

TECHNICAL DATASHEET #TDAX140X00

Protocol Converter

2 Isolated CAN bus ports (SAE J1939, CANopen®)

1 Isolated RS485 port (Modbus RTU/J1587)

P/N: AX140100, AX140200, AX140400

Features:

- Acts as a gateway or interface between CAN buses with different baud rates and protocols (SAE J1939- SAE J1939 or SAE J1939-CANopen®)
- Fast data exchange between a CAN network (SAE J1939 or CANopen®) and a RS-485 bus (SAE J1587 or Modbus RTU)
- 2 Isolated CAN ports (CAN 2.0B)
- 1 Isolated RS-485 serial port
- 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
- CE mark
- User configurable using Axiomatic Electronic Assistant®
- Simulink® block library is available



Applications:

- Mobile (Off-Highway) Equipment
- Transport Vehicles
- Power Genset Control Systems – Control Panels for Power Generation, Marine and Oil & Gas Applications

Ordering Part Numbers:

Protocol Converter, 2 SAE J1939, Modbus RTU - P/N: **AX140100**

Protocol Converter, SAE J1939, CANopen®, Modbus RTU - P/N: **AX140200**
with EDS File

Protocol Converter, SAE J1939, SAE J1939, J1587 - P/N: **AX140400**

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**


Technical Specifications:

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

Power

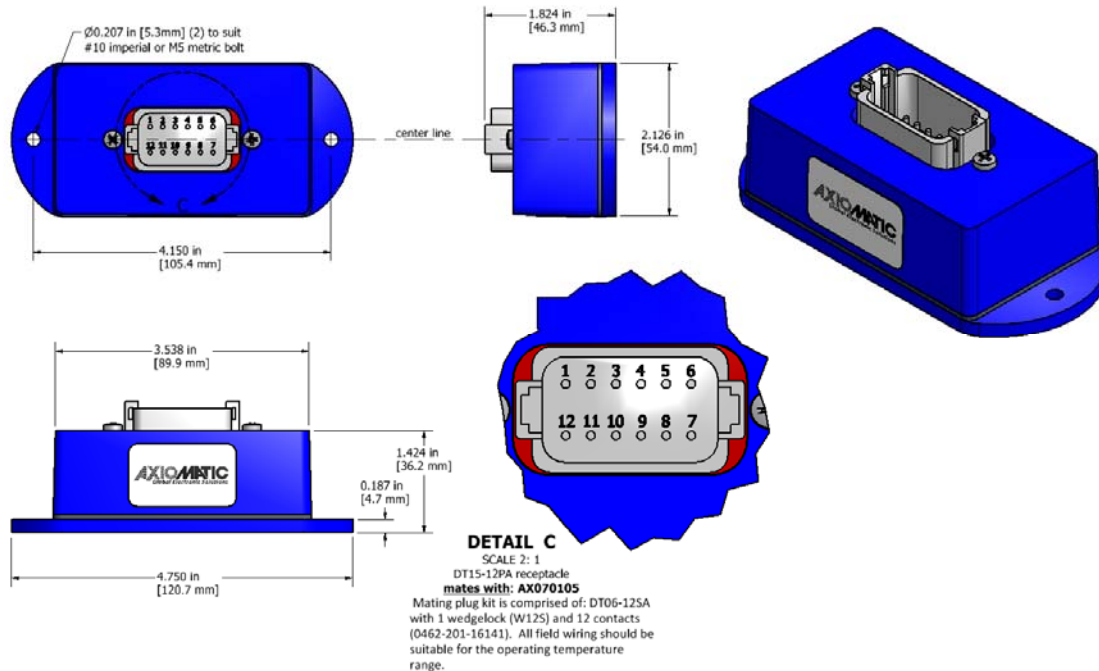
Power Supply Input - Nominal	12 V or 24 Vdc nominal; 9...36 Vdc The minimum allowable supply voltage for the power pin is 8 Vdc.
Surge Protection	95 Vdc
Reverse Polarity Protection	Provided

Control Software

Software Platform	<p>The Protocol Converter comes pre-programmed with standard protocol conversion logic for data exchange between 2 CAN networks and RS-485. The following protocols are available in the standard control logic of model AX140100.</p> <ul style="list-style-type: none"> • SAE J1939 (CAN 1 port) • SAE J1939 (CAN 1 port) • Modbus RTU (RS_485 port) <p>The following protocols are available in the standard control logic of model AX140200.</p> <ul style="list-style-type: none"> • CANopen® (CAN 1 port) • SAE J1939 (CAN 2 port) • Modbus RTU (RS_485 port) <p>The following protocols are available in the standard control logic of model AX140400.</p> <ul style="list-style-type: none"> • SAE J1939 (CAN 1 port) • SAE J1939 (CAN 2 port) • SAE J1587 (RS_485 port) <p>Custom programming for other applications is available on request.</p>
Simulink® Block Library	<p>A Simulink® block library is available on request. Simulink® is a model-based design tool from Mathworks®. Using Simulink®, the OEM machine designer is able to design the data conversion rules between the module interfaces using the Axiomatic Simulink library. Refer to the User Manual <i>Axiomatic Hardware Interface Library for Mathworks Simulink</i> for details.</p> <p>The block library includes SAE J1939, CANopen®, Modbus RTU and J1587 protocols.</p>  <p>Axiomatic HWLibrary, v1.0 Simulink programming for STM32, Atmel and NXP based Axiomatic embedded devices</p>

General Specifications

Memory	STM32F205 32-bit, 512 Kbytes Flash Program Memory
RS-485 Port	1 Isolated RS-485
CAN Ports	2 Isolated CAN 2.0B
Isolation	300 Vrms
Quiescent Current Draw	36 mA @12 V; 19 mA @24 V
Operating Conditions	-40 to 75°C (-40 to 167°F)
Storage Temperature	-55 to 85°C (-67 to 185°F)
Enclosure and Dimensions	Aluminum enclosure, Integral Deutsch IPD connector, Encapsulation Refer to dimensional drawing (above).



Electrical Connections	12 pin Deutsch IPD 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>Frame GND</td></tr> <tr><td>3</td><td>CAN1_SH</td></tr> <tr><td>4</td><td>RS485_GND (J1587 GND)</td></tr> <tr><td>5</td><td>RS485_TX/RX+ (J1587 +)</td></tr> <tr><td>6</td><td>RS485_TX/RX- (J1587 -)</td></tr> <tr><td>7</td><td>CAN2_H</td></tr> <tr><td>8</td><td>CAN2_L</td></tr> <tr><td>9</td><td>CAN2_SH</td></tr> <tr><td>10</td><td>CAN1_H</td></tr> <tr><td>11</td><td>CAN1_L</td></tr> <tr><td>12</td><td>BATT+</td></tr> </tbody> </table> <p>Notes: The Frame GND is connected to CAN 1_SH and CAN2_SH and RS485_GND using a capacitor. There is also a connection between BATT- and Frame GND. The Frame GND pin (pin 2) is used to ground the control unit to the machine's CHASSIS.</p>	CAN and I/O Connector		Pin #	Description	1	BATT-	2	Frame GND	3	CAN1_SH	4	RS485_GND (J1587 GND)	5	RS485_TX/RX+ (J1587 +)	6	RS485_TX/RX- (J1587 -)	7	CAN2_H	8	CAN2_L	9	CAN2_SH	10	CAN1_H	11	CAN1_L	12
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12	BATT+																											
Weight	0.70 lbs. (0.32 kg)																											
Protection Rating	IP67; Unit is encapsulated within the housing.																											

CE mark	Compliant to the EMC Directive Compliant to the RoHS Directive
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</p> <p>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 • Allow J1939 PGN's to be transmitted over CANopen • Link J1587 bus to J1939 • Link Modbus to CAN bus • Link CANopen to J1939 • Define CANnode ID, and baud rate • Facilitate dynamic decoupling of 2 CAN networks • Monitor CAN data
User Interface – CANopen® models	.EDS provided to interface to standard CANopen ® tools

Notes:

Electronic Assistant® is a registered US trademark of Axiomatic Technologies Corporation.

CANopen® is a registered community trade mark of CAN in Automation e.V.

Simulink® is a registered trademark of The Mathworks, Inc.

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: TDAX140X00-11/10/15