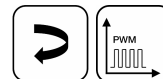


**NOVOHALL  
Rotary Sensor  
Non-contacting**

**RSK-3200  
PWM**

**Mobile Applications**



**Special Features**

- Non-contacting, magnetic measuring principle (Hall)
- Analog interface
- Redundant system
- Electrical range up to 360°
- Temperature range -40° up to +125° C
- Simple mounting
- Protection class IP67/IP69K
- Long life
- Very favourable price/performance ratio
- Other configurations see separate data sheets

**Applications**

For mobile and automotive applications such as

- Throttle
- EGR valves
- Transmission gear
- Accelerator

The housing is made of a special high grade temperature-resistant plastic material.

Fixation with brass bushings allow simplicity of mounting. The customer's D-shaft is inserted into the actuator of the sensor and also takes over the function of the bearing for the position magnet.

Despite of its compact and wear-free design the sensors are very robust against environmental influences like vibrations, temperature variations, dirt and humidity.

These sensors are suitable for use in all kinds of rough environment for example close to engines in automotive applications.

Special models with different electrical angles and contact versions are available upon request.

**Description**

Material	Housing: high grade, temperature resistant plastic PBT GF Integrated actuator: temperature resistant plastic PA GF Sealing: O-ring HNBR
Mounting	With 2 screws M4
Fastening torque of mounting	250 ± 50 Ncm
Sealing	O-ring
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
Weight	approx. 25 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

7: Pulse Width Modulation (PWM)

#### Interface parameters

9: Supply  $U_b = 5$  VDC, level 0 ...  $U_b$

#### Interface parameters

Duty cycle 10 ... 90%, crossed outputs, channel 1 rising cw, high active

2: 250 Hz

3: 500 Hz

Other duty cycles and other frequencies on request

#### Electrical connection

521: Connector AMP MQS 6-pin, male

**R S K - 3 2 0 2 - 8 3 6 - 7 9 2 - 5 2 1**

Series

#### Mechanical version

3201: **Standard design**

3202: Standard design, European E1 approved \*

\*) Customer be noticed prior to any E1-relevant modification

#### Measuring range

06: Angle 60°

12: Angle 120°

18: Angle 180°

24: Angle 240°

36: Angle 360°

Other angles on request

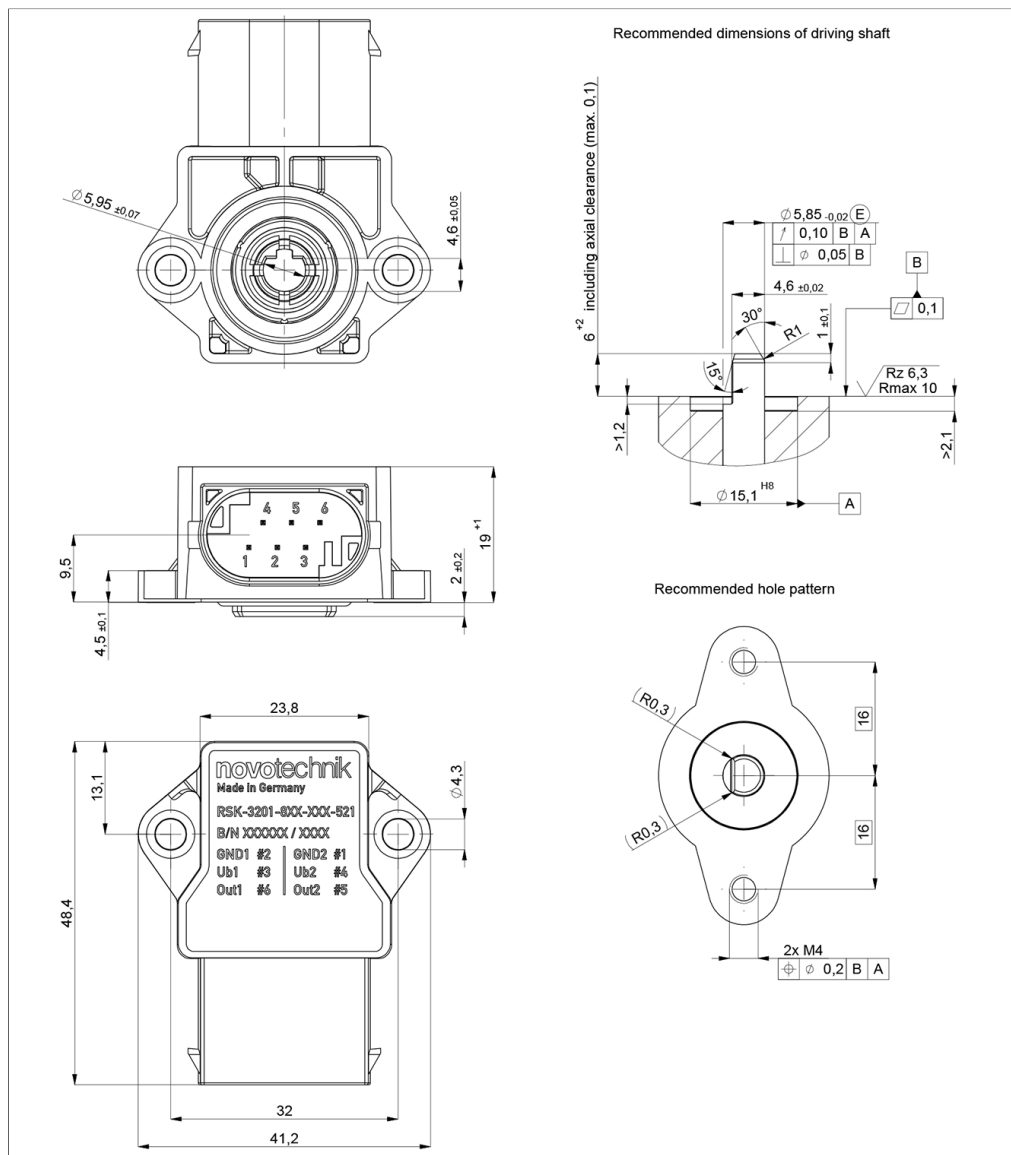
#### Number of channels

8: Fully redundant version (2x supply voltage  $U_b$ , 2x output)

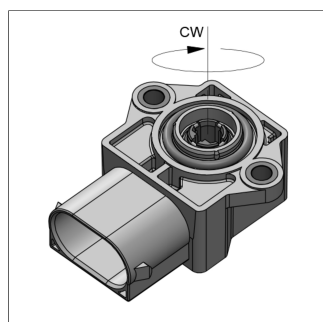
### Accessories included in delivery

- O-ring for sealing housing on shaft side

**Drawing**



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



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

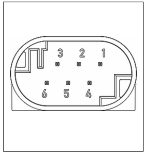
## Technical Data

Type	RSK-32 -8 -7 -521
Output signal	PWM (Pulse Width Modulation)
Frequency PWM Signal	250 Hz, 500 Hz
Start-up time	≤ 7 ms
Duty cycle	10 ... 90 %
Load	≥ 5 kΩ
Number of channels	2
Diagnosis	activated (in case of error, output signal is outside of the plausible signal range)
Behavior signal output	In case of cable breaks: PWM communication stops Pull-down: ≥ 95 %Ub @cable break GND, ≤ 0,5 %Ub @cable break Ub Pull-up: ≥ 99,5 %Ub @cable break GND, ≤ 2 %Ub @cable break Ub In case of internal errors: Pull-up / Pull-down: 0% Duty cycle
Update rate	typ. 3.4 kHz
Measuring range	60°, 120°, 180°, 240°, 360°
Absolute linearity	Measuring range 60°: ±3.0 %FS, Measuring range 120/180°: ±1.5 %FS, Measuring range 240/360°: ±1 %FS Lateral offset of the actuator causes an additional angle error: @0.1 mm: 0.45°, @0.2 mm: 0.95°, @0.3mm: 1.5°
Resolution	12 bits
Repeatability	≤ ±0.5°
Hysteresis	typ. < ±0.1°
Temperature error	Measuring range 60°: ≤ ±1.1 %FS, Measuring range 120°: ≤ ±0.6 %FS, Measuring range 180°: ≤ ±0.4 %FS, Measuring range 240/360°: ≤ ±0.3 %FS
Supply voltage Ub	5 VDC (4.5 ... 5.5 VDC)
Current consumption w/o load	≤ 12 mA per channel
Polarity protection	yes (supply lines and outputs)
Short circuit protection	yes (vs. GND and supply voltage)
<b>Environmental Data</b>	
Max. operational speed	Mechanically unlimited
Vibration IEC 60068-2-6	20 g, 5 ... 2000 Hz, Amax = 0.75 mm
Shock IEC 60068-2-27	50 g, 11 ms
Protection class ISO 20653	IP67 / IP69K (mounted with O-ring)
Operating temperature	-40 ... +125°C
Functional safety	Suitable for safety-related applications according to ISO 13849 after customer validation. Further safety data ( DCavg...) and support for functional safety are available on request.
MTTF (IEC 60050)	1554 years (per channel)
MTTFd (EN ISO 13849-1 parts count method, w/o load)	1732 years (per channel)
MTTFd Declaration of Conformity	<a href="https://www.novotechnik.de/en/downloads/certificates/mttf-certificate">https://www.novotechnik.de/en/downloads/certificates/mttf-certificate</a>
Traceability	Serial number on type labeling: production batch of the sensor assembly and relevant sensor components
Conformity/Approval	CE, UKCA, E1 see <a href="https://www.novotechnik.de/en/downloads/certificates/declarations-of-conformity-eu/uk">https://www.novotechnik.de/en/downloads/certificates/declarations-of-conformity-eu/uk</a> WEEE see <a href="https://www.novotechnik.de/en/downloads/certificates/eu-directive-weee/">https://www.novotechnik.de/en/downloads/certificates/eu-directive-weee/</a>
<b>EMC Compatibility</b>	
ISO 10605 ESD (Handling/Component)	8 kV / 15 kV
ISO 11452-2 Radiated HF-fields	100 V/m
ISO 11452-4 BCI (Bulk current injection)	100 mA
CISPR 25 Radiated emission	Level 4
ISO 7637-3 Pulses on output lines	Level 4
ISO 13766-1/-2 Construction machinery	
ISO 14982 Agricult./forestry machines	
Emission/Immunity E1	acc. to ECE-R10

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

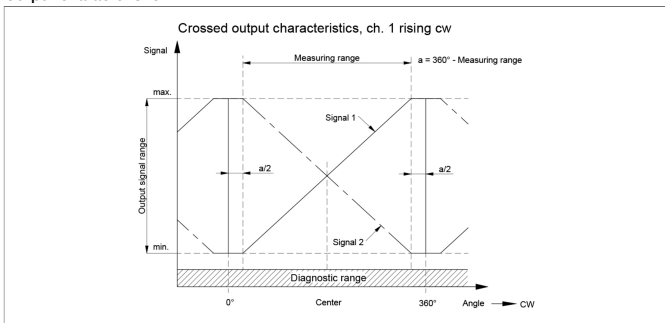
**Connection Assignment**

Supply voltage Ub 1	Pin 3
GND 1	Pin 2
Signal output 1	Pin 6
Signal output 2	Pin 5
Supply voltage Ub 2	Pin 4
GND 2	Pin 1

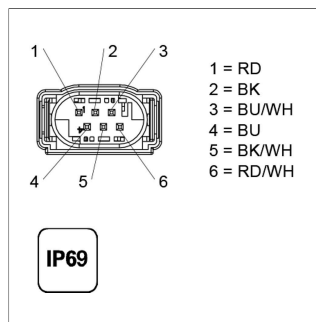
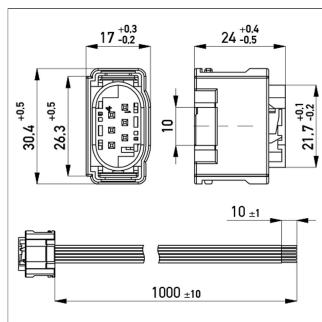
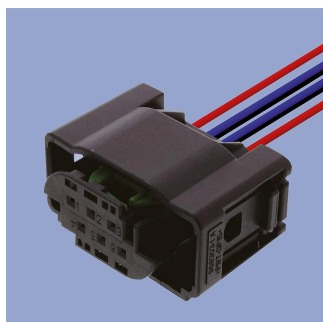


**Technical Data**  
**Output**  
**Characteristics**

**Output characteristic**



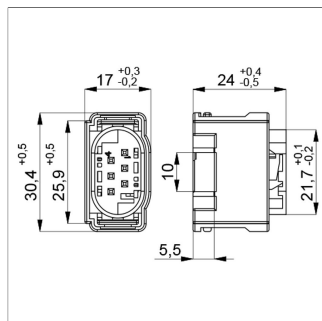
## Connector System MQS



### 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



### 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

Novotechnik U.S., Inc.  
155 Northboro Road

Southborough, MA 01772  
Phone 508 485 2244  
Fax 508 485 2430  
info@novotechnik.com  
www.novotechnik.com



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