QR series

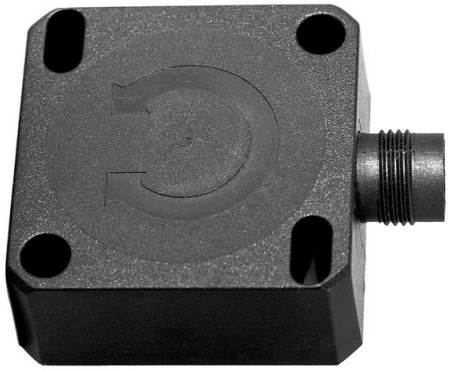
QR40EMN-180HB-V-CM-UL-5V

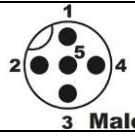
Absolute rotary encoder (contactless)

Output
0 - 5 V (ratiometric to 5 V supply voltage)

Supply voltage
5V dc

Measuring range
180° (out of 360°)



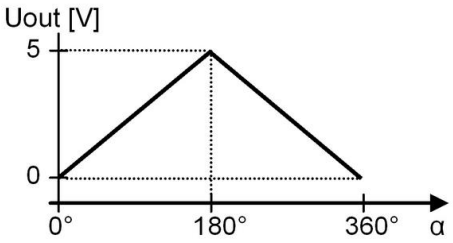
	General specifications v20210419
Housing	Reinforced plastic injection molded (Celanex 2300 GV3/30 - glass filled PBT, black)
Dimensions (indicative)	40x40x17 mm
Mounting	Included: 2x M4x25 stainless steel pozidrive pan head screws, self-tapping (PZ DIN7500CZ)
Ingress Protection (IEC 60529)	IP67, IP69K (with IP69K mating connector)
Relative Humidity	0 - 95% (non condensing, fully potted)
Weight	approx 50 gr.
Magnet type	11,2 x 5,5 x 8 mm Neodymium/N35/nickel coated/remanention 1,2 T
Magnet distance to sensor	0 to 10 mm, magnet at front side
Max. radial magnet misalignment	1 mm Radial Off Axis (< 0,3 mm for minimum non-linearity)
Direction of magnetization	Axial in 8 mm (Northpole marked)
Supply voltage	5V dc
Polarity protection	Yes
Current consumption	≤ 25 mA
Operating temperature	-40 to 85°C
Storage temperature	-40 to 85°C
Measuring range	180° (out of 360°)
Programmable center position	No
Accuracy	
Resolution	12 bit over 360° (min. step 0,09°)
Sensitivity error	±0.5% typ. (@20°C), ±1% typ. (full Temp. range)
Offset error	Magnet + Sensor: <3° typ. (with perfect external magnet positioning)
Non linearity	< ± 1° in magnet alignment range
Repeatability	0,13°
Response time	< 4 ms
Max speed	100 rpm
Output signal	0 - 5 V (ratiometric to 5 V supply voltage)
Short circuit protection	Yes (T<55°C), Max 10 s (T>55°C)
Output load resistor	≥ 20 kΩ
Connection (length ±10%)	M12 5p male connector (Glass fibre reinforced grade, contacts CuZn pre-nickeled galv. Au)
Pinout M12 connector	Pin 1: + Supply voltage Pin 2: not connected Pin 3: Gnd Pin 4: Output Pin 5: not connected 

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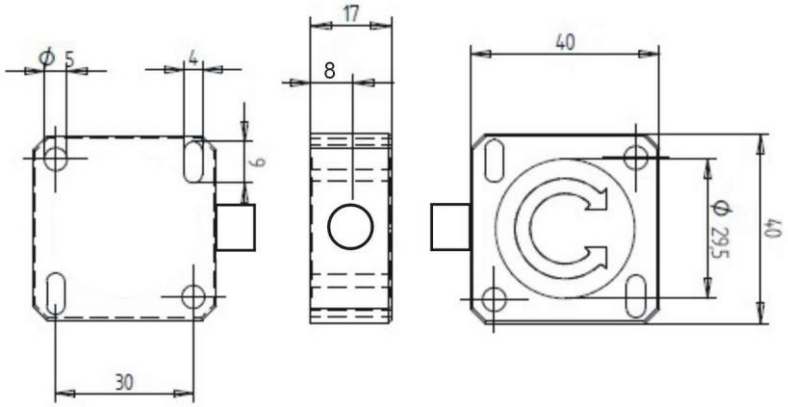
QR40EMN-180HB-V-CM-UL-5V

Output approx. 0V when magnetic field outside specifications

Transfer characteristic



Dimensions (indicative only)



Intended use & UL

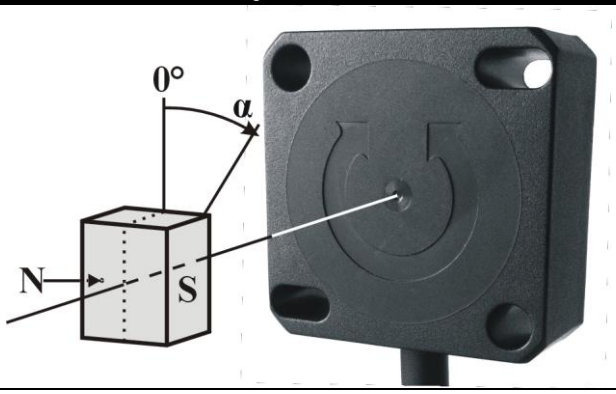
Intended use:
QR series sensors are intended to measure rotation after installing in machines, equipment and systems. Flawless function in accordance with the specifications is ensured only when the device is used within its specifications.
This device is not a safety component according to the EU Machine Directive (ISO13849).
Modifications or non-approved use are not permitted and will result in loss of warranty and void any claims against the manufacturer.

UL:
UL certificate: UL File number: E312057
UL & c-UL listed product (standards UL60947-5-2 & CSA-C22,2 No. 14)
Product Identity / Category Code Number (CCN): Industrial Control Equipment / NRKH & NRKH7
Enclosure / Temperature rating: Enclosure type 1 / Temperature -40° . .+85°C
Electrical rating: Intended to be used with a Class 2 power source in accordance with UL1310
Electrical ratings: max. input Voltage 32V dc, max. current 50mA

Magnet orientation

Magnet drawn in α=0° position.

While rotating the magnet clockwise α increases.
The magnet's north pole (N) is indicated.



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