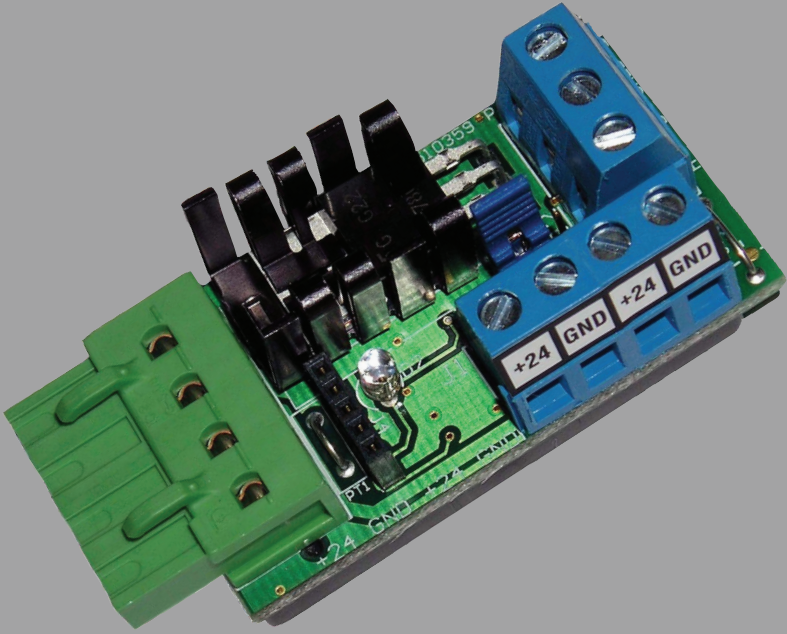# Manning 420MDBS Module

Instruction and Installation Manual

Honeywell

Introduction

Manning 420MDBS 4-20mA to RS-485 Modbus converter Module

This product is used to convert a 4-20mA signal output from a gas sensor to an RS485 Modbus RTU output. The module can be configured to interface to an existing PLC system that is capable of accepting Modbus RTU protocol, or the Manning 96D Digital controller.

This module can also be ordered with an optional connector that allows connection to a wiring harness. This allows the module to be utilized in other Honeywell Analytics applications where the standard Manning connector does not exist. In addition, some Manning applications where the enclosure arrangement does not allow the module to easily plug into the connector may take advantage of this interface. The order number is 420MDBS-SC

This manual must be carefully followed by all individuals who have or will have the responsibility for using or servicing the 420MDBS.

Warranties made by Honeywell Analytics Inc. with respect to this equipment will be voided if the equipment is not used and service in accordance with the instructions in this manual. If in doubt about a procedure, please contact Honeywell Analytics Inc. before proceeding.

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Description

A Operation

The 420MDBS replaces the standard four position sensor plug normally provided with all Manning 4-20mA output sensors. Since the plug is a stand-alone device, only two (2) wires are required to power the plug (see Diagram 1), thereby powering the sensor as well.

The 420MDBS module is wired using the terminal block located at the bottom of the module (see Diagram 1).

Important notes:

- The maximum number of modules on a single daisy chain twisted pair is 32.
- The last module on a chain must have an "End of Line" terminating jumper installed. See Diagram 1. There are two options for the EOL.

   Option one is a purely resistive termination "R". This is most common and should be used first.

   Option two is a resistive/capacitive termination "RC". Use this option only if system is installed in a noisy "high RF or nearby strong electric fields". This option is a trial and error approach and should be attempted only when sporadic packet loss occurs in communication.

- Each module has a Modbus address pre-programmed from the factory. See Diagram 2.
- The 4-20mA output Modbus register is #14. It is coded as a 16 bit signed integer (PLC interface only).
- Divide the numeric value in register #14 by 100 to convert to mA (PLC interface only).
- The device will respond to Modbus RTU protocol, 9600bps, 8 bits data, 2 stop bits. It will support Modbus function 0x03 "Read holding registers" .
- Sensor faults are identified as a 0.5mA reading on Modbus register is #14 (PLC interface only).
- For PLC applications, the alarm levels are programmed within the PLC.
- For 96D controller applications, the alarm levels, ppm levels, fault status, gas type, sensor type etc. can be programmed at the factory in each module upon ordering. In this case Register #14 is no longer a 4-20mA output.
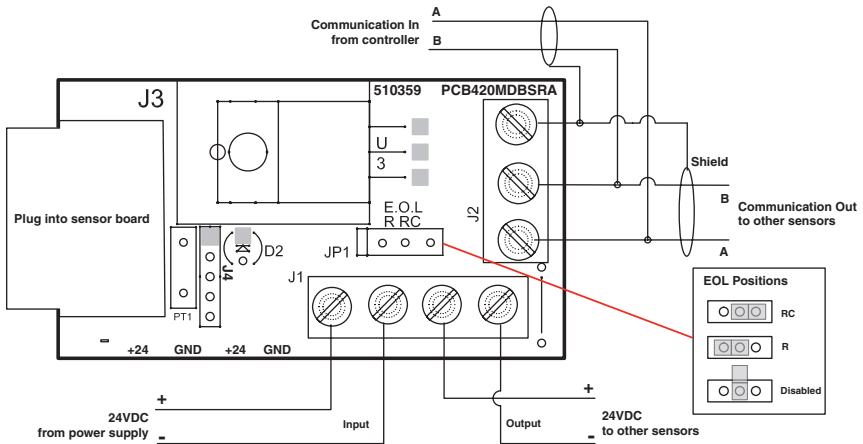
Diagram 1 - Manning 420MDBS Wiring Diagram

Diagram 2 - Modbus Address Label

Optional Connector Wiring Diagram

The option of connecting the module to a sensor that doesn't have the Manning interface plug is shown in Diagram 3. Ensure the interface connector is securely fastened to the module and the screw terminals are tight against a bare copper conductor.
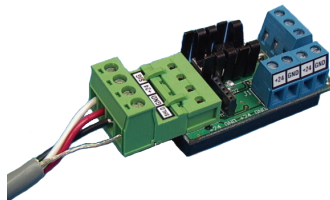

Diagram 3 - 420MDBS Optional Connector Wiring

B Specifications

Power Supply Requirements:	Input Voltage 12VDC to 27VDC
Power Supply Current:	120mA Max
Supply Current Forward:	200mA to 800mA
Operating Temperature:	0°F to 130°F
Humidity Conditions:	0% to 100% Non- Condensing
Maximum Cluster size:	32 Modules per chain
4-20mA Input Signal:	
Input Impedance:	162 Ohms resistive
Max input current:	25mA
Output:	
Format:	RS485
Protocol:	Modbus RTU protocol, 9600bps, 8 bits data, 2 stop bits. Modbus function 0x03 "Read holding registers"
4-20mA Output Register:	Modbus register #14 (PLC interface only).

Limited Warranty

1. Limited Warranty

Honeywell Analytics Inc.. ("HA") warrants to the original purchaser and/or ultimate customer ("Purchaser") of HA's Products ("Product") that if any part thereof proves to be defective in material os workmanship within eighteen (18) months of the date of shipment by HA or twelve (12) months from the date of first use by the Purchaser, whichever comes first, such defective part will be repaired or replaced, free of charge, at HA's discretion. For service repairs, contact HA at

1 800 321 6320

to obtain a service authorization number, then ship prepaid to

Honeywell Analytics Inc.
405 Barclay Blvd
Lincolnshire, IL 60069
Attn: Service Dept

The Product must be in a package equal to or in the original container. The Product will be returned freight prepaid and repaired or replaced if it is determined by HA that the part failed due to defective materials or workmanship. The repair or replacement of any such defective part shall be HA's sole and exclusive responsibility and liability under this limited warranty.

2. Exclusions

A. If gas sensors are part of the Product, the gas sensor is covered by a twelve (12) month limited warranty of the manufacturer.

B. If gas sensors are covered by this limited warranty, the gas sensor is subject to inspection by HA for extended exposure to excessive gas concentrations if a claim by the Purchaser is made under this limited warranty.

C. This limited warranty does not cover consumable items such as batteries, or items subject to wear or periodic adjustment, including lamps, fuses, valves, vanes, sensor elements, cartridges, or filter elements.

3. Warranty Limitation and Exclusion

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4. Disclaimer of Unstated Warranties

THE WARRANTY PRINTED ABOVE IS THE ONLY WARRANTY APPLICABLE TO THIS PURCHASE. ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO THE IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE ARE HEREBY DISCLAIMED.

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