PRESSURE SENSOR FOR COMBUSTION ANALYSIS

Data Sheet

GP15DK

TIGG1892A.01

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AU0031E, Rev. 04

GP15DK

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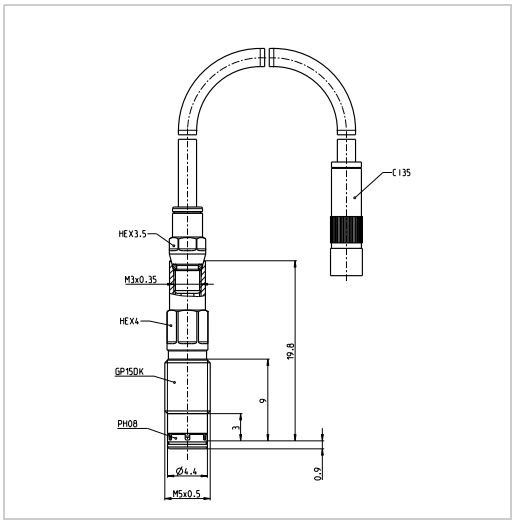


The GP15DK has the slimmest contour due to a M3 cable connector and is a robust M5 sensor especially suited for supercharged engines with high knock events. The Double-Shell™ design decouples the piezoelectric elements from negative influences of mechanical stresses which can occur due to the mounting of the sensor into the engine. In addition to this it has an improved membrane material and geometry. This makes the sensor to the standard solution for development work with heavy knock events and pre-ignition. The sensor could be equipped with SIC for SDM.

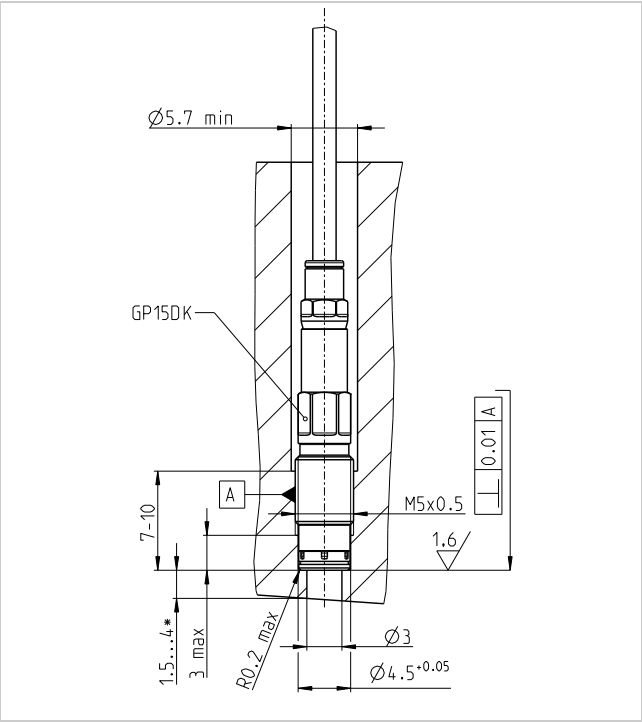
Specifications

Measuring range			0…500 bar	
Overload range			600 bar	
Sensitivity			10 pC/bar	nominal
Linearity	≤ ≤	± ±	0.3 % 0.5 %	0 ... 150 bar FSO 0 ... 300 bar FSO
Calibration 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	
Capacitance			7.5 pF	
Operating temperature range[1]			-40 … 400 °C	
Thermal sensitivity change	≤ ≤	 ±	2 % 0.5	20 … 400 °C and 0 ... 300 bar 250 ± 100 °C and 0 ... 300 bar typ.
Load change drift			7 mbar/ms	max. gradient typ.
Cyclic temperature drift[2]	≤	±	1.5 bar	
Thermo shock error Δp[3]	≤	±	0.8 bar	typ.
Thread diameter			M5 x 0.5	front sealed
Cable connection			M3 x 0.35	negative
Weight			1.6 grams	without cable
Mounting torque			1.5 Nm	using SF01

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

Scope of Supply

- Sensor GP15DK
- Thermo protection PH08
- Piezo-input cable CI35-1
- Coupling CC31
- Accessory kit (protection cap + 2 spare o-rings)
- Calibration sheet
- Documentation



Front sealed direct installation.
*) 1.5 mm for steel, 4 mm for cast iron and aluminium alloys.

Accessories

Cables & couplings	CI35, CC31, E124	
Cable-mounting tool	TC02	TIWG0613A.01
Dummy	DG39	TIWG0593A.01
Dummy removal tool	TD13	TIWG0224A.01
Adaptor sleeves	AH01, AH01A, AH91, MA01, MA02, MA03, MA07	
Mounting tool	Toolset TS21 (TT21A, TT02, TT51) 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.

Precision / thermodynamic analysis
Purpose: Very highly accurate measurements for critical thermodynamic analysis.

Examples: Measurements for heat release and friction loss calculations

Durability / endurance testing
Purpose: Specially designed to withstand under extreme and harsh conditions

Examples: Onboard monitoring of large marine or stationary 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.

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

Contact Information

AVL List GmbH
Headquarters
Graz-Austria

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