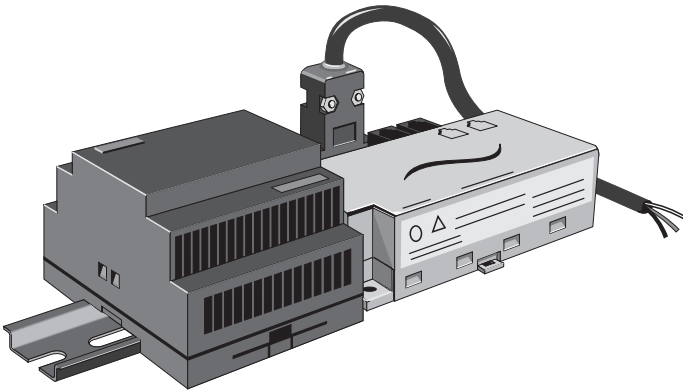


MILLTRONICS

EXTERNAL MODEM KIT

Instruction Manual

March 2001



EXTERNAL MODEM KIT

Safety Guidelines

Warning notices must be observed to ensure personal safety as well as that of others, and to protect the product and the connected equipment. These warning notices are accompanied by a clarification of the level of caution to be observed.

Qualified Personnel

This device/system may only be set up and operated in conjunction with this manual. Qualified personnel are only authorized to install and operate this equipment in accordance with established safety practices and standards.

Warning: This product can only function properly and safely if it is correctly transported, stored, installed, set up, operated, and maintained.

Note: Always use product in accordance with specifications.

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Disclaimer of Liability

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While we have verified the contents of this manual for agreement with the instrumentation described, variations remain possible. Thus we cannot guarantee full agreement. The contents of this manual are regularly reviewed and corrections are included in subsequent editions. We welcome all suggestions for improvement.

Technical data subject to change.

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Specifications

Modem:

- VT-Modem-1US, SIXNET external modem, DIN rail or flat panel mountable
- Only for use in North America
- refer to SIXNET modem manual

Power Supply:

- Siemens 120 V AC/230V AC input, 24V/1.3A output, DIN rail or flat panel mountable
- refer to Siemens power supply manual

Compatible Instruments:

- EnviroRanger ERS 500, Accumass BW500/SF500, AiRanger with SmartLinx® Modbus RTU card, Open Channel Meter OCM III

Warranty

All components of the external modem kit are covered by their individual manufacturer's warranties. Siemens Milltronics Process Instruments Inc. does not provide warranty on any of the modem kit components, separately or together.

The External Modem Kit

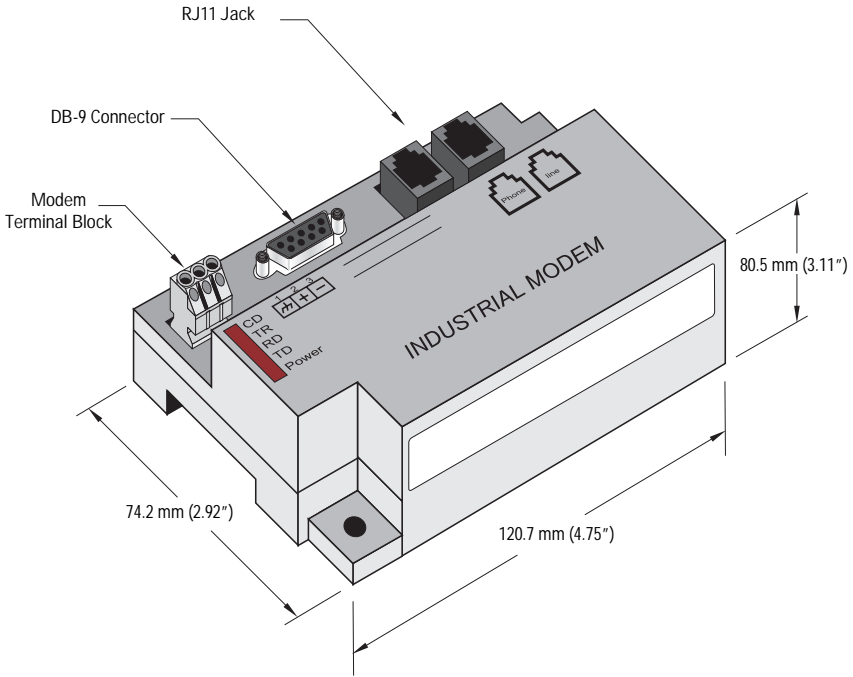
The External Modem Kit is assembled to assist users connecting external modems to Milltronics brand products. While any modem can work with Milltronics brand products, the VT-Modem-1 modem by SIXNET is easy to use and reliable. The External Modem Kit is only available for use in North America.

The External Modem Kit contains the following components:

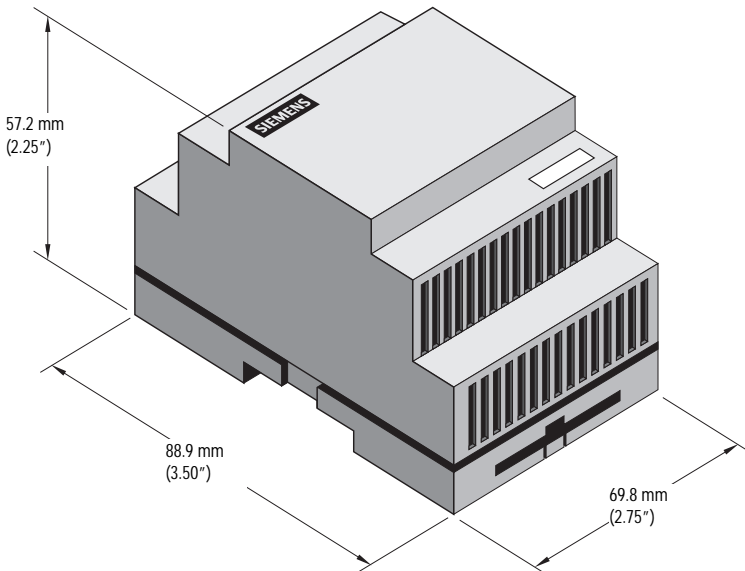
- SIXNET VT-Modem-1 modem
- modem programming cable (DB 9)
- Siemens power supply, 24V/1.3A
- 2-wire power transfer cable
- 3-wire custom communication cable

Dimensions

Modem



Power Supply



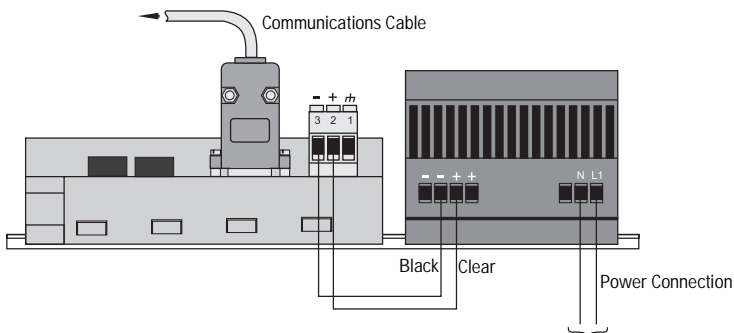
Assembly Instructions

Note: Customer supplied required parts and tools:

- power cable
- cabinet ground wire
- ohmmeter
- RJ11 phone cord

1. **Make sure the power cable is disconnected from the power source.** Connect the power cable to the power supply.
2. Connect the power transfer cable to the power supply and modem as follows:
 - +V on power supply to terminal 2 (+) on modem using clear wire.
 - -V on power supply to terminal 3 (-) on modem using black wire.Connect the ground on the modem to the cabinet ground (wire not provided).
3. Turn on power to the power supply. Connect modem programming cable to modem's DB-9 connector and then to an available port on a PC (eg. Com 1).
4. Program the external modem using the set-up commands for the associated Milltronics product [see Configuring the External Modem and Milltronics Product on page 6] through a terminal program on your PC (eg. Hyperterminal on Windows 95, 98, and NT or using the software provided by SIXNET.) Disconnect the programming cable when finished.
5. Connect the communications cable to the Milltronics product using the appropriate wiring code (see Configuring the External Modem and Milltronics Product on page 6). Connect the communications cable DB9 male connector to modem's DB9 female connector.
6. Program the Milltronics product using the correct parameters listed in Configuring External Modem and Milltronics Product section. Connect external modem to **analog** phone line using RJ11 telephone cable in the modem's **line** jack.
7. Configure the internal modem in laptop or desktop PC using Windows 95 or 98 to communicate using Modbus RTU protocol. (See Configuring Internal Modem on page 11.)
8. Dial in to Milltronics product using internal modem.

Note: When mounted in an external enclosure, ensure the modem and power supply are not exposed to the elements, dirt, or debris.



Configuring External Modem and Milltronics Product

EnviroRanger ERS 500, Accumass BW500, Accumass SF500, or AiRanger with SmartLinx® Modbus RTU card.

To configure the external modem, enter the following commands in order using a terminal program. (See Appendix A for instructions on running Hyperterminal.)

Configuration Commands for External Modem

1. Type **AT** and press **ENTER**.
2. Type the following AT commands in order and press **ENTER** after each command.
3. **OK** appears to validate each command. If **OK** does not appear, re-enter the command.

AT Commands	Description
AT&F&W&W1	resets modem to factory defaults
ATS0=1	answers on 2 nd ring
AT&D0	disable hardware flow control
ATS10=30	inactivity timer set to 300 seconds
ATS37=9	limit speed to 9600
AT&K0	no flow control
ATN0&M0	operate in direct mode
AT&W0	save as user profile 0
AT&Y0	make user profile 0 the default profile

The modem is now configured for 9600 baud communication.
The internal modem (Modbus Master) must be set up for:

- Modbus RTU
- 8 data bits
- 1 stop bit
- no parity
- no flow control

(See Configuring Internal Modem on page 11.)

Configuration Parameters and Wiring Diagram for Milltronics Product

EnviroRanger ERS 500

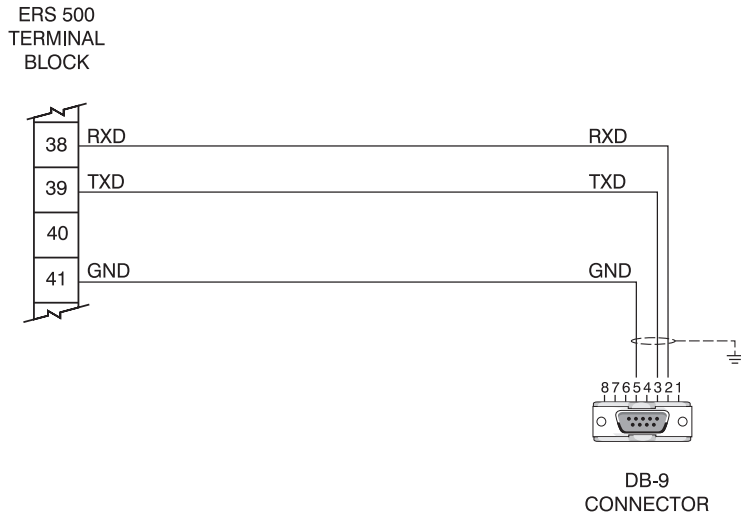
Port 2 set-up parameters:

Parameter	Description
P770 (2)* = 3	Modbus RTU slave
P771 (2) = 1	Modbus slave address of 1
P772 (2) = 9.6	9600 baud
P773 (2) = 0	no parity
P774 (2) = 8	8 data bits
P775 (2) = 1	1 stop bit
P776 (2) = 0	no flow control
P777 (2) = 0	no key up delay
P778 (2) = 1	answer only
P779 (2) = 300	Modem inactivity timeout = 300

*(2) refers to the primary index (secondary index 0).

Wiring Diagram for Connection to EnviroRanger ERS 500

1. Use an ohmmeter to rung out the communication cable. Determine which pin connects with each wire of the cable.
2. Connect the communication cable to the ERS 500 as follows:



Accumass BW500/SF500:

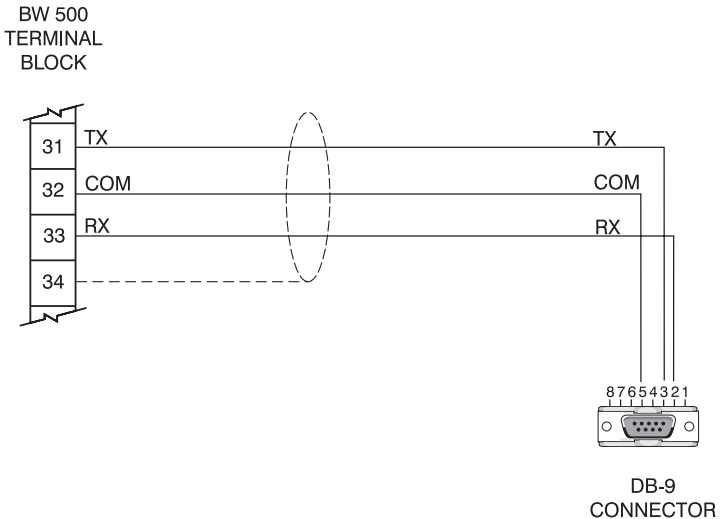
Port 1 set-up parameters:

Parameter	Description
P770 (1)* = 3	Modbus RTU slave
P771 (1) = 1	Modbus slave address of 1
P772 (1) = 2	9600 baud
P773 (1) = 0	no parity
P774 (1) = 8	8 data bits
P775 (1) = 1	1 stop bit
P778 (1) = 1	modem attached
P779 (1) = 300	Modem inactivity timeout = 300

*(1) refers to the primary index (secondary index 0)

Wiring Diagram for Connection to Accumass BW500/SF500:

1. Use an ohmmeter to rung out the communication cable. Determine which pin connects with each wire of the cable.
2. Connect the communication cable to the BW500/SF500 as follows:



AiRanger with SmartLinx® Modbus RTU card

Port 1 set-up parameters:

Parameter	Description
P751 = 3	9600 baud
P752 = 0	no parity
P753 = 1	station address 1

Wiring Diagram for Connection to AiRanger with SmartLinx® Modbus RTU card

1. Use an ohmmeter to rung out the communication cable. Determine which pin connects with each wire of the cable.
2. Connect the communication cable to the AiRanger as follows:

AIRANGER WITH
SMARTLINX® MODBUS
RTU CARD



Open Channel Meter OCM III

To configure the external modem, enter the following commands in order using a terminal program. (See Appendix A for instructions on running Hyperterminal.)

Configuration Commands for External Modem

1. Type **AT** and press **ENTER**.
2. Type the following AT commands in order and press **ENTER** after each command.
3. **OK** appears to validate each command.* If **OK** does not appear, re-enter the command.

AT Commands	Description
AT&F&W&W1	resets modem to factory defaults
ATS0=1	answers on 2 nd ring
ATS37=9	only connect at 9600 baud
AT&D0	disable hardware flow control
ATS10=30	wait time from lost carrier
AT&K5	Xon Xoff flow control
ATN2	MNP reliable mode
ATV0*	numeric results codes
AT&W0	save as user profile 0
AT&Y0	make user profile 0 the default profile

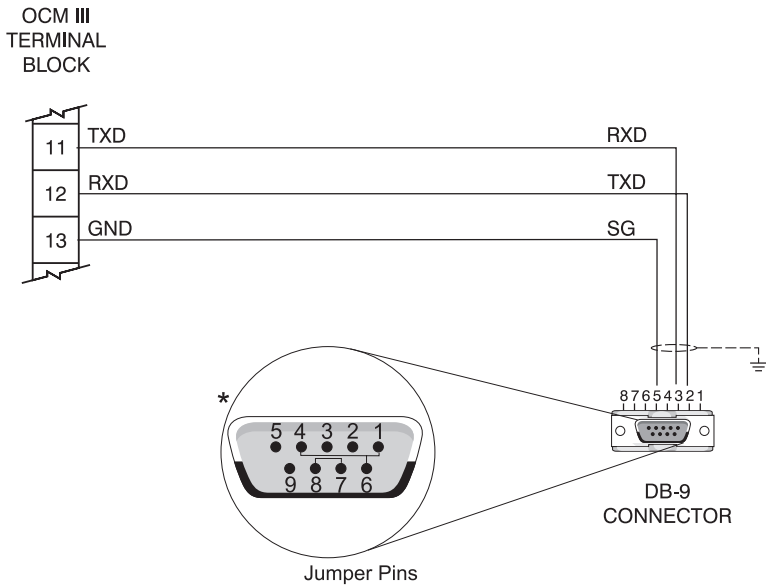
*After ATV0 is entered, 0 will appear to validate this command.

Configuration Parameters for OCM III

Parameter	Description
P37 = 5	9600 baud

The modem is now configured for 9600 baud communication.
Set internal modem to standard modem configuration (Windows default values).

Wiring Diagram for connection to OCM III:



***Note:** Jumpers are required for communication with the OCM III. The jumpers are included in communications cable supplied with Milltronics External Modem Kit.

Configuring Internal Modem

The internal modem communicating with the external modem and Milltronics product must communicate using the Modbus RTU serial protocol.

To set up internal modem using Windows:

1. On the Start Menu, click **SETTINGS** and click **CONTROL PANEL**.
2. Double-click **MODEMS**.
3. Highlight the internal modem being used and then click **PROPERTIES**.
4. Select the **GENERAL** tab. Set speed to **9600** using Maximum Speed dropdown menu.
5. Select the **CONNECTION** tab. Under Connection Preferences, set data bits to **8**, parity to **NONE**, stop bits to **1**.
6. Click **ADVANCED** at bottom right of Connection screen.
7. Verify the **Use error control** and **Use flow control** boxes are not checked.
8. Verify Modulation type is **Standard**.
9. Save changes and exit.
10. Reboot computer.

Modem configuration:

- Modbus RTU
- 9600 baud
- 8 data bits
- 1 stop bit
- no parity
- no flow control

Appendix A – Connecting using Hyperterminal

To run Hyperterminal from Windows:

1. From Start Menu
 - a) click **PROGRAMS**
 - b) click **ACCESSORIES**
 - c) click **HYPERTERMINAL** (sometimes located in **COMMUNICATIONS [HYPERTERMINAL]**).
2. From new window, double-click **HYPERTERM.EXE**.
3. If prompted by Windows to Install Modem, follow prompts to install modem. This will lead to the update Wizard. Insert the CD accompanying the modem, and then follow the prompts to configure external modem.
4. On Connection Description dialogue box, type a name for your modem and select a modem display icon. Press **OK**.
4. In Phone Number Dialogue box:
 - a. Choose the **COM** port connecting your modem (eg. Direct to Com1)
5. In Port Settings Dialogue box:
 - a. Set Bits/second – select **9600** from drop down list
 - b. Set data bits to **8**
 - c. Set parity to **NONE**
 - d. Set stop bits to **1**
 - e. Set flow control to **NONE**
 - f. Choose **OK**.
6. You are now connected to external modem. Type **AT** commands as outlined in Configuring External Modem section.
7. When finished, disconnect by choosing **CALL** and then clicking **DISCONNECT**.
8. When asked to save session, choose **YES**.

www.milltronics.com

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