

AVL



PRESSURE SENSOR FOR COMBUSTION ANALYSIS

Data Sheet

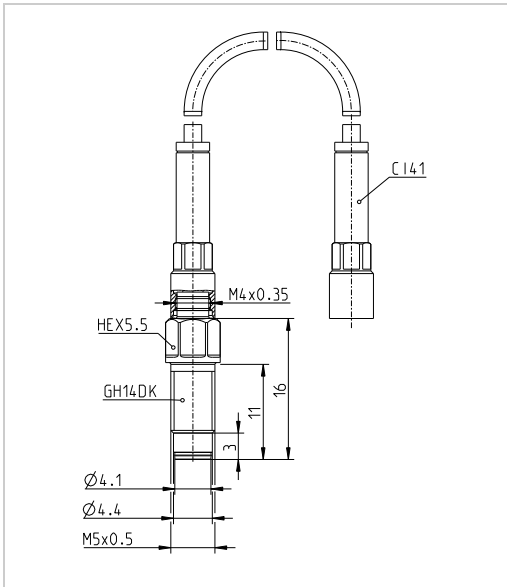


GH14DK

TIGG1322B.01

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The GH14DK is an accurate and robust M5 sensor especially suited for supercharged engines with very high specific output. It is equipped with thermally optimized piezoelectric crystal elements and the special Double Shell™ design. It decouples the piezoelectric elements from negative influences of mechanical stresses which can occur due to the mounting of the sensor into the engine. Additionally it has an improved membrane material and geometry. This makes the sensor more robust suitable as the standard solution for research and development work with perfect trade off between accuracy and robustness. A thermo protection can improve the cyclic drift down to ± 0.4 bar. The sensor is equipped with built in SID for SDM.

Specifications

Measuring range	0...300 bar	
Overload	350 bar	
Sensitivity	19 pC/bar	nominal
Linearity	$\leq \pm 0.3 \%$	FSO
Calibrated ranges	0 ... 80 bar 0 ... 150 bar 0 ... 300 bar	
Natural frequency	170 kHz	
Acceleration sensitivity	≤ 0.0005 bar/g	axial
Shock resistance	≥ 2000 g	
Insulation resistance	$\geq 10^{13}$ Ω	
Capacitance	7.5 pF	
Operating temperature range (1)	- 40 ... 400 °C	
Thermal sensitivity change	$\leq 2 \%$	20 ... 400 °C and 0 ... 300 bar
	$\leq \pm 0.5 \%$	250 \pm 100 °C and 0 ... 300 bar typ.
Load change drift	1.5 mbar/ms	max. gradient typ.
Cyclic temperature drift (2)	$\leq \pm 0.7$ bar	
Thermo shock error Δp (3)	$\leq \pm 0.4$ bar	typ.
Thread diameter	M5 x 0.5	front sealed
Cable connection	M4 x 0.35	negative
Weight	2.2 grams	without cable
Mounting torque	1.5 Nm	

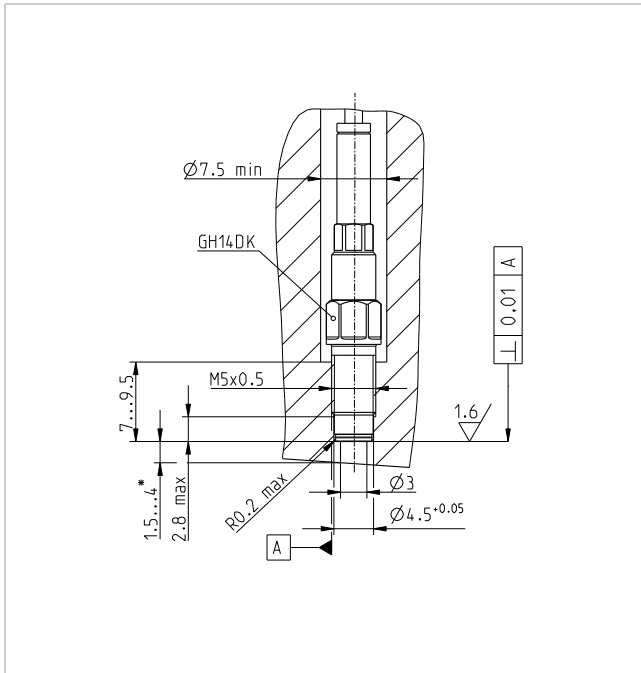
Scope of Supply

- Sensor GH14DK
- Piezo-input cable CI41-1
- Coupling CC41
- Accessory kit (protection cap + 2 spare o-rings)
- Calibration sheet
- Documentation

1) surface temperature around the HEX < 200 °C

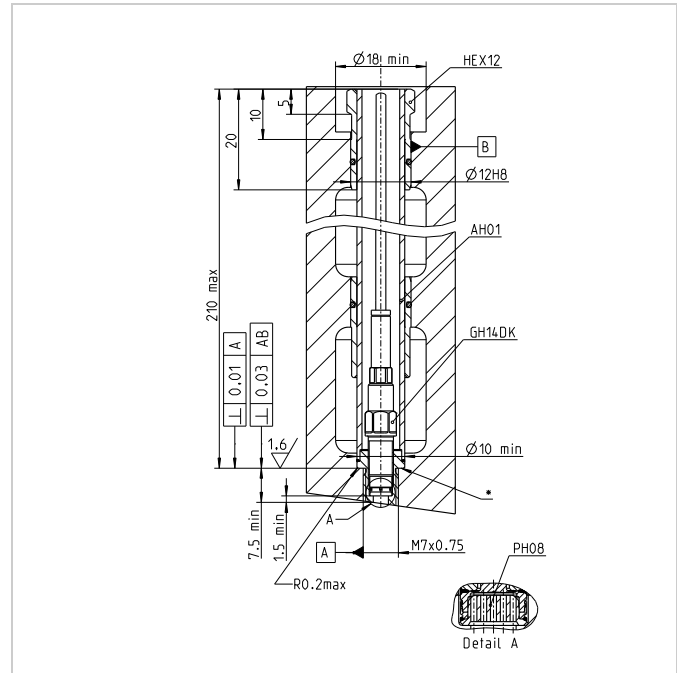
2) at 7 bar IMEP and 1300 rpm, diesel

3) at 9 bar IMEP and 1500 rpm, gasoline



Front sealed direct installation.

*) 1.5 mm for steel, 4 mm for cast iron and aluminium alloys.



Installation with an AH01 adaptor and the PH08.

*) Rigid adhesive, e.g. LOCTITE 648 or Henkel omniFIT.

Accessories

Cables & couplings	CI41, CI42, CI4V, CC41, CC42, E124	
Cable-mounting tool	TC01	TIWG0131A.01
Dummy	DG01	TIWG0113A.01
Dummy removal tool	TD01	TIWG0122A.01
Adaptor sleeves	AH01, AH01A, MA01, MA02, MA03	
Mounting tool	Toolset TS01 (TT01, TT02) Mounting socket TT01 Torque wrench TT02 PH08 dismantling tool TT51	TIWG0121A.01 TIWG0112A.01 TIWG0117A.01 TIWG0532A.01
Machining tool	Toolset MS11 (MD11, MT11, MG11) Step drill MD11 Tap drill MT11 Seat dressing tool MR01-85 Seat dressing tool MR01-160	TIWG0161A.01 TIWG0148A.01 TIWG0154A.01 TIWG0616A.01 TIWG0632A.01
Mounting paste	SF01	TIHK0094A.01
Thermo protection	PH01, PH08	

Icons of strength / Measurement Task

	<p>Toughness / knock applications Purpose: Specially designed to withstand under extreme and harsh conditions</p>	<p>Examples: Analysis of knocking combustion, operation under high engine loads, supercharged engines.</p>		<p>Gallium Orthophosphate GaPO4 Patented unique crystal material.</p>	<p>Today, GaPO4 is by far the best suited piezoelectric material to be used in sensor applications. It has a combination of several unique properties that make it the first choice.</p>
	<p>Precision / thermodynamic analysis Purpose: Very highly accurate measurements for critical thermodynamic analysis.</p>	<p>Examples: Measurements for heat release and friction loss calculations</p>		<p>Double Shell™ Mechanically decouples the crystals from the housing for premium signal quality.</p>	<p>Due to their high sensitivity, these elements are also susceptible to any other kind of applied pressure which would else cause a misreading of the combustion pressure</p>
	<p>Durability / endurance testing Purpose: Specially designed to withstand under extreme and harsh conditions</p>	<p>Examples: Onboard monitoring of large marine or stationary engines</p>		<p>SDM Sensor Data Management Increasing efficiency due to organized workflow.</p>	<p>SDM guarantees end-to-end automated data transfer and thus ensures errorfree measurements. This solution covers the complete measurement chain running from the sensor to the software.</p>

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