

Applications

- Off-highway equipment
- Industrial automation

Ordering Part Numbers

Interface Module, 16x Inputs, 15x Outputs, SAE J1939 - P/N: **AX030810A**

Interface Module, 16x Inputs, 15x Outputs, SAE J1939, with Breather Valve - P/N: **AX030810**

Accessories:

Axiomatic Electronic Assistant KIT - P/N: **AX070506K**

Mating Plug KIT - P/N: **AX070164** (Refer to the General Specifications below for details.)

Features

- 16x universal inputs user selectable as voltage, current, frequency, PWM, or digital
- 4x inputs (#1 to #4) can also act as resistive inputs.
- 12x universal outputs user programmable as voltage, current, frequency, PWM, or digital on/off
- 1x additional output configurable as frequency, PWM, or digital
- 2x high side digital outputs
- 2x 5 V references
- 3x SAE J1939 CAN bus ports
- 1x Ethernet port (10/100 Mbit/s, TCP/IP) (pending)
- -40 to 85 °C operating temperature
- 86-pin TE Deutsch connector
- IP67 rating, suitable for moist and vibrating environments
- Designed for SIL2 and PLc functional safety requirements
- Configurable with Axiomatic Electronic Assistant

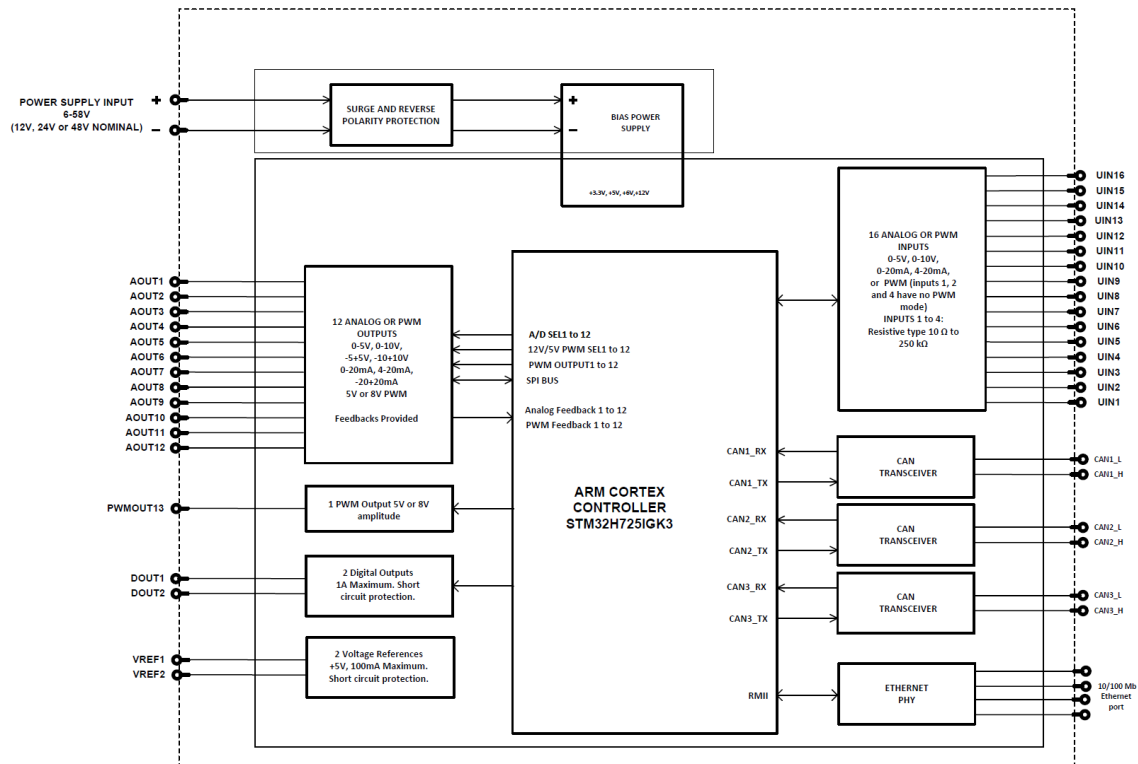


Figure 1.0 – Block Diagram

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

Power Supply

Power Supply Input	12, 24, or 48 V _{DC} nominal (6 to 58 V _{DC} range)
Quiescent Current	151 mA @ 12 V; 85 mA @ 24 V; 67 mA @ 48 V (typical)
Protection	Surge and transient protection provided Reverse polarity protection provided Undervoltage protection provided. Shut down at 5 V. Overvoltage protection provided. Shut down to 59.5 V.

CAN

Ports	3x CAN ports (SAE J1939)
Baud Rate	250 kbit/s, 500 kbit/s, 667 kbit/s, and 1 Mbit/s with auto-baud-rate detection Auto-baud-rate detection can be disabled, and the baud rate can be selected through the user interface. Refer to user manual for details.
Network Termination	It is necessary to terminate the network with external termination resistors. The resistors are 120 Ω , 0.25 W minimum, metal film or similar type. They should be placed between CAN H and CAN L terminals at both ends of the network.

Ethernet (pending)

Port	1x Ethernet port (TCP/IP) 10 or 100 Mbit/s
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Inputs

Universal Inputs	16x universal signal inputs user selectable as voltage, current, frequency, PWM, or digital signal types. 12-bit analog to digital resolution (voltage and current)	
	Voltage	Ranges: 0-5 V or 0-10 V Impedance: 1 M Ω for 0-5 V and 204 k Ω for 0-10 V Accuracy: ± 1 % error
	Current	Ranges: 0-20 mA or 4-20 mA Current Sensing Resistor: 249 Ω Accuracy: ± 1 % error
	Frequency	Range: 0.5 Hz to 10 kHz Accuracy: ± 1 % error Impedance: 1 M Ω Configurable 1.5 k Ω pull-up or pull-down resistor
	PWM	Range: 0.5 Hz to 10 kHz Accuracy: ± 1 % error Impedance: 1 M Ω Configurable 1.5 k Ω pull-up or pull-down resistor
	Digital	Active high or active low Configurable 1.5 k Ω pull-up or pull-down resistor Low: 2 V max. High: 3 V min. and 43 V max.
Resistive Inputs (Inputs #1 to #4)	4x resistive inputs Range: 10 Ω to 250 k Ω Accuracy: ± 2 % error	
Timers and Counters	Some inputs and outputs share timer and counter. Refer to user manual for details.	
Input Grounds	Provided	
Protection	Protected against shorts to Ground or +V _{CC}	

Outputs

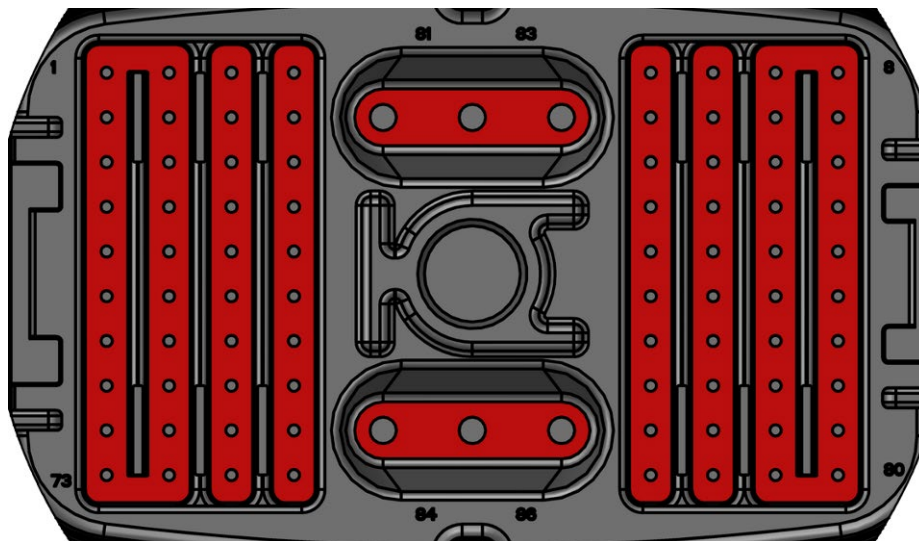
Analog / Digital Outputs	12x analog/digital outputs programmable as follows. All modes support output signal feedback measurement.	
	Voltage	Ranges: 0-5 V, 0-10 V, ± 5 V, ± 10 V Resolution: 1 mV Accuracy: ± 1 % error
	Current	Ranges: 0-20 mA, 4-20 mA Resolution: 0.5 μ A Accuracy: ± 1 % error
	Frequency	Range: 0.5 Hz to 50 kHz Accuracy: ± 1 % error Amplitude: 5 V or 8 V Load: 20 mA max.
	PWM	Range: 1 Hz to 10 kHz Duty Cycle: 0-100 % Accuracy: ± 1 % error Amplitude: 5 V or 8 V Load: 20 mA max.
	Digital	On/off
PWM / Digital Output	1x PWM digital output selectable as follows. All modes support output signal feedback measurement.	
	Frequency	Range: 0.5 Hz to 50 kHz Accuracy: ± 1 % error Amplitude: 5 V or 8 V Load: 20 mA max.
	PWM	Range: 1 Hz to 10 kHz Duty Cycle: 0-100 % Accuracy: ± 1 % error Amplitude: 5 V or 8 V Load: 20 mA max.
	Digital	On/off
Digital Outputs	2x high side digital outputs (1 A max.) Short circuit protection provided Shorted output feedback provided	
Voltage References	2x 5 V ± 0.5 % 100 mA max.	
Timers and Counters	Some inputs and outputs share timer and counter. Refer to user manual for details.	

General Specifications

Microcontroller	STM32H725IGK3 32-bit, 1 MB flash memory, 564 KB RAM
Control Logic	Standard embedded software is provided.
User Interface	Axiomatic Electronic Assistant KIT - P/N: AX070506K
Compliance	Designed for SIL2 and PLc functional safety requirements RoHS
Protection	IP67
Operating Conditions	-40 to 85 °C (-40 to 185 °F)
Storage Temperature	-50 to 120 °C (-58 to 248 °F)
Humidity	Protected against 95% humidity non-condensing (30 to 60 °C)
Weight	3.01 lb. (1.36 kg)
Enclosure	Rugged aluminum housing, anodized, with gasket 9.75 in. x 7.06 in. x 2.48 in. (247.7 mm x 179.3 mm x 63.0 mm) L x W x H excludes mating connector. See dimensional drawing for details. <u>Note:</u> Requires cover TE Deutsch P/N: 4828-008-8605 (not included) for high pressure spray applications.
Installation	For mounting information, refer to the dimensional drawing. Mounting holes sized for ¼ in. or M6 bolts. The bolt length will be determined by the user's mounting plate thickness. The mounting flange of the controller is 0.25 in. (6.35 mm) thick. If the module is mounted without an enclosure, it should be mounted to reduce the likelihood of moisture entry. Install the unit with appropriate space available for servicing and for adequate wire harness access (6 in. or 15 cm) and strain relief (12 in. or 30 cm). Wires should be of the appropriate gauge to meet requirements of applicable electrical codes and suit the specifications of the connector. The module must be mounted in an enclosure in hazardous locations. All field wiring should be suitable for the operating temperature range of the module. All chassis grounding should go to a single ground point designated for the machine and all related equipment.

Table - Electrical Pin Out

Electrical Connections	86-pin connector TE Deutsch P/N: DRCP25-86PAA-G005 Please refer to Table - Electrical Pin Out.
Mating Plug	Mates with TE Deutsch P/N: DRCP28-86SX A mating plug KIT is available from Axiomatic under P/N: AX070164 (comprises TE Deutsch DRCP28-86SA, 6x 0462-203-12141 solid sockets, and 80x 0462-005-20141 solid sockets). The 0462-005-20141 sockets accept 16-18 AWG wires. The 0462-203-12141 sockets accept 12-14 AWG wires. Please note that there are no wires in this plug kit. Secure harness with tie wraps for high vibration applications.

**Left Part of the Connector**

Pin	Function	Pin	Function	Pin	Function	Pin	Function
1	Input 1	2	Signal Return	3	Input 2	4	Signal Return
9	Input 3	10	Signal Return	11	Input 4	12	Signal Return
17	Input 5	18	Signal Return	19	Input 6	20	Signal Return
25	Input 7	26	Signal Return	27	Input 8	28	Signal Return
33	Analog/Digital Output 1	34	Signal Return	35	Analog/Digital Output 2	36	Signal Return
41	Analog/Digital Output 3	42	Signal Return	43	Analog/Digital Output 4	44	Signal Return
49	Analog/Digital Output 5	50	Signal Return	51	Analog/Digital Output 6	52	Signal Return
57	Digital Output 1	58	Signal Return	59	Digital Output 2	60	Signal Return
65	CAN 3 High	66	CAN 3 Low	67	+5V Reference 1	68	+5V Reference 2
73	Ignition	74	Not used	75	PWM/Digital Output	76	Signal Return

Right Part of the Connector

Pin	Function	Pin	Function	Pin	Function	Pin	Function
5	Signal Return	6	Input 9	7	Signal Return	8	Input 10
13	Signal Return	14	Input 11	15	Signal Return	16	Input 12
21	Signal Return	22	Input 13	23	Signal Return	24	Input 14
29	Signal Return	30	Input 15	31	Signal Return	32	Input 16
37	Signal Return	38	Analog/Digital Output 11	39	Signal Return	40	Analog/Digital Output 12
45	Signal Return	46	Analog/Digital Output 9	47	Signal Return	48	Analog/Digital Output 10
53	Signal Return	54	Analog/Digital Output 7	55	Signal Return	56	Analog/Digital Output 8
61	CAN 2 Low	62	CAN 2 High	63	CAN 1 Low	64	CAN 1 High
69	Not used	70	Not used	71	Not used	72	Not used
MDI RX				MDI TX			
77	RX P	78	RX N	79	TX P	80	TX N

Centre Part of the Connector

Pin	Function	Pin	Function	Pin	Function
81	Battery +	82	Battery -	83	Not used
84	Battery +	85	Battery -	86	Not used

Dimensional Drawing

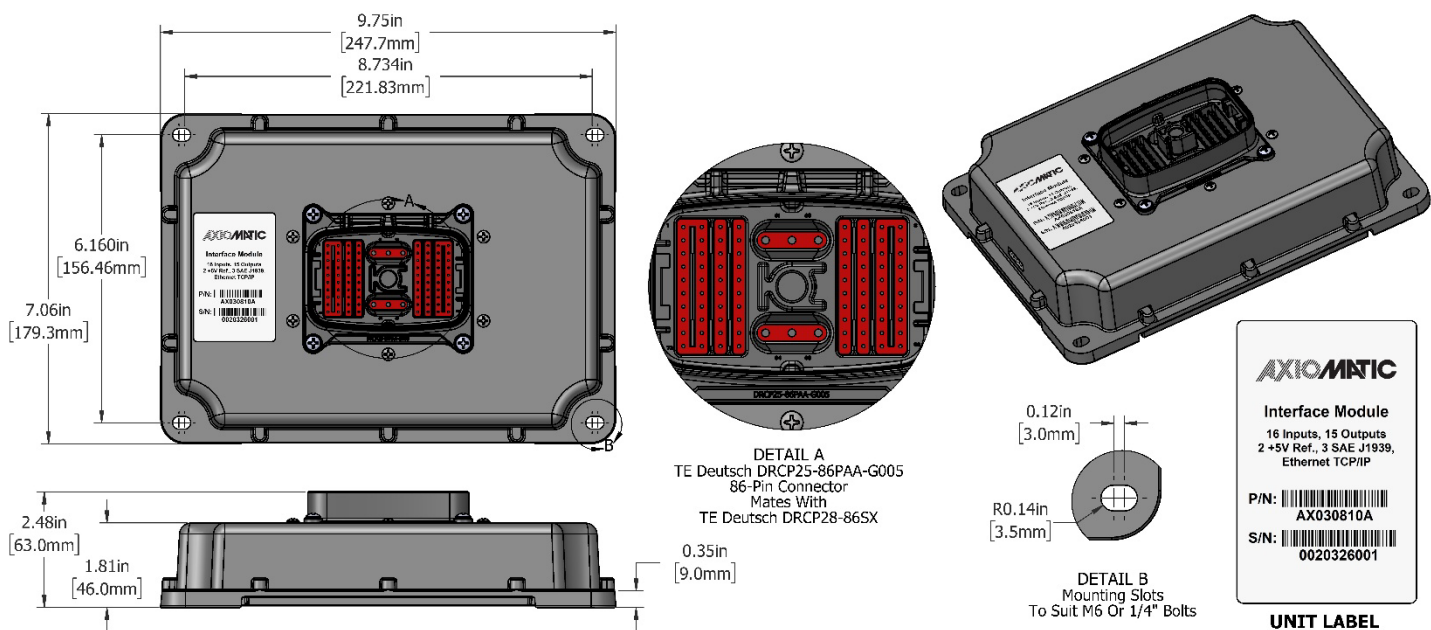


Figure 2 – Dimensional Drawing

TDAX030810A-08/25/2026

OUR PRODUCTS

AC/DC Power Supplies
Actuator Controls/Interfaces
Automotive Ethernet Switches
Battery Chargers
CAN Controls, Routers, Repeaters
CAN/WiFi
CAN/Bluetooth (Classic, BLE)
CAN bus Routers
CANopen I/O Modules
Current/Voltage/PWM Converters
DC/DC Power Converters
Engine Temperature Scanners
Ethernet/CAN Converters, Gateways
Ethernet Switches
Fan Drive Controllers
Gateways, CAN/Modbus, RS-232
Gyroscopes, Inclinometers
Hydraulic Valve Controllers
Inclinometers, Triaxial
I/O Controls
LVDT Signal Converters
Machine Controls
Media Converters
Modbus, RS-422, RS-485 Controls
Motor Controls, Inverters
Power Supplies, DC/DC, AC/DC
PWM Signal Converters/Isolators
Resolver Signal Conditioners
SAE J1939 I/O Modules
Service Tools
Signal Conditioners, Converters
Strain Gauge CAN Controls
Surge Suppressors

OUR COMPANY

Axiomatic provides electronic machine control components to the off-highway, commercial vehicle, electric vehicle, power generator set, material handling, renewable energy and industrial OEM markets. ***We innovate with engineered and off-the-shelf machine controls that add value for our customers.***

QUALITY DESIGN AND MANUFACTURING

We have an ISO9001 registered R&D, electronics design and manufacturing facility in Canada.

Sales offices are in Canada, USA, Australia and Finland.

COMPLIANCE

Product compliance details can be found in the product literature and/or on axiomatic.com. Any inquiries should be sent to sales@axiomatic.com.

SAFE USE

All products should be serviced by Axiomatic. Do not open the product and perform the service yourself.



This product can expose you to chemicals which are known in the State of California, USA to cause cancer and reproductive harm. For more information go to www.P65Warnings.ca.gov.

TECHNICAL SUPPORT

Contact technical support by emailing support@axiomatic.com.

WARRANTY, APPLICATION APPROVALS/LIMITATIONS

Axiomatic Technologies Corporation reserves the right to make corrections, modifications, enhancements, improvements, and other changes to its products and services at any time and to discontinue any product or service without notice. Customers should obtain the latest relevant information before placing orders and should verify that such information is current and complete. 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 at <https://www.axiomatic.com/service/>.

SERVICE

All products to be returned to Axiomatic require a Return Materials Authorization Number (RMA#) from rma@axiomatic.com. Please provide the following information when requesting an RMA number:

- Serial number, part number, Runtime hours, description of problem
- Wiring set up diagram, application and other comments as needed

DISPOSAL

Axiomatic products are electronic waste. Please follow your local environmental waste and recycling laws, regulations and policies for safe disposal or recycling of electronic waste.

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