

**NOVOHALL  
Rotary Sensor  
Non-contacting**

**RSA-3200  
CAN SAE J1939  
Mobile Applications**



**Special Features**

- Touchless hall technology
- Electrical range 360°
- High protection class IP67 resp. IP69K (housing side)
- Resolution 14 bits
- Temperature range -40°C to +105°C
- One and dual-channel versions
- Optimized for use in mobile applications with highest EMC requirements such as ISO pulses and high interferences to ISO 11452, exceeds E1 requirements
- Suitable for linkage lever mounting
- Other configurations see separate data sheets

**Applications**

- Mobile working machines (industrial trucks, construction machinery, agricultural and forestry machinery)
- Marine applications

Mobile working machines or truck conveyors place very high demands on the sensor system due to the external application. The very compact angle sensor RSA-3200 offers reliable function under harsh operating conditions.

The sensor is optimized for mobile applications and is certified according to the highest EMC standards such as ISO pulses and interference fields according to ISO 11452. Available are one and dual-channel versions.

The stainless steel shaft is designed for assembling of linkage levers.

**Description**

Material	Housing: high grade, temperature resistant plastic PBT-GF with SS inserts Shaft: SS X10CrNiS18-9 1.4305 / AISI 303 Sealing: HNBR 70
Mounting	With 2 screws M4
Fastening torque of mounting	250 ± 50 Ncm
Bearing	Sintered bronze bushing
Sealing	Double O-ring seal, electronics completely encapsulated
Electrical connection	6-pin MQS-connector, code A, tinned contact according to drawing AMP-114-18063-126, Index A1 (Connector: AMP P/N 1-967616-1)

**Mechanical Data**

Dimensions	See dimension drawing
Mechanical travel	continuous
Permitted shaft load (static)	40 N (axial) / 50 N (radial)
Torque	Typ. 1.5 Ncm Depending on the environmental temperature and standstill time, the necessary force for the initial operating of the shaft may increase
Weight	approx. 45 g

## Ordering Specifications

### Ordering Specifications

Preferred types printed in bold

- Delivery time up to 25 pcs. within 10 working days EXW
- Best low-volume pricing

#### Interface

J: CAN SAE J1939

#### Interface parameters

##### Single-channel version

1: 1x position, 1x speed, 1x revolution counter

5: 1x position, 1x speed, 1x revolution counter with bus termination 120 Ω

##### Dual-channel version

2: 2x position, 2x speed

3: 2x position, 1x revolution counter

6: 2x position, 2x speed with bus termination 120 Ω

7: 2x position, 1x revolution counter with bus termination 120 Ω

#### Baud rate

3: 500 kBaud

4: 250 kBaud

#### Electrical connection

521: Connector AMP MGS 6-pin, male

**R S A - 3 2 0 1 - 2 1 4 - J 1 4 - 5 2 1**

Series

#### Mechanical version

3201: Standard design

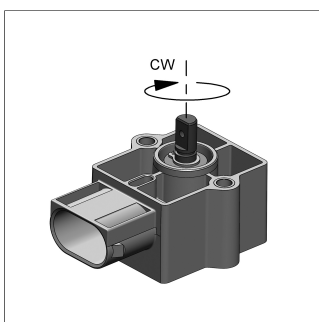
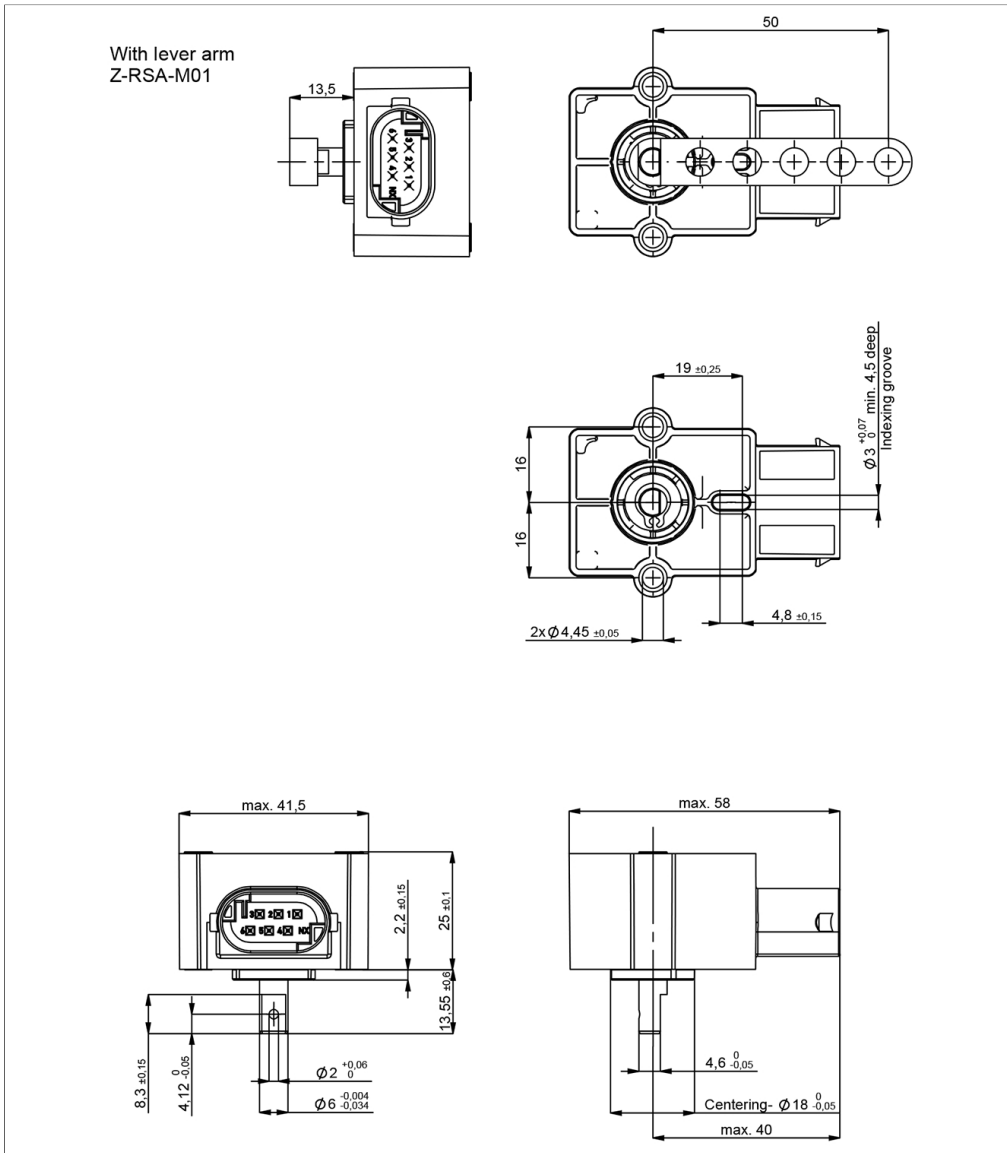
3202: with mounted lever arm Z-RSA-M01

Resolution  
14: 14 bits

Interface  
2: Digital Interface

**Drawing**

CAD data see  
[www.novotechnik.de/en/download/cad-data/](http://www.novotechnik.de/en/download/cad-data/)



When the flattening of the shaft points towards the connector, the sensor is near the electrical center position.

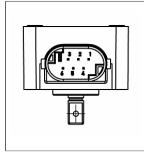
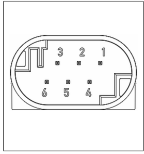
## Technical Data

<b>Type</b>	<b>RSA-32_-214-J_-521</b> <b>CAN SAE J1939</b>
Measured variables	Position, speed, revolution counter
Measuring range	360°
Measuring range speed	0 ... 750 rpm
Number of channels	1 / 2
Protocol	CAN SAE J1939
Programmable parameters	Offset position, counting direction, averaging, baud rate, transmit mode, transmit cycle, source address, resolution position, resolution speed
Diagnosis	activated (in case of error, output signal is outside of the plausible signal range)
Node ID	128 ... 247 (dynamic address claiming)
Baud rate	250, 500 kBAud
Update rate (output)	1 kHz
Resolution	14 bits
Resolution speed	0.055°/s ... 2.2°/s
Linearity	1 Channel: ±0.5 %FS, 2 Channels: ±0.85 %FS
Repeatability	≤ ±0.1°
Hysteresis	≤ ±0.1°
Temperature error	±0.2 %FS
Supply voltage U <sub>b</sub>	12/24 VDC (8 ... 34 VDC)
Current consumption at Power-on	≤ 50 mA
Power drain w/o load	< 0.4 W
Overvoltage protection	45 VDC (permanent)
Polarity protection	yes (supply lines)
Short circuit protection	yes (output vs. GND and supply voltage up to 40 VDC)
Insulation resistance (500 VDC)	≥ 10 MΩ
Bus termination internal	120 Ω (optionally)
<b>Environmental Data</b>	
Max. operational speed	120 rpm (temporary 800 rpm)
Vibration IEC 60068-2-6	20 g, 5 ... 2000 Hz, A <sub>max</sub> = 0.75 mm
Shock IEC 60068-2-27	50 g, 6 ms
Protection class DIN EN 60529	IP67 (shaft side), IP69K (housing incl. electronics)
Operating temperature	-40 ... +105°C
Operating humidity	0 ... 98 % R.H. (no condensation)
Life	typ. 30 Mio. movements (when operated without lever)
Functional safety	If you need assistance in using our products in safety-related systems, please contact us
MTTF (IEC 60050)	843 years (one-channel) or 819 years (two-channel, per channel)
Traceability	Serial number on type labeling: production batch of the sensor assembly and relevant sensor components
<b>EMC Compatibility</b>	
ISO 10605 ESD (Handling/Component)	8 kV
ISO 11452-2 Radiated HF-fields	100 V/m
ISO 11452-4 BCI (Bulk current injection)	200 mA
CISPR 25 Radiated emission	Level 3
ISO 7637-2 Transient Emissions	Level 4
ISO 7637-2 Pulses on supply lines	(1, 2a, 2b, 3a, 3b, 4, 5) Level 4
ISO 7637-3 Pulses on output lines	(3a, 3b) Fast Level 2, Slow Level 4
ISO 16750 Pulses on supply lines	Starting profile Level 4 @12 V / Level 3 @24 V
Emission/Immunity	Exceeds E1 requirements

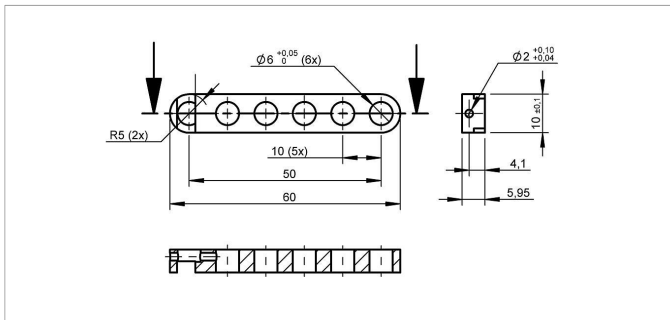
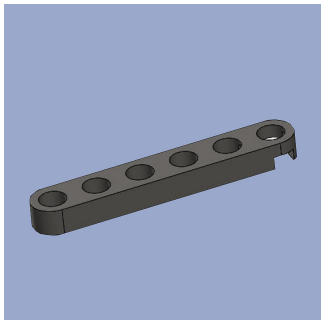
FS = Full scale: Signal span according to electrical measuring range

**Connection Assignment**

Signal	Connector
	code 5_ _
Supply voltage Ub	Pin 1
GND	Pin 2
CAN_H	Pin 3, pin 6
CAN_L	Pin 4, pin 5

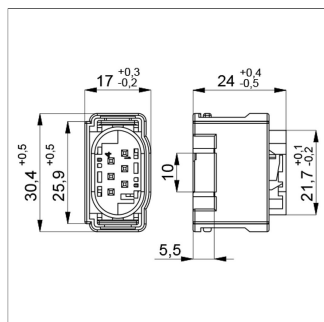


**Sensor Mounting**



**Z-RSA-M01**  
Lever arm 50 mm for mounting at shaft with locking pin (included in delivery).  
Further levers (geometry, materials...) on request.  
Material Aluminium, anodized  
**P/N** **Type**  
400105062 Z-RSA-M01

## Connector System MQS



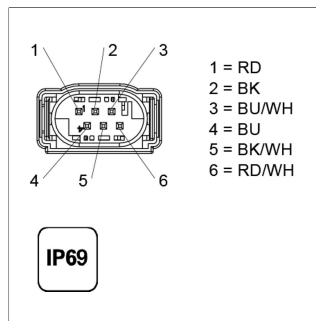
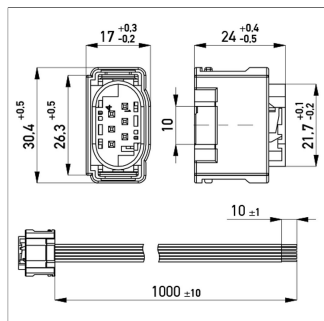
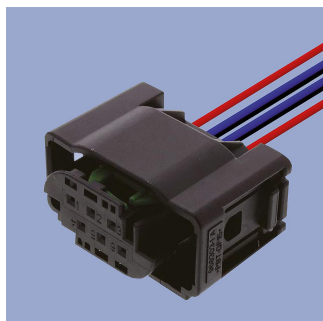
### EEM-33-34

Connector kit MQS System including

- 1 plug socket (female), PBT GF15, AMP P/N 1-967616-1
- 6 tinned contacts for cable cross-section area 0.25 ... 0.35 mm<sup>2</sup> (AWG 22), AMP-P/N 963727-1 or 5-962885-1
- 6 single conductor sealings AMP P/N 967067-2

Operating temp. -40 ... +120°C

P/N	Type
400005666	EEM-33-34



### EEM-33-24

Connector MQS AMP P/N 1-967616-1, 6-pin, PBT GF15, with lead wires 0.5 mm<sup>2</sup>, PVC, 1 m, open ended

Operating temp. -40 ... +120°C

Lead wires PVC, 6x0.5 mm<sup>2</sup>

P/N	Type	Length
400108029	EEM-33-24	1 m

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The specifications contained in our datasheets are intended solely for informational purposes. The documented specification values are based on ideal operational and environmental conditions and can vary significantly depending on the actual customer application. Using our products at or close to one or more of the specified performance ranges can lead to limitations regarding other performance parameters. It is therefore necessary that the end user verifies relevant performance parameters in the intended application. We reserve the right to change product specifications without notice.