

3 Universal Inputs, 2 Outputs Motor Controller, H-Bridge

CAN (SAE J1939)
2 Half-Bridge Outputs
+5 V or +8 V Reference
P/N: AX103000

Features

- 3 universal signal inputs selectable as:
 - Voltage
 - PWM
 - Frequency
 - Digital signal
- 2 half-bridge outputs (maximum 2.5 A) selectable as:
 - Proportional current
 - Hotshot digital
 - PWM duty cycle
 - Proportional voltage
 - ON/OFF digital
- Outputs configurable as:
 - 1 H-Bridge
 - 2 individual High-side/Low-side outputs
- Voltage reference: +5 V or +8 V programmable
- Operational voltage: 8 to 36 Vdc (12 Vdc or 24 Vdc)
- 1 CAN port (SAE J1939) with auto-baud-rate detection
- Integrated 12-pin connector
- Compact
- Laser-welded enclosure, IP67
- Configure with Axiomatic Electronic Assistant



Applications

- Machine control systems for actuators, valves and DC motors.

Ordering Part Number

3 Universal Inputs, 2 Outputs Motor Controller, H-Bridge, CAN (SAE J1939) with auto-baud-rate detection, P/N: **AX103000**

Accessories:

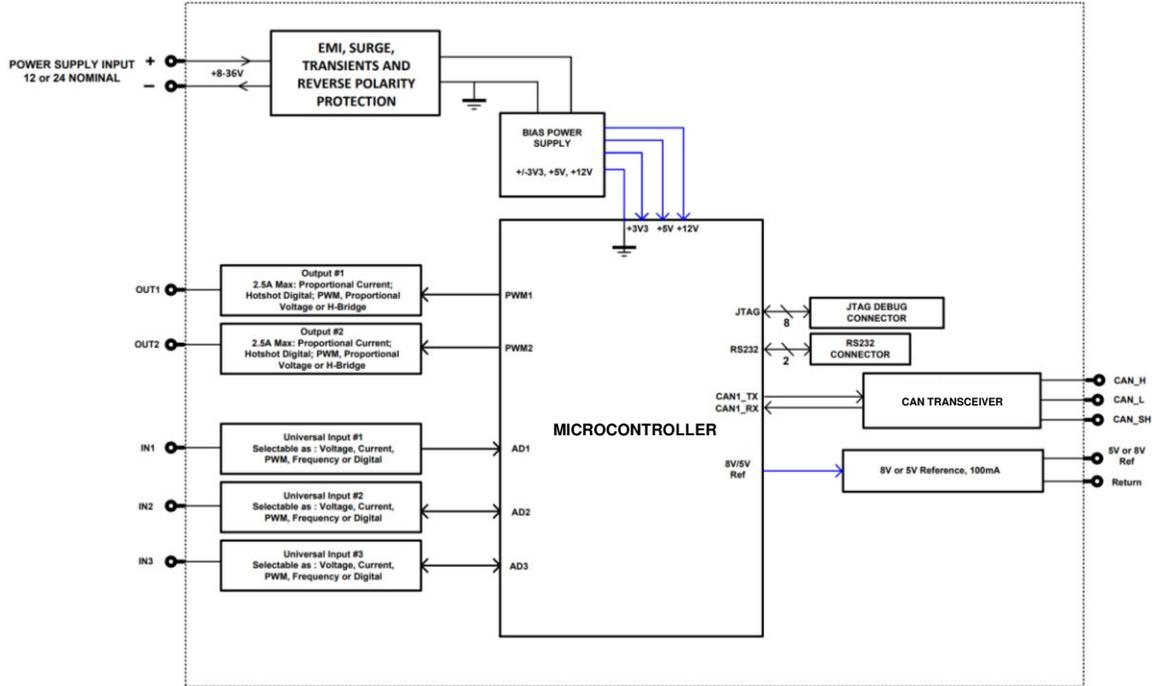
Mating Plug KIT, P/N: **PL-DTM06-12SA**

Axiomatic Electronic Assistant Configuration KIT, P/N: **AX070502** or **AX070506K**

Description

This H-bridge controller measures numerous types of input signals and provides different outputs. It has three Universal Inputs. The two outputs can provide up to 2.5 A of current. Each output is a half-bridge. They form a full H-bridge when used together. Flexible circuit design gives the user a wide range of configurable input and output types. Powerful control algorithms allow the user to program the controller for a wide range of applications without the need for custom firmware. It features auto-baud-rate detection.

Functional 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 V, 24 Vdc nominal 8 Vdc to 36 Vdc range
Quiescent Current Draw	36.5 mA @ 12 Vdc; 22.3 mA @ 24 Vdc typical
Protections	Surge protection is provided. Reverse polarity protection up to -80 Vdc is provided. Input overvoltage (37 V) and input undervoltage (6 V) protection is provided. The unit is designed for 202 Vdc based load dump.

Inputs

Inputs	3 universal inputs 12-bit analog to digital (voltage)	
	All 3 inputs are programmable as follows.	
	Voltage Inputs	Range: 0 to 5 V, Impedance (204 K Ω) 0 to 10 V, Impedance (136 K Ω) 1 mV resolution, +/-0.2% error
	PWM Inputs	Frequency: 1 to 10,000 Hz Duty Cycle: 0 to 100%
	Frequency Inputs	Range: 1 to 10,000 Hz 0.01% resolution, +/-0.1% error
Protection	Protected against short circuit to GND or +Vsupply	

Outputs

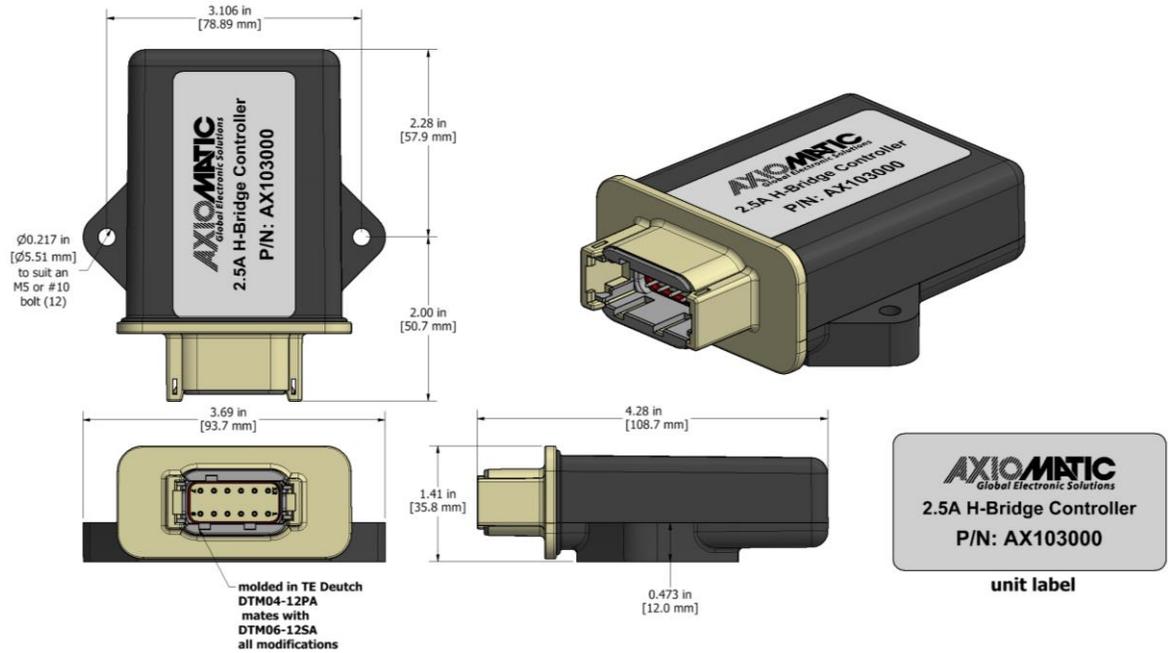
Outputs	2 outputs programmable as follows.	
	Proportional Current Output	1 mA resolution, +/-1% error
	Hotshot Digital Output	Firmware programmable waveform
	High frequency drive	25 kHz
	PWM Output	0.1% resolution, +/-0.1% error
	Proportional Voltage Output	0.1 V resolution, +/-5% error
	On/Off Digital Output	Sourcing from power supply, sinking from output to ground or off.
	The outputs are also configurable as 1 H-Bridge or 2 individual High-Side/Low-Side outputs as follows.	
High-Bridge Type	Current sensing Load connected between two output pins Sourcing up to 2.5 A	
High-Side Type	Half-bridge output Current sensing Load connected to +Vsupply Sourcing up to 2.5 A	
Low-Side Type	Switch to GND Current sensing Load connected to +Vsupply Sinking up to 2.5 A	
Load at power supply voltage must not draw more than 2.5 A.		
Voltage Reference	+5 V or +8 V programmable 100 mA, 2% reference voltage output	
Protection	Overcurrent protection Short-circuit protection in hardware	

General Specifications

Microcontroller	STM32H725RGV3
Communications	1 CAN SAE J1939-compliant port 250 kbit/s, 500 kbit/s, 667 kbit/s, 1 Mbit/s auto-baud-rate detection
Control Logic	Standard embedded control logic is provided. Refer to the User Manual.
User Interface	User configuration and diagnostics are provided with the Axiomatic Electronic Assistant P/N: AX070502 or AX070506K
Compliance	RoHS
Vibration	MIL-STD-202H, method 204, test condition C 10 g peak (Sine) MIL-STD-202H, method 214A, test condition I/B 7.56 Grms (Random)
Shock	MIL-STD-202H, method 213B, test condition A 50 g peak
Operating Conditions	-40°C to 85°C (-40°F to 185°F)
Storage Temperature	-40°C to 105°C (-40°F to 221°F)
Weight	0.25 lb. (0.111 kg)
Protection Rating	IP67
Enclosure and Dimensions	Molded Enclosure, integral connector Nylon 6/6, 30% glass, Laser Welded 4.28 in x 3.69 in x 1.41 in (108.6 mm x 94 mm x 36 mm) Note: L x W x H includes the integral connector Flammability rating: UL 94 HB Refer to Dimensional Drawing.

Electrical Connections	Integral 12-pin receptacle (equivalent to TE Deutsch P/N: DTM04-12P)	
	Pin #	Description
	1	BATT+
	2	+5V or +8V Return
	3	+5V or +8V
	4	Input 1
	5	CAN_L
	6	CAN_SH
	7	CAN_H
	8	Input 3
	9	Input 2
	10	Output 1
	11	Output 2
12	BATT-	
Mating Connectors	Mating Plug KIT P/N: PL-DTM06-12SA (includes 1 DTM06-12SA plug, 1 WM-12S wedgelock, 12 0462-201-20141 solid contacts, and 6 0413-204-2005 sealing plugs)	
Mounting	Mounting holes are sized for #10 or M5 bolts. The bolt length will be determined by the end-user's mounting plate thickness. The mounting flange of the controller is 0.47 inches (12 mm) thick. It should be mounted with connectors facing left or right to reduce likelihood of moisture entry. All field wiring should be suitable for the operating temperature range. Install the unit with appropriate space available for servicing and for adequate wire harness access (6 inches or 15 cm) and strain relief (12 inches or 30 cm).	

Dimensional Drawing



Form: TDAX103000-08/30/2024