Resource
Data Management

Modbus® RS485 to IP DIN Rail Communications Module

Commissioning/User Guide
Revision 1.3c

PR0020-DUALDIN-MOD

Contents

Please ensure all power is switched off before installing or maintaining this product.

The RS485 to IP Communications Module

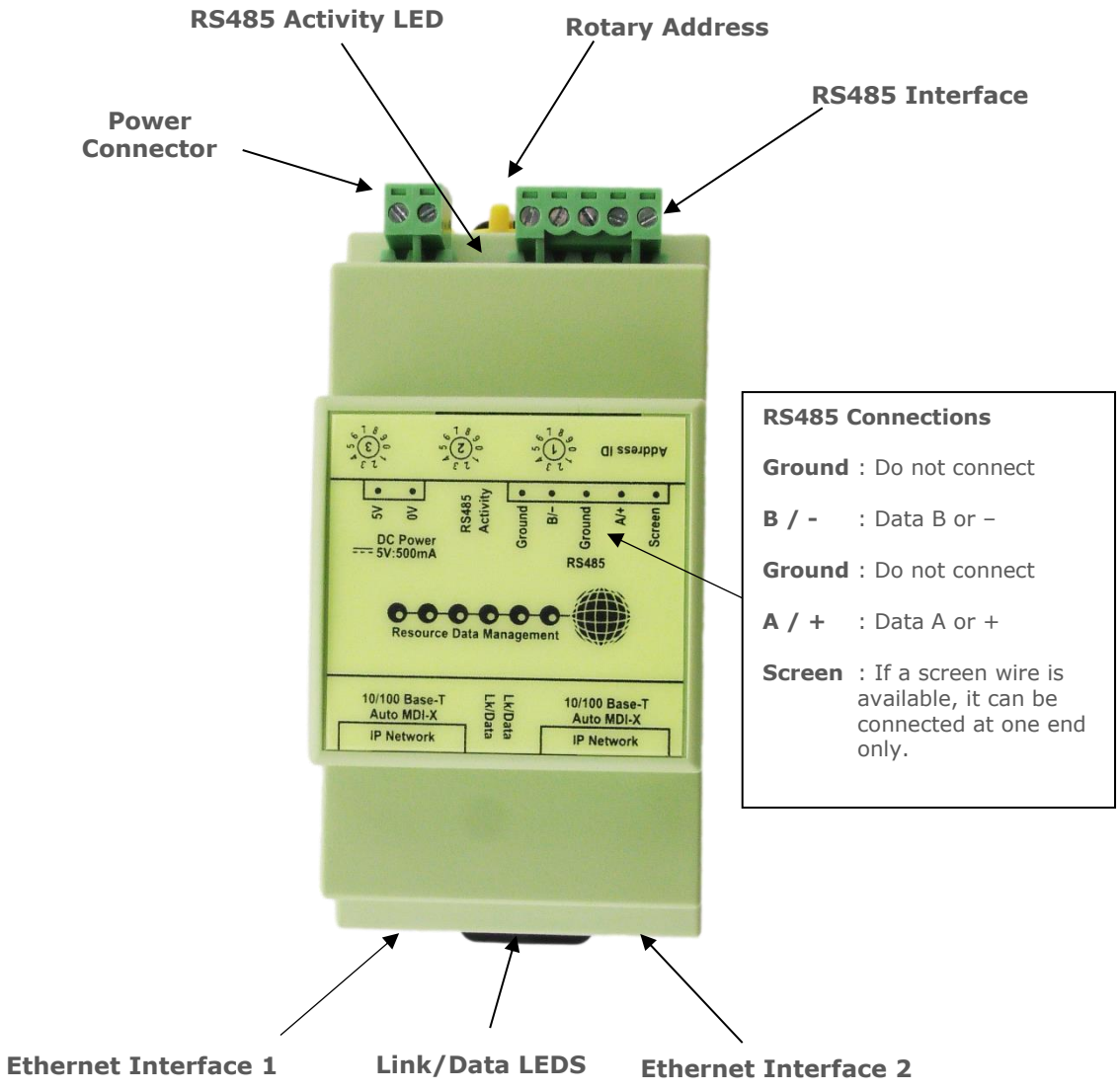
Modbus® Variant

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. The gateway also has the benefit of having two Ethernet ports allowing for further connectivity to other IP devices. When connected to the Data Manager the feature "Modbus TCP Interface", part number PR0470, must be enabled. Each device connected to the PR0020 -DUALDIN-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.

Note: As of the 30th September 2022, this product has been pre-fitted with a through hole 120 Ohm termination resistor, across A & B, on both RS485 network lines (these resistors can be removed if not required). Please ensure that you follow standard RS485 wiring practices when using the adapter.

Connections



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Status LEDs

There are two LEDs next to the Ethernet ports, one for each port and a single LED for the RS485 interface.

Link/Data LEDS

RS485 Activity LED

LED Description	Colour	State	Comment
Link / Data	Green LED	On	Connection Present
		Off	No Connection
		Flashing	Data
RS485 Activity	Green LED	Flashing	Network Activity
		Permanently off/on	Network Fault

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.

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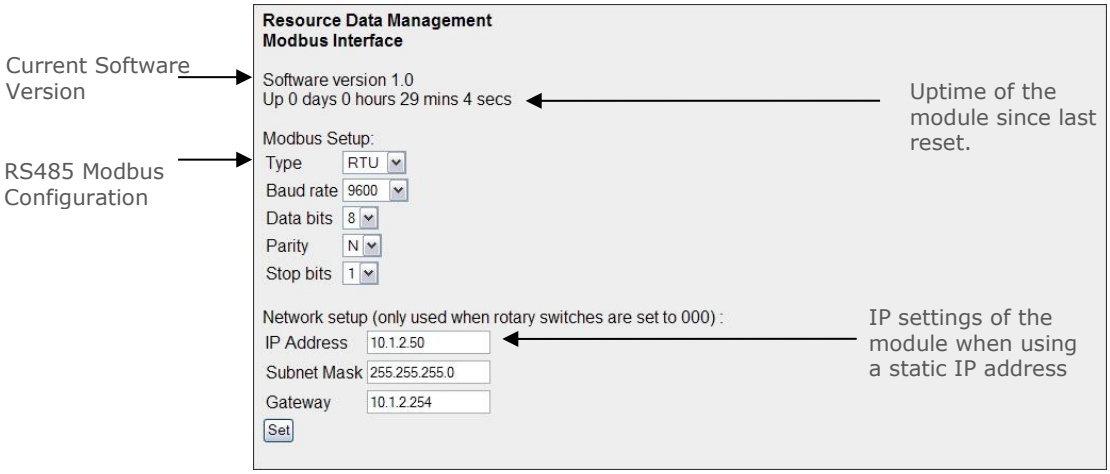
Assigning a Static IP Address

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.

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

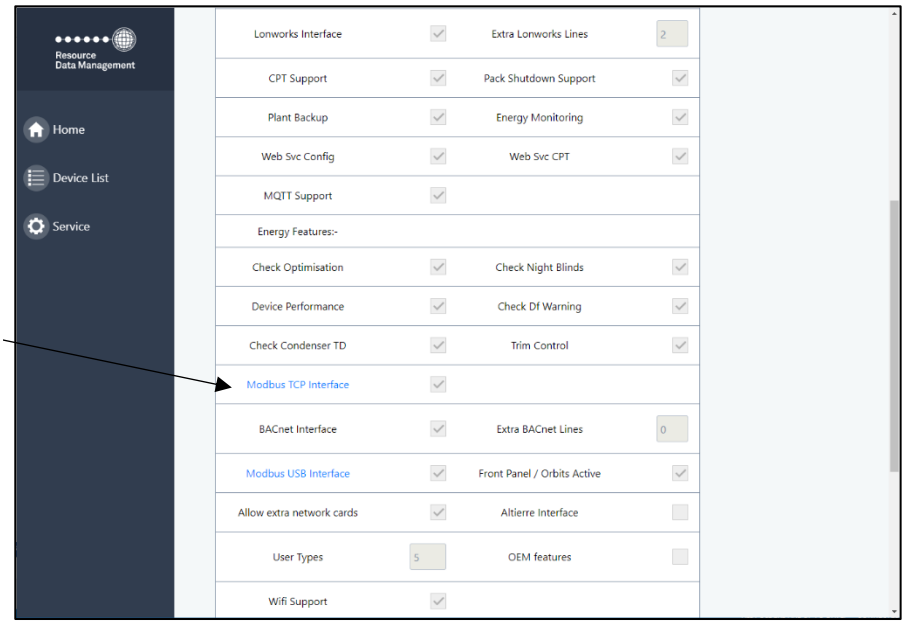
The following configuration options can be set in the module in relation to the RS485 Modbus network communications.

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

Adding a Modbus Device to a DMTouch

On the DMTouch the adapter/ software needs to be activated before it will communicate to the Modbus devices. Please consult RDM sales for activation.

Modbus TCP should be checked in the System Config menu



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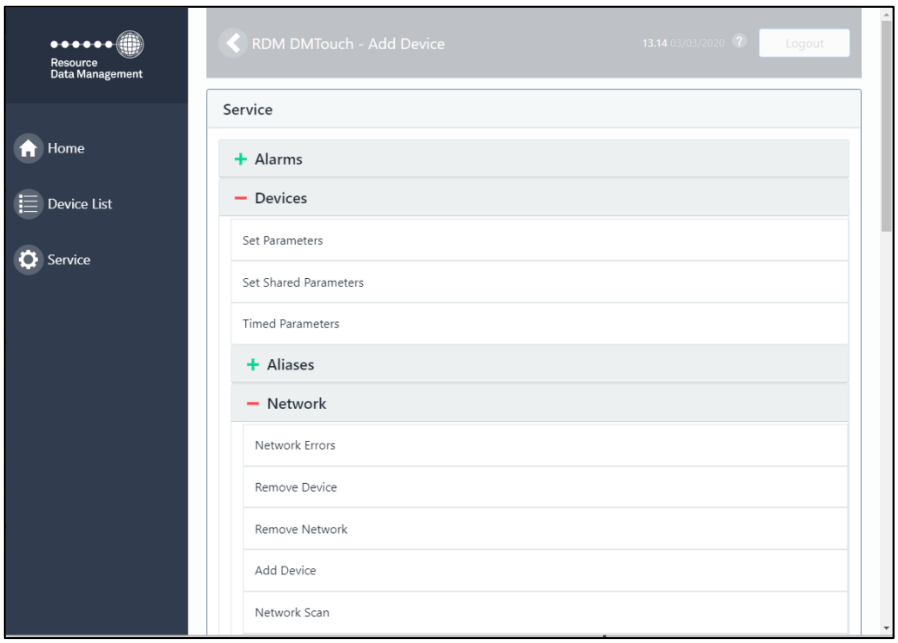
When activated, it will open a number of useable 'templates' for devices to communicate with the DMTouch. Currently the following Modbus® devices are supported:

Modbus® Energy Meters	SIRIO Energy Meter
4MOD Pulse Counter	Socomec Diris A20
AcuDC 240	Socomec Diris A40
AEM33 Power Monitor	SPN ILC Energy Meter
Autometer IC970	VIP396 Energy Meter
Carlo Gavazzi EM21	VIP396 Energy Meter (IEEE)
Carlo Gavazzi EM24-DIN	RDM Energy Meter
Carlo Gavazzi WM14	
Compact NSX	
Countis E13, E23, E33, E43, E53	**Other Modbus® Devices**
Cube 350	**Gas Detection**
Dent Powerscout Energy meter	CPC Infrared RLDS Unit 1
EMM R4h Energy meter	TQ4200 Mk 11 (16 Chan)
Enviro ENV900	TQ4200 Mk II (24 Chan)
Enviro ENV901	TQ4000 (4 Chan)
Enviro ENV901-THD	TQ4300 (12 Chan)
Enviro ENV903-DR-485	TQ4300 (16 Chan)
Enviro ENV910 Single Phase	TQ8000 (24 Chan)
Enviro ENV910 Three Phase	TQ8000 (16 Chan)
Flash D Power Monitor	TQ8000 (8 Chan)
Flash D Power Monitor (3 Wire)	TQ100 (30 Chan)
ICT Energy Meter EI	Safety Gas Detection System
ICT Energy Meter EI Flex – 1phase	Carel Gas Detection
ICT Energy Meter EI Flex – 3phase	MGS Gas 404A Detector
IME Nemo 96HD	**Others**
Integra 1530	Toshiba FDP3 A/C Interface
Integra Ci3/Ri3 Energy Meter	Polin Bakery Controller
Janitza UMG 604	ISpeed Inverter Drive
Janitza UMG 96S	RESI Dali Lighting System
Kamstrum Multical 602	Sabroe Unisab III
Measurlogic DTS	AirBloc SmartElec2
Nautil 910 Energy Meter	Emerson Control Techniques VSD
Schneider Masterpact NW16 H1	Daikin ZEAS Remote Condensing units 11-26
Schneider PM710	NXL Vacon Inverter Template
Schneider PM750	NSL Vacon Inverter Template
Shark Energy Meter	

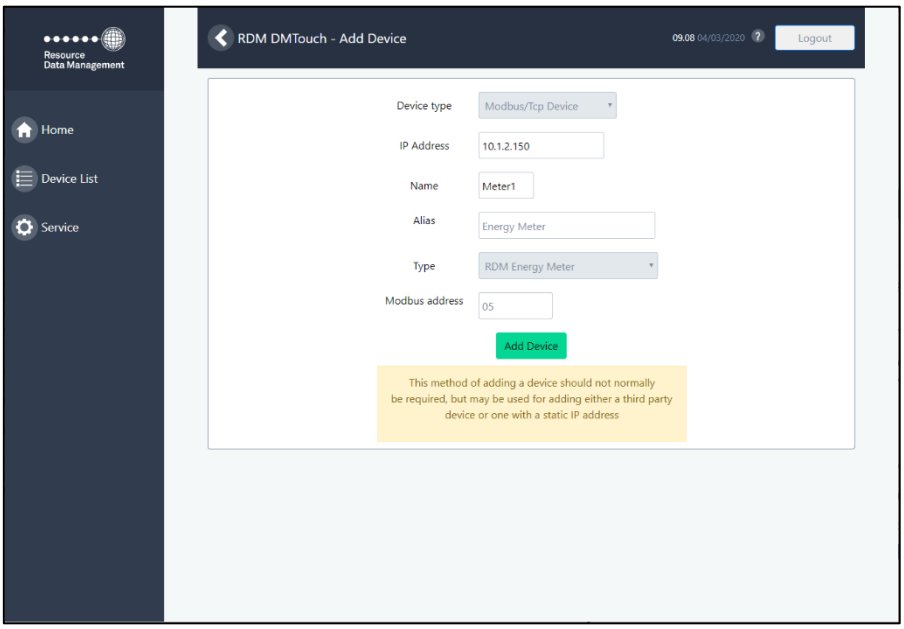
Note - Please be aware that the templates listed above were generated on request and designed to the customers' requirements. Please contact RDM Technical Support for information regarding the template. Furthermore, if you have a Modbus® device which is not listed please contact RDM Technical Support.

To add a Modbus device, log in and navigate through the following menus:

Service/ Devices/ Network/ Add Device



Selecting the 'Add device' option, will show the following page:



Within the page, all fields will need to be entered:

Device Type:	Select Modbus/TCP Device
IP Address:	The IP address assigned to the Modbus module
Name:	The six-character name which appears on the Device List
Alias:	Enter an appropriate description for the device
Type:	Select the device from the drop-down menu
Modbus Address:	Enter the Modbus address of the device

Once details are entered, the Modbus controller will show in the Device List.

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Specification

Supply Voltage Range	5 Vdc ±5%
Typical supply current	<500 mA
Operating temperature range	+5^{0}C to +50^{0}C
Operating Humidity	80% maximum
Storage temperature range	-20^{0}C to +65^{0}C
Environmental	Indoor use at altitudes up to 2000m, Pollution Degree II
Size	110mm (L) x 52.5mm (W) x 68mm (D)
Weight	125 Grams
EMC	EN 61326-1: 2013
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 damped lint free cloth.

Mounting Instructions

Standard DIN rail mountable with additional mounting holes 103mm apart.

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Power Supply

The unit is supplied complete with a mains powered 5Vdc DIN rail mount power supply.

Mains Supply Requirements
Input Voltage Range - 100 to 240vAC
Maximum 0.88 A, 50/60Hz

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

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.

Revision History

Revision	Date	Changes
V1.3	05/03/2020	Update to show Dual Ethernet version
V1.3b	26/03/2024	Note added regarding termination resistors
V1.3c	11/04/2024	Note added regarding RS485 connections

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Group Offices

RDM Group Head Office

80 Johnstone Avenue
Hillington Industrial Estate
Glasgow
G52 4NZ
United Kingdom

+44 (0)141 810 2828
support@resourcedm.com

RDM Inc.

9441 Science Center Drive
New Hope
Minneapolis, MN
55428
United States

+1 612 354 3923
usasupport@resourcedm.com

RDM Asia

Sky Park at One City
Jalan USJ 25/1
47650 Subang Jaya
Selangor
Malaysia

+60 3 5022 3188
asiatech@resourcedm.com

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Resource Data Management