

Fast and precise pressure transmitters

Band width 20kHz / accuracy 0,1%FS

Series 21PHB

The Series 21PHB pressure transmitters, with their 0...20 kHz dynamic range and M6 pressure connection, are optimized both for dynamic (i.e. fast pressure pulsations at close proximity) as well as static pressure measurements. The sensor design enables good media compatibility and supports measurements at temperatures of up to 100 °C.

Electronics

The circuitry for the Series 21PHB was specifically developed to take advantage of the high dynamic and compact range of the 21P sensor head. The signal path remains entirely analog, although it is readjusted in real time by means of a high-precision digital compensation circuit. This ensures the full dynamic range of the sensor and the accuracy of the measurement signal are maintained across the entire 0...20 kHz bandwidth. With a temperature range of -40...+125 °C, the remote signal converter satisfies the exceptional demands associated with hostile environments; e.g., engine test benches. The sensor head alone, i.e., without the remote signal converter, is available for those applications better served by a sensor with 80 mV output (@ 1 mA supply). Included with this configuration is a calibration card providing the user with actual test data taken from the sensor during factory calibration (Series 21P).

Sensor technology

The Series 21P is based on a piezoresistive pressure sensor, which is built into an oil-filled insulated capsule within metallic housing. This technology is characterised by a high overload resistance, excellent long term stability and exceptional media resistance. The miniaturisation of the sensor head allows a close connection to the measuring medium and is key to the extremely dynamic range of 0...20 kHz.

Performance characteristics

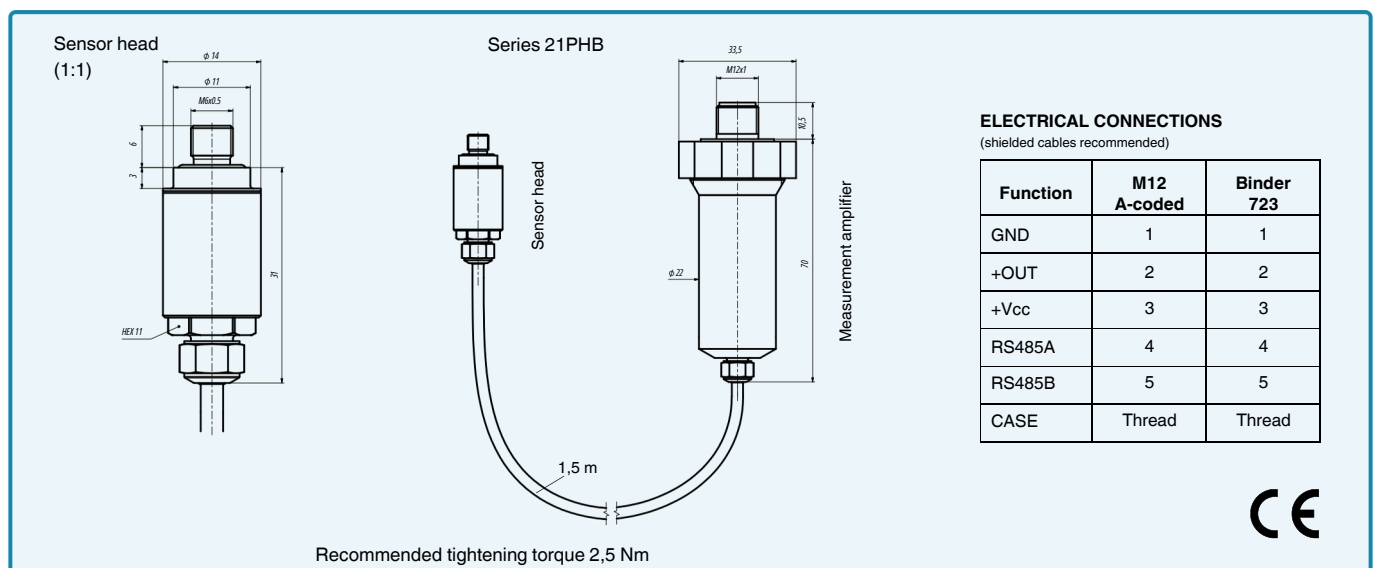
- High media resistant sensor head
- Completely welded (with no internal seals)
- Broad compensated temperature range -10...80 °C
- Excellent dynamic response from static to 20 kHz (pulsation measurements)
- Extremely compact design, pressure connection: M6 x 0,5 fine thread
- Robust construction (IP67), suitable for use on test benches
- Pressure ranges 10 to 600 bar (absolute)



Series 21PHB



Sensor head



Specifications

Pressure ranges											
PA	0...10	0...16	0...25	0...40	0...60	0...100	0...160	0...250	0...400	0...600	bar
Overload resistance	30	48	75	120	180	300	300	500	700	700	bar

PA: Sealed. Zero at 1000 mbar abs.

Accuracy 1)	± 0,1 %FS
Total Error Band 2)	± 0,5 %FS @ -10...80 °C
Operating Temperature Range	-20...100 °C

¹⁾ Linearity (best straight line), hysteresis and repeatability

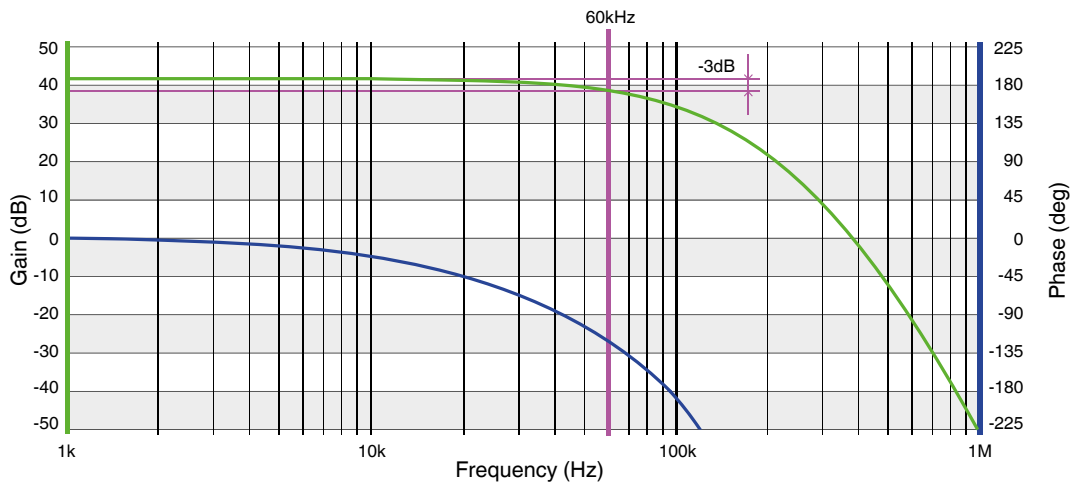
²⁾ Accuracy and temperature error

Type	3-wire
Signal Output	0...10 V
Excitation	13...32 VDC
Load Resistance	> 5 kΩ
Limiting Frequency (-3 dB)	20 kHz min.
Power Consumption (off-load)	15 mA max.
Configuration Interface	RS485
Electrical Connections	M12 plug (5-pin), Binder 723 (5-pin)
Pressure Connection	Metric fine thread: M6 x 0,5 (optional M5 x 0,5 / M8 x 1)
Cable (between sensor and electronics)	TPE cable (PE based) 1,5 m with shield ø 3,3 mm
Insulation	> 10 MΩ @ 300 VDC
Materials inContact with Media	Stainless steel AISI 316L (DIN 1.4404 / 1.4435) external seal of FKM (75 Shore)
Compatibility of media	Liquids and gases
Protection	IP67 (with a suitable mating plug)
EMC	EN 61000-6-2 / EN 61000-6-3 / EN 61326-2-3
Options	<ul style="list-style-type: none"> • Other compensated pressure and temperature ranges • Without compensation electronics as Series 21P • With X-line electronics (more precise, fg = 1,3 kHz) instead of HB electronics

The temperature of the sensor head can be read-out and monitored by the RS485 USB interface converter K-114 and the royalty-free Software CCS30. Moreover, the zero point can be readjusted over the digital interface. Pressure values cannot be read out via the RS485 interface.

Identification:
Class.Group: 5.40

Frequency response for the amplifier electronics of the Series 21PHB



The «HB» electronics designation stands for high bandwidth and is associated with the project name HummingBird.