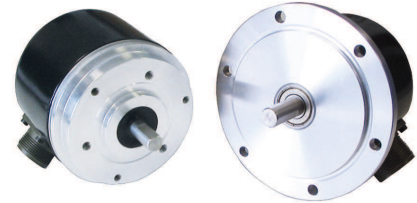


### MAIN FEATURES

Encoder series for harsh environments with high mechanical resistance requirements.  
 Model 90 can be mounted by flanges or fixing clamps; model 115 has a tachometer generator REO-444 type compatible plug.

- 3 channel encoder (A / B / Z) up to 10000 ppr
- Power supply up to +28 V DC with several electrical interfaces available
- Up to 500 kHz output frequency
- Cable or connector output
- Metal cover for heavy duty applications
- Solid shaft diameter up to 11 mm
- Mounting by synchronous or REO-444 flange



### ORDERING CODE

ER 90A 500 S 5/28 P 8 X 6 P R .XXX

**SERIES**  
 incremental encoder series **EL**  
 incremental encoder series **ER**

**MODEL**  
 synchronous flange ø 40 mm **90A**  
 flange REO-444 **115A**

**RESOLUTION**  
 ppr from **1** to **10000**  
 see table for pulses availability

**ZERO PULSE**  
 without zero pulse **S**  
 with zero pulse **Z**

**POWER SUPPLY**  
 (with L electrical interface) 5 V DC **5**  
 5 ... 28 V DC **5/28**

**ELECTRICAL INTERFACE**  
 NPN open collector **C**  
 push-pull **P**  
 line driver **L**  
 power supply 5/28V - output RS-422 **RS**

**SHAFT DIAMETER**  
 (mod. 90) mm **8**  
 (mod. 90) (3/8") 9,52 mm **9**  
 mm **10**  
 (mod. 115) mm **11**

**ENCLOSURE RATING**  
 IP 54 **X**  
 (mod. 90) IP 66 **S**

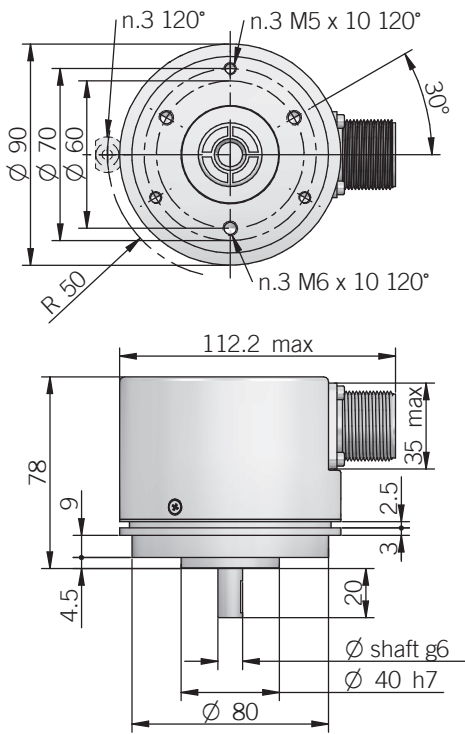
**MAX ROTATION SPEED**  
 (IP 66) 3000 rpm **3**  
 (IP 54) 6000 rpm **6**

**OUTPUT TYPE**  
 cable (standard length 1.5 m) **P**  
 preferred cable lengths 2 / 3 / 5 / 10 m, to be added after DIRECTION TYPE (eg. PR5)  
 MIL connector **M**  
 JIS-C-5432 connector **J**  
 female connector included, without female please add 162 as variant code

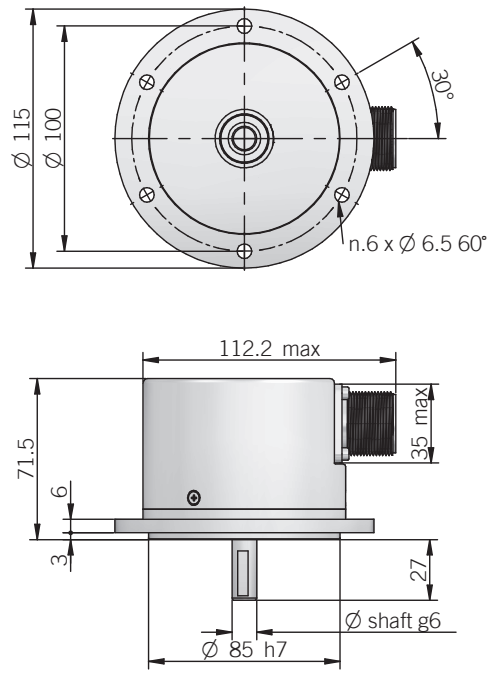
**DIRECTION TYPE**  
 axial **A**  
 radial **R**

**VARIANT**  
 custom version **XXX**

90 A

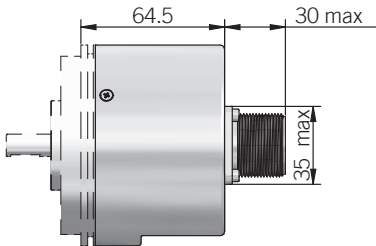


115 A

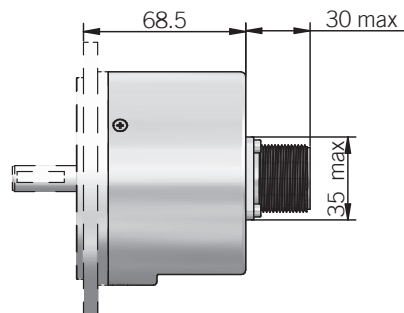


fixing clamps not included, please refer to Accessories section

90 A axial output



115 A axial output



dimensions in mm

**ELECTRICAL SPECIFICATIONS**

<b>Resolution</b>	from 1 to 10000 ppr
<b>Power supply</b>	5 = 4,5 ... 5,5 V DC 5/28 = 4,5 ... 30 V DC (reverse polarity protection)
<b>Power draw without load</b>	800 mW
<b>Max load current</b>	C / P = 50 mA / channel L / RS = 20 mA / channel
<b>Output type*</b>	NPN open collector (AEIC-7273, pull-up max +30 V DC) push-pull / line driver HTL (AEIC-7272) line driver RS-422 (AELT-5000 or equivalent)
<b>Max output frequency</b>	250 kHz up to 6000 ppr 500 kHz from 7200 ppr
<b>Counting direction</b>	A leads B clockwise (shaft view)
<b>Electromagnetic compatibility</b>	according to 2014/30/EU directive
<b>RoHS</b>	according to 2011/65/EU directive
<b>UL / CSA</b>	certificate n. E212495

\* for further details please see OUTPUT LEVELS under TECHNICAL BASICS section

**EL SERIES RESOLUTIONS**

1 - 2 - 4 - 5 - 10 - 15 - 16 - 20 - 25 - 30 - 32 - 40 - 50 - 60 - 70 - 80 - 90 - 160 - 180 - 350 - 450 - 660 - 700 - 750 - 1500

**ER SERIES RESOLUTIONS**

100 - 120 - 128 - 150 - 200 - 240 - 250 - 256 - 300 - **360** - 400 - 480 - **500** - **512** - 600 - 625 - **720** - 800 - 900 - **1000** - **1024** - 1200 - 1250 - 1440 - 1600 - 1800 - 2000 - **2048** - **2500** - 3000 - **3600** - 4000 - 4096 - **5000** - 6000 - **7200** - 8000 - 8192 - 9000 - **10000**

please directly contact our offices for other pulses, preferred resolutions in bold

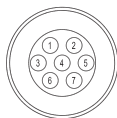
**MECHANICAL SPECIFICATIONS**

<b>Shaft diameter</b>	ø 8 / 9,52 (3/8") / 10 / 11 mm
<b>Enclosure rating</b>	X = IP 54 (IEC 60529) S = IP 66 (IEC 60529)
<b>Max rotation speed</b>	IP 54 - 6000 rpm IP 66 - EL 3000 rpm / 60° C ER 3000 rpm / 70° C - 2000 rpm / 85° C
<b>Max shaft load</b>	200 N axial / radial
<b>Shock</b>	50 G, 11 ms (IEC 60068-2-27)
<b>Vibration</b>	10 G, 10 ... 2000 Hz (IEC 60068-2-6)
<b>Moment of inertia</b>	3,5 x 10 <sup>-6</sup> kgm <sup>2</sup> (83 x 10 <sup>-6</sup> lbf <sup>2</sup> )
<b>Starting torque (at +20°C / +68°F)</b>	< 0,02 Nm (2,83 Ozin) IP 54 < 0,06 Nm (8,50 Ozin) IP 66
<b>Bearing stage material</b>	EN-AW 2011 aluminum
<b>Shaft material</b>	1.4305 / AISI 303 stainless steel
<b>Housing material</b>	PA66 glass fiber reinforced / painted aluminum
<b>Bearings</b>	2 ball bearings
<b>Bearings life</b>	10 <sup>9</sup> revolutions
<b>Operating temperature</b>	-10° ... +60°C (+14° ... +140°F) EL series -25° ... +85°C (-13° ... +185°F) ER series
<b>Storage temperature</b>	-25° ... +70°C (-13° ... +158°F)
<b>Weight</b>	350 g (12,35 oz) 450 g (15,87 oz) with metal cover

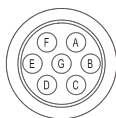
**CONNECTIONS**

Function	Cable C / P	Cable L / RS	7 pin J C / P	7 pin J L / RS no Zero	7 pin M C / P	7 pin M L / RS no Zero	10 pin J L / RS with Zero	10 pin M L / RS with Zero
+V DC	red	red	6	4	F	D	4 - 5	D - E
0 V	black	black	1	6	A	F	6	F
Ch. A	green	green	3	1	C	A	1	A
Ch. A-	/	brown	/	3	/	C	7	G
Ch. B	yellow	yellow	5	2	E	B	2	B
Ch. B-	/	orange	/	5	/	E	8	H
Ch. Z	blue	blue	4	/	D	/	3	C
Ch. Z-	/	white	/	/	/	/	9	I
≡	shield	shield	7	7	G	G	10	J

J connector (7 pin)  
JIS-C-5432 Size 16  
solder side view FV



M connector (7 pin)  
Amphenol MS3102-E-16-S  
solder side view FV



J connector (10 pin)  
JIS-C-5432 Size 16  
solder side view FV



M connector (10 pin)  
Amphenol MS3102-E-18-1  
solder side view FV

