

**Features:**

- Fast and bidirectional data exchange between an Ethernet (Modbus TCP/IP), a RS-422 bus, a RS-485 bus, a RS-232 bus and a CAN network (SAE J1939)
- ASCII to PLC gateway
- 1 Isolated CAN port (CAN 2.0B)
- 1 RS-422 port
- 1 RS-485 port
- 1 RS-232 serial port
- 1 Ethernet port (Modbus TCP/IP)
- Power, Link and Speed LED indicators
- Operational from 9 to 36 Vdc (12 Vdc, 24 Vdc nominal)
- Fully sealed enclosure with a rugged IP67 protection rating
- Suitable for high vibration environments
- 1 8-pin M12 connector, 1 12-pin M12 connector
- Compact size
- User configurable using Axiomatic Electronic Assistant



**Applications:** Communications interface between legacy ASCII systems and PLC's

**Ordering Part Numbers:**

Protocol Converter, **Ethernet / RS-422 / RS-485 / RS-232 / SAE J1939 CAN**  
- P/N: **AX142150**

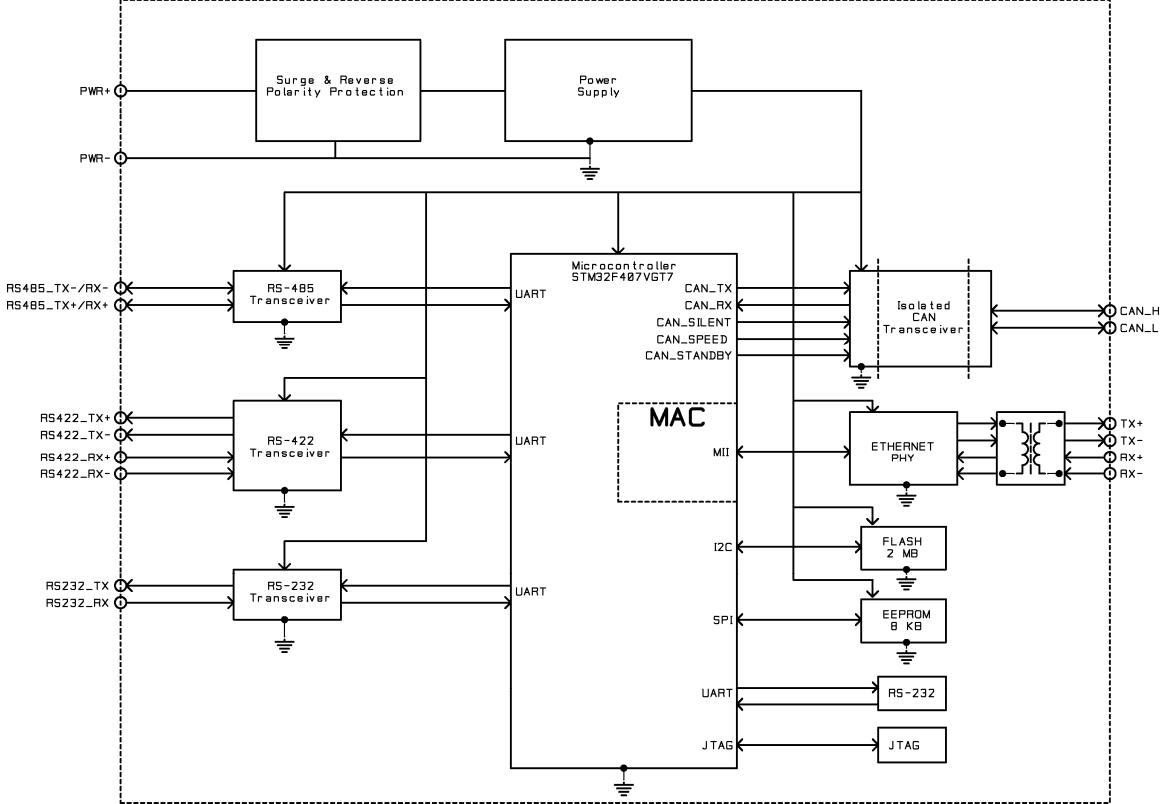
Configuration Tool: Electronic Assistant P/N: **AX070502**

Mating Cables:

**AX070531:** Ethernet and Power Cable 1.7 m (5.5 ft.), 8-pin M12 A-coded, Unterminated Leads, Ethernet Jack

**AX070533:** CAN, RS-232, RS-485, RS-422 Cable 1.5 m (5 ft.), 12-pin M12, Unterminated Leads

## 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 45Vdc.
Reverse Polarity Protection	Provided up to -90V

### Functionality

Conversion Platform	<p>The Protocol Converter comes pre-programmed with standard protocol conversion logic for bidirectional data exchange between a Ethernet (Modbus TCP/IP or proprietary TCP communications), a RS-422 bus, a RS-485 bus, a RS-232 bus and a CAN network (SAE J1939).</p> <p>Data is forwarded "as-is" between the different serial ports. Also, CAN / Ethernet data is forwarded directly to serial interfaces with the configuration allowing the user to specify the CAN message ID (or TCP port / Modbus register) to listen for data to be forwarded.</p>
Ethernet	<p>Single 10/100 Mbit Ethernet compliant port            10BASE-T, 100BASE-Tx (auto-negotiation and full-duplex supported)            Auto-MDIX            Modbus TCP/IP</p>
RS-422	<p>Single RS-422 port            Baud rate: up to 10.5 MBit/s</p>
RS-485	<p>Single RS-485 port</p>
RS-232	<p>One RS-232 port for serial communications            Three-wire            Baud rate: 400 kBit/s</p>

ASCII Features	Maximum Number of ASCII devices Serial Communications Port 0 Serial Communications Port 1 Message Queue Size	2 RS422 RS232 Configurable
CAN	Single SAE J1939 port Isolated Baud rate: 250 kBit/s	

## General Specifications

Memory	STM32F407VGT7 32-bit, 1Mbyte Flash Program Memory
Quiescent Current Draw	70 mA @12 V; 40 mA @24 V Typical
Isolation	CAN isolation: 330 Vrms
LED Indicators	<b>POWER LED</b> GREEN= Power ON RED = Fault condition GREEN/RED = Power OFF  <b>2 GREEN for Ethernet LEDs</b> LINK/ACT: ON means connection (LINK) Flashing means activity (ACT) OFF means Ethernet connection is down Transmission Speed: 100 Mbit/s = ON 10 Mbit/s = OFF
Operating Conditions	-40 to 70°C (-40 to 158°F)
Enclosure and Dimensions	Nylon 6/6, 30% glass fill UL 94V-0 Ultrasonically welded Refer to dimensional drawing.

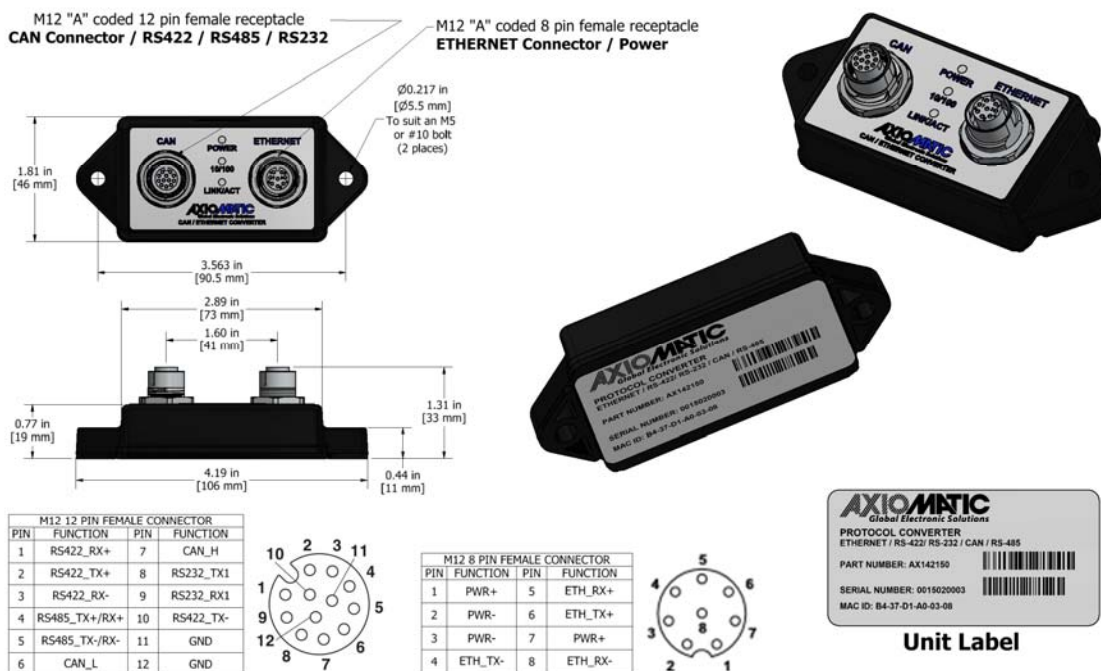
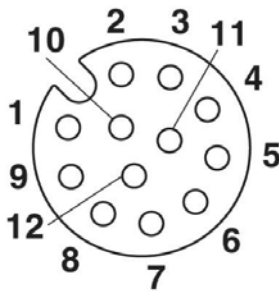
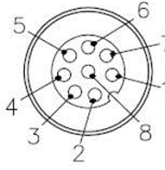


Figure 1.0 – Dimensional Drawing

Electrical Connections	<p><b>CAN / RS-232 / RS-422 Connector</b>  1 Phoenix Contact M12 12-pin connector (A-coded), Female P/N: 1441833 (Connector J2)</p> <table border="1" data-bbox="597 321 1011 615"> <thead> <tr> <th>PIN#</th> <th>Description</th> </tr> </thead> <tbody> <tr><td>1</td><td>RS-422 RX+</td></tr> <tr><td>2</td><td>RS-422 TX+</td></tr> <tr><td>3</td><td>RS-422 RX-</td></tr> <tr><td>4</td><td>RS-485 TX+/RX+ 2</td></tr> <tr><td>5</td><td>RS-485 TX-/RX- 2</td></tr> <tr><td>6</td><td>CAN L</td></tr> <tr><td>7</td><td>CAN H</td></tr> <tr><td>8</td><td>RS-232 TX 1</td></tr> <tr><td>9</td><td>RS-232 RX 1</td></tr> <tr><td>10</td><td>RS-422 TX-</td></tr> <tr><td>11</td><td>GND</td></tr> <tr><td>12</td><td>GND</td></tr> </tbody> </table>  <p><b>Ethernet / Power Connector</b>  1 Phoenix Contact M12 8-pin connector (A-coded), Female, P/N: 1441817 (Connector J1)</p> <table border="1" data-bbox="597 741 1011 951"> <thead> <tr> <th>PIN#</th> <th>Description</th> </tr> </thead> <tbody> <tr><td>1</td><td>Power +</td></tr> <tr><td>2</td><td>Power -</td></tr> <tr><td>3</td><td>Power -</td></tr> <tr><td>4</td><td>Ethernet TX-</td></tr> <tr><td>5</td><td>Ethernet RX+</td></tr> <tr><td>6</td><td>Ethernet TX+</td></tr> <tr><td>7</td><td>Power +</td></tr> <tr><td>8</td><td>Ethernet RX-</td></tr> </tbody> </table> 	PIN#	Description	1	RS-422 RX+	2	RS-422 TX+	3	RS-422 RX-	4	RS-485 TX+/RX+ 2	5	RS-485 TX-/RX- 2	6	CAN L	7	CAN H	8	RS-232 TX 1	9	RS-232 RX 1	10	RS-422 TX-	11	GND	12	GND	PIN#	Description	1	Power +	2	Power -	3	Power -	4	Ethernet TX-	5	Ethernet RX+	6	Ethernet TX+	7	Power +	8	Ethernet RX-
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Mating Connectors	Not supplied Mating connectors should meet the following standard for M12 Connectors, IEC 61076-2-101:2012. They should be A-coded.																																												
Weight	0.15 lb. (0.068 kg)																																												
Protection Rating	IP67; Unit is encapsulated within the housing.																																												
Vibration	Pending Random Vibration: Z-axis tracked vehicle profile (5 hr/axis in all 3 axes) Sinusoidal Component: 8.9 G Sine sweep, 2.5 hr/axis in all 3 axes																																												
Shock	Pending 50 g, 5 impacts per test, 6-20 ms impact duration																																												
Installation	Suits two M5 or #10 mounting bolts.																																												
User Interface – SAE J1939 models	<p><b>For SAE J1939 models, parameters are configurable using the Electronic Assistant.</b></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"> <li>• Specify CAN message filters and CAN message IDs to be received</li> <li>• Link RS-232 or RS-422 or RS-485 to CAN bus and Ethernet</li> <li>• Define CAN node ID, and baud rate</li> <li>• Define Ethernet parameters (IP address, netmask)</li> <li>• Configure message queues</li> </ul>																																												
Web Server Interface	Available Refer to the User Manual.																																												

*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](http://www.axiomatic.com/service.html).*

Form: TDAX142150-01/08/21