

4 Universal Outputs CAN Controller, SAE J1939, Compact

Configurable with Axiomatic Electronic Assistant

P/N: AX030560

Features

- 12/24/48 VDC nominal input power (9 to 60 VDC power supply range)
- 4 signal outputs user selectable as analog current, analog voltage, digital PWM, digital frequency and digital ON/OFF
- 1 CAN port (SAE J1939) with auto-baud-rate detection
- Protection against input surge/transient, input undervoltage, input overvoltage, and output short circuit.
- User-configurable using the Axiomatic Electronic Assistant
- Rugged enclosure and connector
- Compact
- IP67



Applications

- Distributed controls for power generation, co-generation, stationary power
- Distributed controls for commercial vehicles, off-highway equipment, industrial equipment, etc.

Ordering Part Number:

4 Universal Outputs CAN Controller, SAE J1939 with Auto-Baud-Rate Detection, Compact –
P/N: **AX030560**

Accessories:

Mating Plug KIT - P/N: **PL-DTM06-12SA**

Axiomatic Electronic Assistant Configuration KIT - P/N: **AX070502** or **AX070506K**

Description

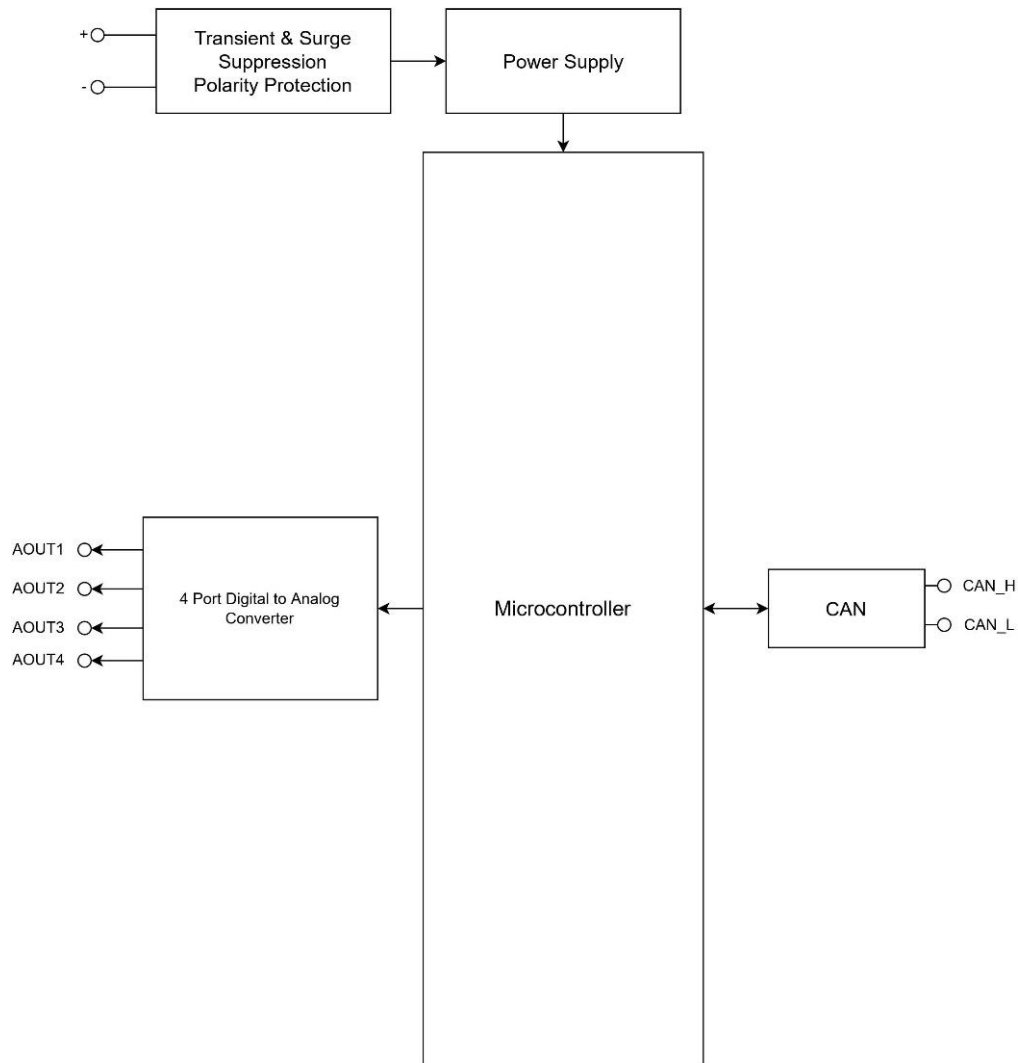
This is a versatile and compact CAN SAE J1939 controller with 4 universal outputs. Its hardware design allows for a wide range of output types: analog current, analog voltage, digital PWM, digital frequency and digital On/Off.

All logical function blocks on the unit are inherently independent from one another but can be configured to interact with each other. The control algorithms / function blocks allow the user to configure the controller for a wide range of applications without the need for custom firmware using the Axiomatic Electronic Assistant.

SAE J1939 CAN network can operate at standard 250 and 500 kbit/s and non-standard 667 kbit/s and 1 Mbit/s baud rates.

The controller accepts power supply voltages from 9 to 60 VDC.

Functional Block Diagram



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/>.

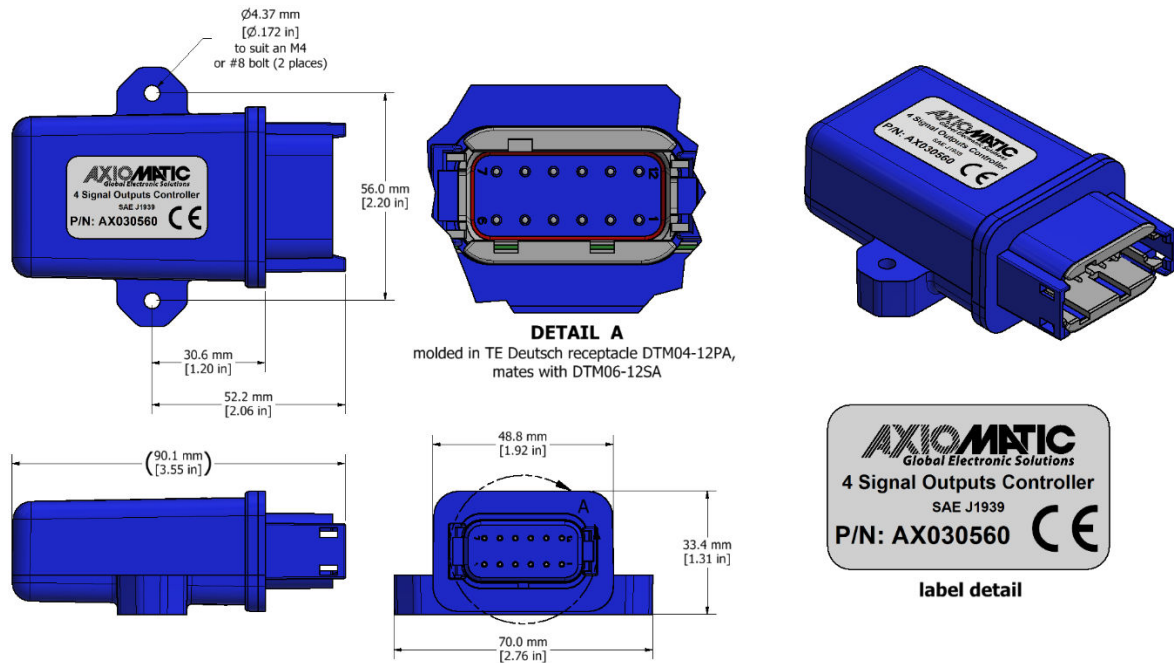
Input

Power Supply Input	12/24/48 VDC nominal (9 to 60 VDC power supply range)
Quiescent Current	87 mA @ 12 VDC; 46 mA @ 24 VDC; 27 mA @ 48 VDC at no load
Protection	Surge protection Reverse polarity protection up to -36 V Undervoltage protection (Hardware shutdown at 4.6 V) Overvoltage protection (Hardware shutdown at 63 V)
Signal Input	CAN Messages, SAE J1939 CAN signal can be filtered to accept messages from a single address on the network permitting a link to a specific ECU. The Axiomatic Electronic Assistant (EA) is used to set up CAN signal acquisition and processing algorithms.

Output

Universal Outputs	4 outputs selectable as follows.	
	Analog Current Signal	0 to 20 mA; 4 mA to 20 mA; and ± 20 mA with maximum 400 Ω load Accuracy: 0.1% preliminary Resolution: 0.015% (>16 bit)
	Analog Voltage Signal	0 to 5 V; 0 to 10 V; ± 5 V; ± 10 V with maximum 25 mA load Accuracy: 0.5% preliminary Resolution: 0.015% (>16 bit)
	PWM Output	0 to 100% duty cycle Accuracy: 0.1% preliminary Amplitude: 5 V maximum Load: 10 mA maximum
	Digital Frequency Output	Frequency: 0.5 kHz to 30 kHz (5 V amplitude, maximum 10 mA load) Accuracy: 0.1% preliminary
	Digital ON/OFF	0 V / 5 V Maximum load: 10 mA
Ground Connection	4 analog GND connections are provided. They are connected together internally.	
Protection	Protected against short circuit to ground and short circuit to power supply rail. Self-recovery when short is removed.	

Dimensional Drawing



General Specifications

Microcontroller	STM32F405, 32-bit, 1 MB flash program memory																										
Communication	1 CAN SAE J1939-compliant port 250 kbit/s, 500 kbit/s, 667 kbit/s, 1 Mbit/s auto-baud-rate detection																										
Control Logic	Standard embedded control logic is provided. (Application-specific control logic or factory programmed setpoints are available on request.)																										
Monitoring and Troubleshooting	The controller can also transmit a CAN application message carrying signals internally generated by the controller. This feature can be used for monitoring and debugging purposes.																										
User Interface	The controller setpoints can be viewed and programmed using the standard J1939 memory access protocol through the CAN port and the PC-based Axiomatic Electronic Assistant, P/N AX070502 or AX070506K .																										
Compliance	CE / UKCA marking RoHS																										
Vibration	MIL-STD-202G, Test 204D, 214A and 213B 7.68 Grms (Random) 10 G peak (Sine)																										
Shock	50 G (Shock)																										
Operating Conditions	-40°C to 85°C (-40°F to 185°F)																										
Storage Temperature	-50°C to 125°C (-58°F to 257°F)																										
Weight	0.15 lb. (0.068 kg)																										
Protection	IP67, PCB is conformal coated and protected by the enclosure.																										
Enclosure and Dimensions	Molded enclosure, integral connector Nylon 6/6, 30% glass, Ultrasonically welded Flammability Rating: UL 94V-0 3.55 in x 2.76 in x 1.31 in (90.1 mm x 70 mm x 33.4 mm) Note: L x W x H excluding mating plugs Refer to the dimensional drawing.																										
Electrical Connections	Integral 12-pin receptacle (equivalent TE Deutsch P/N: DTM04-12PA) <table border="1"> <thead> <tr> <th>Pin</th><th>Description</th></tr> </thead> <tbody> <tr><td>1</td><td>Ground</td></tr> <tr><td>2</td><td>Ground</td></tr> <tr><td>3</td><td>Ground</td></tr> <tr><td>4</td><td>Ground</td></tr> <tr><td>5</td><td>CAN H</td></tr> <tr><td>6</td><td>CAN L</td></tr> <tr><td>7</td><td>Battery +</td></tr> <tr><td>8</td><td>Battery -</td></tr> <tr><td>9</td><td>Output 1</td></tr> <tr><td>10</td><td>Output 2</td></tr> <tr><td>11</td><td>Output 3</td></tr> <tr><td>12</td><td>Output 4</td></tr> </tbody> </table>	Pin	Description	1	Ground	2	Ground	3	Ground	4	Ground	5	CAN H	6	CAN L	7	Battery +	8	Battery -	9	Output 1	10	Output 2	11	Output 3	12	Output 4
Pin	Description																										
1	Ground																										
2	Ground																										
3	Ground																										
4	Ground																										
5	CAN H																										
6	CAN L																										
7	Battery +																										
8	Battery -																										
9	Output 1																										
10	Output 2																										
11	Output 3																										
12	Output 4																										
Mating Connectors	Mating Plug KIT P/N: PL-DTM06-12SA (includes 1 DTM06-12SA plug, 1 WM-12S wedgelock, 12 0462-201-20141 solid contacts, and 6 0413-204-2005 sealing plugs)																										
Mounting	Mounting holes are sized for #8 or M4 bolts. The bolt length will be determined by the end-user's mounting plate thickness. The mounting flange of the controller is 0.425 in (10.8 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 in or 15 cm) and strain relief (12 in or 30 cm).																										
Network Termination	It is necessary to terminate the network with external termination resistors. The resistors are 120 Ω , 0.25 W minimum, metal film or similar type. They should be placed between CAN_H and CAN_L terminals at both ends of the network.																										

Form: TDAX030560-01/07/2025