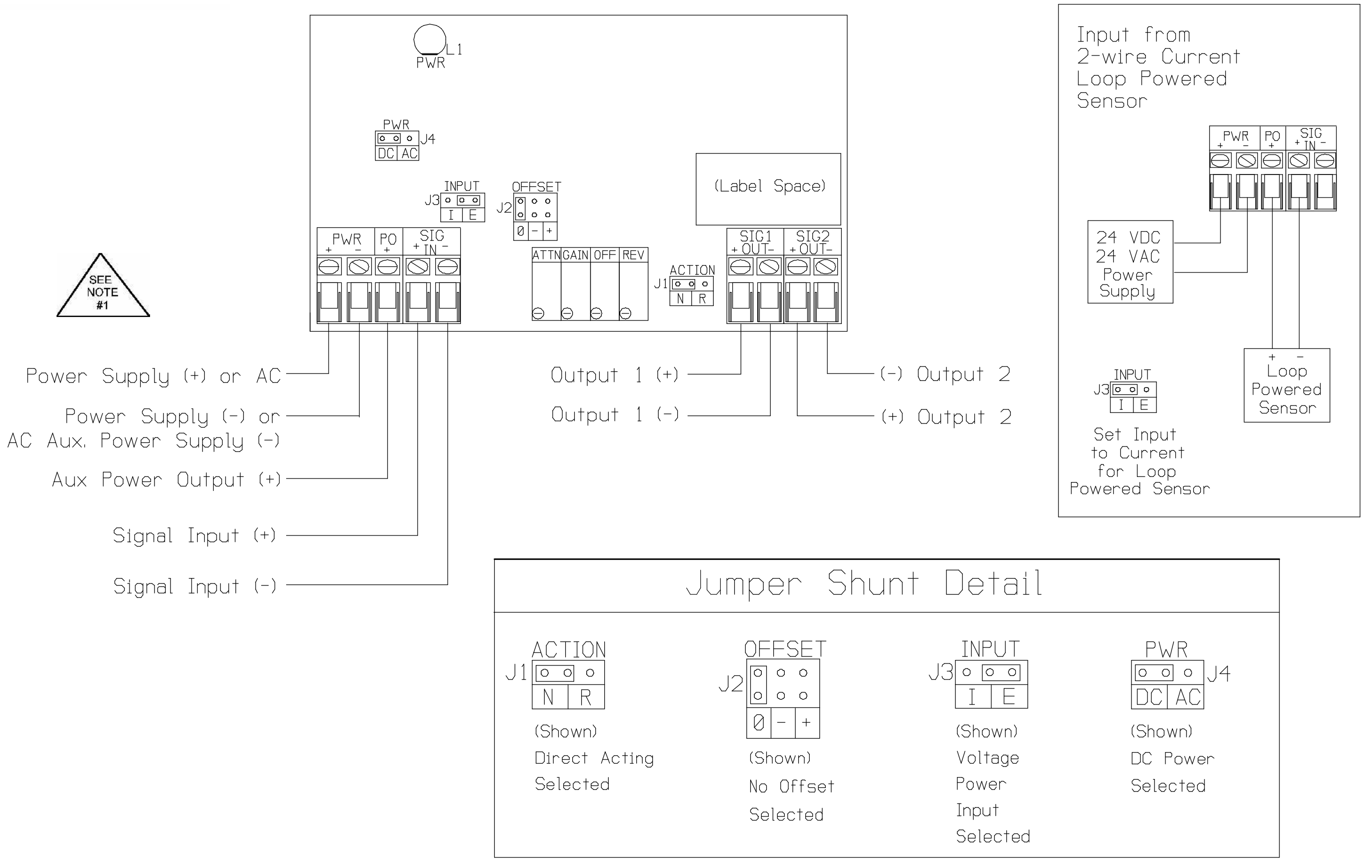
ARM2

Analog Current or Voltage to Dual 4-20 mA Outputs



INSTALLATION

READ THESE INSTRUCTIONS BEFORE YOU BEGIN INSTALLATION.

Ground yourself before touching board. Some components are static sensitive.

MOUNTING:

Circuit board may be mounted in any position. If circuit board slides out of snap track, a non-conductive "stop" may be required. Use only fingers to remove board from snap track. Slide out of snap track or push against side of snap track and lift that side of the circuit board to remove. Do not flex board or use tools.

POWER CONNECTIONS - THIS PRODUCT ACCEPTS 24 VDC or 24 VAC POWER.

Be sure to follow all local and electrical codes. Refer to wiring diagram for connection information. Be sure to make all connections with power off.

NOTE #1

1) DC Power - Refer to wiring diagram for connection information.

   If the 24 VDC power is shared with devices that have coils such as relays, solenoids, or other inductors, each coil must have an MOV, DC Transorb, or diode placed across the coil or inductor. The cathode, or banded side of the DC Transorb or diode, connects to the positive side of the power supply.

2) AC Power - Refer to wiring diagram for connection information.

   Check the wiring configuration of any other loads that may be connected to this transformer. If required by BAS or controller specification, the 24 VAC neutral can be earth grounded at the transformer. Analog input, digital input, and analog output circuits should not be earth grounded at two points. Any field device connected to this transformer must use the same common. If you are not sure of other field device configuration, use separate transformers for isolation.

   If the 24 VAC power is shared with devices that have coils such as relays, solenoids, or other inductors, each coil must have an MOV, AC Transorb, or other spike snubbing device across each of the shared coils. Without these snubbers, coils produce very large voltage spikes when de-energizing that can cause malfunction or destruction of electronic circuits.Refer to wiring diagram for connection information.

3) You should measure the actual voltage output of the secondary. If the output is not fully loaded you may read a higher voltage than the circuit board can handle

The ARM2 does NOT isolate the input signals from the output signals. Use the Analog Isolation Module (AIM1or AIM2) if you need to isolate input signals from output signals.

FACTORY CALIBRATION

The ARM2 is set as follows:

No Attenuation to the Input Signal

Voltage Input Signal

Current Output Signal

Normal Acting Output Signal

No Offset to the Output Signal

Gain of 1 to the Output Signal (1:1). All four (4) pots should be full counterclockwise (you can check them as they may make a slight clicking sound at the end of their range).

The ARM2 can be ordered calibrated to your specifications or you may follow the procedure below to set your own calibration.

Be sure to check the input, output, GAIN and OFFSET specifications of the ARM2. It is possible that the ARM2 cannot re-scale to your requirements.

CHECKOUT AND CALIBRATION

Complete the following steps to change the calibration of the ARM2. You will need a digital volt/current meter, a 24 VDC power supply and a voltage input signal simulator. (A 5K ohm or greater trim pot can be used as a voltage input signal simulator by connecting one end of the trim pot resistance winding to the 24 (+) of the power supply, the other end of the trim pot resistance winding to the 24 (-) of the power supply and the wiper end of the trim pot to the "SIG IN" (+) terminal of the ARM2.)

EQUIVALENT CALIBRATION VOLTAGE

Use a voltage signal for your input signal during calibration: this makes both the procedure and the explanation easier. If you will require a current input when you are finished, use the equation below to find the equivalent calibration voltage to use during the calibration procedure:

Equivalent Calibration Voltage = Required Input Signal Amps x 250

For example, 1 VDC is the equivalent calibration voltage for a 4 milliamp input signal (1 = .004 x 250) or 5 VDC is the equivalent calibration voltage for a 20 milliamp input signal (5 = .020 x 250).

Step 1) Trim Pot Presets

Set all pots as follows to start (These are 25 turn trim pots with no hard stops; they may make a slight clicking sound at either end of their range):

Turn all the pots Full Counter Clockwise: GAIN = gain of 1
OFFSET = 0 volts offset
REV = 0 volts reverse
ATTN = no input signal attenuation)

Step 2) Jumper Shunt Presets

J1- NORMAL OR REVERSE ACTING: Set in "N" position for direct acting output signal. (If you require a reverse acting output signal, you will set this shunt in the "R" position in Step 7.)

J2 - OFFSET: Set in the "O" position for no offset to the output. (If you will require a "+" or "-" offset, you will set this shunt in the appropriate position in Step 6.)

J3 INPUT - Incoming signal: Set for voltage or current: Set in "E" position for voltage input. (If you require a current input, you will set this shunt in the "I" position AFTER you are finished with the calibration procedure.)

Step 3) Wiring Connections. Make the following connections with the power OFF:

Connect a 24 volt AC or DC power supply to the ARM2 terminals "PWR" (+) and "PWR" (-).

Connect the input signal common (-) to the "SIG IN" (-) terminal. Connect input signal (+) to the "SIG IN" (+) terminal.

To read input signal at ARM2 terminals connect (+) meter lead to the "SIG IN" (+) terminal and the (-) meter lead to the "SIG IN" (-) terminal (or in parallel). However to read mA signal on either output, connect the meter in series with connections to the SIG1 and SIG2 output terminals. That is meter (+) to "SIG 1 or 2 OUT" (-) terminal and meter (-) to wire going to device being controlled.

Step 4) Power Up

Turn on the power supply: the POWER indicator will light.

Step 5) Input/Output Signal Adjustments

In this step you will figure the desired voltage input signal span and the desired current output signal span (see the section on Equivalent Calibration Voltage) and calibrate the ARM2 to these input and output signal spans.

To calculate the voltage input signal span, subtract the minimum voltage input signal from the maximum input signal (i.e. a 0 to 5 volt input signal will give you a 5 volt input signal span: 5-0=5).

To calculate the current output signal span, subtract the minimum output signal from the maximum output signal (i.e. a 4 to 20 mA output signal will give you a 16 mA output signal span: 20-4=16).

Take the number for the voltage input signal span and apply this voltage to "IN" terminal.

Compare the output reading on your meter with the current output signal span you calculated above. If the meter reading is higher, adjust the "ATTN" trim pot until the meter reading drops to the calculated output span. If the meter reading is lower, adjust the "GAIN" trim pot until the meter reading increases to the calculated output signal span.

Step 6) Offset Adjustments

The offset adjustments simply shift the output signal range up or down from a "no offset" condition. For example, if an output signal range in a "no offset " condition is 8 to 16 mA, adding an offset of 4 mA will now make the output signal range 12 to 20 mA. Subtracting an offset of 4 mA will now make the output signal range 4 to 12 mA.

Apply the minimum voltage input signal and read the minimum output signal on the meter. With the "OFFSET" jumper shunt "J2" in the "0" position (from Step 6) no offset current will be added or subtracted from the output signal range.

If you need to shift the output signal range up, set the "OFFSET" jumper shunt "J2" in the "+" position and adjust the "OFFSET" trim pot until you increase the voltage reading on the meter to match the desired minimum output current. (Remember, this also increases the maximum output signal by the same amount.)

If you need to shift the output signal range down, set the "OFFSET" jumper shunt "J2" in the "-" position and adjust the "OFFSET" trim pot until you decrease the reading on the meter to match the desired minimum output current. (Remember, this also decreases the maximum output by the same amount.)

Step 7) Reverse Action Adjustments

If you require your output signal to be reverse acting, set jumper shunt "J1" in the "R" position. Apply the minimum voltage input signal and adjust the "REV" trim pot for the highest desired output signal. Check the low, mid-scale and high signal points to insure proper calibration.

Step 8) Final Adjustments

If you require a current input, set the "J3" IN jumper shunt in the "I" position. Check operation of the ARM2 for desired signal rescaling and operation.

Check "Tech Tip" section of catalog for possible applications of this and other products.

Power:	21.6 to 26.4 VAC	Input Signal / Impedance:	0-35 VDC/ 1,000,000 ohms nominal
	22.8 to 30 VDC		0-44 mA/249 ohms
Current:	100 mA maximum	Output Signal / Impedance:	0 -20 mA/750 ohms maximum
23 VDC Power Output (@ 24 VAC Input)	30 mA maximum		