

TECHNICAL DATASHEET #TDAX184200
20 PT1000 RTD Scanner
20 2-wire PT1000 Inputs
CAN, SAE J1939
with Axiomatic Electronic Assistant
P/N: AX184200

Description:

The 20 PT1000 RTD Scanner monitors 20 2-wire PT1000 inputs from a diesel engine and the temperature information is provided to the engine control system over a SAE J1939 CAN bus. Each channel operates independently. Temperature information can include exhaust temperature, winding temperature, and fluid temperature monitoring. All channels of temperature data are automatically sent over the CAN bus when power is applied with no additional programming or configuration required. Integral diagnostics determine RTD integrity. RTD inputs are isolated from the CAN communication and power supply.

During set-up, using an USB-CAN converter and a PC, the operator can configure the controller via the Axiomatic Electronic Assistant to suit the application.



The RTD Scanner features rugged packaging and watertight connectors for an IP67 rating. The connectors are TE Deutsch equivalents. The RTD Scanner is designed to meet the environmental, EMC and vibration requirements of vehicle applications.

Applications:

- Military COTS applications for vehicles
- Power Generator Sets

Ordering Part Number:

20 PT1000 RTD Scanner Module, SAE J1939 P/N: **AX184200**
(Passive auto-baud-rate detection. Supported options are 250 kbit/s, 500 kbit/s, and 1 Mbit/s.)

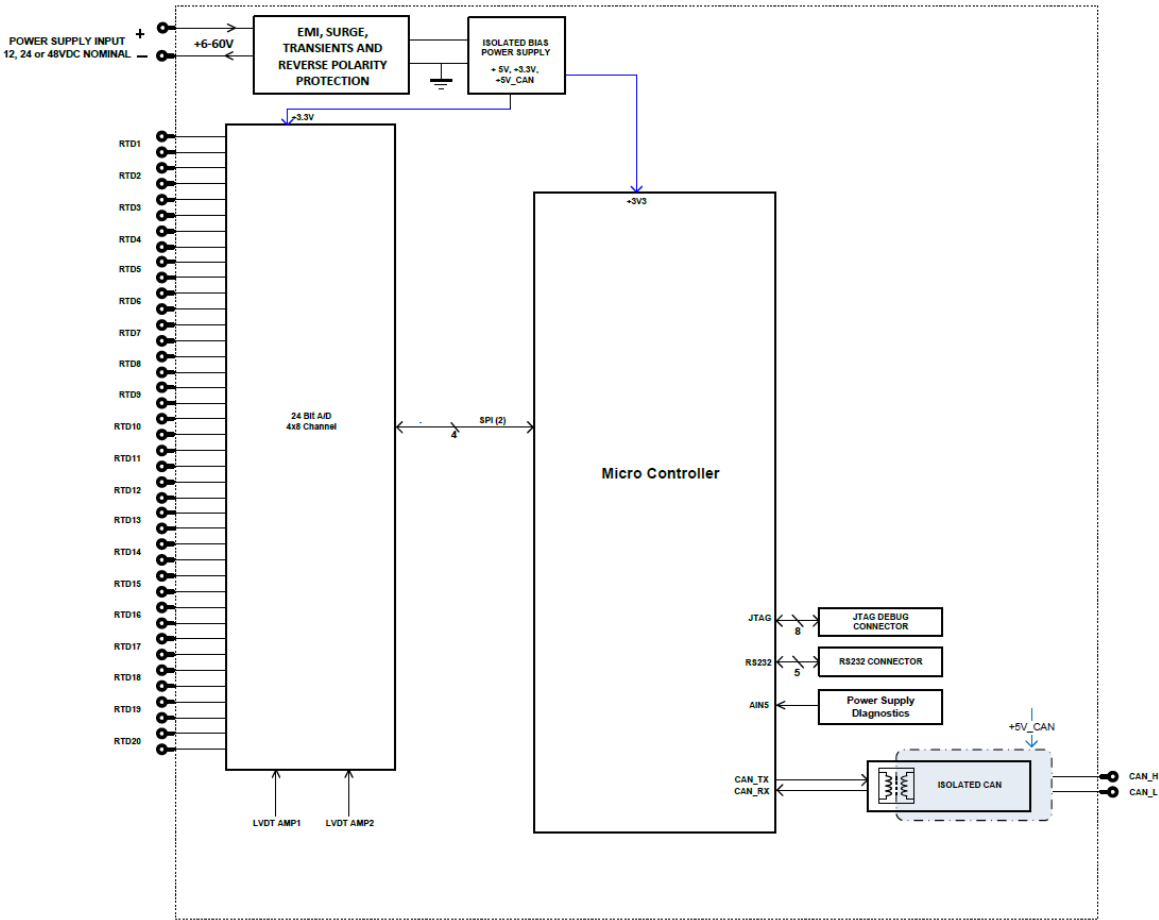
Accessories:

Mating Plug for 40-pin connector, order P/N: **AX070210**

Mating Plug for 12-pin connector, order P/N: **PL-DTM06-12S**

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

Functional 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/>.

Power and Protections

Power Supply Input	12/24/48 VDC nominal (8 to 65 VDC power supply range) 50 or 60 Hz is user selectable.
Quiescent Current	70 mA @ 12 VDC; 35 mA @ 24 VDC typical Inrush does not exceed 500 mA.
Protection	Reverse polarity protection is provided. Power supply input section protects against transients, surges (up to 175 V) and short circuits and is isolated from RTD inputs

RTD Inputs

RTD Types	Up to 20 channels, independently configurable for 2-wire RTDs. Each channel operates independently.
RTD Inputs	The device accepts inputs within the following range of 200 to 4000 Ω . Accuracy: $\pm 1^{\circ}\text{C}$ with offset calibration performed at $R = 1000 \Omega$ (typical at ambient temperature) Resolution: 0.001 $^{\circ}\text{C}$

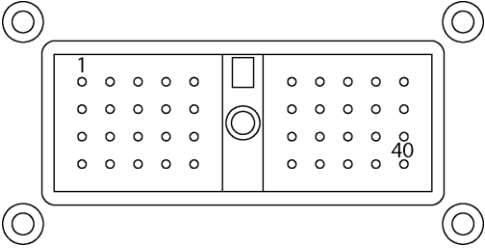
	Isolation voltage is 400V.
Shield	To connect a Shield, use the grounding stud provided on the base plate.
Scan Rate	500ms per channel Total Sweep Time: 3000ms (for RTD 1-10) and 2500ms (for RTD 11-20)
Common Mode Readings	Input range 0 to ± 2 VDC maximum Rejection is 115 db at 5 Vp-p (50 to 60 Hz)
Thermal Drift	40 ppm/ $^{\circ}$ C of span (maximum)
Isolation	Digital isolation is 400 VDC from input to ground. Three-way isolation is provided for the CAN line, inputs, and power supply.

Communications

CAN	1 CAN 2.0B port, protocol SAE J1939 Passive auto-baud-rate detection. Supported options are 250 kbit/s, 500 kbit/s, and 1 Mbit/s. Digital isolation is provided for the CAN line.
Network Termination	According to the CAN standard, 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.

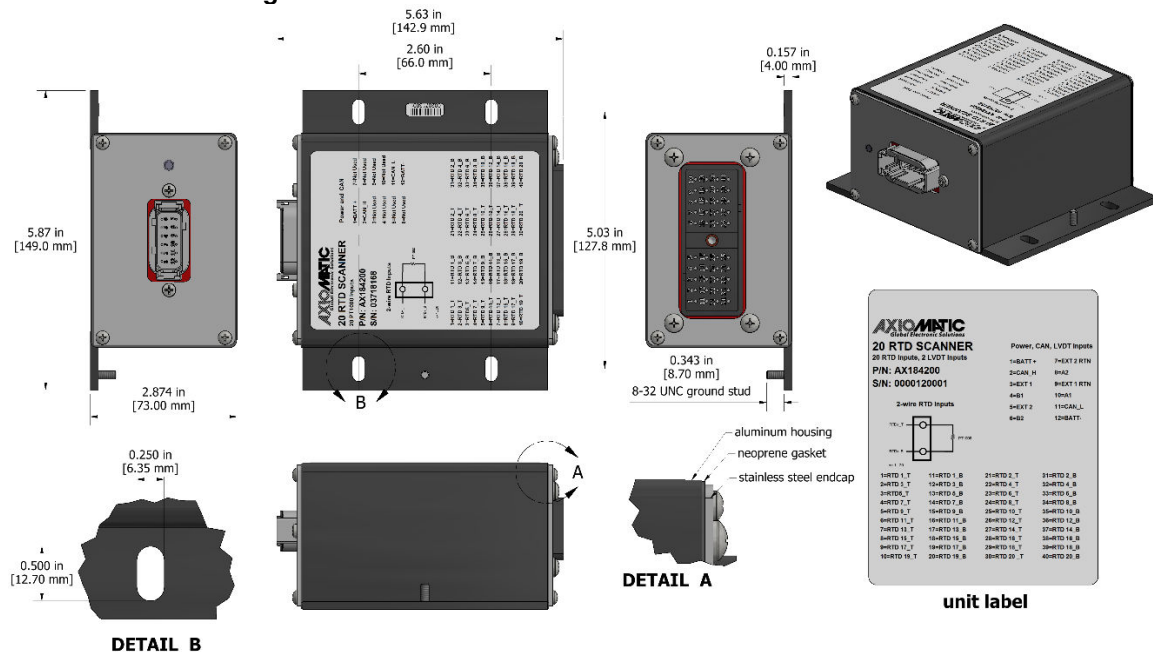
General Specifications

Microcontroller	STM32F405RG 12-bit, 1 MB Flash Memory
Control Logic	User programmable functionality with the Axiomatic Electronic Assistant. Refer to the User Manual.
SAE J1939 Profile	For J1939 compliance (SAE, Recommended Practice for a Serial Control and Communications Vehicle Network, October 2007) all modules comply with the applicable portions of the following: SAE J1939-21, December 2006, Data Link Layer SAE J1939-71, January 2009, Vehicle Application Layer SAE J1939-73, September 2006, Application Layer – Diagnostics SAE J1939-81, May 2003, Network Management <i>Customer specific proprietary extensions can also be included in the SAE J1939 profile on request.</i>
User Interface	The Axiomatic Electronic Assistant (EA) Updates for the Axiomatic EA are found on www.axiomatic.com under the log-in tab.
Vibration	MIL-STD-202G Test 204D and 214A (Sine and Random), 10 g peak (Sine), 7.86 Grms peak (Random)
Shock	MIL-STD-202G, Test 213B, 50 g
Operating Temperature	-40 $^{\circ}$ C to 85 $^{\circ}$ C (-40 $^{\circ}$ F to 185 $^{\circ}$ F)
Storage Temperature	-50 $^{\circ}$ C to 120 $^{\circ}$ C (-58 $^{\circ}$ F to 248 $^{\circ}$ F)
Humidity	Protected against 95% humidity non-condensing, 30 $^{\circ}$ C to 60 $^{\circ}$ C
Protection	IP67
Weight	2.15 lb. (0.98 kg)
Enclosure	Rugged aluminum housing, stainless steel end plates, neoprene gaskets 142.88 x 149.00 x 73.00 mm (5.63 x 5.86 x 2.87") L x W x H Connectors - (equivalent TE Deutsch P/Ns: 1 12-pin DTM13-12PA, 1 40-pin DRC13-40PA) Can be mounted directly on the power generator set or remotely Suitable for moist, high shock, vibrating and non-hazardous environments
Mating Connectors	Axiomatic P/N: AX070210 The 40 pin connector mates with the TE Deutsch equivalent DRC16-40S (1) connector, and 0462-201-16141 (40) SOLID CONTACT SOCKET, Nickel, SIZE 16 for 16-20 AWG wire, 13A maximum current rating. These are available by ordering AX070210. Axiomatic P/N: PL-DTM06-12S The 12 pin connector mates with the TE Deutsch equivalent DTM06-12SA (1), WM-12S (1) and 0462-201-20141 (12) SOLID CONTACT SOCKET, Nickel, SIZE 20 for 20 AWG WIRE, 7.5A maximum current rating. These are available by ordering PL-DTM06- 12S.

Electrical Pin Out – 20 RTD Inputs	1 TE Deutsch equivalent P/N: DRC13-40PA  <table> <tr> <th>PIN#</th><th>Description</th></tr> <tr><td>1</td><td>RTD 1 _T</td></tr> <tr><td>2</td><td>RTD 3 _T</td></tr> <tr><td>3</td><td>RTD 5 _T</td></tr> <tr><td>4</td><td>RTD 7 _T</td></tr> <tr><td>5</td><td>RTD 9 _T</td></tr> <tr><td>6</td><td>RTD 11 _T</td></tr> <tr><td>7</td><td>RTD 13 _T</td></tr> <tr><td>8</td><td>RTD 15 _T</td></tr> <tr><td>9</td><td>RTD 17 _T</td></tr> <tr><td>10</td><td>RTD 19 _T</td></tr> <tr><td>11</td><td>RTD 1 _B</td></tr> <tr><td>12</td><td>RTD 3 _B</td></tr> <tr><td>13</td><td>RTD 5 _B</td></tr> <tr><td>14</td><td>RTD 7 _B</td></tr> <tr><td>15</td><td>RTD 9 _B</td></tr> <tr><td>16</td><td>RTD 11 _B</td></tr> <tr><td>17</td><td>RTD 13 _B</td></tr> <tr><td>18</td><td>RTD 15 _B</td></tr> <tr><td>19</td><td>RTD 17 _B</td></tr> <tr><td>20</td><td>RTD 19 _B</td></tr> <tr><td>21</td><td>RTD 2 _T</td></tr> <tr><td>22</td><td>RTD 4 _T</td></tr> <tr><td>23</td><td>RTD 6 _T</td></tr> <tr><td>24</td><td>RTD 8 _T</td></tr> <tr><td>25</td><td>RTD 10 _T</td></tr> <tr><td>26</td><td>RTD 12 _T</td></tr> <tr><td>27</td><td>RTD 14 _T</td></tr> <tr><td>28</td><td>RTD 16 _T</td></tr> <tr><td>29</td><td>RTD 18 _T</td></tr> <tr><td>30</td><td>RTD 20 _T</td></tr> <tr><td>31</td><td>RTD 2 _B</td></tr> <tr><td>32</td><td>RTD 4 _B</td></tr> <tr><td>33</td><td>RTD 6 _B</td></tr> <tr><td>34</td><td>RTD 8 _B</td></tr> <tr><td>35</td><td>RTD 10 _B</td></tr> <tr><td>36</td><td>RTD 12 _B</td></tr> <tr><td>37</td><td>RTD 14 _B</td></tr> <tr><td>38</td><td>RTD 16 _B</td></tr> <tr><td>39</td><td>RTD 18 _B</td></tr> <tr><td>40</td><td>RTD 20 _B</td></tr> </table>	PIN#	Description	1	RTD 1 _T	2	RTD 3 _T	3	RTD 5 _T	4	RTD 7 _T	5	RTD 9 _T	6	RTD 11 _T	7	RTD 13 _T	8	RTD 15 _T	9	RTD 17 _T	10	RTD 19 _T	11	RTD 1 _B	12	RTD 3 _B	13	RTD 5 _B	14	RTD 7 _B	15	RTD 9 _B	16	RTD 11 _B	17	RTD 13 _B	18	RTD 15 _B	19	RTD 17 _B	20	RTD 19 _B	21	RTD 2 _T	22	RTD 4 _T	23	RTD 6 _T	24	RTD 8 _T	25	RTD 10 _T	26	RTD 12 _T	27	RTD 14 _T	28	RTD 16 _T	29	RTD 18 _T	30	RTD 20 _T	31	RTD 2 _B	32	RTD 4 _B	33	RTD 6 _B	34	RTD 8 _B	35	RTD 10 _B	36	RTD 12 _B	37	RTD 14 _B	38	RTD 16 _B	39	RTD 18 _B	40	RTD 20 _B
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RTD Input Wiring	<p>2-wire RTD Input:</p> <p>x= 1...20</p>																										
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Dimensional Drawing



Form: TDAX184200-08/09/23