

# Rosemount 1810 Flush Mount Pressure Transmitter

## ROSEMOUNT 1810 FEATURES:

- A cleanable and compact stainless steel design
- An innovative patented venting configuration that prevents gauge reference plugging (patent pending)
- HART® Smart capability and 10:1 rangeability
- Superior temperature compensation to reduce temperature drift
- A flush mount fitting compatible with the PASVE™ valve.



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## A compact, reliable pressure measurement for your flush mount applications

The Rosemount 1810 Flush Mount Transmitter brings legendary Rosemount reliability and performance to a difficult measurement application, making it the perfect solution for process clogging applications. The Rosemount 1810 provides PASVE™ valve compatibility, but can also be used as a stand alone flush mount solution with the use of a Rosemount process coupling.

### Flush Mount Design

The Rosemount 1810 Flush Mount Transmitter was designed specifically for applications where process clogging is a problem, such as:

- Pulp & paper
- Food & beverage
- Dairy
- Chemical

### HART® Protocol Compatibility

The 1810 has full SMART communication capabilities via the HART Communicator and provides 10:1 rangeability.

### Flush Mount Solution Compatible with PASVE™ Valve

PASVE™ Valve compatibility allows the Rosemount 1810 to be a drop in replacement for PASVE™ Valve applications, or it can be directly mounted to the process using a Rosemount process coupling.

### Cleanable, Stainless Steel

All 316L SST construction virtually eliminates corrosion problems and the smooth design enables easy cleaning.

### Improved Temperature Compensation

An improved temperature measurement circuit allows the 1810 to accurately measure process temperatures and reduces external influences of temperature.

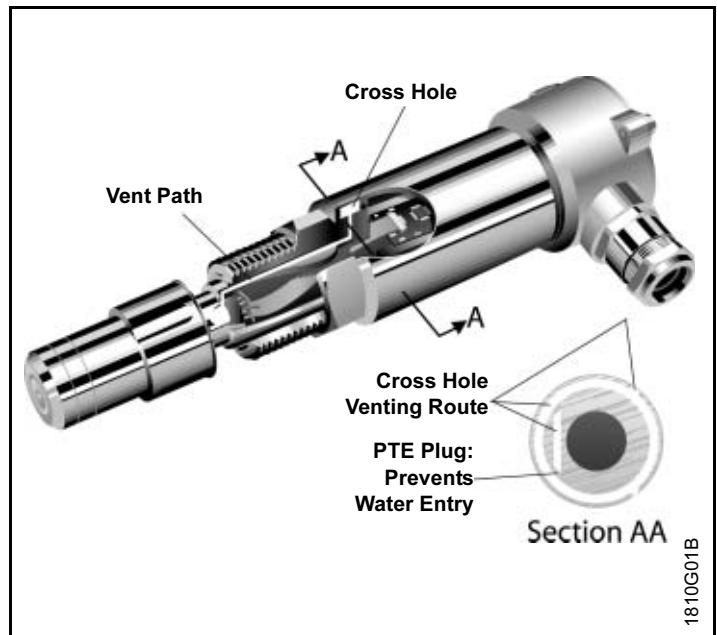


FIGURE 1. Rosemount 1810 Gauge Vent: An internal, machined path to reduce clogging and failure.

### Non-Plugging Gauge Reference Venting

Rosemount's patent pending design features a machined, internal vent path to atmosphere. Not only is this more reliable than plastic vent tubes (which can disconnect or rupture), the vent is located away from the process connection to reduce the chance of clogging.

## Specifications

### PERFORMANCE SPECIFICATIONS

#### Conformance to specifications ( $\pm 3$ Sigma)

*Technology leadership, advanced manufacturing techniques and statistical process control ensure specification conformance to at least  $\pm 3$  sigma.*

#### Reference Accuracy

*For zero-based spans, reference conditions, silicone oil fill, SST materials, standard process connection, and digital trim values set to equal range points.*

Includes the effects of nonlinearity, hysteresis, and repeatability

Range 1:  $\pm 0.15\%$  of span for spans of 1:1 to 7.5:1

Ranges 2, 3, 4:  $\pm 0.1\%$  of span for spans 1:1 to 10:1

#### Long Term Stability

$\pm 0.1\%$  URL per year

#### Ambient Temperature Effect per 50°C (90°F)

$\pm (0.25\% \text{ URL} + 0.25\% \text{ span})$  per 50°C

#### Vibration Effect

Less than  $\pm 0.1\%$  of URL when tested per the requirements of IEC60770-1 field or pipeline with high vibration level (10-60 Hz 0.21mm peak to peak displacement / 60-2000 Hz 3g)

#### Power Supply Effect

Less than  $\pm 0.005\%$  of calibrated span per volt

#### RFI Effects

$\pm 0.1\%$  of span from 20 to 1000 MHz and for field strength up to 10 V/m

### FUNCTIONAL SPECIFICATIONS

#### Range and Sensor Limits

Rosemount 1810 Range and Sensor Limits				
Range	Minimum Span	Upper (URL)	Lower (LRL) (Abs.)	Lower <sup>(1)</sup>
1	4 psi (27,6 kPa)	30 psi (207 kPa)	0 psia (0 kPa)	-14.7 psig (-101,3 kPa)
2	15 psi (103 kPa)	150 psi (1034 kPa)	0 psia (0 kPa)	-14.7 psig (-101,3 kPa)
3	80 psi (552 kPa)	800 psi (5,516 kPa)	0 psia (0 kPa)	-14.7 psig (-101,3 kPa)
4	250 psi (1,724 kPa)	2500 psi (17,237 kPa)	0 psia (0 kPa)	-14.7 psig (-101,3 kPa)

(1) Assume atmospheric pressure of 14.7 psig.

#### Overpressure Limits

Range 1: 750 psi (5, 170 kPa)

Range 2: 1,500 psi (10, 342 kPa)

Range 3: 1,600 psi (11,032 kPa)

Range 4: 3,750 psi (25,855 kPa)

#### Burst Pressure

Ranges 1-4: 11,000 psi (75,842 kPa)

#### Service

Liquid, gas, slurry, and vapor applications

#### 4-20 mA (output code A)

##### Zero and Span Adjustment

Zero and span values can be set anywhere within the range. Span must be greater than or equal to the minimum span.

##### Output

Two-wire 4-20 mA output. Digital process variable superimposed on 4-20 mA signal, available to any host that conforms to the HART protocol.

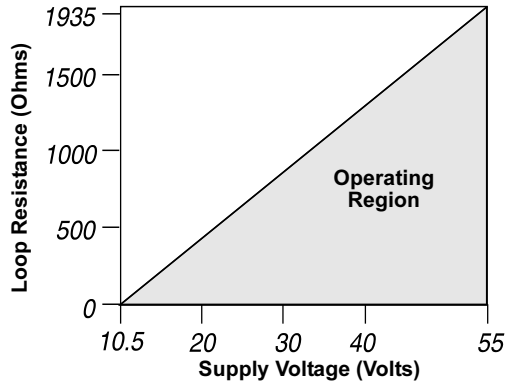
##### Power Supply

External power supply required. Transmitter operates on 10.5 to 55.0 V dc with no load.

### Load Limitations

Maximum loop resistance is determined by the voltage level of the external power supply, as shown:

**Max. Loop Resistance = 43.5 (Power Supply Voltage – 10.5)**



Communication requires a minimum loop resistance of 250 ohms.

### Temperature Limits

#### Ambient

-40 to 85 °C (-40 to 185 °F)

#### Storage

-46 to 110 °C (-50 to 230 °F)

#### Process Temperature Limits

-40 to 121 °C (-40 to 250 °F)

### Humidity Limits

0–100% relative humidity

### Turn-On Time

Performance within specifications less than 2.0 seconds after power is applied to the transmitter

### Damping

The default damping value is 0.40 seconds and can be reset in fixed increments of 0.05, 0.10, 0.20, 0.40, 0.80, 1.60, 3.20, 6.40, 12.8, and 25.6 seconds.

### Failure Mode Alarm

#### HART/4-20mA (output code A)

If self-diagnostics detect a gross transmitter failure, the analog signal will be driven off scale to alert the user. The Rosemount 1810 provides a high alarm value of  $\geq 21.75\text{mA}$ .

## PHYSICAL SPECIFICATIONS

### Electrical Connections

M20 × 1.5 (CM20) for use with supplied cable gland (use 7.5 - 10mm diameter for best results). HART interface connections fixed to terminal block for output code A.

### Process Connections

- PASVE™ valve compatible process connection
- Welded process coupling
- Process Connection thread is G1 x 11

### Process-Wetted Parts

#### Process Isolating Diaphragms

316L SST

### Non-Wetted Parts

#### Electronics Housing

316L SST  
NEMA 4X  
IP 65

### Sensor Module Fill Fluid

Silicone (standard)

### Shipping Weights for Rosemount 1810

2.2 lb. (1 kg.)

## Product Certifications

### Approved Manufacturing Locations

Rosemount Inc. - Chanhassen, Minnesota, USA  
Fisher-Rosemount GmbH & Co. - Wessling, Germany  
Emerson Process Management Asia Pacific Private Limited -  
Singapore  
Beijing Rosemount Far East Instrument Co., Limited - Beijing

### European Directive Information

The EC declaration of conformity for all applicable European directives for this product can be found on the Rosemount website at [www.rosemount.com](http://www.rosemount.com). A hard copy may be obtained by contacting our local sales office.

### Electro Magnetic Compatibility (EMC)

Installed signal wiring should not be run together and should not be in the same cable tray as AC power wiring.

Device must be properly grounded or earthed according to local electric codes.

To improve protection against signal interference, shielded cable is recommended, see page 4 for more information.

### Other important guidelines

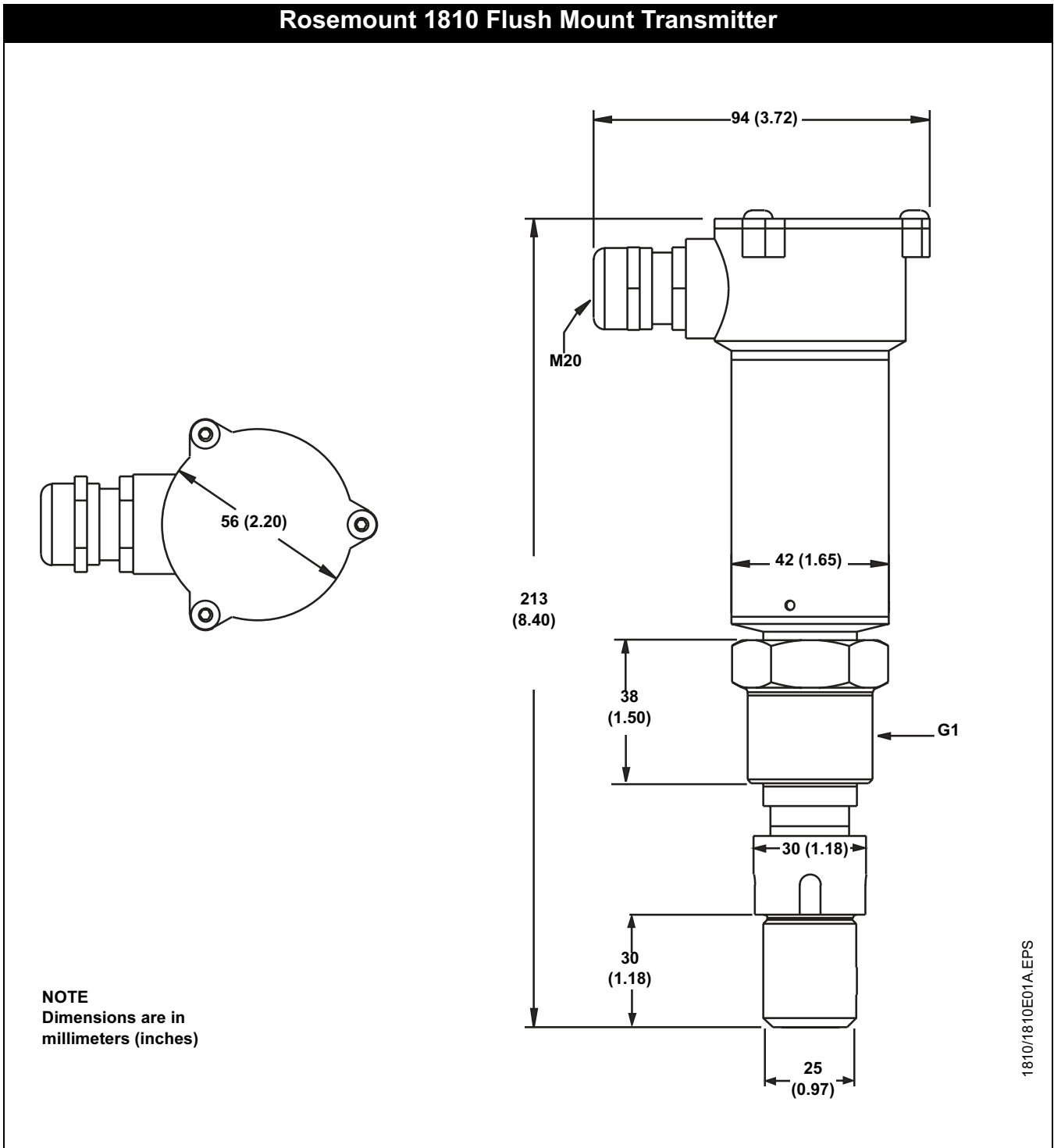
Only use new, original parts.

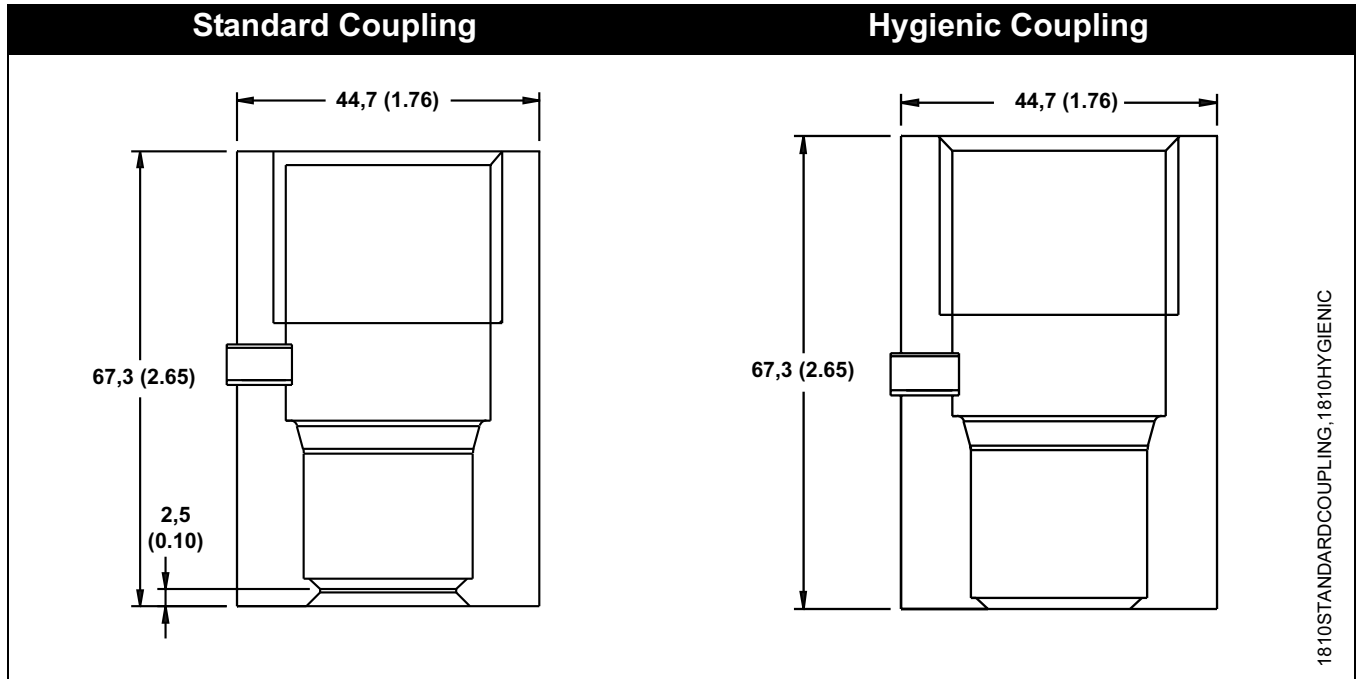
To prevent the process medium escaping, do not unscrew or remove process flange bolts, adapter bolts or bleed screws during operation.

When accessories are added to the transmitter, the minimum pressure rating of any component shall not be exceeded.

Maintenance shall only be done by qualified personnel.

### Dimensional Drawings





## Ordering Information

<b>Model</b>	<b>Product Description</b>
1810	Flush Mount Transmitter
<b>Code</b>	<b>Measurement Type</b>
G	Gauge
A	Absolute
<b>Code</b>	<b>Pressure Range</b>
1	30 psi (207 kPa)
2	150 psi (1,034 kPa)
3	800 psi (5,516 kPa)
4	2500 psi (17,237 kPa)
<b>Code</b>	<b>Isolating Diagram/Process Connection Material</b>
2	316L SST
<b>Code</b>	<b>Process Coupling Style</b>
D00	No Coupling
D01	Hygienic, 316L SST
D11	Standard 316L SST
<b>Code</b>	<b>Transmitter Output</b>
A	4-20 mA HART <sup>®</sup> protocol
<b>Code</b>	<b>Electrical Connection</b>
2B	Terminal Box, M20
<b>Code</b>	<b>Options</b>
A1	Shut-Off Plug
A2	Plastic Transmitter Cover
C1	Custom Software Configuration
Q4	Calibration Data Certificate consistent with ISO 10474 2.1 or EN 10204 2.1
Q8	Material Traceability Certificate per EN 10204-3.1B
Q31	Certificate of Compliance according to EN102204-2.1
Q32	Certificate of Compliance according to EN102204-2.2
<b>Typical Model Number: 1810 A 2 2 D11 A 2B A1</b>	



**SIGNAL SELECTION: (Software Selectable)**

- 4-20 mA with simultaneous digital signal based on HART protocol\***
- Burst mode of HART digital process variable<sup>(1)</sup>
- Burst mode output options:
  - Primary variable in engineering units
  - Primary variable in percent of range
  - All dynamic variables in engineering units
  - All dynamic variables in engineering units and the primary variable mA value
- Multidrop Communication Transmitter Address (1-15):    (default = 1)

(1) C1 Option required for configuration of this parameter.

**Rosemount 1810 Gauge and Absolute Pressure Transmitter Range Limits**

Units	Range 1 Span		Range 2 Span		Range 3 Span		Range 4 Span	
	min	max	min	max	min	max	min	max
inH <sub>2</sub> O	110.92	831.89	415.94	4159.445	2218.37	22183.71	6932.41	69324.09
inHg	8.1441	61.0806	30.5403	305.403	162.8816	1628.16	509.005	5090.05
ftH <sub>2</sub> O	9.243	69.324	34.662	346.6	184.86	1848.64	577.70	5777.01
mmH <sub>2</sub> O	2817.33	21129.96	10564.98	105649.8	56346.56	563465.6	176083	1760830
mmHg	206.8597	1551.45	775.725	7757.24	4137.2	413721	12928.73	129287.33
psi	4.0	30	15	150	80	800	250	2500
bar	0.27579	2.06843	1.034	10.3421	5.5158	55.1581	17.2369	172.369
mbar	275.7904	2068.43	1034.214	10342.14	5515.81	55158.1	17236.9	172369
g/cm <sup>2</sup>	281.2280	2109.21	1054.6	10546.05	5624.56	56245.6	17576.75	175767.50
kg/cm <sup>2</sup>	0.2812	2.1090	1.0546	10.5461	5.6246	56.2456	17.5768	175.7615
Pa	27579.04	206843	103421.40	1034214	551580.8	5515808	1723690	17236900
kPa	27.579024	206.843	103.4214	1034.21	551.581	5515.81	1723.69	17236.893
torr	206.8597	1551.45	775.725	7757.24	4137.2	413721	12928.73	129287.33
atm	0.272184	2.04138	1.02069	10.2069	5.44368	54.4368	17.0115	170.115

NOTE:  
When used with the 375 Handheld Communicator or the Rosemount 268 Communicator, ±5% adjustability is allowed on the sensor limit to allow for unit conversions.



## Product Data Sheet

00813-0100-4020, Rev EA  
August 2004

# Rosemount 1810

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