

DESCRIPTION

The B170180 Quad-4 Hall Effect Pickup is a microprocessor-based sensor for use with the B1750 positive displacement flow meters. The Quad-4 sensor can detect both uni- and bi-directional flow. The sensor's mode of operation is determined by an output selection switch inside the housing. The Quad-4 sensor detects the rotation of the flow meter gears and emits a frequency signal proportional to flow. The output signal is a square wave pulse that has a duty cycle of approximately 50%.

The Quad-4 signal outputs are protected with a self-resetting fuse. This fuse has a 50 mA nominal trip point. When a trip occurs, turn off power to the sensor and remove the output load to reset the fuse. The sensor has a sourcing output configuration when jumpers JP1 and JP2 are shorting pins.

The Quad-4 sensor circuit board has a red and green LED. The red LED is a status LED which, when the sensor is operating properly, flashes once every 4 seconds. A fast flash indicates a failure of one or more of the pickups. The green LED indicates the pulse of the input signal. Signals above 20 Hz are solid green.

INSTALLATION

1. Make sure that the flow meter sensor cavity is free of debris prior to installing the pickup.
2. Install the flow meter and sensor.
3. Cycle the power so the sensor functions properly.

Securing the Sensor to the Flow Meter

Use a 9/64 hex key to tighten internal screws.

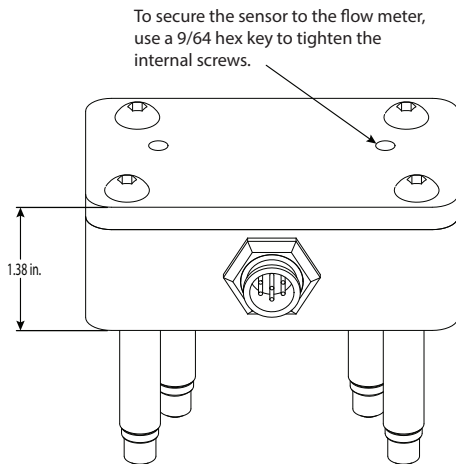


Figure 1: Securing the sensor to the flow meter

Test Feature

The Quad-4 pickup is equipped with an output test feature for readouts before the initial running of your system.

NOTE: Power must be cycled for new setting to take effect.

- Switch setting 8 causes the pickup to output a 10 Hz (+/- 20%) Phase = +90° pulse output, simulating low flow conditions without flow through the meter
- For sourcing outputs, place the shorting block across JP1 & JP2 (factory default)
- Switch setting 9 causes the pickup to output a 250 Hz (+/- 20%) Phase = -90° pulse output, simulating medium flow conditions without flow through the meter.

Electrical Connection for Pin Connector

Pin Number	Function
1	NC
2	Output 2
3	NC
4	Output 1
5	Ground
6	Supply

Wiring Color Code

	Pin Number	Wire Color
Signal 2	2	Green
Signal 1	4	White
Ground	5	Black
Supply Voltage	6	Red

Quad-4 Operating Modes

Switch	Output 1	Output 2
0	Flow Direction	Signal 2
1	1 x frequency +90° phase	
2	Flow Direction	2 x frequency
3	2 x frequency +90° phase	
4	Flow Direction	4 x frequency
5	Both outputs 4 x frequency in phase	
6	Reserved	
7	Forward pulses	Reverse pulses
8	Test: S1 & S2 == 10 Hz (± 20%) Phase = +90°	
9	Test: S1 & S2 == 250 Hz (± 20%) Phase = -90°	

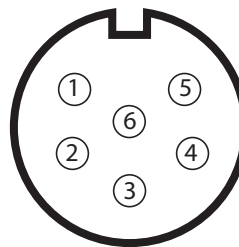


Figure 2: Pinout looking at male connector on sensor

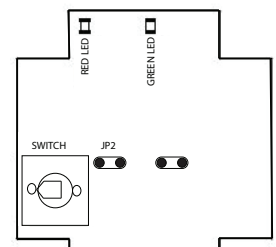
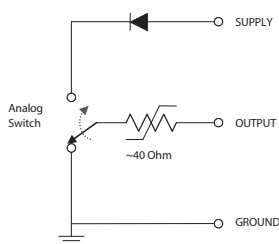


Figure 3: Top view of circuit board with view of LEDs and switch

SPECIFICATIONS

Supply Voltage	10...28V DC
Supply Current	75 mA @ 24V DC
Duty Signal	50% ± 15%
Minimum Signal	0.5 Hz
Maximum Signal	1000 Hz
Frequency Output	Flow dependent, up to 2000 Hz
Driving Capacity	50 mA maximum resistive load
Output Impedance	~ 40 Ohm analog switch and self-resetting fuse
Temperature Range	-40...185° F (-40...85° C)

SOURCING OUTPUT CIRCUIT (DEFAULT FROM FACTORY)



- Output selection jumper on; Place shorting block across JP1 & JP2
- Signal output square wave:
 $V_{high} = \text{Supply} - 1V$ @ no output load
 $V_{low} = 0.1V$
- Maximum sourced output voltage: Supply -0.5V
- Maximum current sourcing capabilities: 50 mA

Figure 4: Sourcing output circuit

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The Americas | Badger Meter | 4545 West Brown Deer Rd | PO Box 245036 | Milwaukee, WI 53224-9536 | 800-876-3837 | 414-355-0400
 México | Badger Meter de las Americas, S.A. de C.V. | Pedro Luis Ogazón N°32 | Esq. Angelina N°24 | Colonia Guadalupe Inn | CP 01050 | México, DF | México | +52-55-5662-0882
 Europe, Eastern Europe Branch Office (for Poland, Latvia, Lithuania, Estonia, Ukraine, Belarus) | Badger Meter Europe | ul. Korfantego 6 | 44-193 Knurów | Poland | +48-32-236-8787
 Europe, Middle East and Africa | Badger Meter Europa GmbH | Nurtinger Str 76 | 72639 Neuffen | Germany | +49-7025-9208-0
 Europe, Middle East Branch Office | Badger Meter Europe | PO Box 341442 | Dubai Silicon Oasis, Head Quarter Building, Wing C, Office #C209 | Dubai / UAE | +971-4-371 2503
 Slovakia | Badger Meter Slovakia s.r.o. | Racianska 109/B | 831 02 Bratislava, Slovakia | +421-2-44 63 83 01
 Asia Pacific | Badger Meter | 80 Marine Parade Rd | 21-06 Parkway Parade | Singapore 449269 | +65-63464836
 China | Badger Meter | 7-1202 | 99 Hangzhong Road | Minhang District | Shanghai | China 201101 | +86-21-5763 5412
 Switzerland | Badger Meter Swiss AG | Mittelholzerstrasse 8 | 3006 Bern | Switzerland | +41-31-932 01 11