



## EL - EF 49 C / P

### THROUGH HOLLOW SHAFT INCREMENTAL ENCODER

#### MAIN FEATURES

∅ 49 mm encoder recommended in feedback control systems on AC servomotors, interchangeable with size 19 Resolver.

- Easy mechanical mounting
- Small dimensions
- Wide range of resolutions available
- High temperature resistance

#### EL series

Basic version with 3 channels incremental outputs. Several output types available

#### EF series

6 channels encoder with optical generation of "Hall effect phases" (commutation signals)  
Signal transmission by bit parallel bus



#### ORDERING CODE

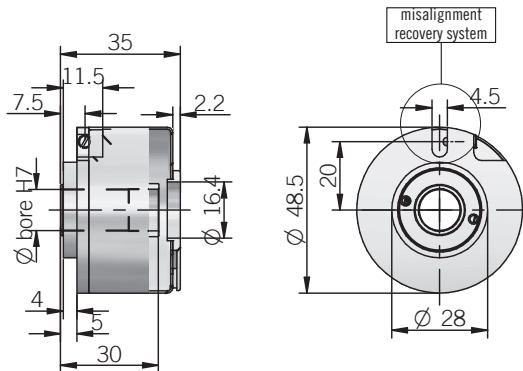
ORDERING CODE	EF	49C	6	L	500	S	5	L	8	X	6	PR	.XXX
<b>SERIES</b>													
incremental encoder	EL												
incremental encoder with Hall phases	EF												
<b>MODEL</b>													
blind hollow shaft		49C											
through hollow shaft		49P											
<b>EF MOTOR POLES</b>													
4 poles			4										
6 poles			6										
8 poles			8										
<b>EF ELECTRONIC INTERFACE FOR COMMUTATION SIGNALS</b>													
NPN open collector						C							
line driver RS-422						L							
<b>RESOLUTION</b>													
ppr from						100							
to						2048							
see table for pulses availability													
<b>ZERO PULSE</b>													
without zero pulse						S							
with zero pulse						Z							
<b>POWER SUPPLY</b>													
5 V DC						5							
(mod. EL) 8 ... 24 V DC						8/24							
<b>ELECTRONIC INTERFACE</b>													
(mod. EL) NPN						N							
(mod. EL) NPN open collector						C							
(mod. EL) push-pull						P							
line driver						L							
<b>BORE DIAMETER</b>													
mm			6										
mm			8										
9,52 mm (3/8")			9										
mm			10										
mm			12										
12,7 mm (1/2")			12.7										
<b>ENCLOSURE RATING</b>													
IP 40						X							
<b>MAX ROTATION SPEED</b>													
6000 rpm						6							
<b>OUTPUT TYPE</b>													
radial cable (standard length 0,3 m)						PR							
<b>VARIANT</b>													
custom version						XXX							



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## OPTICAL HOLLOW SHAFT INCREMENTAL ENCODERS | EL - EF 49 C / P

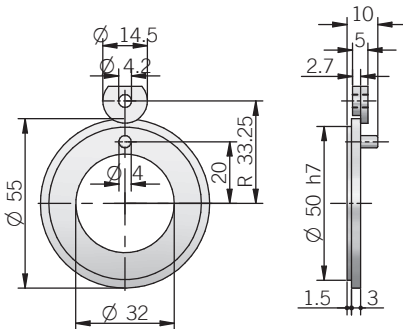
## EL - EF 49 C / P



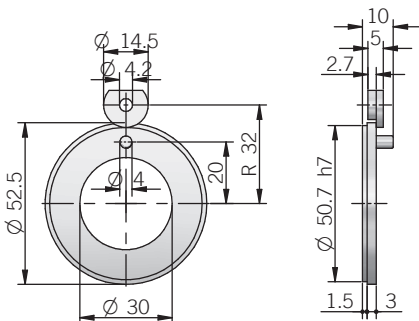
dimensions in mm

## ACCESSORIES

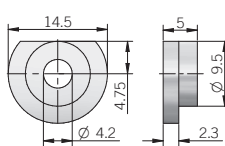
Size 19 resolver flange (01 version) ordering code: **FLG000** (P/N 94010087)



Size 19 resolver flange (14 version) ordering code: **FLG001** (P/N 94010065)



Set n.3 fixing clamps (P/N 94080001)



for mounting instruction please refer to product installation notes

## RESOLUTIONS

100 4 / 6 poles - 200 4 / 6 poles - 500 4 / 6 / 8 poles - 512 4 / 6 / 8 poles  
1000 4 / 6 / 8 poles - 1024 4 / 6 / 8 poles - 2000 4 / 6 / 8 poles  
2048 4 / 6 / 8 poles

please directly contact our offices for other pulses

## ELECTRICAL SPECIFICATIONS

<b>Resolution</b>	from 100 to 2048 ppr (see table)
<b>Max load current</b>	N / C / P = 30 mA / channel L = 20 mA / channel
<b>Max output frequency</b>	150 kHz
<b>Counting direction</b>	A leads B clockwise (shaft view)
<b>Electromagnetic compatibility</b>	IEC 61000-6-1 IEC 61000-6-3

## ELECTRICAL SPECIFICATIONS EL SERIES

<b>Power supply</b>	5 = 4,5 ... 5,5 V DC 8/24 = 7,6 ... 25,2 V DC
<b>Current consumption without load</b>	100 mA max
<b>Output type</b>	NPN / NPN open collector / push-pull / line driver

\*output levels according to power supply, for further details please see under Technical basics section

## ELECTRICAL SPECIFICATIONS EF SERIES

<b>Power supply</b>	5 = 4,5 ... 5,5 V DC
<b>Current consumption without load</b>	150 mA max
<b>Output type for incremental signals</b>	line driver RS-422
<b>Output type for Hall phases</b>	NPN open collector (max pullup +30V DC) line driver RS-422

## MECHANICAL SPECIFICATIONS

<b>Bore diameter</b>	ø 6 / 8 / 9,52 / 10 / 12 / 12,7 mm
<b>Enclosure rating</b>	IP 40 (IEC 60529)
<b>Max rotation speed</b>	6000 rpm
<b>Shock</b>	50 G, 11 ms (IEC 60068-2-27)
<b>Vibration</b>	5 G, 10 ... 500 Hz (IEC 60068-2-6)
<b>Moment of inertia</b>	$2 \times 10^{-6} \text{ kgm}^2$
<b>Starting torque (at +20°C / +68°F)</b>	< 0,01 Nm
<b>Body material</b>	EN-AW 2011 aluminum
<b>Shaft material</b>	1.4305 / AISI 303 stainless steel
<b>Housing material</b>	nickel plated brass
<b>Bearings</b>	2 ball bearings
<b>Bearings life</b>	$10^9$ revolutions
<b>Operating temperature</b>	-20° ... +85 °C (-4° ... +185°F) -10° ... +100°C (+14° ... +212°F) on demand
<b>Storage temperature</b>	-25° ... +85°C (-13° ... +185°F)
<b>Weight</b>	150 g (5,29 oz)

## CONNECTIONS

Function	EL cable output	EL cable output	EF cable output
	N / C / P	Line driver	
+V DC	red	red	red
0 V	black	black	black
Ch. A	green	green	green
Ch. B	yellow	yellow	yellow
Ch. Z	blue	blue	blue
Ch. A-	/	brown	brown
Ch. B-	/	orange	orange or pink
Ch. Z-	/	white	white
Ch. U	/	/	grey
Ch. V	/	/	violet
Ch. W	/	/	grey-pink
Ch. U-	/	/	red-blue
Ch. V-	/	/	white-green
Ch. W-	/	/	brown-green
⊥	shield	shield	shield



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