

# PRESSURE SENSOR FOR COMBUSTION ANALYSIS

Data Sheet



GH15D  
TIGG1349B.01

## GH15D

TIGG1349B.01



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★★★



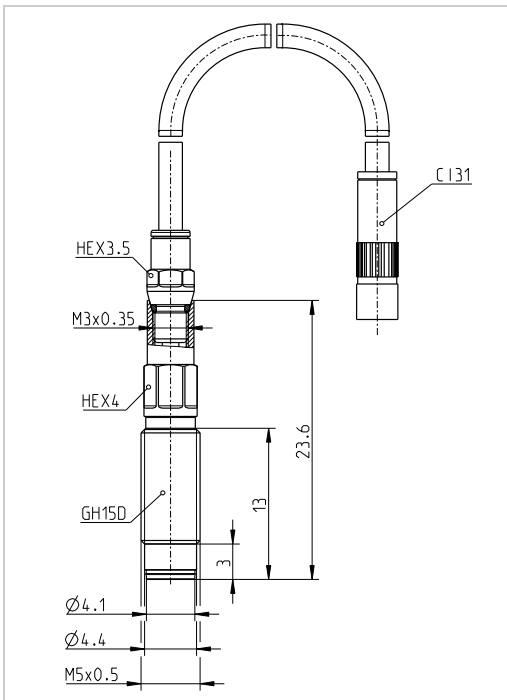
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GaPO<sub>4</sub>



double shell



The GH15D has the slimmest contour due to a M3 cable connector and allows very precise thermodynamic measurements with a sensor of size M5. This is realized by 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. Using a thermo protection like PH08 can improve the cyclic drift by 0.3 bar. The sensor is equipped with built in SID for SDM.

### Specifications

Measuring range	0 ... 250 bar		
Overload	300 bar		
Sensitivity	19 pC/bar		nominal
Linearity	≤ ±	0.3 %	FSO
Calibrated ranges	0 ... 80 bar 0 ... 150 bar 0 ... 250 bar		
Natural frequency	160 kHz		
Acceleration sensitivity	≤	0.0005 bar/g	axial
Shock resistance	≥	2000 g	
Insulation resistance	≥	1 * 10 <sup>13</sup> Ω	
Capacitance	7.5 pF		
Operating temperature range <sup>(1)</sup>	- 40 ... 400 °C		
Thermal sensitivity change	≤	1 %	20 ... 400 °C and 0 ... 250 bar
	≤ ±	0.25 %	250 ± 100 °C and 0 ... 250 bar typ.
Load change drift	1.5 mbar/ms		max. gradient typ.
Cyclic temperature drift <sup>(2)</sup>	≤ ±	0.5 bar	
Thermo shock error Δp <sup>(3)</sup>	≤ ±	0.3 bar	typ.
Thread diameter	M5x0.5		front sealed
Cable connection	M3x0.35		negative
Weight	2.2 grams		without cable
Mounting torque	1.5 Nm		using SF01

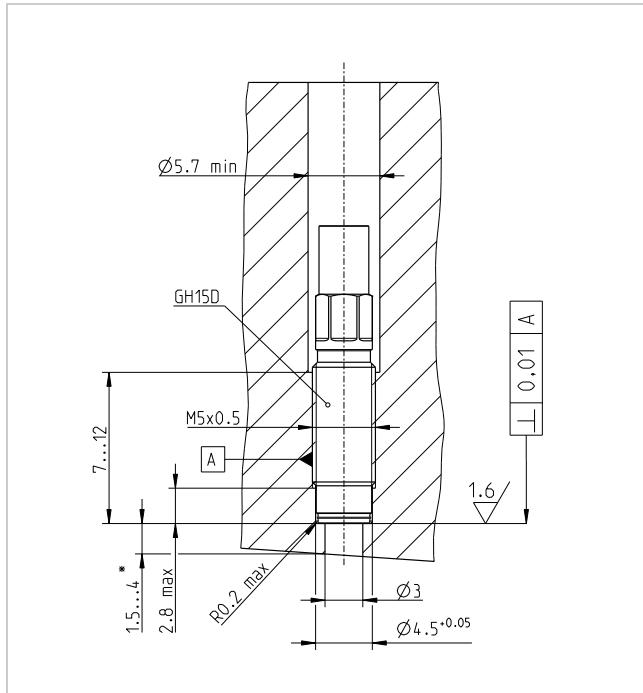
### Scope of Supply

- Sensor GH15D
- Piezo-input cable CI31-1
- Fitted coupling CC31
- Accessory kit (protection cap + 2 spare O-rings)
- Calibration sheet
- Documentation

<sup>1)</sup> surface temperature around the HEX < 200 °C

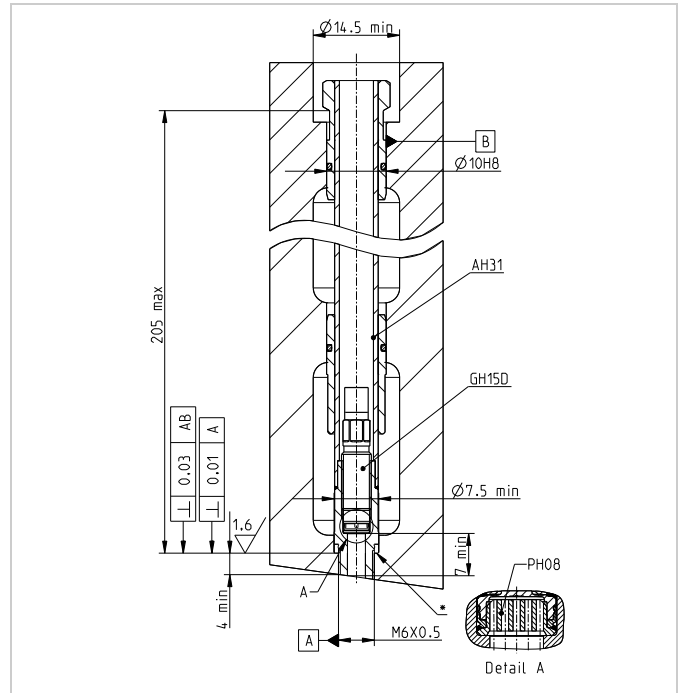
<sup>2)</sup> at 7 bar IMEP and 1300 rpm, diesel

<sup>3)</sup> 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 AH31 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	Toolset TS21 (TT21, TT02) Mounting socket TT21 Torque wrench TT02 PH08 dismounting tool TT51	TIWG0213A.01 TIWG0214A.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

	<p><b>Toughness / knock applications</b>  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><b>Gallium Orthophosphate GaPO4</b>  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><b>Precision / thermodynamic analysis</b>  Purpose: Very highly accurate measurements for critical thermodynamic analysis.</p>	<p>Examples: Measurements for heat release and friction loss calculations</p>		<p><b>Double Shell™</b>  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><b>Durability / endurance testing</b>  Purpose: Specially designed to withstand under extreme and harsh conditions</p>	<p>Examples: Onboard monitoring of large marine or stationary engines</p>		<p><b>SDM Sensor Data Management</b>  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>

## Contact Information

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