



BRUCONTROL

Process Automation Made Personal

Model AA-1 Analog Amplifier Board

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Description

This board converts PWM or Analog Output signals from the interface into analog voltages to drive analog (also termed 'proportional') voltage-controlled devices such as proportional valves, variable SSRs, proportional regulators, etc. It has 4 adjustable channels with an additional adjustment to determine the outputs' states when a channel's interface output is disabled or unwired (i.e. high impedance). It takes a 5-24 VDC input and has pass-through terminals for simplified device wiring. The input voltage to board from interface is 3.3 or 5V DC PWM or analog. The output range is adjustable to accommodate 0-5, 0-10, 0-12 VDC, etc. for different controlled device requirements. The maximum output drive current per channel is 45 mA.

Installation

⚠ The order of installation must be followed below. Failing to do so could damage the Analog Amplifier or downstream devices.

1. At the top terminals, wire power and signal inputs as follows:
 - a. V+ to power supply positive, within range of 5 – 24 VDC.
 - b. GND to power supply ground.

- c. IN 1...4 to interface PWM/Analog Out pin, either 3.3 or 5 VDC max. Check the interface's Interface Wiring Map to ensure the pin can produce a PWM/Analog output signal, denoted by the 'P' code.
 2. Without wiring the bottom terminals, each output's voltage upper limit must be established. (e.g. BEFORE COMPLETING THIS PHYSICAL CONNECTION TO THE PROPORTIONAL DEVICE):
 - a. Each PWM/Analog Out pin connected via IN1...4 is associated with a PWM/Analog Output Device Element port in BruControl. That output must be enabled and set to maximum (maximum voltage/value (e.g. BruControl PWM/Analog Output Device Element enabled with uncalibrated output value = 255)).
 - b. Using a volt meter, measure the output associated with each PWM/Analog Out pin / analog amplifier input IN1...4. Turn the associated potentiometer (OUT 1...4) until the controlled device's max allowable analog input voltage is achieved. This would be 5 V for a 0 – 5 V control signal, 10 V for a 0 – 10 VDC control signal, etc. These potentiometers are 25-turn, so it may take multiple turns to achieve the desired voltage.
 - c. Repeat for every channel before wiring to the controlled device to ensure an over-voltage is not induced. This is not established during board manufacture and must be performed by the installer! After each channel is established, the physical connection to the controlled device may be completed per below.
 3. At the bottom terminals, wire:
 - a. V+ to device requiring power. Voltage is the same as V+ above as this is a pass-through connection to facilitate wiring. Max current is 2A per channel.
 - b. GND to device requiring power. This is the same as GND above as this is a pass-through connection to facilitate wiring.
 - c. OUT 1...4 to controlled device (e.g. proportional valve) input signal.
 4. Set OUTx: This potentiometer determines the OUT 1...4 output voltage when the IN1...4 input impedance is high, such as when the associated BruControl PWM/Analog Device Element is disabled or the input is unwired. Turn the potentiometer clockwise to increase the voltage, and counterclockwise to decrease it. Full counterclockwise for 0 VDC is recommended to ensure the controlled device is "off" when the Device

Element is disabled. If turning clockwise, do not continue to increase the OUT 1...4 output voltage above its maximum of 5, 10 etc. VDC. This potentiometer is 25-turn, so it may take multiple turns to achieve the desired voltage.

Contact BruControl at info@brucontrol.com with any questions or concerns.