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May, 2017

PHPS-5500 Pressure Transducer - Switch

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General description

The PHPS 5500 is a pressure sensing device acting as pressure transducer. Signal conditioning consist of complete temperature compensation and adjusted amplifier in single, programmable ASIC. High performance and accuracy enables use of this transducer in many applications. Programmable temperature compensation provides 1% total error over 0 to 70°C temperature range. Wide supply range 7 to 40 V, standard 0,5 to 4,5 V voltage output, digital output and switching output provides users maximum freedom for any type of application with dry air or non-corrosive gases and liquids.

The model PHPS 5500 is designed for standard M8 electrical connector. The whole group consists for pressure ranges from 20 mbar to 7 bar. Gage pressure configuration available for this group.



Features

- Wide supply voltage range 7 to 40 V
- Wide compensated range (0 to 70°C)
- Total accuracy down to **0,5%FS** over 0 to 70°C, all effects included (maximum)
- Standard 0,5 to 4,5 V analog output
- Switching output with led indicator
- Overcurrent and overvoltage protection
- Overload and short circuit protection
- High performance OEM applications
- Standard M8 output connector
- Gage pressure configuration
- Pressure ranges: from 20 mbar to 7 bar or vacuum

Applications

- Pressure switch
- Pressure measurement
- Process control
- Leak detection
- Pneumatic controls



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Types overview

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

$V_{CC} = 12\text{V}$

Low pressure range

Pressure range	20 mbar (0,15psi)	50 mbar (0,3psi)	100 mbar (0,8psi)	350 mbar (5psi)
ID group	PHPS 5500-020M	PHPS 5500-050M	PHPS 5500-100M	PHPS 5500-350M
Pressure types	gage/ bidirectional gage	gage/ bidirectional gage	gage/ bidirectional gage	gage/ bidirectional gage
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
Temperature ranges	Operating: -25 to 85°C Compensated: 0 to 70°C Storage : -40 to 125°C			
Over pressure ¹⁾	200 mbar	500 mbar	1 bar	1 bar
Burst pressure ²⁾	300 mbar	750 mbar	1.5 mbar	1.7 bar

High pressure range

Pressure range	1 bar (15psi)	2 bar (30psi)	4 bar (60psi)	7 bar (100psi)	-1 to 0 bar
ID group	PHPS 5500 - 001B	PHPS 5500 - 002B	PHPS 5500 - 004B	PHPS 5500 - 007B	PHPS 5500 - 000B
Pressure types	gage/ bidirectional gage	gage/ bidirectional gage	gage/ bidirectional gage	gage/ bidirectional gage	gage/ bidirectional gage
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⁾	3 bar	6 bar	8 bar	14 bar	3 bar
Burst pressure ²⁾	5 bar	10 bar	12 bar	21 bar	5 bar

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Performance characteristics

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

$V_{CC} = 12\text{V}$

Parameter	Symbol	Min.	Typ.	Max.	Unit
Power supply					
Supply voltage	V_{CC}	7	12	40	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
Accuracy (pressure) @ 25°C ⁸⁾					
Low pressure (20 to 100 mbar FS devices)	E_a		0,3	±0,5	%FSO
Standard pressure	E_a		0,1	±0,3	%FSO
Total accuracy (pressure) @ 0 to 70°C ⁹⁾					
Low pressure (20 to 100 mbar FS devices)	E_{Ia}		0,5	±1	%FSO
Standard pressure (all other devices)	E_{Ia}		0,3	±0,5	%FSO
Resolution					
A/D converter	D_i			15	bit
D/A converter	D_o		11		bit
Response time	E_n		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

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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) Digital signal is non-ratiometric to the power supply V_{cc} .
- 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 silicon, RTV, ceramics Al_2O_3 , epoxy, nickel.

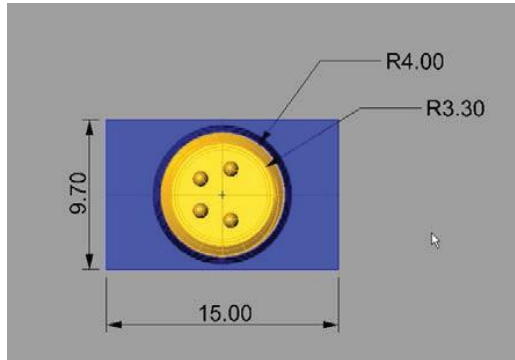
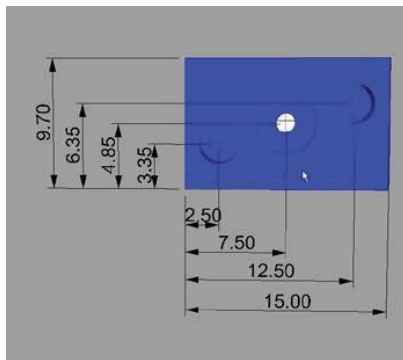
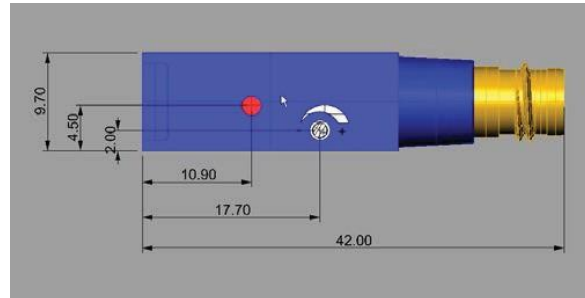
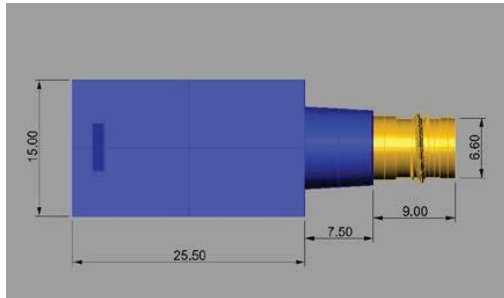
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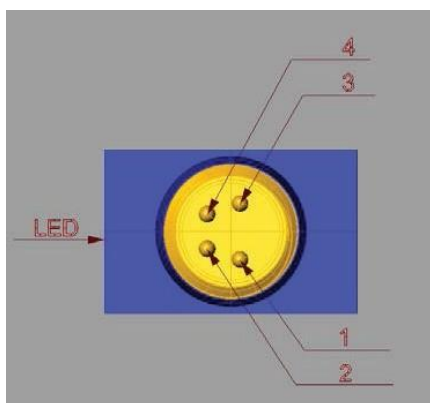
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Outline dimensions



Pinout



ANALOG VERSION:

1	Vcc
2	OUT (analog)
3	GND
4	OUT (switching)

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Ordering guide

Transducer type	Pressure range	Pressure type	Direction
PHPS 5500	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.

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