novotechnik
Siedle Group

NOVOHALL
Rotary Sensor
Non-contacting

RSK-3200
Ratiometric
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

Supply voltage Ub
2: Ub = 5 VDC

Output signal
1: 5 ... 95% ratiometric to supply voltage Ub (0.25 ... 4.75 VDC)
2: 10 ... 90% ratiometric to supply voltage Ub (0.5 ... 4.5 VDC)

Output characteristic
4: Crossed outputs, channel 1 rising cw
9: Rising outputs cw, channel 2 with 50 % signal level to channel 1 (only 229)
Other output characteristics on request

Electrical connection
521: Connector AMP MQS 6-pin, male

R S K - 3 2 0 2 - 8 3 6 - 2 1 4 - 5 2 1

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 Ub, 2x output)

Mechanical version
3201: Standard design
3202: Standard design, European E1 approved *

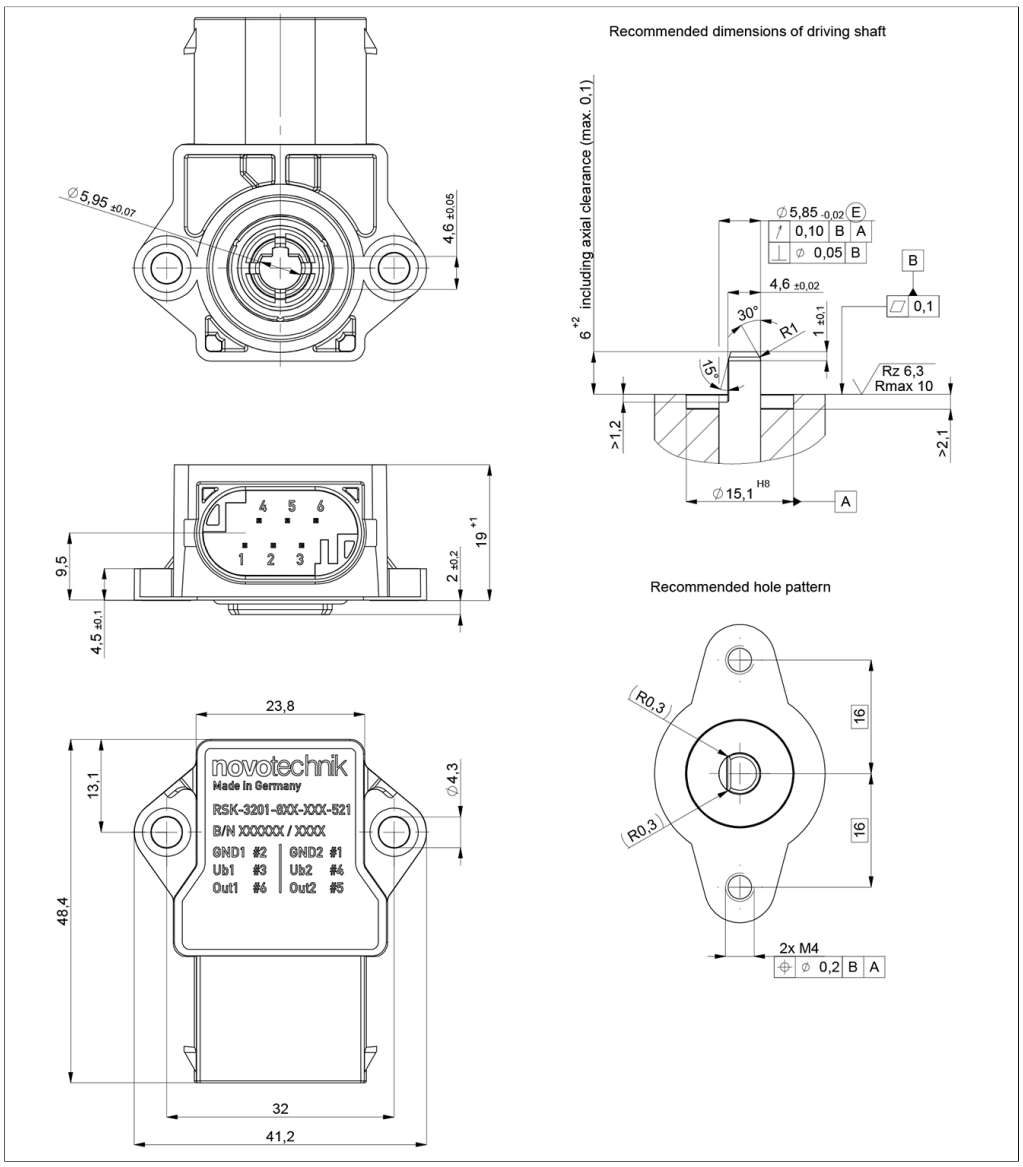
Series

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

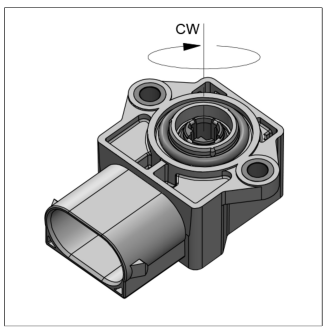
Accessories included in delivery

- O-ring for sealing housing on shaft side

Drawing



CAD data see
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.

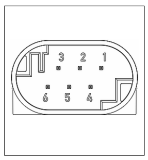
Technical Data

Type	**RSK-32__-8__-2__-521**
Output signal	ratiometric to supply voltage Ub 5 ... 95% (0.25 ... 4.75 V) 10 ... 90% (0.5 ... 4.5 V)
Load	≥ 5 kΩ Pull-up or Pull-down
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: 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: ≤ 2 %Ub (on request: ≥ 95%)
Update rate	typ. 3.4 kHz
Measuring range	60°, 120°, 180°, 240°, 360°
Absolute linearity	At pull-down resistor 10 kΩ: Measuring range 60°: ±2.2 %FS, Measuring range 120/180°: ±1.5 %FS, Measuring range 240/360°: ±1 %FS
	Additional ±0.3 % at FS at electrical code 229 for channel 2
	Lateral offset of the actuator causes an additional angle error: @0.1 mm: 0.45°, @0.2 mm: 0.95°, @0.3mm: 1.5°
Interlinearity	±3 %FS
Resolution (related to Ub)	12 bits
Repeatability	≤ ±0.5°
Hysteresis	typ. < ±0.1° Only measuring range 360°: typ. < 0.25° (lower hysteresis on request)
Temperature error	Measuring range 60°: ≤ ±1,25 %FS, Measuring range 120/180°: ≤ ±0.75 %FS, Measuring range 240/360°: ≤ ±0.5 %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)
Environmental Data	
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	https://www.novotechnik.de/en/downloads/certificates/mttfd-certificate
Traceability	Serial number on type labeling: production batch of the sensor assembly and relevant sensor components
Conformity/Approval	CE, UKCA, E1 see https://www.novotechnik.de/en/downloads/certificates/declarations-of-conformity-eu/uk WEEE see https://www.novotechnik.de/en/downloads/certificates/eu-directive-weee/
EMC Compatibility	
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 5
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

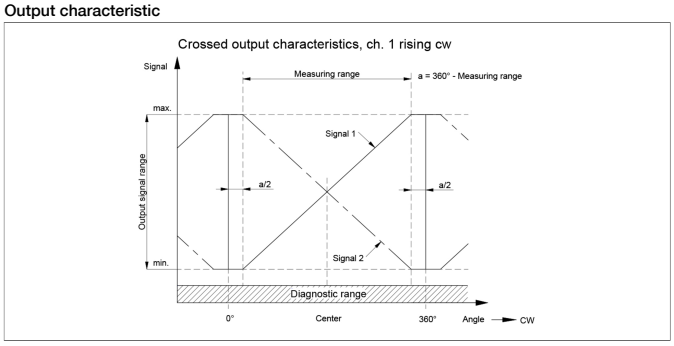
Connection Assignment

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

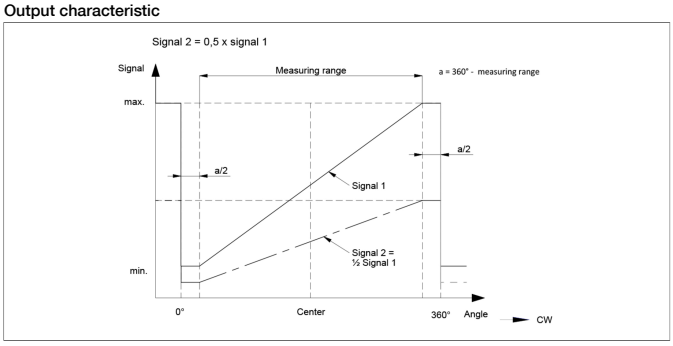


Technical Data
Output Characteristics

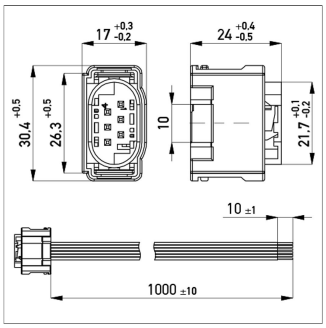
Output characteristic

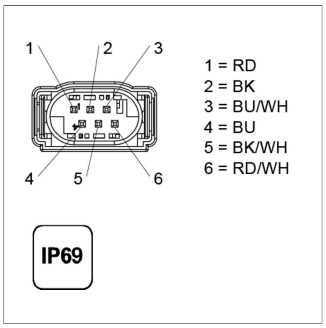


Output characteristic



Connector System MQS





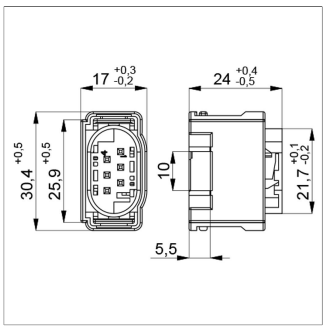
EEM-33-24

Connector MQS AMP P/N 1-967616-1, 6-pin, PBT GF15, with lead wires 0.5 mm², PVC, 1 m, open ended

Operating temp. -40 ... +120°C

Lead wires PVC, 6x0.5 mm²

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 mm² (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
Siedle Group

Novotechnik U.S., Inc.
155 Northboro Road

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