



Models 840 & 860 Sensors

Installation Manual

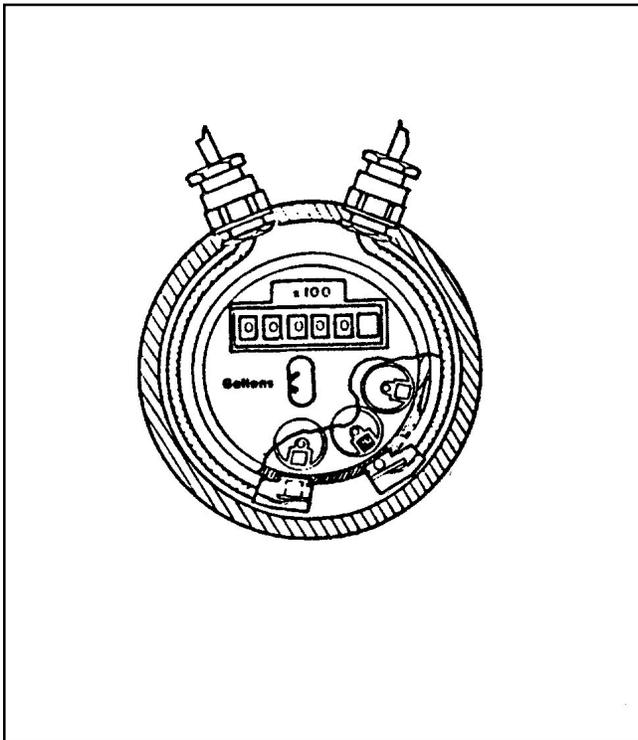


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Models 840 and 860 Sensors

If the Model 840 Reed Switch or the 860 Infrared Transmitter is purchased with a meter, the 840 or 860 sensors are installed at the factory. You do not need to follow any of the instructions on this page.

When the Models 840 and 860 are purchased separately from the meter, follow the installation procedure below.

Installation

Model 210

Loosen three screws (4), but do not remove completely. Grasp register box (5) and pull straight up. Pop out plug (10).

Insert sensor wire (12) through retaining nut (6). Then guide wire through hole in register box (5). Place strain relief (11) over wire as illustrated and then add bushing (9) and nut (8). Loosely tighten (6, 11, 9, and 8) at this time.

Models 211 & 212

Open register cover to reveal two retaining screws. Remove the two retaining screws. Gently squeeze and lift off register cover. Insert sensor wire in appropriate slot on register. Pull wire through exit slot. See Figure 3. Snap register cover onto meter and tighten with two retaining screws.

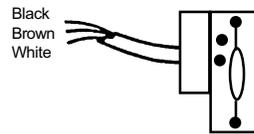
If you have a Model 860 Infrared Transmitter refer to Figure 1 (3). On all meters except the 3/4", the sensor will go in the second slot as illustrated. On the 3/4", the sensor will go in the first slot. Note: On all registers the infrared sensor goes into the slot with the reflective silver bars. Refer to label in lid (7) for sensor placement.

If you have a Model 840 Reed Switch (2), it will go in the third or fifth slot depending on counts per gallon desired. Refer to label in lid for sensor placement.

Push the sensor (2 or 3) wire side up until it bottoms out in the slot in the register (1).

Route the sensor wire (12) around the register (1). See Figure 2. Push strain relief (11) through register box (5) and tighten retaining nut (6). Do not tighten (9 and 8) at this time. Place register box (5) on register (1) with lid (7) aligned with totalizer as indicated. Pull slack out of sensor cable through (8, 9, and 11). Put register box (5) on register (1) until it seats. Tighten three screws (4). Pull slack out of sensor cable (12) and tighten (8) securely.

Model 840 Reed Switch



Model 860 Infrared Transmitter

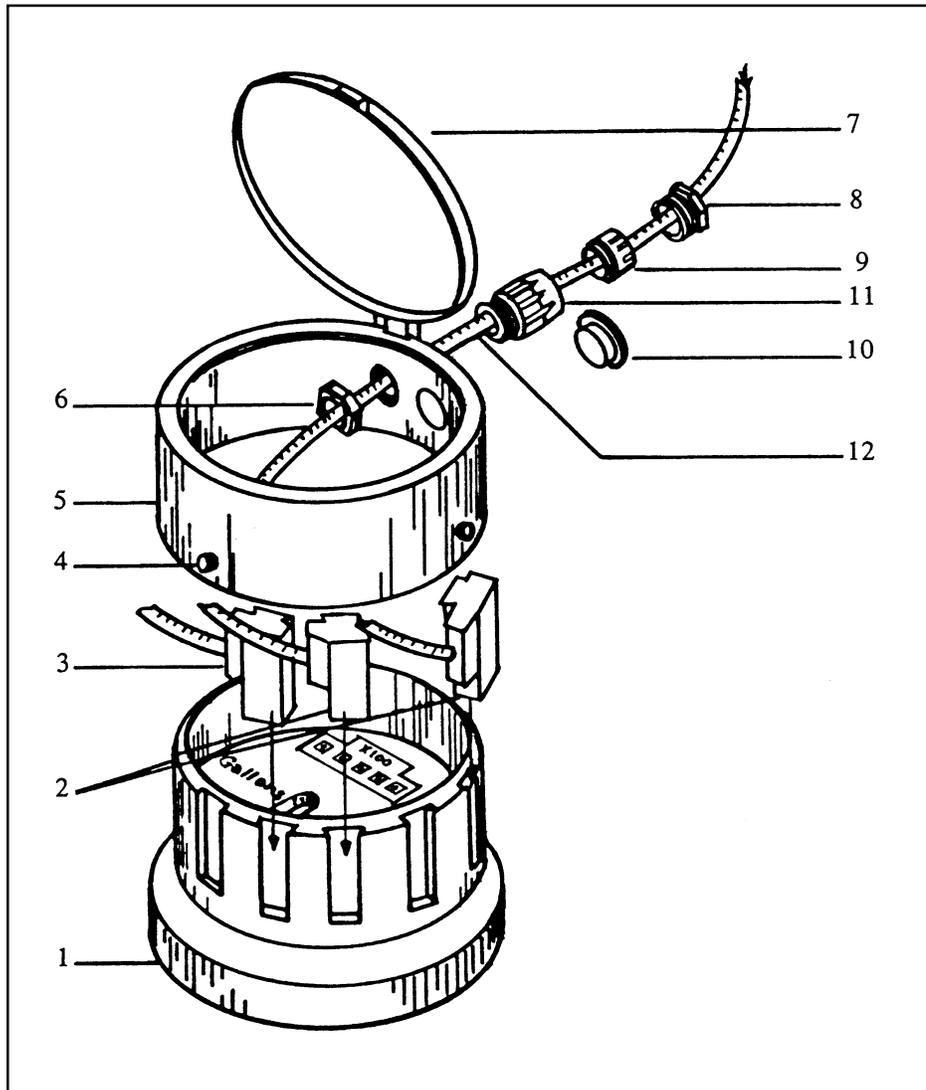
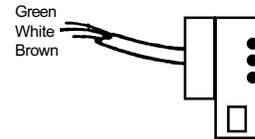


Figure 1

Models 840 and 860 Sensors

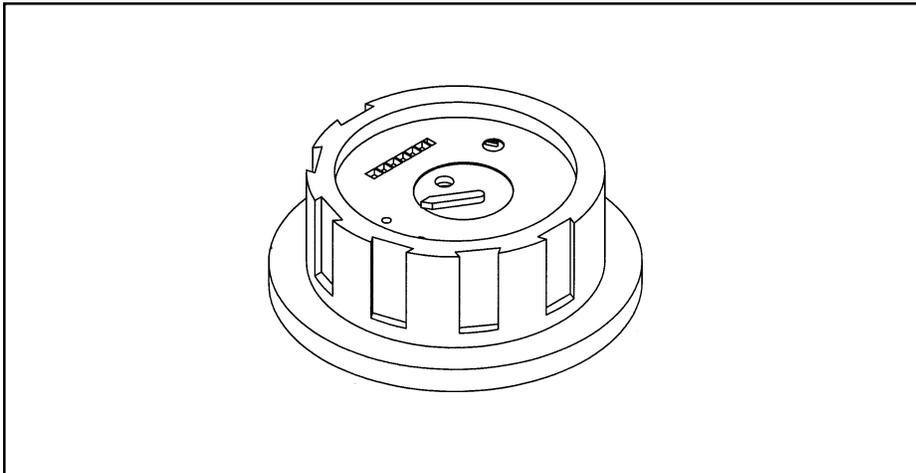
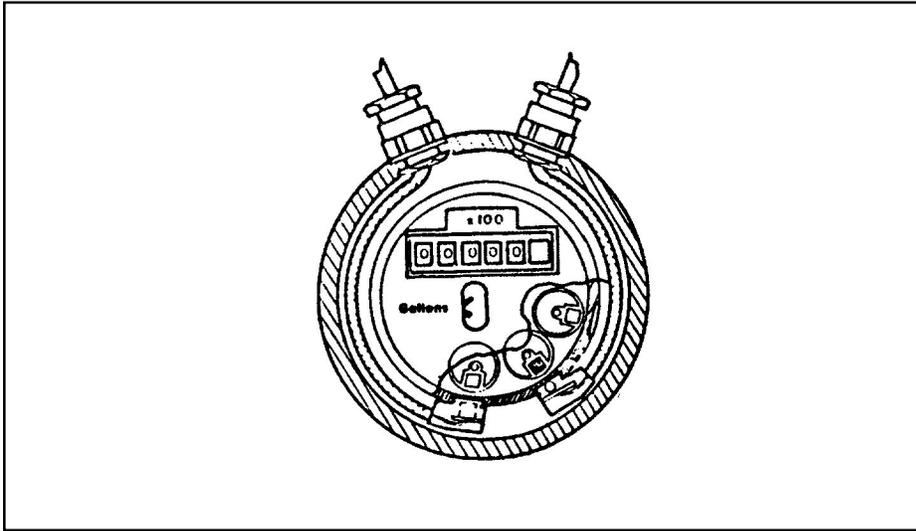
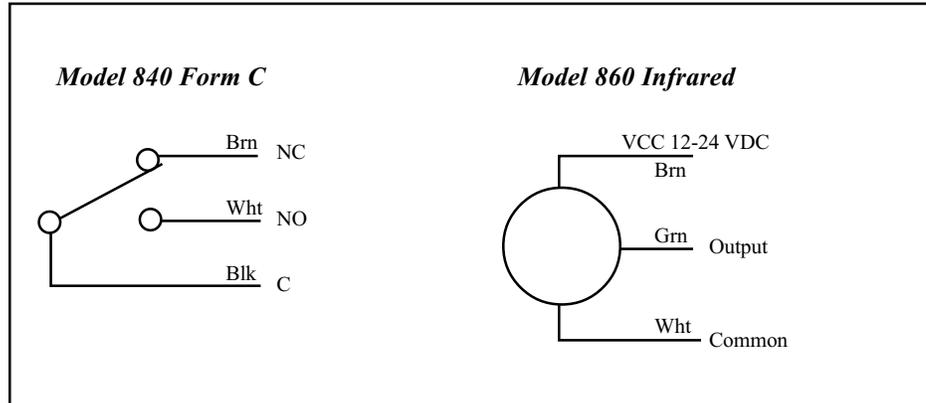


Figure 3

Wiring

Sensor with Niagara Equipment



860 Infrared Pulser

The infrared pulser contains an LED and a phototransistor to sense when a reflective surface passes in front of the sensor. The WPX and MTX meters have silvered bars on a rotating wheel that are sensed by the infrared pulser.

The LED and phototransistor have their anodes (positive lead) tied together and to the brown lead wire. They are normally tied to the positive output of a power supply.

The LED is normally powered by 15 - 20 mA of current. A resistor must be added between the cathode of the LED (white wire) and the negative output of the power supply.

The value of the resistor is calculated by using the equation:

$$R_{LED} = \frac{V - 1}{I}$$

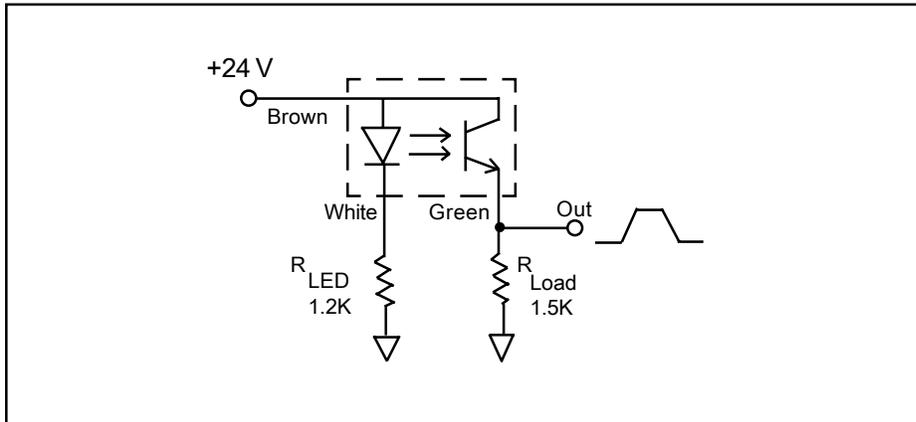
R = Resistance in K Ohms

V = Voltage of the power supply

I = Current in milliamps to power the LED

The phototransistor output is a small current that turns on and off, and is sensed by putting a resistor between its output (green wire) and the negative output of the power supply. The best value for this resistor will have to be determined experimentally. It will be in the range of 1.5K to 20K ohms. Different values may have to be tested to determine the best resistor to use. Some common values that could be tried are 1.5K, 10K, and 20K. At least one of these values should work. Note that the output is a slowly changing signal. If the receiving electronics do not have any hysteresis, there could be significant counting errors. The schematic of a possible application:

Models 840 and 860 Sensors



When used with Niagara model	R _{LED}	R _{LOAD}
1030 or 3030	1.2K	1.5K
KEP RT	1.2K	20K
Data Precision 693	1K	40K

Model 1005 PNG0380G275, no external resistor needed.

*The value of R_{LOAD} must for different manufactures' flowmeters be determined experimentally. Try different values in the 1.5 - 40K range to find the best result.

Model 860 with Other Equipment

Resistors differ greatly when used with other manufacturer's equipment. Read material carefully or consult factory before connecting or permanent damage could occur.

Ground must be connected to the white lead through a current limiting resistor. The size of the resistor is as follows.

VCC = 24 VDC resistor value 1500 ohms, 3/4 watt. Load 5 - 40K.

VCC = 15 VDC resistor value 1000 ohms, 3/4 watt. Load 5 - 40K.

VCC = 12 VDC resistor value 750 ohms, 3/4 watt. Load 5 - 40K.

Caution: In all cases the resistor must be installed between the white lead and ground. Permanent damage will occur without this resistor.

OPTIONS

Model 573

- Provides a high frequency pulse output for interface with Venture Measurement instrumentation.
- Supply Voltage: 24 VDC max.
- Current Requirement: 30 mA.
- Output Signal: Non-symmetrical square pulse train (equal to supply voltage).
- Wiring: Pigtail, 36", 2-wire conductor.
- Max. Output Current: 30 mA.



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