



RS485-Ethernet Module


The **Micha** series of Serial to Ethernet Interfaces provide a simple and reliable method of connecting an RS232 or RS485 port to a network.

These gateway modules convert serial protocol (RS-232 or RS485) into TCP/IP protocol and enable remote management and control of a serial device through a TCP/IP network. Based on the WIZnet W7100 chip, the TCP/IP core is a market-proven hardwired TCP/IP stack with integrated Ethernet MAC & PHY and supports TCP, UDP and IPv4.

Two supply voltage ranges are available – 10VDC to 30VDC, and 20VDC to 60VDC. The modules include isolating DC-DC converters, allowing a wide range of supply voltages with a typical power consumption of <40mA at 24VDC (<1W).

The interfaces are housed in a light grey UL94-V0 flame retardant polycarbonate enclosure, which clips onto standard 35mm DIN-rail, and measure just 53mm wide, 90mm high, and 58mm above the mounting plate. Detachable plug and socket terminal blocks are provided for wiring power and signal cables up to 2.5mm².

General Specification:

Part Numbers:	103 395 : DRM RS485 to Ethernet Interface - 10-30VDC 103 396 : DRM RS485 to Ethernet Interface - 20-60VDC 103 397 : DRM RS232 to Ethernet Interface - 10-30VDC 103 398 : DRM RS232 to Ethernet Interface - 20-60VDC
Module size:	53 x 90 x 58mm (excluding incoming Ethernet connection) DIN-rail clip on rear fits standard 35mm 'top hat' profile (TS35 DIN 46277) Enclosure material: Self-extinguishing Polycarbonate UL94-VO Colour: RAL 7035
LED Indicators (on RJ45 connector):	Green: Network Connection Orange: Data
Data Speed:	10/100 Mbps Ethernet & Max 230Kbps Serial Interface
Power consumption:	~80mA at 12VDC ~40mA at 24VDC ~20mA at 48VDC (all nominal)
Temperature range:	-40°C ~85°C (Operation), -40°C ~85°C (Storage)
Humidity:	10 ~ 90%
Fuse Rating:	 <p>Fuse Protection: A 20mm 1.5A A/S fuse is located in a carrier which can be accessed by removing the lower cover of the module.</p>
Module weight:	0.085kg
Manufacturer:	The Micha Design Company Limited
Country of Origin / HS Code:	United Kingdom / Commodity Code: 90328900

Configuring the Module.

To configure the Serial to Ethernet Interface, it is recommended that the WIZnet Configuration Tool is downloaded from:

http://www.wiznet.io/wp-content/uploads/wiznethome/S2E%20Module/WIZ107_108SR/Utility/WIZ107_108_config_tool.zip

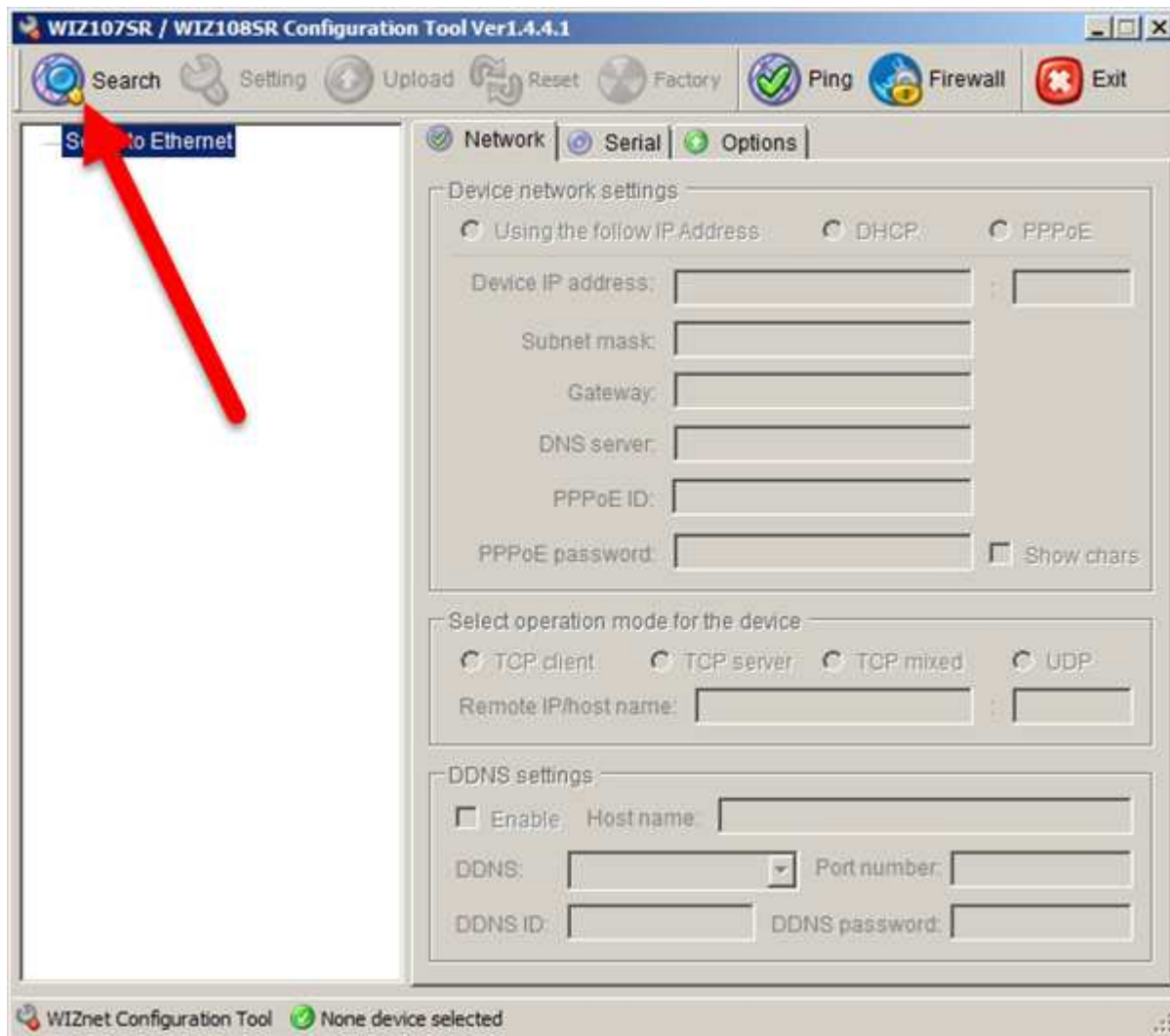
or

http://www.micha.co.uk/download/ConfigTool107_1.4.4.1_install.zip

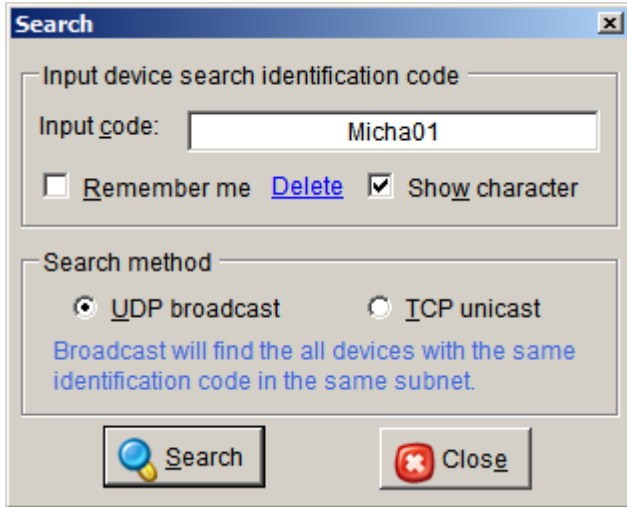
Unzip the downloaded file, and run the setup.exe file.

Configuration Tool:

When the Configuration Tool is started, it allows the user to search for any connected devices. Click on the **Search** icon:



In the Input code field, enter **Micha01** – ticking the ‘Show character’ box allows the text to be shown – and leave the default ‘UDP broadcast’ box selected:



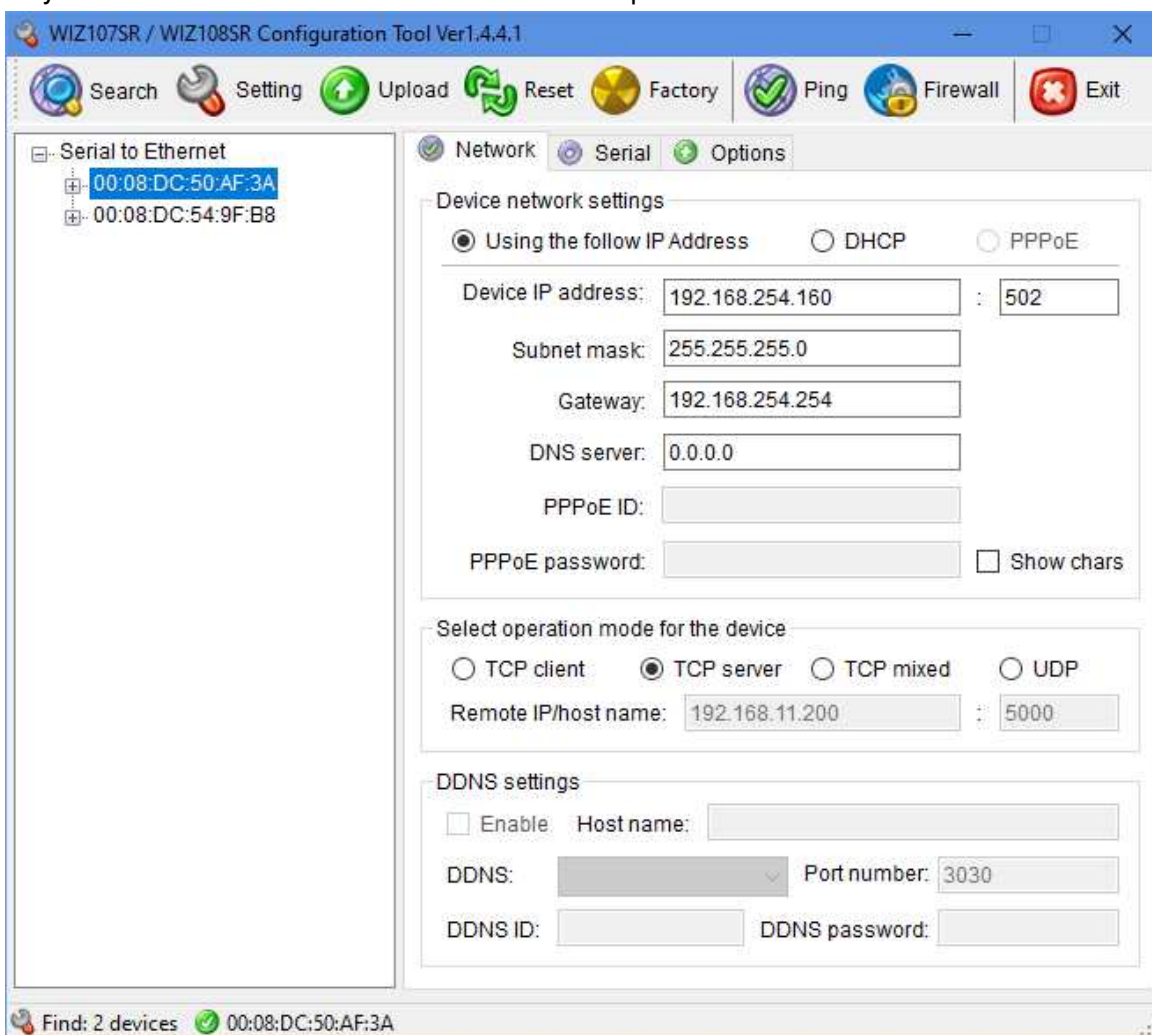
The screenshot shows a 'Search' dialog box with the following fields and options:

- Input device search identification code:** Input code:
- Remember me [Delete](#) Show character
- Search method:**
 - UDP broadcast
 - TCP unicast

Broadcast will find the all devices with the same identification code in the same subnet.
- Buttons:

Note: All factory-configured units supplied by Micha will include this Input code. This allows searched to be narrowed to include only Micha modules.

Any detected modules will be listed as the example below:



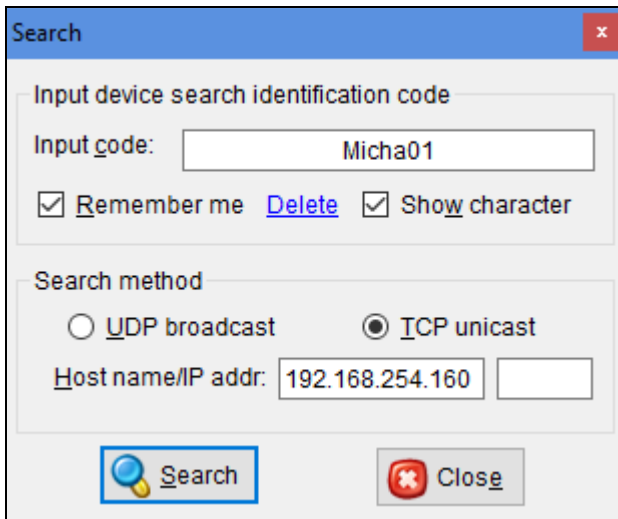
The screenshot shows the 'WIZ1075R / WIZ1085R Configuration Tool Ver1.4.4.1' interface. The 'Serial to Ethernet' section is expanded, showing two detected devices with MAC addresses: 00:08:DC:50:AF:3A and 00:08:DC:54:9F:B8. The 'Network' settings are configured as follows:

- Device network settings:**
 - Using the follow IP Address (selected), DHCP, PPPoE
 - Device IP address: 192.168.254.160 : 502
 - Subnet mask: 255.255.255.0
 - Gateway: 192.168.254.254
 - DNS server: 0.0.0.0
 - PPPoE ID:
 - PPPoE password: Show chars
- Select operation mode for the device:**
 - TCP client, TCP server (selected), TCP mixed, UDP
 - Remote IP/host name: 192.168.11.200 : 5000
- DDNS settings:**
 - Enable Host name:
 - DDNS: Port number: 3030
 - DDNS ID: DDNS password:

At the bottom, it shows 'Find: 2 devices' and a green checkmark next to the selected device MAC address 00:08:DC:50:AF:3A.

Note: The first device has been pre-programmed with IP address 192.168.254.160

Alternatively, if you know the IP address the module has been programmed to, it can be accessed directly by ticking the 'TCP unicast' box and entering the address:



Setting the IP address:

If the module has been pre-programmed with an IP address and a new IP address is required, it is recommended that each of the modules is set to use DHCP to allow a connected DHCP server to allocate an unused IP address.

This procedure should be carried out on each module:

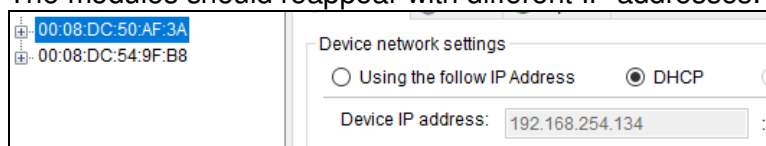
1. Select the module's MAC address, select the DHCP option, and click on 'Setting':

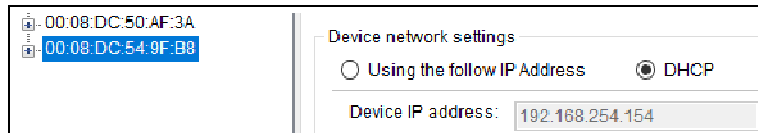


2. Repeat with the other modules:



3. Click on Search and repeat the search for all modules. The modules should reappear with different IP addresses:





In the above example, the first module has been allocated IP address 192.168.254.134 and the second module address 192.168.254.154

4. **Important:** The allocated IP addresses should now be fixed to ensure they do not change. With each module, select the MAC address, select the 'Using the following IP Address' option, check that the Port No is set to '502' and operation mode set to 'TCP server' and again upload the settings to the module by clicking on the 'Setting' button:



5. Repeat for all connected modules. The IP address should now be available for remote access.

Note 1: At manufacture, the modules may either be configured with a fixed IP address (e.g. 192.168.254.160), or with DHCP. Modules pre-configured with DHCP should have the MAC address shown on a label on the module (e.g. 00:08:DC:50:AF:3A). This allows the modules to be identified on site. If the module does not have the MAC address label fitted, the only way to identify the location of each module is to physically disconnect it and run a search from the Config tool. The module which is no longer connected will not show up in a search.

Note 2: MAC addresses are unique and duplicates should not be found.

Note 3: In the event no DHCP server is available to allocate IP addresses, it may be necessary to manually create the IP addresses:

1. Check the IP address of the computer used for connection by opening a Command Prompt and typing in:
ipconfig
Typically, the following window will be shown:

```

C:\>ipconfig

Windows IP Configuration

Ethernet adapter Local Area Connection:

    Connection-specific DNS Suffix  . : 
    Link-local IPv6 Address . . . . . : fe80::9e7:7019:d209:f56e%11
    IPv4 Address. . . . . : 192.168.254.117
    Subnet Mask . . . . . : 255.255.255.0
    Default Gateway . . . . . : 192.168.254.254

Tunnel adapter isatap.<111E34FA-C257-44AE-A8A7-3B4E7474DEDE>:

    Media State . . . . . : Media disconnected
    Connection-specific DNS Suffix  . : 

Tunnel adapter Local Area Connection* 11:

    Media State . . . . . : Media disconnected
    Connection-specific DNS Suffix  . : 

C:\>
  
```

Look for the IPv4 address shown – in the above example, this is **192.168.254.117**

- In the Configuration tool, enter a different final number, e.g. 192.168.254.118. The Subnet Mask will be automatically completed in Configuration tool. Enter the same Default Gateway if shown. Check that 'Using the following TCP Address option is selected, the Port is set to '502', and click on the Setting button:



Serial Settings:

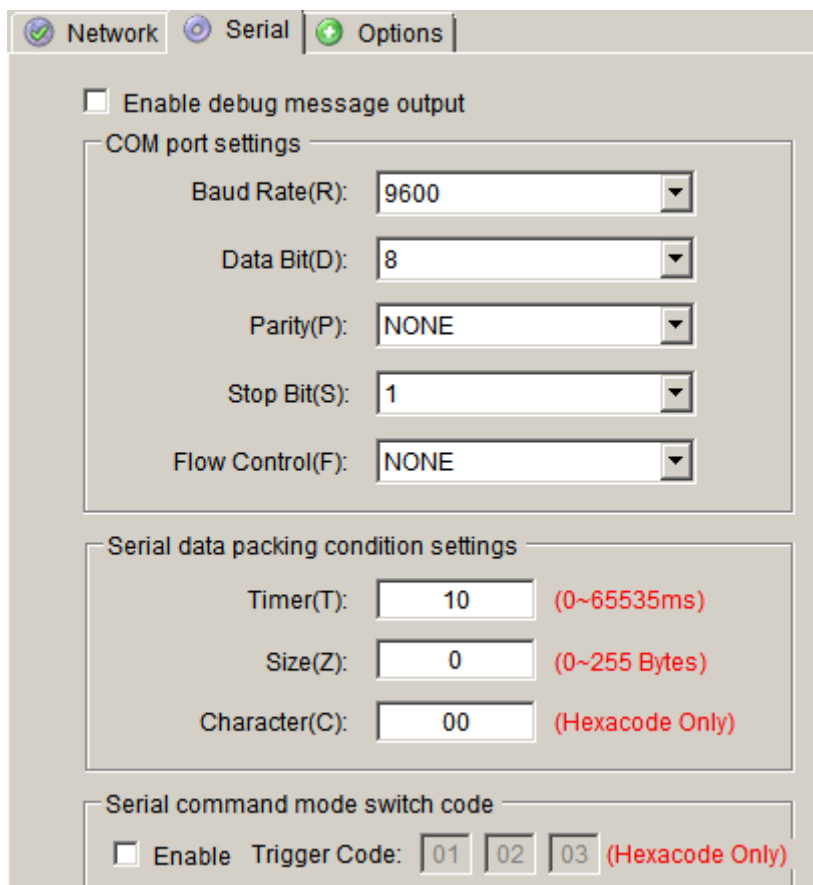
It is essential that the correct serial settings are used to communicate with the Ethernet modules. These should have been factory set, but in the event of the module being reset, check the following serial settings on the Serial tab.

For **MPC**-type controllers, the following settings should be used:

Enable debug message:	Not selected
Baud Rate (R):	38400
Data Bit (D):	8 (default)
Parity (P):	NONE (default)
Stop Bit (S):	1 (default)
Flow Control (F):	NONE (default)
Timer (T):	10
Size (Z):	0 (default)
Character (C):	00 (default)
Enable Trigger Code	Not selected (default)

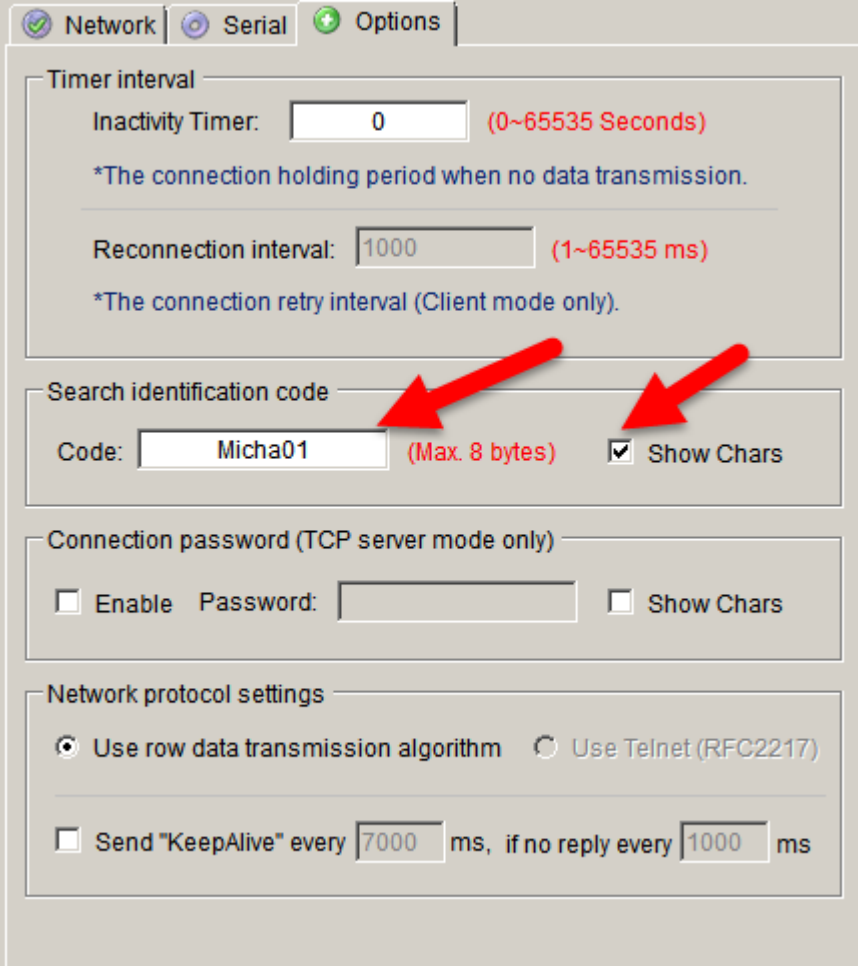
For Micha **MSRx** and **CPC** controllers, the following settings should be used:

Enable debug message:	Not selected
Baud Rate (R):	9600
Data Bit (D):	8 (default)
Parity (P):	NONE (default)
Stop Bit (S):	1 (default)
Flow Control (F):	NONE (default)
Timer (T):	10
Size (Z):	0 (default)
Character (C):	00 (default)
Enable Trigger Code	Not selected (default)



Options tab:

No special settings are required. Entering an 'Input code' is optional, and only helps when searching for multiple devices on a network:



Network | Serial | Options

Timer interval

Inactivity Timer: (0~65535 Seconds)
*The connection holding period when no data transmission.

Reconnection interval: (1~65535 ms)
*The connection retry interval (Client mode only).

Search identification code

Code: (Max. 8 bytes) Show Chars

Connection password (TCP server mode only)

Enable Password: Show Chars

Network protocol settings

Use row data transmission algorithm Use Telnet (RFC2217)

Send "KeepAlive" every ms, if no reply every ms

Saving settings:

Any changes to the module configuration must be saved to the module. This is achieved by clicking on the 'Setting' icon:



General Notes:

When searching for modules on the LAN, if no 'Input code' is entered, only modules without any input code will be found. Similarly, if an Input code of 'Micha01' is entered, only modules with that input code will be detected.

No more than one module with the same IP address can be present on the network.

Communicating with Modbus Tools

We recommend Modbus Poll software, which is available from: <http://www.modbustools.com/>

Example setup with MSRx controller:

On the MSRx Charge Controller:

Ensure the MSRx Charge Controller is set to Modbus Protocol:

Navigate to the Settings Menu E => "Set Exp Module: Com Port/D-Log"

Press Select

Ensure Modbus has been selected on the Sub-Menu Screen:

"Comms Module: Select: Modbus RTU"

Ensure the MSRx Charge Controller Modbus Address is set correctly:

Press Down to go to screen:

"Comms Module: Address: 102" (address is set to Slave ID 102)

(This can be any number between 1 and 247 but must match the customer equipment it is communicating with)

Ensure these parameters are remembered:

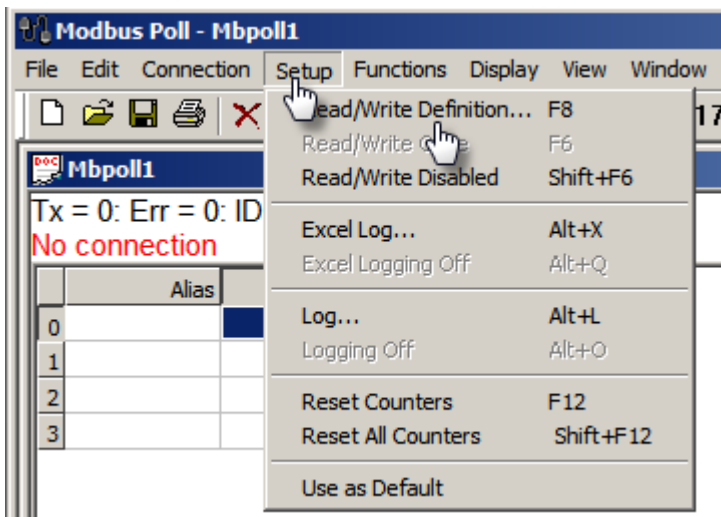
Press Menu to go back to "Set Exp Module: Com Port/D-Log"

Press Menu to go proceed to "Change Settings: Accept ? => Select"

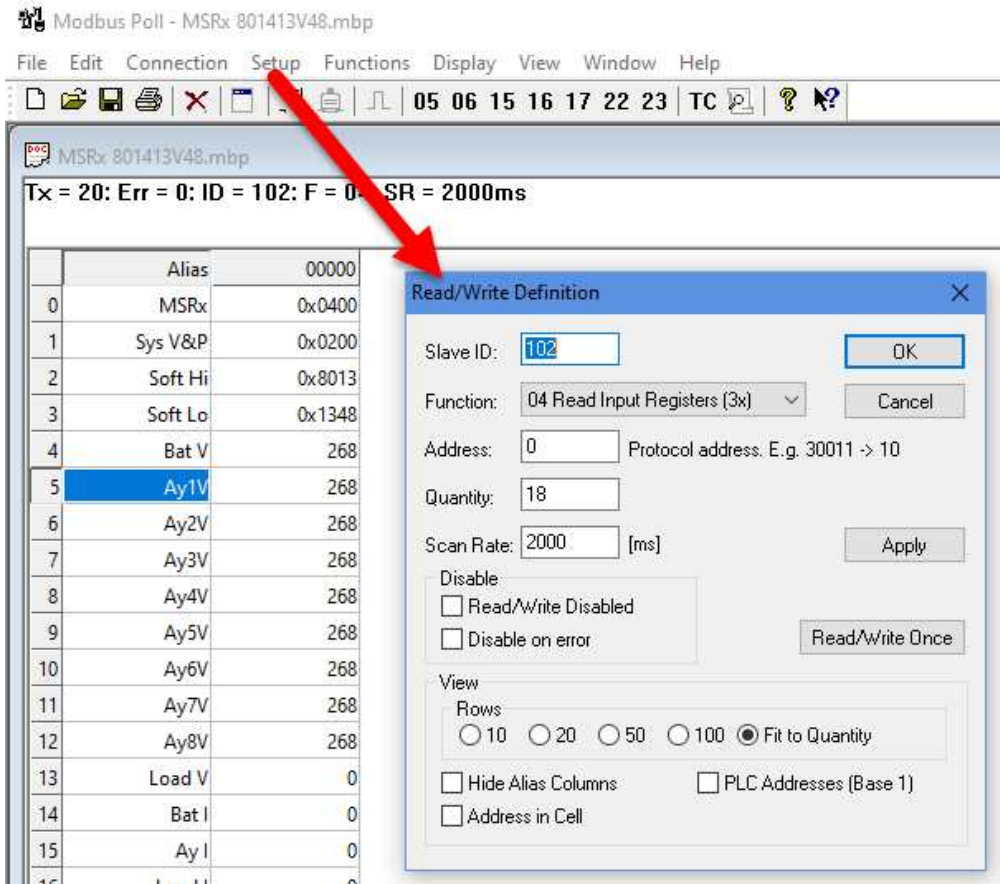
Press Select to remember the change of setting

On Modbus Poll:

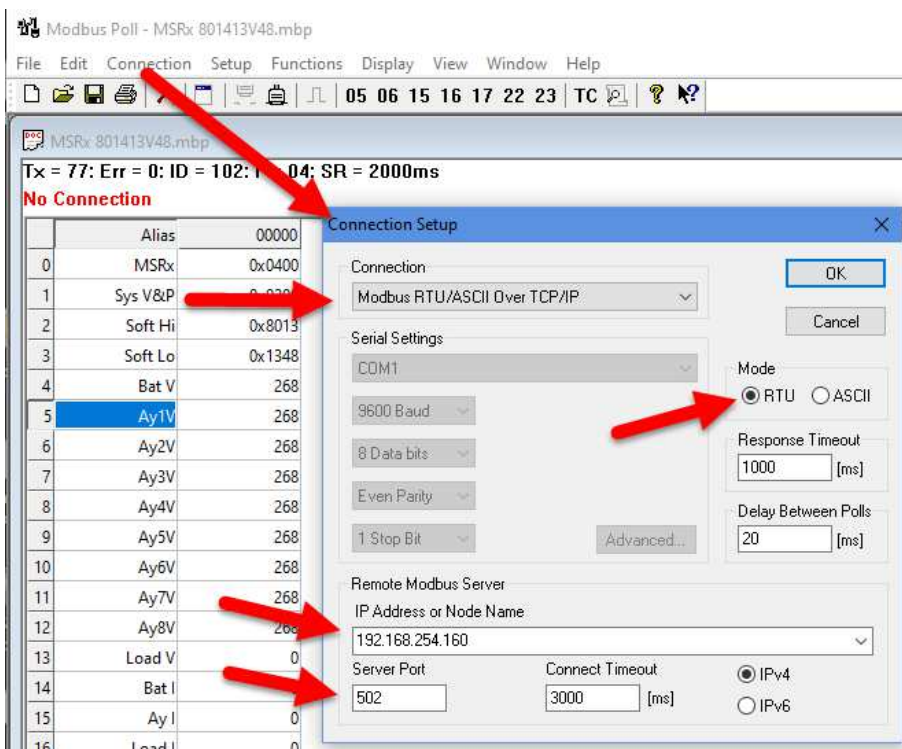
Click on Setup and then Read/Write Definition:



Ensure the Slave ID is set to the same number (102) and select the required function (e.g. '04 Read Input Registers):

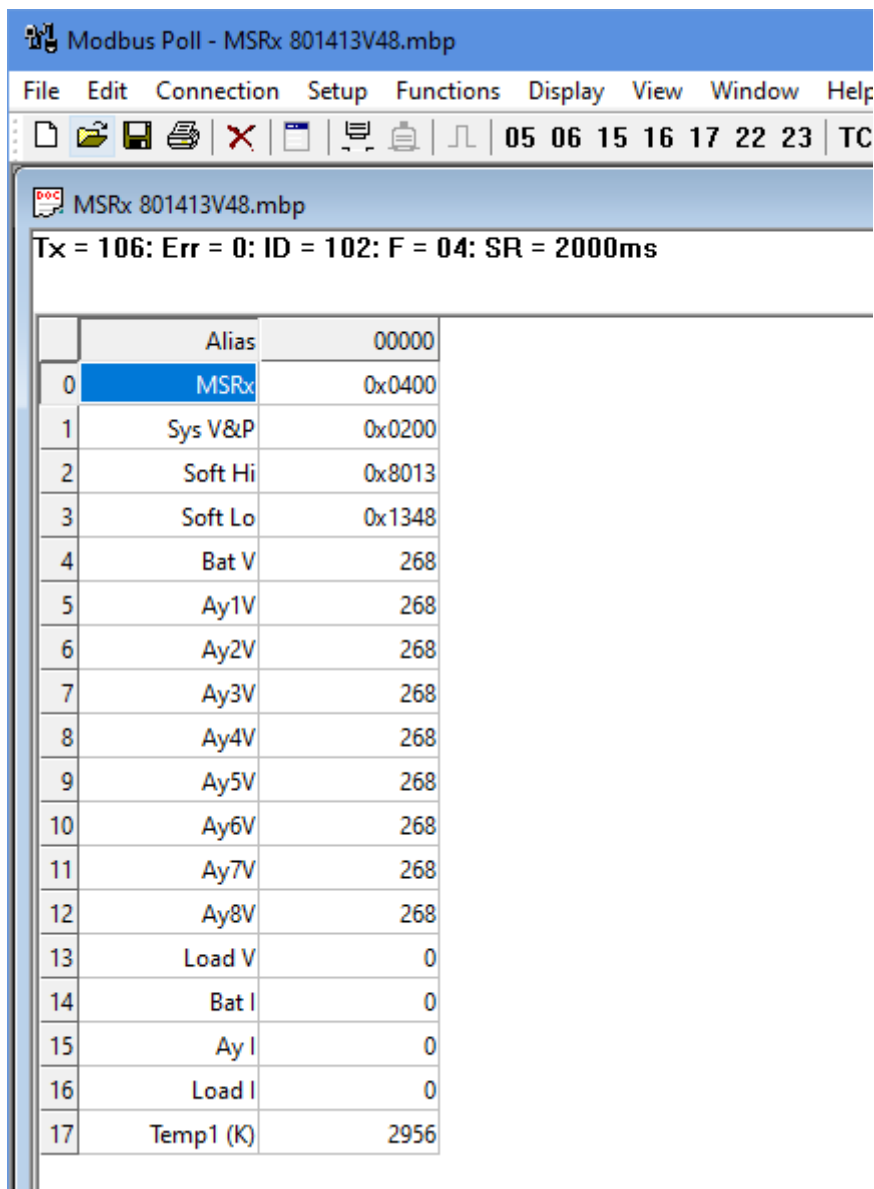


Click on Connection > Connect and select the appropriate protocol (Modbus RTU/ASCII Over TCP/IP) and mode (RTU). Ensure the appropriate IP address and Server Port number to match the interface module are entered:



Click on OK.

The main window of Modbus Poll will display incoming data:



The screenshot shows the Modbus Poll application window titled "Modbus Poll - MSRx 801413V48.mbp". The menu bar includes File, Edit, Connection, Setup, Functions, Display, View, Window, and Help. The toolbar contains various icons for file operations and data viewing. The main display area shows the file name "MSRx 801413V48.mbp" and the status "Tx = 106: Err = 0: ID = 102: F = 04: SR = 2000ms". Below this is a table of Modbus registers:

Register Address	Alias	Value
	Alias	00000
0	MSRx	0x0400
1	Sys V&P	0x0200
2	Soft Hi	0x8013
3	Soft Lo	0x1348
4	Bat V	268
5	Ay1V	268
6	Ay2V	268
7	Ay3V	268
8	Ay4V	268
9	Ay5V	268
10	Ay6V	268
11	Ay7V	268
12	Ay8V	268
13	Load V	0
14	Bat I	0
15	Ay I	0
16	Load I	0
17	Temp1 (K)	2956

For further information on the Modbus registers, refer to the following documents:

801641 Issue 6:MSRx Modbus Memory Map Specification

801779 Issue 5:CPC Modbus Memory Map Specification

Document History:	Date:	Software:	Notes:
802578 Version 1	27-Jun-2018	Various	First issue.
802578 Version 2	08-Dec-2019	Various	Notes on configuring multiple modules
802578 Version 3	03-Jan-2020	MSRx 801313 V4.8 on	Reflects changes in MSRx software
103395_8-DS	15-Nov-2020		Document renumber