



MEASUREMENT AND CONTROL

# 1800 Series Pressure Transmitters

The **1800 Series Pressure Transmitters** are well suited for intrinsically safe applications or conventional transmitter installations. The 1800 Series transmitters utilize an advanced monosilicon pressure sensor and incorporate a patented encapsulation technology to achieve exceptional mechanical and thermal isolation.

All 1800 Series transmitters include external push-buttons for device setup and calibration. If ordered with the appropriate output, they can also be programmed using HART® or Modbus. Additionally, they are available with 2, 3, or 5-valve manifolds. With a standard ±0.075% accuracy, the SOR 1800 Series conventional transmitters are an exceptional solution for continuous pressure monitoring.

## Features

- Gauge Pressure Ranges
  - 1 psi to 1 psi through -14.5 psi to 14,500 psi
  - 6 kPa to 6 kPa through -100 kPa to 100 MPa
- Differential Pressure Ranges
  - 0.87 psid to 0.87 psid through -72.5 psid to 1,450 psid
  - 6 kPa to 6 kPa through -500 kPa to 10 MPa
- 4-20 mA with optional HART®, 1-5VDC low power or Modbus output
- ±0.075% accuracy (F.S.)
- Aluminum explosion proof housing
- Standard push-buttons for setup
- Optional integral LCD display
- EMC (EMI/RFI) protection
- ATEX / IECEx certified for intrinsically safe and flameproof applications
- CSA certified for explosion proof applications
- 3 year warranty



**1800PT**  
Conventional Gauge Pressure

**1800PR**  
Piezoresistive Gauge Pressure



**1800DM**  
Differential Pressure with Direct Mount Diaphragm Seal



**1800DP**  
Differential Pressure



**1800RM**  
Differential Pressure with Remote Mount Diaphragm Seals

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# 1800 Series Pressure Transmitters

## Product Specifications 1800PT



### Product Specifications - 1800PT

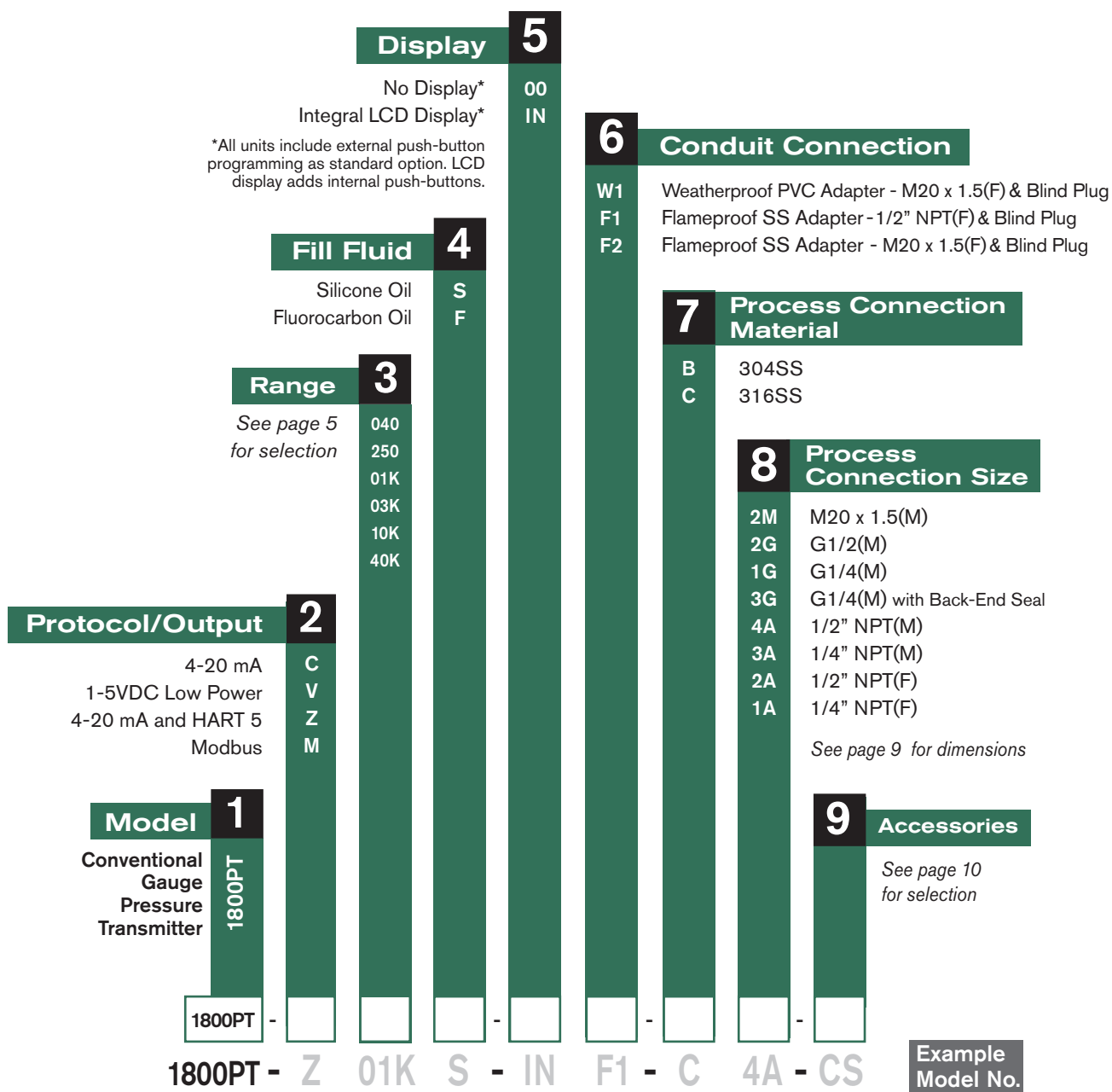
<b>Output</b>	4-20mA 1-5VDC Low Power HART 5 (Optional) Modbus	<b>Long Term Stability</b>	≤ ±0.2% URL per 5 years
		<b>Response Time</b>	≤ 200 ms
		<b>Damping Time</b>	0-100 s (Configurable)
		<b>Startup Time</b>	≤ 6 s
<b>Accuracy</b>	(Linearity, Hysteresis and Repeatability) ± 0.075% (± 0.2% at max turndown) *Square Root Output Accuracy = 1.5 x Linear Output Accuracy	<b>Supply Voltage</b>	
		4-20mA	10.5-55 VDC
		1-5VDC Low Power	9-32 VDC
		HART® with 250 Ω load	16.5-55 VDC
		Modbus	5-32 VDC
<b>Temperature Effect</b>	± 2.1% URL @ -4 to 176°F	<b>Loop Resistance</b>	0-2119 Ω
<b>Temperature Range</b>		<b>HART® Protocol</b>	250-600 Ω
<b>Compensated</b>	-4 to 176°F	<b>Circuit Protection</b>	Reverse Polarity and EMC (EMI/RFI) protected
<b>Ambient (Limited by both Approvals and Display)</b>		<b>Power Consumption</b>	≤ 500 mW @ 24 VDC, 20.8 mA
<b>No Approvals or Display</b>	-40 to 185°F	<b>Power Supply Effects</b>	< ±0.005% URL/V
<b>With Integral LCD Display (No Approvals)</b>	-4 to 158°F	<b>Mounting Position Effect</b>	≤ 0.06 psi Can be corrected by re-zeroing
<b>Intrinsically Safe</b>	-40 to 140°F	<b>Vibration Effect</b>	< 0.1% URL IEC61928-3 tests
<b>Flameproof</b>	-13 to 140°F	<b>Relative Humidity</b>	5-100% R.H. @ 104°F
<b>Process</b>	-40 to 248°F	<b>Construction</b>	Aluminum Ex-Pf Housing
<b>Flameproof</b>	Limits Max Temperature to 176°F	<b>IP Rating</b>	IP67
<b>Intrinsically Safe</b>	Limits Max Temperature to 248°F	<b>Weight (No Adapters or Brackets)</b>	3.44 lbs
<b>Storage</b>		<b>Warranty</b>	3 years
<b>No Display</b>	-40 to 230°F		
<b>With Integral LCD Display</b>	-40 to 185°F		

Design and specifications are subject to change without notice. For latest revision, see [SORInc.com](http://SORInc.com).

### How to Order

Below is the SOR quick select model number tree that provides you with all the options to configure and order a product for your application.

- You must select a designator for each component
- Reference tables, charts and additional information are provided throughout the catalog to help you make your selections, see pages noted in the tree.



See page 32 for agency and options.



### Ranges - PT

Designator	LRL	URL	Smallest Possible Span	Over Pressure
040	-5.8 psi (-40 kPa)	5.8 psi (40 kPa)	0.29 psi (2 kPa)	145 psi (1 MPa)
250	-14.5 psi (-100 kPa)	36.3 psi (250 kPa)	1.81 psi (12.5 kPa)	580 psi (4 MPa)
01K	-14.5 psi (-100 kPa)	145 psi (1 MPa)	7.25 psi (50 kPa)	870 psi (6 MPa)
03K	-14.5 psi (-100 kPa)	435 psi (3 MPa)	21.8 psi (150 kPa)	2175 psi (15 MPa)
10K	-14.5 psi (-100 kPa)	1450 psi (10 MPa)	72.5 psi (500 kPa)	2900 psi (20 MPa)
40K	-14.5 psi (-100 kPa)	5802 psi (40 MPa)	725 psi (5 MPa)	11603 psi (80 MPa)

To determine if desired Measuring Range is achievable for a specific range option:

1. Lower End of Measuring Range  $\geq$  LRL
2. Upper End of Measuring Range  $\leq$  URL
3. Measuring Range Span = Upper End – Lower End  $\geq$  Smallest Possible Span



### Product Specifications - 1800PR

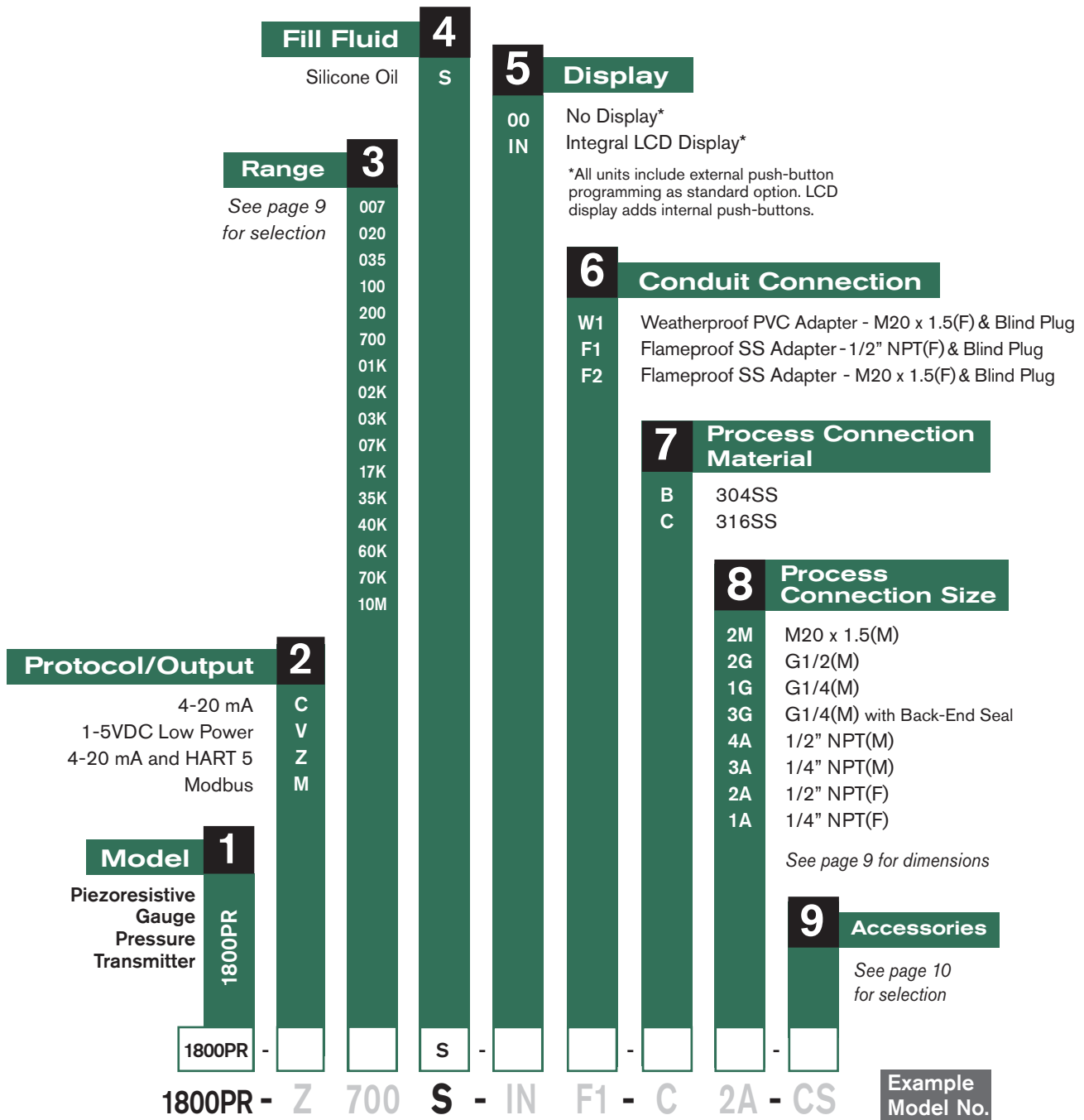
<b>Output</b>	4-20mA 1-5VDC Low Power HART 5 (Optional) Modbus	<b>Long Term Stability</b>	≤ ±0.2% URL per 5 years
		<b>Response Time</b>	≤ 200 ms
		<b>Damping Time</b>	0-100 s (Configurable)
		<b>Startup Time</b>	≤ 6 s
<b>Accuracy</b>	(Linearity, Hysteresis and Repeatability) ± 0.2% (± 0.5% at max turndown) *Square Root Output Accuracy = 1.5 x Linear Output Accuracy	<b>Supply Voltage</b>	
		4-20mA	10.5-55 VDC
		1-5VDC Low Power	9-32 VDC
		HART® with 250 Ω load	16.5-55 VDC
		Modbus	5-32 VDC
<b>Temperature Effect</b>	± 0.67% URL @ -4 to 176°F	<b>Loop Resistance</b>	0-2119 Ω
<b>Temperature Range</b>		<b>HART® Protocol</b>	250-600 Ω
<b>Compensated</b>	-4 to 176°F	<b>Circuit Protection</b>	Reverse Polarity and EMC (EMI/RFI) protected
<b>Ambient (Limited by both Approvals and Display)</b>		<b>Power Consumption</b>	≤ 500mW @ 24VDC, 20.8mA
<b>No Approvals or Display</b>	-40 to 185°F	<b>Power Supply Effects</b>	< ±0.005% URL/V
<b>With Integral LCD Display (No Approvals)</b>	-4 to 158°F	<b>Mounting Position Effect</b>	≤ 0.06 psi Can be corrected by re-zeroing
<b>Intrinsically Safe</b>	-40 to 140°F	<b>Vibration Effect</b>	< 0.1% URL IEC61928-3 tests
<b>Flameproof</b>	-13 to 140°F	<b>Relative Humidity</b>	5-100% R.H. @ 104°F
<b>Process</b>	-40 to 248°F	<b>Construction</b>	Aluminum Ex-Pf Housing
<b>Flameproof</b>	Limits Max Temperature to 176°F	<b>IP Rating</b>	IP67
<b>Intrinsically Safe</b>	Limits Max Temperature to 248°F	<b>Weight (No Adapters or Brackets)</b>	3.18 lbs
<b>Storage</b>		<b>Warranty</b>	3 years
<b>No Display</b>	-40 to 230°F		
<b>With Integral LCD Display</b>	-40 to 185°F		

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- Reference tables, charts and additional information are provided throughout the catalog to help you make your selections, see pages noted in the tree.



See page 32 for agency and options.

### Ranges

Designator	LRL	URL	Smallest Possible Span	Over Pressure
007	-1 psi (-7 kPa)	1 psi (7 kPa)	0.73 psi (5 kPa)	1.52 psi (10.5 kPa)
020	-2.9 psi (-20 kPa)	2.9 psi (20 kPa)	1.45 psi (10 kPa)	4.35 psi (30 kPa)
035	-5.08 psi (-35 kPa)	5.08 psi (35 kPa)	2.9 psi (20 kPa)	7.61 psi (52.5 kPa)
100	-14.5 psi (-100 kPa)	14.5 psi (100 kPa)	5.08 psi (35 kPa)	21.8 psi (150 kPa)
200	-14.5 psi (-100 kPa)	29 psi (200 kPa)	14.5 psi (100 kPa)	43.5 psi (300 kPa)
700	-14.5 psi (-100 kPa)	101.5 psi (700 kPa)	29 psi (200 kPa)	152 psi (1050 kPa)
01K	-14.5 psi (-100 kPa)	145 psi (1 MPa)	72.5 psi (500 kPa)	217.5 psi (1.5 MPa)
02K	-14.5 psi (-100 kPa)	246.6 psi (1.7 MPa)	145 psi (1 MPa)	369.8 psi (2.55 MPa)
03K	-14.5 psi (-100 kPa)	507.6 psi (3.5 MPa)	246.6 psi (1.7 MPa)	761.4 psi (5.25 MPa)
07K	-14.5 psi (-100 kPa)	1015 psi (7 MPa)	507.6 psi (3.5 MPa)	1523 psi (10.5 MPa)
17K	-14.5 psi (-100 kPa)	2465 psi (17 MPa)	1015 psi (7 MPa)	3698 psi (25.5 MPa)
35K	-14.5 psi (-100 kPa)	5076 psi (35 MPa)	2465 psi (17 MPa)	7614 psi (52.5 MPa)
40K	-14.5 psi (-100 kPa)	5801 psi (40 MPa)	2900 psi (20 MPa)	8702 psi (60 MPa)
60K	-14.5 psi (-100 kPa)	8702 psi (60 MPa)	4351 psi (30 MPa)	13053 psi (90 MPa)
70K	-14.5 psi (-100 kPa)	10153 psi (70 MPa)	5076 psi (35 MPa)	15229 psi (105 MPa)
10M	-14.5 psi (-100 kPa)	14504 psi (100 MPa)	7252 psi (50 MPa)	21756 psi (150 MPa)

To determine if desired Measuring Range is achievable for a specific range option:

1. Lower End of Measuring Range  $\geq$  LRL
2. Upper End of Measuring Range  $\leq$  URL
3. Measuring Range Span = Upper End – Lower End  $\geq$  Smallest Possible Span

# 1800 Series Pressure Transmitters

## Process Connections 1800PT/PR

### Process Connections

Designator	Dimensions = mm	Designator	Dimensions = mm
<b>2M</b> M20 x 1.5(M)	<p>SW27 20 3 2 5 17.5 M20X1.5 GB-T193-2003</p>	<b>4A</b> 1/2" NPT(M)	<p>SW27 19 1/2NPT ANSI/ASME 1.20.1</p>
<b>2G</b> G1/2(M)	<p>SW27 20 3 2 5 17.5 G1/2 EN837</p>	<b>3A</b> 1/4" NPT(M)	<p>SW27 16 1/4NPT ANSI/ASME 1.20.1</p>
<b>1G</b> G1/4(M)	<p>SW27 13 2 2 5 9.5 G1/4 EN837</p>	<b>2A</b> 1/2" NPT(F)	<p>SW27 16 14 1/2NPT ANSI/ASME B1.20.1</p>
<b>3G</b> G1/4(M) with Back-End Seal	<p>SW27 14 12 18.9 G1/4 DIN3852-E</p>	<b>1A</b> 1/4" NPT(F)	<p>SW21 15 12 1/4NPT ANSI/ASME B1.20.1</p>

### Accessories

Description	Designator
Pipe Mounting Kit (U-Shaped Bracket for 2" Pipe) <i>Dimension drawing below.</i>	PK
Customer-Specified Display Settings <sup>1,6</sup>	SC
ATEX / IECEx Flameproof Ex db IIC T6 Gb, Ex tb IIIC T80°C Db <sup>1,2</sup>	CL
CSA Explosion Proof Class I, II, III, Div. 1, Grps. A, B, C, D, T6; Grps. E, F, G, T80°C <sup>2,3</sup>	CS
ATEX / IECEx Intrinsically Safe Ex ia IIC T4 Ga <sup>1</sup>	CK
CE Certificate	CE
Degrease Treatment of Wetted Parts	BB
Electropolishing Treatment of Wetted Parts	CC
Coiled Tube Heat Exchange Connector <i>Dimension drawing below.</i>	ET
Finned Heat Exchange Connector <i>Dimension drawing below.</i>	FE
Calibration Certificate	C1
Welding Adapter M20 x 1.5(M) 304SS <sup>4</sup> <i>Dimension drawing below.</i>	WM
Welding Adapter G1/2(F) 304SS <sup>5</sup> <i>Dimension drawing below.</i>	WG
Compliance to NACE Certification MR0 175/ISO 15156	NC
Password protected settings menu lockout	LK

<sup>1</sup> Requires Display option IN

<sup>2</sup> Requires Conduit Connection option F1 or F2

<sup>3</sup> Not available with ATEX / IECEx Approvals

<sup>4</sup> Requires 2M Process Connection Size

<sup>5</sup> Requires 2G Process Connection Size

<sup>6</sup> Form 1835\_1800 Series SC Accessory Data Sheet must be completed and submitted with order

Dimensions = mm

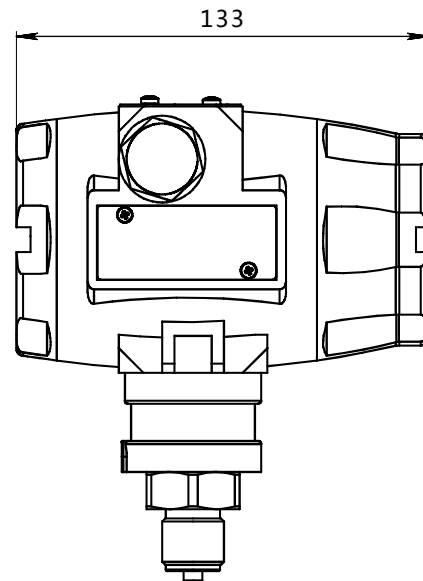
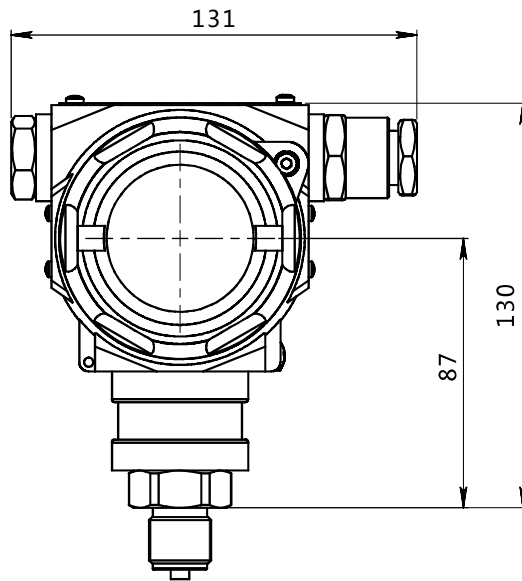
PK - Pipe Mounting Kit			
ET - Coiled Tube Heat Exchange Connector	FE - Finned Heat Exchange Connector	WM - Welding Adapter M20 x 1.5(M)	WG - Welding Adapter G1/2(F)

# 1800 Series Pressure Transmitters

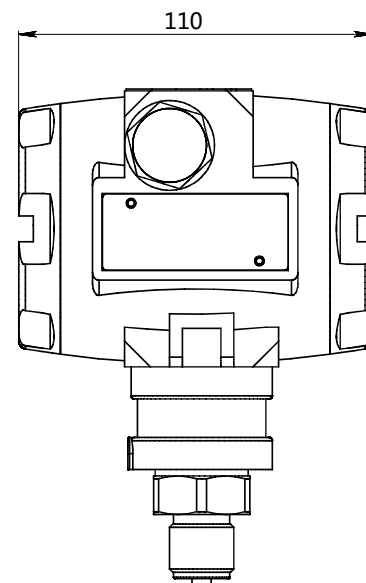
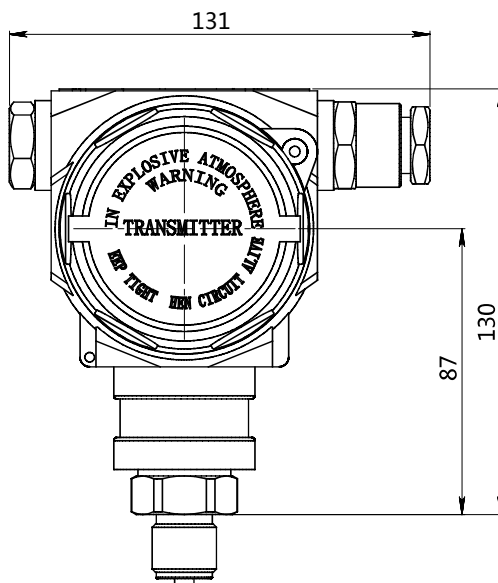
## Dimensions 1800PT/PR

Dimensions shown are for reference only.  
Dimensions = mm

### With Integral LCD Display (option IN)



### Without Display (option 00)



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### Product Specifications - 1800DP

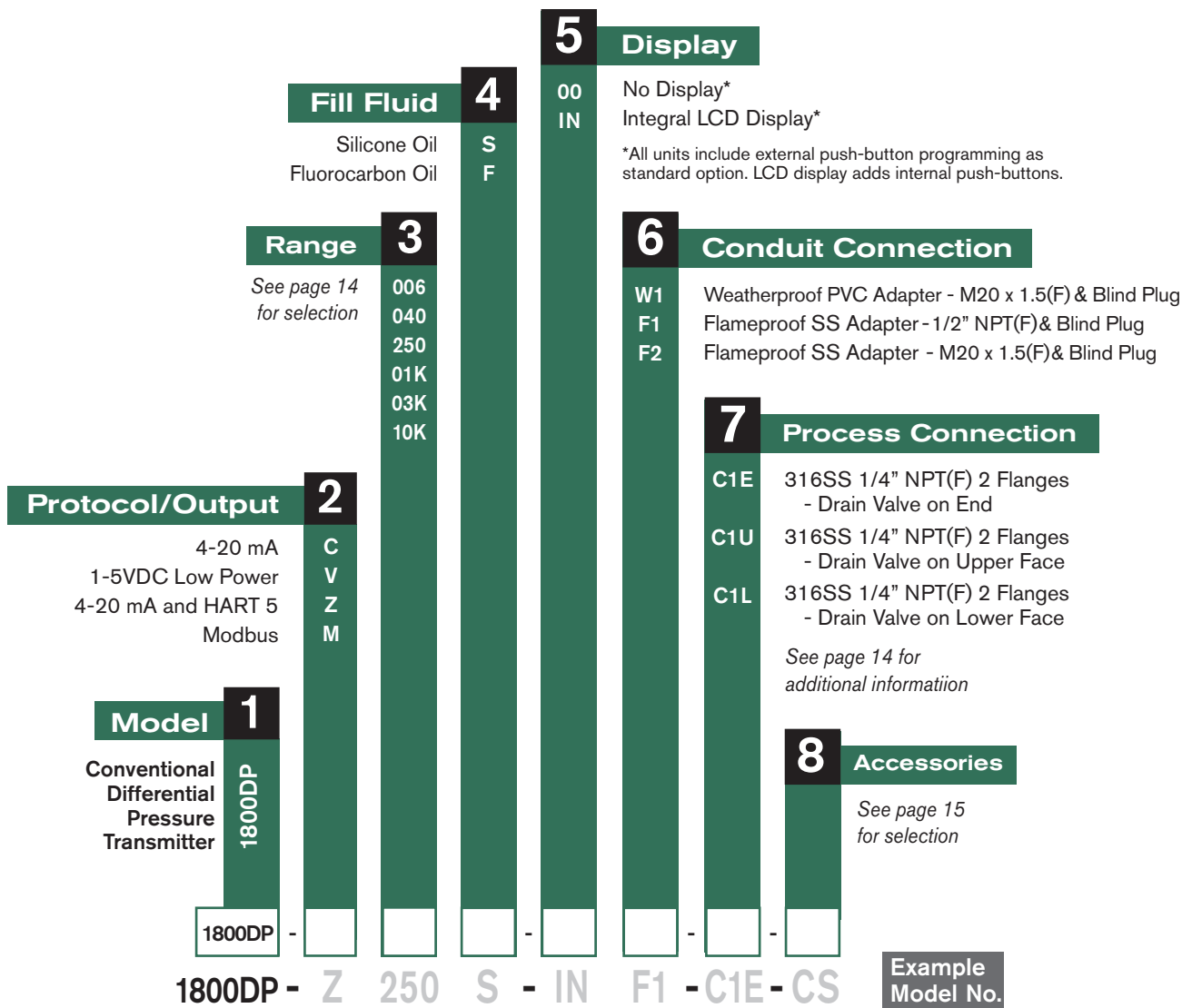
<b>Output</b>	4-20mA Linear (default) or Square Root 1-5VDC Low Power HART 5 (Optional) Modbus	<b>Long Term Stability</b>	≤ ±0.2% URL per 5 years
<b>Accuracy</b>	(Linearity, Hysteresis and Repeatability) ± 0.075% (± 0.2% at max turndown) *Square Root Output Accuracy = 1.5 x Linear Output Accuracy	<b>Response Time</b>	≤ 200 ms
<b>Static Pressure Effects</b>		<b>Damping Time</b>	0-100 s (Configurable)
Effect on Zero	± 15% URL/580 psi	<b>Startup Time</b>	≤ 6 s
Effect on Full Scale	± 0.2% URL/580 psi	<b>Supply Voltage</b>	
<b>Temperature Effect</b>	± 10.1% URL @ -4 to 176°F	4-20mA	10.5-55 VDC
<b>Temperature Range</b>		1-5VDC Low Power	9-32 VDC
Compensated	-4 to 176°F	HART® with 250 Ω load	16.5-55 VDC
Ambient (Limited by both Approvals and Display)		Modbus	5-32 VDC
No Approvals or Display	-40 to 185°F	<b>Loop Resistance</b>	0-2119 Ω
With Integral LCD Display (No Approvals)	-4 to 158°F	HART® Protocol	250-600 Ω
Intrinsically Safe	-40 to 140°F	<b>Circuit Protection</b>	Reverse Polarity and EMC (EMI/RFI) protected
Flameproof	-13 to 140°F	<b>Power Consumption</b>	≤ 500mW @ 24VDC, 20.8mA
<b>Process</b>		<b>Power Supply Effects</b>	< ±0.005% URL/V
Silicone Oil Fill Fluid	-40 to 248°F	<b>Mounting Position Effect</b>	≤ 0.06 psi Can be corrected by re-zeroing
Fluorocarbon Oil Fill Fluid	-40 to 185°F	<b>Vibration Effect</b>	< 0.1% URL IEC61928-3 tests
Flameproof	Limits Max Temperature to 176°F	<b>Relative Humidity</b>	5-100% R.H. @ 104°F
Intrinsically Safe	Limits Max Temperature to 248°F	<b>Construction</b>	Aluminum Ex-Pf Housing
<b>Storage</b>		<b>IP Rating</b>	IP67
No Display	-40 to 230°F	<b>Weight (No Adapters or Brackets)</b>	8.82 lbs
With Integral LCD Display	-40 to 185°F	<b>Warranty</b>	3 years

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See page 32 for agency and options.

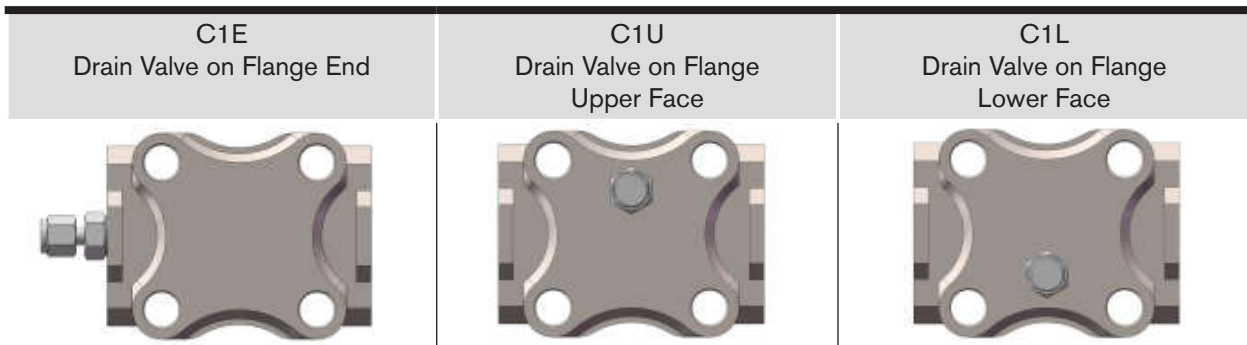
### Ranges

Designator	LRL	URL	Smallest Possible Span	Max Static Pressure	Hi-Side Over Pressure	Lo-Side Over Pressure
006	-0.87 psid (-6 kPa)	0.87 psid (6 kPa)	0.03 psid (200 Pa)	3626 psi (25 MPa)	2321 psid (16 MPa)	2321 psid (16 MPa)
040	-5.8 psid (-40 kPa)	5.8 psid (40 kPa)	0.06 psid (400 Pa)	5801 psi (40 MPa)	2321 psid (16 MPa)	2321 psid (16 MPa)
250	-36.3 psid (-250 kPa)	36.3 psid (250 kPa)	0.36 psid (2.5 kPa)	5801 psi (40 MPa)	2321 psid (16 MPa)	2321 psid (16 MPa)
01K	-72.5 psid (-500 kPa)	145 psid (1 MPa)	1.45 psid (10 kPa)	5801 psi (40 MPa)	2321 psid (16 MPa)	2321 psid (16 MPa)
03K	-72.5 psid (-500 kPa)	435 psid (3 MPa)	4.35 psid (30 kPa)	5801 psi (40 MPa)	2321 psid (16 MPa)	2321 psid (16 MPa)
10K	-72.5 psid (-500 kPa)	1450 psid (10 MPa)	14.5 psid (100 kPa)	5801 psi (40 MPa)	2321 psid (16 MPa)	2321 psid (16 MPa)

To determine if desired Measuring Range is achievable for a specific range option:

1. Lower End of Measuring Range  $\geq$  LRL
2. Upper End of Measuring Range  $\leq$  URL
3. Measuring Range Span = Upper End – Lower End  $\geq$  Smallest Possible Span

### Process Connections



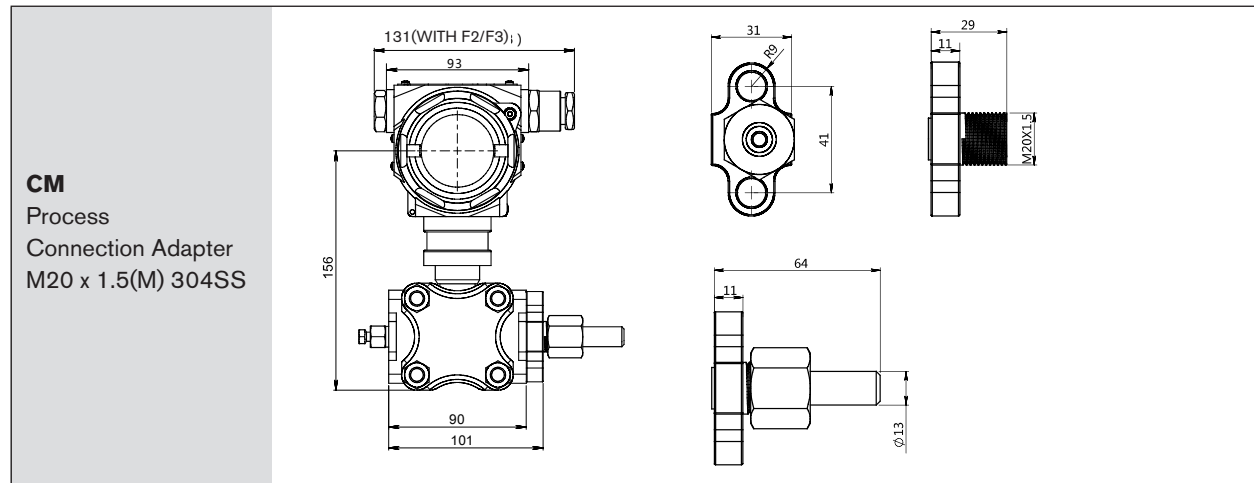
### Accessories

Description	Designator
Process Connection Adapter M20 x 1.5(M) 304SS <i>Dimension drawing below.</i>	CM
Process Connection Adapter 1/2" NPT(F) 304SS <i>Dimension drawing page 16.</i>	CN
Pipe Mounting Kit (Stainless Steel Bent Bracket for 2" Pipe) <i>Dimension drawing page 16.</i>	PK
Plate Mounting Kit (Stainless Steel Bent Bracket) <i>Dimension drawing page 16.</i>	PL
Pipe Mounting Kit (Stainless Steel Flat Bracket for 2" Pipe) <i>Dimension drawing page 16.</i>	PM
Customer-Specified Display Settings <sup>1,4</sup>	SC
ATEX / IECEx Flameproof Ex db IIC T6 Gb, Ex tb IIIC T80°C Db <sup>1,2</sup>	CL
CSA Explosion Proof Class I, II, III, Div. 1, Grps. A, B, C, D, T6; Grps. E, F, G, T80°C <sup>2,3</sup>	CS
ATEX / IECEx Intrinsically Safe Ex ia IIC T4 Ga <sup>1</sup>	CK
CE Certificate	CE
Degrease Treatment of Wetted Parts	BB
Electropolishing Treatment of Wetted Parts	CC
Calibration Certificate	C1
Static Pressure Report	C2
Compliance to NACE Certification MR0 175/ISO 15156	NC
Password protected settings menu lockout	LK

<sup>1</sup> Requires Display option IN    <sup>2</sup> Requires Conduit Connection option F1 or F2    <sup>3</sup> Not available with ATEX / IECEx Approvals

<sup>4</sup> Form 1835\_1800 Series SC Accessory Data Sheet must be completed and submitted with order

Dimensions = mm



# 1800 Series Differential Pressure Transmitter

## Accessories 1800DP

Dimensions = mm

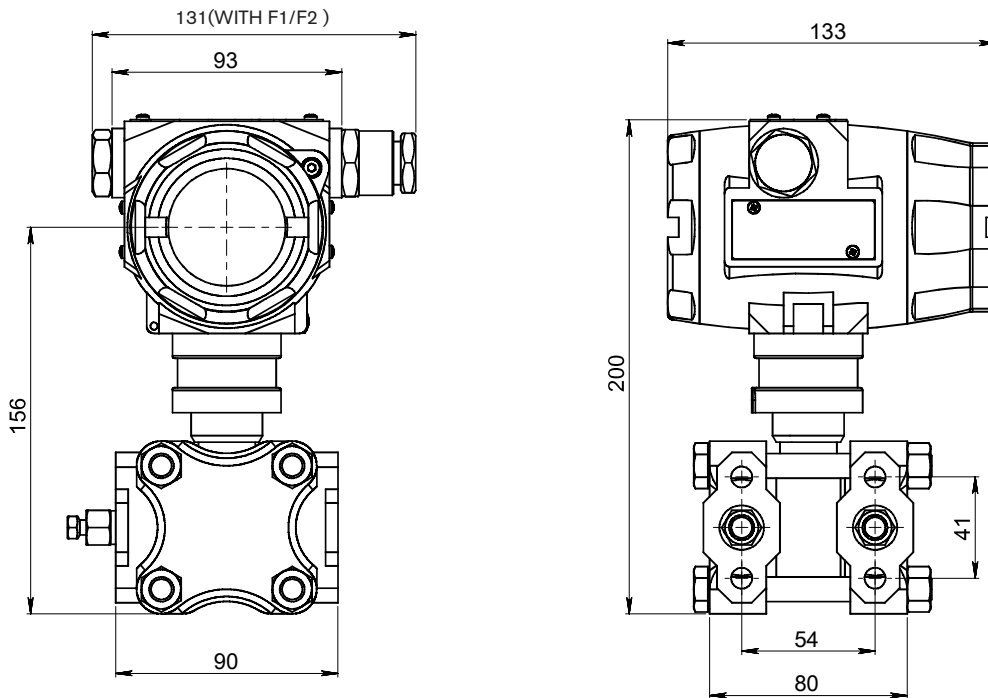
<p><b>CN</b> Process Connection Adapter 1/2" NPT(F) 304SS</p>	
<p><b>PK</b> Pipe Mounting Kit (Stainless Steel Bent Bracket for 2" Pipe)</p>	
<p><b>PL</b> Plate Mounting Kit (Stainless Steel Bent Bracket)</p>	
<p><b>PM</b> Pipe Mounting Kit (Stainless Steel Flat Bracket for 2" Pipe)</p>	

# 1800 Series Differential Pressure Transmitter

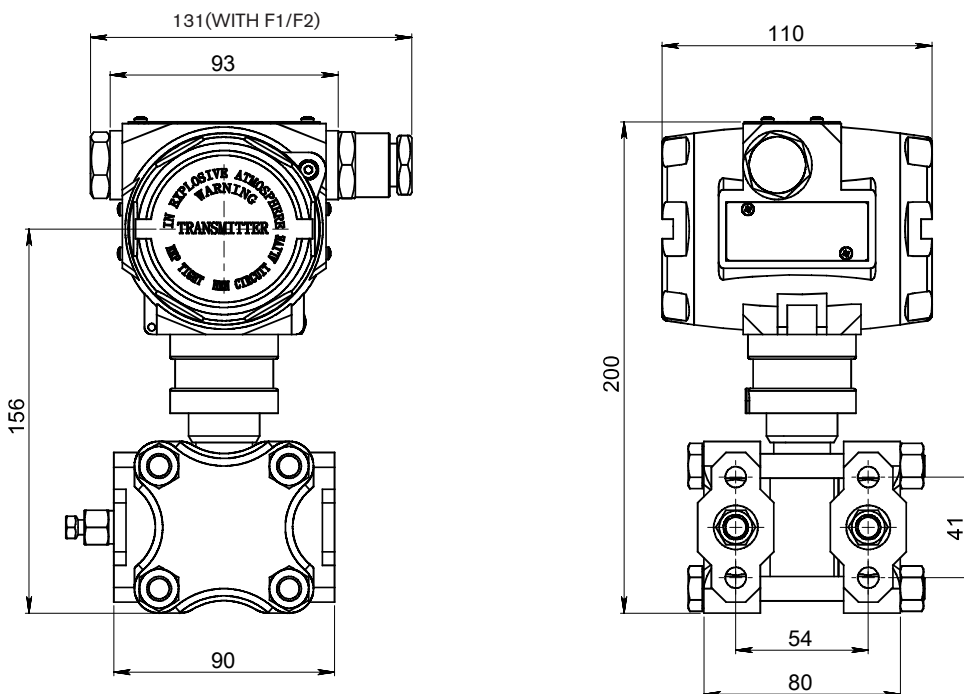
Dimensions  
**1800DP**

Dimensions shown are for reference only.  
Dimensions = mm

## With Integral LCD Display (option IN)



## Without Display (option 00)



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### Product Specifications - 1800DM

<b>Output</b>	4-20mA Linear (default) or Square Root HART 5 (Optional) Modbus		
<b>Accuracy</b>	(Linearity, Hysteresis and Repeatability) ± 0.075% (± 0.2% at max turndown) *Square Root Output Accuracy = 1.5 x Linear Output Accuracy	<b>Long Term Stability</b>	≤ ±0.2% URL per 5 years
		<b>Response Time</b>	≤ 200 ms
		<b>Damping Time</b>	0-100 s (Configurable)
		<b>Startup Time</b>	≤ 6 s
<b>Static Pressure Effects</b>		<b>Supply Voltage</b>	
Effect on Zero	± 6% URL/580 psi	4-20mA	10.5-55 VDC
Effect on Full Scale	± 0.2% URL/580 psi	HART® with 250 Ω load	16.5-55 VDC
		Modbus	5-32 VDC
<b>Temperature Effect</b>	± 0.5% URL @ -4 to 176°F	<b>Loop Resistance</b>	0-2119 Ω
		HART® Protocol	250-600 Ω
<b>Temperature Range</b>		<b>Circuit Protection</b>	Reverse Polarity and EMC (EMI/RFI) protected
Compensated	-4 to 176°F	<b>Power Consumption</b>	≤ 500 mW @ 24 VDC, 20.8 mA
Ambient (Limited by both Approvals and Display)		<b>Power Supply Effects</b>	< ±0.005% URL/V
No Approvals or Display	-40 to 185°F	<b>Mounting Position Effect</b>	≤ 0.06 psi Can be corrected by re-zeroing
With Integral LCD Display (No Approvals)	-4 to 158°F	<b>Vibration Effect</b>	< 0.1% URL IEC61928-3 tests
Intrinsically Safe	-40 to 140°F	<b>Relative Humidity</b>	5-100% R.H. @ 104°F
Flameproof	-13 to 140°F	<b>Construction</b>	Aluminum Ex-Pf Housing
<b>Process</b>		<b>IP Rating</b>	IP67
Silicone Oil Fill Fluid	-49 to 401°F	<b>Weight</b>	
Hi-Temp Silicone Oil Fill Fluid	32 to 599°F	2" Flange	17.9 lbs
Hygienic NEOBEE® M-20 Fill Fluid	14 to 356°F	3" Flange	23.1 lbs
Flameproof	Limits Max Temperature to 176°F	<b>Warranty</b>	3 years
Intrinsically Safe	Limits MaxTemperature to 248°F		
<b>Storage</b>			
No Display	-40 to 230°F		
With Integral LCD Display	-40 to 185°F		

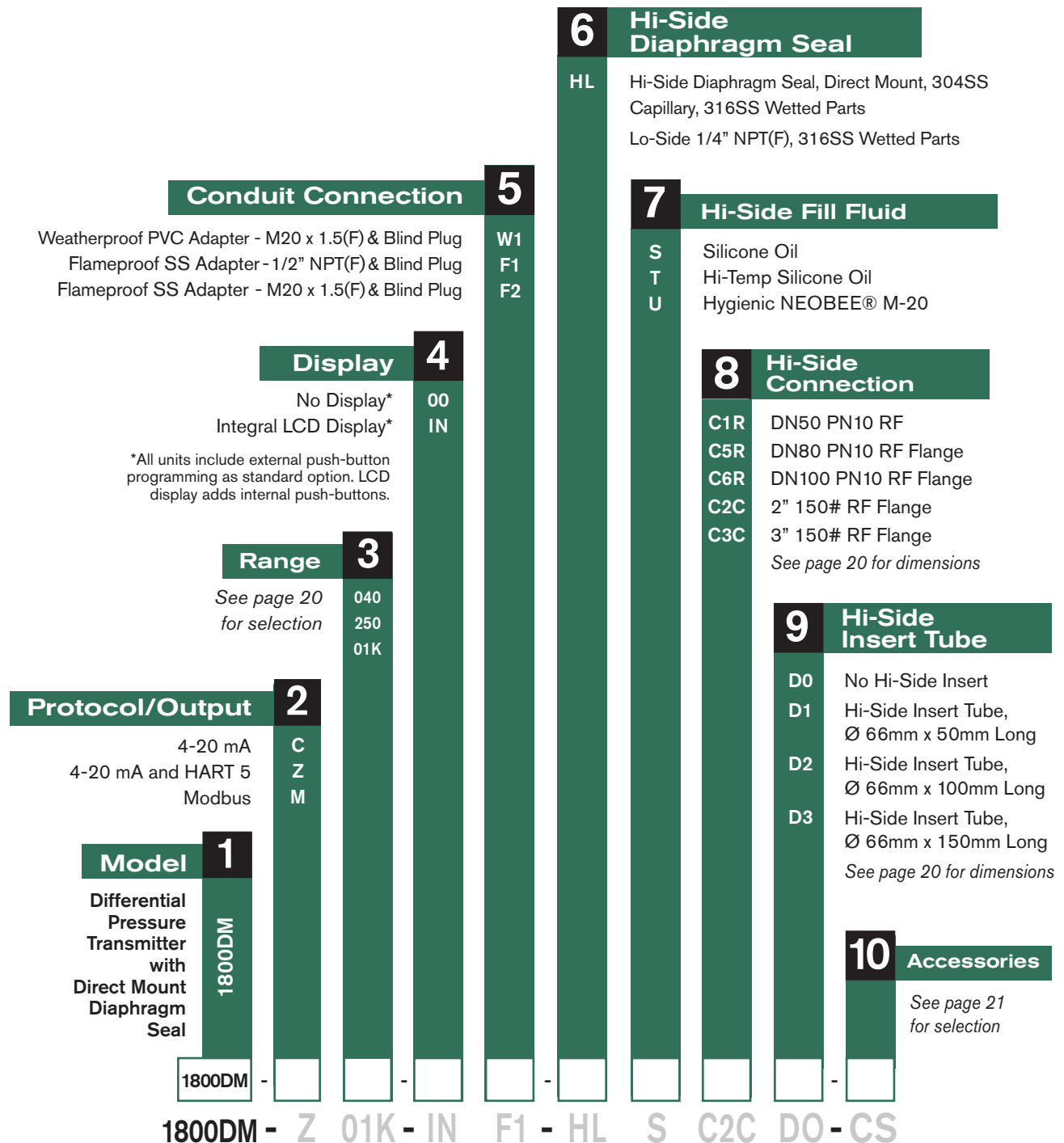
Design and specifications are subject to change without notice. For latest revision, see [SORInc.com](http://SORInc.com).



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- You must select a designator for each component
- Reference tables, charts and additional information are provided throughout the catalog to help you make your selections, see pages noted in the tree.



See page 32 for agency and options.

### Ranges

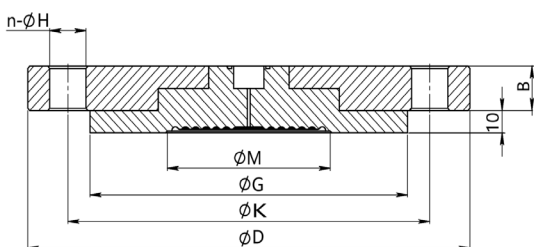
Designator	LRL	URL	Smallest Possible Span	Max Static Pressure	Hi-Side Over Pressure	Lo-Side Over Pressure
	psid (kPa)	psid (kPa)	psid (kPa)	psi (MPa)	psid (MPa)	psid (MPa)
040	-5.8 (-40)	5.8 (40)	1.45 (10)	1450 (10)	1450 (10)	1450 (10)
250	-36.3 (-250)	36.3 (250)	1.81 (12.5)	1450 (10)	1450 (10)	72.5 (0.5)
01K	-72.5 (-500)	145 (1000)	7.25 (50)	1450 (10)	1450 (10)	72.5 (0.5)

To determine if desired Measuring Range is achievable for a specific range option:

1. Lower End of Measuring Range  $\geq$  LRL
2. Upper End of Measuring Range  $\leq$  URL
3. Measuring Range Span = Upper End - Lower End  $\geq$  Smallest Possible Span

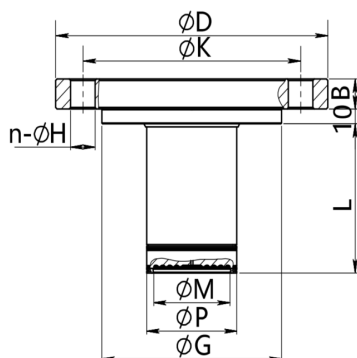
### Process Connection Dimensions

#### No Insert Tube



Option	C1R	C5R	C6R
Outer Diameter ( $\varnothing D$ )	165	200	200
Thickness (B)	19	20	20
Hole Circumference ( $\varnothing K$ )	125	160	160
Raised Face Diameter ( $\varnothing G$ )	102	138	158
Hole Diameter ( $\varnothing H$ )	18	18	18
Number (n)	4	8	8
Corrugation Size ( $\varnothing M$ )	56	71	71

#### Option C5R with Insert Tube



Option	D1	D2	D3
Outer Diameter ( $\varnothing D$ )	200	200	200
Thickness (B)	20	20	20
Hole Circumference ( $\varnothing K$ )	160	160	160
Raised Face Diameter ( $\varnothing G$ )	138	138	138
Hole Diameter ( $\varnothing H$ )	18	18	18
Number (n)	8	8	8
Corrugation Size ( $\varnothing M$ )	42	42	42
Insert Tube Diameter ( $\varnothing P$ )	66	66	66
Insert Tube Length (L)	50	100	150

# 1800 Series Pressure Transmitters

Accessories  
**1800DM**

## Accessories

Description	Designator
304SS T-Shaped M20 x 1.5(M) Adapter for Lo-Side	CM
304SS U-Shaped 1/2" NPT Adapter for Lo-Side	CN
Customer-Specified Display Settings <sup>1, 4</sup>	SC
ATEX / IECEx Flameproof Ex db IIC T6 Gb, Ex tb IIIC T80°C Db <sup>1, 2</sup>	CL
CSA Explosion Proof Class I, II, III, Div. 1, Grps. A, B, C, D, T6; Grps. E, F, G, T80°C <sup>2, 3</sup>	CS
ATEX / IECEx Intrinsically Safe Ex ia IIC T4 Ga <sup>1</sup>	CK
CE Certificate	CE
Degrease Treatment of Wetted Parts	BB
Electropolishing Treatment of Wetted Parts	CC
Calibration Certificate	C1
Static Pressure Report	C2

<sup>1</sup> Requires Display option IN    <sup>2</sup> Requires Conduit Connection option F1 or F2    <sup>3</sup> Not available with ATEX / IECEx Approvals

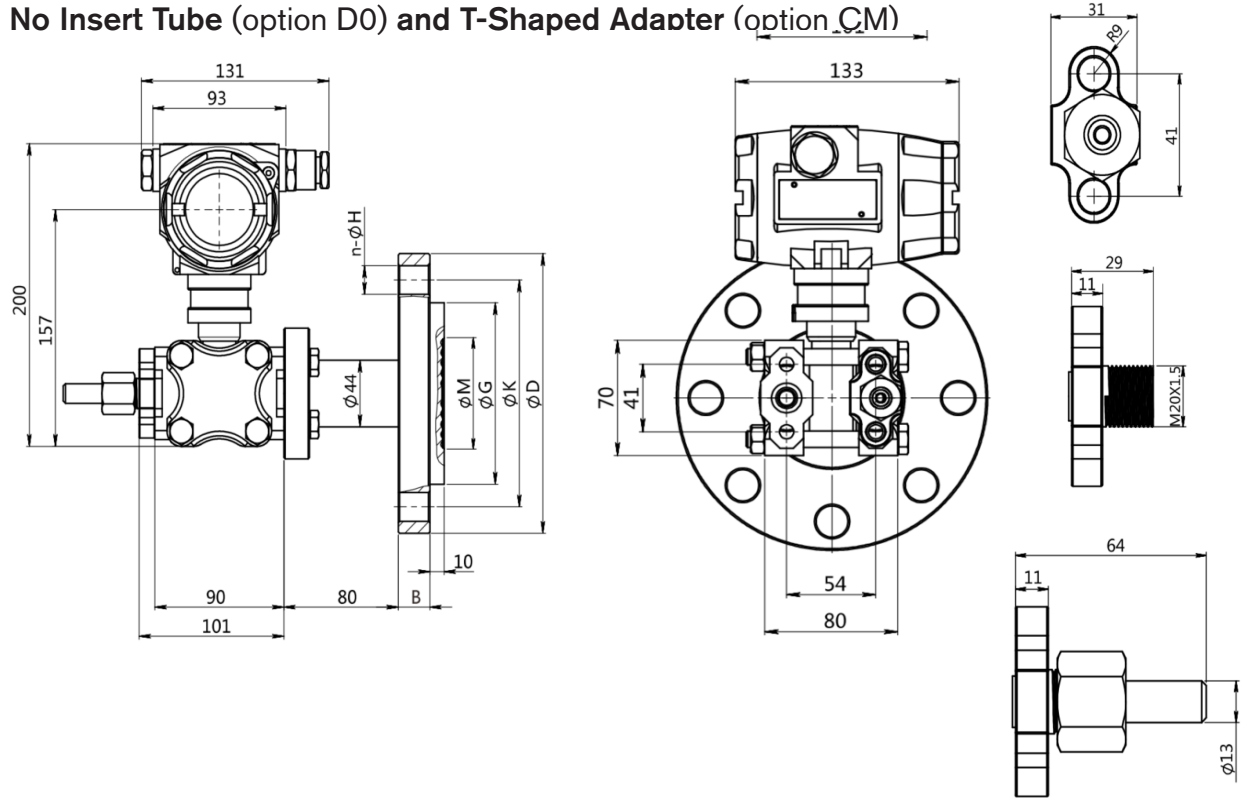
<sup>4</sup> Form 1835\_1800 Series SC Accessory Data Sheet must be completed and submitted with order

# 1800 Series Differential Pressure Transmitter

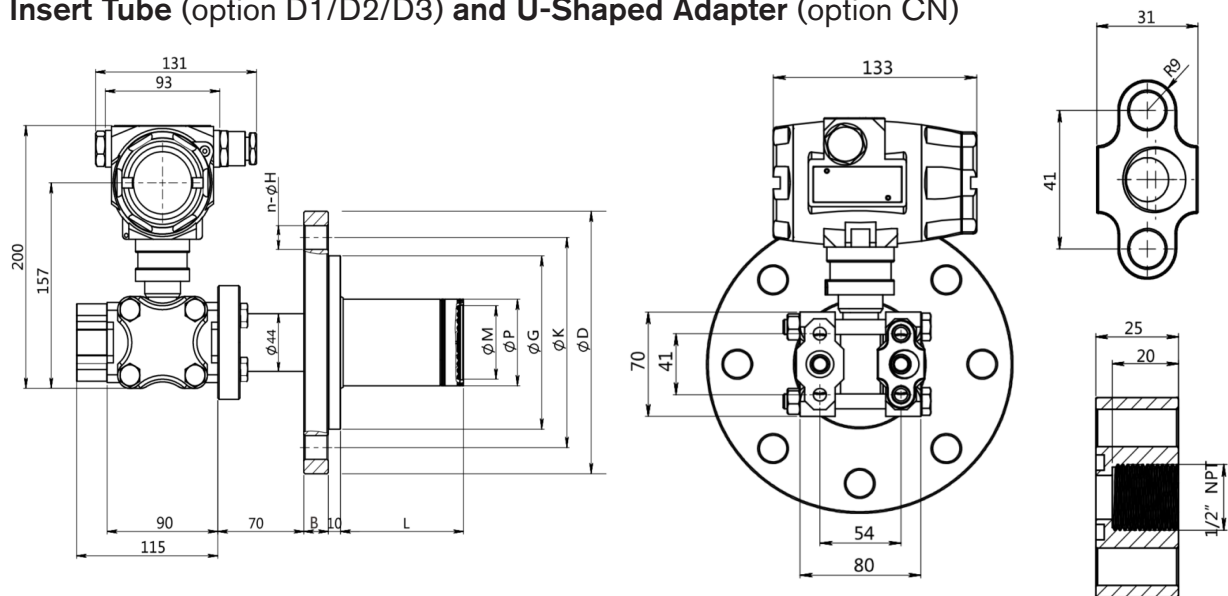
## Dimensions 1800DM

Dimensions shown are for reference only.  
Dimensions = mm

**With Integral LCD Display (option IN),  
No Insert Tube (option D0) and T-Shaped Adapter (option CM)**



**With Integral LCD Display (option IN),  
Insert Tube (option D1/D2/D3) and U-Shaped Adapter (option CN)**



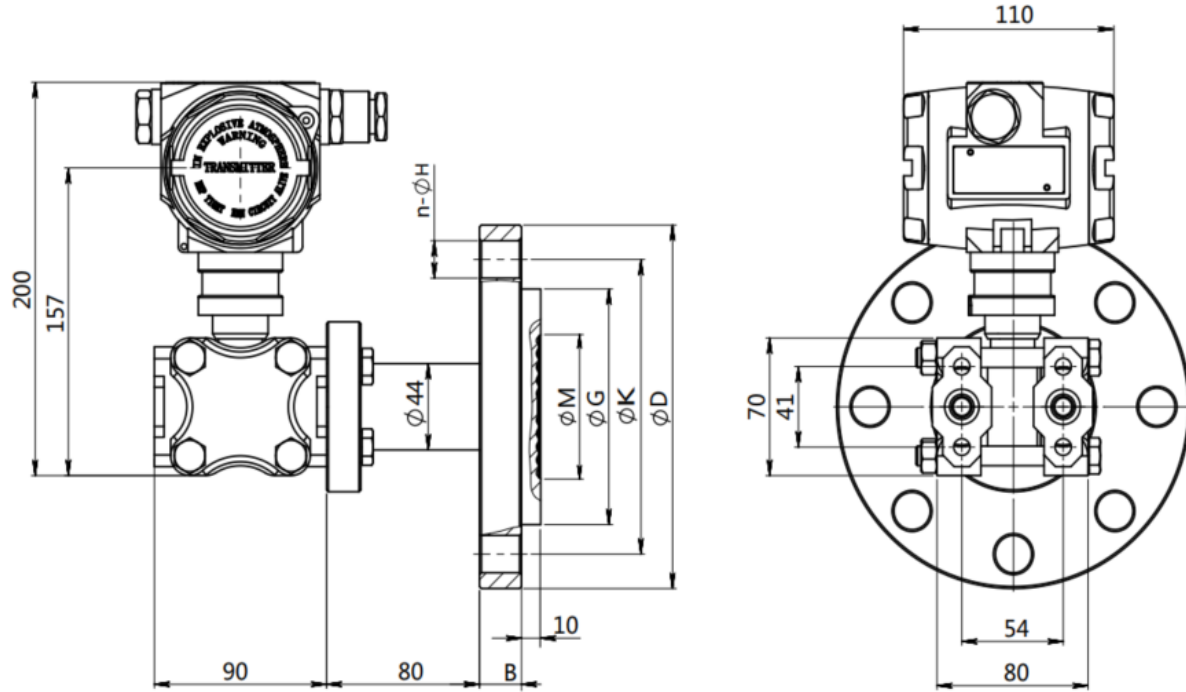
*Design and specifications are subject to change without notice. For latest revision, see SORInc.com.*

# 1800 Series Differential Pressure Transmitter

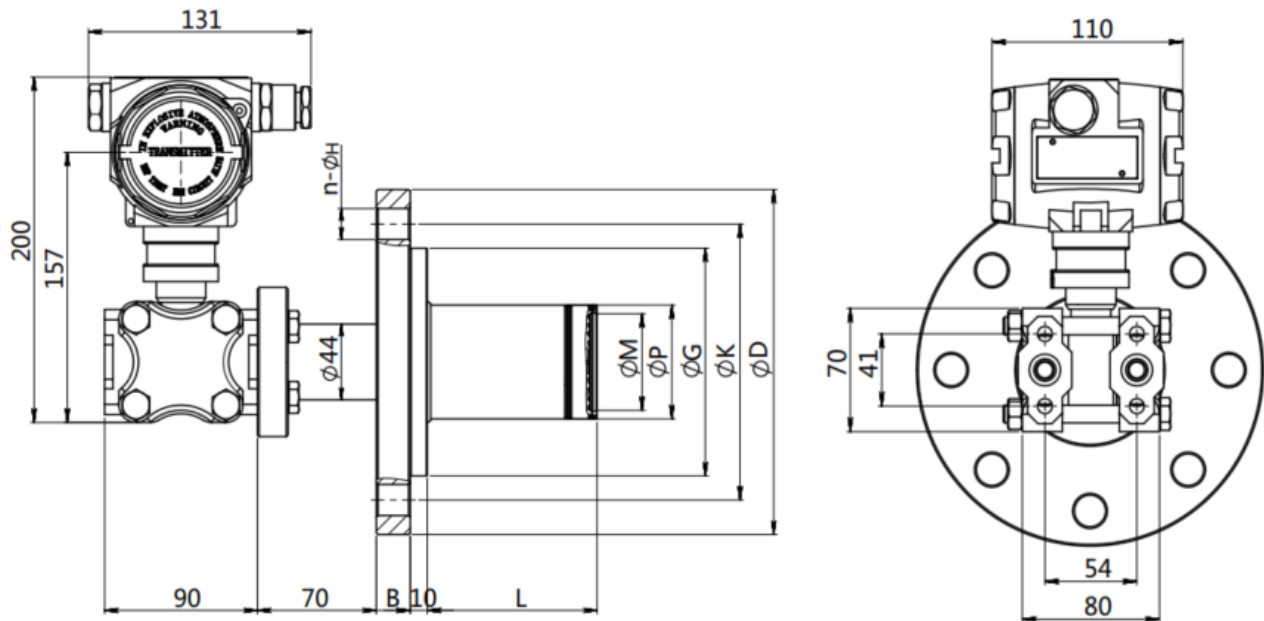
Dimensions  
**1800DM**

Dimensions shown are for reference only.  
Dimensions = mm

**Without Display (option 00) and No Insert Tube (option D0)**



**Without Display (option 00) and Insert Tube (option D1/D2/D3)**

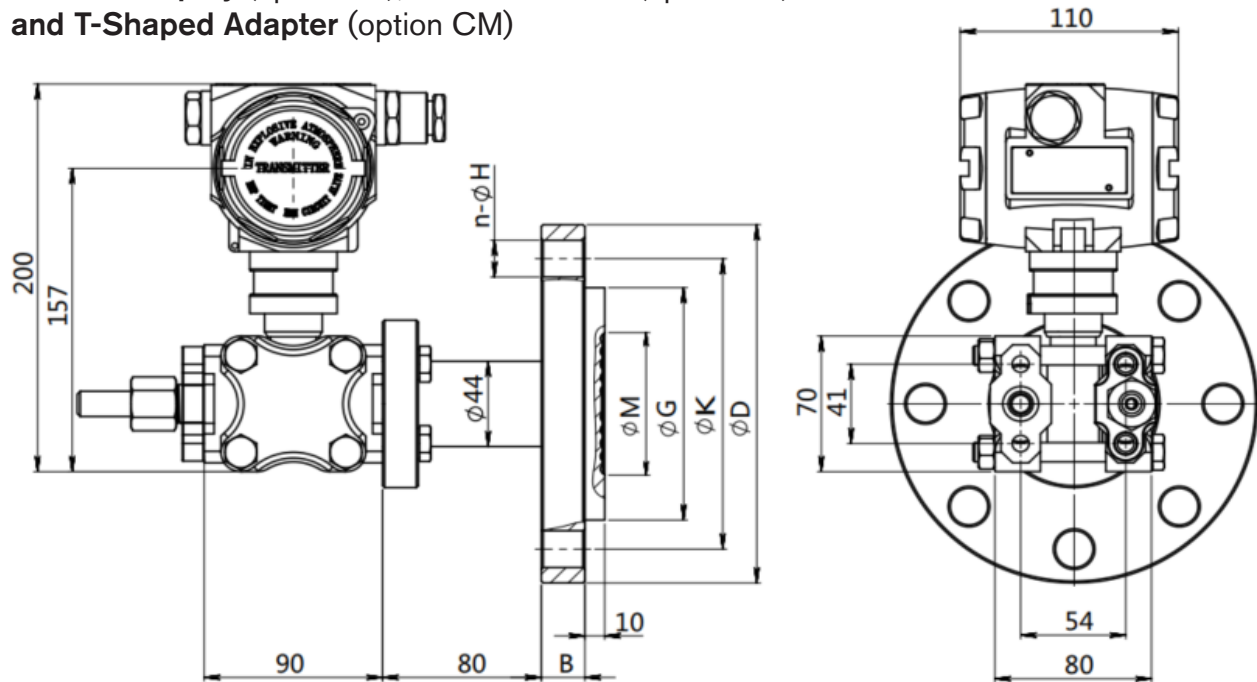


# 1800 Series Differential Pressure Transmitter

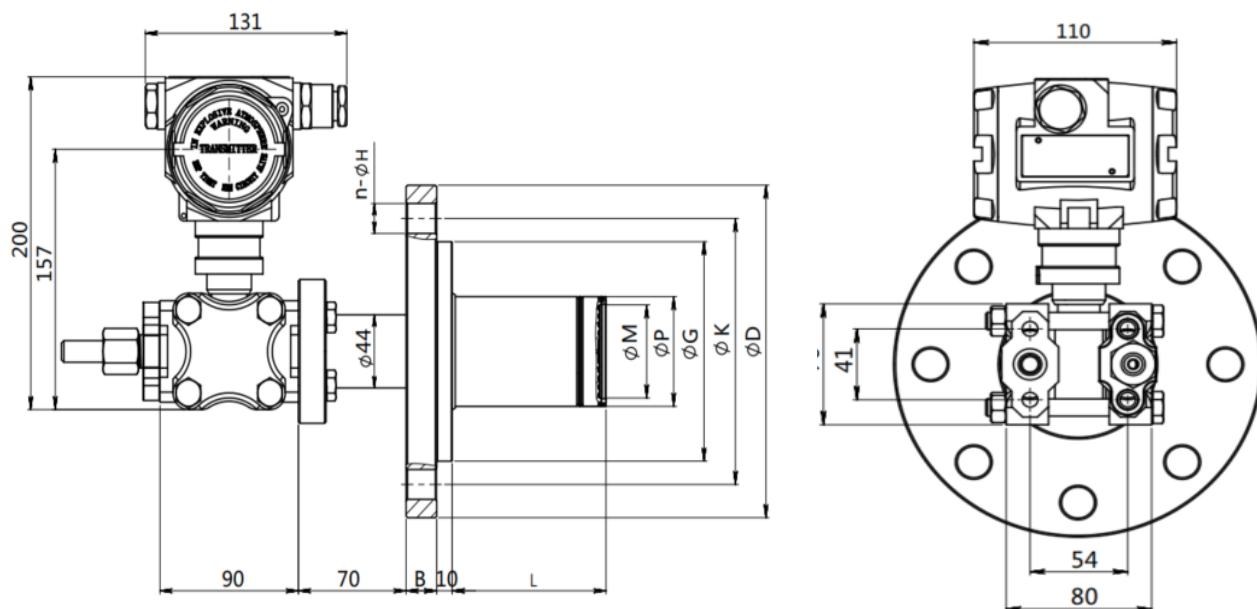
## Dimensions 1800DM

Dimensions shown are for reference only.  
Dimensions = mm

**Without Display** (option 00), **No Insert Tube** (option D0)  
and **T-Shaped Adapter** (option CM)



**Without Display** (option 00), **Insert Tube** (option D0)  
and **T-Shaped Adapter** (option CM)



### Product Specifications - 1800RM



<b>Output</b>	4-20mA Linear (default) or Square Root HART 5 (Optional) Modbus	
<b>Accuracy</b>	(Linearity, Hysteresis and Repeatability) ± 0.2% (± 0.5% at max turndown) *Square Root Output Accuracy = 1.5 x Linear Output Accuracy	
<b>Static Pressure Effects</b>		
Effect on Zero	± 3% URL/580 psi	
Effect on Full Scale	± 0.2% URL/580 psi	
<b>Temperature Effect</b>	± 2.1% URL @ -4 to 176°F	
<b>Temperature Range</b>		
Compensated	-4 to 176°F	
Ambient (Limited by both Approvals and Display)		
No Approvals or Display	-40 to 185°F	
With Integral LCD Display (No Approvals)	-4 to 158°F	
Intrinsically Safe	-40 to 140°F	
Flameproof	-13 to 140°F	
<b>Process</b>		
Silicone Oil Fill Fluid	-49 to 401°F	
Hi-Temp Silicone Oil Fill Fluid	32 to 599°F	
Hygienic NEOBEE® M-20 Fill Fluid	14 to 356°F	
Flameproof	Limits Max Temperature to 176°F	
Intrinsically Safe	Limits MaxTemperature to 248°F	
<b>Storage</b>		
No Display	-40 to 230°F	
With Integral LCD Display	-40 to 185°F	
<b>Long Term Stability</b>	≤ ±0.2% URL per 5 years	
<b>Response Time</b>	≤ 200 ms	
<b>Damping Time</b>	0-100 s (Configurable)	
<b>Startup Time</b>	≤ 6 s	
<b>Supply Voltage</b>	4-20mA HART® with 250 Ω load Modbus	10.5-55 VDC 16.5-55 VDC 5-32 VDC
<b>Loop Resistance</b>	HART® Protocol	0-2119 Ω 250-600 Ω
<b>Circuit Protection</b>		Reverse Polarity and EMC (EMI/RFI) protected
<b>Power Consumption</b>		≤ 500 mW @ 24 VDC, 20.8 mA
<b>Power Supply Effects</b>		< ±0.005% URL/V
<b>Mounting Position Effect</b>		≤ 0.06 psi Can be corrected by re-zeroing
<b>Vibration Effect</b>		< 0.1% URL IEC61928-3 tests
<b>Relative Humidity</b>		5-100% R.H. @ 104°F
<b>Construction</b>		Aluminum Ex-Pf Housing
<b>IP Rating</b>		IP67
<b>Weight</b>		
Tri-Clamp with No Brackets		14.0 lbs
2" Flange (One Side)		17.9 lbs
2" Flanges (Both Sides)		25.1 lbs
3" Flange (One Side)		23.1 lbs
3" Flanges (Both Sides)		35.7 lbs
<b>Warranty</b>		3 years

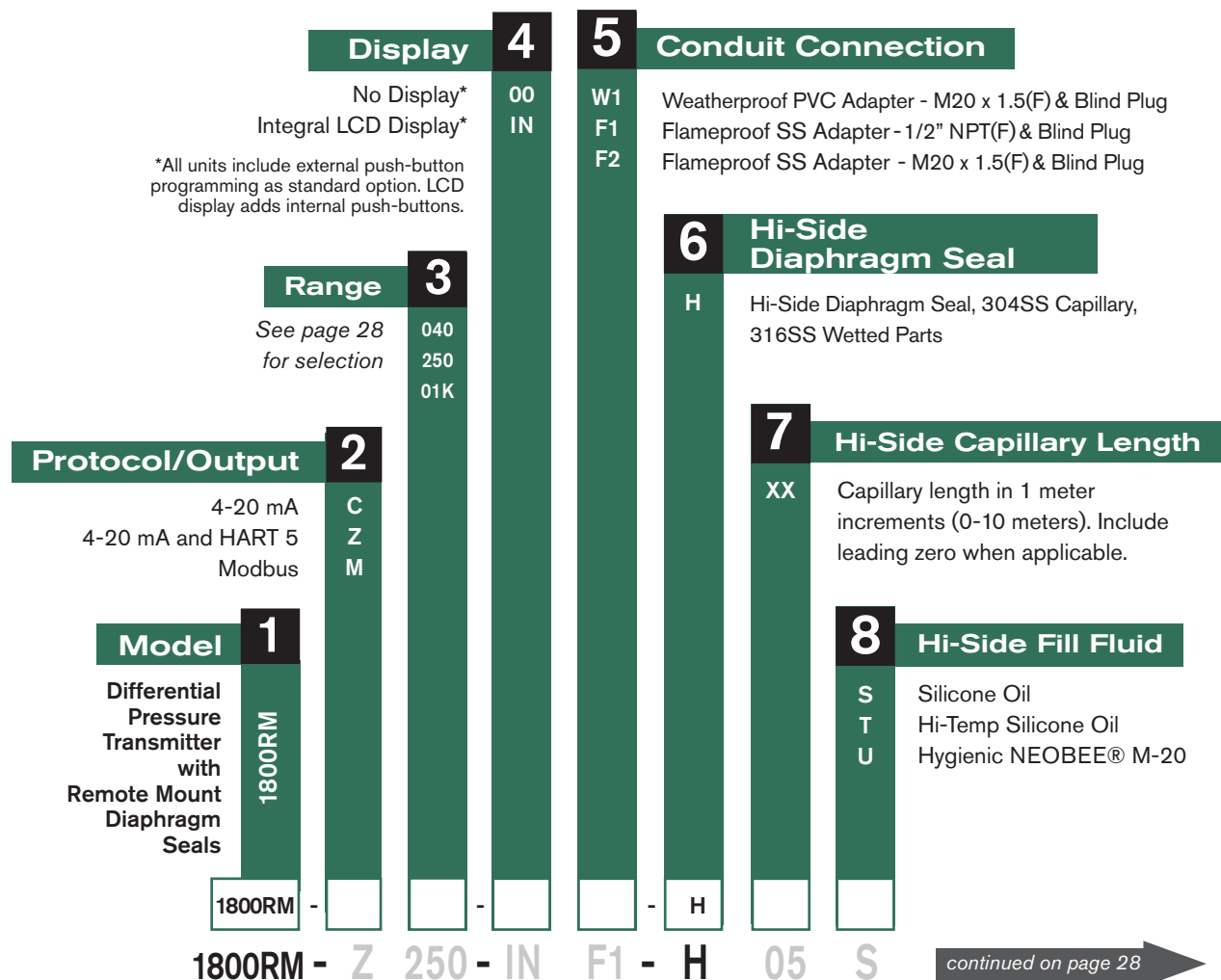
Design and specifications are subject to change without notice. For latest revision, see [SORInc.com](http://SORInc.com).



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- Reference tables, charts and additional information are provided throughout the catalog to help you make your selections, see pages noted in the tree.



See page 32 for agency and options.

<p><b>Lo-Side Capillary Length</b> <b>12</b></p> <p>Capillary length in 1 meter increments (0-10 meters). Include leading zero when applicable.</p> <p><b>Lo-Side Diaphragm Seal</b> <b>11</b></p> <p>Lo-Side Diaphragm Seal, 304SS Capillary, 316SS Wetted Parts</p> <p><b>Hi-Side Insert Tube</b> <b>10</b></p> <p>No Hi-Side Insert Tube D0 Hi-Side Insert Tube, Ø 66mm x 50mm Long D1 Hi-Side Insert Tube, Ø 66mm x 100mm Long D2 Hi-Side Insert Tube, Ø 66mm x 150mm Long D3 <i>See page 28 for dimensions</i></p> <p><b>Hi-Side Connection</b> <b>9</b></p> <p>DN50 PN40 RF Flange C1R DN80 PN10 RF Flange C5R DN100 PN10 RF Flange C6R 1-1/2" Tri-Clamp C1T 2" Tri-Clamp C2T 2" 150# ANSI RF Flange C2C 3" 150# ANSI RF Flange C3C <i>See page 28 for dimensions</i></p>	<p><b>Lo-Side Fill Fluid</b> <b>13</b></p> <p>S Silicone Oil T Hi-Temp Silicone Oil U Hygienic NEOBEE® M-20</p> <p><b>Lo-Side Connection</b> <b>14</b></p> <p>C1R DN50 PN40 RF Flange C5R DN80 PN10 RF Flange C6R DN100 PN10 RF Flange C1T 1-1/2" Tri-Clamp C2T 2" Tri-Clamp C2C 2" 150# ANSI RF Flange C3C 3" 150# ANSI RF Flange <i>See page 28 for dimensions</i></p> <p><b>Lo-Side Insert Tube</b> <b>15</b></p> <p>D0 No Lo-Side Insert Tube D1 Lo-Side Insert Tube, Ø 66mm x 50mm Long D2 Lo-Side Insert Tube, Ø 66mm x 100mm Long D3 Lo-Side Insert Tube, Ø 66mm x 150mm Long <i>See page 28 for dimensions</i></p> <p><b>Accessories</b> <b>16</b></p> <p><i>See page 29 for selection</i></p>	
<p>continued from page 27 →</p>	<p>C2C D0 - L 05 S C2C D0 - CS</p>	<p><b>Example Model No.</b></p>

See page 32 for agency and options.

### Ranges

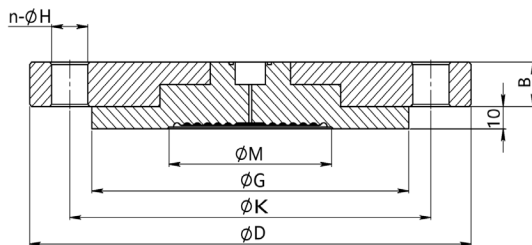
Designator	LRL	URL	Smallest Possible Span	Max Static Pressure	Hi-Side Over Pressure	Lo-Side Over Pressure
	psid (kPa)	psid (kPa)	psid (kPa)	psi (MPa)	psid (MPa)	psid (MPa)
040	-5.8 (-40)	5.8 (40)	0.58 (4)	1450 (10)	1450 (10)	1450 (10)
250	-36.3 (-250)	36.3 (250)	3.63 (25)	1450 (10)	1450 (10)	72.5 (0.5)
01K	-72.5 (-500)	145 (1000)	14.5 (100)	1450 (10)	1450 (10)	72.5 (0.5)

To determine if desired Measuring Range is achievable for a specific range option:

1. Lower End of Measuring Range  $\geq$  LRL
2. Upper End of Measuring Range  $\leq$  URL
3. Measuring Range Span = Upper End – Lower End  $\geq$  Smallest Possible Span

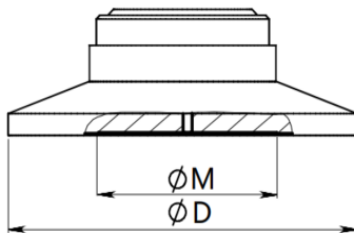
### Process Connection Dimensions

#### No Insert Tube



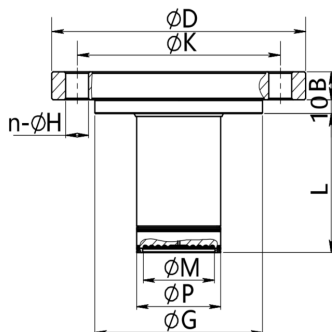
Option	C1R	C5R	C6R
Outer Diameter ( $\emptyset D$ )	165	200	200
Thickness (B)	19	20	20
Hole Circumference ( $\emptyset K$ )	125	160	160
Raised Face Diameter ( $\emptyset G$ )	102	138	158
Hole Diameter ( $\emptyset H$ )	18	18	18
Number (n)	4	8	8
Corrugation Size ( $\emptyset M$ )	56	71	71

#### Tri-Clamp



Option	C1T	C2T
Size ( $\emptyset D$ )	165	200
Corrugation Size ( $\emptyset M$ )	56	71

#### Option C5R with Insert Tube



Option	D1	D2	D3
Outer Diameter ( $\emptyset D$ )	200	200	200
Thickness (B)	20	20	20
Hole Circumference ( $\emptyset K$ )	160	160	160
Raised Face Diameter ( $\emptyset G$ )	138	138	138
Hole Diameter ( $\emptyset H$ )	18	18	18
Number (n)	8	8	8
Corrugation Size ( $\emptyset M$ )	42	42	42
Insert Tube Diameter ( $\emptyset P$ )	66	66	66
Insert Tube Length (L)	50	100	150

### Accessories

Description	Designator
Pipe Mounting Kit (Stainless Steel Bent Bracket for 2" Pipe) <i>Dimension drawing below.</i>	PK
Plate Mounting Kit (Stainless Steel Bent Bracket) <i>Dimension drawing page 30.</i>	PL
Pipe Mounting Kit (Stainless Steel Flat Bracket for 2" Pipe) <i>Dimension drawing page 30.</i>	PM
Clamp for 1-1/2" Tri-Clamp, One Side <sup>1</sup> <i>Dimension drawing page 30.</i>	F1
Clamp for 2" Tri-Clamp, One Side <sup>2</sup> <i>Dimension drawing page 30.</i>	F2
Clamps for 1-1/2" Tri-Clamps, Both Sides <sup>3</sup> <i>Dimension drawing page 30.</i>	F3
Clamps for 2" Tri-Clamps, Both Sides <sup>4</sup> <i>Dimension drawing page 30.</i>	F4
Gasket for 1-1/2" Tri-Clamp, One Side <sup>1</sup> <i>Dimension drawing page 30.</i>	G1
Gasket for 2" Tri-Clamp, One Side <sup>2</sup> <i>Dimension drawing page 30.</i>	G2
Gaskets for 1-1/2" Tri-Clamps, Both Sides <sup>3</sup> <i>Dimension drawing page 30.</i>	G3
Gaskets for 2" Tri-Clamps, Both Sides <sup>4</sup> <i>Dimension drawing page 30.</i>	G4
Welding Adapter for 1-1/2" Tri-Clamp, One Side <sup>1</sup> <i>Dimension drawing page 30.</i>	W1
Welding Adapter for 2" Tri-Clamp, One Side <sup>2</sup> <i>Dimension drawing page 30.</i>	W2
Welding Adapters for 1-1/2" Tri-Clamps, Both Sides <sup>3</sup> <i>Dimension drawing page 30.</i>	W3
Welding Adapters for 2" Tri-Clamps, Both Sides <sup>4</sup> <i>Dimension drawing page 30.</i>	W4
Customer-Specified Display Settings <sup>5, 6</sup>	SC
ATEX / IECEx Flameproof Ex db IIC T6 Gb, Ex tb IIIC T80°C Db <sup>5, 7</sup>	CL
CSA Explosion Proof Class I, II, III, Div. 1, Grps. A, B, C, D, T6; Grps. E, F, G, T80°C <sup>7, 8</sup>	CS
ATEX / IECEx Intrinsically Safe Ex ia IIC T4 Ga <sup>5</sup>	CK
CE Certificate	CE
Degrease Treatment of Wetted Parts	BB
Electropolishing Treatment of Wetted Parts	CC
Calibration Certificate	C1
Static Pressure Report	C2

<sup>1</sup> Requires C1T for Hi and/or Lo-Side Flange

<sup>2</sup> Requires C2T for Hi and/or Lo-Side Flange

<sup>3</sup> Requires C1T for both Hi and Lo-Side Flange

<sup>4</sup> Requires C2T for both Hi and Lo-Side Flange

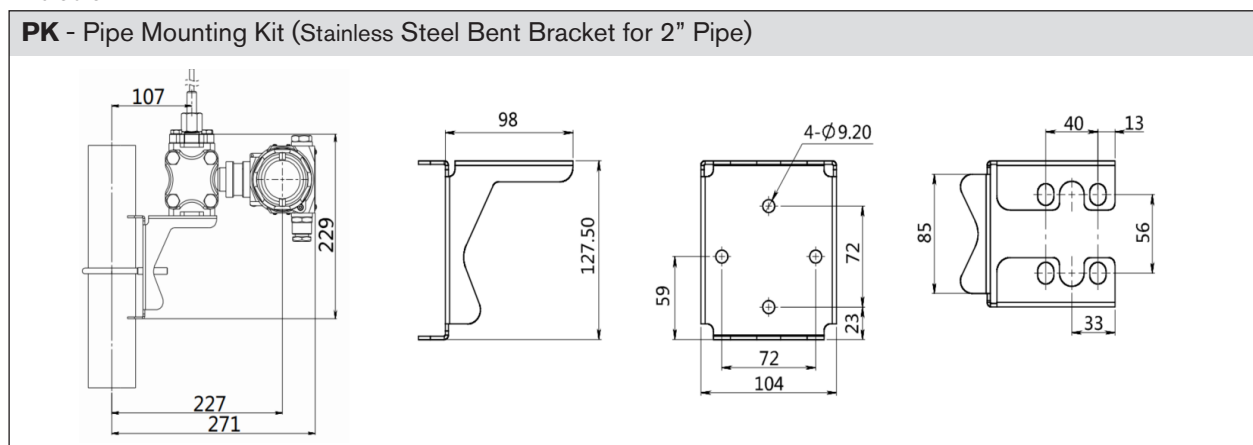
<sup>5</sup> Requires Display option IN

<sup>6</sup> Form 1835\_1800 Series SC Accessory Data Sheet must be completed and submitted with order

<sup>7</sup> Requires Conduit Connection option F1 or F2

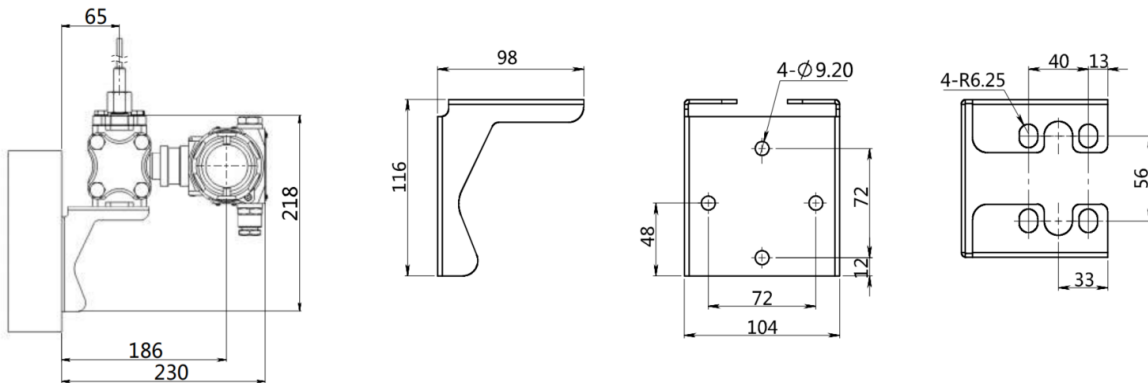
<sup>8</sup> Not available with ATEX / IECEx Approvals

Dimensions = mm

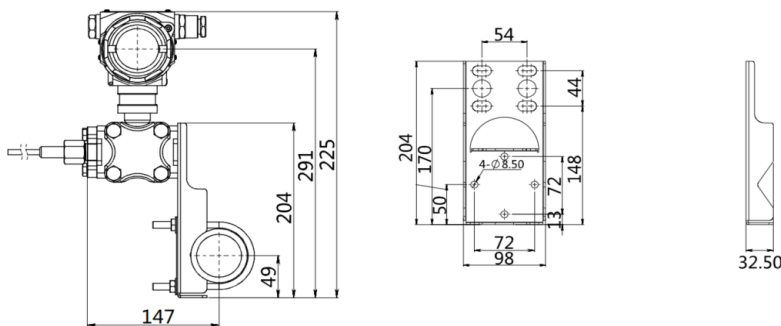


Dimensions = mm

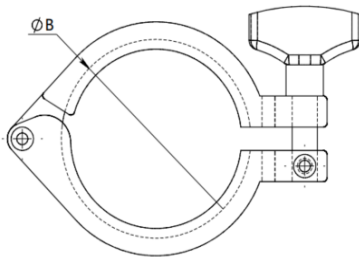
### PL - Plate Mounting Kit (Stainless Steel Bent Bracket)



### PM - Pipe Mounting Kit (Stainless Steel Flat Bracket for 2" Pipe)

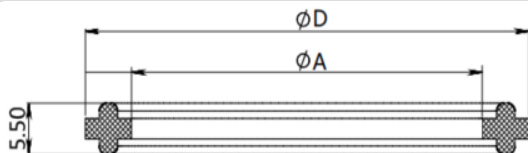


### F1/F2/F3/F4 - Tri-Clamp



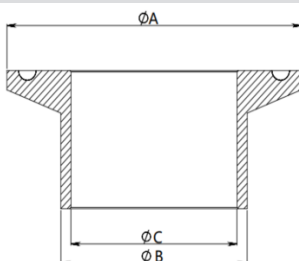
Option	F1/F3 (1-1/2" Clamp)	F2/F4 (2" Clamp)
Size (ØB)	53.9	67.4

### G1/G2/G3/G4 - Tri-Clamp Gasket



Option	G1/G3 (1-1/2" Clamp)	G2/G4 (2" Clamp)
Size (ØD)	50.5	64
Size (ØA)	35	47.8

### W1/W2/W3/W4 - Tri-Camp Welding Adapter



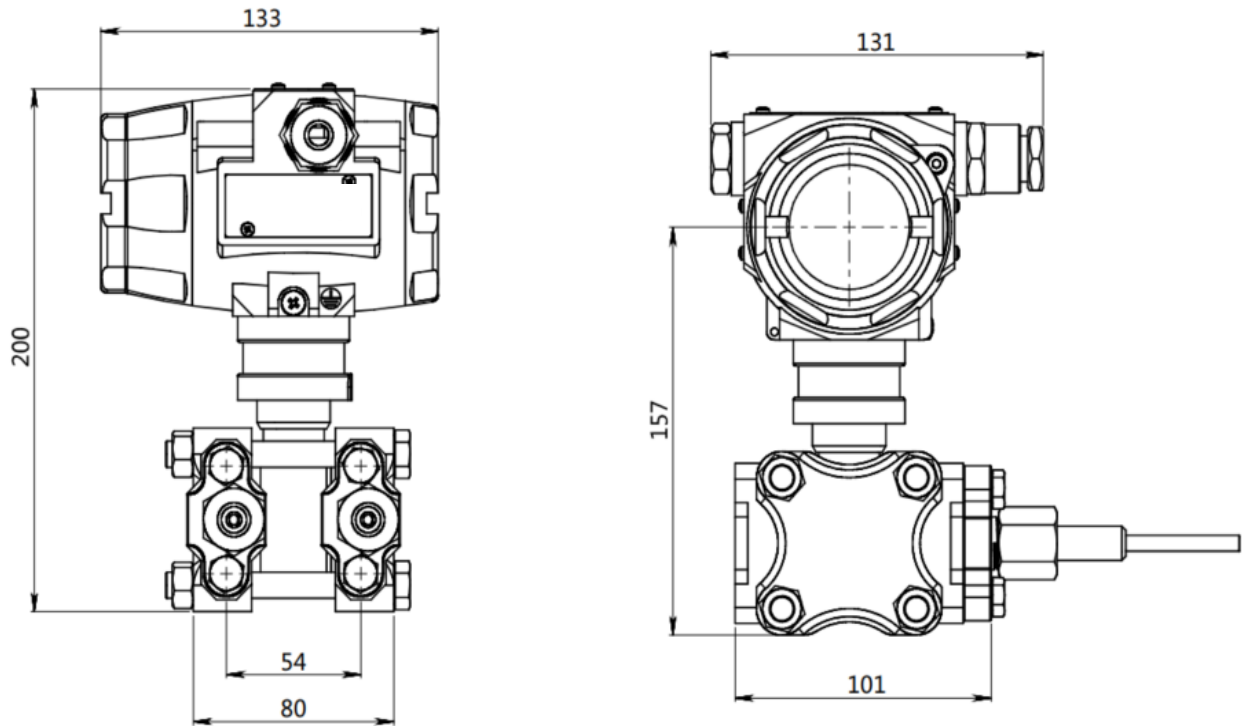
Option	W1/W3 (1-1/2" Clamp)	W2/W4 (2" Clamp)
Size (ØA)	50.5	64
Size (ØB)	38	51
Size (ØC)	35.6	48.6

# 1800 Series Differential Pressure Transmitter

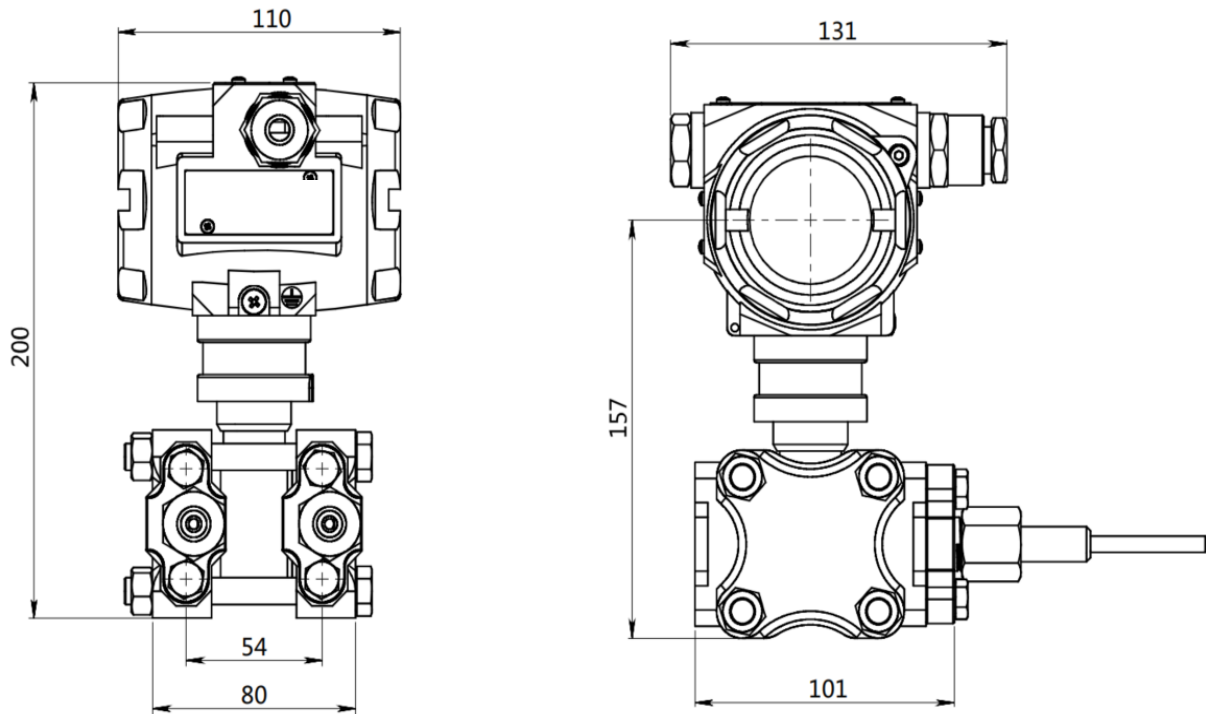
Dimensions  
**1800RM**

Dimensions shown are for reference only.  
Dimensions = mm

## With Integral LCD Display (option IN)



## Without Display (option 00)



# 1800 Series Pressure Transmitters

## Agency and Options

### Agency Approvals

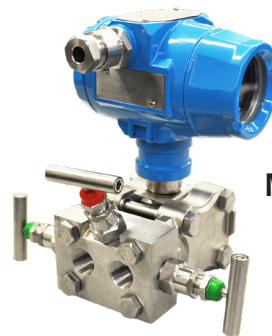
Approved	Safety Method	Approval
ATEX / IECEx	Intrinsically Safe	EX ia IIC T4 Ga
	Flameproof	Ex db IIC T6 Gb Ex tb IIIC T80°C Db
CSA (U.S. and Canada)	Explosion Proof	Class I, II, III; Division 1 Groups A-D; T6 Groups E-G; T80°C

### Manifolds

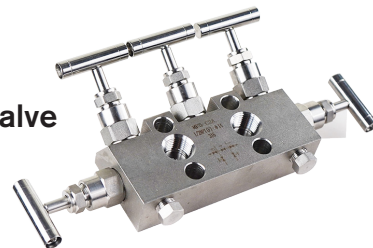
The 1800 Series Conventional Pressure Transmitters are available with two, three, or five-valve manifolds. The information in the Product Specifications table and Pressure-Temperature Limit chart below applies to all manifold models.



**MF2 2-Valve**



**MF3 3-Valve**



**MF5 5-Valve**

### Product Specifications

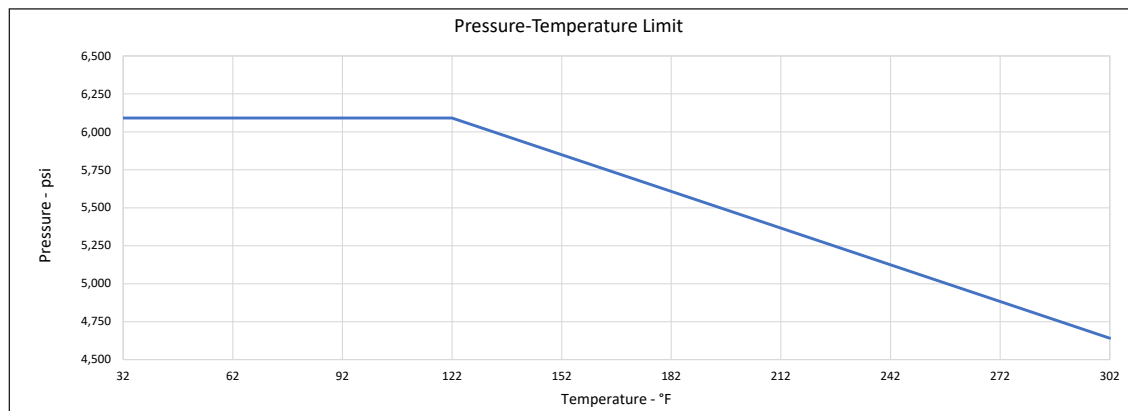
#### Materials of Construction

Valve Body	304SS or 316SS
Valve Seat	Stainless Steel
Valve Tip	Duplex Stainless Steel
Stop Pin	Stainless Steel
Packing	PTFE

Process Temperature ≤ 302°F

Ambient Temperature -22 to 199°F

*Design and specifications are subject to change without notice. For latest revision, see SORInc.com.*





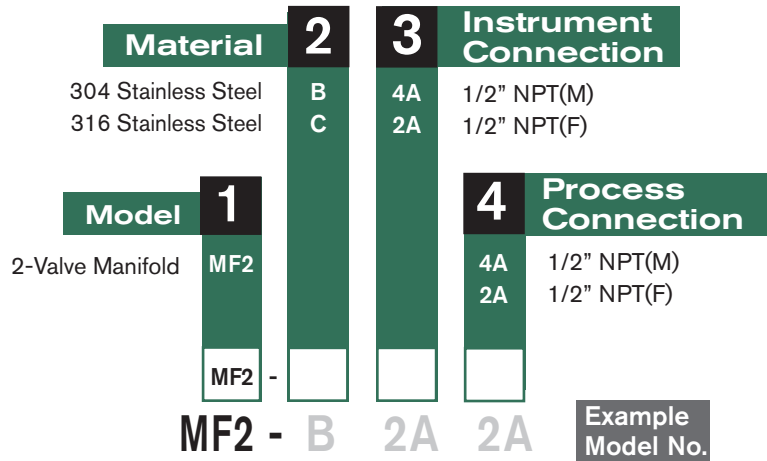
# 1800 Series Pressure Transmitters

## 2-Valve Manifold

### How to Order

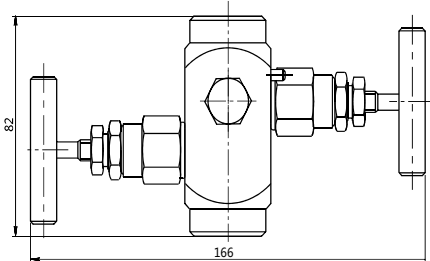
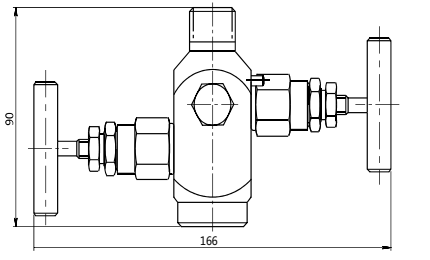
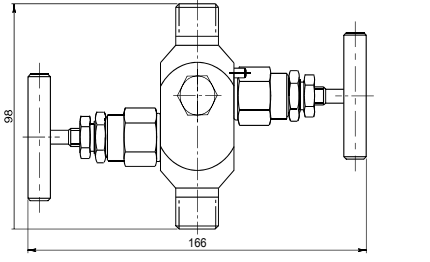
Below is the SOR quick select model number tree that provides you with all the options to configure and order a product for your application.

- You must select a designator for each component



Alternative materials and connections are available. Consult factory for details.

Dimensions = mm

Connections	
Instrument - 1/2" NPT(F) Process - 1/2" NPT(F)	
Instrument - 1/2" NPT(M) Process - 1/2" NPT(F)	
Instrument - 1/2" NPT(M) Process - 1/2" NPT(M)	

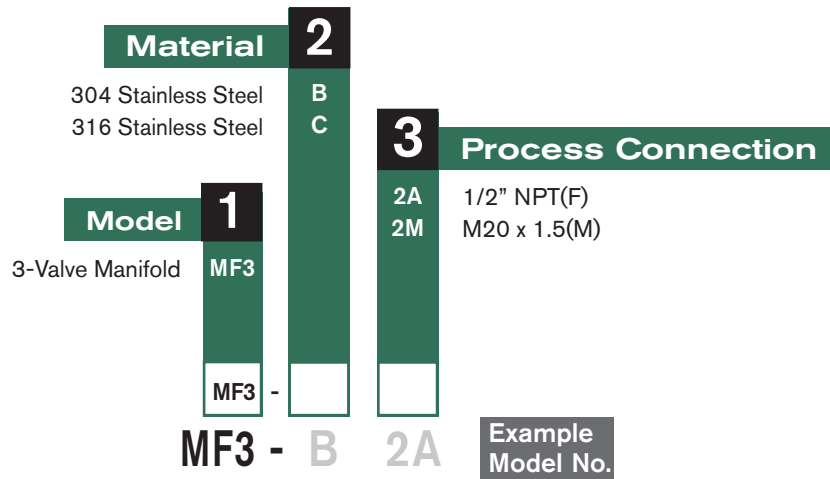
# 1800 Series Pressure Transmitters

## 3-Valve Manifold

### How to Order

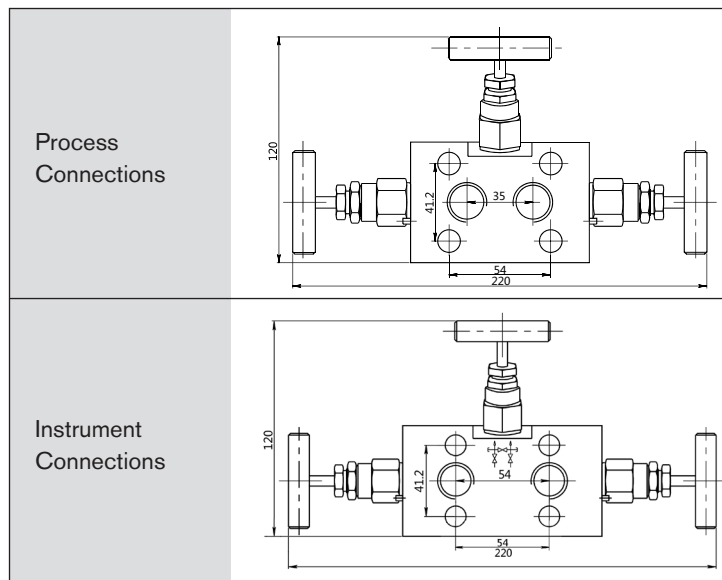
Below is the SOR quick select model number tree that provides you with all the options to configure and order a product for your application.

- You must select a designator for each component



Alternative materials and connections are available. Consult factory for details.

Dimensions = mm



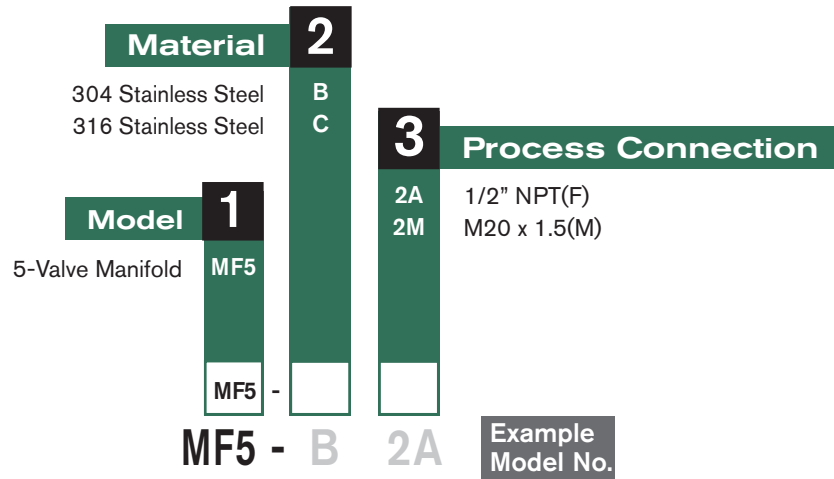
# 1800 Series Pressure Transmitters

## 5-Valve Manifold

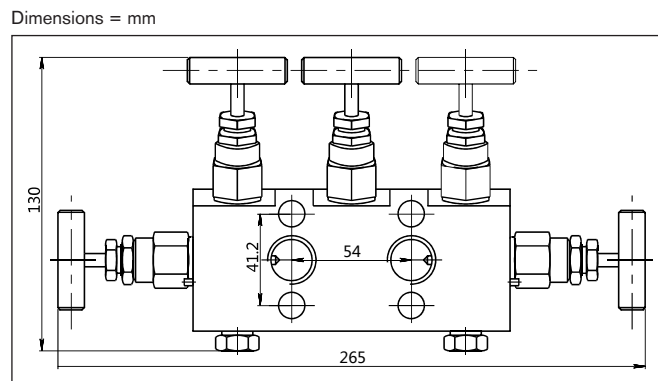
### How to Order

Below is the SOR quick select model number tree that provides you with all the options to configure and order a product for your application.

- You must select a designator for each component



Alternative materials and connections are available. Consult factory for details.





MEASUREMENT AND CONTROL

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