4 Signal Outputs CAN Controller
CANopen®
with Axiomatic Electronic Assistant
P/N: AX030541

Features

- 4 independent analog signal outputs (voltage or current)
- User selectable output ranges from +/-10V or +/-20 mA, including: 0-5V; 0-10V; +/-5V; +/-10V; 0-20mA; 4-20 mA; and +/-20mA.
- User selectable PWM outputs including: PWM 0-100% D.C or 0.5-20 kHz Frequency.
- 12V/24V/48Vdc input power (nominal) with rugged surge protection
- Galvanic isolation between CAN, power supply and analog signal outputs
- 1 CANopen®, SAE J1939 model available
- Rugged IP67 packaging and connectors
- Vibration compliant for engine applications
- CE / UKCA marking

Applications

Distributed controls for:

- Power generation, co-generation, stationary power
- Commercial vehicles
- Off-highway equipment
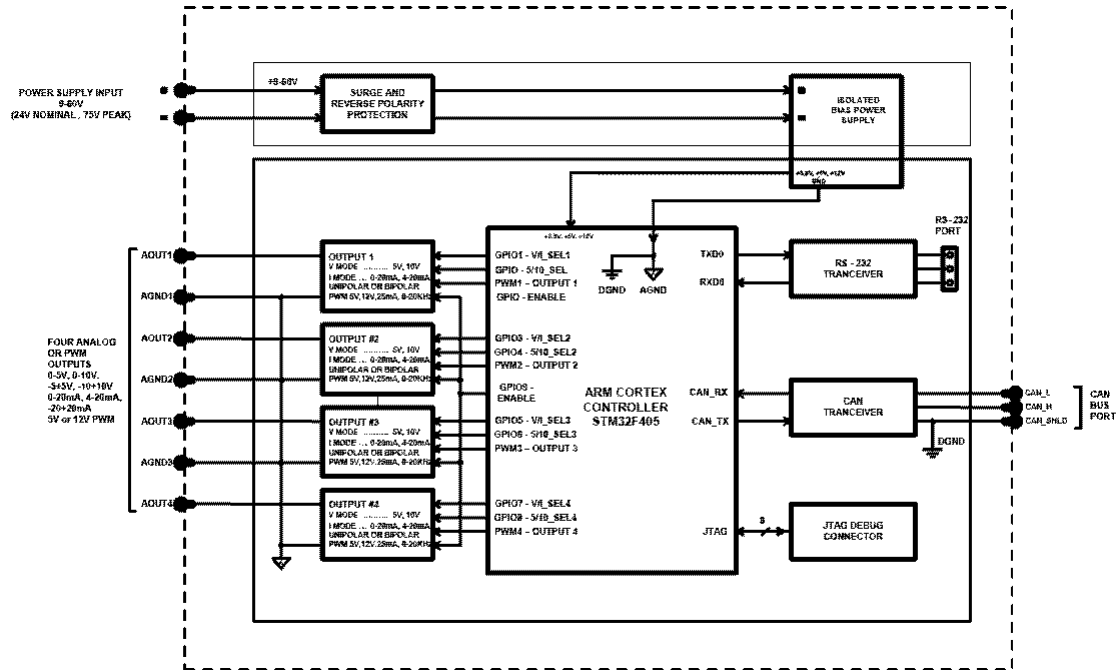- Industrial equipment, etc.

Ordering Part Numbers

Model P/N	Standard Reference
AX030541	CANopen®
AX030540	SAE J1939 (with auto-baud-rate detection)

Accessories:

EDS File

PL-DTM06-12SA Mating Plug Kit (1 DTM06-12S, 1 WM12S, 12 contacts, FG- IOCTRL-20)

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 Approvals/Limitations and Return Materials Process as described on https://www.axiomatic.com/service/.

Input

Power Supply Input	12V, 24V, or 48Vdc nominal (9 to 60 Vdc power supply range)
Surge Protection	Provided
Reverse Polarity Protection	Provided
Undervoltage Protection	Provided
Overvoltage Protection	Provided (Hardware shutdown at 75V)
Input	CANopen® {SAE J1939 (model AX030540)} The CAN signal can be filtered to accept messages from a single address on the network permitting a link to a specific ECU.

Outputs

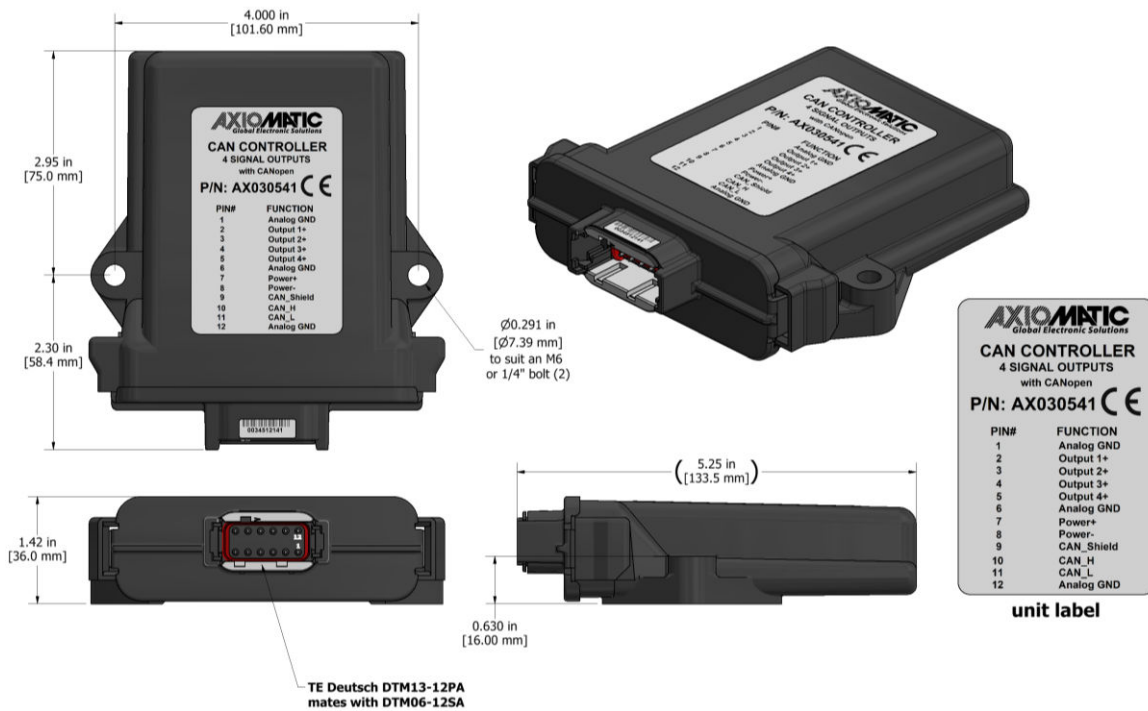|	
CAN	The controller can send a single frame application specific CAN message to the network continuously or on request.
Signal Outputs	Up to 4 signal outputs are selectable by the user. Refer to Table 1.0.
Ground Connection	3 Analog GND connections are provided. They are connected together internally.
Protection for Output + Terminal	Fully protected against short circuit to ground and short circuit to power supply rail. Unit will fail safe in the case of a short circuit condition, self-recovering when the short is removed.

Table 1.0 - Outputs	
Output Types	Up to 4 signal outputs are available.
	Using the Axiomatic Electronic Assistant, the user selects the output mode (voltage, current, or digital): • the minimum and maximum values for the output signal from the +/-10V or +/-20 mA range • standard analog voltage signal ranges, including: 0-5V; 0-10V; +/-5V; +/-10V with maximum 25mA load • analog current signal ranges, including: 0-20mA; 4-20 mA; and +/-20mA with maximum 500Ω load • PWM outputs, including: PWM 0-100% D.C.; and Frequency 0.5-30 kHz (5V or 12V Amplitude, maximum 40mA load). PWM outputs are push-pull type. Maximum 40mA sourcing/sinking. The outputs can be globally enabled or disabled.
Output Accuracy	Voltage, Current: 0.2% preliminary PWM: 0.1% preliminary
Output Resolution	0.015% (>16 bit)

General Specifications

Microcontroller	STM32F405, 32-bit, 1 MByte flash program memory
Isolation	300 Vrms Galvanic isolation between the power supply input and the analog signal outputs and the CAN circuit.
Control Logic	Standard embedded software 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.
CAN	1 CAN port (CANopen®)
User Interface (PC-based)	EDS File (Download from product page.)
Software Reflashing	PC-based Axiomatic Electronic Assistant, P/Ns: AX070502 or AX070506K
Quiescent Current Draw	107 mA @ 12V and full load 52 mA @ 24V and full load 32 mA @ 48V and full load
Response Time	<10 mSec. max.
Weight	0.55 lb. (0.249 kg)
Operating Conditions	-40 to 85 °C (-40 to 185 °F)
Storage Temperature	-55 to 125 °C (-67 to 257°F)
Compliance	CE / UKCA marking
Protection	IP67, PCB is conformal coated and protected by the housing.
Vibration and Shock	MIL-STD-202G, Test 204D, 214A and 213B 7.68 Grms (Random), 10 g peak (Sine), 50 g (Shock)
Emnclosure and Dimensions	High Temperature Nylon Enclosure – (TE Deutsch P/N: EEC-325X4B) 4.62 x 5.24 x 1.43 inches 117.42 x 133.09 x 36.36 mm (W x L x H excluding mating plugs) Refer to the dimensional drawing.
Mounting	Mounting holes sized for ¼ inch or M6 bolts. The bolt length will be determined by the end-user's mounting plate thickness. The mounting flange of the controller is 0.63 inches (16 mm) thick. If the module is mounted without an enclosure, it should be mounted vertically with connectors facing left and right to reduce likelihood of moisture entry. 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. No wire or cable harness should exceed 30 meters in length. The power input wiring should be limited to 10 meters. 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).

Network Termination	It is necessary to terminate the network with external termination resistors. The resistors are 120 Ohm, 0.25W minimum, metal film or similar type. They should be placed between CAN_H and CAN_L terminals at both ends of the network.	
Electrical Connections	12-pin receptacle (TE Deutsch P/N: DTM13-12PA-R008) 20 AWG wire is recommended for use with contacts 0462-201-20141.	Mating plug KIT: Available from Axiomatic as p/n: **PL-DTM06-12SA**. It is comprised of the following TE Deutsch part equivalents: plug (DTM06-12SA); wedgelock (WM12S); and 12 contacts (0462-201-20141) as well as 6 sealing plugs (0413-204-2005). If not all the outputs are required for the application, use the sealing plugs to fill the mating connector pins. Wiring to these mating plugs must be in accordance with all applicable local codes. Suitable field wiring for the rated voltage and current must be used. The rating of the connecting cables must be at least 70°C. Use field wiring suitable for both minimum and maximum ambient temperature.

PIN #	FUNCTION
1	Analog GND
12	Analog GND
2	Output 1+
11	CAN_L
3	Output 2+
10	CAN_H
4	Output 3+
9	CAN_Shield
5	Output 4+
8	Power -
6	Analog GND
7	Power +

Dimensional Drawing

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

Form: TDAX030541-01/26/2024