

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 5/28 V DC - 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**

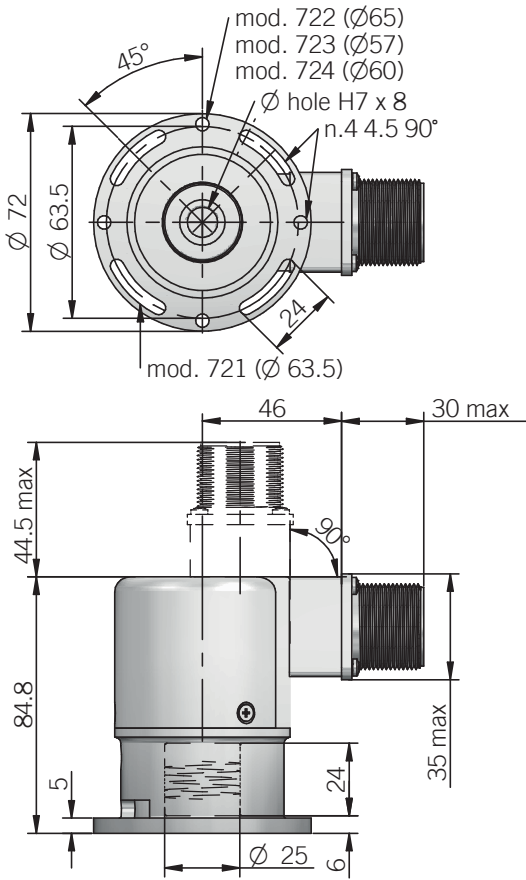
OUTPUT TYPE
 cable (standard length 1,5 m) **P**
 preferred cable lengths 2 / 3 / 5 / 10 m, to be added after DIRECTION TYPE (eg. PR5)
 MIL plug connector **M**
 JIS-C-5432 plug connector **J**
 M12 plug connector **M12**
 M23 plug connector **H**
 M16 plug connector **C**

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

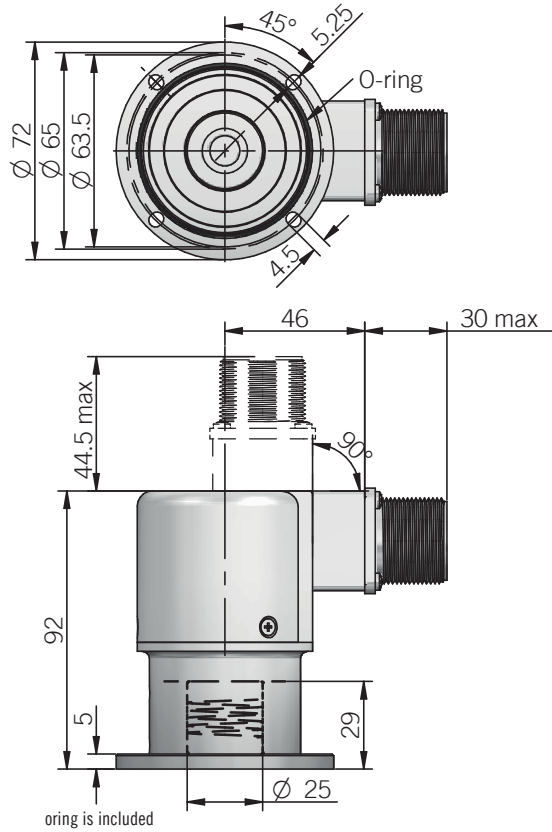
SOCKET
 socket not included **.162**
 to be reported only with connector output (eg. MR.162), for socket see Accessories

VARIANT
 custom version **XXX**

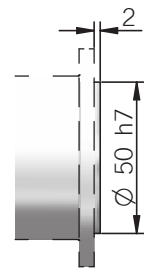
721A



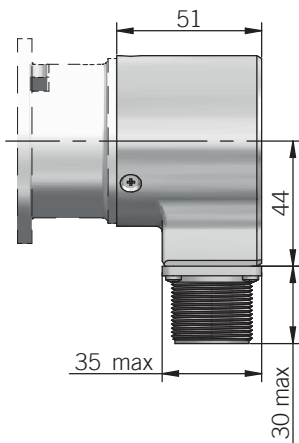
721A (S ENCLOSURE RATING)



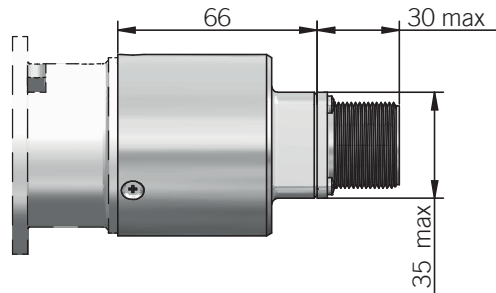
72B FLANGE



DIMENSIONS WITH METAL COVER AND RADIAL OUTPUT



DIMENSIONS WITH METAL COVER AND AXIAL OUTPUT



recommended mating shaft tolerance g6
dimensions in mm

ELECTRICAL SPECIFICATIONS	
Resolution	from 1 to 10000 ppr
Power supply¹	5 = 4,5 ... 5,5 V DC 5/28 = 4,5 ... 30 V DC (reverse polarity protection)
Power draw without load	800 mW
Max load current	C / P = 50 mA / channel L / RS = 20 mA / channel
Electrical interface²	NPN open collector (AEIC-7273, pull-up max +30 V DC) push-pull / line driver HTL (AEIC-7272 or similar) line driver RS-422 (AELT-5000 or similar)
Max output frequency	250 kHz up to 6000 ppr / 500 kHz from 7200 ppr
Counting direction	A leads B clockwise (shaft view)
Index signal	180°e (gated A)
Mean time to dangerous failure (MTTF)³ according to EN ISO 13849-1	200 years EL series 263 years ER series
Mission time (Tm)³	20 years
Diagnostic coverage (DC)³	0%
Cable type	shielded - fixed installation conductors section 0,22 mm ² / AWG 24 bending radius min 60 mm
Electromagnetic compatibility	according to 2014/30/EU directive
RoHS	according to 2011/65/EU directive
UL / CSA	file n. E212495

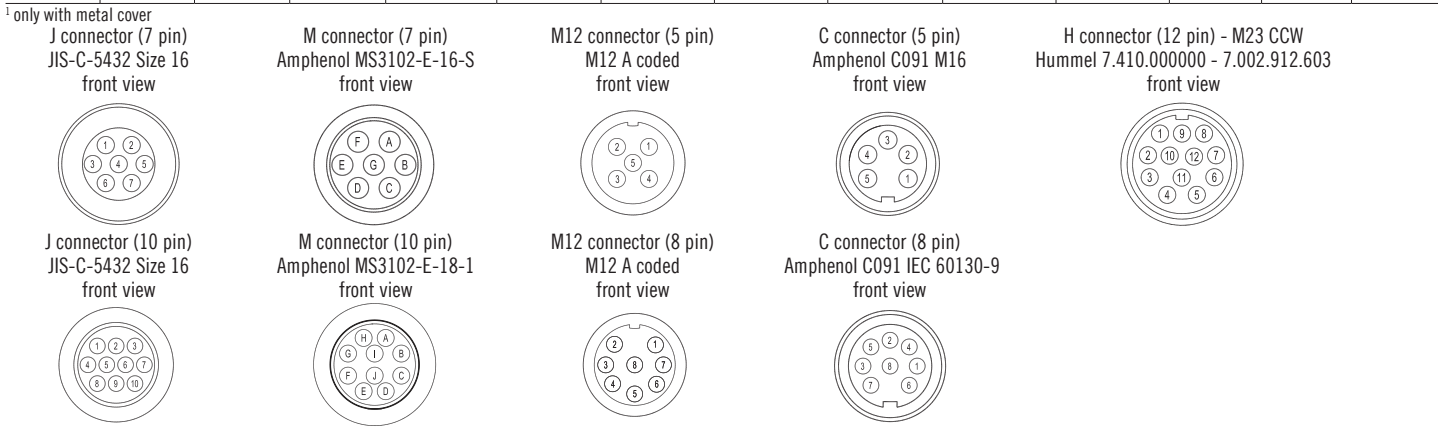
¹ as measured at the transducer without cable influences
² for further details refer to OUTPUT LEVELS on TECHNICAL BASICS section
³ this product is not a safety component, for further details refer to TECHNICAL BASICS section
⁴ measured on the transducer flange
⁵ condensation not allowed

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

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 ¹	housing ¹	9	housing ¹	housing ¹



MECHANICAL SPECIFICATIONS	
Bore diameter	ø 6 / 8 / 10 mm
Enclosure rating IEC 60529	X = IP 54 S = IP 66
Max rotation speed	6000 rpm with X enclosure rating EL 3000 rpm / 60° C with S enclosure rating ER 3000 rpm / 70° C with S enclosure rating ER 2000 rpm / 85° C with S enclosure rating
Shock	50 G, 11 ms (IEC 60068-2-27)
Vibration	10 G, 10 ... 2000 Hz (IEC 60068-2-6)
Moment of inertia	3,5 x 10 ⁻⁶ kgm ² (83 x 10 ⁻⁶ lbf ²)
Starting torque (at +20°C / +68°F)	< 0,02 Nm (2,83 Ozin) with X enclosure rating < 0,04 Nm (5,66 Ozin) with S enclosure rating
Bearing stage material	aluminum
Shaft material	stainless steel
Housing material	PA66 glass fiber reinforced / painted aluminum
Elastic coupling material	aluminum
Bearings	n.2 ball bearings
Bearings life	10 ⁹ revolutions
Operating temperature^{4,5}	-10° ... +60°C (+14° ... +140°F) EL series -25° ... +85°C (-13° ... +185°F) ER series
Storage temperature⁵	-25° ... +70°C (-13° ... +158°F)
Weight	400 g (14,11 oz) 500 g (17,64 oz) with metal cover

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 - 10240 - 12000 - 14400 - 16000 - 16384 - 18000 - 20000 - 20480 - 24000

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