



# RDO Series

## Precision compensated pressure sensors

### FEATURES

- 0...10 mbar to 0...5 bar,  
0...5 inch H<sub>2</sub>O to 0...100 psi,  
differential, gage or absolute
- Temperature compensated
- Calibrated zero and span
- High impedance for low power applications
- Small DIP packages
- Sensortech PRO services



### MEDIA COMPATIBILITY

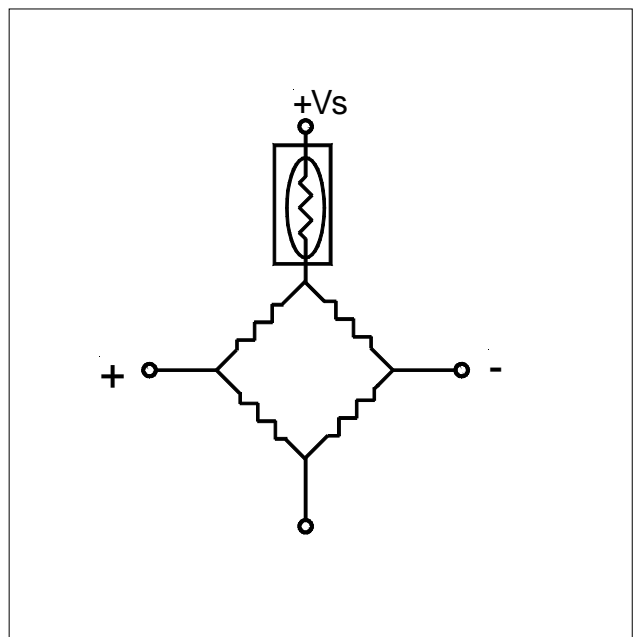
To be used with non-corrosive, non-ionic working fluids such as clean dry air, dry gases and the like.

### SPECIFICATIONS

#### Maximum ratings

Supply voltage $V_s$	+20 V <sub>DC</sub>
Lead temperature (soldering 4 sec.)	250 °C
Temperature ranges	
Compensated	0 to 50 °C
Operating	-40 to 85 °C
Storage	-55 to 125 °C
Humidity limits (non-condensing)	0 to 100% RH
Common mode pressure	
all devices up to 25 mbar/10 "H <sub>2</sub> O	50 psig
all others	150 psig

### EQUIVALENT CIRCUIT





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### PRESSURE RANGES SPECIFICATIONS<sup>1</sup>

#### RDO...P (Prime Grade) devices

Part number	Operating pressure	Proof pressure <sup>11</sup>	Full-scale span <sup>2</sup>		
			Min.	Typ.	Max.
RDOM050...P	0...50 mbar	1.4 bar	12.92 mV	13.05 mV	13.18 mV
RDOM100...P	0...100 mbar	1.4 bar	25.91 mV	26.17 mV	26.43 mV
RDOM250...P	0...250 mbar	1.4 bar	43.1 mV	43.5 mV	43.9 mV
RDOB001...P	0...1 bar	2.1 bar	86.2 mV	87.0 mV	87.9 mV
RDOB002...P	0...2 bar	4.2 bar	86.2 mV	87.0 mV	87.9 mV
RDOB005...P	0...5 bar	10.4 bar	71.8 mV	72.5 mV	73.2 mV
RDOP001...P	0...1 psi	20 psi	17.82 mV	18.0 mV	18.18 mV
RDOP005...P	0...5 psi	20 psi	59.40 mV	60.0 mV	60.60 mV
RDOP015...P	0...15 psi	30 psi	89.10 mV	90.0 mV	90.90 mV
RDOP030...P	0...30 psi	60 psi	89.10 mV	90.0 mV	90.90 mV
RDOP100...P	0...100 psi	150 psi	99.00 mV	100.0 mV	101.0 mV

#### RDO...H (High Grade) devices

Part number	Operating pressure	Proof pressure <sup>11</sup>	Full-scale span <sup>2</sup>		
			Min.	Typ.	Max.
RDOM010...H	0...10 mbar	250 mbar	15.7 mV	16.1 mV	16.5 mV
RDOM025...H	0...25 mbar	250 mbar	24.6 mV	25.1 mV	25.6 mV
RDOM050...H	0...50 mbar	1.4 bar	12.5 mV	13.0 mV	13.5 mV
RDOM100...H	0...100 mbar	1.4 bar	25.2 mV	26.1 mV	27.0 mV
RDOM250...H	0...250 mbar	1.4 bar	42.0 mV	43.5 mV	45.0 mV
RDOB001...H	0...1 bar	2.1 bar	84.0 mV	87.0 mV	90.0 mV
RDOB002...H	0...2 bar	4.2 bar	84.0 mV	87.0 mV	90.0 mV
RDOB005...H	0...5 bar	10.4 bar	70.0 mV	72.5 mV	75.0 mV
RDOH005...H	0...5 inch H <sub>2</sub> O	200 inch H <sub>2</sub> O	19.5 mV	20.0 mV	20.5 mV
RDOH010...H	0...10 inch H <sub>2</sub> O	200 inch H <sub>2</sub> O	24.5 mV	25.0 mV	25.5 mV
RDOP001...H	0...1 psi	20 psi	17.37 mV	18 mV	18.63 mV
RDOP005...H	0...5 psi	20 psi	57.90 mV	60 mV	62.10 mV
RDOP015...H	0...15 psi	30 psi	86.85 mV	90 mV	93.15 mV
RDOP030...H	0...30 psi	60 psi	86.85 mV	90 mV	93.15 mV
RDOP100...H	0...100 psi	150 psi	96.50 mV	100 mV	103.5 mV



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### PERFORMANCE CHARACTERISTICS<sup>1</sup>

Characteristics		Min.	Typ.	Max.	Unit	
Zero pressure offset	all RDO...D4P and RDO...G2P devices	-0.25	0	+0.25	mV	
	all RDO...A2P devices <sup>12</sup>	-0.30	0	+0.30		
	all devices up to 25 mbar/10 "H <sub>2</sub> O	-0.75	0	+0.75		
	all RDO...A2H devices <sup>12</sup>	-1.00	0	+1.00		
	all other devices	-0.50	0	+0.50		
Combined linearity and hysteresis <sup>3</sup>	all RDO...P devices <sup>3</sup>		±0.1	±0.25	%FSO	
	all other devices		±0.2	±1.00		
Temperature effects (0 to 50°C) <sup>4</sup>	Offset	all RDO...P devices		±0.2	±0.5	mV
		all devices up to 25 mbar/10 "H <sub>2</sub> O		±0.2	±0.6	
		all other devices		±0.2	±1.0	
	Span	all RDO...P		±0.4	±1.0	%FSO
		all other devices		±0.4	±2.0	
	Repeatability <sup>5</sup>	all devices up to 25 mbar/10 "H <sub>2</sub> O		±0.5		
all other devices			±0.2	±0.5		
Input impedance <sup>6</sup>			4.0		kΩ	
Output impedance <sup>7</sup>			4.0			
Common mode voltage <sup>8</sup>		1.5	3.0	5.0	V <sub>DC</sub>	
Response time <sup>9</sup>			100		µsec	
Long term stability of offset and span <sup>10</sup>			±0.1		mV	

#### Specification notes:

1. Reference conditions: supply voltage,  $V_s = 12V_{DC}$ ;  $T_A = 25^\circ C$ ; common mode line pressure = 0 bar; pressure applied to port 2. For absolute devices only, pressure is applied to port 1 and the output polarity is reversed.
2. Span is the algebraic difference between the output voltage at full scale pressure and the output at zero pressure. Span is ratiometric to the supply voltage.
3. Hysteresis is the maximum output difference at any point within the operating pressure range for increasing and decreasing pressure. Maximum linearity and hysteresis for the RDOM250...P is 0.35 %FSO and for the RDOP005...P is 0.5 %FSO.
4. Maximum error band of the offset voltage and the error band of the span, relative to the 25°C reading.
5. Maximum difference in output at any pressure within the operating pressure range and temperature within 0 to +50°C after:
  - a) 100 temperature cycles, 0 to +50°C.
  - b) 1.0 million pressure cycles, 0 psi to full scale span.
6. Input impedance is the impedance between  $V_s$  and ground.
7. Output impedance is the impedance between + and - outputs.
8. This is the common mode voltage of the output arms for  $V_s = 12 V_{DC}$ .
9. Response time for a zero to full scale span pressure step change, 10 to 90 % rise time.
10. Long term stability over a one year period.
11. If the maximum pressure is exceeded, even momentarily, the package may leak or burst, or the pressure sensing die may fracture. The proof pressure for the forward gage of all devices in the D4-package is the specified value or 7 bar/100 psi, whatever is less.
12. Absolute devices with improved zero pressure offset values are available on request. Please contact your nearest Sensortronics sales office for further information.

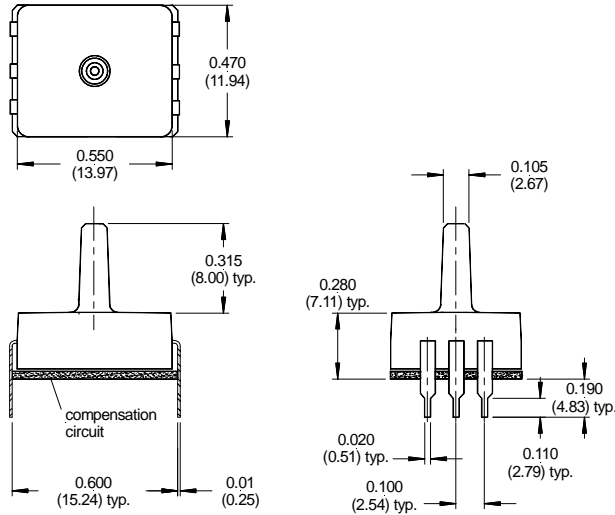


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### PHYSICAL DIMENSIONS

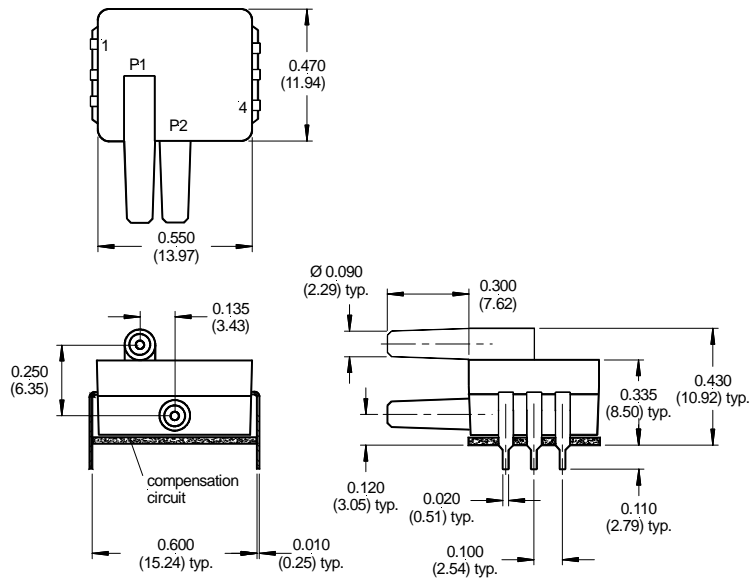
RDO...G2...,  
RDO...A2...



mass: 2 g

third angle projection  
dimensions in inches (mm)

RDO...D4...

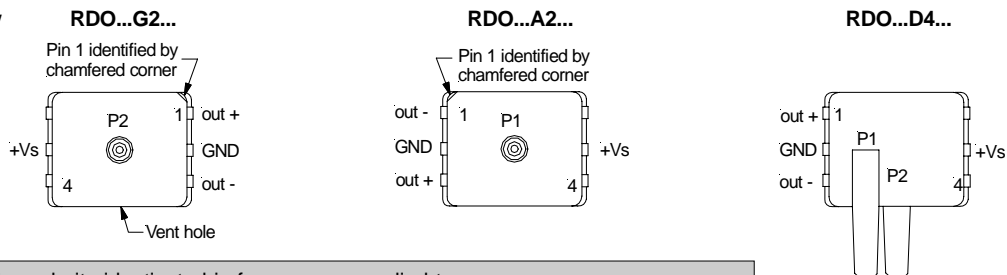


mass: 2 g

third angle projection  
dimensions in inches (mm)

### ELECTRICAL CONNECTION

Top View



Note: The polarity indicated is for pressure applied to  
RDO...G2..., RDO...D4... : P2 (backward gage), RDO...A2... : P1 (forward gage)



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### ORDERING INFORMATION - AVAILABLE LISTINGS

**Note:** RDO...P = Prime Grade,  
RDO...H = High Grade

Pressure range	Pressure mode		
	Absolute	Gage	Differential/Gage
10 mbar		RDOM010G2H	RDOM010D4H
25 mbar		RDOM025G2H	RDOM025D4(P,H)
50 mbar		RDOM050G2P	RDOM050D4(P,H)
100 mbar		RDOM100G2(P,H)	RDOM100D4(P,H)
250 mbar		RDOM250G2(P,H)	RDOM250D4(P,H)
1 bar	RDOB001A2(P,H)	RDOB001G2(P,H)	RDOB001D4(P,H)
2 bar	RDOB002A2(P,H)	RDOB002G2(P,H)	RDOB002D4H
5 bar	RDOB005A2(P,H)	RDOB005G2(P,H)	RDOB005D4(P,H)
5 "H <sub>2</sub> O			RDOH005D4H
10 "H <sub>2</sub> O			RDOH010D4H
1 psi		RDOP001G2(P,H)	RDOP001D4(P,H)
5 psi		RDOP005G2(P,H)	RDOP005D4(P,H)
15 psi	RDOP015A2(P,H)	RDOP015G2(P,H)	RDOP015D4(P,H)
30 psi	RDOP030A2(P,H)	RDOP030G2(P,H)	RDOP030D4H
100 psi	RDOP100A2(P,H)	RDOP100G2(P,H)	RDOP100D4(P,H)

#### Sensortech PRO services:

- Extended guarantee period of 2 years
- Improved performance characteristics
- Custom product modifications and adaptations even for small quantities
- Advanced logistics models for supply inventory and short delivery times
- Technical support through application engineers on the phone or at your site
- Fastest possible technical response for design and QA engineers
- ... plus other services on request

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