

EL - ER 30 E / H SOLID SHAFT INCREMENTAL ENCODER

MAIN FEATURES

Miniaturized Ø 30 mm encoder series for application in small devices. Recommended when a minimal size is required even providing excellent performances.

- 3 channel encoder (A / B / Z) up to 2500 ppr
- Power supply up to +28 V DC with several electrical interfaces available
- Up to 220 kHz output frequency
- Cable output, connectors available on cable end
- Solid shaft diameter up to 6 mm
- Mounting by clamping or threaded flange



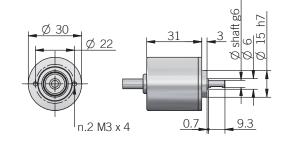






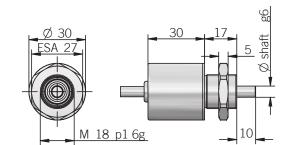
ORDERING CODE	EL	30E	50	S	5/28	C	4	X	3	PA	. XXX
	SERIES incremental encoder series EL incremental encoder series ER										
	clamping flange ø 15 M18 threaded fla	MODEL i mm 30E ange 30H									
		RES ppr from e available									
		V	vithout zer	ro pulse S ro pulse Z							
		(wit	h L electrica	al interface) 5 28 V	DC 5/28						
						ollector C sh-pull P					
			power sup	ply 5/28V -		SHAFT D	IAMETER				
							E) mm 4 mm 6	E RATING IP 54 X			
							MA	X ROTATIO	00 rpm 3		
			proformed	aabla langth	015/2/2	/5/10	radial c	able (stand	OUTP dard length dard length UT TYPE (eg	0,5 m) PR	
			preserred (avie ieligili	5 1,5 / 2 / 3	/ 5 / 10 111,	to he added	ailei UUIP	UI IIPE (eg		VARIANT

30 E (axial output)



recommended mating shaft tolerance H7 dimensions in mm

30 H (axial output)



Resolutionfrom 1 to 2500 pprPower supply1 $5 = 4,5 \dots 5,5 \text{ V DC}$ $5/28 = 4,5 \dots 30 \text{ V DC}$ (reverse polarity protection)
3/20 = 4,5 30 ¥ DO (leverse polarity protection)
Power draw without load 800 mW max
$ \begin{array}{c c} \textbf{Max load current} & \textbf{C} \ / \ \textbf{P} \ = 50 \ \text{mA} \ / \ \text{channel} \\ \textbf{L} \ / \ \textbf{RS} \ = 20 \ \text{mA} \ / \ \text{channel} \\ \end{array} $
Electrical interface ² 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)
Max output frequency 100 kHz EL series 220 kHz ER series
Counting direction A leads B clockwise (shaft view)
Electromagnetic compatibility according to 2014/30/EU directive
RoHS according to 2011/65/EU (01/09/2020) directive
UL / CSA certificate n. E212495

CONNECTIONS		
Function	Cable C / P	Cable L / RS
+V DC	red	red
0 V	black	black
A+	green	green
A-	/	brown or grey
B+	yellow	yellow
B-	/	orange
Z+	blue	blue
Z-	/	white
후	shield	shield

MECHANICAL SPECIFICATIONS					
Shaft diameter	ø 4 / 6 mm				
Enclosure rating	IP 54 (IEC 60529)				
Max rotation speed	3000 rpm				
Max shaft load ³	5 N axial / radial				
Shock	50 G, 11 ms (IEC 60068-2-27)				
Vibration	10 G, 10 2000 Hz (IEC 60068-2-6)				
Moment of inertia	0,05 x 10 ⁻⁶ kgm ² (1,2 x 10 ⁻⁶ lbft ²)				
Starting torque (at +20°C / +68°F)	< 0,005 Nm (0,71 Ozin)				
Bearing stage material	EN-AW 2011 aluminum				
Shaft material	1.4305 / AISI 303 stainless steel				
Housing material	PA66 glass fiber reinforced				
Bearings	n.2 ball bearings				
Bearings life	10° revolutions				
Operating temperature ^{4,5}	-10° +60°C (+14° +140°F) EL series -25° +85°C (-13° +185°F) ER series				
Storage temperature ⁵	-25° +85°C (-13° +185°F)				
Weight	70 g (2,47 oz)				

¹ as measured at the transducer without cable influences

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EL SERIES RESOLUTIONS

1 - 10 - 20 - 25 - 50 - 60 - 64 - 150

ER SERIES RESOLUTIONS

100 - 128 - **200** - 250 - 256 - **300** - 360 - **400** - **500** - **512** - **600** - 625 - **720** - 800 - **1000** - **1024** - **1200** - 1250 - **1440** - 1600 - **2000** - **2048** - 2500

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









² for further details refer to OUTPUT LEVELS on TECHNICAL BASICS section

³ maximum load for static usage

⁴ measured on the transducer flange

⁵ condensation not allowed



EH 38 A / B / D SOLID SHAFT INCREMENTAL ENCODER

MAIN FEATURES

Miniaturized ø 38 mm encoder series for application in small devices. Recommended when a minimal size is required even providing excellent performances.

- · 3 channel encoder (A / B / Z) up to 1024 ppr
- Power supply up to +30 V DC with several electrical interfaces available
- Up to 105 kHz output frequency
- Cable output, connectors available on cable end
- Solid shaft diameter up to 6 mm
- Mounting by clamping or centering square flange







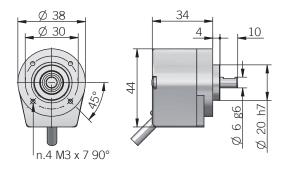




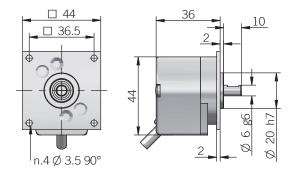
ORDERING CODE	EH	38A	500	S	5/28	P	6	Х	3	PR	. XXX
incremental encoder s		MODEL									
clamping fl square flan; square fla	ange ø 20 m	nm 38A nm 38B									
	ppi refer to the a	r from 50	OLUTION to 1024 pulses list								
			ZER ithout zer	O PULSE o pulse S o pulse Z							
			WICH ZO	POWER	R SUPPLY 5 V DC 5 / DC 5/28						
				ELEC	TRICAL IN PN open c						
		ţ	oower sup	ply 5/28V -	lin	e driver L S-422 RS	IAMETER				
							IAMETER mm 6	RATING			
							MA	IP 54 X X Rotatio 300	N SPEED 00 rpm 3		
			nrafarrad o	ahla lanath	c 1 5 / 2 / 2	/5/10 m	radial ca to be added	able (stand	OUTP ard length 0		

VARIANT custom version XXX

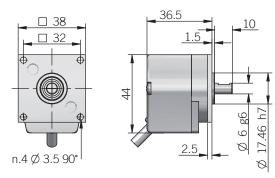
38 A



38 B



38 D



recommended mating shaft tolerance H7 dimensions in mm

RESOLUTIONS

50* - **100** - **200** - 250 - 256 - 360 - 400 - **500** - **512** - **1000** - 1024

please directly contact our offices for other pulses, preferred resolutions in bold *available only without zero pulse

ELECTRICAL SPECIFICATIONS					
Resolution	from 50 to 1024 ppr				
Power supply ¹	$5 = 4.5 \dots 5.5 \text{ V DC}$ $5/28 = 4.5 \dots 30 \text{ V DC}$ (reverse polarity protection)				
Current consumption without load	100 mA max				
Max load current	C / P = 50 mA / channel L = 20 mA / channel				
Electrical interface ²	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)				
Max output frequency	105 kHz				
Counting direction	A leads B clockwise (shaft view)				
Electromagnetic compatibility	according to 2014/30/EU directive				
RoHS	according to 2011/65/EU (01/09/2020) directive				
UL / CSA	certificate n. E212495				

MECHANICAL SPECIFICA	ATIONS
Shaft diameter	ø 6 mm
Enclosure rating	IP 54 (IEC 60529)
Max rotation speed	3000 rpm
Max shaft load ³	5 N axial / radial
Shock	50 G, 11 ms (IEC 60068-2-27)
Vibration	10 G, 10 2000 Hz (IEC 60068-2-6)
Moment of inertia	0,05 x 10 ⁻⁶ kgm ² (1,2 x 10 ⁻⁶ lbft ²)
Starting torque (at +20°C / +68°F)	< 0,01 Nm (1,42 Ozin)
Bearing stage material	aluminum UNI 5076
Shaft material	1.4305 / AISI 303 stainless steel
Housing material	PA66 glass fiber reinforced
Bearings	n.2 ball bearings
Bearings life	10° revolutions
Operating temperature ^{4,5}	-20° +70°C (-4° +158°F)
Storage temperature ⁵	-20° +70°C (-4° +158°F)
Weight	150 g (5,29 oz)

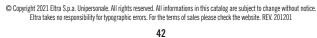
¹ as measured at the transducer without cable influences

CONNECTIONS

Cable C / P red black	Cable L red black
black	black
green	green
/	brown or grey
yellow	yellow
/	orange
blue	blue
/	white
shield	shield
	green / yellow / blue /















² for further details refer to OUTPUT LEVELS on TECHNICAL BASICS section

³ maximum load for static usage

⁴ measured on the transducer flange

⁵ condensation not allowed



EL - ER 40 A/B/C/H/I/N/X

MAIN FEATURES

Miniaturized ø 42 mm encoder series for general factory automation applications.

- · 3 channel encoder (A / B / Z) up to 14400 ppr
- Power supply up to +28 V DC with several electrical interfaces available
- Up to 500 kHz output frequency
- Cable output, connectors available on cable end
- Solid shaft diameter 6 mm or 8 mm
- Mounting by clamping, threaded or synchronous flange





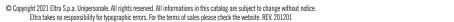




incremental encoder series EI incremental encoder series EI incremental encoder series EI MODEL clamping flange a 9.0 mm 40A square flange g 19.6 5 mm 40B clamping flange a 9.1 mm 40C MIS threaded flange 40i MCD threaded flange 40i Synchronous flange a 9.2 mm 40X RESOUTION (mod. A / B) ppr from 1 to 14400 (mod. A / B) ppr from 1 to 12500 refer to the available pulses list ERRO PULSE without zero pulse S without zero pulse S without zero pulse S With L electrical interface S V DC 5/25 ELECTRICAL INTERFACE NPURS RUPPLY (with L electrical interface) S V DC 5/5 5 28 V DC 5/28 ELECTRICAL INTERFACE NPURS RUPPLY power supply 5/28V - output RS-4/22 RS SHAFT DIAMETER (mod. A / B / C / H / / N) mm 8 ENCLOSURE RATING (F 54) S000 rpm 6 (F 66) 3000 rpm 6 (F 66) 3000 rpm 7 (F 54) S000 rpm 7 (F 54) S00	ORDERING CODE	ER	40A	100	S	5/28	P	6	X	6	P	R	. XXX
preferred cable lengths 1,5 / 2 / 3 / 5 / 10 m, to be added after DIRECTION TYPE (eg. PR5) DIRECTION TYPE	incremental encoder se incremental encoder se incremental encoder se clamping fla square flange clamping flange M18 thr M20 th synchronous flat synchronous flat (mod. C / H /	SERIES sries EL ries ER nge Ø 20 m 36,5 m Ø 17,46 m eaded flan readed flan readed flan nge Ø 20 m d. A / B) ppi	MODEL nm 40A nm 40B nm 40C nge 40H nge 40I nm 40N nm 40X RES or from 1 available p	OLUTION to 14400 to 2500 pulses list ZER vithout zer with zer	RO PULSE o pulse S o pulse Z POWEI Il interface) 5 28 V ELEC N	R SUPPLY 5 V DC 5 / DC 5/28 STRICAL IN IPN open c pu lin - output R	ITERFACE Ollector C Ish-pull P ie driver L S-422 RS SHAFT D B/C/H/I/ (mod	IAMETER 'N) mm 6 X) mm 8 ENCLOSUR	E RATING IP 54 X H) IP 66 X IX ROTATIO (IP 66) 30 (IP 54) 60	N SPEED 00 rpm 3 00 rpm 6 OUT	PUT TYPE	R	. XXX
			p	referred cal	ble lengths	1,5 / 2 / 3 /	5 / 10 m, to	be added a	after DIRECT	TON TYPE (6	eg. PR5) Directi		

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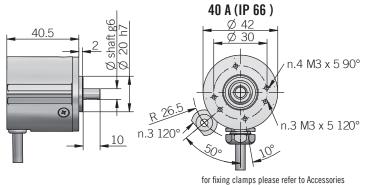
eltra@eltra.it

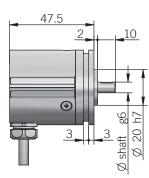
VARIANT custom version XXX

radial R

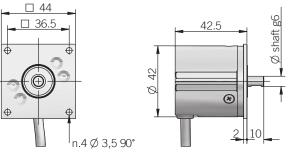
OPTICAL SOLID SHAFT INCREMENTAL ENCODERS | EL - ER 40 A/B/C/H/I/N/X

40 A (IP54) n.4 M3 x 5 90° i.3 M3 x 5 120°

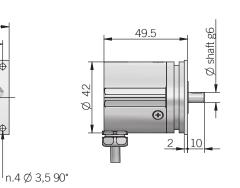




40 B (IP54)







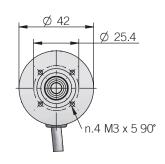
40 C

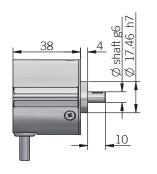
40 X

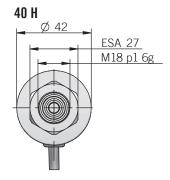
n.3 M3 x 5 120°

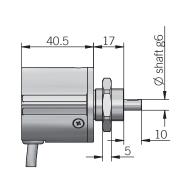
dimensions in mm

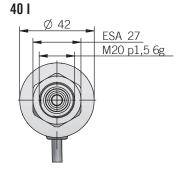
recommended mating shaft tolerance H7

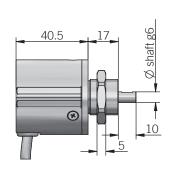


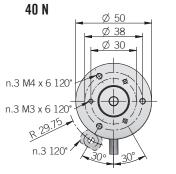


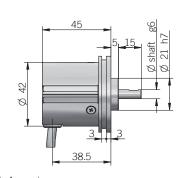




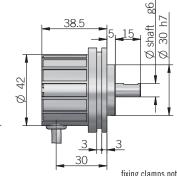


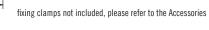






fixing clamps not included, please refer to the Accessories



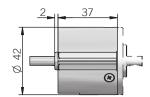






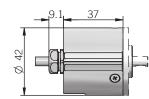
OPTICAL SOLID SHAFT INCREMENTAL ENCODERS | EL - ER 40 A/B/C/H/I/N/X

40 (axial output)



dimensions in mm

40 (IP 66 axial output)



ELECTRICAL SPECIFICA	TIONS
Resolution	from 1 to 14400 ppr (mod. A/B) from 1 to 2500 ppr (mod. C/H/I/N/X)
Power supply ¹	$\begin{array}{l} 5 = 4.5 \dots 5.5 \text{ V DC} \\ 5/28 = 4.5 \dots 30 \text{ V DC} \text{ (reverse polarity protection)} \end{array}$
Power draw without load	800 mW max
Max load current	C/P = 50 mA/channel L/RS = 20 mA/channel
Electrical interface ²	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)
Max output frequency	EL series 150 kHz ER series 250 kHz up to 3600 ppr 500 kHz from 4000 ppr
Counting direction	A leads B clockwise (shaft view)
Electromagnetic compatibility	according to 2014/30/EU directive
RoHS	according to 2011/65/EU (01/09/2020) directive
UL / CSA	certificate n. E212495

CONNECTIONS		
Function	Cable C / P	Cable L / RS
+V DC	red	red
0 V	black	black
A+	green	green
A-	/	brown or grey
B+	yellow	yellow
B-	/	orange
Z+	blue	blue
Z-	/	white
<u></u>	shield	shield

MECHANICAL SPECIFICATIONS					
Shaft diameter	ø6/8 mm				
Enclosure rating	X = IP 54 (IEC 60529) S = IP 66 (IEC 60529)				
Max rotation speed	IP 54 - 6000 rpm IP 66 - 3000 rpm				
Max shaft load³	5 N axial / radial				
Shock	50 G, 11 ms (IEC 60068-2-27)				
Vibration	10 G, 10 2000 Hz (IEC 60068-2-6)				
Moment of inertia	0,1 x 10 ⁻⁶ kgm ² (2,4 x 10 ⁻⁶ lbft ²)				
Starting torque (at +20°C / +68°F)	< 0,01 Nm (1,42 Ozin) IP 54 < 0,05 Nm (7,10 Ozin) IP 66				
Bearing stage material	EN-AW 2011 aluminum				
Shaft material	1.4305 / AISI 303 stainless steel				
Housing material	PA66 glass fiber reinforced				
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 temperature ⁵	-25° +70°C (-13° +158°F)				
Weight	100 g (3,52 oz)				

¹ as measured at the transducer without cable influences

EL SERIES RESOLUTIONS

1 - 2 - 4 - 5 - 10 - 15 - 16 - 20 - 30 - 32 - 40 - 50 - 70 - 80 - 90 - 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 - 10000 - 12000 - 14400

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



EL - ER 58 B / C / H / T

MAIN FEATURES

Standard ø 58 mm encoder series for industrial applications with high mechanical resistance requirements. These encoders are designed to support high radial and axial shaft load and they can be mounted by means of flanges or fixing clamps.

ER 58C M* 500

- · 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

ORDERING CODE

- Available with metal cover for heavy duty applications
- Solid shaft diameter up to 12 mm
- Mounting by synchronous, clamping or coupling flange







R . 162 +XXX



			ı								
250.50											
SERIES											
incremental encoder series EL incremental encoder series ER											
incremental encoder series ER I											
	MODEL										
synchronous flange ø 50	mm 58B										
clamping flange ø 36 clamping flange ø 50											
coupling flange ø 40											
Coupling hange y 40	METAL CO	OVED									
* .	add for metal co										
•	add for illetar co	RESOLUTION									
	nnr f	rom 1 to 24000									
		ailable pulses list									
	10101 10 1110 411		RO PULSE								
		without zer									
			o pulse Z								
			POWE	R SUPPLY							
		(with L electrica									
			5 28 V	/ DC 5/28							
				TRICAL IN							
			N	PN open c							
					sh-pull P						
		power sup	nly 5/20\/		e driver L						
		power sup	ply 3/20V	- output N		IAMETER					
						B) mm 6					
						. C) mm 8					
				mod. B / C	/ H) (3/8")						
				(,, (0, 0 ,	mm 10					
					(mod. 7	T) mm 12					
					E	NCLOSUR					
							IP 54 X				
					(m	nod. B / C /					
						MA	X ROTATIO				
							(IP 66) 30				
							(IP 54) 60	00 rpm 6			
							aabla (.)		PUT TYPE		
		profor	ad cable lo	nothe 2 / 2 /	5 / 10 m, to			ndard lengt			
		picicii	ca cabic ici	181113 4 / 3 /	5 / 10 III, ll	o oc auucu i		L male cor			
								32 male co			
							M12 r	nale conne	ector M12		
								3 male coi			
							M 1	C mala aa	anactor C	1	

S 5/28





M16 male connector C

to be reported only with connector output (eg. MR.162), for mating connector see Accessories

DIRECTION TYPE axial A radial R MATING CONNECTOR

mating connector not included .162

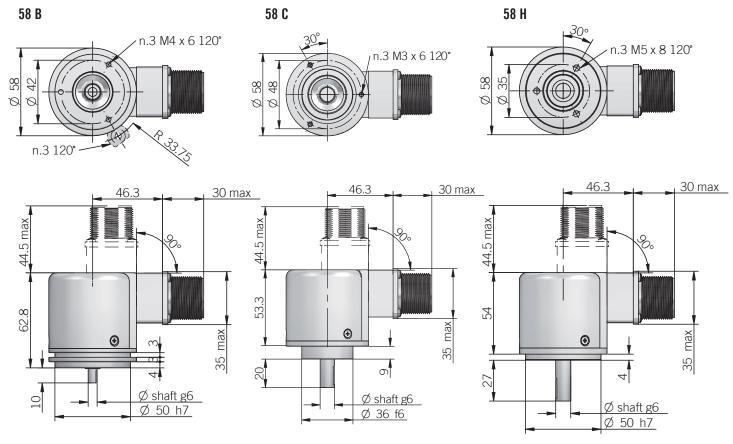


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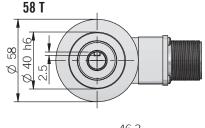
² for further details refer to OUTPUT LEVELS on TECHNICAL BASICS section

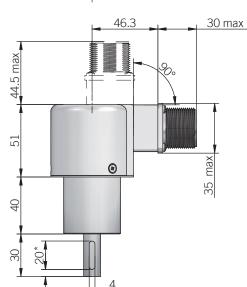
³ maximum load for static usage

⁴ measured on the transducer flange ⁵ condensation not allowed



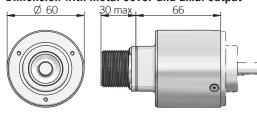
fixing clamps not included, please refer to Accessories



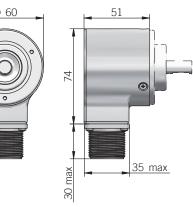


recommended mating shaft tolerance H7 dimensions in mm

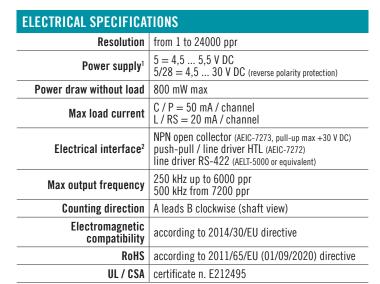
Dimension with metal cover and axial output



Dimension with metal cover and radial output



* slot only with 12mm shaft diameter



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

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

MECHANICAL SPECIFICA	ATIONS
Shaft diameter	ø 6 / 8 / 9,52 (3/8") / 10 / 12 mm
Enclosure rating	X = IP 54 (IEC 60529) S = IP 66 (IEC 60529)
Max rotation speed	IP 54 - 6000 rpm IP 66 - EL 3000 rpm / 60° C ER 3000 rpm / 70° C - 2000 rpm / 85° C
Max shaft load³	10 N axial / 20 N radial with ø6 mm shaft 200 N axial / radial
Shock	50 G, 11 ms (IEC 60068-2-27)
Vibration	10 G, 10 2000 Hz (IEC 60068-2-6)
Moment of inertia	1,5 x 10 ⁻⁶ kgm ² (36 x 10 ⁻⁶ lbft ²)
Starting torque (at +20°C / +68°F)	< 0,02 Nm (2,83 Ozin) IP 54 < 0,06 Nm (8,50 Ozin) IP 66
Bearing stage material	EN-AW 2011 aluminum
Shaft material	1.4305 / AISI 303 stainless steel
Housing material	PA66 glass fiber reinforced / painted aluminum
Bearings	n.2 ball bearings
Bearings life	10° revolutions
Operating temperature ^{4, 5}	-10° +60°C (+14° +140°F) EL series -25° +85°C (-13° +185°F) ER series
Storage temperature ⁵	-25° +70°C (-13° +158°F)
Weight	350 g (12,35 oz) 450 g (15,87 oz) with metal cover

as measured at the transducer without cable influences

² for further details refer to OUTPUT LEVELS on TECHNICAL BASICS section

3 maximum load for static usage

4 measured on the transducer flange

⁵ condensation not allowed

CONNEC	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	Α	F	6	F	4	1	10	1	8		
A+	green	green	3	1	С	Α	1	A	3	6	5	2	1		
A-	/	brown or grey	/	3	/	С	7	G	/	5	6	/	2		
B+	yellow	yellow	5	2	E	В	2	В	1	4	8	4	3		
B-	/	orange	/	5	/	Е	8	Н	/	3	1	/	4		
Z+	blue	blue	4	/	D	/	3	С	5	2	3	3	5		
Z-	/	white	/	/	/	/	9	I	/	8	4	/	6		
<u></u>	shield	shield	7	7	G	G	10	J	housing	housing	9	/	/		

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



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



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



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



M12 connector (5 pin) M12 A coded solder side view FV



M12 connector (8 pin) C connector (8 pin) Amphenol C091 IEC 60130-9 M12 A coded solder side view FV solder side view FV



H connector (12 pin) - M23 CCW Hummel 7.410.000000 -C connector (5 pin) Amphenol C091 M16 solder side view FV





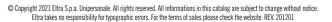


7.002.912.603

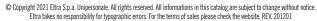


















EL - ER 63 A / D / E SOLID SHAFT INCREMENTAL ENCODER

MAIN FEATURES

Standard ø 63 mm encoder series for industrial applications with high mechanical resistance requirements. These encoders are designed to support high radial and axial shaft load and they can be mounted by means of flanges or fixing clamps.

- · 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
- Solid shaft diameter up to 10 mm
- Mounting by synchronous or centering 2,5" square flange







ORDERING CODE	ER	63A	M*	500	S	5/28	P	8	X	6	M	R	. 162	+XXX
incrementa incrementa synchro centering sc	SERIES al encoder series EL I encoder series ER onous flange ø 31,75 quare flange ø 50 g square flange ø 50	MODEL mm 63A mm 63D mm 63E META add for met	AL COVER al cover M RES opr from 1 e available v (wit	colution to 24000 pulses list ZEF without zer with zer h L electrica	RO PULSE o pulse S o pulse Z POWEI al interface) 5 28 \ ELEC N	R SUPPLY 5 V DC 5 / DC 5/28 :TRICAL IN IPN open c pu lin - output R	ITERFACE ollector C ish-pull P e driver L S-422 RS SHAFT D (3/8")	IAMETER mm 8 mm 9,52 mm 10 ENCLOSUR	E RATING	ON SPEED 100 rpm 3 00 rpm 6 OUTI ndard lengt	PUT TYPE h 1,5 m) P	R	. 162	+XXX
				preferi	ed cable lei	ngths 2 / 3 /	/ 5 / 10 m, to	be added	after DIREC MI JIS-C-54; M12 r	ndard lengt TION TYPE (i L male cor 32 male co nale conne	h 1,5 m) P eg. PR5) nnector M nnector J ector M12			
										3 male con 6 male con	nnector C DIRECT	ION TYPE axial A radial R IATING COI		
							211		/ MD 100			r not inclu		

63 A

n.3 120°

63 E

n.3 M5 x 7 120°

Ø shaft g6

Ø 31.75 h7

∙n.4 Ø 5.5 90°

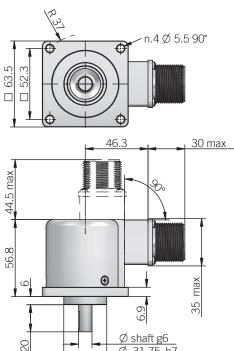
__ 30 max

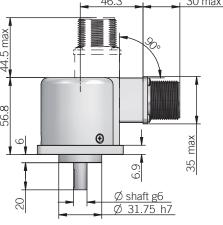
fixing clamps not included, please refer to Accessories

__ 30 max

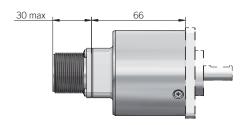
46.3

63 D

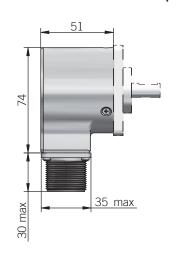




Dimension with metal cover and axial output



Dimension with metal cover and radial output



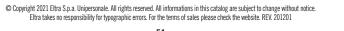
recommended mating shaft tolerance H7 dimensions in mm

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Ø shaft g6 Ø 50 h7

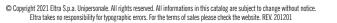
to be reported only with connector output (eg. MR.162), for mating connector see Accessories VARIANT custom version +XXX











MAIN FEATURES

Explosion proof encoder for applications within explosive and hazardous areas.

- · 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
- 10 mm solid shaft diameter
- Mounting by syncronous or centering square flange

EX CLASSIFICATION

It has been assured with EC-TYPE Examination Certificate CESI 04 ATEX 082 that the EX 80 comply with essential health and safety requirements according to

- EN 60079-0:2012+A11:2013
- EN 60079-1:2014
- EN 60079-31:2014

The UE declaration is available on www.eltra.it











5/28	Р	10	X	3	PR	XXX

ORDERING CODE EX	80A	500	S	5/28	P	10	X	3	PR	. XX
	mm 80D RES from 100 e available	SOLUTION to 10000 pulses list ZEI without zei with zei	RO PULSE ro pulse S ro pulse Z POWEF al interface) 5 28 V	DC 5/28 TRICAL IN PN open c	TERFACE					
			ply 5/28V		SHAFT D	DIAMETER mm 10 ENCLOSUR MA	IP 65 X IX ROTATIO 30 cable (stand	00 rpm 3 0UTI dard length	PUT TYPE 1,5 m) PR	

VARIANT custom version XXX

۱	110113	MLGII
	from 1 to 24000 ppr	
	$5 = 4.5 \dots 5.5 \text{ V DC}$ $5/28 = 4.5 \dots 30 \text{ V DC}$ (reverse polarity protection)	
	800 mW max	
	C / P = 50 mA / channel L / RS = 20 mA / channel	
	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)	
	250 kHz up to 6000 ppr 500 kHz from 7200 ppr	
	A leads B clockwise (shaft view)	

EL SERIES RESOLUTIONS

ELECTRICAL SPECIFICATIONS

Power supply¹

Max load current

Electromagnetic

compatibility

Power draw without load 800 mW max

Resolution from 1 to 24000 ppr

Electrical interface² push-pull / line driver HTL (AEIC-7272) line driver RS-422 (AELT-5000 or equivalent)

Counting direction A leads B clockwise (shaft view)

UL / CSA certificate n. E212495

Max output frequency | 250 kHz up to 6000 ppr

according to 2014/30/EU directive

RoHS | according to 2011/65/EU (01/09/2020) directive

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

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

MECHANICAL SPECIFICA	ATIONS
Shaft diameter	ø 8 / 9,52 (3/8") / 10 mm
Enclosure rating	X = IP 54 (IEC 60529) S = IP 66 (IEC 60529)
Max rotation speed	IP 54 - 6000 rpm IP 66 - EL 3000 rpm / 60° C ER 3000 rpm / 70° C - 2000 rpm / 85° C
Max shaft load ³	200 N axial / radial
Shock	50 G, 11 ms (IEC 60068-2-27)
Vibration	10 G, 10 2000 Hz (IEC 60068-2-6)
Moment of inertia	1,5 x 10 ⁻⁶ kgm ² (36 x 10 ⁻⁶ lbft ²)
Starting torque (at +20°C / +68°F)	< 0,02 Nm (2,83 Ozin) IP 54 < 0,06 Nm (8,50 Ozin) IP 66
Bearing stage material	EN-AW 2011 aluminum
Shaft material	1.4305 / AISI 303 stainless steel
Housing material	PA66 glass fiber reinforced / painted 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 temperature ⁵	-25° +70°C (-13° +158°F)
Weight	350 g (12,35 oz) 450 g (15,87 oz) with metal cover

¹ as measured at the transducer without cable influences

⁵ condensation not allowed

CUNNEC	CUNNECTIONS														
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	Α	F	6	F	4	1	10	1	8		
A+	green	green	3	1	С	Α	1	Α	3	6	5	2	1		
A-	/	brown or grey	/	3	/	С	7	G	/	5	6	/	2		
B+	yellow	yellow	5	2	Е	В	2	В	1	4	8	4	3		
B-	/	orange	/	5	/	E	8	Н	/	3	1	/	4		
Z+	blue	blue	4	/	D	/	3	С	5	2	3	3	5		
Z-	/	white	/	/	/	/	9	I	/	8	4	/	6		
÷	shield	shield	7	7	G	G	10	J	housing	housing	9	/	/		

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



M connector (10 pin)

Amphenol MS3102-E-18-1

solder side view FV

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



M12 connector (5 pin)

M12 A coded



C connector (5 pin)

C connector (8 pin)



H connector (12 pin) - M23 CCW

Hummel 7.410.000000 -

7.002.912.603

solder side view FV







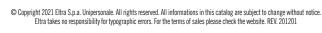




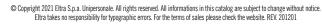


M16 IEC 60130-9

solder side view FV







53



² for further details refer to OUTPUT LEVELS on TECHNICAL BASICS section

³ maximum load for static usage

⁴ measured on the transducer flange

Ø 40 h7 Ø shaft g6

45 max_

MECHANICAL SPECIFICATIONS

Shaft diameter ø 10 mm Enclosure rating IP 65 (IEC 60529)

Max rotation speed 3000 rpm

80 D

recommended mating shaft tolerance H7

dimensions in mm

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 with optional centrifugal relay.

- Power supply up to +24 V DC with several electrical interfaces available
- Solid shaft diameter up to 11 mm
- Mounting by syncronous or REO-444 flange







		10
Man .		
	•	

ORDERING CODE EH 90A 500	S	8/24	P	1000	Z	8/24	P	8	Х	6	M	R	. 162	+XXX	+ 200
SERIES incremental encoder series EH															
synchronous flange ø 40 mm 90A															
flange REO-444 115A flange REO-444 with centrifugal relay 115R															
RESOLUTIOI ppr from 200 to 204 refer to the available pulses lis	3														
	RO PULSE														
with ze	ro pulse Z														
(with L electrica	l interface)														
		RICAL INT	ERFACE												
	NP	N open co pus	sh-pull P												
		IIIIe	driver L RES	DLUTION											
				ZER	O PULSE POWFR	SUPPLY									
						RICAL IN	TERFACE								
								A) mm 8							
						,	A) (3/8") i L5A - 115R	mm 10							
						(IIIOU. 11		CLOSURE	RATING						
									IP 54 X) IP 66 S						
								(00 rpm 3					
											UT TYPE				
			pref	erred cable	e lengths 2	2/3/5/1	0 m, to be	ca added afte	er DIRECTI	dard length ON TYPE (e male con	g. PR5)				
								JI			nnector J	==			
											DIRECTIO	axial A			
											MAT	radial R ING CON			
To be indicated in the models 90A - 115A for double e	actronics of	nd double		to be	reported o	nly with co	nnector ou	tput (eg. N			onnector ronnector se		ries		
resolution. See examples:	ootivillos d	ווע עטעטול										cust		VARIANT on +XXX	



- · 3 channel encoder (A / B / Z) up to 2048 ppr
- Redundancy encoder with double output and / or double resolutions
- Up to 105 kHz output frequency
- Model 115R available with centrifugal relay

41	FOTO	10 41	Checle		THE
21	FILR	11 A I	SPECIE	11 A 1	11/1/

80 A

n.3 120°

ELECTRICAL SPECIFICA	IIUNS
Resolution	from 100 to 10000 ppr
Power supply ¹	$5 = 4.5 \dots 5.5 \text{ V DC}$ $5/28 = 4.5 \dots 30 \text{ V DC}$ (reverse polarity protection)
Current consumption without load	80 mA max
Max load current	C / P = 50 mA / channel L / RS = 20 mA / channel
Electrical interface ²	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)
Max output frequency	250 kHz up to 6000 ppr 500 kHz from 7200 ppr
Counting direction	A leads B clockwise (shaft view)
Electromagnetic compatibility	according to 2014/30/EU directive
RoHS	according to 2011/65/EU (01/09/2020) directive
UL / CSA	certificate n. E212495

fixing clamps not included, please refer to the Accessories

Ø shaft g6

n.3 M6 x 10 120°

EPL MARKING



II 2GD Ex db IIC T6 Gb Ex tb IIIC T85°C Db IP 65

II 2GD

II: group II: different than mines

2: category 2: high level of protection

GD: areas containing gas (G) and dust (D) **Ex db IIC T6 Gb**

Ex db: flameproof enclosure for explosive atmospheres with gases, vapours and mists IIC: group of gas IIC

T6: max surface temperature +85°C of the device for atmospheres with gas Gb: product with a high level of protection

Ex tb IIIC T85°C Db

Ex tb: flameproof enclosure safety type

IIIC: group of dust combustibles IIIC

T85°C: max surface temperature +85°C of the device in the presence of dust

Db: product with a high level of protection

200 N axial / radial
50 G, 11 ms (IEC 60068-2-27)
10 G, 10 2000 Hz (IEC 60068-2-6)
1,5 x 10 ⁻⁶ kgm ² (36 x 10 ⁻⁶ lbft ²)
< 0,06 Nm (8,50 Ozin)
anodized aluminum
1.4305 / AISI 303 stainless steel
anodized aluminum
n.2 ball bearings
10 ⁹ revolutions
-20° +50°C (-4° +122°F)
-20° +70°C (-4° +158°F)
1200 g (42,33 oz)

CONNECTIONS		
Function	Cable C / P	Cable L / RS
+V DC	brown	brown
0 V	gray	gray
A+	green	green
Α-	/	red
B+	yellow	yellow
B-	/	pink
Z+	white	blue
Z-	/	white
<u></u>	shield	shield

RESOLUTIONS

100 - 200 - **360** - 400 - **500** - **1000** - **1024** - 1440 - **2000** - **2048** - **2500** - 3000 -**3600** - 4000 - 4096 - **5000** - 6000 - **7200** - 8000 - 8192 - 9000 - **10000**

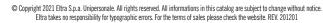
please directly contact our offices for other pulses, preferred resolutions in bold

www.eltra.it

Double resolution and double electronics: EH90A1024Z5L-2048Z8/24L10X...

Double resolution and same electronics: EH90A1024-2048Z5L10X...

Same resolution and double electronics: EH90A1024Z5L-Z8/24L10X..





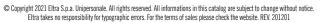
RELAY INTERVENTION SPEED

(mod. 115R) from 600 to 4300

for other speeds please contact our offices directly







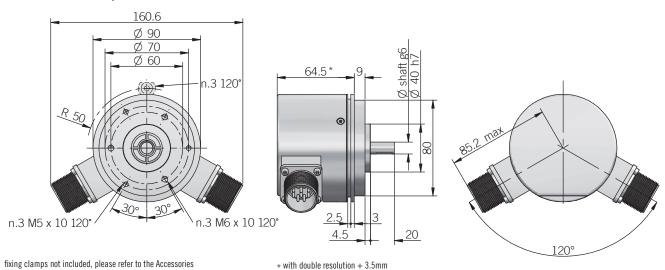
¹ as measured at the transducer without cable influences

² for further details refer to OUTPUT LEVELS on TECHNICAL BASICS section

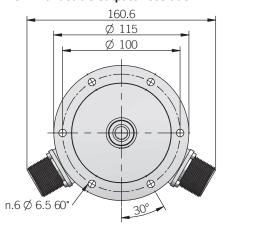
³ maximum load for static usage

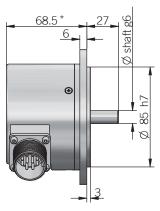
⁴ measured on the transducer flange ⁵ condensation not allowed

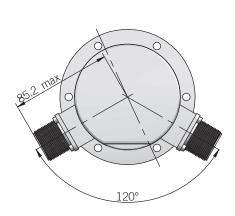
90 A with double output / resolution



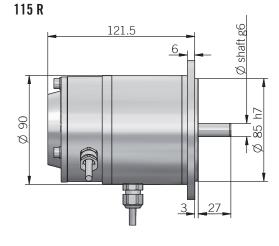
115 A with double output / resolution

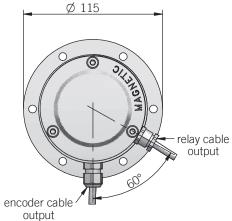






 \star with double resolution + 3.5mm



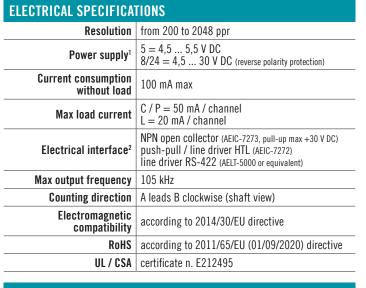


recommended mating shaft tolerance H7 dimensions in mm

Eltra 1995-2020

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eltra@eltra.it



RESOLUTIONS

200 - 250 - 500 - 512 - **1000 - 1024 - 2000 - 2048**

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

RELAY CHARACTERISTICS					
Intervention speed from 600 to 4300 rpm					
Accuracy ± 3 %					
Contact capacity	2 A / 250 V AC 3,3 A / 125 V AC				
Type of contact Normally Closed (NC)					

MECHANICAL SPECIFICA	ATIONS				
Shaft diameter	ø 8 / 9,52 (3/8") / 10 / 11 mm				
Enclosure rating	X = IP 54 (IEC 60529) S = IP 66 (IEC 60529)				
Max rotation speed	IP 54 - 6000 rpm IP 66 - 3000 rpm				
Max shaft load ³	200 N axial / radial				
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 lbft ²)				
Starting torque (at +20°C / +68°F)	< 0,02 Nm (2,8 OzIn) IP 54 < 0,06 Nm (8,5 OzIn) IP 66				
Bearing stage material	EN-AW 2011 aluminum				
Shaft material	1.4305 / AISI 303 stainless steel				
Housing material	painted aluminum				
Bearings	n.2 ball bearings				
Bearings life	10 ⁹ revolutions				
Operating temperature ^{4, 5}	-10° +60°C (+14° +140°F)				
Storage temperature ⁵	-25° +70°C (-13° +158°F)				
Weight	750 g (26,46 oz) 1050 g (37,04 oz) with relay				

¹ as measured at the transducer without cable influences

² for further details refer to OUTPUT LEVELS on TECHNICAL BASICS section

³ maximum load for static usage

4 measured on the transducer flange

5 condensation not allowed

<u></u> ቦበ	MIM	ECT	.IUY	IC.
. GU	XX	ΕЬΙ	יוטו	Ю

Function	Cable C / P	Cable L	7 pin J C / P	7 pin J L no Zero	7 pin M C / P	7 pin M L/RS no Zero	10 pin J L with Zero	10 pin M L with Zero
+V DC	red	red	6	4	F	D	4 - 5	D - E
0 V	black	black	1	6	A	F	6	F
A+	green	green	3	1	С	Α	1	А
A-	/	brown or grey	/	3	/	С	7	G
B+	yellow	yellow	5	2	E	В	2	В
B-	/	orange	/	5	/	E	8	Н
Z+	blue	blue	4	/	D	/	3	С
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



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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







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EL - ER 90 A EL - ER 115 A

SOLID SHAFT INCREMENTAL ENCODER

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





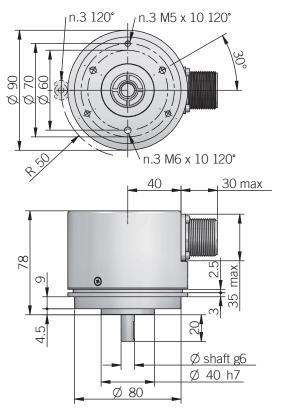


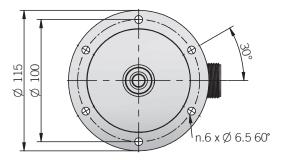


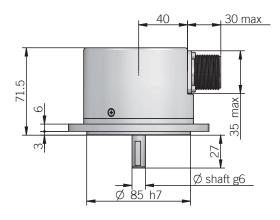


SERIES incremental encoder series EL incremental encoder series ER MODEL synchronous flange Ø 40 mm 90A flange REO-444 115A RESOLUTION ppr from 1 to 10000	X
incremental encoder series ER MODEL Synchronous flange ø 40 mm 90A flange REO-444 115A RESOLUTION ppr from 1 to 10000	
synchronous flange ø 40 mm 90A flange REO-444 115A RESOLUTION ppr from 1 to 10000	
flange REO-444 115A RESOLUTION ppr from 1 to 10000	
ppr from 1 to 10000	
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	
SHAFT DIAMETER (mod. 90) mm 8	
(mod. 90) (3/8") mm 9,52	
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 male connector M	
JIS-C-5432 male connector J	
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	

115 A







fixing clamps not included, please refer to Accessories

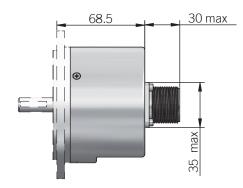
90 A axial output

90 A



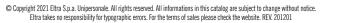
recommended mating shaft tolerance H7 dimensions in mm

115 A axial output











VARIANT custom version XXX

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ELECTRICAL SPECIFICAT	TIONS
Resolution	from 1 to 10000 ppr
Power supply ¹	$5 = 4.5 \dots 5.5 \text{ V DC}$ $5/28 = 4.5 \dots 30 \text{ V DC}$ (reverse polarity protection)
Power draw without load	800 mW
Max load current	C/P = 50 mA/channel L/RS = 20 mA/channel
Electrical interface ²	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)
Max output frequency	250 kHz up to 6000 ppr 500 kHz from 7200 ppr
Counting direction	A leads B clockwise (shaft view)
Electromagnetic compatibility	according to 2014/30/EU directive
RoHS	according to 2011/65/EU (01/09/2020) directive
UL / CSA	certificate n. E212495

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 SPECIFICA	MECHANICAL SPECIFICATIONS					
Shaft diameter	ø 8 / 9,52 (3/8") / 10 / 11 mm					
Enclosure rating	X = IP 54 (IEC 60529) S = IP 66 (IEC 60529)					
Max rotation speed	IP 54 - 6000 rpm IP 66 - EL 3000 rpm / 60° C ER 3000 rpm / 70° C - 2000 rpm / 85° C					
Max shaft load ³	200 N axial / radial					
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 lbft ²)					
Starting torque (at +20°C / +68°F)	< 0,02 Nm (2,83 Ozin) IP 54 < 0,06 Nm (8,50 Ozin) IP 66					
Bearing stage material	EN-AW 2011 aluminum					
Shaft material	1.4305 / AISI 303 stainless steel					
Housing material	PA66 glass fiber reinforced / painted 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 temperature ⁵	-25° +70°C (-13° +158°F)					
Weight	350 g (12,35 oz) 450 g (15,87 oz) with metal cover					

¹ as measured at the transducer without cable influences

⁵ condensation not allowed

CONNECTIONS		_					1	
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	Α	F	6	F
A+	green	green	3	1	С	А	1	А
A-	/	brown or grey	/	3	/	С	7	G
B+	yellow	yellow	5	2	E	В	2	В
B-	/	orange	/	5	/	E	8	Н
Z+	blue	blue	4	/	D	/	3	С
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





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

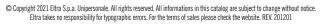


M connector (10 pin) Amphenol MS3102-E-18-1 solder side view FV









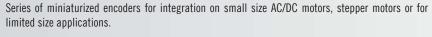












- · 3 channel encoder (A / B / Z) up to 1024 ppr
- · Power supply up to +30 V DC with several electrical interfaces available
- Up to 105 kHz output frequency
- · No wear due to absense of bearings
- Easy assembly

MAIN FEATURES

Compact size



ORDERING CODE	EH	30M	500	S	5/30	P	6	X	6	PR	. XXX
in	SERIES cremental encoder series EH										
		MODEL									
	kit encoder with fla kit enco										
			OLUTION								
		pr from 50 e available									
	Total to the	c available		RO PULSE							
		٧	vithout zei	ro pulse S							
			with zer	ro pulse Z							
				POWE	S V DC 5						
				5 30 \	/ DC 5/30						
					TRICAL IN						
				N	IPN open c	ollector C					
					ρι lin	ish-pull P e driver L					
		1	power sup	ply 5/30V		S-422 RS					
						BORE D	IAMETER				
						(1///")	mm 6 mm 6,35				
							NCLOSUR				
					(mod.	17M) IP40					
							MA	X ROTATIO			
								60	00 rpm 6		
							radial d	ahle (stand	UUTF lard length	O 5 m) PR	
			preferred o	cable length	s 1,5 / 2 / 3	3/5/10 m,					
											VARIANT
									(custom ver	rsion XXX



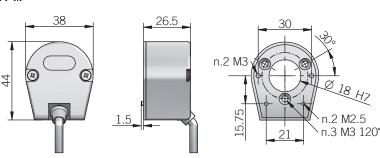


² for further details refer to OUTPUT LEVELS on TECHNICAL BASICS section

³ maximum load for static usage

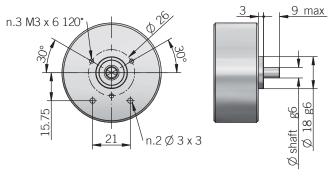
⁴ measured on the transducer flange

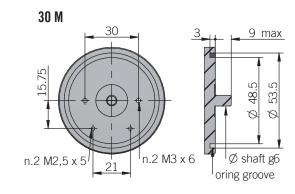
30 M



RECOMMENDED INTERFACE FLANGE DESIGN

17 M





$\ dimensions\ in\ mm$

ELECTRICAL SPECIFICATIONS					
Resolution	from 50 to 1024 ppr				
Power supply ¹	$5 = 4.5 \dots 5.5 \text{ V DC}$ $5/30 = 4.5 \dots 30 \text{ V DC}$ (reverse polarity protection)				
Current consumption without load	50 mA (2 channels A / B) 100 mA (3 channels A / B / Z)				
Max load current	C / P = 50 mA / channel L = 20 mA / channel				
Electrical interface ²	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)				
Max output frequency	105 kHz				
Counting direction	A leads B clockwise (shaft view)				
Electromagnetic compatibility	according to 2014/30/EU directive				
RoHS	according to 2011/65/EU (01/09/2020) directive				

without load	100 ma (3 channels A / B / Z)					
Max load current	C/P = 50 mA / channel $L = 20$ mA / channel					
Electrical interface ²	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)					
Max output frequency	105 kHz					
Counting direction	A leads B clockwise (shaft view)					
Electromagnetic compatibility						
RoHS	according to 2011/65/EU	(01/09/2020) directive				
UL / CSA	certificate n. E212495					
CONNECTIONS						
Function	Cable Cable					

CONNECTIONS		
Function	Cable P	Cable L/RS
+V DC	red	red
0 V	black	black
A+	green	green
A-	/	brown or grey
B+	yellow	yellow
B-	/	orange
Z+	blue	blue
Z-	/	white
÷	shield	shield

MECHANICAL SPECIFICATIONS				
Bore diameter	ø 6 / 6,35 (1/4") mm			
Enclosure rating	mod. 17 IP 40 (IEC 60529) mod. 30 IP 54 (IEC 60529) when properly installed with oring kit (not supplied, please refer to the Accessories)			
Max rotation speed	6000 rpm (limited by output frequency)			
Shock	50 G, 11 ms (IEC 60068-2-27)			
Vibration	10 G, 10 2000 Hz (IEC 60068-2-6)			
Moment of inertia	0,5 x 10 ⁻⁶ kgm ² (12 x 10 ⁻⁶ lbft ²)			
Flange material (mod. 17)	aluminium			
Hub material	EN-AW 2011 aluminium			
Cover material	PA66 glass fiber reinforced			
Shaft radial play allowed	± 0,04 mm			
Shaft axial play allowed	± 0,1 mm			
Operating temperature ^{3, 4}	-20° +60°C (-4° +140°F)			
Storage temperature ⁴	-25° +70°C (-13° +158°F)			
Weight	50 g (1,76 oz)			

¹ as measured at the transducer without cable influences

² for further details refer to OUTPUT LEVELS on TECHNICAL BASICS section ³ measured on the transducer flange

4 condensation not allowed

RESOLUTIONS

50* - **100** - **200** - 250 - 256 - 360 - 400 - **500** - 512 - **1000** - 1024

*available only without zero pulse

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











· 3 channel encoder (A / B / Z) up to 5000 ppr

stepper motors or for limited size applications.

Power supply up to +30 V DC with several electrical interfaces available

Series of miniaturized encoders with high resolution for integration on small size AC/DC motors,

Up to 500 kHz output frequency

No wear due to absense of bearings

Easy assembly

MAIN FEATURES

Compact size

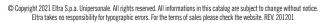


SERIES incremental encoder series EH TYPE high resolution kit encoder with flange 17MH high resolution kit encoder 30MH RESOLUTION ppr 2000 / 2048 / 2500 / 4096 / 5000 ZERO PULSE without zero pulse S with zero pulse S with zero pulse S with zero pulse POWER SUPPLY 530 V DC 5/30 ELECTRICAL INTERFACE push-pull P line driver L power supply 5/30V - output RS-422 RS BORE DIAMETER mm 6 (1/4") mm 6,35 ENCLOSURE RATINE (mod. 17MH) IP40 - (mod. 30MH) IP 54 X) OPTION to be reported X OUTPUT TYPE radial cable (standard length 0,5 m) PR preferred cable lengths 1,5 / 2 / 3 / 5 / 10 m, to be added after OUTPUT TYPE (seg. PR5)	ORDERING CODE EH	30MH	2000	S	5/30	P	6	X	X	PR	. XXX
high resolution kit encoder with flange 17MH high resolution kit encoder 30MH RESOLUTION ppr 2000 / 2048 / 2500 / 4096 / 5000 ZERO PULSE without zero pulse S with zero pulse Z POWER SUPPLY 530 V DC 5/30 ELECTRICAL INTERFACE push-pull P line driver L power supply 5/30V - output RS-422 RS BORE DIAMETER mm 6 (1/4") mm 6,35 ENCLOSURE RATING (mod. 17MH) IP40 - (mod. 30MH) IP 54 X OPTION to be reported X OUTPUT TYPE radial cable (standard length 0,5 m) PR											
high resolution kit encoder with flange 17MH high resolution kit encoder 30MH RESOLUTION ppr 2000 / 2048 / 2500 / 4096 / 5000 ZERO PULSE without zero pulse 2 with zero pulse 2 POWER SUPPLY 530 V DC 5/30 ELECTRICAL INTERFACE push-pull P line driver L power supply 5/30V - output RS-422 RS BORE DIAMETER mm 6 (1/4") mm 6,35 ENCLOSURE RATING (mod. 17MH) IP40 - (mod. 30MH) IP 54 X OUTPUT TYPE radial cable (standard length 0,5 m) PR	incremental encoder series EH										
ppr 2000 / 2048 / 2500 / 4096 / 5000 ZERO PULSE without zero pulse S with zero pulse Z POWER SUPPLY 530 V DC 5/30 ELECTRICAL INTERFACE push-pull P line driver L power supply 5/30V - output RS-422 RS BORE DIAMETER mm 6 (1/4") mm 6,35 ENCLOSURE RATING (mod. 17MH) IP40 - (mod. 30MH) IP 54 X OPTION to be reported X OUTPUT TYPE radial cable (standard length 0,5 m) PR		nge 17MH									
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with zero pulse Z POWER SUPPLY 530 V DC 5/30 ELECTRICAL INTERFACE push-pull P line driver L power supply 5/30V - output RS-422 RS BORE DIAMETER mm 6 (1/4") mm 6,35 ENCLOSURE RATING (mod. 17MH) IP40 - (mod. 30MH) IP 54 X OUTPUT TYPE radial cable (standard length 0,5 m) PR											
POWER SUPPLY 530 V DC 5/30 ELECTRICAL INTERFACE push-pull P line driver L power supply 5/30V - output RS-422 RS BORE DIAMETER mm 6 (1/4") mm 6,35 ENCLOSURE RATING (mod. 17MH) IP40 - (mod. 30MH) IP 54 X OPTION to be reported X OUTPUT TYPE radial cable (standard length 0,5 m) PR		V									
530 V DC 5/30 ELECTRICAL INTERFACE push-pull P line driver L power supply 5/30V - output RS-422 RS BORE DIAMETER mm 6 (1/4") mm 6,35 ENCLOSURE RATING (mod. 17MH) IP40 - (mod. 30MH) IP 54 X OPTION to be reported X OUTPUT TYPE radial cable (standard length 0,5 m) PR			WILII Zei								
push-pull P line driver L power supply 5/30V - output RS-422 RS BORE DIAMETER mm 6 (1/4") mm 6,35 ENCLOSURE RATING (mod. 17MH) IP40 - (mod. 30MH) IP 54 X OPTION to be reported X OUTPUT TYPE radial cable (standard length 0,5 m) PR											
line driver L power supply 5/30V - output RS-422 RS BORE DIAMETER mm 6 (1/4") mm 6,35 ENCLOSURE RATING (mod. 17MH) P40 - (mod. 30MH) P 54 X OPTION to be reported X OUTPUT TYPE radial cable (standard length 0,5 m) PR											
power supply 5/30V - output RS-422 RS BORE DIAMETER mm 6 (1/4") mm 6,35 ENCLOSURE RATING (mod. 17MH) IP40 - (mod. 30MH) IP 54 X OPTION to be reported X OUTPUT TYPE radial cable (standard length 0,5 m) PR					pu	sh-pull P					
BORE DIAMETER mm 6 (1/4") mm 6,35 ENCLOSURE RATING (mod. 17MH) IP40 - (mod. 30MH) IP 54 X OPTION to be reported X OUTPUT TYPE radial cable (standard length 0,5 m) PR			nower sun	nlv 5/30V							
mm 6 (1/4") mm 6,35 ENCLOSURE RATING (mod. 17MH) P40 - (mod. 30MH) P 54 X OPTION to be reported X OUTPUT TYPE radial cable (standard length 0,5 m) PR			power sup	piy 0/00 1	output it						
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(mod. 17MH) IP40 - (mod. 30MH) IP 54 X OPTION to be reported X OUTPUT TYPE radial cable (standard length 0,5 m) PR											
OPTION to be reported X OUTPUT TYPE radial cable (standard length 0,5 m) PR					(mod 17)						
to be reported X OUTPUT TYPE radial cable (standard length 0,5 m) PR					(IIIUu. 17)	WIП) II 40 -	(IIIou. Sulvii	n) II J4 A I			
radial cable (standard length 0,5 m) PR								to be re			
preferred cable lengths 1,5/2/3/5/10 m, to be added after OUIPUT TYPE (eg. PR5)			, ,		15/0/0	(5 (10					
VARIANT			preterred o	cable length	s 1,5/2/3	/ 5 / 10 m,	to be added	atter OUTP	UI TYPE (eg.		VADIANT



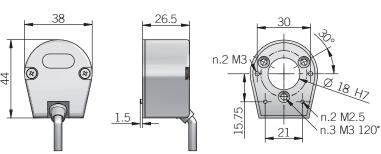




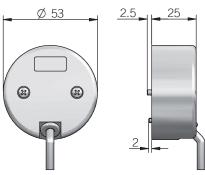


BLIND HOLLOW SHAFT INCREMENTAL ENCODER

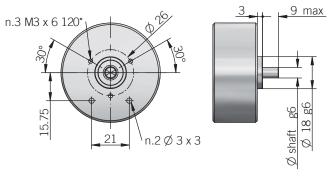
17 MH

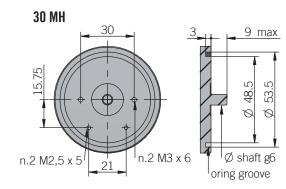


30 MH



RECOMMENDED INTERFACE FLANGE DESIGN 17 MH





dimensions in mm

ELECTRICAL SPECIFICATIONS					
Resolution	2000 - 2048 - 2500 - 4096 - 5000 ppr				
Power supply ¹	4,5 30 V DC (reverse polarity protection)				
Current consumption without load	60 mA max				
Max load current	20 mA / channel				
Electrical interface ²	push-pull / line driver HTL (AEIC-7272) line driver RS-422 (AELT-5000 or equivalent)				
Max output frequency	500 kHz				
Counting direction	A leads B clockwise (shaft view)				
Electromagnetic compatibility	according to 2014/30/EU directive				
RoHS	according to 2011/65/EU (01/09/2020) directive				
UL / CSA	certificate n. E212495				

		20.0 0.0	p 0 / 0,00 (2/ · /	
oolar	ity protection)	Enclosure rating IEC 60529	mod. 17 IP 40 mod. 30 IP 54 when properly installed with oring kit (not supplied, please refer to the Accessories)	
1171		Max rotation speed	6000 rpm (limited by output frequency)	
	_ (AEIC-7272) 00 or equivalent)	Shock 50 G, 11 ms (IEC 60068-2-27)		
		Vibration	10 G, 10 2000 Hz (IEC 60068-2-6)	
haf	t view)	Moment of inertia	0,5 x 10 ⁻⁶ kgm ² (12 x 10 ⁻⁶ lbft ²)	
·		Flange material (mod. 17)	aluminium	
EU	directive	Hub material	EN-AW 2011 aluminium	
ΈU	(01/09/2020) directive	Cover material	PA66 glass fiber reinforced	
		Shaft radial play allowed	± 0,04 mm	
		Shaft axial play allowed	± 0,1 mm	
		Operating temperature ^{3, 4}	-20° +85°C (-4° +185°F)	
		Storage temperature ⁴	-20° +85°C (-4° +185°F)	
	Cable	Weight	50 σ (1.76 οz)	

MECHANICAL SPECIFICATIONS

Bore diameter Ø 6 / 6,35 (1/4") mm

Weight 50 g (1,76 oz) as measured at the transducer without cable influences



Function	Cable P	Cable L / RS
+V DC	red	red
0 V	black	black
A+	green	green
A-	/	brown or grey
B+	yellow	yellow
B-	/	orange
Z+	blue	blue
Z-	/	white
<u></u>	shield	shield



MAIN FEATURES

ø 36 mm encoder series recommended in feedback control systems on AC servomotors, interchangeable with size 15 Resolver in the back of the motor.

- · 6 channels encoder with optical generation of "Hall effect phases" (commutation signals)
- Signal transmission by bit parallel bus
- Easy mechanical mounting
- Small dimensions
- Wide range of resolutions available
- High temperature resistance







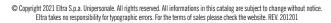


ORDERING CODE	EF	36K	4	L	512	S	5	L	8	X	6	PR	. XXX
incremental encoder with Hall ph blind hollow shaft w ELECTRICAL IN	ith rear fi 4 po 6 po 8 po	MOTOF les (2 poles les (3 poles les (4 poles FOR COMM NP lir	s pair) 6 s pair) 8 IUTATION N open cone driver I INCREMI pp refer to the	ollector C RS-422 L ENTAL RES or from 500 e available	o to 1024 pulses list ZER vithout zer with zer	RO PULSE to pulse S to pulse Z POWER		RS-422 L BORE D (3/8")		E RATING IP 40 X X ROTATIO 600	00 rpm 6 OUTP I	UT TYPE	
					preferred c	able lengths	s 1,5 / 2 / 3	/5/10 m,			ard length 0 JT TYPE (eg.	,3 m) PR	

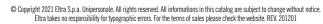








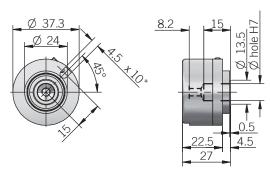






² for further details refer to OUTPUT LEVELS on TECHNICAL BASICS section ³ measured on the transducer flange

⁴ condensation not allowed



* ø 4 mm torque pin min 0.5mm from bottom end

for size 15 Resolver flange please refer to Accessories recommended mating shaft tolerance g6 dimensions in mm

ELECTRICAL SPECIFICATIONS					
Incremental resolution	from 500 to 1024 ppr				
Power supply ¹	4,5 5,5 V DC				
Current consumption without load	150 mA max				
Max load current	20 mA / channel (line driver RS-422) 30 mA / channel (NPN open collector)				
Electrical interface for incremental signals ²	line driver RS-422 (AELT-5000 or equivalent)				
Electrical interface for Hall phases ²	NPN open collector (pull-up max +30V DC) line driver RS-422 (AELT-5000 or equivalent)				
Max output frequency	150 kHz				
Counting direction	A leads B clockwise (shaft view)				
Electromagnetic compatibility	according to 2014/30/EU directive				
RoHS	according to 2011/65/EU (01/09/2020) directive				
UL / CSA	certificate n. E212495				

CONNECTIONS	
Function	Cable
+V DC	red
0 V	black
A+	green
B+	yellow
Z+	blue
A-	brown
B-	orange or pink
Z-	white
U+	grey
V+	violet
W+	grey-pink
U-	red-blue
V-	white-green
W-	brown-green
÷	shield

MECHANICAL SPECIFICATIONS				
Bore diameter	ø 8 / 9,52 (3/8") / 10 mm			
Enclosure rating	IP 40 (IEC 60529)			
Max rotation speed	6000 rpm			
Shock	50 G, 11 ms (IEC 60068-2-27)			
Vibration	5 G, 10 500 Hz (IEC 60068-2-6)			
Moment of inertia	0,5 x 10 ⁻⁶ kgm ² (12 x 10 ⁻⁶ lbft ²)			
Starting torque (at +20°C / +68°F)	< 0,01 Nm (1,42 Ozin)			
Bearing stage material	EN-AW 2011 aluminum			
Shaft material	1.4305 / AISI 303 stainless steel			
Housing material	EN-AW 2011 aluminum			
Bearings	n.2 ball bearings			
Bearings life	10 ⁹ revolutions			
Operating temperature ^{3, 4}	-10° +85°C (+14° +185°F)			
Storage temperature⁴	-25° +85°C (-13° +185°F)			
Weight	150 g (5,29 oz)			

as measured at the transducer without cable influences ² for further details refer to OUTPUT LEVELS on TECHNICAL BASICS section

³ measured on the transducer flange

4 condensation not allowed

RESOLUTIONS

500 4 / 6 poles 512 4 / 6 poles 1000 6 / 8 poles 1024 4 / 6 / 8 poles

please directly contact our offices for other pulses



MAIN FEATURES

Miniaturized encoder series for general factory automation applications, small AC motors and gearmotors.

- · 3 channel encoder (A / B / Z) up to 14400 ppr
- Power supply up to +30 V DC with several electrical interfaces available
- Up to 500 kHz output frequency
- Cable output, connectors available on cable end
- Metal cover for high IP enclosure rating
- Blind hollow shaft diameter up to 10 mm
- Mounting by stator coupling or torque pin







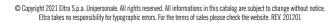


ORDERING CODE	ER	38F	500	S	5/30	P	10	X	X	PR	. XXX
incremental enco incremental enco blind hollow shaft w blind hollow sh	SERIES der series EM oder series ER vith stator coup raft with torque	MODEL Dling 38F e pin 38G RES opr from 1 e available v	GOLUTION 14400 pulses list ZER vithout zer with zer	RO PULSE TO pulse S TO pulse Z POWEI al interface) 5 30 V ELEC	R SUPPLY 5 V DC 55 7 DC 5/30 TRICAL IN PN open cu	TERFACE Ollector C sh-pull P e driver L S-422 RS BORE D		X	X	PR	. XXX
							mm 8 mm 10	F DATING			
						'	MGLUSUK	IP 65 X	OPTION		
								to be r	eported X		
			preferred c	able length	s 1,5 / 2 / 3	/5/10 m,			OUTF dard length UT TYPE (eg	. PR5)	
									,	uotom voi	VARIANT

custom version XXX











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Hollow shaft ø 48 mm encoder series recommended for motor feedback.

Power supply up to +24 V DC with several electrical interfaces available

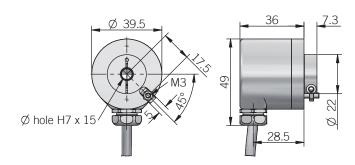
· 3 channel encoder (A / B / Z) up to 2048 ppr

Cable output, connectors available on cable end Through hollow shaft diameter up to 8 mm

Up to 150 kHz output frequency

Mounting by stator coupling

MAIN FEATURES



torque pin is included, for mounting instruction please refer to product installation notes

recommended mating shaft tolerance g6 dimensions in mm

ELECTRICAL SPECIFICA	TIONS
Sensing principle	magnetic Asic (EM) / reflective OptoAsic (ER)
Resolution	from 1 to 14400 ppr
Power supply ¹	$5 = 4.5 \dots 5.5 \text{ V DC}$ $5/30 = 4.5 \dots 30 \text{ V DC}$ (reverse polarity protection)
Power draw without load	5 = 200 mW typical 5/30 = 800 mW typical
Max load current	C/P = 50 mA/channel L/RS = 20 mA/channel
Electrical interface ²	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)
Max output frequency	250 kHz up to 3600 ppr / 500 kHz from 4000 ppr
Counting direction	A leads B clockwise (shaft view)
Startup time	150 ms
Electromagnetic compatibility	according to 2014/30/EU directive
RoHS	according to 2011/65/EU (01/09/2020) directive
UL / CSA	certificate n. E212495

CONNECTIONS		
Function	Cable C / P	Cable L/RS
+V DC	red	red
0 V	black	black
A+	green	green
A-	/	brown or grey
B+	yellow	yellow
B-	/	orange
Z+	blue	blue
Z-	/	white
÷	shield	shield

MECHANICAL SPECIFICA	ATIONS
Bore diameter	ø 6* / 6,35 (1/4") / 8* / 10 mm * with supplied shaft adapter
Enclosure rating	IP 65 (IEC 60529)
Max rotation speed	6000 rpm
Max shaft load ³	5 N axial / radial
Shock	50 G, 11 ms (IEC 60068-2-27)
Vibration	10 G, 10 2000 Hz (IEC 60068-2-6)
Moment of inertia	0,8 x 10 ⁻⁶ kgm ² (19 x 10 ⁻⁶ lbft ²)
Starting torque (at +20°C / +68°F)	< 0,01 Nm (1,42 Ozin)
Bearing stage material	EN-AW 2011 aluminum
Shaft material	1.4305 / AISI 303 stainless steel
Shaft adapter material	CuSn12 / CC483K bronze
Housing material	painted aluminum
Bearings	n.2 ball bearings
Bearings life	10 ⁹ revolutions
Operating temperature ^{4, 5}	-25° +85°C (-13° +185°F)
Storage temperature ⁵	-25° +85°C (-13° +185°F)
Weight	150 g (5,29 oz)

¹ as measured at the transducer without cable influences

EM SERIES RESOLUTIONS

1 - 2 - 4 - 5 - 6 - 10 - 15 - 16 - 20 - 30 - 32 - 40 - 50 - 60 - 70 - 80 - 90

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**-8000-8192-10000-12000-14400

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





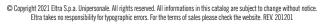




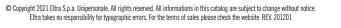


URDERING CODE	EL 4	48C 500	3	5	L	8	X	Б	PK	. XX
	SERIES									
increm	ental encoder series EL	וחחרו								
	blind hollow shaft through hollow shaft									
		RESOLUTION om 100 to 2048 ailable pulses list								
	Telef to the ava		RO PULSE							
		without ze	ro pulse S							
		with ze	ro pulse Z PNWFF	SUPPLY						
		(with L electric	al interface)	5 V DC 5						
				' DC 8/24 Trical in						
				PN open c	ollector C					
				pu lin	sh-pull P e driver L					
						IAMETER				
						mm 6 mm 8				
					E	NCLOSUR				
							IP 40 X			
						MA	X ROTATIO 60	N SPEED 00 rpm 6		
								OUTP	UT TYPE	
		nreferred o	ahle length	s 1 5 / 2 / 3	/ 5 / 10 m		able (stand I after OUTPI			
		prototrou	Jasio iongtii	0 1,0 / 2 / 0	, 5, 10 111,	to bo addoc		J. 111 L (08		VARIAN











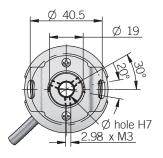
² for further details refer to OUTPUT LEVELS on TECHNICAL BASICS section

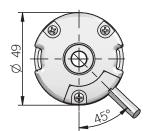
³ maximum load for static usage

⁴ measured on the transducer flange

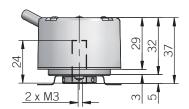
⁵ condensation not allowed

48 C / P





model C without hole on cover



recommended mating shaft tolerance g6 dimensions in mm

ELECTRICAL SPECIFICA	TIONS
Resolution	from 100 to 2048 ppr
Power supply ¹	5 = 4,5 5,5 V DC 8/24 = 7,6 25,2 V DC
Current consumption without load	100 mA max
Max load current	C / P = 30 mA / channel L = 20 mA / channel
Electrical interface ²	NPN open collector (pull-up max +30V DC) push-pull / line driver HTL (AEIC-7272) line driver RS-422 (AELT-5000 or equivalent)
Max output frequency	150 kHz
Counting direction	A leads B clockwise (shaft view)
Electromagnetic compatibility	according to 2014/30/EU directive
RoHS	according to 2011/65/EU (01/09/2020) directive
UL / CSA	certificate n. E212495

CONNECTIONS		
Function	Cable C / P	Cable L
+V DC	red	red
0 V	black	black
A+	green	green
A-	/	brown or grey
B+	yellow	yellow
B-	/	orange
Z+	blue	blue
Z-	/	white
<u></u>	shield	shield

MECHANICAL SPECIFICA	ATIONS
Bore diameter	ø6/8 mm
Enclosure rating	IP 40 (IEC 60529)
Max rotation speed	6000 rpm
Shock	50 G, 11 ms (IEC 60068-2-27)
Vibration	10 G, 10 500 Hz (IEC 60068-2-6)
Moment of inertia	2,5 x 10 ⁻⁶ kgm ² (59 x 10 ⁻⁶ lbft ²)
Starting torque (at +20°C / +68°F)	< 0,01 Nm (1,42 Ozin)
Bearing stage material	EN-AW 2011 aluminum
Shaft material	1.4305 / AISI 303 stainless steel
Housing material	PA 66 glass fiber reinforced
Bearings	n.2 ball bearings
Bearings life	10 ⁹ revolutions
Operating temperature ^{3, 4}	-20° +85 °C (-4° +185°F)
Storage temperature	-25° +85°C (-13° +185°F)
Weight	100 g (3,53 oz)

¹ as measured at the transducer without cable influences

RESOLUTIONS

100 - 200 - 360 - 400 - 500 - **512** - 1000 - **1024** - 2000 - **2048**

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



THROUGH HOLLOW SHAFT INCREMENTAL ENCODER

MAIN FEATURES

ø 49 mm encoder recommended in feedback control systems on AC servomotors,

- · 3 channel encoder (A / B / Z) up to 2048 ppr
- Power supply up to +24 V DC with several electrical interfaces available
- Up to 150 kHz output frequency
- Cable output, connectors available on cable end
- Through hollow shaft diameter up to 12,7 mm (1/2")
- Interchangeable with size 19 Resolver









ORDERING CODE EL	49C	500	S	5	L	8	X	6	PR	. XXX
SERIES incremental encoder EL blind hollow s through hollow s	MODEL haft 49C shaft 49P RES or from 100 e available	OLUTION O to 2048 pulses list ZEF vithout zer with zer	RO PULSE o pulse S o pulse Z POWEF al interface) 8 24 V ELEC	R SUPPLY 5 V DC 5 / DC 8/24 -TRICAL IN PN open c	TERFACE ollector C sh-pull P e driver L BORE C (3/8")	MAA	E RATING IP 40 X XX ROTATIO 60	DN SPEED 100 rpm 6	PUT TYPE	. XXX
		preferred (avie ieligth	5 1,3 / 2 / 3	/ 3 / 10 M,	to be added	ailei UUTP	PUT TYPE (eg	. rkɔ)	VARIANT













² for further details refer to OUTPUT LEVELS on TECHNICAL BASICS section

³ measured on the transducer flange 4 condensation not allowed

* ø 4 mm torque pin min 0.5 mm from bottom end

for size 19 (version 01 or 14) resolver flange please refer to Accessories

recommended mating shaft tolerance g6 dimensions in mm

ELECTRICAL SPECIFICAT	TIONS
Resolution	from 100 to 2048 ppr
Power supply ¹	5 = 4,5 5,5 V DC 8/24 = 7,6 25,2 V DC
Current consumption without load	100 mA max
Max load current	20 mA / channel
Electrical interface ²	NPN open collector (pull-up max +30V DC) push-pull / line driver HTL (AEIC-7272) line driver RS-422 (AELT-5000 or equivalent)
Max output frequency	150 kHz
Counting direction	A leads B clockwise (shaft view)
Electromagnetic compatibility	according to 2014/30/EU directive
RoHS	according to 2011/65/EU (01/09/2020) directive
UL / CSA	certificate n. E212495

CONNECTIONS		
Function	Cable C / P	Cable L
+V DC	red	red
0 V	black	black
A+	green	green
A-	/	brown or grey
B+	yellow	yellow
B-	/	orange
Z+	blue	blue
Z-	/	white
÷	shield	shield

MECHANICAL SPECIFICA	ATIONS
Bore diameter	ø 6 / 8 / 9,52 (3/8") / 10 / 12 / 12,7 (1/2") mm
Enclosure rating	IP 40 (IEC 60529)
Max rotation speed	6000 rpm
Shock	50 G, 11 ms (IEC 60068-2-27)
Vibration	20 G, 10 2000 Hz (IEC 60068-2-6)
Moment of inertia	2 x 10 ⁻⁶ kgm ² (47 x 10 ⁻⁶ lbft ²)
Starting torque (at +20°C / +68°F)	< 0,01 Nm (1,42 Ozin)
Bearing stage material	EN-AW 2011 aluminum
Shaft material	1.4305 / AISI 303 stainless steel
Housing material	nickel plated brass
Bearings	n.2 ball bearings
Bearings life	10° revolutions
Operating temperature ^{3, 4}	-20° +85 °C (-4° +185°F) -10° +100°C (+14° +212°F) on demand
Storage temperature ⁴	-25° +85 °C (-13° +185°F)
Weight	150 g (5,29 oz)

¹ as measured at the transducer without cable influences

 $^{\rm 2}$ for further details refer to OUTPUT LEVELS on TECHNICAL BASICS section

³ measured on the transducer flange

4 condensation not allowed

RESOLUTIONS

100 - 200 - 500 - 512 - 1000 - 1024 - 2000 - 2048

please directly contact our offices for other pulses





MAIN FEATURES

ø 49 mm encoder series recommended in feedback control systems on AC servomotors. They include a traditional incremental encoder and commutation signals (Hall effect phases).

- Easy mechanical mounting
- · Small dimensions
- Wide range of resolutions available
- High temperature resistance
- 6 channels encoder with optical generation of "Hall effect phases" (commutation signals)
- Signal transmission by bit parallel bus





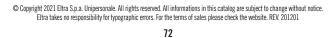




ORDERING CODE	EF	49C	6	L	500	S	5	L	8	X	6	PR	. XXX
S incremental encoder with Hall pha blind I	nollow s hollow s 4 pc 6 pc 8 pc	MODEL shaft 49C shaft 49P MOTO oles (2 pol oles (3 pol oles (4 pol FOR COM	DR POLES es pair) 4 es pair) 6 es pair) 8 IMUTATION IPN open c line driver INCREM	ollector C RS-422 L ENTAL RES or from 10 te available	SOLUTION O to 2048 pulses list ZEI vithout zer	RO PULSE o pulse S							
					with zer		R SUPPLY 5 V DC 5						
			ELE	CTRICAL	INTERFACI	FOR INC	REMENTAL						
								(3/8")	mm 6 mm 8 mm 9,52 mm 10 mm 12 mm 12,7				
									NCLOSUR				
									MA	X ROTATIO 60	00 rpm 6		
					preferred o	able length	s 1,5 / 2 / 3	/5/10 m.		able (stand 1 after OUTP	dard length		
							,				1-6		VARIANT









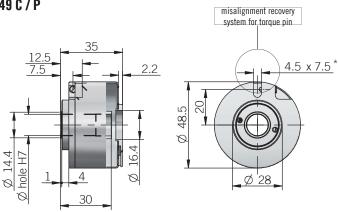
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49 C / P



* ø 4 mm torque pin min 0.5 mm from bottom end for size 19 (version 01 or 14) resolver flange please refer to Accessories

recommended mating shaft tolerance g6 dimensions in mm

CONNECTIONS

ELECTRICAL SPECIFICA	TIONS
Incremental resolution	from 100 to 2048 ppr
Power supply ¹	4,5 5,5 V DC
Current consumption without load	150 mA max
Max load current	20 mA / channel
Electrical interface for incremental signals ²	line driver RS-422 (AELT-5000 or equivalent)
Electrical interface for Hall phases ²	NPN open collector (pull-up max +30V DC) line driver RS-422 (AELT-5000 or equivalent)
Max output frequency	150 kHz
Counting direction	A leads B clockwise (shaft view)
Electromagnetic compatibility	according to 2014/30/EU directive
RoHs	according to 2011/65/EU (01/09/2020) directive
UL / CSA	certificate n. E212495

Function	Cable
+V DC	red
0 V	black
A+	green
B+	yellow
Z+	blue
A-	brown
B-	orange or pink
Z-	white
U+	grey
V+	violet
W+	grey-pink
U-	red-blue

white-green

brown-green

shield

MECHANICAL SPECIFICA	ATIONS
Bore diameter	ø 6 / 8 / 9,52 (3/8") / 10 / 12 / 12,7 (1/2") mm
Enclosure rating	IP 40 (IEC 60529)
Max rotation speed	6000 rpm
Shock	50 G, 11 ms (IEC 60068-2-27)
Vibration	5 G, 10 500 Hz (IEC 60068-2-6)
Moment of inertia	2 x 10 ⁻⁶ kgm ² (47 x 10 ⁻⁶ lbft ²)
Starting torque (at +20°C / +68°F)	< 0,01 Nm (1,42 Ozin)
Bearing stage material	EN-AW 2011 aluminum
Shaft material	1.4305 / AISI 303 stainless steel
Housing material	nickel plated brass
Bearings	n.2 ball bearings
Bearings life	10 ⁹ revolutions
Operating temperature ^{3, 4}	-20° +85 °C (-4° +185°F) -10° +100°C (+14° +212°F) on demand
Storage temperature ⁴	-25° +85°C (-13° +185°F)
Weight	150 g (5,29 oz)

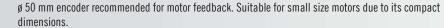
Weight | 150 g (5,29 d

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





- · 3 channel encoder (A / B / Z) up to 1024 ppr
- Higly integrated optical ASIC
- Wide power supply up to +30 V DC
- Through hollow shaft up to 10 mm diameter
- Mounting by coupling flange or stator coupling (front or rear fixing)
- IP 65 as protection grade
- Wide temperature range -40 ... + 100°C









ORDERING CODE	EH	50FP	1024	S	5/30	P	6	X	6	PR	. XXX
	SERIES coder series EH naft with front fix haft with rear fix	MODEL king 50FA king 50FP RES or from 100 e available	SOLUTION 0 to 1024 pulses list ZEF without zer	RO PULSE o pulse S o pulse S POWEI 5 30 V ELEC	R SUPPLY / DC 5/30 !TRICAL IN pu lin	TERFACE sh-pull P e driver L S-422 RS BORE D (3/8")	IAMETER mm 6 mm 8 mm 9,52 0 mm 10		6	PR	. XXX
						ı	NULUSURE	IP 65 X			
							MAX	(ROTATION	0 rpm 6		
							radial ca	able (standa		JT TYPE ,5 m) PR	
			preferred o	able length	s 1,5 / 2 / 3	/5/10 m,	to be added				

V-

W-

÷





75

VARIANT

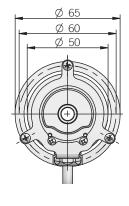
 $^{^{\}rm 2}$ for further details refer to OUTPUT LEVELS on TECHNICAL BASICS section

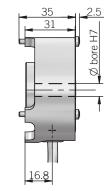
³ measured on the transducer flange

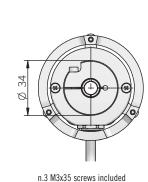
⁴ condensation not allowed

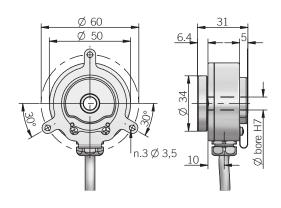
50 FP

50 FA









recommended mating shaft tolerance g6 dimensions in mm

ELECTRICAL SPECIFICATIONS					
Resolution	from 100 to 1024 ppr				
Power supply ¹	4,5 30 V DC (with reverse polarity protection)				
Power draw without load	800 mW max				
Max load current	20 mA / channel				
Electrical interface ²	push-pull / line driver HTL (AEIC-7272) line driver RS-422 (AELT-5000 or equivalent)				
Max output frequency	105 kHz				
Counting direction	A leads B clockwise (shaft view)				
Electromagnetic compatibility	according to 2014/30/EU directive				
RoHS	according to 2011/65/EU (01/09/2020) directive				
UL / CSA	certificate n. E212495				

RESOLUTIONS

100 - 200 - 256 - **360** - 400 - 500 - **1000** - **1024** ppr

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

CONNECTIONS		
Function	Cable P	Cable L / RS
+V DC	red	red
0 V	black	black
A+	green	green
A-	/	brown or grey
B+	yellow	yellow
B-	/	orange
Z+	blue	blue
Z-	/	white
-	shield	shield

MECHANICAL SPECIFICATIONS				
Bore diameter	ø 6 / 8 / 9,52 (3/8") / 10 mm			
Enclosure rating	IP 65 (IEC 60529)			
Max rotation speed	6000 rpm			
Shock	50 G, 11 ms (IEC 60068-2-27)			
Vibration	10 G, 10 2000 Hz (IEC 60068-2-6)			
Moment of inertia	0,5 x 10 ⁻⁶ kgm ² (12 x 10 ⁻⁶ lbft ²)			
Starting torque (at +20°C / +68°F)	< 0,01 Nm (1,42 Ozin)			
Bearing stage material	EN-AW 2011 aluminum			
Shaft material	1.4305 / AISI 303 stainless steel			
Housing material	EN-AW 2011 aluminum			
Bearings	n.2 ball bearings			
Bearings life	10° revolutions			
Operating temperature ^{3, 4}	-40° +100 °C (-40° +212°F)			
Storage temperature ⁴	-40° +100 °C (-40° +212°F)			
Weight	150 g (5,29 oz) mod.FP 200 g (7,05 oz) mod.FA			

as measured at the transducer without cable influences



MAIN FEATURES

Encoder series for direct mounting on motors; integrated elastic coupling allows radial and axial shaft play.

- · 3 channel encoder (A / B / Z) up to 1024 ppr
- Power supply up to +24 V DC with several electrical interfaces available
- Up to 150 kHz output frequency
- Cable outuput, connectors available on cable end
- Up to 10 mm bore diameter
- Integrated elastic couplig









ORDERING CODE	EH	53A	500	S	8/24	P	8	X	6	PR.N	XXX
inc	SERIES remental encoder series EH	MODEL									
	adjustable flange m adjustable flange m	odel 53A odel 53B									
	р										
			ZER	O PULSE							
		V	ithout zer/ with zer	o pulse S o pulse Z							
		/: 1			SUPPLY						
		(WITI	1 L electrica	ıl interface) 8 24 V	DC 8/24						
					TRICAL IN	TERFACE ollector C					
				IN	pu	sh-pull P					
					lin	e driver L	IAMETER				
						DONE	mm 6				
							mm 8 mm 10				
						E	NCLOSURE	RATING IP 54 X			
							MAX	X ROTATIO	N SPEED 00 rpm 6		
							radial cab	la (standar		PUT TYPE	
		р	referred cal	ole lengths 1	1,5/2/3/	5 / 10 m, to	be added at				
											VARIANT

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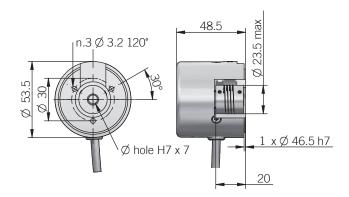




² for further details refer to OUTPUT LEVELS on TECHNICAL BASICS section

³ measured on the transducer flange 4 condensation not allowed

53 A



recommended mating shaft tolerance g6 dimensions in mm

53 B interface



ELECTRICAL SPECIFICATIONS					
Resolution	from 100 to 1024 ppr				
Power supply ¹	$5 = 4.5 \dots 5.5 \text{ V DC}$ 8/24 = 7,6 25,2 V DC (reverse polarity protection)				
Current consumption without load	100 mA max				
Max load current	C / P = 50 mA / channel L = 20 mA / channel				
Electrical interface ²	NPN open collector (pull-up max +30V DC) push-pull / line driver HTL (AEIC-7272) line driver RS-422 (AELT-5000 or equivalent)				
Max output frequency	150 kHz				
Counting direction	A leads B clockwise (shaft view)				
Electromagnetic compatibility	according to 2014/30/EU directive				
RoHS	according to 2011/65/EU (01/09/2020) directive				
UL / CSA	certificate n. E212495				

CONNECTIONS		
Function	Cable C / P	Cable L
+V DC	red	red
0 V	black	black
A+	green	green
A-	/	brown or grey
B+	yellow	yellow
B-	/	orange
Z+	blue	blue
Z-	/	white
÷	shield	shield

MECHANICAL SPECIFICATIONS				
Bore diameter	ø6/8/10 mm			
Enclosure rating	IP 54 (IEC 60529)			
Max rotation speed	6000 rpm			
Shock	50 G, 11 ms (IEC 60068-2-27)			
Vibration	10 G, 10 2000 Hz (IEC 60068-2-6)			
Moment of inertia	1 x 10 ⁻⁶ kgm ² (24 x 10 ⁻⁶ lbft ²)			
Starting torque (at +20°C / +68°F)	< 0,01 Nm (1,42 Ozin)			
Bearing stage material	EN-AW 2011 aluminum			
Shaft material	1.4305 / AISI 303 stainless steel			
Housing material	PA66 glass fiber reinforced			
Bearings	n.2 ball bearings			
Bearings life	10 ⁹ revolutions			
Operating temperature ^{3, 4}	-10° +60°C (+14° +140°F)			
Storage temperature ⁴	-25° +70°C (-13° +158°F)			
Weight	150 g (5,29 oz)			
and the second s	11 : 6			

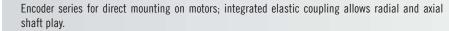
¹ as measured at the transducer without cable influences

RESOLUTIONS

50 - 100 - 120 - 125 - 128 - 150 - 180 - 200 - 250 - 256 - 300 - 360 - 400 - 500 - 512 - 600 - 720 - 1000 - 1024

please directly contact our offices for other pulses





- · 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
- Available with metal cover for heavy duty applications
- Integrated elastic couplig up to 10 mm bore diameter









ORDERING CODE	ER 53	A M*	500	S	5/28	Р	8	X	6	M	R	.162	+XXX
incremental incremental (SERIES encoder series EL encoder series ER MOD djustable flange model 5: djustable flange model 5: M * add for	EL BA BB ETAL COVER metal cover M RES ppr from 1 to the available p	OLUTION to 10000 pulses list	D PULSE pulse S pulse Z POWER interface) 5 28 V ELEC	s supply 5 v dc 5 5 cc 5/28 trical in	TERFACE Ollector C	8	X	6	M	R	.162	+XXX
		ſ	oower supp		pu lin	sh-pull P e driver L							
			preferre	d cable len	gths 2 / 3 /	E	o be added a	IP 54 X IP 64 S X ROTATIO (IP 64) 30 (IP 54) 60 cable (star	00 rpm 3 00 rpm 6	PUT TYPE n 1,5 m) P eg. PR5) nector M			
				to be re	ported only	with conne		M12 n M2 M1	nale conne 3 male cor 6 male cor	ctor M12 nnector H nnector C DIRECTI Mg connecto	see Accesso	ded .162 ories	VARIANT rsion XXX







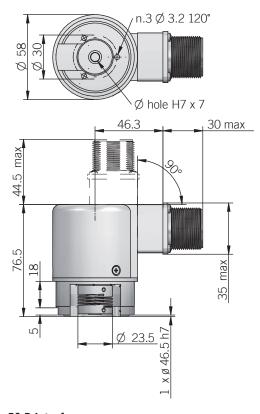
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² for further details refer to OUTPUT LEVELS on TECHNICAL BASICS section ³ measured on the transducer flange

⁴ condensation not allowed

53 A

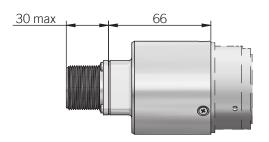


53 B interface

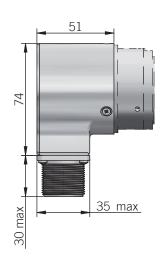


recommended mating shaft tolerance g6 dimensions in mm

Dimensions with metal cover and axial output



Dimensions with metal cover and radial output



ELECTRICAL SPECIFICATIONS Resolution from 1 to 10000 ppr $5 = 4,5 \dots 5,5 \text{ V DC}$ $5/28 = 4,5 \dots 30 \text{ V DC (reverse polarity protection)}$

Power draw without load	800 mW
Max load current	C/P = 50 mA/channel L/RS = 20 mA/channel
Electrical interface ²	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)

Max output frequency 250 kHz up to 6000 ppr 500 kHz from 7200 ppr **Counting direction** A leads B clockwise (shaft view)

Electromagnetic according to 2014/30/EU directive compatibility **RoHS** | according to 2011/65/EU (01/09/2020) directive UL / CSA | certificate n. E212495

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 **-**

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

MECHANICAL SPECIFICA	ATIONS
Bore diameter	ø6/8/10 mm
Enclosure rating	X = IP 54 (IEC 60529) S = IP 64 (IEC 60529)
Max rotation speed	IP 64 - 3000 rpm IP 54 - 6000 rpm
Shock	50 G, 11 ms (IEC 60068-2-27)
Vibration	10 G, 10 2000 Hz (IEC 60068-2-6)
Moment of inertia	1 x 10 ⁻⁶ kgm ² (24 x 10 ⁻⁶ lbft ²)
Starting torque (at +20°C / +68°F)	< 0,01 Nm (1,42 Ozin)
Bearing stage material	EN-AW 2011 aluminum
Shaft material	1.4305 / AISI 303 stainless steel
Housing material	PA66 glass fiber reinforced / painted aluminum
Bearings	n.2 ball bearings
Bearings life	10 ⁹ revolutions
Operating temperature ^{3, 4}	-10° +60°C (+14° +140°F) -25° +85°C (-13° +185°F) ER series

as measured at the transducer without cable influences

² for further details refer to OUTPUT LEVELS on TECHNICAL BASICS section

Storage temperature⁴ | -25° ... +70°C (-13° ... +158°F)

Weight 350 g (12,35 oz)

3 measured on the transducer flange

4 condensation not allowed

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	Α	F	6	F	4	1	10	1	8
A+	green	green	3	1	С	Α	1	А	3	6	5	2	1
A-	/	brown or grey	/	3	/	С	7	G	/	5	6	/	2
B+	yellow	yellow	5	2	Е	В	2	В	1	4	8	4	3
B-	/	orange	/	5	/	E	8	Н	/	3	1	/	4
Z+	blue	blue	4	/	D	/	3	С	5	2	3	3	5
Z-	/	white	/	/	/	/	9	I	/	8	4	/	6
<u></u>	shield	shield	7	7	G	G	10	J	housing	housing	9	/	/

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







M12 connector (8 pin) C connector (8 pin) M12 A coded IEC 60130-9 solder side view FV solder side view FV



H connector (12 pin) - M23 CCW Hummel 7.410.000000 -C connector (5 pin) IEC 60130-9 7.002.912.603 solder side view FV solder side view FV





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M connector (10 pin)

Amphenol MS3102-E-18-1

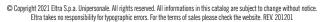














EL - ER 58 F / G EL - ER 63 F / G

BLIND HOLLOW SHAFT INCREMENTAL ENCODER

MAIN FEATURES

Hollow shaft encoder series for industrial applications with high mechanical resistance requirements. These encoders are designed to withstand high radial and axial shaft loads.

- · 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

Eltra* 1985-2020

- Available with metal cover for heavy duty applications
- Blind hollow shaft diameter up to 15 mm
- Mounting by stator coupling, torque stop slot or torque pin







58 F



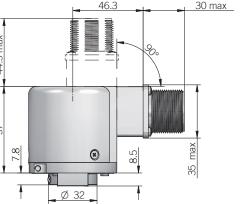


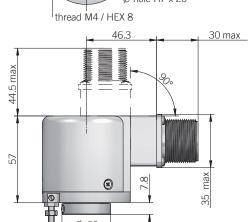
ORDERING CODE ER	58F	M*	500	S	5/28	P	8	X	3	M	R	. 162	+XXX
SERIES													
incremental encoder series EL incremental encoder series ER													
blind hollow shaft with stator cou blind hollow shaft with torqu	MODEL pling 58F												
blind hollow shaft with torque stop blind hollow shaft with torque blind hollow shaft with torque	slot 63F												
*	META add for meta	L COVER											
			OLUTION to 24000										
	refer to the		pulses list	ח חווו פר									
		V	vithout zer	ro pulse S ro pulse Z									
				POWE	R SUPPLY								
		(wit	h L electrica	5 28 \	/ DC 5/28								
					CTRICAL IN IPN open c	ollector C							
				- I F /20V	lin	ish-pull P							
			power sup	piy 5/28V	- output K	S-422 RS Bore D	IAMETER						
							mm 8 mm 10						
							mm 12 mm 14 mm 15						
						E	NCLOSUR	E RATING					
								IP 54 X IP 66 S					
							MA	AX ROTATIO 30	00 rpm 3				
								cable (sta	ndard lengt				
			preferr	ed cable lei	ngths 2 / 3 /	/ 5 / 10 m, to	o be added	MI	L male cor	nnector M			
								M12 r	32 male conne	ector M12			
									3 male co 6 male co	nnector C			
										DIRECT	axial A		
											radial R		
				to be re	eported only	with conne	ctor output	(eg. MR.162			or not inclu see Access	ories	VADIANT

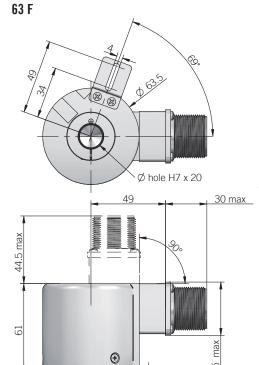
VARIANT custom version XXX

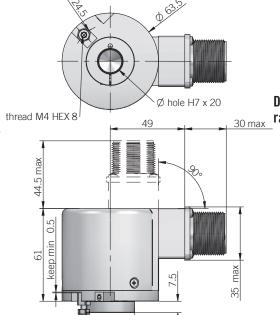
58 G Ø hole H7 x 20 thread M4 / HEX 8 30 max

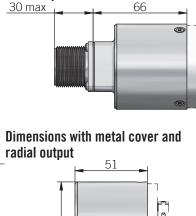
63 G





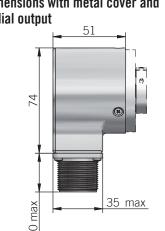






Dimensions with metal cover and

axial output



torque pin is included in model G, for model F please refer to Accessories

recommended mating shaft tolerance g6

dimensions in mm





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OPTICAL HOLLOW SHAFT INCREMENTAL ENCODERS | EL - ER 58 F / G - EL - ER 63 F / G

ELECTRICAL SPECIFICAT	TIONS
Resolution	from 1 to 2500 ppr (58 G) from 1 to 24000 ppr (58 F - 63 F / G)
Power supply ¹	$5 = 4.5 \dots 5.5 \text{ V DC}$ $5/28 = 4.5 \dots 30 \text{ V DC}$ (reverse polarity protection)
Power draw without load	800 mW max
Max load current	C / P = 50 mA / channel L / RS = 20 mA / channel
Electrical interface ²	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)
Max output frequency	250 kHz up to 6000 ppr 500 kHz from 7200 ppr
Counting direction	A leads B clockwise (shaft view)
Electromagnetic compatibility	according to 2014/30/EU directive
RoHS	according to 2011/65/EU (01/09/2020) directive
UL / CSA	certificate n. E212495

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** - 10240 - 12000 - **14400** - 16000 - 16384 - 18000 - **20000** -

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

MECHANICAL SPECIFICA	ATIONS
Bore diameter	\emptyset 8* / 10* / 12* / 14 / 15 mm * with supplied shaft adapter (valid for resolution \ge 3000 ppr)
Enclosure rating	X = IP 54 (IEC 60529) S = IP 66 (IEC 60529)
Max rotation speed	3000 rpm
Shock	50 G, 11 ms (IEC 60068-2-27)
Vibration	10 G, 10 2000 Hz (IEC 60068-2-6)
Moment of inertia	4 x 10 ⁻⁶ kgm ² (95 x 10 ⁻⁶ lbft ²)
Starting torque (at +20°C / +68°F)	< 0,02 Nm (2,83 Ozin) IP 54 < 0,06 Nm (8,50 Ozin) IP 66
Bearing stage material	EN-AW 2011 aluminum
Shaft material	1.4305 / AISI 303 stainless steel
Shaft adapter material	CuSn12 / CC483K bronze
Housing material	PA66 glass fiber reinforced / painted aluminum
Bearings	n.2 ball bearings
Bearings life	10 ⁹ revolutions
Operating temperature ^{3, 4}	-10° +60°C (+14° +140°F) EL series -20° +70°C (-4° +158°F) ER series
Storage temperature ⁴	-25° +70°C (-13° +158°F)
Fixing torque for collar clamping	1,5 Nm (212 Ozin) recommended
Weight	350 g (12,35 oz)

- ¹ as measured at the transducer without cable influences ² for further details refer to OUTPUT LEVELS on TECHNICAL BASICS section
- ³ measured on the transducer flange
- 4 condensation not allowed

CONNEC	TIONS												
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	Α	F	6	F	4	1	10	1	8
A+	green	green	3	1	С	Α	1	Α	3	6	5	2	1
A-	/	brown or grey	/	3	/	С	7	G	/	5	6	/	2
B+	yellow	yellow	5	2	Е	В	2	В	1	4	8	4	3
B-	/	orange	/	5	/	Е	8	Н	/	3	1	/	4
Z+	blue	blue	4	/	D	/	3	С	5	2	3	3	5
Z-	/	white	/	/	/	/	9	I	/	8	4	/	6

10

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

ᆂ

shield

shield



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



Amphenol MS3102-E-16-S solder side view FV

M connector (7 pin)



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



M12 connector (5 pin) M12 A coded solder side view FV

G



M12 connector (8 pin) M12 A coded solder side view FV



C connector (5 pin) circular M16 solder side view FV

housing



C connector (8 pin) IEC 60130-9 solder side view FV



H connector (12 pin) - M23 CCW Hummel 7.410.000000 -7.002.912.603 solder side view FV

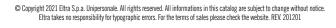
housing

9













EL 63 FB / GB / PB / PBF / PC / PCF

BLIND / THROUGH HOLLOW SHAFT INCREMENTAL ENCODER

MAIN FEATURES

Hollow shaft encoder series for small AC motors, thanks to compact size (only 35 mm height).

- · 3 channel encoder (A / B / Z) up to 2500 ppr
- Power supply up to +28 V DC with several electrical interfaces available
- Up to 300 kHz output frequency
- Cable output, connectors available on cable end
- Through or blind hollow shaft diameter up to 15 mm
- Shaft fixing by collar clamping









ORDERING CODE	EL (63GB	500	S	5/28	Р	8	Х	3	PR	. XXX
blind hollov blind through through hollow rea	SERIES incremental encoder EL v shaft with torque stop slot to shaft with torque pince shaft with torque stop slot shaft with torque stop slot	MODEL ot 63FB in 63GB in 63PB in 63PC t 63PCF RES pr from 1 available	OLUTION to 2500 pulses list I ZER vithout zer with zer a L electrica	RO PULSE o pulse S o pulse Z POWE al interface) 5 28 V ELEC	R SUPPLY 5 V DC 5 7 DC 5/28 TRICAL IN PN open co pu lin	TERFACE Ollector C sh-pull P e driver L S-422 RS	IAMETER				. ***
							mm 8 mm 10 mm 12 mm 14 mm 15				
			prefei	rred cable le	engths 2/3	/5/10 m,	MAX	ole (standar	rpm 3 OUTPL d length 1,		

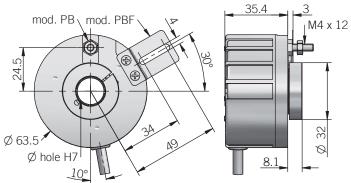




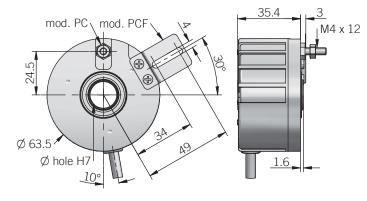
63 FB / GB

mod. GB mod. FB 35 3 M4 x 12 Ø 63.5 Ø hole H7 x 20 8.1

63 PB / PBF

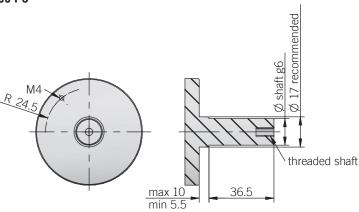


63 PC / PCF



torque pin is included in model GB / PB / PC, for model FB / PBF / PCF please refer to Accessories

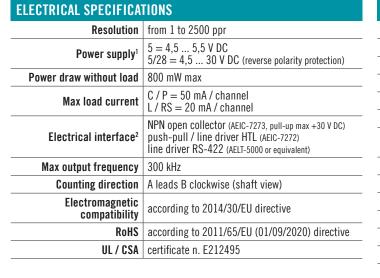
RECOMMENDED INTERFACE FLANGE DESIGN 63 PC



dimensions in mm







RESOLUTIONS

1 - 2 - 5 - **20** - 25 - **32** - 50 - 60 - 100 - 128 - **200** - 250 - 256 - **360** - 400 - 500 - 512 - 600 - 720 - 1000 - **1024** - 1440 - 1800 - **2000** - 2048 - 2500

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

CONNECTIONS		
Function	Cable C / P	Cable L / RS
+V DC	red	red
0 V	black	black
A+	green	green
A-	/	brown or grey
B+	yellow	yellow
В-	/	orange
Z+	blue	blue
Z-	/	white
	shield	shield

MECHANICAL SPECIFICA	ATIONS
Bore diameter	ø8/10/12/14/15 mm
Enclosure rating	IP 54 (IEC 60529)
Max rotation speed	3600 rpm continuous / 4000 rpm peak
Shock	50 G, 11 ms (IEC 60068-2-27)
Vibration	10 G, 10 2000 Hz (IEC 60068-2-6)
Moment of inertia	4 x 10 ⁻⁶ kgm ² (95 x 10 ⁻⁶ lbft ²)
Starting torque (at $+20^{\circ}$ C / $+68^{\circ}$ F)	< 0,04 Nm (5,66 Ozin)
Bearing stage material	EN-AW 2011 aluminum
Shaft material	1.4305 / AISI 303 stainless steel
Housing material	PA 66 glass fiber reinforced
Bearings	n.2 ball bearings
Bearings life	10 ⁹ revolutions
Operating temperature ^{3, 4}	-10° +60 °C (+14° +140°F)
Storage temperature⁴	-25° +70 °C (-13° +158°F)
Weight	350 g (12,35 oz)

as measured at the transducer without cable influences



87

² for further details refer to OUTPUT LEVELS on TECHNICAL BASICS section

³ measured on the transducer flange

⁴ condensation not allowed



EL - ER 72 A / B Blind Hollow Shaft incremental encoder

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

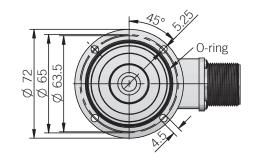




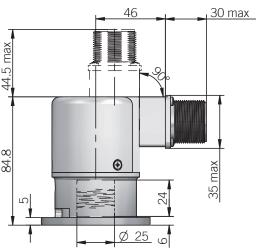
ORDERING CODE ER 72	1 A	M*	500	S	5/28	P	8	X	6	M	R	.162	+XXX
SERIES incremental encoder series EL incremental encoder series ER													
fixing holes ø 63,5 mm 7 fixing holes ø 65 mm 7 fixing holes ø 57 mm 7 fixing holes ø 60 mm 7	22												
	LANGE TYPE lange type A lange type B MET * add for me	AL COVER											
		RES ppr from 1 he available											
		V	vithout zer	o pulse S o pulse Z									
		(wit	h L electrica	POWEI al interface)	R SUPPLY 5 V DC 5								
				ELEC	/ DC 5/28 CTRICAL IN IPN open c	ITERFACE							
		ı	power sup		. pu	sh-pull P e driver L							
		,	, , ,				DIAMETER mm 6 mm 8						
						ı	mm 10 Enclosur	E RATING					
						(mod. E	L721 / EL72	IP 54 X 2) IP 66 S I X Rotati (
							III.r	(IP 66) 30	00 rpm 3				
									ndard lengt				
			preferr	ed cable lei	ngths 2 / 3 /	/5/10 m, t	o be added	MI	TION TYPE (L male coi 32 male co	nnector M			
								M12 n M2	nale conne 3 male co	ector M12			
								IAIT	o maie co		ION TYPE axial A		
											radial R IATING CON		
				to be re	eported only	with conne	ctor output	(eg. MR.162		g connecto ng connector		ories	VARIANT

721 A IP 66

72 B flange version







mod. 721 (Ø 63.5)

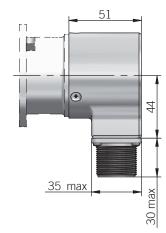
mod. 722 (Ø65) mod. 723 (Ø57) mod. 724 (Ø60)

 $/\emptyset$ hole H7 x 8

n.4 4.5 90°

721 A

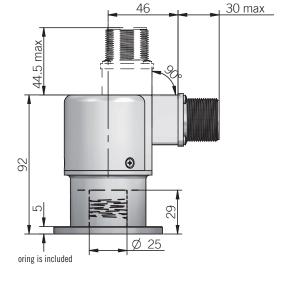
Dimensions with metal



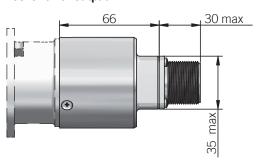
cover radial output

recommended mating shaft tolerance g6 dimensions in mm

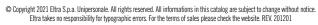
www.eltra.it



Dimensions with metal cover axial output









ELECTRICAL SPECIFICATIONS					
Resolution	from 1 to 24000 ppr				
Power supply ¹	$5 = 4.5 \dots 5.5 \text{ V DC}$ $5/28 = 4.5 \dots 30 \text{ V DC}$ (reverse polarity protection)				
Power draw without load	800 mW max				
Max load current	C / P = 50 mA / channel L / RS = 20 mA / channel				
Electrical interface ²	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)				
Max output frequency	250 kHz up to 6000 ppr 500 kHz from 7200 ppr				
Counting direction	A leads B clockwise (shaft view)				
Electromagnetic compatibility	according to 2014/30/EU directive				
RoHS	according to 2011/65/EU (01/09/2020) directive				
UL / CSA	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*

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

MECHANICAL SPECIFICA	ATIONS			
Bore diameter	ø6/8/10 mm			
Enclosure rating	X = IP 54 (IEC 60529) S = IP 66 (IEC 60529)			
Max rotation speed	IP 54 - 6000 rpm IP 66 - EL 3000 rpm / 60° C ER 3000 rpm / 70° C - 2000 rpm / 85°			
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 lbft ²)			
Starting torque (at +20°C / +68°F)	< 0,02 Nm (2,83 Ozin) IP 54 < 0,04 Nm (5,66 Ozin) IP 66			
Bearing stage material	EN-AW 2011 aluminum			
Shaft material	1.4305 / AISI 303 stainless steel			
Housing material	PA66 glass fiber reinforced / painted aluminum			
Bearings	n.2 ball bearings			
Bearings life	10° revolutions			
Operating temperature ^{3, 4}	-10° +60°C (+14° +140°F) EL series -25° +85°C (-13° +185°F) ER series			
Storage temperature ⁴	-25° +70°C (-13° +158°F)			
Weight	400 g (14,11 oz)			

¹ as measured at the transducer without cable influences

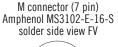
CONNEC	TIONS												
Function	Cable C / P	Cable L/RS	7 pin J C / P	7 pin J L / RS no Zero	7 pin M C / P	7 pin M L / RS no Zero	10 pin J L / RS with Zero	10 pin M L / RS with Zero	5 pin M12 C / P	8 pin M12 L / RS	12 pin H	5 pin C C / P	8 pin C L / RS
+V DC	red	red	6	4	F	D	4 - 5	D - E	2	7	12	5	7
0 V	black	black	1	6	Α	F	6	F	4	1	10	1	8
A+	green	green	3	1	С	А	1	А	3	6	5	2	1
A-	/	brown or grey	/	3	/	С	7	G	/	5	6	/	2
B+	yellow	yellow	5	2	Е	В	2	В	1	4	8	4	3
B-	/	orange	/	5	/	Е	8	Н	/	3	1	/	4
Z+	blue	blue	4	/	D	/	3	С	5	2	3	3	5
Z-	/	white	/	/	/	/	9	I	/	8	4	/	6
	shield	shield	7	7	G	G	10	J	housing	housing	9	/	/





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







M connector (10 pin) M12 conne Amphenol MS3102-E-18-1 M12 A solder side view FV solder side



M12 connector (5 pin) M12 A coded solder side view FV



M12 connector (8 pin) M12 A coded solder side view FV

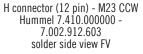


C connector (5 pin) circular M16 solder side view FV



C connector (8 pin) IEC 60130-9 solder side view FV

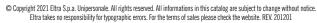














^{*} only with model EL721 / EL722 with "S" enclosure rating

 $^{^{\}rm 2}$ for further details refer to OUTPUT LEVELS on TECHNICAL BASICS section

³ measured on the transducer flange

⁴ condensation not allowed

EH 80 C / P / PG / K BLIND / THROUGH HOLLOW SHAFT INCREMENTAL ENCODER

MAIN FEATURES

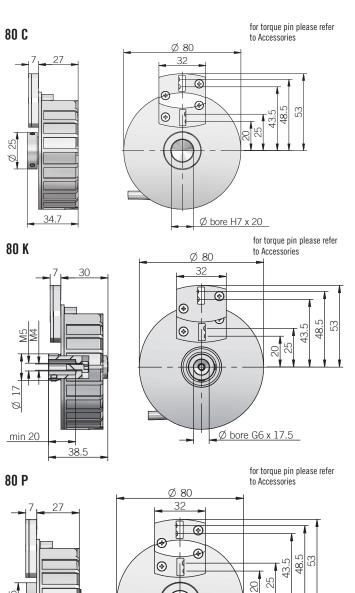
ø 80 mm encoder series recommended in feedback control systems on AC servomotors.

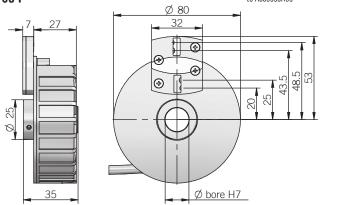
- 3 channel encoder (A / B / Z) up to 2048 ppr
- Power supply up to +30 V DC with several electric interfaces available
- Up to 105 kHz output frequency
- Cable output, connectors available on cable end
- Through or blind hollow shaft diameter up to 15 mm
- Shaft fixing by grain or collar clamping

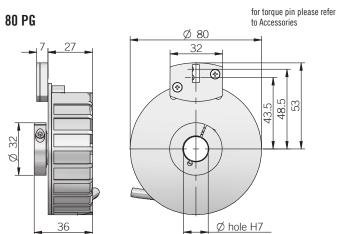




ORDERING CODE	EH	80C	500	S	5	L	8	Х	6	PR	. XX
	SERIES										
	incremental encoder EH										
	blind hollow sl	MODEL haft 80C									
	blind hollow shaft with rear fi	xing 80K									
	through hollow s through hollow shaft with collar clampi	ng 80PG									
		RES	OLUTION								
	refer to the		1 to 2048 pulses list								
				RO PULSE							
		V	vithout zeı with zeı	ro puise S ro puise Z							
					R SUPPLY						
		(wit	h L electrica	al interface) 5 28 V	/ DC 5/28						
					CTRICAL IN						
				ľ	IPN open co pu:	sh-pull P					
			nower sun	nlv 5/28V	line output RS -	e driver L					
			power sup	pry 0/201	output in		IAMETER				
						(mod. C	P) mm 8 mm 10				
						(mod. C -	P) mm 12				
						d. C - P - P(d. C - P - P(G) mm 14 G) mm 15				
							NCLOSUR				
							МΔ	IP 64 X X rotatio i	N SPFFN		
							(mod.	P - PG) 300	00 rpm 3		
							(mo	d. C - K) 600		UT TYPE	
			, .		15/0/2	15 110		idial (stand	ard length (),3 m) PR	
			preterred (cable length	ıs 1,5 / 2 / 3	/5/10 m,	to be added	after OUTPU	II IYPE (eg.		VARIAN







recommended mating shaft tolerance g6, model 80K mating shaft tolerance .. dimensions in mm

ELECTRICAL SPECIFICATIONS					
Resolution	from 1 to 2048 ppr				
Power supply ¹	$5 = 4.5 \dots 5.5 \text{ V DC}$ $5/28 = 4.5 \dots 30 \text{ V DC}$ (reverse polarity protection)				
Power draw without load	800 mW max				
Max load current	C / P = 50 mA / channel L / RS = 20 mA / channel				
Electrical interface ²	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)				
Max output frequency	105 kHz				
Counting direction	A leads B clockwise (shaft view)				
Electromagnetic compatibility	according to 2014/30/EU directive				
RoHS	according to 2011/65/EU (01/09/2020) directive				
UL / CSA	certificate n. E212495				

017 031	Continuate II. EZ1Z433					
MECHANICAL SPECIFICA	MECHANICAL SPECIFICATIONS					
Bore diameter	ø8/10/12/14/15 mm					
Enclosure rating	IP 64 (IEC 60529)					
Max rotation speed	3000 rpm (mod.P / PG) 6000 rpm (mod.C / K)					
Shock	50 G, 11 ms (IEC 60068-2-27)					
Vibration	20 G, 10 2000 Hz (IEC 60068-2-6)					
Moment of inertia	4 x 10 ⁻⁶ kgm ² (95 x 10 ⁻⁶ lbft ²)					
Starting torque (at +20°C / +68°F)	< 0,04 Nm (5,66 Ozin)					
Bearing stage material	PA66 glass fiber reinforced					
Shaft material	EN-AW 2011 aluminum (mod. C / K) 1.4305 / AISI 303 stainless steel (mod.P / PG)					
Housing material	PA66 glass fiber reinforced					
Bearings	n.2 ball bearings					
Bearings life	10 ⁹ revolutions					
Operating temperature ^{3, 4}	-20° +85 °C (-4° +185°F) -20° +100°C (-4° +212°F) on demand					
Storage temperature⁴	-25° +85 °C (-13° +185°F)					
Weight	250 g (8,82 oz)					

¹ as measured at the transducer without cable influences

⁴ condensation not allowed

CONNECTIONS		
Function	Cable C / P	Cable L / RS
+V DC	red	red
0 V	black	black
A+	green	green
A-	/	brown or grey
B+	yellow	yellow
B-	/	orange
Z+	blue	blue
Z-	/	white

RESOLUTIONS

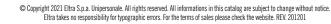
100* - **200** - 250 - 256 - 360 - 400 - **500** - 512 - 600 - **1000** - **1024** - **2000** - **2048**

shield

*available without zero pulse please directly contact our offices for other pulses, preferred resolutions in bold



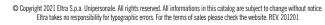






custom version XXX









shield

² for further details refer to OUTPUT LEVELS on TECHNICAL BASICS section

³ measured on the transducer flange

MAIN FEATURES

ø 88 mm through hollow shaft encoder designed for middle size asyncronous motors.

- · 3 channel encoder (A / B / Z) up to 2500 ppr
- Power supply up to +28 V DC with several electrical interfaces available
- · Up to 105 kHz output frequency
- · Cable output, connectors available on cable end
- · Sturdy mechanic
- · 25 or 30 mm bore diameter, others on request
- · Shaft fixing with grub screws

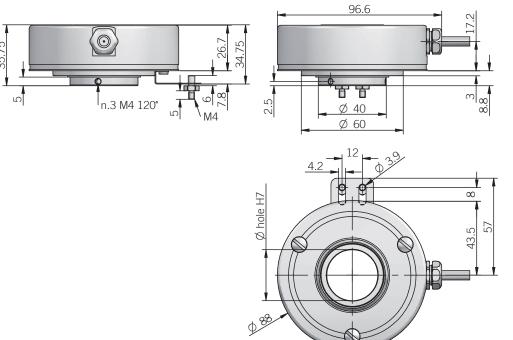




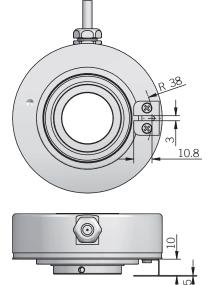
preferred cable lengths 1,5 / 2 / 3 / 5 / 10 m, to be added after OUTPUT TYPE (eg. PR5)

ORDERING CODE	EH	88P	1024	S	5/28	P	30	S	3	PR	. XXX
	SERIES										
incremental encoder si incremental encoder s											
through hollow shaft with to	rque stop	MODEL slot 88P									
	(mod.	EH) max	ppr 2500								
			ppr 2048 pulses list								
		١	without zer	RO PULSE to pulse S							
			with zer	o pulse Z POWE	 R Supply						
	(wi		h L electrica cal interface	e) 8 24 \	/ DC 8/24						
					/ DC 5/28 Ctrical in	TERFACE					
				N	IPN open c	ollector C sh-pull P					
		(mod. EH)	power sup	ply 5/28V	lin	e driver L					
						SHAFT D	IAMETER mm 25				
			nlease d	lirectly cont	act our offic	es for other	mm 30				
			piodocio	moonly dom	400 041 01110		NCLOSURE	RATING IP 65 S			
							MAX	ROTATION 300	N SPEED 10 rpm 3		
									OUTPU	IT TYPE	
							radial ca	able (standa	ard length 0,	5 m) PR	





OPTIONAL TORQUE STOP SLOT



for torque stop slot and torque pin please refer to

Accessories n.2 torque pins are included

recommended mating shaft tolerance g6 dimensions in mm

FIFCTRI	CAL SPEC	IFICATION

Resolution	from 250 to 2500 ppr (EH series) from 2 to 2048 ppr (EL series)
Power supply ¹	$5 = 4,5 \dots 5,5 \text{ V DC}$ $5/28 = 4,75 \dots 29,4 \text{ V DC}$ $8/24 = 7,6 \dots 25,2$ (reverse polarity protection)
Current consumption without load	100 mA max
Max load current	C/P = 50 mA/channel L/RS = 20 mA/channel
Electrical interface ²	NPN open collector (pullup max +30V DC) push-pull / line driver HTL (AEIC-7272) line driver RS-422 (AELT-5000 or equivalent)
Max output frequency	105 kHz
Counting direction	A leads B clockwise (shaft view)
Electromagnetic compatibility	according to 2014/30/EU directive
RoHS	according to 2011/65/EU (01/09/2020) directive

CONNECTIONS

www.eltra.it

Function	Cable C / P	Cable L/RS
+V DC	red	red
0 V	black	black
A+	green	green
A-	/	brown or grey
B+	yellow	yellow
В-	/	orange
Z+	blue	blue
Z-	/	white
-	shield	shield

UL / CSA certificate n. E212495

MECHANICAL SPECIFICATIONS

Shaft diameter	ø 25/30 mm		
Enclosure rating	IP 65 (IEC 60529)		
Max rotation speed	3000 rpm		
Shock	50 G, 11 ms (IEC 60068-2-27)		
Vibration	20 G, 10 2000 Hz (IEC 60068-2-6)		
Moment of inertia	45 x 10 ⁻⁶ kgm ² (10,68 x 10 ⁻⁴ lbft ²)		
Starting torque (at +20°C / +68°F)	< 0,1 Nm (14,16 Ozin)		
Bearing stage material	EN-AW 2011 aluminum		
Shaft material	1.4305 / AISI 303 stainless steel		
Housing material	EN-AW 2011 aluminum		
Bearings	n.2 ball bearings		
Bearings life	10 ⁹ revolutions		
Operating temperature ^{3, 4}	-10° +70°C (+14° +158°F)		
Storage temperature	-25° +85°C (-13° +185°F)		
Weight	350 g (12,35 oz)		

¹ as measured at the transducer without cable influences

EH SERIES RESOLUTIONS

250 - 256 - 500 - **512** - 700 - 720 - **1000** - **1024** - 1440 - 2500

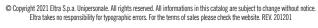
EL SERIES RESOLUTIONS

2 - 5 - 90 - 100 - 200 - **360** - 400 - 600 - 900 - **2000** - 2048

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









VARIANT

² for further details refer to OUTPUT LEVELS on TECHNICAL BASICS section

 $^{^{\}scriptscriptstyle 3}$ measured on the transducer flange

⁴ condensation not allowe



EH 88 PE / PET THROUGH HOLLOW SHAFT INCREMENTAL ENCODER

MAIN FEATURES

Cost effective encoder for asynchronous motors, suitable for elevators and stage machinery.

- 3 channel encoder (A / B / Z) up to 2500 ppr
- Power supply up to +28 V DC with several electrical interfaces available
- Up to 105 kHz output frequency
- Cable output, connectors available on cable end
- Sturdy mechanic
- Up to 40 mm bore diameter
- Shaft fixing by collar clamping

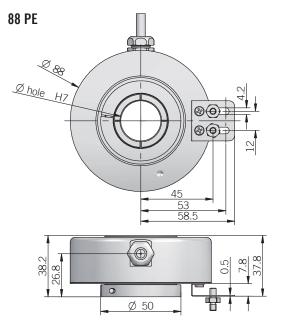




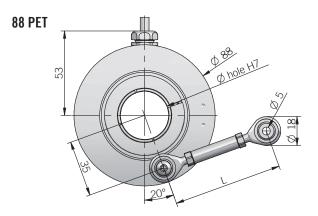




ORDERING CODE	EH	88PE	1024	S	5/28	P	30	X	3	PR	. XXX
	SERIES										
	incremental encoder series EH										
throu	ugh hollow shaft with torque stop	MODEL									
	gh hollow shaft for torque arm fixi										
	please refer to Accessories for										
	n	RES or from 500	OLUTION 0 to 2500								
		ie available									
				RO PULSE							
		V	without zer								
			WILII ZEI	ro pulse Z	R SUPPLY						
		(wit	h L electrica	al interface)	5 V DC 5						
					/ DC 5/28						
				ELEC	TRICAL IN	ITERFACE Ish-pull P					
					İin	ie driver L					
			power sup	ply 5/28V	- output R	S-422 RS					
						BORE D	mm 25				
							mm 30				
							E) mm 35 E) mm 38				
						(mod. P	E) mm 40				
							NCLOSURE				
								IP 54 X			
							MAX	ROTATION X	SPEED O rpm 3		
								5000		UT TYPE	
								able (standa	rd length 0	,5 m) PR	
			preferred o	cable length	s 1,5/2/3	3 / 5 / 10 m,	to be added	after OUTPUT	TYPE (eg.	PK5)	

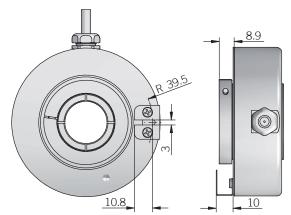


for torque pin please refer to Accessories





OPTIONAL TORQUE STOP SLOT



for torque stop slot and torque pin please refer to Accessories recommended mating shaft tolerance g6 dimensions in mm

www.eltra.it

ELECTRICAL SPECIFICATIONS Resolution from 500 to 2500 ppr $5 = 4.5 \dots 5.5 \text{ V DC}$ $5/28 = 4.5 \dots 30 \text{ V DC}$ (reverse polarity protection) Power supply¹ Power draw without load | 800 mW Max load current | 20 mA / channel push-pull / line driver HTL (AEIC-7272) Electrical interface² line driver RS-422 (AELT-5000 or equivalent) Max output frequency **Counting direction** A leads B clockwise (shaft view) Electromagnetic

UL / CSA certificate n. E212495

according to 2014/30/EU directive

RoHS | according to 2011/65/EU (01/09/2020) directive

MECHANICAL SPECIFICATIONS						
Bore diameter	ø 25 / 30 / 35 / 38 / 40 mm					
Enclosure rating	IP 54 (IEC 60529)					
Max rotation speed	3000 rpm					
Shock	50 G, 11 ms (IEC 60068-2-27)					
Vibration	10 G, 10 2000 Hz (IEC 60068-2-6)					
Moment of inertia	45 x 10 ⁻⁶ kgm² (10,68 x 10 ⁻⁴ lbft²)					
Starting torque (at +20°C / +68°F)	< 0,02 Nm (2,83 Ozin)					
Bearing stage material	EN-AW 2011 aluminum					
Shaft material	up to ø 38 mm: EN-AW 2011 aluminum ø 40 mm: 1.4305/AISI 303 stainless steel					
Housing material	EN-AW 2011 aluminum					
Bearings	n.2 ball bearings					
Bearings life	10 ⁹ revolutions					
Operating temperature ^{3, 4}	-30° +85°C (-22° +185°F)					
Storage temperature⁴	-30° +85°C (-22° +185°F)					
Weight	350 g (12,35 oz)					

¹ as measured at the transducer without cable influences

compatibility

RESOLUTIONS

500 - 512 - 720 - **1000 - 1024** - 1440 - 2500

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

ONNECTIONS		
Function	Cable P	Cable L/RS
+V DC	red	red
0 V	black	black
A+	green	green
A-	/	brown or grey
B+	yellow	yellow
B-	/	orange
Z+	blue	blue
Z-	/	white
<u>‡</u>	shield	shield







² for further details refer to OUTPUT LEVELS on TECHNICAL BASICS section

³ measured on the transducer flange 4 condensation not allowed

THROUGH HOLLOW SHAFT INCREMENTAL ENCODER

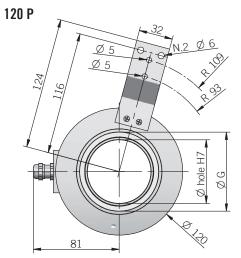
MAIN FEATURES

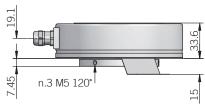
- ø 120 mm through hollow shaft encoder designed for medium / big size motors.
- 3 channel encoder (A / B / Z) up to 2048 ppr
- Power supply up to +24 V DC with several electrical interfaces available
- Up to 105 kHz output frequency
- Cable output, connectors available on cable end
- Through hollow shaft diameter up to 60 mm
- Shaft fixing by grub screws





ORDERING CODE EL	120P	1024	S	5/28	P	50	X	3	PR	. XXX
SERIES incremental encoder series EL through hollow shaft with spr pr refer to th	MODEL ring 120P RES or from 400 e available	SOLUTION O to 2048 pulses list ZEI without zer with zer	RO PULSE ro pulse S ro pulse Z POWEI al interface) e) 8 24 \ 5 28 \ ELEC	R SUPPLY 5 V DC 5 7 DC 8/24 7 DC 5/28 FTRICAL IN PN open c pu	ITERFACE Ollector C sh-pull P e driver L BORE [DIAMETER mm 40 mm 50 mm 60 ENCLOSUR	E RATING IP 54 X			· AAA
						IVIA	X ROTATIO 300	00 rpm 3	PUT TYPE	l
		preferred of	cable length	s 1,5/2/3	/5/10 m,		able (stand I after OUTPL	ard length	0,5 m) PR	ı



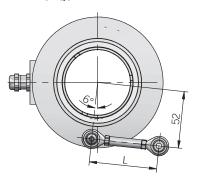


recommended mating shaft tolerance g6

dimensions in mm	
ELECTRICAL SPECIFICA	TIONS
Resolution	from 400 to 2048 ppr
Power supply ¹	$5 = 4.5 \dots 5.5 \text{ V DC}$ $5/28 = 4.75 \dots 29.4 \text{ V DC}$ $8/24 = 7.6 \dots 25.2 \text{ V DC}$ (reverse polarity protection)
Current consumption without load	100 mA max
Max load current	C / P = 50 mA / channel L = 20 mA / channel
Electrical interface ²	NPN open collector (pullup max +30V DC) push-pull / line driver HTL (AEIC-7272) line driver RS-422 (AELT-5000 or equivalent)
Max output frequency	105 kHz
Counting direction	A leads B clockwise (shaft view)
Electromagnetic compatibility	according to 2014/30/EU directive
RoHs	according to 2011/65/EU (01/09/2020) directive
UL / CSA	certificate n. E212495

CONNECTIONS		
Function	Cable C / P	Cable L
+V DC	red	red
0 V	black	black
A+	green	green
A-	/	brown or grey
B+	yellow	yellow
B-	/	orange
Z+	blue	blue
Z-	/	white
<u></u>	shield	shield







for torque arm please refer to Accessories

SHAFT DIAMETER	G
ø 40	ø 65
ø 50	ø 65
ø 60	ø 75

MECHANICAL SPECIFICA	ATIONS			
Bore diameter	ø 40 / 50 / 60 mm			
Enclosure rating	IP 54 (IEC 60529)			
Max rotation speed	3000 rpm			
Shock	50 G, 11 ms (IEC 60068-2-27)			
Vibration	10 G, 10 2000 Hz (IEC 60068-2-6)			
Moment of inertia	approx 215 x 10 ⁻⁶ kgm ² (51 x 10 ⁻⁴ lbft ²)			
Starting torque (at +20°C / +68°F)	< 0,05 Nm (7 Ozin)			
Bearing stage material	EN-AW 2011 aluminum			
Shaft material	EN-AW 2011 aluminum			
Housing material	EN-AW 2011 aluminum			
Bearings	n.2 ball bearings			
Bearings life	10 ⁹ revolutions			
Operating temperature ^{3, 4}	0° +60 °C (+32° +140°F)			
Storage temperature ⁴	-25° +70 °C (-13° +158°F)			
Weight 750 g (26,46 oz)				
as measured at the transducer without cable influences				

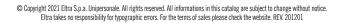
RESOLUTIONS

400 - 800 - 1000 - **1024** - 1440 - 1600 - 2000 - **2048**

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















² for further details refer to OUTPUT LEVELS on TECHNICAL BASICS section

³ measured on the transducer flange

⁴ condensation not allowed

MAGNETIC INCREMENTAL KIT ENCODER

MAIN FEATURES

EMI series encoders are suitable for several application fields like electric motors marine industry, iron and steel industry, textile machines, wood-working, paper-working, glass working, marble-working machinery and, more generally, automation and process control fields.

- · 3 channel encoder (A / B / Z) up to 2048 ppr
- Cable output, connectors available on cable end
- Compact dimensions
- No wear due to no contact magnetic technology
- Bore shaft diameter up to 10 mm
- IP 67 enclosure rating
- Wide operating temperature -40° ... +125°C (-40° ... +257°F)



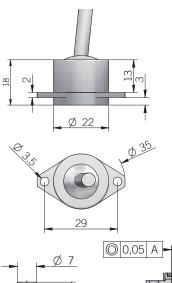




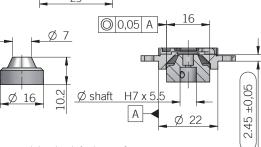


ORDERING CODE	EMI	22A	1024	Z	5	P	6	S	10	P	R	. XXX
magnetic incremental encoder se clamping fla for anodized version please directl	SERIES ries EMI ange ø 22 l	MODEL mm 22A ur offices RES opr from 2	OLUTION 2 to 2048 pulses list ZER vithout zer	RO PULSE o pulse S o pulse Z POWEI ELEC	R SUPPLY 5 V DC 5 CTRICAL IN pu jine driver	ITERFACE ISh-pull P RS-422 L DR BORE D (3/8")	IJAMETER mm 6 mm 8 mm 9,52 mm 10 ENCLOSURI	E RATING IP 67 S X ROTATIO 1000	N SPEED 0 rpm 10	IT TYPE		·
		ţ	oreferred ca	ble lengths	1,5 / 2 / 3 /	/5/10 m, t			ndard length (FION TYPE (eg		ON TYPE axial A	
											radial R	

22 A axial cable output



22 A radial cable output



recommended mating shaft tolerance g6 dimensions in mm

ELECTRICAL SPECIFICATIONS

from 2 to 2048 ppr
4,5 5,5 V DC
100 mA max
20 mA / channel
push pull / line driver RS-422 (AELT-5000 or equivalent)
205 kHz
A leads B with clockwise rotation (flange view)
\pm 0,35° typical / \pm 0,50° max
according to 2014/30/EU directive
according to 2011/65/EU (01/09/2020) directive
certificate n. E212495

nn		ECT	 т.
	W W		
			 w

Function	Cable P	Cable L
+V DC	red	red
0 V	black	black
A+	green	green
A-	/	brown or grey
B+	yellow	yellow
B-	/	orange
Z+	blue	blue
Z-	/	white
_	shield	shield

MECHANICAL SPECIFICA	ATIONS	
Bore diameter (magnet-actuator)	ø 6/8/9,52 (3/8")/10 mm	
Enclosure rating	IP 67 (IEC 60529)	
Max rotation speed	10000 rpm	
Shock	50 G, 11 ms (IEC 60068-2-27)	
Vibration	10 G, 10 2000 Hz (IEC 60068-2-6)	
Moment of inertia (magnet-actuator)	0,1 x 10 ⁻⁶ kgm ² (2,4 x 10 ⁻⁶ lbft ²)	
Bearing stage material	EN-AW 2011 aluminum	
Housing material	EN-AW 2011 aluminum	
Magnet-actuator material		
Operating temperature ^{3, 4}	-40° +125°C (-40° +257°F)	
Storage temperature	-25° +85°C (-13° +185°F)	
Weight	30 g (1,06 oz)	
Magnet actuator mounting tolerances (to get best electrical performances)	± 0,2 mm (axial) ± 0,1 mm (radial)	

¹ as measured at the transducer without cable influences

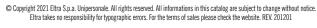
4 condensation allowed

RESOLUTIONS

2 - 4 - 8 - 10 - 16 - 20 - 32 - 40 - 64 - 80 - 100 - 125 - 128 - 200 - 250 - 256 - 400 - 500 - 512 - 1024 - 2048















² for further details refer to OUTPUT LEVELS on TECHNICAL BASICS section

³ measured on the transducer flange

MAGNETIC INCREMENTAL KIT ENCODER

MAIN FEATURES

Series of miniaturized encoders for integration on small size AC/DC motors, stepper motors or for limited size applications.

- · 3 channel encoder (A / B / Z) up to 90 ppr
- Power supply up to +30 V DC with several electrical interfaces available
- Cable output, connectors available on cable end
- Compact dimensions (only 23,6 mm height)
- No wear due to no contact magnetic technology
- Bore shaft diameter up to 10 mm
- Wide operating temperature -20° ... +100°C (-4° ... +212°F)
- OEM version without cover available



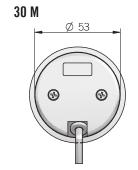


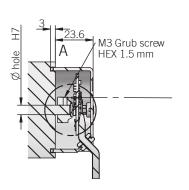
ORDERING CODE	EMI	30M	*\$	50	Z	5/30	Р	6	X	X	PR	. XXX
	SERIES magnetic incremental encoder series EMI	MODEL										
		oder 30M	COVER									
	*	add if witho		SOLUTION m 1 to 90								
			V	vithout zer	RO PULSE To pulse S To pulse Z							
					POWER	SUPPLY 5 V DC 5 DC 5/30						
					ELEC	TRICAL IN	ITERFACE					
				power sup	ply 5/30V -	lin	e driver L S-422 RS					
								mm 6 mm 6,35				
								mm 8 mm 10				
							E	NCLOSUR	E RATING IP 54 X			
									to be re	OPTION eported X		
						15/0/0	/5/10			lard length (
				preterred o	able length	S 1,5 / Z / 3	/5/10 m, t	to be added	arter UUTP	UI IYPE (eg		VADIAN

CE c SU'us

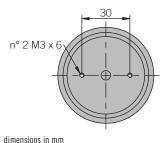


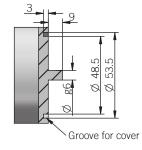
VARIANT custom version XXX

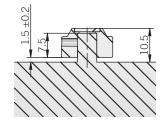




RECOMMENDED INTERFACE FLANGE DESIGN







ELECTRICAL SPECIFICATIONS			
Resolution	from 1 to 90 ppr		
Power supply ¹	$5 = 4,5 \dots 5,5 \text{ V DC}$ $5/30 = 4,5 \dots 30 \text{ V DC}$ (reverse polarity protection)		
Power draw without load	5 = 200 mW typical 5/30 = < 400 mW		
Max load current	C / P = 50 mA for channel $L / RS = 20$ mA per channel		
Electrical interface ²	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)		
Max output frequency	15 kHz		
Counting direction	A leads B clockwise (magnet actuator view)		
Accuracy	\pm 0,35° typical / \pm 0,90° max according to mounting tolerances and temperature range		
Startup time	150 ms		
Electromagnetic compatibility	according to 2014/30/EU directive		
RoHs	according to 2011/65/EU (01/09/2020) directive		
UL / CSA	certificate n. E212495		

MECHANICAL SPECIFICATIONS					
Bore diameter	ø 6 / 6,35 (1/4") / 8 / 10 mm				
Enclosure rating	IP 54 (IEC 60529) when properly installed with supplied oring				
Max rotation speed	limited only by output frequency				
Shock	50 G, 11 ms (IEC 60068-2-27)				
Vibration	20 G, 10 2000 Hz (IEC 60068-2-6)				
Moment of inertia	0,1 x 10 ⁻⁶ kgm ² (2,4 x 10 ⁻⁶ lbft ²)				
Magnet-actuator material	EN-AW 2011 aluminium				
Cover material	PA66 glass fiber reinforced				
Shaft radial play allowed	± 0,25 mm				
Shaft axial play allowed	± 0,5 mm				
Operating temperature ^{3, 4}	-20° +100°C (-4° +212°F)				
Storage temperature⁴	-20° +100°C (-4° +212°F)				
Weight 100 g approx (3,5 oz)					
as measured at the transducer without cable influences for further details refer to OUTPUT LEVELS on TECHNICAL BASICS section					

³ measured on the transducer flange



Function	Cable C / P	Cable L/RS
+V DC	red	red
0 V	black	black
A+	green	green
A-	/	brown or grey
B+	yellow	yellow
B-	/	orange
Z+	blue	blue
Z-	/	white
÷	shield	shield









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⁴ condensation not allowed

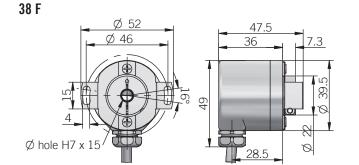
MAGNETIC INCREMENTAL BLIND HOLLOW SHAFT ENCODER

MAIN FEATURES

Thanks to the magnetic technology, the EMI 38 series is suitable for harsh environment applications such as marble and glass working machines, washing systems and generally for industrial automation.

- · 3 channel encoder (A / B / Z) up to 2048 ppr
- · Power supply up to +28 V DC with several electrical interfaces available
- · Cable output, connectors available on cable end
- Compact dimensions
- · Blind hollow shaft diameter up to 10 mm with shaft fixing by collar clamping
- · Sturdy construction due to separated chambers design
- Wide operating temperature -25° ... +100°C (-13° ... +212°F)

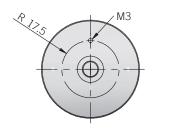


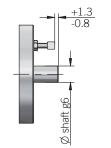


38 G Ø 39.5 M3 Ø hole H7 x 15

torque pin is included, for mounting instruction please refer to product installation notes

RECOMMENDED INTERFACE FLANGE DESIGN 38 F max 19 min 16.5





dimensions in mm

CONNECTIONS		
Function	Cable P	Cable L
+V DC	red	red
0 V	black	black
A+	green	green
A-	/	brown or grey
B+	yellow	yellow
В-	/	orange
Z+	blue	blue
Z-	/	white
-	shield	shield

ELECTRICAL SPECIFICATIONS					
Resolution	from 2 to 2048 ppr				
Power supply ¹	5 = 4,5 5,5 V DC 5/28 = 4,75 29,4 V DC 8/24 = 7,6 25,2 V DC (reverse polarity protection)				
Current consumption without load	80 mA max				
Max load current	20 mA per channel				
Electrical interface ²	push-pull / line driver HTL (AEIC-7272) line driver RS-422 (AELT-5000 or equivalent)				
Max output frequency	205 kHz				
Counting direction	A leads B clockwise (shaft view)				
Accuracy	\pm 0,35° typical / \pm 0,50° max				
Electromagnetic compatibility	according to 2014/30/EU directive				
RoHs	according to 2011/65/EU (01/09/2020) directive				
UL / CSA	certificate n. E212495				

MECHANICAL SPECIFICA	ATIONS
Shaft diameter	ø 6* / 6,35 (1/4") / 8* / 9,52 (3/8") / 10 mm * with supplied shaft adapter
Enclosure rating	X = IP 64 (IEC 60529) S = IP 66 (IEC 60529)
Max rotation speed	IP 66 - 3000 rpm IP 64 - 6000 rpm
Max shaft load ³	5 N axial / radial
Shock	50 G, 11 ms (IEC 60068-2-27)
Vibration	10 G, 10 2000 Hz (IEC 60068-2-6)
Moment of inertia	0,25 x 10 ⁻⁶ kgm ² (6 x 10 ⁻⁶ lbft ²)
Starting torque (at +20°C / +68°F)	< 0,02 Nm (2,83 Ozin)
Bearing stage material	EN-AW 2011 aluminum
Shaft material	1.4305 / AISI 303 stainless steel
Shaft adapter material	CuSn12 / CC483K bronze
Housing material	painted aluminum
Bearings	n.2 ball bearings
Bearing lifetime	10 ⁹ revolutions
Operating temperature ^{4, 5}	-25° +100°C (-13° +212°F)
Storage temperature ⁵	-25° +85°C (-13° +185°F)
Weight	150 g (5,29 oz)

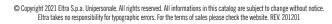
¹ as measured at the transducer without cable influences

RESOLUTIONS

2 - 4 - 8 - 10 - 16 - 20 - 32 - 40 - 64 - 80 - 100 - 125 - 128 - 200 - 250 - 256 - 400 - 500 - 512 - 1024 - 2048

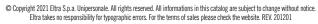
















² for further details refer to OUTPUT LEVELS on TECHNICAL BASICS section

³ maximum load for static usage

⁴ measured on the transducer flange ⁵ condensation not allowed

MAGNETIC INCREMENTAL SOLID SHAFT ENCODER

MAIN FEATURES

Thanks to the magnetic technology, EMI 40 series is suitable for harsh environment applications such as marble and glass working machines, washing systems and generally for industrial automation.

- 3 channel encoder (A / B / Z) up to 2048 ppr
- Power supply up to +28 V DC with several electrical interfaces available
- Cable output, connectors available on cable end
- · Compact dimensions
- · Solid shaft diameter up to 6 mm
- Sturdy construction due to separated chambers design
- Wide operating temperature -25° ... +100°C (-13° ... +212°F)



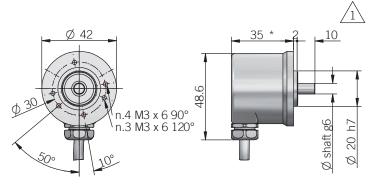






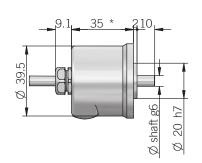
ORDERING CODE	EMI	40A	1024	Z	5	L	6	X	3	P	R	. XXX
URDERING CODE	SERIES magnetic incremental encoder series EMI clamping flange ø 20 refer to th	MODEL mm 40A RES ppr from 2 e available v	SOLUTION 2 to 2048 pulses list ZEI vithout zer with zer	RO PULSE FOR PULSE STORE AND PULSE STORE AND POWER All interface) 8 24 V 5 28 V	R SUPPLY 5 V DC 5 7 DC 8/24 7 DC 5/28 TRICAL IN	TERFACE Sh-pull P e driver L Shaft C	DIAMETER mm 4 mm 6 ENCLOSUR	E RATING IP 64 X IP 66 S		P	R	. XXX
								X ROTATIO (IP 66) 30 (IP 64) 60	00 rpm 3			
			preferred ca	able lengths	1,5/2/3/	5/10 m, t			OUTPI ard length (ION TYPE (eg			
											ON TYPE axial A radial R	

40 A radial cable output



recommended mating shaft tolerance H7 dimensions in mm

40A axial cable output



* IP66 + 7 mm

ELECTRICAL SPECIFICA	ELECTRICAL SPECIFICATIONS				
Resolution	from 2 to 2048 ppr				
Power supply ¹	$5 = 4.5 \dots 5.5 \text{ V DC}$ $5/28 = 4.75 \dots 29.4 \text{ V DC}$ $8/24 = 7.6 \dots 25.2 \text{ V DC}$ (reverse polarity protection)				
Current consumption without load	80 mA max				
Max load current	20 mA / channel				
Electrical interface ²	push-pull / line driver HTL (AEIC-7272) line driver RS-422 (AELT-5000 or equivalent)				
Max output frequency	205 kHz				
Counting direction	A leads B clockwise (shaft view)				
Accuracy	\pm 0,35° typical / \pm 0,50° max				
Electromagnetic compatibility	according to 2014/30/EU directive				
RoHS	according to 2011/65/EU (01/09/2020) directive				

UL / CSA certificate n. E212495

ONNECTIONS		
Function	Cable P	Cable L
+V DC	red	red
0 V	black	black
A+	green	green
A-	/	brown or grey
B+	yellow	yellow
B-	/	orange
Z+	blue	blue
Z-	/	white
÷	shield	shield

MECHANICAL SPECIFICATIONS					
Shaft diameter	ø 4 / 6 mm				
Enclosure rating	X = IP 64 (IEC 60529) S = IP 66 (IEC 60529)				
Max rotation speed	IP 66 - 3000 rpm IP 64 - 6000 rpm				
Max shaft load³	5 N axial / radial				
Shock	50 G, 11 ms (IEC 60068-2-27)				
Vibration	10 G, 10 2000 Hz (IEC 60068-2-6)				
Moment of inertia	0,5 x 10 ⁻⁶ kgm ² (12 x 10 ⁻⁶ lbft ²)				
Starting torque (at +20°C / +68°F)	< 0,02 Nm (2,83 Ozin) IP 64 < 0,05 Nm (7,10 Ozin) IP 66				
Bearing stage material	EN-AW 2011 aluminum				
Shaft material	1.4305 / AISI 303 stainless steel				
Housing material	painted aluminum				
Bearings	n.2 ball bearings				
Bearing lifetime	10 ⁹ revolutions				
Operating temperature ^{4, 5}	-25° +100°C (-13° +212°F)				
Storage temperature ⁵	-25° +85°C (-13° +185°F)				
Weight	150 g (5,29 oz)				

¹ as measured at the transducer without cable influences

RESOLUTIONS

2 - 4 - 8 - 10 - 16 - 20 - 32 - 40 - 64 - 80 - 100 - 125 - 128 - 200 - 250 - 256 - 400 - 500 - 512 - 1024 - 2048









VARIANT

custom version XXX

www.eltra.it

² for further details refer to OUTPUT LEVELS on TECHNICAL BASICS section

³ maximum load for static usage

⁴ measured on the transducer flange

⁵ condensation not allowed

MAGNETIC INCREMENTAL KIT ENCODER

MAIN FEATURES

EMI series encoders are suitable for several application fields like electric motors marine industry, iron and steel industry, textile machines, wood-working, paper-working, glass working, marble-working machinery and, more generally, automation and process control fields.

- 3 channel encoder (A / B / Z) up to 2048 ppr
- Power supply up to +28 V DC with several electrical interfaces available
- Cable or M12 connector output, other connectors available on cable end
- Compact dimensions
- No wear due to no contact magnetic technology
- Bore shaft diameter up to 10 mm
- IP 67 Enclosure rating
- Wide operating temperature -40° ... +125°C (-40° ... +257°F)





DERING CODE	EMI	bbA	512	L	5/28	P	10	X	10	M12	R	.162	+XXX
	SERIES												
magnetic incremental encoder	series EMI	MODEL											
	g holes ø 48	mm 55A											
for anodized version please dire	ectly contact (OLUTION										
		ppr from 2	2 to 2048										
	refer to the	e available	•	RO PULSE									
		V	vithout zer	o pulse S									
			with zer	o pulse Z	R SUPPLY								
		(wit	h L electrica	al interface)									
					TRICAL IN								
						ish-pull P le driver L							
		р	ower supp	oly 5/28 V	- output R	S-422 RS							
				MAGNE	T ACTUATO	OR BORE D	mm 6						
						(2/0")	mm 8 mm 9,52						
						(3/6)	mm 10						
						E	ENCLOSUR	E RATING IP 64 X					
								IP 67 S					
							MA	X ROTATIO 1000	ON SPEED O rpm 10				
									OUTI	PUT TYPE			
		ı	preferred ca	ible lengths	1,5/2/3/	/ 5 / 10 m, to		after DIREC	ndard lengt TION TYPE (6	eg. PR5)			
								M12 r	nale conne		ION TYPE		
										DIKEGI	axial A		
										M	radial R IATING CO	NNECTOR	
										g connecto	or not inclu	ided .162	
				to be rep	oorted only	with connec	tor output (eg. M12.162	2), for matin	g connector	see Access	ories	

VARIANT custom version XXX

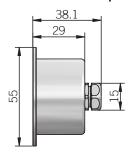
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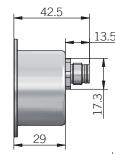
n.3 Ø 3.2 120° / n.3 Ø 3.2 120° Ø 16 Ø hole

55 A radial M12 output

55 A axial cable output



55 A axial M12 output



recommended mating shaft tolerance g6 dimensions in mm

ELECTRICAL SPECIFICATIONS					
Resolution	from 2 to 2048 ppr				
Power supply ¹	$5 = 4.5 \dots 5.5 \text{ V DC}$ $5/28 = 4.5 \dots 30 \text{ V DC}$ (reverse polarity protection)				
Power draw without load	800 mW max				
Max load current	20 mA / channel				
Electrical interface ²	push-pull / line driver HTL (AEIC-7272) line driver RS-422 (AELT-5000 or equivalent)				
Max output frequency	y 205 kHz				
Counting direction	A leads B clockwise (flange view)				
Accuracy	\pm 0,35° typical / \pm 0,50° max				
Electromagnetic compatibility	according to 2014/30/EU directive				
RoHS	according to 2011/65/EU (01/09/2020) directive				
UL / CSA	certificate n. E212495				

¹ as measured at the transducer without cable influences

<u>Ø 35 H7</u>

55 A radial cable output

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CONNECTIO	VS			
Function	Cable P	Cable L/RS	5 pin M12 P	8 pin M12 L / RS
+V DC	red	red	2	7
0 V	black	black	4	1
A+	green	green	3	6
A-	/	brown or grey	/	5
B+	yellow	yellow	1	4
B-	/	orange	/	3
Z+	blue	blue	5	2
Z-	/	white	/	8
<u></u>	shield	shield	housing	housing
		·		

MECHANICAL SPECIFICA	MECHANICAL SPECIFICATIONS					
Bore diameter (magnet-actuator)	ø 6 / 8 / 9,52 (3/8") / 10 mm					
Enclosure rating	X = IP 64 (IEC 60529) S = IP 67 (IEC 60529)					
Max rotation speed	10000 rpm					
Shock	50 G, 11 ms (IEC 60068-2-27)					
Vibration	10 G, 10 2000 Hz (IEC 60068-2-6)					
Moment of inertia (magnet actuator)	0,1 x 10 ⁻⁶ kgm ² (2,4 x 10 ⁻⁶ lbft ²)					
Bearing stage material	EN-AW 2011 aluminum					
Housing material	painted aluminum					
Magnet-actuator material	EN-AW 2011 aluminum					
Operating temperature ^{3, 4}	-40° +125°C (-40° +257°F) (with + 5 V DC) -40° +100°C (-40° +212°F) -25° +85°C (-13° +185°F) with M12 connector					
Storage temperature⁴	-40° +125°C (-40° +257°F)					
Weight	150 g (5,29 oz)					
Magnet actuator mounting tolerances (to get best electrical performances)	± 0,2 mm (axial) ± 0,1 mm (radial)					

RESOLUTIONS

2 - 4 - 8 - 10 - 16 - 20 - 32 - 40 - 64 - 80 - 100 - 125 - 128 - 200 - 250 - 256 - 400 - 500 - 512 - 1024 - 2048

M12 connector (5 pin) M12 A coded solder side view FV

M12 connector (8 pin) M12 A coded solder side view FV













² for further details refer to OUTPUT LEVELS on TECHNICAL BASICS section

³ measured on the transducer flange

⁴ condensation not allowed



MAGNETIC INCREMENTAL SOLID SHAFT ENCODER

MAIN FEATURES

Thanks to the magnetic technology, the EMI 63 series is suitable for harsh environment applications such as marble and glass working machines, washing systems, metal working machines and all the applications where high temperature resistance is required.

SERIES

63A 1024

- 3 channel encoder (A / B / Z) up to 2048 ppr
- Power supply up to +28 V DC with several electrical interfaces available
- Up to 300 kHz output frequency
- Cable or M12 connector output, other connectors available on cable end
- Solid shaft diameter up to 10 mm

ORDERING CODE

- Mounting by synchronous or centering 2,5" square flange
- Sturdy construction due to separated chambers design
- Wide operating temperature -25° ... +100°C (-13° ... +212°F)





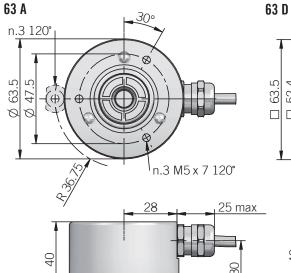


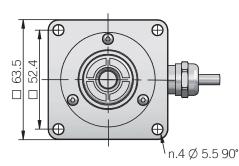
R .162 +XXX

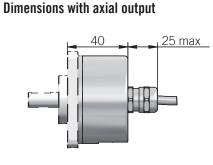


6 M12

magnetic incremental encoder series EMI									
MODEL									
synchronous flange ø 31,75 mm 63A centering square flange ø 31,75 mm 63D									
RESOLUTION									
ppr from 2 to 2048									
refer to the available pulses list									
ZERO F without zero p									
with zero p									
·	POWER SUPP	.y							
(with L electrical in									
5	5 28 V DC 5/2								
	ELECTRICAL	push-pull P							
		line driver L							
power supply 5	5/28 V - outpu								
			DIAMETER						
		(3/8)	mm 9,52 mm 10						
		1	ENCLOSUR	E RATING					
				IP 64 X					
				IP 66 S					
			IVIA	X ROTATIO (IP 66) 30					
				(IP 64) 60					
						PUT TYPE			
	- I 1 F / O	2 / 5 / 10 1		cable (star					
preierred cable	e lengths 1,5 / 2 /	3 / 3 / 10 III, t	o de added a		noin TTPE (6				
							ON TYPE		
							axial A		
							radial R	INFOTOR	
					mating	ı m g connecto	ATING CON		
to	to be reported onl	with connecto	or output (eg	g. M12R.162					
									VARIANT
							C	custom ver	sion XXX







Ø shaft g6 Ø 31.75 h7

_125 max Ø shaft g6 Ø 31.75 h7

recommended mating shaft tolerance H7 dimensions in mm

fixing clamps not included, please refer to Accessories					
ELECTRICAL SPECIFICATIONS					
Resolution from 2 to 2048 ppr					
Power supply ¹	$5 = 4.5 \dots 5.5 \text{ V DC}$ $5/28 = 4.5 \dots 30 \text{ V DC}$ (reverse polarity protection)				
Power draw without load	800 mW max				
Max load current	20 mA / channel				
Electrical interface ²	push-pull / line driver HTL (AEIC-7272) line driver RS-422 (AELT-5000 or equivalent)				
Max output frequency	205 kHz				
Counting direction	A leads B clockwise (shaft view)				
Accuracy	\pm 0,35° typical / \pm 0,50° max				
Electromagnetic compatibility	according to 2014/30/EU directive				
RoHS	according to 2011/65/EU (01/09/2020) directive				

Function	Cable P	Cable L / RS	5 pin M12 P	8 pin M12 L / RS
+V DC	red	red	2	7
0 V	black	black	4	1
A+	green	green	3	6
A-	/	brown or grey	/	5
B+	yellow	yellow	1	4
B-	/	orange	/	3
Z+	blue	blue	5	2
Z-	/	white	/	8

shield

shield

UL / CSA certificate n. E212495

MECHANICAL SPECIFICA	ATIONS
Shaft diameter	ø 9,52 (3/8") / 10 mm
Enclosure rating	X = IP 64 (IEC 60529) S = IP 66 (IEC 60529)
Max rotation speed	IP 66 - 3000 rpm IP 64 - 6000 rpm
Shock	50 G, 11 ms (IEC 60068-2-27)
Vibration	10 G, 10 2000 Hz (IEC 60068-2-6)
Moment of inertia	0,5 x 10 ⁻⁶ kgm ² (12 x 10 ⁻⁶ lbft ²)
Starting torque (at +20°C / +68°F)	< 0,01 Nm (1,42 Ozin) (IP 64) < 0,08 Nm (11,33 Ozin) (IP 66)
Bearing stage material	EN-AW 2011 aluminum
Shaft material	1.4305 / AISI 303 stainless steel
Housing material	EN-AW 2011 aluminum
Bearings	n.2 ball bearings
Bearing lifetime	10° revolutions
Operating temperature ^{3, 4}	-25° +100°C (-13° +212°F) -25° +85°C (-13° +185°F) with M12 connector
Storage temperature⁴	-25° +85°C (-13° +185°F)
Weight	350 g (12,35 oz)
1 1 1 1 1 1 20 1	11.0

¹ as measured at the transducer without cable influences

4 condensation not allowed **RESOLUTIONS**

2 - 4 - 8 - 10 - 16 - 20 - 32 - 40 - 64 - 80 - 100 - 125 - 128 - 200 - 250 - 256 - 400 - 500 - 512 - 1024 - 2048

M12 connector (5 pin) M12 A coded solder side view FV

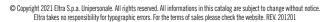
M12 connector (8 pin) M12 A coded solder side view FV



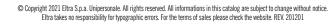












housing

housing





CONNECTIONS

² for further details refer to OUTPUT LEVELS on TECHNICAL BASICS section

³ measured on the transducer flange



MAGNETIC INCREMENTAL KIT ENCODER

MAIN FEATURES

Contactless encoder with through hollow shaft up to 28 mm. The compact size (only 11 mm thickness), the high IP grade and resistance to vibrations make this product an excellent solutions for heavy duty applications.

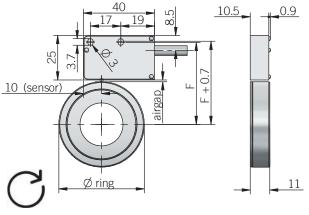
- 2 channel encoder (A / B) up to 4096 ppr
- Power supply up to +28 V DC with several electrical interfaces available
- Up to 350 kHz output frequency
- Cable output, connectors available on cable end
- Through hollow shaft diameter up to 28 mm
- Shaft mounting by tolerance ring
- Wide operating temperature -20° ... +85°C (-4° ... +185°F)





ORDERING CODE	ETMR	A	4096	S	5	L	9	S	8	PR	. XXX
		28 mm B RES	SOLUTION 4 to 4096 pulses list								
	וסוכו נט נוופ	c available		O PULSE							
		V	vithout zer								
		(wit	h L electrica	I interface)	5 V DC 5 DC 5/28						
		,	oower supp		lin	sh-pull P e driver L					
		ŀ	ower supp	ily 3/20 V	- output N		IAMETER				
						(3/8")	mm 9 mm 9,52 mm 10 mm 11				
							mm 14 mm 19 mm 24 mm 28				
						I	NCLOSURE	RATING IP 67 S			
							MAX	ROTATION	I SPEED 0 rpm 8		
									OUTP	UT TYPE	
			prefe	red cable le	engths 2 / 3	/5/10 m,	to be added a	ble (standa after OUTPU			

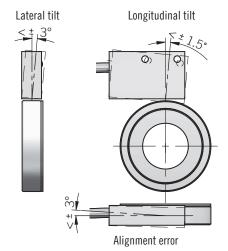
ETMR A / B



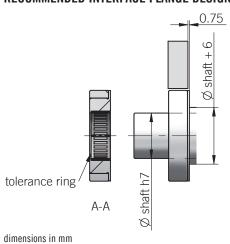
Model	A	В
ø ring	41,2	48
Fixing (F)	41,9	46
Airgap	0.3 ± 0.1	1 ± 0,1

tolerance ring is included for mounting instruction please refer to product installation notes

MOUNTING TOLERANCES



RECOMMENDED INTERFACE FLANGE DESIGN



ELECTRICAL SPECIFICATIONS		
Resolution	from 64 to 4096 ppr (powers of 2)	
Pole pitch		
Power supply ¹	$5 = 4.5 \dots 5.5 \text{ V DC}$ $5/28 = 4.5 \dots 30 \text{ V DC}$ (reverse polarity protection)	
Power draw without load	800 mW max	
Max load current	20 mA / channel	
Electrical interface ²	push-pull / line driver HTL (AEIC-7272) line driver RS-422 (AELT-5000 or equivalent)	
Max output frequency	350 kHz	
Counting direction	A leads B clockwise	
Accuracy	\pm 0,35° typical / \pm 0,50° max	
Electromagnetic compatibility	according to 2014/30/EU directive	
RoHS	according to 2011/65/EU (01/09/2020) directive	

MECHANICAL SPECIFICATIONS			
Bore diameter	ø 9 / 9,52 (3/8") / 10 / 11 / 14 / 19 / 24 / 28 mm		
Enclosure rating	IP 67 (IEC 60529)		
Max rotation speed	8000 rpm		
Shock	50 G, 11 ms (IEC 60068-2-27)		
Vibration	20 G, 10 2000 Hz (IEC 60068-2-6)		
Moment of inertia	115 x 10 ⁻⁶ kgm ² (27,29 x 10 ⁻⁴ lbft ²)		
Sensor body material	anodized aluminum		
Magnet-actuator material	1.4305 / AISI 303 stainless steel		
Operating temperature ^{3, 4}	-20° +85°C (-4° +185°F)		
Storage temperature⁴	-20° +85°C (-4° +185°F)		
Weight	100 g (3,53 oz)		

UL / CSA certificate n. E212495

⁴ condensation allowed

CONNECTIONS			
Function	Cable P	Cable L / RS	
+V DC	red	red	
0 V	black	black	
A+	green	green	
A-	/	brown or grey	
B+	yellow	yellow	
B-	/	orange	
<u>+</u>	shield	shield	

RESOLUTIONS

64* - 128 - 256 - 512 - 1024 - 2048 - 4096









¹ as measured at the transducer without cable influences

 $^{^{\}rm 2}$ for further details refer to OUTPUT LEVELS on TECHNICAL BASICS section

³ measured on the transducer flange

^{*} available with mod.B; please directly contact our offices for other pulses