

Interface Module, 16x Inputs, 15x Outputs

16x Universal (including 4x Resistive) Inputs
12x Universal, 2x High-Side Digital, & 1x PWM Outputs
2x 5 V References
3x CAN Ports (SAE J1939)

1x Ethernet Port (TCP/IP) (pending)

Designed for SIL2 and PLC Functional Safety Requirements
Configurable with Axiomatic Electronic Assistant

P/N: AX030810

Features

- 16x universal inputs user selectable as follows.
 - 0-5 V, 0-10 V
 - 0-20 mA, 4-20 mA
 - Frequency (0.5 Hz to 10 kHz)
 - PWM (0.5 Hz to 10 kHz)
 - Digital (Active high or active low)
- 4x resistive inputs (inputs 1 to 4) from 10 Ω to 250 k Ω
- 12x universal outputs user programmable as follows.
 - 0-5 V, 0-10 V, ± 5 V, ± 10 V
 - 0-20 mA, 4-20 mA
 - Frequency (0.5 Hz to 50 kHz)
 - PWM (1Hz to 10 kHz)
 - 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



Applications

- Off-highway equipment
- Industrial automation

Ordering Part Numbers

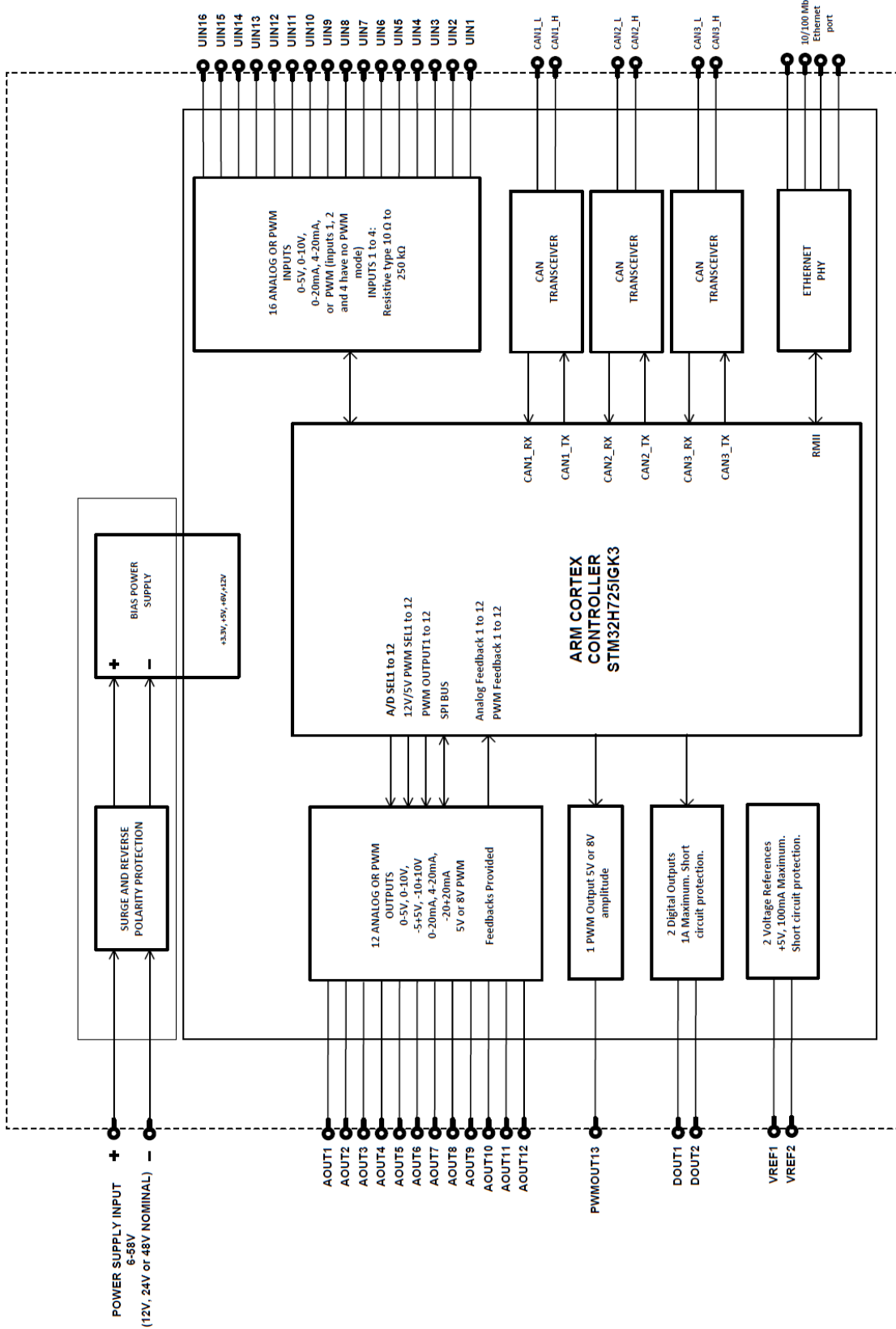
Interface Module, 16 Inputs, 15 Outputs, SAE J1939 - P/N: **AX030810**

Accessories:

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

Mating Plug KIT - P/N: **AX070164** (For details, refer to the General Specifications below)

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 VDC nominal (6 to 58 VDC power supply range)
Quiescent Current	151 mA @ 12 VDC; 85 mA @ 24 VDC; 67 mA @ 48 VDC (typical)
Protection	Surge and transient protection Reverse polarity protection Undervoltage protection down to 5 V. Overvoltage protection is up to 59.5 V.

Inputs

Universal Inputs	16x universal signal inputs user selectable as voltage, current, frequency, PWM, or digital signal types.	
	Voltage	Ranges: 0-5 V, 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, 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: max. 2 V High: min. 3 V and max. 43 V
12-bit analog to digital resolution (voltage, current)		
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 +Vcc	

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 - 50 kHz Accuracy: ± 1 % error Amplitude: 5 V or 8 V Load: 20 mA max.
	PWM	Range: 1 Hz - 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 - 50 kHz Accuracy: ± 1 % error Amplitude: 5 V or 8 V Load: 20 mA max.
	PWM	Range: 1 Hz - 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 % Max. 100 mA	
Timers and Counters	Some inputs and outputs share timer and counter. Refer to user manual for details.	

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) 10/100 Mbit/s
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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
Operating Conditions	-40 to 85 °C (-40 to 185 °F)
Storage Temperature	-50 to 120 °C (-58 to 248°F)
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. Note: Requires cover TE Deutsch P/N: 4828-008-8605 (not included) for high pressure spray applications.
Humidity	Protected against 95% humidity non-condensing, 30 to 60 °C
Protection	IP67
Weight	3.01 lb. (1.363 kg)
Electrical Connections	86-pin connector TE Deutsch P/N: DRCP25-86PAA-G005s 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, 80x 0462-203-12141 solid sockets, and 6x 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.
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.

Dimensional Drawing

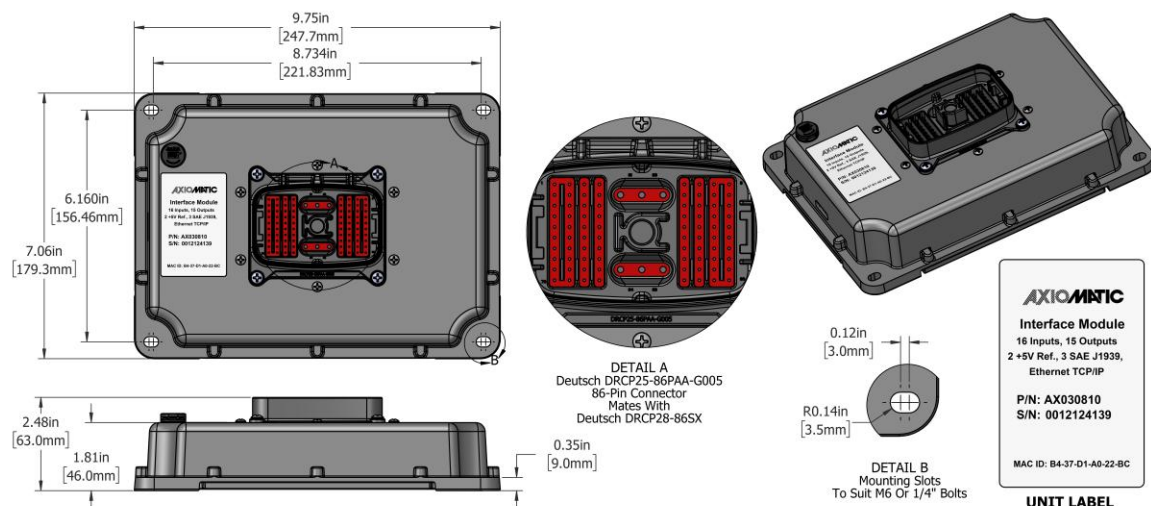
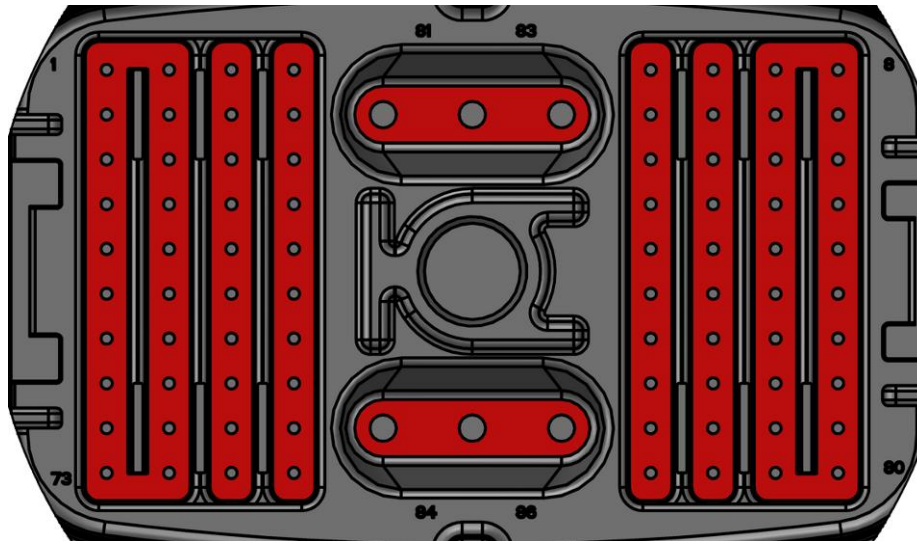


Table - Electrical Pin Out



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

TDAX030810-01/28/2026