

# QR series



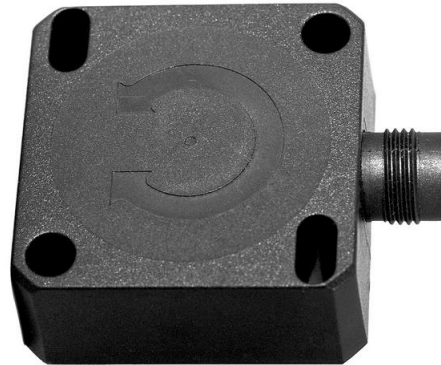
QR40EMN-180HB-V-CM-UL-5V

## 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

Reinforced plastic injection molded (Celanex 2300 GV3/30 - glass filled PBT, black)

40x40x17 mm

Included: 2x M4x25 stainless steel pozidrive pan head screws, self-tapping (PZ DIN7500CZ)

IP67, IP69K (with IP69K mating connector)

0 - 95% (non condensing, fully potted)

approx 50 gr.

11,2 x 5,5 x 8 mm Neodymium/N35/nickel coated/remanent 1,2 T

0 to 10 mm, magnet at front side

1 mm Radial Off Axis ( < 0,3 mm for minimum non-linearity)

Axial in 8 mm (Northpole marked)

5V dc

Yes

≤ 25 mA

-40 to 85°C

-40 to 85°C

180° (out of 360°)

No

12 bit over 360° (min. step 0,09°)

±0.5% typ. (@20°C), ±1% typ. (full Temp. range)

Magnet + Sensor: <3° typ. (with perfect external magnet positioning)

< ± 1° in magnet alignment range

0,13°

< 4 ms

100 rpm

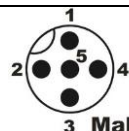
0 - 5 V (ratiometric to 5 V supply voltage)

Yes (T<55°C), Max 10 s (T>55°C)

≥ 20 kΩ

M12 5p male connector (Glass fibre reinforced grade, contacts CuZn pre-nickeled galv. Au)

Pin 1: + Supply voltage  
Pin 2: not connected  
Pin 3: Gnd  
Pin 4: Output  
Pin 5: not connected



### Housing

Dimensions (indicative)

Mounting

Ingress Protection (IEC 60529)

Relative Humidity

Weight

Magnet type

Magnet distance to sensor

Max. radial magnet misalignment

Direction of magnetization

Supply voltage

Polarity protection

Current consumption

Operating temperature

Storage temperature

Measuring range

Programmable center position

Accuracy

Resolution

Sensitivity error

Offset error

Non linearity

Repeatability

Response time

Max speed

Output signal

Short circuit protection

Output load resistor

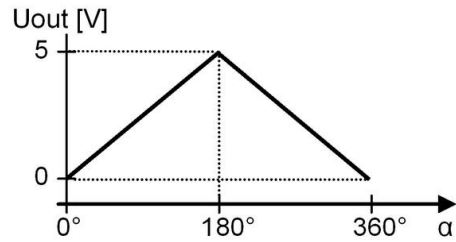
Connection (length ±10%)

Pinout M12 connector

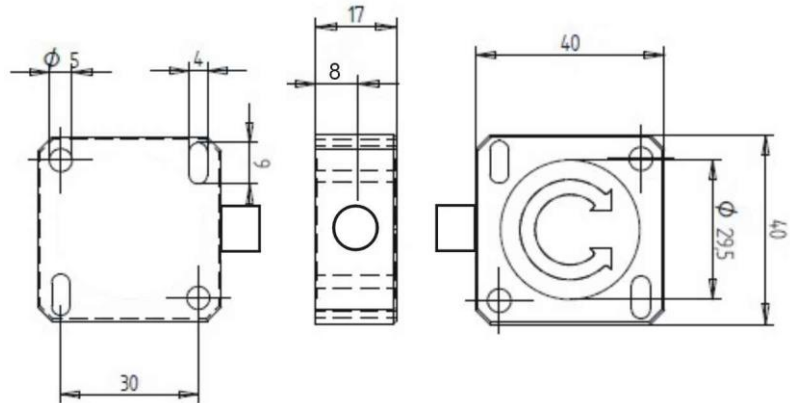
## QR40EMN-180HB-V-CM-UL-5V

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  $-40^\circ \dots +85^\circ\text{C}$

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 drawn in  $\alpha=0^\circ$  position.

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

### Magnet orientation

