

18 Digital Input CANopen® Controller

P/N: AX030301

Features:

- 8 digital inputs are user selectable from the following.
 - Active High/Active Low
 - PWM signal from sensors or diesel engine ECM's
 - Pulse (Hz or RPM)
 - Counter
- 10 digital inputs are user selectable as Active High/Active Low
- 12V, 24VDC input power (nominal) with rugged surge protection
- 1 CAN (CANopen®)
- Rugged IP67 packaging and connectors



Applications:

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

Ordering Part Numbers:

18 Digital Input to CAN, CANopen®: **AX030301**
 EDS File: **EDS-AX030301**

Accessories:

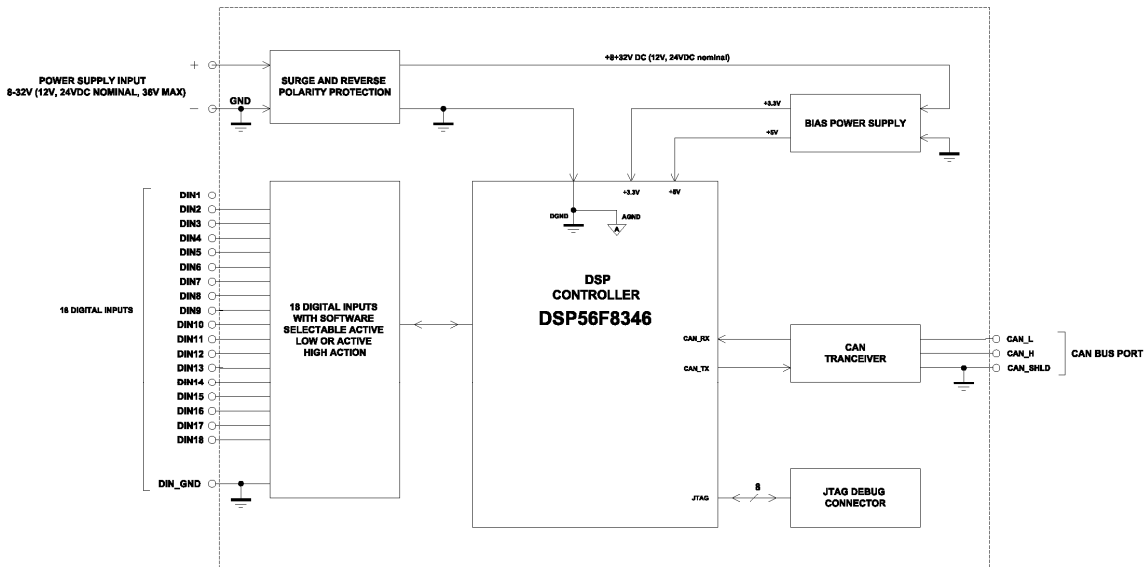
PL-DTM06-12SA-12SB Mating Plug Kit

(The KIT is comprised of: DTM06-12S, DTM06-12SB, 2 W12S and 24 contacts. The Axiomatic stock # is FG-IOCTRL-19.)

PC-based Configuration Tool: *Industry standard CANopen PC-based software*

Contact Axiomatic for a quotation to provide application-specific control logic or setpoints.

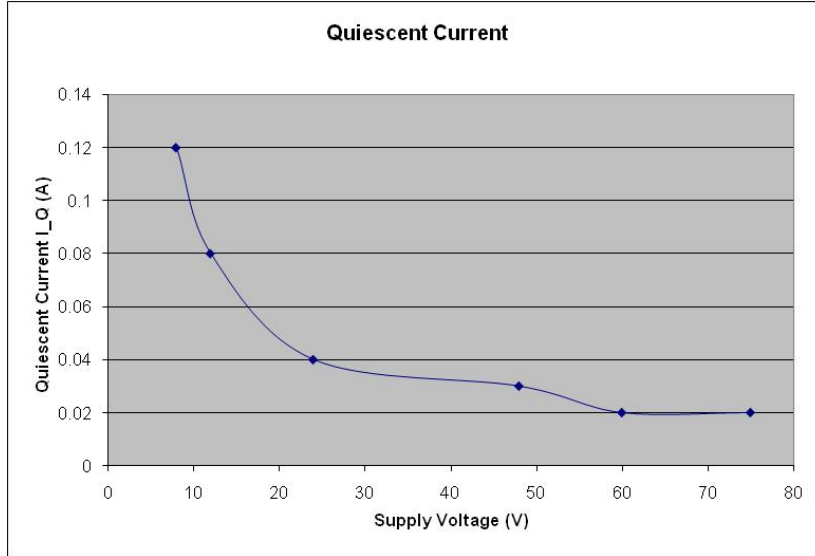
BLOCK DIAGRAM



Technical Specifications:

Power Supply Specifications

Power Supply Input - Nominal	12V, 24VDC nominal (8...32VDC power supply range) 36V maximum
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Input Specifications

Protection	Surge and reverse polarity protection are provided.
All Inputs	Up to 18 digital inputs are selectable by the user. Refer to Table 1.0.
Input Protection	Full protection to all other physical pins (any other input, output or power terminal).
CAN Commands	CANopen® (model AX030301)
Ground Connection	1 Digital GND connection is provided.

Table 1.0 - Inputs	
Digital Inputs	<p>Up to 18 digital inputs are available. The first 8 digital inputs can be configured for any one of the following options.</p> <ul style="list-style-type: none"> • Disable Input • Digital Input (Active High 10 KOhm or Active Low 10 KOhm) • PWM signal input (1-10,000 Hz, 0-100% D.C.) • Pulse Input (Hz or RPM) (50 to 10,000 Hz, 50 mV-3V RMS)* • 16-bit Counter Input <p>* NOTE: If the Input Maximum setpoint is set for a low frequency (<=50Hz), the controller will use a different technique to measure the frequency. Instead of measuring the pulses in the Measuring Window (this parameter is ignored) it will measure the time between rising edges of the signal. If more than 10 seconds pass without a transition, the input will be read as zero. The frequency range in this mode is 0.5-50Hz, with up to 2 decimal places of resolution.</p> <p>The last 10 digital inputs are user selectable as Active Low 10 KOhm or Active High 10 KOhm. Threshold 2.5V (Other values are available on request.) Hysteresis 1V</p>
Input Accuracy	<p>PWM, single channel: +/- 0.05% to +/- 1.25% (over the 500 Hz to 10 kHz range) Frequency/RPM, single channel: +/- 1% 16-bit counter, single channel: +/- 3 mSec (@50 Hz)</p>
Input Resolution	<p>PWM, single channel: +/- 0.05% to +/- 1.25%, 0 decimal place resolution NOTE: If the Input Maximum setpoint is set for a low frequency (<=50Hz), the controller will use a different technique to measure the frequency. Instead of measuring the pulses in the Measuring Window (this parameter is ignored) it will measure the time between rising edges of the signal. If more than 10 seconds pass without a transition, the input will be read as zero. The frequency range in this mode is 0.5-50Hz, with up to 2 decimal places of resolution.</p> <p>Frequency/RPM (single channel) 0.5 Hz to 50 Hz: +/- 0.01Hz, 0 decimal place resolution 50 Hz to 10kHz: +/- 1Hz, 0 decimal place resolution 16-bit counter, single channel: 1 pulse resolution</p>

Output Specifications

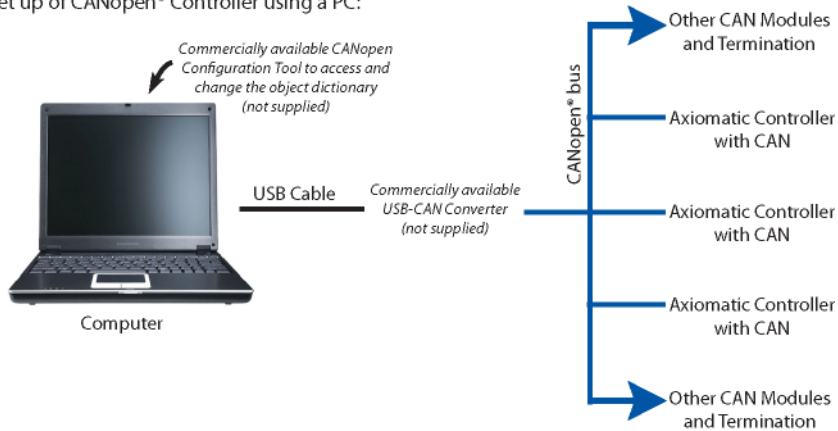
CAN Messages	CANopen®
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General Specifications

Microprocessor	DSP56F8346
Control Logic	Standard embedded software (Application-specific logic available on request)
Quiescent Current Draw	0.06A @24Vdc
Communications	1 CAN port (CANopen®)
User Interface (PC-based)	Axiomatic Technologies Corp. recommends the CAN ESD tools or any other CANopen tools. Visit www.can-cia.org for more information

Set up of AX030301 Controller using a PC:

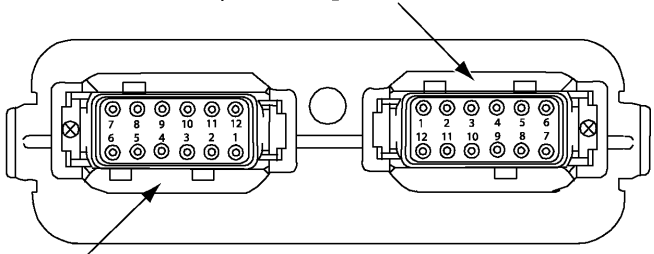
Set up of CANopen® Controller using a PC:



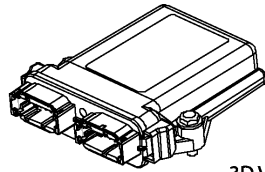
NOTES:

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.

CAN Interface	1 CAN port (CANopen®)	
	The controller's object dictionary is compatible with the CiA DS-404 device profile (Device profile for measurement devices and closed-loop controllers). In addition to the standard objects for this device profile, the controller also includes a number of manufacturer specific objects to extend the functionality beyond that of the basic profile. Refer to the user manual for details.	
	The Axiomatic AX030301 is compliant with the following CAN in Automation (CiA) standards.	
	[DS-301]	CiA DS-301 V4.02 – CANopen Application Layer and Communication Profile. CAN in Automation 2002
[DS-404]	CiA DS-404 V1.2 – Device Profile for Measurement Devices and Closed-Loop Controllers. CAN in Automation 2002	
[DS-305]	CiA DS-305 V2.0 – Layer Setting Service (LSS) and Protocols. CAN in Automation 2006	

Operating Conditions	-40 to 85 °C (-40 to 185 °F)																																																				
Protection	IP67, PCB is conformally coated and protected by the housing. Plugs carry an IP69 rating.																																																				
Electrical Connections	<p>Deutsch DTM series 24 pin receptacle (DTM13-12PA-12PB-R008) Mating plug: Deutsch 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.</p> <p>Use dielectric grease on the pins when installing the controller.</p> <p>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.</p> <p style="text-align: center;">Key Arrangement B (black)</p>  <p style="text-align: center;">Key Arrangement A (grey)</p> <p style="text-align: center;">FRONT VIEW 24 PIN RECEPTACLE</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="2">Grey Connector</th> <th colspan="2">Black Connector</th> </tr> </thead> <tbody> <tr><td>1</td><td>CAN_H</td><td>1</td><td>Digital Input 7</td></tr> <tr><td>2</td><td>CAN_L</td><td>2</td><td>Digital Input 8</td></tr> <tr><td>3</td><td>CAN_Shield</td><td>3</td><td>Digital Input 9</td></tr> <tr><td>4</td><td>GND</td><td>4</td><td>Digital Input 10</td></tr> <tr><td>5</td><td>Power -</td><td>5</td><td>Digital Input 11</td></tr> <tr><td>6</td><td>Power+</td><td>6</td><td>Digital Input 12</td></tr> <tr><td>7</td><td>Digital Input 6</td><td>7</td><td>Digital Input 18</td></tr> <tr><td>8</td><td>Digital Input 5</td><td>8</td><td>Digital Input 17</td></tr> <tr><td>9</td><td>Digital Input 4</td><td>9</td><td>Digital Input 16</td></tr> <tr><td>10</td><td>Digital Input 3</td><td>10</td><td>Digital Input 15</td></tr> <tr><td>11</td><td>Digital Input 2</td><td>11</td><td>Digital Input 14</td></tr> <tr><td>12</td><td>Digital Input 1</td><td>12</td><td>Digital Input 13</td></tr> </tbody> </table>	Grey Connector		Black Connector		1	CAN_H	1	Digital Input 7	2	CAN_L	2	Digital Input 8	3	CAN_Shield	3	Digital Input 9	4	GND	4	Digital Input 10	5	Power -	5	Digital Input 11	6	Power+	6	Digital Input 12	7	Digital Input 6	7	Digital Input 18	8	Digital Input 5	8	Digital Input 17	9	Digital Input 4	9	Digital Input 16	10	Digital Input 3	10	Digital Input 15	11	Digital Input 2	11	Digital Input 14	12	Digital Input 1	12	Digital Input 13
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Mounting	<p>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.</p> <p>If the module is mounted without an enclosure, it should be mounted to reduce the likelihood of moisture entry.</p> <p>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.</p> <p>No wire or cable harness should exceed 30 meters in length. The power input wiring should be limited to 10 meters.</p> <p>All field wiring should be suitable for the operating temperature range of the module.</p> <p>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).</p>																																																				

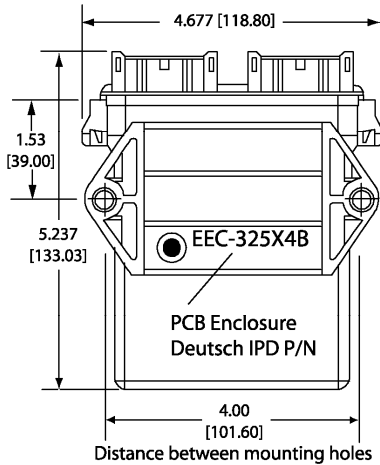
Weight	0.50 lbs. (0.23 kg)
Packaging and Dimensions	High Temperature Nylon housing - Deutsch IPD PCB Enclosure (EEC-325X4B) 4.62 x 5.24 x 1.43 inches 117.42 x 133.09 x 36.36 mm (W x L x H excluding mating plugs)



3D VIEW
Housing with 24 Pin Receptacle

HOUSING DIMENSIONS

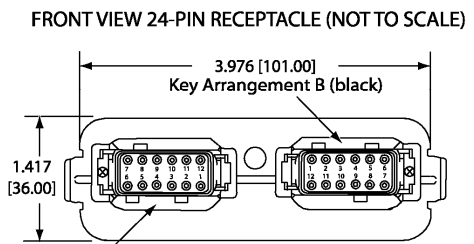
Housing Material: High Temperature Nylon (Black)



Height 1.368 [34.75]
with 24 pin receptacle

Mounting Holes:
Ø 0.29 [7.40]
through 2 pl for
0.25 [6.00] fastener

Mounting flange:
16 mm [0.63 in] thick



Mating Plug Assemblies for 24-pin receptacle:
Deutsch IPD P/N: DTM06-12SA and DTM06-12SB
with wedgelocks WM12S and contacts
(Contact factory for contact specification.)

Dimensions: inches [mm]
excluding mating plug(s)

BOTTOM VIEW

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

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 www.axiomatic.com/service.html.

Form: TDAX030301-11/17/09