

Model 310 Programmable analog transmitter

The model 310 is a loop powered, programmable transmitter capable of converting the signal from flow sensors to a linear 4-20 mA analog signal. In addition to our standard square wave signal, it can also accept a sine wave making it a versatile transmitter for numerous applications.

With an onboard microcontroller and digital circuitry, the 310 is programmed from a computer eliminating the need to adjust potentiometers and producing precise, accurate and drift free signals. This will save both time and money by



lowering overall maintenance times. This model also has an integral filter that the user can specify as 0 (to show true sensor readings) or 10 (for maximum damping).

The compact cast epoxy body measures 44 mm $(1.75'') \times 70$ mm $(2.75'') \times 25$ mm (1'') can easily be mounted to panels, DIN rails or enclosures. With multiple inputs, ease of use and a variety of enclosures, the model 310 is a powerful and competitive transmitter for many of today's demanding applications.

Transmitter only

Optional enclosure (ver. 310-02 & 310-03)



Specifications	
Power requirements	Loop input voltage 9-35 VDC
Input frequency	• 0.4 to 10 kHz
Load resistance	 Max. 750 Ω @ 24 VDC
Output response time	Varies with filter
Operating temperature	• -29°C to 70°C (-20°F to 158°F)
Storage temperature	• -40°C to 85°C (-40°F to 185°F)
Accuracy	• ±0.04% of reading over entire span
Linearity	• 0.1% of full scale

Calibration

Units can be calibrated at our facility or easily programmed in the field. Field calibration requires A310 programming kit (consisting of a custom cable and software) and IBM compatible computer running a Windows based operating system. In order to calibrate, the model 310 must be connected to the loop for power and the A301 cable must be connected to an available 9-pin COM port on the computer.

Once the software is loaded and communications with the transmitter are established, the following parameters are entered in the setup screens:

- 1. Units of measure
- 2. "K" and offset values selected from the sensor owners manual or for insert style sensors entering the pipe I.D. allows the software to calculate the "K" and offset values
- 3. The flow rate represented by 4 mA
- 4. The flow rate represented by 20 mA

An added feature is a user selectable filter. Set for the minimum (0), the transmitter reacts to actual flow input. Set at the maximum (10), the transmitter provides the greatest damping possible.

Once the values are set, the "send" command loads the transmitter. All programming can be saved with a file name for later reference.

Wiring



Per standard wiring practices, the loop power must be off before making any wire connections. The terminal strips have removable plug-in connectors to make wiring easier.

- 1. Refer to figure 1 for terminal connections.
- 2. Connect loop power supply positive (+) to terminal marked 4-20 mA loop (+)
- 3. Connect terminal marked 4-20 mA loop (-) of model 310 to positive analog terminal of input device (chart recorder, PLC, etc.)
- 4. Connect negative analog terminal of input device to loop power supply negative
- 5. Wiring a series 200 sensor, connect the red wire (signal) to signal (+) terminal, black wire (ground) to signal (-) terminal and the shield to shield ground terminal (disregard shield for the IR sensors). If the sensor is not a series 200, then go to step 6.
- 6. Wiring a series 4000 sensor, connect the clear wire (signal) to signal (+) terminal, black wire (ground) to signal (-) terminal, shield wire to shield ground terminal and red wire (power) to power (4000 only) terminal.
- 7. For maximum EMI protection, connect model 310 ground log to panel ground.
- 8. Ensure that all connections are tight, then plug connector into header.

