**ogger **S**etup from Setup on the main menu. Enter “TUTORIAL.STP” as the name of the setup file.
2. Click on **OK** to save the setup file.

### **Step 13 Create a Real-Time Trend Plot**

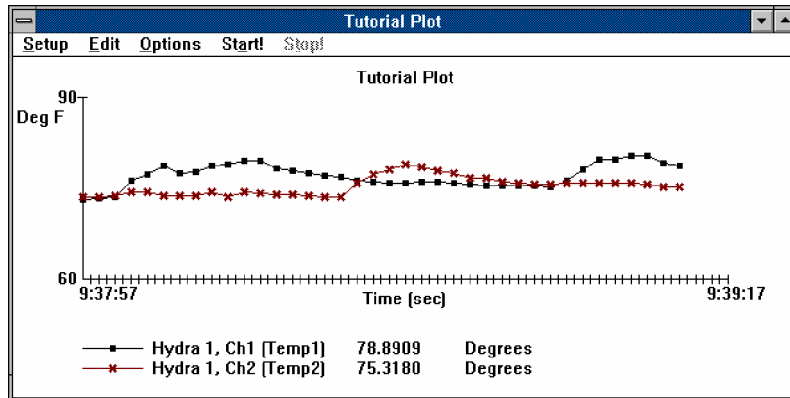
Create a real-time trend plot so you can display the data from the thermocouple on channels 1 and 2 in real-time.

1. Select **C**reate **P**lot from Plots on the main menu. A new window titled “Plot 1” appears.
2. Select **S**ettings... from the Setup menu in Plot 1’s window. Inside the Y-axis scale box type 90 for the **P**lot **M**aximum and 60 for the **P**lot **M**inimum. Select seconds in the X-axis Time Span box and type 80 **S**econds.
3. Click in the **P**lot **C**hannels... button to select the channels to plot. Channel 1 of Hydra 1 is already entered for you in the Selected Channels box. You only need to add channel 2 of Hydra 1 to the plot. Click on **Ch2 (Temp 2)** making sure that instrument **Hydra 1** is still selected. Click on **A**dd **C**hannel to add channel 2 to the plot. Select **OK** to move back to the settings dialog box. Select **OK** again to move back to Plots main menu.
4. Change the Plot title and labels by selecting **L**abels... under the Setup menu. Under **P**lot **T**itle, enter “Tutorial Plot”. Under **Y**-**A**xis **L**abel, enter “Deg F”. Select **OK** to move back to the main plot window.

### **Step 14 Start Hydra and the Real-Time Plot**

1. Move back to the Wireless Logger application by clicking in the Wireless Logger program’s window, which is the upper part of your screen.
2. Start Hydra acquiring data by clicking on the **S**tart **H**ydra button located below Wireless Logger main menu.
3. Bring back the real-time trend plot by selecting **T**utorial **P**lot under Plots on the main menu. From the Plot main menu, select **S**tart! to start the real-time chart.

The real-time chart begins plotting the data collected by Hydra. If you rub the end of one of the thermocouples, you can increase the temperature and see the results in the trend plot as shown below.



rs132s.bmp


4. Stop Hydra from acquiring data by moving back to the Wireless Logger program and selecting **Stop Hydra** button located under the main menu.
5. Close the Hydra Logging Status menu by double-clicking in the upper left hand corner of the status box.
6. Resave your Wireless Logger setup to save your plot configuration. Select **Save Logger Setup** under Setup.

### **Step 15 Determine the Wireless Logger's Communication Range**

Now that you have established communications with the Wireless Logger satellite and acquired data locally, you can take the satellite out to remote locations and test the wireless communication link. Wireless Logger for Windows provides a utility to make this quick and simple. The utility is called "Site Survey."

The utility works by continually incrementing the Wireless Logger's totalizer. A dialog box on your PC keeps track of the number of increments sent to the satellite and the number of successes and failures in communicating with the Wireless Logger. By using the Wireless Logger to display the totalizer count, you can move your satellite around to different locations and determine whether you can communicate with the Wireless Logger. When you go out of the satellite's communication range, the totalizer reading on the Wireless Logger stops incrementing. You will know when you are back in range of the Wireless Logger when the totalizer begins to increment again.

1. Open the site survey utility by selecting **Site Survey...** under the Utilities menu. Click on **Start** to start the site survey. Note that the totalizer count in the dialog box begins to increment upwards. Since your satellite is next to your PC, the number of successful transmissions increments at the same pace as the totalizer count.

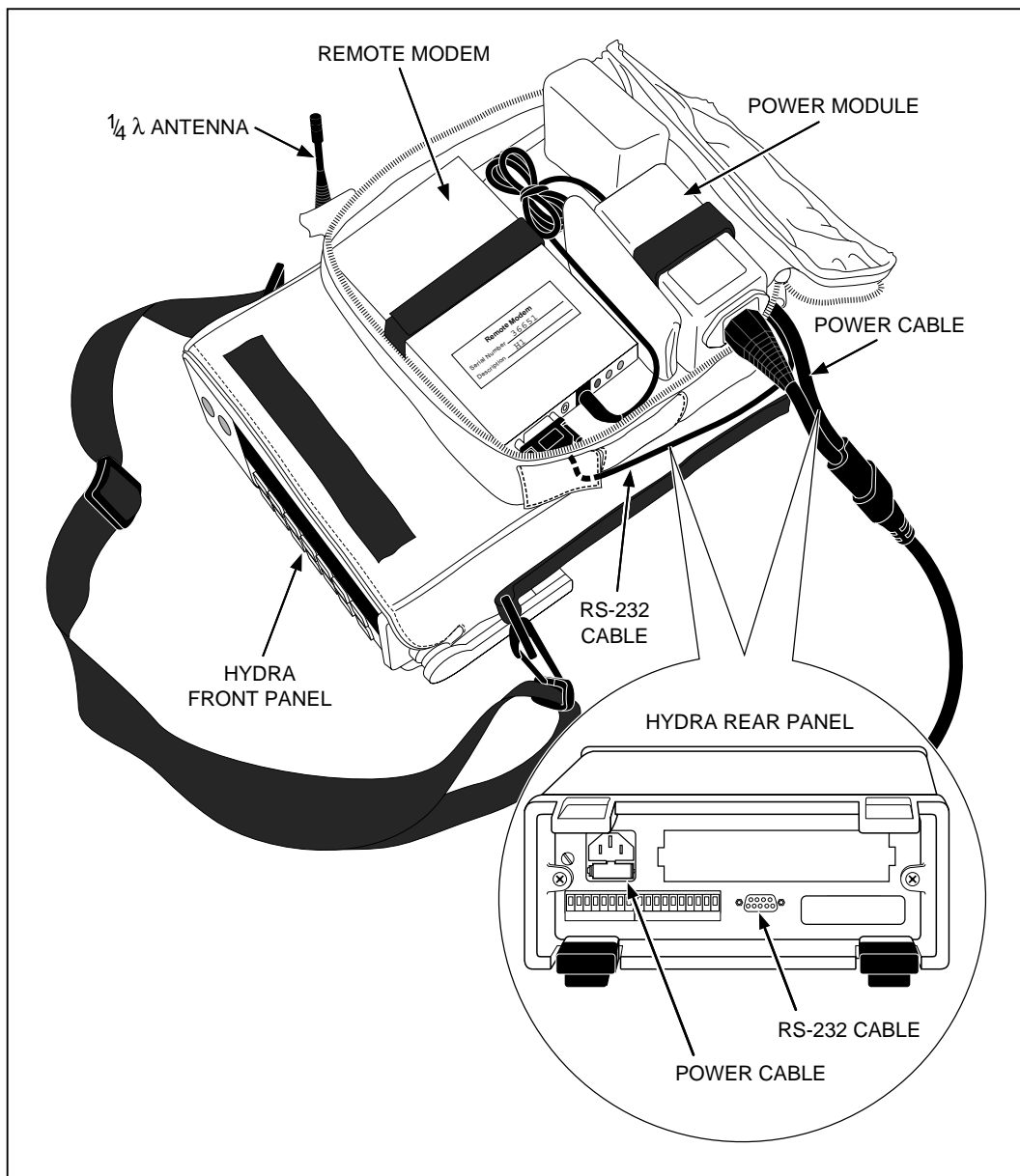
2. Press the **Totalizer** button (  on the front of the Wireless Logger). The totalizer count is tracking the number of transmissions that the software is sending to the wireless modem. When the totalizer is incrementing, you know that the satellite is in communication range with the base station.
3. Unplug the power from the Wireless Logger. Note that the number of successes no longer increments on the PC. Instead the number of failures begins to increment. This tells you that you are either out of communication range with the base station, or the base station or satellite is down. In the case of this Quick Start section, the satellite is down since it has lost power. Restore power to the Wireless Logger. The satellite's totalizer begins to increment, and the number of successes also starts to increment.
4. Stop the site survey utility by clicking on **Stop**. Click on **Close** to move back to the main configuration menu.

### **Step 16 Exit Wireless Logger for Windows**

Exit Wireless Logger for Windows by clicking on **Exit Application** under Setup. The Wireless Logger Quick Start section gave you a brief overview of the Wireless Logger for Windows software and Wireless Logger satellites. In review, you performed the following steps:

- Configured the Universal Input Module
- Set the front panel communication parameters
- Configured the base station's wireless modem
- Configured the remote modem
- Installed the Wireless Logger for Windows software program
- Configured the Wireless Logger for scanning
- Configured the Wireless Logger to communicate via wireless modems
- Verified communication between a Wireless Logger satellite and the base station
- Configured channels 1 and 2 of the Wireless Logger
- Created a data file
- Saved a Wireless Logger setup
- Created a real-time trend plot
- Performed real-time data collection and plotting
- Explored the site survey utility

Now that you have finished this Quick Start section, you are ready to take your Wireless Logger out to your remote locations and verify its communication. While you are exploring, try other locations as well.



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# **Chapter 1**

## **Overview of the Wireless Logger Data Acquisition Tool**

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## Introduction

### 1-1.

The Wireless Logger™ data acquisition tool (Wireless Logger tool) (Figure 1-1) consists of Hydra Data Loggers communicating with a Host Computer via a wireless modem radio link. The Host Computer (not included) controls all operations using the *Wireless Logger for Windows* software. Table 1-1 shows the conversion kits and component parts for assembling a Host Computer into a Wireless Logger Base Station (Base Station), and assembling a Hydra into a Wireless Logger Remote (Remote).

The primary characteristics of the Wireless Logger tool are as follows:

- **Range.** The Wireless Logger tool allows direct line of sight communications with the 900 MHz system and up to 1200 feet (365 meters) using the 2.4 GHz system.
- **Extendibility.** A Host Computer operates up to 20 Wireless Logger Remotes simultaneously. Add and subtract Remotes at any time.
- **Flexibility.** Freely position the Wireless Logger Remotes anywhere within range, from the simple to the most difficult-to-reach places.
- **Fast Setup.** Install the modems, position the Wireless Logger Remotes, open *Wireless Logger for Windows* and begin operations.
- **Ease of Use.** A few clicks of the mouse and the Wireless Logger Remotes go to work. Monitor measurements at any time at the Host Computer.

## Host Computer Requirements

### 1-2.

- The Host Computer must meet the following minimum requirements:
- **System.** IBM PC Compatible computer with an Intel 386 microprocessor or greater
- **Hard Disk Drive.** Hard disk drive with 1 MB of available space
- **Floppy Disk Drive.** Floppy disk drive 1.2 MB (5 ¼-inch) or 1.44 MB (3 ½-inch)
- **Memory.** 640 KB of main memory plus at least 3 MB extended memory
- **Monitor.** Any monitor supported by Windows
- **Windows.** Microsoft Windows version 3.1 or later
- A mouse is optional but it facilitates operation.

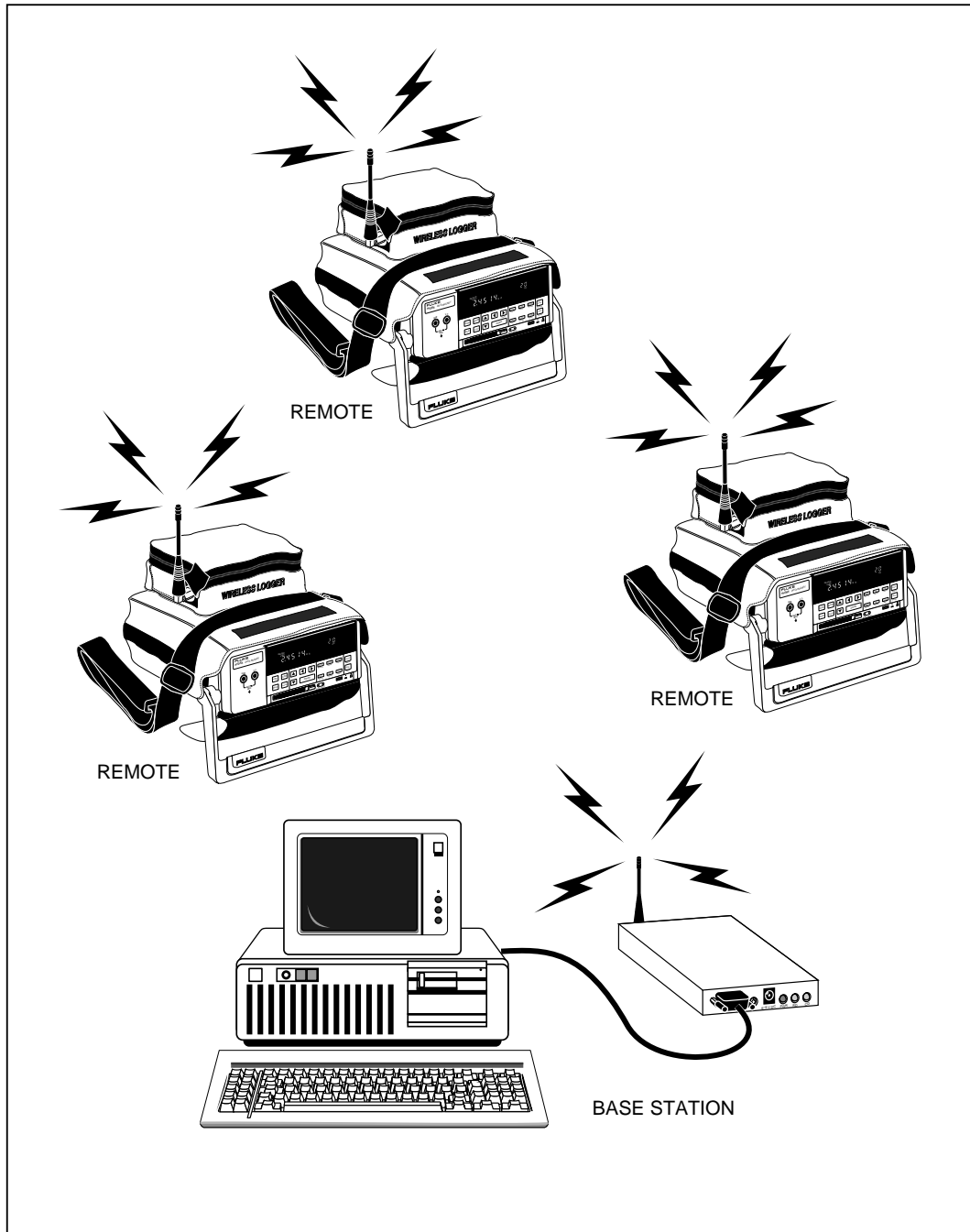


Figure 1-1. Wireless Logger Data Acquisition Tool

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Table 1-1. Wireless Logger Models, Options, and Accessories

Part Number	Description
<b>Models:</b>	
<b>2625A/WL</b> <b>2625A/W2</b>	<b>Wireless Logger Data Acquisition Tool</b> 2625A Hydra Data Logger (Note 1) Wireless Modem (with Antenna, power supply, RS-232 cable) Soft Carrying Case for the Wireless Logger Tool Wireless Logger Users Manual Labels: Remote Modem and Base Station Modem
<b>2625A/WL-700</b> <b>2625A/W2-700</b>	<b>Wireless Base Station Package</b> Wireless Modem (with Antenna, power supply, RS-232 cable) <i>Wireless Logger for Windows</i> Software DB9 to DB25 RS-232 Cable Adapter Labels: Remote Modem and Base Station Modem Wireless Logger Users Manual
<b>Options:</b>	
<b>26X5A/WL-701</b> <b>26X5A/W2-701</b>	<b>Hydra Wireless Logger Conversion Kit (Note 2)</b> Wireless Modem (Antenna, power supply, RS-232 cable) Soft Carrying Case for the Wireless Logger Wireless Logger Manual Labels: Remote Modem and Base Station Modem
<b>26X5A/WL-704</b>	<b>Wireless Logger DC Power Kit</b> Battery Pack for the Hydra and Wireless Modem
<b>26X5A/WL-902</b>	<b><i>Wireless Logger for Windows</i> Software Package</b> Software Disk Set (-99002) Wireless Logger Manual
<b>2620A-100</b>	<b>I/O Connector Set</b> Universal Input Module
<b>2620A-101</b>	Current Shunts, 10Ω, 0-100 mA, (qty. 12)
<b>Accessories</b>	
C42	Wireless Logger Soft Carrying Case
PV350	Pressure/Vacuum Transducer Module
80i-410	Clamp-On DC/AC Current Probe
80i-1010	Clamp-On DC/AC Current Probe
Note 1. 2625A Hydra Data Logger includes: Universal Input Module, Hydra Starter Software Package, T-Thermocouple, Users Manual, TL70 Test Lead Set, Power Cable.	
Note 2. Converts a standard Hydra 2625A Data Logger or 2635A Data Bucket into a Wireless Logger.	

The "Wireless Base Station Package" (see Table 1-1) configures the Host Computer as a Wireless Logger Base Station. A Base Station package includes the wireless modem, *Wireless Logger for Windows* software, cables, an adapter, and modem labels.

## **Hydra requirements**

**1-3.**

The Wireless Logger tool requires one of two Hydra models:

- **2625A Hydra Data Logger™** - Running software version 5.5 or higher
- **2635A Hydra Data Bucket™** - Running any software version

The "Wireless Logger Data Acquisition Tool" (Hydra included) or "Hydra Conversion Kit" (Hydra not included) configures a Hydra as a Wireless Logger Remote. A Remote package includes (in addition to the Hydra) the wireless modem, modem power module, cables and modem labels. The memory card feature is not used when a 2635A Hydra Data Bucket operates as the Hydra with the Wireless Logger tool. To view the 2625A Hydra Data Logger software version, at the Hydra front panel press the left/right arrow keys simultaneously. The larger number display is the software version. Press the CANCL key to clear display.

## **Spread Spectrum Communications**

**1-4.**

The wireless modems (Figure 1-3 and 1-4) used with the Wireless Logger tool communicate using spread spectrum technology. Spread spectrum is a radio transmission technique used in radio frequency (rf) data communications. Developed originally for military use, spread spectrum provides non-jammable data links with a high degree of immunity to electrical interference from either natural or man-made sources. Spread spectrum transmission also has the ability to send data at much higher rates, approaching 10 Mb per second. The combination of noise immunity and high data rate transmission makes spread spectrum transmission technology ideally suited for the Wireless Logger data acquisition tool.

## **Spread Spectrum Licensing**

**1-5.**

Spread spectrum operation with an effective radiated power (erp) of up to 1000 milliwatts (1 watt) requires no FCC licensing. The rf output of the Wireless Logger is 500 mW for the 900 MHz system and 100 mV for the 2.4 GHz system which falls well within this category.

In accordance with the Radio Communications Act of 1992 the Spectrum Management Agency (SMA) requires that an Apparatus License be obtained prior to use of the wireless modem in Australia and New Zealand. An application for this license may be obtained by contacting the SMA. This device has been

approved for use in Australia on channels 4, 5, 6 and 7 only. In New Zealand channel 7 is the only channel approved for use.

The Wireless Logger 2.4 GHz has been certified as compliant with the European Telecommunications Standards Institute (ETSI) for wide band data transmission systems in the following countries:

AT	Austria	IT	Italy
BE	Belgium	LU	Luxembourg
CA	Canada	NL	Netherlands
DK	Denmark	NO	Norway
FI	Finland	ES	Spain
FR	France	SE	Sweden
DE	Germany	GB	Great Britain

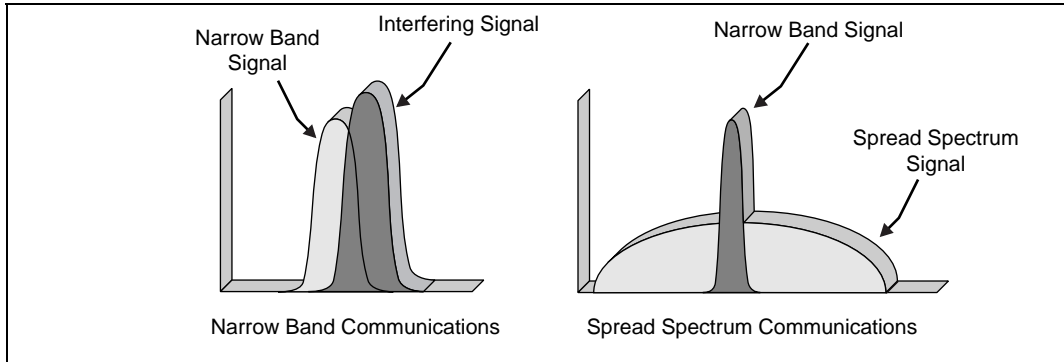
*Note*

*Some countries may require that the end user obtain an operating or station license prior to actual operation with these modems. It is the responsibility of the end user to determine applicability of local licensing requirements.*

**Spread Spectrum in Operation**

**1-6.**

Spread spectrum technology is fundamentally different from narrowband communications in the method of transferring data. Narrowband transmissions are narrowly centered on a carrier frequency with a typical information bandwidth of 25 kHz (see Figure 1-2). Narrowband receivers, tuned to the carrier frequency, detect and demodulate the carrier, and recover the data. An interfering signal that falls on or near the narrowband carrier frequency corrupts the transmission, causing data errors and unreliable communications.



**Figure 1-2. Comparing Narrow Band and Spread Spectrum Communications**

Spread spectrum avoids the problems of interfering signals by spreading the rf energy over a broader portion of the spectrum, up to 1,000 times broader than that used in narrowband communications (see Figure 1-2). Interfering signals come and go with little or no effect when using spread spectrum. The frequency range reserved for spread spectrum is 902 to 928 MHz and 2.4 to 2.4835 GHz. The 900 MHz wireless modems divide this frequency range into seven channels. The 2.4 GHz accommodates 15 channels.

The 900 MHz spread spectrum transmitter uses a pseudo-random sequence and coded data signal to broadly phase-modulate a carrier. The transmitted data is effectively obscured, or “locked,” within a frequency band. At the receiver, the identical pseudo-random code used by the transmitter is generated in the receiver demodulator stage, reconstructing the original data signal. The coding of information at the transmitter and associated decoding at the receiver permits communication only with stations programmed with the same carrier-encrypted code sequence. In the Wireless Logger tool, the basis of the pseudo-random code in each of the wireless modems is the modem serial number.

The 2.4 GHz system uses a spread spectrum frequency hopping technique. In this technique the center frequencies are rapidly shifted during transmission using a similar pseudo-random code assignment.



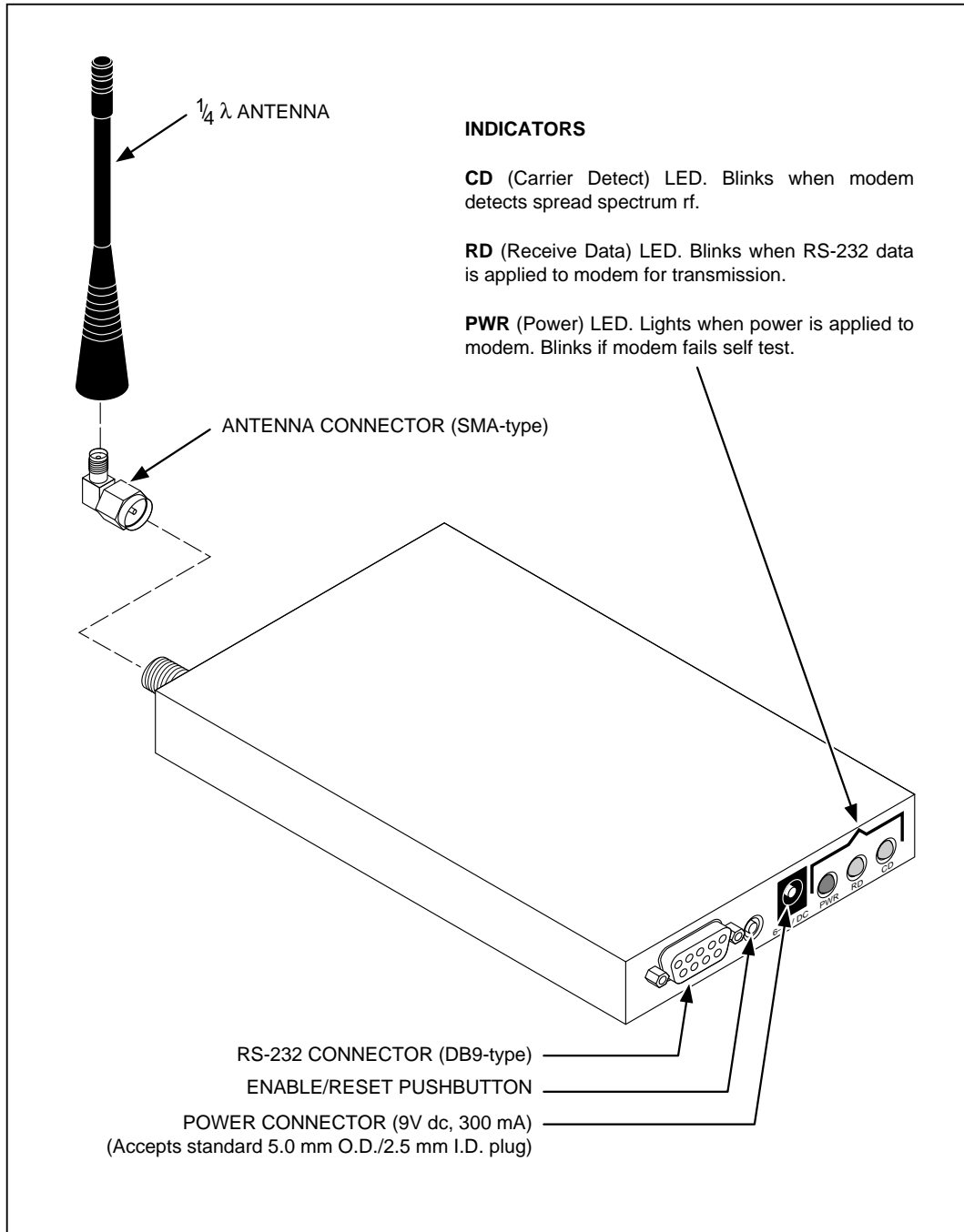
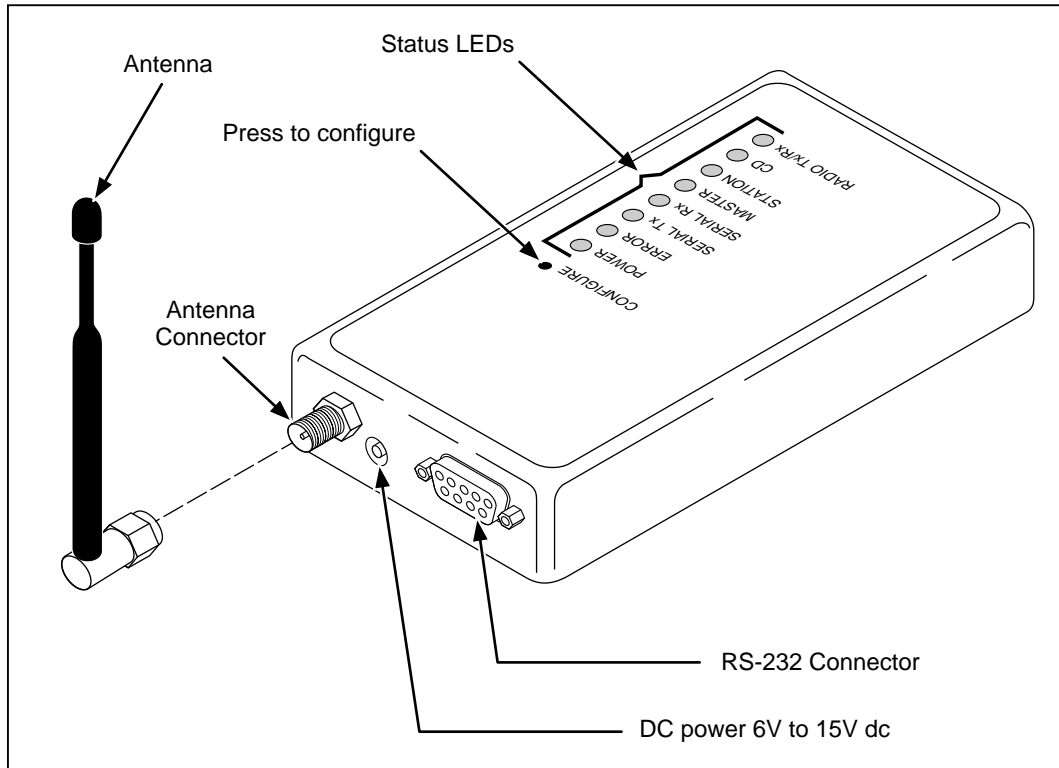


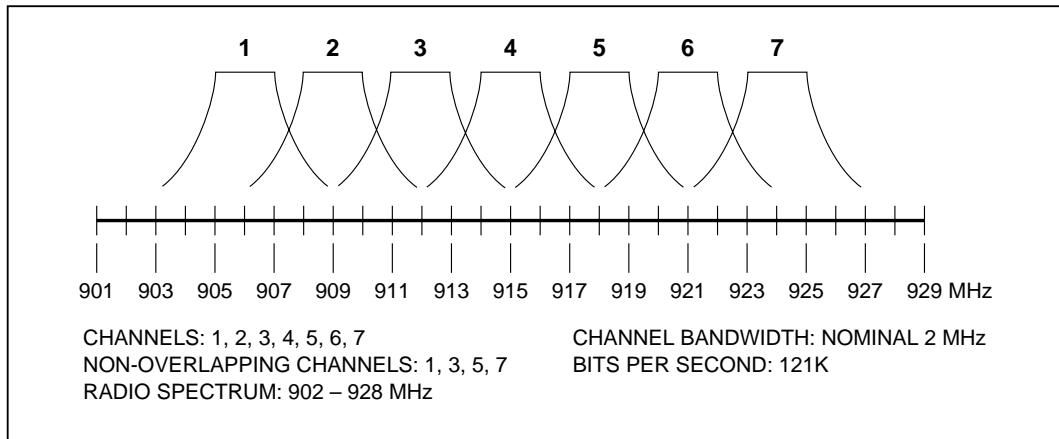
Figure 1-3. 900 MHz Modem

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**Figure 1-4. 2.4 GHz Modem**



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Figure 1-5. Wireless Modem Channel Assignments (900 MHz)

### Spread Spectrum and Electrical Interference

1-7.

The spread spectrum broadband modulation/demodulation scheme is the key to its ability to reject noise. Spread spectrum distributes a relatively small amount of data over a frequency band that is much larger than required to handle the amount of information being transmitted. In addition, the information is modulated with a random code pattern that distributes minute parts of the original signal across the entire channel bandwidth. Noise from electromagnetic interference (EMI) or radio frequency interference (RFI) is generated typically in industrial areas by mechanical devices such as electric motor brushes, corona, relays, solenoids, induction heaters, lighting, and communications equipment. Noise from these devices normally concentrates in random spikes through a particular portion of a frequency band, and are very narrow and relatively random when compared to the spread spectrum bandwidth. A noise spike radiated onto a portion of the spread spectrum frequency band has little or no effect on the information carried within the frequency band.

The spreading technique used in spread spectrum not only helps to reduce the effects of signal interference, but also reduces the possibility of interference with other electronic devices. The broad carrier frequency limits the peak radiated power at any one area with the frequency band. As a result, this limited energy nearly eliminates the possibility that spread spectrum transmissions will create interference for other electronic instrumentation.

### Using Spread Spectrum

1-8.

Like all rf devices, spread spectrum transmissions are affected by the environment they are used in. Most limitations are relatively stable and predictable, usually caused by physical surroundings such as buildings and other structures, and can often be circumvented by a little planning. For example, spread spectrum modems, like any other radiowave transmitter, cannot transmit through a solid metal enclosure. A window or door opening, however, is often enough to allow the spread spectrum signal to pass "through" a metal wall. The 900 MHz wireless modem rf output of 500 mW provides a range of about 400 m. The range is somewhat less in buildings with significant metal content, and somewhat greater in outdoor line-of-sight applications. The 2.4 GHz system has an rf output of 100 mV and has a line of sight range of 300 m.

### System Operation

1-9.

The Base Station sends commands and queries to the Remote Hydras, and the Remote Hydras respond with status and measurement data. Hydra temporarily stores the measurement scan records in its internal scan memory. On a polling basis, the Host Computer queries a Hydra for the scan record count. If the count is 1 or more, the Host Computer reads the scan records one by one, checking each record before deleting it from the Hydra scan memory. After reading up to ten scans, the Host Computer moves on to the next Hydra and the process repeats. If an error occurs in reading a scan record, the Host Computer also moves on to the next Hydra. After querying the last Hydra, the polling cycle repeats. Hydras that failed to transmit a scan record during a particular poll are read on the next polling cycle.

### Wireless Logger for Windows Software

1-10.

The *Wireless Logger for Windows* software provides an operating environment for the Wireless Logger tool. *Wireless Logger for Windows* builds a Hydra instrument and configuration database, transfers the configuration to the instrument, acquires data from the instrument and manages the acquired data. Some major features of *Wireless Logger for Windows* include:

- **Multiple Instruments.** Supports up to 20 Wireless Logger Remotes in simultaneous operation via a single Host Computer COM port.
- **Local Instrument.** Supports one Local Hydra instrument using an RS-232 cable to an available Host Computer COM port.
- **Ease of Use.** Provides fast and easy configuration and operation using menus and windows.
- **On-Line Help.** Extensive on-line help provides instantaneous answers to any setup or operating question.
- **Multiple Data Files.** Logs scan records to separate data files for each operating Wireless Logger Remote.

- **Links other Windows Applications.** Supports Dynamic Data Exchange (DDE) for linking Wireless Logger Remote measurement data with other Windows applications such as spreadsheets.
- **Trend Plots.** Displays up to eight trend plots, each able to display eight channels selected from any operating Wireless Logger Remote. As an option, you can display the data for the plot channels in numeric form below the plot.

For information on the features and operating characteristics, refer to Chapter 3 "Using *Wireless Logger for Windows*."

## Options and Accessories

1-11.

Table 1-1 summarizes the options and accessories for the Wireless Logger tool.

## How to Use this Manual

1-12.

Detailed Hydra operations appear in the following user manuals:

- **2625A Hydra Data Logger.** *Hydra 2620A Series II Data Acquisition Unit/2625A Series II Data Logger Users Manual* (Part Number 686675)
- **2635A Hydra Data Bucket.** *Hydra 2635A Series II Data Bucket Users Manual* (Part Number 686698)

The Wireless Logger Users Manual discusses how to use a Hydra in a Wireless Logger tool configuration. The manual begins with Quick Start, continues through six chapters, and ends with 5 appendices.

- **Quick Start.** Allows the experienced user to quickly set up and start operating the Wireless Logger tool. It is at the front of this manual.
- **Chapter 1 Overview of the Wireless Logger Data Acquisition Tool.** Provides an overview of the Wireless Logger tool, including the requirements and role of each system element, how the system operates, and features available in the operating software, *Wireless Logger for Windows*.
- **Chapter 2 Preparing the Base Station and Remotes.** Provides step-by-step procedures for installing *Wireless Logger for Windows*, configuring the Base Station and Remote wireless modems for operation, connecting the Base Station and Remotes into a network, and testing and configuring the network using *Wireless Logger for Windows*.
- **Chapter 3 Using *Wireless Logger for Windows*.** Provides procedures for operating the Wireless Logger tool. Includes configuration procedures, reading measurement data, trend plots, and data files. An extensive Reference section details all *Wireless Logger for Windows* characteristics and operations.
- **Chapter 4 *Wireless Logger for Windows* Reference.** Provides complete descriptions in reference format for all *Wireless Logger for Windows* parameter selections.

- **Chapter 5 Pruning and Grafting Utility.** Provides complete instructions for operating the Pruning and Grafting Utility. This utility manipulates data files, combining separate data files into a single file, and filtering the data to obtain only the data of interest.
- **Chapter 6 Maintenance.** Provides a list of the Wireless Logger tool replaceable parts and gives troubleshooting hints, including decoding wireless modem error codes.
- **Appendices:** Ancillary information including Specifications, File Formats, Error Messages, Dynamic Data Exchange (DDE), and Exception Condition Handling.

## ***Unpacking and Inspection***

***1-13.***

Carefully remove the contents of the shipping container and inspect for damage or missing parts (see Table 1-1 for a list of parts). If any of the contents are damaged or anything is missing, contact the place of purchase immediately. Save the container and packing material. If repairs, equipment relocation, or extended storage are necessary, use the original container and packing material to prevent damage to the equipment.

# **Chapter 2**

## ***Preparing the Base Station and Remote***

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## Introduction

## 2-1.

This chapter contains the information needed to completely set up the Base Station (Host Computer and Base Station Wireless Modem) and Wireless Logger Remotes (Hydra and Remote Wireless Modem).

The following topics should be completed in sequence:

- Installing *Wireless Logger for Windows*
- Configuring the Base Station and Remote Modems
- Connecting a Base Station, Remote, and Local Hydra
- Creating a *Wireless Logger for Windows* Setup File
- Placing the Base Station and Remotes
- Using the *Site Survey* feature to Verify Operations
- Connecting Hydra Analog and Digital Lines

## Installing Wireless Logger for Windows

## 2-2.

Complete the following procedure to install *Wireless Logger for Windows*. A basic knowledge of MS-DOS and Windows operations is required. If any step is unfamiliar to you, refer to the DOS and/or Windows documentation.

1. Insert the *Wireless Logger for Windows* disk into the A disk drive. (If the B disk drive is used, modify this procedure accordingly.)
2. Select the Run... command from the File menu of the Windows Program Manager, opening the Run dialog box.
3. Type a : \setup . exe in the Command Line: box. Click OK, opening the Wireless Logger Setup dialog box (below).



rs020s.bmp

4. Verify in the dialog box that Space Available: exceeds Space Required. If this is not the case, click Cancel and erase unneeded files on the selected drive, and repeat this procedure. The default drive and directory for the *Wireless Logger for Windows* files is C:\WIRELESS. Modify the Drive and Setup Directory to suit or accept the defaults and click OK.
5. Click OK in response to the Setup is Complete! message. A program group is created in Program Manager with four icons, as shown below.



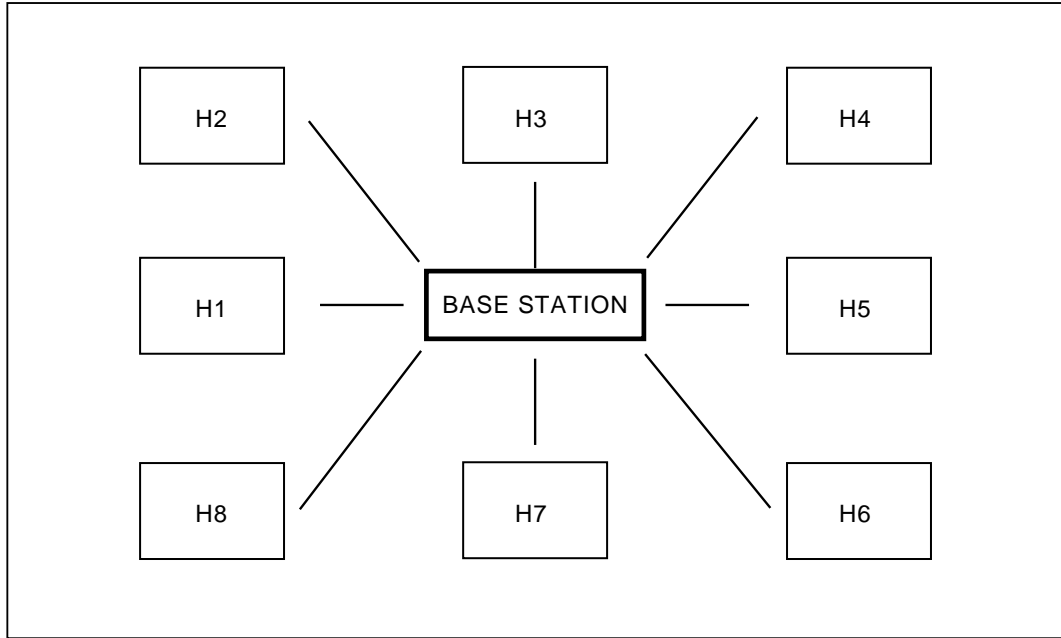
rs021s.bmp

## **Configuring the Base Station and Remote Modems 2-3.**

The procedures below configure the Base Station (Host Computer) and Remote (Hydra) wireless modems for operation. All modem procedures take place at the Host Computer. The Remote modems include the Base Station modem serial number as part of their configuration procedure. **If a Base Station modem is replaced in a network, all the associated Remote modems must be reconfigured to reflect the serial number of the new Base Station modem.**

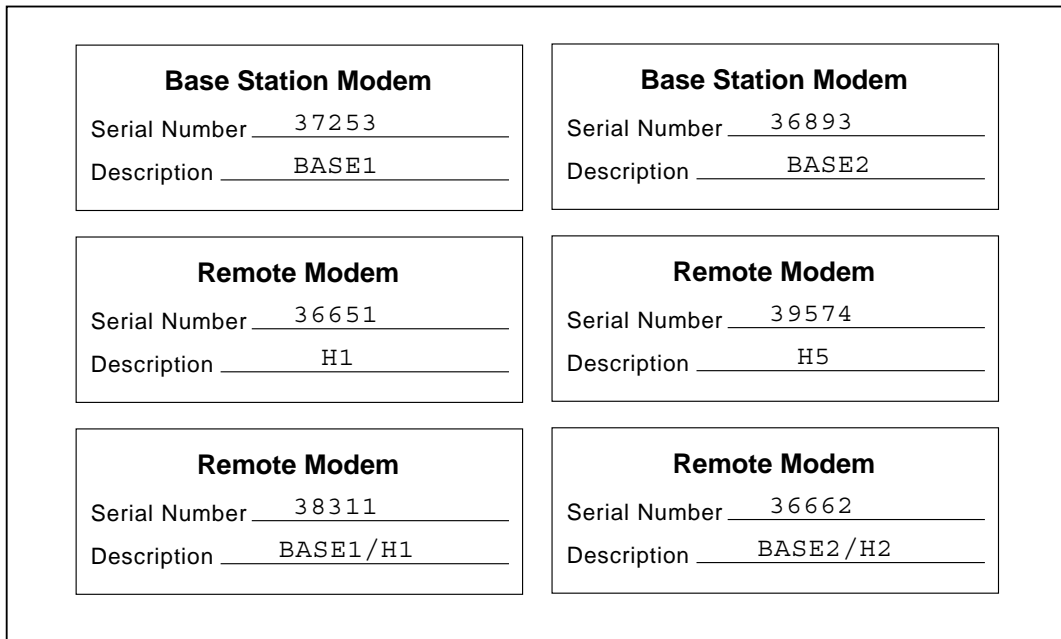
The Base Station is the center of the network with radio links to the Remotes (Figure 2-1). To follow the convention of *Wireless Logger for Windows*, each Remote Hydra is identified as H1, H2, H3, etc. If there are several Base Stations, the Remote Hydra identifications are extended to include the associated Base Station, e.g., Base1/H1, Base1/H2, Base2/H3, etc. Each wireless modem is identified with a label (supplied) to indicate how the modem is configured (Base Station or Remote), plus the serial number and description of the modem. See Figure 2-2 for examples of modem labels.

Each modem has an internal Electrically Erasable Programmable Read Only Memory (EEPROM) device to store the Base Station or Remote modem configuration data.



rs022f.eps

**Figure 2-1. Base Station and Remote Networks**



rs023f.eps

**Figure 2-2. Examples of Modem Labels**

Wireless modems have seven independent radio channels allowing seven separate Base Stations to operate in the same proximity without sharing a radio channel.

The wireless modems have two modes of operation: Operating and Configuration. The procedures below place the modem into the Configuration mode, make the parameter selections, and then "launch" the modem back to the Operating mode. Whenever a modem is powered up, it is automatically placed into the Operating mode. A modem must be launched into the Operating mode before use with *Wireless Logger for Windows*.

### **Connecting the Base Station Modem for Configuration 2-4.**

Complete the following procedure to configure a Base Station modem. Connect the modem to the Host Computer, as shown in Figure 2-3. All items, except for the Host Computer, are supplied with the Wireless Base Station Package (see Table 1-1). This procedure assumes the use of the Host Computer COM2 port. If COM1 is used instead of COM2, modify this procedure, as required. Before using COM3 or COM4, refer to "Connecting a Base Station" later in this chapter.

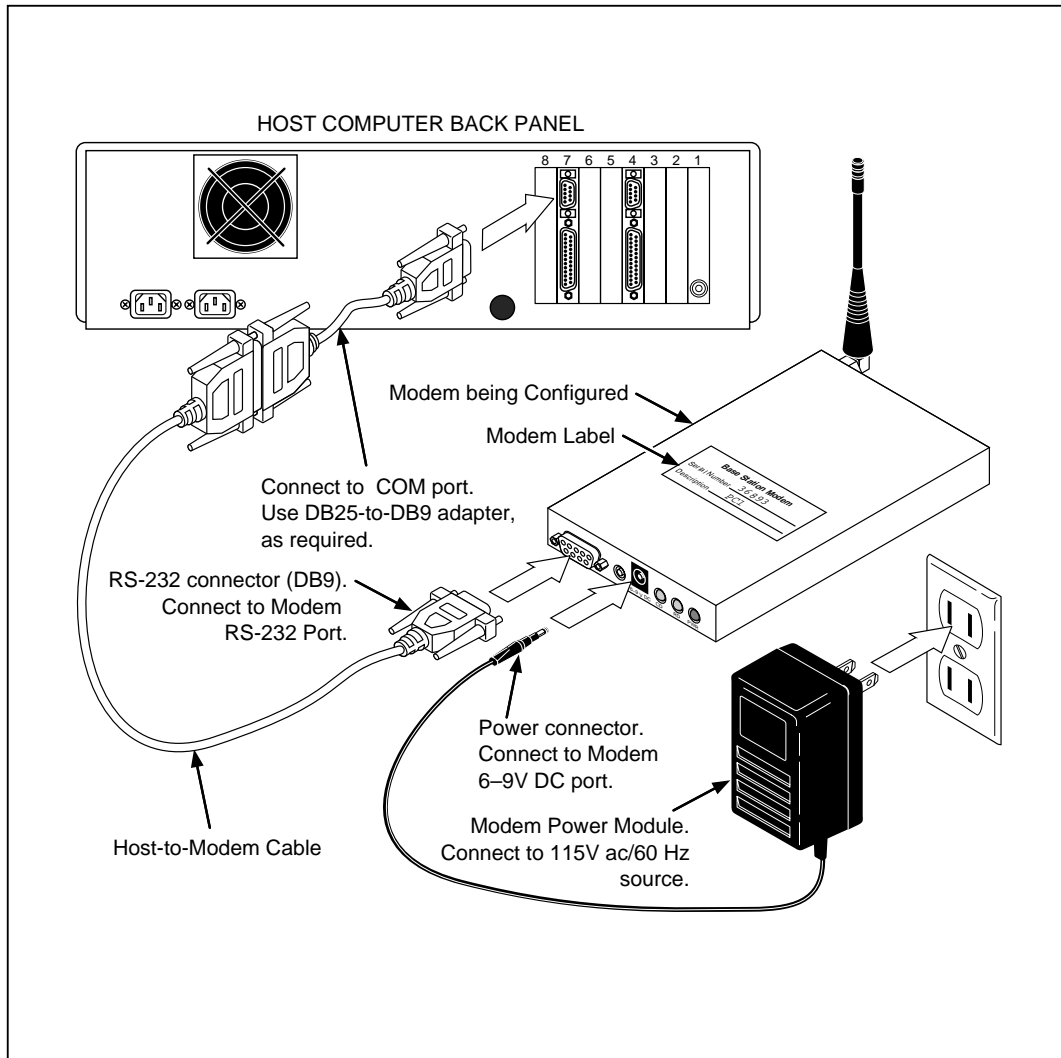
1. Connect the wireless modem to be configured as a Base Station modem to the Host Computer COM2 port using the modem RS-232 cable and DB25-to-DB9 adapter cable (if required).

The gender of the host computer COM port is always male. If you are trying to connect to a port that is female, it is not a COM port.

2. Connect the modem power module into a source and connect the power output cable to the Base Station modem DC input. Verify that the modem PWR indicator is on (red) and not blinking.

If the PWR light is blinking, the modem failed self-test and cannot be used. Terminate this procedure and refer to "Modem Error Codes" in Chapter 6 "Maintenance."

If the PWR indicator does not light, check the power connections. If the connections are correct, either the power module or modem has failed. Repeat with a different power module or modem to localize the problem.



**Figure 2-3. Connecting a Base Station (900 MHz)**

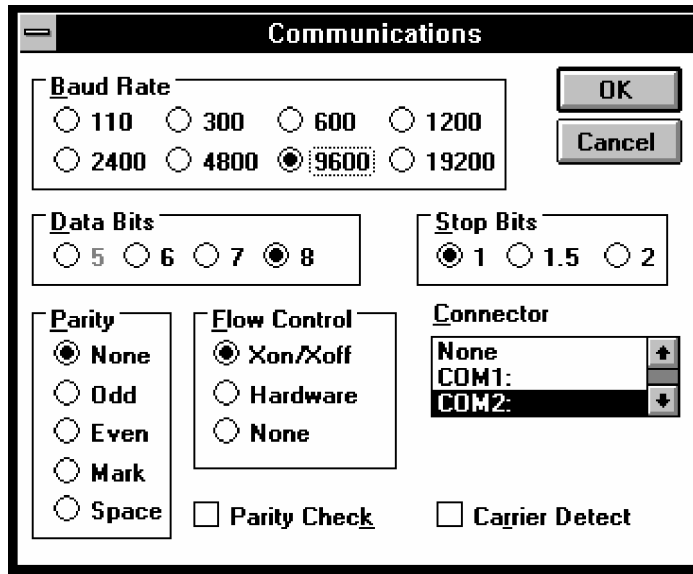
rs024f.eps

3. Assemble the antenna (see Figure 1-3) and connect it to the modem. Do not over tighten the connectors.
4. Apply a Base Station Modem label on the modem (Figure 2-2). Fill in the unique serial number (bbbbbb) as recorded on the bottom of the modem, and describe the Base Station (e.g., Host1, Base1, etc.).

## Com Port Settings

2-5.

1. Open Terminal Emulator from the Fluke Wireless Logger group of Program Manager or Hypen Terminal if in Windows '95 and if you receive a Select another port... message, COM2 is being used by another application. Close the other application and repeat this step.
2. Open Communications... from the Settings menu. Verify or make the selections shown below (modify COM, as required). Click OK.



rs025s.bmp

## 900 MHz Base Station Modem Configuration

2-6.

1. Press the ENABLE/RESET button on the modem (see Figure 1-3). Verify that the terminal screen displays the modem configuration MAIN MENU (on the next page). Note that b b b b is the Base Station modem serial number, and Radio Channel: 4 is the default.

If meaningless characters appear, the communication settings are incorrect. Go back to step 6. Note that the baud rate must be 9600 for modem configuration procedures.

If the MAIN MENU does not appear, check the cable connection. Verify that the modem is connected to the COM2 port.

It is possible to have everything correct and not receive the modem configuration MAIN MENU if the COM2 port is internally redirected. For example, COM2 may be routed internally for a laptop computer communications modem disabling the external COM2 port. Other applications may make claim to COM2 such as a serial Mouse. When COM3 and COM4 ports are installed, they often share interrupts with COM1 and COM2, causing a hardware conflict. Try another COM port or resolve the COM port issue and return to this procedure.

```
RF Modem U2.4
by Proxim Inc., (c) 1990,91

MAIN MENU

Serial #: b b b b b      Radio Channel: 4

D - Display Parameters
R - Reset Parameters to Defaults
C - Change Radio Channel
N - Network Configuration
S - Serial Configuration
A - Advanced Configuration
L - Launch Operating Mode

Enter Selection:
```

rs026s.bmp

2. Verify that the serial number at the top of the MAIN MENU matches the serial number you recorded on the modem Base Station Modem label. Menu selections are made in upper or lower case letters, e.g., R or r. To exit any menu at any time, press the <Esc> key.

3. **D - Display Parameters.** Type D and press <Enter>. This screen summarizes the present modem configuration. When the modem parameters are reset (next step), the screen appears as shown below. Press <Enter> to continue.

```

                                PARAMETER SETTINGS
                                Serial #: bbbbbb

Serial Port
-----
      Operating Mode: Pass-Through          Delimiters: 13,10
      Echo Mode: Simple                    Max Length: 256
      Baud Rate: 9600                      Input Time-Out: Off

      XON/XOFF Generation: Disabled        XON/XOFF Recognition: Disabled
      CTS Generation: Disabled            DSR Generation: Disabled

Network
-----
      Radio Channel: 4                      Radio Speed: 121 Kbaud
      Subchannel: 1                        Broadcast Address: 1

      Dest. Serial #: None                 Lost Communication: Continue
      Serial # Filter: None                Type Filter: None

```

rs027s.bmp

4. **R – Reset Parameters to Defaults.** Type R and press <Enter>. Type Y and <Enter> in response to Reset to Default Settings? [Y or N].

*Note*

*The remainder of this procedure assumes the modem has been reset to the default settings.*

5. **C – Change Radio Channel.** Refer to the table below to select the radio channel for the Base Station. If you are setting up a single Base Station, radio channel 4 [default] has already been selected; continue to step 12.

Two or more Base Stations operating in the same proximity use different radio channels. For example, configure one Base Station modem for channel 2, and the second for channel 6. Using adjacent channels or a single channel for two networks may increase transmission errors.



Type C and press <Enter>. Type the channel number and press <Enter> in response to Enter Value [1-7].

		Radio Channel Number Selection						
		1	2	3	4	5	6	7
Number of Base Stations	1				X			
	2		X				X	
	3	X			X			X
	4	X		X		X		X
	5	X		X	X	X		X
	6	X	X	X		X	X	X
	7	X	X	X	X	X	X	X
Note: Reuse channels after seven networks have been used.								

6. **N – Network Configuration.** The default is correct.
7. **S – Serial Configuration.** This sets up the wireless modem RS-232 port. Type S and press <Enter>. Complete the menu selections shown in **bold**.

**B** – Baud Rate (9600)  
 Set Baud Rate  
 Current Value: 9600  
 Enter Value [1=1200, 2=2400, 3=4800, 4=9600, 5=19200]: **5 <Enter>**

**E** – Echo Mode (Simple)  
 Set Echo Mode  
 Current Value: Simple  
 Enter Value [(S)imple, (T)erminal or (N)one]: **n <Enter>**

**F** – Flow Control

FLOW CONTROL

X – Generate XON/XOFF (Disabled)  
 C – Generate CTS (Disabled)  
 D – Generate DSR (Disabled)  
 R – Recognize XON/XOFF (Disabled)  
 Enter Selection: **<Esc>** [defaults]

**M** – Maximum Line Length (256)  
 Maximum Line Length  
 Current Value: 256  
 Enter Value [1-576]: **300 <Enter>**

**I** – Input Time-out (Off)  
Input Time-out  
Current Value: Off  
Enter Value [In 16ths of a second, 0 = Off]: **<Esc>** [default]

**A** – Add a Delimiter (13,10)  
Delimiter to List  
Current Value: 13,10  
Enter Value [1-255]: **<Esc>** [default]

**R** – Remove a Delimiter (13, 10)  
Remove Delimiter from List  
Current Value: 13,10  
Enter Value [1-255]: **13 <Enter>**

**R** – Remove a Delimiter (10)  
Remove Delimiter from List  
Current Value: 10  
Enter Value [1-255]: **10 <Enter>**

After the submenu selections above are complete, the S - Serial Configuration menu appears as shown below: Press <Esc> to return to the MAIN MENU.

SERIAL PORT

B – Baud Rate (19200)  
E – Echo Mode (None)  
F – Flow Control  
M – Maximum Line Length (300)  
I – Input Time-out (Off)  
A – Add a Delimiter (None)  
R – Remove a Delimiter (None)

rs115f.eps

8. **A – Advanced Configuration.** Type A and press <Enter>. Complete the menu selections shown below in **bold**.

**B** – Broadcast Address (1)  
 Set Broadcast Address  
 Current Value: 1  
 Enter Value [Positive Integer]: **b b b b** <Enter>    **[b b b b is the Base modem serial number (from step 4)]**

**E** – Enable Broadcast  
 Set Dest. to Broadcast? [Y or N] <Esc> [default]

**D** – Dest. Serial # (None)  
 Set Dest. Serial #  
 Current Value: Broadcast  
 Enter Value [From Serial # Label]: <Esc> [default]

**C** – Subchannel (1)  
 Set Subchannel  
 Current Value: 1  
 Enter Value [0-65535]: <Esc> [default]

**S** – Serial # Filter (None)  
 Set Incoming Serial # Filter  
 Current Value: None  
 Enter Value [From Serial # Label, 0 = None]: <Esc> [default]

**T** – Type Filter (None)  
 Set Incoming Type Filter  
 Current Value: None  
 Enter Value [(D)irected, (B)roadcast or (N)one]: **B** <Enter>

**L** – Lost Communication (Continue)    [Toggles: **Continue/Halt**]  
 Enter Selection: [default]

**O** – Operating Mode (Pass-Through)    [Toggles: **Pass-Through/Packetized**]  
 Enter Selection: **O** <Enter>  
**O** – Operating Mode (Packetized)

After the submenu selections are complete, the A - Advanced Configuration menu appears as follows. Press <Esc> to return to the MAIN MENU.

```

                                ADVANCED
B - Broadcast Address (bbbb) [B. S. S/N]
E - Enable Broadcast
D - Dest. Serial # (None)
C - Subchannel (1)
S - Serial # Filter (None)
T - Type Filter (Broadcast)
L - Lost Communication (Continue)
O - Operating Mode (Packetized)

```

rs116f.eps

9. **L - Launch Operating Mode.** Launching reviews the selected parameters and places the modem into the Operating mode.

Type L and press <Enter>. The PARAMETER SETTINGS summary should agree with the figure shown below. Note that b b b b b is the Base Station Modem Serial Number; the Radio Channel depends on your selection in step 11; and the Radio Speed (121 Kbaud) is not configurable.

Refer to Table 2-1 to find the menu for making corrections, as required. If the parameters are correct, type Y and press <Enter> in response to Launch Operating Mode? [Y or N].

```

                                PARAMETER SETTINGS
                                Serial #: bbbbb
Serial Port
-----
      Operating Mode: Packetized           Delimiters: None
      Echo Mode: None                     Max Length: 300
      Baud Rate: 19200                     Input Time-Out: Off
XON/XOFF Generation: Disabled             XON/XOFF Recognition: Disabled
      CTS Generation: Disabled             DSR Generation: Disabled
Network
-----
      Radio Channel: 4                     Radio Speed: 121 Kbaud
      Subchannel: 1                       Broadcast Address: bbbbb
Dest. Serial #: None                      Lost Communication: Continue
      Serial # Filter: None                Type Filter: Broadcast

```

rs028s.bmp

**Table 2-1. Wireless Modem Parameters and Menus (900 MHz)**

Parameter	Menu Location
<b>Serial Port</b>	
Operating Mode:	Advanced Configuration/Operating Mode
Echo Mode:	Serial Configuration/Echo Mode
Baud Rate:	Serial Configuration/Baud Rate
XON/XOFF Generation:	Serial Configuration/Flow Control
CTS Generation	Serial Configuration/Flow Control
Delimiters:	Serial Configuration/Add a Delimiter Serial Configuration/Remove a Delimiter
Max Length:	Serial Configuration/Maximum Line Length
Input Time-Out:	Serial Configuration/Input Time-Out
XON/XOFF Recognition:	Serial Configuration/Flow Control
DSR Generation:	Serial Configuration/Flow Control
<b>Network</b>	
Radio Channel:	Main Menu/Change Radio Channel
Subchannel:	Advanced Configuration/Subchannel
Dest. Serial #:	Advanced Configuration/Dest. Serial #
Serial # Filter:	Advanced Configuration/Serial # Filter
Radio Speed:	[This is not a configurable parameter]
Broadcast Address:	Advanced Configuration/Broadcast Address
Lost Communication:	Advanced Configuration/Lost Communication
Type Filter:	Advanced Configuration/Type Filter

10. This completes the configuration of the Base Station modem. Choose one of the following:

- Continue to the "Configuring a Remote Modem" procedure.
- Select the Exit command from the File menu to exit the Terminal mode. Click No if there is a ... save the changes ... message.

## 2.4 GHz Base Station Modem Configuration

2-7.

The base station's modem is configured using the Terminal Emulator or Hyperterminal included in Microsoft Windows 3.1 and Windows 95.

1. Start Terminal Emulator or Hyperterminal.
2. Using a paperclip or similar device, press the modem's "configure" button located on the modem's front panel. This will bring up the modem's main menu which appears as shown below.

```
MAIN MENU
1) View configuration
2) Change configuration
3) Reset configuration to default
4) View event log
5) Resume operation
```

rs122f.eps

3. Reset the modem to factory default settings by entering **3** <ENTER>, **Y** <ENTER>, then **2** <ENTER> to change configuration.
4. Move to the Radio configuration menu by entering **1** <ENTER> and change the settings to match those shown below.

```
RADIO SETTINGS
1) Node type (Master)
2) Domain (0)
3) Channel (1)
4) Subchannel (1)
5) Transmit count (Infinite)
6) Retry interval (1000 milliseconds)
7) Receive filter (None)
8) Destination address (Broadcast)
```

rs123f.eps

5. Press <ENTER> to return to the modem configuration menu and select Serial port settings by entering **2** <ENTER>. Change the base station's serial port settings to match those shown below.

SERIAL PORT SETTINGS

- 1) Baud (19200)
- 2) Data bits (8)
- 3) Stop bits (1)
- 4) Parity (None)
- 5) Software XON/XOFF flow control (Disabled)
- 6) Hardware RTS/CTS flow control (Disabled)
- 7) Hardware DTR/DSR flow control (Disabled)

rs119f.eps

6. Enter the Data Packet settings by entering **3** <ENTER> and change the settings to match the following:

DATA PACKETING SETTINGS

- 1) Data mode (Packetized)
- 2) Line length (300)
- 3) Input timeout (10)
- 4) Delimiters (none)

rs120f.eps

- Return to the modem's main menu and select item 5 "Resume Operation" to review and save the changes to the modem. The menu changes should match those shown below. If the changes are correct enter **Y** <ENTER> to save the current configuration. To make corrections to your settings, enter <ENTER>, and return to the main menu and make corrections as needed.

```


Current Configuration



Radio:  
Node type = Master                      Domain = 0  
Channel = 1                                Subchannel = 1  
Transmit Count = Infinite                Retry interval = 1000 milliseconds  
Receive filter = None  
Destination address = N/A



Serial port:  
Baud = 19200  
Data bits = 8  
Stop bits = 1  
Parity = none  
Flow control = XON/XOFF: Disabled



Data packeting:  
Protocol = Packetized  
Line length = 300  
Input timeout = 10  
Delimiters = none


```

rs121f.eps

### **Connecting the Remote Modem for Configuration**

**2-8.**

Complete the following procedure to configure a Remote modem. Connect the modem to the Host Computer for configuration, as shown in Figure 2-3.

- Connect the wireless modem to be configured as a Remote modem to the Host Computer COM2 port using the modem RS-232 cable.

The gender of the host computer COM port is always male. If you are trying to connect to a port that is female, it is not a COM port.

- Connect the modem power module into a power source and connect the power output cable to the Remote modem DC input. Verify that the modem PWR indicator is on (red) and does not blink.

If the PWR light is blinking, the modem failed self-test and cannot be used. Terminate this procedure and refer to "Modem Error Codes" in Chapter 6 "Maintenance."

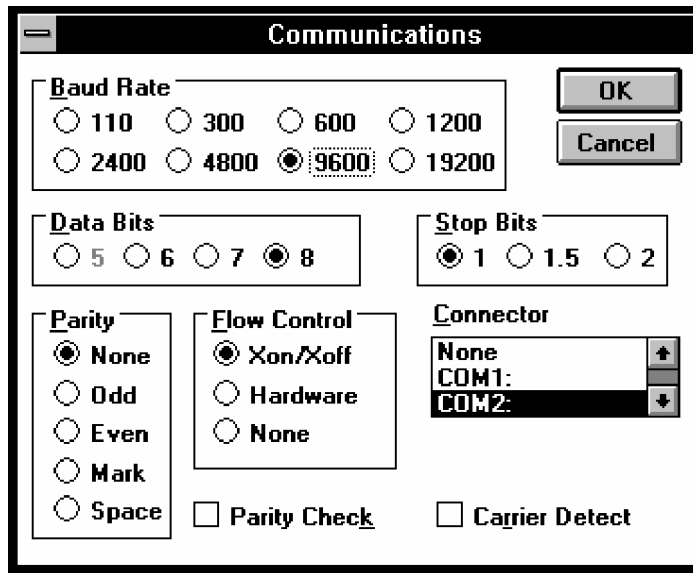
If the PWR indicator does not light, check the power connections. If the connections are correct, either the power module or modem has failed. Repeat with a different power module or modem to localize the problem.



3. Assemble the antenna (see Figure 1-3) and connect it to the modem. Do not over tighten the connectors.
4. Apply a Remote Modem label on the modem (Figure 2-2). Fill in the unique serial number (r r r r r) as recorded on the bottom of the modem, and describe the Remote (e.g., H1, Base1/H1, etc.).
5. If you are already in the Terminal Emulator accessory, continue to step 7. Otherwise, open Terminal Emulator from the Fluke Wireless Logger group of Program Manager.

If you receive a Select another port... message, COM2 is being used by another application. Close the other application and repeat this step, or open Terminal directly from the Accessories group of Program Manager.

6. Open Communications... from the Settings menu. Verify or make the selections shown below (modify COM, as required). Click OK.



rs029s.bmp

## **900 MHz Remote Modem Configuration**

**2-9.**

1. Press the ENABLE/RESET button on the modem (see Figure 1-3). Verify that the terminal screen displays the modem configuration MAIN MENU (below). Note that r r r r r is the Remote modem serial number, and Radio Channel: 4 is the default.

If meaningless characters appear, the communication settings are incorrect. Go back to step 6. Note that the baud rate must be 9600 for modem configuration procedures.

If the MAIN MENU display does not appear, check the cable connection. Verify that the modem is connected to the COM2 port.

It is possible to have everything correct and not receive the modem configuration menu if the COM2 port is internally redirected. For example, COM2 may be routed internally for a laptop computer communications modem disabling the external COM2 port. Other applications may make claim to COM2 such as a serial Mouse. When COM3 and COM4 ports are installed, they often share interrupts with COM1 and COM2, causing a hardware conflict. Try another COM port or resolve the COM port issue and return to this procedure.

```
                RF Modem U2.4
                by Proxim Inc., (c) 1990,91

                MAIN MENU

Serial #: r r r r r      Radio Channel: 4

D - Display Parameters
R - Reset Parameters to Defaults
C - Change Radio Channel
N - Network Configuration
S - Serial Configuration
A - Advanced Configuration
L - Launch Operating Mode

Enter Selection:
```

rs030s.bmp

2. Verify that the serial number at the top of the MAIN MENU matches the serial number you recorded on the Remote Modem label. Menu selections are made in upper or lower case letters, e.g., R or r. To exit any menu at any time, press the <Esc> key.
3. **D - Display Parameters.** Type D and press <Enter>. This screen summarizes the present modem configuration. When the modem parameters are reset (next step), the screen appears as shown below. Press <Enter> to continue.

```

                                PARAMETER SETTINGS
                                Serial #: rrrrr

Serial Port
-----
      Operating Mode: Pass-Through          Delimiters: 13,10
      Echo Mode: Simple                     Max Length: 256
      Baud Rate: 9600                       Input Time-Out: Off

      XON/XOFF Generation: Disabled         XON/XOFF Recognition: Disabled
      CTS Generation: Disabled              DSR Generation: Disabled

Network
-----
      Radio Channel: 4                      Radio Speed: 121 KBaud
      Subchannel: 1                        Broadcast Address: 1

      Dest. Serial #: None                 Lost Communication: Continue
      Serial # Filter: None                Type Filter: None

```

rs031s.bmp

4. **R – Reset Parameters to Defaults.** Type R and press <Enter>. Type Y and <Enter> in response to Reset to Default Settings? [Y or N].

*Note*

*The remainder of this procedure assumes the modem has been reset to the default settings.*

5. **C – Change Radio Channel.** Enter the identical radio channel used by the Base Station modem for this network. The default is channel 4.
6. **N – Network Configuration.** The default is correct.

7. **S – Serial Configuration.** This sets up the parameters for the wireless modem RS-232 port. Type S and press <Enter>. Complete the menu selections shown below in **bold**.

**B** – Baud Rate (9600)  
Set Baud Rate  
Current Value: 9600  
Enter Value [1=1200, 2=2400, 3=4800, 4=9600, 5=19200]: **<Esc>**

**E** – Echo Mode (Simple)  
Set Echo Mode  
Current Value: Simple  
Enter Value [(S)imple, (T)erminal or (N)one]: **n <Enter>**

**F** – Flow Control  
FLOW CONTROL  
X – Generate XON/XOFF (Disabled)  
C – Generate CTS (Disabled)  
D – Generate DSR (Disabled)  
R – Recognize XON/XOFF (Disabled)  
Enter Selection: **x <Enter> <Esc>**

**M** – Maximum Line Length (256)  
Maximum Line Length  
Current Value: 256  
Enter Value [1-576]: **300 <Enter>**

**I** – Input Time-out (Off)  
Input Time-out  
Current Value: Off  
Enter Value [In 16ths of a second, 0 = Off]: **<Esc>** [default]

**A** – Add a Delimiter (13,10)  
Delimiter to List  
Current Value: 13,10  
Enter Value [1-255]: **<Esc>** [default]

**R** – Remove a Delimiter (13, 10)  
Remove Delimiter from List  
Current Value: 13,10  
Enter Value [1-255]: **13 <Enter>**

After the submenu selections above are complete, the S - Serial Configuration menu appears as shown below. Press <Esc> to return to the MAIN MENU.

SERIAL PORT

B – Baud Rate (9600)  
 E – Echo Mode (None)  
 F – Flow Control  
 M – Maximum Line Length (300)  
 I – Input Time-out (Off)  
 A – Add a Delimiter (10)  
 R – Remove a Delimiter (10)

rs117f.eps

8. **A – Advanced Configuration.** Type A and press <Enter>. Complete the menu selections shown in **bold**.

**B** – Broadcast Address (1)  
 Set Broadcast Address  
 Current Value: 1  
 Enter Value [Positive Integer]: **b b b b b** <Enter>  
[**b b b b b** is the associated Base Station serial number, not this modem serial number]

**E** – Enable Broadcast  
 Set Dest. to Broadcast? [Y or N] **y** <Enter>

**D** – Dest. Serial # (Broadcast)  
 Set Dest. Serial #  
 Current Value: Broadcast  
 Enter Value [From Serial # Label]: **<Esc>** [default]

**C** – Subchannel (1)  
 Set Subchannel  
 Current Value: 1  
 Enter Value [0-65535]: **<Esc>** [default]

**S** – Serial # Filter (None)  
 Set Incoming Serial # Filter  
 Current Value: None  
 Enter Value [From Serial # Label, 0 = None]: **b b b b b** <Enter>  
[**b b b b b** is the associated Base Station serial number, not this modem serial number]

**T** – Type Filter (None)  
Set Incoming Type Filter  
Current Value: None  
Enter Value [(D)irected, (B)roadcast or (N)one]: **D <Enter>**

**L** – Lost Communication (Continue) [Toggles: **Continue/Halt**]  
Enter Selection: [default]

**O** – Operating Mode (Pass-Through) [Toggles: **Pass-Through/Packetized**]  
Enter Selection: [default]

After the submenu selections are complete, the A - Advanced Configuration menu appears as shown below: Press <Esc> to return to the MAIN MENU.

```

                                ADVANCED
B – Broadcast Address (bbbb) [B. S. S/N]
E – Enable Broadcast
D– Dest. Serial # (Broadcast)
C– Subchannel (1)
S – Serial # Filter (bbbb) [B. S. S/N]
T – Type Filter (Directed)
L – Lost Communication (Continue)
O– Operating Mode (Pass-Through)

```

rs118f.eps

9. **L - Launch Operating Mode.** Launching reviews the selected parameters and places the modem into the Operating mode.

Type L and press <Enter>. The PARAMETER SETTINGS summary should agree with the figure shown below. Note that r r r r is the Remote Modem Serial Number, b b b b is the associated Base Station Modem serial number; the Radio Channel matches the setting for the associated Base Station; and the Radio Speed (121 KBAud) is not configurable.

Refer to Table 2-1 to find the menu for making corrections, as required. If the parameters are correct, type Y and press <Enter> in response to Launch Operating Mode? [Y or N].

```
PARAMETER SETTINGS
Serial #: rrrrr

Serial Port
-----
      Operating Mode: Pass-Through          Delimiters: 10
      Echo Mode: None                      Max Length: 300
      Baud Rate: 9600                      Input Time-Out: Off

      XON/XOFF Generation: Enabled         XON/XOFF Recognition: Disabled
      CTS Generation: Disabled            DSR Generation: Disabled

Network
-----
      Radio Channel: 4                      Radio Speed: 121 Kbaud
      Subchannel: 1                        Broadcast Address: b b b b b

      Dest. Serial #: Broadcast            Lost Communication: Continue
      Serial # Filter: b b b b b          Type Filter: Directed
```

rs032s.bmp

10. The Remote modem is now configured for operation. Set the modem aside for use when completing "Connecting the Remotes," below.

Repeat this procedure for each Remote modem. All Remote modems associated with a particular Base Station are configured identically. Note that the remote modem serial number, r r r r (not used in this procedure) is used when configuring *Wireless Logger for Windows* software.

When the configuration of all the Remote modems is complete, select the Exit command from the File menu to exit the Terminal Emulator accessory. Click No if there is a ... save the changes ... message.

## 2.4 GHz Remote Modem Configuration

2-10.

Now that the base station modem is configured, you need to configure the remote modem. Disconnect the base station modem from the PC and connect the remote modem to the PC. Be sure you do not confuse the two modems since they are configured differently. If you have not already done so, label the two modems Base Station and Remote with the labels included with the Wireless Logger.

1. Start Terminal Emulator or Hyperterminal.
2. Using a paperclip or similar device, press the modem's "configure" button located on the modem's front panel. This will bring up the modem's main menu which appears as shown below.

MAIN MENU

- 1) View configuration
- 2) Change configuration
- 3) Reset configuration to default
- 4) View event log
- 5) Resume operation

rs122f.eps

3. Reset the modem to factory default settings by entering **3** <ENTER> **Y** <ENTER>. Then **2** <ENTER> to change configuration. Move to the Radio configuration menu by entering **1** <ENTER> and change the settings to match those in Figure 13. Take special note of menu selection #7 "Receive Filter" and #8 "Destination Address". In these fields enter the serial number found on the underside of the base station modem. This will set the remote modem to listen and talk only with the base station modem.

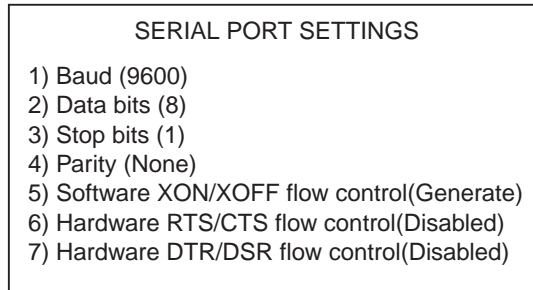
RADIO SETTINGS

- 1) Node type (Station)
- 2) Domain (0)
- 3) Channel (1)
- 4) Subchannel (1)
- 5) Transmit count (Infinite)
- 6) Retry interval (1000 milliseconds)
- 7) Receive filter (**base station serial #**)
- 8) Destination address (**base station serial #**)

rs124f.eps

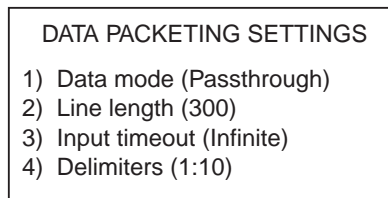


4. Press <ENTER> to return to the modem configuration menu and select serial port settings by entering **2** <ENTER>. Change the base station's serial port settings to match those shown here.



rs125f.eps

5. Enter the Data Packet settings by entering **3** <ENTER> and change the settings to match the following:



rs126f.eps

- Return to the modem's main menu and select item 5 "Resume Operation" to review and save the changes to the modem. The menu changes should match those shown below. If the changes are correct enter **Y** <ENTER> to save the current configuration. To make corrections to the settings enter <ENTER>, and return to the main menu and make corrections as needed.

<b>Current Configuration</b>	
<b>Radio:</b>	
Node type = Station	Domain = 0
Channel = 1	Subchannel = 1
Transmit count = Infinite	Retry interval = 1000 milliseconds
Receive filter = <b>(base station serial #)</b>	
Destination address = <b>(base station serial #)</b>	
<b>Serial port:</b>	
Baud = 9600	
Data bits = 8	
Stop bits = 1	
Parity = none	
Flow control = XON/XOFF: Generate	
<b>Data packeting:</b>	
Protocol = Passthrough	
Line length = 300	
Input timeout = Infinite	
Delimiters = 10	

rrs127f.eps

## **Connecting the Base Station for Operation** **2-11.**

Complete the following procedure to connect a Base Station, as shown in Figure 2-3. This is the same connection used for configuring the modems. All items are supplied with the Wireless Base Station Package. (See Table 1-1.) This procedure assumes the use of the Host Computer COM2 port. If neither COM1 nor COM2 are available, analyze the hardware configuration of the Host Computer for alternatives because COM3 and COM4 (if installed) often share interrupts with COM1 and COM2 and may not be suitable for connecting a Base Station.

1. Connect the configured modem with the Base Station label to the Host Computer COM2 port using the modem RS-232 cable and DB9-to-DB9 adapter cable.
2. The gender of the host computer COM port is always male. If you are trying to connect to a port that is female, it is not a COM port.
3. Connect the modem power module into a power source and connect the power output cable to the Base Station modem 6-9V DC input connector. Verify that the modem PWR indicator is on (red) and does not blink.

If the PWR light is blinking, the modem failed self-test and cannot be used. Terminate this procedure and refer to "Modem Error Codes" in Chapter 6 "Maintenance."

If the PWR indicator does not light, check the power connections. If the connections are correct, either the power module or modem has failed. Repeat with a different power module or modem to localize the problem.

4. Record the Base Station serial number and description inside the rear cover of this manual.
5. Position the modem at least 1 foot (30 cm) away from adjacent objects, in particular, metal partitions.

## Connecting the Remote for Operation

2-12.

Complete the following procedure to connect a Remote, as shown in Figure 2-4. Use the items supplied with the Wireless Logger, or if converting an existing Hydra, use the items with the Hydra Conversion Kit (see Table 1-1). Repeat this procedure for each Remote.

1. Position the components in the Hydra soft case, as shown in Figure 2-4. After the case is secured, it appears as shown in Figure 2-5.
2. Connect the Remote modem to the Hydra using the short RS-232 cable. The modem should have a Remote Modem label with the modem serial number and description (e.g., H1).
3. Connect the modem power module into a power source using the dual line cord and connect the power output cable to the Remote modem DC input connector. Verify that the modem PWR indicator is on (red) and does not blink.

If the PWR light is blinking, the modem failed self-test and cannot be used. Terminate this procedure and refer to "Modem Error Codes" in Chapter 6 "Maintenance."

If the PWR indicator does not light, check the power connections. If the power connections are correct, either the power module or modem has failed. Repeat with a different power module or modem to localize the problem.

4. Record the serial number and description of the Remote modem inside the rear cover of this manual.
5. Connect the Hydra into a 115V ac/60 Hz power source using the other connector on the dual line cord. Apply power to the Hydra and configure the RS-232 communications port at the front panel by pressing the **SHIFT** key then the **LIST** key then press the up/down arrow keys and the **ENTER** key to select 9600 bAUd, no PAR, OFF CtS (2635A Data Bucket only), and OFF Echo.

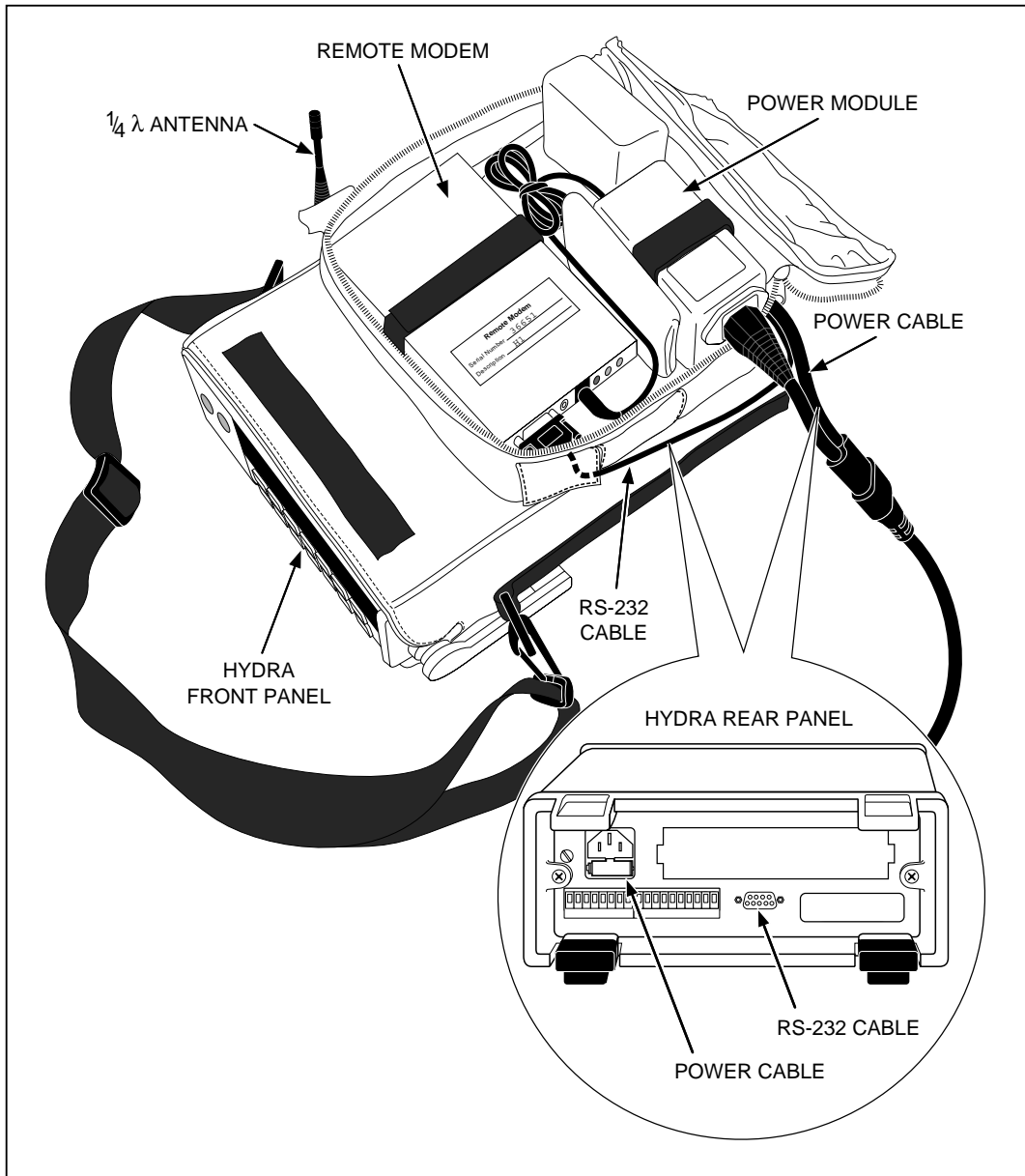
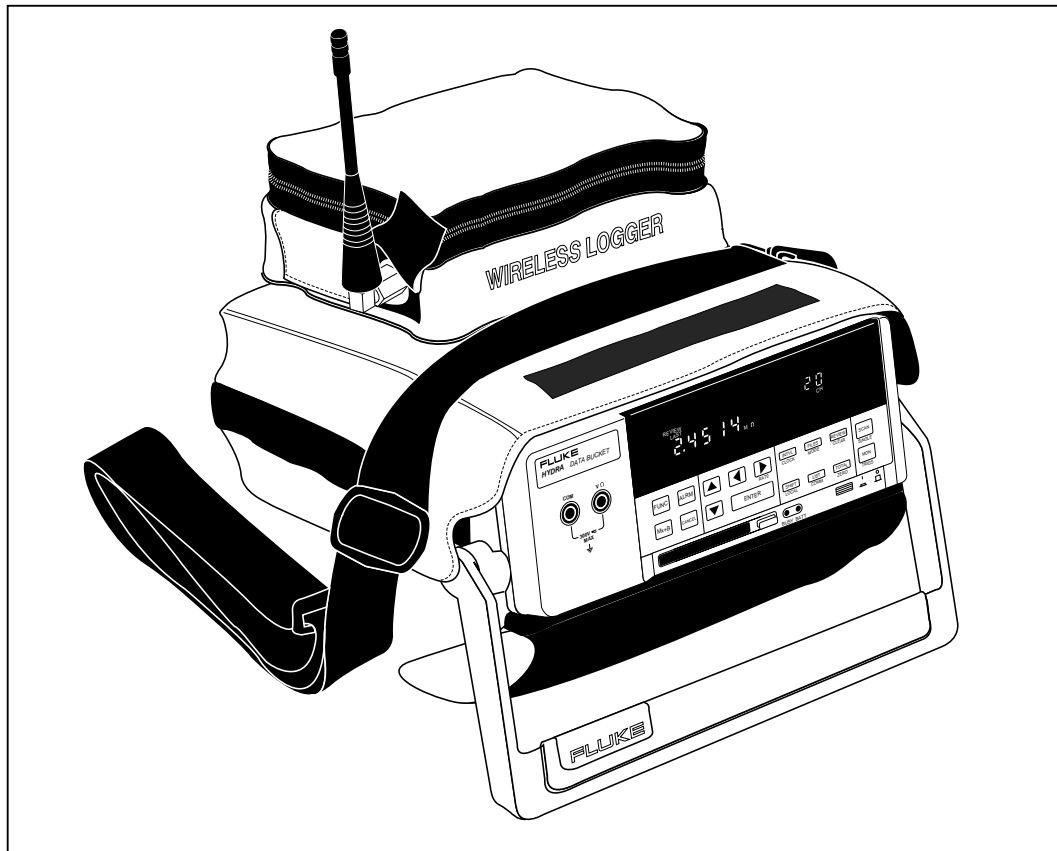


Figure 2-4. Connecting a Remote

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rs034f.eps

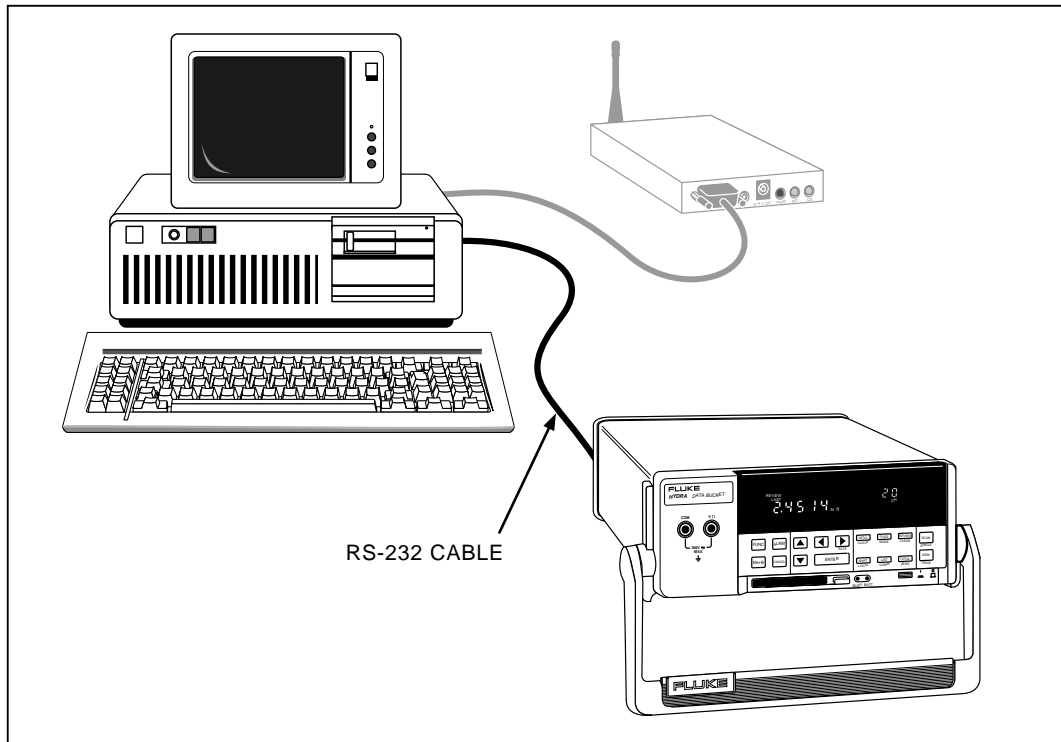
Figure 2-5. A Remote Ready for Placement

## Connecting a Local Hydra

2-13.

Complete the following procedure to connect a Local Hydra, as shown in Figure 2-6. This procedure assumes the use of the Host Computer COM1 port. If COM1 is not available, analyze the hardware configuration of the Host Computer for alternatives because COM3 and COM4 (if installed) often share interrupts with COM1 and may not be suitable for connecting a Base Station.

1. Connect the Hydra to the Host Computer COM1 port using the RS40 cable supplied in the 2625A/WL-700 Wireless Base Station Package. The cable has "RS40" stamped on the connectors. Use a DB25-to-DB9 adapter as required.



rs035f.eps

**Figure 2-6. Connecting a Local Hydra**

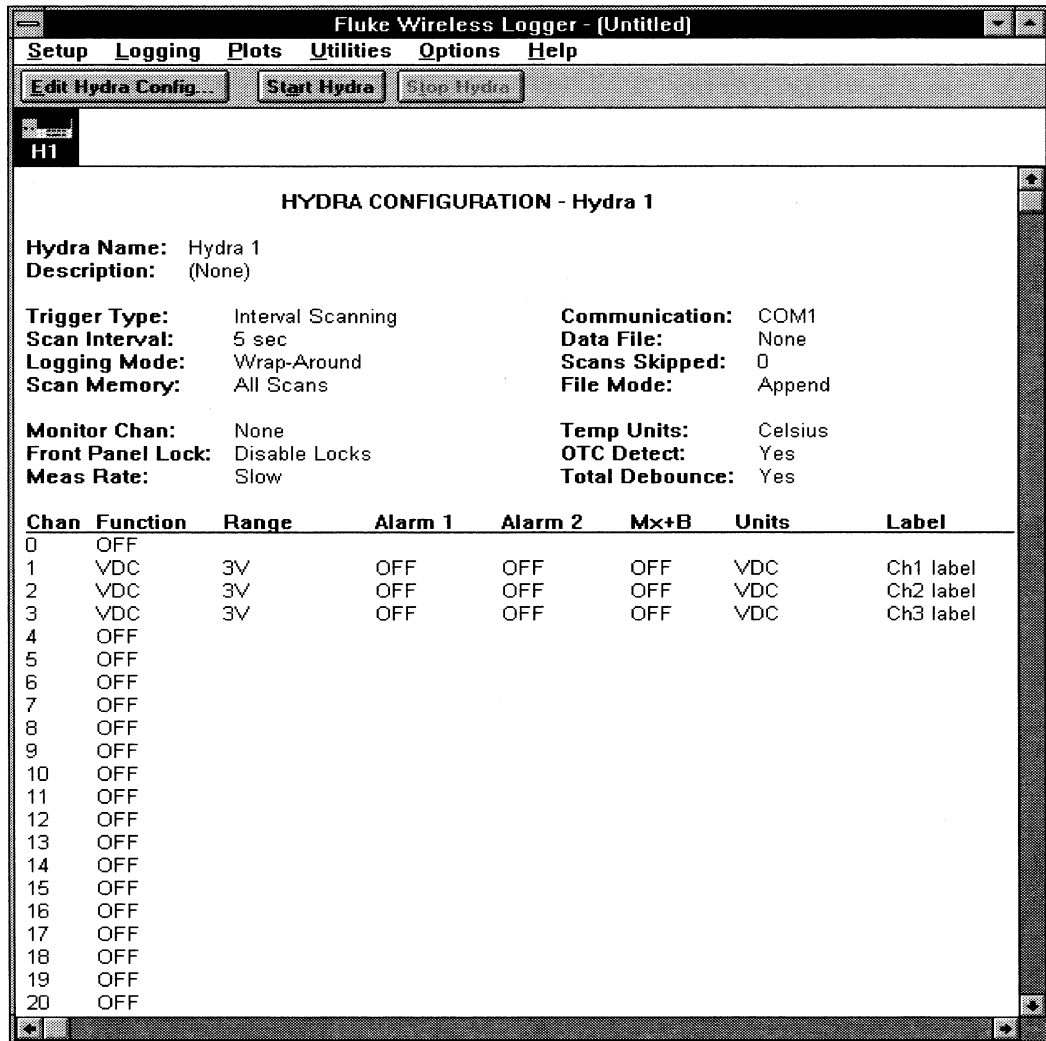
2. Apply power to the Hydra and configure the RS-232 communications port at the front panel by pressing the **SHIFT** key then the **LIST** key, then the up/down arrow keys and the **ENTER** key to select 9600 bAUd (19200 for the 2635A) , no PAR, OFF CtS (2635A only), and OFF Echo.

### **Creating a Wireless Logger for Windows Setup File 2-14.**

Complete the following procedure to create a *Wireless Logger for Windows* setup file for the Base Station and Remote (and Local Hydra) communication parameters. The other segments of the setup file, including Hydra configurations, channel function, scan interval, alarms, scaling, etc., are discussed in Chapter 3 "Using *Wireless Logger for Windows*."

1. Position all the Remotes close to the Base Station, and connect the Local Hydra (if used). Power all Hydras and Remote modems.

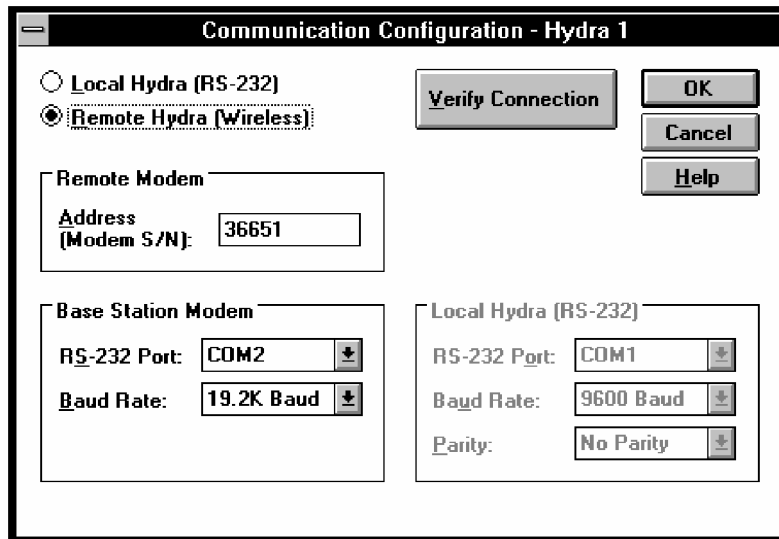
- Open *Wireless Logger* from the *Fluke Wireless Logger* group. The application opens to the Main Window (below). The top bar shows the name of the active setup file. When the application is first opened, the top bar reads *Fluke Wireless Logger - [Untitled]*.



rs036s.tif



3. Save the current setup (default) to a file by selecting the Save Logger Setup As... command from the Setup menu. Type SETUP .STP for the file name and click OK. Verify the top bar changes to Fluke Wireless Logger - SETUP.STP.
4. The default is one Hydra icon. Select the Create New Hydra command from the Setup menu if there is more than one Hydra for your setup. Repeat until the correct number of Hydra icons is displayed.
5. Associate each Hydra icon (H1, H2, H3, etc.) with a Remote (and one icon with the Local Hydra, if used). Click the desired Hydra icon, then click the Edit Hydra Config... button to open the Hydra Configuration dialog box. Click the Communications... button to open the Communication Configuration dialog box.
6. Establish if the Hydra being configured is the Local Hydra [RS-232] or a Remote Hydra [Wireless], then proceed to one of the following procedures. An example of setting the communication parameters for Hydra 1 as a Remote with serial number 36651 is shown below.



rs037s.bmp

- Local Hydra – At the upper left, select Local Hydra (RS-232). In the Local Hydra (RS-232) group, select COM1 (if COM1 is not selected for the Local Hydra, see Chapter 2 "Connecting a Local Hydra"), 9600 Baud (19.2K Baud for the 2635A Data Bucket), and No Parity.
  - Remote Hydra –At the upper left corner, select Remote Hydra (Wireless). In the Address (Modem S/N): box of the Remote Modem group, enter the Remote modem serial number for the selected Hydra icon. In the Base Station Modem group, select COM2 (if COM2 is not selected for the Base Station modem, see Chapter 2 "Connecting the Base Station"), and 19.2K Baud.
7. Click the Verify Connection button to test the communications between the Host Computer and the Hydra.
  8. A Connection Successful! return indicates that the communication parameters between the Base Station and Remote (or Local Hydra) are correct. Click OK in the dialog box and continue to step 8.
  9. A ! return and error message indicates that the communication parameters are not configured correctly, or that not all the connections have been made successfully. Click OK in the dialog box and go directly to the "Quick Check" paragraph below to resolve the problem. Do not continue with this procedure and do not close the dialog box.
  10. Click OK in the Communication Configuration menu and OK in the Hydra Configuration menu to return to the Main Window. If this is the last Hydra icon to configure, continue to step 9; otherwise, repeat steps 5 through 8 for each of the remaining Hydra icons.
  11. Select the Save Logger Setup command from the Setup menu to save the configuration parameters in the SETUP . STP file.

### **Quick Check**

**2-15.**

Quick Check locates communication problems between the Base Station, Remotes, and Local Hydras when Verify Connection fails in step 7 of "Creating a *Wireless Logger for Windows* Setup File." When Verify Connection fails, a message box contains a message indicating the problem area. Refer to Table 2-3 for suggestions when a communications difficulty occurs between the Base Station and a Remote. Refer to Table 2-4 for suggestions when a communications difficulty occurs between the Base Station and a Local Hydra.

**Table 2-2. Quick Check and the Remote Hydra (Wireless)**

<b>Dialog Box Message</b>	<b>Comment</b>	<b>Action</b>
Hydra n: Unable to initialize communications port!	The COM port does not exist.	Check the Host Computer for the COM port configuration and select a different COM port.
The Host Computer COM port is not responding.	The COM port is being used by other hardware or application, e.g., the Terminal accessory.	Check what other applications are running or what hardware is currently active and clear the COM port for use with the Wireless Logger tool.
Hydra n: Time-out waiting for Base Station Modem!	The Base Station modem is not powered or has failed.	The Base Station modem PWR light must be on and not blinking.
The Host Computer is unable to communicate with the Base Station modem.	The Base Station modem RS-232 parameters and the Host Computer RS-232 parameters do not match.	Check the RS-232 parameters for the Host Computer (Communications Configuration dialog box), and the Base Station modem using the modem configuration setup.
	The Base Station modem is configured incorrectly, e.g., the Broadcast Address or Operation Mode.	Use the modem configuration setup to check the Base Station modem parameters.
	The Base Station modem has not been "launched" into the Operating mode.	Remove and then apply power to the Base Station modem.
	The RS-232 cable between the Host Computer and Base Station modem is defective.	Use the supplied cable or other known good cable. In rare instances, a cable may fail. Try another cable.
Hydra n: RS-232 Communication Error!	The Base Station modem configuration is incorrect.	Check the Base Station modem parameters.
	The Base Station modem is not powered.	Apply power to the Base Station Modem.
	The Base Station modem is not "launched."	Remove modem power and then apply power to launch.
There is an incompatibility in the Base Station modem setup.	There is a hardware conflict for the COM port (internal modem, serial mouse, etc.).	Resolve the hardware conflict to make the COM port fully available.

**Table 2-2. Quick Check and the Remote Hydra (Wireless) (cont)**

Dialog Box Message	Comment	Action
<p>Hydra n: RF Transmission Failure!</p> <p>The Base Station transmitted but the Remote never responded.</p>	<p>The Remote modem is not powered or has failed.</p>	<p>The Remote modem PWR light must be on and not blinking.</p>
	<p>The Remote modem is configured for a different Base Station.</p>	<p>The swapping of Remote modems between networks will not work. Each Remote modem is configured for a particular Base Station.</p>
	<p>The Remote modem is configured incorrectly (wrong radio channel, operating mode, etc.).</p>	<p>Use the modem configuration setup to check the Remote modem parameters.</p>
	<p>The Remote modem is out of range.</p>	<p>If the Remote is not adjacent to the Host Computer, bring the modem next to the Host to eliminate range as a factor in testing.</p>
<p>Hydra n: Time-out waiting for Hydra!</p> <p>The Base Station modem was able to communicate with the Remote modem, but the Remote modem was unable to communicate with the Hydra.</p>	<p>The Hydra power is off or has failed self-test.</p>	<p>Power the Hydra and verify there are no error codes displayed during self-test.</p>
	<p>The Remote modem RS-232 parameters and the Hydra RS-232 parameters do not match.</p>	<p>Check the RS-232 parameters for the Hydra using the front panel <b>SHIFT</b> <b>LIST</b> and <b>ENTER</b> keys, and the Remote modem using the modem configuration setup. They must match.</p>
	<p>The Remote modem is configured incorrectly, e.g., the Broadcast Address or Operation Mode has the wrong selection.</p>	<p>Use the modem configuration setup to check the Remote modem parameters.</p>
	<p>The RS-232 cable between the Remote modem and the Hydra is defective.</p>	<p>Use the supplied cable or other known good cable. In rare instances, a cable may fail. Try another cable.</p>
<p>Hydra n: Unsupported model or version of Hydra!</p>	<p>The Hydra is not a 2625A Data Logger or a 2635A Data Bucket.</p>	<p>Connect the correct model Hydra. The 2625A must use software version 5.5 or higher (see Hydra Manual).</p>

**Table 2-3. Quick Check and the Local Hydra (RS-232)**

Dialog Box Message	Comment	Action
Hydra n: Unable to initialize communications port!	The COM port does not exist.	Check the Host Computer for its COM port configuration and select a different COM port.
The Host Computer COM port is not responding.	The COM port is being used by other hardware or application, e.g., the Terminal accessory.	Check what other applications are running or what hardware is currently active and clear the COM port for use with the Wireless Logger tool.
Hydra n: RS-232 Communication Error!	Parity is selected in Local Hydra [RS-232], or the baud rate does not match.	Other parity or baud selections cause RS-232 communication errors.
The RS-232 parameters do not match those in the Communication Configuration dialog box.	Host Computer may be running other applications using the same COM port.	If COM1 and COM3/COM4 share an interrupt, errors may occur. Stop other applications to verify.
	There is a hardware conflict for the COM port (internal modem, serial mouse, etc.).	Resolve the hardware conflict to make the COM port fully available.
Hydra n: Time-out waiting for Hydra!	The Hydra is unpowered, failed self-test, or the RS-232 cable is disconnected.	Power Hydra, look for a self-test error display, or attach the RS-232 cable.
The Host Computer is unable to communicate with the Local Hydra.	The Host Computer RS-232 parameters and the Hydra RS-232 parameters do not match.	Check the RS-232 Local Hydra (RS-232) parameters at the Host Computer; at the Hydra using <b>(SHIFT) (LIST)</b> and <b>(ENTER)</b> keys.
	Other applications are running and trying to use COM1 at the same time.	Temporarily use COM2 (change Local Hydra (RS-232) settings) to verify.
	Verify that Hydra is connected to the Host Computer COM1 port.	Connection to COM3/COM4 may have interrupt conflicts. COM2 is reserved for wireless modem.
Hydra n: Unsupported model or version of Hydra!	The Hydra is not a 2625A Data Logger or a 2635A Data Bucket.	Connect the correct model Hydra. The 2625A must use software version 5.5 or higher (see Hydra Manual).

## Placing the Base Station and Remotes

2-16.

After completing the procedure under "Creating a *Wireless Logger for Windows* Setup File," place the Remotes in their working locations, and position the Base Station. Observe the following guidelines:

- **Centrally Locate the Base Station.** The nominal range for a non-line-of-sight Base Station/Remote communications link is 500 to 800 feet (150 to 240 meters). Choose a Base Station location that is central to the Remotes for equal radio coverage, while not exceeding the 800 foot limit.
- **Avoid Radio Signal Barriers between the Base Station and Remotes.** Avoid radio signal barriers such as metal partitions, concrete floors with metal reinforcing bars or metal pans. Line-of-sight communications is superior whenever possible.
- **Position the Remotes near a Source of Primary Power.** Although both the Hydra and modem can operate from dc sources of power (9 to 12V dc for the Hydra, and 6.5 to 9.5V dc for the wireless modem) most installations involve connection to a 115V ac/60 Hz sources of power. Position the Hydra near a source of ac power whenever possible.
- **Position the Remotes near the Measurement Locations.** The proximity of the Remote to the source of measurement inputs should be considered when placing the Remote.

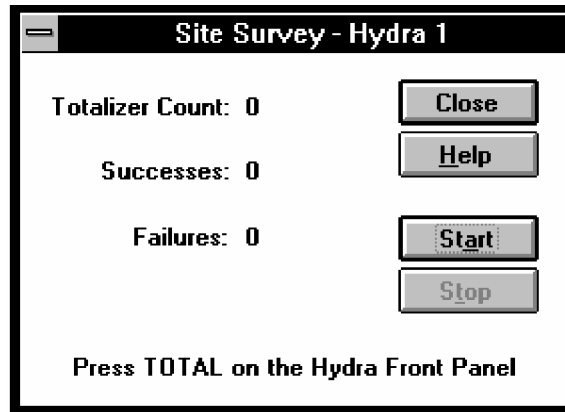
## Using the Site Survey Feature to Verify Operations 2-17.

The *Site Survey* feature of *Wireless Logger for Windows* verifies the communications path between the positioned Base Station and the located Remotes. This procedure assumes all Remotes are powered and have been successfully operated in close proximity to the Base Station before being placed in their operating location.

Complete the following procedure to use *Site Survey*.

1. Open Wireless Logger from the Fluke Wireless Logger group of Program Manager.
2. Select the Load Logger Setup command from the Setup menu and enter the desired setup file, e.g., SETUP .STP. Click OK.
3. Click the Hydra icon for the Remote to be verified. For example, Hydra/H1. If you are not using a mouse, press <Tab>, select the Hydra icon with the cursor keys, then press <Enter>.

4. Select the Site survey command from the Utilities menu, opening the following menu:



rs038s.bmp

5. Click the Start button in the Site Survey dialog box. Communication between the Base Station and the selected Remote is indicated by the Successes count incrementing at approximately the same rate as the Totalizer Count. Occasional Failures are not unusual.

At the Hydra, press the **TOTAL** key and watch for a steadily increasing totalizer count. An occasional missing count is not unusual.

Frequent or steady Failures indicates poor communications between the Base Station and Remote. Reposition the Remote and/or the Base Station and repeat steps 3 through 5.

[Hint: Power the Remote with batteries to provide maximum Remote portability. The Hydra connects to a 9 to 12V dc supply via a rear panel connector. (See the Hydra manual.) The wireless modem connects to a 9V dc supply using a standard 5.0mm outside-diameter/2.5mm inside-diameter power plug. A Wireless Logger DC Power Kit to power the Hydra and modem is available as an option. (See "Options and Accessories" in Chapter 1.) The absolute maximum dc input for the wireless modem is 9.5V DC.]

## **Connecting Hydra Analog and Digital Lines 2-18.**

Following the final positioning of the Remotes, connect the measurement lines, ALARM OUTPUTS, and DIGITAL I/O lines as described in the following Hydra manuals:

- **2625A Hydra Data Logger.** *Hydra 2620A Series II Data Acquisition Unit/2625A Series II Data Logger Users Manual* (Part Number 686675)
- **2635A Hydra Data Bucket.** *Hydra 2635A Series II Data Bucket Users Manual* (Part Number 686698)



# Chapter 3

## *Using Wireless Logger for Windows*

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## Introduction

## 3-1.

This chapter describes how to operate *Wireless Logger for Windows*. The operating procedures assume you have a working knowledge of Hydra parameters, described in the following Hydra manuals:

- **2625A Hydra Data Logger.** *Hydra 2620A Series II Data Acquisition Unit/2625A Series II Data Logger Users Manual* (Part Number 686675)
- **2635A Hydra Data Bucket.** *Hydra 2635A Series II Data Bucket Users Manual* (Part Number 686698)

On-line Help also describes Hydra parameters and *Wireless Logger for Windows* features. To access Help, press the <F1> key at any time, or click any Help button. A summary of all *Wireless Logger for Windows* features and menus is provided in Chapter 4 "*Wireless Logger for Windows Reference*."

This chapter assumes you have completed "Creating a *Wireless Logger for Windows* Setup File" in Chapter 2 and the Base Station and Remote network is operational.

The following topics are covered in this chapter:

- **Hydra Configuration Procedures.** How to enter, save, download, upload, and print Hydra configuration data.
- **Logging Operations.** Starting and stopping the Hydras, using DDE, monitoring and optimizing performance, and using Site Survey.
- **Processing the Data.** How to view, print, and process the data files in other applications.
- **Trend Plots.** How to view the measurement trends during Hydra scanning, to save and print plots, and create Trend Plots from a data file.

## Starting and Stopping Wireless Logger for Windows 3-2.

Similar to all Windows applications, *Wireless Logger for Windows* is started and exited using icons and menu selections. There are also several startup features that can be applied, allowing *Wireless Logger for Windows* to open automatically loading a setup file, and to open automatically loading a setup file and start all Hydras logging.

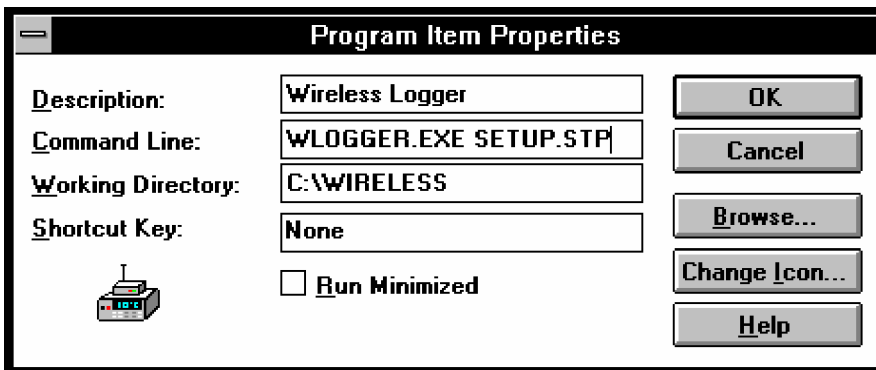
### Starting Wireless Logger for Windows

3-3.

To start *Wireless Logger for Windows*, open Wireless Logger from the Fluke Wireless Logger group of Program Manager. Verify Wireless Logger opens to the Main Window.

To modify the starting procedure to open *Wireless Logger for Windows* automatically loading a setup file, conduct the following procedure.

1. Select, but do not open, the Wireless Logger icon in the Fluke Wireless Logger group of Program Manager.
2. Select the Properties... command from the File menu to open the Program Item Properties dialog box.
3. Modify the Command Line displayed in the Program Item Properties dialog box by adding the setup filename after the WLOGGER . EXE command. For example, if the setup filename is SETUP . STP, the command line would change to WLOGGER . EXE SETUP . STP (see below). Click OK when the command line is correct.



rs039s.bmp

The Command Line displayed in the Program Item Properties dialog box may be further modified to include the /G switch. Using the example above, the Command Line would change to WLOGGER . EXE SETUP . STP /G. The /G switch must follow the setup filename on the command line.

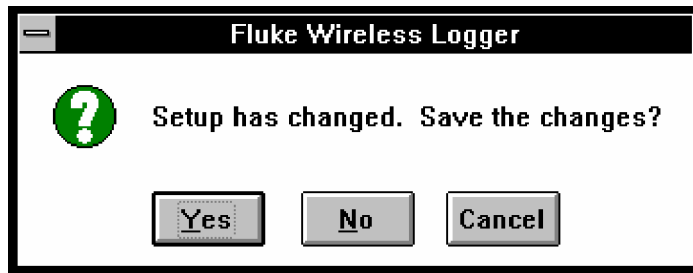
The /G switch starts all Hydras when *Wireless Logger for Windows* is opened. Generally, this feature is used to automatically resume data collection after a loss of power to the Host Computer. For more information and configuration requirements when using the /G switch, refer to Appendix E, "Loss of Power."

### Exiting Wireless Logger for Windows

3-4.

To exit *Wireless Logger for Windows*, select the Exit Application command from the *Wireless Logger for Windows* Setup menu, or double click the Control-Menu box (upper-left corner).

If you have changed the setup file, you will be prompted with a Save the changes? message, as shown below:



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Click Yes to save the changes in the setup file and exit the application, click No to not save the changes in the setup file and exit the application, or click Cancel to return to the application.

## Hydra Configuration Procedures

**3-5.**

Procedures in this section detail how to upload, download, save, and manipulate Hydra configuration data.

The following topics are covered in this section:

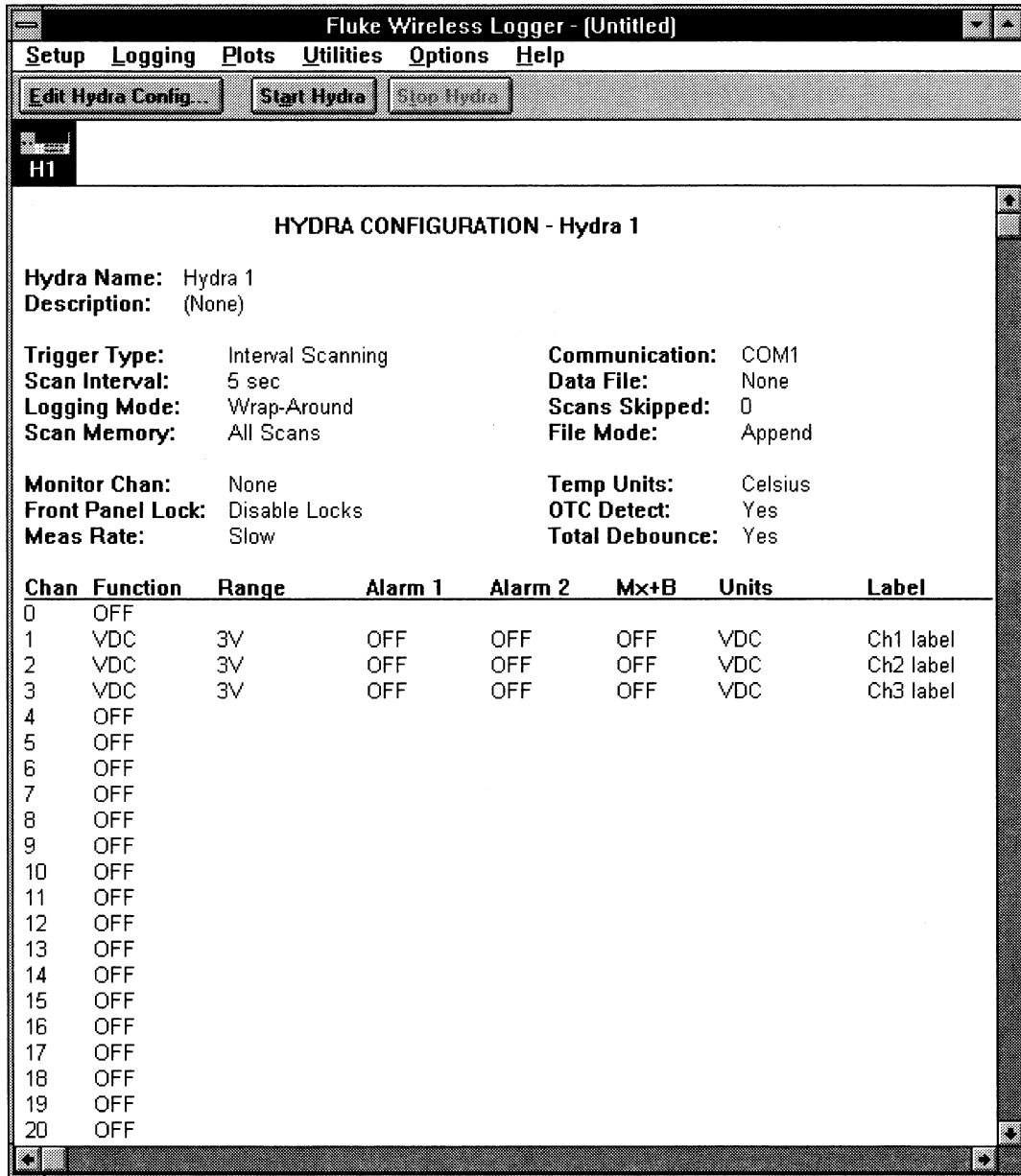
- **Editing Hydra Configuration Data.** Making changes to the Hydra configurations, e.g., scan interval, channel functions, alarms, Mx+B scaling, etc.
- **Copy Configuration Data Between Hydras.** Copy any Hydra configuration to another Hydra.
- **Downloading Configuration Data to a Hydra.** Sending the Hydra configuration from *Wireless Logger for Windows* to the Hydra.
- **Uploading Configuration Data from a Hydra.** Sending the Hydra configuration from the Hydra to *Wireless Logger for Windows*.
- **Printing Configuration Data.** Printing a hard copy record of the Hydra configuration data.

### Editing Hydra Configuration Data

**3-6.**

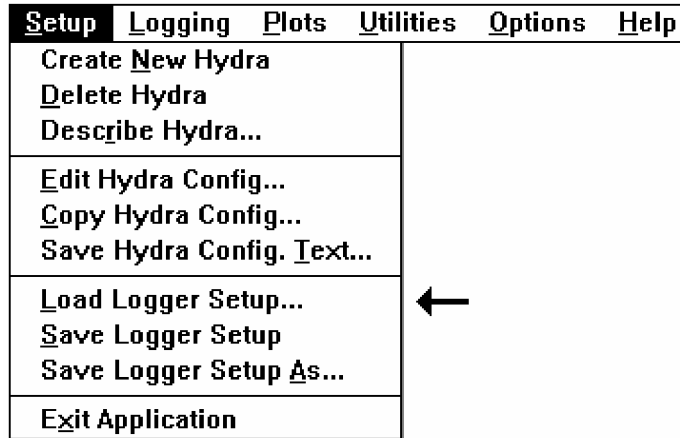
Complete the following procedure to edit a Hydra configuration, which is saved in a setup file.

1. Open Wireless Logger from the Fluke Wireless Logger group of Program Manager. Verify the Main Window is displayed, as shown below.



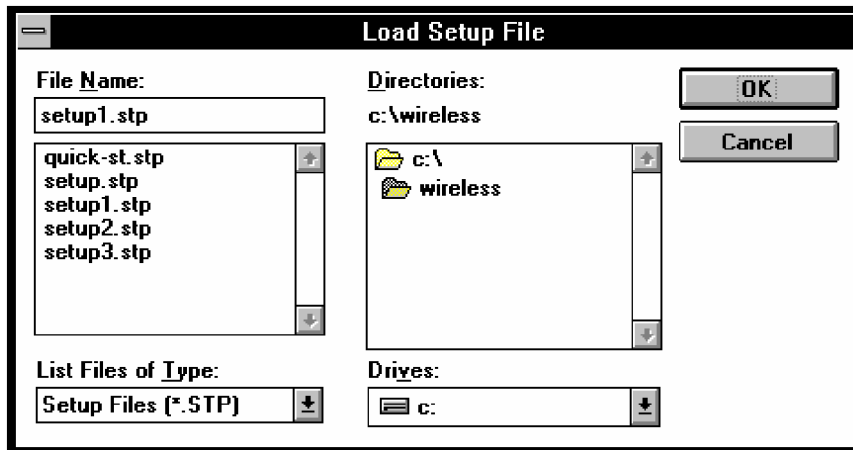
rs036s.tif

2. Select the Load Logger Setup... command from the Setup menu (shown below).



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Choose a setup file, e.g., `setup1.stp`, from the Load Setup File dialog box (shown below) as the destination for the Hydra configuration data. Click OK. If working with only the `setup.stp` file, choose it, and then immediately use the Save Logger Setup As... command to make a copy, e.g., `setup1.stp`. (Reminder: This procedure assumes you created a setup file with the communication parameters, as discussed in Chapter 2.)



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Following the convention introduced in Chapter 2, the file `setup.stp` contains all the communication parameters, while copies (`setup1.stp`, etc.) will also include the Hydra configurations entered in this procedure.

3. In the Main Window, click on the desired Hydra icon, e.g., Hydra (H1). Click the Edit Hydra Config... button to open the Hydra Configuration dialog box (see below).

**Hydra Configuration - Hydra 1**

**Measurement Rate**  
 Slow (High Res.)  
 Fast

**Temperature Units**  
 Celsius  
 Fahrenheit

**Scan Parameters**  
**Trigger Type:**  
Interval Scanning  
**Hydra Scan Memory:**  
All Scans  
Scan Interval (secs): 5  
 Wrap-Around Logging Mode

**Hydra Front Panel**  
**Monitor Channel:** None  
**Front Panel Lock:** Disable Locks

Open Thermocouple Detect     Totalizer Debounce

OK  
Cancel  
Help  
Communication...  
Channels...  
Data File...

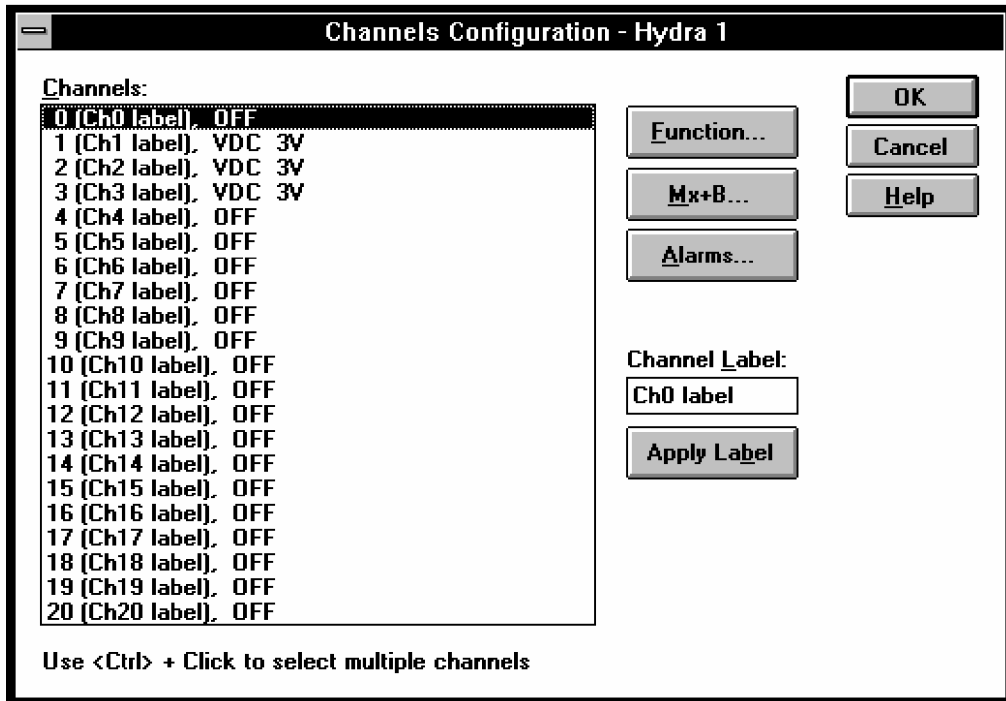
rs044s.bmp

Make the following general selections in the Hydra Configuration dialog box to suit your application (click Help, as required):

- **Measurement Rate.** Slow (high resolution) or Fast
- **Temperature Units.** Celsius or Fahrenheit
- **Scan Parameters.** Trigger Type, Hydra Scan Memory, Scan Interval (secs), and Wrap-Around Logging Mode.
- **Hydra Front Panel.** Monitor Channel and Front Panel Lock.
- **Open Thermocouple Detect.** Enable or disable.
- **Totalizer Debounce.** Enable or disable.

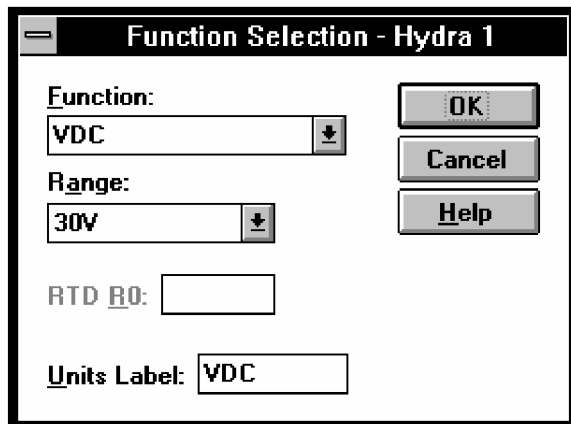


- Click the Channels... button to open the Channels Configuration dialog box (below). Configure this dialog box as described below. To configure multiple channels with the same configuration, select them using <Ctrl>.



Click the Function... button to select the function of each Hydra channel. The Function Selection dialog box (following) is shown with an example.

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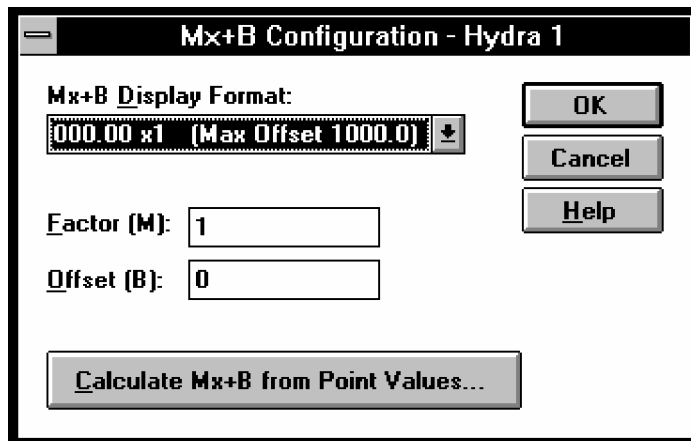


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The function selections are as follows. Click OK after making the selections.

- **Function.** Select from OFF, VDC, VAC, OHMS-2T, OHMS-4T, THERMOCOUPLE, RTD-2W, RTD-4W, and FREQ.
- **Range.** Select various ranges, depending on the Function.
- **Units Label.** Select a units label to reflect the measurement. This feature is often used with Mx+B scaling (see below).

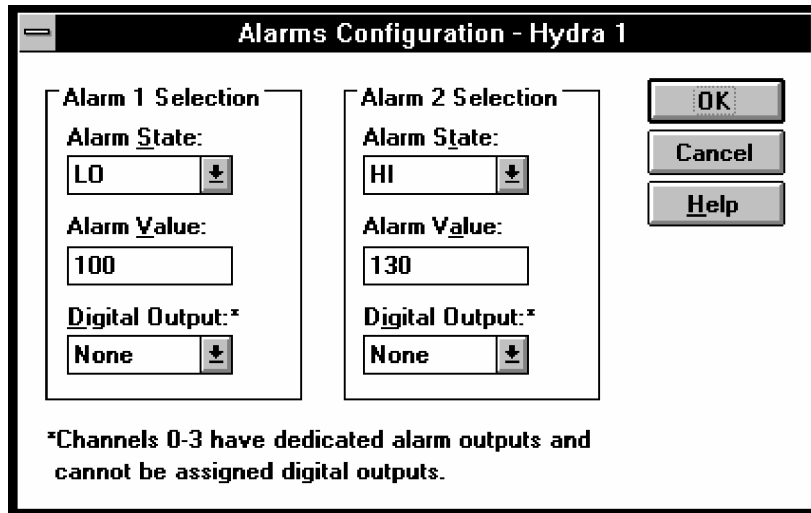
Click the Mx+B... button to configure the selected channels for Mx+B scaling. The Mx+B dialog box is shown below.



rs047s.bmp

- The Mx+B selections are as follows. Click OK after making the selections:
- **Mx+B Display Format.** Pull down the menu and select the display format, which also dictates a maximum offset range.
- **Factor (M).** Select a multiplier for the measurement from -0.000,000,000,000,000,1 to +99,999,999.
- **Offset (B).** Select an offset for the measurement from -999,999,999 to +999,999,999.
- **Calculate Mx+B from Point Values.** For automatic calculation and entering of the Mx+B values, plus the display format, click the Calculate Mx+B from Point Values... button. Enter the Input Range and Display Range values. Click OK.

Click the Alarms... button to configure the selected channel(s) for alarm settings. The Alarms Configuration dialog box is shown below, with an example of HI and LO alarm settings.



rs048s.bmp

- The Alarm selections (two alarms) are as follows. Click OK after making the selections.
- **Alarm State.** Choose from HI (High), LO (Low) or OFF.
- **Alarm Value.** Choose an alarm value consistent with the expected readings and alarm conditions.

- **Digital Output.** Associate a Hydra DIGITAL I/O line with an alarm output, less Channels 0 to 3, which have dedicated alarm outputs. When an alarm is active, the I/O line is set low.

Select the Channel Label for each of the channels configured above by selecting the desired channel, entering the label and selecting the Apply Label button. Examples are shown below.

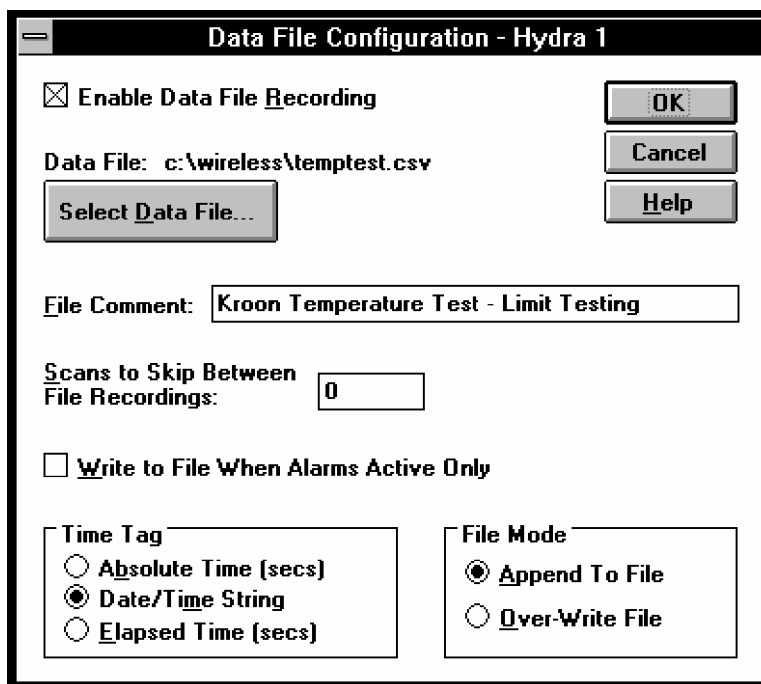
**Channels:**

0 (Line Voltage), VAC 150/300V
1 (Line Frequency), FREQ 900 Hz
2 (Power Supply A), VDC 30V
3 (Power Supply B), VDC 30V

rs049s.bmp

Click OK to return to the Hydra Configuration dialog box.

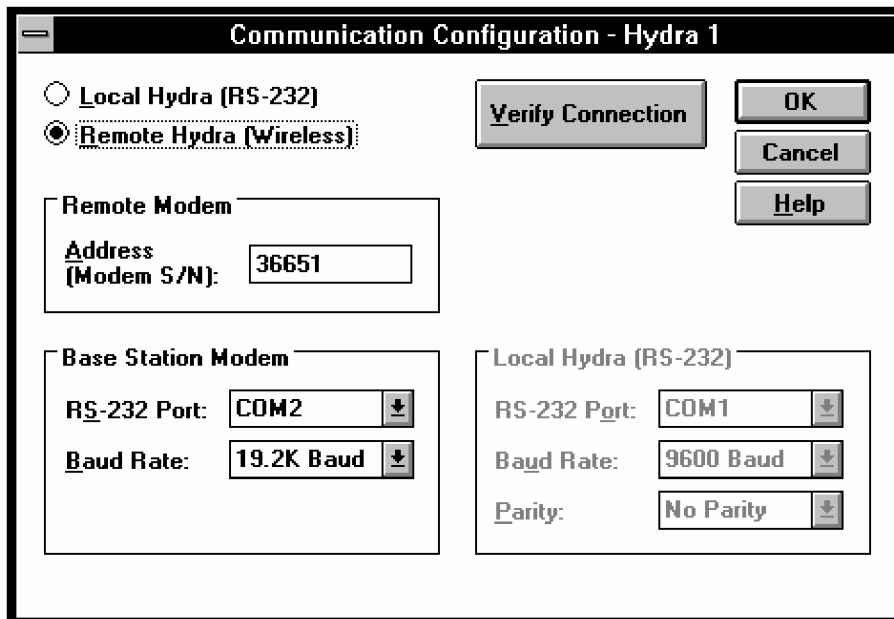
5. Click the Data File... button to open the Data File Configuration dialog box, shown below, with an example. Each Hydra has a separate data file.



rs050s.bmp

The Data File selections are as follows. Click OK after making the selections.

- **Enable Data File Recording.** Enable or disable.
  - **Data File.** Click the Select Data File... button and enter a file name, or if appending to a file, enter an existing file name.
  - **File Comment.** Enter a file comment, which appears in the data file header. (See "Processing the Data" later in this chapter.)
  - **Scans to Skip Between File Recordings.** Enter a number between 0 and 65535 of scans to skip between file recordings.
  - **Write to File When Alarms Active Only.** Enable or disable.
  - **Time Tag.** Choose Absolute Time (secs), Date/Time String, or Elapsed Time (secs).
  - **File Mode.** Choose Append to File or Over-Write File.
6. Click the Communications... button to open the Communications Configuration dialog box, shown below, with an example.



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The Communication Configuration selections are as follows. Click OK after making the selections.

- **Local Hydra (RS-232)/Remote Hydra (Wireless).** Click local or remote operation for the Hydra.

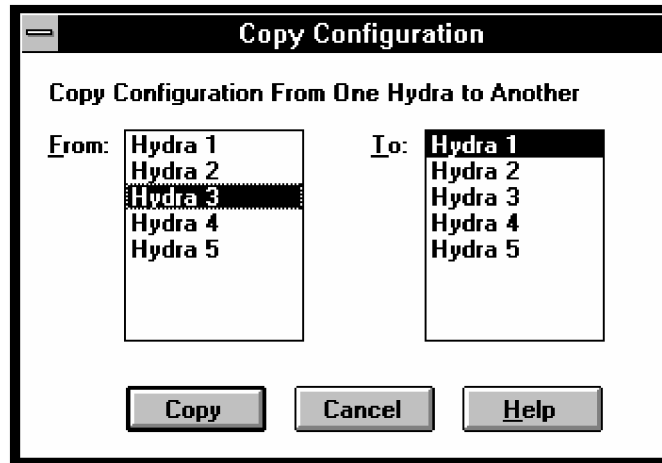
- **Remote Modem.** Enter the serial number of the Hydra Remote modem in the Address (Modem S/N) box.
  - **Base Station Modem.** Select the RS-232 port and Baud Rate of the Base Station COM port that connects to the Base Station wireless modem.
  - **Local Hydra (RS-232).** Select the RS-232 port, Baud Rate, and Parity for the RS-232 port that connects to the Local Hydra.
  - **Verify Connection.** Click to check the communications link.
7. Click OK in the Hydra Configuration dialog box to return to the Main Window. The Main Window summarizes the configuration you just entered for the selected Hydra. To name the Hydra something other than Hydra 1, Hydra 2, etc., select the Describe Hydra... command from the Setup menu and edit the Hydra Name and/or Description.
  8. Select the Save Logger Setup command from the Setup menu to save the configuration data.

The configuration data does not automatically appear at the Hydra. The configuration is sent to the Hydra either at the start of logging (discussed in "Logging Operations") or when downloading (discussed in "Downloading Configuration Data to a Hydra").

Repeat steps 3 through 7 to configure each Hydra.

**Copy Configuration Data Between Hydras****3-7.**

To copy a Hydra configuration to another Hydra, select the Copy Configuration.. command from the Setup menu. In the Copy Configuration dialog box, make From: and To: Hydra selections. Click Copy. All configuration parameters are copied except the data file configuration, communication configuration, and Hydra Name. The example below shows the Hydra 3 configuration will be copied to Hydra 1.



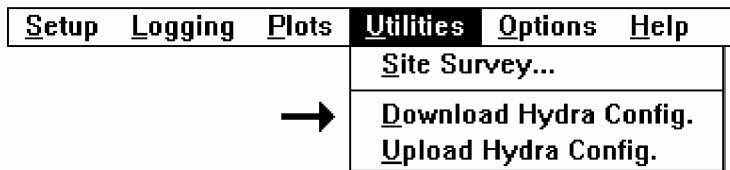
rs052s.bmp

**Downloading Configuration Data to a Hydra****3-8.**

The downloading feature sends configuration data from the Host Computer to a Hydra, configuring all the Hydra channels, alarms, Mx+B scaling, scan interval, etc. During logging operations, the default setting is for downloading to occur at the start of logging.

Complete the following procedure to download configuration data to a Hydra.

1. Click the Hydra icon in the Main Window for configuration data downloading. When downloading, it is this Hydra that receives the configuration data. If the displayed Hydra configuration is the configuration you want to download, proceed to Step 3; otherwise, continue to Step 2.
2. Create the configuration you want to download using the procedures in "Entering Hydra Configuration Data" above, or copy a configuration from another Hydra using "Copy Configuration Data Between Hydras" above.
3. Select the Download Hydra Config. command from the Utilities menu.



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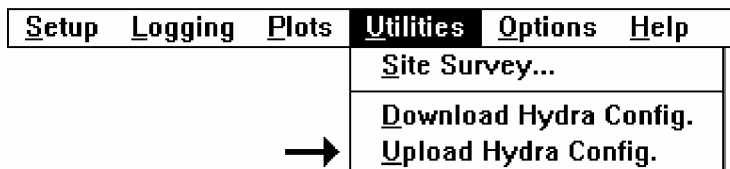
### Uploading Configuration Data from a Hydra

3-9.

The uploading feature retrieves configuration data from a Hydra, including all the channels, alarms, Mx+B scaling, scan interval, etc. (Note: Model 2635A using dc-volt scales 90 mV and 900 mV uploads these scales as Auto.)

Complete the following procedure to upload configuration data from a Hydra.

1. Click the Hydra icon in the Main Window for configuration data uploading. When uploading, this Hydra provides the configuration data.
2. Select Upload Hydra Config. from the Utilities menu (shown below).



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3. Update channel labels and unit labels for the new uploaded configuration.
4. To save this configuration, select the Save Logger Setup command from the Setup menu.
5. To copy this configuration to another Hydra, refer to the previous heading "Copy Configuration Data Between Hydras."

### Printing Configuration Data

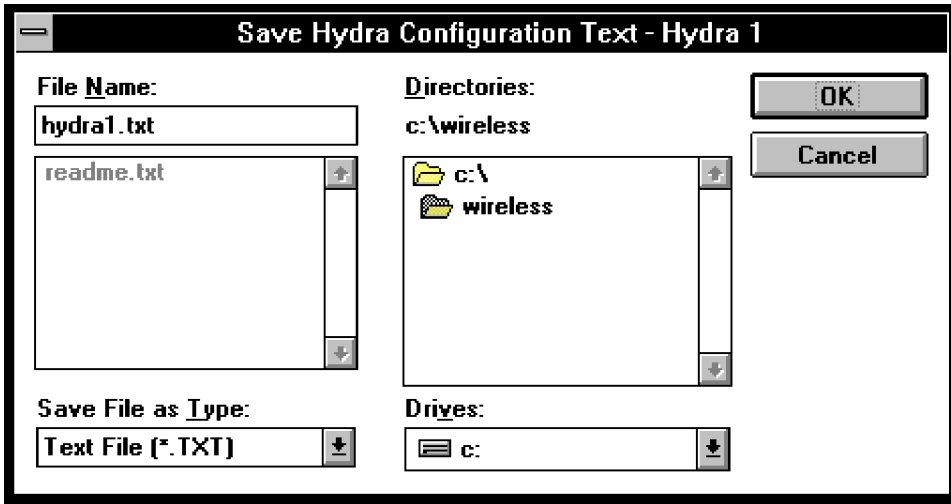
3-10.

You can save Hydra configuration data as a text file, e.g., `hydra1.txt`. Like any text file, it can be opened in a word processing application or any text editor and then printed.

Complete the following procedure to print a configuration data record.

1. Click the Hydra icon in the Main Window for configuration data printing.
2. Select the Save Hydra Config. Text... command from the Setup menu, opening the Save Hydra Configuration Text dialog box (see below).





rs055s.bmp

1. Enter a text file name in the File Name box, e.g., `hydra1.txt`. Change the Directories, Drives, and Save File As Type, as desired. Click OK.
2. Open the text file in any text editor or word processing application.
3. To use the Windows Notepad Accessory, open Notepad from the Accessories group of Program Manager. Select the Open... command from the File menu. In the File Name box, enter the path and name of the text file saved in step 3 above, for example, `c:\wireless\hydra1.txt`. Click OK.

To print the file, select the Print command from the File menu. See the following printout example for the Hydra default settings.

HYDRA1.TXT

HYDRA CONFIGURATION - Hydra 1

Hydra Name: Hydra 1  
 Description: (None)  
 Trigger Type: Interval Scanning  
 Scan Interval: 5 sec  
 Logging Mode: Wrap-Around  
 Scan Memory: All Scans  
 Communication: COM1  
 Data File: None  
 Scans Skipped: 0  
 File Mode: Append  
 Monitor Chan: None  
 Front Panel Lock: Disable Locks  
 Meas Rate: Slow  
 Temp Units: Celsius  
 OTC Detect: Yes  
 Total Debounce: Yes

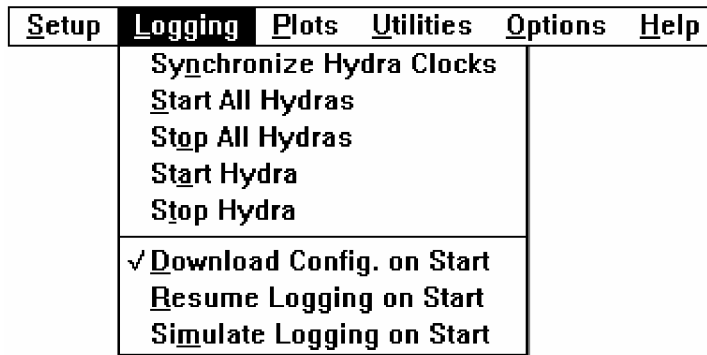
Chan	Function	Range	Alarm 1	Alarm 2	Mx+B	Units	Label
0	OFF						
1	VDC	3V	OFF	OFF	OFF	VDC	Ch1 label
2	VDC	3V	OFF	OFF	OFF	VDC	Ch2 label
3	VDC	3V	OFF	OFF	OFF	VDC	Ch3 label
4	OFF						
5	OFF						
6	OFF						
7	OFF						
8	OFF						
9	OFF						
10	OFF						
11	OFF						
12	OFF						
13	OFF						
14	OFF						
15	OFF						
16	OFF						
17	OFF						
18	OFF						
19	OFF						
20	OFF						

## Logging Operations

**3-11.**

Logging operations consist of synchronizing Hydra clocks, starting and stopping the Hydras, either as a group or individually, and monitoring the collection, display, and values of the measurement data. The information in this chapter assumes Hydras are configured and ready for use. (Refer to the information covered earlier under "Hydra Configuration Procedures.")

Logging commands are in the Logging menu of the Main Window (see below).



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## Starting and Stopping the Hydras

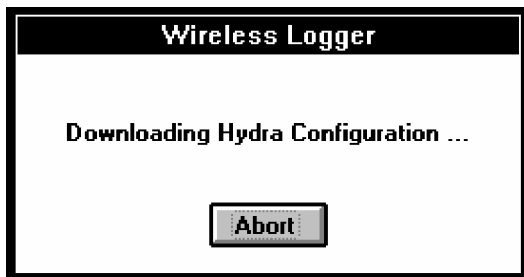
**3-12.**

Starting a Hydra begins the data collection, while stopping the Hydra ends data collection. Scan records are transferred from the Hydras to the Host Computer over the wireless modem link (or RS-232 cable for a Local Hydra).

Complete the following procedure to start and stop the Hydras.

1. Select the Synchronize Hydra Clocks command from the Logging menu. This synchronizes all the Hydra clocks with each other and to within one minute of the Host Computer system time. This is important for time tag data correlation in plotting and data processing.
2. Select one of the following starting modes from the Logging menu:
  - **Download Config. on Start** [default]. Hydra configurations are sent from the Host to the Hydras when the Hydras are started.
  - **Resume Logging on Start**. Hydra configurations are retrieved from the Hydras when the Hydras are started, resuming operations. (Note: Model 2635A using dc-volt scales 90 mV and 900 mV uploads these scales as Auto.)
  - **Simulate Logging on Start**. There is no Hydra activity. Instead, the software generates pseudo data for training and testing.

3. Click the Start Hydra button from the Main Window button bar, or, if starting all Hydras at once, the Start All Hydras command from the Logging menu. Verify the ...configuration... message below (assuming the default setting from step 2). If there are communication problems, an error message is reported. (See Appendix C "Error Messages.")

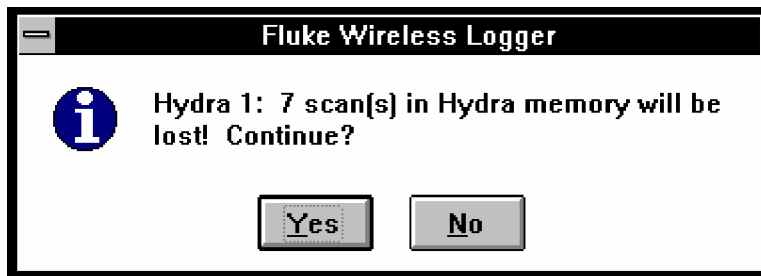


4. Verify the start of scanning with the Starting Hydra Logging message and a change in the Hydra icon with the appending of LOG (below).



The Hydras are now collecting data. To stop scanning, proceed to step 5.

If a Hydra being started holds old measurement data in its scan memory, a warning message is displayed (below) before logging is started. If you select Yes to continue, the measurement data will be cleared. To retrieve this data, select No and return to step 2. Select the Resume Logging on Start command and repeat steps 3 and 4.



5. Click the Stop Hydra button in the Main Window button bar, or, if stopping all Hydras at once, the Stop All Hydras command from the Logging menu. Verify the message Stopping Hydra Logging...

If the Hydra has measurement data remaining in scan memory, the Reading Remaining Hydra Scans... message appears (below). If you click the Abort button to terminate, the next time the Hydra is started using the Download Config. On Start mode, the warning message in step 4 appears.

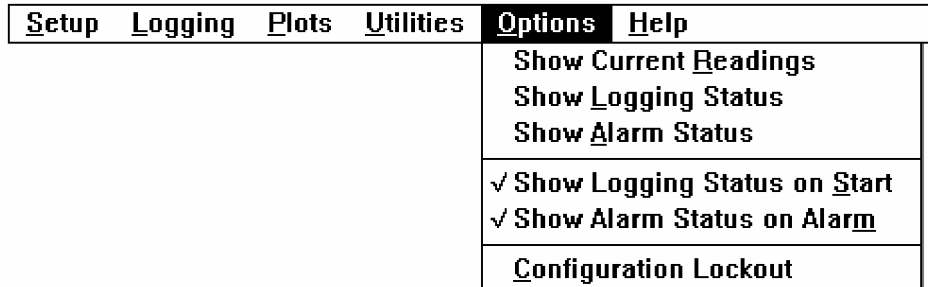


rs061s.bmp

**Monitoring Performance**

**3-13.**

- The Options menu from the Main Window (below), provides performance monitoring options during logging. The options (discussed below) place a dialog window in the application.



rs062s.bmp

- **Show Current Readings.** Displays the channel measurements and the Digital I/O status (decimal 0 to 255 for lines 7 to 0), the Alarm status (decimal 0 to 15 for lines 3 to 0), and the Totalizer count for the selected Hydra. An example is shown below.

Readings - Hydra 1		
Chan	Reading	
0	+75.6385	Degrees
1	+75.8149	Degrees
2	+75.8690	Degrees
3	+78.5201	Degrees
4	+82.1313	Degrees
5	+77.0262	Degrees
6	+86.2061	Degrees
7	+78.3038	Degrees
8	+76.9108	Degrees
9	+76.3917	Degrees
10	+80.1121	Degrees
11		
12		
13		
14		
15		
16		
17		
18		
19		
20		
DO	255	
AO	15	
Total	0	

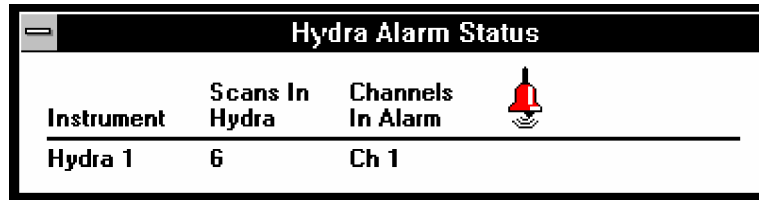
rs065s.bmp


- Show Logging Status.** Summarizes the communications link. Excessive Comm Errors indicate marginal communications between the Base Station and Remote. If the Scans In Hydra increase over time, scans are being collected in the Hydra faster than they can be retrieved. In this situation, stop logging and set the scan interval to a larger value. Enable Show Logging Status on Start from the Options menu [default] for automatic display when starting Hydra logging.

Hydra Logging Status				
Instrument	Scans In Hydra	Retrieved Scans	Comm Errors	Last Error
Hydra 1	0	41	0	

rs063s.bmp

- Show Alarm Status.** Summarizes the alarm status. The Alarm Bell appears when a channel is in alarm and all channels in alarm are listed. Enable Show Alarm Status on Alarm from the Options menu [default] for automatic display when a channel transitions into alarm.



Instrument	Scans In Hydra	Channels In Alarm	
Hydra 1	6	Ch 1	

rs054s.bmp

- **Configuration Lockout.** This disables configuration-related commands in the Main Window Setup menu, including Create New Hydra, Delete Hydra, Describe Hydra..., Edit Hydra Configuration (including the button with the same function) and Copy Hydra Configuration...

### Optimizing Performance

3-14.

The rate at which measurement data is transferred from the Remotes to the Base Station is optimized by the following:

- **Minimize the plot.** When using the Trend Plot feature, minimize the plot window to an icon and bring the plot up only when viewing the data. (See "Starting and Stopping Trend Plots" step 3.)
- **Disable the "Screen Saver" feature.** Automatic screen savers may slow system throughput. Disable them when possible. (See the Windows Control Panel.)
- **Disable Recording to Data Files.** If you do not want to save data to a data file, be sure recording is disabled. (See "Editing Hydra Configuration Data," step 5.)
- **Save Only Alarm Data.** Saving data only when a channel is in alarm [Model 2625A only] increases system throughput as non-alarm data is not transferred. (See "Editing Hydra Configuration Data," step 5.)
- **Avoid Radio Channel Sharing.** If networks share a single radio channel or adjacent channels, maximize the distance between the networks. Radio interference results in increased transmission errors, slowing down system throughput. (See "Configuring a Base Station Modem," step 11.)
- **Avoid Unnecessarily Short Scan Intervals.** Short scan intervals increase the amount of measurement data for transfer over the communications link. To speed system throughput, choose the longest possible interval. (See "Editing Hydra Configuration Data," step 3.)

### **Simulated Logging**

**3-15.**

Simulated logging is enabled by selecting the Simulate Logging on Start command from the Logging menu. A Hydra that is logging in the simulated mode has SIM appearing in the icon (below).



rs066s.bmp

### **Using Dynamic Data Exchange (DDE)**

**3-16.**

Dynamic Data Exchange (DDE) links Wireless Logger for Windows to other applications running under Windows. To use DDE, open the DDE client application and perform any setup necessary to access external data via DDE. Refer to Appendix D for information on DDE.

### **Using Site Survey**

**3-17.**

The Site Survey feature is used to test the communications link between the Base Station and Remote through use of the Hydra Totalizer function. Refer to "Using the Site Survey Feature to Verify Operations" in Chapter 2.

### **Processing the Data**

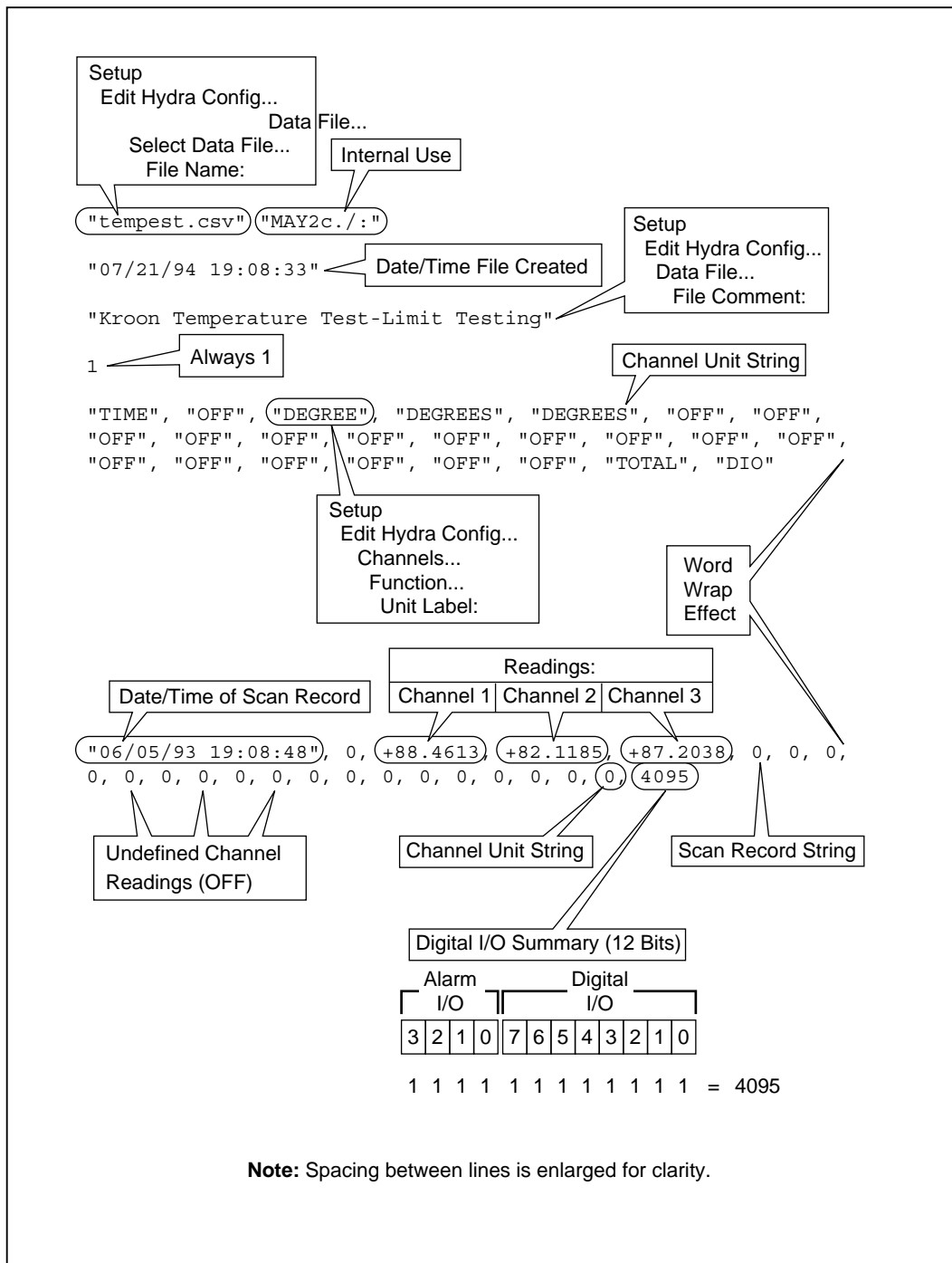
**3-18.**

Data files created during logging are saved in comma-separated-variable (csv) format in American Standard Code for Information Interchange (ASCII) text characters. Virtually all word processing, spreadsheet, and data management applications open, display, and print ASCII text files.

To combine data files into a single file, or to "filter" data files for specific channels, measurement range, date/time, etc., refer to Chapter 5 "Pruning and Grafting Utility." Refer to Figure 3-1 for an example of the data file formatting. To process the data files, refer to one of the following topics:

- **Viewing and Printing Data Files.** How to view and print the data files using the Windows Write Accessory.
- **Data Files and Other Applications.** How to view and print the data files using other Windows applications, in particular, spreadsheets.





rs067f.eps

**Figure 3-1. Data File Formatting**

### **Viewing and Printing Data Files**

**3-19.**

You can view and print data files in their original csv format with the Windows Write or Notepad Accessory, or any word-processing application that opens text files. The procedure below assumes the use of the Write Accessory. The data is printed in strings, without formatting. Add your own formatting, as desired.

1. Open Write from the Accessories group of Program Manager.
2. Select the Open... command from the File menu. In the File Name box, enter the path and name of the desired data file, for example, `c:\wireless\temptest.csv`. Click OK. Select No Conversion in response to the "Do you want to convert this file to Write format?" to maintain this as a text file.
3. Verify the text file appears in the format shown in Figure 3-1.
4. To print the file, select the Print... command from the File menu. After printing or viewing, select the Exit command from the File menu.

### **Data Files and Other Applications**

**3-20.**

Viewing and printing *Wireless Logger for Windows* data files is enhanced by processing the data in spreadsheet programs, which presents the data in columns. Spreadsheets can also present the data in graphs and plots. Complete the following procedure to view and print a data file in spreadsheet format.

1. Open the spreadsheet application in Program Manager.
2. There are two general methods for opening files. Select one of the methods below that suits your spreadsheet application.
  - Select the Open... command from the File menu. In the File Name box, type the complete path to the *Wireless Logger for Windows* data file you wish to display, for example, `c:\wireless\temptest.csv`.
  - Select the Import From command from the File menu. In the File Name box, type the complete path to the *Wireless Logger for Windows* data file you wish to display, for example, `c:\wireless\temptest.csv`.
3. Adjust the spreadsheet column width and other formatting variables to display the data in the desired format.

Print the data, as desired. (Refer to your spreadsheet documentation.)

### **Trend Plots**

**3-21.**

Trend Plots provide a graphical indication of the measurement trend during Hydra scanning. Eight separate Trend Plot windows may be running at one time and each plot displays up to eight traces from any mix of Hydras and Hydra channels. An example is shown in Figure 3-2. Plot images may be saved using Windows

clipboard (\*.clp) and Paintbrush (\*.bmp) accessories, and pasted into any application that accepts images in bitmap format. Plots may be played back from a data file using other Windows applications such as a spreadsheet or plotting package.

For customization of plot traces, line types include eight symbols, eight colors, and six line styles.

The following topics are covered in this section:

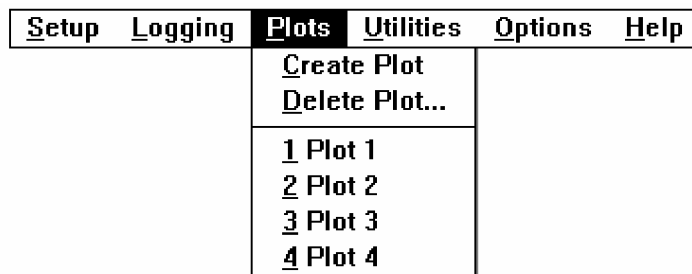
- Creating and Configuring a Plot.
- Starting and Stopping Trend Plots.
- Saving and Printing Trend Plots.
- Getting the Right Trend Plot Look.
- Deleting Trend Plots.
- Creating Plots and Graphs from a Data File.

**Creating and Configuring a Plot**

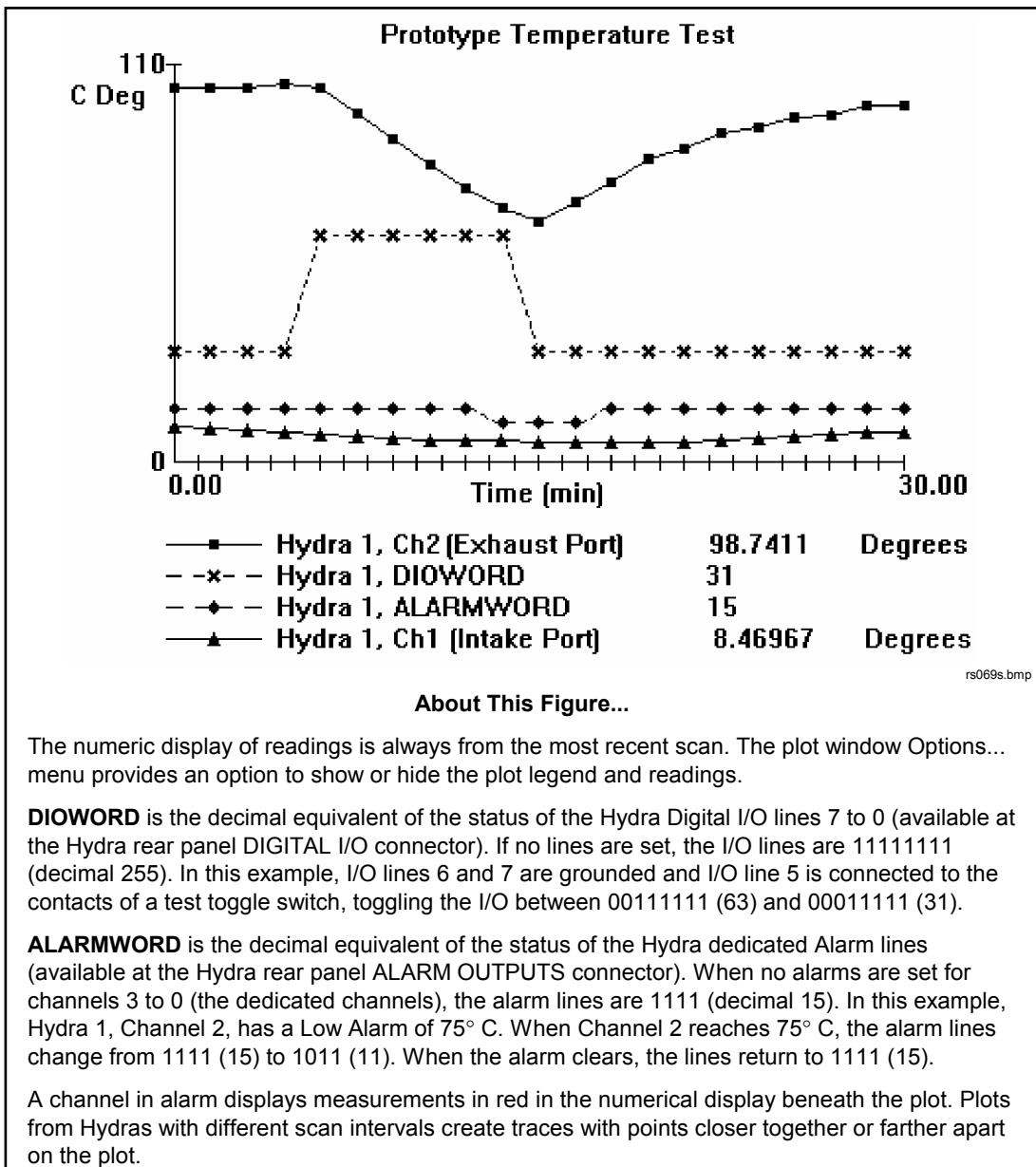
**3-22.**

Complete the procedure below to create and configure a Trend Plot. A Trend Plot can be created at any time, even during data collection.

1. Select the Plots menu from the Main Window. This opens a listing of the existing plots (eight plots maximum). The example below shows four plots, Plot 1 through Plot 4, already exist, and the plot created next will be Plot 5. Plot 1 through Plot 4 are the default plot titles. A plot title is assigned as shown in Figure 3-3.



rs068s.bmp



**About This Figure...**

The numeric display of readings is always from the most recent scan. The plot window Options... menu provides an option to show or hide the plot legend and readings.

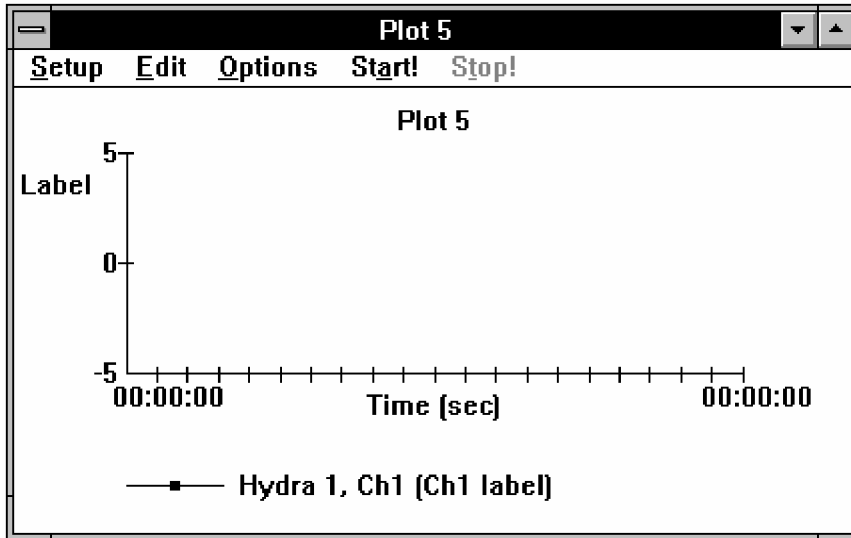
**DIOWORD** is the decimal equivalent of the status of the Hydra Digital I/O lines 7 to 0 (available at the Hydra rear panel DIGITAL I/O connector). If no lines are set, the I/O lines are 11111111 (decimal 255). In this example, I/O lines 6 and 7 are grounded and I/O line 5 is connected to the contacts of a test toggle switch, toggling the I/O between 00111111 (63) and 00011111 (31).

**ALARMWORD** is the decimal equivalent of the status of the Hydra dedicated Alarm lines (available at the Hydra rear panel ALARM OUTPUTS connector). When no alarms are set for channels 3 to 0 (the dedicated channels), the alarm lines are 1111 (decimal 15). In this example, Hydra 1, Channel 2, has a Low Alarm of 75° C. When Channel 2 reaches 75° C, the alarm lines change from 1111 (15) to 1011 (11). When the alarm clears, the lines return to 1111 (15).

A channel in alarm displays measurements in red in the numerical display beneath the plot. Plots from Hydras with different scan intervals create traces with points closer together or farther apart on the plot.

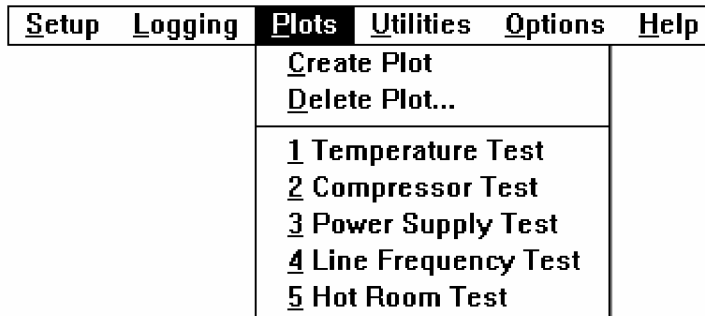
**Figure 3-2. Typical Trend Plot**

2. Click on Create Plot to create a new plot. This creates a plot with default settings, as shown below. In this example, Plot 5 was created.

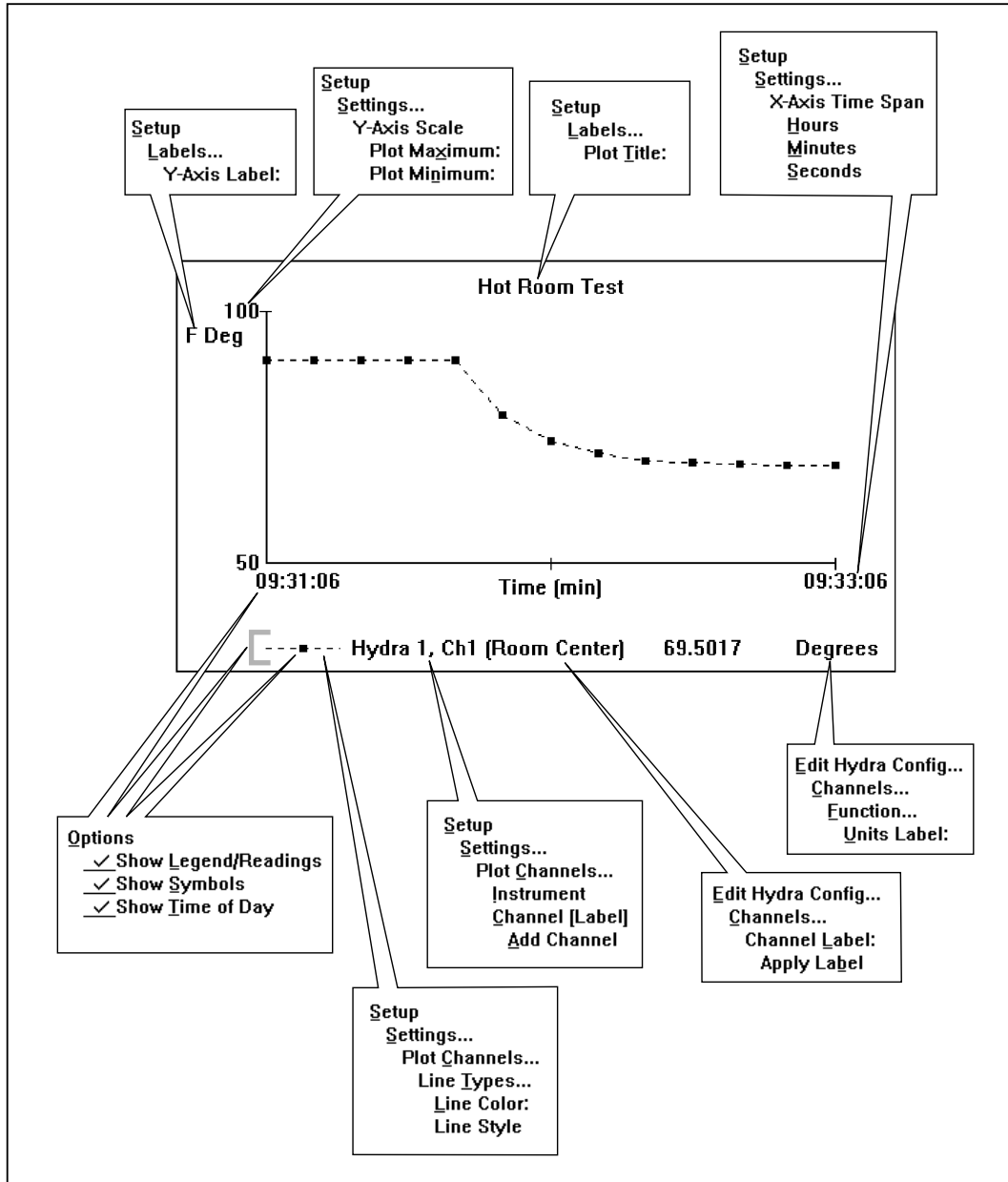


rs070s.bmp

Customize the plot as shown by example in Figure 3-3. The readings in the legend appear only when the plot has been started. All selections, except for the channel label and units label, are made from the Plot window menus. After plots are titled, they might appear in the plot list as shown below.



rs071s.bmp



rs072c.eps

Figure 3-3. Configuring a Trend Plot

**Starting and Stopping Trend Plots****3-23.**

Complete the procedure below to start and stop a Trend Plot. Trend Plots operate independently from the Start Hydra and Stop Hydra commands made in the Main Window. When you start a Trend Plot, which always clears previous traces on the plot, it continues to run until you command it to stop. Trend Plots can be minimized to an icon by clicking the Minimize button (down arrow) in the top-right corner of the plot window. Plot images can be captured at any time and printed out (see "Printing Trend Plots" below).

1. Select the desired plot from the plot list in the Plots menu of the Main Window.
2. At the top of the plots window, click Start! to start the plot. If a full-screen display is desired, click on the Maximize button (up arrow) at the top-right corner of the plot window.

You can turn the Show Symbols feature on and off at any time from the Options menu. Each symbol represents a data point, and data points are connected with the selected Line Type (see Figure 3-3).

To save the plot image at any time, select Copy Image from the Edit menu. This copies the plot into the Windows Clipboard (see "Printing Trend Plots" below). When the Edit menu is open, the plot pauses (no data is lost).

Data will not appear on the plot unless the Hydras associated with the plot channels have been started. The Hydras may be started before or after starting the plot.

3. To close the plot, double click on the Control-menu box at the at the top-left corner of the plot window, or select Close Plot from the plot Setup menu. Any plotting that is in progress will continue. To completely remove a plot, you must use the Delete Plot command from the Plots menu of the Main Window.
4. To retrieve a plot after it has been closed, select the plot title from the Plots menu of the Main Window.
5. To stop a plot, retrieve the plot (see step 4) and click the Stop! button.

To save the plot image, click Edit and then Copy Image. This saves the plot in the Windows Clipboard. Be sure to process the graphic as soon as possible because any other use of the Clipboard overwrites the graphic.

If Start! is clicked again, the plot clears and begins.

6. To clear the plot from the screen, select Close Plot from the plot Setup menu.

**Saving and Printing Trend Plots****3-24.**

The plot image in the Clipboard may be pasted immediately into another application or saved and recalled for processing at a later time.

Complete the procedure below to save, recall, and print a trend plot image using Windows.

***Saving a Trend Plot Image*** **3-25.**

1. While in a plot window, select Copy Image from the Edit menu. The plot image is saved in the Windows Clipboard feature.
2. Open Clipboard Viewer from the Main group of Program Manager.
3. Select Save As... from the File menu. In the File Name box, select a path and name, e.g., C : \WIRELESS\PLOT22 . CLP. Click OK.

***Recalling a Trend Plot Image*** **3-26.**

1. Open Clipboard Viewer from the Main group of Program Manager.
2. Select Open... from the File menu. In the File Name: box, select a path and name, e.g., C : \WIRELESS\PLOT22 . CLP. Click OK.
3. The recalled image in Clipboard may now be pasted into applications and accessories that accept graphics in bitmap format.

***Printing a Trend Plot Image*** **3-27.**

1. Place the desired Trend Plot image in the Clipboard (see above).
2. Open Paintbrush from the Accessories group of Program Manager.
3. Select Paste from the Edit menu. If the Paintbrush screen is too small for the paste, select the Image Attributes... command from the Options menu to resize the screen, then repaste the image. (See the Windows documentation for instructions on using Paintbrush.)

Trend Plot images can be enhanced using the Paintbrush tools. For example, adding text, grid lines, and comments. An example is shown in Figure 3-4.

4. Select Print... from the File menu to print the image.
5. To save the image, select Save As... from the File menu. Select a path and name, e.g., C : \WIRELESS\PLOT22 . BMP. Click OK.



**Getting the Right Trend Plot Look****3-28.**

A Trend Plot data point is connected to the next data point with the selected Line Type, and marked with a Symbol (if selected) (see Figure 3-3). There are eight different symbols, one for each of the eight plot traces (below).

- Hydra 1, Ch1 [Ch1 label]
- \*— Hydra 1, Ch2 [Ch2 label]
- ◆— Hydra 1, Ch3 [Ch3 label]
- ▲— Hydra 1, Ch4 [Ch4 label]
- Hydra 1, Ch5 [Ch5 label]
- ★— Hydra 1, Ch6 [Ch6 label]
- ▼— Hydra 1, Ch7 [Ch7 label]
- ◆— Hydra 1, Ch8 [Ch8 label]

rs073s.bmp

When a Trend Plot time span is selected in the Plot Settings dialog box, the minimum Hydra Scan Interval for a full-scale plot is calculated and displayed (see below). For example, a plot time span of 10 hours calculates a minimum recommended Hydra scan interval of 73 seconds. Typical plot characteristics are shown in Figures 3-5 and 3-6.

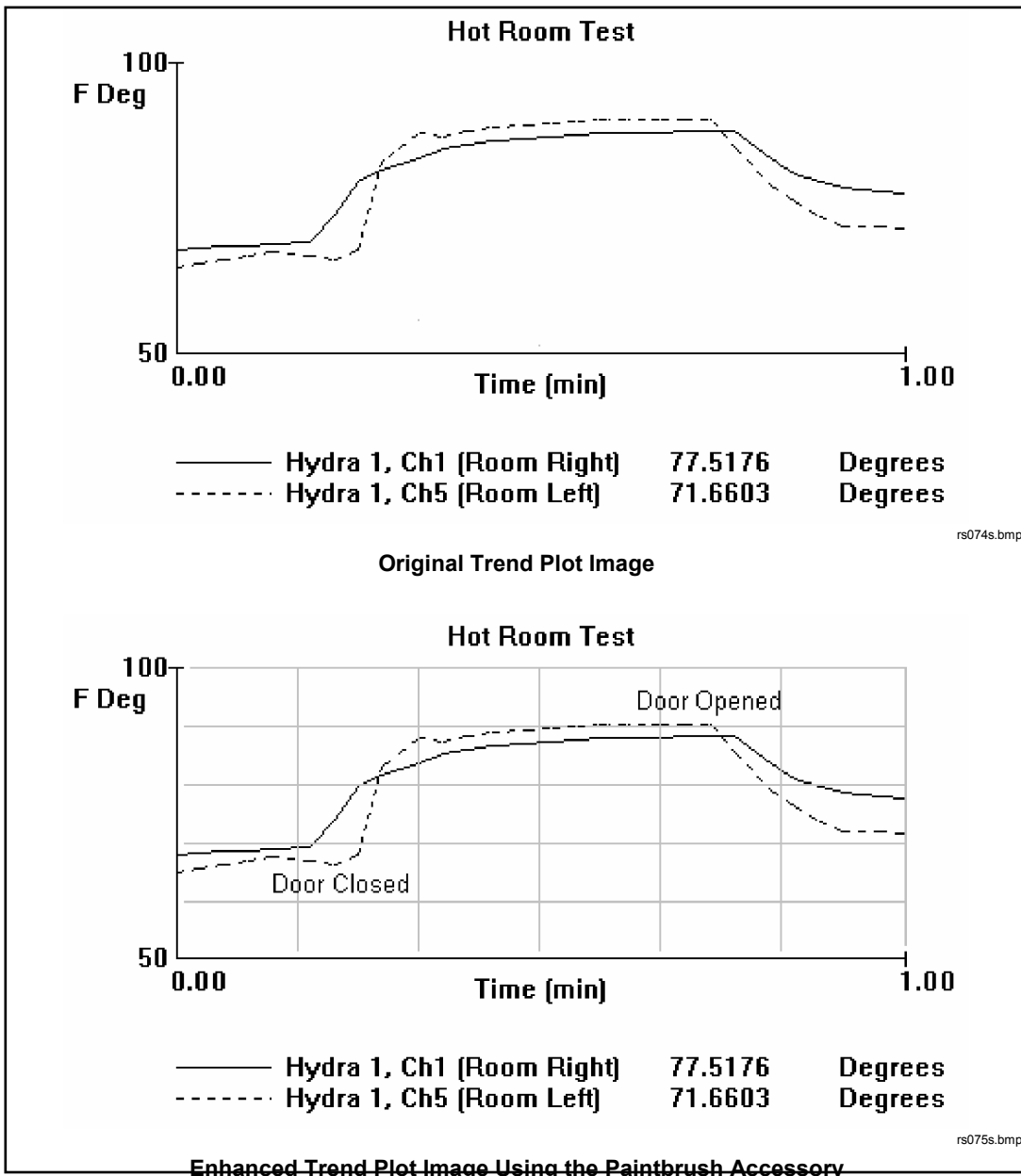


Figure 3-4. Printing Trend Plots

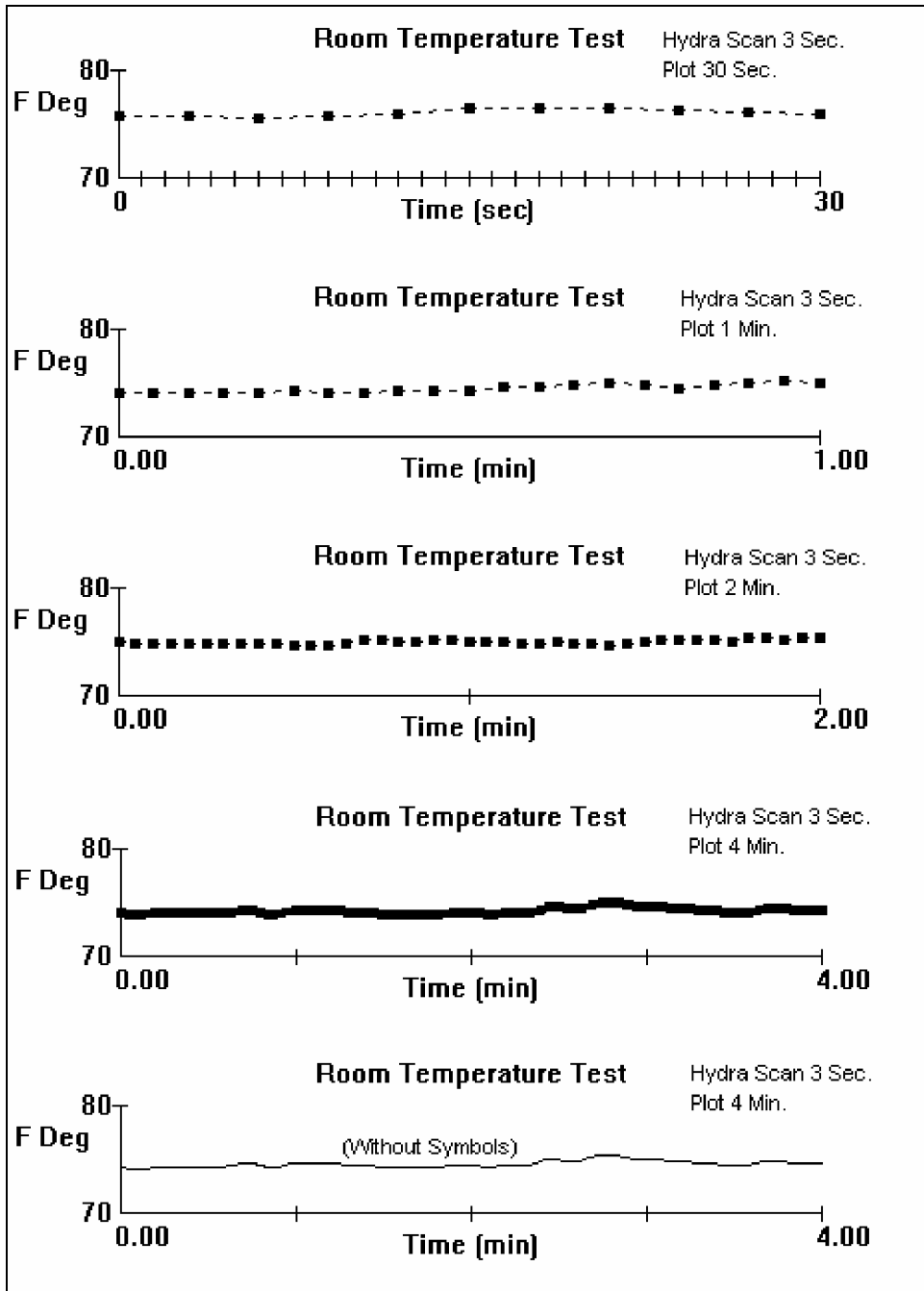
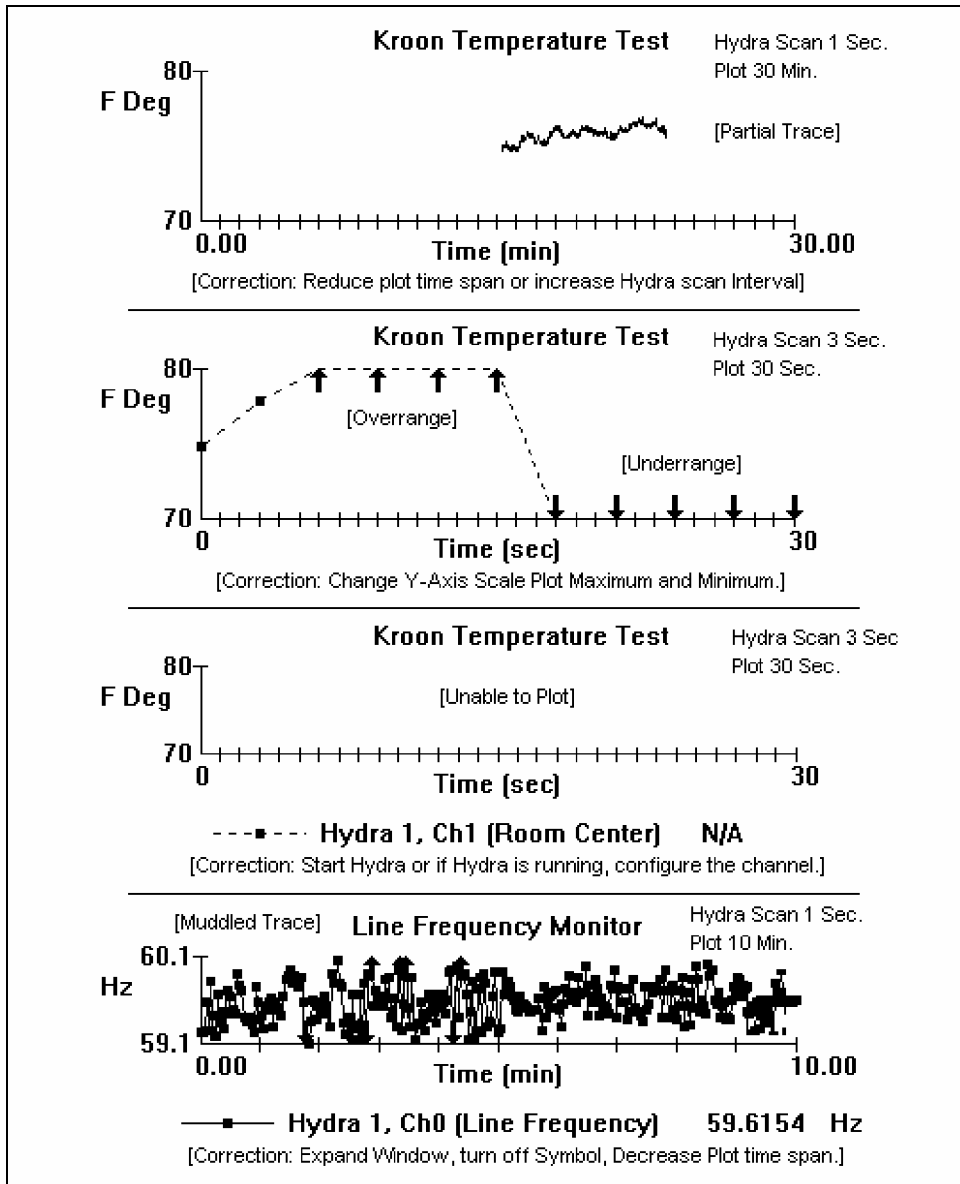


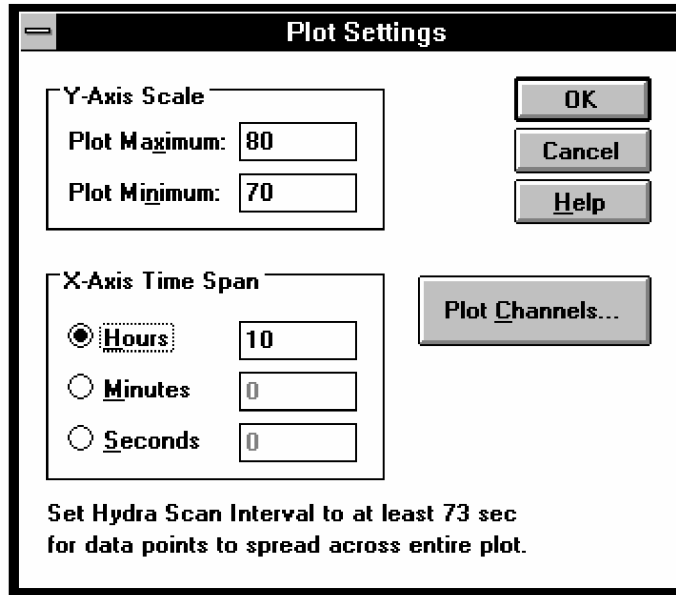
Figure 3-5. Trend Plot Characteristics

rs076s.bmp



rs077s.bmp

**Figure 3-6. Troubleshooting Trend Plots**



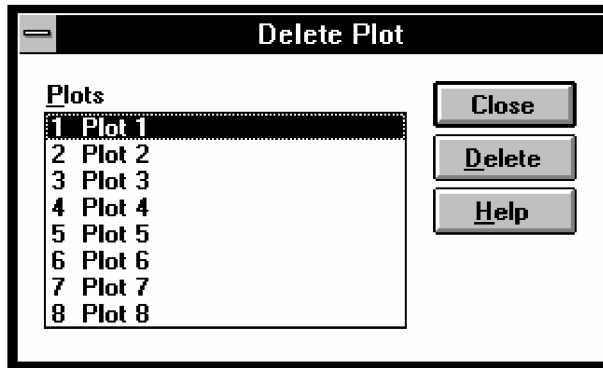
rs078s.bmp

### **Deleting Trend Plots**

**3-29.**

Complete the procedure below to delete a Trend Plot.

1. Select the Delete Plot command from the Plots menu of the Main Window.
2. Select the title of the plot to delete, then click Delete (see below). Respond to the Delete Anyway? message with OK. Repeat for each plot to be deleted.
3. Click on Close to return to the Main Window.



rs079s.bmp

### Creating Plots and Graphs from a Data File

3-30.

You can create a plot or graph of a data file by using most spreadsheet applications. The procedure that follows is general and should be adapted to whatever spreadsheet program you are using.

Complete the following procedure to create a plot or graph from a data file.

1. Open the spreadsheet application from Program Manager.
2. There are two general methods for opening files. Select one of the methods below that suits your spreadsheet application.
  - Select the Open... command from the File menu. In the File Name box, type the complete path to the *Wireless Logger for Windows* data file you wish to display, for example, `c:\wireless\temptest.csv`.
  - Select the Import From command from the File menu. In the File Name box, type the complete path to the *Wireless Logger for Windows* data file you wish to display, for example, `c:\wireless\temptest.csv`.
3. Adjust the spreadsheet column width and other formatting variables to display the data in the desired format.
4. Highlight the cells you wish to plot or graph. Include the far-left column containing Hydra time stamps to plot data versus time.
5. From the spreadsheet toolbar or menu, open the graph/plot utility.
6. Open a plot/graph window in the spreadsheet to display the plot/graph.
7. Select the desired plot or graph format, and enter titles, axis labels and other formatting features, as desired.
8. Print the plot/graph from the spreadsheet or copy and paste it into word processing, Paintbrush accessory, Clipboard accessory, or any application that accepts images in bitmap format.

# **Chapter 4**

## **Wireless Logger for Windows**

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## Introduction

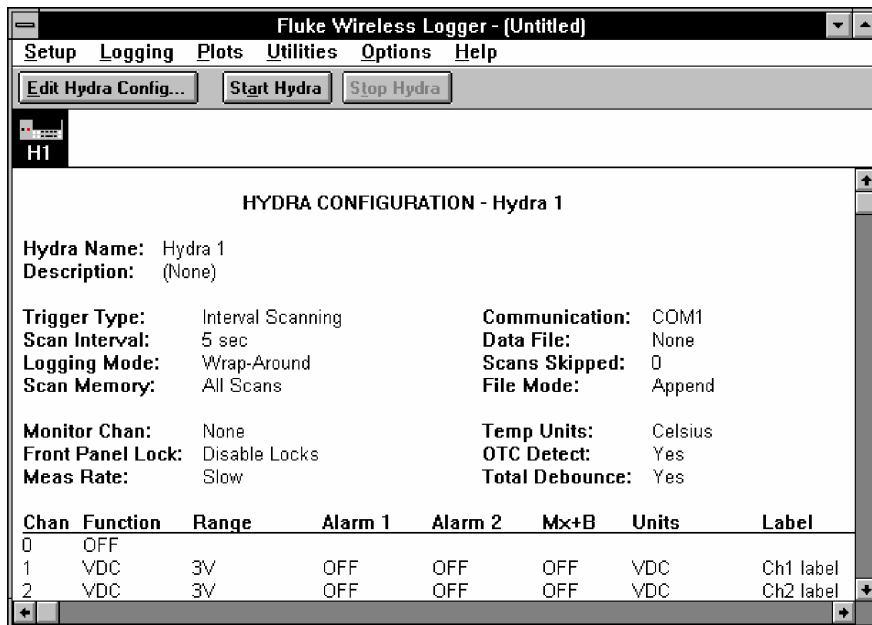
4-1.

This chapter is a reference guide to the dialog boxes and menus of *Wireless Logger for Windows* software. Each dialog box contains various types of controls for performing functions, selecting parameters, and entering file names. Press the **F1**-Help key, or select the Help button in the current dialog box for specific information about an operation.

## Main Window

4-2.

The Main Window (below) is displayed whenever the *Wireless Logger for Windows* application is selected from the Windows Program Manager. The Main Window provides a menu bar at the top, buttons for quick access to three often-used Main Window items, a Hydra selection menu bar just below the buttons, and a Hydra configuration display area.



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The menu bar across the top of the Main Window allows you to select *Wireless Logger for Windows* menu commands for setting up the Hydra configuration, starting scanning and data collection, setting up trend plots, uploading and

downloading Hydra configuration, showing status windows, locking out configuration changes, and displaying help.

To speed operations, the button bar (located below the menu bar) contains three commonly selected functions. These functions allow you to quickly edit the Hydra configuration, and start and stop the selected Hydra.

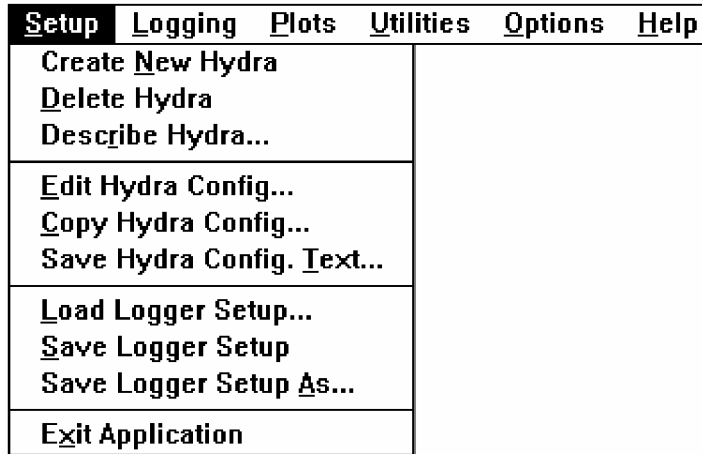
The Hydra selection icon bar contains an icon for each Hydra created using the Create New Hydra command from the Setup menu. The selected Hydra is highlighted. The information contained in the Hydra configuration display area applies to the selected Hydra in the icon bar. Any parameters that are set using the menu bar and the button bar apply to the selected Hydra.

The Hydra configuration display summarizes the Hydra configuration associated with the Hydra that is selected in the Hydra-selection icon bar. To change any of the configuration parameters shown, use the menus and dialog boxes provided in the main menu bar and the button bar. Select the Describe Hydra... command from the Setup menu to change the name and description of the selected Hydra. Use the Hydra Configuration dialog box (Setup Edit Hydra Config... menu or the Edit Hydra Config... button) to change the settings for Trigger Type, Scan Interval, Logging Mode, Scan Memory, Monitor Chan, Front Panel Lock, Meas Rate, Temp Units, OTC Detect, and Total Debounce. Use the Communication Configuration dialog box (Setup Edit Hydra Config... Communication...) to change the Communication parameters. Use the Data File Configuration dialog box (Setup Edit Hydra Config... Data File...) to change the settings for Data File, Scans Skipped, and File Mode. Use the Channels Configuration dialog box (Setup Edit Hydra Config... Channels) to set the channel definitions (the channels are shown at the bottom of the Hydra configuration display area). The contents of the menus and dialog boxes of the menu system are described in the following paragraphs.

## **Setup Hydra Configuration**

**4-3.**

The Setup menu (below) contains commands to create new Hydras in the Main Window, delete Hydras from the Main Window, describe the Hydra, edit the configurations of each of the attached Hydras, and copy and save various configurations and setups. All configuration related dialog boxes include the associated Hydra number in the caption of the dialog, for example "Channel Configuration (Hydra 1)." All menu command followed by "..." open dialog boxes.



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### Create New Hydra

4-4.

This menu selection adds a new Hydra icon to the Hydra selection menu bar. A default configuration is associated with the new Hydra icon, and is displayed in the Hydra configuration display area of the Main Window.

### Delete Hydra

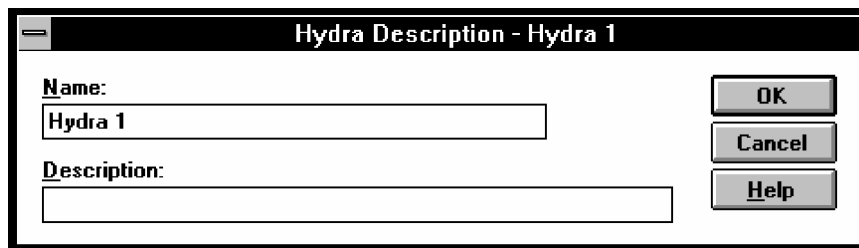
4-5.

This menu selection deletes the selected Hydra from the Hydra selection menu bar. The associated Hydra configuration is also deleted. A warning message appears that gives you a chance to cancel the deletion.

### Describe Hydra

4-6.

This menu selection opens a dialog box (below) for entry of a Hydra name and description. Click OK to place the Hydra name and description in the Hydra configuration display area of the Main Window.



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## Edit Hydra Configuration

4-7.

This menu selection opens a dialog box (below) that allows you to enter the configuration parameters for the selected Hydra, establish the communications parameters between the Hydras and the base station, select the channel configurations for the Hydra, and enable data recording.

Hydra Configuration - Hydra 1

Measurement Rate:  Slow (High Res.)  Fast

Temperature Units:  Celsius  Fahrenheit

Scan Parameters

Trigger Type: Interval Scanning

Hydra Scan Memory: All Scans

Scan Interval (secs): 5

Wrap-Around Logging Mode

Hydra Front Panel

Monitor Channel: None

Front Panel Lock: Disable Locks

Open Thermocouple Detect  Totalizer Debounce

OK  
Cancel  
Help  
Communication...  
Channels...  
Data File...

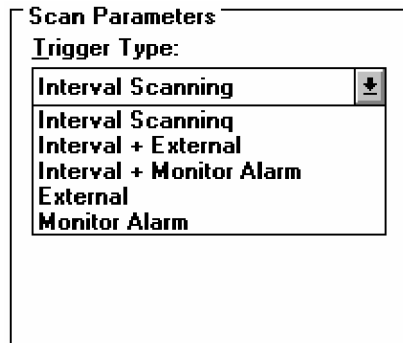
The changes made to the parameters are shown in the Hydra configuration display area of the Main Window. The Hydra configuration is downloaded to the selected Hydra when the Hydra is started (using the Download Config. on Start starting mode).

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The following items are included in the Hydra Configuration dialog box:

- **Measurement Rate.** The speed at which the Hydra measures the input of each channel. The slow measurement rate provides the highest accuracy and resolution. The fast rate provides one less digit of resolution.
- **Temperature Units.** The type of temperature reading taken on the Hydra. The displayed temperature unit can either be degrees Celsius (°C) or Fahrenheit (°F).
- **Scan Parameters.** Sets the method the selected Hydra uses to scan its channels.
- **Hydra Front Panel.** Sets the attributes of the front panel of the selected Hydra.
- **Open Thermocouple Detection.** If checked, the open thermocouple detection circuitry on the Hydra is enabled. Disable open thermocouple detection if you have other instrumentation measuring the same thermocouple terminal.
- **Totalizer Debounce.** If checked, input debouncing is enabled for the “Σ” input on the rear panel Digital I/O connector, which adds a delay of 1.75 ms to each transition, allowing increased accuracy from totalizer inputs from contact closures.

The available Scan Parameters (below) include the following:



rs084s.bmp

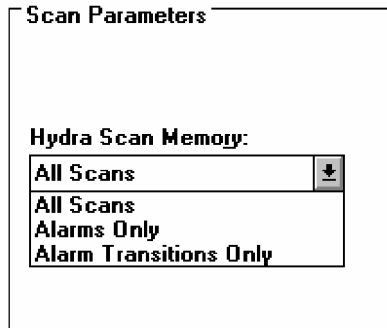
- **Trigger Type – Interval Scanning.** Interval Scanning controls the scan trigger by scan interval. The resolution of interval scanning is 1-second (up to 9 hours, 99 minutes, and 99 seconds).

- **Trigger Type – Interval + External.** Interval + External allows an external source to initiate a single scan. If a scan is already in progress, this request is ignored.
- **Trigger Type – Interval + Monitor Alarm.** Interval + Monitor Alarm allows an alarm condition on the monitor channel to trigger a single scan. If a scan is already in progress, this request is ignored.
- **Trigger Type – External.** External allows an external source to initiate scanning. If a scan is already in progress, this request is ignored.
- **Trigger Type – Monitor Alarm.** Monitor Alarm allows an alarm condition on the monitor channel to trigger scanning. If a scan is already in progress, this request is ignored.

External enables scanning when a low input occurs on the rear-panel TR terminal of the Hydra.

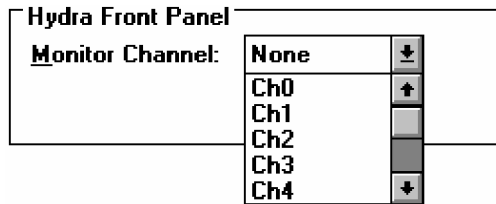
Monitor Alarm triggers a scan when an alarm condition occurs on the monitor channel. External triggering is disabled.

- **Hydra Scan Memory** (below). Establishes what types of scans are saved in the internal Hydra scan memory. If you select All scans, all of the scans of all channels on the Hydra (except those whose function is set to OFF) are recorded into the scan memory. If you select Alarms Only, only those scans that occur while one or more channels are in alarm are recorded [Model 2625A only]. If you select Alarm Transitions Only, only the single scan that occurs when a channel transitions into alarm and the single scan that occurs when a channel transitions out of alarm are recorded [Model 2625A only].



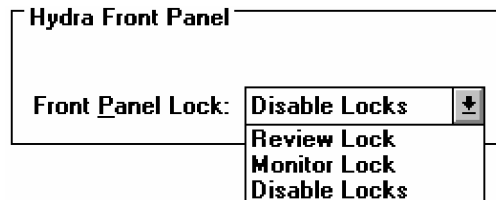
rs085s.bmp

- **Scan Interval.** Sets the period between starts of measurement scans. The scan interval has a resolution of 1 second. The maximum scan interval is 38439 seconds.
- **Wrap Around Logging Mode.** Establishes whether the Hydra stops recording data in internal Hydra scan memory once the memory is full, or continues to record data overwriting the oldest data in scan memory. To stop recording once memory is full, remove the check from the check box. To continue recording data after memory is full, check this selection.
- The Front Panel items include:
- **Monitor Channel** (below). Establishes which channel is displayed on the front panel of the Hydra during logging. Runs the monitor function on the selected channel. The selection includes channels 0 through 20, or “None” if no channel is to be displayed.



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- **Front Panel Lock** (below). Enables or disables special Hydra lockout modes. If the Front Panel Lock is set to Review Lock, all keys are disabled except the up/down and left/right arrow keys for review of the minimum, maximum, and last values of any channel. If set to Monitor Lock, all keys are disabled except the up/down arrow keys for monitoring any channel. If set to Disable Locks, all key functions on the Hydra are disabled.



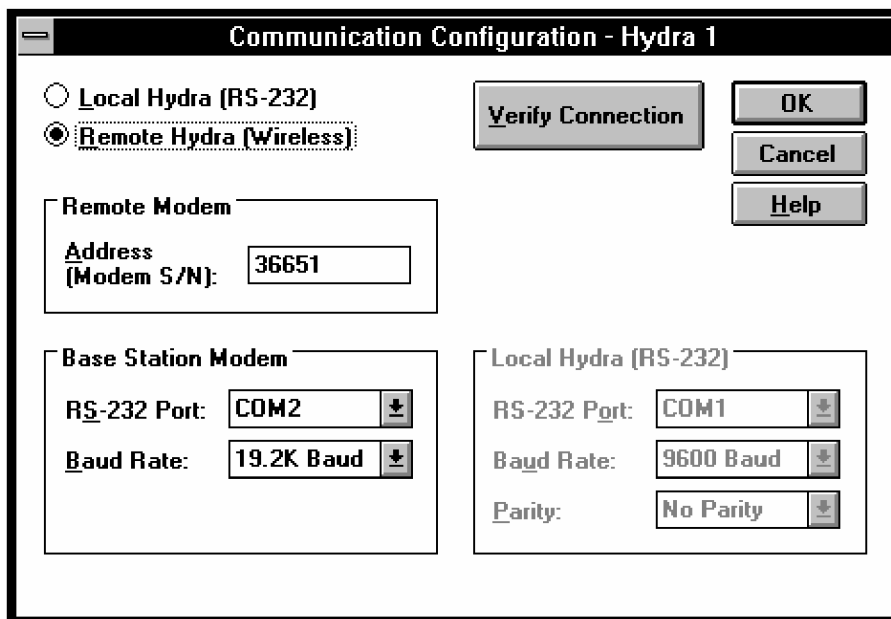
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The following buttons in this dialog box open the next level of dialog boxes:

- **Communication...**
- **Channels...**
- **Data File...**

### Communication...

The Communication Configuration dialog box (below) sets up the communications link between the Base Station and Remote Hydra, or the Local Hydra.



If you select the Local Hydra (RS-232) option button, the Local Hydra information is enabled. Select the RS-232 Port number for the Local Hydra, and set the baud rate and parity for the selected port.

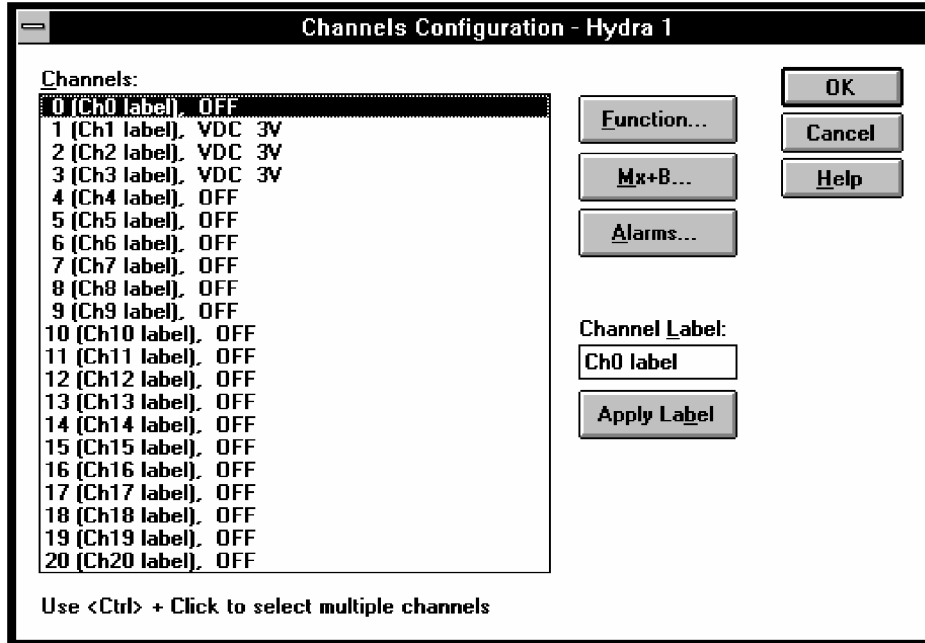


If you select the Remote Hydra (Wireless) option button, the Wireless Logger information is enabled. Enter the address of the remote Wireless modem (the serial number located on the modem label). Select the RS-232 Port number on which the Base Station Wireless modem is connected, and set the baud rate for the selected port.

To test the communications you have set up, click the Verify Connection button. If an error occurs, a diagnostic error message is displayed. (See Appendix C "Error Messages.")

### Channels...

The Channel Configuration dialog box (below) changes the configuration of a selected group of channels on the Hydra. Use the mouse cursor to select the channel(s) you want to change.



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Use the following buttons to change the configuration of the channel(s):

- **Function...**
- **Mx+B...**
- **Alarms...**

To change the label of the selected channel(s), enter the new label in the Channel Label edit box, then click the Apply Label button. If you select more than one channel, the labels of all the selected channels are changed.

### **Function...**

The Function Selection dialog box changes the function configuration of selected Hydra channels.

Select the function you want the channel to perform by using the Function drop-down box.

Use the Range drop-down box to change the range of the function.

Use the RTD R0 edit box to enter the resistance of the RTD at the freezing point (Fahrenheit or Celsius).

Use the Units Label edit box to select the units displayed for the selected Hydra channel.

### **Mx+B...**

The Mx+B Configuration dialog box selects the factor, offset, and display format of an Mx+B measurement for scaled readings on the selected channel of the Hydra.

Use the Mx+B Display Format drop-down box to select the format of the readings output by the Hydra.

Use the Factor (M) and Offset (B) edit boxes to select the M and B scaling values.

Use the Calculate Mx+B from Point Values button to open the Mx+B Calculation dialog box. This dialog box automatically calculates the Factor (M), Offset (B), and display format values. Enter the minimum and maximum values of the input you are using on the selected channel of the Hydra. Enter the minimum and maximum of the output from the Hydra. Click OK to exit the Mx+B Calculation dialog box and place the Mx+B values into the Mx+B Configuration dialog box.

### **Alarms...**

The Alarms Configuration dialog box sets the configuration for the two available alarms for the selected channel on the Hydra.

Use the Alarm State drop-down box to set the alarm to either OFF for no alarms, LO for alarms to occur below a certain limit, and HI for alarms to occur above a certain limit.

Use the Alarm Value edit box to set the value at which the alarm is activated.

Use the Digital Output drop-down box to associate alarms for channels 4 through 20 with the rear panel DIGITAL I/O lines of the Hydra. Channels 4 through 20 can be associated with any one or combination of the DIGITAL I/O pins. Note that alarms occurring on channels 0 through 3 are always associated with the rear panel ALARM OUTPUTS (channel 0 to ALARM OUTPUT 0, channel 1 to ALARM OUTPUT 1, etc.).

### Data File...

The Data File Configuration dialog box (below) enables or disables data file recording of Hydra scan data and set data file parameters.

**Data File Configuration - Hydra 1**

**Enable Data File Recording** OK

Data File: c:\wireless\temptest.csv Cancel

Select Data File... Help

File Comment: Hot Room Temperature Test

Scans to Skip Between File Recordings: 0

**Write to File When Alarms Active Only**

Time Tag

Absolute Time (secs)

Date/Time String

Elapsed Time (secs)

File Mode

Append To File

Over-Write File

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To enable data file recording, check the Enable Data File Recording check box. To disable data file recording, remove the check from the Enable Data File Recording check box. All other boxes in the dialog box are disabled, but the information contained in them is retained.

Click the Select Data File button to select the name of the data file.

Use the File Comment edit box to enter a comment to be placed in the data file heading.

Use the Scans to Skip Between File Recordings edit box to select how many scans you want to skip between recordings to the data file. For example, if you select 0, all scans are recorded in the data file. If you select 1, every other scan is recorded.

To write to the data file only when an alarm occurs, check the Write to File When Alarms Active Only check box.

Time Tag sets the format of the time stamp that is recorded at the beginning of each record in the data file. Three types of time stamp can be recorded:

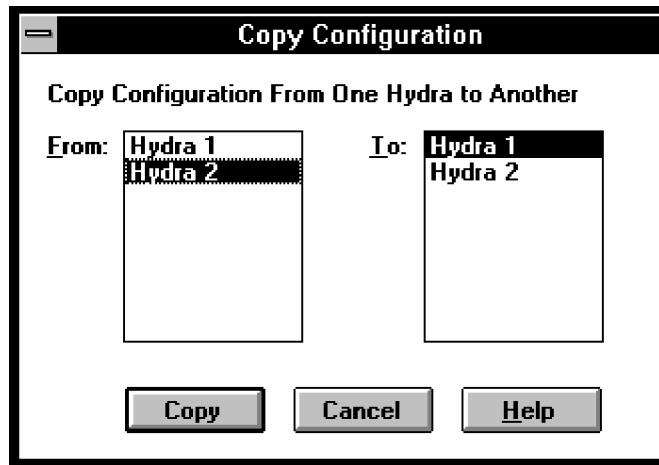
- **Absolute Time (secs).** Absolute time is the number of seconds since January 1, 1970 at 00:00:00 Universal Coordinated Time (UCT).
- **Date/Time String.** Date/Time String shows the time as a string consisting of the month, day, and year, along with the hour, minutes, and seconds.
- **Elapsed Time (secs).** Elapsed Time shows the time as the number of seconds since the time of the first scan entered into the data file.

The File Mode box lets you select how to write to the data file. To append data to an already existing file, select the Append to File option button. To always overwrite the file at the start of a logging run, select the Over-Write File option button.

### Copy Hydra Configuration

4-8.

The Copy Configuration dialog box (below) copies the configuration from one Hydra to another. Select the Hydra you want to copy the configuration from in the From list box. Select the Hydra you want to copy the configuration to in the To list box. Then click the Copy button. Communication and data file parameters and the Hydra name are not copied.



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### Save Hydra Configuration Text

4-9.

The Save Hydra Configuration Text dialog box allows you to save the Hydra configuration to a text file. The text is written to the file in a form similar to that of the display in the Main Window. The configuration information from this file is for documentation purposes only and cannot be loaded into the *Wireless Logger for Windows* application.

### Load Logger Setup

4-10.

The Load Setup File dialog box allows you to select a setup file from which the overall logger setup is to be loaded. The logger setup includes the trend plot configurations. To retrieve a plot after loading a setup, select the plot title from the plot list in the Plots menu.

The *Wireless Logger for Windows* application also accepts the logger setup filename as a command line argument when the application is started up.

### Save Logger Setup

4-11.

This menu selection saves the current overall logger setup into the setup file last loaded from or saved to. If no such file exists, this menu selection opens a dialog box that lets you select a setup filename.

### Save Logger Setup As

4-12.

The Save Logger Setup As dialog box lets you save the current overall logger setup into a file with a filename you select.

### Exit Application

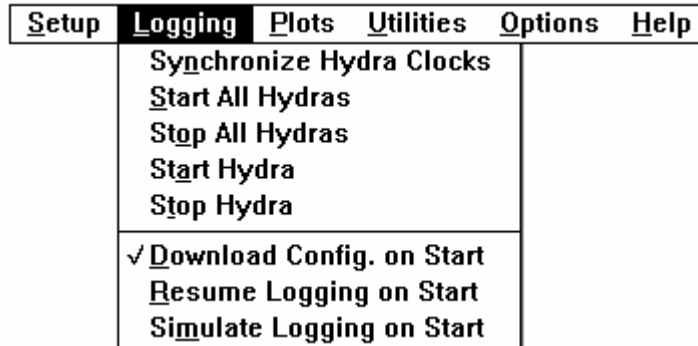
4-13.

This menu selection closes the *Wireless Logger for Windows* application and all associated trend plots. If changes have been made to the overall setup and have not been saved, you are asked whether you want to save the changes.

## Logging

4-14.

The Logging menu (below) contains the following selections for starting and stopping logging activity, and for specifying how to start logging:



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- Synchronize Hydra Clocks
- Start All Hydras
- Stop All Hydras
- Start Hydra (duplicated as a button in the Main Window)
- Stop Hydra (duplicated as a button in the Main Window)
- Download Config. on Start
- Resume Logging on Start
- Simulate Logging on Start

After a Hydra has been started, its associated icon in the Hydra Selection menu bar is modified to indicate logging status. The appearance of the icon is different for normal logging and for simulated logging.

Certain menu functions are not available during logging and are disabled. These functions include Hydra configuration changes and any actions that involve communicating with the Hydra.

### **Synchronize Hydra Clocks**

**4-15.**

This command sets all Hydras to the same date and time. Since *Wireless Logger for Windows* supports versions of Hydra that only allow times to be set with one minute resolution, the times set in the Hydras may be off by up to one minute from the PC system time, but are synchronized with respect to each other. This command is very important for correlating data from multiple Hydras in plotting and data processing.

### **Start All Hydras**

**4-16.**

This command initiates data collection from all Hydras not already in data collection mode. If starting in the Download Config. on Start mode and a Hydra has scans in its logging memory, a warning message appears, giving you the option to cancel. If you continue, logging memory is cleared. If initiation of data collection for any Hydra fails, an error message is displayed, and the command is aborted.

“All Hydras” refers to the Hydras appearing in the Hydra selection menu bar.

### **Stop All Hydras**

**4-17.**

This command stops data collection from all Hydras. If scans remain in any Hydra after scanning has been stopped, the remaining scans are read (to abort reading the scans, click the Abort button). “All Hydras” refers to the Hydras appearing in the Hydra selection icon bar.

### **Start Hydra**

**4-18.**

This command initiates data collection from the selected Hydra. If starting in the Download Config. on Start mode and if the Hydra has scans in its logging memory, a warning message appears, giving you the option to cancel. If you continue, logging memory is cleared. If initiation of data collection fails, an error message is displayed.

### **Stop Hydra**

**4-19.**

This command stops data collection from the selected Hydra. If scans remain in the Hydra after scanning has been stopped, the remaining scans are read (to abort reading the scans, click the Abort button).

### **Download Configuration on Start**

**4-20.**

If this menu is checked, the Hydra configuration is downloaded to each Hydra being started when the Start Hydra or Start All Hydras command is selected. The logging memory contents of the being started are cleared.

### **Resume Logging on Start**

**4-21.**

If this menu is checked, the Hydra configuration is uploaded from each Hydra being started. Logging memory is not cleared. (Note: Model 2635A using dc-volt scales 90 mV and 900 mV uploads these scales as Auto.)

### **Simulate Logging on Start**

**4-22.**

If this menu is checked, data associated with each Hydra comes from a simulated source when the Start Hydra or Start All Hydras command is selected. The simulated data consists of repeated patterns on each channel. This selection is used to try out various configurations and plots before actually logging data with a connected Hydra.

## **Plots**

**4-23.**

The Plots menu (below) creates and deletes trend plot windows, and allows you to directly select any of up to eight trend plot windows. This menu contains the following selections:

<b><u>S</u>etup</b>	<b><u>L</u>ogging</b>	<b><u>P</u>lots</b>	<b><u>U</u>tilities</b>	<b><u>O</u>ptions</b>	<b><u>H</u>elp</b>
		<b><u>C</u>reate Plot</b>			
		<b><u>D</u>elete Plot...</b>			
		<b><u>1</u> Plot 1</b>			
		<b><u>2</u> Plot 2</b>			
		<b><u>3</u> Plot 3</b>			
		<b><u>4</u> Plot 4</b>			
		<b><u>5</u> Plot 5</b>			
		<b><u>6</u> Plot 6</b>			
		<b><u>7</u> Plot 7</b>			
		<b><u>8</u> Plot 8</b>			

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- **Create Plot**
- **Delete Plot...**
- **Plot 1, 2 Plot 2, etc.**

In addition, each time Create Plot is selected, a new menu selection is added to the Plots menu item. Create Plot creates a trend plot window whose title is added to a numbered list of plots in the Plots menu.

### **Create Plot**

**4-24.**

This menu selection creates a trend plot window. The trend plot is configured from the plot window's menu system. Up to eight plots can be created. The plots are given default titles, such as 1 Plot 1, 2 Plot 2, etc. Plot titles for each plot are listed in the Main Window Plot menu.

### **Delete Plot**

**4-25.**

This menu selection opens a dialog box that asks you for the name of the plots to delete. When a deletion is made, a message is displayed warning the user that the plot configuration will be lost.

### **1 Plot 1, 2 Plot 2, etc.**

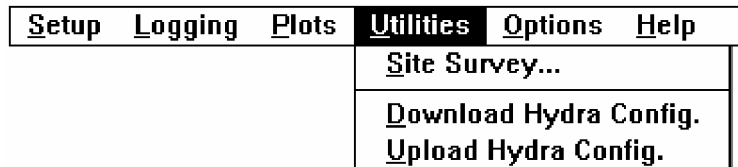
**4-26.**

This menu selection causes the plot window with the corresponding title to appear on top of the Main Window. If the plot has been closed, it is reopened. The plot title can be edited from the Labels... menu selection under the Setup menu in the trend plot window. It is listed under the Main Window Plots menu.

## **Utilities**

**4-27.**

The Utilities menu (below) allows you to perform a site survey to confirm the connection between the base station and the Remote Hydra, and allows you to download and upload the Hydra configuration from the Base Station. This menu contains the following selections:



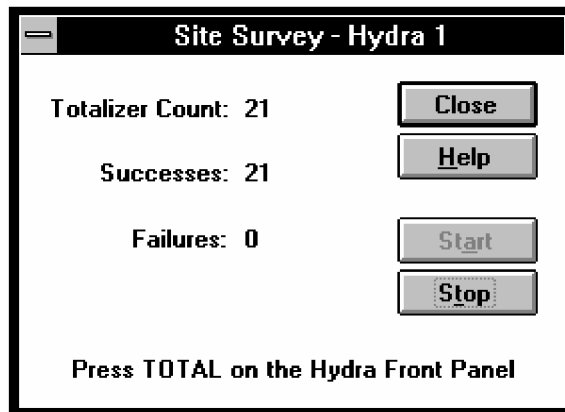
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- **Perform Site Survey...**
- **Download Hydra Configuration**
- **Upload Hydra Configuration**

### **Perform Site Survey...**

**4-28.**

The Site Survey dialog box for the selected Hydra (below) allows you to start and stop site survey operation. During site survey operation, commands are sent to the Hydra once per second, incrementing the totalizer value on the Hydra display.



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To begin the site survey, click the Start button. At the Hydra end, click the TOTAL button on the Hydra front panel and observe the continually incrementing totalizer count to verify successful communication. At the Base Station, communication status (successes and failures) is displayed in the Site Survey dialog box.

Site Survey is only available when logging is turned off for all Hydras (to assure the most accurate results).

If the Host Computer is unable to communicate with the Base Station modem, an error message will occur.

### **Download Hydra Configuration**

**4-29.**

When selected, this command downloads the Hydra configuration from the PC to the Hydra. If the Hydra has scans in its logging memory, a warning message appears, giving you the option to cancel. If you continue, logging memory is cleared. This command applies only to the selected Hydra.

**Upload Hydra Configuration**

**4-30.**

When selected, this command uploads the Hydra Configuration from the Hydra to the PC. Logging memory is not cleared as a result of this command. This command applies only to the selected Hydra. When the upload is complete, a warning message appears indicated that channel labels and units labels may be inconsistent with the new uploaded configuration. Be sure to edit these labels to match the new configuration. (Note: Model 2635A using dc-volt scales 90 mV and 900 mV uploads these scales as Auto.)

**Options**

**4-31.**

The Options menu (below) allows you to monitor various status indications from the Remote Hydras. Options also contains a selection that prevents you from changing certain configuration parameters in the Setup menu. The Options menu contains the following selections:

<u>S</u> etup	<u>L</u> ogging	<u>P</u> lots	<u>U</u> tilities	<b>Options</b>	<u>H</u> elp
Show Current <u>R</u> eadings Show <u>L</u> ogging Status Show <u>A</u> larm Status					
<input checked="" type="checkbox"/> Show Logging Status on <u>S</u> tart <input checked="" type="checkbox"/> Show Alarm Status on <u>A</u> larm					
<u>C</u> onfiguration Lockout					

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- Show Current Readings
- Show Logging Status
- Show Alarm Status
- Show Logging Status on Start
- Show Alarm Status on Alarm
- Configuration Lockout

**Show Current Readings**

**4-32.**

This menu selection displays a table of readings for all 21 Hydra channels, the digital and alarm outputs, and the totalizer count for the selected Hydra. Only one readings table can be viewed at a time. The Readings window does not disable the Main Window while the Readings window is visible. To close the Readings window, select Close from the Readings window control menu.

### **Show Logging Status**

**4-33.**

This menu selection displays the logging status of each Hydra, including the current scan records in Hydra's scan memory, the total number of retrieved scans since the start of logging, the number of communication errors since the start of logging, and the type of the last communication error. The displayed error message is an abbreviated form of the standard error messages. Use this status window to verify that scans are being retrieved quickly as they are being collected in Hydra scan memory. The scans in Hydra value should always settle down to values below ten. If not, stop logging and increase the scan interval of one or more Hydras, then restart logging and check the logging status window again.

The Logging Status window does not disable the Main Window while the Logging Status window is visible. To close the Logging Status window, select Close from the Logging Status window control menu.

### **Show Alarm Status**

**4-34.**

If this menu is checked, the Alarm Status window appears on top of the Main Window. This window displays the alarm status of each Hydra, including the current scans in Hydra value, and a list of the channels in alarm for the last scan retrieved.

The Alarm Status window does not disable the Main Window while the Alarm Status window is visible. To close the Alarm Status window, select Close from the Alarm Status window control menu.

### **Show Logging Status on Start**

**4-35.**

If this menu selection is checked, the Logging Status window appears automatically when the Start Hydra or Start All Hydras command is completed.

### **Show Alarm Status on Alarm**

**4-36.**

If this menu selection is checked, the Alarm Status window appears automatically when a channel transitions into the alarm state. A beep occurs when the window appears.

## Configuration Lockout

4-37.

If this menu selection is checked, the following configuration related menu items are disabled from the Setup menu:

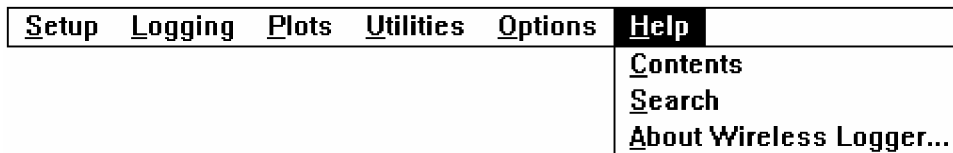
- **Create New Hydra**
- **Delete Hydra**
- **Describe Hydra...**
- **Edit Hydra Configuration...**
- **Copy Hydra Configuration...**

The button duplicating the “Edit Hydra Configuration...” function is also disabled.

## Help

4-38.

The Help menu (below) contains the following selections:



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- **Contents**
- **Search**
- **About Hydra Logger...**

Selection of the first two menu items opens the Windows Help utility with the corresponding help information. The “About Hydra Logger...” selection opens a dialog box that displays copyright information and the software version number.



# Chapter 5

## *Pruning and Grafting Utility*

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## Summary of Pruning and Grafting Utility

### 5-1.

Open Pruning and Grafting from the Fluke Wireless Logger group of Program Manager. To toggle between a partial screen and a full screen, type <Alt> <Enter>. The Pruning and Grafting Utility allows data files of potentially thousands of scan records to be reduced to only the records of interest by passing the data through a "filter." The output of the filter is saved in a separate ASCII file. Filter parameters include channels, measurement skipping, averaging, date/time range, greater-than, less-than, and AND/OR value limits.

The utility merges separate data files into a single data file. The source files may be in the binary data file format and ASCII data file format produced by Logger, Starter, and *Wireless Logger for Windows* application software, or memory card binary format (Model 2635A Data Bucket only). Both utility functions can be applied, filtering and combining files simultaneously into a single output file.

The main menu for the utility consists of four menus, FILE, EDIT, GO, and DISPLAY, plus a program setup screen summarizing the parameters of the files and filters. Parameters appear on the program screen as they are selected. A summary of the menu functions and descriptions is shown in Table 5-1.

**Table 5-1. Summary of Pruning and Grafting Menus and Windows**

FUNCTION	DESCRIPTION	FIGURE
FILE Menu	Manage setup files	5-1
NEW Menu	Resets setup to defaults	5-1
SAVE Menu	Saves the setup	5-1
OPEN Menu	Reads an initialization file	5-2
SAVEAS Menu	Saves setup to an initialization file	5-3
EXIT Menu	Use to exit the utility	5-4
EDIT Menu	Selects files and filters	5-5
Input Files Menu	Selects the input files for merging and filtering	5-6
Output File Menu	Selects the output file for the merged/filtered data	5-7
Channel List Menu	Selects the channels to be filtered and merged	5-8
Filters Menu	Selects the filter parameters for the selected files	5-9
Decimal Point Menu	Selects the data file separator and date format	5-10
File Compatibility Menu	Enables/disables data file compatibility checking	5-10
Horizontal Merging Menu	Selects horizontal or vertical file merging	5-11
GO Menu	Use to initiate the utility to perform its function	5-12
DISPLAY Menu	Selects background format and memory remaining	5-13

## FILE Menu

5-2.

The FILE menu (Figure 5-1) sets the initial conditions of the program, and creates, recalls, and saves program setups. The default initialization file PANDG.PNI loads the initial program setup.

## NEW Menu

5-3.

Select NEW and press <Enter> to reset the program to the default values stored in the current initialization file. Use the entries in the EDIT menu (Figure 5-5) to configure the program setup for the desired operations.

## SAVE Menu

5-4.

Select SAVE and press <Enter> to save the program setup in the current initialization file. For example, if the default initialization file PANDG.PNI is active, SAVE updates this file with the configuration shown in the program setup screen.

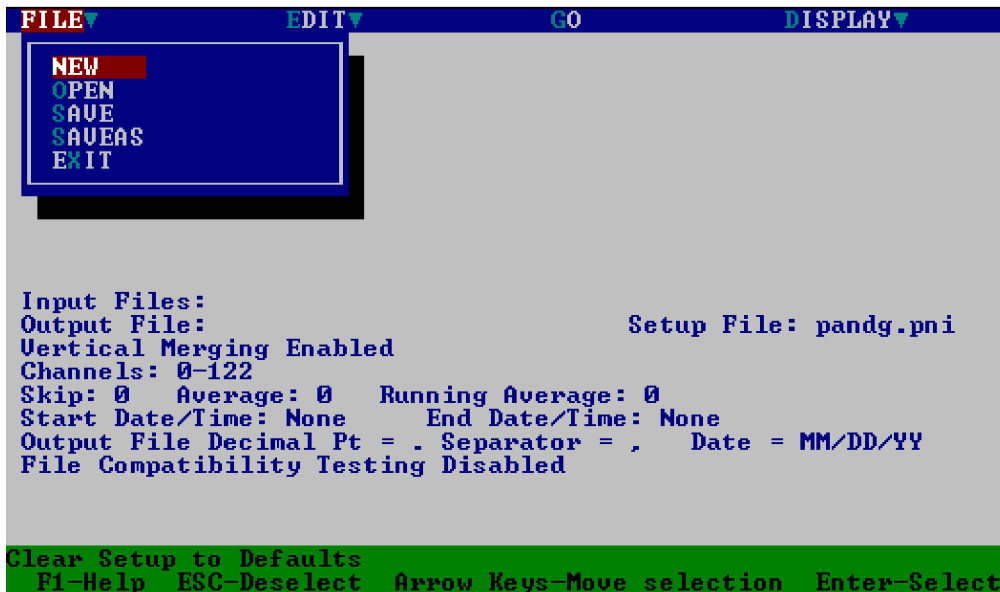


Figure 5-1. FILE Menu

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**OPEN Menu**

**5-5.**

The OPEN Menu (Figure 5-2) lists all the available program initialization files (default extension \* .PNI). Use the SAVEAS menu (Figure 5-3) to save program initialization files. To load the initialization defaults into the program setup, select a file then press <Enter>.

The example in Figure 5-2 shows selection of the file PANDG04 .PNI. Press <Enter> to change the program setup screen to the parameters saved in selected file.



Figure 5-2. OPEN Menu

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## SAVEAS Menu

5-6.

Select SAVEAS and press <Enter> to save the program setup as an initialization file (Figure 5-3). A prompt asks for the name of the file.

### Note

*If the file name already exists, it is overwritten without warning.*

The example in Figure 5-3 shows the program setup is saved in the file PANDG09.PNI.

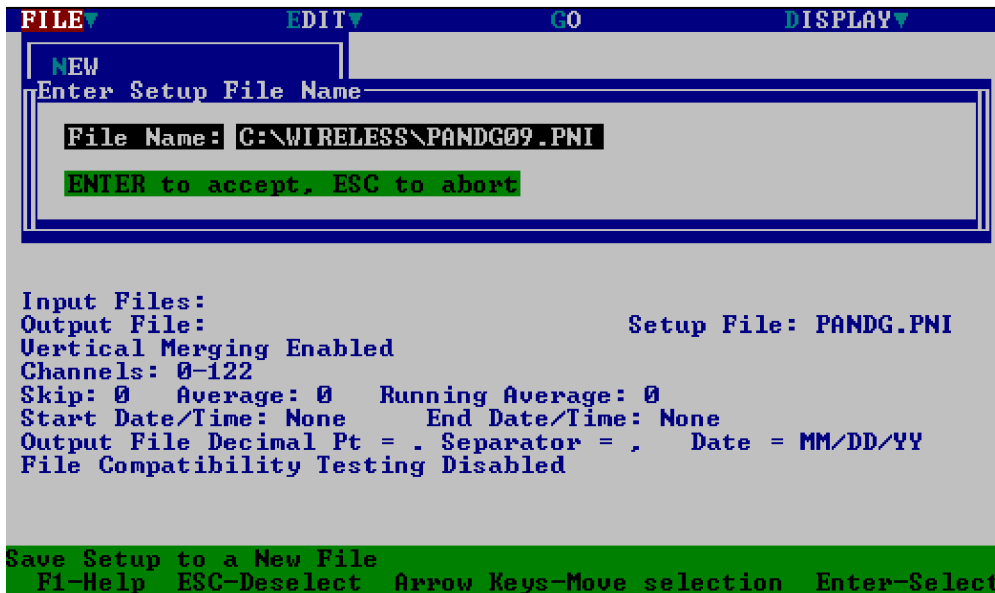


Figure 5-3. SAVEAS Menu

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**EXIT Menu****5-7.**

Use the EXIT menu (Figure 5-4) to exit the Pruning and Grafting Utility. When the utility is initialized, the file PANDG.PNI provides the setup defaults, as does any subsequent OPEN menu selection (Figure 5-2). If any parameter is changed during operations, the program asks if the changes should be saved before quitting. If you select Y (Yes), a window requests the name of the initialization file in which to store the changes. This can be the current initialization file, a different file, or a new file to be created. If you select N (No), the changes to the defaults are not changed, and the next window verifies the Exit operation, where Y will exit the program, and N will return to the main menu.

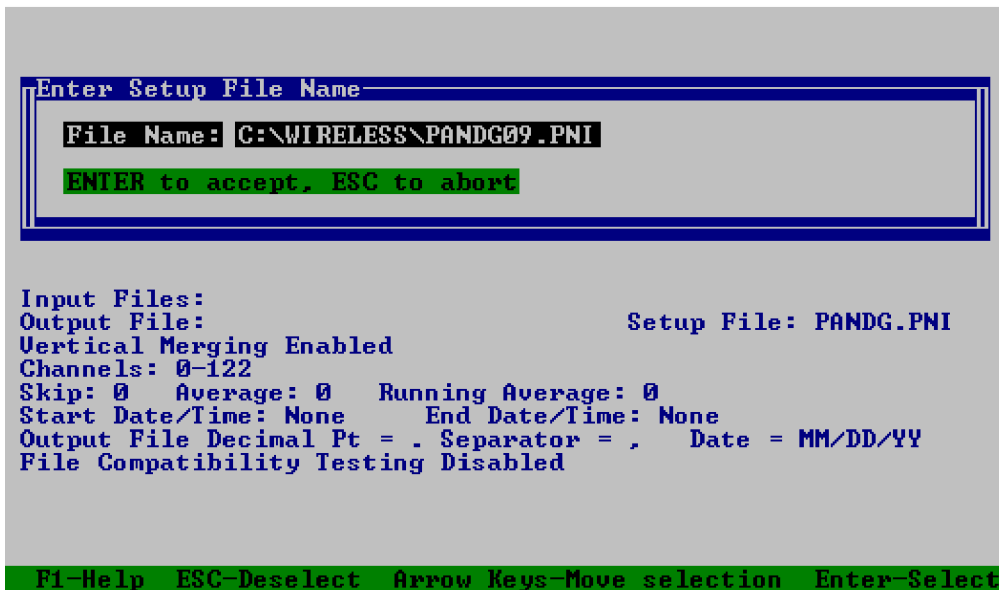
```
Exit Verify
Do you really want to EXIT? (Y or N): Y
ENTER to accept, ESC to abort

Input Files:
Output File:                               Setup File: PANDG.PNI
Vertical Merging Enabled
Channels: 0-122
Skip: 0   Average: 0   Running Average: 0
Start Date/Time: None   End Date/Time: None
Output File Decimal Pt = . Separator = ,   Date = MM/DD/YY
File Compatibility Testing Disabled

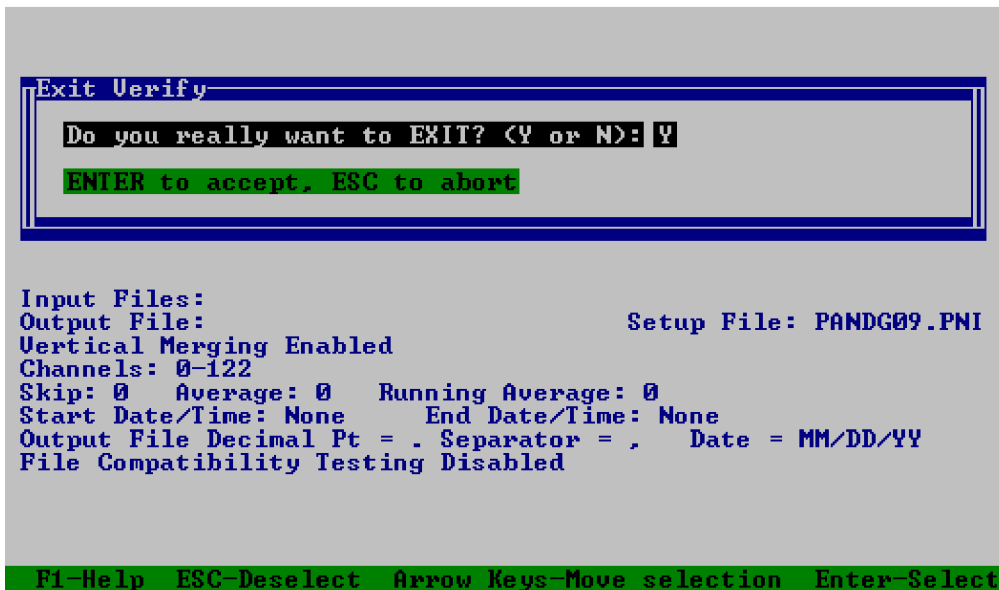
F1-Help  ESC-Deselect  Arrow Keys-Move selection  Enter-Select
```

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Figure 5-4. EXIT Menu



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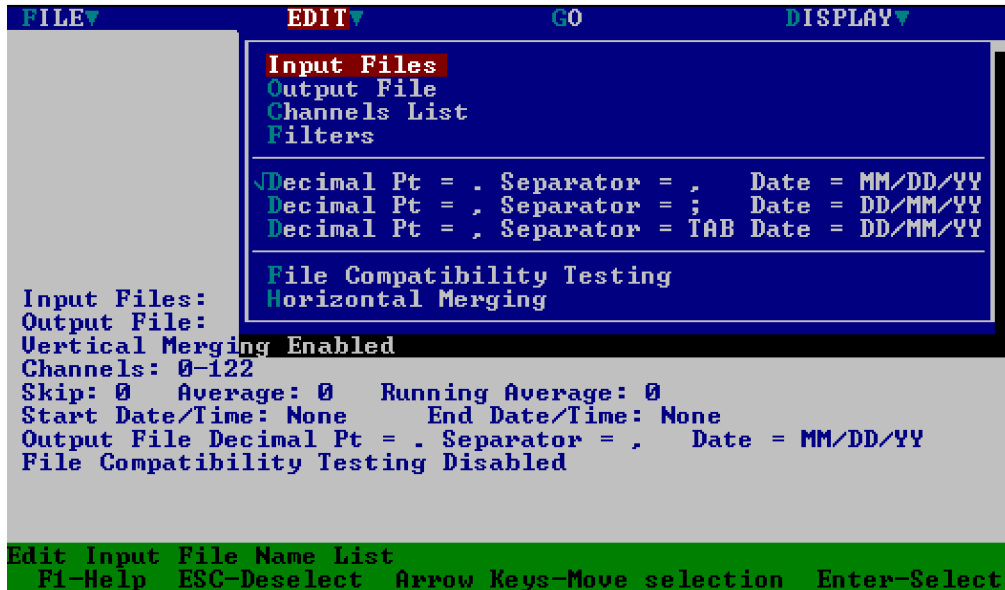
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Figure 5-4. EXIT Menu (cont)

## EDIT Menu

5-8.

The EDIT menu (Figure 5-5) selects the files and filters, the decimal point, file compatibility testing, and horizontal merging features.



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Figure 5-5. EDIT Menu

## Input Files Menu

5-9.

The Input Files menu (Figure 5-6) records the file names for filtering or combining, or both filtered and combined as a simultaneous operation. If no filters are specified, the files simply combine into an ASCII output file. If only a single file is entered, it can be filtered with the results sent to an output file. Enter up to 10 files. A full path name is used if the file is not in the current directory.

The example in Figure 5-6 shows five files LOGDATA1 .DAT through LOGDATA5 .DAT will be filtered and combined.

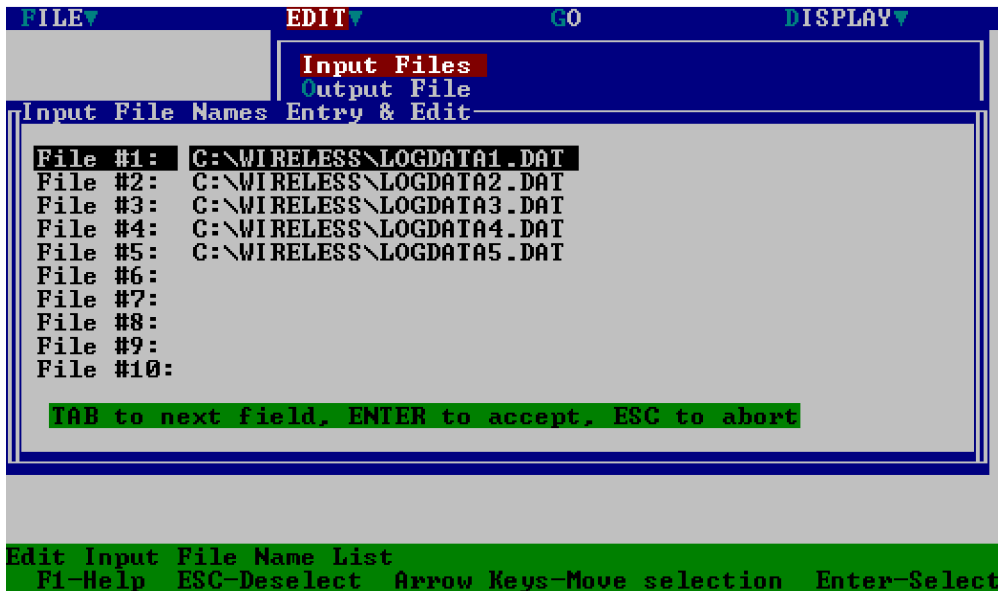


Figure 5-6. Input Files Menu

rs105s.bmp



**Output File Menu****5-10.**

The Output File menu (Figure 5-7) specifies the name of the output file for the filtered and combined data. Output files are always in ASCII format.

*Note*

*If an existing file name is selected, it is overwritten without warning.*

The example in Figure 5-7 shows the output file name SUMMDATA.DAT. After pressing <Enter>, the program setup screen changes the Output File: entry from blank (as shown in Figure 5-7) to SUMMDATA.DAT.

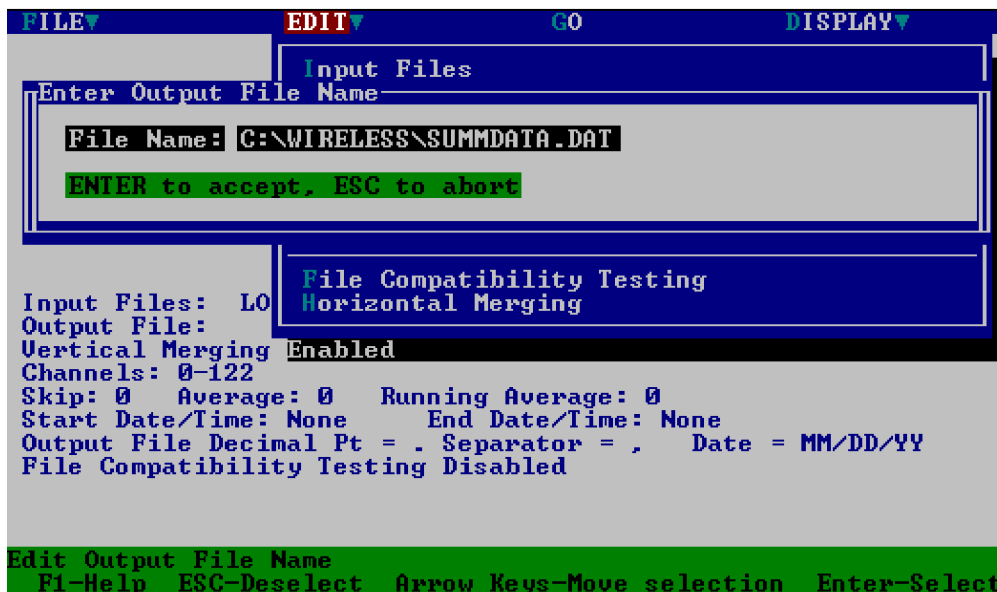


Figure 5-7. Output File Menu

rs106s.bmp

## Channels List Menu

5-11.

The Channels List menu (Figure 5-8) selects the channel or groups of channels to be included in the output file. Channels for instrument 1 are in the range 0 to 22 (including two pseudo channels – see below), and for instrument 2, in the range 100 to 122. For example, to filter the measurement data for instrument 1, channel 16, the number 16 would be entered; to filter the measurement data for instrument 2, channel 6, the number 106 would be entered.

To specify groups of channels, use the "-" and "," characters. For example, 0,5,9,10 selects instrument 1, channels 0, 5, 9, and 10. The entry 105-115 specifies instrument 2, channels 5 to 15.

To filter Totalizer and Alarm data, pseudo channels are assigned with channel 21 representing the Totalizer data and channel 22 representing the Alarm data. For example, an entry of 22 filters the alarm data for instrument 1; an entry of 121 filters the totalizer data for instrument 2.

The example in Figure 5-8 shows the entry 100-122, selecting instrument 2, channels 0 to 20, plus the two pseudo channels 21 (Totalizer) and 22 (Alarms). After pressing <Enter>, the program setup screen changes the Channels: entry from 0-122 (as shown in Figure 5-8) to 100-122. To select all channels, enter ALL; to select channels that are active, enter ON.



Figure 5-8. Channels List Menu

rs107s.bmp

**Filters Menu****5-12.**

The Filter menu (Figure 5-9) filters the scan records for the selected channels (Figure 5-8). Each scan record is compared to the parameters specified in this menu. If the scan record meets the specified requirements, it is recorded into the output file (Figure 5-7). Each filter parameter is described below.

**Skip Count**

The Skip Count simply skips over n scan records. For example, if a file has 5,000 scan records this can be reduced to 1,000 scan records by entering the number 4 (read, skip, skip, skip, skip, read, skip, skip, skip, skip, read, etc.)

**Average Count**

The Average Count entry averages readings into a one reading. For example, a file with 5,000 scan records can be reduced to 1,000 averaged scan records by entering the number 5 (read, read, read, read, read, average, read, etc.).

**Running Average Count**

The Running Average Count levels the averaging output. The higher the entry, the more intense the leveling. This is a leveling function only; input scan records equals the number of the output scan records. Leveling is based on the following algorithm:  $X_{out} = (X_{last} \times (n-1) + X_{current})/n$ , where:

$X_{out}$  = Value of the output scan record (the leveled value)

$X_{last}$  = The value of the previous  $X_{out}$

$X_{current}$  = The value of the current recorded scan record

n = The number entered in this menu (shown as 3 in figure 5-9)

A special case is  $X_{out} = X_{first}$ , where  $X_{first}$  is the very first scan record. An example for n=3 and ten measurements is:

Input scan record values: 110, 113, 117, 110, 118, 114, 111, 116, 117, 112

Output scan record values: 110, 111, 113, 112, 114, 114, 113, 114, 115, 114

The first  $X_{out}$  value is equal to the  $X_{first}$ , which is 110

then in sequence:  $X_{out} = (110 \times (3-1) + 113)/3 = 111$

$X_{out} = (111 \times (3-1) + 117)/3 = 113$

$X_{out} = (113 \times (3-1) + 110)/3 = 112$

$X_{out} = (112 \times (3-1) + 118)/3 = 114$

$X_{out} = (114 \times (3-1) + 114)/3 = 114$

$X_{out} = (114 \times (3-1) + 111)/3 = 113$

$X_{out} = (113 \times (3-1) + 116)/3 = 114$

$X_{out} = (114 \times (3-1) + 117)/3 = 115$

$X_{out} = (115 \times (3-1) + 112)/3 = 114$

## Start Date/End Date

Scan records can be filtered by date and time. The format is MM/DD/YY (Month/Day/Year [or Day/Month/Year - See Figure 5-5]) and HH:MM:SS (Hours/Minutes/Seconds). For example, 07/21/94 15:00:00 as a Start Date and 07/22/94 22:00:00 as an End Data specifies that only the scan records within these date/time limits are recorded.

## Record Only When Greater Than/Less Than

Further filtering is provided by channel readings above or below a specified value. When this filtering is desired, a check mark is placed in the box, a channel is specified, and then the "Greater Than" and/or "Less Than" value is entered. The operating mode of these filters is in either an OR configuration, where scan records are recorded when either the Greater Than OR Less Than conditions are met, or in an AND configuration where both the Greater Than AND Less Than conditions are met.

The example in Figure 5-9 shows scan values are recorded only when channel 5 measurements are greater than 120 AND channel 8 measurements are less than 110.

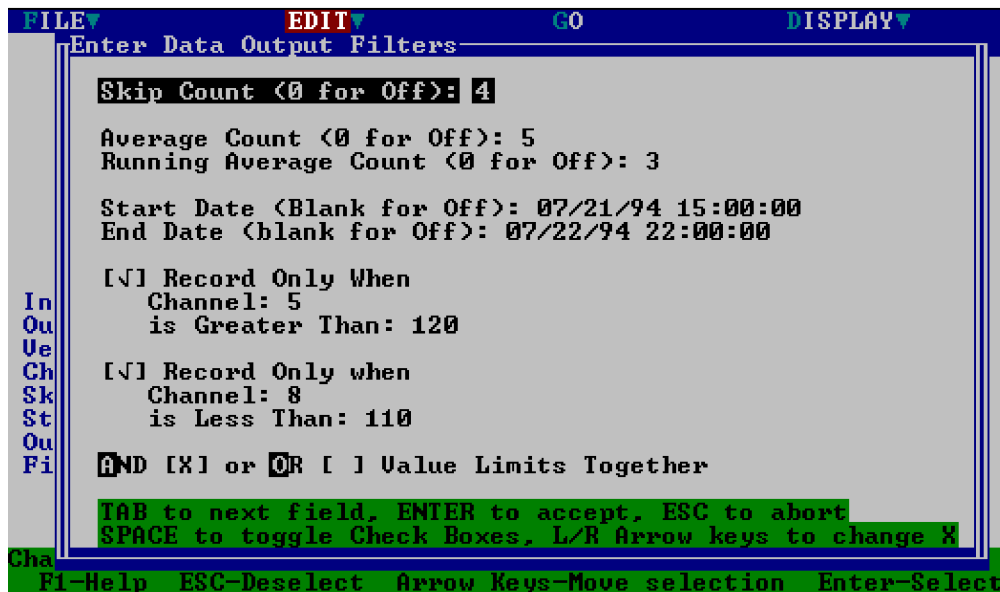


Figure 5-9. New Title

rs108s.bmp

**Decimal Point Menu**

**5-13.**

The Decimal Pt menu (Figure 5-10) specifies how numbers are saved in the output ASCII file, as follows:

```
Separator = ,      12.345,23.456,34.567
Separator = ;      12,345;23,456;34,567
Separator = <TAB>  12,345 23,456 34,567
```

These selections also set the date-reporting format Month/Day/Year (decimal point ".") or Day/Month/Year (decimal point "," or "<TAB>").

**File Compatibility Testing Menu**

**5-14.**

The File Compatibility Testing menu (Figure 5-10) enables/disables input file compatibility testing. For example, combining two files where Channel 1 measures ohms in one file and volts dc in the other results in meaningless data for channel 1 in the output file. Files are checked during GO (Figure 5-12).

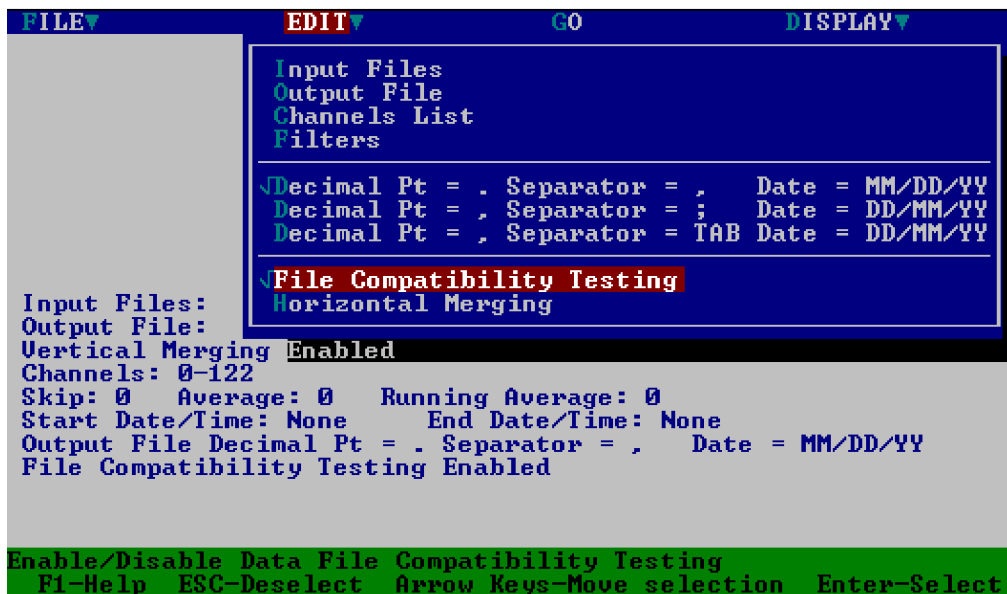


Figure 5-10. Decimal Point and File Compatibility Testing Menu

rs109s.bmp

## Horizontal Merging Menu

5-15.

The Horizontal Merging Menu (Figure 5-11) selects Horizontal or Vertical merging. Vertical merging (default) merges multiple files that contain data acquired at different times. The data is placed in date/time order in a single output file.

Horizontal merging is used to merge multiple data files that contain data acquired at somewhat the same time. Data from scan records from each file are merged into that scan record from the first file that has the closest match in time and then output to a single output file.

Using a comparison to a spreadsheet, vertical merging places the scan records from each file in different rows, according to date/time order; Horizontal merging places scan records with similar data/time tags on the same row, creating more columns than existed on any of the input files.

When horizontal merging is enabled, you may enter a "delta time" that is used to determine which records are merged. The larger the delta time, the more time is allowed between records from the different input files. When horizontal merging is enabled, channels in the first input file are selected by channel numbers 0-22; channels in the second file are selected by numbers 100-122, etc.

The example in Figure 5-11 shows Horizontal merging with a delta time of 10.

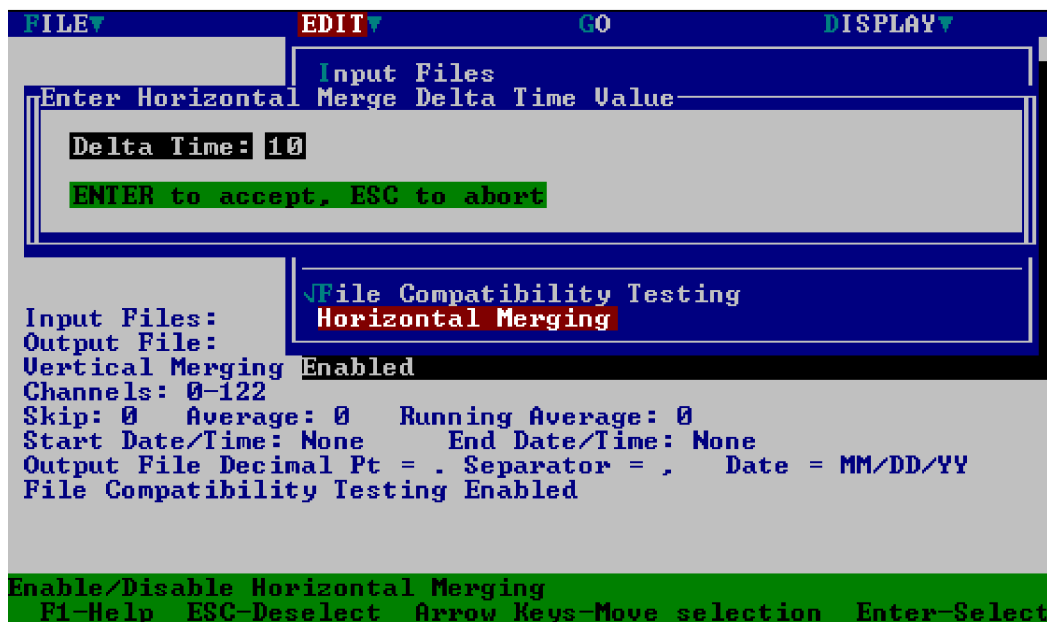
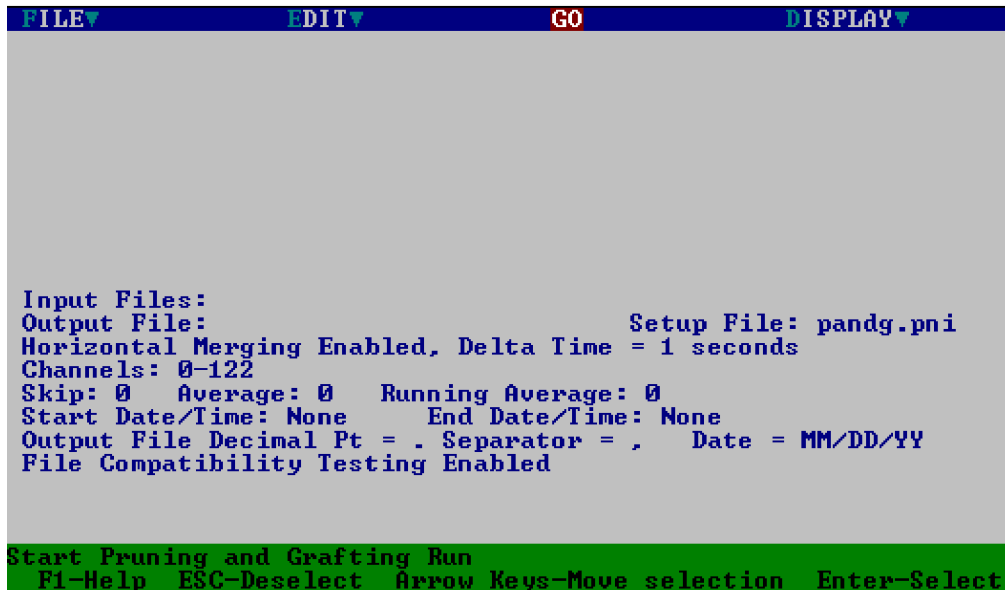


Figure 5-11. Horizontal Merging Menu

rs110s.bmp

**GO Menu****5-16.**

The GO menu (Figure 5-12) initiates a Pruning and Grafting run with the configuration shown in the program setup screen. If File Compatibility Testing is enabled (Figure 5-5), the input files are checked before pruning and grafting. An error message appears if file compatibility testing fails, halting the Pruning and Grafting run.



```
FILE▼          EDIT▼          GO          DISPLAY▼

Input Files:
Output File:
Horizontal Merging Enabled, Delta Time = 1 seconds
Channels: 0-122
Skip: 0 Average: 0 Running Average: 0
Start Date/Time: None End Date/Time: None
Output File Decimal Pt = . Separator = , Date = MM/DD/YY
File Compatibility Testing Enabled

Start Pruning and Grafting Run
F1-Help ESC-Deselect Arrow Keys-Move selection Enter-Select
```

rs111s.bmp

Figure 5-12. GO Menu

## DISPLAY Menu

5-17.

The Display menu (Figure 5-13) gives a choice of a light screen background or dark screen background. "PC Memory Remaining" reports the conventional DOS memory available after the utility is loaded. If the PC is overloaded with software programs, the Memory Left could fall below 32000 bytes, which is the minimum number for the utility to perform properly.

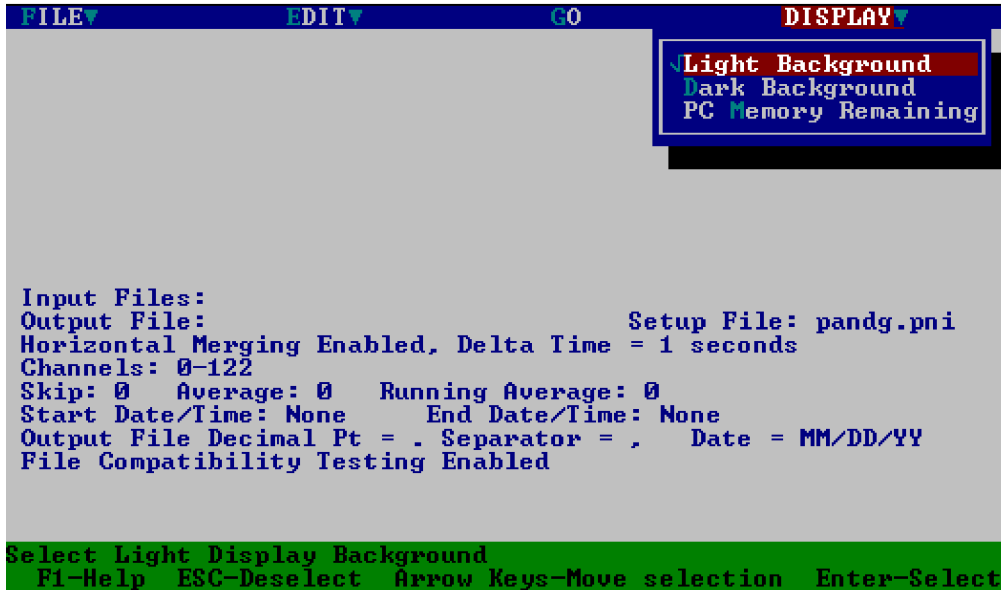


Figure 5-13. Display Menu

rs112s.bmp



# Chapter 6

## *Maintenance*

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6-3.	Operating Mode Errors.....	6-3
6-4.	Configuration Mode Errors .....	6-4
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6-6.	Wireless Logger Tool Replacement Parts .....	6-6



## Introduction

6-1.

Maintenance procedures in this manual are limited to the wireless modem information and a listing of replacement parts. Refer to the following Hydra manuals for Hydra maintenance information:

- **2625A Hydra Data Logger.** *Hydra 2620A Series II Data Acquisition Unit/2625A Series II Data Logger Users Manual* (Part Number 686675)
- **2635A Hydra Data Bucket.** *Hydra 2635A Series II Data Bucket Users Manual* (Part Number 686698)

A Hydra Service Manual (Part Number 202231) is available for purchase. This Service Manual covers three Hydra instruments: 2620A Data Acquisition Unit, 2625A Data Logger, and 2635A Data Bucket.

## Wireless Modem Error Codes

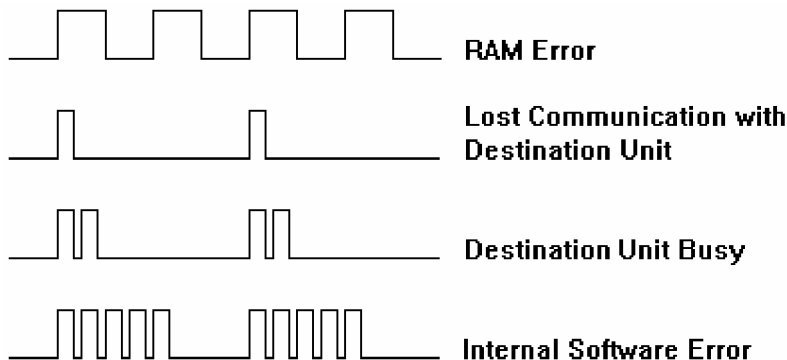
6-2.

There are two types of wireless modem errors: Operating Mode Errors, and Configuration Mode Errors. Each is discussed below.

### Operating Mode Errors

6-3.

The Proxim ProxLink XR wireless modem performs an internal self-check each time the modem is powered. The result of the self-check is indicated by the wireless modem PWR indicator. A steady PWR light verifies a successful self-check; a blinking PWR light indicates an error. Error codes are signaled by blinking the PWR light in various patterns, as follows:



rs113s.bmp

The Lost Communication with Destination Unit, and Destination Unit Busy errors appear in a point-to-point configuration. The Wireless Logger tool does not use the point-to-point configuration; therefore, these errors will not appear.

**RAM Error.** If the power LED is flashing evenly, a RAM error occurred during boot up. Unplug the wireless modem power module and then plug it in again. If the error indication continues, the unit has failed and must be returned for service.

**Lost Communication with Destination Unit.** If the power LED is flashing one count, the unit has a point-to-point configuration and it can no longer communicate with the remote unit. In this case, the error likely means that the remote unit is either out of range or has been turned off. A unit will enter this error state only after it has made numerous attempts to reestablish communication. [This application of the wireless modem does not use a point-to-point configuration and this error should not occur.]

**Destination Unit Busy.** If the power LED is blinking two counts, the unit has a point-to-point configuration and can no longer communicate with the remote unit. In this case, the error indicates that the remote unit configuration is no longer set up for point-to-point communication with this unit. [This application of the wireless modem does not use a point-to-point configuration and this error should not occur.]

**Internal Software Error.** If the power LED is blinking five counts, the unit has experienced an internal error. Unplug the wireless modem power module and then plug it in again. If the error indication continues, the unit has failed and must be returned for service.

### **Configuration Mode Errors**

**6-4.**

Wireless modem Configuration Mode Errors are ASCII strings relayed from the Base Station wireless modem to the Host Computer, over the RS-232 connection during wireless modem configuration. Each error and description is listed below.

- **The input given was too long!** The number of characters in the last input line is longer than the maximum number of characters expected.
- **Invalid number!** The last input line has an invalid format. This is different from the "Value given in not in range allow!" error message.
- **Value given is not in range allowed!** the last input line specified a value that is not in range for the parameters being specified.
- **Invalid option!** The menu option selected is not one of the valid options for the current menu.
- **Serial #nnnnn, is not responding!** This message occurs when the remote unit (serial number nnnnn) is not responding correctly to messages during a remote configuration. The remote unit in this case is in a state where it is ignoring remote configuration requests. This situation occurs only when the unit is in the process of being configured by yet a different unit.
- **Serial #nnnnn, ignored request!** This message occurs when the remote unit (serial number nnnnn) is not responding correctly to messages during a remote

configuration. The remote unit in this case is not responding to radio messages. The unit is probably: (1) turned off, (2) set to a different radio channel, (3) set to a different network subchannel, (4) currently in the user interface mode, or (5) defective.

- **Serial #nnnnn, has already been remotely configured!** This message occurs when the remote ProxLink unit (serial number nnnnn) is not responding correctly to messages during a remote configuration. The remote unit in this case has already been remotely configured for a point-to-point communication by another unit. In this case, the user is given the option of overriding the remote unit's configuration.
- **Serial #nnnnn, has already been locally configured!** This message occurs when the remote ProxLink unit (serial number NNNNN) is not responding correctly to messages during a remote configuration. The remote unit in this case has already been configured using its own user interface. In this case, the user is given the option of overriding the configuration of the remote unit.

## **Wireless Modem Servicing Information**

**6-5.**

The wireless modems are not user serviceable. During the warranty period, return any unit that fails to a Fluke Service Center for repair or replacement.

To contact Fluke, call one of the following telephone numbers:

USA and Canada: 1-800-44-FLUKE  
(1-800-443-5853)

Europe: +31 402-678-200

Japan: +81-3-3434-0181

Singapore: +65-✱-276-6196

Anywhere in the world: +1-425-356-5500

Or, visit Fluke's Web site at [www.fluke.com](http://www.fluke.com).

After the warranty period, you may elect to return the unit to a Fluke Service Center for repairs, or return the wireless modem directly to the Proxim factory. When returning the unit to the Proxim factory, telephone first (415) 960-1630 for a Return Merchandise Authorization (RMA) number, and then ship the unit, with the RMA number displayed on the shipping label, to Proxim, 295 N. Bernardo Avenue, Mountain View, California 94043.

## **Wireless Logger Tool Replacement Parts**

## **6-6.**

Replacement parts are shown in the following table. To order replacement parts in the USA, call 1-800-526-4731. To order parts from outside the USA, contact the nearest Fluke Service Center. (See Appendix E for a list of Service Center locations.) Other Wireless Logger components, options, and accessories are listed in Table 1-1.

<b>Part Number</b>	<b>Description</b>
485706	Two-Receptacle Power Cable
868153	DB25-to-DB9 Cable Adapter
897256	Wireless Modem, ProxLink XR [Note 1]
104312	Wireless Modem, ProxLink PL [Note 1]
929018	Short RS-232 Cable (Hydra to Wireless Modem)
929034	Wireless Modem Power Module (Remote) [Note 2]
929138	Wireless Modem Antenna for Proxlink XR (1/4 Wave)
944876	Wireless Modem Antenna for ProxLink PL (5/8 Wave)
929141	Wireless Modem Power Module (Base Station) [Note 2]
929146	Wireless Modem RS-232 Cable
929166	Modem Labels
929380	Wireless Modem Antenna 90-degree SMA adapter (for XR only)
936562	Wireless Logger Users Manual
688036	2.4 GHz Antenna
688721	7.5 V AC to DC Power Adapter
688033	Line Cord, Connector, Europe
688462	Line Cord, Connector, USA
688432	Line Cord, Connector, Australia
688439	Line Cord, Connector, UK
110528	Wireless Modem United States
686675	2620A/2625A Series II User Manual
686698	2620A.2625A Series II Service Manual
<p>Note 1. The Proxim ProxLink XR Wireless Modem can be repaired or replaced under the Fluke Product Exchange Program (PEP). Contact the nearest Fluke Service Center for instructions.</p>	
<p>Note 2. If either modem power module should fail, use only the factory replacement part. The modem power module electrical and physical characteristics must be exact.</p>	

# ***Appendices***

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# Appendix A Specifications

## Introduction

A-1.

The specifications presented here apply only to the Proxim ProxLink XR Wireless Modem. Specifications for the Hydras may be found in one of the following manuals:

- **2625A Hydra Data Logger.** *Hydra 2620A Series II Data Acquisition Unit/2625A Data Logger Users Manual* (Part Number 686675)
- **2635A Hydra Data Bucket.** *Hydra 2635A Series II Data Bucket Users Manual* (Part Number 686698)

### 900 Mhz Wireless Modem Specifications

Specification	Description
<b>Serial Interface</b>	
Data Rates	1.2K, 2.4K, 4.8K, 9.6K, 19.2K Baud
Data Format	8 Data Bits, No Parity, 1 Stop Bit
Flow Control	CTS, DSR, XON/XOFF
Connector	DB9 - 9-pin Female D Connector
<b>Radio</b>	
Model	RDA-500
Power Output	500 mW (Nominal)
Data Rate	121 Kbps
Total Channels	7
Independent Channels	4
Nominal Range	800 Feet
<b>Power</b>	
Power Connector	2.5mm male DC Power Jack
Required Source	9V dc (9.5V dc maximum)
Transmit Current	350 mA @ 9V dc
Receive Current	150 mA @ 9V dc
Standby Current	15 mA @ 9V dc
Power Up Time	Less than one second

**900 Mhz Wireless Modem Specifications (cont)**

<b>Packaging</b>	
Antenna	1/4-wave with 0 dB gain (approx. 4-inches)
Package Size (without Antenna)	4.0" x 6.5" x 0.75"
Weight (with Antenna)	12 oz.
LEDs	Power, Carrier Detect, Receive Data
<b>Environment</b>	
Temperature - Operating	-20° to +60° C
Temperature - Storage	-50° to +85° C
Relative Humidity	20% to 90% (non-condensing)
<b>Software</b>	
Operating Modes	Off-line Configuration
Pass-Through	Transparent to application
Packetized	Real-time configuration, message, and status commands
Message Format Options	Line length, delimiters, and input time-out
Network Parameters	
Channel Options	Radio channel and security subchannel (16 bits)
Outgoing Messages	Directed or Broadcast
Incoming Messages	Directed, Broadcast or all
Packetized Mode Features	Radio signal strength, standby mode, message status, and error report

### 2.4 GHz Wireless Modem Specifications

Specification	Description
<b>Serial Interface</b>	
Data Rates	112.5 to 115200 baud
Data Format	7 or 8 Data Bits, 1, 1.5, or 2 stop bits; even, odd, or no parity
Control Lines	TXD, RXD, RTS, CTS, DTS, DSR @RS-232 levels
Configure and Reset control lines	
Pinout	Wire to the DCE [Data Communication Equipment] specification, except for pins 1 and 9. 1 - Configure, 2 - TX, 3 - RX, 4 - DTR, 5 - GND, 6 - DSR, 7 - RTS, 8 - CTS, 9 - Reset
Connector	Female DB-9
<b>Radio</b>	
Model	RF1
Frequency	2.4 - 2.4835 GHz
Compatible with the Proxim RangeLAN2	
Technology	Frequency hopping, spread spectrum
Channels	15 independent
Power Output	100 mW
Data Rate	1.6 Mbits/sec
Modulation	4fsk (bsk in back off mode)
<b>Power</b>	
Input voltage	6 - 15 VDC
Input current	675 mA RX typical 850 mA TX typical Standby mode < 40 mA Sleep mode < 10 mA
Power connector	2.5 mm dc power jack

### 2.4 GHz Wireless Modem Specifications (cont)

<b>Physical</b>	
Imperial Dimensions	5.5 X 2.77 X .88 inches, weight: 10 ounces
Metric Dimensions	14.0 X 7.0 X 2.2 centimeters, weight: 200 grams
<b>Environment</b>	
Temperature - Operating	-20° to +60° C
Temperature - Storage	-50° to +85° C
Relative Humidity	20% to 90% (non-condensing)
<b>Software</b>	
Operating Modes	Off-line Configuration
Pass-Through	Transparent to application Off-line configuration Line length, delimiters, input timeout as message format options
Packetized mode	Accepts and generates real-time configuration, message, and status commands Radio signal strength, standby mode, message status, error reporting, site survey, and rf snooping survey

# Appendix B

## File Formats

### File Formats

### B-1.

The data file is maintained in comma-separated ASCII format (identical to the Hydra Logger ASCII data file format). The ASCII format is compatible with data analysis and management tools running simultaneously in other computers on a network.

Data files are opened in SHARED mode with write blocked. This enables network reads but no writes of the data file while scan data is being recorded. Between scans, the file is closed, allowing full network access to the file (including delete if allowed by the security level enabled on the Host Computer). If the file disappears between one scan and the next, a new file (including header and with the previous file name) is created before new scan data is recorded.

The comma separated ASCII file format is as follows (<EOL> means “end of line”, a <CR><LF> sequence):

- File name string (< 15 characters) followed by:
- Special format (internally-used) string (8 characters) <EOL>
- Date and time file was created <EOL>
- File Comment(< 70 characters) <EOL>
- Number of Hydras (always 1) <EOL>
- Channel Units string (25 comma-separated strings) <EOL>
- Scan Record 1 <EOL>
- Scan Record n <EOL>

Each scan record consists of the Hydra timestamp (the user's choice of absolute time, date/time string, or elapsed time) and a comma-separated list of channel

readings (including the DIO word, and totalizer). The strings are surrounded by quotes to allow direct importation into spreadsheet programs and other data analysis and presentation packages.

In this format, each recorded scan consumes about 300 bytes. A 1 Megabyte file can store about 3330 scans.

# Appendix C

## Error Messages

### **Introduction**

**C-1.**

This appendix provides a summary of all possible *Wireless Logger for Windows* error messages. The following paragraphs identify the group messages, which is followed by the individual messages found in each group.

### **Group Error Messages**

**C-2.**

#### **Error Messages**

**C-3.**

A variety of error messages may occur during operation of the Wireless Logger data acquisition tool (Wireless Logger tool). In most cases, the problems causing the errors may be fixed relatively easily.

If you have received an error message, check the list below for clues as to what caused the error, and refer to the individual error messages that follow:

#### **Errors When Starting Application**

**C-4.**

Window creation failed!

Error registering window class!

Wireless Logger is already running!

Must run in protected mode (standard or enhanced)!

Unable to initialize DDE!

No timers available! Close another application and try again!

**Errors When Starting Hydra**

**C-5.**

- Hydra X: No channels defined!
- Hydra X: N scan(s) in Hydra memory will be lost!
- Hydra X: Calibration Corrupted! Continue?
- Hydra X: Date/Time Corrupted! Check Hydra clock.

**Errors When Opening or Creating New Windows**

**C-6.**

- Unable to Create Plot Window!
- Maximum number of plots reached!
- Low on memory!
- Maximum number of Hydras reached!

**Errors When Logging**

**C-7.**

- Cannot close application while Hydras are logging!
- Hydra X: Cannot change Configuration while logging!
- Hydra X: Communication Interruption!
- Hydra X: Hydra Scan Memory Full!
- Hydra X: Unable to Write to Data File!

**File Related Errors**

**C-8.**

- Unable to Open Setup File!
- Unable to Write to Setup File!
- Setup File is Invalid!
- Unable to Create Configuration Text File!
- Unable to Write to Configuration Text File!
- Hydra X already has this filename!

**Communication Errors**

**C-9.**

- Hydra X: Hydra Execution Error!
- Hydra X: Hydra Command Error!
- Hydra X: RF Transmission Error!
- Hydra X: Time-out waiting for Hydra!
- Hydra X: Time-out waiting for Base Station!



Hydra X: RS-232 Communications Error!

Hydra X: Not enough memory to perform operation!

Hydra X: Unable to initialize communications port!

Hydra X: Unsupported model or version of Hydra!

## **Individual Error Messages** **C-10.**

### **Window Creation Failed!** **C-11.**

The application was unable to create a new window. This error may occur if not enough memory is available. Close some applications, or exit and restart Windows, then try again.

### **Error Registering Window Class!** **C-12.**

The application was unable to register the window class. This error may occur if not enough memory is available. Close some applications, or exit and restart Windows, then try again.

### **Wireless Logger is Already Running!** **C-13.**

Only one instance of the *Wireless Logger for Windows* application may be open at once. Either close the existing application and begin again, or use the application that is already open.

### **Must Run in Protected Mode (Standard or Enhanced)!** **C-14.**

Restart Windows to run in protected mode (standard or enhanced).

### **Unable to Initialize DDE!** **C-15.**

An error occurred while trying to initiate DDE. Try closing some other applications that are currently using DDE and try again.

### **No Timers Available!** **C-16.**

*Wireless Logger for Windows* requires the use of a timer. This error occurs when all timers (a limited Windows resource) are being used by other applications. Close some applications that are using timers (for example, the clock application under Windows Accessories) and try again.

### **Hydra X: No Channels Defined!** **C-17.**

None of the channels on Hydra X has been defined. You must define at least one channel for the Hydra before attempting to start logging with the Hydra.

**Hydra X: N Scan(s) in Hydra Memory Will be Lost!** **C-18.**

This warning occurs when a Hydra configuration is about to be downloaded to the Hydra, and scans still in Hydra memory will be cleared as a result. Scans may be left in Hydra memory if some loss of communication has occurred, or if *Wireless Logger for Windows* attempts to retrieve the remaining scans after you stop logging and you abort the retrieval.

To continue and erase the stored scans, click Yes. To cancel, click No.

If you are attempting to start the Hydra logging but do not want to lose the scans currently in Hydra memory, select Resume Logging on Start under the Logging menu and try starting the Hydra again. Since the configuration is uploaded to the Host Computer instead of downloaded to the Hydra, the scans in the Hydra memory are not cleared.

**Hydra X: Calibration Corrupted!** **C-19.**

The Hydra's calibration constants have been corrupted. The Hydra instrument needs to be recalibrated. See the Hydra manual's maintenance section for information on servicing the instrument.

**Hydra X: Date/Time Corrupted!** **C-20.**

The Hydra instrument no longer contains a valid date and time. Press the <Shift>INTVL button on the front panel of the Hydra instrument to ensure that the date and time are correctly set. This message can also occur if the Hydra's internal clock has failed. In this case, see the Hydra manual's maintenance section for information on servicing the instrument.

**Unable to Create Plot Window!** **C-21.**

The application was unable to create a new trend plot window. This error may occur if not enough memory is available. Close some applications, or exit and restart Windows and then try again.

**Maximum Number of Plots Reached!** **C-22.**

The maximum number of trend plots (eight) have already been created. To delete one of the existing plots, select Delete Plot from the Plots menu.

Note that not all of the trend plot windows may be visible. All existing plots are listed in the Plots menu.

**Low on Memory!** **C-23.**

There is not enough memory to complete the current operation. Either close some applications, or exit and restart Windows.

**Maximum Number of Hydras Reached!** **C-24.**

The maximum number of Hydra instruments (20) have already been created. An unused Hydra may be reconfigured for use, or deleted by selecting it and then selecting the Delete Hydra command from the Setup menu.

**Cannot Close Application While Hydras are Logging!** **C-25.**

You must stop logging on all Hydra instruments before exiting *Wireless Logger for Windows*. Use Stop All Hydras under the Logging menu to stop logging on all Hydras, then exit the application.

**Hydra X: Cannot Change Configuration While Logging!** **C-26.**

This message appears if you attempt to copy a Hydra configuration from one Hydra to a Hydra that is currently logging. Use Stop Hydra to stop logging on the Hydra you are copying to before attempting to change its configuration.

**Hydra X: Communication Interruption!** **C-27.**

Communication with the Hydra instrument has been interrupted. If this message occurs during logging, check the Logging Status window for the current communication status. If the total number of errors for the Hydra continually increase, communication is still being interrupted.

To prevent this error message window from reappearing, click on the Disable this warning check box. The error message is not displayed again until you exit and restart the *Wireless Logger for Windows* application.

**Hydra X: Hydra Scan Memory Full!** **C-28.**

Hydra scan memory is full. This condition occurs when scans are being collected in Hydra scan memory faster than *Wireless Logger for Windows* can retrieve them and the scan memory eventually fills up. This may be caused by frequent or prolonged communication interruptions that prevent *Wireless Logger for Windows* from retrieving scans fast enough, or by the Hydras being configured for short scan intervals such that *Wireless Logger for Windows* cannot keep up even under ideal communication conditions.

When Hydra scan memory becomes full, the Hydra instrument either overwrites the oldest scans in memory or stops storing new scans. The oldest scans are overwritten if the Wrap-Around Logging Mode has been enabled in the Hydra Configuration dialog box.

**Hydra X: Unable to Write to Data File!**

**C-29.**

*Wireless Logger for Windows* was not able to write Hydra scan data to the data file. This could indicate that the directory structure for the data file has been deleted, that the application no longer has write permission for the file, or that the disk is full.

**Unable to Open Setup File!**

**C-30.**

The application was not able to open the setup file specified on the command line or with the Load Logger Setup... command.

Ensure that the full path of the setup file is correct, and that the file exists. If this error occurs when starting *Wireless Logger for Windows* with a setup file on the command line, be sure you have the correct command line format:

If you use Save Logger Setup under the Setup menu item, the application attempts to save the setup file using the directory structure of the previous Save Logger Setup As... command. If the directory structure has changed, the application cannot save the setup file. Try using the Save Logger Setup As command.

Another possible cause of this error may be that another application has opened the file, denying write permissions to other applications.

The FILES setting in CONFIG.SYS file should be set to at least 30.

**Unable to Write to Setup File!**

**C-31.**

The application was not able to write to the setup file.

Ensure that the setup file exists and is located in the proper directory. If you use Save Logger Setup under the Setup menu item, the application attempts to write to the setup file using the directory structure of the previous Save Logger Setup As... command. If the directory structure has changed, the application cannot write to the setup file. Try using the Save Logger Setup As command.

The FILES setting in CONFIG.SYS file should be set to at least 30.

**Setup File is Invalid!**

**C-32.**

The selected setup file is either not a *Wireless Logger for Windows* setup file or its contents have been corrupted.

***Unable to Create Configuration Text File!***

**C-33.**

The application was not able to create the Hydra configuration text file. Make sure that the full path of the file is correct.

The FILES setting in CONFIG.SYS file should be set to at least 30.

***Unable to Write to Configuration Text File!***

**C-34.**

The application was not able to write to the Hydra configuration text file. This error may occur if the disk becomes full.

The FILES setting in CONFIG.SYS file should be set to at least 30.

***Hydra X Already has this Filename!***

**C-35.**

Another Hydra has already been assigned this filename. Multiple Hydras cannot log data to the same file.

***Hydra X: Hydra Execution Error!***

The Hydra received an incorrect command, possibly due to a communication error. Retry the operation.

***Hydra X: Hydra Command Error!***

The Hydra received a command it did not recognize, probably due to a communication error. Retry the operation.

***Hydra X: RF Transmission Error!***

The Base Station modem was unable to transmit to the remote modem. This error occurs if the remote modem is out of range, turned off, or not configured to receive messages from the Base Station modem.

***Hydra X: Time-Out Waiting for Hydra!***

**C-36.**

The Hydra was unable to communicate with the Host Computer. This error occurs when the Hydra is turned off, configured for the wrong baud rate or parity, not connected to the remote modem (or to the Host Computer for a local Hydra), not a Hydra instrument, or not quite in range to send a response to the Base Station, but close enough to receive the command from the Base Station.

**Hydra X: Time-Out Waiting for Base Station!**

**C-37.**

The Base Station Host Computer is unable to communicate with the Base Station modem.

Use the Windows Terminal emulator to restore communication. Ensure that the baud rate, parity, etc. are correct.

Check the cable between the Base Station and the modem for proper connection. Make sure that the cable is connected to the correct COM port, and that the port has been properly set up to communicate with the modem. Verify the modem configuration parameters.

This error can also occur if the Base Station modem cannot determine when a packet begins and ends (due to disruptions in the RS-232 cable). To overcome this problem, it may be necessary to cycle power on the Base Station modem.

**Hydra X: RS-232 Communications Error!**

This message appears when an error occurs over the RS-232 serial port. Occasional RS-232 errors occur more often for high baud rates, and during file operations or network accesses.

If this error occurs repeatedly, there may be a more serious problem. First, verify that the serial port settings in *Wireless Logger for Windows* match the settings in the Base Station modem or the local Hydra. If these are correct, the problem is probably due to a hardware conflict in the Host Computer, such as a serial mouse or an internal modem sharing the same interrupt request line as the serial port.

**Hydra X: Not Enough Memory to Perform Operation!**

**C-38.**

Not enough memory is available to perform the operation. Close some other applications and try again.

**Hydra X: Unable to Initialize Communications port!**

**C-39.**

*Wireless Logger for Windows* is unable to initialize the Host Computer's serial COM port. This indicates that the COM port does not exist or is being used by another application. (Be sure that you close the terminal emulator program after you have finished configuring the modems.) Also be sure that the COM port selected for a local Hydra is not the same as the COM port selected for the Base Station modem in the *Wireless Logger for Windows* application.

***Hydra X: Unsupported Model or Version of Hydra!***

**C-40.**

This error occurs if you are using any Hydra instrument other than a model 2625A or model 2635A using software version 5.5 or later. To determine the version of the software running on the 2625A, press the right and left arrow keys on the Hydra instrument simultaneously. The version number is shown in the center of the display. Press the CANCL key to exit.





# Appendix D

## ***Dynamic Data Exchange (DDE)***

### ***Dynamic Data Exchange (DDE)***

***D-1.***

Dynamic Data Exchange allows you to transfer data between applications, and updating the data as it is being gathered.

To display the data, you must first link the application (such as a spreadsheet) to the *Wireless Logger for Windows* application. You must enter the application name (Wlogger), a topic and an item before the link can be established. In some cases, the link is established by entering the application name, topic, and item into a formula for a specific cell. Other applications allow you to enter the application name, topic, and item into a dialog box. Once the link is established, *Wireless Logger for Windows* updates the application with new data whenever the data changes.

In many applications, you can also manipulate the data that is being received from the *Wireless Logger for Windows* application using Macros. See the application manual for more information.

The following application name, topics, and items are available for *Wireless Logger for Windows* (the names are not case sensitive):

Application name:	Wlogger	
Topics:	System	System Topic
	HydraX	Number of the Hydras from the Hydra Selection Icon Bar (X can be 1 through 20)
Items (System Topic):	Topics	List of Topics ("System, Hydra 1, Hydra2, ...")
	Systems	List of System Items ("Topics, SysItems, Formats")
	Formats	List of DDE formats ("TEXT")
Items (Hydra Topic):	cX	Channel X reading (X can be 0 through 20)
	Hydra_Name	The name of the selected Hydra instrument (set using Describe Hydra under Setup)
	<b>RdateTime</b>	Seconds since 00:00:00 01/01/1970
	<b>ELdateTime</b>	Date/time format compatible with Excel and Lotus 1-2-3
	DIO	Hydra DIO, DIO 0 through 11 (includes DIGITAL I/O and ALARM OUTPUTS)
	Totalizer	Hydra totalizer value

For example, to access the data from channel 10 of Hydra instrument number 1 within an Excel spreadsheet cell, use:

```
=Wlogger|Hydra1!c10
```

to get the name of the Hydra instrument number 6:

```
=Wlogger|Hydra6|Hydra_Name
```

Examples for linking Hydra data within both Lotus 123 and Quattro pro (those versions which support DDE) are as follows:

```
For Lotus 123: @DDELINK ("Wlogger", "Hydra1", "C10" )
For Quattro Pro: @DDELINK ( [ Wlogger | Hydra1] "C10")
```

*Note*

*In the examples above please note "|" is a pipe symbol, and there are no spaces in the example phrase.*

# Appendix E

## Exception Condition Handling

### Exception Condition Handling

E-1.

This appendix describes how *Wireless Logger for Windows* handles exception conditions during operation.

### Communication Errors

E-2.

If a communication error occurs (time-out, RF transmission error, overrun, framing, or parity) during the reception of scan data, the request for data is repeated up to three times. If all three attempts fail, *Wireless Logger for Windows* then goes on to service the other Hydras before again asking the Hydra for data. The number of accumulated communication errors appears in the Logging Status window, along with a short description of the last communication error.

If the communications connection to a Hydra is interrupted during logging, *Wireless Logger for Windows* times out each time it attempts to communicate with the Hydra. These time-outs appear as communication errors in the Logging Status window display, and a window is displayed with a warning message, bringing the *Wireless Logger for Windows* application to the top.

After communications are restored, if the Hydra's scan memory has become full, a window with a warning message indicating possible data loss is displayed.

*Wireless Logger for Windows* attempts to retrieve scans stored in the Hydra's scan memory during the communication loss.

### Full-Disk

E-3.

If the disk becomes full during data collection or if the directory structure is deleted such that attempts to write to the data file fail, subsequent scans are not recorded, but communication with the Hydra and data display continues. A window with a warning appears, bringing the *Wireless Logger for Windows*

application to the top. When the problem is fixed, *Wireless Logger for Windows* resumes recording scans in the file.

### **Invalid Entries**

**E-4.**

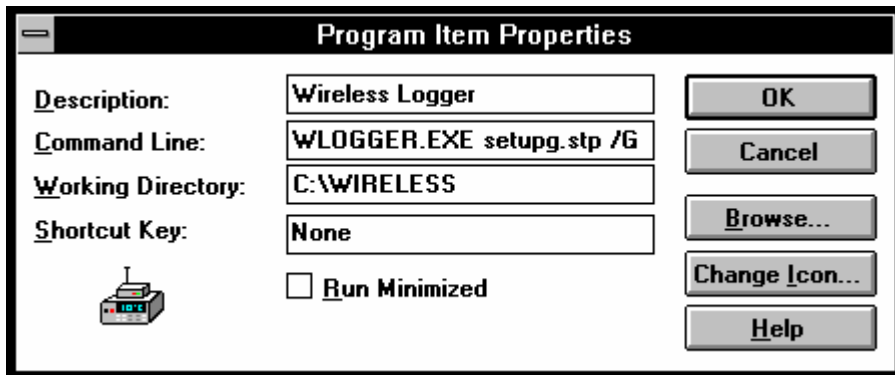
Diagnostic messages are displayed if the user enters invalid values into the fields of a dialog box.

### **Loss of Power**

**E-5.**

Complete the following procedure to automatically resume data collection after a loss and then restoration of power to the Host Computer.

1. In DOS, verify that the AUTOEXEC .BAT file includes WIN to start windows when power is returned to the Host Computer. Be sure there is nothing in the AUTOEXEC .BAT or in Windows that requires a prompt, e.g., network name, passwords, etc.
2. In Program Manager, select the Copy... command from the File menu to copy the Wireless Logger icon (in the Fluke Wireless Logger group) to the Windows StartUp group. Create the StartUp group if it does not exist using the New... command from the File menu in Program Manager.
3. Highlight (but do not open) the Wireless Logger icon in the StartUp group. Select the Properties command from the File menu in Program Manager. At the end of the Command Line in the Program Item Properties dialog box, add the name of the special setup file that will be in use when the Host Computer power is restored, and follow this with the /G switch. For example, using the special setup file SETUPG .STP, the entire Command Line would read:  
C:\WIRELESS\WLOGGER.EXE SETUPG.STP /G (below).  
SETUPG .STP (for example) is a special setup file that is identical to the normal setup file, except for a few settings described below.



4. Open Wireless Logger from the Fluke Wireless Logger group of Program Manager. Select the Load Logger Setup... command from the Setup menu,

and select the desired setup file for normal operations. For example, `setup.stp`. Click OK.

5. Select the Save Logger Setup As... command from the Setup menu and enter the name of the special setup file. For example, `setupg.stp`. Click OK. This filename must agree with the filename entered in step 3.
6. Add the following selections to the special setup file: select the Resume Logging on Start command from the Logging menu, and for each Hydra, select Append to File in the Data File Configuration dialog box (click the Edit Hydra Config... button, then Data File... button). Click OK twice to return to the Main Window.
7. Select the Save Logger Setup command from the Setup menu to save the selections entered in step 6.
8. To test the automatic data collection feature when power is lost, close all Windows applications except for *Wireless Logger for Windows*. Click the Start Hydra button in the *Wireless Logger for Windows* Main Window and verify data collection activities.
9. Turn the Host Computer power off, pause, and then on again. Observe the Host Computer reboots and resumes *Wireless Logger for Windows* data collection activities, as displayed on the Logging Status dialog box.



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