Solid State Pressure Sensor

Series – Model 85

FEATURES

- ✓ Robust SS housing
- ✓ IP 65 or Better
- ✓ MEMS Sensing Inside
- ✓ Custom Configurable
- ✓ As low as 125 Pa

DESCRIPTION

The Series 85 is a miniature and robust pressure transducer with calibrated and temperature compensated output . It incorporates MEMS sensing chip which is specially designed for low pressure application where board-mount is not applicable.

Multi-order compensation for correction of offset, sensitivity, thermal errors and nonlinearity are accomplished in factory via an internal DSP running a correction algorithm with calibration coefficients stored in on-chip EEPROM.

A variety of output configuration, including resolution, sampling rate, output interface are available to provide simple and ready-to-use solution for a wide rage of application. Multiple chosen for pneumatic interface are suitable for system integration.

Multiple choice for media compatibility are available upon request.

Specifications – Basic

Parameters	Min	Typ	Max	Unit
Temp - Operating [1]	-20		85	℃
Temp - Compensated [2]	0		50	℃
Temp - Storage	-40		125	℃
Humidity [3]	0		95	%RH
Over-pressure [4, 7]	3x			FS
Burst Pressure [4, 8]	6x			FS
Long-term Stability [5]			1.0	%FS
Orientation Sensitivity [6]			0.04	%FS/g
ESD – HBM	-4		+4	kV
Vibration	20g, 10Hz to 2Hz			

NOTES:

1. -40 to 85 ℃ is available upon request.

2. Custom temperature compensation is available upon request.

3. Gas only, no condensation.

4. Range dependent. Refer to individual data sheet.

5. Zero stability to be tested with 120 hour hot storage at 85 ℃ , which is roughly equivalent to accelerated aging of the part for over a year at Room Temperature.

6. Measured orientation effect on the zero output of 0.15 psi sensor with a standard deviation of 0.035% Full-Scale/g.

7.The maximum deviation in output from a Best Fit Straight Line (BFSL) fitted to the output measured over the pressure

range at 25°C [77°F]. Includes all errors.

8.The maximum deviation from the ideal transfer function over the entire compensated temperature and pressure

range. Includes all errors due to offset, span, NOL, hysteresis, non-repeatability, TCO, TCS and thermal hysteresis

9. Over-pressure (OP): the maximum pressure that may be applied to the sensor without causing a change in performance with respect to the specifications.

10. Burst-pressure (BP): The maximum pressure that may be applied to the sensor without a catastrophic failure.

Ordering Information

Series 85

85 A C – XXXX G – 1 2 1P

Series

Type of Output
A = Analog Output
D = Digital Output

Supply
Blank = 5.0 V
L = 3.3 V
C = Custom

mbar	
2.5	L25
5	L50
10	100
20	200
40	400
60	600
100	101
200	201
500	501
1000	102
2000	202
4000	402
7000	702

Type of Pressure
G: Gauge (+P at Port B)
A: Absolute (+P at Port A)
D: Differential (+P at Port B)
I: Negative (-P at Port B, offset output when P=0)
*Absolute is available only for pressure equal or greater than 1000 mbar/15 psi.

Port Type
1 = Flush
2 = Barb
3 = PTC, 4mm
9 = Other

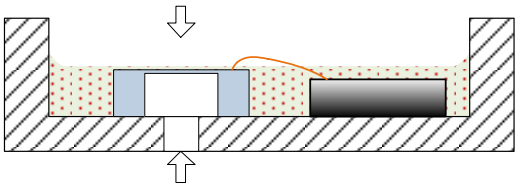
Output
2 = 0.5 to 4.5 V
4 = 4 to 20 mA
S = Special
A =0.5 to 4.5V, clamped
B =0.2 to 4.7V, clamped

Configuration
1P: Standard
x1: Full gel coating
x2: Thin-film conformal coating with Parylene
x3: Gel on ASIC chip only
x4: Selective gel on chips
x0: No encapsulation
xP: Refer to individual data sheet

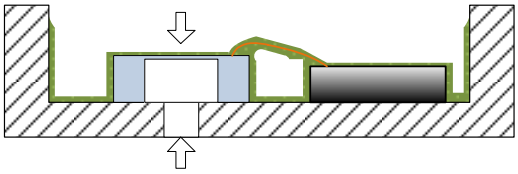
Notes:
Custom ranges and units are available upon request. Please contact factory.

Type of Encapsulation

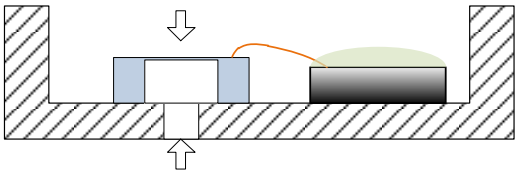
Series 85, 52, 19 & 17



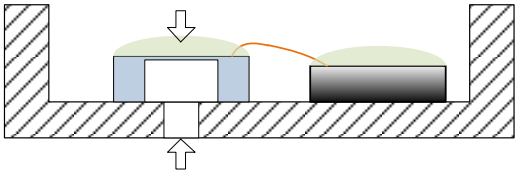
x1 Std gel coating



x2 Thin-film conformal coating with Parylene

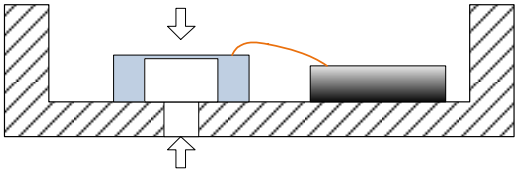


x3 Gel on ASIC chip only



x4 Selective gel on chips

chips carrier inside of TXR



x0 No encapsulation

Code of configuration

Note:

- The least right 2 digits in ordering information are coded for configuration.
- Type of encapsulation is determined per application and sensing chip used.
- Sensor price varies with the encapsulation chosen.
- Chips stack is taken in Series 17 and only available for absolute pressure.

Specifications – Analog Output

Parameters	Min	Typ	Max	Unit
Supply (V_{DD}) – 3.3V [1]	2.75	3.3	3.6	V
Supply (V_{DD}) – 5.0V [1]	4.75	5.0	5.25	V
Supply (V_{DD}) – 12V [1]	8.0	12.0	16.0	V
Operating Current [2]		2.2	3.2	mA
Resolution - DAC [3]		13	16	bits
Output (-P) [4]		10%		V_{DD}
Output (Zero) [4]		50%		V_{DD}
Output (+P) [4]		90%		V_{DD}
Accuracy [5]		±0.5		%FS
Overall Error [6]		± 2.5		%FS
Update Rate [7]		1.2		kHz
Start-up Time [8]			2.3	ms

NOTES:

1. 8 to 16V supply should be ordered separately. Other supply voltage from 2.75 to 5.5V is available upon request.

2. Continuously running measurement sequence is executed at 5V.

3. Higher resolution longer step response settling time. Dithering is available upon request and can be switched on or off.

4. VDD-ratiometric voltage. For vented gauge pressure, zero is 10%. Absolute voltage output (0/1V, 0/5V) is also available upon request.

5. Combines errors at 25°C after reflow mounting and auto-zero. Pressure range dependent.

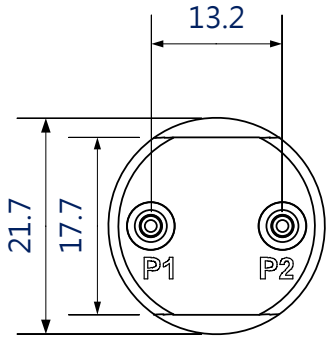
6. The maximum deviation in output from a Best Fit Straight Line (BFSL) fitted to the output measured over the pressure range and compensated temperature.. Combines errors of NOL, hysteresis, and repeatability. Pressure range dependent.

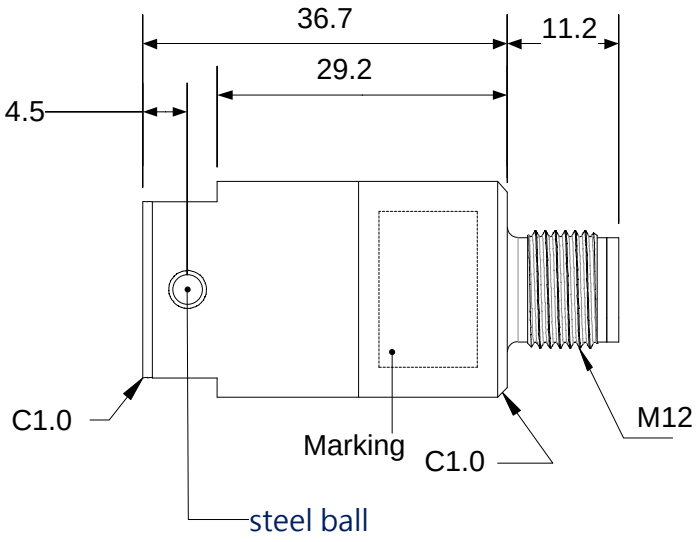
7. Single measurement duration in 16-bit with SSC on-chip temperature sensor. Resolution dependent.

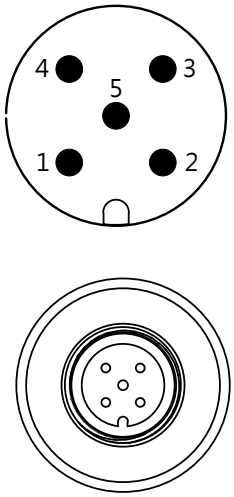
8. V_{DD} ramps up to activate Digital data to ADC plus DAC settling time.

9. Recommended operating condition with external resistive load 1kΩ and capacitive load 10nF as low-pass filtering configuration at analog output for output bandwidth from 1kHz to 5kHz.

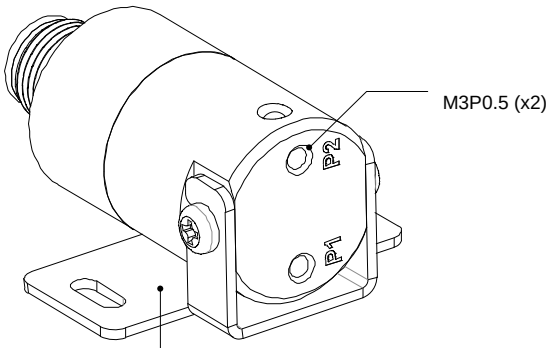
Dimension
- flush fitting







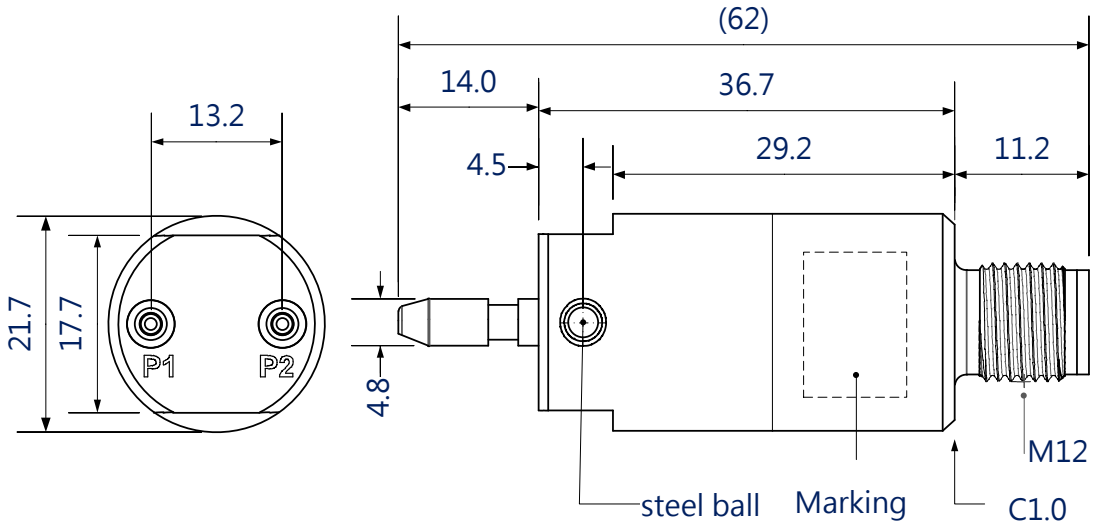
Standardized M12 Circular Connector, 5 circuits

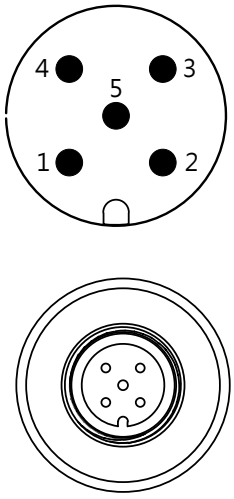


Mounting Bracket (excluded)

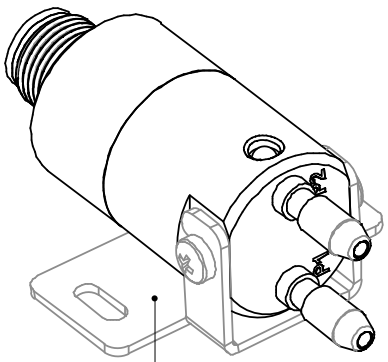
NOTE:
1. P1 is used for positive differential
2. P2 is used for absolute
3. P1 is used for gage
4. All dimensions are in mm

Dimension
- barb fitting





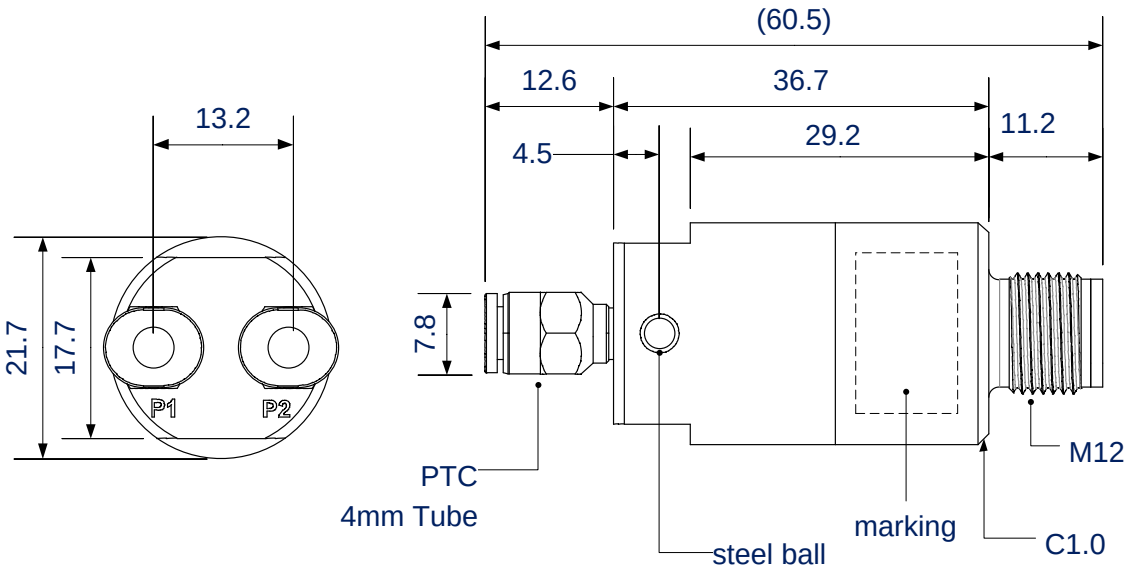
Standardized M12 Circular Connector, 5 circuits

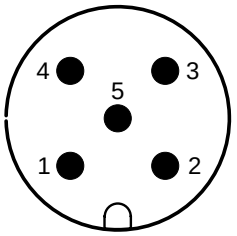


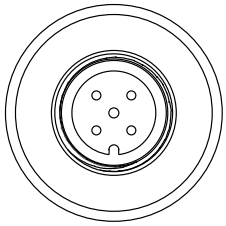
Mounting Bracket (excluded)

NOTE:
1. P1 is used for positive differential
2. P2 is used for absolute
3. P1 is used for gage
4. All dimensions are in mm

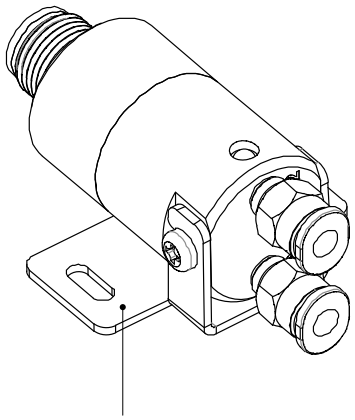
Dimension
- PTC, 4 mm







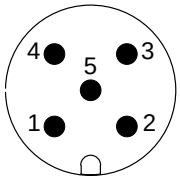
Standardized M12 Circular Connector, 5 circuits

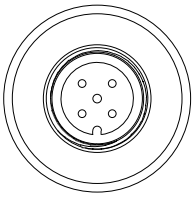


Mounting Bracket (excluded)

NOTE:
1. P1 is used for positive differential
2. P2 is used for absolute
3. P1 is used for gage
4. All dimensions are in mm

Electrical Connection





Standardized M12
Circular Connector
5-circuit

Pinout Assignment

Analog Output

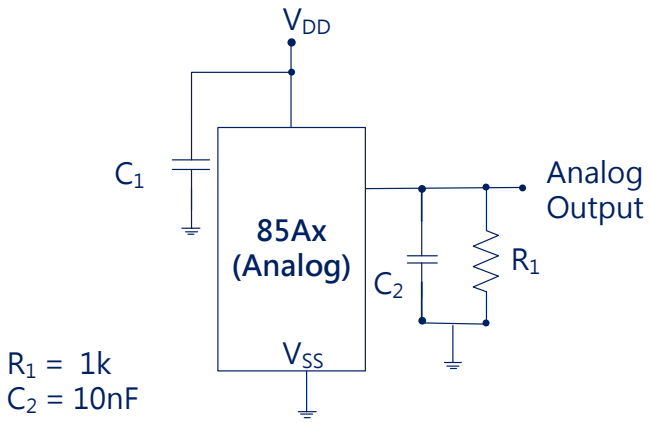
Pin #	Description
1	V_{DD}
2	N.C.
3	GND
4	OUT
5	N.C.

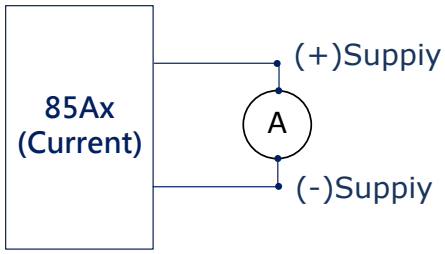
Current Output

Pin #	Description
1	(+)Suppiy
2	(-)Supply
3	N.C.
4	N.C.
5	N.C.

NOTE:
N.C. pins must be left floating

Application Circuit





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