Universal Modbus Receiver
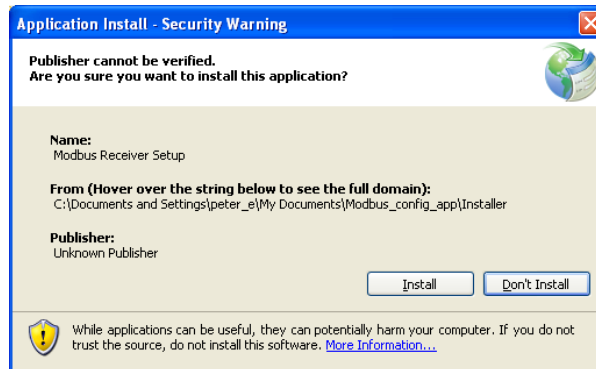# Setup Application

Version B

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1 Introduction

The **Universal Modbus Receiver Setup** is a Windows PC application for configuring and testing the **HWM Universal Modbus Receiver** with firmware version 8 onwards. Hereon the Universal Modbus Receiver will be referred to as simply the "receiver".

Before using this software, please read the **Universal Modbus Receiver User Manual** (**MAN-546-0005**), which describes the installation and operation of the receiver unit.

2 Software Installation

The software is installed by executing the self extracting installer file **ModbusReceiverSetup_Vx.x_setup.exe** (where x.x is the version). If the following message appears, click on the **Install** button.

When the application has finished installing it will execute automatically. To run it again there will be an entry on the start menu under **HWM**, or on the start screen if you are using Windows 8.

3 Operation

To configure the receiver it must be connected to either an RS-232 or RS-485 port of a PC. This can be either a built in port or a USB adapter.

Follow the instructions in the **Universal Modbus Receiver User Manual** on how to connect and configure the receiver. The baud rate DIP switches (SW3 and SW4) must initially be set to one of the preconfigured settings, but the user programmable settings (both switches on) can be changed later.

Power up the receiver and start the application **Modbus Receiver Setup**. This will open up with the window below.

The window is divided up into sections depending on functionality. These are described in turn below.

3.1 PC Serial Port Settings
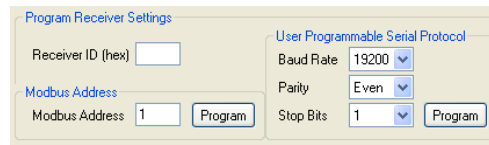
When using the application for the first time you will need to configure the PC serial port.

- Set the **Port** to the port number that you have attached the receiver.
- Set the **Baud Rate**, **Parity** and **Stop Bits** to those selected in the receiver.

These parameters are saved and will be used next time you start the application.

After setting the port parameters, it is a good idea to check the communication between the PC and the receiver. This can be done by selecting one of the transmitter channels and reading its data, as described in section **3.6 Channel Registers**.

3.2 Program Receiver Settings

Here you can change the **Modbus Address** of the receiver, and the **User Programmable Serial Protocol**.

3.2.1 Modbus Address

The **Modbus Address** is factory set to **1**. To change it to a different value…

- Enter the **Receiver ID** from the label on the receiver.
- Enter the required **Modbus Address**.
- Click the **Program** button to set the new address.

There is no verification reply. To check that the programming was successful, try reading a transmitter channel using the new address.
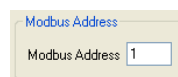
3.2.2 User Programmable Serial Protocol

The user programmable serial protocol is factory set to 19200 baud, even parity, and 1 stop bit. To change this…

- Select the required **Baud Rate**, **Parity** and **Stop Bits**.
- Click the **Program** button to set the new configuration.
- Remove the power from the receiver.
- Set DIP switches **SW3** and **SW4** inside the receiver to **ON**.
- Reconnect the power.
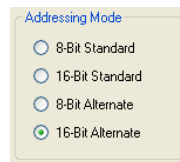- Set the **PC Serial Port Settings** to the new configuration.

There is no verification reply. To check that the programming was successful, try reading a transmitter channel using the new configuration.

3.3 Modbus Address

Before you can read and write to any registers, the application needs to know the Modbus address of the receiver. From firmware version 10 onwards this is factory set to 1. If you have programmed a different value then enter it in the **Modbus Address** box.
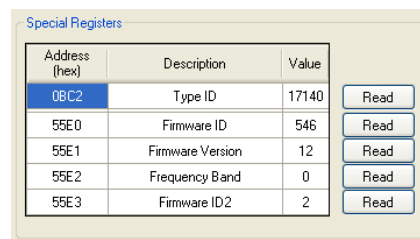
3.4 Addressing Mode

This allows you to select the addressing mode you wish to use to access the receiver. When the addressing mode is changed the addresses in the register displays are updated to the relevant register map.

In terms of configuring the receiver, it makes no difference which you use. The different modes have been included to test the receiver, and to assist the understanding of the different register maps.

For convenience, the addressing mode is saved so that the same one will be used next time you start the application.

For more information about the register maps and addressing modes see the **Universal Modbus Receiver User Manual**.

3.5 Special Registers

The special registers are read only registers that provide information about the receiver's identity and configuration. To read a register click on the **Read** button beside the register.

The registers available will depend on the selected **Addressing Mode**. Those not available will by greyed out.

3.6 Channel Registers

The **Channel Register** list shows the registers for up to 255 transmitter channels. The scroll bar on the right allows to list to be scrolled to see the channels you wish to view. The actual number of channels available will depend on your model of receiver.

The registers available for each channel will depend on the selected **Addressing Mode**. The alternate addressing modes return additional information in extra registers.

For more information about the register maps and addressing modes see the **Universal Receiver User Manual**.

3.6.1 Selecting Channels

Channels are accessed by first selecting the range of channels that you wish to read or write. There are different ways of doing this…

- To select a single channel, click on the row header on the left of the list.
- To select multiple channels, click on the first required row header, and drag the cursor to the last.
- Alternatively, to select multiple channels, click on the first row header, and step up and down with the cursor keys whilst holding the shift key.

3.6.2 Reading Channels

To read channels, select the range of channels that you wish to read, and click on the **Read Channels** button. The selected channels will be read one by one and the list updated.
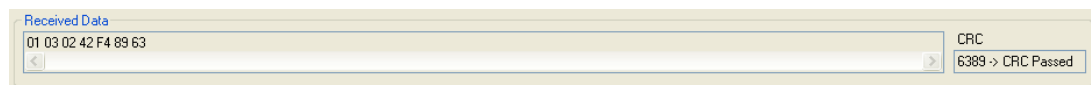
3.6.3 Writing Channels

To change the serial number of a channel…

- Click in the **Serial No** box of the required channel.
- Enter the serial number of the transmitter that you wish to assign to that channel.
- Select the channel.
- Click on the **Write Channels** button.

If you wish, you can enter a series of serial numbers, and then write them all at once by selecting all the channels to be updated.

Writing to a channel will reset its **Data 1** to **Data 4** to **FF$_h$**, and the time since the last received message, **Tx Time**, to 0.

3.7 Received Data

The **Received Data** box shows the raw hexadecimal data of the last received message, along with the success or failure of the CRC.

4   Firmware Update

The firmware in the receiver can be updated using the Update Firmware facility. To use this, first download the update file from the HWM website www.hwm-water.com if available, or request it from HWM Customer Services at support@hwm-water.com.
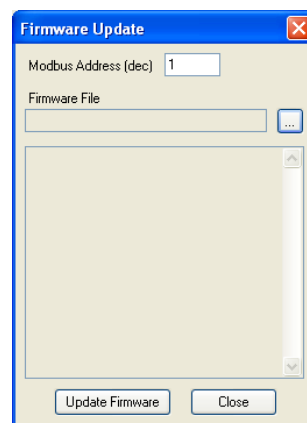
If you are using an RS485 bus with other devices, the receiver will need to be disconnected from this and connected on its own to a PC via RS232 or RS485.

To perform the update…

- Click on the **Update Firmware** button.

This will open the **Firmware Update** dialog.

- Click on the **…** button next to the **Firmware File** box. This will open an **Open** file dialog for you to navigate to and select the upgrade file. The upgrade file will have a **upd** extension.
- Ensure that the receiver is powered, and then click the Update Firmware button.
- You will be able to see the progress in the dialog window. Whilst the receiver is in bootloader mode its red and yellow LED's will flash alternately.
- When the update is complete, an **Update complete** message box will appear. Close this and the dialog box.
- To check the upgrade, click on the **Read Registers** button in the **Special Registers** section to update the **Firmware Version** register.

If you get an error during the update, the receiver may be left in bootloader mode with its LED's flashing. If this occurs, power off the receiver and back on again. Close the application, restart it and perform the above sequence again.

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