

MannComm

Set-up and Monitoring software for Multiplus Series Instruments



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NOTE

We have checked the contents of this manual for conformity with the hardware and software described. Nevertheless, because errors cannot be ruled out, we cannot accept any liability for complete conformity. The information in this manual have been checked regularly and any necessary corrections will be included in subsequent editions.

We always welcome suggestions for improvement.

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1 Product Overview

1.1 Introduction

The MannComm software allows you to setup and save configuration information for Multiplus Instruments via a Modbus RS485 link. Each link can connect up to 32 instruments.

MannComm allows you to view the configuration parameters of an instrument by directly up-loading the information on line or opening a file. You can modify the configuration data, download it to a MultiPlus product and save it into the EEPROM of that instrument.

Configuration files can also be stored on disk for later retrieval.

The software also monitors measured values, internal variables, alarm status and analogue output signals for each instrument and shows the results on the screen in engineering units.

It also includes a packet generation and testing interface that allows for basic testing of modbus commands over the link.

2 Installation

2.1 System Requirements

- Windows 2000/XP/Vista
- IBM PC with a spare COM port
- RS232 to RS485 Converter

2.2 Getting Started from CD Rom

Place CD ROM containing “MannComm Software Version 1.XX” in the CD ROM drive of your computer.

1. Open up Windows Explorer and select the “Set-up” Icon in the MannComm folder on the CD ROM.
2. Double click on this icon and click OK to start the installation process
3. Follow the step by step instructions.

2.3 Downloading the latest version

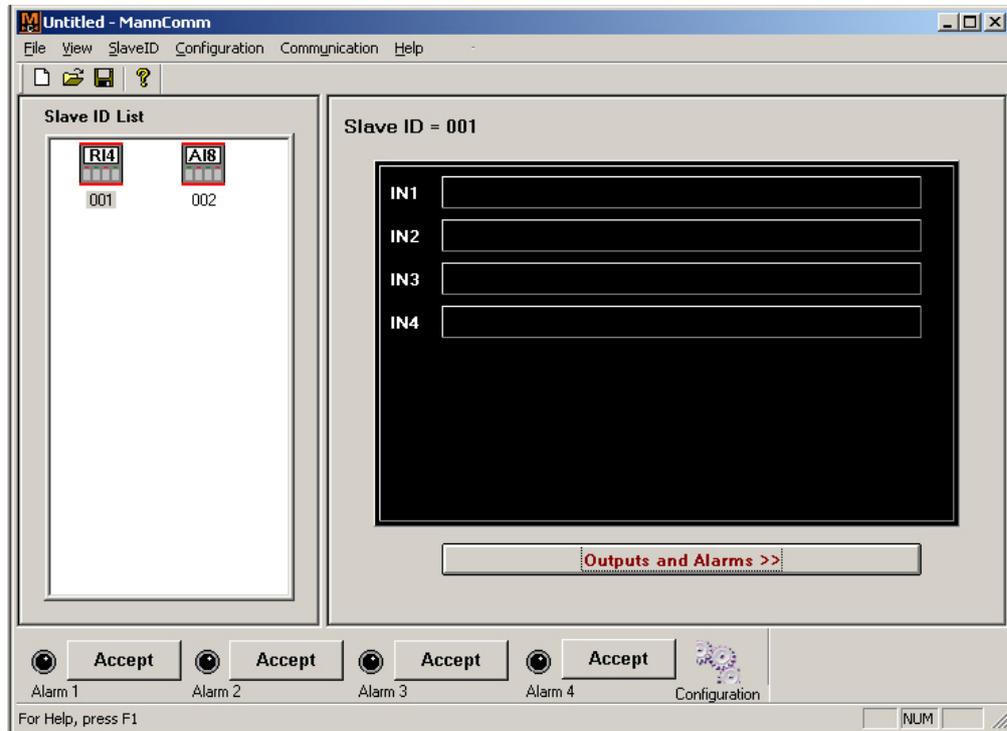
The latest version of MannComm Software is available from the Weidmüller website at www.mannseries.com. The installation package will include the latest revision of this manual.

2.4 Run MannComm Software

After completing installation, select “Start | Programs | Weidmuller | MannSeries | MannComm | MannComm ” to run the MannComm application.

3 Run mode overview

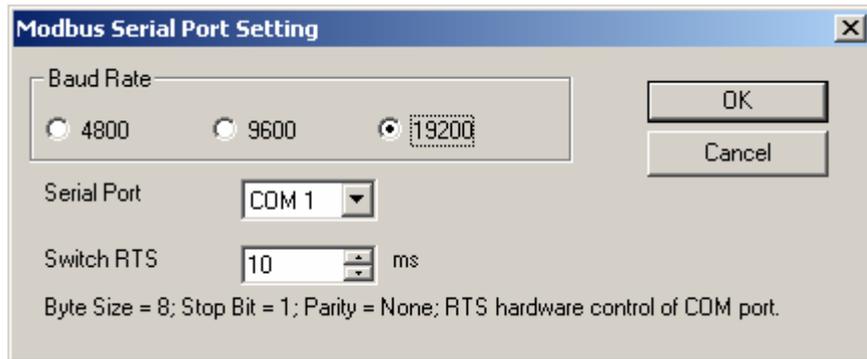
There are 3 panels on the MannComm run screen. The left panel is the **Slave ID List Panel**, the right hand panel is the **Display Panel** and bottom panel is the **Alarm Indicator Panel**.



3.1 Setting up the Modbus communication link

When you first run MannComm software, you will need to define COM port parameters for the communications port that is connected to your RS232/RS485 converter.

1. Select menu “Communication | Modbus Port Setting” to open the COM port settings window.



2. Set the COM port parameters according to your hardware connection and setting.
3. Click “OK”. You can now use MannComm software to control any Mann Series field instrument that supports MODBUS.



NOTE

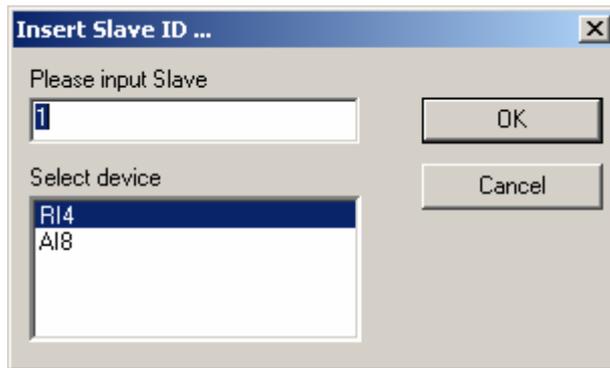
For lower baud rates a longer time for the ‘Switch RTS’ setting is required. We recommend a minimum of 20mS. If the setting is incorrect the program will report a communication error when uploading changes to Input, Output or Alarm settings.

Use the lowest value that works effectively.

3.2 Building The Slave ID List

3.2.1 Adding a Slave ID

1. Select the menu “Slave ID| Insert Slave ID” or use short key ALT+Ins or put mouse on **Slave ID List Panel**, then right click mouse and choose popup menu item “Insert Slave ID”.
2. Enter the Slave ID and highlight the product type, then press “OK” button to insert one instrument to the Slave ID list.



3.2.2 Deleting a Slave ID

1. Select one Slave ID from **Slave ID List Panel**.
2. Choose menu “Slave ID | Delete Slave ID” or use the short key ALT+Del or right click mouse on **Slave ID List Panel** and select “Delete Slave ID” item.

3.2.3 Changing a Device Type

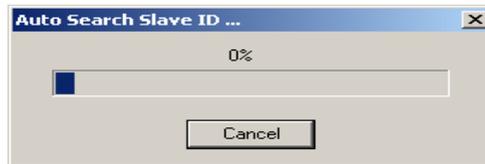
1. Select one Slave ID from **Slave ID List Panel**.
2. Choose menu “Slave ID | Change Device Type” or right click mouse on **Slave ID List Panel** and select “Change Device Type” item.
3. From “Please select device type ...” dialogue, choose one device type, then press “OK”. The system will change the related Slave Id device type.



3.2.4 Using the Auto-Search Slave ID

1. Select menu “Slave ID | Auto Search Slave ID” or right click mouse on **Slave ID List Panel** and select “Auto Search Slave ID” item, the application will automatically build the Slave ID list for you.

Note: this process may take a few minutes depending on your computer and communication baud-rate.



Once MannComm has identified all the instruments you want to be inserted in the **Slave ID List Panel**, you can press the “Cancel” button to stop the searching process early or wait for the search to be completed.

3.2.5 Saving a Slave ID List To a File

If you want to re-use your Slave ID list at some future time, you can save the current Slave ID list to the file. The file extension name is SID.

1. Select menu “File | Save As” or just simply press save button on the toolbar.

2. When Windows standard file save dialogue pops up, input the file name and press “Save” button.

You can recall this file using Open Slave ID List function.

3.2.6 Opening the Slave ID List From a File

1. Select menu “File | Open” or just simply press open button on the toolbar.

2. From Windows standard file open dialogue, enter or select the file name which you want to open, then press “Open” button.

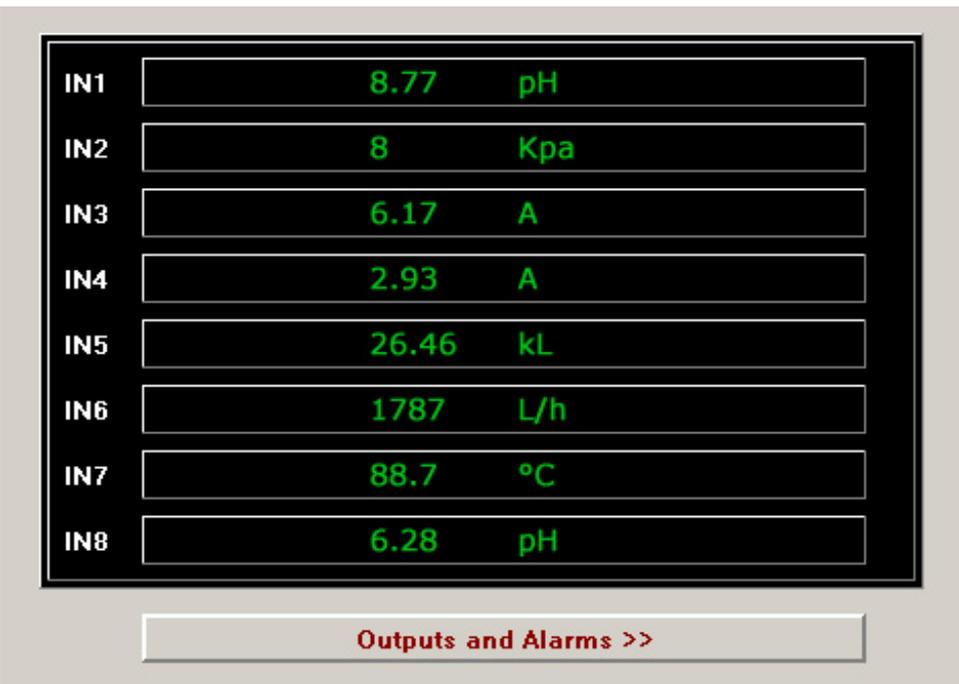
MannComm software also records the four most recently used file names in the “File” menu. You can open any of these files by double clicking on them.

3.3 The Display Panel

3.3.1 Input Data Display

After building the Slave ID list, left click any one Slave ID and the **Display Panel** will display running data of that unit. The default display is of the input channels measured variables

Input display example:



IN1	8.77	pH
IN2	8	Kpa
IN3	6.17	A
IN4	2.93	A
IN5	26.46	kL
IN6	1787	L/h
IN7	88.7	°C
IN8	6.28	pH

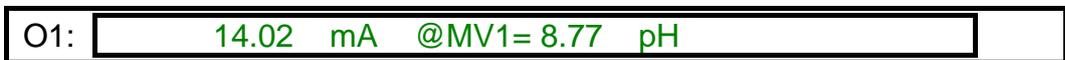
[Outputs and Alarms >>](#)

3.3.2 Analogue Output & Alarm Data Display

If you press the “Outputs and Alarms >>” button while the Inputs are displayed, the **Display Panel** will change to the Outputs and Alarms running data. This display is used for showing analogue output and alarm running data which include current output value, which measured variable or combination it acts on, the alarm set points and engineering units. You can press “Input Channels” button to go back input channels running data display.

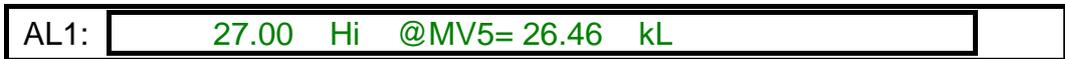
The menu “View | Show Next Display Page” provides same function for switching the **Display Panel** between Input display and Output/Alarm display.

3.3.2.1 Analogue output example:



- 14.02 : Output value.
- mA : Output type is current and unit is mA.
- @MV1 : Acts on measured variable 1.
- 8.77 : The measured variable value of MV1
- pH : Engineering unit of MV1

3.3.2.2 Alarm display example:



- 27.00 : Set point.
- Hi : Alarm type is high.
- @MV5 : Acts on measured variable 5.
- 26.46 : The measured variable value of MV5.
- kL : Engineering unit

3.3.3 Alarm Indicator Panel

The **Alarm Indicator Panel** displays the alarm status and provides four “Accept” buttons to accept “Operator Acknowledged” alarms.



There is a “Configuration” icon to access the selected instrument parameters setting page.

3.4 Configuration of Instrument Parameters Using MannComm

3.4.1 Overview

MannComm allows you to view the configuration parameters of an instrument by directly up-loading the information on line or opening a file. You can modify the configuration data, download it to a MultiPlus product and save it into the EEPROM of that instrument. Configuration files can also be stored on disk for later retrieval. Configuration parameter files are saved with a **.PAR** extension.

To see the current configuration of any unit on line, bring it up on the display panel and press the “Configuration” icon in the **Alarm Indicator Panel** or select “Configuration” menu, you can select submenu item “Input”, “Output”, “Alarm” or “Display” to open the relevant configuration window.



Load

Retrieves the current instrument configuration directly from the instrument.



Update

Download the displayed set-up to the instrument’s RAM memory. Note input and output types (current or voltage) are not updated for safety reasons until you issue the “Save” command.



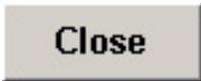
Save

Send the “Save” command to the instrument so that it saves all changed data from RAM memory to EEPROM, then re-initialises.



>>

Change to the second page of the current set-up



Close

Finish setting and exit.

3.4.2 Saving the Configuration settings

There is a “**File**” menu on each configuration dialogue to be used for reading and saving the configuration parameters of the instrument.



NOTE

Make sure that you have saved your configuration parameters to a file before overwriting them in the instrument’s EEPROM. Note that input, output, alarm and display information are stored in separate files, so choose the filenames accordingly.

Menu “**File | Write**” – Write current parameter settings to a file.

Menu “**File | Read**” – Load parameter settings from a file.

Menu “**File | Exit**” – Finish parameter setting and exit.

3.4.3 Integer notation



NOTE

For simplicity and optimal speed the displayed measured variables and outputs are sent as integers with the engineering units and decimal point position set separately. To configure any displayed value you must enter the decimal point position and engineering units using the appropriate decimal point pull-down menu/edit box and the engineering units pull down menu. Do not enter any decimal points or engineering units in the edit boxes of the values.

3.4.4 Application Examples

Two application examples (one for the AI8 and one for the RI4) are provided to show you how to open a configuration file, down-load it to an instrument and save that configuration in the instrument’s non volatile memory. These same configurations can then also be used by the MannServer Excel spreadsheet application to show how real-time data from your instruments can be exchanged using DDE and ActiveX.

The set-up parameters are saved as Parameter files (.PAR extension) on the CD ROM (in the Applications subdirectory under MannComm):

- AI8 Effluent Tank Monitoring
- RI4 Heat Exchanger Monitoring

The inputs, outputs, alarms and display are separately saved in their own files for these applications, so that all you have to do to set up an AI8 or RI4 is to open the correct file while in the configuration window, update the instrument with the parameters settings and save the settings. The paragraph below describes the parameter setting process.

3.4.5 Setting parameters for the AI8

The AI8 has eight analogue inputs, two analogue outputs and four alarm relays. These are grouped into five pages:

- Inputs 1 to 4 (plus number of samples)
- Inputs 5 to 8
- Outputs 1 and 2
- Alarms 1 and 2
- Alarms 3 and 4
- Display settings

3.4.6 Setting parameters for the RI4

The RI4 has four RTD inputs, two analogue outputs and four alarm relays. These are grouped into four pages:

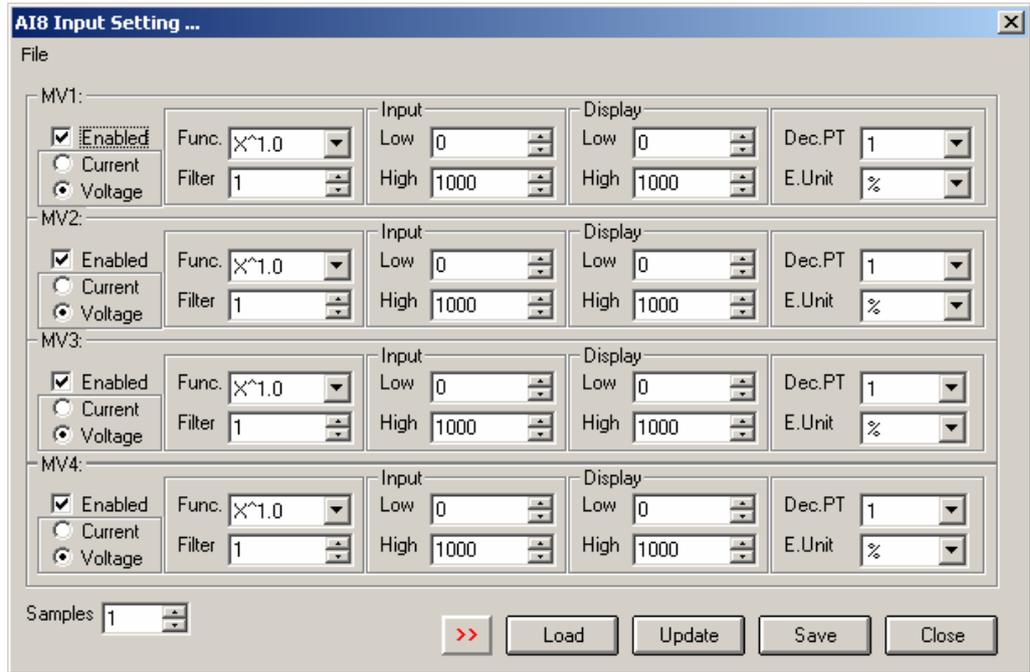
- Inputs 1 to 4 (plus number of samples)
- Outputs 1 and 2
- Alarms 1 and 2
- Alarms 3 and 4

Each page contains all the edit boxes and pull down lists necessary to set up the instrument parameters. Parameters which do not apply to a particular set-up are greyed out.

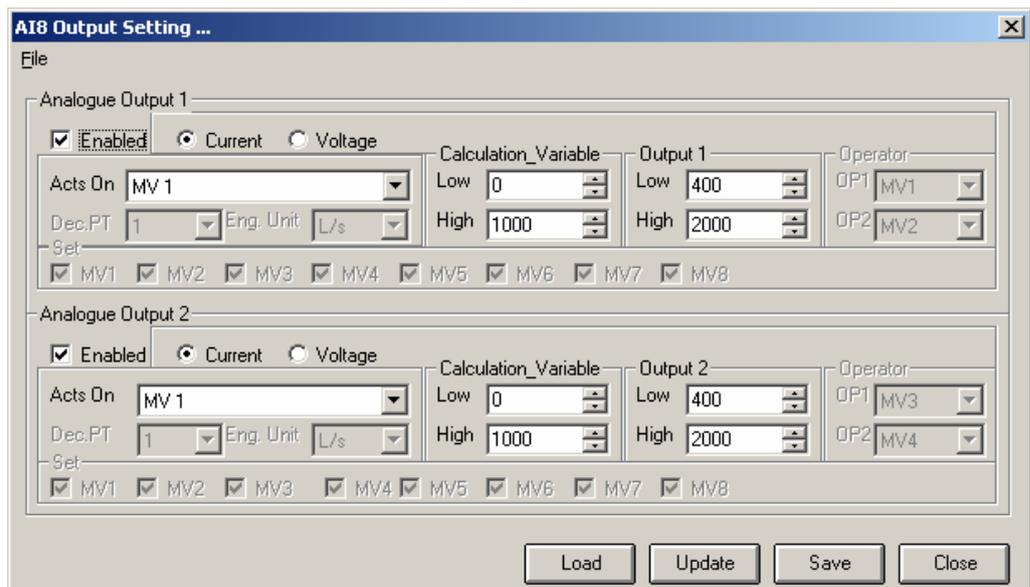
3.4.7 Configuration pages

When a parameter setting applies to a group of pages, it is listed in the first page of that group. For your easy reference, the first of the Configuration pages for Inputs, Outputs, Alarms and Display of the AI8 and RI4 are listed here.

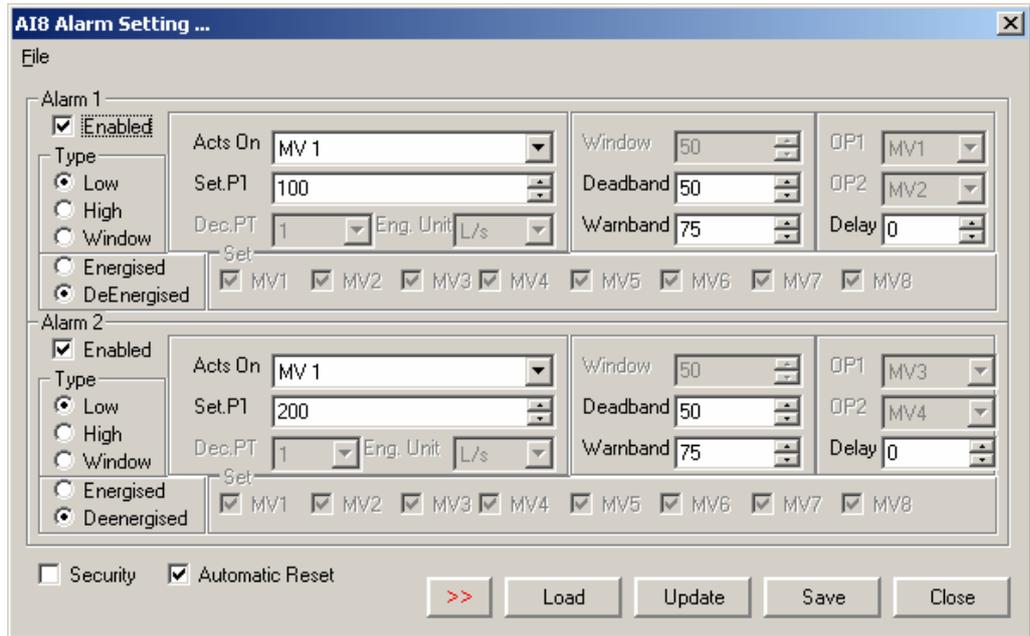
3.4.7.1 AI8 Input Configuration Dialogue



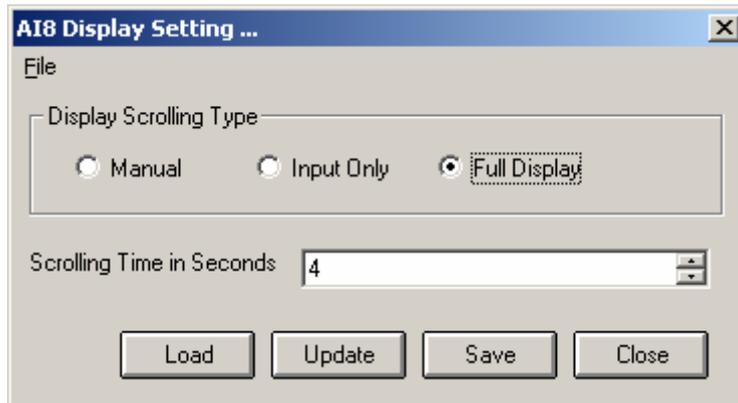
3.4.7.2 AI8 Output Configuration Dialogue



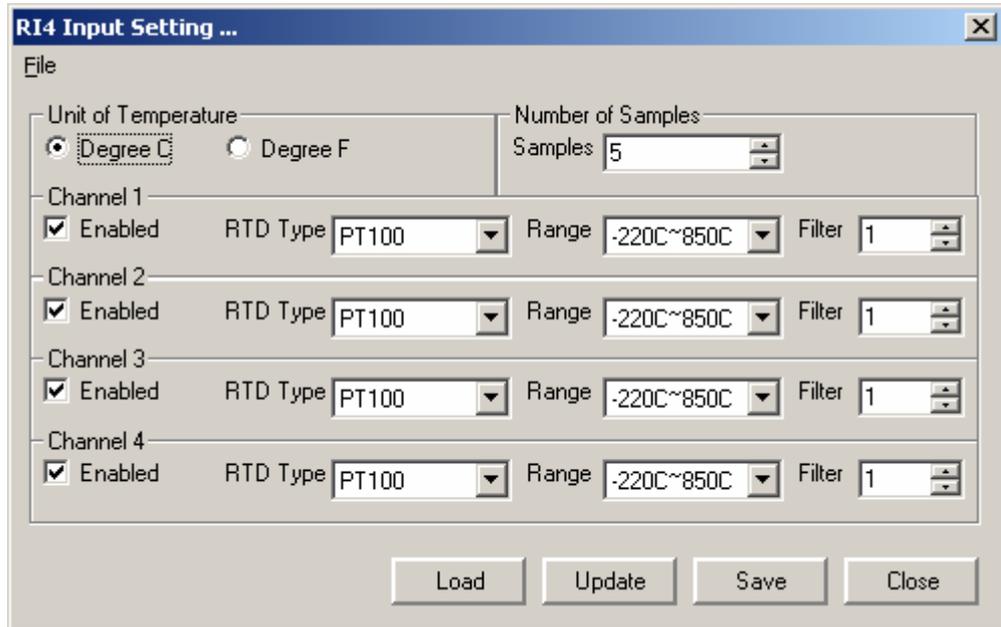
3.4.7.3 AI8 Alarm Configuration Dialogue



3.4.7.4 AI8 Display Configuration Dialogue



3.4.7.5 RI4 Input Configuration Dialogue



RI4 Input Setting ...

File

Unit of Temperature
 Degree C Degree F

Number of Samples
 Samples: 5

Channel 1
 Enabled RTD Type: PT100 Range: -220C~850C Filter: 1

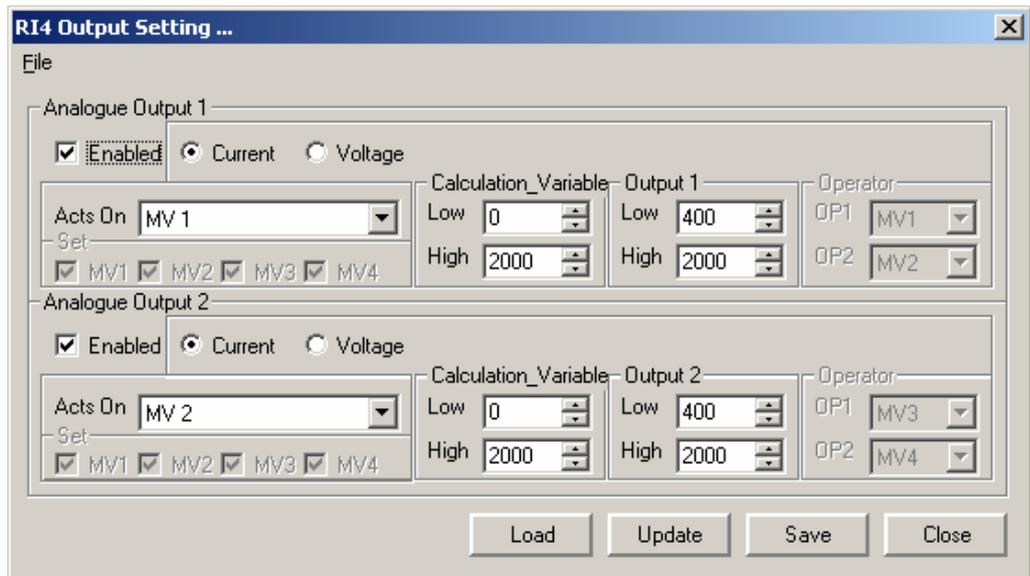
Channel 2
 Enabled RTD Type: PT100 Range: -220C~850C Filter: 1

Channel 3
 Enabled RTD Type: PT100 Range: -220C~850C Filter: 1

Channel 4
 Enabled RTD Type: PT100 Range: -220C~850C Filter: 1

Buttons: Load, Update, Save, Close

3.4.7.6 RI4 Output Configuration Dialogue



RI4 Output Setting ...

File

Analogue Output 1
 Enabled Current Voltage

Acts On: MV1
 Set: MV1 MV2 MV3 MV4

Calculation_Variable: Output 1
 Low: 0 High: 2000

Operator:
 OP1: MV1 OP2: MV2

Analogue Output 2
 Enabled Current Voltage

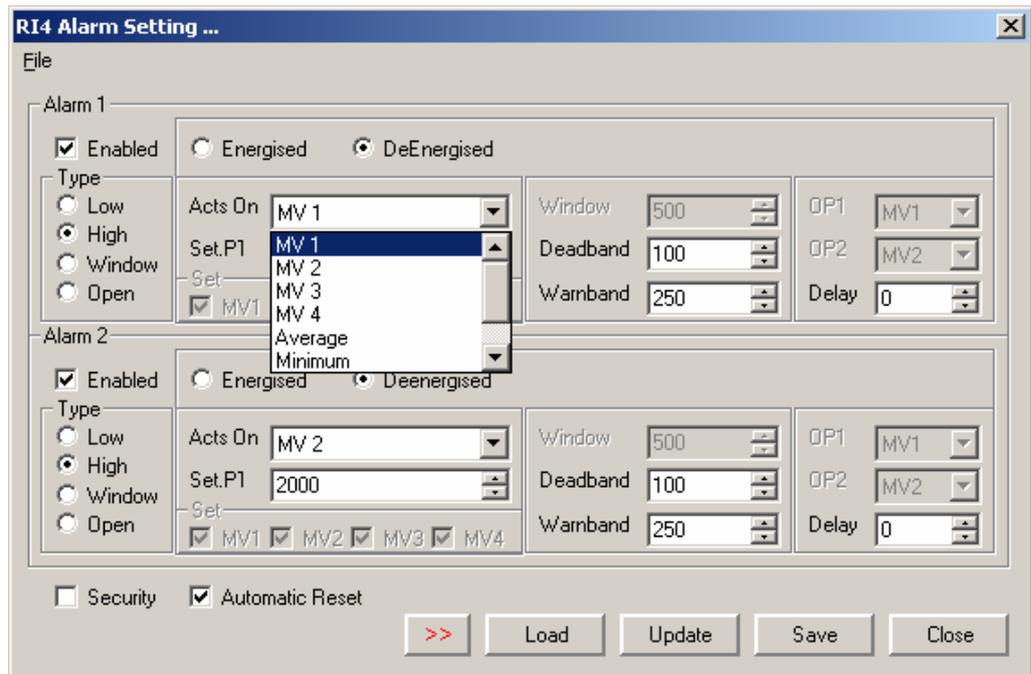
Acts On: MV2
 Set: MV1 MV2 MV3 MV4

Calculation_Variable: Output 2
 Low: 0 High: 2000

Operator:
 OP1: MV3 OP2: MV4

Buttons: Load, Update, Save, Close

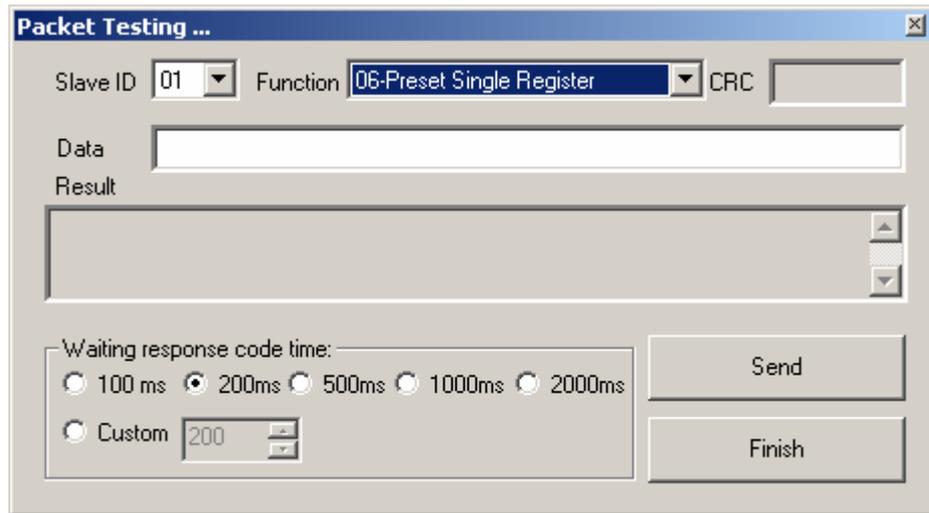
3.4.7.7 RI4 Alarm Configuration Dialogue



3.5 Packet Testing

3.5.1 Using Packet Testing

This is an extremely useful tool for testing any instrument that supports Modbus protocol. You can send and receive raw data to or from the instrument to be connected to your computer.



The following fields must be entered into the Data Box in the Packet Tester Window.

- **Slave ID** – Slave ID address
- **Function** – Function number
- **CRC** – CRC check sum of your sending data, software will calculate it for you automatically.
- **“Data”** – The data to be sent to the instrument under test.
- **Result** – Display the response data of remote instrument.
- **“Waiting Response Code Time”** – Set the time-limit for a response code from the unit under test. Normally, 500ms is enough.

MannComm measures the response time and displays the result under the “Result” display box.

The construction of all Modbus commands are provided in the Modbus Standard.

The details of implementation of the relevant commands in the AI8 and RI4 are contained on the CD ROM that was supplied with your AI8 or RI4.

The packet tester will work with other manufacturers’ products that support Modbus RTU.

3.5.2 Packet Testing Examples

We have provided two examples on how to communicate with the RI4 using Modbus protocol.

- Example 1 will outline how to obtain a temperature measurement from the RI4.
- Example 2 will outline how to change the unit of measurement from Celsius to Fahrenheit.

These examples will outline the two basic functions of communication via Modbus. Those being, reading a run mode parameter and modifying a set-up parameter.

3.5.2.1 Example 1 Reading a Parameter (Temperature Input 1).

To communicate with the RI4 requires the building of a packet. A packet is simply a binary string containing the information required to prompt the unit to send a return packet containing the temperature information. Modbus Protocol defines the format of the packet.

To build a packet requires,

- The RI4 Serial Communication Control Specification (SCCS), which gives the Address, Data, and Function codes that are required to read the temperature of Input 1.
- Modicon Modbus Reference Guide. This defines how to build the packet.
- Software to send the packet, for example MannComm Software.

To Query the temperature of a given input channel						
Parameter	Modbus S Type	Data Type	Modbus Address	Command Address (Hex)	Value	Command Function (Hex)
Ch1 Temp	Input Reg	Integer	30600	0257	#Value	4
Ch2 Temp	Input Reg	Integer	30601	0258	#Value	4
Ch1 Temp	Input Reg	Integer	30602	0259	#Value	4
Ch2 Temp	Input Reg	Integer	30603	025A	#Value	4

Figure 1

Figure1 shows an extract from the SCCS .

As shown in the SCCS Function Code 4 is required to read Channel-1 Temperature.

From the Modicon Modbus Reference Manual the format for function 4 is as follows:

04 Read Input Registers				
Slave ID	Function	Function Data	No of Registers	CRC Check
01	04	02 57	00 01	xx

Sending the above message will prompt the RI4 with Slave ID 1 to return the contents of register 0257.

The response will be:

04 Read Input Registers - Response				
Slave ID	Function	Byte Count	Data	CRC Check
01	04	02	7F FF	xx

Note: all numbers are in Hex.

The response indicates that the current value of Input1 is 7F FF. From the SCCS this corresponds to that input being Open Circuit.

3.5.2.2 Example 2 Changing Display from °C to °F

From the SCCS Functions 6 or 10 can be used to modify the unit of temperature. This example will use command 6.

From the Modicon Reference the Packet must be structures as follows.

06 Preset Single Register				
Slave ID	Function	Register Address	Data	CRC Check
01	06	00 63	00 FF	xx

The RI4 will acknowledge that the parameter has been modified by sending a return packet:

06 Preset Single Register – Acknowledge Change				
Slave ID	Function	Register Address	Data	CRC Check
01	06	00 63	00 FF	xx

The packet returned is identical to the one sent. This acknowledges the parameter has been changed.

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Password: detmold
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