

Multiple I/O Controller, SAE J1939

P/N: AX028030

Applications

The controller is designed to be applied in an industrial control panel for engine applications.

Ordering Part Numbers

Multiple I/O Controller, SAE J1939 - P/N: AX028030

Accessories:

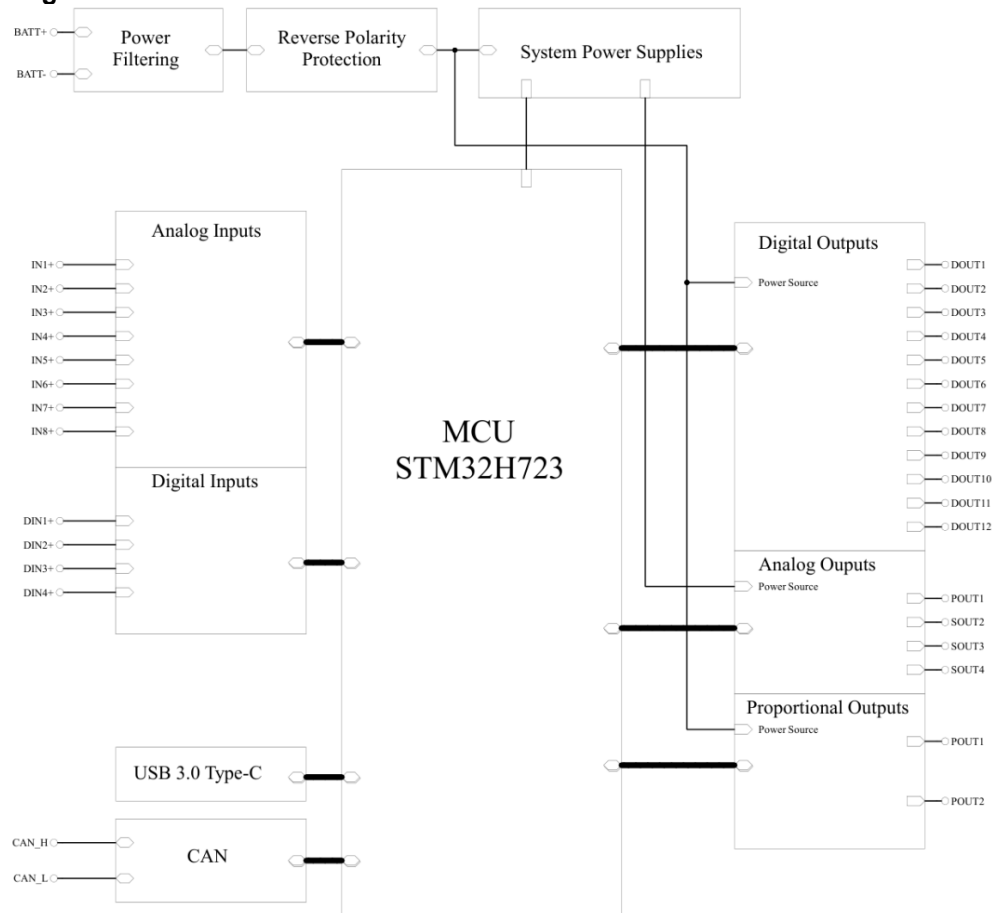
Axiomatic Electronic Assistant KIT - P/N: AX070502 or AX070506K

Features

- 4x digital and 8x analog inputs
- 12x digital, 4x analog, and 2x Proportional / PWM outputs (3 A)
- 1x CAN port (SAE J1939) with auto-baud-rate detection and 1x USB 2.0 type-C port (full-speed)
- 12 or 24 VDC nominal
- 3x bicolour red/green and 16x green LED indicators (read below for details)
- Operates from -40 to 85 °C (-40 to 185 °F)
- Configurable with Axiomatic Electronic Assistant



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/>.

All specifications are typical at nominal input voltage and 25 °C unless otherwise specified.

Power Supply

Power Input	12 or 24 VDC nominal 8 to 36 VDC power supply range
Quiescent Current	80 mA @ 12 VDC; 50 mA @ 24 VDC typical
Protection	Reverse polarity protection is provided. Surge and transient protection are provided.

Inputs

Digital Inputs	4x digital signal inputs configurable as frequency, PWM, or digital Non-configurable 24.9 kΩ pulldown resistor 1x green LED per digital input (turns green when the input is in use)														
	Frequency	Range: Up to 10 kHz Accuracy: ±0.2 % error													
	PWM	Range: Up to 10 kHz Duty Cycle: 0 to 100 % Accuracy: ±1 % error													
	Digital	Active High or Active Low Active Low: 1.5 V max. Active High: 3.5 V min. (rated up to 36 V) Green LED for visual indication of Active High													
Analog or Digital Inputs	8x analog or digital signal inputs selectable as voltage, current, or digital 12-bit analog to digital conversion Input Update Rate: 1.67 ms (dependent on analog filter settings)														
	Voltage	<table><tr><th>Range (V)</th><th>Impedance (kΩ)</th><th>Resolution (mV)</th></tr><tr><td>0 to 2.5</td><td>High</td><td>< 0.6</td></tr><tr><td>0 to 5</td><td>204</td><td>< 1.5</td></tr><tr><td>0 to 10</td><td>136</td><td>< 3</td></tr></table> Accuracy: ±0.2 % error		Range (V)	Impedance (kΩ)	Resolution (mV)	0 to 2.5	High	< 0.6	0 to 5	204	< 1.5	0 to 10	136	< 3
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0 to 2.5	High	< 0.6													
0 to 5	204	< 1.5													
0 to 10	136	< 3													
	Current	Range: 0-20 mA or 4-20 mA Resolution: < 6 μA Accuracy: ±0.2 % error Impedance: 124 Ω 24 mA / 3 V max													
	Digital	Active High or Active Low Active Low: 1 V max. Active High: 2.3 V min. (rated up to 36 V)													
Protection	Protected against shorts to Ground or +V _{PS}														

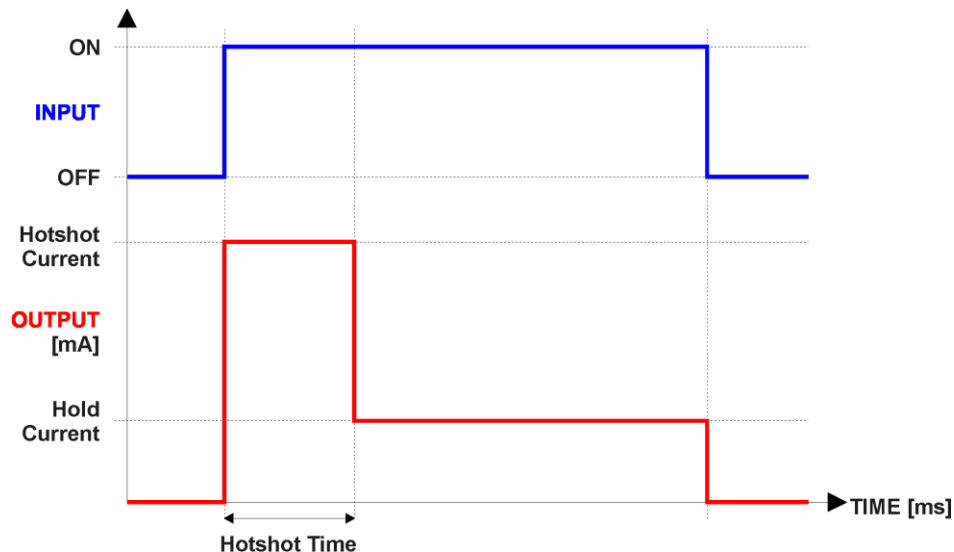


Figure 1.0 – Hotshot Digital Profile

Outputs

Digital Outputs	12x digital outputs 100 mA per output Sourcing from power supply or output off 1x green LED per output (turns green when ON)																
Analog outputs	4x analog outputs configurable as current, voltage, digital hotshot, or digital on/off 12-bit analog-to-digital conversion <table> <tr> <td>Voltage</td><td> <table> <tr> <th>Range (V)</th><th>Resolution (mV)</th></tr> <tr> <td>0 to 2.5</td><td>< 0.6</td></tr> <tr> <td>0 to 5</td><td>< 1.5</td></tr> <tr> <td>0 to 10</td><td>< 3</td></tr> </table> Accuracy: $\pm 5\%$ error Load: 20 mA max. </td></tr> <tr> <td>Current</td><td> Ranges: 0-20 mA or 4-20 mA Resolution: < 6 μA Accuracy: $\pm 1\%$ error Compliance Voltage: 20 V Load: 1 kΩ max. </td></tr> <tr> <td>Digital Hotshot</td><td>See Figure 1.0</td></tr> <tr> <td>Digital On/Off</td><td>Sourcing from power supply or output off 2.5 V, 20 mA max. per output</td></tr> </table>	Voltage	<table> <tr> <th>Range (V)</th><th>Resolution (mV)</th></tr> <tr> <td>0 to 2.5</td><td>< 0.6</td></tr> <tr> <td>0 to 5</td><td>< 1.5</td></tr> <tr> <td>0 to 10</td><td>< 3</td></tr> </table> Accuracy: $\pm 5\%$ error Load: 20 mA max.	Range (V)	Resolution (mV)	0 to 2.5	< 0.6	0 to 5	< 1.5	0 to 10	< 3	Current	Ranges: 0-20 mA or 4-20 mA Resolution: < 6 μA Accuracy: $\pm 1\%$ error Compliance Voltage: 20 V Load: 1 kΩ max.	Digital Hotshot	See Figure 1.0	Digital On/Off	Sourcing from power supply or output off 2.5 V, 20 mA max. per output
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Digital Hotshot	See Figure 1.0																
Digital On/Off	Sourcing from power supply or output off 2.5 V, 20 mA max. per output																
Proportional Outputs	2x half-bridge outputs selectable as proportional current, proportional voltage, hotshot digital, PWM, or digital On/Off Current sensing, grounded load High frequency drive 1x bicolour red/green LED per proportional output (green if ON, red if ERROR) <table> <tr> <td>Proportional Current</td><td> Range: High side sourcing up to 3 A Accuracy: $\pm 2\%$ error </td></tr> <tr> <td>Proportional Voltage</td><td> Ranges: 0-V_{PS} Accuracy: $\pm 5\%$ error </td></tr> <tr> <td>Hotshot Digital</td><td>See Figure 2.0</td></tr> <tr> <td>PWM</td><td> Frequency Range: 0.1 Hz to 25 kHz Duty Cycle: 0-100 % Accuracy: $\pm 1\%$ error </td></tr> <tr> <td>Digital On/Off</td><td>Sourcing from power supply or output off Load at supply voltage must not draw more than 3 A</td></tr> </table>	Proportional Current	Range: High side sourcing up to 3 A Accuracy: $\pm 2\%$ error	Proportional Voltage	Ranges: 0-V_{PS} Accuracy: $\pm 5\%$ error	Hotshot Digital	See Figure 2.0	PWM	Frequency Range: 0.1 Hz to 25 kHz Duty Cycle: 0-100 % Accuracy: $\pm 1\%$ error	Digital On/Off	Sourcing from power supply or output off Load at supply voltage must not draw more than 3 A						
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PWM	Frequency Range: 0.1 Hz to 25 kHz Duty Cycle: 0-100 % Accuracy: $\pm 1\%$ error																
Digital On/Off	Sourcing from power supply or output off Load at supply voltage must not draw more than 3 A																
Protections	Short circuit protection																

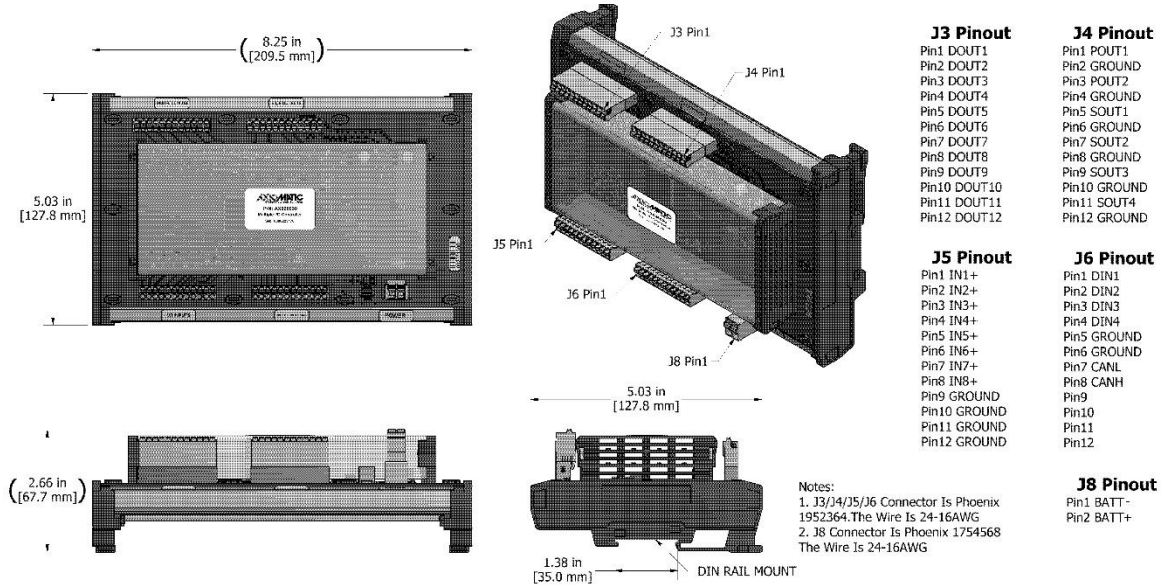
General Specifications

Microcontroller	STM32H723ZGT6, 32-bit, 1 MB flash memory
Control Logic	User programmable functionality using Axiomatic Electronic Assistant KIT
USB	1x USB 2.0 type-C (full-speed) For communication between the controller's CAN bus, a PC based software, and other devices on the CAN network
CAN	1x CAN port (SAE J1939) Supported baud rates: 250 kbit/s, 500 kbit/s, 667 kbit/s, 1Mbit/s with auto-baud-rate detection
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 High and CAN Low terminals at both ends of the network.
Communication LED	1x bicolour red/green LED Green for activity, Red if USB not connected
User Interface & Reflashing	Axiomatic Electronic Assistant P/Ns: AX070502 and AX070506K
Protection	IP20
Operating Temperature	-40 to 85 °C (-40 to 185 °F)
Vibration	IEC-60068-2-6:2007-12 2g peak (Sine component)
Shock	IEC 60068-2-27:2008-02 15g peak
Weight	0.318 kg (0.7 lb.)
Enclosure	Phoenix Contact DIN rail mount Refer to dimensional drawing.
Mounting	DIN rail mount, TH 35-7.5

Electrical Connections

Electrical Connections	J8	
	Pin	Description
	1	Battery -
	2	Battery +
	J5	
	Pin	Description
	1	Input 1
	2	Input 2
	3	Input 3
	4	Input 4
	5	Input 5
	6	Input 6
	7	Input 7
	8	Input 8
	9	Ground
	10	
	11	
	12	
	J6	
	Pin	Description
	1	Digital Input 1
	2	Digital Input 2
	3	Digital Input 3
	4	Digital Input 4
	5	Ground
6		
7	CAN Low	
8	CAN High	
9	Not Used	
10	Not Used	
11	Not Used	
12	Not Used	
J4		
Pin	Description	
1	Proportional Output 1	
2	Ground	
3	Proportional Output 2	
4	Ground	
5	Analog Output 1	
6	Ground	
7	Analog Output 2	
8	Ground	
9	Analog Output 3	
10	Ground	
11	Analog Output 4	
12	Ground	
J3		
Pin	Description	
1	Digital Output 1	
2	Digital Output 2	
3	Digital Output 3	
4	Digital Output 4	
5	Digital Output 5	
6	Digital Output 6	
7	Digital Output 7	
8	Digital Output 8	
9	Digital Output 9	
10	Digital Output 10	
11	Digital Output 11	
12	Digital Output 12	
Mating Plugs (Provided with the unit)	1x Phoenix Contact 1754568 terminal block plug, 2-pin, straight 4x Phoenix Contact 1952364 terminal block plug, 12-pin, straight	

Dimensional Drawing



Form: TDAX028030-05/21/2026