

ModbusRTU <-> ModbusTCP/IP <-> CAN Bidirectional Protocol Conversion
(Model AX141810)

CAN to Modbus RTU to Modbus TCP/IP Protocol Conversion
(Model AX141830)

P/N: AX141810, AX141830

Features:

- Fast data exchange between a CAN network (SAE J1939), RS-485 bus (Modbus RTU) and Ethernet (Modbus TCP/IP)
- Model AX141810 – bidirectional Modbus (RTU+TCP/IP) to CAN and vice versa
- Model AX141830 - CAN to Modbus (RTU+TCP/IP) direction
- 1 Isolated CAN port (CAN 2.0B)
- 1 Isolated RS-485 serial port
- 1 Ethernet port (Modbus TCP)
- Operational from 9 to 36 Vdc (12 Vdc, 24 Vdc nominal)
- Integrated 12-pin connector (equivalent to a TE Deutsch P/N)
- 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 Numbers:

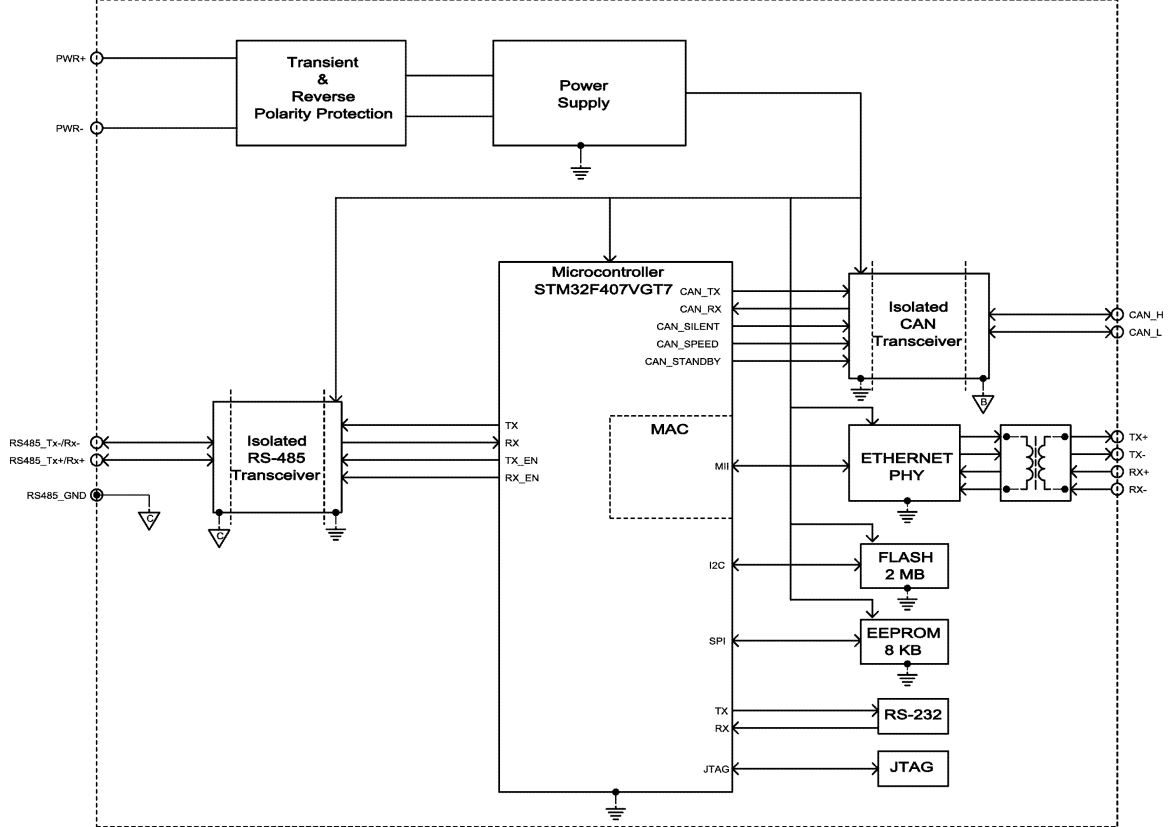
Protocol Converter, Modbus RTU to TCP/IP to CAN 2.0B, Bidirectional - P/N: **AX141810**
Protocol Converter, CAN 2.0B to Modbus RTU to TCP/IP - P/N: **AX141830**

Firmware Reflashing Tool – The Axiomatic Electronic Assistant KIT, P/Ns: **AX070502** or **AX070506K**

Accessories:

Mating Plug KIT (DT06-12SA, W12S, 12 0462-201-16141 contacts, 3 sealing plugs) P/N: **AX070105**

BLOCK DIAGRAM



Technical Specifications:

Specifications are typical at nominal input voltage and 25 degrees C unless otherwise specified.

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/>.

Power

Power Supply Input - Nominal	12 V or 24 Vdc nominal; 9...36 Vdc
Under-voltage Protection	Hardware shuts down at 6Vdc.
Surge Protection	95 Vdc
Over-voltage Protection	Hardware shuts down at 40Vdc.
Reverse Polarity Protection	Provided up to -40V

Functionality

Conversion Platform	<p>The Protocol Converter supports conversion logic for bidirectional 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. The two firmware versions, AX141810 and AX141830 both support the same data routing functions. The difference is in the amount of routing rules and message definitions.</p> <p>The AX141810 is a general-purpose device with support for both directions, Modbus (RTU+TCP/IP) to CAN and vice versa. The AX141810 ships with no configuration to allow the user to set up the parameters.</p> <p>The AX141830 is targeted mainly for CAN to Modbus (RTU+TCP/IP) direction.</p>
---------------------	--

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 Single half-duplex RS-485 port provided Baud rate: Configurable (75Bit/s to 256 kBit/s)
CAN	SAE J1939 Isolated Baud rate: Default 250 kBit/s Auto-baud-rate detect (250kBit/s, 500 kBit/s or 1MBit/s)

General Specifications

Memory	STM32F407VGT7 32-bit, 1Mbyte Flash Program Memory
Quiescent Current Draw	62 mA @12 V; 32 mA @24 V
Isolation	CAN isolation: 330 Vrms RS-485 isolation: 300 Vrms
Operating Conditions	-40 to 65°C (-40 to 149°F)
Enclosure and Dimensions	Aluminum enclosure, Integral TE Deutsch type connector, Encapsulation Refer to dimensional drawing.

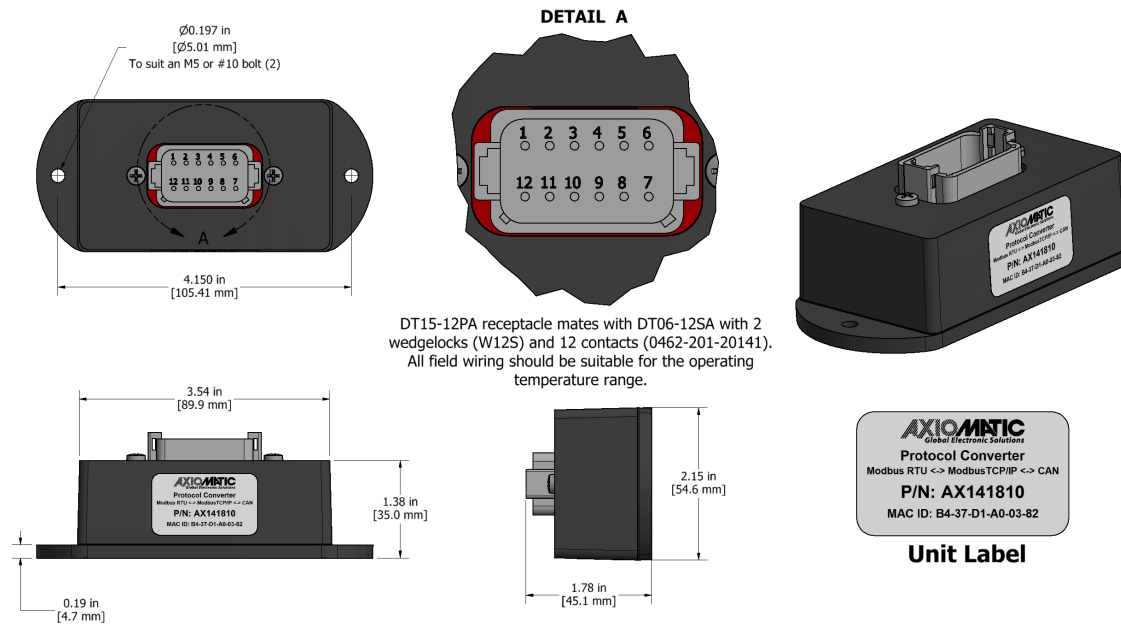


Figure 1.0 – Dimensional Drawing

Electrical Connections	12-pin connector (equivalent TE Deutsch P/N: DT15-12PA) A mating plug kit is available as Axiomatic P/N: AX070105 .																			
	<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>BATT-</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> </tbody> </table>	CAN and I/O Connector		Pin #	Description	1	BATT-	2	Ethernet TX+	3	Ethernet RX+	4	RS485 TX+/RX+	5	CAN SH	6	CAN H	7	CAN L	8
CAN and I/O Connector																				
Pin #	Description																			
1	BATT-																			
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	BATT+

Weight	0.71 lbs. (0.32 kg)
Protection Rating	IP67; Unit is encapsulated within the housing.
Vibration and Shock	4 g IEC publication 60068-2-6, Test Fc
Installation	<p>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.</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>
User Interface	<p>Parameters are configurable using a web browser.</p> <p>The Axiomatic Electronic Assistant KIT, P/Ns: AX070502 or AX070506K, can be used for firmware updates and for configuring Device IP address, netmask and Modbus port.</p>

Form: TDAX141810-30-06/29/23