

HPSD 2000 Pressure Transducer

General description

Pressure transducer HPSD 2000 is a pressure sensing device. High performance and accuracy enables use of this transducer in many applications. The HPSD 2000 pressure transducers are constructed on 1 mm thick ceramic substrate attached inside standard metal 19 mm housing with O-ring groove. Input pressure is sensed with silicon piezoresistive bridge. Programmable temperature compensation provides 1% total error over 0 to 70°C temperature range. Operating from single 5 V supply, wide compensated temperature range and standard, ratiometric 0,5 to 4,5 V output provides OEM users maximum freedom for any type of application with dry air or non-corrosive gases and liquids.

Whole family HPSD 2000 includes 20 mbar up to 7 bar pressure range.

Features

- Single 5 V supply voltage
- Easy to use package
- Wide compensated range (0 to 70°C)
- Up to 15 bits I2C output (pressure + temperature)
- Standard 0,5 to 4,5 V voltage output
- Total accuracy down to **0.5%FS** over 0 to 70°C, all effects included (maximum)
- High performance OEM applications
- Integrated EMC protection
- Gage configuration

Applications

- Industrial Process Control
- Pressure transducer
- Air flow monitoring
- Process control
- Leak detection



This information applies to a product under development. Its characteristics and specifications are subject to change without notice. Hyb d.o.o. assumes no obligation regarding future manufacture unless otherwise agreed to in writing. Copyright © Hyb d.o.o., 2017. All rights reserved.

HPSD 2000 Pressure Transducer

Types overview

$$T_{AMB} = 25^{\circ}\text{C}$$

$$V_{CC} = 5\text{ V, unless otherwise noted}$$

Low pressure range

Pressure range	20 mbar (0,3 psi)	50 mbar (0,8 psi)	100 mbar (1,5 psi)
ID group	HPSD 2000-020M	HPSD 2000-050M	HPSD 2000-100M
V _{OUT}	0,5 to 4,5 V	0,5 to 4,5 V	0,5 to 4,5 V
Temperature ranges	Operating: -25 to 85°C Compensated: 0 to 70°C Storage : -40 to 125°C		
Over pressure	200 mbar	500 mbar	1000 mbar
Burst pressure	300 mbar	750 mbar	1500 mbar

High pressure range

Pressure range	350 mbar (5psi)	1 bar (15psi)	2 bar (30psi)	4 bar (60psi)	-1 to 0 bar
ID group	HPSD 2000-350M	HPSD 2000-001B	HPSD 2000-002B	HPSD 2000-004B	HPSD 2000-000B
V _{OUT}	0,5 to 4,5 V	0,5 to 4,5 V	0,5 to 4,5 V	0,5 to 4,5 V	0,5 to 4,5 V
Temperature ranges	Operating: -25 to 85°C Compensated: 0 to 70°C Storage : -40 to 125°C				
Over pressure	1 bar	3 bar	6 bar	8 bar	3 bar
Burst pressure	1.7 bar	5 bar	10 bar	12 bar	5 bar

This information applies to a product under development. Its characteristics and specifications are subject to change without notice. Hyb d.o.o. assumes no obligation regarding future manufacture unless otherwise agreed to in writing. Copyright © Hyb d.o.o., 2017. All rights reserved.

Performance characteristics

 $T_{AMB} = 25^{\circ}\text{C}$
 $V_{CC} = 5\text{ V}$, unless otherwise noted

Parameter	Symbol	Min.	Typ.	Max.	Unit
Power supply					
Supply voltage	V_{CC}	4,75		5,25	V
Current consumption	I_{CC}		4	6,5	mA
Analog output (pressure) ³⁾					
Offset voltage ⁴⁾	V_O		0,50		V
Full scale output (FSO) ⁵⁾	V_{FS}		4,50		V
Full scale span (FSS) ⁶⁾	V_{FSO}		4,00		V
Offset voltage (bidirectional devices)	V_O		2,50		V
Digital output (pressure), 15 bits ³⁾					
Offset voltage ⁴⁾	V_O		3277		counts
Full scale output (FSO) ⁵⁾	V_{FS}		29491		counts
Full scale span (FSS) ⁶⁾	V_{FSO}		26214		counts
Offset voltage (bidirectional devices)	V_O		16384		counts
Digital output (temperature), 15 bits ⁷⁾					
Temperature output @ 0°C	T_o		8192		counts
Temperature output @ 70°C	T_s		24576		counts
Accuracy (pressure) @ 25°C ⁸⁾					
Low pressure (20 to 100 mbar FS devices)	E_a		0,3	±0,5	%FSO
Standard pressure	E_a		0,2	±0,4	%FSO
Total accuracy (pressure) @ 0 to 70°C ⁹⁾					
Low pressure (20 to 100 mbar FS devices)	E_{ta}		0,5	±1	%FSO
Standard pressure (all other devices)	E_{ta}		0,3	±0,5	%FSO
Resolution					
A/D converter	D_i			15	bit
D/A converter	D_o		11		bit
Response time	E_{rt}		1,5		ms
Repeatability ¹⁰⁾	E_r		±0,05		% FSO
Nonlinearity & pressure hysteresis (BFSL) ¹¹⁾	E_l		±0,1	±0,3	% FSO
Load resistance	R_L	2		∞	k
Media compatibility			See spec. note ¹²⁾		
Weight	W		9		g

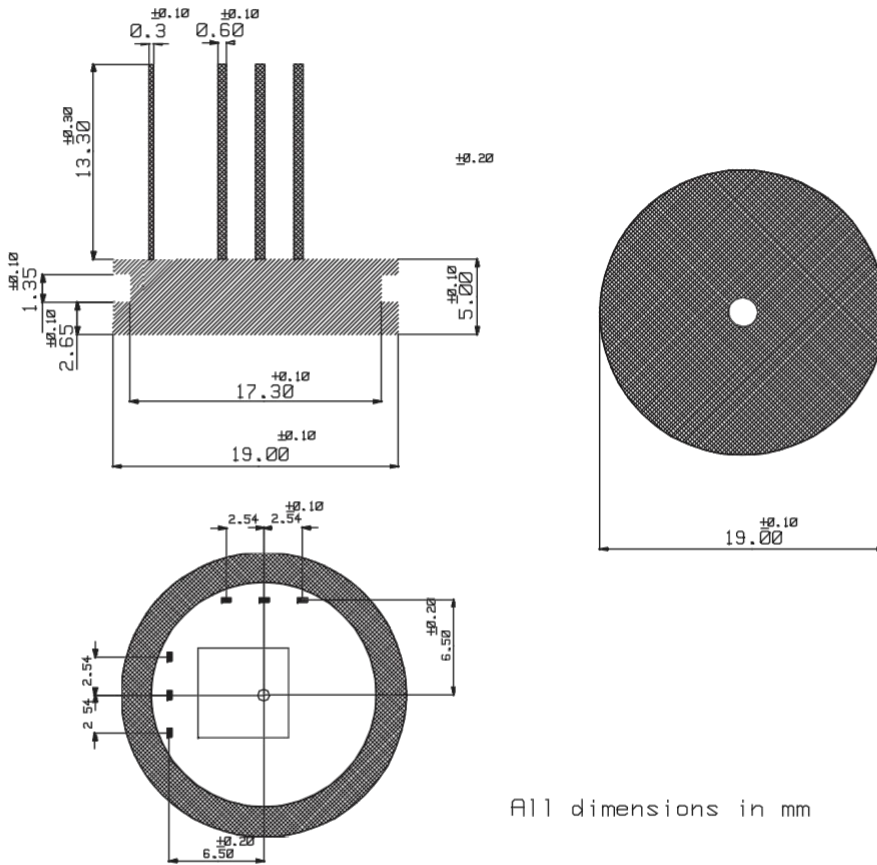
This information applies to a product under development. Its characteristics and specifications are subject to change without notice. Hyb d.o.o. assumes no obligation regarding future manufacture unless otherwise agreed to in writing. Copyright © Hyb d.o.o., 2017. All rights reserved.

HPSD 2000 Pressure Transducer**Specification notes**

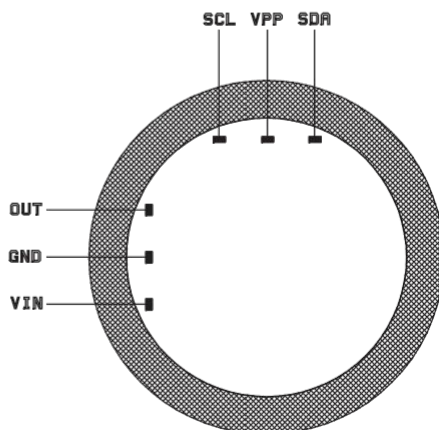
- 1) Over pressure is the maximum pressure which may be applied without causing damage to the sensing element.
- 2) Burst pressure is the maximum pressure which may be applied without causing leakage damage to the sensing element.
- 3) Analog output signal is ratiometric to power supply V_{cc} , digital signal is not ratiometric to the power supply.
- 4) Offset voltage is the voltage output at zero pressure.
- 5) Full scale output is the voltage output at full pressure range.
- 6) Full scale span is the algebraic difference between the output at full scale pressure range and offset.
- 7) Digital output signal (temperature) is not ratiometric to power supply V_{cc} . Temperature data are read directly on the sensing element.
- 8) Accuracy includes all effects (offset, span, nonlinearity, pressure hysteresis and repeatability) at room temperature and represents maximum deviation of transducer signal from ideal characteristic.
- 9) Total accuracy includes all effects (offset, span, nonlinearity, pressure hysteresis and repeatability) included with all temperature effects of offset and span. It describes overall error and represents maximum deviation of transducer signal from ideal characteristic in compensated temperature range from 0 to 70°C.
- 10) Repeatability is defined as typical deviation of the output signal after 10 pressure cycles.
- 11) Nonlinearity is defined as the BFSL (best fit straight line) across entire pressure range.
- 12) Media compatibility: clean, dry and noncorrosive gases and liquids to pyrex, silicon, RTV, ceramics Al_2O_3 , epoxy, stainless steel.

This information applies to a product under development. Its characteristics and specifications are subject to change without notice. Hyb d.o.o. assumes no obligation regarding future manufacture unless otherwise agreed to in writing. Copyright © Hyb d.o.o., 2017. All rights reserved.

Outline dimensions



Pinout



This information applies to a product under development. Its characteristics and specifications are subject to change without notice. Hyb d.o.o. assumes no obligation regarding future manufacture unless otherwise agreed to in writing. Copyright © Hyb d.o.o., 2017. All rights reserved.

HPSD 2000 Pressure Transducer

Ordering guide

Transducer type	Pressure range	Pressure type	Pressure direction
HPSD 2000	020M	G	0
	050M		B
	100M		
	350M		
	001B		
	002B		
	004B		
	007B		
	000B		

Pressure range	
020M	20 mbar
050M	50 mbar
100M	100 mbar
350M	350 mbar
001B	1 bar
002B	2 bar
004B	4 bar
007B	7 bar
000B	-1 to 0 bar

Pressure type	
G	Gage

Pressure direction	
0	0 to press. range
B	-press range to +press. range (bidirectional)

Other configurations possible on special request.

This information applies to a product under development. Its characteristics and specifications are subject to change without notice. Hyb d.o.o. assumes no obligation regarding future manufacture unless otherwise agreed to in writing. Copyright © Hyb d.o.o., 2017. All rights reserved.