

1 Input, 1 Output, Isolated Signal Converter

1 Isolated Universal Input

1 Isolated Signal Output

1 Isolated CAN (SAE J1939)

Configurable with Axiomatic Electronic Assistant

P/N: AX030800

Features:

- Operational from 6 to 62 VDC (12/ 24/ 48 VDC nominal)
- 1 isolated universal input user selectable as the following types:
 - Voltage
 - Current
 - Resistive
 - Digital
 - Frequency
 - RPM
 - PWM
- 1 isolated signal output user selectable as the following types:
 - Voltage
 - Current
 - Digital
 - Frequency
 - PWM
- 1 isolated CAN port (SAE J1939) with auto-baud-rate detection
- 4-way isolation Power-Input-Output-CAN
- Protected against power surges, transients, undervoltage, overvoltage and reverse polarity
- Input and output protected from short circuits
- Integrated TE Deutsch equivalent 8-pin connector
- Fully sealed enclosure with a rugged IP67 protection rating
- Compact size
- User configurable using Axiomatic Electronic Assistant



Applications:

- Power Generator Set control systems
- Machine engine control systems

Ordering Part Number:

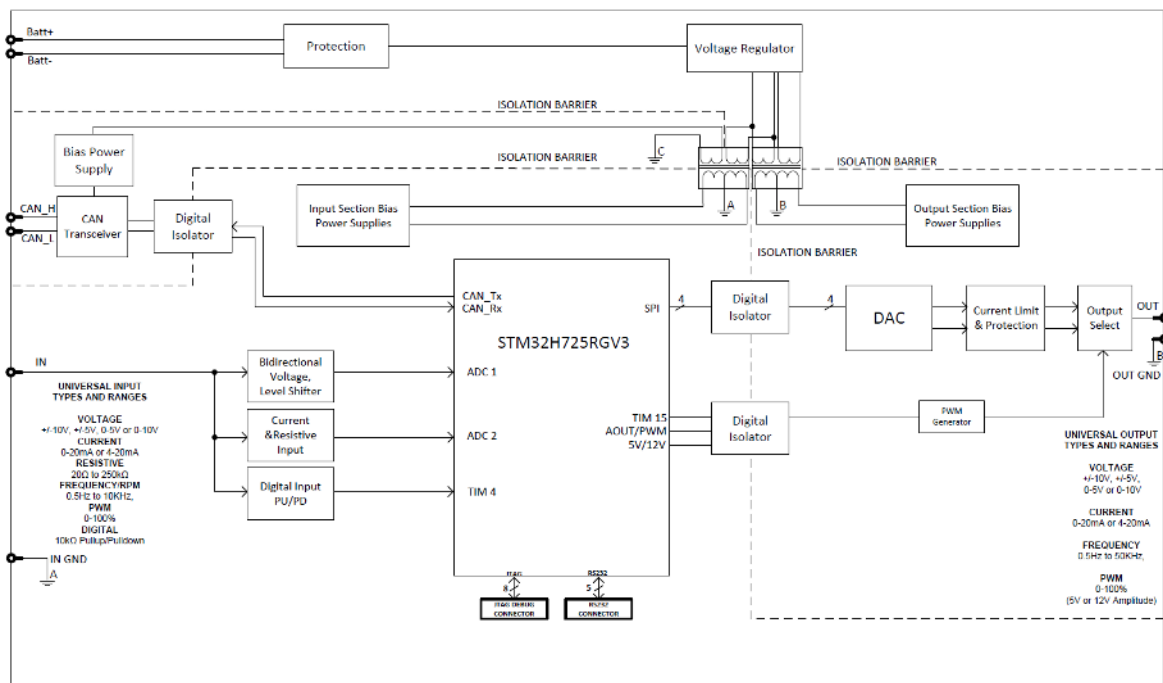
1 Input, 1 Output, Isolated Signal Converter- P/N: **AX030800**

Accessories:

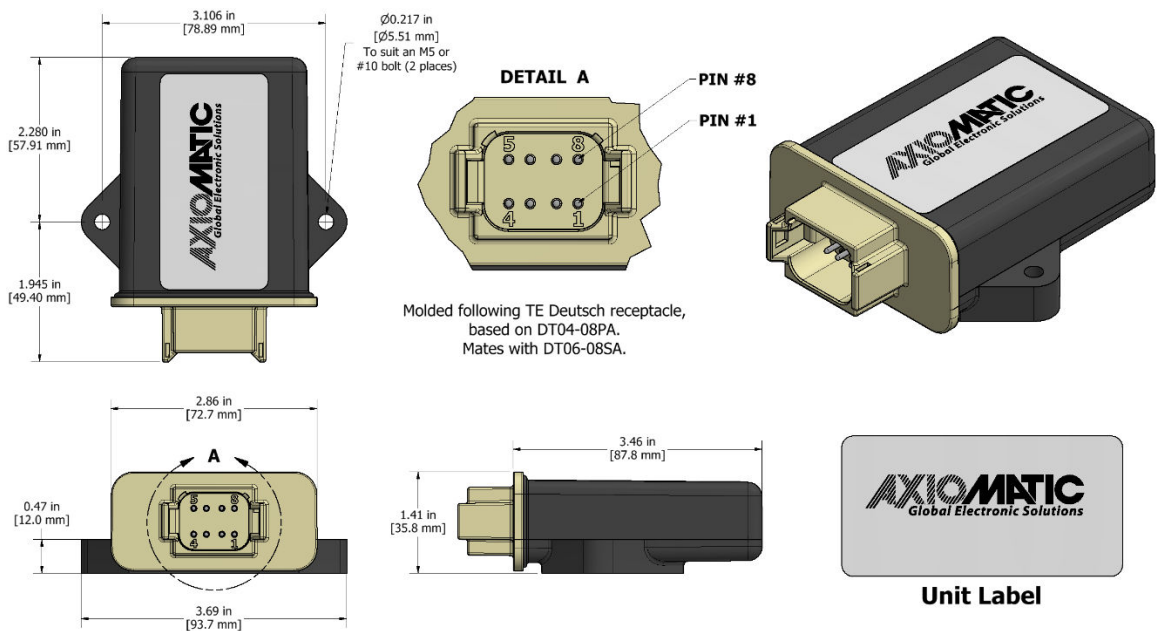
Mating Plug KIT P/N: **AX070112**

Axiomatic Electronic Assistant P/N: **AX070502** or **AX070506K**

Block Diagram



Dimensional Drawing



Technical Specifications

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 Limitations & Return Materials Process as described on <https://www.axiomatic.com/service/>.

Note: All specifications are typical at nominal input voltage and 25°C unless otherwise specified.

Power

Power Supply Input	12, 24, or 48 VDC nominal (6 to 62 VDC)
Quiescent Current	151.5 mA @ 12 V; 73.5 mA @ 24 V; 39.5 mA @ 48 V typical
Surge and Transient Protection	Up to 200 VDC
Under-Voltage Protection	Hardware shutdown at 6 V
Over-Voltage Protection	Hardware shutdown at 63 V
Reverse Polarity Protection	Up to -400 VDC

Isolated Universal Input

Input	1 isolated universal input selectable as: Voltage, Current, Resistive, Digital, Frequency, RPM, or PWM type Refer to Table 1.0.
Protection	Protected against shorts 0-20 mA input protected up to 30 mA

Table 1.0 – User Programmable Input

Analog to Digital Input Functions	12-bit Analog to Digital (Voltage Input, Current Input, or Resistive Input)										
Voltage Input	Ranges: 0-5 V, 0-10 V, ± 5 V, ± 10 V Resolution: 1 mV Accuracy: $\pm 1\%$ error										
Current Input	Range: 0-20 mA, 4-20 mA Resolution: 1 μ A Accuracy: $\pm 2\%$ error Current Sense Resistor: 124 Ω										
Resistive Input	Resolution: 1 Ω resolution for lower ranges, 1 k Ω for higher ranges Accuracy: $\pm 2\%$ error Self-calibrating for the range 30 Ω to 250 k Ω										
Digital Input	Active High or Active Low Selectable 10 k Ω pull-up or pull-down										
Timer Input Functions	15-bit Timer (Frequency Input, RPM Input, or PWM Input)										
Frequency Input	<table><tr><th>Range</th><th>Resolution</th></tr><tr><td>0.5 Hz to 50 Hz</td><td>0.01 Hz</td></tr><tr><td>10 Hz to 1 kHz</td><td>0.1 Hz</td></tr><tr><td>100 Hz to 10 kHz</td><td>1 Hz</td></tr></table>	Range	Resolution	0.5 Hz to 50 Hz	0.01 Hz	10 Hz to 1 kHz	0.1 Hz	100 Hz to 10 kHz	1 Hz		
Range	Resolution										
0.5 Hz to 50 Hz	0.01 Hz										
10 Hz to 1 kHz	0.1 Hz										
100 Hz to 10 kHz	1 Hz										
PWM Input	Resolution: 0.01% Accuracy: $\pm 1\%$ error Impedance: 1 M Ω										

Isolated Signal Output

Output	1 isolated signal output selectable as: Voltage, Current, Digital, Frequency, or PWM type Refer to Table 2.0.
Protection	Protected against shorts.
Table 2.0 – User Programmable Output	
Analog to Digital Output Functions	12-bit Analog to Digital (Voltage Output or Current Output)
Voltage Output	Ranges: 0-5 V, 0-10 V, ± 5 V, ± 10 V Resolution: 1 mV Accuracy: $\pm 1\%$ error Maximum Load: 25 mA
Current Output	Range: 0-20 mA, 4-20 mA Resolution: 0.5 μ A Accuracy: $\pm 1\%$ error Maximum Load: 500 Ω
Digital Output	Amplitude: 5 V or 12 V Maximum Load: 50 mA
Frequency Output	Frequency: 0.5 Hz to 50 kHz Accuracy: $\pm 1\%$ error
PWM Output	Frequency: 0.5 Hz to 10 kHz Duty Cycle: 0-100% Accuracy: $\pm 1\%$ error

General Specifications

Microcontroller	STM32H725RGV3																		
Control Logic	Pre-programmed with standard logic. Refer to the user manual.																		
Communications	1 isolated CAN port SAE J1939 compliant 250 kbps, 500 kbps, 667 kbps, 1 Mbps auto-baud-rate detection																		
Isolation	300Vrms 4-way isolation Power-Input-Output-CAN																		
User Interface	Axiomatic Electronic Assistant P/N: AX070502 or AX070506K																		
Compliance	RoHS																		
Operating Conditions	-40°C to 85°C (-40°F to 185°F)																		
Storage Temperature	-55°C to 125°C (-67°F to 257°F)																		
Weight	0.22 lbs. (0.1 kg)																		
Protection	IP67																		
Enclosure and Dimensions	Plastic Enclosure, Nylon 6-6 with 30% glass fill, laser welded Integral TE Deutsch equivalent connector 4.23 in x 3.69 in x 1.41 in (107.3 mm x 93.7 mm x 35.8 mm) Note: L x W x H includes the integral connector. Refer to dimensional drawing. Flammability rating: UL 94 HB																		
Electrical Connections	Integral 8-pin receptacle (equivalent to TE Deutsch P/N: DT04-08PA) <table border="1"> <thead> <tr> <th>Pin #</th><th>Description</th></tr> </thead> <tbody> <tr> <td>1</td><td>Output</td></tr> <tr> <td>2</td><td>Output Ground</td></tr> <tr> <td>3</td><td>CAN_H</td></tr> <tr> <td>4</td><td>CAN_L</td></tr> <tr> <td>5</td><td>Input Ground</td></tr> <tr> <td>6</td><td>Input</td></tr> <tr> <td>7</td><td>Power +</td></tr> <tr> <td>8</td><td>Power -</td></tr> </tbody> </table>	Pin #	Description	1	Output	2	Output Ground	3	CAN_H	4	CAN_L	5	Input Ground	6	Input	7	Power +	8	Power -
Pin #	Description																		
1	Output																		
2	Output Ground																		
3	CAN_H																		
4	CAN_L																		
5	Input Ground																		
6	Input																		
7	Power +																		
8	Power -																		
Mating Plug Kit	A mating plug KIT is available as Axiomatic P/N: AX070112 (includes 1 socket DT06-08SA, 1 wedgelock W8S, 8 contacts 0462-201-16141, and 6 sealing plugs 114017)																		
Mounting	Mounting holes are sized for #10 or M5 bolts. The bolt length will be determined by the end-user's mounting plate thickness. The mounting flange of the controller is 0.47 inches (12 mm) thick. It should be mounted with connectors facing left or right to reduce the likelihood of moisture entry. All field wiring should be suitable for the operating temperature range. 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).																		

Form: TDAX030800-10/30/2024