HDO Series

Precision compensated pressure sensors

FEATURES

- **10 mbar to 5 bar, absolute, gage or differential pressure**
- **Calibrated and temperature compensated**
- **High impedance for low power applications**
- **Small SMD packages**
- **RoHS compliant**
- **Sensortechnics PRO services**

MEDIA COMPATIBILITY

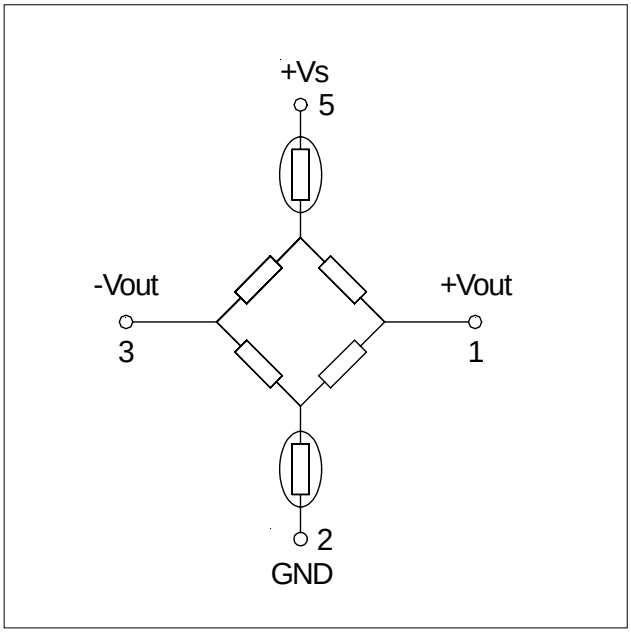
To be used with non-corrosive, non-ionic working fluids such as clean dry air, dry gases and the like.

SPECIFICATIONS

Maximum ratings

Supply voltage V_S	+20 V_{DC}
Lead specifications	
Average preheating temperature gradient	2.5 K/s
Soak time	ca. 3 min
Time above 217°C	50 s
Time above 230°C	40 s
Time above 250°C	15 s
Peak temperature	260°C
Cooling temperature gradient	-3.5 K/s
Temperature ranges	
Compensated	0 ... 50 °C
	(0 ... 70 °C on request)
Operating	-40 ... 85 °C
Storage	-40 ... 125 °C
Humidity limits (non-condensing)	0 ... 100% RH

EQUIVALENT CIRCUIT



PRESSURE RANGES SPECIFICATIONS[1]

Part number	Operating pressure	Proof pressure[11]	Burst pressure[12]	Full-scale span[2]		
				Min.	Typ.	Max.
HDOM010...P	0...10 mbar	100 mbar	150 mbar	19.7 mV	20.0 mV	20.3 mV
HDOM020...P	0...20 mbar	100 mbar	150 mbar	24.7 mV	25.0 mV	25.3 mV
HDOM050...P	0...50 mbar	250 mbar	500 mbar	19.7 mV	20.0 mV	20.3 mV
HDOM100...P	0...100 mbar	250 mbar	500 mbar	19.7 mV	20.0 mV	20.3 mV
HDOM200...P	0...200 mbar	1 bar	1.4 bar	Specifications available on request. Please contact Sensortechnics.		
HDOM500...P	0...500 mbar	1 bar	1.4 bar			
HDOB001A...P	0...1 bara	3 bara	5 bara	89.1 mV	90.0 mV	90.9 mV
HDOB001(D,G)...P	0...1 bar	3 bar	5 bar	Specifications available on request. Please contact Sensortechnics.		
HDOB002...P	0...2 bar	4 bar	6 bar			
HDOB005...P	0...5 bar	7 bar	7 bar			
HDOM010...H	0...10 mbar	100 mbar	150 mbar	19.5 mV	20.0 mV	20.5 mV
HDOM020...H	0...20 mbar	100 mbar	150 mbar	24.5 mV	25.0 mV	25.5 mV
HDOM050...H	0...50 mbar	250 mbar	500 mbar	19.37 mV	20.0 mV	20.63 mV
HDOM100...H	0...100 mbar	250 mbar	500 mbar	19.37 mV	20.0 mV	20.63 mV
HDOM200...H	0...200 mbar	1 bar	1.4 bar	Specifications available on request. Please contact Sensortechnics.		
HDOM500...H	0...500 mbar	1 bar	1.4 bar			
HDOB001A...H	0...1 bara	3 bara	5 bara	86.85 mV	90.0 mV	93.15 mV
HDOB001(D,G)...H	0...1 bar	3 bar	5 bar	Specifications available on request. Please contact Sensortechnics.		
HDOB002...H	0...2 bar	4 bar	6 bar			
HDOB005...H	0...5 bar	7 bar	7 bar			

Specification notes:

1. Reference conditions: supply voltage, V_S = 12V_{DC}; T_A = 25°C; common mode line pressure = 0 bar; pressure applied to high pressure port.
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.
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. Proof pressure is the maximum pressure which may be applied without causing durable shifts of the electrical parameters of the sensing element.
12. Burst pressure is the maximum pressure which may be applied without causing damage to the sensing element or leaks to the housing.

PERFORMANCE CHARACTERISTICS[1]

All HDO...P devices (Prime Grade)

Characteristics		Min.	Typ.	Max.	Unit
Zero pressure offset		-0.25	0	+0.25	mV
Combined linearity and hysteresis[3]			±0.1	±0.25	%FSO
Temperature effects (0...50 °C)[4]	Offset		±0.2	±0.5	mV
	Span		±0.4	±1.0	%FSO
Repeatability[5]			±0.2	±0.5	
Input impedance[6]			>12		kΩ
Output impedance[7]			4.0		
Common mode voltage[8]		4.8	6.0	7.2	V_{DC}
Response time[9]			100		µsec
Long term stability of offset and span[10]			±0.1		mV

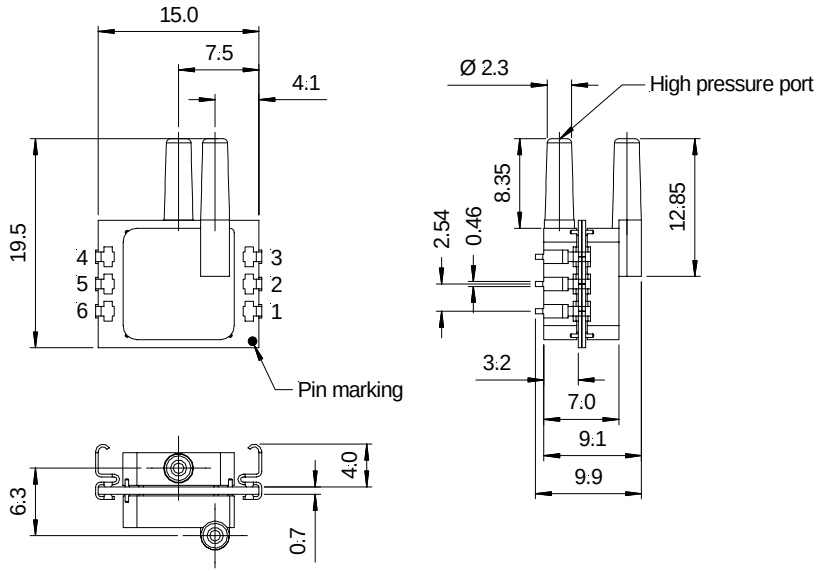
All HDO...H devices (High Grade)

Characteristics		Min.	Typ.	Max.	Unit
Zero pressure offset	devices up to 20 mbar	-0.75	0	+0.75	mV
	all other devices	-0.5	0	+0.5	
Combined linearity and hysteresis[3]			±0.2	±1.0	%FSO
Temperature effects (0...50 °C)[4]	Offset		±0.2	±1.0	mV
	Span		±0.4	±2.0	%FSO
Repeatability[5]			±0.2	±0.5	
Input impedance[6]			>12		kΩ
Output impedance[7]			4.0		
Common mode voltage[8]		4.8	6.0	7.2	V_{DC}
Response time[9]			100		µsec
Long term stability of offset and span[10]			±0.1		mV

PHYSICAL DIMENSIONS AND ELECTRICAL CONNECTIONS

Different housing options are available on request. Please contact Sensortechnics.

HDO...E... (SMD, 2 ports same side)



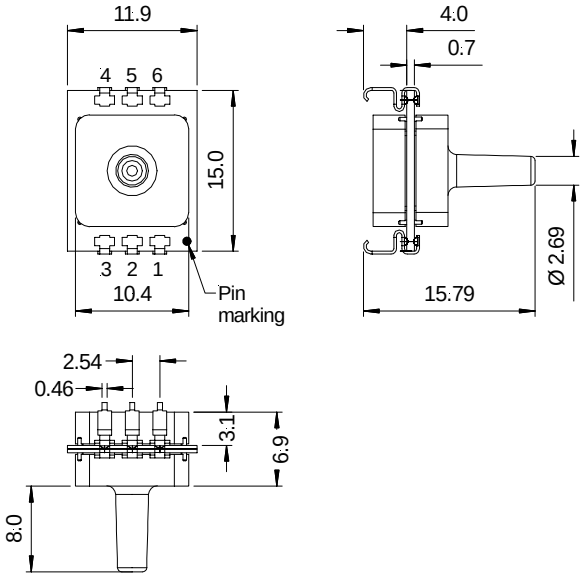
Pin	Connection
1	+Vout
2	GND
3	-Vout
4	N / C
5	+Vs
6	N / C

Note:
The polarity indicated is for pressure applied to high pressure port (forward gage).

third angle projection

dimensions in mm

HDO...Y... (SMD, 1 port axial)



Pin	Connection
1	+Vout
2	GND
3	-Vout
4	N / C
5	+Vs
6	N / C

Note:
Pressure port is in forward gage configuration

third angle projection

dimensions in mm

ORDERING INFORMATION

	Series	Pressure range		Pressure mode		Housing		Porting		Grade	
Options	HDO	M010	10 mbar	A*	Absolute	E*	SMD, 2 ports same side	8	Straight	H	High
		M020	20 mbar	D	Differential					P	Prime
		M050	50 mbar	G	Gage	Y**	SMD, 1 port axial				
		M100	100 mbar								
		M200	200 mbar								
		M500	500 mbar								
		B001	1 bar								
		(B001A)	1 bara								
		B002	2 bar								
		B005	5 bar								
				* only available from 1 bar		* standard for differential devices, "D" ** standard for absolute and gage devices, "A" and "G"					
Example:	HDO	M100		G		Y		8		P	

Note:	Devices highlighted in grey are preferred stock items

Sensortechnics PRO services:

- Extended guarantee period of 2 years
- 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
- Traceability of each sensor through serial numbers on request
- No product specification changes without customer notification
- No product obsolescence without very early prior notice
- Fastest possible technical response for design and QA engineers
- Long term product availability for your spares and service needs

... plus other services on request