

10 Universal Signal Inputs CAN Controller, CANopen®

Voltage, Current, Digital, PWM, Frequency/RPM, Counter Inputs

+5V Reference

P/N: AX030131

Features

- 10 user selectable signal inputs:
 - 0-5 V
 - 0-10 V
 - 0-20 mA
 - 4-20 mA
 - PWM (low or high frequency)
 - Frequency/RPM
 - Counter
 - Digital
- +5V Reference, 100 mA
- 12V, 24Vdc (nominal) power input
- 1 CANopen® port (SAE J1939 model available)
- Rugged enclosure and TE Deutsch connectors
- Standard control logic
- CE/UKCA mark (EMC Directive)
- EDS File



Applications

The controller is designed to meet the rugged demands of construction equipment, power generator sets and heavy-duty industrial machine control applications.

Ordering Part Numbers

10 Universal Signal Input Controller, CANopen®: **AX030131**

Accessories:

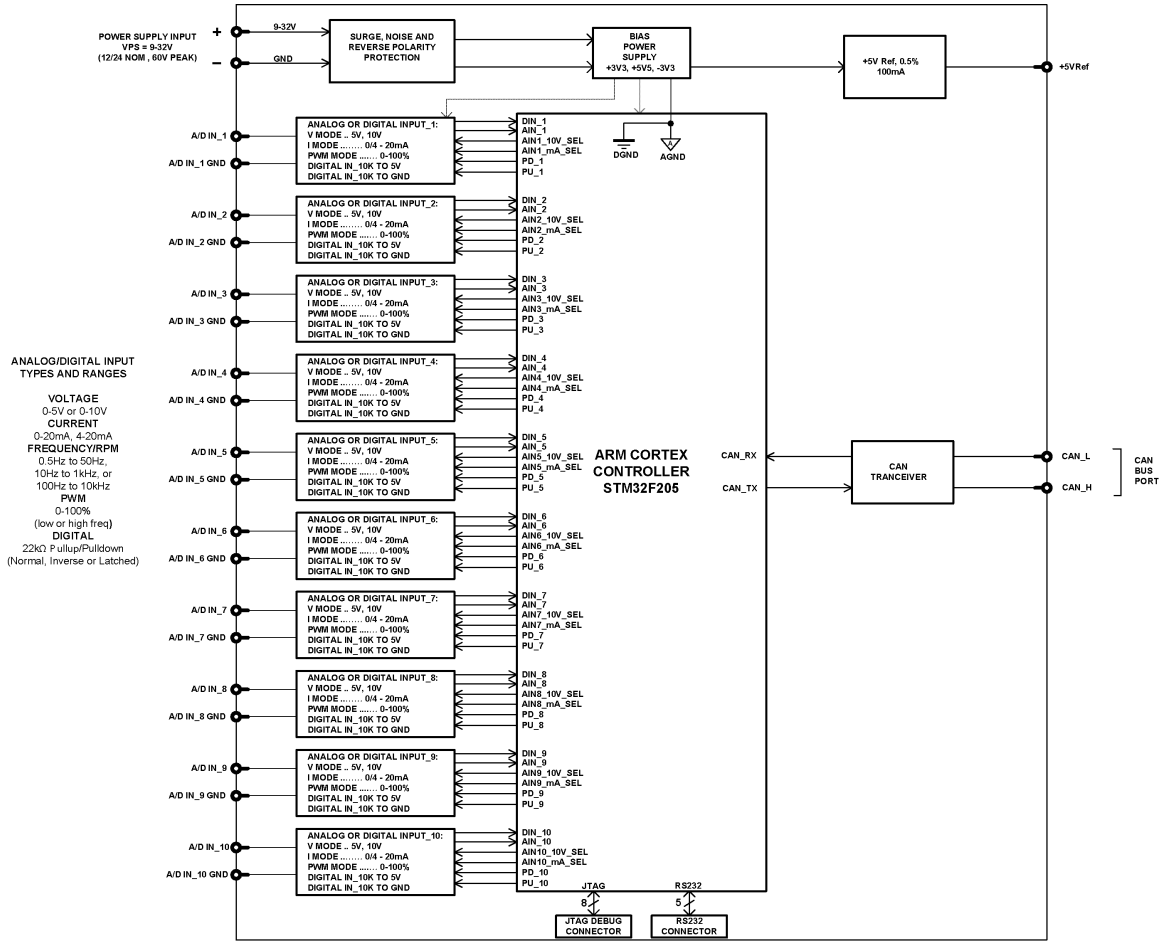
EDS File

Mating Plug Kit, P/N: **PL-DTM06-12SA-12SB**

Description

The 10 Universal Signal Input Module accepts up to 10 analog or digital type inputs (0-5V, 0-10V, 0-20 mA or 4-20 mA, Digital, PWM, Frequency/RPM or Counter). The modules can be connected to a variety of analog machine sensors or levers, PLC's, switches, PWM signals, etc. It interfaces with the machine's CAN network. Standard embedded software is provided. A rugged IP67 rated enclosure and a wide-ranging power supply input section for 12V or 24Vdc power makes the module suitable for applications in the harsh environment of mobile equipment with on-board battery power. All setpoints are user configurable.

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/>.

Power Supply

Power Supply Input	12 or 24Vdc nominal operating voltage 8...60 Vdc power supply range for voltage transients
Surge Protection	Provided
Reverse Polarity Protection	Provided
Quiescent Current	51 mA @ 12 V, 27 mA @ 24 V typical
Voltage Reference	+5V, 100 mA

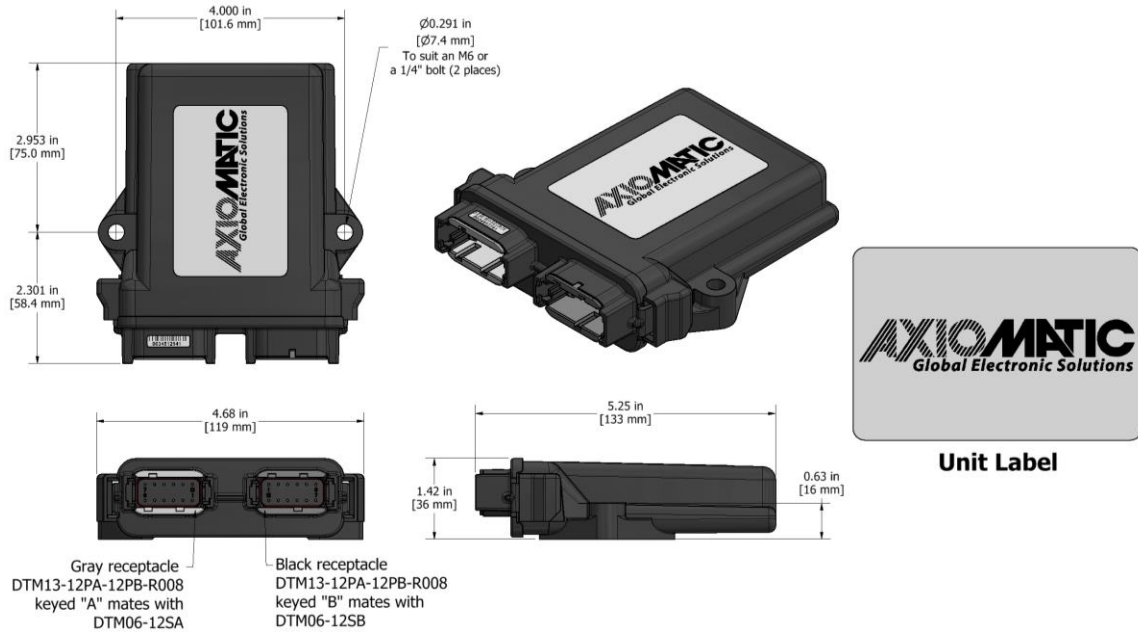
Signal Inputs

Inputs	<p>10 user selectable inputs (See Table 1.0.)</p> <ul style="list-style-type: none"> Analog 12-bit (0-5V, 0-10V, 0-20 mA, 4-20 mA) PWM 12-bit (low or high frequency) Frequency/RPM Counter input 16-bit Digital (active high/active low) [ON when input \geq 1.5V] <p>The "Input Sensor Type" setpoint is used to configure input type.</p> <table border="1" data-bbox="537 428 1321 842"> <caption>Table 1.0. Inputs – Sensor Type Selections</caption> <thead> <tr> <th>Setpoint</th> <th>Input Type</th> </tr> </thead> <tbody> <tr><td>0</td><td>Disabled</td></tr> <tr><td>1</td><td>Voltage (0-5 V)</td></tr> <tr><td>13</td><td>Voltage (0-10 V)</td></tr> <tr><td>2</td><td>Current (0-20 mA)</td></tr> <tr><td>21</td><td>Current (4-20 mA)</td></tr> <tr><td>40</td><td>Frequency (0.5 to 50 Hz)</td></tr> <tr><td>41</td><td>Frequency (10 Hz to 1 kHz)</td></tr> <tr><td>4</td><td>Frequency (100 Hz to 10 kHz)</td></tr> <tr><td>3</td><td>PWM Low Frequency (<1 kHz)</td></tr> <tr><td>51</td><td>PWM High Frequency (>100 Hz)</td></tr> <tr><td>5</td><td>16-bit Counter</td></tr> <tr><td>6</td><td>Digital (normal)</td></tr> <tr><td>61</td><td>Digital (inverse)</td></tr> <tr><td>62</td><td>Digital (latched)</td></tr> </tbody> </table> <p>All inputs with the exception of 16-Bit Counter are sampled every 1ms. Analog Input types have a 12-bit resolution.</p> <p>With current inputs, short circuit protection is provided.</p>	Setpoint	Input Type	0	Disabled	1	Voltage (0-5 V)	13	Voltage (0-10 V)	2	Current (0-20 mA)	21	Current (4-20 mA)	40	Frequency (0.5 to 50 Hz)	41	Frequency (10 Hz to 1 kHz)	4	Frequency (100 Hz to 10 kHz)	3	PWM Low Frequency (<1 kHz)	51	PWM High Frequency (>100 Hz)	5	16-bit Counter	6	Digital (normal)	61	Digital (inverse)	62	Digital (latched)										
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Input Impedance	<p>0-5V: 1 MΩ 0-10V: 170 kΩ 0(4)-20mA: 249 Ω Frequency/Digital Input: Pull Up/Pull Down 22 kΩ</p>																																								
Scan Rate	<p>Each input is scanned in 100uS. A complete scan of 10 inputs occurs with new measured values every 1mS.</p>																																								
Analog Ground	<p>10 Analog Ground connections are provided. Grounds are connected internally.</p>																																								

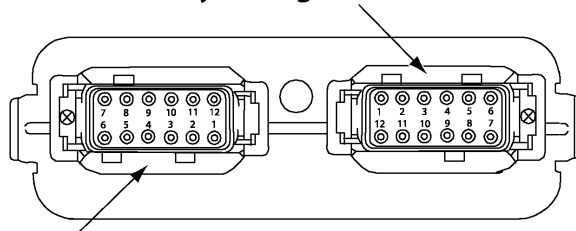
General Specifications

Microcontroller	STM32F205VGT6
Communications	1 CAN port (2.0B, CANopen®) An SAE J1939 model is available (P/N: AX030120).
Compliance	CE / UKCA marking RoHS
Vibration	MIL-STD-202G, Method 204D, test condition A – 10 g peak (Sine) MIL-STD-202G, Method 214A, test condition B – 7.68 Grms (Random)
Shock	MIL-STD-202G, Method 213B, test condition A 50 g half sine pulse, 6 ms, 6 pulses per axis
User Interface	EDS File
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.
Control Logic	Refer to the User Manual.
Electrical Connections	24-pin receptacle (TE Deutsch P/N: DTM13-12PA-12PB-R008) Mating plug: TE Deutsch P/Ns: DTM06-12SA and DTM06-12SB , with 2 wedgelocks (WM12S) and 24 contacts (0462-201-20141). 20 AWG wire is recommended for use with contacts 0462-201-20141.
Enclosure and Dimensions	High Temperature Nylon Enclosure – (TE Deutsch P/N: EEC-325X4B) Flammability Rating: UL 94V-0 4.677 x 5.236 x 1.417 inches 118.80 x 133.00 x 36.00 mm (W x L x H excluding mating plugs)
Operating Temperature	-40 to 85°C (-40 to 185°F)
Storage Temperature	-50 to 125°C (-58 to 257°F)
Weight	0.55 lb. (0.25 kg)
Protection	IP67, Unit is conformal coated in its enclosure.
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 always be in conduit or conduit trays. The module must be mounted in an enclosure in hazardous locations for this purpose. 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).

Dimensions and Typical Connections



Key Arrangement B (black)



Key Arrangement A (grey)

FRONT VIEW 24 PIN RECEPTACLE

Grey Connector		Black Connector	
Pin #	Function	Pin #	Function
1	Analog Ground 5	1	Input 6
2	Analog Ground 4	2	Input 7
3	Analog Ground 3	3	Input 8
4	Analog Ground 2	4	Input 9
5	Analog Ground 1	5	Input 10
6	Battery -	6	CAN_H
7	Battery +	7	CAN_L
8	Input 1	8	+5V Reference
9	Input 2	9	Analog Ground 9
10	Input 3	10	Analog Ground 8
11	Input 4	11	Analog Ground 7
12	Input 5	12	Analog Ground 6

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

Form: TDAX030131-10/10/2024