**TECHNICAL DATASHEET #TDAX141600**

# CAN Isolator/Router

P/N: AX141600

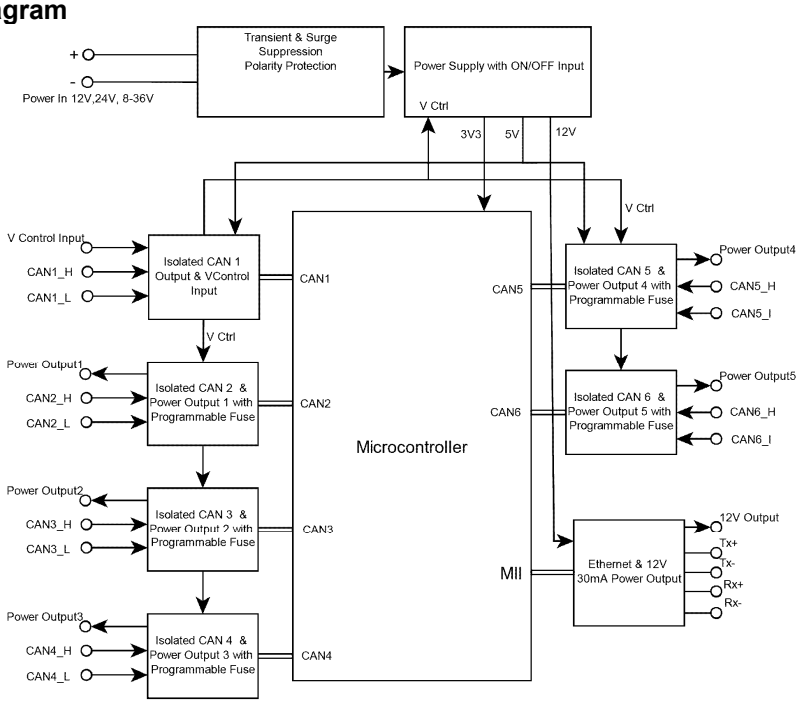
## Features:

- Fast and bidirectional data exchange between 6 CAN ports.
- 6 Isolated CAN ports (CAN 2.0B)
- Ethernet port for configuration purposes
- Route messages from Port X to Port Y based on message ID filter.
- Can be configured as a switch to broadcast messages on all ports.
- Modify address/change source address before sending it out on another port.
- Configurable baud rate
- Configurable termination resistor
- LED indicator
- Operational from 9 to 36 Vdc (12 Vdc, 24 Vdc nominal)
- Fully sealed enclosure with a rugged IP67 protection rating
- 6 5-pin, 1 4-pin and 1 8-pin M12 connectors
- Suitable for harsh environments
- User configurable using Axiomatic Electronic Assistant
- CE marking

**Applications:** Communications interface between multiple CAN buses on electric vehicles used in mining and other vehicle applications

| **Ordering Part Numbers:** |
|---|
| CAN Isolator/Router - P/N: **AX141600** |
| Configuration Tool: Electronic Assistant P/N: **AX070502** |

## Block Diagram





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## Technical Specifications:

Typical at nominal input voltage and 25 degrees C unless otherwise specified

## Power

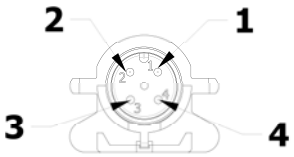
| | |
|---|---|
| Power Supply Input - Nominal | 12 V or 24 Vdc nominal; 9…36 Vdc |
| Under-voltage Protection | Hardware shuts down at 6.5 Vdc. |
| Surge Protection | 55 Vdc |
| Over-voltage Protection | Hardware shuts down at 45Vdc. |
| Reverse Polarity Protection | Provided up to -80V |
| Over-current Protection | Maximum 5.5A |

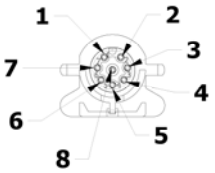
## Functionality

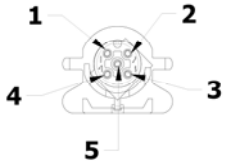
| | |
|---|---|
| Conversion Platform | The CAN Isolator/Router comes pre-programmed with standard protocol conversion logic for bidirectional data exchange between six CAN buses (CAN 2.0B). The higher-level CAN protocols such as SAE J1939 or CANopen are recognized.<br><br>The Ethernet port has a web server running for configuration purposes. |
| CAN | CAN 2.0B ports<br>Baud rate: Each port can be configured for 125, 250, 500 or 1,000 kbps over CAN.<br>Default baud rate: 500 kbps<br><br><u>5 CAN Ports</u><br>Five (5) CAN In ports with power supply and resettable fuse<br>The fuse trips at 1A. Fuse status is reported over the CAN network.<br>Fuse remains tripped until short is removed.<br>Each port includes 120 Ohm termination. It can be configured over CAN.<br><br><u>1 CAN Port</u><br>One (1) CAN port with module activation sensing<br>One digital input shuts down power to the router and power to all CAN input ports.<br>Amplitude up to +Vps. |
| Ethernet | Single 10/100 Mbit Ethernet compliant port<br>10BASE-T, 100BASE-Tx (auto-negotiation and full-duplex supported)<br>Auto-MDIX |
| Operating System | FreeRTOS |

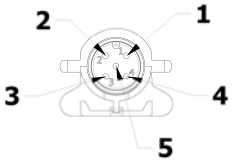
## General Specifications

| | |
|---|---|
| Memory | STM32F765ZIT6<br>32-bit, 2Mbyte Flash Program Memory |
| Quiescent Current Draw | 170 mA @12 V; 100 mA @24 V |
| Isolation | 3-way isolation<br>Isolation is between power supply, microcontroller, and each CAN port.<br>300 Vrms |
| LED Indicator | <u>POWER LED</u><br>GREEN= Power ON (Fuse Closed)<br>RED = Power OFF (Fuse Open)<br><br>Port Activity is shown using the RED/GREEN LED ON. |
| Operating Conditions | -40 to 70°C (-40 to 158°F) |
| User Interface – SAE J1939 models | **Parameters are configurable using the Electronic Assistant, AX070502**<br>The functionality of the Electronic Assistant includes but is not limited to the following.<br>• Specify CAN message filters and CAN message IDs to be received<br>• Define CAN node ID, and baud rate<br>• Define Ethernet parameters such as IP address and netmask.<br><br>Refer to the User Manual. |
| Web Server Interface | Refer to the User Manual. |
| Enclosure and Dimensions | PC Infino SC-1220UR<br>UL 94-V2 rated<br>Gasket<br>Encapsulated<br>Refer to dimensional drawing. |

<table>
<tr><td>Installation</td><td>Suits three (3) M5 or #10 mounting bolts.</td></tr>
<tr><td>Weight</td><td>1.036 lb. (0.475 kg)</td></tr>
<tr><td>Electrical Connections – Power, Ethernet</td><td>
Power Port<br>
1 CONEC 43-01167 M12 4-pin connector (A-coded), Male<br>
(Connector 1)<br>
<table>
<tr><th>PIN#</th><th>Description</th></tr>
<tr><td>1</td><td>Battery +</td></tr>
<tr><td>2</td><td>Battery +</td></tr>
<tr><td>3</td><td>Battery -</td></tr>
<tr><td>4</td><td>Battery -</td></tr>
</table>


<br><br>
Ethernet Port<br>
1 CONEC 43-01332 M12 8-pin connector (A-coded), Female<br>
(Connector 2)<br>
<table>
<tr><th>PIN#</th><th>Description</th></tr>
<tr><td>1</td><td>Power IN</td></tr>
<tr><td>2</td><td>Power GND</td></tr>
<tr><td>3</td><td>Power GND</td></tr>
<tr><td>4</td><td>Ethernet TX-</td></tr>
<tr><td>5</td><td>Ethernet RX+</td></tr>
<tr><td>6</td><td>Ethernet TX+</td></tr>
<tr><td>7</td><td>Power IN</td></tr>
<tr><td>8</td><td>Ethernet RX-</td></tr>
</table>


</td></tr>
<tr><td>Electrical Connections - CAN</td><td>
Input CAN Ports (5)<br>
1 CONEC 43-01165 M12 5-pin connector (A-coded), Female<br>
(Connectors are labelled as 3, 5, 6, 7, 8.)<br>
<table>
<tr><th>PIN#</th><th>Description</th></tr>
<tr><td>1</td><td>Not Used</td></tr>
<tr><td>2</td><td>OUT x<br>(Where x = the next CAN port)</td></tr>
<tr><td>3</td><td>CAN_Shield</td></tr>
<tr><td>4</td><td>CAN_H</td></tr>
<tr><td>5</td><td>CAN_L</td></tr>
</table>


<br><br>
Output CAN Port (1)<br>
1 CONEC 43-01169 M12 5-pin connector (A-coded), Male<br>
(Connector 4.)<br>
<table>
<tr><th>PIN#</th><th>Description</th></tr>
<tr><td>1</td><td>Not Used</td></tr>
<tr><td>2</td><td>V Control Signal</td></tr>
<tr><td>3</td><td>CAN_Shield</td></tr>
<tr><td>4</td><td>CAN_H</td></tr>
<tr><td>5</td><td>CAN_L</td></tr>
</table>


</td></tr>
<tr><td>Mating Connectors</td><td>Not supplied<br>Mating connectors should meet the following standard for M12 Connectors, IEC 61076-2-101:2012. They should be A-coded.</td></tr>
</table>

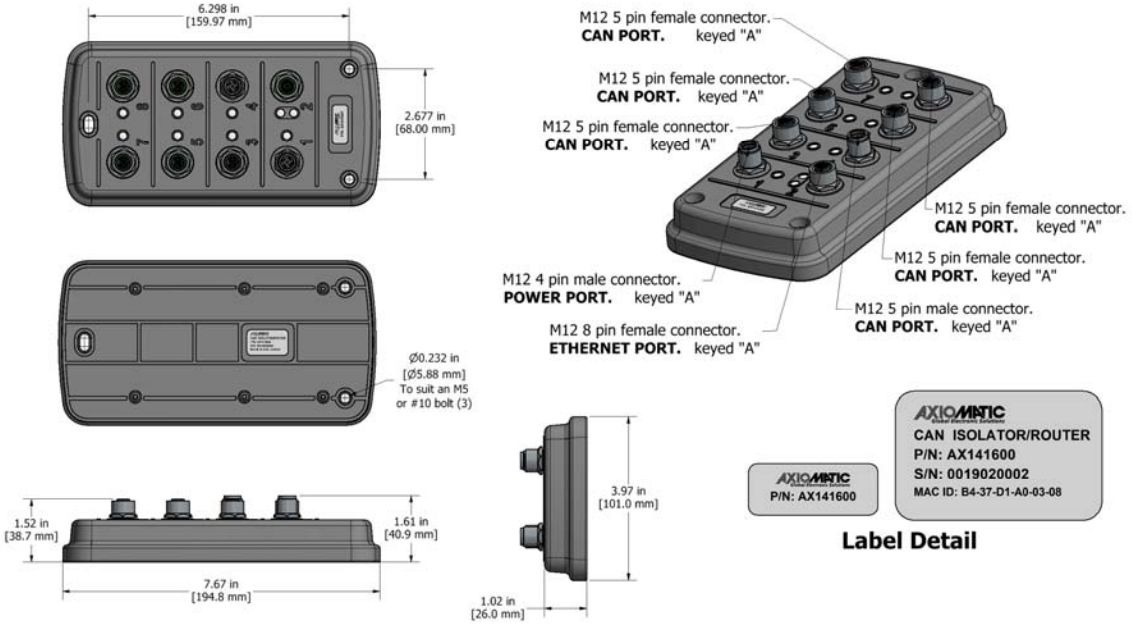



*Figure 1.0 – Dimensional Drawing*

## Compliance

| | |
|---|---|
| Protection Rating | IP67; Unit is encapsulated within the housing. |
| Vibration | MIL-STD-202G, Test 204D and 214A (Sine and Random)<br>10 g peak (Sine), 7.56 Grms peak (Random) |
| Shock | MIL- STD-202G, Method 213B, test condition A<br>50g |
| Compliance | CE marking |
| EMC Compliance | Emissions: CISPR 32<br>Immunity: CISPR 35 |

*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 www.axiomatic.com/service.html.*

Form: TDAX141600-12/10/20