

WIRING AND CALIBRATION

2-Wire Loop Powered 4-20mA Transmitter Options W2 and W3

1.

Installation & Wiring

1.1 General

The transmitter board is fitted inside the enclosure of the flow meter, Option W2 provides a 4-20mA dc output in addition to a local mechanical analog indicator. Option W3 operates identically, but omits the local indication.

The transmitter measures differential pressure directly using a piezoresistive wet/wet differential pressure sensor. The differential pressure measured is independent of the mechanical measurement provided by the local mechanical indicator. The output of the transmitter is linear with differential pressure. The output must be linearized in the receiving device to provide a flow measurement. The transmitter is powered by an external 24 volt dc power supply provided by the user. A rated capacity of 25mA minimum is required.

1.2 Construction

It has integrated construction, high static pressure, stable and reliable. The high and low pressure sides are protected by isolated stainless steel diaphragm. It can be used for measuring liquids and gases and conductive flow media that are compatible with stainless steel and Viton™ seals.

Electric Performance

Power supply: 2-wire 15 ~ 28VDC

Output signal: 2-wire loop powered 4 ~ 20mADC

Response time (10% ~ 90%) : ≤1ms

Electric connection: 100mm silicon rubber flexible wires

Max. Static pressure: 20MPa

Construction Specification

Housing: Bronze or Stainless Steel 316L (dependent on meter construction)

Diaphragm material: Stainless Steel 316L

Pin: silicon rubber flexible wire

O-ring: Viton™ (Only)

Fill In: Silicon Oil

Media compatibility: the gas or media which is compatible with stainless steel and Viton™

Environment Condition

Position effect: deviate 90° from any orientation, zero change ≤0.2%FS

Shock: ≤1% at 3gRMS, 30 ~ 2000Hz

Impact: ≤1% at 100g, 10ms

Cycling Life: 1×10⁸ pressure cycles

Basic Specification

Specification*	Min.	Typ.	Max.	Units
Accuracy		±0.25%FS	≤ ±0.5%FS	
Zero Thermal Error		±1.0	±1.2	%FS, @ 25°C
Span Thermal Error		±1.0	±1.2	%FS, @ 25°C
Compensated Temp. Range	0 ~ 50			°C
Working Temp. Range	-40 ~ 120			°C
Storage Temp. Range	-40 ~ 120			°C
Long Term Stability		±0.3	±0.5	%FS / year
*Testing at basic condition				

2.1 Wiring & Test Equipment

Fluke 9600A digital multimeter or equivalent. All flow meters are factory calibrated. Connect multimeter in series with current loop. WARNING: Do not adjust span unless you are certain that the meter is reading incorrectly. Access adjustment pot by either removing the screw in plug located in the ABS housing (W2 option) or removing the aluminum cover (W3 option). Using a 24Vdc power supply connect – to terminal 1 and + to terminal 2. Power supply not included option PS-24.

2.2 Procedure

With pipeline pressurized, adjust zero pot (Z) until current reads 4.00mA ± 0.02mA at no flow. Establish a known flow rate through the flow meter as close to 95% of F.S. as practical. Set span pot (S), span is set using the following formula: $I = 16 Q^2 + 4.00$; where I = current output in mA, Q = decimal % of full scale.

% Flow to Output Chart

<u>% FS</u>	<u>Current Output</u>	<u>% FS</u>	<u>Current Output</u>
20	4.64	70	11.84
30	5.44	80	14.24
40	6.56	90	16.96
50	8.00	95	18.44
60	9.76	100	20.00

2.

Field
Calibration
(4-20mA dc)

Wiring Diagram W2 & W3 Option

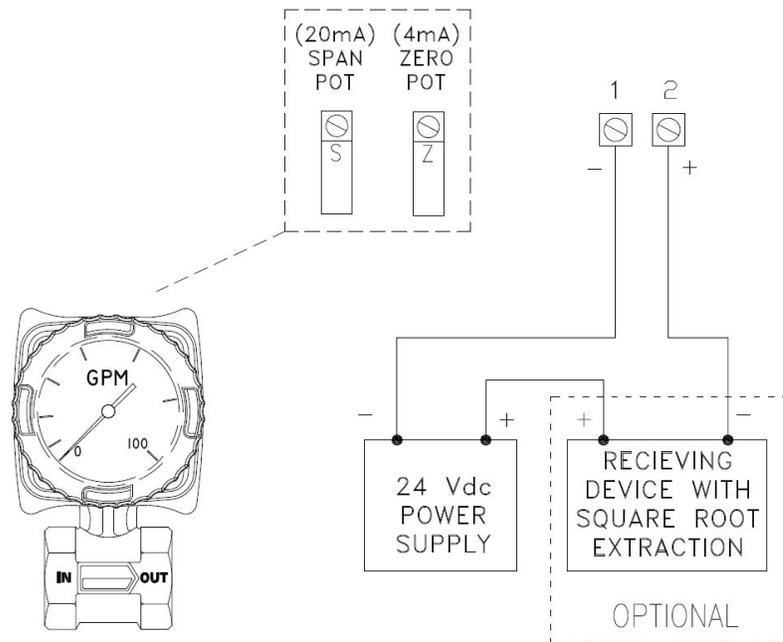


Figure 1

Wiring and Adjustment Pot Diagram W2 Option

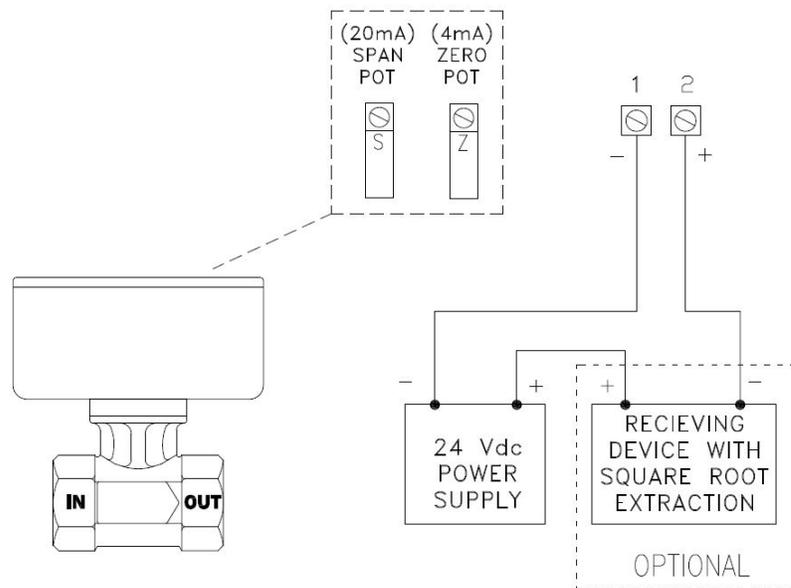


Figure 2

Note: When adjusting the span to increase the milliamp output turn the span pot counterclockwise, when adjusting the zero to increase the milliamp output turn the zero pot clockwise. When calibrating the 4-20mA signal refer to section 2.2 for flow to output chart.