

Cylinder Pressure Sensor

for close loop combustion control (CLCC)

Type 6634A1

Robust piezoelectric pressure for continuous cylinder pressure measurement of medium speed engines. This sensor is ready for new fuels including hydrogen.

- 350 bar
- Voltage output 0 ... 5 V
- Signal and supply galvanically isolated
- Suitable for hydrogen combustion application
- Excellent life time and stability

Description

Sensor designed for continuous cylinder pressure measurement of medium speed engines. The new patented membrane and new joining technologies enable optimal reliability and life time performance. The piezoelectric-measuring element is extremely stable resulting in a very accurate and repeatable output signal over the whole life time.

Application

Close loop combustion control (CLCC) of medium speed engines, e.g. knock detection, cylinder balancing and power calculation.

Technical data

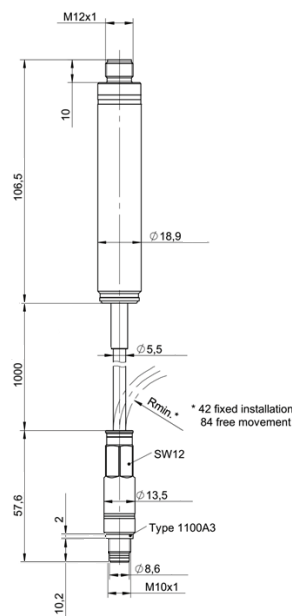
Measuring range	bar	0 ... 350
Overload	bar	500
Burst pressure	bar	>2 000
Linearity	% FSO	≤±0,5
Sensitivity shift 250 ± 100 °C	% FSO	≤±1,5
Thermal shock at 1 500 rpm	bar	≤±0,5
Mounting torque of sensor	N·m	15

Operation temperature ranges

Sensing element	°C	−40 ... 350
Cable	°C	−40 ... 200
Charge amplifier	°C	−40 ... 120

Power supply & signal

Sensitivity calibrated at 250 °C	mV/bar	10,0
Signal span (FS)	V	3,5
Zero line (stable temp. no dynamic pressure)	V	1,2 ± 0,2
Supply voltage	VDC	15 ... 32
Cut off frequency (-3 dB)	Hz	≤0,016 / ≥10 000
Supply current	mA	<11



Max. voltage galvanic isolation	VDC	500
Isolation resistance galvanic isolation ¹⁾	MΩ	>10
Connector		M12x1 8 -pol
Weight	g	180
Degree of protection mated	EN 60529	IP67
CE approval	EMC	2014/30/EU
	ROHS	2011/65/EU
EMC Emission Standards		EN 61000-6-3:2007 + A1:2011
		EN 61000-6-4:2007 + A1:2011
		EN 61326-1:2013 (Class A equipment)
EMC Immunity Standards		EN 61000-6-1:2007
		EN 61000-6-2:2005
		EN 61326-1:2013

¹⁾ Between signal output or power supply and sensor case or engine ground

Mounting

For CLCC the sensor should be installed in the cylinder head close to the combustion chamber, the optimal length of the pressure bore between sensor and combustion chamber depends mainly on the engine speed, a too long bore may generate pipe oscillations disturbing the measuring signal.

Acoustic resonance frequency of mounting bore

Bore length l [mm]	Acoustic resonance [Hz]
5	39 290
10	19 630
15	13 080
20	9 800

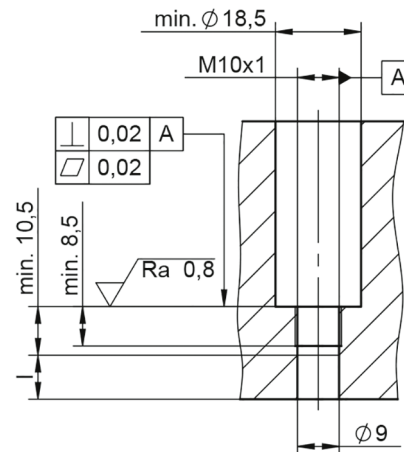


Fig. 1: Mounting bore shoulder sealed

Connector

With the excitation current limitation of <50 mA, wrong polarity protection is guaranteed, except when the Exct GND is not connected.

- 1 Exct GND
- 2 Signal GND
- 3 don't connect
- 4 don't connect
- 5 Uout (0,2 – 4,8 V)
- 6 don't connect
- 7 don't connect
- 8 + Exct (15 ... 32 V)

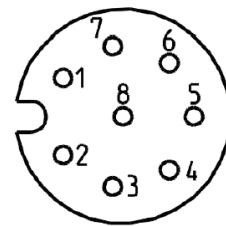


Fig. 2: Connector

Signal output

The integrated charge amplifier provides a current output signal in a range of 0 ... 5 V. The sensor has a zero line of about 1,2 V (at dynamic pressure 0 bar).

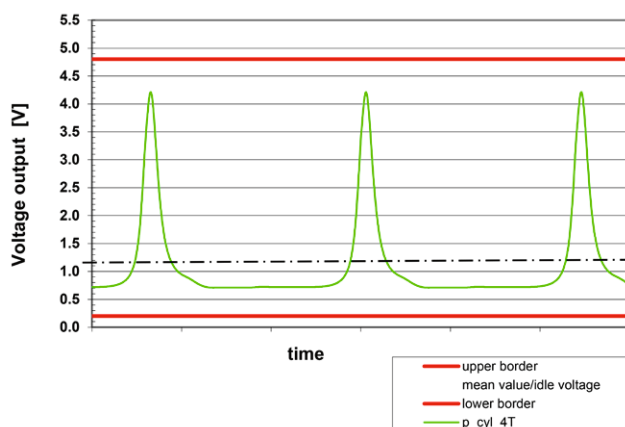


Fig. 3: Example of output signal from 2-stroke and 4- stroke engine

Optional accessories

- Torque wrench 8 ... 40 Nm
- Fork wrench SW 12 for 1300A11
- Tubular socket

Mat. No./Type

1300A11
1300A13
1300B6