

PRELIMINARY
TECHNICAL DATASHEET #TDAX141810
Protocol Converter
ModbusRTU <-> ModbusTCP/IP <-> J1939 CAN

P/N: AX141810

Features:

- Fast and bidirectional data exchange between a CAN network (SAE J1939), RS-485 bus (Modbus RTU) and Ethernet (Modbus TCP/IP)
- 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 Deutsch IPD 12-pin connector
- Fully sealed enclosure with a rugged IP67 protection rating
- Compact size
- User configurable using Axiomatic Electronic Assistant



Applications: Communications interface between machine and master control systems

Ordering Part Numbers:

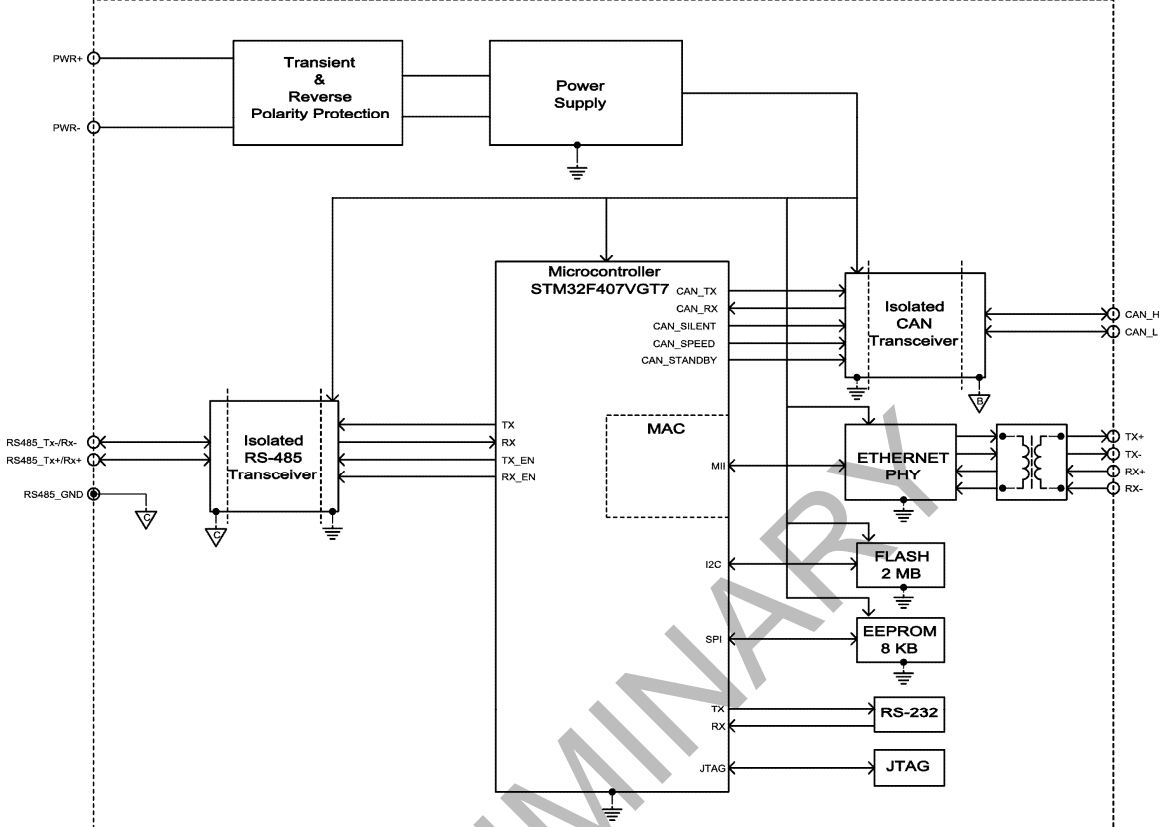
Protocol Converter, 2 SAE J1939, Modbus RTU - P/N: **AX141810**

Configuration Tool: Electronic Assistant P/N: **AX070502**

Accessories:

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

BLOCK DIAGRAM



Technical Specifications:

Typical at nominal input voltage and 25 degrees C unless otherwise specified

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	The Protocol Converter comes pre-programmed with standard protocol conversion logic for bidirectional data exchange between Ethernet (Modbus TCP/IP), RS-485 (Modbus RTU) and SAE J1939 CAN networks.
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: 115.2 kBit/s
CAN	SAE J1939 Isolated Baud rate: 250 kBit/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 connector, Encapsulation Refer to dimensional drawing.

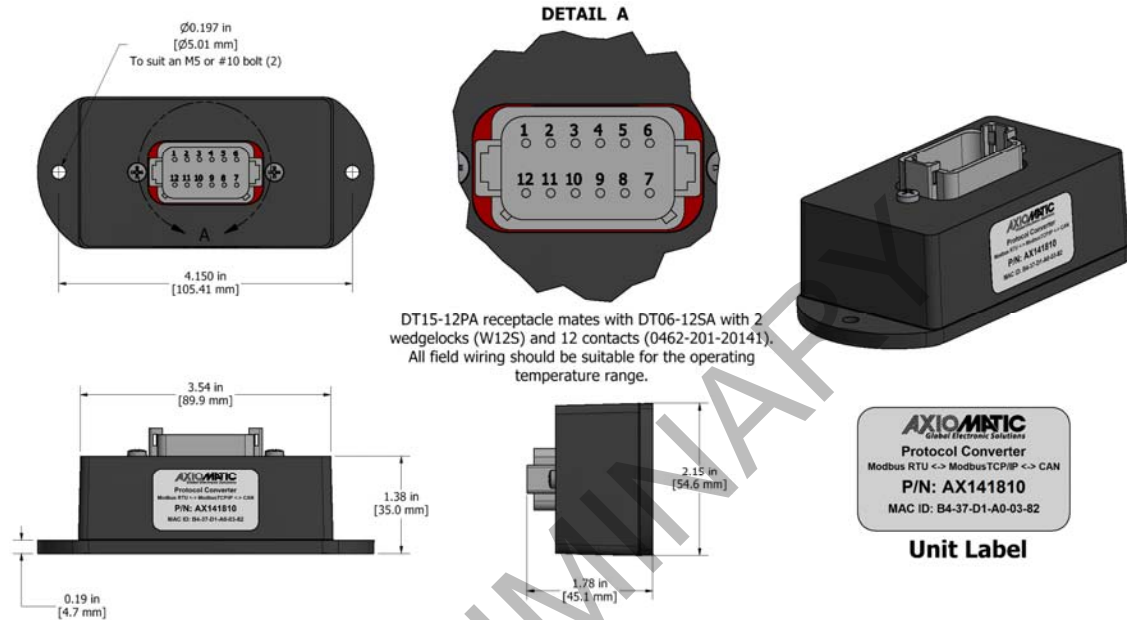


Figure 1.0 – Dimensional Drawing

Electrical Connections	12 pin TE Deutsch connector 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>TX+</td> </tr> <tr> <td>3</td> <td>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>RX-</td> </tr> <tr> <td>11</td> <td>TX-</td> </tr> <tr> <td>12</td> <td>BATT+</td> </tr> </tbody> </table>	CAN and I/O Connector		Pin #	Description	1	BATT-	2	TX+	3	RX+	4	RS485 TX+/RX+	5	CAN_SH	6	CAN_H	7	CAN_L	8	RS485_GND	9	RS485_TX-/RX-	10	RX-	11	TX-	12
CAN and I/O Connector																												
Pin #	Description																											
1	BATT-																											
2	TX+																											
3	RX+																											
4	RS485 TX+/RX+																											
5	CAN_SH																											
6	CAN_H																											
7	CAN_L																											
8	RS485_GND																											
9	RS485_TX-/RX-																											
10	RX-																											
11	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 – SAE J1939 models	<p>For SAE J1939 models, parameters are configurable using the Electronic Assistant.</p> <p>Axiomatic Electronic Assistant P/N: AX070502 The Electronic Assistant for <i>Windows</i> operating systems comes with a royalty-free license for use on multiple computers. It requires an Axiomatic USB-CAN converter to link the device's CAN port to a <i>Windows</i>-based PC.</p> <p>The functionality of the Electronic Assistant includes but is not limited to the following.</p> <ul style="list-style-type: none"> • Specify CAN message filters and CAN message IDs to be received • Link Modbus RTU or Modbus TCP/IP to CAN bus • Link Modbus RTU master to Modbus TCP/IP slave or vice versa • Define CAN node ID, and baud rate • Define Ethernet parameters (IP address, netmask)

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 www.axiomatic.com/service.html.

Form: TDAX141810-08/25/20