

# Cylinder pressure sensor for on-line combustion control

Type 7614CG1/7614CG2

Piezoelectric pressure sensor with galvanic isolated 4 ... 20 mA output signal for continuous cylinder pressure measurement for medium and low speed diesel and gas engines

- Robust design, with excellent long term stability
- Suitable for knock detection
- Very good thermodynamic behaviour
- Front end sealing or shoulder sealing

### Description

The M14×1.25 sensor and the in-line charge amplifier are connected by a robust Fluorelastomer-cable. The patented “antistrain” design, makes the measuring element insensitive to varying mounting conditions. The Quartz-measuring element is extremely stable and provides a very accurate and repeatable output signal over the whole life time. The sensor has been designed so that a life of several thousand operating hours can be achieved in a diesel and gas engines, but individual sensor life time is strongly depending on application.

The sensor can be installed either front end sealed or shoulder sealed. The front end sealing protects the thread from direct contact the the combustion gas, which prevents the mounting thread from seizing.

### Application

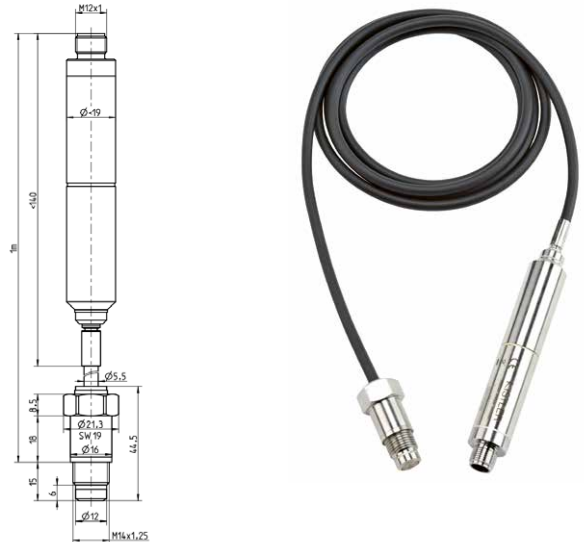
Closed loop combustion control and monitoring tasks for e.g. knock detection, cylinder balancing, MIP calculation, etc.

### Typ 7614CG1

For 4-stroke engines Type 7614CG1 is recommended, this type has a time constant of >10 s, which is sufficient for all kind of measurements for 4-stroke engines with >300 1/min.

### Typ 7614CG2

This type is especially suitable for 2-stroke engines <300 1/min, the in-line charge amplifier runs with a time constant of >100 s which provides a fully suitable frequency bandwidth for all kind of measuring tasks.



### Technical data

	Type	7614CG1	7614CG2
Measuring range	bar	0 ... 250	0 ... 250
Sensitivity	mA/bar	0.05	0.05
Overload	bar	300	300
Linearity	% FSO	≤±0.5	
Operating temperature range			
Sensor front	°C	-20 ... 350	
at cable connection	°C	-20 ... 200	
at charge amplifier	°C	-20 ... 120	
Thermal shock at 1 500 1/min, p <sub>mi</sub> = 9 bar	bar	≤±0.5	
Change in sensitivity			
200 ±150 °C	%	≤±2.5	
200 ±50 °C	%	≤±1	
Upper cut-off frequency (-3 dB)	kHz	10	10
Time constant	s	>10	>110
Output current	mA	4 ... 20	
Signal range	mA	12.5	
Zero line (no pressure)	mA	6.5	
Supply voltage	VDC	18 ... 32	
Load resistance	Ω	100 ... 600	
max. voltage*	VDC	500	
Plug DIN (mated)	M12x1	IP67	
Weight	g	230	
Tightening torque	N·m	25	
Connector	8 pole	M12x1	

\* between case, signal output or power supply

**Mounting**

The sensor should be installed close to the combustion chamber. The length of the indicating bore between sensor and combustion chamber depends mainly on the engine speed, a too long bore may generate pipe oscillations disturbing the measuring signal.

An installation at the indicator valve is not recommended for continuous measuring because the operating temperature may exceed the admissible temperature range.

For any questions about the installation please contact Kistler.

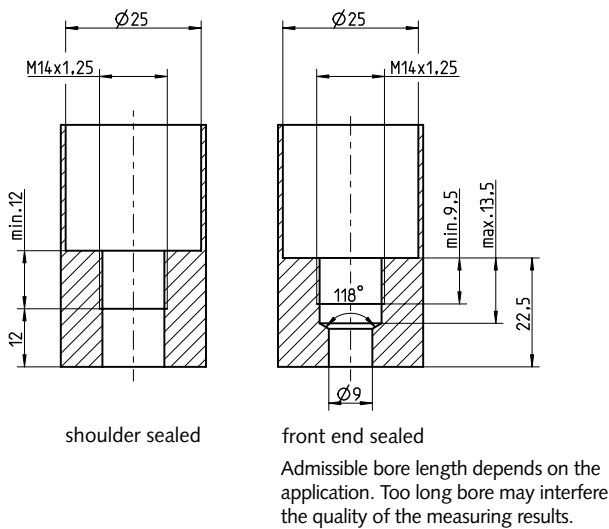


Fig. 1: Mounting bore.

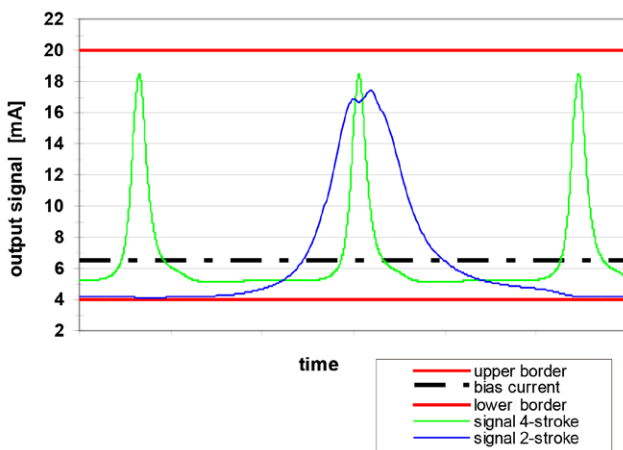


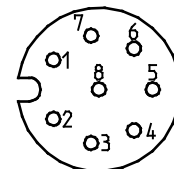
Fig. 2: Example of output signal from 2- and 4-stroke engine with signal span 12.5 mA

**General specifications**

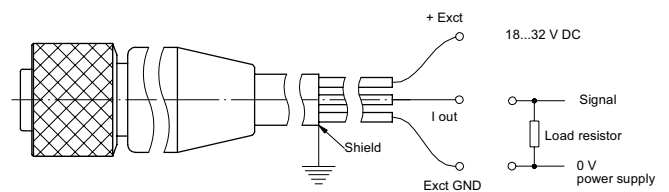
ATEX	II 3G Ex nA IIC T3 Gc
IECEX	IECEX nA IIC T3 Gc
Marine approval	GL, ABS, BV, LR, DNV, CSS

**Connector**

- 1 Exct GND
- 2 don't connect
- 3 don't connect
- 4 don't connect
- 5 Signal output
- 6 don't connect
- 7 don't connect
- 8 + Exct (18 ... 32 V)



**Connection of Types 7614CG.../6613CG... to data acquisition system with connecting cable Type 1700B69A...**



**Important:**

Shield must be connected to the case/shield of the data acquisition system (or engine control).  
Shield and Exct GND must not be connected!

**Optional accessories**

- Torque wrench 8 ... 40 N·m
- Fork wrench SW 12 for Type 1300A11
- Tubular socket
- Connecting cable, l = 10 m
- Connecting cable, l = 20 m
- Connecting cable, l = 30 m
- Connecting cable, l = 3 m
- Connecting cable, l = 1.5 m
- Connecting cable, l = 15 m

**Type/Art. No.**

- 1300A11
- 1300A13
- 1300A145
- 1700B69A10
- 1700B69A20
- 1700B69A30
- 1700B69A3
- 1700B69A1,5
- 1700B69A15

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