

# Modbus Router with Ethernet and CAN

## CAN to Modbus RTU to Modbus TCP/IP Protocol Conversion

*CAN SAE J1939*

*Modbus RTU (RS-485)*

*Ethernet (Modbus TCP/IP)*

*Configurable using a Web Browser*

*Supported by Axiomatic Electronic Assistant*

**P/N: AX141830A**

### Features

- Fast data exchange between a CAN network (SAE J1939), RS-485 bus (Modbus RTU), and Ethernet (Modbus TCP/IP)
- CAN to Modbus (RTU+TCP/IP) direction
- May be used as a replacement for AX141830 if it has the same configuration
- 1 Isolated CAN port (CAN 2.0B)
- 1 Isolated RS-485 serial port
- 1 Ethernet port (Modbus TCP/IP)
- Operational from 9 to 36 VDC (12 or 24 VDC nominal)
- Integrated TE Deutsch 12-pin connector
- Surge, reverse polarity, input overvoltage, and input undervoltage protection
- Fully sealed enclosure with a rugged IP67 protection rating
- Compact size
- User configurable using a web browser



### Applications

Communications interface between machine and master control systems

### Ordering Part Number

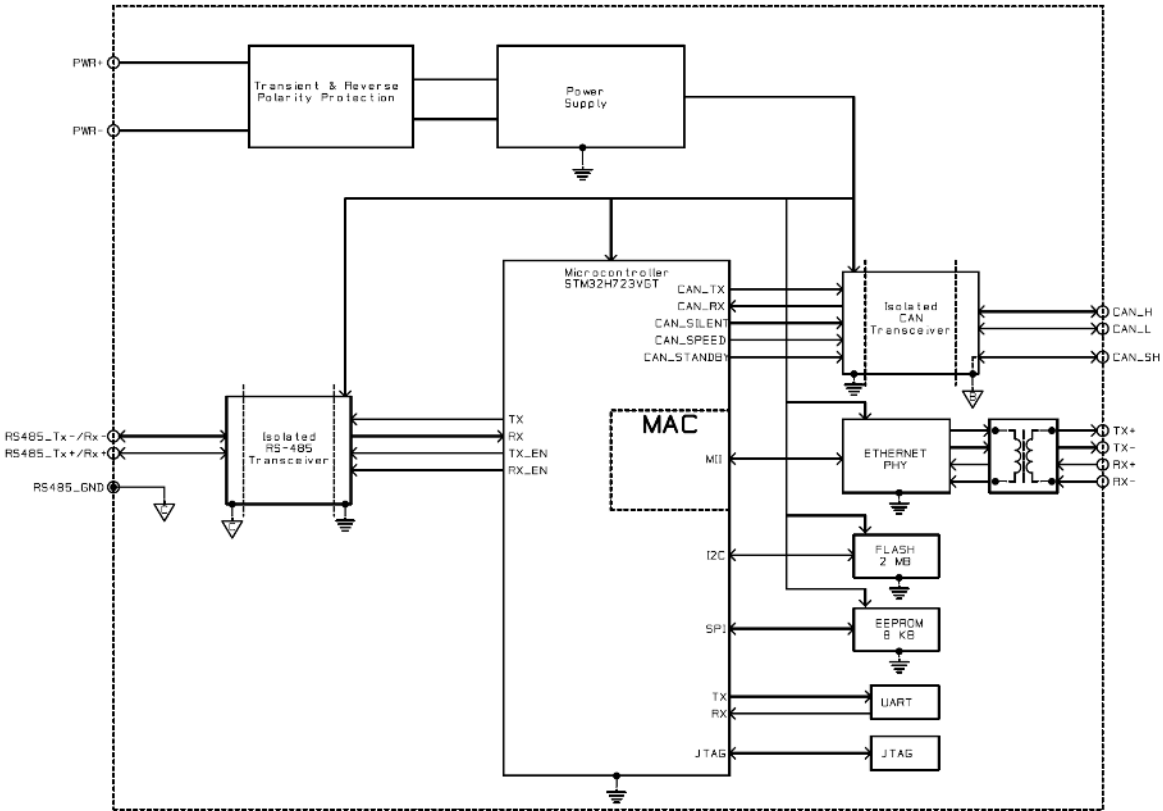
Modbus Router with Ethernet and CAN, SAE J1939 to Modbus RTU+TCP/IP - P/N: **AX141830A**

#### Accessories:

Mating Plug KIT P/N: **AX070105**

Axiomatic Electronic Assistant P/N: **AX070502** or **AX070506K**

Block Diagram



Technical Specifications

Specifications are indicative and subject to change. Actual performance will vary depending on the application and operating conditions. Users should satisfy themselves that the product is suitable for use in the intended application. All our products carry a limited warranty against defects in material and workmanship. Please refer to our Warranty, Application Approvals/Limitations and Return Materials Process as described on <https://www.axiomatic.com/service/>.

**Note:** All specifications are typical at nominal input voltage and 25°C unless otherwise specified.

Power

Power Supply Input	12 or 24 VDC nominal (9 to 36 VDC)
Quiescent Current	130 mA @ 12 V; 70 mA @ 24 V typical (power only, no other connections)
Surge Protection	95 VDC
Under-Voltage Protection	Hardware shutdown at 6 VDC
Over-Voltage Protection	Hardware shutdown at 42 VDC
Reverse Polarity Protection	Provided up to -40 V

Functionality

Conversion Platform	<p>The Protocol Converter supports conversion logic for bi-directional data exchange between Ethernet (Modbus TCP/IP), RS-485 (Modbus RTU), and SAE J1939 CAN networks.</p> <p>The actual conversion logic setup is highly application specific.</p> <p>The AX141830A is targeted mainly for CAN to Modbus (RTU+TCP/IP) direction communication.</p>
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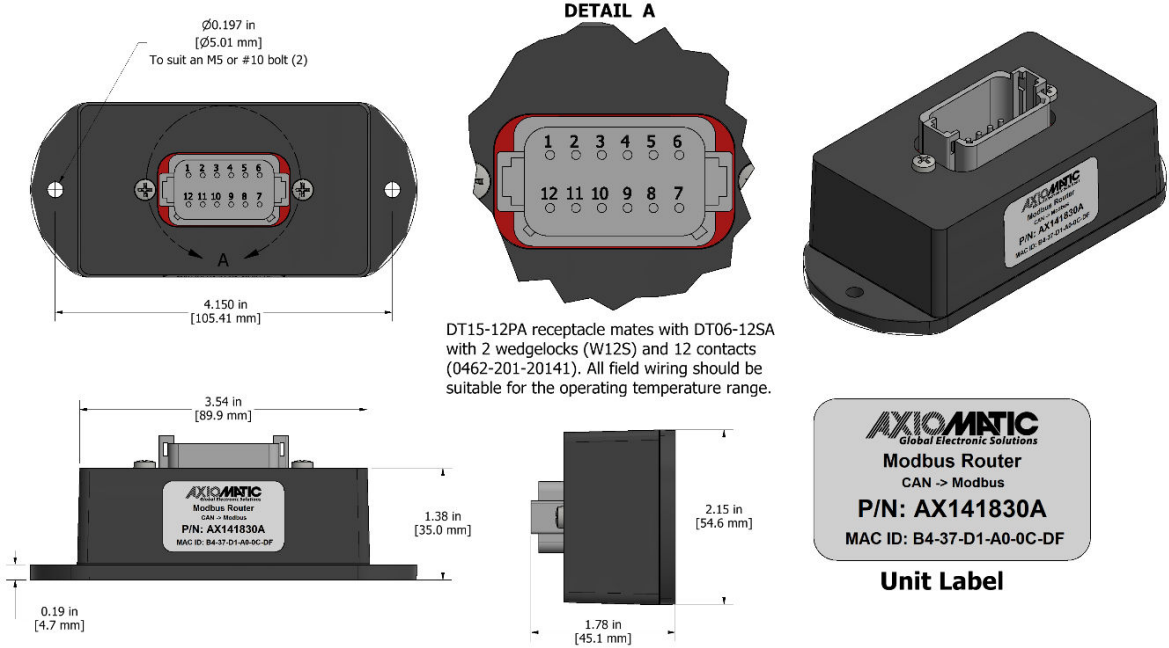
Ethernet	1 port 10/100 Mbit Ethernet compliant 10BASE-T, 100BASE-Tx (auto-negotiation and full-duplex supported) Auto-MDIX Modbus TCP/IP
RS-485	Modbus RTU Isolated 1 half-duplex RS-485 port provided Baud rate: Configurable (75 bit/s to 256 kbit/s)
CAN	SAE J1939 port Isolated Baud rate: 250 kbit/s (default) 250 kbit/s, 500 kbit/s, 1 Mbit/s auto-baud-rate detection

## General Specifications

Microcontroller	STM32H723VGT6																												
Isolation	CAN isolation: 330 Vrms RS-485 isolation: 300 Vrms																												
User Interface	Parameters are configurable using a web browser. Firmware can also be updated using a web browser. Please see the user manual for details.  Axiomatic Electronic Assistant (P/N: <b>AX070502</b> or <b>AX070506K</b> ) can be used for configuring device IP address, netmask, and Modbus port.																												
Compliance	RoHS																												
Vibration	Pending																												
Shock	Pending																												
Operating Conditions	-40 to 65°C (-40 to 149°F)																												
Storage Temperature	-40 to 105°C (-40 to 221°F)																												
Weight	0.70 lbs. (0.32 kg)																												
Protection	IP67																												
Enclosure and Dimensions	Aluminum enclosure Integral TE Deutsch connector Encapsulation Refer to dimensional drawing.																												
Electrical Connections	<p>12-pin TE Deutsch connector P/N: DT15-12PA A mating plug KIT is available as Axiomatic P/N: <b>AX070105</b> (includes 1 plug DT06-12SA, 1 wedgelock W12S, 3 sealing plugs 114017, 12 contacts 0462-201-16141)</p> <table border="1"> <thead> <tr> <th colspan="2">CAN and I/O Connector</th></tr> <tr> <th>Pin #</th><th>Description</th></tr> </thead> <tbody> <tr><td>1</td><td>Power -</td></tr> <tr><td>2</td><td>Ethernet TX+</td></tr> <tr><td>3</td><td>Ethernet RX+</td></tr> <tr><td>4</td><td>RS485_TX+/RX+</td></tr> <tr><td>5</td><td>CAN_SH</td></tr> <tr><td>6</td><td>CAN_H</td></tr> <tr><td>7</td><td>CAN_L</td></tr> <tr><td>8</td><td>RS485_GND</td></tr> <tr><td>9</td><td>RS485_TX-/RX-</td></tr> <tr><td>10</td><td>Ethernet RX-</td></tr> <tr><td>11</td><td>Ethernet TX-</td></tr> <tr><td>12</td><td>Power +</td></tr> </tbody> </table>	CAN and I/O Connector		Pin #	Description	1	Power -	2	Ethernet TX+	3	Ethernet RX+	4	RS485_TX+/RX+	5	CAN_SH	6	CAN_H	7	CAN_L	8	RS485_GND	9	RS485_TX-/RX-	10	Ethernet RX-	11	Ethernet TX-	12	Power +
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<p>Mounting</p>	<p>Mounting holes sized for #10 or M5 bolts. The bolt length will be determined by the end-user's mounting plate thickness. The mounting flange of the controller is 0.19 inches (4.75 mm) thick.</p> <p>If the module is mounted without an enclosure, it should be mounted to reduce the likelihood of moisture entry. Install the unit with appropriate space available for servicing and for adequate wire harness access (6 inches or 15 cm) and strain relief (12 inches or 30 cm).</p> <p>The CAN wiring is considered intrinsically safe. The power wires are not considered intrinsically safe and so in hazardous locations, they need to be located in conduit or conduit trays at all times. The module must be mounted in an enclosure in hazardous locations for this purpose.</p> <p>All field wiring should be suitable for the operating temperature range of the module.</p> <p>All chassis grounding should go to a single ground point designated for the machine and all related equipment.</p>
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### Dimensional Drawing



Form: TDAX141830A-02/15/2024