Protocol Converter
Ethernet / RS-422 / 2 RS-232 / SAE J1939 CAN

P/N: AX142100

Features

- Fast and bidirectional data exchange between an Ethernet, a RS-422 bus, two RS-232 buses and a CAN network (SAE J1939) (CANopen® model available)
- ASCII to Programmable Logic Controller (PLC) gateway
- 1 Isolated CAN port (CAN 2.0B)
- 1 RS-422 port (can be used as RS-485)
- 2 RS-232 serial ports
- 1 Ethernet interface (TCP communication at user configurable port)
- 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
- One 8-pin M12 connector; 1 12-pin M12 connector
- Compact size
- User configurable using a web browser

Applications

Communications interface between legacy ASCII systems and PLC's

Ordering Part Numbers:

Protocol Converter, Ethernet / RS-422 / 2 RS-232 / SAE J1939 CAN - P/N: **AX142100**

KIT (Protocol Converter, Ethernet / RS-422 / 2 RS-232 / SAE J1939 CAN and mating cables AX070531 and AX070533) - P/N: **AX142100K**
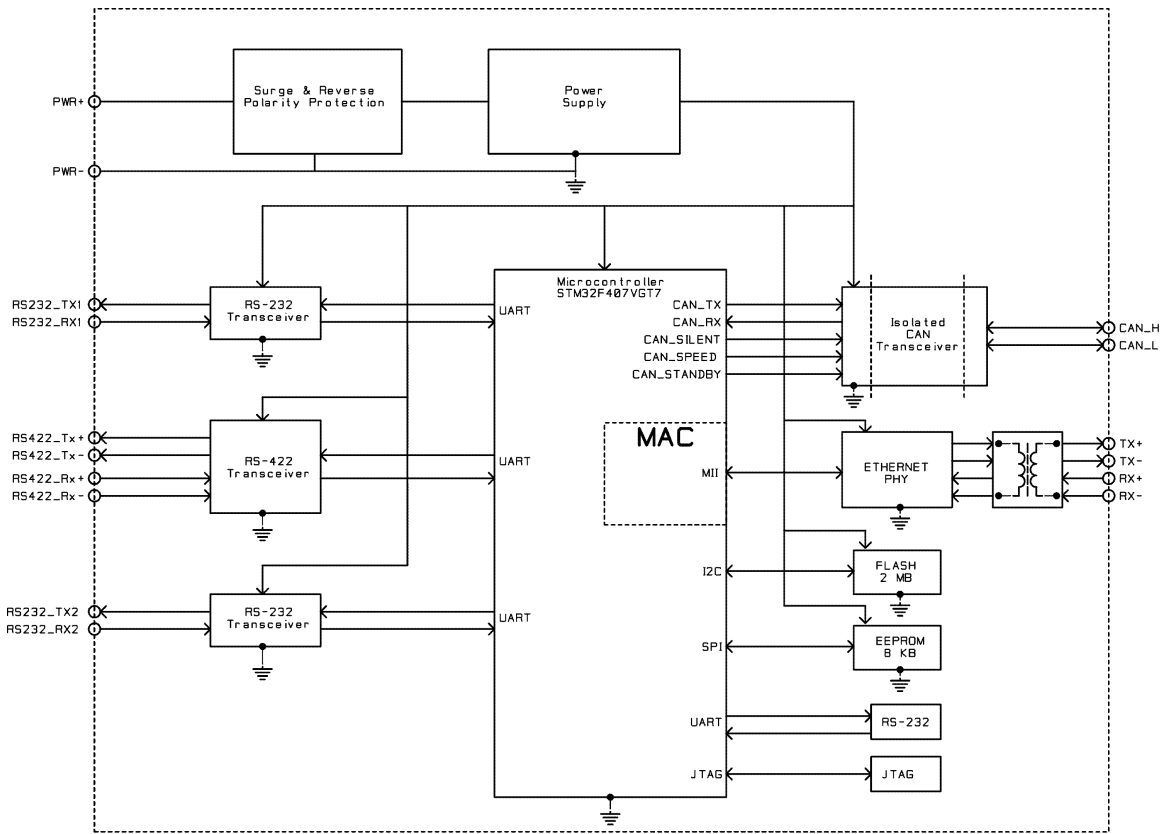
Protocol Converter, **Ethernet / RS-422 / 2 RS-232 / CANopen® CAN** - P/N: **AX142101**

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-422 Cable 1.5 m (5 ft.), 12-pin M12, Unterminated Leads

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

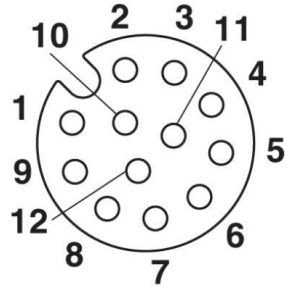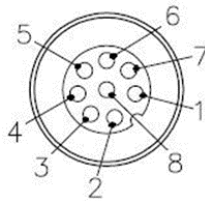| Power Supply Input - Nominal	12 V or 24 Vdc nominal; 9…36 Vdc
Under-voltage Protection	Hardware shuts down at 6Vdc.
Surge Protection	95 Vdc
Over-voltage Protection	Hardware shuts down at 45Vdc.
Reverse Polarity Protection	Provided up to -90V

Functionality

Conversion Platform	The Protocol Converter comes pre-programmed with standard protocol conversion logic for bidirectional data exchange between Ethernet (proprietary TCP communications), an RS-422 bus, two RS-232 buses and a CAN network (SAE J1939). 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) to listen for data to be forwarded.

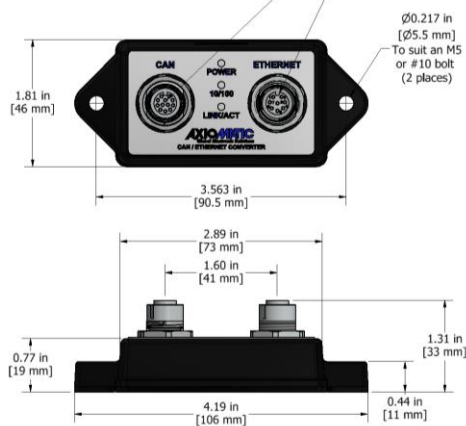| Ethernet	Single 10/100 Mbit Ethernet compliant port 10BASE-T, 100BASE-Tx (auto-negotiation and full-duplex supported) Auto-MDIX		
RS-422	Single RS-422 port Baud rate: up to 10.5 MBit/s Note: RS-422 connections can be used as RS-485. See pinout.		
RS-232	Two RS-232 ports for serial communications Three-wire Baud rate: up to 400 kBit/s		
ASCII Features	Maximum Number of ASCII devices	2	
	Serial Communications Port 0	RS422	
	Serial Communications Port 1	RS232	
	Message Queue Size	Configurable	
CAN	Single SAE J1939 port Isolated Baud rate: 250 kBit/s (default) (CANopen® model available)		

General Specifications

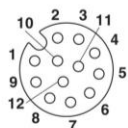| Microcontroller	STM32F407VGT7 32-bit, 1Mbyte Flash Program Memory
Quiescent Current Draw	70 mA @12 V; 40 mA @24 V Typical
Isolation	CAN isolation: 330 Vrms
LED Indicators	POWER LED GREEN= Power ON RED = Fault condition GREEN/RED = Power OFF 2 GREEN for Ethernet LEDs LINK/ACT: ON means connection (LINK) 　　　　　　 Flashing means activity (ACT) 　　　　　　 OFF means Ethernet connection is down Transmission Speed: 100 Mbit/s = ON 　　　　　　　　　　 10 Mbit/s = OFF
Web Interface	Available Refer to the User Manual. The functionality of the web interface includes but is not limited to the following. • Specify CAN message filters and CAN message IDs to be received • Link RS-232 or RS-422 to CAN bus and Ethernet • Define CAN node ID, and baud rate • Define Ethernet parameters (IP address, netmask) • Configure message queues
User Interface	Axiomatic Electronic Assistant KIT P/Ns: AX070502 or AX070506K The Axiomatic Electronic Assistant for *Windows* 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 *Windows*-based PC. The functionality of the Axiomatic Electronic Assistant includes: • IP address configuration • Firmware Reflashing
Operating Conditions	-40 to 70°C (-40 to 158°F)
Weight	0.15 lb. (0.068 kg) without mating cables
Enclosure and Dimensions	Nylon 6/6, 30% glass fill UL 94V-0 Ultrasonically welded Refer to dimensional drawing.
Protection Rating	IP67; Unit is encapsulated within the housing.
Vibration	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	50 g, 5 impacts per test, 6-20 ms impact duration
Electrical Connections	**CAN / RS-232 / RS-422 Connector** 1 Phoenix Contact M12 12-pin connector (A-coded), Female P/N: 1441833 Note: To use RS-422 as RS-485, connect the Tx+ and Rx+ pin to D+ on the RS-485 connector. Also connect the Tx- and Rx- to pin D-.

PIN#	Description
1	RS-422 RX+
2	RS-422 TX+
3	RS-422 RX-
4	RS-232 TX 2
5	RS-232 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

Ethernet / Power Connector
1 Phoenix Contact M12 8-pin connector (A-coded), Female, P/N: 1441817

PIN#	Description
1	Power +
2	Power -
3	Power -
4	Ethernet TX-
5	Ethernet RX+
6	Ethernet TX+
7	Power +
8	Ethernet RX-

Mating Connectors	Not supplied Mating connectors should meet the following standard for M12 Connectors, IEC 61076-2-101:2012. They should be A-coded.
Mating Cables	Refer to the drawings for AX070533 and AX070531. They are located on www.axiomatic.com under the log-in tab in the user manual section. **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-422 Cable 1.5 m (5 ft.), 12-pin M12, Unterminated Leads
Installation	Suits two M5 or #10 mounting bolts.

M12 "A" coded 12 pin female receptacle
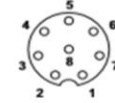**CAN Connector / RS422 / 2 RS232**

M12 "A" coded 8 pin female receptacle
ETHERNET Connector / Power

Ø0.217 in [Ø5.5 mm]
To suit an M5 or #10 bolt (2 places)

1.81 in [46 mm]

3.563 in [90.5 mm]

2.89 in [73 mm]

1.60 in [41 mm]

0.77 in [19 mm]

1.31 in [33 mm]

4.19 in [106 mm]

0.44 in [11 mm]

M12 12 PIN FEMALE CONNECTOR

PIN	FUNCTION	PIN	FUNCTION
1	RS422_RX+	7	CAN_H
2	RS422_TX+	8	RS232_TX1
3	RS422_RX-	9	RS232_RX1
4	RS232_TX2	10	RS422_TX-
5	RS232_RX2	11	GND
6	CAN_L	12	GND

M12 8 PIN FEMALE CONNECTOR

PIN	FUNCTION	PIN	FUNCTION
1	PWR+	5	ETH_RX+
2	PWR-	6	ETH_TX+
3	PWR-	7	PWR+
4	ETH_TX-	8	ETH_RX-

PROTOCOL CONVERTER
ETHERNET / RS-422 / 2 RS-232/ SAE J1939 CAN
PART NUMBER: AX142100
SERIAL NUMBER: 0015020003
MAC ID: B4-37-D1-A0-03-08
Unit Label

Figure 1.0 – Dimensional Drawing

Note: CANopen® is a registered community trademark of CAN in Automation e.V.

Form: TDAX142100-11/23/23