TECHNICAL DATASHEET #TDAX020900

Single Valve Controller, DIN 43650A, M12

with Bluetooth

P/N: AX020900

Features:

- Configurable via Bluetooth with CAN2BT smartphone Application
- High frequency switching output (PWM)
- Drives one solenoid up to 2.5A
- Current sensing circuit maintains output regardless of changes in input voltage and coil resistance
- Short circuit proof (in case of solenoid failure or miswiring)
- Can hot swap
- Accepts one current, voltage, PWM. frequency or digital signal input
- +5V reference to power a potentiometer
- 8-36Vdc (12V or 24Vdc nominal)
- -30 to +85°C operating temperature
- Mates to a DIN 43650A interface on a cartridge or block style solenoid valve
- M12 Connector
- LED indicator
- IP67
- CE marking
- Vibration and shock compliance for off-highway applications

Ordering Part Numbers:

Valve Controller with Bluetooth: **AX020900**

Accessories:

The Android app for this is called the **BT MAP** Tool, available from Google Play.

AX070139 M12 Mating Plug with 2 m cable, unterminated

Application: Accurate control of hydraulic and pneumatic proportional solenoid valves used in mobile construction equipment and industrial processes.

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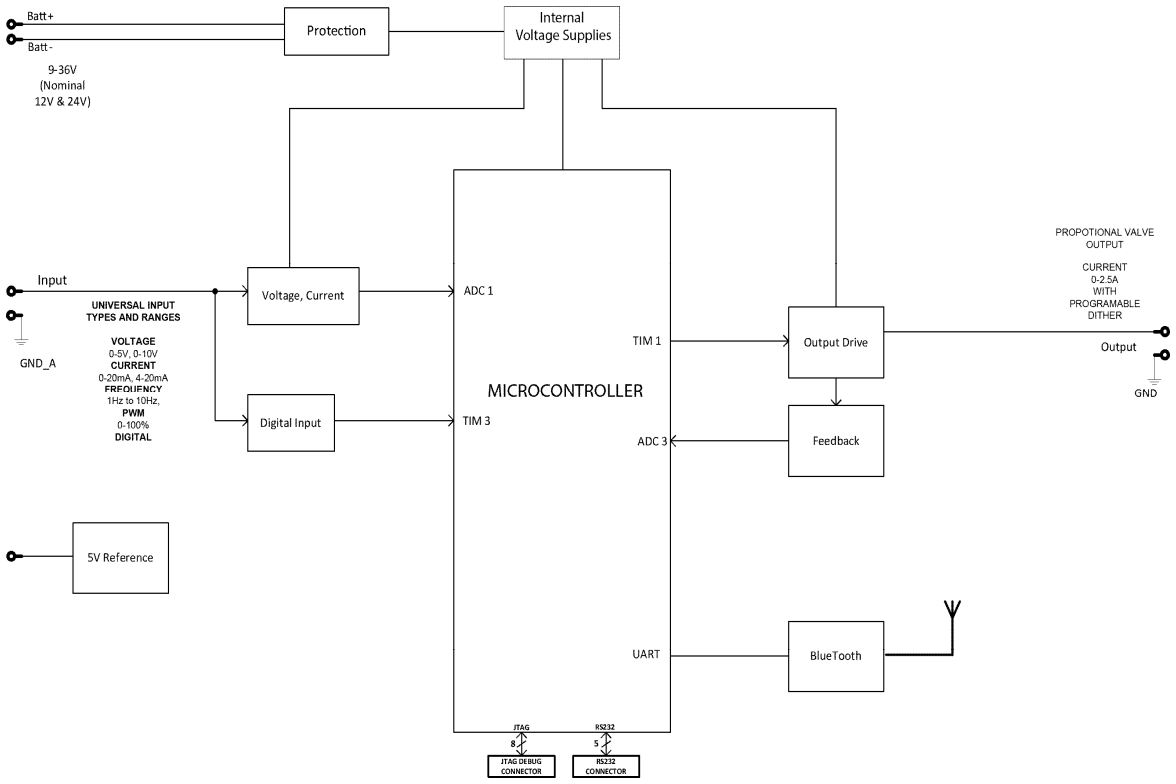
Description: The Valve Controller simplifies control of proportional solenoids by supplying a current proportional to an input control (current, voltage, PWM, frequency or digital signal). It accepts power supply voltages from 8 to 36 VDC. This linear solenoid driver utilizes high frequency switching output (PWM) to provide a DC current output. Maximum current output is up to 2.5 A. A current sensing circuit maintains output current regardless of changes in input voltage and coil resistance. The user can adjust maximum and minimum current. Ramp time, dither frequency and amplitude can also be adjusted to match the application. The unit is available with a DIN 43650 connection to mount directly on the coil. The Bluetooth connection allows the user to transfer data to a PC, smartphone, display or tablet. The setpoints are configurable using the smartphone application. Additionally, the controller includes a configurable dual LED which is visible from outside the housing. It has rugged packaging and performance for IP67, high vibration and off-highway machine environments. An M12 connection is provided.

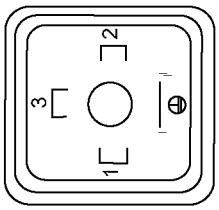
Block Diagram:



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.

Technical Specifications:

Power Supply Input - Nominal	12Vdc or 24Vdc nominal (8…36 VDC power supply range)
Protection	Reverse polarity protection is provided. Overvoltage protection is provided.
Control input signal options	One universal input selectable as: Voltage; Current; PWM; or Digital. 12-bit Analog to Digital (voltage, current) Protected against shorts to GND or +Supply Voltage Types: 0-5V or 0-10V 1mV resolution, +/- 1% accuracy Current Types: 0-20mA Frequency Types: 0.5Hz to 50 Hz, 0.2 Hz resolution 10 Hz to 1 kHz, 2 Hz resolution 100 Hz to 10 kHz, 70 Hz resolution PWM Types: Frequency range: 1 to 10,000 Hz PWM Duty Cycle Range: 0 to 100% 0.01% resolution, +/-1% accuracy Digital Type: Active High up to +Supply or Active Low to Ground
Input resistance	>100 kOhms when not in current sense mode; 124 Ohms in current sense mode
Voltage Reference	1 +5V, 20 mA
Range of maximum output current	up to 2.5 A Minimum and maximum current are user adjustable. Overcurrent protection Short circuit protection in hardware 1mA resolution, accuracy +/-2% error
Output types	User configurable output types, including: • Proportional Current • Hotshot Current
Solenoid resistance selection (nominal)	Nominal resistance of solenoid coil should comply with: Rcoil $\leq$ (Vpower supply - 1.5 V)/I-max.
Current Ramp Ttime	User configurable 0.01-5 sec. independent
Dither Amplitude Current Dither Frequency	User configurable 0 to 10% of rated maximum current 50 to 400 Hz (+/-10% of full scale)
Bluetooth	TI CC2564MODA Bluetooth® Host Controller Interface Module Bluetooth LE V4.1 compliant Connection Range*: Up to TBA m (TBA ft.) Operating Range*: Up to TBA m (TBA ft.) @ 13 dbm (Class 1) Internal antenna **Range depends on the operating environment and actual results may vary.*
Microprocessor	STM32F401CEY6 32-bit, 1024 Kbit program flash
Quiescent Current	15 mA @ 24Vdc; 25 mA @ 12Vdc Typical
LED Indicator	Red/Green LED User configurable

Control Logic	User programmable functionality. Refer to User Manual UMAX020900. There is one Look Up Table. The BTMAP tool allows configuration of the input type, look up table parameters and output.
User Interface	BT MAP Tool application is available from Google Play. https://play.google.com/store/apps/details?id=com.axiomatic.btmaptool
Software Flashing	Not supported
Operating Conditions	-30 to 85 °C (-22 to 185 °F)
Protection	IP67 when correctly installed with lid, o-ring/washer and base gasket
Weight	0.15 lb. (0.068 kg)
Approvals	CE marking
Vibration (Pending)	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)
Shock (Pending)	MIL- STD-202G, Method 213B, test condition A 50g (half sine pulse, 9ms long, 8 per axis)
Enclosure	Hirschmann GDME 2011 black housing (PA material, 94 V1), central screw M3 x 40, transparent cover, washer and o-ring, nitrile rubber gasket DIN 43650-A contact arrangement with 18 mm spacing (plug-style to mount on valve) Contacts: Sn, PA, 94V1 Approvals: VDE, SEV, GL Refer to the dimensional drawing.
Electrical Connectio	One M12 5-position, A-coded Connector, Binder P/n: 09 0437 87 05 1 Power + 2 Power - 3 Input + 4 Input GND 5 +5V Reference DIN 43650A connection to solenoid: NOTE: The EARTH pin (or GND) on the DIN43650A plug is not connected in the AX020900. So, the Input Signal shield wire should be drained at the equipment end. PIN 2 is Solenoid - PIN 3 is Not Used.  The Earth GND is not connected. The input signal shield wire should be drained at the equipment end. PIN 1 is Solenoid +

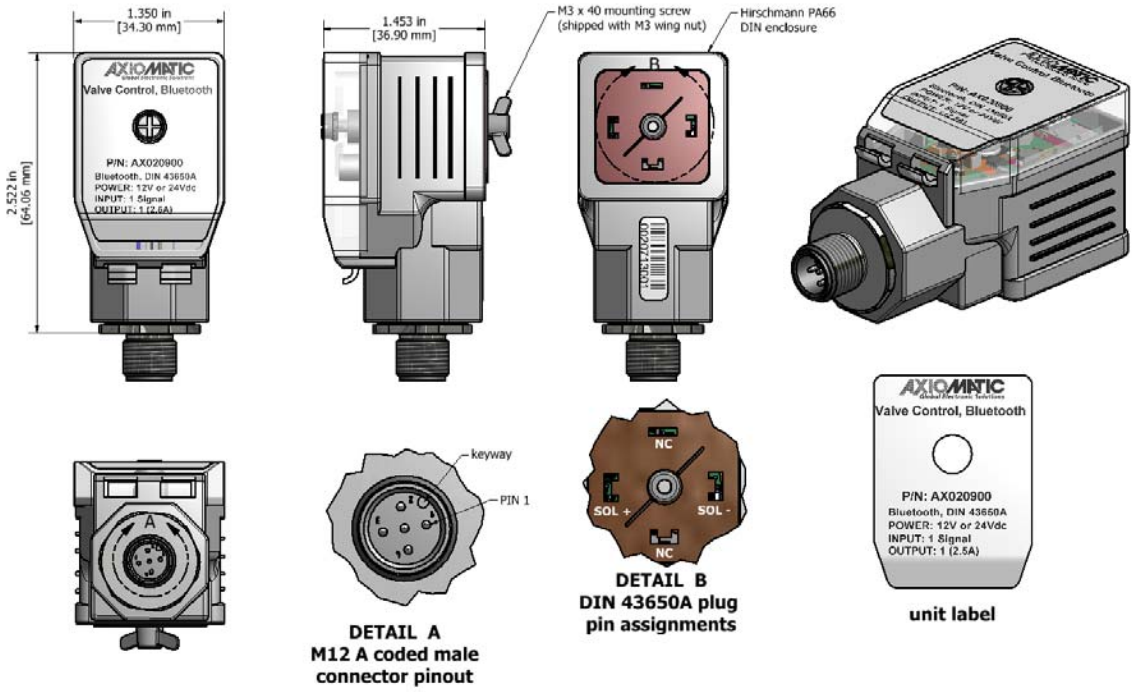


Figure 1.0. – Dimensional Drawing

Note 1: For proper operation of the amplifier, match power supply voltage with rating of solenoid coil. Operating the amplifier with a supply voltage lower than the solenoid rated voltage may result in reduced maximum current output.
Note 2: The coil should have no polarity or protection diodes for proper operation of the device.
Note 3: The maximum current output of the amplifier should not exceed the current rating of the solenoid coil.
Note 4: Bluetooth® is a registered trademark of Bluetooth SIG.

Form: TDAX02900-07/23/18