

**MAIN FEATURES**

Standard encoder series for industrial environments with high mechanical resistance requirements. Specifically designed for direct mounting on motors or tachometric dynamos thanks to integrated elastic coupling which allows radial and / or axial motor shaft play.

- 3 channel encoder (A / B / Z) up to 24000 ppr
- Power supply up to +28 V DC with several electrical interfaces available
- Up to 500 kHz output frequency
- Cable or connector output
- Available with metal cover for heavy duty applications
- Integrated elastic couplig up to 10 mm bore diameter



**ORDERING CODE**      **ER**   **721**   **A**   **M\***   **500**   **S**   **5/28**   **P**   **8**   **X**   **6**   **M**   **R**   **.162**   **+XXX**

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

**MODEL**  
 fixing holes ø 63,5 mm **721**  
 fixing holes ø 65 mm **722**  
 fixing holes ø 57 mm **723**  
 fixing holes ø 60 mm **724**

**FLANGE TYPE**  
 flange type **A**  
 flange type **B**

**METAL COVER**  
 \* add for metal cover **M**

**RESOLUTION**  
 ppr from **1** to **24000**  
 refer to the available pulses list

**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**

**BORE DIAMETER**  
 mm **6**  
 mm **8**  
 mm **10**

**ENCLOSURE RATING**  
 IP 54 **X**  
 (mod. EL721 / EL722) IP 66 **S**

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

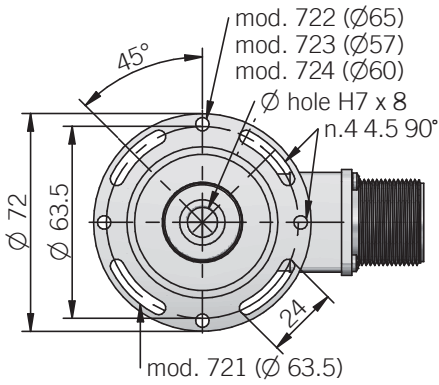
**OUTPUT TYPE**  
 cable (standard length 1,5 m) **P**  
 preferred cable lengths 2 / 3 / 5 / 10 m, to be added after DIRECTION TYPE (eg. PR5)  
 MIL male connector **M**  
 JIS-C-5432 male connector **J**  
 M12 male connector **M12**  
 M23 male connector **H**  
 M16 male connector **C**

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

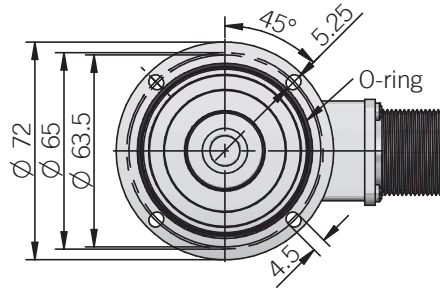
**MATING CONNECTOR**  
 mating connector not included **.162**  
 to be reported only with connector output (eg. MR.162), for mating connector see Accessories

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

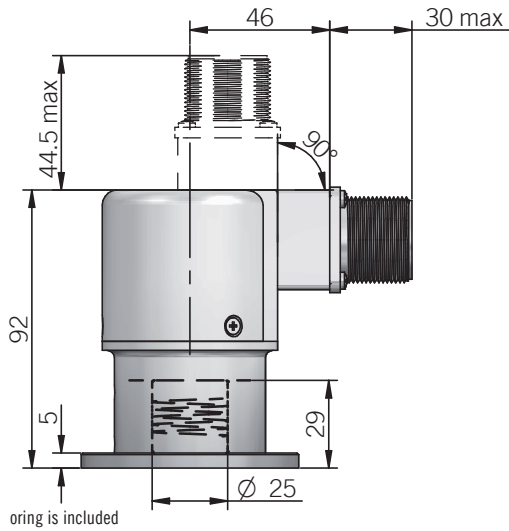
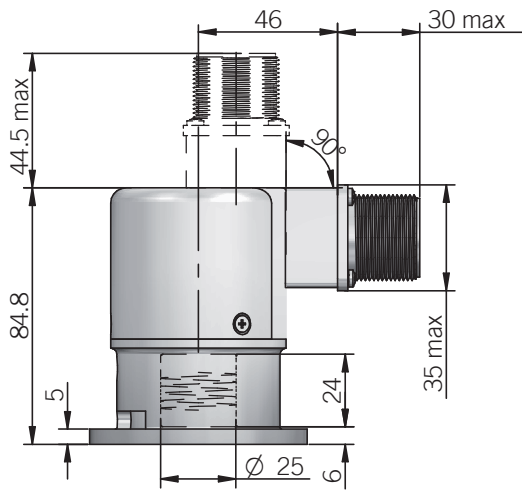
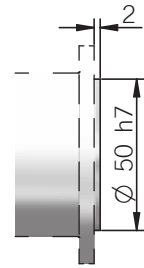
721 A



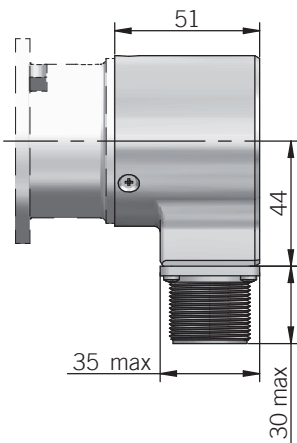
721 A IP 66



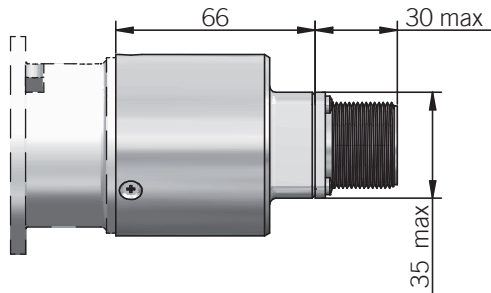
72 B flange version



Dimensions with metal cover radial output



Dimensions with metal cover axial output



recommended mating shaft tolerance g6  
dimensions in mm

ELECTRICAL SPECIFICATIONS	
<b>Resolution</b>	from 1 to 24000 ppr
<b>Power supply<sup>1</sup></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 max
<b>Max load current</b>	C / P = 50 mA / channel L / RS = 20 mA / channel
<b>Electrical interface<sup>2</sup></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 similar)
<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

EL SERIES RESOLUTIONS	
1 - 2 - 4 - 5 - 10 - 15 - 16 - 20 - 25 - 30 - 32 - 40 - 50 - 60 - 70 - 80 - 90 - 100* - 160 - 180 - 240* - 250* - 350 - 450 - 500* - 660 - 700 - 750 - 900* - 1000* - 1024* - 1250* - 1300* - 1500 - 1800* - 2000* - 2048* - 2500*	

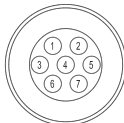
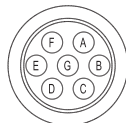
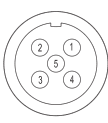
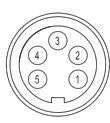

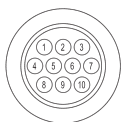
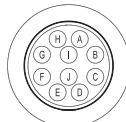
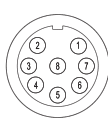

\* only with model EL721 / EL722 with "S" enclosure rating

ER SERIES RESOLUTIONS	
100 - 120 - 128 - 150 - 200 - 240 - 250 - 256 - 300 - <b>360</b> - 400 - 480 - <b>500</b> - <b>512</b> - <b>600</b> - 625 - <b>720</b> - 800 - 900 - <b>1000</b> - <b>1024</b> - 1200 - 1250 - 1440 - 1600 - 1800 - <b>2000</b> - <b>2048</b> - <b>2500</b> - 3000 - <b>3600</b> - 4000 - 4096 - <b>5000</b> - 6000 - <b>7200</b> - 8000 - 8192 - 9000 - <b>10000</b> - 10240 - 12000 - <b>14400</b> - 16000 - 16384 - 18000 - <b>20000</b> - 20480 - 24000	

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

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	5 pin M12 C / P	8 pin M12 L / RS	12 pin H	5 pin C C / P	8 pin C L / RS
+V DC	red	red	6	4	F	D	4 - 5	D - E	2	7	12	5	7
0 V	black	black	1	6	A	F	6	F	4	1	10	1	8
A+	green	green	3	1	C	A	1	A	3	6	5	2	1
A-	/	brown or grey	/	3	/	C	7	G	/	5	6	/	2
B+	yellow	yellow	5	2	E	B	2	B	1	4	8	4	3
B-	/	orange	/	5	/	E	8	H	/	3	1	/	4
Z+	blue	blue	4	/	D	/	3	C	5	2	3	3	5
Z-	/	white	/	/	/	/	9	I	/	8	4	/	6
≡	shield	shield	7	7	G	G	10	J	housing	housing	9	/	/

<p>J connector (7 pin) JIS-C-5432 Size 16 solder side view FV</p> 	<p>M connector (7 pin) Amphenol MS3102-E-16-S solder side view FV</p> 	<p>M12 connector (5 pin) M12 A coded solder side view FV</p> 	<p>C connector (5 pin) circular M16 solder side view FV</p> 	<p>H connector (12 pin) - M23 CCW Hummel 7.410.000000 - 7.002.912.603 solder side view FV</p> 
<p>J connector (10 pin) JIS-C-5432 Size 16 solder side view FV</p> 	<p>M connector (10 pin) Amphenol MS3102-E-18-1 solder side view FV</p> 	<p>M12 connector (8 pin) M12 A coded solder side view FV</p> 	<p>C connector (8 pin) IEC 60130-9 solder side view FV</p> 	

MECHANICAL SPECIFICATIONS	
<b>Bore diameter</b>	∅ 6 / 8 / 10 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>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 < 0,04 Nm (5,66 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>	n.2 ball bearings
<b>Bearings life</b>	10 <sup>9</sup> revolutions
<b>Operating temperature<sup>3,4</sup></b>	-10° ... +60°C (+14° ... +140°F) EL series -25° ... +85°C (-13° ... +185°F) ER series
<b>Storage temperature<sup>4</sup></b>	-25° ... +70°C (-13° ... +158°F)
<b>Weight</b>	400 g (14,11 oz)

<sup>1</sup> as measured at the transducer without cable influences

<sup>2</sup> for further details refer to OUTPUT LEVELS on TECHNICAL BASICS section

<sup>3</sup> measured on the transducer flange

<sup>4</sup> condensation not allowed