



PR0020-MOD

Modbus® RS485 to IP Communications Module Installation & User Guide

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Before installing or using this product, read the contents of this guide thoroughly to familiarise yourself with all the operating parameters and features. Please refer to the safety information detailed in the [Specification](#) section.



Ensure that all power is switched off before installing or maintaining this product

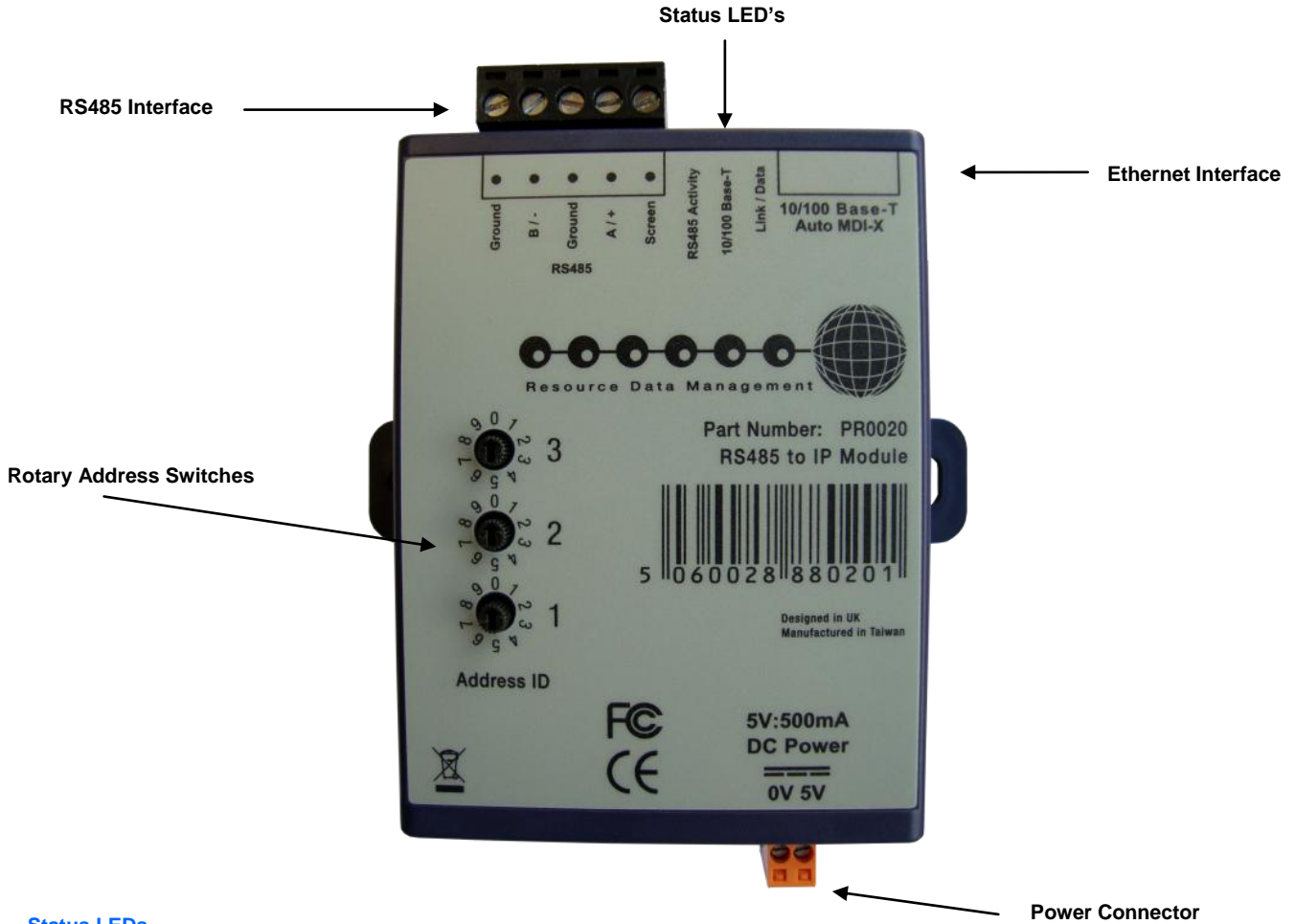
The RS485 to IP Communications Module

Modbus® Variant

Description

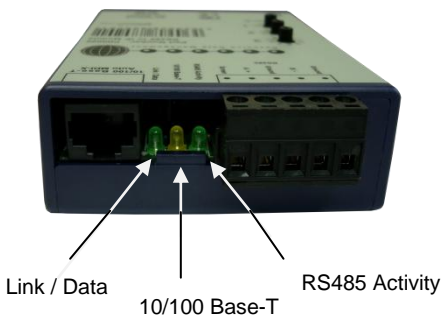
The RS485 to IP module is used to convert RS485 Modbus® traffic, from a third party network, into Modbus TCP/IP traffic for use with an RDM Data Manager. This will allow RS485 Modbus devices, such as energy meters, to be connected to an IP network thus reducing wiring costs and complexity onsite. When connected to the Data Manager the feature “Modbus TCP Interface”, part number PR0470, must be enabled. Each device connected to the PR0020-MOD will take up 1 position out of 32 devices available in a single block of IP devices, part number PR0481. **Note** this gateway can be used as a standard RS485 Modbus® to Modbus® TCP/IP module without the use of a Data Manager.

Connections



Status LEDs

There are three LED's on the module. Two relate to the Ethernet interface and the remaining LED is for the RS485 interface.



LED Description	Colour	State	Comment
Link / Data	Green LED	On	Connection Present
		Off	No Connection
		Flashing	Data
10/100 Base-T	Yellow LED	On	100 Base-T Connection
		Off	10 Base-T Connection
RS485 Activity	Green LED	Flashing	Network Activity
		Permanently off/on	Network Fault



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Configuration

The IP address of the module is dependent on the rotary switch positions.

Rotary Address	IP Address Range
000	The module is in static IP address mode, see Assigning a Static IP Address
001 to 254	The module is set to operate in the 10.1.2.XXX range with the last part of the IP address being a number between 1 and 254. The last part of the IP address is the rotary switch address entered. Select a 3 digit address and power on the module. For example if the rotary switch address is set to "150" then the module will be assigned the address 10.1.2.150.
301 to 555	The module is set to operate in the 192.168.0.XXX range with the last part of the IP address being a number between 1 and 254. The last part of the IP address is determined by the rotary switch address entered. Select a 3 digit address and power on the module. Rotary address 301 equates to 1, 302 is 2 etc up to address 555 which is 254. If you add 300 to the last part of the desired IP address it will provide the required rotary switch setting. For example if the desired IP address is "192.168.0.150" then the module rotary switch address will be '450'.
999	The module is set to DHCP mode and will request an IP address from network. Set '999' and power on the module.
Remaining Addresses	The remaining rotary switch addresses are reserved for future use and should not be used.

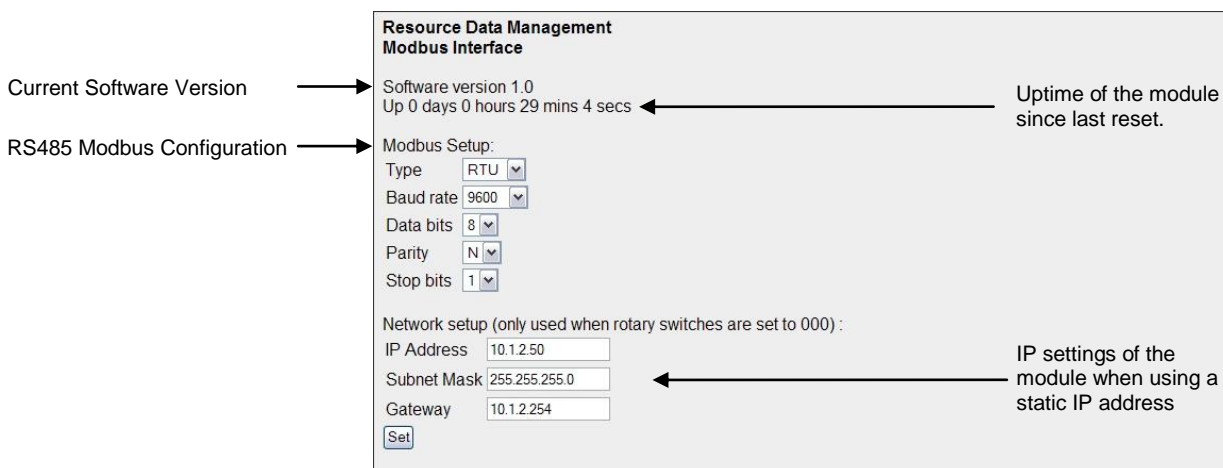
Assigning a Static IP Address

Follow the steps below to assign a static IP address to the Modbus® RS485 to IP module.

- 1) With the RS485 to IP module powered off set the rotary switch positions to one of the predefined IP addresses e.g. 001 to 254.
- 2) Power the module on.
- 3) Connect a CAT5 patch cable to the Ethernet interface of the RS485 to IP module.
- 4) Now connect the patch cable to the PC or Laptop which will be used to configure the module. Note the RS485 to IP module has an Auto MDI-X feature which allows either a standard patch cable or cross-over patch cable to be used.
- 5) Assign the Laptop or PC a static IP address in the "10.1.2.XXX" range ensuring the IP address selected doesn't clash with the IP address set in the module.
- 6) Once configured open a web browser session and browse to the IP address of the module.
- 7) On the webpage shown, enter the desired information. An IP address, Subnet Mask and Gateway can be assigned. Once the correct details have been entered click the "Set" button.
- 8) Now set the rotary switches on the module to "000".
- 9) Power the module off for 10 seconds and then power the module back on.
- 10) The operation is now complete and the module will have the static IP address entered.

Webpage Interface

Below is a screenshot of the webpage interface and the data displayed.



Once the appropriate information has been entered click on "Set" to save the changes. A message "Setup Changed" will be shown along with a review of the details entered, when the page refreshes ensure the configuration has been updated with the desired settings.

Note It is also possible to place the module into DHCP mode even if a static IP address is entered into the "Network Setup" field as the static address is only used when the rotary switches are set to "000" on the module.

RS485 Network Configuration Settings (Dependant on third party Modbus device)

The following configuration options can be set in the module in relation to the RS485 Modbus network communications.

Modbus Setup	Value
Type	RTU ASCII
Baud rate	9600 19200
Data bits	7 8
Parity	N (None) E (Even) O (Odd)
Stop bits	1 2

Logging on a Modbus Device to the Data Manager

The following will assist an engineer when logging on a generic 3rd party Modbus device to a RDM Data Manager.

- 1) Ensure the Modbus TCP Interface, PR0470, is enabled.
- 2) Ensure IP Network Support is enabled, 1 block equates to 32 Modbus devices, part number PR0481.
- 3) Power on the RS485 to IP module and enter an IP address as per the [Assigning a Static Address](#) section.
- 4) Check and configure the RS485 Network configuration settings in the RS485 to IP module. Note the settings in the RS485 to IP module must match that of the settings in the 3rd party Modbus device to ensure consistent network communication.
- 5) Connect the RS485 to IP module to the Data Manager's IP network.
- 6) Assign each third party Modbus device a unique Modbus address. Note if two devices are assigned the same Modbus address network inconsistencies will occur.
- 7) Connect the 3rd party RS485 network to the RDM RS485 to IP module.
- 8) Now either through the Data Manager Front Panel or Web Pages navigate to the "Add Device" page. Enter the appropriate details and manually add each Modbus device.

Specification

Power requirements

Supply Voltage Range:	5 Vdc \pm 5%
Typical supply current:	<500 mA
Operating temperature range:	+5°C to +50°C
Operating Humidity:	80% maximum
Storage temperature range:	-20°C to +65°C
Environmental:	Indoor use at altitudes up to 2000m, Pollution Degree II,
Size:	95mm (L) x 73mm (W) x 29mm (D)
Weight:	110 Grams
EMC:	EN 61326: 2006
Ventilation:	There is no requirement for forced cooling ventilation
Class 2 Insulation:	No protective Earth is required and none should be fitted.
Disposal	Please observe local legislation with regards to electrical products.
Origins	Product designed in the UK manufactured in Taiwan.

Ethernet Interface

10/100 Base-T with Auto MDI-X feature. The Auto MDI-X feature automatically configures the Ethernet Interface to allow either a standard patch cable or crossover cable to be used when connecting to the RS485 to IP module directly.

External Power Supply Requirements

5Vdc : 500mA

Cleaning

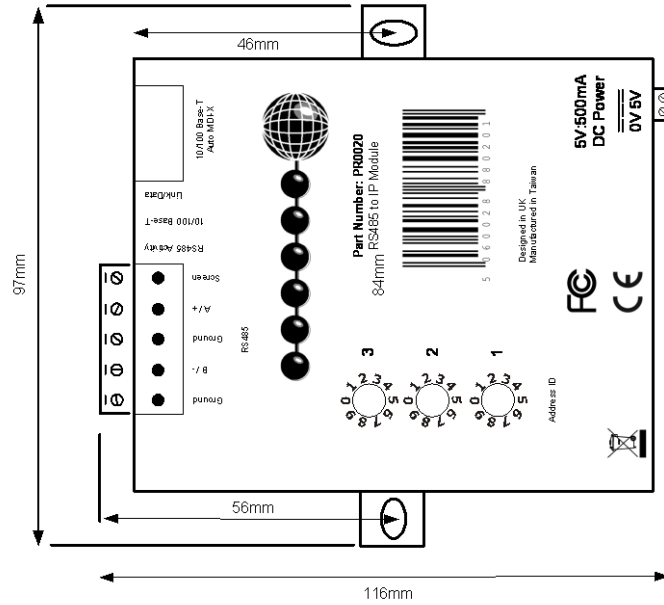
Do not wet the module when cleaning. Clean by wiping with a slightly dampened lint free cloth.



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Mounting Instructions

The product should be mounted as shown below using the screw holes provided.



Power Supply

Included in the box is a 5Vdc supply for use with the module.

The orange connector block comes prewired to connect to the PR0020 out of the box. (Output Voltage 5Vdc)

Note for the 5Vdc output wiring, the black cable is the 0V connection and the black cable with white markings is +5V.



Mains Wiring

Blue = Neutral
Brown = Live

Input Voltage Range - 90 to 264VAC

Note a standard 3 pin UK plug is fitted by default. This can be removed to expose the Live and Neutral wires depending on the site wiring requirements.

Note the product must be used as detailed by the manufacturer, failure to comply may result in the level of protection being affected.



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Maximum Number of RS485 Devices

The maximum number of RS485 devices which can be connected to the module is dependent on the third party device in use. Check with the third party device manufacturer to confirm the maximum number of devices which can be connected to a single network, this number is dependent on the loading presented by each device. Depending on the third party network the maximum number of devices on a single network may be 32.

Disclaimer

The specifications of the product detailed in this document may change without notice. RDM Ltd shall not be liable for errors or omissions, for incidental or consequential damages, directly or indirectly, in connection with the furnishing, performance or misuse of this product or document.



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