

Preliminary Datasheet

November, 2021

PHPSU-4503 Pressure Transducer

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General description

Pressure transducer PHPSU-4503 is an OEM pressure sensing device with temperature compensated and calibrated output.

This transducer was specially designed to provide stable output signal (offset and span) over wide temperature range from 0 to 70°C. Thick film resistors printed on substrate are individually laser trimmed to provide temperature compensation, zero and span calibration. Additional two pins provide temperature signal for external temperature measurement if required. Pressure transducer is intended for use with non-corrosive gases and fluids.

PHPSU-4503 is designed for constant voltage excitation for pressure ranges from 4" H₂O to 150 psi (10 mbar up to 10bar).

Features

- Constant voltage excitation
- Easy to use DIP package
- Wide compensated range (0 to 70°C)
- Zero and span calibration
- Differential and absolute configurations
- Pressure range from 4" H₂O to 150 psi
- Outstanding long term stability

Applications

- Medical instrumentation
- Respirators
- HVAC
- Process control
- Leak detection
- Pneumatic controls
- Altimeters



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Pressure range	4 H ₂ O (10mbar)	0,3 psi (20mbar)	0,8 psi (50 mbar)	1 psi (70mbar)
ID group	PHPSU-4503-004H	PHPSU-4503-0P3P	PHPSU-4503-0P8P	PHPSU-4503-001P
V _{OUT} ³⁾	40±0,3mV	40±0,3mV	40±0,3 mV	18±0,15 mV
V _{OFFS(MAX); 25°C}	±0,5 mV	±0,5 mV	±0,5 mV	±0,5 mV
Temp. ranges	Operating: -25 to 85°C Compensated: 0 to 70°C Storage: -40 to 125°C			
Over pressure ¹⁾	1 psi	3 psi	5 psi	10 psi
Burst pressure ²⁾	3 psi	5 psi	10 psi	20 psi

Pressure range	5 psi (350 mbar)	15 psi (1 bar)	30 psi (2bar)	100 psi (7 bar)	150 psi (10 bar)
ID group	PHPSU-4503-005P	PHPSU-4503-015P	PHPSU-4503-030P	PHPSU-4503-100P	PHPSU-4503-150P
V _{OUT} ³⁾	60±0,5 mV	90±0,5 mV	90±0,5 mV	90±1 mV	90±1 mV
V _{OFFS(MAX); 25°C}	±0,5 mV	±0,5 mV	±0,5 mV	±0,5 mV	±0,5 mV
Temp. ranges	Operating: -25 to 85°C Compensated: 0 to 70°C Storage: -40 to 125°C				
Over pressure ¹⁾	25 psi	60 psi	90 psi	200 psi	200 psi
Burst pressure ²⁾	50 psi	120 bar	150 psi	250 psi	250 psi

T_{AMB} = 25°CV_{CC} = 12 V, unless otherwise noted

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Parameter	Min.	Typ.	Max.	Unit
Input voltage		12	20	V
Bridge resistance	2		4	k Ω
Thermal error of span (0 to 70°C) ^{5), 6)}		$\pm 0,2$	± 1	%FS
Thermal error of offset (0 to 70°C) ^{4), 6)}		$\pm 0,2$	$\pm 0,5$	mV
Combined linearity and hysteresis ⁸⁾		$\pm 0,2$	$\pm 0,5$	%FS
Input impedance	4		25	k Ω
Output impedance	2		4	k Ω
Repeatability ⁷⁾		$\pm 0,05$		%FSO
Long term stability of offset and span		$\pm 0,1$		mV
Media compatibility	See spec. note ^{9), 10)}			
Weight		7		g

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 input supply voltage V_{cc} .
- 4) Offset voltage is the voltage output at zero pressure.
- 5) Span is the algebraic difference between the output at full scale pressure range and offset.
- 6) Thermal error of span and offset represents the maximum deviation of transducer signal (span and offset) through whole compensated temperature range from 0 to 70°C in compare to value at 25°C.
- 7) Repeatability is defined as typical deviation of the output signal after 10 pressure cycles.
- 8) Nonlinearity is defined as the BFSL (best fit straight line) across entire pressure range, for 100psi and 150psi pressure ranges this parameter is defined as typ. 0.5%FS (max 0.8%FS).
- 9) Media compatibility on pressure port P1: clean, dry and noncorrosive gases to silicon, RTV, ceramics Al₂O₃, gold, epoxy, polymer.
- 10) Media compatibility on pressure port P2: clean, dry and noncorrosive gases to RTV, ceramics Al₂O₃, epoxy, polymer.

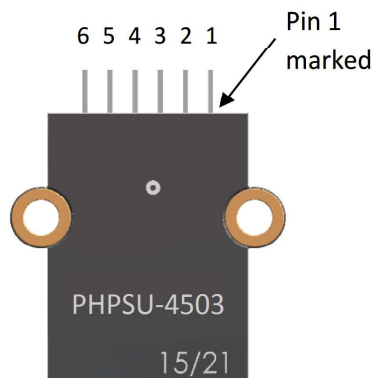
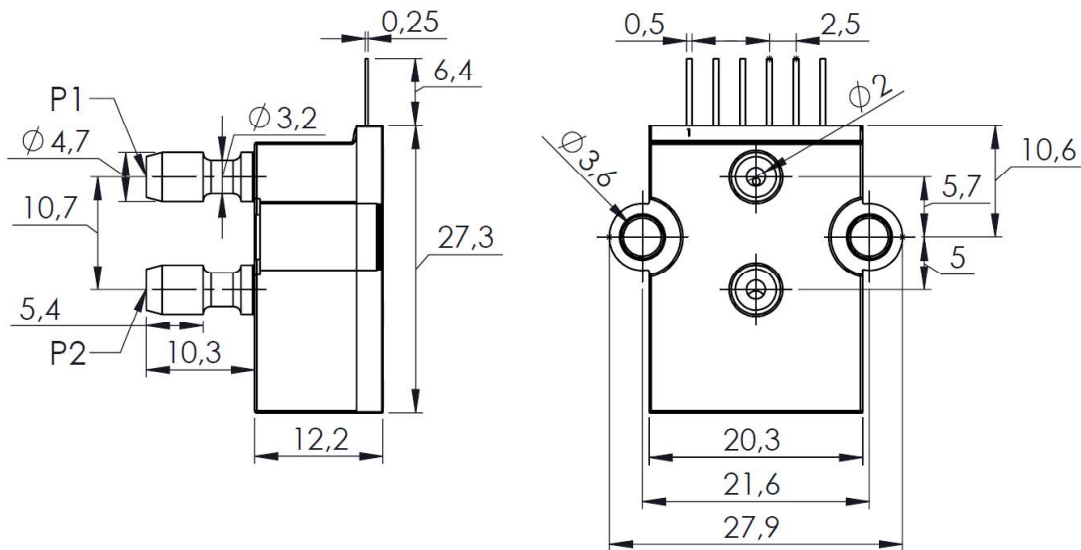
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Outline dimensions and pinout



Pin number	Output
1	Temp out+
2	Vs
3	+OUT
4	GND
5	-OUT
6	Temp out-

Note: Output polarity is defined for positive pressure on port **P2**

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Transducer type	Pressure range	Pressure type	Silgel protection
PHPSU-4503	004H	D	
	0P3P	A	S
	0P8P		
	001P		
	005P		
	015P		
	030P		
	100P		
	150P		

Pressure range		Pressure type	
004H	4 " H ₂ O	D	Differential
0P3P	0,3 psi	A	Absolute (for p≥1 bar), on P1, output polarity reversed.
0P8P	0,8 psi		
001P	1 psi		
005P	5 psi		
015P	15 psi		
030P	30 psi		
100P	100 psi		
150P	150 psi		

Silgel protection	
	No gel protection
S	Silgel protection

Other configurations possible on special request.

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