Incremental rotary encoders IRC202 and 205

The incremental rotary encoders IRC with a lamp as the light source in the standard industrial version converts rotary motion to electrical signals by the photoelectronic scanning of rasters onto two glass elements [stator and rotor]. Electrical signals provide information of bilateral position of two mechanical parts, angle turn or rotary motion. Common use of IRC encoders is in connection with display units or numerical control systems on machine tools or robots. They are excellent for application in other equipment where measuring accuracy and reliability are required. Encoder IRC205 is equipped with a circuit to watch the function of the lamp. If the lamp is broken all outputs are set to high impedance (3rd state).

Type identification

IRC 2 x x / xxxx xx x

SUBSTANDARD (example)
- **P** – Pinion ∅ 5 mm sticked to the shaft
- **M** – Frost resistant -40˚ to +60˚C
- **D** – Optical indication of zero impulse by LED (KB, PB)

OUTLET
- **PA** – Cable 1 m axial
- **PB** – Cable 1 m radial
- **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 or eq.
- **KKB** – Cable 1 m with connector CONTACT 20.10.50.AC radial
- **KC** – Connector CANON 9-pin

NUMBER OF IMPULSES PER ROTATION
84, 96, 100, 108, 124, 128, 168, 192, 200, 250, 400, 500, 600, 720, 900, 1000, 1024, 1250, 2048, 2500, 3600, 4096 and 5000 with one zero impulse per rotation.

OUTLETS IDENTIFICATION

	Supply voltage	Outlet
2	+10 ÷ +30 V	OC PNP
5	+ 5 V	line driver

DIAMETER OF SHAFTS
0 – outer ∅ 6 mm

TYPE OF ENCODER
2 – IRC2xx with a miniatur lampe as the light source

Technical data

Rotation	10000 min.$^{-1}$
Angular acceleration	40000 rad.s^{-2}
Moment of inertia of mechanical parts	20 g.cm^{-2} ±10 %
Shaft loads IRC – axial 202 and 205	20 N max.
– radial 202 and 205	50 N max.
Cable lenghts	50 m max.
Type of protection	IP65
Weight max.	0,25 kg

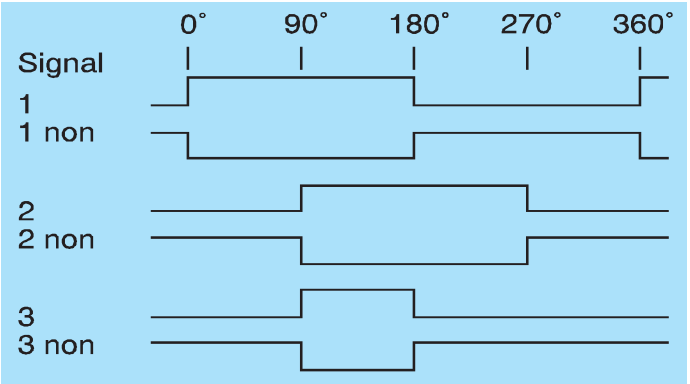
Technical data

Type IRC	Supply voltage	Frequence max.	Supply current	Output signals level	Type of protection	Cable length to subsequent electronics
202	+10 to +30 V Un	100 kHz	max. 200 mA	U_{OH} > -1 V/I_O = 10 mA I_{OL} < 6 µA/U_N = 30 V	IP 65	max. 50 m
205	+5 Vcc± 5%	170 kHz		U_{OH} > 2,5 V (-20 mA) U_{OL} < 0,4 V (20 mA)		

(IRC205 -line transmiter AM26LS31 and recommended receiver AM26LS32)

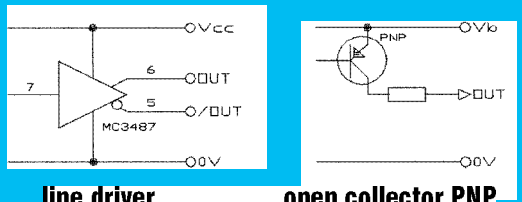
Output signals

IRC202 – 2 basic signals (1,2) turned by 90˚ el. and 1 zero impulse (3).
IRC205 – 2 basic signals (1,2) turned by 90˚ el., 1 zero impulse (3) and their negation.



For frequecies higher than 100kHz zero pulse is not quaranteed.

Scheme of output circuit (for one signall)



line driver **open collector PNP**

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Description of connection elements IRC202 – 205

Pin Connector	Colour of outlet cable	Significance IRC202	IRC205
1	Grey	NC	Signal 2 non
2	Rose	NC	Sensor +5 V
3	Blue	Signal 3	
4	Violet	NC	Signal 3 non
5	Yellow	Signal 1	
6	White	NC	Signal 1 non
7	—	NC	
8	Green	Signal 2	
9	Shield	Shield	
10	Black	GND	
11	Brown	NC	Sensor 0 V
12	Red	U_n +10 to +30 V	V_{cc} +5V

Note: Function Sensor is used with a supply resource enabling balancing the decrease of voltage on the cable as the feedback. If Sensor function is not used we recommend to connect PIN 2 to PIN 12 and PIN 10 to PIN 11 (IRC205).

Pin Connector	Significance IRC202	IRC205
1	Signal 1	
2	NC	Signal 1 non
3	Signal 2	
4	NC	Signal 2 non
5	U_n +10 to +30 V	V_{cc} +5 V
6	Signal 3	
7	NC	Signal 3 non
8	GND	
9	Shield	

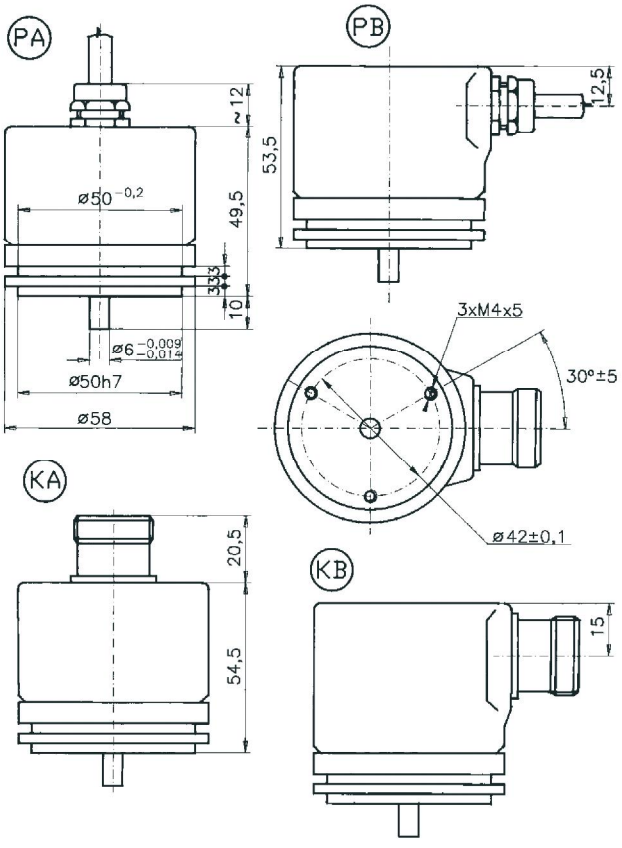
Assembly

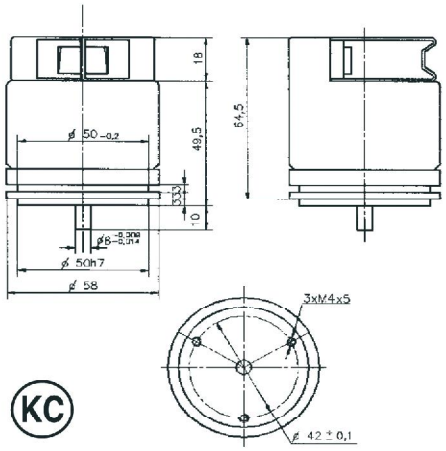
Encoders are fixed into the equipment by 3 screws M4. Position of the shaft is determined by fitted diameter 50h7. The connection has to be constructed so as to avoid exceeding the maximum radial or axial shaft load permited. It is necessary to keep alignment connection. It is recommended to use suitable homokinetic diaphragm couplings [see Accessories catalogue list].

Considering that sensitive electrostatic parts have been used we recommend to connect the encoders without a power supply and to strictly follow the rules for work with electrostatic sensitive equipment.

Change of technical parameters reserved

Dimensioned drawing IRC202 and 205





How to order?

Please indicate encoder type, number of impulses per rotation, outlet, number of pieces, delivery term and other non-standard features.

Example

10 pcs IRC 205/1250KB. Delivery term – four weeks Connecting cable and homokinetic diaphragm couplings can be ordered as well [see Accessories catalogue list].