

## NOVOHALL Angle Sensor non-contacting

Series RSC3200



### 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 IP6k7/IP6k9k
- long life
- very favourable price /performance ratio
- european E1 approved

### Applications

For mobile and automotive applications such as

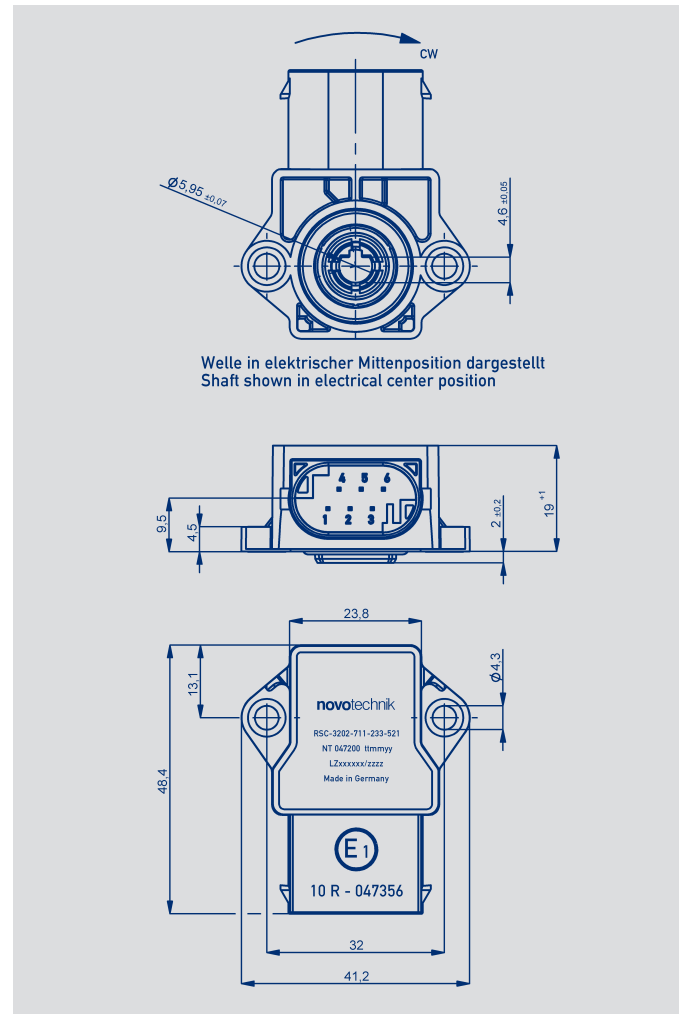
- throttle
- EGR valves
- transmission gear
- accelerator

The housing is made of a special high grade temperature-resistant plastic material. Fixation with brass bushings allow simplicity of mounting.

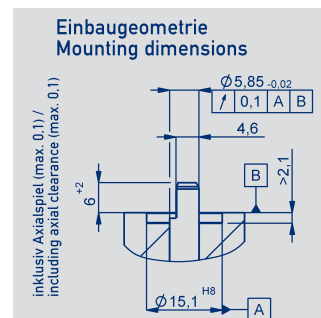
The customer's D-shaft is inserted into the shaft coupling of the sensor and also takes over the function of the bearing for the position magnet.

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.



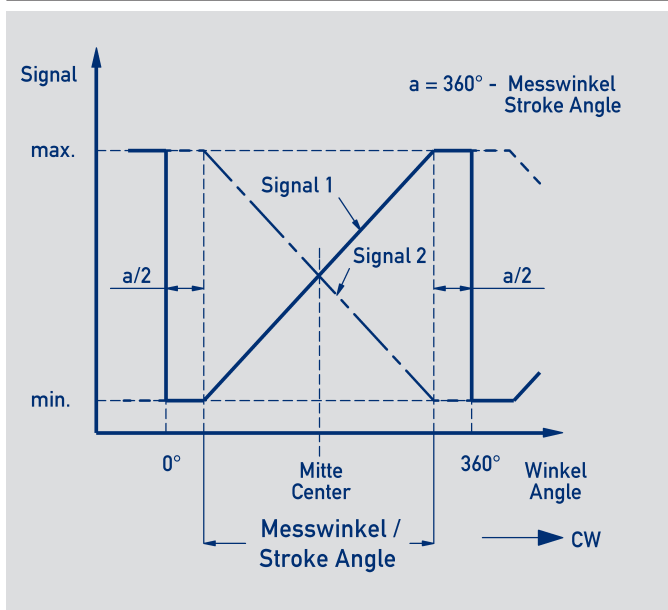
### Einbaugeometrie Mounting dimensions



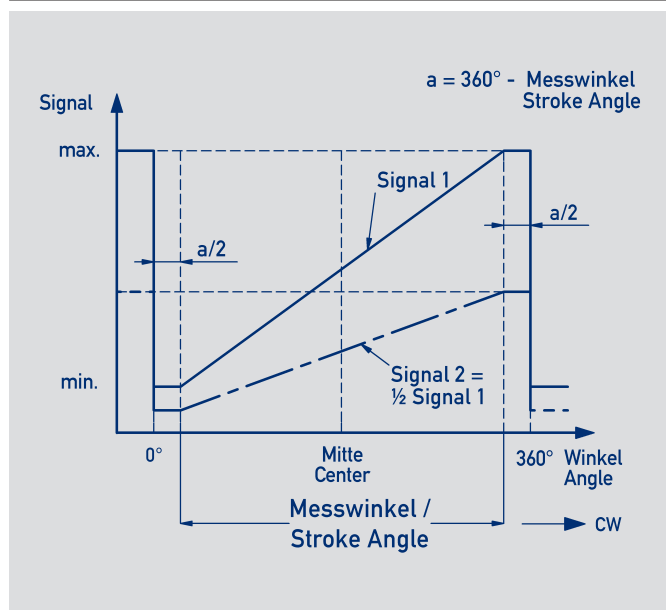
### Description

|                           |  |
|---------------------------|--|
| Housing                   | high-grade, temperature-resistant plastic  |
| Integrated shaft coupling | high-grade plastic   |
| Electrical connections    | 6-pin MQS-connector, code A, tinned contact according to drawing AMP-114-18063-126, Index A1 (connector: AMP P/N 1-967616-1) |
| Sealing                   | O-ring   |

Output characteristic (code 2 \_ 4)



Output characteristic (code 2 2 9)



| Connection assignment | MQS-connector |
|-----------------------|---------------|
| GND 2                 | Pin 1         |
| GND 1                 | Pin 2         |
| Supply voltage 1      | Pin 3         |
| Supply voltage 2      | Pin 4         |
| Output 2              | Pin 5         |
| Output 1              | Pin 6         |

|   |   |                      |                         |               |
|---|---|----------------------|-------------------------|---------------|
| <b>Type designations</b>                              | <b>RSC-3202-8 _-2 _-521</b>   |                      |                         |               |
| <b>Mechanical Data</b>                                |   |                      |                         |               |
| Dimensions  | see drawing   |                      |                         |               |
| Mounting  | with 2 M4 screws  |                      |                         |               |
| Starting torque of mounting screws at housing flange  | 200 ... 300   |                      |                         | Ncm           |
| Mechanical travel                                     | 360 continuous  |                      |                         | °             |
| Maximum operational speed                             | mechanical unlimited  |                      |                         |               |
| Weight  | approx. 25  |                      |                         | g             |
| <b>Electrical Data</b>                                |   |                      |                         |               |
| Maximum permissible applied voltage                   | 5 (4.5 ... 5.5)   |                      |                         | VDC           |
| Current consumption without load                      | typ. 15 (typ 8 on request) per channel  |                      |                         | mA            |
| Reverse polarity protection                           | yes, supply lines   |                      |                         |               |
| Short-circuit protection                              | yes (vs. GND and Ub)  |                      |                         |               |
| Measuring range                                       | 0...60 up to 0...360 in 5 angles available (s. ordering code)   |                      |                         | °             |
| Number of channels                                    | 2   |                      |                         |               |
| Update rate   | 2.5   |                      |                         | kHz           |
| Resolution  | 12  |                      |                         | bit           |
| Repeatability   | 0.5   |                      |                         |               |
| Absolute linearity at measuring angle                 | 60°<br>2.0  | 120° / 180°<br>1.5   | 240° / 360°<br>1.0      | ± % FS        |
|   | (additional ±0.3 % at FS at electrical code 229 for channel 2)  |                      |                         |               |
| Interlinearity  | 3   |                      |                         | ± % FS        |
| Output signal   | ratiometric to Ub<br>0.25...4.75<br>0.5...4.5<br>(load resistance ≥ 1 kΩ)   |                      |                         | VDC<br>VDC    |
| Temperature error at measuring angle                  | 60°<br>≤ 1.1  | 120° / 180°<br>≤ 0.7 | 240° / 360°<br>typ. 0.5 | ± % FS        |
|   | (additional ±0.3 % at FS at electrical code 229 for channel 2)  |                      |                         |               |
| <b>Environmental Data</b>                             |   |                      |                         |               |
| Temperature range                                     | - 40 up to +125   |                      |                         | °C            |
| Vibration (IEC 60068-2-6)                             | 5...2000<br>Amax = 0.75<br>amax = 20  |                      |                         | Hz<br>mm<br>g |
| Shock (IEC 60068-2-27)                                | 50 (11 ms)  |                      |                         |               |
| MTTF (DIN EN ISO 13849, parts count method, w/o load) | 285 (per channel)   |                      |                         | Years         |
| Functional safety                                     | If you need assistance in using our products in safety-related systems, please contact us   |                      |                         |               |
| Protection class (ISO 20653)                          | IP6k7 / IP6k9k (mounted with O-ring)  |                      |                         |               |
| EMC compatibility                                     | ISO 11452-2 Radiated EM HF-fields, Absorber Hall 100 V/m<br>ISO 11452-5 Radiated EM HF-fields, Stripline 100 V/m<br>ISO 10605 (Kap. 5.2) Packaging and Handling + Component Test 8 kV<br>ISO 10605 (Kap. 5.3) Powered up test 8 kV<br>CISPR 25 Radiated Emission, class 5<br>Interference emission and immunity according to ECE-R10 (E1) |                      |                         |               |

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## Ordering specifications

### Preferred types printed in bold:

- delivery time up to 25 pcs. within 10 working days
- no low volume surcharge

Operating voltage  $U_b$   
2:  $U_b = 5\text{ V}$  (4.5...5.5 V)

### Output signal

1: **0.25 ... 4.75 V ratiometric**  
2: 0.5 ... 4.5 V ratiometric

### Output characteristics

4: **crossed outputs, channel 1 rising CW**  
9: rising CW, channel 2 with 50 %, signal level to channel 1 (only 229)  
Other characteristics on request

### Electrical connection

521: **connector AMP MQS 6-pin male**  
Cable versions and assembled connectors on request

**R S C** - **3 2 0 2** - **8 3 6** - **2 1 4** - **5 2 1**

Series

Mechanical version  
3202: standard

### Measuring range

06: angle 60°  
12: angle 120°  
18: angle 180°  
24: angle 240°  
36: angle 360°

### Model:

8: **fully redundant (2 x  $U_b$ , 2 x output)**

## Necessary accessories

- Mating connector:  
plug socket (female),  
AMP P/N 1-967616-1
- Tinned contact for cable  
cross-section area 0.3...0.5 mm<sup>2</sup>,  
(AWG 22)  
AMP P/N 963727-1 (6x),
- Single conductor sealing  
AMP P/N 967067-2 (6x)
- Female Connector-Kit EEM  
33-34, P/N 005666,  
consisting:  
1 plug socket,  
6 contacts  
6 single conductor sealings