AXIOMATIC
Global Electronic Solutions

Bidirectional Modbus Router with Ethernet and CAN

Modbus RTU <-> Modbus TCP/IP <-> CAN Bidirectional 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: AX141810A

Features

- Fast data exchange between a CAN network (SAE J1939), RS-485 bus (Modbus RTU), and Ethernet (Modbus TCP/IP)
- Bidirectional Modbus (RTU+TCP/IP) to CAN and vice versa
- May be used as a replacement for AX141810 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
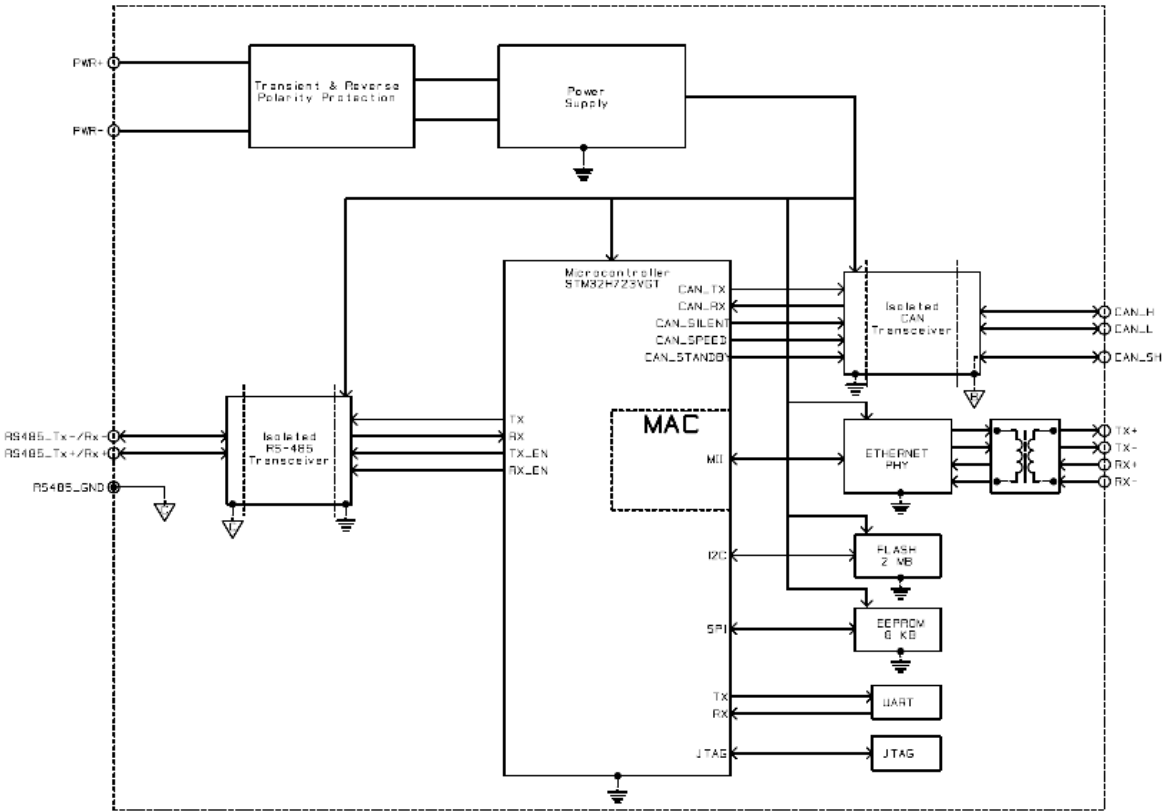
Ordering Part Number

Bidirectional Modbus Router with Ethernet and CAN, Modbus RTU to TCP/IP to CAN SAE J1939 - P/N: **AX141810A**

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 Limitations & 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.
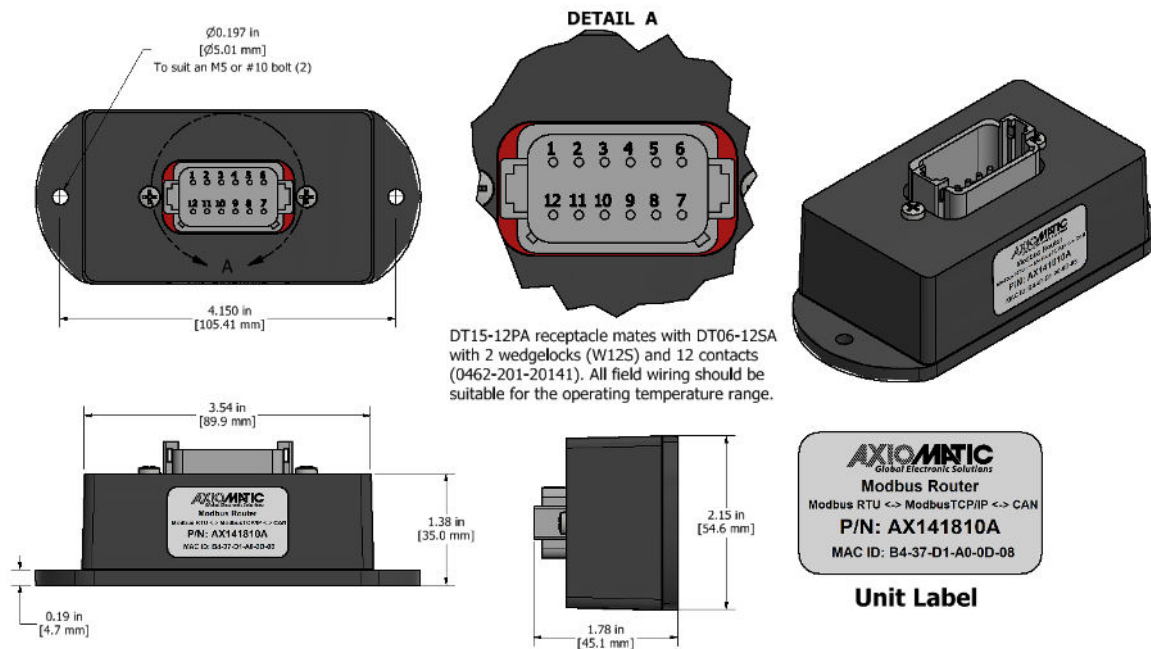
Power

Power Supply Input	12 or 24 VDC nominal (9 to 36 VDC)
Quiescent Current	160 mA @ 12 V; 80 mA @ 24 V typical (power only, no other connections)
Surge Protection	95 VDC
Under-Voltage Protection	Hardware shutdown at 5 VDC
Over-Voltage Protection	Hardware shutdown at 41.5 VDC
Reverse Polarity Protection	Provided up to -36 V

Functionality

Conversion Platform	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. The AX141810A is a general-purpose device with support for both directions, Modbus (RTU+TCP/IP) to CAN and vice versa. It ships with no configuration to allow the user to set up the parameters. The actual conversion logic setup is highly application specific.
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

Dimensional Drawing

Ø0.197 in [Ø5.01 mm]
To suit an M5 or #10 bolt (2)

4.150 in [105.41 mm]

DETAIL A

DT15-12PA receptacle mates with DT06-12SA with 2 wedgelocks (W12S) and 12 contacts (0462-201-20141). All field wiring should be suitable for the operating temperature range.

3.54 in [89.9 mm]

1.38 in [35.0 mm]

0.19 in [4.7 mm]

2.15 in [54.6 mm]

1.78 in [45.1 mm]

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Global Electronic Solutions
Modbus Router
Modbus RTU <-> ModbusTCP/IP <-> CAN
P/N: AX141810A
MAC ID: B4-37-D1-A0-0D-08

Unit Label

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: **AX070502** or **AX070506K**) can be used for configuring device IP address, netmask, and Modbus port.
Compliance	RoHS
Operating Conditions	-40 to 85°C (-40 to 185°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	12-pin TE Deutsch connector P/N: DT15-12PA A mating plug KIT is available as Axiomatic P/N: **AX070105** (includes 1 plug DT06-12SA, 1 wedgelock W12S, 3 sealing plugs 114017, 12 contacts 0462-201-16141) Table below
Mounting	Mounting holes sized for #10 or M4.5 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. 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). 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. All field wiring should be suitable for the operating temperature range of the module. All chassis grounding should go to a single ground point designated for the machine and all related equipment.

Pin	Description
1	Battery -
2	Ethernet TX +
3	Ethernet RX +
4	RS485 TX + / RX +
5	CAN Shield
6	CAN H
7	CAN L
8	RS485 Ground
9	RS485 TX - / RX -
10	Ethernet RX -
11	Ethernet TX -
12	Battery +