

There are many applications in which it is desirable to connect one or more Seametrics flow sensors to a PLC, and the sensors are well suited for this. In many cases the digital pulse of a Seametrics sensor can be connected directly, or with a minimum of components.

The Seametrics products most commonly chosen for use with a PLC are IP and TX insertion sensors, WT turbine meters, and S-Series low flow sensors. These units, which have three wires, use Hall-effect technology. They need 5-24 Volts DC and up to 8 mA current, and they are current sinking (NPN) devices.

These devices can connect directly to the PLC if:

1. The sensor power provided by the PLC is 6 - 24 Vdc (24 Vdc is typical.)
2. The sensor power supply can provide at least 8mA (100 mA is typical.)
3. The sensor input on the PLC can accept a current sinking device.

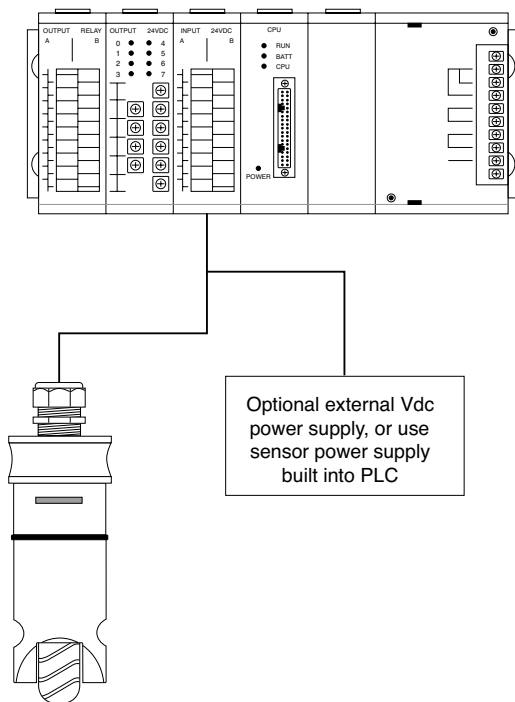
If the PLC input only accepts current sourcing devices, a pull-up resistor must be added. Connection of this resistor is shown in **Figures 3 & 5**. Typically, on a 24 Vdc input a 2.2 K Ohm resistor will be effective.

See **Figure 1a** for connections.

Seametrics uses reed switches on two products, the MJR, MJHR, MJNR, and WJ meters. While these are infrequently used with PLC's, the wiring is very straightforward. Reed switches, which have two wires, do not need a power supply to operate. They can be connected in the same way as any other mechanical switch or contact closure. While they will handle up to 50 mA AC current, in general **using a reed switch with 115 Vac input modules is not recommended**, both for reasons of safety and of switch life.

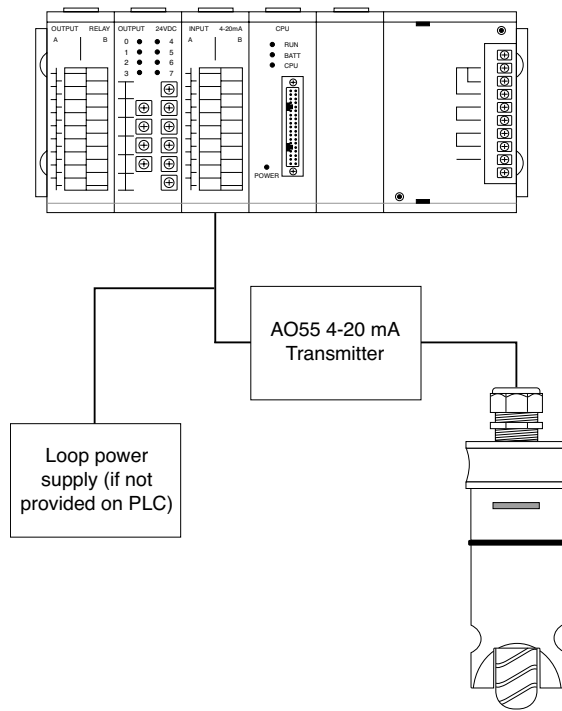
**Figure 1a**

**DIRECT CONNECTION TO DC INPUT MODULE**



**Figure 1b**

**CONNECTION TO 4-20 mA ANALOG INPUT MODULE, WITH AO55 TRANSMITTER**



Since the three-wire, Hall-effect units are solid state, they do not exhibit switch bounce and can be used at relatively high frequencies. Reed switches, like most mechanical switches, tend to have considerable bounce and it may be necessary to take precautions against this.

Any input module will have certain frequency limitations. The table below gives maximum frequency that a particular flow sensor or meter could be expected to produce.

Flow Sensor Type	Maximum Frequency (Hz)
WJ-Series	20
MJ-Series	45
S-Series	140
WT-Series	150
IP-Series	400
TX-Series	250

If the PLC is equipped with a 4-20 mA analog input module, it is necessary to order the flow sensor with some form of 4-20 mA transmitter. Two options are the A055 blind transmitter and FT440 with 4-20 mA option. See **Figure 1b**, follow the connection diagrams for these products to connect to the analog input.

