PRESSURE SENSOR FOR COMBUSTION ANALYSIS

Data Sheet

GH15DK

TIGG1383B.01

05/2022
AT3773E, Rev. 07

GH15DK

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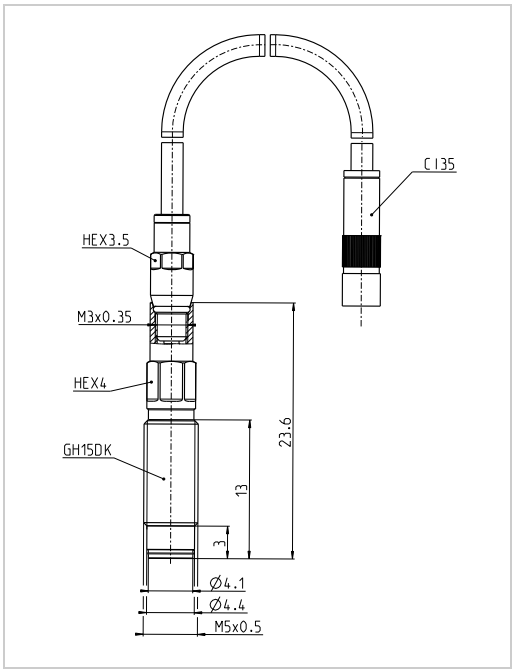


The GH15DK has the slimmest contour due to a M3 cable connector and is an accurate and robust M5 sensor especially suited for supercharged engines with high specific output. It has thermally optimized piezoelectric crystal elements and the special Double Shell™ design. It decouples the piezoelectric 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. Using a thermo protection like PH08 can improve the cyclic drift by 0.4 bar. The sensor is equipped with built in SID for SDM.

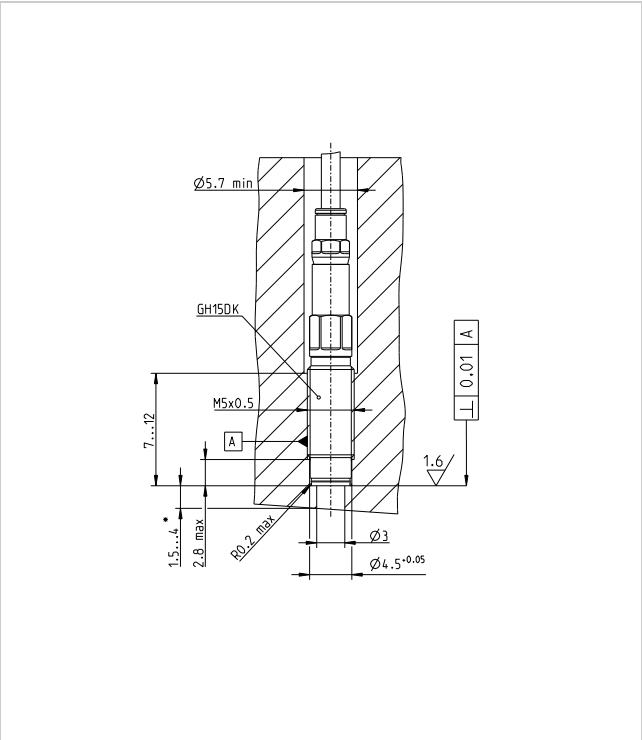
Specifications

Measuring range			0 … 300 bar	
Overload			350 bar	
Sensitivity			19 pC/bar	nominal
Linearity	≤	±	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	≥		$1 * 10^{13}$ Ω	100 V
Capacitance			7.5 pF	
Operating temperature range [1]			- 40 … 400 °C	
Thermal sensitivity change	≤		2 %	20 … 400 °C and 0 … 300 bar
	≤	±	0.5 %	250 ± 100 °C and 0 … 300 bar typ.
Load change drift			1.5 mbar/ms	max. gradient typ.
Cyclic temperature drift [2]	≤	±	0.7 bar	
Thermo shock error Δp[3]	≤	±	0.4 bar	typ.
Thread diameter			M5 x 0.5	front sealed
Cable connection			M3 x 0.35	negative
Weight			2.2 grams	without cable
Mounting torque			1.5 Nm 2.0 Nm	recommended max.

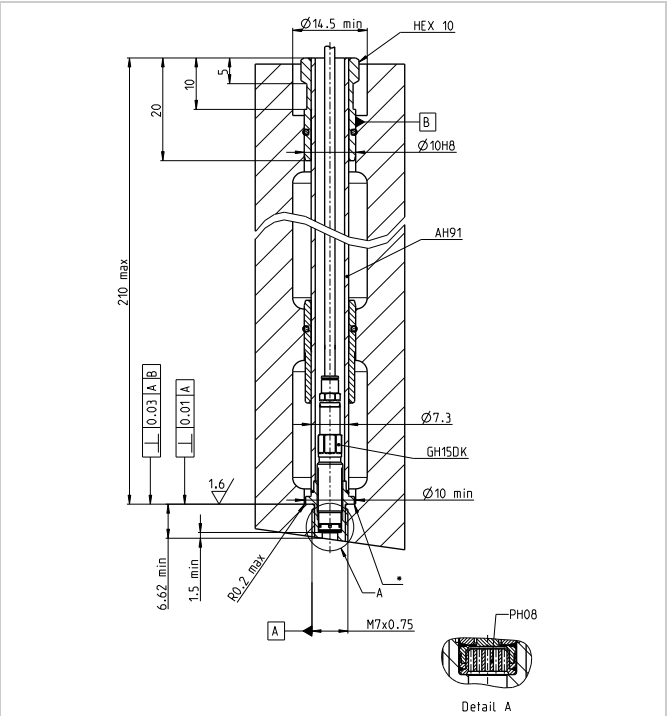
Scope of Supply

- Sensor GH15DK
- Piezo-input cable CI35-1
- Coupling CC31
- 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 AH91 adaptor and the PH08.
*) Rigid adhesive, e.g. LOCTITE 648 or Henkel omniFIT.

Accessories

Cables & couplings	CI31, CI32, CI3V, CC31, E124	
Cable-mounting tool	TC02	TIWG0613A.01
Dummy	DG24	TIWG0334A.01
Dummy removal tool	TD13	TIWG0224A.01
Adaptor sleeves	AH01, AH01A, AH91, MA01, MA02, MA03, MA07	
Mounting tool	Tool set TS21 (TT21A, TT02) Mounting socket TT21A Torque wrench TT02 PH08 dismounting tool TT51	TIWG0213A.01 TIWG0663A.01 TIWG0117A.01 TIWG0532A.01
Machining tool	Toolset MS15 (MD12, MT12) Step drill MD12 Tap drill MT12 Seat dressing tool MR01-85 Seat dressing tool MR01-160	TIWG0337A.01 TIWG0335A.01 TIWG0346A.01 TIWG0616A.01 TIWG0632A.01
Mounting paste	SF01	TIHK0094A.01
Thermo protection	PH01, PH08	

Icons of strength / Measurement Task

Toughness / knock applications Purpose: Specially designed to withstand under extreme and harsh conditions	Examples: Analysis of knocking combustion, operation under high engine loads, supercharged engines.	Gallium Orthophosphate GaPO4 Patented unique crystal material.	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.
Precision / thermodynamic analysis Purpose: Very highly accurate measurements for critical thermodynamic analysis.	Examples: Measurements for heat release and friction loss calculations	Double Shell™ Mechanically decouples the crystals from the housing for premium signal quality.	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
Durability / endurance testing Purpose: Specially designed to withstand under extreme and harsh conditions	Examples: Onboard monitoring of large marine or stationary engines	SDM Sensor Data Management Increasing efficiency due to organized workflow.	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.

Contact Information

AVL List GmbH
Headquarters
Graz-Austria

Phone: +43 316 787-0
E-mail: info@avl.com