Modbus Router / Modbus Router 485

Datasheet

A-MBR / A-MBR-485

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CONTENTS

aparian

1. PREFACE

1.1. ABOUT THIS DOCUMENT

This document contains the technical data for the Modbus Router.

1.2. FEATURES

The Modbus Router provides intelligent data routing between EtherNet/IP and Modbus (serial Modbus-RTU or Ethernet Modbus-TCP). **NOTE:** The Modbus Router 485 can communicate on serial RS485 whilst the Modbus Router can communicate on serial RS232. The Modbus Router allows the user to integrate Modbus devices into a Rockwell Logix platform (e.g. ControlLogix, CompactLogix, MicroLogix, etc.) with minimal effort.

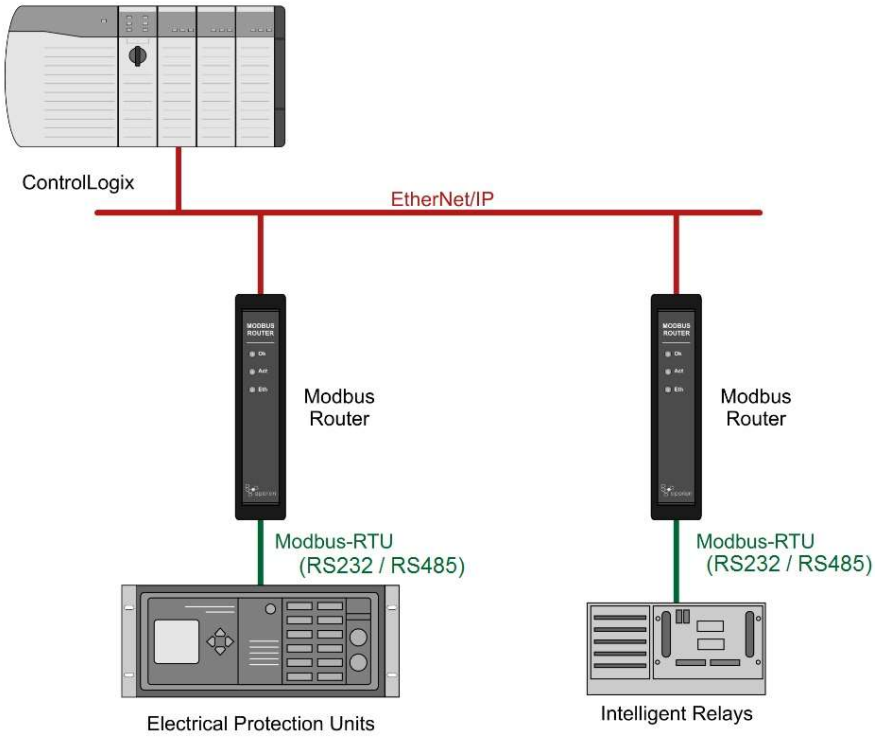

Figure 1.1. – Typical Setup

The Modbus Router is able to transfer data from various Modbus devices to a maximum of three Logix controllers. The module operates in one of three modes, simplifying the configuration for all applications.

Mode	Description	Message Initiator
Reactive Tag	The Modbus Router will convert Modbus messages to Logix controller tag reads or tag writes. (Modbus Slave)	Remote Device
Scheduled Tag	The Modbus Router transfers data between a Modbus device and a number of Logix tags, using a preconfigured scheduled. (Modbus Master) No Logix or remote device configuration is required.	Modbus Router
Unscheduled	The Modbus Router transfers messages received from a Logix Message Instruction. (Modbus Master)	Logix (Msg)

Table 1.1 – Modes of Operation

The Modbus Router is configured using the Aparian Slate application. This program can be downloaded from www.aparian.com free of charge. Slate offers various configuration methods, including a controller tag browser.

Hereafter the Modbus Router will be referred to as the **module**.

The module can operate in both a Logix "owned" and standalone mode. With a Logix connection the input and output assemblies will provide additional diagnostics information which will be available in the Logix controller environment.

The Modbus Router allows the user to integrate Modbus devices into a Logix system with minimal effort. No copying or mapping of data in the Logix controller is required as the Modbus Router writes directly into Logix tags.

The module also provides a range of statistics and traffic analyser to help fault find any problems.

The Modbus Router supports Modbus on two ports which can be configured from the Slate environment; Modbus-RTU (Serial) or Modbus-TCP (Ethernet).

The Modbus Router (RS232 version) uses isolated RS232 for Modbus serial communication providing better noise immunity. The RS232 or RS485 port uses a terminal block for convenient installation.

A built-in webserver provides detailed diagnostics of system configuration and operation, including the display of Modbus operation and communication statistics, without the need for any additional software.

1.3. ARCHITECTURE

The figure below provides an example of the typical network setup in reactive mode, where the Modbus Router acts as a Modbus slave device.

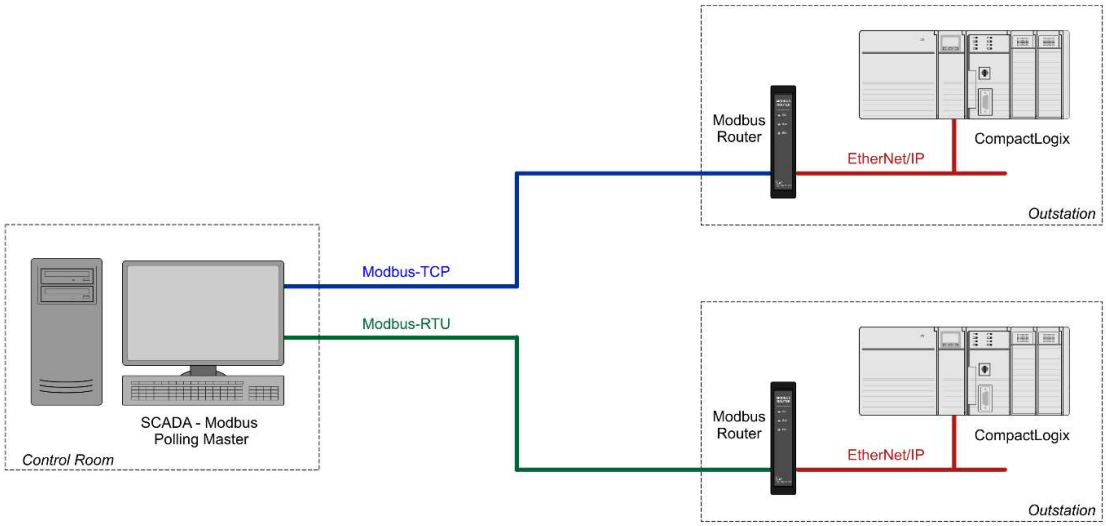

Figure 1.2. - Example of a typical network setup in reactive mode

By converting and redirecting serial Modbus messages from legacy devices to EtherNet/IP, the module provides an interface for data exchange to Allen-Bradley ControlLogix and CompactLogix platforms. This enables user to replace legacy devices and systems with minimal effort and downtime.

The Modbus Router allows a Logix platform to seamlessly integrate into a Modbus network with Reactive Tag Mode. The module will route Modbus message directly to Logix tags with no need for additional ladder code.

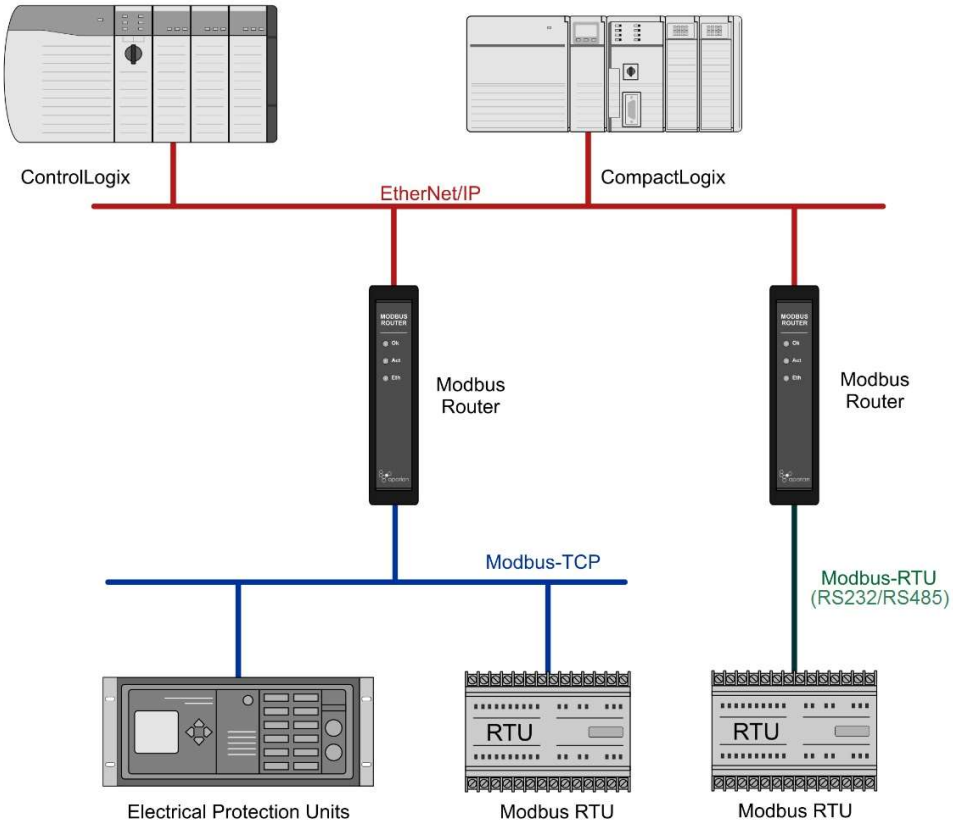

Figure 1.3. - Example of a typical network setup in scheduled/unscheduled mode

Systems that rely on a central ControlLogix communicating to a number of remote Modbus devices, (e.g. Electrical Protection Units or Remote Terminal Units), may find the Modbus Router useful when operating in Scheduled Tag Mode as shown in the figure above. The module, acting as a Modbus master, will exchange data between the Modbus device and Logix platform at a configured interval without any need for additional coding or mapping.

2. ETHERNET/IP NETWORK

Specification	Rating
Connector	RJ45
Conductors	CAT5 STP/UTP
ARP connections	Max 20
TCP connections	Max 20
CIP connections	Max 10
Communication rate	10/100Mbps
Duplex mode	Full / Half
Auto-MDIX support	Yes
Controller Support	ControlLogix, CompactLogix, MicroLogix, SLC

Table 2.1 - Ethernet specification

3. SERIAL PORT (RS232)

Specification	Rating
RS232 Connector	4-way terminal
RS232 Conductor	24 – 18 AWG
RS232 Isolation voltage	2.5 kV
BAUD	1200, 2400, 4800, 9600, 19200, 38400, 57600, 115200
Parity	None, Even, Odd
Data bits	8
Stop bits	1

Table 3.1 – RS232 Serial port specification

4. SERIAL PORT (RS485)

Specification	Rating
RS485 Connector	4-way terminal
RS485 Conductor	24 – 18 AWG
BAUD	1200, 2400, 4800, 9600, 19200, 38400, 57600, 115200
Parity	None, Even, Odd
Data bits	8
Stop bits	1

Table 4.1 – RS485 Serial port specification

5. MODBUS

Specification	Rating
Reactive Tag mode	Max 40 mapping items
Scheduled Tag mode	Max 40 mapping items
Application Functions Supported	Read Coil, Read Discrete Input, Read Holding Register, Read Input Register, Write Coil, Write Register
Maximum Logix Controller support	3
Protocols	Modbus RTU, Modbus TCP

Table 5.1 - Modbus specification

6. ELECTRICAL SPECIFICATIONS

Specification	Rating
Power requirements	Input: 10 – 28V DC, (70mA @ 24VDC)
Power consumption	1.7 W
Connector	3-way terminal
Conductors	24 – 18 AWG
Enclosure rating	IP20, NEMA/UL Open Type

Temperature	-20 – 70 °C
Earth connection	Yes, terminal based
Emissions	IEC61000-6-4
ESD Immunity	EN 61000-4-2
Radiated RF Immunity	IEC 61000-4-3
EFT/B Immunity	EFT: IEC 61000-4-4
Surge Immunity	Surge: IEC 61000-4-5
Conducted RF Immunity	IEC 61000-4-6

Table 6.1 - Electrical specification

7. CERTIFICATIONS

Certification	**Mark**
CE Mark	
UL Mark File: E494895	 CLASS 1, DIV 2, GROUPS A, B, C, D
ODVA Conformance	 *MBR - F/W 1.009 *MBR485 - F/W 1.004
RoHS2 Compliant	
RCM	

Table 7.1 – Certifications

8. DIMENSIONS

Below are the enclosure dimensions as well as the required DIN rail dimensions.

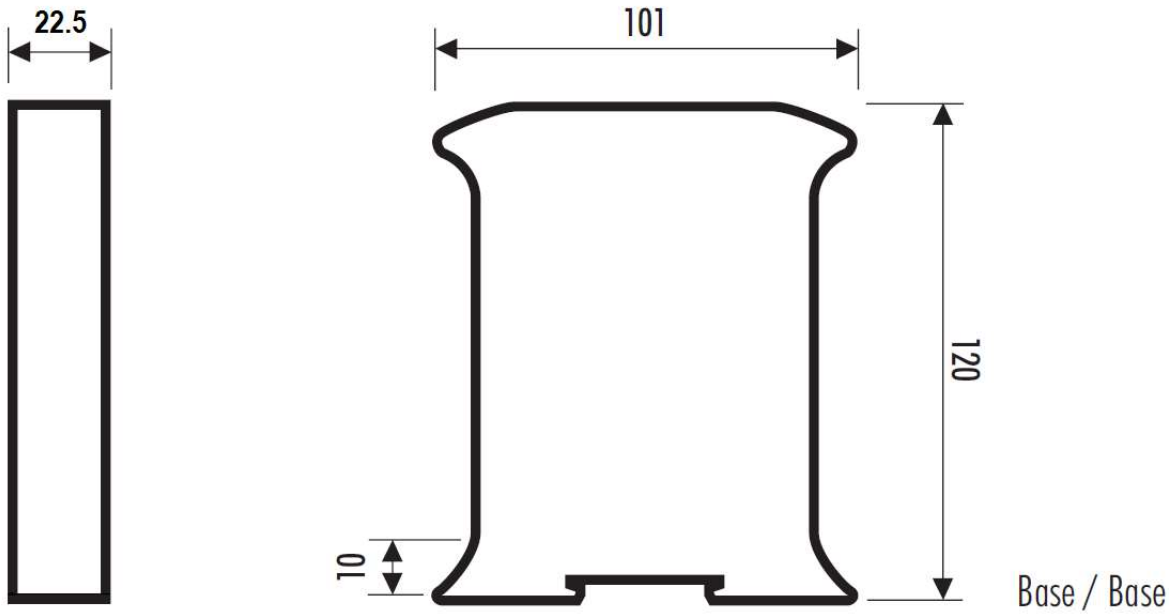

Figure 8.1 – Modbus Router enclosure dimensions

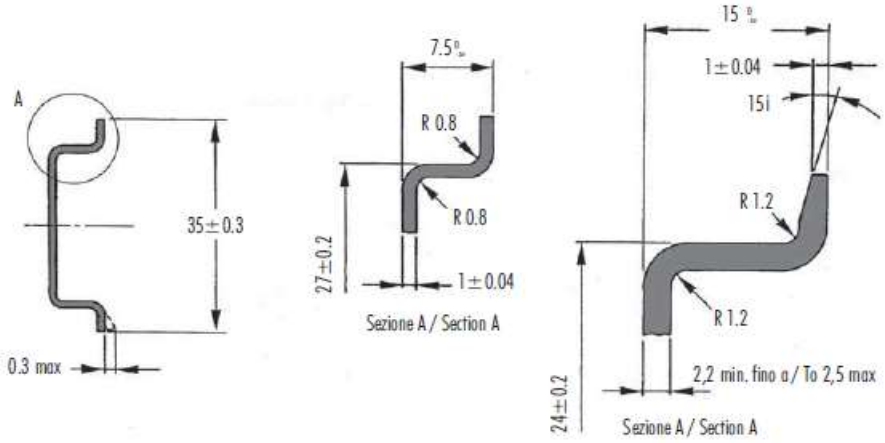

Figure 8.2 - Required DIN dimensions