

**2x Pt1000 RTD, 2x PTC Thermistor Inputs CAN Controller**  
**1x CAN Port (SAE J1939)**  
**Wake-on-CAN**  
**Configurable with Axiomatic Electronic Assistant**  
**P/N: AX180410**

## Features

- 2x channels for Pt1000 RTD sensors
- 2x PTC (Positive Temperature Coefficient) thermistor sensors
- 1x CAN port (SAE J1939) with auto-baud-rate detection
- **Wake-on-CAN** functionality to reduce power consumption
- 12 or 24 VDC nominal input power
- Protected against surge/transient and reverse polarity
- Rugged, sealed, IP67-rated enclosure
- Integral 12-pin connector
- 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

2x Pt1000 RTD, 2x PTC Thermistor Input CAN Controller, SAE J1939 – P/N: **AX180410**

CANopen® version – P/N: AX180411

### Accessories:

Mating Plug KIT P/N: **PL-DTM06-12SA**

Axiomatic Electronic Assistant KIT – P/N: **AX070506K**

## Description

The AX180410 controller can read two Pt1000 RTD sensors and two PTC (Positive Temperature Coefficient) thermistor sensors and relays the data over CAN bus (SAE J1939). The CAN port features auto-baud-rate detection.

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 accepts power supply voltages from 8 to 36 VDC. Rugged enclosure and power supply surge protection suits the harsh environment of mobile equipment.

## Block Diagram (Pending)

## Dimensional Drawing

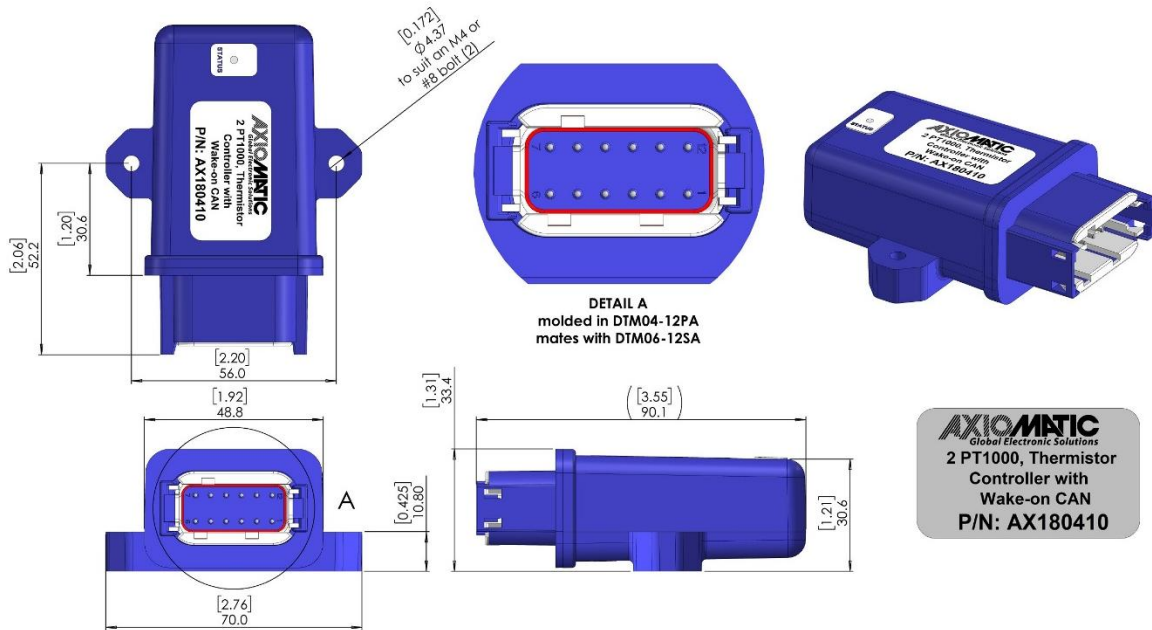


Figure 1 – Dimensional Drawing

## 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 24 VDC nominal (8 to 36 VDC range)                      |
| Quiescent Current  | TBD mA @ 12 V; TBD mA @ 24 V typical                          |
| Protection         | Surge and transient protection<br>Reverse polarity protection |

### Inputs

|                       |                                                                                                                                                                                                                                                   |
|-----------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| RTD Inputs            | 2x channels for Pt1000 RTD sensors<br>24-bit analog to digital resolution<br>RTD Resistance Range: 200 to 4000 $\Omega$<br>RTD Lead Resistance Range: 0 to 10 $\Omega$<br>Accuracy: TBD                                                           |
| PTC Thermistor Inputs | 2x channels for PTC thermistor sensors<br>24-bit analog to digital resolution<br>Measuring Resistance Range: 790 to 1420 $\Omega$<br>Measuring Temperature Range: -40 to 130 $^{\circ}\text{C}$ (-40 to 266 $^{\circ}\text{F}$ )<br>Accuracy: TBD |
| Sampling Rate         | A total of 20 samples per second across all channels combined<br>(For example, if only one channel is being used, it will be sampled 20 times per second. If two are in use, both channels will be sampled 10 times per second.)                  |

## General Specifications

| Microcontroller        | STM32G0B1CBU3<br>32-bit, 128 KB flash memory                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |     |             |   |           |   |          |   |         |   |         |   |        |   |        |   |         |   |         |   |         |    |         |    |         |    |           |
|------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|-------------|---|-----------|---|----------|---|---------|---|---------|---|--------|---|--------|---|---------|---|---------|---|---------|----|---------|----|---------|----|-----------|
| Control Logic          | Standard embedded control logic is provided.<br>Refer to the User Manual.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |     |             |   |           |   |          |   |         |   |         |   |        |   |        |   |         |   |         |   |         |    |         |    |         |    |           |
| CAN                    | 1x CAN port (SAE J1939)<br>Supported baud-rates: 125 kbit/s, 250 kbit/s, 500 kbit/s, 667 kbit/s, or 1 Mbit/s with auto-baud-rate detection<br><br><b>Wake-on-CAN</b> functionality to reduce power consumption                                                                                                                                                                                                                                                                                                                                                                                                                               |     |             |   |           |   |          |   |         |   |         |   |        |   |        |   |         |   |         |   |         |    |         |    |         |    |           |
| User Interface         | Axiomatic Electronic Assistant KIT – P/N: <b>AX070506K</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |     |             |   |           |   |          |   |         |   |         |   |        |   |        |   |         |   |         |   |         |    |         |    |         |    |           |
| Compliance             | RoHS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |     |             |   |           |   |          |   |         |   |         |   |        |   |        |   |         |   |         |   |         |    |         |    |         |    |           |
| Protection             | IP67                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |     |             |   |           |   |          |   |         |   |         |   |        |   |        |   |         |   |         |   |         |    |         |    |         |    |           |
| Operating Conditions   | -40 to 85 °C (-40 to 185 °F)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |     |             |   |           |   |          |   |         |   |         |   |        |   |        |   |         |   |         |   |         |    |         |    |         |    |           |
| Storage Temperature    | -50 to 125 °C (-58 to 257 °F)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |     |             |   |           |   |          |   |         |   |         |   |        |   |        |   |         |   |         |   |         |    |         |    |         |    |           |
| Weight                 | Pending                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |     |             |   |           |   |          |   |         |   |         |   |        |   |        |   |         |   |         |   |         |    |         |    |         |    |           |
| Enclosure              | Molded Enclosure, integral connector<br>Nylon 6/6, 30% glass<br>Ultrasonically welded<br>Flammability Rating: UL 94V-0<br>3.6 in. x 2.8 in. x 1.3 in. (90.1 mm x 70.0 mm x 33.4 mm)<br>L x W x H including integral connector<br>Refer to the dimensional drawing.                                                                                                                                                                                                                                                                                                                                                                           |     |             |   |           |   |          |   |         |   |         |   |        |   |        |   |         |   |         |   |         |    |         |    |         |    |           |
| Electrical Connections | Integral 12-pin receptacle (equivalent to TE Deutsch P/N: <b>DTM04-12PA</b> ) <table border="1"> <thead> <tr> <th>Pin</th><th>Description</th></tr> </thead> <tbody> <tr><td>1</td><td>Battery -</td></tr> <tr><td>2</td><td>CAN High</td></tr> <tr><td>3</td><td>PTC 1 T</td></tr> <tr><td>4</td><td>RTD 2 T</td></tr> <tr><td>5</td><td>Ground</td></tr> <tr><td>6</td><td>Ground</td></tr> <tr><td>7</td><td>RTD 1 T</td></tr> <tr><td>8</td><td>RTD 1 B</td></tr> <tr><td>9</td><td>RTD 2 B</td></tr> <tr><td>10</td><td>PTC 2 T</td></tr> <tr><td>11</td><td>CAN Low</td></tr> <tr><td>12</td><td>Battery +</td></tr> </tbody> </table> | Pin | Description | 1 | Battery - | 2 | CAN High | 3 | PTC 1 T | 4 | RTD 2 T | 5 | Ground | 6 | Ground | 7 | RTD 1 T | 8 | RTD 1 B | 9 | RTD 2 B | 10 | PTC 2 T | 11 | CAN Low | 12 | Battery + |
| Pin                    | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |     |             |   |           |   |          |   |         |   |         |   |        |   |        |   |         |   |         |   |         |    |         |    |         |    |           |
| 1                      | Battery -                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |     |             |   |           |   |          |   |         |   |         |   |        |   |        |   |         |   |         |   |         |    |         |    |         |    |           |
| 2                      | CAN High                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |     |             |   |           |   |          |   |         |   |         |   |        |   |        |   |         |   |         |   |         |    |         |    |         |    |           |
| 3                      | PTC 1 T                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |     |             |   |           |   |          |   |         |   |         |   |        |   |        |   |         |   |         |   |         |    |         |    |         |    |           |
| 4                      | RTD 2 T                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |     |             |   |           |   |          |   |         |   |         |   |        |   |        |   |         |   |         |   |         |    |         |    |         |    |           |
| 5                      | Ground                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |     |             |   |           |   |          |   |         |   |         |   |        |   |        |   |         |   |         |   |         |    |         |    |         |    |           |
| 6                      | Ground                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |     |             |   |           |   |          |   |         |   |         |   |        |   |        |   |         |   |         |   |         |    |         |    |         |    |           |
| 7                      | RTD 1 T                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |     |             |   |           |   |          |   |         |   |         |   |        |   |        |   |         |   |         |   |         |    |         |    |         |    |           |
| 8                      | RTD 1 B                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |     |             |   |           |   |          |   |         |   |         |   |        |   |        |   |         |   |         |   |         |    |         |    |         |    |           |
| 9                      | RTD 2 B                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |     |             |   |           |   |          |   |         |   |         |   |        |   |        |   |         |   |         |   |         |    |         |    |         |    |           |
| 10                     | PTC 2 T                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |     |             |   |           |   |          |   |         |   |         |   |        |   |        |   |         |   |         |   |         |    |         |    |         |    |           |
| 11                     | CAN Low                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |     |             |   |           |   |          |   |         |   |         |   |        |   |        |   |         |   |         |   |         |    |         |    |         |    |           |
| 12                     | Battery +                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |     |             |   |           |   |          |   |         |   |         |   |        |   |        |   |         |   |         |   |         |    |         |    |         |    |           |
| Mating Connectors      | Mating Plug KIT P/N: <b>PL-DTM06-12SA</b> (includes 1x DTM06-12SA plug, 1x WM-12S wedgelock, 12x 0462-201-20141 solid contacts, and 6x 0413-204-2005 sealing plugs)                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |     |             |   |           |   |          |   |         |   |         |   |        |   |        |   |         |   |         |   |         |    |         |    |         |    |           |
| Mounting               | Mounting holes are sized for #8 or M4 bolts. The bolt length will be determined by the end-user's mounting plate thickness. The mounting flange of the controller is 0.43 in. (10.8 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).                                                                                                     |     |             |   |           |   |          |   |         |   |         |   |        |   |        |   |         |   |         |   |         |    |         |    |         |    |           |

Form: TDAX180410-01/28/2026