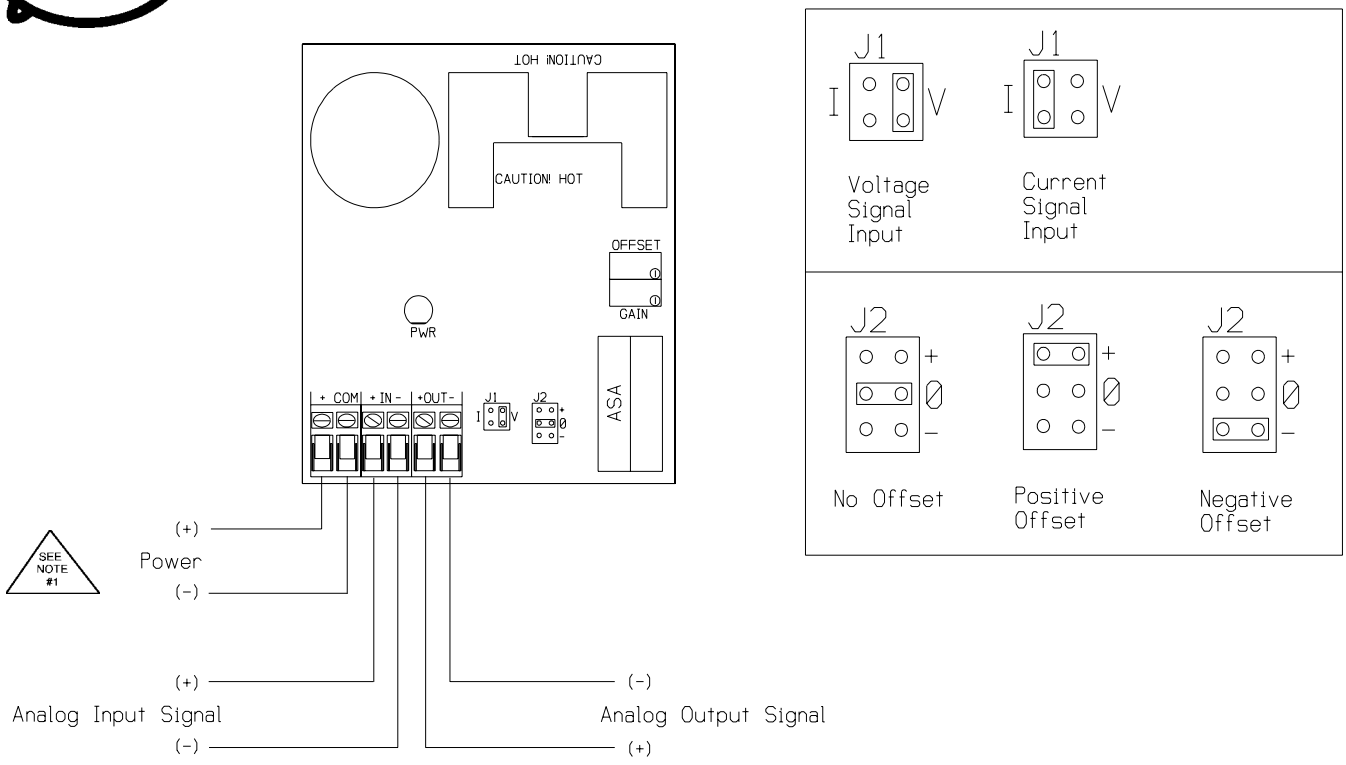
ASA

Analog Signal Amplifier



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 nonconductive “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:

NOTE #1

1) **25 to 30 VDC** - with power off, connect 25 to 30 volt DC power supply to (+) and COM terminals on the board.

   24 VAC - with power off, connect one transformer secondary leg to (+) and the other to the COM terminal on the board. Check the wiring configuration of any other loads that may be connected to this transformer. 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.

2) **If the 24 volt AC 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.

3) **If the 25 to 30 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.

4) The secondary voltage should be isolated from earth ground, chassis ground, and neutral leg of the primary winding. Grounding should be to the system common only. Failure to follow these procedures can result in improper operation.

5) 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 ASA does NOT isolate the input signals from the output signals. Use the Analog Isolation Module (AIM1, AIM2 or AIM3) if you need to isolate input signals from output signals.

FACTORY CALIBRATION

The ASA is set as follows:

Voltage Input Signal

No Offset to the Output Signal

Gain of 2 to the Output Signal (1:2)

The ASA 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 ASA. It is possible that the ASA cannot re-scale to your requirements.

CHECKOUT AND CALIBRATION

Complete the following steps to change the calibration of the ASA. You will need a digital volt/current meter, a 25 to 30 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 (+) of the power supply, the other end of the trim pot resistance winding to the (-) of the power supply and the wiper end of the trim pot to the "IN" terminal of the ASA.)

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 the GAIN pot Full Counterclockwise: = Gain of 1

Turn the OFFSET pots Full Clockwise: = 0 volts offset

Step 2) Jumper Shunt Presets

J1 IN - INCOMING SIGNAL: 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 proce dure.)

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.)

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

Connect a 25 to 30 volt DC or 24 VAC power supply to the ASA terminals (+) and COM.

Connect the (-) input signal to the IN (-) terminal.

Connect the (-) meter lead to the OUT (-) terminal.

Connect (+) input signal lead to the IN (+) terminal.

Connect (+) meter lead to the OUT (+) terminal.

Step 4) Power Up

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

Step 5) Set-Up - Input/Output Signal Adjustments

In this step you will figure the desired voltage/current input signal span and the desired voltage output signal span and calibrate the ASA to these input and output signal spans.

To calculate the voltage/current input signal span, subtract the minimum voltage/ current 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 voltage output signal span, subtract the minimum voltage output signal from the maximum voltage output signal (i.e. a 3 to 15 volt output signal will give you a 12 volt output signal span: 15-3=12).

Take the number for the voltage input signal span and apply this voltage to the "IN" (+) and (-) terminals.

Compare the output voltage reading on your meter with the voltage output signal span you calculated above. If the meter is higher or lower, adjust the "GAIN" potentiometer until the meter reads 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" setting. For example, an output signal range with "no offset" is 3 to 15 volts. The maximum offset range is +/- 0 to 20 VDC.

Adding an offset of 2 volts would make the output signal range 5 to 17 volts. Subtracting an offset of 2 volts would make the output signal range 1 to 13 volts.

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, no offset 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" potentiometer until you increase the voltage reading on the meter to match the desired minimum output voltage. (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" potentiometer until you decrease the voltage reading on the meter to match the desired minimum output voltage. (Remember, this also decreases the maximum output by the same amount.

Step 7) Final Adjustments

If you require a current input, set the "J1" IN jumper shunt in the "I" position. Check operation of the ASA for desired signal rescaling and operation.

ASA Power Consumption:	Supply Current - 2.05 Amps maximum
Power Range-Output	2 Amps or 30 Watts maximum
	P out = [(V out/Load) (V out)]
	P out = (Load Current) (V out)
	If above 30 watts, derate load current and calculate again
Load Impedance	10 Ohms minimum
Input Impedance:	Voltage -200,000 Ohms
	Current -250 Ohms