

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

+5 V 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 (0-5 V, 0-10 V, 0-20 mA or 4-20 mA)
- 1 form C relay output
- +5 V reference
- Operational 4 to 36 VDC (12 or 24 VDC)
- DIN rail mount, screw terminals
- Axiomatic Electronic Assistant, P/Ns: AX070502, AX070505K or AX070506K can be used for complex parameter configuration.
- A Near Field Communications (NFC) antenna is provided for simple configuration using an Android smartphone:
 - Place the phone next to the antenna and configure the product while unpowered.
 - Axiomatic 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:

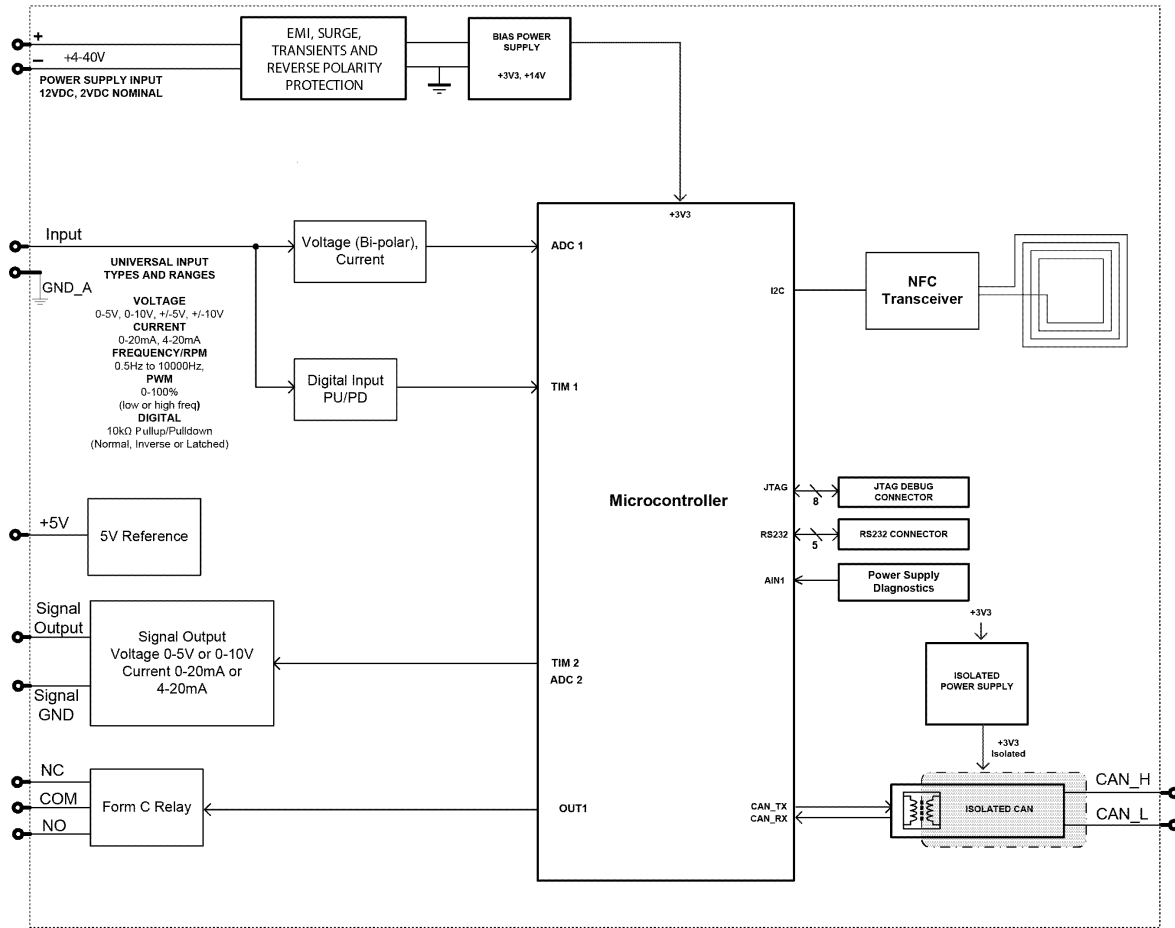
Analog I/O, Relay Output Module, SAE J1939: **AX031950**
Analog I/O, Relay Output Module, 500 kbps SAE J1939: **AX031950-01**
Analog I/O, Relay Output Module, 1 Mbps SAE J1939: **AX031950-02**

Accessories:

Axiomatic Electronic Assistant: **AX070502**, **AX070505K**, or **AX070506K**

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 <https://www.axiomatic.com/service/>.

Power

Power Supply Input	12 or 24 VDC nominal (4 to 36 VDC range)
Typical Quiescent Current	20 mA @ 12 VDC; 35 mA @ 24VDC
Protection	Reverse polarity protection up to 60 V Under-voltage protection is down to 4.5 V Overvoltage protection is up to 40 V
Reference Voltage	1 +5 V, ±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.			
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) \pm 5 V (impedance 100 k Ω) \pm 10 V (impedance 100 k Ω) Resolution: \pm 1 mV Accuracy: \pm 0.5%			
Current Input	0-20 mA (impedance 124 Ω) 4-20 mA (impedance 124 Ω) Resolution is \pm 1 μ A. Accuracy is \pm 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: 0.01% Accuracy: \pm 0.1%			
Frequency/RPM Input	0.5 Hz to 50 Hz; 10 Hz to 1 kHz; or 100 Hz to 20 kHz Resolution: 0.01% Accuracy: \pm 0.1%			
Maximum and Minimum Ratings	Characteristic	Min	Max	Units
	Power supply	9	36	VDC
	Voltage input	0	36	VDC
	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	VDC
Frequency	0	20 000	Hz	
GND	1 analog GND connection is provided.			

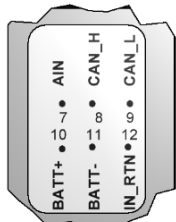
Outputs

Output	1 Form C relay NC 3 contact pins per output Maximum 2 A @ 250 VAC or 2 A @ 30VDC per contact
Analog Output	1 analog output, user selectable as: <ul style="list-style-type: none"> • 0-5 V, 0-10 V (\pm0.2% accuracy) • 0-20 mA, 4-20 mA (\pm0.2% accuracy)
Analog Output GND	1 GND connection is provided.

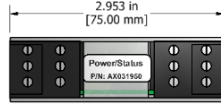
General Specifications

Microcontroller	STM32F205RE, 32-bit, 512 KB flash program memory																										
Isolation	300 Vrms CAN bus isolation																										
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 (NFC) 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	Axiomatic Electronic Assistant																										
User Interface via CAN	Axiomatic Electronic Assistant																										
LED Indicator	1 RED and GREEN LED with application-specific responses																										
Operating Conditions	-40°C to 85°C (-40°F to 185°F)																										
Storage Temperature	-55°C to 125°C (-67°F to 257°F)																										
Weight	Contact Axiomatic.																										
Protection	IP40 (enclosure), IP20 (terminals)																										
Enclosure	DR12, 35 mm DIN rail mount Polycarbonate 75 mm x 98.5 mm x 22.5 mm (W x H x D) 2.95 in x 3.88 in x 0.89 in Refer to the dimensional drawing.																										
Electrical Connections	12 screw terminal connections Refer to dimensional drawing for pin out orientation. <table border="1" data-bbox="560 1033 1362 1442"> <thead> <tr> <th>Screw Terminal #</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>Relay Output COM 1</td> </tr> <tr> <td>2</td> <td>Relay Output NC 1</td> </tr> <tr> <td>3</td> <td>Relay Output NO 1</td> </tr> <tr> <td>4</td> <td>+5V Reference</td> </tr> <tr> <td>5</td> <td>Analog Output</td> </tr> <tr> <td>6</td> <td>Analog Output Return</td> </tr> <tr> <td>7</td> <td>Analog Input</td> </tr> <tr> <td>8</td> <td>CAN_H</td> </tr> <tr> <td>9</td> <td>CAN_L</td> </tr> <tr> <td>10</td> <td>Power +</td> </tr> <tr> <td>11</td> <td>Power -</td> </tr> <tr> <td>12</td> <td>Analog Input GND</td> </tr> </tbody> </table>	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
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Dimensional Drawing

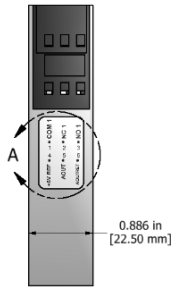
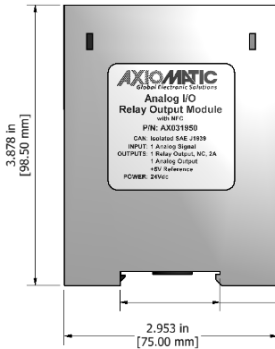
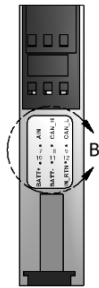
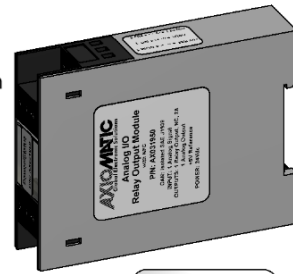


DETAIL B
LH label



DETAIL A
RH label

↑
this way up on
the DIN rail



AXIOMTIC
Global Electronic Solutions

**Analog I/O
Relay Output Module**
with NFC

P/N: AX031950
CAN: Isolated SAE J1939

INPUT: 1 Analog Signal
OUTPUTS: 1 Relay Output, NC, 2A
1 Analog Output
+5V Reference

POWER: 24Vdc

unit label

+5V REF ● ● ● COM 1
AOUT ● ● ● NC 1
AOUTRET ● ● ● NO 1

left side label

BATT+ ● ● ● AIN
BATT- ● ● ● CAN_H
IN_RTN ● ● ● CAN_L

right side label

Power/Status
P/N: AX031950
top label

Form: TDAX031950-06/02/23