

Installation

Mounting The wall mount style (AO55W) is the only housing which needs to be mounted, since the meter mount (AO55M) is already physically connected to the flow sensor. The AO55W comes with mounting feet and requires four screws to attach it to any stable surface.

Connection . On either style of housing, the upper portion must be removed to make connections. Use a standard hex wrench (5/32" or 4 mm) to loosen the screws, then remove the upper half. The connections are made to terminal blocks in this upper half, which contains the potted electronics. Note that the terminal blocks are a removable style, and can be unplugged and plugged back in for convenience.

Look at the connections diagram before connecting to the current loop. The only connections required on an AO55M are the positive and negative loop connections. On an AO55W, the sensor must also be connected, since it is remote from the transmitter. Be careful to follow the color coding of the three flow sensor wires in order to establish the correct polarity. Incorrect polarity can damage the sensor.

Settings

Setting Frequency. The AO55 converts a train of off/on pulses from the flow sensor into a continuous milliamp signal. This signal ranges from 4 milliamps at zero flow to 20 milliamps at the desired maximum flow. This desired maximum is determined by the user, and then entered as a frequency.

To determine the frequency setting, follow these steps:

1) Decide what flow rate should represent the top of the scale. This is ordinarily the maximum expected flow or a value just above it, in gallons per minute.

2) Determine the k-factor of the flow sensor. This will be on the model/serial label of the fitting in the case of any TX or IP 80-series (81 or 82). For an IP or TX 100/200 series (101, 201, 115, 215) it will be on a chart in the instruction manual. For any S-series flow sensor (SPX, SPT, SEB) it will be on the model/serial label. The k-factor is simply the number of pulses the flow sensor produces per gallon of flow. It is determined by a flow test, except in the case of the 100/200 series, which are adjustable for a wide range of pipe sizes.

3) Calculate frequency, using this formula:

$$\frac{\text{K-FACTOR} \times \text{TOP FLOW (GPM)}}{60}$$

Enter this frequency, using the four rotary switches marked frequency. Note the decimal point between the third and fourth switches.

Frequency Setting Example

An IP 81 with AO55M is installed in a 2" PVC line. The maximum flow for this installation is estimated to be about 150 GPM. To be on the safe side, a flow rate of 170 GPM is selected as the full-scale maximum, the flow at which the current loop will register 20 mA.

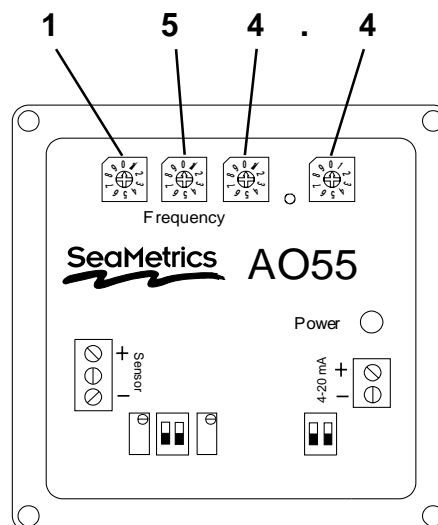
The model/serial label on the SeaMetrics fitting reads "k = 54.50"

$$\frac{54.50 \times 170}{60} = 154.42$$

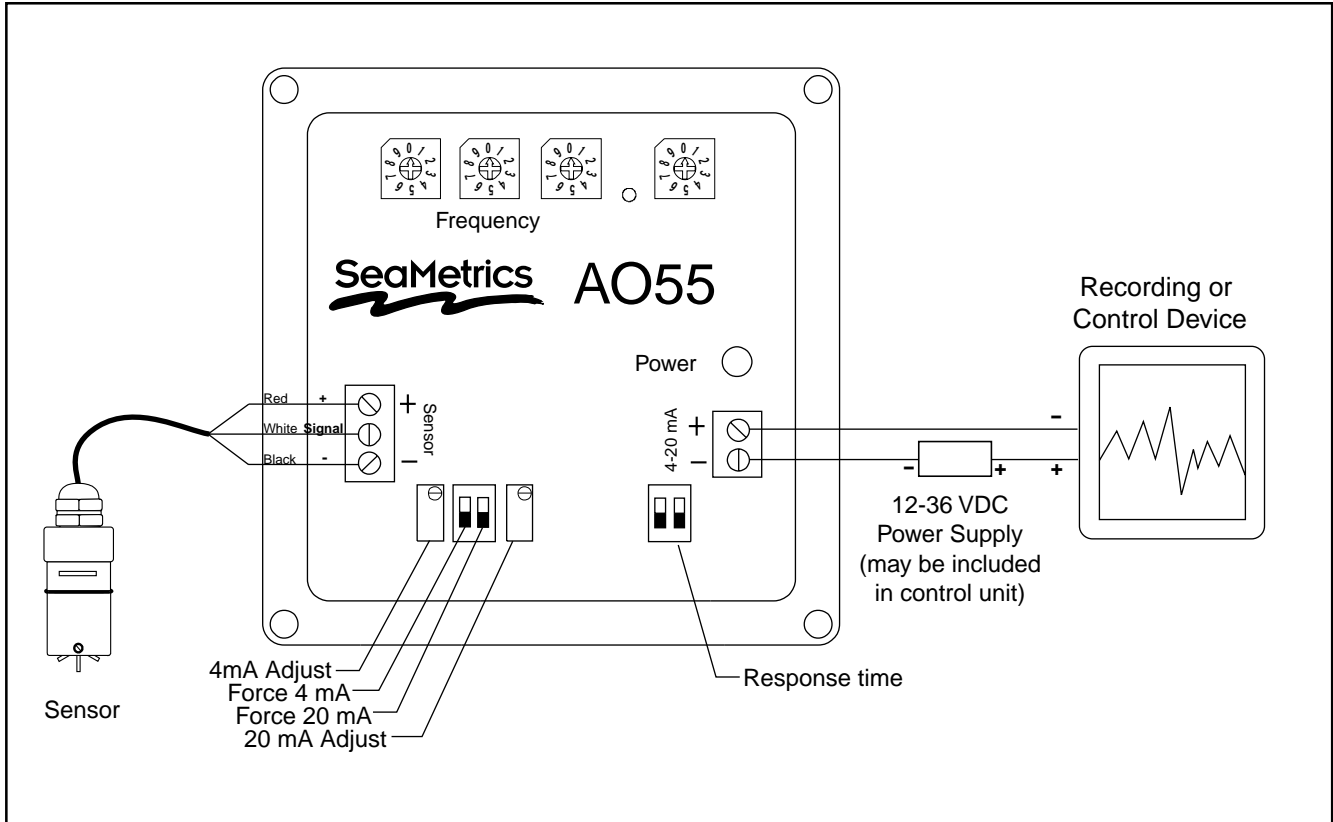
Rounding to one decimal point, 154.4 is entered on the rotary switches (154.4).

Example: 154.4

Turn rotary switch pointer to the desired digit.



Connections

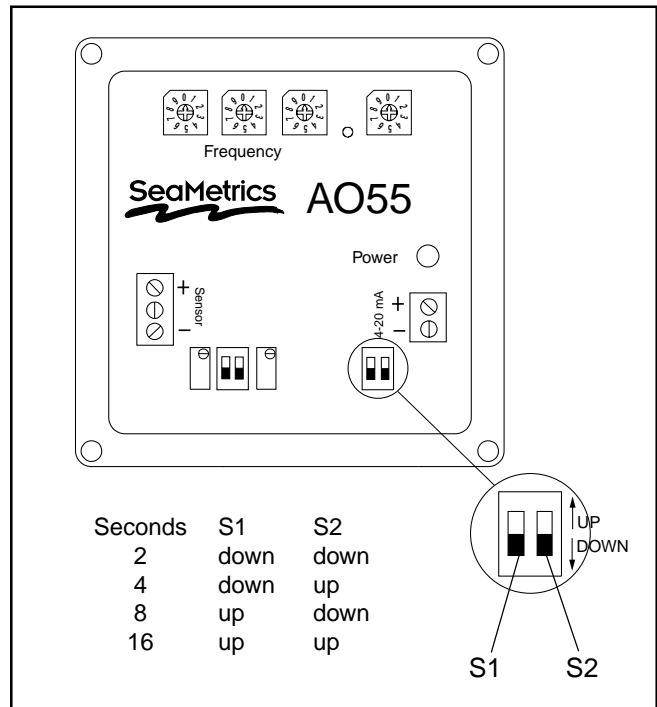


Setting Averaging Time. For most applications, this step can be ignored. The unit comes with a setting already in place which will work fine for most applications. However, for applications in which a particularly steady output signal is desired, or in large pipe, a larger averaging period may be desirable. Note however that the averaging period requires a tradeoff, since a longer averaging period implies a slower response time. If steady signal is more important than fast response, increase the averaging time as desired. See the diagram for the switch positions and their corresponding times.

Checking Calibration

Normally it should not be necessary to check calibration, since the digital design of this unit virtually eliminates drift. However, there are two types of calibration check which can be performed. Look at the "Connections" diagram to locate the 4 and 20 mA force switches. To force the 4 mA output, put its switch in the up position. Check the current output at the Power terminals, and if necessary trim to 4.00 mA using the appropriate trimpot. Return the switch to the down position, and repeat the process with the 20 mA switch.

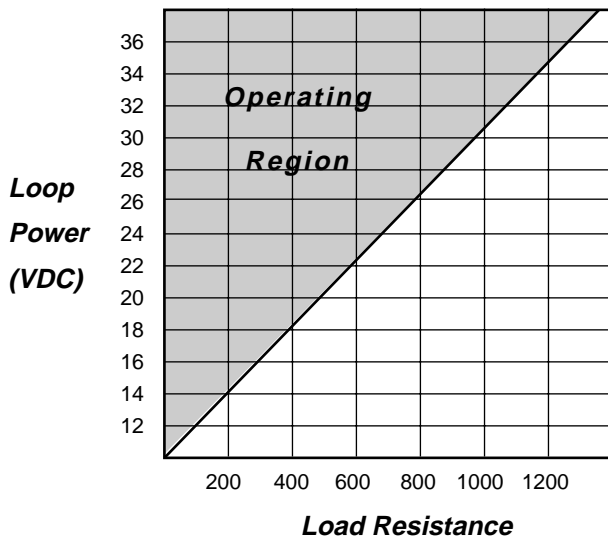
Setting Averaging Time



Troubleshooting Guide

| Problem | Probable Cause | Check First | Further Test |
|------------------------------------|---|--|---|
| No analog signal at reading device | Break in current loop Dead power supply Reversed polarity | Loop indicator light on? | Multimeter: check voltage on power supply Check polarity |
| Output stuck at 4 mA | No frequency input from flow sensor | Flow sensor rotor turn freely? Flow sensor connections good? Flow sensor polarity correct? Terminal blocks firmly plugged in? | With flow sensor disconnected, use short piece of wire to repeatedly short between sensor "sig" and "-" terminals. Output mA should rise. |
| mA signal doesn't match flow rate | Inadequate voltage Wrong frequency setting | Voltage vs. load chart Review setting procedure | Multimeter: check voltage |

Load vs. Supply Voltage



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