

Pressure Standard

Type 6961C

Reference sensor for the calibration of piezoelectric high-pressure sensors

The Type 6961C is a reference sensor for pressure sensor calibration systems up to 300 bar. It is ideally suited to quasi-static calibration procedures typically employed for piezoelectric pressure sensors.

- High sensitivity
- Exceptional linearity
- Minimal drift
- Very good thermal stability
- Insensitive to variations in mounting conditions
- SCS-accredited calibration, traceable to national and international standards

Description

The very high sensitivity, exceptional linearity and outstanding thermal stability of the 6961C emanate from a specially developed PiezoStar® crystal sensing element. The sensing element is integrated into a robust stainless steel body for mechanical protection and high thermal inertia, making the 6961C an ideal transfer standard.

Application

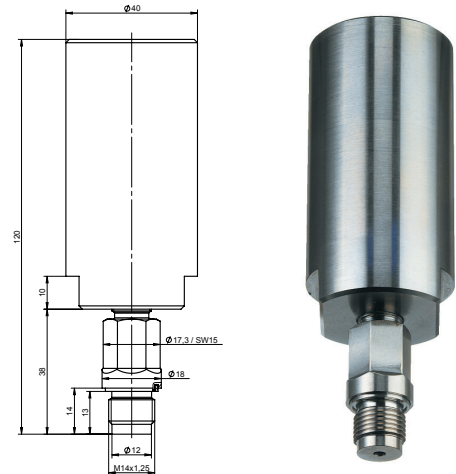
The Type 6961 serves as transfer or working standard in calibration and quality assurance laboratories for piezoelectric pressure sensors. The sensor's 300 bar pressure range makes it ideally suited for combustion pressure measurement applications.

Working standard

As working standard, the 6961C forms an integral part of a pressure sensor calibration system. The working standard is the reference for the definition of pressure during the calibration process, i.e. the output of a unit under test is compared to the pressure measured with the working standard.

Transfer standard

The Type 6961C may also be used as an intermediary to compare standards, i.e. as a transfer standard. The 6961C is calibrated at a primary laboratory and is then used to calibrate a working standard in the calibration system. In this case, the output of the working standard is compared to the pressure measured with the transfer standard.



Technical Data - Overview

| | | |
|-------------------------------|--------|--------------------|
| Measuring range | bar | 0... 300 |
| Calibrated partial ranges | bar | 0... 50 / 0... 100 |
| Overload | bar | 350 |
| Nominal sensitivity | pC/bar | ≈ -90 |
| Linearity | %FSO | < 0,10 |
| CMC ¹ | % | < 0,10 |
| Thermal sensitivity deviation | %/°C | < 0,01 |
| Operating temperature range | °C | 25 ±5 |
| Insulation resistance | Ω | ≥ 1013 |
| Weight | g | 685 |
| Tightening torque | N·m | 25 |
| Mounting thread | - | M14x1,25 |
| Connector (charge output) | - | KIAG 10-32 |

¹ The Calibration and Measurement Capability is stated as the combined standard uncertainty of measurement multiplied by a coverage factor k = 2. The value shown is the largest uncertainty for the full scale of the specified calibration range(s)

Calibration

The reference sensor is calibrated against a high precision hydraulic piston gauge at Kistler's SCS-accredited calibration laboratory. Calibration of the Type 6961C conforms to the requirements set by ISO/IEC 17025. Calibration results are documented on a multi-page calibration certificate, as shown in Figure 1.

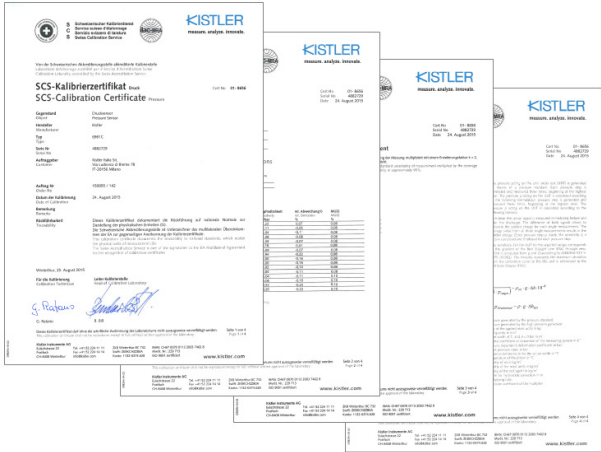


Fig. 1: Calibration Certificate

Calibration load is applied as steps at monotonically decreasing pressure levels, unloading the pressure after each step. The Type 6961C is calibrated at 16 pressure steps, as shown in Figure 2. The sensor signal is measured immediately before and after each unloading step. The difference between these two measurements is the yielded charge per pressure step. The sensor's calibration parameters, e.g. sensitivity and linearity are based on the results of multiple pressure steps over the respective calibration range.

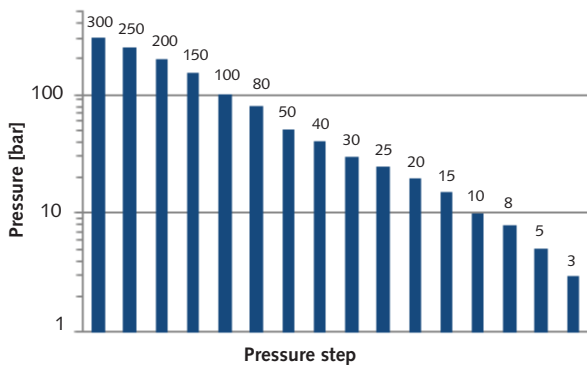


Fig. 2: Calibration pressure steps

Mounting conditions

The sensor Type 6961C may be screwed directly into a M14x1,25 bore. Dimensions and tolerances for the mounting port are shown in Figure 3. The sensor type 6961C is tightened / removed with an open wrench, using the 15mm hexagon flats as shown in Figure 4.

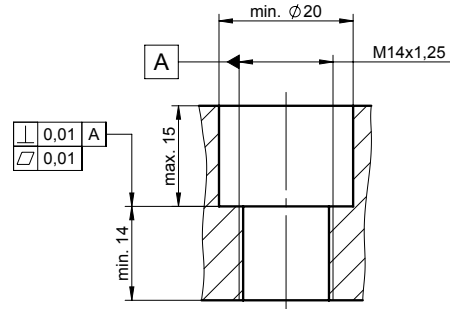


Fig. 3: Sensor mounting

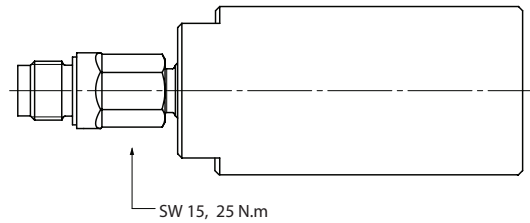


Fig. 4: Wrench flats and tightening torque

Optional accessories

- Torque wrench Type 1300A11
- Open end insert (15mm) Type 1300A163

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