

Knock Sensor KS4-R2

www.bosch-motorsport.com



BOSCH
Invented for life



- ▶ Engine vibration measurements
- ▶ Measurement range 3 to 25 kHz
- ▶ Robust design
- ▶ Compact housing

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 25 kHz
Operating temperature range	-40 to 150°C

Storage temperature range	-30 to 60°C
Max. vibration	≤ 800 m/s ² at 0 to 24 kHz ≤ 4,000 m/s ² at 5 to 24 kHz (short-term)

Technical Specifications

Mechanical Data

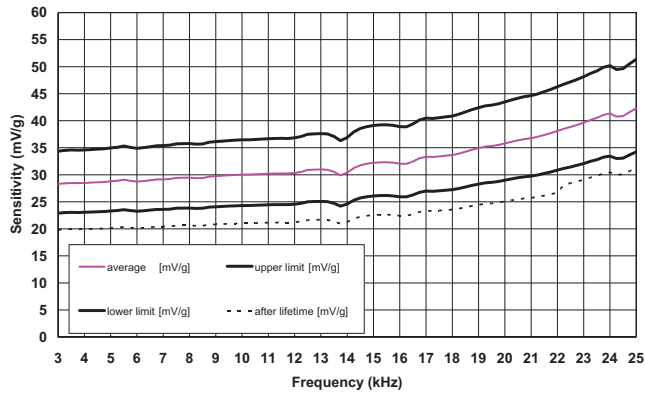
Fixing screw for cast iron	M8x25
Fixing screw for aluminum	M8x30
Installation torque	20 ± 5 Nm
Weight w/o Connector	60 g
Protection	IP 54

Electrical Data

Range of frequency	3 to 25 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 20 to 50 %
(linear increasing with freq)

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 ASX 602-03PC-HE

Mating connector F 02U 002 840-01
ASX 002-03SC-HE

Pin 1 Sig

Pin 2 Gnd

Pin 3 Scr

Sleeve Elastomer

Wire size AWG 20

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.

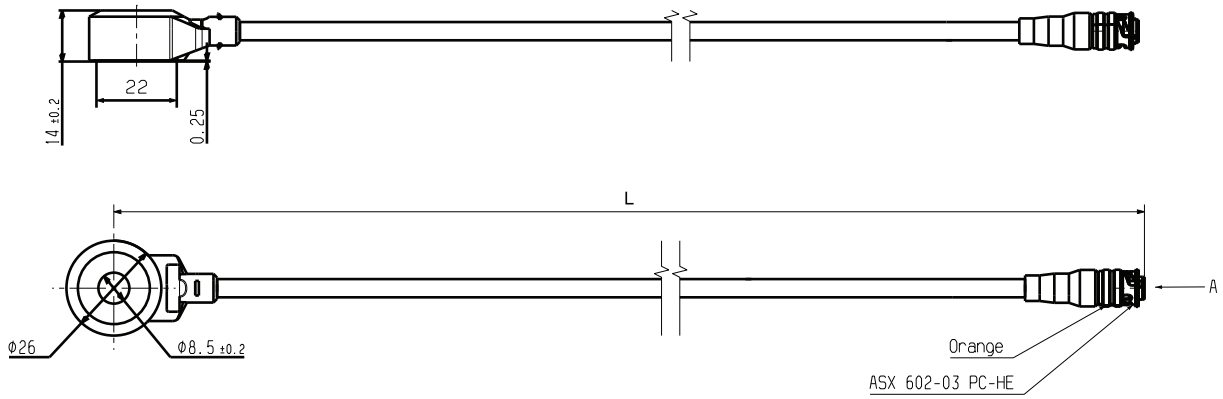
Safety Note

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

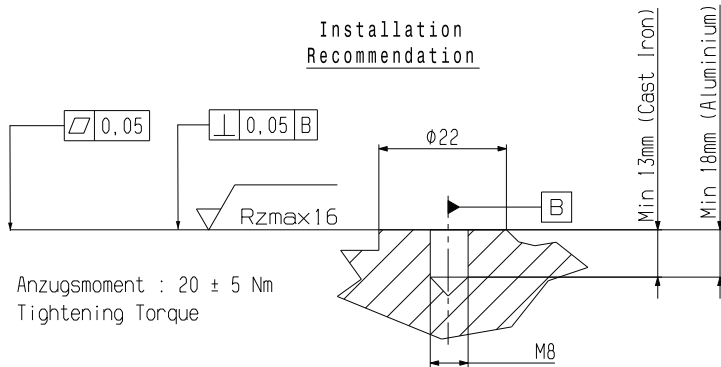
Ordering Information

Knock Sensor KS4-R2
Order number **F 02U V01 884-01**

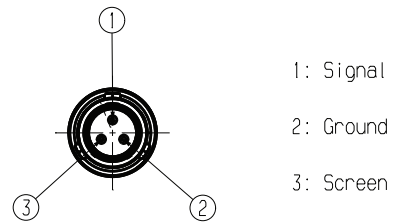
Dimensions



Installation Recommendation



Detail A Electrical Connection



Represented by:

Europe:
 Bosch Engineering GmbH
 Motorsport
 Robert-Bosch-Allee 1
 74232 Abstatt
 Germany
 Tel.: +49 7062 911 9101
 Fax: +49 7062 911 79104
 motorsport@bosch.com
 www.bosch-motorsport.de

North America:
 Bosch Engineering North America
 Motorsport
 38000 Hills Tech Drive
 Farmington Hills, MI 48331-3417
 United States of America
 Tel.: +1 248 876 2977
 Fax: +1 248 876 7373
 motorsport@bosch.com
 www.bosch-motorsport.com

Latin America:
 Robert Bosch Ltda
 Motorsport
 Av Juscelino Kubitschek de
 Oliveira 11800
 Zip code 81460-900
 Curitiba - Parana
 Brasilia
 Tel.: +55 41 3341 2057
 Fax: +55 41 3341 2779

Asia-Pacific:
 Bosch Engineering Japan K.K.
 Motorsport
 18F Queen's Tower C, 2-3-5 Minato Mirai
 Nishi-ku, Yokohama-shi
 Kanagawa 220-6218
 Japan
 Tel.: +81 45 650 5610
 Fax: +81 45 650 5611
 www.bosch-motorsport.jp

Australia, New Zealand and South Africa:
 Robert Bosch Pty. Ltd
 Motorsport
 1555 Centre Road
 Clayton, Victoria, 3168
 Australia
 Tel.: +61 (3) 9541 3901
 motor.sport@au.bosch.com