TECHNICAL DATASHEET #TDAX184300

2 Pt100 RTD, 1 Signal Inputs CAN Controller, SAE J1939

1 Universal Input
2 Inputs for 3-Wire Pt100 RTD Sensors
Configurable with Axiomatic Electronic Assistant

P/N: AX184300

Features

- 2 channels of 3-wire Pt100 RTD sensor input
- 1 universal input user selectable as follows.
  - Voltage
  - Current
  - Frequency
  - PWM
  - Digital (Active High or Active Low)
- 12, 24, or 48 VDC nominal input power
- 1 CAN port (SAE J1939)
- Protected against power surge/transient, reverse polarity, undervoltage and overvoltage
- Rugged enclosure and connector
- User-configurable using Axiomatic Electronic Assistant

Applications

The controller is designed to meet temperature monitoring and control in rugged conditions in:

- Power generator set engine control systems
- Heavy duty industrial machines
- Off-highway construction equipment
- Municipal vehicles
- Electric vehicle charging

Ordering Part Number

2 Pt100 RTD, 1 Signal Inputs CAN Controller, SAE J1939 with auto-baud-rate detection - P/N: **AX184300**

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

Description

The AX184300 Controller can read two 3-wire Pt100 RTD sensors and one universal signal input. The universal input can be configured to read voltage, current, frequency, PWM, or digital signals.

Standard control logic is provided. All logical function blocks on the unit are inherently independent from one another but can be configured to interact with each other. All parameters are configurable using the Axiomatic Electronic Assistant. The device can operate at standard 250 and 500kbit/s and non-standard 667kbit/s and 1Mbit/s baud rates.

The device accepts power supply voltages from 6 to 62 VDC. Rugged enclosure and power supply surge protection suits the harsh environment of mobile equipment.

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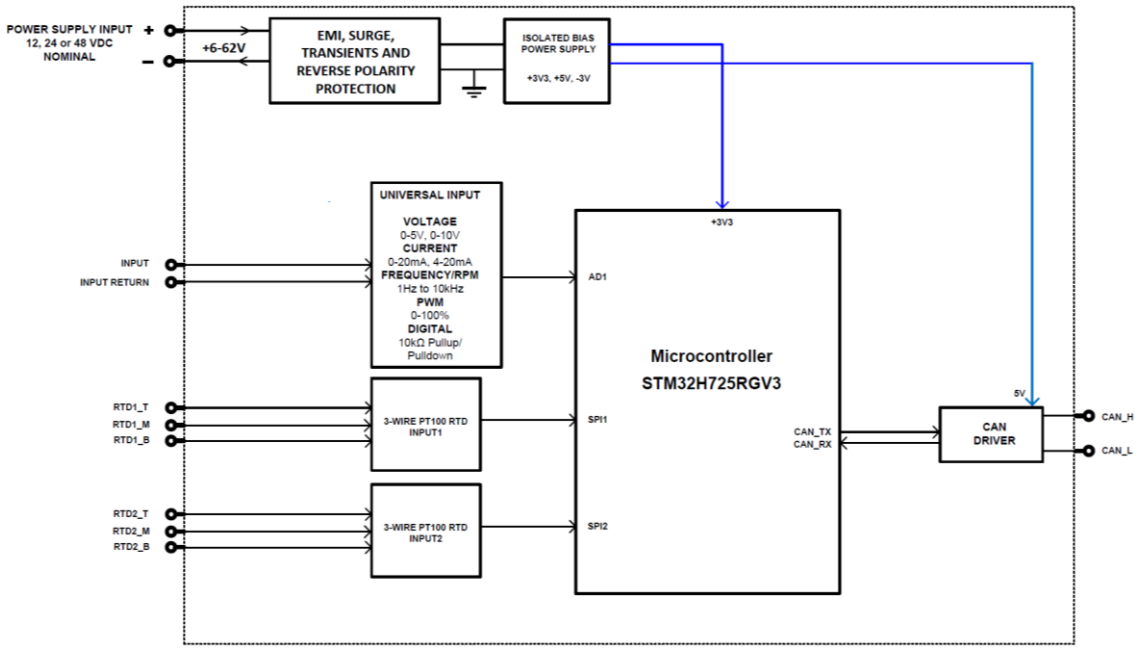
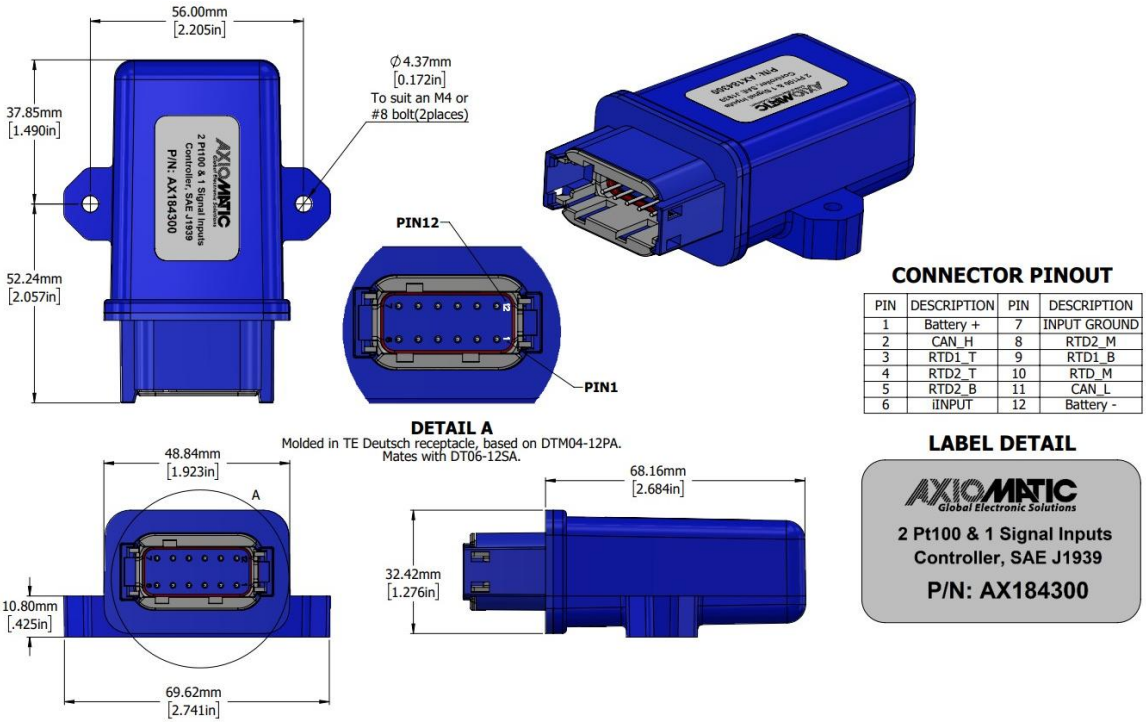
Block Diagram



Dimensional Drawing



CONNECTOR PINOUT

PIN	DESCRIPTION	PIN	DESCRIPTION
1	Battery +	7	INPUT GROUND
2	CAN_H	8	RTD2_M
3	RTD1_T	9	RTD1_B
4	RTD2_T	10	RTD_M
5	RTD2_B	11	CAN_L
6	iINPUT	12	Battery -

LABEL DETAIL

AXIOMATIC Global Electronic Solutions

2 Pt100 & 1 Signal Inputs
Controller, SAE J1939

P/N: AX184300

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, 24, or 48 VDC nominal (6 to 62 VDC)
Quiescent Current	40 mA @ 12 V; 20 mA @ 24 V; 11.5 mA @ 48 V typical
Protection	Surge and transient protection Reverse polarity protection (up to 400 VDC) Under-voltage protection (Hardware shutdown at 4.6 V) Over-voltage protection (Hardware shutdown at 62.98 V)

Inputs

<table>
<tr><td>RTD Inputs</td><td>2 channels of 3-wire Pt100 sensor input
Scan Rate:
10 samples per second per channel
RTD Resistance Range:
20 Ω to 400 Ω
RTD Lead Resistance Range:
0 Ω to 10 Ω
Accuracy:
±0.02 Ω</td></tr>
<tr><td>Universal Input</td><td>1 input selectable as follows
<table>
<tr><td>Voltage</td><td>Ranges:
0-5V or 0-10V
Resolution:
1 mV
Accuracy:
±0.2 % error
Input Impedance:
204 kΩ for 0-5V
136 kΩ for 0-10V</td></tr>
<tr><td>Current</td><td>Ranges:
0-20mA or 4-20mA
Resolution:
1 µA
Accuracy:
±0.2 % error
Input Impedance:
124 Ω</td></tr>
<tr><td>Frequency</td><td>Range:
1 Hz to 10 kHz
Resolution:
0.01 %
Accuracy:
±0.1 % error</td></tr>
<tr><td>PWM</td><td>Range:
1 Hz to 10 kHz
Duty Cycle:
0 to 100 %</td></tr>
<tr><td>Digital</td><td>Active High or Active Low with 10 kΩ pull-up or pull-down
Amplitude up to 36 V</td></tr>
</table>
12-bit Analog to Digital (voltage and current inputs)
Protected against shorts to Ground or +Vsupply</td></tr>
</table>

General Specifications

<table>
<tr><td>Microcontroller</td><td>STM32H725RGV3</td></tr>
<tr><td>Isolation</td><td>400 VDC from power supply
(Input and CAN port are not isolated from each other.)</td></tr>
<tr><td>Communications</td><td>1 CAN SAE J1939-compliant port
Supported baud-rates: 250 kbit/s, 500 kbit/s, 667 kbit/s, or 1 Mbit/s with auto-baud-rate detection</td></tr>
<tr><td>Control Logic</td><td>Standard embedded control logic is provided. Refer to the User Manual.</td></tr>
<tr><td>User Interface</td><td>User configuration and diagnostics are provided with the Axiomatic Electronic Assistant P/N: AX070502 or AX070506K</td></tr>
<tr><td>Compliance</td><td>RoHS</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>-50°C to 125°C (-58 to 257°F)</td></tr>
<tr><td>Weight</td><td>0.07 kg (0.15 lbs.)</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
Ultrasonically welded
Flammability Rating: UL 94V-0
3.54 x 2.75 x 1.31 inches (90.09 x 70.00 x 33.35 mm)
L x W x H including integral connector
Refer to the dimensional drawing.</td></tr>
<tr><td>Electrical Connections</td><td>Integral 12-pin receptacle (equivalent to TE Deutsch P/N: DTM04-12PA)

<table>
<tr><th>Pin #</th><th>Description</th></tr>
<tr><td>1</td><td>Battery +</td></tr>
<tr><td>2</td><td>CAN High</td></tr>
<tr><td>3</td><td>RTD1_T</td></tr>
<tr><td>4</td><td>RTD2_T</td></tr>
<tr><td>5</td><td>RTB2_B</td></tr>
<tr><td>6</td><td>Input</td></tr>
<tr><td>7</td><td>Input Ground</td></tr>
<tr><td>8</td><td>RTD2_M</td></tr>
<tr><td>9</td><td>RTD1_B</td></tr>
<tr><td>10</td><td>RTD1_M</td></tr>
<tr><td>11</td><td>CAN Low</td></tr>
<tr><td>12</td><td>Battery -</td></tr>
</table></td></tr>
<tr><td>Mating Connectors</td><td>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)</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 in. (12 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).</td></tr>
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Form: TDAX184300-10/29/2025