

Preliminary
TECHNICAL DATASHEET #TDAX031950
Analog I/O, Relay Output Module

+5V Reference
SAE J1939
NFC
DIN rail mount

P/N: AX031950

Features:

- 1 Isolated CAN port, SAE J1939
- 1 Universal Signal Input (Bipolar or Unipolar Voltage, Current, Digital, PWM or Frequency type)
- 1 Analog Output (0-5V, 0-10V, 0-20mA or 4-20mA)
- 1 Form C NC Relay Output
- +5V Reference
- Operational 4...36 Vdc (12 Vdc or 24 Vdc)
- DIN rail mount, screw terminals
- Electronic Assistant AX070502 can be used for complex parameter configuration
- A Near Field Communications Antenna is provided for simple configuration using an Android Smartphone:
 - Place the phone next to the antenna and configure while unpowered.
 - The E-Write NFC Android Application provides flexible user configurability for application-specific input-output relationship with slope or time response.
 - Protected and secure communications



Applications:

- Industrial automation applications

Ordering Part Numbers:

Analog I/O, Relay Output Module, SAE J1939: **AX031950**

Analog I/O, Relay Output Module, 500 kbps SAE J1939: **AX031950-01**

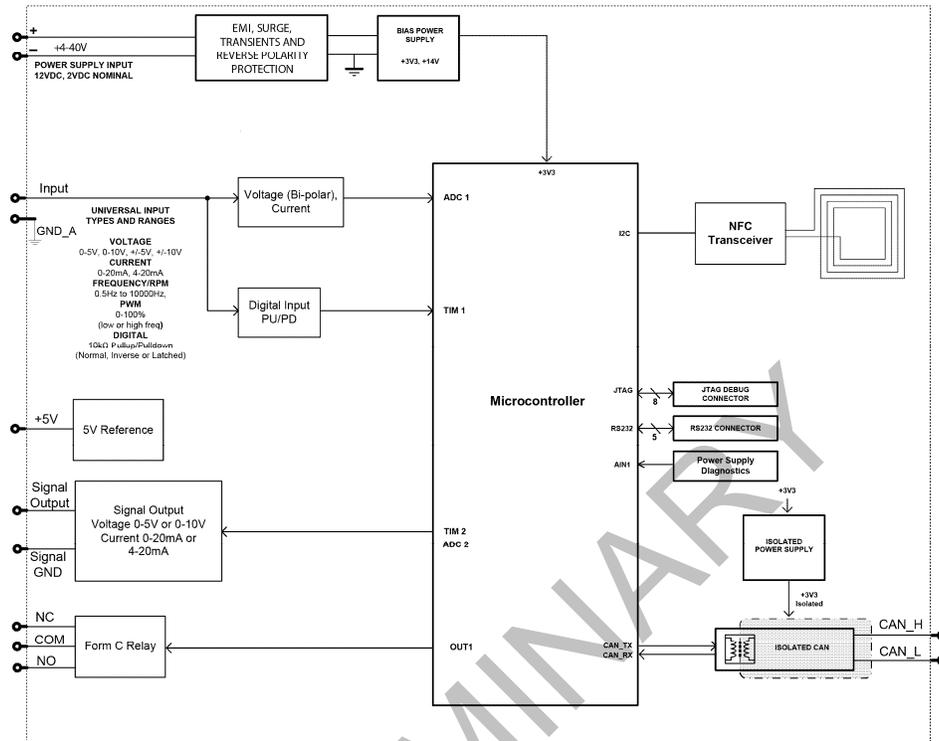
Analog I/O, Relay Output Module, 1 Mbps SAE J1939: **AX031950-02**

Accessories:

Electronic Assistant®: **AX070502**

E-WRITE NFC Application is available from the Google Play Store for simple configurations.

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 www.axiomatic.com/service.html.

Power

Power Supply Input	12Vdc or 24 Vdc nominal 4...36 Vdc power supply range
Protection	Reverse polarity protection up to 60V. Under-voltage protection is down to 4.5V. Overvoltage protection is up to 40 V.
Reference Voltage	1 +5V, +/- 1%, 100 mA

Input

Input	1 Universal Signal Input User selectable as Bipolar or Unipolar Voltage, Current, Digital, Frequency, or PWM input types. Refer to Table 1.0.
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Table 1.0 –User Programmable Universal Signal Inputs																																									
Analog & Digital Input Functions	Voltage Input, Current Input, or Digital Input																																								
Voltage Input	0-5 V (Impedance 100 k Ω) 0-10 V (Impedance 100 k Ω) +/- 5V (Impedance 100 k Ω) +/- 10V (Impedance 100 k Ω) Resolution is +/- 1mV. Accuracy is +/-0.5%																																								
Current Input	0-20 mA (Impedance 124 Ω) 4-20 mA (Impedance 124 Ω) Resolution is +/- 1 μ A. Accuracy is +/- 0.2%.																																								
Digital Input Level	Accepts 5 V TTL Accepts up to Vps Threshold: Low <1 V High >2.2 V																																								
Digital Input	1 M Ω Impedance or Active High or Active Low with 10 k Ω pull-up or pull-down																																								
Timer Input Functions	PWM Input or Frequency Input																																								
PWM Input	Low Frequency (0.50 Hz to 1 kHz) High Frequency (100 Hz to 10 kHz) 0 to 100% D.C. Resolution is 0.01%. Accuracy is +/-0.1%.																																								
Frequency/RPM Input	0.5 Hz to 50 Hz; 10 Hz to 1 kHz; or 100 Hz to 20 kHz Resolution is 0.01%. Accuracy is +/-0.1%.																																								
Maximum and Minimum Ratings	<table border="1"> <thead> <tr> <th>Characteristic</th> <th>Min</th> <th>Max</th> <th>Units</th> </tr> </thead> <tbody> <tr> <td>Power Supply</td> <td>9</td> <td>36</td> <td>V dc</td> </tr> <tr> <td>Voltage Input</td> <td>0</td> <td>36</td> <td>V dc</td> </tr> <tr> <td>Current Input 0(4)-20 mA</td> <td>0</td> <td>12</td> <td>Vdc</td> </tr> <tr> <td>Digital Input</td> <td>0</td> <td>36</td> <td>Vdc</td> </tr> <tr> <td>PWM Duty Cycle</td> <td>0</td> <td>100</td> <td>%</td> </tr> <tr> <td>PWM Low Frequency</td> <td>10</td> <td>1 000</td> <td>Hz</td> </tr> <tr> <td>PWM High Frequency</td> <td>100</td> <td>10 000</td> <td>Hz</td> </tr> <tr> <td>PWM Voltage pk - pk</td> <td>0</td> <td>36</td> <td>V dc</td> </tr> <tr> <td>Frequency</td> <td>0</td> <td>20 000</td> <td>Hz</td> </tr> </tbody> </table>	Characteristic	Min	Max	Units	Power Supply	9	36	V dc	Voltage Input	0	36	V dc	Current Input 0(4)-20 mA	0	12	Vdc	Digital Input	0	36	Vdc	PWM Duty Cycle	0	100	%	PWM Low Frequency	10	1 000	Hz	PWM High Frequency	100	10 000	Hz	PWM Voltage pk - pk	0	36	V dc	Frequency	0	20 000	Hz
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GND	1 Analog GND connection is provided.																																								

Outputs

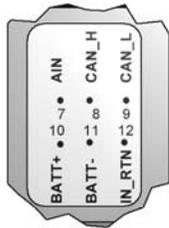
Output	1 Form C Relay NC 3 contact pins per output Max. 2A @ 250Vac or 2A @ 30Vdc per contact
Analog Output	1 Analog Output, user selectable as: 0-5V, 0-10V (+/- 0.2% accuracy) 0-20mA, 4-20mA (+/- 0.2% accuracy)
Analog Output GND	1 GND connection is provided.

General Specifications

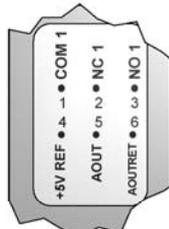
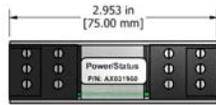
Microprocessor	STM32F205RE, 32-bit, 512 Kbytes Flash Program Memory
Isolation	300 Vrms CAN bus Isolation
Typical Quiescent Current	Contact Axiomatic.
Control Logic	Standard embedded software is provided.
Communications	1 Isolated CAN port (SAE J1939) Model AX031950: 250 kbps Model AX031950-01: 500 kbps Model AX031950-02: 1 Mbps
NFC Communications	Near Field Communication Full-duplex Data rate: 106 kbit/s Complies with ISO1443 (RF protocol), ISO13239, and ISO7816 Protected and secure configuration
User Interface via NFC	E-WRITE NFC Application is available from the Google Play Store for simple configurations.
Software Reflashing	Electronic Assistant® P/N: AX070502
User Interface via CAN	Electronic Assistant® P/N: AX070502
LED Indicator	1 Red and Green LED with application-specific responses
Operating Conditions	-40 to 85 °C (-40 to 185 °F)
Storage Temperature	-55 to 125 °C (-67 to 257°F)
Protection	IP40 (housing), Terminals IP20
Weight	Contact Axiomatic.
Enclosure	DR12, 35 mm DIN rail mount Polycarbonate 75 x 98.5 x 22.5 mm (W x H x D) 2.95 x 3.88 x 0.89 inches Refer to the dimensional drawing.
Electrical Connections	12 Screw terminal connections Refer to dimensional drawing for pin out orientation.

Screw Terminal #	Description
1	Relay Output COM 1
2	Relay Output NC 1
3	Relay Output NO 1
4	+5V Reference
5	Analog Output
6	Analog Output Return
7	Analog Input
8	CAN_H
9	CAN_L
10	Power +
11	Power -
12	Analog Input GND

Dimensional Drawing

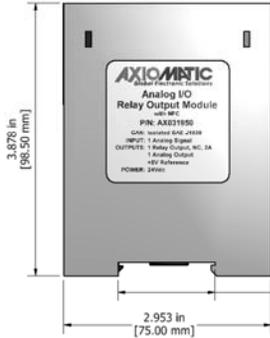


**DETAIL B
LH label**

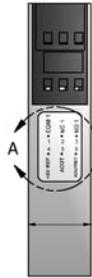


**DETAIL A
RH label**

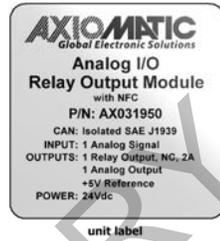
↑
this way up on
the DIN rail



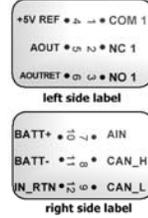
to suit 35 mm
DIN rail



0.886 in
(22.50 mm)



unit label



left side label



right side label



top label

PRELIMINARY

Form: TDAX031950-07/30/19