MILLTRONICS
APPLICATION GUIDE

Sample Setup for Report by Exception on an EnviroRanger

This application guide describes how to set up an EnviroRanger for the report by exception feature. After setting up the EnviroRanger as per this guide, the user will be able to trigger a switch and initiate a report by exception call out.

To test this setup configuration, the program MDBUS (www.calta.com) was used as the Modbus Master. The modem on the computer running MDBUS was a 3COM internal modem (see application guide 99003 for setup information on the internal modem). The modem used by the EnviroRanger was a VT-Modem-1 (see application guide 00004 for setup information on the external modem).

Report by exception operates in the following manner:

Event → trigger → report → call

An event causes a trigger to go off, generating a report. The existence of a report then causes a call to be made.

The report contains the following information:

- Location ID
- Trigger number
- Time stamp
- Data

The setup for this example is shown in Figure 1.

Keywords:
Report by exception, Modems, Modbus RTU, Trigger, ERS 500

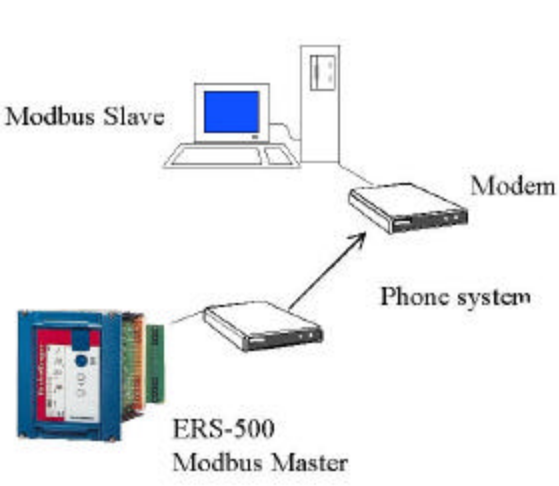


Figure 1 - Setup

Description:

Before setting up report by exception, the EnviroRanger startup parameters need to be configured. For this test, a transducer needs to be active (it does not need to be attached, but it does need to be configured).

A series of steps are required to get report by exception going. The basic steps are listed in the following sections with a brief explanation of what is being done.

Setting up the Modbus Slave:

This step sets up the Modbus slave for the ERS-500 to call. In this test, MDBUS was used with a 3-COM internal modem. The modem was set according to application guide 99003. MDBUS was set up with the following settings:

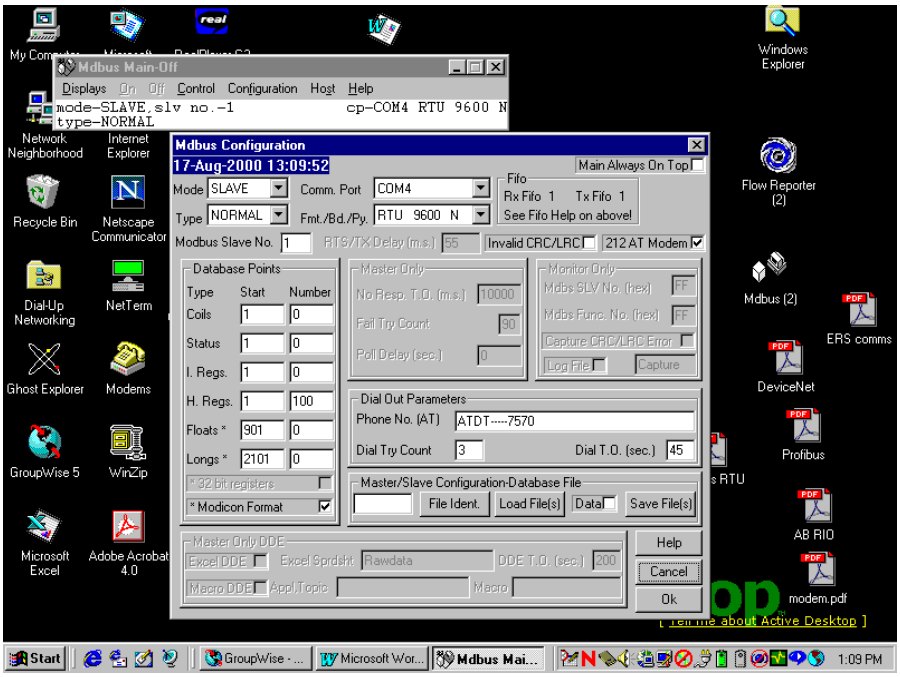
Mode: Slave
Type: Normal
Com Port: COM4
Fmt/Bd./Py.: RTU 9600 N

Modbus Slave No: 1
Invalid CRC/LRC: Box not checked
212 AT Modem: Box checked

Coil Start: 1
Coil Number: 0
Status Start: 1
Status Number: 0
I Reg. Start: 1
I Reg. Number: 0

H Reg. Start: 1
H Reg. Number: 100
Floats Start: 901
Floats Number: 0
Longs Start: 2101
Longs Number: 0

Modicon Format: Box checked
Master/Slave Configuration – Database file: Box is blank
Dial-Out Parameters: Does not matter what is entered here.



The modem also needs to be set to auto answer. One method is to use HyperTerminal to connect to the internal modem, and then to type the following commands:

ATS0=1	Auto Answer on 1st ring
AT&W0	save as profile 0
AT&Y0	make profile 0 the default

Setting up the Modem on ERS-500

The modem used for this example was set up according to Application Guide 00004. No other settings were required.

MILLTRONICS
APPLICATION GUIDE

Setting up the Trigger

This step defines what the trigger is and when it will activate. The trigger itself is some event based on a parameter in the EnviroRanger. The most common events to trigger on would be a level, an input, an output, or time. Up to 32 different triggers can be defined.

In this example, the source for trigger 1 is digital input 1 (which will be wired to a switch). Also, the trigger will go to an 'on state' when the input is 1, and the trigger will go to the 'off state' when the input is 0.

P420 index 1 = 275	parameter number for digital input
P421 index 1 = 1	point number
P422 index 1 = 1	on set point
P423 index 1 = 0	off set point

Setting up Report #1

This section of parameters defines a report.

For this example, a report is set up that will send the level (P920) for point 1 and will format it as defined units, sub index 0 using two decimal places. This report will be generated when trigger 1 is asserted.

P481 index 1 = 920	parameter number that is to be reported
P482 index 1 = 1	point number that is to be reported
P483 index 1 = 17	the format for sending the parameter
P484 index 1 = 1	the trigger # that will generate the report
P485 index 1 = 1	trigger type. Trigger when asserted.

Setting up the Incoming Port

There are two sets of port settings: one for incoming messages and one for the outgoing messages. This example sets the EnviroRanger up to be a Modbus RTU slave when the unit is called and be a Modbus RTU master when calling out. Also, note that the setup of the port itself is done here for both outgoing and incoming messages. If only report by exception used, then P770 can be any value, except 0 or 1 (none, or Dolphin) for report by exception to work.

P770 index 2 = 5	Modbus RTU Master
P771 index 2 = 1	network address of 1
P772 index 2 = 9.6	baud rate of 9600
P773 index 2 = 0	no parity
P774 index 2 = 8	8 data bits
P775 index 2 = 1	1 stop bit

Setting up the Master Driver

In this section, the port is set up for the outgoing message.

P473 = 1	Slave address being called
P474 = 1	Holding register offset
P475 = 6	Number of times to try sending the write command before giving up. A value of 3 to 6 will work with most modems. If the data is not being received, it may be necessary to increase this value. A value of at least 2 is recommended when using a modem.
P476 = 3000	Timeout delay of 3 seconds. Wait this amount of time for a reply before timing out.

MILLTRONICS
APPLICATION GUIDE

Setting up the Modem

P778 index 2 = 3 Modem available. Allows Answer or Dial
P779 index 2 = 30 Modem inactivity timeout. Use 30 seconds

Setting up the Dialer

This section sets up the phone number (or numbers) called. The index is by phone number. It is set up to call out using Modbus RTU Master. It is also set up to retry each number 3 times before giving up and to cycle through all the numbers 3 times before giving up.

P783 index 1 = 5 dial-out protocol (Modbus RTU Master)
P784 index 1 = 1 enable phone number using tone dialing
P785 index 1 = 7407570 phone number
P786 = 3 tries per number
P787 = 3 number of cycles
P788 = 10 wait 10 seconds before retrying
P789 = 30 connection timeout

Setting up Reporting

The step links the reporting to the port and permits everything to work.

P470 = 1234 Unit identifier. A number assigned by the user to an EnviroRanger to identify it. This must be a nonzero value to enable report by exception.
P471 = 2 Report destination. This identifies which port to sent the exception out through.

Wiring the Switch

To trigger the exception, a switch will need to be wired to the EnviroRanger. A simple single pole, single throw switch is used (s1 and s2 represent the two sides of the switch).

For the rack and panel unit, use the following wiring:

S1 to terminal 26
S2 to terminal 27
Jumper terminal 22 to 23

For the wall mount, use the following wiring:

S1 to terminal 55
S2 to terminal 42
Jumper terminal 53 to 54

Putting it all Together

Once all these steps are completed, the final steps are:

- Start MDBUS
- View the Holding registers

- Activate the switch on the ERS-500 and wait a few seconds for the dial-up to occur.

- Watch the information coming in to the holding registers

Note: The information in this document is intended as a "guide" only. Milltronics assumes no responsibility for its application.