

# Knock Sensor KS4-R2



- ▶ Frequency: 3 to 30 kHz
- ▶ Weight: 60 g
- ▶ Height sensor head: 14 mm

This sensor is used for detecting structural born vibrations in spark ignition engines due to uncontrolled combustion. This sensor is suitable for operation in extreme conditions.

Due to the inertia of the seismic mass, the sensor moves in correlation to the engine block vibration; this motion results in a compressive force which is converted into a voltage signal via a piezoceramic sensor element. As a result, upper and lower voltage thresholds can be defined directly correlating to an acceleration magnitude.

The main benefits of this sensor are its robust mechanical design, compact housing and precise determination of structure-related noise. This version is an optimized part for Motorsport applications based on a series application development. Compared to the previous version, the advantage of this new modification is that this product has an extended frequency and higher operating temperature rating.

## Application

Application	3 to 30 kHz
Operating temperature range	-40 to 150°C
Storage temperature range	-30 to 60°C
Max. vibration	≤ 800 m/s <sup>2</sup> at 0 to 24 kHz ≤ 4,000 m/s <sup>2</sup> at 5 to 24 kHz (short-term)

## Technical Specifications

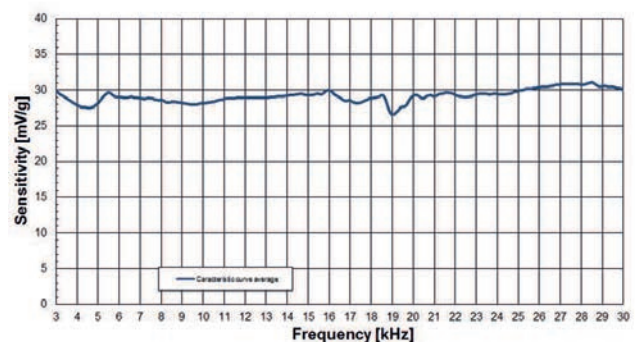
### Mechanical Data

Fixing screw for cast iron	M8x25
Fixing screw for aluminum	M8x30
Installation torque	20 + 5 Nm

Weight w/o Connector	60 g
Protection	IP 54

### Electrical Data

Range of frequency	3 to 30 kHz
Max. sensitivity changing (lifetime)	-17 %
Linearity between 5 to 15 kHz (from 5 kHz value)	-10 to 10 %
Linearity between 15 to 20 kHz (linear increasing with freq)	20 to 50 %
Main resonance frequency	> 30 kHz



Ratio of frequency and sensitivity

Impedance	> 1 MOhm
Temperature dependence of sensitivity	0.04 mV/g°C
Capacity field	1,150 ± 200 pF

### Connectors and Wires

Connector	ASX602-03PC-HE
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Mating connector	F02U.002.840-01
ASX002-03SC-HE	
Pin 1	Sig
Pin 2	Gnd
Pin 3	Scr
Sleeve	Elastomer
Wire size	0.5 mm <sup>2</sup>
Wire length L	150 to 450 mm
Various motorsport and automotive connectors on request.	

**Installation Notes**

The KS4-R2 can be connected to all Bosch Motorsport ECUs featuring knock control.

The sensor must rest directly on the brass compression sleeve during operation.

To ensure low-resonance coupling of the sensor to the measurement location, the contact surface must be clean and properly machined to provide a secure flush mounting.

Please route the sensor wire in a way that prevents resonance vibration.

Please find further application hints in the offer drawing at our homepage.

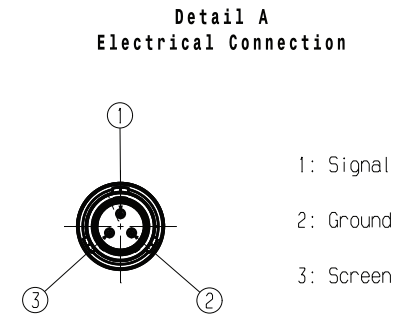
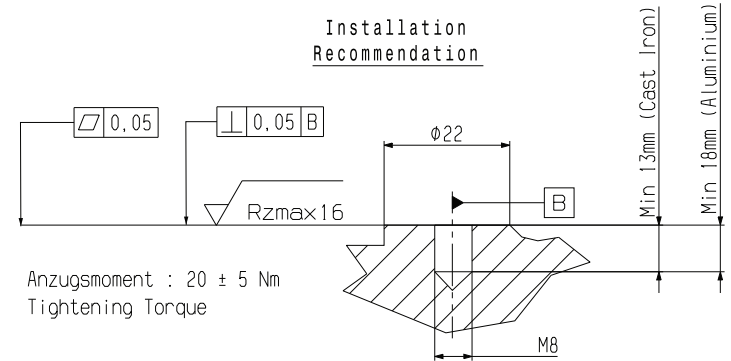
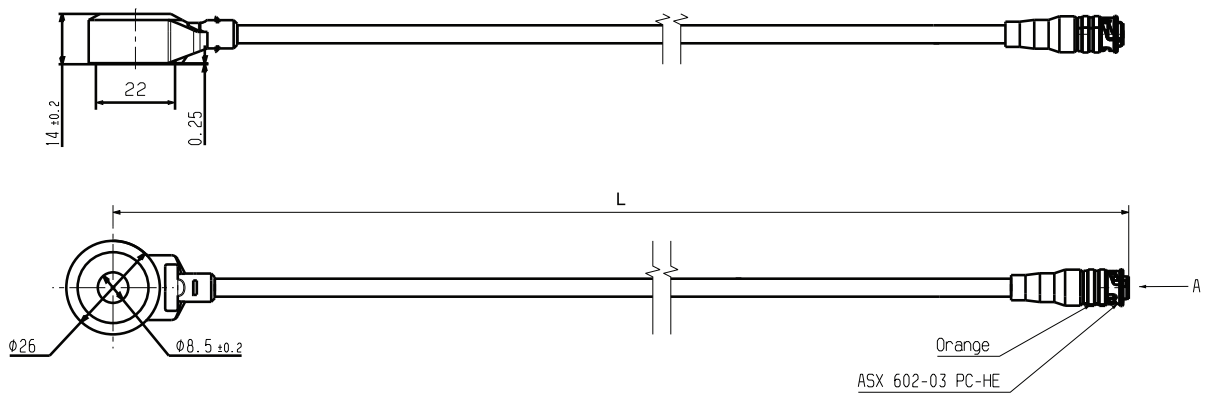
**Safety Note**

The sensor is not intended to be used for safety related applications without appropriate measures for signal validation in the application system.

**Ordering Information**

**Knock Sensor KS4-R2**  
Order number **F02U.V01.884-01**

**Dimensions**



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