Instruction

MI 611-226
November 2004

Remote Communications Program for 875 Electrochemical Analyzers

invensys®
FOXBORO®

Contents

1. Introduction

Overview

The Remote Communications (RCOM) program for the 875 Electrochemical Analyzer is a PC-based software package that permits you to monitor, configure, and calibrate up to two 875 Analyzers remotely from a personal computer (PC). The PC communicates with an 875 Analyzer through an RS-232-C serial port. When the analyzer is direct connected to the PC, an external modem is not required. However, when connection is via a telephone line, modems are required at each end.

The major benefits of the program are:

- Ability to operate up to two 875 Analyzers from a remote PC.
- Ability to transfer measurement data from the analyzer to a PC and configuration data in either direction between the analyzer and a PC.
- Ability to use the program with several different types of 875 Analyzers, now and in the future, because the program obtains its configuration data from the particular instrument to which it is connected.

The PC must be equipped with a Windows NT, Windows 95, Windows 98, or Windows 2000 operating system. It does not run with Windows 3.1 or Windows CE. The PC must have the following minimum requirements:

- 90 MHz Pentium with 16 MB RAM or better computer
- Hard drive with 5 MB of space
- RS-232-C Serial Port (COM1 or COM2)
- Mouse or compatible pointing device
- 4X CD-ROM drive (8X recommended).

The program can be executed for each communication port, up to a maximum of two, as shown in Figure 1.

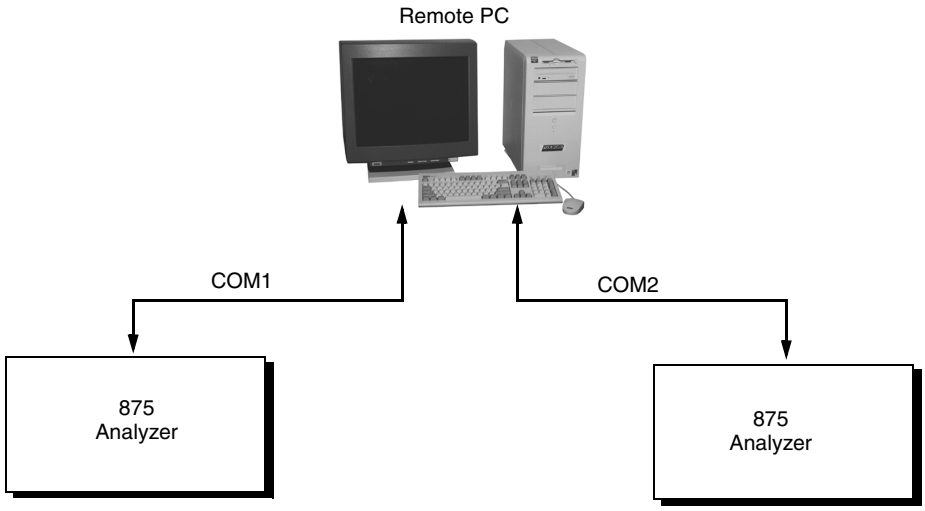

Figure 1. External Interface between a Remote PC and Two 875 Analyzers

Reference Documents

Detailed information about 875 Analyzers can be found in the documents listed below.

Table 1. Reference Documents

Document	Description
MI 611-222	Instruction — 875CR Contacting Conductivity/Resistivity Analyzer
MI 611-224	Instruction — 875EC Electrodeless Conductivity Analyzer
MI 611-225	Instruction — 875PH Electrochemical Analyzer

2. Installation

The -F option in an 875 model code or the RCOM Configurator Utility Kit (BS810NX) consists of three items:

- Configurator CD-ROM BS809WJ
- Cable BS809WH
- Instruction MI 611-226

Verify that all three items were included with your shipment.

Connecting the Analyzer and PC

Attach the cable provided to your computer serial port (COM1 or COM2). If the computer serial port has a 25-pin connector, use a 25- to 9-pin adapter. Attach the other end of the cable to the RS-232-C connection on your analyzer.

Installing the Software

Perform installation while running the standard Windows installation program. Close all other running programs before starting your installation.

Insert the CD-ROM in your computer and if installation doesn't automatically start, select:

Start
Settings
Control Panel
Add/Remove Programs

Then follow the instructions to install the RCOM program by typing the CD-ROM drive letter, **disk1**, and using **setup.exe** as the command (for example, **E:\disk1\setup.exe**).

The installation procedure is automatic and prompts you for necessary information.

After installation is complete, reboot your computer.

3. Operation

Running the RCOM Program

To run the program, first connect the analyzer and PC, as explained in the Installation section of this instruction. Then double-click the RCOM icon or access the program from the **Start** menu. The Connect screen is presented.

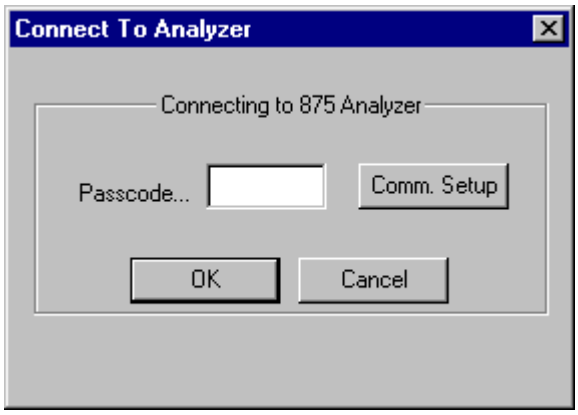

Figure 2. Connect Screen

Enter your passcode and select **OK**. The factory default passcode is 0800.

NOTE

If using RCOM with an 875EC Analyzer with Version 1 software, only log in with a Level 1 passcode. Failure to do this results in software "crashes" if specific functions in the Diagnostics menu are exercised. If using Level 2 or 3 passcodes, do **not** suspend a fault or erase the history log.
Also, if using RCOM with an 875EC Analyzer with Version 1 software, the passcode cannot be changed from the RCOM program.

If the RCOM program is unable to connect to your analyzer, select **Comm. Setup**. The Connections Parameter screen is displayed. Make sure that the correct **Port** is selected and that the **Baud Rate**, **Data Bits**, **Parity**, and **Stop Bits** selections match those of the connected analyzer. Then select **OK**.

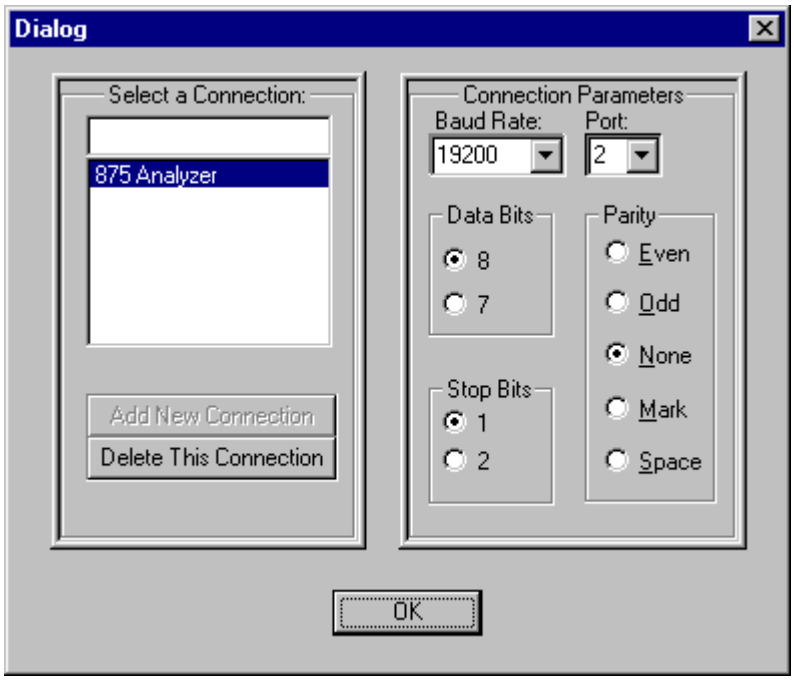

Figure 3. Connections Parameter Screen

The Passcode screen reappears. Enter your passcode. If it is a valid passcode, the Top Level Menu Screen is displayed.

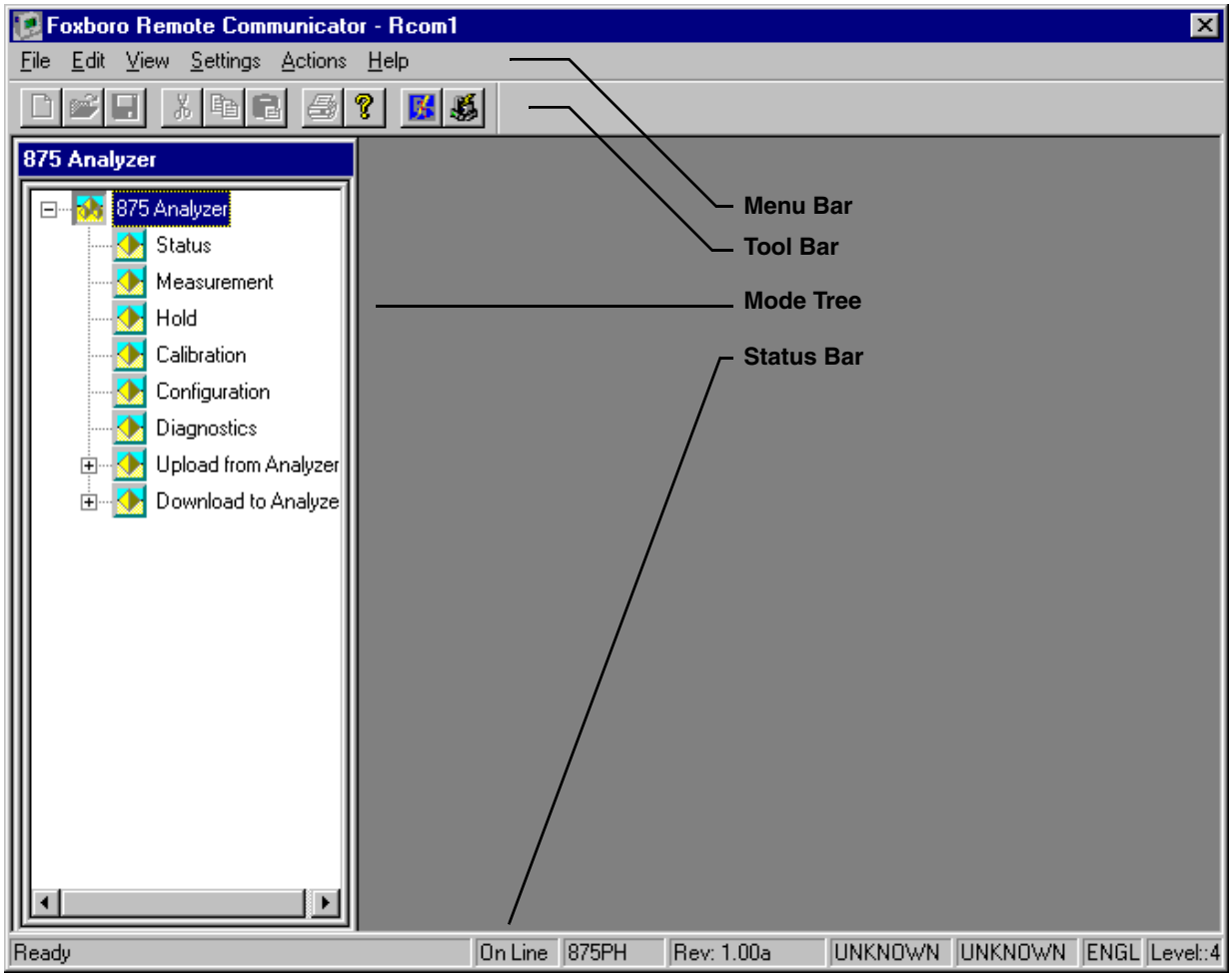

Figure 4. Top Level Screen

Top Level Screen

The Top Level Screen contains a menu bar, toolbar, status bar, and mode tree. Each is described below.

Menu Bar

The Menu Bar contains File, Edit, View, Settings, Actions, and Help menus. Each is described in the following table.

Table 2. Menu Bar — Description of Functions

Top Level Menu Pick	Submenu Pick	Description
File	New*	Creates a preconfiguration database using a default database as a template.
	Open..*	Edits an existing configuration database.
	Close*	Closes the current configuration field.
	Save*	Saves the active document.
	Save As..*	Saves the configuration to a file
	Download File From Analyzer	Downloads the file from the analyzer.
	Upload File To Analyzer	Uploads the file to the analyzer.
	Recent File*	Shows the most recently accessed files for quick access.
	Exit	Quits the application.
Edit	Undo*	Reverses the previous action.
	Cut*	Cuts selected text and graphics from the file and places these items on the clipboard.
	Copy*	Copies selected text and graphics to the clipboard.
	Paste*	Pastes the contents of the clipboard to the file at the insertion point.
View	Toolbar	Shows or hides the toolbar.
	Status Bar	Shows or hides the status bar.
Settings	Loop Back	For factory only - do not use.
	Setup	Displays the Connections parameter screen.
Actions	Connect	Connects the analyzer to the PC.
	Disconnect	Disconnects the analyzer from the PC.
Help	About RCOM	Displays the software version number.

*Not available at this time.

Toolbar

The program is equipped with a toolbar at the top of the screen. It can be shown or hidden at any time by using the **View** menu. The icons on the toolbar are shown in Figure 5. A listing of the features and descriptions for the toolbar is given in Table 3.

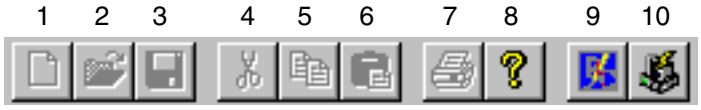

Figure 5. Toolbar Icons

Table 3. Toolbar Features and Descriptions

Item	Feature	Description
1	New*	Creates a new database using a default database as a template.
2	Open*	Edits an existing stored configuration database.
3	Save*	Saves the active configuration database to a file.
4	Cut*	Cuts selected text and graphics from the file and places it on the clipboard.
5	Copy*	Copies selected text and graphics to the clipboard.
6	Paste*	Pastes the contents of the clipboard to the file at the insertion point.
7	Print*	Not available at this time.
8	About	Displays the software version number.
9	Connection Parameters Screen	Displays the Connection Parameters screen.
10	Connect Screen	Displays the Connect or Disconnect screen

*Not available at this time

Status Bar

The program is equipped with a status bar at the bottom of the screen. It can be shown or hidden at any time by using the **View** menu. The status bar displays nine items of information:

- The program status: Ready, Connecting, and so forth
- The communication status: On Line or Off Line
- The type of the connected analyzer; for example, 875EC
- The hardware revision level
- The current date
- The current time
- The language
- The passcode level.

Mode Tree

The Mode Tree enables easy access to the six analyzer modes: Status, Measurement, Hold, Calibration, Configuration, and Diagnostics. It also provides a shortcut means to the Download from Analyzer and Upload to Analyzer functions.

Connecting to an Analyzer

Communication is established between your analyzer and your PC upon startup. You can disconnect it and/or reconnect it by selecting **Disconnect** or **Connect** in the **Action** menu.

Reading Analyzer Data

After connecting the RCOM to an analyzer, select **Measurement** from the Menu Tree. The User Window is displayed to the right of the Menu Tree. This window continuously reads and displays measurement, absolute measurement, and temperature readings.

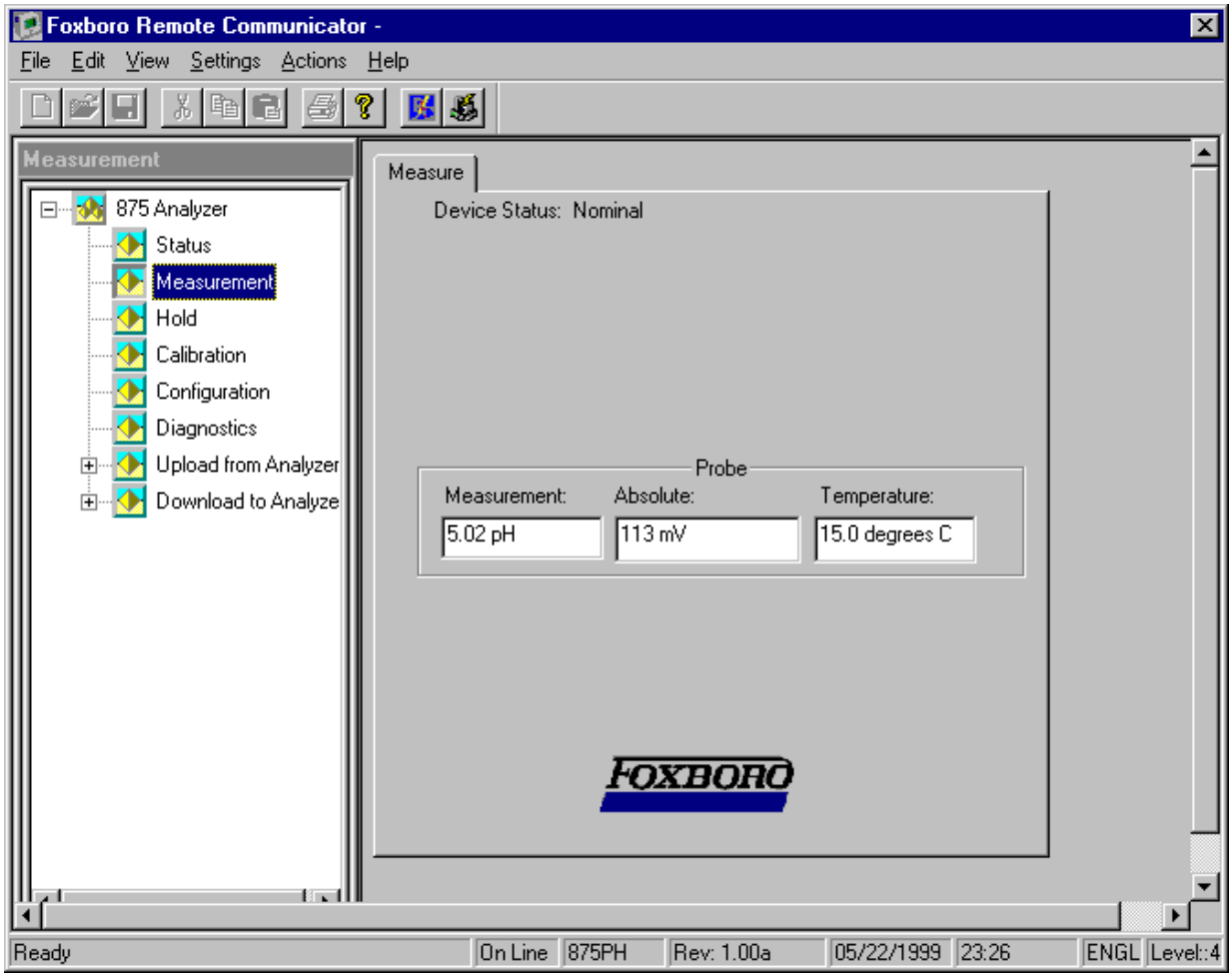

Figure 6. Top Level Menu Screen with User Window

Changing to Another Mode

To change from one mode to another, select the new mode in the Menu Tree. If you select **Measurement** or **Status**, the desired screen is displayed. If you select **Hold**, **Calibration**, **Configuration**, or **Diagnostics**, the Mode Change screen first appears. To proceed, click on **Enter**. To exit the selected mode, click on the **Mode** button and then select the next mode you wish to enter from the Menu Tree.

NOTE

The **Help** button is not active at this time.

For a detailed description of each mode, refer to the instructions listed in Table 1.

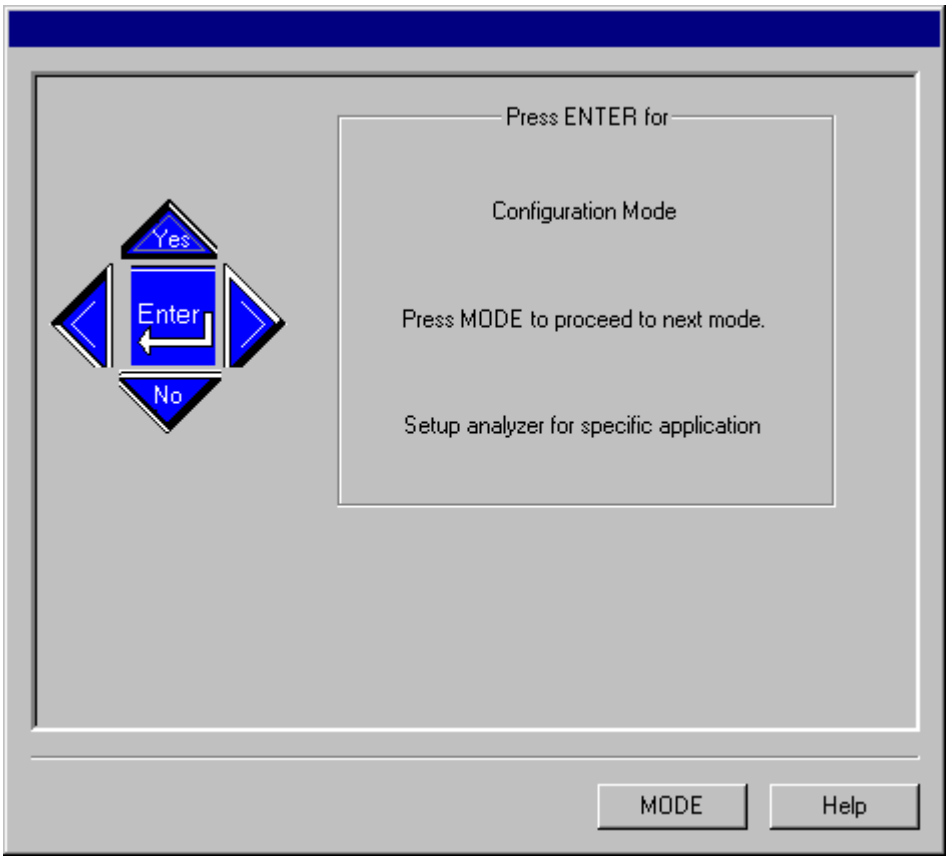

Figure 7. Mode Change Screen

Downloading a File from the Analyzer

Configuration data can be downloaded from your analyzer and saved to a file that can later be copied to another analyzer. Calibration data can not be downloaded at this time. The size of such a file is approximately 10 KB.

To download a file from the analyzer:

1. Hardwire your analyzer to your PC (see "Connecting the Analyzer and PC" on page 3).
2. Connect to your device via **Action -> Connect**.
3. Download the file via **File -> Download File From Analyzer**.
4. Save the file via **File -> Save As**. Use the extension **.MAI**.

Uploading a File to the Analyzer

⚠ CAUTION

Before using this function, it is **highly recommended** that you save the existing analyzer data in your database (see "Downloading a File from the Analyzer" on page 11).

To upload a file from the analyzer:

1. Hardwire your analyzer to your PC (see "Connecting the Analyzer and PC" on page 3).
2. Connect to your device via **Action -> Connect**.
3. Open the desired file via **File -> Open**.
4. Upload the file via **File -> Upload File To Analyzer**.

4. Use With Modems

Introduction

The RCOM program usually operates with the 875 Analyzer directly connected to a PC. However, it can optionally operate through standard telephone data modulator/demodulators (modems). Though RCOM does not manage a modem, the presence of modems does not interfere with its operation.

Modems can be used if a telephone connection is established first, and then RCOM communicates through the modems unknowingly. When you have finished using RCOM, the telephone connection must be explicitly broken.

— NOTE

Although menu operation is possible through modems, it is strongly recommended that 875 Analyzer firmware upgrades be performed only by direct connection and not using modems.

Equipment

A summary of the required equipment is shown in Figure 8 and described below.

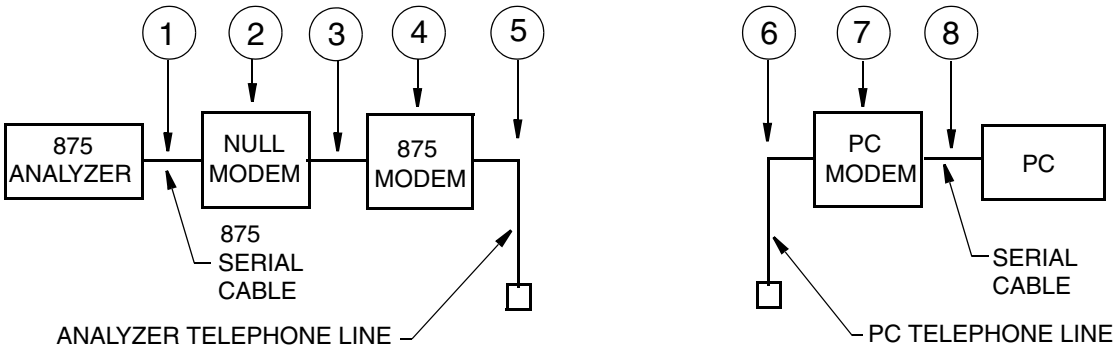

Figure 8. Required Equipment for Operation With Modems

1. Serial cable supplied with the 875 Analyzer.
2. Null modem at the 875 Analyzer.
3. Standard RS232 cable.
4. External, stand-alone modem at analyzer end.
5. Telephone line dedicated to the 875 Analyzer.
6. Telephone line available to the PC when needed.
7. External, stand-alone modem at PC end.
8. Standard serial cable between the modem and PC.
9. Any adapters required by the various physical connectors.

Connection from an 875 Analyzer to a PC requires external, stand-alone modems at each end. Foxboro does not recommend any specific modem, but it is useful if each modem is able to ignore its electrical control signals such as DTR and CTS.

The 875 Analyzer serial port connects with only three wires carrying data, and does not provide any control signals. Either additional wiring must be supplied, or the modem connected to the analyzer must be capable of answering an incoming call and transmitting data without the DTR or CTS control signals. Most modems are wired for connection to a PC and require the input and output wires to be crossed at the 875 Analyzer. This crossing, and potentially the DTR and CTS signals, are supplied by a component called a null modem.

The PC uses two different programs to establish the telephone connection and then to communicate with the analyzer. When changing from one program to the other, the modem must retain the telephone connection. This is impossible using the Windows operating system with internal modems. Therefore, an external modem is required. The external modem must be able to ignore its DTR input so that it does not hang up the telephone between the different programs.

Setup

1. Select Baud Rate
   First choose a baud rate for the modem connection. Today's V.90 modems can connect at baud rates up to 56 K. Therefore, they should work at the highest 875 Analyzer rate of 19.2 K. If using older modems, the analyzer baud rate should be set not to exceed the practical connection speed of the modem.
2. Configure the Analyzer RCOM Parameters
   At the analyzer front panel, enter Configuration mode, scroll down to **Remote** and select **Port Settings**. Set a practical **Baud Rate**; **Data & Parity** = **8, None**; **Stop Bits** = **1**; and **Update Rate** = **Off**.
3. Configure the Analyzer Modem
   The modem to be used at the 875 Analyzer must first be connected to a PC for configuration. The null modem is not used at this time. Use a standard serial cable and connect it to one of the PC serial ports.

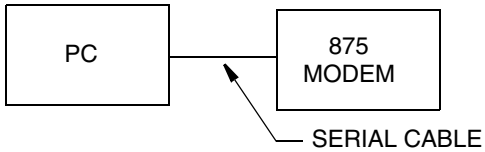

Figure 9. Connections for Configuring the Analyzer Modem

Open a plain terminal program, such as Hyperterminal. It is best to connect to the associated PC serial port instead of the modem. Use the desired baud rate. Referring to the modem user manual, set the switches and enter the commands required to get the modem to function as follows:

- Local echo off
- Online echo off

- Result code replies disabled (at least in answer mode)
- Answer after one ring
- DTR overridden (ignored)
- Flow control disabled, CTS ignored
- RTS ignored

Save this configuration as the default in case of a power failure.

4. Connect the 875 Modem Through the Null Modem
   Once the analyzer modem is configured, disconnect it from the PC cable, and connect it through the null modem to the analyzer serial cable. Also connect a dedicated phone line to the modem.
5. Configure the PC Modem
   Connect the modem for the PC to one of the PC serial ports using a standard cable. Once again, open a plain terminal program such as Hyperterminal and connect to the associated PC serial port instead of the modem. Use any baud rate greater than the analyzer baud rate. Refer to the modem user manual, and set the switches and enter the commands to configure the PC modem as follows:
   - DTR overridden (ignored)
   - Flow control disabled, CTS ignored
   - RTS ignored
6. Connect the PC phone line to the modem.
7. Install the RCOM Program in the PC. See “Installing the Software” on page 3.
8. Connect the PC to its Modem
   On the PC, open a plain terminal program such as Hyperterminal and connect to the PC serial port associated with the modem. Use any baud rate greater than the analyzer baud rate. Refer to the modem user manual, and enter the modem commands to dial the telephone number dedicated to the analyzer. The modems should connect. Then close the terminal program without hanging up.

— NOTE

You must actually close this program to release the serial port. It is not enough simply to minimize the window.

9. Set the RCOM Parameters
   Start the RCOM program, and click the **Comm Setup** button. Select the **Port** connected to the modem, and the same baud rate used in the terminal program (might not be the same as the analyzer baud rate). Keep **Data Bits** = **8, Parity** = **None**, and **Stop Bits** = **1**. You may select a name for the modem connection. Click **OK**.
10. Enter the 875 Analyzer passcode. The Top Level Menu Screen is immediately displayed.
11. Immediately close the RCOM window. This saves the communication settings.
12. Open the terminal program again, and enter the modem commands required to hang up the phone line.

Operation

1. On the PC, open a plain terminal program such as Hyperterminal and connect to the associated PC serial port (not the modem itself). Use any baud rate at or greater than the analyzer baud rate. Refer to the modem user manual, and enter the commands to dial the telephone number dedicated to the 875 Analyzer. The modems should connect.
2. Close the terminal program without hanging up.
3. Start RCOM, enter the 875 Analyzer passcode, and click **OK**. The RCOM main menu should appear quickly. Use RCOM as you would with a direct connection. When done, close all RCOM windows.
4. Open the terminal program again, and enter the modem commands required to hang up the phone line.

— NOTE

If Step 4 is not done, the phone lines remain connected, accumulating toll charges.

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