AO45 Analog Transmitter Instructions

General Information

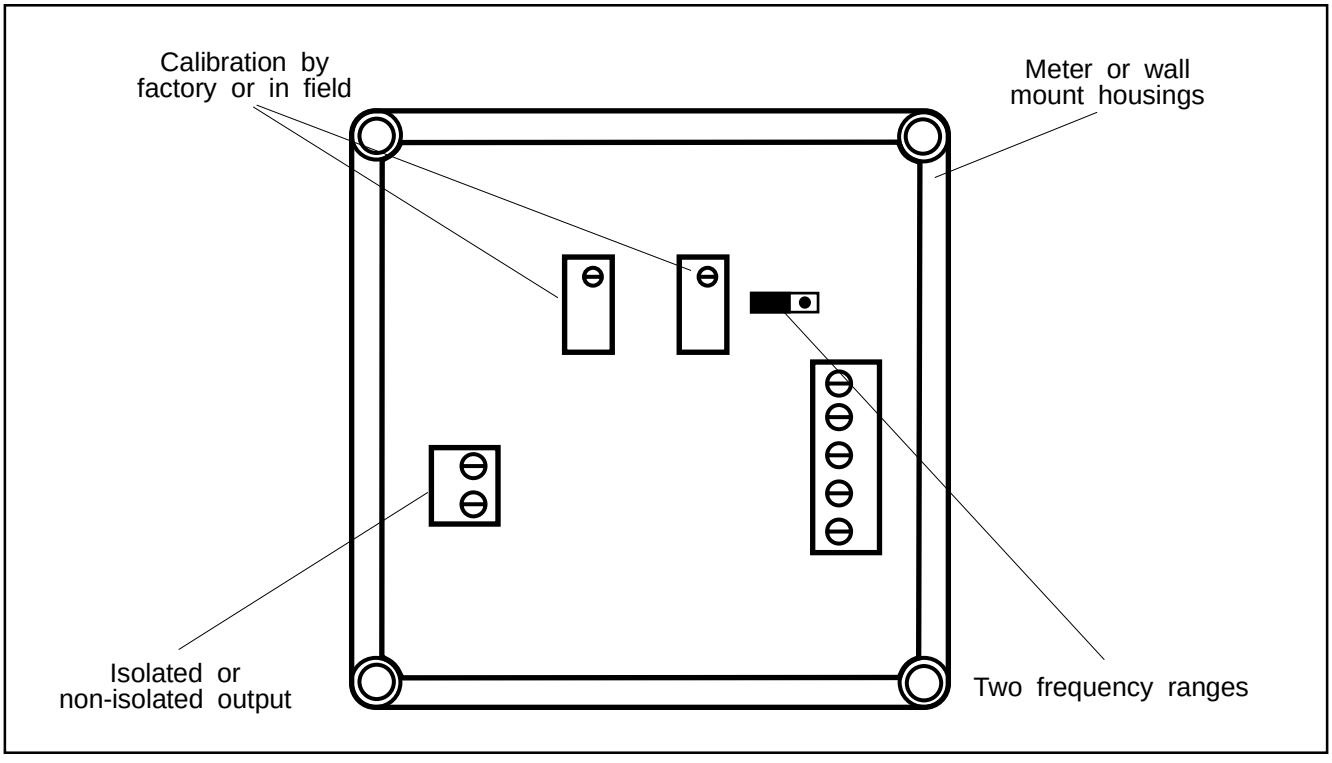
The SeaMetrics AO45 is a compact pulse to analog converter. Combined with an IP insertion flow sensor or a WT turbine meter, it is ideal for flow rate recording, PLC or data logger input, and proportional chemical feed. The unit is available in a wallmount enclosure or in a round cast-aluminum housing mounted directly on a SeaMetrics meter. The nonmetallic wallmount enclosure is splash-proof and has a clear cover.

The 4-20 mA analog output is suitable for telemetry, metering pump pacing, data logging, or control applications. Trimpots are used to adjust the 4 mA and 20 mA setpoints. The unit can be factory-calibrated or user calibrated with the proper equipment. The output is a 4-20 mA current source, which is compatible with electronic metering pumps, programmable controllers and computer input cards.

Specifications

Power	
Sensor	6-24 VDC
Current loop	12-36 VDC (see chart)
Voltage Burden	11 VDC
Temperature	32° - 130° F (0° - 55° C)
Humidity	85% non-condensing relative
Enclosure	
Wall mount	polystyrene
Meter mount	cast aluminum
Input	Open collector transistor (most SeaMetrics meters)
Frequency range	(@ 20 mA output)
Low	10 - 100 Hz
High	100 - 1000 Hz
Output	Proportional 4 - 20 mA
Response Time	3 sec. to 95 % output

Features



Installation

Mounting. Only the wall mount (W) housing style needs to be mounted. The meter mount (M) unit comes preinstalled on a flow meter or sensor. To mount the W housing, remove the front cover. Locate the screw holes underneath the four cover screw holes. Mark the centers and drive screws through these holes into a secure surface. It is important to use only these holes, which are isolated from the interior of the enclosure, in order to keep the enclosure leaktight.

Connections. See the "Connections" diagrams on page 4. Determine whether or not the 4-20 mA output needs to be isolated:

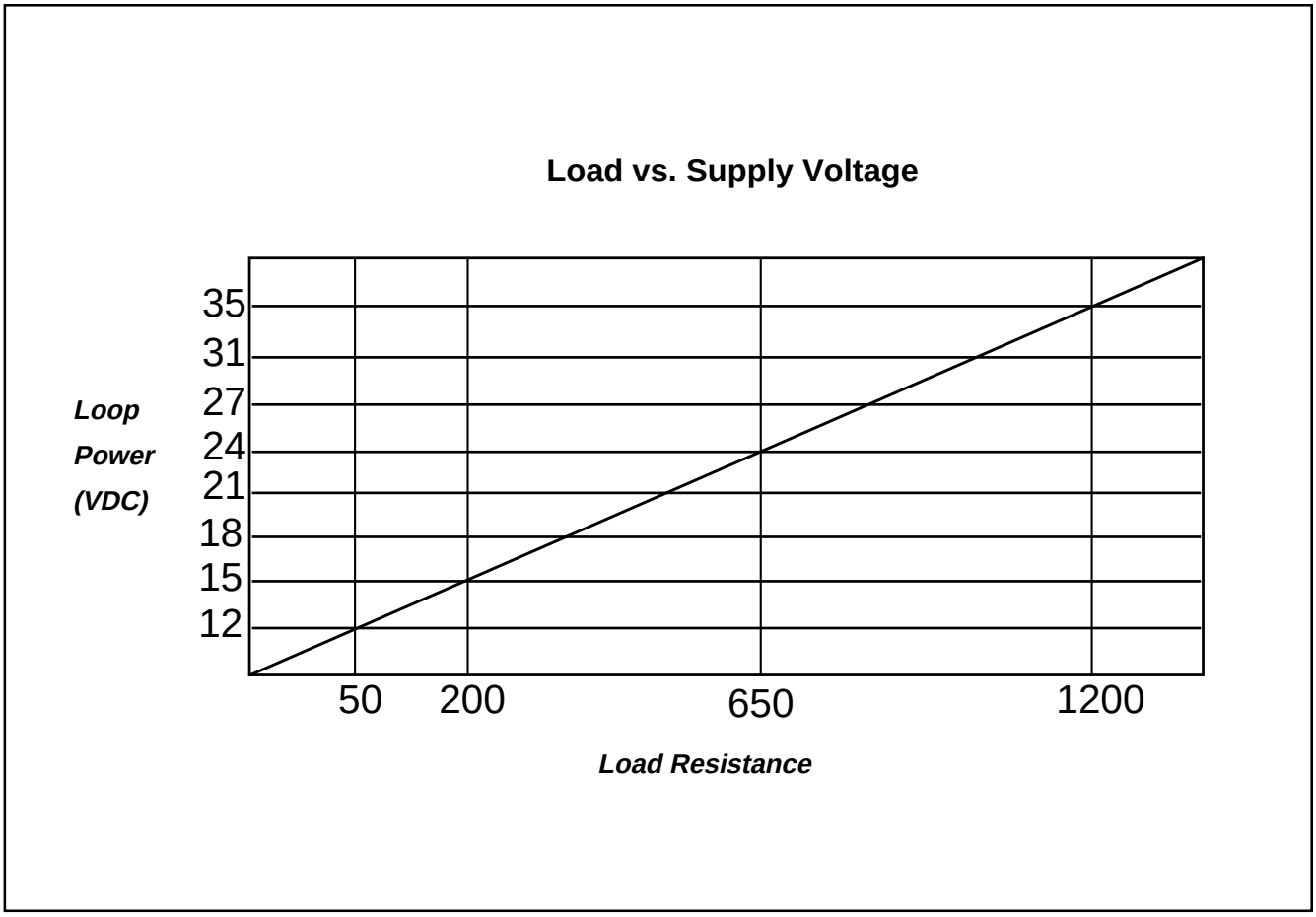
1. If the external 4-20 mA device has its own built-in power supply, follow the "Isolated power source" diagram.

2. Isolation prevents certain potential problems, such as ground loops. It also allows a higher voltage to be used for the 4-20 mA loop (up to 35 VDC) to drive a higher-impedance load, roughly above 300 Ohms. Typically the literature provided with the 4-20 mA device will specify its impedance.

3. A non-isolated circuit is simpler because it only requires one power supply. As a general rule, the standard SeaMetrics PC1 power supply can power both the control and the 4-20 mA loop up to 300 Ohms impedance.

The connection for AO45M meter mounted units as supplied is non-isolated, with a jumper wire preinstalled to power the 4-20 mA loop. If an isolated connection is necessary, unscrew the cover and remove the circuit board to expose terminals. Reconnect the unit following the "Isolated power source" diagram.

For a wall mount unit, connect the flow sensor first. Then connect the 4-20 mA output, following the appropriate diagram. Finally, connect the power supply.



Field Calibration. Ordinarily the AO45 is ordered with a flow sensor or meter and is factory calibrated to a requested flow range. However, the unit can be field-calibrated if necessary. A frequency generator and a multimeter are required. Follow these steps:

1. Calculate 20 mA frequency. Determine the flow rate at which 20 mA output is desired. Determine the K-factor (pulses per gallon) of the flow sensor. For SeaMetrics units, this is marked on the sensor. Use this formula:

$$\text{Frequency} = \frac{\text{K-factor(PPG) X Flow Rate(GPM)}}{60}$$

2. Select range. There are two frequency ranges, 10 - 100 pulses per second and 100 - 1,000 pulses per second. Note the range into which the calculated 20 mA frequency falls.
Find the frequency jumper. Choose position HI or LO and place the jumper there.

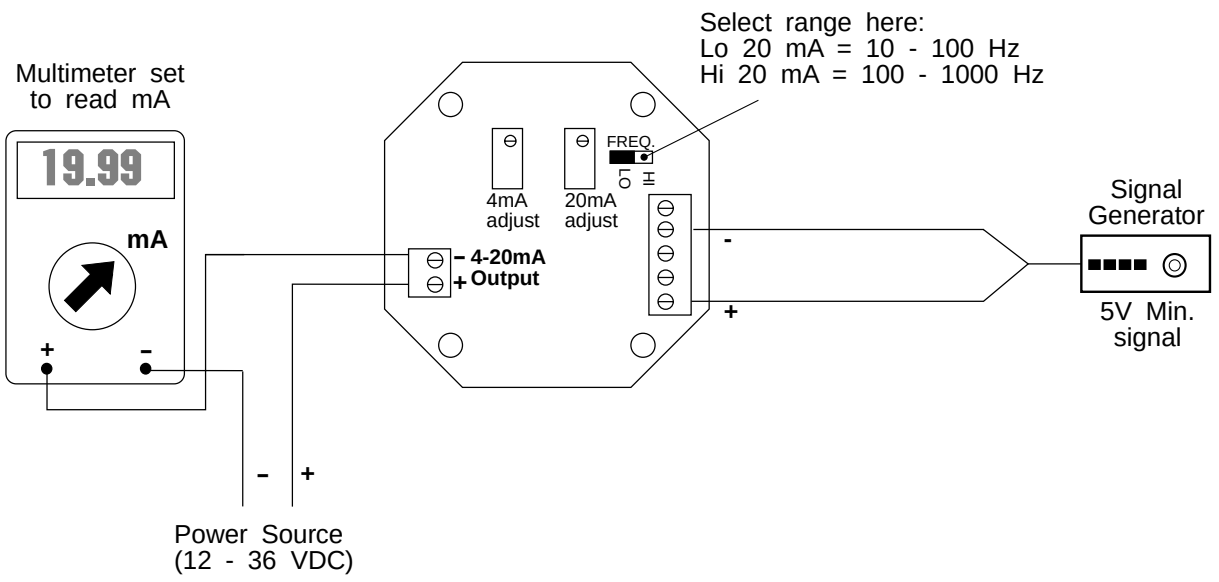
3. Connect multimeter. Set the multimeter for mA and connect to the 4-20 mA terminals, observing polarity. Apply power.

4. Adjust 4 mA. Locate the trimpot marked "4 ADJ". Dial the pot until your multimeter reads 4.00 mA.

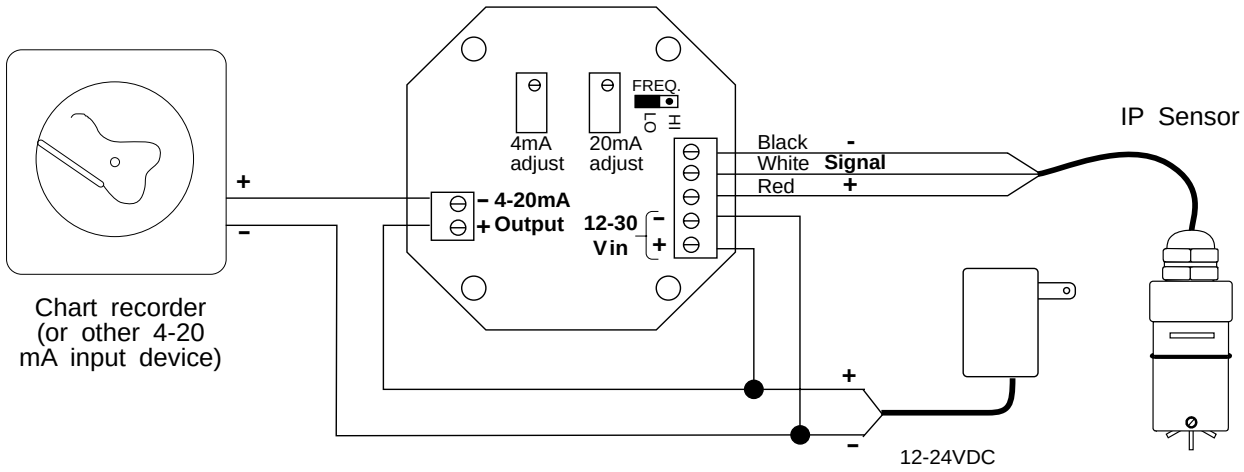
5. Connect frequency. Set your frequency generator for the 20 mA frequency as calculated above. Connect to the input terminals marked "SENSOR" and + 12 V.

6. Adjust 20 mA. Dial the trimpot marked "20 ADJ" until your multimeter reads 20.00 mA. Disconnect the multimeter. Calibration is completed.

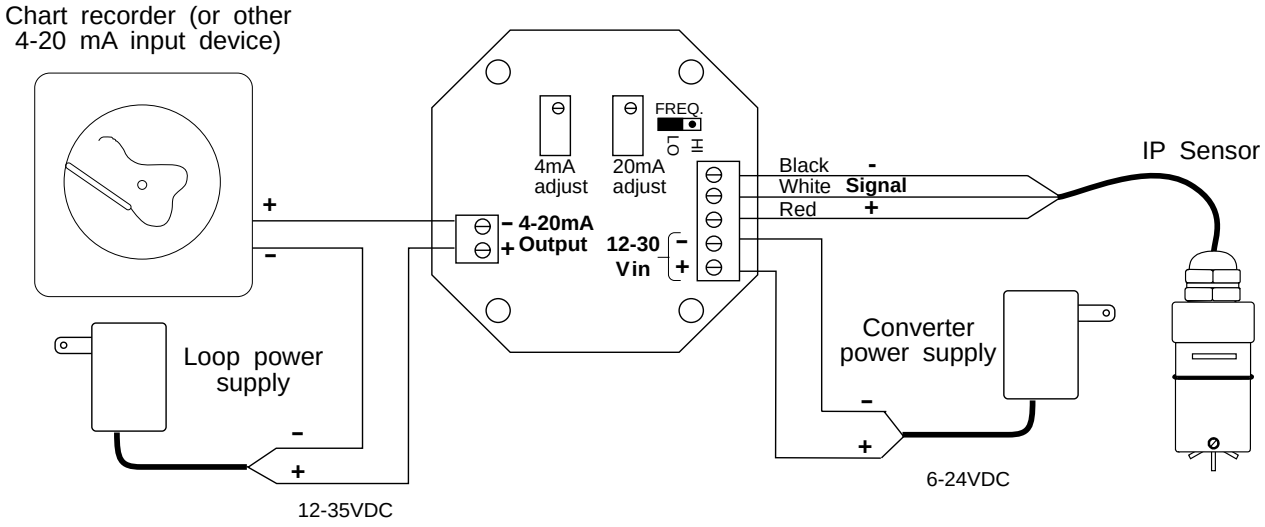
Field Calibration



Connections: non-isolated loop power (standard factory wiring)



Connections: isolated loop power



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