

# QR series



QR40-360HA-P-K

## Absolute rotary encoder (contactless)

Output  
PWM (0 - 5 V)

Supply voltage  
10 - 30V dc

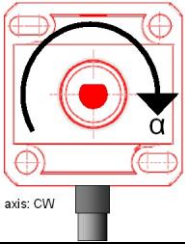
Measuring range  
360°



### General specifications v20121009

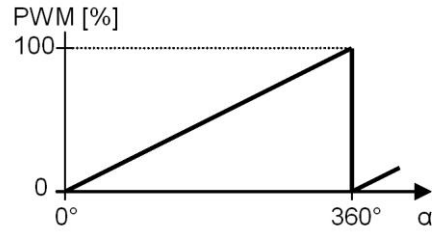
Housing	Quadro40: PBT black
Dimensions	40x40x22 mm
Mounting	2x stainless M4x25 mm screws
Ingress Protection (IEC 60529)	IP66
Weight	approx 75 gr (excl. cable)
Shaft	Stainless steel Ø 6 mm
Shaft type	D-form
Shaft bearing	Polyamide (glass-filled), Radial force < 1Nm, Axial force < 8N (push & pull)
Shaft length	8 mm
Supply voltage	10 - 30V dc
Polarity protection	Yes
Current consumption	≤ 10 mA
Operating temperature	-25 to 85°C
Storage temperature	-25 to 85°C
Measuring range	360°
Programmable center position	No
Accuracy	
Resolution	12 bit f.s. (min step 0,088°)
Max offset error	± 2°
Non linearity	< ± 1,4°
Repeatability	0,12°
Response time	< 10 ms
Max speed	15 rpm
Output signal	PWM (0 - 5 V)
Short circuit protection	Yes (max 10 s)
Output load resistor	≥ 20 kΩ
Connection	Cable 2 m PVC/PVC Liyy, black Ø 4,6 mm, wires: 3x0,34 mm² Sensor colors (static usage)
Wire coding	Brown + Supply voltage Black Output Blue Gnd

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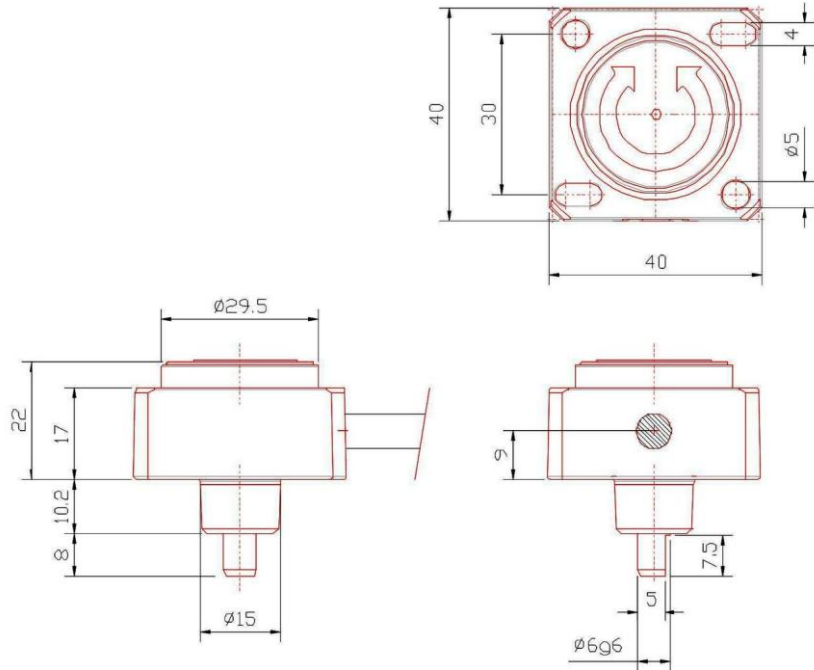
Rotation axis: CW

## Transfer characteristic



## QR40-360HA-P-K

## Dimensions



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## PWM signal parameters

Parameter	Symbol	Typ	Unit	Note
PWM frequency	$f_{PWM}$	244	Hz	Signal period: 4097 $\mu$ s
MIN pulse width	$PW_{MIN}$	1	$\mu$ s	- Position 0d - Angle 0 deg
MAX pulse width	$PW_{MAX}$	4096	$\mu$ s	- Position 4095d - Angle 359,91 deg

The duty cycle is proportional to the measured angle:  

$$\text{Position} = \frac{T_{on} * 4097}{(T_{Ton} + T_{off})} - 1$$

