

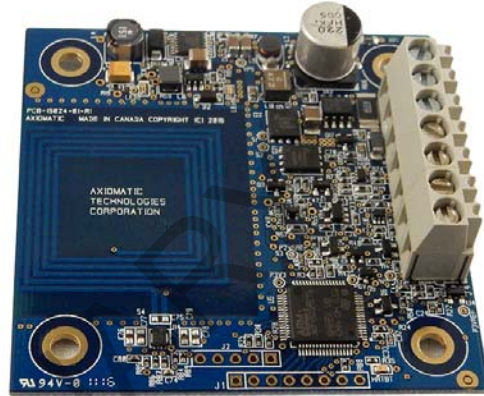
Universal Input, Single Output Valve Controller

With Near Field Communication
Configurable with E-WRITE NFC Application from Google Play

P/N: AX020700

Features:

- 1 universal signal input, user selectable as:
 - Voltage;
 - Current;
 - PWM;
 - Frequency;
 - Counter
 - or Digital.
- 1 output drives a solenoid, user selectable as:
 - proportional current 0-3 A;
 - proportional voltage up to Vps;
 - PWM signal;
 - or digital on/off.
- 12Vdc, 24Vdc nominal
- PCB assembly with a 7 screw terminal connector
- LED indicator
- IP00
- **Near Field Communication (NFC) allows for remote configuration via mobile phone running EWRITE App if placed close to the controller.**
- Flexible user programming for application-specific control logic using a mobile phone and via the EWRITE Application from Google Play.
- Protected and secure communication



Ordering Part Numbers:

AX020700 – Valve Controller PCB

A DIN rail mount model will be available soon.

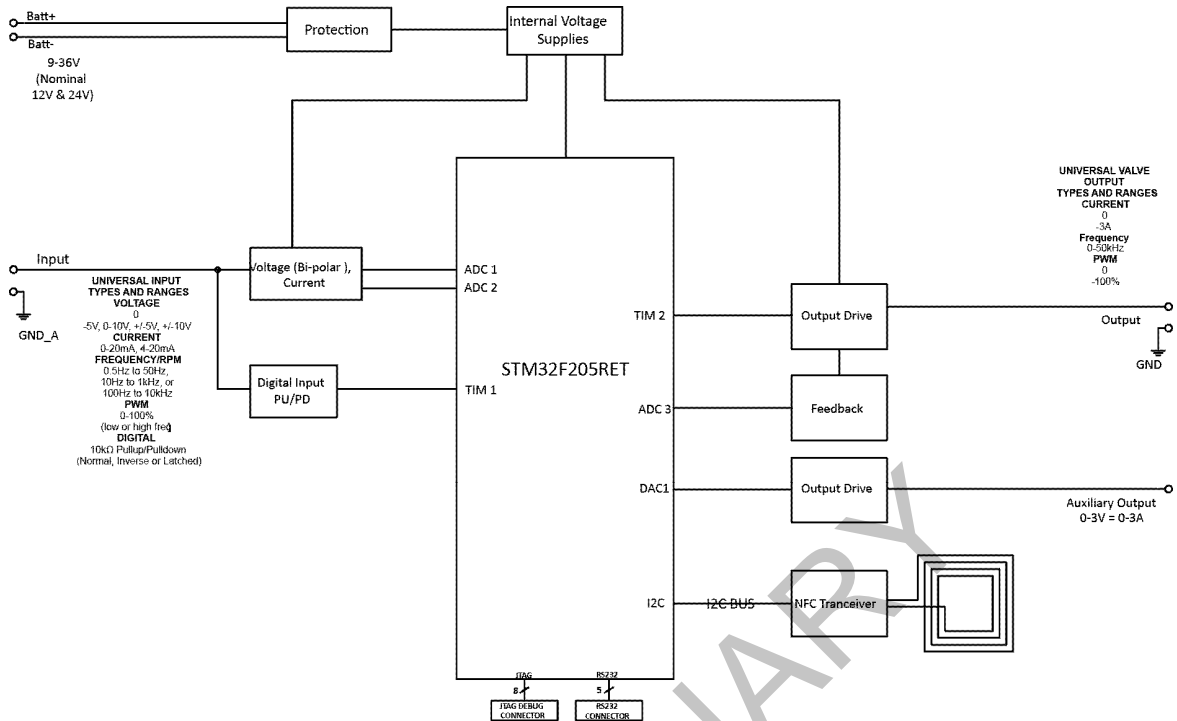
Description:

As a highly flexible controller, it accepts one command signal input and drives a solenoid up to 3A. Many control profile parameters are user configurable. A PCB form factor and DIN rail form factor are available. Operation is from -40 to 85 °C. Designed to interface with 12V or 24V battery power, it is suitable for machine and industrial applications.

Using Near Field Communication (NFC), the wireless valve controller is remotely configurable via a smartphone application. Bringing the two devices within 3 cm* (1 inch) of each other, the NFC technology uses magnetic induction between two loop antennas to communicate within the globally available radio frequency ISM band of 13.56 MHz.

**The distance will vary with different phones.*

BLOCK DIAGRAM



Technical Specifications: All specifications typical at nominal input voltage and 25°C unless otherwise specified. 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 www.axiomatic.com/service.html.

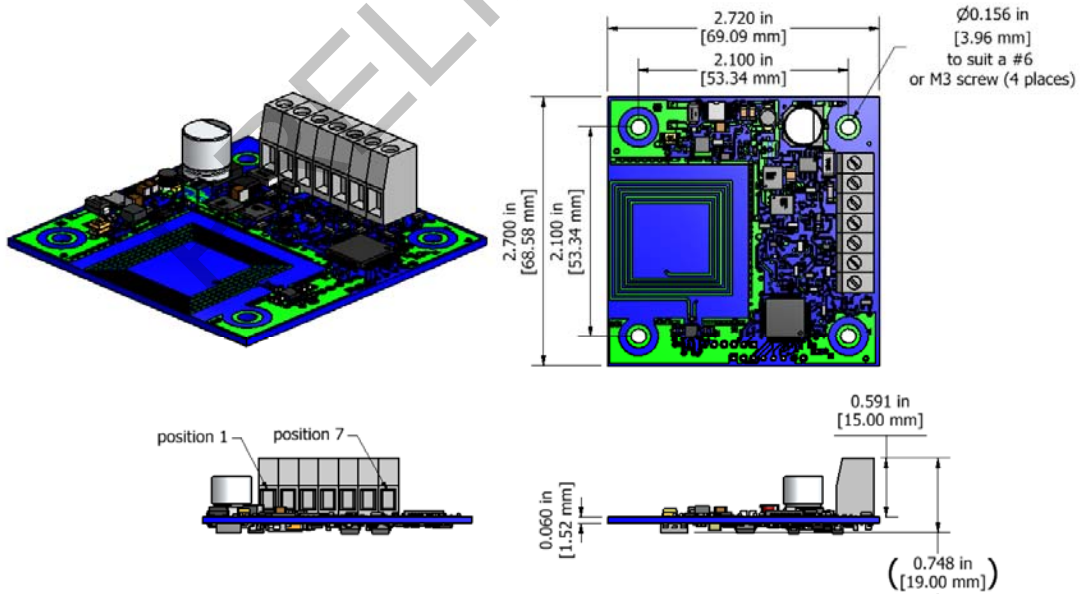


Figure 1.0. – Dimensional Drawing

Input Specifications

Power Supply Input - Nominal	12Vdc or 24Vdc nominal (9...36 VDC power supply range)																																										
Protection	Reverse polarity protection is provided. Overvoltage protection up to 45V is provided. Overvoltage (undervoltage) shutdown of the output load is provided.																																										
Universal Signal Input	Refer to Table 1.0 All inputs are user selectable.																																										
Table 1.0 –User Programmable Universal Input																																											
Analog Input Functions	Voltage Input or Current Input																																										
Voltage Input	0-5 V (Impedance 110 kΩ) 0-10 V (Impedance 130 kΩ) +/- 5V (Impedance 110 kΩ) +/- 10V (Impedance 130 kΩ)																																										
Current Input	0-20 mA (Impedance 249 Ω) 4-20 mA (Impedance 249 Ω)																																										
Discrete Input Functions	Digital Input, PWM Input or Frequency Input																																										
Input	12-bit ADC																																										
Digital Input Level	Accepts 5 V TTL Accepts up to Vps Threshold: Low <1 V High >2.2 V																																										
Digital Input	Active High or Active Low Amplitude: 0 to +Vps																																										
Input Impedance	1 MOhm High impedance, 10KOhm pull down, 10KOhm pull up to +6V																																										
PWM Input	Low Frequency (10 Hz to 1 kHz) High Frequency (100 Hz to 10 kHz) 0 to 100% D.C.																																										
Frequency Input	0.5 Hz to 50 Hz; 10 Hz to 1 kHz; or 100 Hz to 10 kHz 1 to 99% D.C.																																										
Input Accuracy	< 1%																																										
Input	16-bit Timer																																										
Maximum and Minimum Ratings	<table border="1"> <thead> <tr> <th>Characteristic</th> <th>Min</th> <th>Max</th> <th>Units</th> </tr> </thead> <tbody> <tr> <td>Power Supply</td> <td>9</td> <td>36</td> <td>V dc</td> </tr> <tr> <td>Voltage Input</td> <td>0</td> <td>36</td> <td>V dc</td> </tr> <tr> <td>Current Input 0(4)-20 mA</td> <td>0</td> <td>12</td> <td>Vdc</td> </tr> <tr> <td>Digital Input</td> <td>0</td> <td>36</td> <td>Vdc</td> </tr> <tr> <td>PWM Duty Cycle</td> <td>0</td> <td>100</td> <td>%</td> </tr> <tr> <td>PWM Low Frequency</td> <td>10</td> <td>1 000</td> <td>Hz</td> </tr> <tr> <td>PWM High Frequency</td> <td>100</td> <td>10 000</td> <td>Hz</td> </tr> <tr> <td>PWM Voltage pk - pk</td> <td>0</td> <td>36</td> <td>V dc</td> </tr> <tr> <td>Frequency</td> <td>0.5</td> <td>10 000</td> <td>Hz</td> </tr> </tbody> </table>			Characteristic	Min	Max	Units	Power Supply	9	36	V dc	Voltage Input	0	36	V dc	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	V dc	Frequency	0.5	10 000	Hz
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Output Specifications

Output	Up to 3A Half-bridge, High Side Sourcing, Current Sensing, Grounded Load High Frequency (25 kHz) The user can select the following options for output using the E-Write NFC. <ul style="list-style-type: none"> • Proportional Output Current (with current sensing) (0-3A) • Proportional Output Voltage (up to Vps) • Output PWM Duty Cycle (0-100% D.C.) • Digital On/Off (Gnd-Vps)
Configurable Parameters	Refer to Table 2.0.
Output Accuracy	Output Current mode $\leq 1\%$ Output Voltage mode $\leq 1\%$ Output PWM Duty Cycle mode $\leq 1\%$
Output Resolution	Output Current mode 1 mA Output Voltage mode 0.1V Output PWM mode 0.1%
Protection	Overcurrent and short circuit protection
Auxiliary Output	Voltage output is proportional to current output. Short circuit protection is provided.
Auxiliary Output Scale	1V per 1A

Table 2.0 Configurable Output Parameters	
	Range
Minimum current	0A
Maximum current	0-3A
Ramps	0 to 60,000 ms
Dither amplitude (level)	0-400 mA
Current dither frequency	50 to 400Hz
PWM frequency	1Hz to 50 kHz +/-10%

General Specifications

Microprocessor	STM32F205RET6 32-bit, 512 Kbit program flash																
Quiescent Current	Contact Axiomatic.																
LED Indicator	Power, heartbeat and output fault indication																
Response Time	Contact Axiomatic.																
Control Logic	User programmable functionality using																
Communications	Near Field Communication Full-duplex Data rate: 106 kbit/s Complies with ISO1443 (RF protocol), ISO13239, and ISO7816 Protected and secure configuration																
User Interface	E-WRITE NFC Application is available from Google Play. https://play.google.com/store?hl=en																
Operating Conditions	-40 to 85 °C (-40 to 185 °F)																
Dimensions	2.70 x 2.72 x 0.75 inches (68.59 x 69.09 x 19.00 mm) L x W x H Refer to the dimensional drawing.																
Protection	IP00																
Vibration	MIL-STD-202G, Method 204D test condition C (Sine) and Method 214A, test condition B (Random) 10 g peak (Sine) 7.68 Grms peak (Random) Pending																
Shock	MIL-STD-202G, Method 213B, test condition A 50g (half sine pulse, 9ms long, 8 per axis) Pending																
Approvals	CE marking pending																
Weight	0.05 lb. (0.023 kg)																
Electrical Connections	3 Screw Terminals (Wieland P/N: WIEL 25-163-0353-0) 4 Screw Terminals (Wieland P/N: WIEL 25-163-0453-0) Use 14-16 AWG wire for connection to power and solenoid. <table border="1" data-bbox="589 1276 1040 1514"> <thead> <tr> <th>PIN #</th> <th>FUNCTION</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>POWER +</td> </tr> <tr> <td>2</td> <td>POWER -</td> </tr> <tr> <td>3</td> <td>SOLENOID +</td> </tr> <tr> <td>4</td> <td>SOLENOID -</td> </tr> <tr> <td>5</td> <td>INPUT +</td> </tr> <tr> <td>6</td> <td>INPUT GND</td> </tr> <tr> <td>7</td> <td>AUXILIARY OUTPUT</td> </tr> </tbody> </table>	PIN #	FUNCTION	1	POWER +	2	POWER -	3	SOLENOID +	4	SOLENOID -	5	INPUT +	6	INPUT GND	7	AUXILIARY OUTPUT
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Mounting	Mounting holes are sized for #6 or M4 bolts. The bolt length will be determined by the end-user's mounting plate thickness. The mounting flange of the controller is 0.062 inches (1.5 mm) thick. If the module is mounted without an enclosure, it should be mounted vertically 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.																

Form: TDAX020700-04/04/16