TECHNICAL DATASHEET #TDAX032160

6 Digital Inputs Controller

2 Isolated CAN (SAE J1939) ports

Configurable with Axiomatic Electronic Assistant

P/N: AX032160

Features

- 2 SAE J1939 isolated CAN ports
- 6 digital signal inputs selectable as:
  - PWM
  - Frequency
  - Digital type
- 12/ 24/ 48 Vdc nominal power input (8 to 60 Vdc range)
- Operates from -40 to 85°C (-40 to 185°F)
- IP67
- Compact Enclosure, 12-pin Connector (TE Deutsch equivalent)
- Configurable via the Axiomatic Electronic Assistant

Applications

- Mobile control panels
- Power generation, co-generation, stationary power, etc.
- Commercial vehicles, off-highway equipment, etc.
- Connect different CAN devices or networks with different baud-rates
- Provide galvanic isolation between the control system and vehicle backbone

Ordering Part Number

6 Digital Inputs Controller, 2 SAE J1939 with auto-baud-rate detection: **AX032160**

Accessories:
Axiomatic Electronic Assistant Configuration KIT P/N: **AX070502** or **AX070506K**
Mating Plug KIT P/N: **PL-DTM06-12SA**

Description

The 6 Digital Input Controller with Dual CAN Controller (ECU) is meticulously designed to measure digital inputs and transmit data to an SAE J1939 Network. All six inputs are selectable to measure frequency/PWM or digital signals. The device provides a comprehensive set of configurable settings, allowing users to create custom configurations without the need for reprogramming. The powerful control algorithms enable users to program the controller for a broad spectrum of applications without the necessity of custom software. The AX032160 incorporates an Auto-Baud-Rate detection functionality, enhancing its overall versatility and utility.

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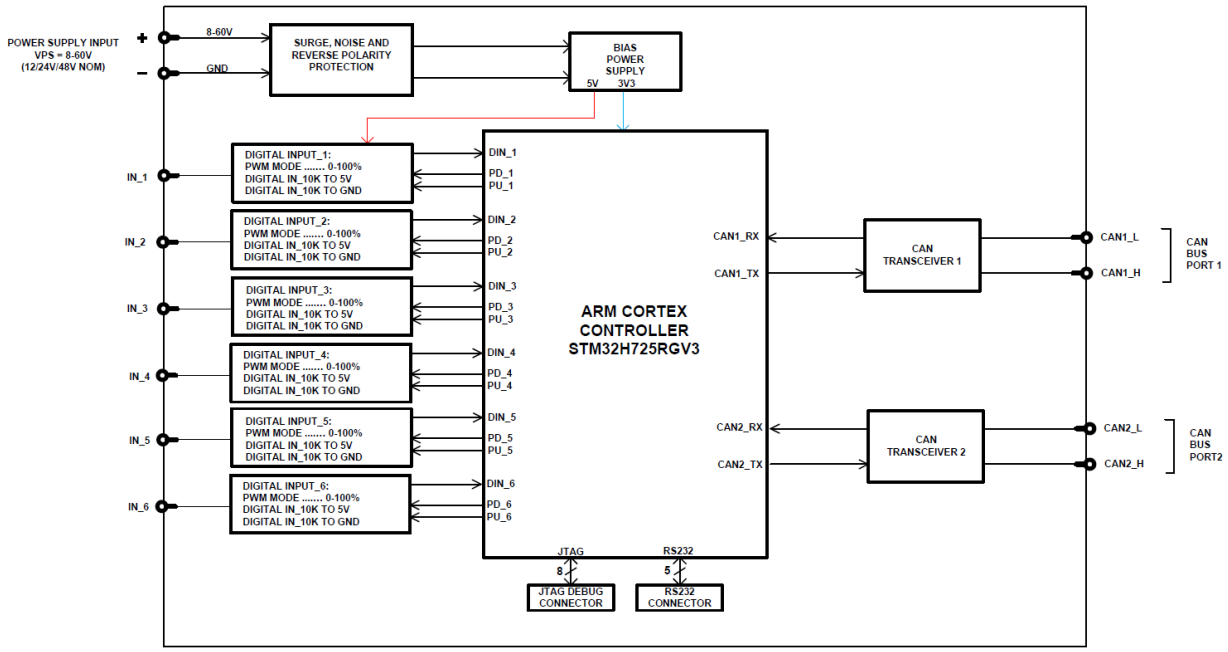
Block Diagram



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	12Vdc, 24Vdc, or 48Vdc nominal (8 to 60 VDC)
Quiescent Current	54 mA @ 12 V; 27.5 mA @ 24 V; 16.2 mA at 48 V typical
Protection	Reverse polarity protection is provided. Surge and transient protection is provided. Under-voltage protection is provided with hardware shutdown at 6V. Over-voltage protection is provided with hardware shutdown at 63V.

Input

Universal Inputs	6 digital signal inputs: PWM Duty, Frequency, or Digital Type Low level max. 1V High level min. 4V Selectable as 10 kΩ pull-up or pull-down <u>Frequency Type</u> Resolution: 0.01% Accuracy: ±0.1% Range: 1 to 10 kHz <u>PWM Duty Type</u> Resolution: 0.02% Accuracy: ±0.2% Frequency: 1 to 10 kHz PWM Duty Cycle: 0 to 100% <u>Digital Type</u> Active High or Active Low Amplitude: up to 43V
Input Grounds	Provided Inputs referenced to Power -

General Specifications

<table>
<tr><td>Microcontroller</td><td>STM32H725RGV3, 32-bit, 1 MByte flash memory</td></tr>
<tr><td>Communications</td><td>2 galvanically isolated CAN ports (SAE J1939)
1 Mbit/sec max.
Auto-baud-rate detection</td></tr>
<tr><td>Control Logic</td><td>Refer to the User Manual.</td></tr>
<tr><td>Software Reflashing</td><td>Axiomatic Electronic Assistant Configuration KIT - P/Ns: AX070502 or AX070506K</td></tr>
<tr><td>User Interface</td><td>Axiomatic Electronic Assistant KIT - P/Ns: AX070502 or AX070506K
The controller is also configurable via the Ethernet.</td></tr>
<tr><td>Compliance</td><td>RoHS</td></tr>
<tr><td>Vibration</td><td>MIL-STD-202H, method 204, test condition C
10g peak (Sine)
MIL-STD-202H, method 214A, test condition I/B
7.56 Grms (Random)</td></tr>
<tr><td>Shock</td><td>MIL-STD-202H, method 213B, test condition A
50g peak</td></tr>
<tr><td>Operating Conditions</td><td>-40°C to 85°C (-40 to 185°F)</td></tr>
<tr><td>Storage Temperature</td><td>-55°C to 125°C (-67 to 257°F)</td></tr>
<tr><td>Weight</td><td>0.20 lb. (0.0907 kg)</td></tr>
<tr><td>Protection</td><td>IP67</td></tr>
<tr><td>Enclosure and Dimensions</td><td>Molded enclosure, integral connector
Nylon 6/6, 30% glass, laser welded
4.28 in x 3.69 in x 1.41 in (108.7 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</td></tr>
<tr><td>Electrical Connections</td><td>Integral 12-pin receptacle (equivalent TE Deutsch P/N: DTM04-12PA)

Mates with PL-DTM06-12SA Mating Plug Kit (includes 1 DTM06-12S, 1 WM-12S, 12 0462-201-20141, 6 0413-204-2005 Sealing Plug)

<table>
<tr><th>PIN #</th><th>FUNCTION</th></tr>
<tr><td>1</td><td>Power+</td></tr>
<tr><td>2</td><td>Digital Input 2</td></tr>
<tr><td>3</td><td>Digital Input 4</td></tr>
<tr><td>4</td><td>Digital Input 6</td></tr>
<tr><td>5</td><td>CAN1_H</td></tr>
<tr><td>6</td><td>CAN2_H</td></tr>
<tr><td>7</td><td>CAN2_L</td></tr>
<tr><td>8</td><td>CAN1_L</td></tr>
<tr><td>9</td><td>Digital Input 5</td></tr>
<tr><td>10</td><td>Digital Input 3</td></tr>
<tr><td>11</td><td>Digital Input 1</td></tr>
<tr><td>12</td><td>Power-</td></tr>
</table></td></tr>
<tr><td>Network Termination</td><td>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.</td></tr>
<tr><td>Mounting</td><td>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.

If the module is mounted without an enclosure, it should be mounted vertically with connectors facing left or right to reduce the 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).</td></tr>
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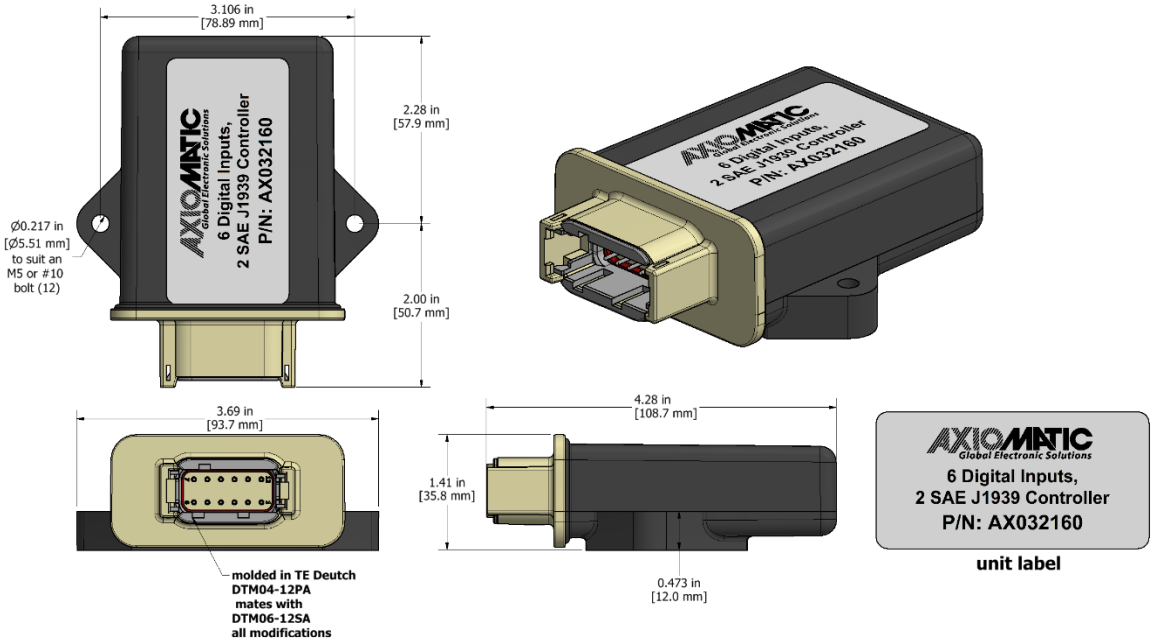
Dimensional Drawing



Form: TDAX032160-10/17/2024