

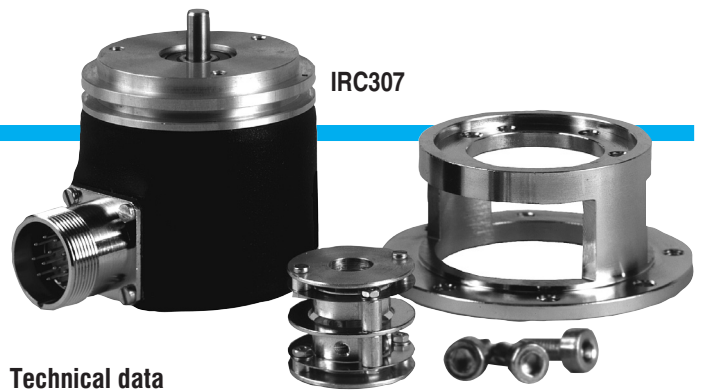
# Incremental rotary encoders IRC307, 317, 327

IRC307 – external diameter of the shaft  $\varnothing$  6 mm  
 IRC317 – external diameter of the shaft  $\varnothing$  10 mm  
 IRC327 – internal diameter of the shaft  $\varnothing$  12 mm

The incremental rotary encoders IRC with LED diode as the light source in the standard industrial version convert the rotation to two electrical sinusoidal incremental signals (1 and 2) with bilateral shift by  $90^\circ$  with approximate amplitude of 1 V pp and one zero impulse (3) per one rotation with approximate amplitude of 0,5 V. They are designed for transmission of electrical information on alignment of two mechanical units, their angle shift or rotational movements. The encoder IRC is mostly used together with digital indication or control systems. They may be used in other devices requiring high accuracy and reliability of measurement and transmission of signal over long distances.

## Type identification

IRC 3 x x / xxxx xx x	
3	<b>SUBSTANDARD (example)</b> P – Pinion $\varnothing$ 5 mm stuck to the shaft M – Frost resistant $-25^\circ \div +60^\circ\text{C}$ D – Optical indication of zero impulse by a LED diode (KB, PB) H – Extended shaft, e. g. 35 mm T – Lowered moment of friction
x	<b>DESIGN OF OUTLETS</b> PA – cable 1 m axial PB – cable 1 m side KA – connector CONTACT 20.10.10.AA axial KB – connector CONTACT 20.10.10.AA radial KKA – cable 1 m with connector CONTACT 20.10.50.AC axial KKB – cable 1 m with connector CONTACT 20.10.50.AC radial
/ xxxx	<b>NUMBER OF IMPULSES PER ROTATION</b> 512, 1024, 2048, 2500 with one zero impulse per rotation.
xx	<b>OUTLET IDENTIFICATION</b>
x	<b>DIAMETER OF SHAFTS</b> 0 – external diameter of the shaft 6 mm 1 – external diameter of the shaft 10 mm 2 – internal diameter of the shaft 12 mm
	<b>TYPE OF SWITCH</b> 3 – IRC3xx with a LED as the light source



## Technical data

Rotations	10000 min. <sup>-1</sup>
Angular acceleration	40000 rad.s <sup>-2</sup>
Moment of inertia of mechanical parts	20 g.cm <sup>2</sup> $\pm$ 10 %
Load of the IRC shaft – axial 307/317,327	20/40 N max.
– radial 307/317,327	50/60 N max.
Type of protection	IP65
Weight	0,35 kg max.

## Elektrical data

Amplitude of the signal 1 and 2	0,6 $\div$ 1,2 V pp ( $Z_0 = 120 \Omega$ )
Amplitude of the signal 3	0,2 $\div$ 0,8 V ( $Z_0 = 120 \Omega$ )

*The amplitude is understood to be the differential between sig+ and sig- of the particular signals*

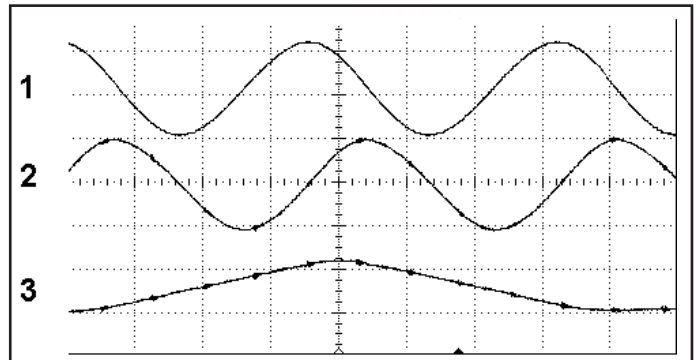
Maximum frequency	180 kHz/-3 db
Supply voltage	5 V $\pm$ 5 %
Consumption of current	< 70 mA max.
Maximum length of cable	150 m

## Working conditions

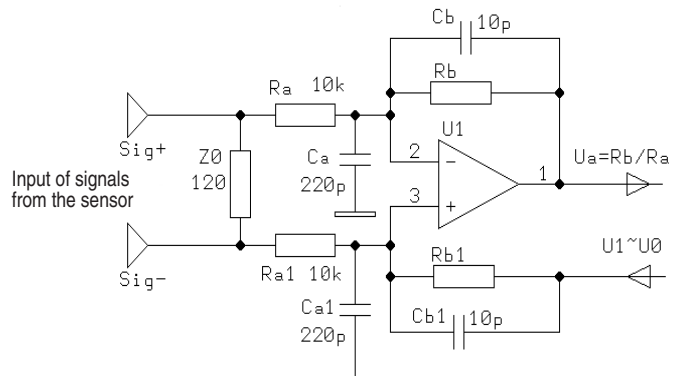
Vibrations in accordance with FCCSN345791	10 g <sub>n</sub> (10 $\div$ 2000 Hz)
Shock	50 g <sub>n</sub> (100 ms)
Operation temperature – standard	0° $\div$ +60°C
– model M	-25° $\div$ +60°C
Humidity – relative	95 % max.
– absolute	40 g.m <sup>-3</sup> max.

Atmosphere without aggressive substances.

## Sequence of signals by turning right



Recommended connection of the input circuit of the cooperating device for one signal pair



# Description of connectin encoders IRC3x7

Pin of the conector	Colour of the output cable	Significance IRC3x7
1	Grey	Signal 2
2	Pink	Sensor +5 V
3	Blue	Signal 3+
4	Violet	Signal 3
5	Yelow	Signal 1+
6	White	Signal 1-
7	—	NC
8	Green	Signal 2+
9	Shielding	Shielding
10	Black	GND
11	Brown	Sensor 0 V
12	Red	$V_{cc} +5 V$

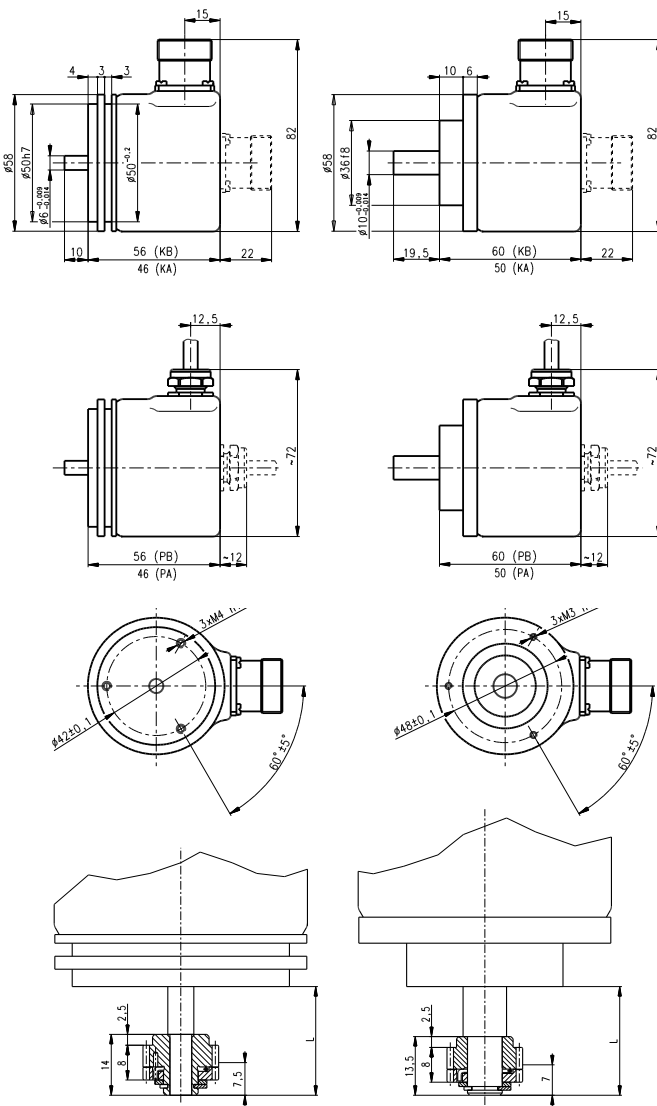
NOTE: The Sensor function is used in power supply sources allowing compensation of the voltage loss on cables as a feedback. In case the Sensor function is not used, it is recommended to connect pin 2 with pin 12 and pin 10 with pin 11 on the interconnecting cable.

## Assembly

The IRC 307 encoder is installed into appropriate equipment using 3xM4 screws or a groove. The position of the shaft is explicitly determined by a fitted diameter of 50h7 mm. The IRC 317 encoder are installed using 3xM3 screws and the position of the shaft is explicitly determined by a diameter of 36f8. It is recommended to use appropriate hokinetic connections (see the catalogue sheet „Accessories“). The IRC 327 encoder are mounted on the shaft of the respective device and 2 imbus M4 screws. After the that sensor is to be turned to the required position and 4xM3 screws of the fixed plate connection are to be tightened. The connection has to be designed so as to avoid exceeding the maximum admissible radial or axial load applied to the shaft and it is necessary to keep the connection aligned. The cable of the IRC327 encoder must be fastened so as to avoid stress on the encoder by is own weight. Cosidering the electrostatic sensitive components used it is recommended to connect the encoder without power supply and to follow the work rules for electrostatic sensitive devices. In wet enviroments with running or splashing water it is recommended not to position the IRC 3x7 encoders with the shaft pointing upwards.

When temperature is less then  $-5^{\circ}C$  cable must be fixed.

## Dimensional drawing IRC307 IRC317



## How to order

The number of pieces must be spefied in the order together with the name and type of sensor, number of impulses per rotation, design of the outlet or custom design and term of delivery. It is also possible to order interconnecting cable, opposite segment of the conector, cable plug and homokinetic connection (see the caloque sheet „Accessories“).

## Example

We would like to order 20 pcs **IRC307/512 KA M**. The encoder IRC307 with 512 impulses per one rotation and with a conector fitted on the axix, frost-proof, with delivery in three weeks time.

## IRC327

