

Models SFP33 & SFP32 Pressure Transmitters

Pressure



*SFP32 Single-Ended
Pressure Transmitter*

*SFP33 Flow-Through
Pressure Transmitter*

Brooks® Seal Free Pressure Measurement for Ultrapure Fluids

Overview

Brooks® Seal Free Pressure (SFP) transmitter is designed to measure the pressure of high purity fluids. It comes in two versions, the WA designation is for measuring ultrapure water and the CA designation is for measuring ultrapure chemicals, acids and bases.

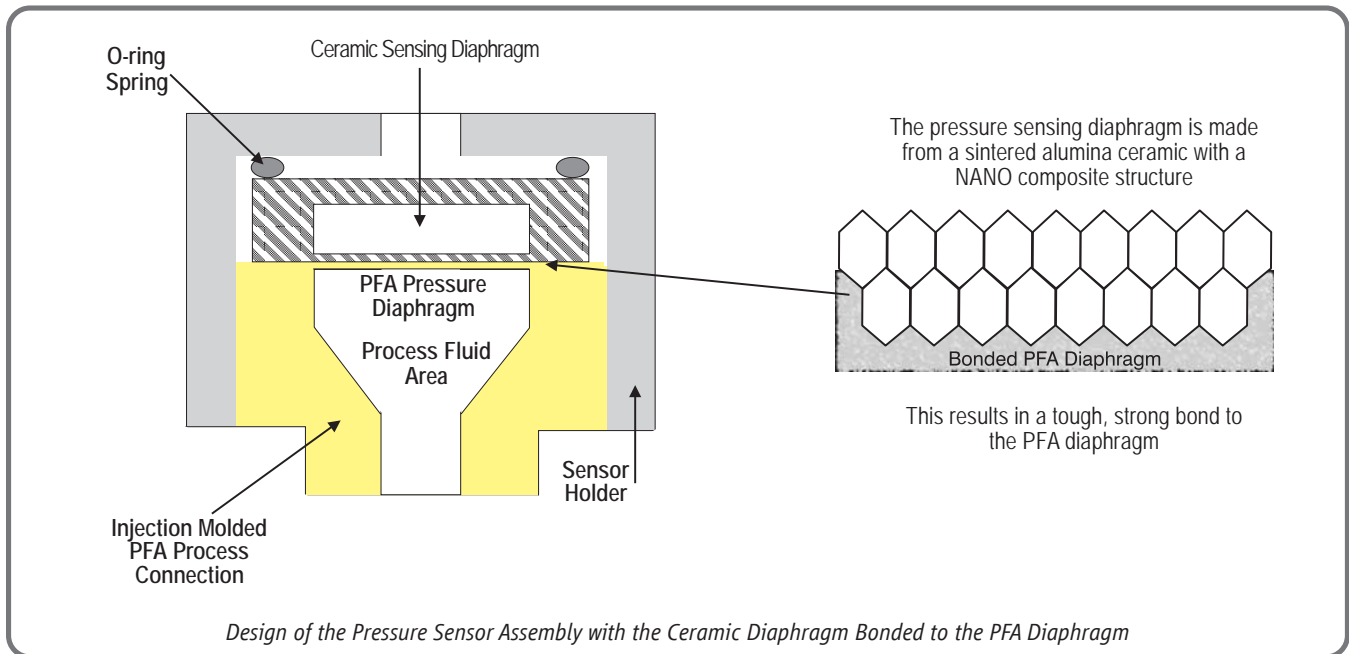
The heart of the transmitter is an injection molded, single piece, pressure vessel fabricated from high purity Perfluoroalkoxy (PFA) plastic. The design allows the PFA diaphragm to be thick, while still providing pressure sensitivity and insuring process safety. The thick diaphragm virtually eliminates the possibility of corrosive ions diffusing from the process fluid. Injection molding provides a very smooth surface finish to maintain fluid purity. No elastomers are used to seal the pressure sensor from the process fluid. The benefit is increased fluid purity since elastomers can be a possible contamination source in ultrapure fluids. There are no potential fluid leak paths to the outside in this innovative design.

An alumina NANO-composite ceramic pressure sensor is permanently bonded to the PFA pressure diaphragm. It is highly corrosion resistant to the chemicals used in semiconductor manufacturing, which further insures fluid purity. Permanent bonding of the pressure sensor to the PFA diaphragm means exposure to a vacuum will not damage the transmitter. Measurement in the vacuum region is also possible.

In the unlikely event that corrosive ions penetrate the PFA diaphragm, a patent pending integrated vapor leak indicator is mounted in the wall of the sealed electrical housing. This indicator will change colors in the presence of corrosive ions and provide a primary visual indication that the sensor electronics have been compromised and thus the device should be replaced. Sensor electronics are protected to IP55 standards.

Brooks® SFP has the flexibility to fit your process and electrical interfacing requirements. A wide variety of standard pressure ranges are available and can be referenced to either atmospheric pressure for gauge measurement or a vacuum for absolute measurement. Externally accessed zero and span adjustments are provided to compensate the device for mounting effects. This also allows the user to recalibrate the device without having to send it back to the factory. Temperature compensation electronics insure accurate pressure measurement over a range of process temperatures. Voltage and current electrical signals representing measured pressure are available. A variety of fluid connections can be specified.

Product Features



Precision Pressure Measurement

The ceramic pressure sensor provides an accurate and stable pressure measurement. Integrated temperature electronics compensate the pressure measurement for changing fluid temperatures. All devices are factory calibrated to the requested pressure range and are thoroughly tested over the specified operating temperature range.

Seal Free Process Connection

The single piece process connection means fluid is only in contact with pure PFA surfaces. This also increases process safety since there are no potential leak paths to the outside of the transmitter. Exposure to vacuum pressures will not damage the transmitter's performance. (See Figure Above)

High Purity Process Integrity

Process wetted surfaces are fabricated from injection molded PFA plastic. Injection molding creates a very smooth surface to insure fluid purity. No elastomeric seals are used, which eliminates a potential source of fluid contamination.

Flexible Applications

A variety of pressure ranges and process connections allow for flexibility to meet your process requirements. A choice of either a voltage or analog signal allows for easy interfacing with almost all control and monitoring electronics. Externally accessible zero and span adjustments can be used to adjust the sensor, after installation, to compensate for mounting and environmental factors.

Applications

The Brooks® SFP is available as either a single-ended design (32 designation) or a flow-through design (33 designation). The Brooks® SFP WA is specifically designed for measuring the pressure of ultrapure water used in industries where maintaining metal ion free water is a high priority for process consistency and yield. These industries include semiconductor, flat panel display and optics. The Brooks® SFP CA is designed for measuring the pressure of ultrapure chemicals used in these same industries.

Product Specifications

Performance	SFP32/SFP33
Pressure Measurement	Standard Ranges: 0-150 psi*, 0-145 psi*, 0-100 psi, 0-95 psi, 0-60 psi Gauge pressure measurement is standard. Absolute pressure measurement is an option.
Accuracy	±1% full scale includes linearity, hysteresis and repeatability
Temperature Compensation Range	15 - 40°C (59 - 104°F)
Temperature Drift	±0.3% full scale per degree C

Physical

Materials of Construction	Process Wetted: High purity perfluoroalkoxy PFA plastic Electrical Enclosure: Polypropylene Pressure Sensor: AL ₂ O ₃												
Process Connections	Process Connections: PFA tube stub is standard Options: Male Flaretube (See Model Code)												
Ceramic Sensor Proof Pressures	Proof pressure of the ceramic diaphragm is the maximum exposure pressure without damaging the sensor performance. <table border="1"> <thead> <tr> <th>Range</th> <th>Proof Pressure</th> </tr> </thead> <tbody> <tr> <td>0 - 60 psig</td> <td>112 psig</td> </tr> <tr> <td>0 - 95 psig</td> <td>178 psig</td> </tr> <tr> <td>0 -100 psig</td> <td>178 psig</td> </tr> <tr> <td>0 -145 psig</td> <td>187 psig</td> </tr> <tr> <td>0 - 150 psig</td> <td>187 psig</td> </tr> </tbody> </table>	Range	Proof Pressure	0 - 60 psig	112 psig	0 - 95 psig	178 psig	0 -100 psig	178 psig	0 -145 psig	187 psig	0 - 150 psig	187 psig
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Leak Pressures	Minimum pressure at which the transmitter might leak. <table border="1"> <thead> <tr> <th>Range</th> <th>Leak Pressure</th> </tr> </thead> <tbody> <tr> <td>0 - 60 psig</td> <td>180 psig</td> </tr> <tr> <td>0 - 95 psig</td> <td>375 psig</td> </tr> <tr> <td>0 -100 psig</td> <td>375 psig</td> </tr> <tr> <td>0 -145 psig</td> <td>375 psig</td> </tr> <tr> <td>0 - 150 psig</td> <td>375 psig</td> </tr> </tbody> </table>	Range	Leak Pressure	0 - 60 psig	180 psig	0 - 95 psig	375 psig	0 -100 psig	375 psig	0 -145 psig	375 psig	0 - 150 psig	375 psig
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Functional

Pressure Output Signals	4 - 20 mA, 0 - 5 V, 1 - 5 V and 0 - 10 V are available for pressure measurement in the range specified.
Voltage Input Requirements	24 Vdc for current output; 12 - 24 Vdc for voltage output

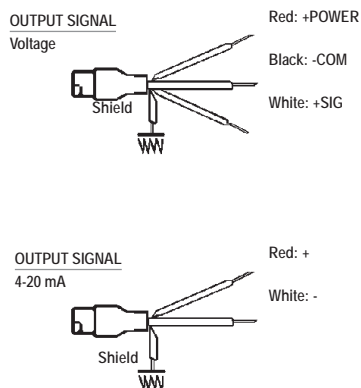
Miscellaneous

Protection	IP55 equivalent. Meets CE standards
EMC Directive 89/336/EEC	Pressure Equipment Directive 97/23/EC as Sound Engineering Practice (SEP)

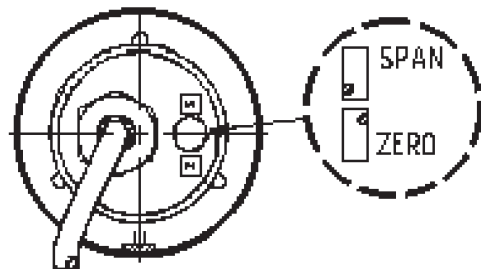
* Note: 150 psi and 145 psi ranges are available only in the Ultrapure Water Models 32 WA and 33 WA.

Wiring Diagram & Zero / Span Adjustments

Wiring Diagram



Zero/Span Adjustments



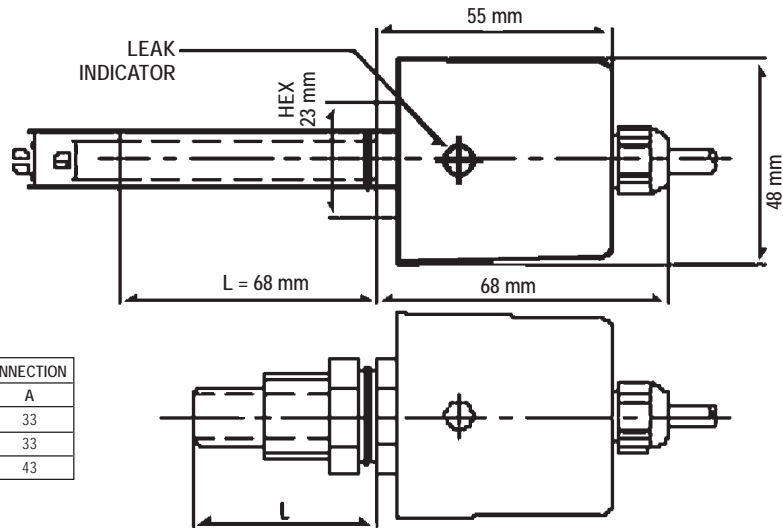
Note: Wiring Diagram and Zero/Span Adjustments apply to all models

Product Dimensions - Model SFP32

Model SFP32, Single-Ended Pressure Transmitter

TUBE CONNECTION		
Size	DD	IO
1/4"	6.35	3.96
3/8"	9.53	6.38
1/2"	12.70	9.55

FLARED CONNECTION	
Size	A
1/4"	33
3/8"	33
1/2"	43

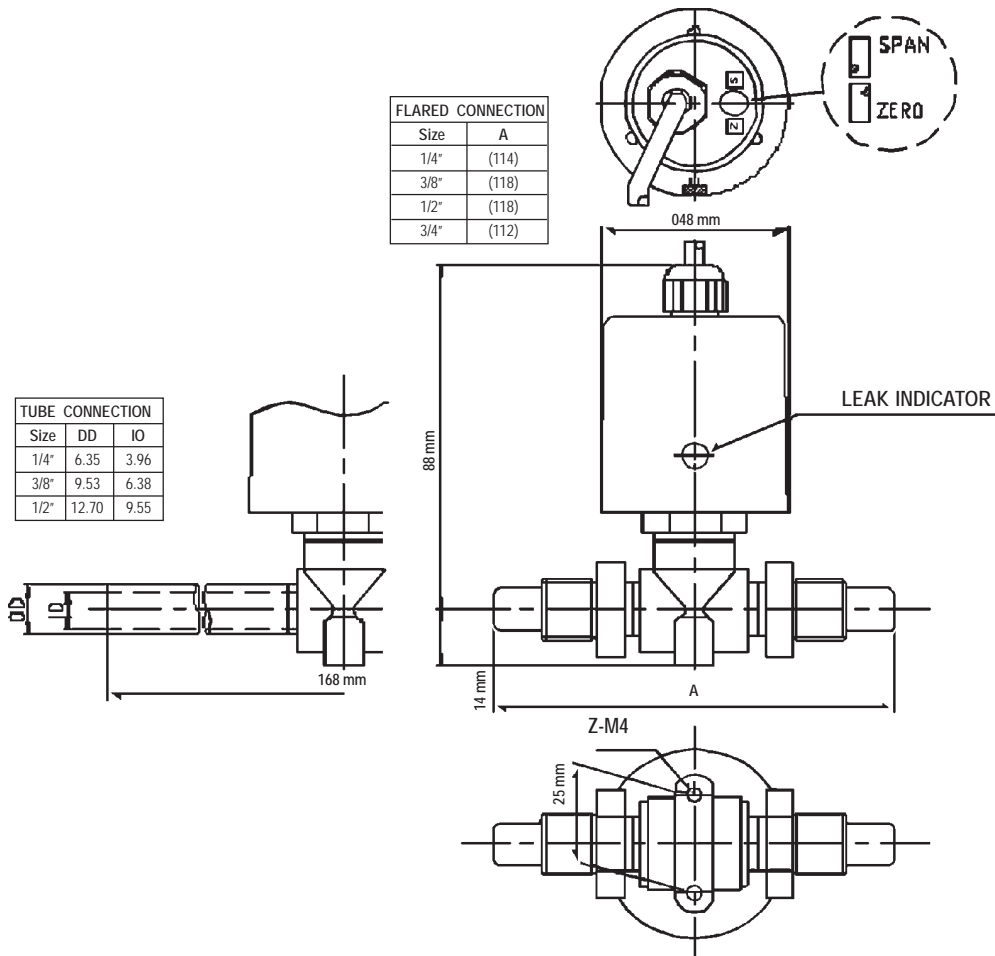


Product Dimensions - Model SFP33

Model SFP33, Flow-Through Pressure Transmitter with Flare and Tube Process Connections

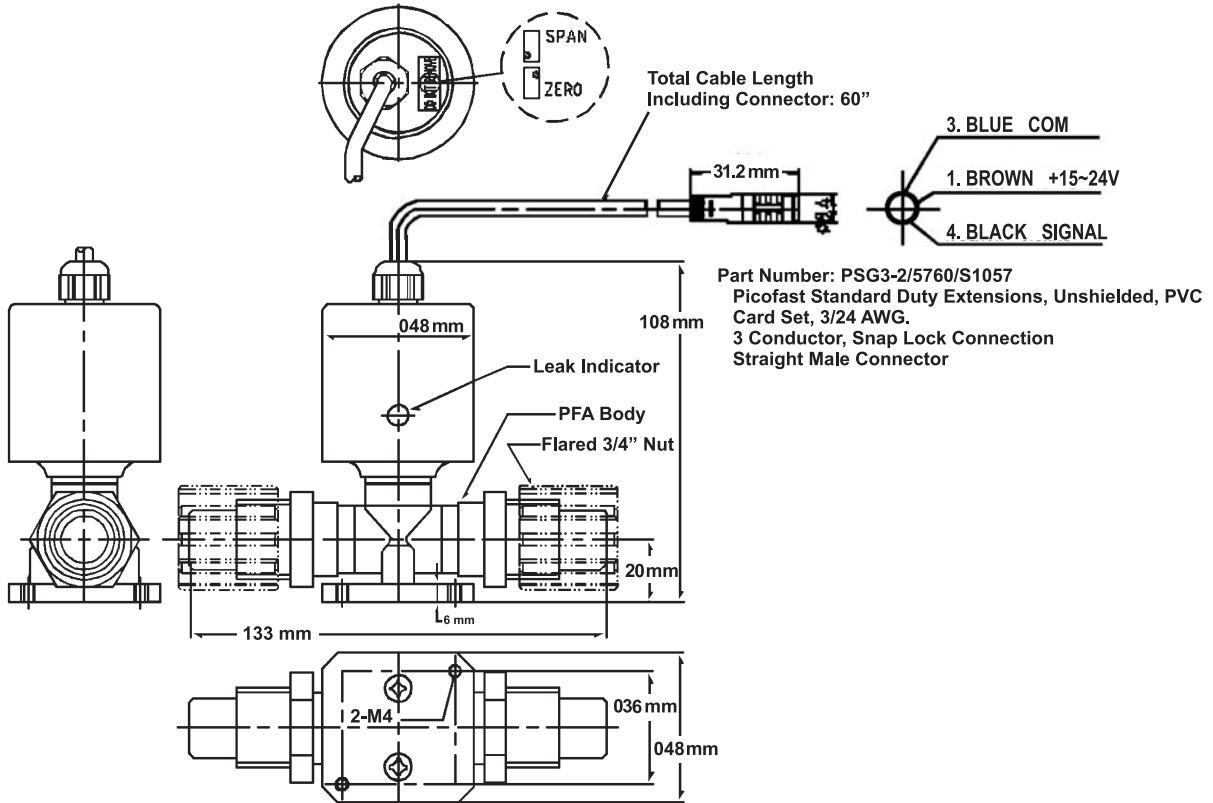
TUBE CONNECTION		
Size	DD	IO
1/4"	6.35	3.96
3/8"	9.53	6.38
1/2"	12.70	9.55

FLARED CONNECTION	
Size	A
1/4"	(114)
3/8"	(118)
1/2"	(118)
3/4"	(112)



Product Dimensions - Model SFP33

Model SFP33, Flow-Through Pressure Transmitter with 3/4" Flare Process Connection
The Turck Electrical Connector Option is Shown.



Model Code

Code Description	Code Option	Option Description
I. Base Model Numbers	SFP33WA	Flow-Through Pressure Transmitter for Ultrapure Water
	SFP33CA	Flow-Through Pressure Transmitter for Chemicals, Acids & Bases
	SFP32WA	Single-Ended Pressure Transmitter for Ultrapure Water
	SFP32CA	Single-Ended Pressure Transmitter for Chemicals, Acids & Bases
II. Absolute or Gauge Measurement	1	Gauge pressure (Referenced to atmospheric pressure)
	2	Absolute pressure (Referenced to vacuum)
III. Measured Pressure Range	A	0-150 psi (Note: Only available in WA Models)
	B	0-145 psi (Note: Only available in WA Models)
	C	0-100 psi
	D	0-95 psi
	E	0-60 psi
IV. Output Signal	1	4-20 mA
	2	1-5 Vdc
	3	0-5 Vdc
	4	0-10 Vdc
V. Process Connection(s)	A	1/4" - OD Tube Stub
	B	3/8" - OD Tube Stub
	C	1/2" - OD Tube Stub
	D	1/4" - Male Flare Tube
	E	3/8" - Male Flare Tube
	F	1/2" - Male Flare Tube
	G	3/4" - Male Flare Tube (Only available on SFP33WA Models)
VI. Wiring	1	2 Meter Pigtail (Standard)
	2	4 Meter Pigtail
	3	10 Meter Pigtail
	4	2 Meter Cable with 5-pin female connector
	7	Turck Connector with 60 inch cable

Sample Standard Model Code

I	II	III	IV	V	VI
SFP33WA	1	B	2	F	4

TRADEMARKS

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