

TECHNICAL DATASHEET #TDAX032050

## 16 Cell Battery Voltage Monitor

SAE J1939  
with Axiomatic Electronic Assistant  
P/N: AX032050

### Features:

- 16 Cell Battery Voltage Interface to monitor voltage level
- Suitable for most battery chemistries
- Battery Stack Voltage Input (0-90Vdc)
- 12V, 24Vdc input power (nominal) with rugged surge protection
- 1 CAN (SAE J1939) port
- IP67
- CE/UKCA marking pending
- User configurable using the Axiomatic Electronic Assistant



### Applications:

- Fuel Cells, Hybrid Power Back-up Systems

### Ordering Part Numbers:

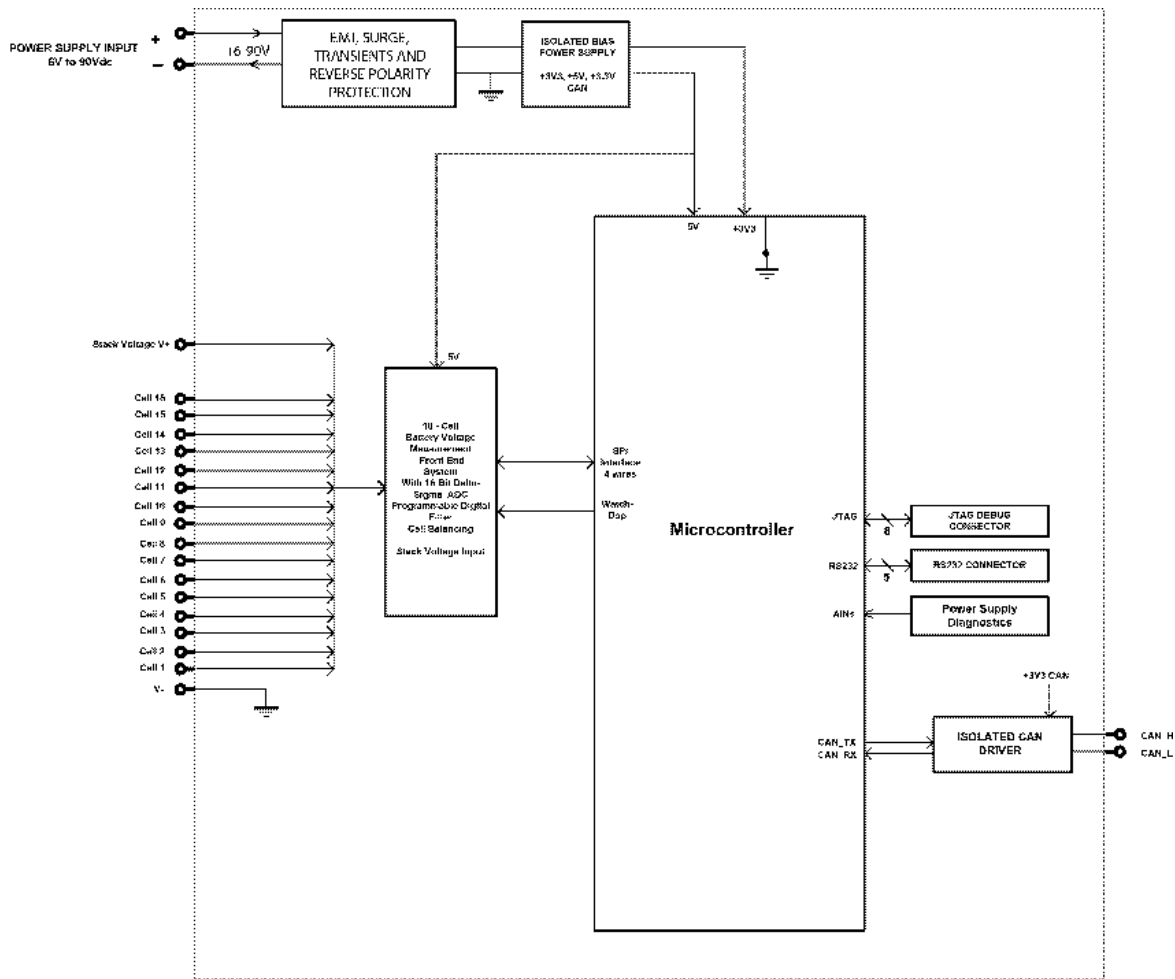
SAE J1939 Controller:

Model P/N	Baud Rate	Standard Reference
AX032050	250 kBit/s	J1939/11, J1939/15.

Axiomatic Electronic Assistant Configuration KIT, P/Ns: **AX070502**, **AX070505K**, or **AX070506K**

Accessories: **PL-DTM06-12SA-12SB** Mating Plug Kit

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 Approvals/Limitations and Return Materials Process as described on <https://www.axiomatic.com/service/>.

Input Specifications

Power Supply Input - Nominal	12V, 24Vdc nominal (6...90Vdc power supply range)
Isolation	Isolated power supply up to 1,000 V
Protection	Surge and reverse polarity protection are provided.
All Inputs	<p>16 Differential Battery Cell Inputs</p> <p>19 Input Pins are provided to permit multiple units to be connected in series.</p> <p>16-bit Sigma-delta ADC with third order noise programmable digital filter</p> <p>Cell measurement range 0-5Vdc</p> <p>Scan rate is programmable from 1 to 200 milliseconds for all 16 cells.</p> <p>Total measurement error is 2.2mV maximum.</p> <p>Passive cell balancing up to 1A (max.) with individual programmable pulse width modulation duty cycle control for each cell.</p> <p>Suitable for most battery chemistries.</p>
Battery Stack Voltage Input	<p>1 0-90Vdc voltage input measurement</p> <p>12-bit ADC</p> <p>0.5% accuracy</p>

## General Specifications

Microcontroller	STM32F405RG
Control Logic	Standard Control Logic
User Interface (PC-based)	The Axiomatic Electronic Assistant for <i>Windows</i> operating systems. It comes with a royalty-free license for use. The Axiomatic Electronic Assistant requires an Axiomatic USB-CAN converter to link the device's CAN port to a <i>Windows</i> -based PC. This is included in the Configuration KITs P/Ns: <b>AX070502</b> , <b>AX070505K</b> , or <b>AX070506K</b>
CAN Communications	1 CAN port (SAE J1939) Isolated up to 1,000 V
Quiescent Current Draw	23 mA @ 24V 46 mA @ 12V
Compliance	RoHS Directive Pending CE/UKCA marking for EMC Directive
Vibration	<b>Pending</b> Random Vibration: 7.7 Grms peak Sinusoidal Component: 10 g peak Based on MIL-STD-202G, Methods 204G and 214A
Shock	<b>Pending</b> 50 g half sine pulse, 6 x 6ms per axis Based on MIL-STD-202G, Method 213B, Test Condition A
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.
Operating Conditions	-40 to 85 °C (-40 to 185 °F)
Storage Temperature	-50 to 125 °C (-58 to 257 °F)
Protection	IP67, PCB is conformal coated and protected by the enclosure.
Weight	0.50 lb. (0.23 kg)
Enclosure and Dimensions	High Temperature Nylon Enclosure (equivalent TE Deutsch P/N: EEC-325X4B) Flammability Rating: UL 94V-0 4.66 x 5.25 x 1.42 inches 118.53 x 133.45 x 35.99 mm (W x L x H excluding mating plugs)

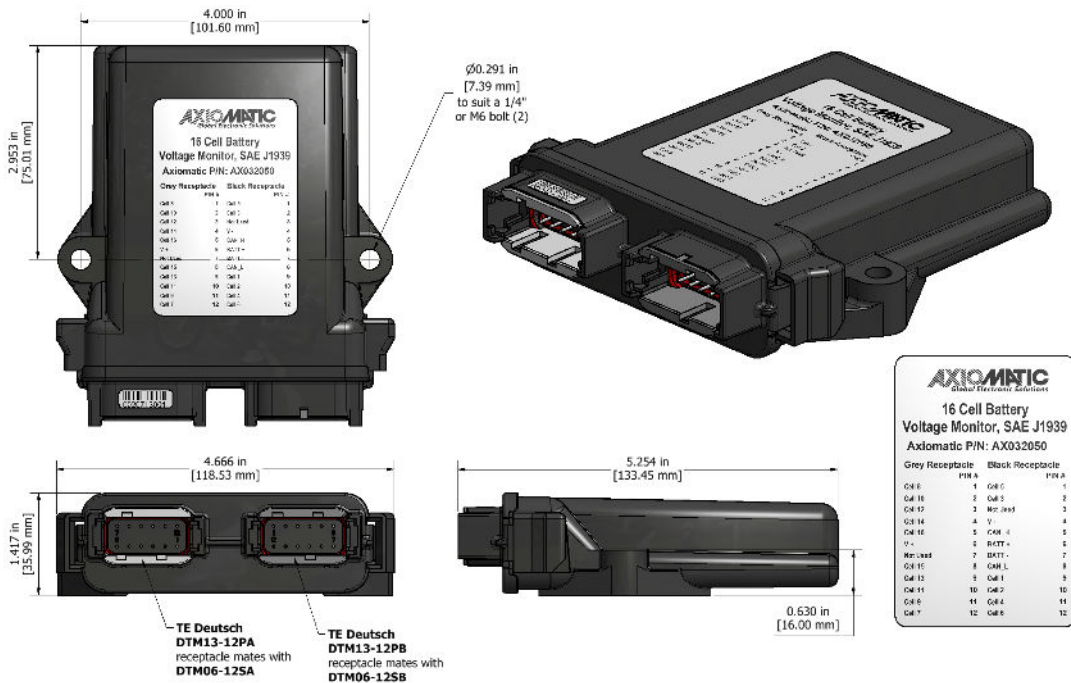


Figure 1.0 - Dimensional Drawing

Electrical Connections

24-pin receptacle (equivalent TE Deutsch P/N: DTM13-12PA-12PB-R008)  
Mating plug: equivalent to the 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.

**Key Arrangement B (black)**

A technical diagram of a 24-pin receptacle from a front perspective. It shows two distinct pin layouts side-by-side, separated by a central circular feature. The left layout is labeled 'Key Arrangement A (grey)' and the right layout is labeled 'Key Arrangement B (black)'. Each layout consists of two rows of 12 pins. The pins are numbered 1 through 12 in each row. The diagram uses arrows to point from the text labels to the corresponding pin arrangements.

**Key Arrangement A (grey)**

**FRONT VIEW 24 PIN RECEPTACLE**

Grey Connector		Black Connector	
1	Cell 8	1	Cell 5
2	Cell 10	2	Cell 3
3	Cell 12	3	Not Used
4	Cell 14	4	V -
5	Cell 16	5	CAN_H
6	V +	6	BATT +
7	Not Used	7	BATT -
8	Cell 15	8	CAN_L
9	Cell 13	9	Cell 1
10	Cell 11	10	Cell 2
11	Cell 9	11	Cell 4
12	Cell 7	12	Cell 6

Form: TDAX032050-06/02/23