

Yaw Rate Sensor YRS 3

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- ▶ Yaw rate and acceleration measurement
- ▶ CAN output
- ▶ 15 Hz low-pass filtered
- ▶ Measurement ranges: ± 4.1 g; $\pm 160^\circ/\text{s}$

This sensor is designed to measure the physical effects of yawing, lateral and longitudinal acceleration. In order to achieve this, the sensor features both a measuring element for yaw rate and two for acceleration, with one appropriate integrated circuit. A rotation around the third orthogonal axis, a yaw rate, creates a Coriolis force on the accelerometers, which is detected by the element. Apart from the measuring element for yaw rate, a pure surface micro machined measuring element for acceleration is utilized to measure the vehicles lateral and longitudinal acceleration. This enables a very precise application. The main feature and benefit of this sensor is its wide measuring range, the standardized 1 Mbaud/s CAN-signal output and the combination of high quality production part and robust design.

Application

Application I	$\pm 160^\circ/\text{s}$
Application II	± 4.1 g
Operating temperature range	-40 to 85°C

Technical Specifications

Mechanical Data

Weight w/o wire	65 g
Size	34 x 80 x 84 mm

Electrical Data

Power supply	7 to 18 V
Max input current	130 mA
CAN speed	1 Mbaud/s

CAN Message

CAN_ID_01 0x70

Byte	Value
0	Yaw Rate 1
1	
2	Reserved
3	
4	Acc Y-axis
5	

6	Reserved
7	Unused
CAN_ID_02 0x80	
Byte	Value
0	Yaw Angular Acceleration
1	
2	Reserved
3	
4	Acc X-axis
5	
6	Reserved
7	Unused

Characteristic

Characteristic Application I

Measuring range	± 160 °/s
Over range limit	$\pm 1,000$ °/s
Absolute resolution	0.1 °/s
Cut-off frequency (-3 dB)	15 Hz

Characteristic Application II

Measuring range	± 4.1 g
Over range limit	± 10 g
Absolute resolution	0.01 g
Cut-off frequency (-3 dB)	15 Hz

Connectors and Wires

Connector	AMP 114-18063-076
Mating connector 4-pole DRS	F 02U B00 435-01 (connector kit) F 02U 002 460-01 (connector housing)
Pin 1	Gnd
Pin 2	CANL
Pin 3	CANH
Pin 4	UBat

CAN Parameters

Byte order	LSB (Intel)
CAN speed	1 MBaud/s
Bit mask	signed

Offset (all signals)	0x8000 hex
Quantization Yaw Rate 1	0.005 [°/s/digit]
Quantization Yaw Ang. Acc	0.125 [°/s ² /digit]
Quantization Acc X-axis	0.0001274 [g/digit]
Quantization Acc Y-axis	0.0001274 [g/digit]

Installation Notes

The YRS 3 can be connected directly to most control units and data logging systems.

The sensor is protected against reverse polarity and short-circuits.

Please avoid abrupt temperature changes.

For mounting please use only the integrated fixing holes.

Please ensure that the environmental conditions do not exceed the sensor specifications.

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

Safety Note

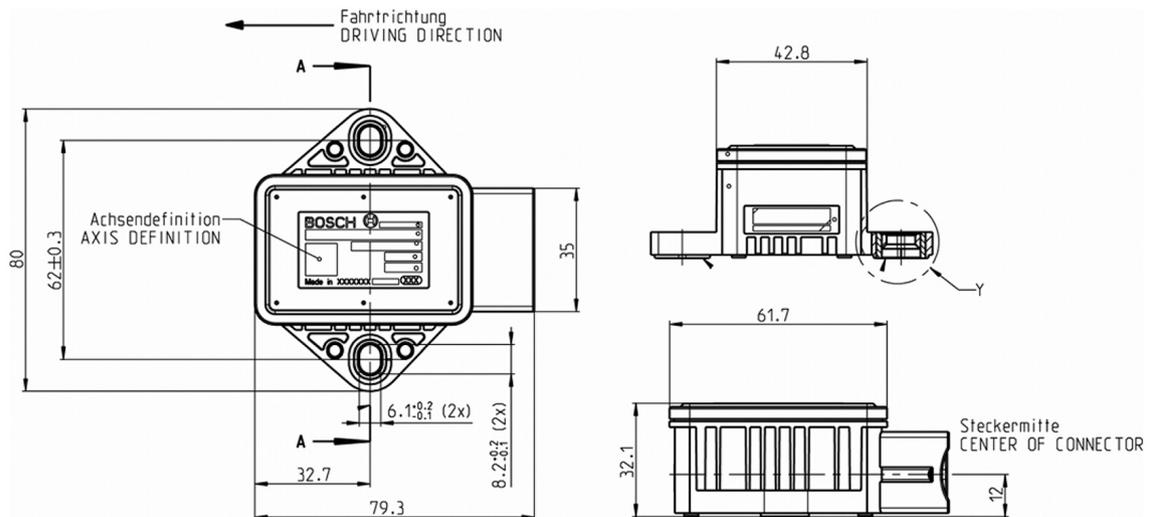
The sensor is not intended to be used for safety related applications without appropriate measures for signal validation in the application system.

Ordering Information

Yaw Rate Sensor YRS 3

Order number **0 265 005 838**

Dimensions



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 Kubitscheck 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