

zero point.

Thanks to these specifications and the possibility to transfer data over a field

Max singleturn resolution 25 bit (33'554'432 ppr)

Supported output interfaces are: Bit parallel, Analogue, SSI, Profibus, Profinet and Ethercat.





EAR 58 B / C - 63 A / D / E BIT PARALLEL - SSI

SOLID SHAFT SINGLETURN ABSOLUTE ENCODER

MAIN FEATURES

Industry standard singleturn absolute encoder for factory automation applications.

- Optical sensor technology (propietary OptoASIC)
- Resolution up to 25 bit
- Power supply up to +30 VDC with Bit Parallel or SSI as electrical interface
- Cable or connector output
- Solid shaft diameter up to 10 mm
- Mounting by synchronous, clamping or centering 2,5" square flange









SSI ORDERING CODE

EAR 63A

MODEL

SERIES

synchronous flange ø 31.75 mm 63A synchronous flange ø 50 mm 58B clamping flange ø 36 mm 58C

singleturn absolute encoder EAR

13

G 8/30

X 2048

RS

10



ORDERING CODE BIT PARALLEL	EAR	63A	12	G	8/30	P	P	X	10	X	MA	R	.162	+XXX
singleturn absolute enc	SERIES oder EAR													
Siligietuili absolute elici	Juei EAR	MODEL												
synchronous flang	ge ø 31.75 i													
synchronous fla	inge ø 50 i	nm 58B												
clamping fl centering square flang														
centering square fl	ange ø 50 i	nm 63E												
			OLUTION											
(multiples and submultiple	s of 360) nr		1 1 to 13											
(mattpios and submattpio	.o or ooo, pr	11011100		DE TYPE										
				binary B										
(no no	wers of 2) b	nary offse	at code (N	gray G										
(no	powers of 2)	gray offse	et code (0	-XXX) GC										
					R SUPPLY									
					/ DC 8/30	TEDEAGE								
				ELEU	TRICAL IN	sh-pull P								
							LOGIC							
							egative N							
						l	positive P	OPTIONS						
						to be re	ported if n							
							vith extern							
							binary code th externa							
						reset with	external in	iputs LZE						
			(with	n binary cod	de) strobe /	reset with	n external							
									B) mm 6					
								/D) 3/8"-	mm 9,52					
							(mod. 58 C							
							IP 65		ENCLOSUR e / IP67 cov					
							00	onare orac	,, 11 0, 001	IP 67 S				
											PUT TYPE			
							(withou		able (stand cable (stand					
				preferred	cable lengtl			e added afte	er DIRECTIO	N TYPE (eg.	PDR5)			
							(without re	set option)	19 pin MIL	male conr				
											DIKECT	radial R		
											N	IATING COI	INECTOR	
											g connecto	or not inclu	ded .162	
					to be rep	orted only v	with connec	tor output (eg. MAR.162	!), for matin	g connector	see Accessi		VADIANT
														VARIANT









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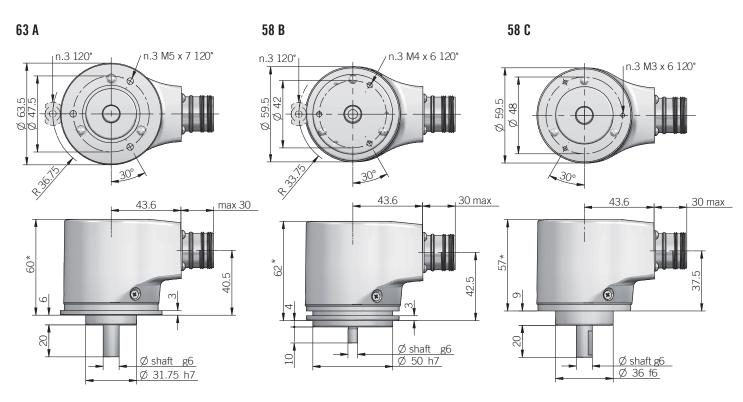
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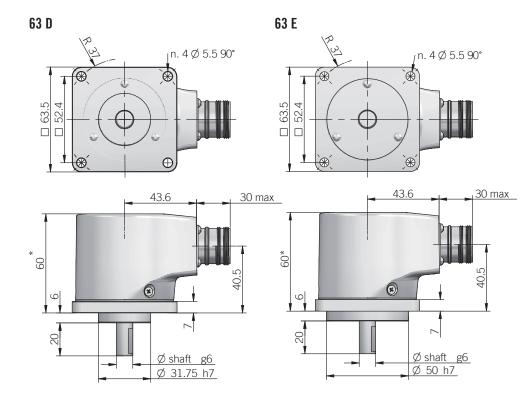
custom version XXX

R .162 +XXX



fixing clamps not included, please refer to Accessories

fixing clamps not included, please refer to Accessories



 * with option ZP +1,5 mm recommended mating shaft tolerance H7 dimensions in mm







T PARALLEL CONNECTION	DNS			
Function	Binary / Gray	Cable PD	Cable PE	19 pin MA
bit 1 (LSB)	B°/G°	green	green	A
bit 2	B1/ G1	yellow	yellow	В
bit 3	B^2/G^2	blue	blue	С
bit 4	B ³ / G ³	brown	brown	D
bit 5	B ⁴ / G ⁴	orange or pink	orange or pink	E
bit 6	B ⁵ / G ⁵	white	white	F
bit 7	B ⁶ /G ⁶	grey	grey	G
bit 8	B ⁷ / G ⁷	purple	purple	Н
bit 9	B ⁸ /G ⁸	grey / pink	grey / pink	J
bit 10	B ⁹ /G ⁹	white / green	white / green	K
bit 11	B ¹⁰ / G ¹⁰	brown / green	brown / green	L
bit 12	B11 / G11	white / yellow	white / yellow	M
bit 13	B ¹² / G ¹²	yellow / brown	yellow / brown	N
STROBE	/	/	green / blue	Р
LATCH	/	/	yellow / grey	R
0 V	1	black	black	T
U / D	1	red / blue	red / blue	U
RESET	1	/	pink / green	/
+ V DC	1	red	red	V
÷	/	shield	shield	S

SSI CONNECTIONS						
Function	Cable PC	7 pin MC	10 pin MD	12 pin HA	12 pin HA	8 pin M12
+ V DC	red	G	G	8	8	8
0 V	black	F	F	1	1	5
DATA +	green	С	С	2	2	3
DATA -	brown	D	D	10	10	2
CLOCK +	yellow	A	A	3	3	4
CLOCK -	orange or pink	В	В	11	11	6
A+	grey	/	/	/	6	/
A-	blue	/	/	/	7	/
B+	purple	/	/	/	9	/
В-	white / green	/	/	/	12	/
U/D	red / blue	E	E	5	5	7
RESET	white	/	Н	4	4	1
÷	shield	housing	housing	9	housing	housing

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



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



MD connector (10 pin) Amphenol MS3102-E-18-1P HA connector (12 pin) M23 CCW Hummel 7.410.000000 - 7.002.912.603 solder side view FV

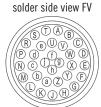


solder side view FV

MA connector (19 pin) Amphenol 62IN 12E 14-19 P solder side view FV



ME connector (32 pin) Glenair IPT 02 A 18-32 P F6



OPTICAL SINGLETURN ABSOLUTE ENCODERS | EAR 58 B / C - 63 A / D / E PAR - SSI

ELECTRICAL SPECIFICA	TIONS			
Resolution	P = from 90 ppr to 13 bit S = from 360 ppr to 25 bit			
Power supply ¹	7,6 30 V DC (reverse polarity protection)			
Power draw without load	< 1 W			
Max load current	20 mA / channel			
Absolute electrical interface²	$\begin{array}{l} P = \text{push pull (iC-DL)} \\ S = RS-422 \text{ (THVD1451 or equivalent)} \end{array}$			
Incremental electrical interface²	$\label{eq:Lagrangian} \begin{split} L &= \text{HTL diff. (AEIC-7272, active short circuit protection)} \\ P &= \text{Push-Pull (AEIC-7272, active short circuit protection)} \\ RS &= \text{RS-422 (AELT-5000 or equivalent)} \end{split}$			
Max incremental output frequency	128 kHz			
Auxiliary inputs (U/D - RESET - LATCH)	active high (+V DC) connect to 0 V if not used / RESET - LATCH t _{min} 150 ms			
Max frequency	50 kHz LSB (Bit Parallel) clock input: 100 kHz 1 MHz (SSI)			
Code type	binary or gray			
Logic	SSI = positive Bit parallel = positive or negative			
SSI monostable time (Tm)	20 μs			
SSI pause time (Tp)	> 35 µs			
SSI frame	left aligned format (MSB LSB) up to 13 bit = length 13 bit from 14 to 21 bit = length 21 bit from 22 to 25 bit = length 25 bit			
SSI status and parity bit	on request			
Counting direction	decreasing clockwise (shaft view)			
Start-up time	700 ms			
Accuracy	± 250 arc-sec			
Electromagnetic compatibility	according to 2014/30/EU directive			
RoHS	according to 2011/65/EU (01/09/2020) directive			
UL / CSA	certificate n. E212495			

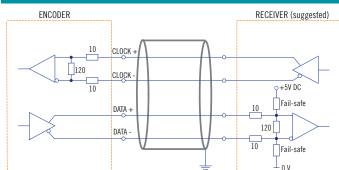
MECHANICAL SPECIFICATIONS						
Shaft diameter	ø 6 / 9,52 (3/8") / 10 mm					
Enclosure rating IEC 60529	X = IP 65 shaft side / IP67 cover side S = IP 67					
Max rotation speed	see table					
Max shaft load³	200 N axial / 70 N radial					
Shock	50 G, 11 ms (IEC 60068-2-27)					
Vibration	10 G, 10 2000 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)	< 0,03 Nm (4,25 Ozin)					
Bearing stage material	EN-AW 2011 aluminum					
Shaft material	1.4305 / AISI 303 stainless steel					
Housing material	painted aluminium					
Bearings	n.2 ball bearings					
Bearings life	10 ⁹ revolutions					
Operating temperature Bit parallel ^{4, 5}	-20° +85°C (-4 +185°F)					
Operating temperature SSI ^{4, 5}	-40° +100°C (-40° +212°F) -20° +100°C (-4° +212°F) with cable output -25° +85°C (-13° +185°F) with M12 connector					
Storage temperature ⁵	-20° +85°C (-4° +185°F)					
Weight approx 300 g (10,58 oz)						

¹ as measured at the transducer without cable influences ² for further details refer to OUTPUT LEVELS on TECHNICAL BASICS section

⁴ measured on the transducer flange ⁵ condensation not allowed

ROTATION SPEED DERATING TABLE								
Temperature °C (°F)	Max speed (rpm)	Max continuous speed (rpm)						
up to +70 (+158)	10000	8000						
+70 +85 (+158 +185)	8000	5000						
+85 +100 (+185 212)	5000	3000						











³ maximum load for static usage



EAR 58 F - 63 F / G BIT PARALLEL - SSI

BLIND HOLLOW SHAFT SINGLETURN ABSOLUTE ENCODER

MAIN FEATURES

Industry standard singleturn absolute encoder for factory automation applications.

- Optical sensor technology (propietary OptoASIC)
- Resolution up to 25 bit
- Power supply up to +30 VDC with Bit Parallel or SSI as electrical interface
- Cable or connector output
- Blind hollow shaft up to 15 mm
- Mounting by stator coupling, torque stop slot or torque pin













ORDERING CODE

to be added with incremental output

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ORDERING CODE BIT PARALLEL	EAR	58F	12	G	8/30	Р	P	X	15	X	MA	R	.162	+XXX
singleturn absolute e	SERIES													
Ç		MODEL												
blind hollow shaft wi blind hollow shaft wit blind hollow sha	h torque stop	slot 63F pin 63G												
(multiples and submult	inles of 360) n	bit from												
(iliuitipies aliu subiliuit	ipies or 3007 pj	pi iiviii 30	CO	DE TYPE										
				binary B gray G										
(ni	o powers of 2) b (no powers of 2)	inary offse	t code (0- t code (0-	XXX) BC										
	, . , ,	g . ,	•	POWER	SUPPLY DC 8/30									
					TRICAL IN	TERFACE								
					pu	sh-pull P	LOGIC							
						ne	gative N ositive P							
								OPTIONS						
						latch w	ith extern							
						(with t reset wit	inary code h external) strobe S input ZE						
			(with	binary cod		reset with e reset with								
				, , , , , , ,					MMETER mm 14					
					11 / 10				mm 15					
	O	liameters 6 /	7 8 7 9,52 (3	3/8") / 10 /	11 / 12 mm	i with option			NCLOSUR					
							IP 65	shaft side	: / IP67 cov	ver side X IP 67 S				
							/withou	ıt antiana) o	able (stand	OUTI	PUT TYPE			
				, ,		0.10.15.1			able (stand	dard length	1,5 m) PE			
				preferred	cable length	ns 2 / 3 / 5 /			er DIRECTION 19 pin MIL		nector MA			
											DIRECT	radial R		
										motin		ATING CO		
					to be rep	oorted only w	ith connec	tor output (e	eg. MAR.162			or not inclu see Accesso		
												(custom ve	VARIANT rsion XXX





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122

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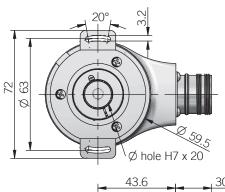
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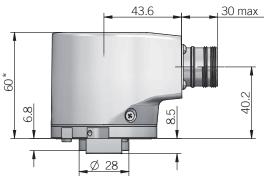


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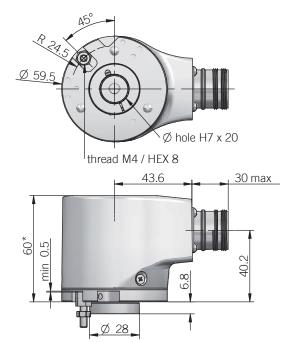
VARIANT

R .162 +XXX EAR 58F G 8/30 X 2048 RS 15 **SERIES** singleturn absolute encoder EAR MODEL blind hollow shaft with stator coupling 58F blind hollow shaft with torque stop slot 63F blind hollow shaft with torque pin 63G RESOLUTION bit 13 / 16 / 17 / 18 / 21 / 25 ppr 360 / 720 / 1440 / 2880 / 3600 binary B gray ((no powers of 2) binary offset code (0-XXX) B (no powers of 2) gray offset code (0-XXX) GC POWER SUPPLY 8 ... 30 V DC 8/30 ELECTRICAL INTERFACE Serial Synchronous Interface - SSI S to be reported if not used X reset with external input ZE reset on cover or with external input ZP INCREMENTAL RESOLUTION (powers of 2) ppr from 128 to 8192 INCREMENTAL ELECTRICAL INTERFACE available with PC or HA output type line driver HTL L push pull P line driver RS-422 RS BORE DIAMETER mm 14 mm 15 diameters 6 / 8 / 9,52 (3/8") / 10 / 11 / 12 mm with optional shaft adapter, see Accessories **ENCLOSURE RATING** IP 65 shaft side / IP67 cover side X IP 67 S **OUTPUT TYPE** cable (standard length 1,5 m) PC preferred cable lengths 2 / 3 / 5 / 10 m, to be added after DIRECTION TYPE (eg. PCR5) (without reset option) 7 pin MIL male connector MC (with reset option) 10 pin MIL male connector MD 12 pin M23 male connector HA 8 pin M12 male connector M12 DIRECTION TYPE MATING CONNECTOR mating connector not included .162 to be reported only with connector output (eg. HAR.162), for mating connector see Accessories



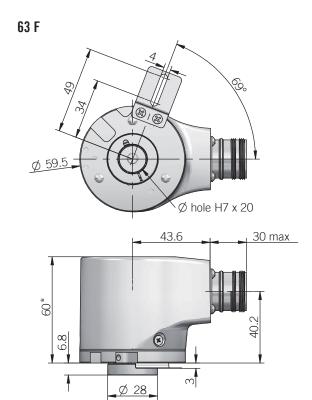


63 G

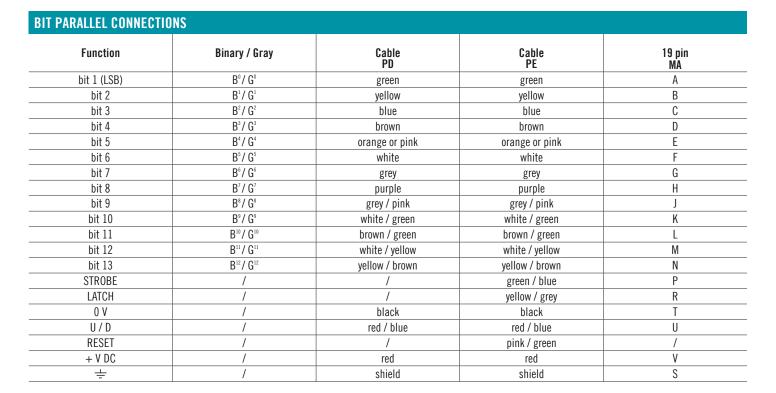


torque pin is included

* with option ZP + 1.5 mmrecommended mating shaft tolerance g6 dimensions in mm



for torque pin please refer to Accessories



221 CONNECTIONS	S					
Function	Cable PC	7 pin MC	10 pin MD	12 pin HA	12 pin HA	8 pin M12
+ V DC	red	G	G	8	8	8
0 V	black	F	F	1	1	5
DATA +	green	С	С	2	2	3
DATA -	brown	D	D	10	10	2
CLOCK +	yellow	A	A	3	3	4
CLOCK -	orange or pink	В	В	11	11	6
A+	grey	/	/	/	6	/
A-	blue	/	/	/	7	/
B+	purple	/	/	/	9	/
B-	white / green	/	/	/	12	/
U/D	red / blue	E	E	5	5	7
RESET	white	/	Н	4	4	1
÷	shield	housing	housing	9	housing	housing

HA connector (12 pin) M23 CCW Hummel

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

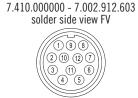


M12 connector (8 pin) M12 A coded solder side view FV



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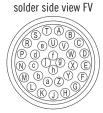
MD connector (10 pin) Amphenol MS3102-E-18-1P solder side view FV



MA connector (19 pin) Amphenol 62IN 12E 14-19 P solder side view FV



ME connector (32 pin) Glenair IPT 02 A 18-32 P F6

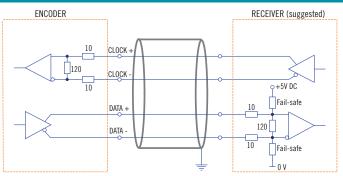




OPTICAL SINGLETURN ABSOLUTE ENCODERS | EAR 58 F - 63 F / G PAR - SSI

ELECTRICAL SPECIFICATIONS				
Resolution	P = from 90 ppr to 13 bit S = from 360 ppr to 25 bit			
Power supply ¹	7,6 30 V DC (reverse polarity protection)			
Power draw without load	< 1 W			
Max load current	20 mA / channel			
Absolute electrical interface²	P = push pull (iC-DL) S = RS-422 (THVD1451 or equivalent)			
Incremental electrical interface ²				
Max incremental output frequency	128 kHz			
Auxiliary inputs (U/D - RESET - LATCH)	active high (+V DC) connect to 0 V if not used / RESET - LATCH t _{min} 150 ms			
Max frequency	50 kHz LSB (Bit Parallel) clock input: 100 kHz 1 MHz (SSI)			
Code type	binary or gray			
Logic	SSI = positive Bit parallel = positive or negative			
SSI monostable time (Tm)	20 μs			
SSI pause time (Tp)	> 35 µs			
SSI frame	left aligned format (MSB LSB) up to 13 bit = length 13 bit from 14 to 21 bit = length 21 bit from 22 to 25 bit = length 25 bit			
SSI status and parity bit	on request			
Counting direction	decreasing clockwise (shaft view)			
Start-up time	700 ms			
Accuracy	± 250 arc-sec			
Electromagnetic compatibility	according to 2014/30/EU directive			
RoHS	according to 2011/65/EU (01/09/2020) directive			
UL / CSA	certificate n. E212495			

UL/	CSA	certificate n. E212495	
221 2215115122			
SSI SCHEMATICS			
ENCODER			RE



MECHANICAL SPECIFICATIONS						
Bore diameter	ø 14 / 15 mm ø 6* / 8* / 9,52 (3/8")* / 10* / 11* / 12* * with optional shaft adapter, please refer to Accessories					
Enclosure rating IEC 60529	X = IP 65 shaft side / IP67 cover side $S = IP 67$					
Max rotation speed	see table					
Max shaft load ³	200 N axial / 60 N radial					
Shock	50 G, 11 ms (IEC 60068-2-27)					
Vibration	10 G, 10 2000 Hz (IEC 60068-2-6)					
Moment of inertia	5 x 10 ⁻⁶ kgm ² (119 x 10 ⁻⁶ lbft ²)					
Starting torque (at +20°C / +68°F)	< 0,03 Nm (4,25 Ozin)					
Bearing stage material	EN-AW 2011 aluminum					
Shaft material	1.4305 / AISI 303 stainless steel					
Housing material	painted aluminium					
Bearings	n.2 ball bearings					
Bearings life	10 ⁹ revolutions					
Operating temperature Bit parallel ^{4, 5}	-20° +85°C (-4 +185°F)					
Operating temperature SSI ^{4, 5}	-40° +85°C (-40° +185°F) -20° +85°C (-4° +185°F) with cable output -25° +85°C (-13° +185°F) with M12 connector					
Storage temperature ⁵	-20° +85°C (-4° +185°F)					
Weight	approx 300 g (10,58 oz)					

⁵ condensation not allowed

ROTATION SPEED DERATING TABLE								
	Temperature °C (°F)	Max speed (rpm)	Max continuous speed (rpm)					
IP65	up to +70 (+158)	9000	6000					
	+70 85 (+158 185)	6000	3000					
IP67	up to +70 (+158)	8000	6000					
	+70 +85 (+158 185)	4000	2000					





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



EAR 90 - 115 A BIT PARALLEL - SSI

SOLID SHAFT SINGLETURN ABSOLUTE ENCODER

MAIN FEATURES

Industry standard singleturn absolute encoder for factory automation applications.

- Optical sensor technology (propietary OptoASIC)
- Resolution up to 25 bit
- Power supply up to +30 VDC with Bit Parallel or SSI as electrical interface
- Cable or connector output
- Solid shaft diameter up to 11 mm
- Mounting by synchronous or REO-444 flange











ORDERING CODE BIT PARALLEL EAF	90A	12	G	8/30	P	P	X	10	X	MA	R	. 162	+XXX
SERIE: singleturn absolute encoder EAI													
-	MODEL												
synchronous flange ø 4 REO-444 f	ange 115A												
		m 1 to 13											
(multiples and submultiples of 360		0 to 3600	DE TYPE										
		00	binary B gray G										
(no powers of 2 (no powers o			-XXX) BC										
(no powers o	(2) gray ons	set code (o	POWE	R SUPPLY									
				/ DC 8/30 Ctrical in									
					ısh-pull P	LOGIC							
					n	egative N							
							OPTIONS						
					latch w	ported if n vith extern	al input L						
					reset wit	binary code th externa	I input ZE						
		(wit	h binary cod	latch / de) strobe /	reset with reset with	external ii external	nputs LZE input SZE						
						(mod		DIAMETER mm 9,52					
						(iiiou		mm 10 5) mm 11					
						ID CE	1	ENCLOSUR					
						IP 65	Snatt Side	e / IP67 cov	IP 67 S				
						(withou	ut options) (cable (stand		PUT TYPE 1,5 m) PD			
			preferred	cable lengt	hs 2 / 3 / 5 /		(cable (stand er DIRECTIO	dard length	1,5 m) PE			
			-	3		(without re	set option)	19 pin MIL	male conr	nector MA	ON TYPE		
											radial R	INFOTOS	
										g connecto		ded .162	
				to be re	ported only v	vith connec	tor output (eg. MAR.162	!), for matin	g connector	see Accesso		VARIANT





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

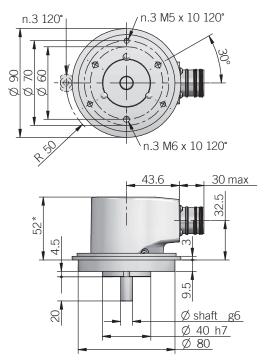


VARIANT custom version XXX

ORDERING CODE R .162 +XXX EAR 90A G 8/30 S X 2048 RS 10 **SERIES** singleturn absolute encoder EAR MODEL synchronous flange ø 40 mm 90A REO-444 flange 115A RESOLUTION
bit 13 / 16 / 17 / 18 / 21 / 25
ppr 360 / 720 / 1440 / 2880 / 3600 CODE TYPE binary gray ((no powers of 2) binary offset code (0-XXX) BO (no powers of 2) gray offset code (0-XXX) G(POWER SUPPLY 8 ... 30 V DC 8/30 ELECTRICAL INTERFACE Serial Synchronous Interface - SSI S OPTION to be reported if not used X reset with external input ZE reset on cover or with external input ZP INCREMENTAL RESOLUTION (powers of 2) ppr from 128 to 8192 INCREMENTAL ELECTRICAL INTERFACE available with PC or HA output type line driver HTL L push pull P line driver RS-422 RS SHAFT DIAMETER (mod. 90) 3/8"- mm 9,52 mm 10 (mod. 115) mm 11 **ENCLOSURE RATING** IP 65 shaft side / IP67 cover side X **OUTPUT TYPE** cable (standard length 1,5 m) PC preferred cable lengths 2 / 3 / 5 / 10 m, to be added after DIRECTION TYPE (eg. PCR5) (without reset option) 7 pin MIL male connector MC (with reset option) 10 pin MIL male connector MD 12 pin M23 male connector HA 8 pin M12 male connector M12 DIRECTION TYPE MATING CONNECTOR mating connector not included .162

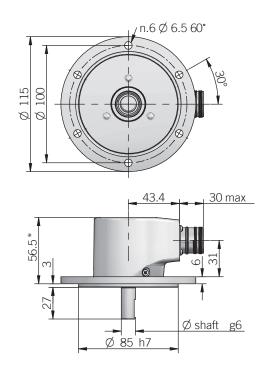
to be added with incremental output

90 A

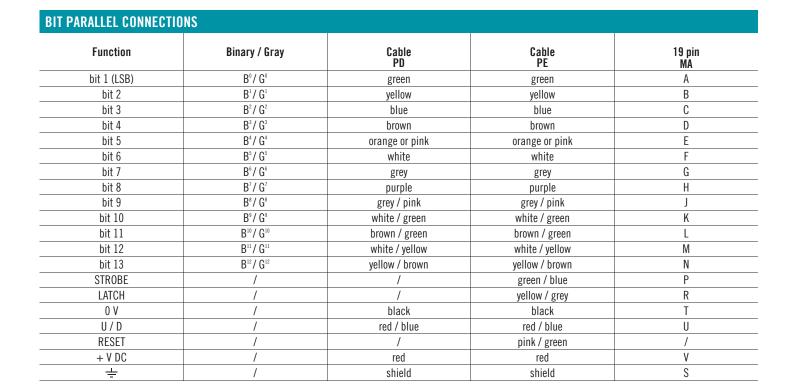


for fixing clamps please refer to Accessories * with option ZP +1,5 mm recommended mating shaft tolerance H7 dimensions in mm

115 A







SSI CONNECTIONS						
Function	Cable PC	7 pin MC	10 pin MD	12 pin HA	12 pin HA	8 pin M12
+ V DC	red	G	G	8	8	8
0 V	black	F	F	1	1	5
DATA +	green	С	С	2	2	3
DATA -	brown	D	D	10	10	2
CLOCK +	yellow	A	A	3	3	4
CLOCK -	orange or pink	В	В	11	11	6
A+	grey	/	/	/	6	/
A-	blue	/	/	/	7	/
B+	purple	/	/	/	9	/
B-	white / green	/	/	/	12	/
U/D	red / blue	Е	E	5	5	7
RESET	white	/	Н	4	4	1
÷	shield	housing	housing	9	housing	housing

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



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



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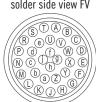
MD connector (10 pin) Amphenol MS3102-E-18-1P solder side view FV



HA connector (12 pin) M23 CCW Hummel MA connector (19 pin) Amphenol 62IN 12E 14-19 P 7.410.000000 - 7.002.912.603 solder side view FV solder side view FV



ME connector (32 pin) Glenair IPT 02 A 18-32 P F6 solder side view FV













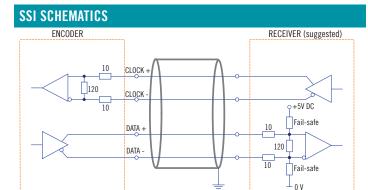
OPTICAL SINGLETURN ABSOLUTE ENCODERS | EAR 90 - 115 A PAR - SSI

ELECTRICAL SPECIFICA	TIONS				
Resolution	P = from 90 ppr to 13 bit S = from 360 ppr to 25 bit				
Power supply ¹	7,6 30 V DC (reverse polarity protection)				
Power draw without load	< 1 W				
Max load current	20 mA / channel				
Absolute electrical interface²	$\begin{array}{l} P = \text{push pull (iC-DL)} \\ S = RS-422 \text{ (THVD1451 or equivalent)} \end{array}$				
Incremental electrical interface²	$ \begin{array}{l} L = HTL \ diff. \ (\text{AEIC-7272, active short circuit protection}) \\ P = Push-Pull \ (\text{AEIC-7272, active short circuit protection}) \\ RS = RS-422 \ (\text{AELT-5000 or equivalent}) \end{array} $				
Max incremental output frequency	128 kHz				
Auxiliary inputs (U/D - RESET - LATCH)	active high (+V DC) connect to 0 V if not used / RESET - LATCH t _{min} 150 ms				
Max frequency	50 kHz LSB (Bit Parallel) clock input: 100 kHz 1 MHz (SSI)				
Code type	binary or gray				
Logic	SSI = positive Bit parallel = positive or negative				
SSI monostable time (Tm)	20 μs				
SSI pause time (Tp)	> 35 µs				
SSI frame	left aligned format (MSB LSB) up to 13 bit = length 13 bit from 14 to 21 bit = length 21 bit from 22 to 25 bit = length 25 bit				
SSI status and parity bit	on request				
Counting direction	decreasing clockwise (shaft view)				
Start-up time	700 ms				
Accuracy	± 250 arc-sec				
Electromagnetic compatibility	according to 2014/30/EU directive				
RoHS	according to 2011/65/EU (01/09/2020) directive				
UL / CSA	certificate n. E212495				

IECHANICAL SPECIFIC <i>i</i>	ATIONS			
Shaft diameter	ø 9,52 (3/8") / 10 / 11 mm			
Enclosure rating IEC 60529	X = IP 65 shaft side / IP67 cover side S = IP 67			
Max rotation speed	see table			
Max shaft load ³	200 N axial / 70 N 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)	< 0,03 Nm (4,25 Ozin)			
Bearing stage material	EN-AW 2011 aluminum			
Shaft material	1.4305 / AISI 303 stainless steel			
Housing material	painted aluminium			
Bearings	n.2 ball bearings			
Bearings life	10° revolutions			
Operating temperature Bit parallel ^{4, 5}	-20° +85°C (-4 +185°F)			
Operating temperature SSI ^{4, 5}	$ \begin{array}{cccccccccccccccccccccccccccccccccccc$			
Storage temperature ⁵	-20° +85°C (-4° +185°F)			
Weight approx 300 g (10,58 oz)				

⁵ condensation not allowed

ROTATION SPEED DERATING TABLE								
Temperature °C (°F)	Max speed (rpm)	Max continuous speed (rpm)						
up to +70 (+158)	10000	8000						
+70 +85 (+158 +185)	8000	5000						
+85 +100 (+185 212)	5000	3000						





EAL 58 B / C - 63 A / D / E

SOLID SHAFT SINGLETURN ABSOLUTE ENCODER

MAIN FEATURES

Industry standard singleturn absolute encoder for factory automation applications.

- Optical sensor technology (OptoASIC)
- Programmable measuring range via teach-in function (external inputs or cover button)
- Power supply up to +30 VDC with analogue (voltage or current) electrical interface
- Cable or M12 connector output
- Solid shaft diameter up to 10 mm
- Mounting by synchronous, clamping or centering 2,5" square flange











ORDERING CODE EA	L 63 <i>A</i>	16B	12/30	V	05	X	10	X	M12	R	. 162	+XXX
SERIE analogue singleturn absolute encoder E/ synchronous flange ø 31 synchronous flange ø clamping flange ø centering square flange ø centering square flange ø	MODEI 75 mm 63/ 50 mm 588 36 mm 580 75 mm 63/ 50 mm 63/ PUT DAC RI	SSOLUTION 16 bit 16B POWE 12 30 V ELEC	R SUPPLY DC 12/30 CTRICAL IN	ITERFACE voltage V current I 0 UTPI 0 2 4 2 iput / 3 wi 4 wii	UT RANGE 5 V 05 10 V 010 0 mA 020 0 mA 420 res current (mod. 63 A (mod. 58 C	OPTIONS: Output X Output Q SHAFT E (mod. 58 / D) 3/8" 63 A / D / I shaft side	DIAMETER B B) mm 6 mm 9,52 E) mm 10 ENCLOSUR e / IP67 cov	E RATING ver side X IP 67 S OUTF ndard lengti	PUT TYPE h 1,5 m) P	R	. 162	+XXX
		preferre	d cable leng	gths 2 / 3 / !	5 / 10 m, to		ter DIRECTI	ndard lengtl ON TYPE (eg nale conne	. PR5)			
									DIRECTI	ION TYPE radial R IATING COI	INFCTOD	
			to be rep	orted only w	rith connecto	or output (eg	g. M12R.162	mating 2), for matin	g connecto	r not inclu	ded .162	
												VARIANT











custom version XXX

132

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

³ maximum load for static usage

⁴ measured on the transducer flange

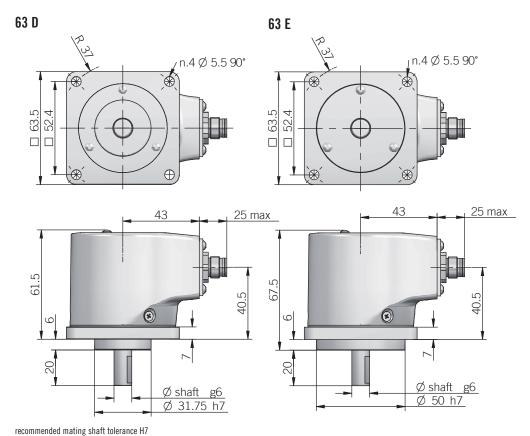
63 A 58 B 58 C , n.3 M5 x 7 120° , n.3 M4 x 6 120° n.3 120° n.3 120° ın.3 M3 x 6 120° 25 max 25 max 61.5

Ø 50 h7

for fixing clamps please refer to Accessories

Ø shaft g6 Ø 31.75 h7

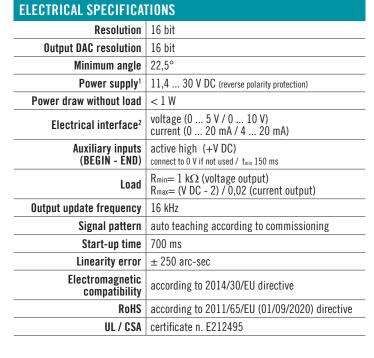
for fixing clamps please refer to Accessories





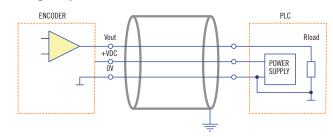
dimensions in mm



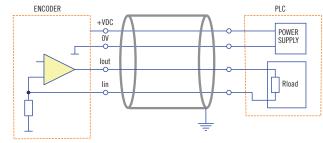


ELECTRICAL INTERFACE

Voltage output



Current output



3 / 4 wire source with 3 wires interface lin is internally connected to OV

MECHANICAL SPECIFICA	ATIONS			
Shaft diameter	ø 6 / 9,52 (3/8") / 10 mm			
Enclosure rating IEC 60529	X = IP 65 shaft side / IP67 cover side S = IP 67			
Max rotation speed	see below table			
Max shaft load ³	200 N axial / 70 N 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)	< 0,03 Nm (4,25 Ozin)			
Bearing stage material	EN-AW 2011 aluminum			
Shaft material	1.4305 / AISI 303 stainless steel			
Housing material	painted aluminium			
Bearings	n.2 ball bearings			
Bearings life	10° revolutions			
Operating temperature ^{4, 5}	-20° +85°C (-4° +185°F)			
Storage temperature ⁵	-20° +85°C (-4° +185°F)			
Weight	approx 350 g (12,35 oz)			
s measured at the transducer without cable influences				

1 as measured at the transducer without cable influences

⁵ condensation not allowed

ROTATION SPEED / TEMPERATURE TABLE								
Temperature °C (°F)	Max speed (rpm)	Max continuous speed (rpm)						
up to +70 (+158)	10000	8000						
+70 +85 (+158 +185)	8000	5000						

CONNECTIONS	CONNECTIONS								
Function	Cable	5 pin M12	8 pin M12*						
+ V DC	red	2	2						
0 V	black	3	3						
Vout / lout	green	1	1						
lin	yellow	/	6						
BEGIN	white	4	4						
END	brown or grey	5	5						
-	shield	housing	housing						

^{*} with Q current ouput

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

M12 A coded solder side view FV





M12 connector (8 pin)





Ø shaft g6

Ø 36 f6

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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



EAL 58 F - 63 F / G Analogue

BLIND HOLLOW SHAFT SINGLETURN ABSOLUTE ENCODER

MAIN FEATURES

ORDERII

Industry standard singleturn absolute encoder for factory automation applications.

- Optical sensor technology (OptoASIC)
- Programmable measuring range via teach-in function (external inputs or cover button)
- Power supply up to +30 VDC with analogue (voltage or current) electrical interface
- Cable or M12 connector output
- Blind hollow shaft up to 15 mm
- Mounting by stator coupling, torque stop slot or torque pin







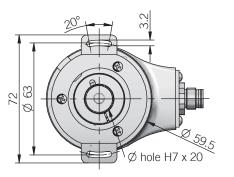


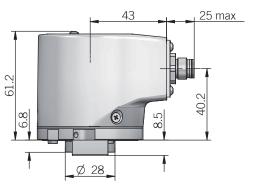


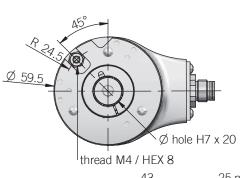


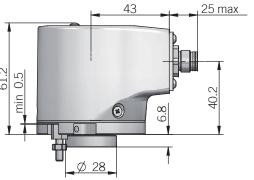
ING CODE EAL	58F	16B	12/30	V	05	Х	15	X	M12	R	. 162	+XXX
SERIES analogue singleturn absolute encoder EAL blind hollow shaft with stator cou blind hollow shaft with torque sto blind hollow shaft with torqu OUTPL	slot 63F e pin 63G T DAC RESO 16	bit 16B POWER	R SUPPLY DC 12/30									
			TRICAL IN	TERFACE								
				voltage V current I								
					T RANGE 5 V 05							
				0	10 V 010							
					mA 020 mA 420							
	to be reporte	ed with v	ınltage nut	nut / 3 wir		OPTIONS						
	to be report	ou with v	onago out			output Q						
						BORE DI	MMETER mm 14					
diameters	5 / 8 / 9,52 (3/	/o"\ / 10 /	/ 11 / 10 mm	ith antion	al abaft ad	antar ana An	mm 15					
ulallieters	0 / 6 / 9,32 (3/	0)/10/	11 / 12 11111	i witii optioii		EI	NCLOSUR					
					IP 65	shaft side	/ IP67 cov	ver side X IP 67 S				
								OUTI	PUT TYPE			
		preferred	d cable leng	ths 2 / 3 / 5	/ 10 m to I) be added aft		ndard lengt ON TYPF (e.g.				
		prototro	a 0abio iong	,	, 10, 10 .		M12 n	nale conne	ctor M12			
									DIRECTI	ON TYPE radial R		
										ATING CO		
			to be repo	orted only wit	th connecto	r output (eg.	M12R.162		g connecto g connector			

58 F



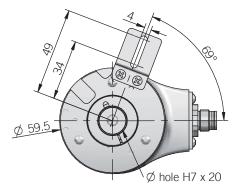


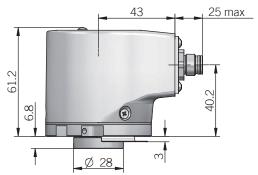




torque pin is included recommended mating shaft tolerance g6 dimensions in mm

63 F





for torque pin please refer to Accessories





VARIANT

custom version XXX

137

63 G

OPTICAL SINGLETURN ABSOLUTE ENCODERS | EAL 58 F - 63 F / G ANALOGUE

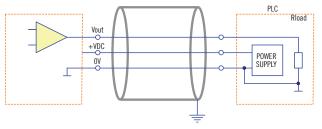
ELECTRICAL SPECIFICAT	TIONS
Resolution	16 bit
Output DAC resolution	16 bit
Minimum angle	22,5°
Power supply ¹	11,4 30 V DC (reverse polarity protection)
Power draw without load	< 1 W
Electrical interface ²	voltage (0 5 V / 0 10 V) current (0 20 mA / 4 20 mA)
Auxiliary inputs (BEGIN - END - U/D)	active high (+V DC) connect to 0 V if not used / $t_{\rm min}$ 150 ms
Load	$R_{\text{min}} = 1 \text{ k}\Omega$ (voltage output) $R_{\text{max}} = (\text{V DC - 2}) / 0.02$ (current output)
Output update frequency	16 kHz
Signal pattern	auto teaching according to commissioning
Start-up time	700 ms
Linearity error	± 250 arc-sec
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 14 / 15 mm Ø 6* / 8* / 9,52 (3/8")* / 10* / 11* / 12* mm * with optional shaft adapter, please refer to Accessories					
Enclosure rating IEC 60529	X = IP 65 shaft side / IP67 cover side $S = IP 67$					
Max rotation speed	see table					
Max shaft load ³	200 N axial / 60 N radial					
Shock	50 G, 11 ms (IEC 60068-2-27)					
Vibration	10 G, 10 2000 Hz (IEC 60068-2-6)					
Moment of inertia	5 x 10 ⁻⁶ kgm ² (119 x 10 ⁻⁶ lbft ²)					
Starting torque (at +20°C / +68°F)	< 0,03 Nm (4,25 Ozin)					
Bearing stage material	EN-AW 2011 aluminum					
Shaft material	1.4305 / AISI 303 stainless steel					
Housing material	painted aluminium					
Bearings	n.2 ball bearings					
Bearings life	10 ⁹ revolutions					
Operating temperature ^{4, 5}	-20° +85°C (-4° +185°F)					
Storage temperature ⁵	-20° +85°C (-4° +185°F)					
Weight	approx 350 g (12,35 oz)					
	•					

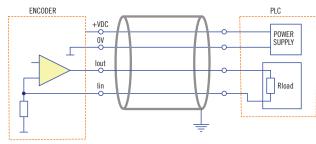
¹ as measured at the transducer without cable influences

ELECTRICAL INTERFACE

Voltage output



Current output



3 / 4 wire source with 3 wires interface lin is internally connected to OV

maximum load for stati measured on the transo condensation not allow	ducer flange						
ROTATION SPEED / TEMPERATURE TABLE							
	Temperature °C (°F)	Max speed (rpm)	Max continuous speed (rpm)				
IP65	up to +70 (+158)	9000	6000				
IFOJ	+70 +85 (+158 +185)	6000	3000				
IP67	up to +70 (+158)	8000	4000				
1607	+70 +85 (+158 +185)	4000	2000				

CONNECTIONS			
Function	Cable	5 pin M12	8 pin M12*
+ V DC	red	2	2
0 V	black	3	3
Vout / lout	green	1	1
lin	yellow	/	6
BEGIN	white	4	4
END	brown or grey	5	5
<u></u>	shield	housing	housing

^{*} with Q current ouput

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

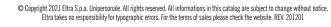


M12 connector (8 pin) M12 A coded solder side view FV











EAL 90 - 115 A

SOLID SHAFT SINGLETURN ABSOLUTE ENCODER

MAIN FEATURES

Industry standard singleturn absolute encoder for factory automation applications.

- Optical sensor technology (OptoASIC)
- Programmable measuring range via teach-in function (external inputs or cover button)
- Power supply up to +30 VDC with analogue (voltage or current) electrical interface
- Cable or M12 connector output
- Solid shaft diameter up to 11 mm
- Mounting by synchronous or REO-444 flange









	162 +XXX
SERIES analogue singleturn absolute encoder EAL	
MODEL synchronous flange ø 40 mm 90A	
REO-444 flange 115A OUTPUT DAC RESOLUTION	
16 bit 16B	
POWER SUPPLY 12 30 V DC 12/30	
ELECTRICAL INTERFACE	
voltage V current I	
OUTPUT RANGE	
$egin{array}{c} 0 \dots 5 \ V \ 05 \ 0 \dots 10 \ V \ 010 \ \end{array}$	
0 20 mA 020 4 20 mA 420	
OPTIONS to be reported with voltage output / 3 wires current output X	
4 wires current output Q	
SHAFT DIAMETER (mod. 90) 3/8" - mm 9,52	
mm 10 (mod. 115) mm 11	
ENCLOSURE RATING	
IP 65 shaft side / IP67 cover side X IP 67 S	
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)	
M12 male connector M12 female connector included, without female please add 162 as variant code	
DIRECTION TYPE	
radial R Mating conne	CTOR
mating connector not included to be reported only with connector output (eg. M12R.162), for mating connector see Accessories	1.162



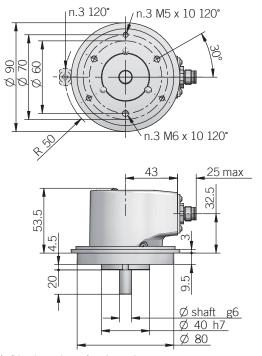


VARIANT

custom version XXX

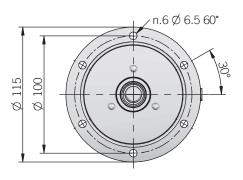
² for further details refer to OUTPUT LEVELS on TECHNICAL BASICS section

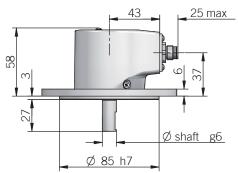
90 A



for fixing clamps please refer to Accessories recommended mating shaft tolerance H7 dimensions in mm

115 A



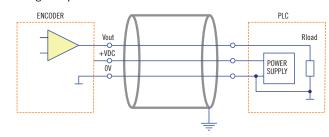




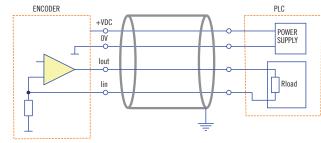
ELECTRICAL SPECIFICATIONS Resolution 16 bit Output DAC resolution 16 bit Minimum angle 22,5° **Power supply**¹ 11,4 ... 30 V DC (reverse polarity protection) Power draw without $\overline{\text{load}}$ < 1 W Electrical interface² voltage (0 ... 5 V / 0 ... 10 V) current (0 ... 20 mA / 4 ... 20 mA) Auxiliary inputs (BEGIN - END - U/D) active high (+V DC) connect to 0 V if not used / t_{min} 150 ms $\begin{array}{c|c} \textbf{Load} & R_{\text{min}}{=}~1~\text{k}\Omega~\text{(voltage output)} \\ R_{\text{max}}{=}~\text{(V DC - 2) / 0,02 (current output)} \end{array}$ Output update frequency 16 kHz **Signal pattern** auto teaching according to commissioning Start-up time 700 ms **Linearity error** ± 250 arc-sec Electromagnetic compatibility according to 2014/30/EU directive **RoHS** according to 2011/65/EU (01/09/2020) directive **UL / CSA** certificate n. E212495

ELECTRICAL INTERFACE

Voltage output



Current output



3 / 4 wire source with 3 wires interface lin is internally connected to OV

MECHANICAL SPECIFICATIONS					
Shaft diameter	ø 9,52 (3/8") / 10 / 11 mm				
Enclosure rating IEC 60529	X = IP 65 shaft side / IP67 cover side S = IP 67				
Max rotation speed	see below table				
Max shaft load ³	200 N axial / 70 N 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)	< 0,03 Nm (4,25 Ozin)				
Bearing stage material	EN-AW 2011 aluminum				
Shaft material	1.4305 / AISI 303 stainless steel				
Housing material	painted aluminium				
Bearings	n.2 ball bearings				
Bearings life	109 revolutions				
Operating temperature ^{4, 5}	-20° +85°C (-4° +185°F)				
Storage temperature ⁵	-20° +85°C (-4° +185°F)				
Weight	approx 350 g (12,35 oz)				

as measured at the transducer without cable influences

⁵ condensation not allowed

ROTATION SPEED / TEMPERATURE TABLE								
Temperature °C (°F)	Max speed (rpm)	Max continuous speed (rpm)						
up to +70 (+158)	10000	8000						
+70 +85 (+158 +185)	8000	5000						

CONNECTIONS			
Function	Cable	5 pin M12	8 pin M12*
+ V DC	red	2	2
0 V	black	3	3
Vout / Iout	green	1	1
lin	yellow	/	6
BEGIN	white	4	4
END	brown or grey	5	5
÷	shield	housing	housing

^{*} with Q current ouput

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

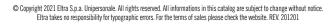
M12 connector (8 pin) M12 A coded solder side view FV











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

³ maximum load for static usage

⁴ measured on the transducer flange



EA 58 B / C - 63 A / D / E PROFIBUS

SOLID SHAFT SINGLETURN ABSOLUTE ENCODER

MAIN FEATURES

Industry standard singleturn absolute encoder for factory automation applications.

- Optical sensor technology (OptoASIC)
- Resolution up to 13 bit (8192 ppr)
- Power supply up to +28 V DC with Profibus DP as electrical interface
- Cable gland or M12 connector output
- Solid shaft diameter up to 10 mm
- Mounting by synchronous, clamping or centering 2,5" square flange

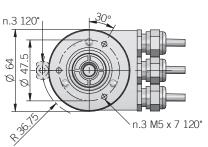




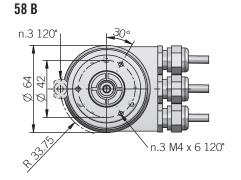


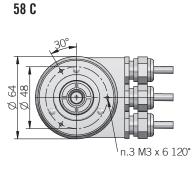


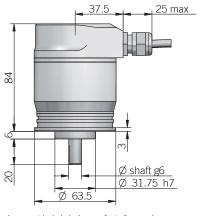
ORDERING CODE	EA 63 <i>A</i>	4096	В	12/28	FXX	10	Х	6	M12R	. 162	+XXX
SERI singleturn absolute encoder synchronous flange ø 3 synchronous flange ø clamping flange ø centering square flange ø 3 centering square flange	MODE 75 mm 63/ 50 mm 586 36 mm 580 .75 mm 630 50 mm 638	8									
		ESOLUTION 096 / 8192									
	+ I	C	ode type binary B Powe 12 28 V ELEC PROFIBUS	 R Supply DC 12/28 C trical in	TERFACE ASS 2 FXX SHAFT E (mod. 58 (9,52mm 3, - 63 A / D /	DIAMETER 3 B) mm 6 (8") mm 9 E) mm 10 ENCLOSUR	E RATING IP 54 X IP 66 S AX ROTATIO (IP 66) 30 (IP 54) 60 box - radia	ON SPEED 100 rpm 3 100 rpm 6 OUTI al cable gla 2 connect	PUT TYPE ands P3R ors M12R	WEST CORE	
		to be repo	rted only wi	th connector	output (eg.	. M12R.162)		connector	TING CONI s not inclu see Access	ded .162	
			,		-1 1-0	,	,	,			VARIANT

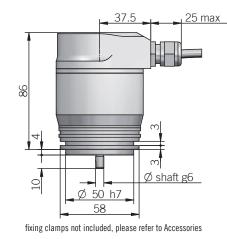


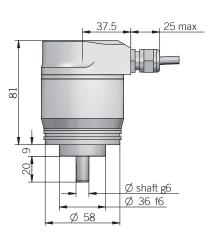
63 A





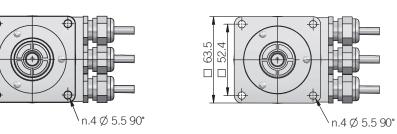




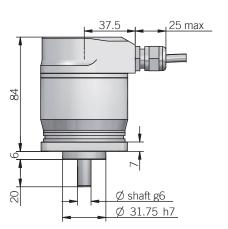


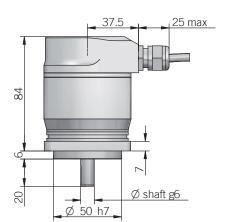
fixing clamps not included, please refer to Accessories

63 D



63 E





recommended mating shaft tolerance H7 dimensions in mm

www.eltra.it







custom version XXX

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OPTICAL SINGLETURN ABSOLUTE ENCODERS | EA 58 B / C - 63 A / D / E PROFIBUS

ELECTRICAL SPECIFICATIONS					
Resolution	2 4096 / 2 8192 ppr programmable during commissioning				
Power supply ¹	11,4 29,4 V DC (reverse polarity protection)				
Current consumption without load	300 mA				
Electrical interface ²	RS 485 galvanically isolated				
Max bus frequency	12 Mbaud				
Diagnostic features	frequency warning position warning / alarm please refer to installation manual for more informations				
Max frequency	max 25 kHz LSB				
Code type	binary				
Counting direction	programmable during commissioning				
Start-up time	500 ms				
Accuracy	± 1/2 LSB				
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	POWER	BUS OUT	BUS IN
+ V DC	2		
0 V	4		
А		2	
В		4	
А			2
В			4

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

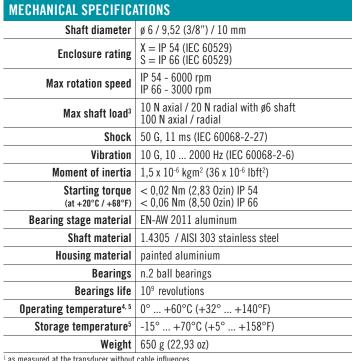


BUS OUT - female (5 pin) BUS IN - male (5 pin) M12 B coded solder side view FV





M12 B coded



¹ as measured at the transducer without cable influences











EA 58 F - 63 F / G

BLIND HOLLOW SHAFT SINGLETURN ABSOLUTE ENCODER

MAIN FEATURES

Industry standard singleturn absolute encoder for factory automation applications.

- Optical sensor technology (OptoASIC)
- Resolution up to 13 bit (8192 ppr)
- Power supply up to +28 V DC with Profibus DP as electrical interface
- Cable gland or M12 connector output
- Blind hollow shaft diameter up to 15 mm
- Mounting by stator coupling, torque stop slot or torque pin









ORDERING CODE	EA	58F	4096	В	12/28	FXX	15	X	3	M12R	. 162	+XXX
	SERIES singleturn absolute encoder EA blind hollow shaft with stator cou blind hollow shaft with torque stop blind hollow shaft with torque	MODEL pling 58F o slot 63F e pin 63G RES	OLUTION 96 / 8192									
			C	DDE TYPE binary B								
				POWE	R SUPPLY							
			J		DC 12/28 Ctrical in							
					DP VO CLA							
						BORE D	IAMETER					
							mm 14 mm 15					
	diameters 6 / 8 / 9,52 (3/8") / 10 /	11 / 12 mm	n with optio	nal shaft ad							
						E	NCLOSUR	E RATING IP 54 X				
							MA	X ROTATIO	00 rpm 3			
							terminal	box - radia radial M1	ıl cable gl	PUT TYPE ands P3R ors M12R		
										TING CON		
			to be renor	rted only wit	h connector	output (eg	M12R.162)			s not inclu		
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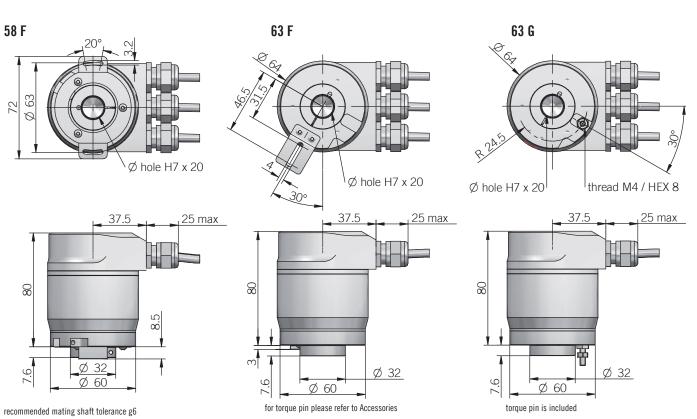
² for further details refer to OUTPUT LEVELS on TECHNICAL BASICS section

maximum load for static usage

⁴ measured on the transducer flange

⁵ condensation not allowed

OPTICAL SINGLETURN ABSOLUTE ENCODERS | EA 58 F - 63 F / G PROFIBUS



TIONS
2 4096 / 2 8192 ppr programmable during commissioning
11,4 29,4 V DC (reverse polarity protection)
300 mA
RS 485 galvanically isolated
12 Mbaud
frequency warning position warning / alarm please refer to installation manual for more informations
max 25 kHz LSB
binary
programmable during commissioning
500 ms
± 1/2 LSB
according to 2014/30/EU directive
according to 2011/65/EU (01/09/2020) directive
certificate n. E212495

CONNECTIONS			
Function	POWER	BUS OUT	BUS IN
+ V DC	2		
0 V	4		
A		2	
В		4	
A			2
В			4

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MECHANICAL SPECIFICA	MECHANICAL SPECIFICATIONS								
Bore diameter	Ø 14 / 15 mm Ø 6* / 8* / 9,52 (3/8")* / 10* / 11* / 12* * with optional shaft adapter, please refer to Accessories								
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	5 x 10 ⁻⁶ kgm ² (119 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 aluminium								
Bearings	n.2 ball bearings								
Bearings life	10 ⁹ revolutions								
Operating temperature ^{3, 4}	0° +60°C (+32° +140°F)								
Storage temperature ⁴	-15° +70°C (+5° +158°F)								
Fixing torque for collar clamping	1,5 Nm (212 Ozin) recommended								
Weight	650 g (22,93 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

M12 A coded view solder side FV

POWER connector (5 pin) BUS OUT - female (5 pin) BUS IN - male (5 pin) M12 B coded solder side view FV





M12 B coded





EA 90 A - 115 A PROFIBUS

SOLID SHAFT SINGLETURN ABSOLUTE ENCODER

MAIN FEATURES

Industry standard singleturn absolute encoder for factory automation applications.

- Optical sensor technology (OptoASIC)
- Resolution up to 13 bit (8192 ppr)
- Power supply up to +28 V DC with Profibus DP as electrical interface
- Cable gland or M12 connector output
- Solid shaft diameter up to 11 mm
- Mounting by synchronous or REO-444 flange









ORDERING CODE EA	90A	4096	В	12/28	FXX	10	X	6	M12R	. 162	+XXX
SERIES Singleturn absolute encoder EA synchronous flange ø 40 REO-444 flat	MODEL 1 mm 90A nge 115A RES	SOLUTION 96 / 8192 CO	DE TYPE binary B POWEI 2 28 V ELEC	R SUPPLY DC 12/28 Strical in DP VO CLA	TERFACE SS 2 FXX SHAFT D 3) (3/8") 9, (mod. 11: E	IAMETER 52 mm 9 mm 10 5) mm 11 NCLOSUR (mod. 9		N SPEED 00 rpm 3 00 rpm 6 0UTI I cable gl:	PUT TYPE ands P3R	. 162	+XXX
								connector	TING CONI s not inclu	ded .162	
		to be report	ted only wit	h connector	output (eg.	M12R.162)	, for mating	connectors	see Accesso		VADIANT

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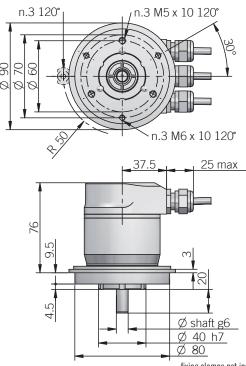
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OPTICAL SINGLETURN ABSOLUTE ENCODERS | EA 90 A - 115 A PROFIBUS



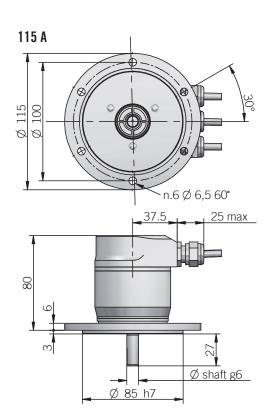


recommended mating shaft tolerance H7 dimensions in mm

fixing clamps not included, please refer to Accessories

ELECTRICAL SPECIFICAT	TIONS
Resolution	2 4096 / 2 8192 ppr programmable during commissioning
Power supply 1	11,4 29,4 V DC (reverse polarity protection)
Current consumption without load	300 mA
Electrical interface ²	RS 485 galvanically isolated
Max bus frequency	12 Mbaud
Diagnostic features	frequency warning position warning / alarm please refer to installation manual for more informations
Max frequency	max 25 kHz LSB
Code type	binary
Counting direction	programmable during commissioning
Start-up time	500 ms
Accuracy	± 1/2 LSB
Electromagnetic compatibility	according to 2014/30/EU directive
RoHS	according to 2011/65/EU (01/09/2020) directive
UL / CSA	certificate n. E212495

POWER	BUS OUT	BUS IN
2		
4		
	2	
	4	
		2
		4
		2 4



MECHANICAL SPECIFICATIONS								
Shaft diameter	ø 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	100 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	painted aluminium							
Bearings	n.2 ball bearings							
Bearings life	10 ⁹ revolutions							
Operating temperature ^{4,5}	0° +60°C (+32° +140°F)							
Storage temperature ⁵	-15° +70°C (+5° +158°F)							
Weight	750 g (26,46 oz)							

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

POWER connector (5 pin) BUS OUT - female (5 pin) BUS IN - male (5 pin) M12 A coded view solder side FV

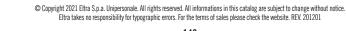
M12 B coded solder side view MV solder side view FV





M12 B coded







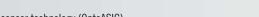


EAX 80 A / D

EXPLOSION PROOF ATEX SINGLETURN ABSOLUTE ENCODER

MAIN FEATURES





- Optical sensor technology (OptoASIC)
- Resolution up to 13 bit (8192 ppr)
- Power supply up +28 V DC with SSI as electrical interface
- Code reset for easy setup
- 10mm solid shaft diameter
- Cable output
- · Mounting by syncronous or centering square flange

EX CLASSIFICATION

It has been assured with EC-TYPE Examination Certificate CESI 04 ATEX 082 that the EAX 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











ORDERING CODE EAX	80A	256	G	8/28	S	X	X	10	X	3	PR	. XXX
SERIES singleturn absolute flameproof encoder EAX synchronous flange ø 4(centering square flange ø 4(MODEL 0 mm 80A 0 mm 80D RES	SOLUTION										
ppr 360 / 720 / 1440 / 2880 / please directly contact our												
		CO	DDE TYPE binary B									
(no powers of 2) (no powers of	binary offs 2) gray offs	set code (0 set code (0	gray G -XXX) BC									
				R SUPPLY DC 8/28								
		Coriol	ELEC	TRICAL IN	ITERFACE							
		Senai	Synchrono	us iliteriat		LOGIC						
					to be r	eported X	OPTIONS					
						ported if n	ot used X					
					reset wi	th external		IAMETER mm 10				
							E	NCLOSUR	E RATING IP 65 X			
								MA	X ROTATIO	N SPEED 00 rpm 3		
								radial o	able (stand		PUT TYPE 1,5 m) PR	
				preferr	ed cable lei	ngths 2 / 3 /	5 / 10 m, to		after OUTPU			

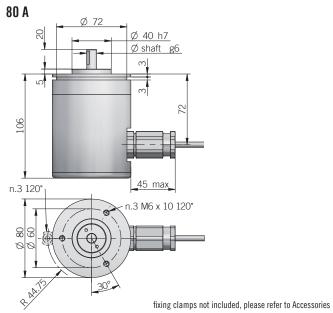




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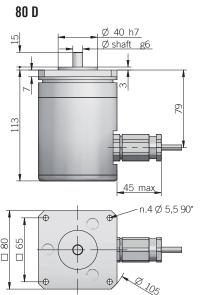
OPTICAL SINGLETURN ABSOLUTE ENCODERS | EAX 80 A / D



ELECTRICAL SPECIFICAT	TIONS
Resolution	from 360 to 8192 ppr
Power supply ¹	7,6 29,4 V DC (reverse polarity protection)
Current consumption without load	100 mA
Electrical interface ²	RS-422 compatible
Auxiliary inputs (U/D - RESET)	active high (+V DC) connect to 0 V if not used / RESET tmin 150 ms
Clock frequency	100 kHz 1 MHz
SSI monostable time (Tm)	18 μs
SSI pause time (Tp)	> 35 µs
SSI frame	(MSB LSB) 13 bit data length
Counting direction	decreasing clockwise (shaft view)
Start-up time	700 ms
Accuracy	± 1/2 LSB
Electromagnetic compatibility	according to 2014/30/EU directive
RoHS	according to 2011/65/EU (01/09/2020) directive
UL / CSA	certificate n. E212495

- 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

CONNECTIONS	
Function	Cable
+ V DC	red
0 V	grey
DATA +	green
DATA -	brown
CLOCK +	yellow
CLOCK -	pink
U / D	blue
RESET	white
<u>+</u>	shield



recommended mating shaft tolerance H7 dimensions in mm

MECHANICAL SPECIFICATIONS							
Shaft diameter	ø 10 mm						
Enclosure rating	IP 65 (IEC 60529)						
Max rotation speed	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	1,5 x 10 ⁻⁶ kgm ² (36 x 10 ⁻⁶ lbft ²)						
Starting torque (at +20°C / +68°F)	< 0,06 Nm (8,50 Ozin)						
Bearing stage material	anodized aluminum						
Shaft material	1.4305 / AISI 303 stainless steel						
Housing material	anodized aluminum						
Bearings	n.2 ball bearings						
Bearings life	10 ⁹ revolutions						
Operating temperature ^{4, 5}	0° +50°C (+32° +122°F)						
Storage temperature ⁵	-15° +70°C (+5° +158°F)						
Weight	1200 g (42,33 oz)						

EPL MARKING



II 2GD Ex db IIC T6 Gb Ex th 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

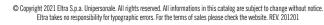
IIIC: group of dust combustibles IIIC

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

Db: product with a high level of protection











EMA 22 A

MAGNETIC SINGLETURN ABSOLUTE KIT ENCODER

MAIN FEATURES

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

- Resolution up to 13 bit (8192 ppr) with SSI as electrical interface
- Cable output, connectors available on cable end
- No wear due to no contact magnetic technology
- Bore shaft diameter up to 10 mm
- IP 67 enclosure rating
- Wide operating temperature -40 $^{\circ}$... +125 $^{\circ}$ C (-40 $^{\circ}$... +257 $^{\circ}$ F)

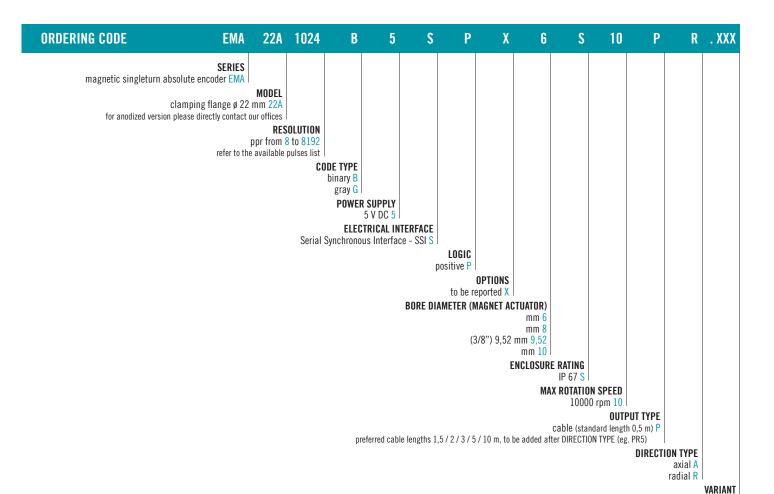












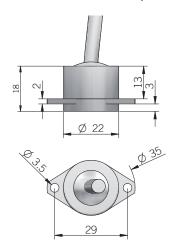


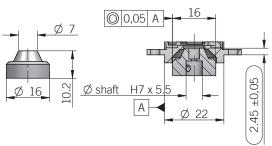


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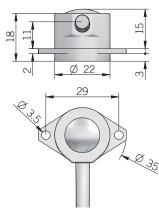
MAGNETIC SINGLETURN ABSOLUTE ENCODERS | EMA 22 A

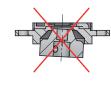
22 A with axial cable output





22 A with radial cable output





ELECTRICAL SPECIFICA	TIONS
Resolution	from 8 to 8192 ppr
Power supply ¹	4,75 5,25 V DC
Current consumption without load	100 mA max
Electrical interface ²	RS-422 (SN65LBC179Q or equivalent)
Code type	binary or gray
Clock frequency	100 kHz 1 MHz
SSI monostable time (Tm)	20 μs
SSI frame	(MSB LSB) 13 bit data length
Counting direction	decreasing clockwise (magnet actuator 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

as measured at the transducer without cable influences

⁴ condensation allowed

CONNECTIONS	
Function	Cable
+ V DC	red
0 V	black
DATA +	green
DATA -	brown or grey
CLOCK +	yellow
CLOCK -	orange
÷	shield

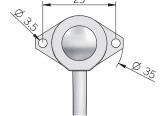
MECHANICAL SPECIFICATIONS Bore diameter ø 6 / 8 / 9,52 (3/8") / 10 mm (magnet-actuator) **Enclosure rating** IP 67 (IEC 60529) Max rotation speed 10000 rpm **Shock** 50 G, 11 ms (IEC 60068-2-27) **Vibration** 10 G, 10 ... 2000 Hz (IEC 60068-2-6) Moment of inertia $0.1 \times 10^{-6} \text{ kgm}^2 (2.4 \times 10^{-6} \text{ lbft}^2)$ (magnet-actuator) Bearing stage material EN-AW 2011 aluminum Housing material EN-AW 2011 aluminum Magnet-actuator EN-AW 2011 aluminum material Operating temperature^{3, 4} -40° ... +125°C (-40° ... +257°F) Storage temperature4 -25° ... +85°C (-13° ... +185°F) **Weight** 30 g (1,06 oz) **Magnet actuator** mounting tolerances ± 0.2 mm (axial) (to get best electrical ± 0.1 mm (radial) performances)

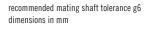
RESOLUTIONS 8 - 16 - 25 - 32 - 40 - 50 - 64 - 80 - 100 - 125 - 128 - 160 - 200 - 250 - 256 -320 - 400 - 500 - 512 - 800 - 1000 - 1024 - 1600 - 2000 - 2048 - 4096 - 8192













EMA 36 B

SOLID SHAFT MAGNETIC SINGLETURN ABSOLUTE ENCODER

MAIN FEATURES

Miniaturized singleturn absolute encoder for limited size applications.

- Magnetic sensor technology without contact (Magnetic ASIC)
- Up to 15 bit as singleturn resolution
- Power supply up to +30 V DC with SSI as electrical interface
- Code reset for easy setup
- Cable or M12 output, other connectors available on cable end
- 6 mm diameter solid shaft
- Mounting by syncronous flange











ORDERING CODE	EMA	36B	13	G	8/30	S	Р	X	6	Х	8	M12R	. 162	+XXX
magnetic singleturn abso	SERIES lute encoder EMA													
sync	ronous flange ø 33 i	MODEL mm 36B												
please di	rectly contact our offic	rom 1 to 360 / 7 es for other	15 bit 20 ppr pulses	DE TYPE										
				binary B gray G										
				POWER	SUPPLY 5 V DC 5									
				ELEC	DC 8/30 Trical in	TERFACE								
			Serial :	Synchrono	us Interfa		LOGIC							
								OPTIONS						
							ported if no th external	input ZE						
								SHAFT D	DIAMETER mm 6					
							IP 67 (NCLOSURI / IP 65 sha					
									MA	ROTATIO 80	N SPEED 00 rpm 8			
					preferred o	able length	ıs 1,5 / 2 / 3	/5/10 m,	to be added	after OUTP	dard length UT TYPE (e _i ale connec	tor M12R		
					to be repo	orted only w	ith connecto	r output (eg	g. M12R.162		g connect	IATING CON or not inclu r see Access	ded .162	

VARIANT custom version XXX





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

³ measured on the transducer flange

Miniaturized singleturn absolute encoder for limited size applications.

- Up to 15 bit as singleturn resolution
- Power supply up to +30 V DC with SSI as electrical interface
- Code reset for easy setup

- Mounting by stator coupling or torque pin











ORDERING CODE	EMA	36F	13	G	8/30	S	Р	Х	10	Х	8	M12R	. 162	+XX
	with stator coup haft with torque	pin 36G RESOL from 1 to 360 / 7	15 bit 20 ppr r pulses CO	8 30 V	TRICAL IN	to be re	LOGIC positive P	input ZE	IAMETER					
		diamet	ers 4 / 5 /				IP 67	apter, see A E cover side	radial o	E RATING aft side X AX ROTATIO 80 cable (standafter OUTPU 2 radial m.	00 rpm 8 OUT dard length T TYPE (eg. ale connec	PUT TYPE 0,5 m) PR PDR5) ctor M12R MATING CO	NNECTOR	
					to be repo	orted only w	ith connecto	or output (eg	g. M12R.162			or not inclu r see Access		

MAIN FEATURES

- Magnetic sensor technology without contact (Magnetic ASIC)

- Cable or M12 output, other connectors available on cable end
- Blind hollow shaft up to 10 mm diameter



ELECTRICAL SPECIFICATIONS					
Resolution	from 1 to 15 bit 360 / 720 ppr				
Power supply ¹	$5 = 4,75 \dots 5,25 \text{ V DC}$ $8/30 = 7,6 \dots 30 \text{ V DC}$ (reverse polarity protection)				
Power draw without load	< 400 mW				
Electrical interface ²	RS-422 (THVD1451 or equivalent)				
Auxiliary inputs (U/D - RESET)	active high (+V DC) connect to 0 V if not used / RESET t _{min} 150 ms				
Clock frequency	100 kHz 1 MHz				
Code type	binary or gray				
SSI monostable time (Tm)	20 μs				
SSI pause time (Tp)	> 35 µs				
SSI frame	(MSB LSB) up to 13 bit = length 13 bit 14 to 15 bit = length 15 bit				
SSI status and parity bit	on request				
Counting direction	decreasing clockwise (shaft view)				
Start-up time	150 ms				
Accuracy	± 0,35° max				
Electromagnetic compatibility	according to 2014/30/EU directive				
RoHS	according to 2011/65/EU (01/09/2020) directive				
UL / CSA	certificate n. E212495				

n.4 M3 x 6 90°

CONNECTIONS						
Function	Cable	8 pin M12				
+ V DC	red	8				
0 V	black	5				
DATA +	green	3				
DATA -	brown or grey	2				
CLOCK +	yellow	4				
CLOCK -	orange	6				
U/D	red / blue	7				
RESET	white	1				
<u></u>	shield	housing				

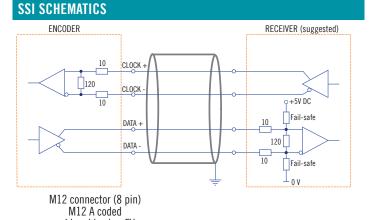
MECHANICAL SPECIFIC <i>i</i>	ATIONS			
Shaft diameter	ø 6 mm			
Enclosure rating	IP 67 cover side / IP 65 shaft side (IEC 60529)			
Rotation speed	8000 rpm continuous / 10000 rpm max			
Max shaft load ³	20 N axial / radial			
Shock	50 G, 11 ms (IEC 60068-2-27)			
Vibration	20 G, 10 2000 Hz (IEC 60068-2-6)			
Moment of inertia	0,001 x 10 ⁻⁶ kgm ² (0,02 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	1.0503 / AISI 1045 chrome plated steel			
Bearings	n.2 ball bearings			
Bearings life	10° revolutions			
Operating temperature ^{4, 5}	-30° +100°C (-22° +212°F) -25° +85°C (-13° +185°F) with M12 connector			
Storage temperature ⁵	-25° +85°C (-13° +185°F)			
Weight	150 g (5,29 oz)			
as measured at the transducer without cable influences				

	as measured at	t the transducer	without cable	influences
--	----------------	------------------	---------------	------------

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

fixing clamps not included, please refer to Accessories

⁵ condensation not allowed







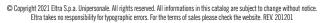
36 B

n.3 120°

dimensions in mm

recommended mating shaft tolerance H7





www.eltra.it

VARIANT

custom version XXX

³ maximum load for static usage

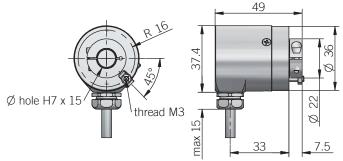
⁴ measured on the transducer flange

MAGNETIC SINGLETURN ABSOLUTE ENCODERS | EMA 36 F/G

36 F 50 Ø 42.7 Ø hole H7 x 15 Ø

recommended mating shaft tolerance g6 dimensions in mm

36 G



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

ELECTRICAL SPECIFICATIONS

Resolution	from 1 to 15 bit 360 / 720 ppr
Power supply ¹	$5 = 4,75 \dots 5,25 \text{ V DC}$ $8/30 = 7,6 \dots 30 \text{ V DC}$ (reverse polarity protection)
Power draw without load	< 400 mW
Electrical interface ²	RS-422 (THVD1451 or equivalent)
Auxiliary inputs (U/D - RESET)	active high (+V DC) connect to 0 V if not used / RESET t _{min} 150 ms
Clock frequency	100 kHz 1 MHz
Code type	binary or gray
SSI monostable time (Tm)	20 μs
SSI pause time (Tp)	> 35 µs
SSI frame	(MSB LSB) up to 13 bit = length 13 bit 14 to 15 bit = length 15 bit
SSI status and parity bit	on request
Counting direction	decreasing clockwise (shaft view)
Start-up time	150 ms
Accuracy	± 0,35° max
Electromagnetic compatibility	according to 2014/30/EU directive
RoHS	according to 2011/65/EU (01/09/2020) directive
UL / CSA	certificate n. E212495

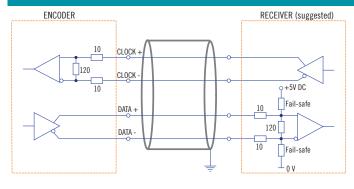
- ¹ as measured at the transducer without cable influences
- ² for further details refer to OUTPUT LEVELS on TECHNICAL BASICS section
- ³ maximum load for static usage
- 4 measured on the transducer flange
- ⁵ condensation not allowed

Cable	8 pin M12
red	8
black	5
green	3
brown	2
yellow	4
orange	6
red / blue	7
white	1
shield	housing
	red black green brown yellow orange red / blue white

MECHANICAL SPECIFICATIONS

Bore diameter	ø 9,52 (3/8") / 10 mm ø 4* / 5* / 6* / 6,35 (1/4")* / 8* mm * with optional shaft adapter, please refer to Accessories
Enclosure rating	IP 67 cover side / IP 65 shaft side (IEC 60529)
Rotation speed	8000 rpm continuous / 10000 rpm max
Max shaft load ³	20 N axial / radial
Shock	50 G, 11 ms (IEC 60068-2-27)
Vibration	20 G, 10 2000 Hz (IEC 60068-2-6)
Moment of inertia	0,001 x 10 ⁻⁶ kgm ² (0,02 x 10 ⁻⁶ lbft ²)
Starting torque (at +20°C / +68°F)	< 0,01 Nm (1,42 Ozin)
Bearing stage material	EN-AW 2011 aluminium
Shaft material	1.4305 / AISI 303 stainless steel
Shaft adapter material	CuSn12 / CC483K bronze
Housing material	1.0503 / AISI 1045 chrome plated steel
Bearings	n.2 ball bearings
Bearings life	10 ⁹ revolutions
Operating temperature ^{4, 5}	-30° +100°C (-22° +212°F) -25° +85°C (-13° +185°F) with M12 connector
Storage temperature ⁵	-25° +85°C (-13° +185°F)
Weight	150 g (5,29 oz)

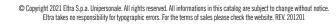
SSI SCHEMATICS



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











EMA 50 A / B BIT PARALLEL - SSI

SOLID SHAFT MAGNETIC SINGLETURN ABSOLUTE ENCODER

MAIN FEATURES

Singleturn absolute magnetic encoder size 50 mm with solid shaft

- Resolution up to 13 bit (8192 ppr)
- Power supply up to +30 V DC with SSI or Bit Parallel as electrical interface
- Code reset for easy setup
- Cable or M12 output, other connectors available on cable end
- Sturdy construction (separated chambers)
- Solid shaft diameter up to 10 mm
- IP 67 enclosure rating
- Mounting by syncronous flange











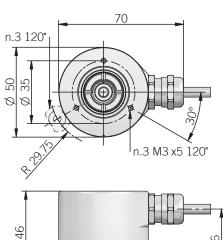
ORDERING CODE	EMA	50B	1024	G	8/30	N	N	X	6	X	3	M12	R	. 162	+XXX
magnetic singleture absolute o	SERIES														
magnetic singleturn absolute e		MODEL													
	ıs flange ø 25 is flange ø 30 i														
for anodized version please d		ur offices													
(N / C / R /	U / P interface) ¡	opr from 2	to 4096												
	(S interface)	opr from 2		E TYPE											
			b	oinary B gray G											
(n	o powers of 2) b	inary offse	et code (0-)	(XX) BC											
	(no powers of 2)	gray orrse	et code (U-A	POWER	SUPPLY										
					5 V DC 5 DC 8/30										
					TRICAL IN	ITERFACE									
				N	PN open c										
				Pl	NP open c										
			Serial Sy	nchrono/	ρι us Interfa	ush pull P ce - SSI S									
						ne	LOGIC egative N								
						Ĺ	ositive P								
							ported if n								
							h external binary code								
			(with bina	ary code) S	strobe and	reset with	external i	•	IAMETER						
								(mod. 5	0A) mm 6						
								(mod. 50	0B) mm 8 B) mm 10						
								E	NCLOSUR	E RATING IP 65 X					
									MA	IP 67 S XX Rotatic					
									Wir		00 rpm 3				
										cable (sta	OUTI ndard lengt	PUT TYPE h 0,5 m) P			
				pro	eferred cab	le lengths 1	,5/2/3/5	5 / 10 m, to			ON TYPE (eg nale conne				
									,-	,			ION TYPE		
													axial A radial R		
											matin		ATING CON		
						to be repo	rted only w	ith connecto	or output (eg	g. M12R.162	2), for matin	g connector	see Accesso	ries	VADIANT
															VARIANT





custom version XXX

50 A radial cable output

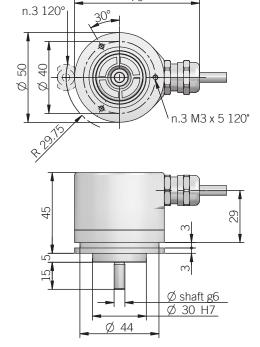


fixing clamps not included, please refer to Accessories

Ø 44

50 B radial cable output

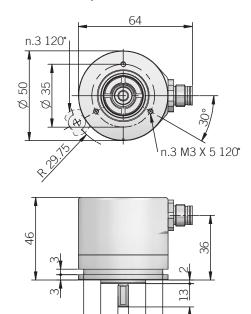
Ø shaft g6 Ø 25 H7



fixing clamps not included, please refer to Accessories

recommended mating shaft tolerance H7 dimensions in mm

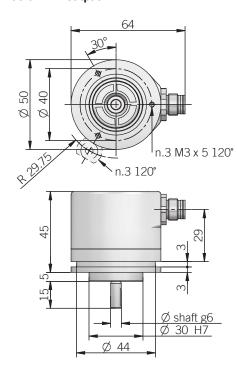
50 A radial M12 output



fixing clamps not included, please refer to Accessories

Ø 44

50 B radial M12 output



fixing clamps not included, please refer to Accessories

Axial output



ELECTRICAL SPECIFICATIONS					
Resolution	from 2 to 4096 ppr (N/C/P/R/U interface from 2 to 8192 ppr (S interface)				
Power supply ¹	$5 = 4,5 \dots 5,5 \text{ V DC} $ 8/30 = 7,6 \dots 31,5 V DC (reverse polarity pro				
Current consumption without load	< 100 mA				
Max load current	P = 20 mA / channel N / C / R / U = 40 mA / channel				
Electrical interface ²	NPN / NPN open collector (ULN2003A) PNP / PNP open collector (TD62783) push pull (iC-DL) RS-422 (LTC1690 or equivalent)				
Auxiliary inputs (U/D - RESET)	active high (+V DC) connect to 0 V if not used / RESET tmin 150 ms				
Max frequency	output: 25 kHz LSB (Bit parallel) clock input: 100 kHz 1 MHz (SSI)				
Code type	binary or gray				
cci manaatabla					

coue type	biliary or gray
SSI monostable time (Tm)	20 μs
SSI pause time (Tp)	> 35 µs
Ctrobo timo	20

SSI frame	(MSB LSB) 13 bit data length
Counting direction	decreasing clockwise (shaft view)
Start-up time	150 ms

Accuracy	± 0,35° typical
Electromagnetic compatibility	according to 2014/30/EU directive
RoHS	according to 2011/65/EU (01/09/2020) directive

UL / CSA certificate n. E212495

⁵ condensation not allowed

	L CONNECTIONS
DILLEARALLE	L GUNNEGITUNƏ

Function	Gray / Binary	Cable
bit 1 (LSB)	G ⁰ / B ⁰	green
bit 2	G1/B1	yellow
bit 3	G ² / B ²	blue
bit 4	G ³ / B ³	brown
bit 5	G ⁴ / B ⁴	orange or pink
bit 6	G ⁵ / B ⁵	white
bit 7	G ⁶ / B ⁶	grey
bit 8	G ⁷ / B ⁷	violet
bit 9	G8 / B8	grey / pink
bit 10	G ⁹ / B ⁹	white / green
bit 11	G ¹⁰ / B ¹⁰	brown / green
bit 12	G11/ B11	white / yellow
0 V	/	black
+ V DC	/	red
U/D	/	red / blue
RESET	/	yellow / brown
STROBE	/	white / grey
÷	/	shield

MECHANICAL SPECIFICA	ATIONS
Shaft diameter	ø6/8/10 mm
Enclosure rating	X = IP 65 (IEC 60529) S = IP 67 (IEC 60529)
Max rotation speed	3000 rpm continuous / 5000 rpm istantaneous
Max shaft load ³	30 N axial / 50 N radial
Shock	50 G, 11 ms (IEC 60068-2-27)
Vibration	20 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)	< 0,03 Nm (4,25 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 ^{4, 5}	-25° +85°C (-13° +185°F)
Storage temperature ⁵	-25° +85°C (-13° +185°F)
Weight	200 g (7,05 oz)

SSI CONNECTIONS		
Function	Cable	8 pin M12
+ V DC	red	8
0 V	black	5
DATA +	green	3
DATA -	brown or grey	2
CLOCK +	yellow	4
CLOCK -	orange or pink	6
U/D	red / blue	7
RESET	white	1
÷	shield	housing

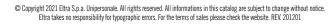
M12 connector (8 pin) M12 A coded solder side view FV



STROB	E TIMING
LSB	
LSB+1	
STROBE	20 μs min







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



EMA 50 F / G Bit parallel - SSI

BLIND HOLLOW SHAFT MAGNETIC SINGLETURN ABSOLUTE ENCODER

MAIN FEATURES

Singleturn absolute magnetic encoder size 50 mm with blind hollow shaft

- Resolution up to 13 bit (8192 ppr)
- Power supply up to +30 V DC with SSI or Bit Parallel as electrical interface
- Code reset for easy setup
- Cable or M12 output, other connectors available on cable end
- Sturdy construction (separated chambers)
- Blind hollow shaft diameter up to 15 mm
- IP 67 enclosure rating
- Mounting by stator coupling or torque pin



ORDERING CODE	EMA	50F	1024	G	8/30	N	N	Х	15	Х	3	M12	R	. 162	+XXX
magnetic singleturn absolute	SERIES encoder FMA														
magnetic singletum absolute	elicodei Livia i	MODEL													
blind hollow shaft v blind hollow sh		e pin 50G													
(N / C / R /	/ U / P interface)		OLUTION to 4096												
	(S interface)	ppr from 2		 Ode type											
			U.	binary B											
(no powers of 2)	binary offs	et code (0	gray G)-XXX) BC											
	(no powers of 2	!) gray offs	et code (0		 R Supply										
					5 V DC 5 / DC 8/30										
					TRICAL IN	ITERFACE									
				N	PN open c	NPN N ollector C									
					'NP open c	PNP R									
			Corial	Synchrono	pı	ısh pull P									
			Seliai	Syliciliono	us iliterra		LOGIC								
							egative N positive P								
								OPTIONS							
						reset wi	th external	input ZE							
			(with bi	inary code) :	strobe and	with) reset with	binary code 1 external i	nput SZE							
								BORE [DIAMETER mm 14						
				F / C / O /	10 / 10				mm 15						
			diamete	rs 5 / 6 / 8 /	10 / 12 mn	1 WITH OPTIO	nai snatt ad		accessories E nclosur	E RATING					
										IP 65 X IP 67 S					
									MA	X ROTATIO	ON SPEED				
										30	000 rpm 3 OUT I	I Put type			
				nr	eferred cah	le lengths 1	5/2/3/5	5 / 10 m to	he added a		ndard lengt ON TYPE (eg				
				ρi	ciciica cab	ic iciigtiis 1	,572757	77 10 111, 10			male conne	ector M12			
												DIRECT	ION TYPE axial A		
												N	radial R IATING CO	NECTOD	
												g connecto	or not inclu	ided .162	
						to be repo	ortea only w	ıtın connecti	or output (e	g. W12K.162	z), tor matin	g connector	r see Access	ories	VARIANT

custom version XXX

50 F radial cable output

CE CPU'US

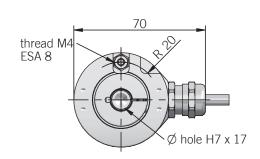
Ø 28 Ø 50

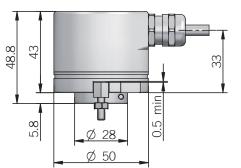
50 G

radial cable output

70

Ø hole H7 x 17





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

recommended mating shaft tolerance g6 dimensions in mm

50 F radial M12 output

50 G

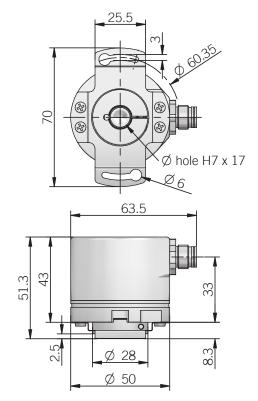
radial M12 output

thread M4

ESA 8

 ∞ ₩.

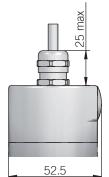
5.8



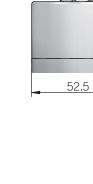
63.5

ï hole H7 x 17

Axial output















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MAGNETIC SINGLETURN ABSOLUTE ENCODERS | EMA 50 F/G

ELECTRICAL SPECIFICA	TIONS
Resolution	from 2 to 4096 ppr (N / C / P / R / U interface) from 2 to 8192 ppr (S interface)
Power supply ¹	$\begin{array}{l} 5 = 4,5 \dots 5,5 \text{ V DC} \\ 8/30 = 7,6 \dots 31,5 \text{ V DC (reverse polarity protection)} \end{array}$
Current consumption without load	< 100 mA
Max load current	P = 20 mA / channel N / C / R / U = 40 mA / channel
Electrical interface ²	NPN / NPN open collector (ULN2003A) PNP / PNP open collector (TD62783) push pull (ic-DL) RS-422 (LTC1690 or equivalent)
Auxiliary inputs (U/D - RESET)	active high (+V DC) connect to 0 V if not used / RESET tmin 150 ms
Max frequency	output: 25 kHz LSB (Bit parallel) clock input: 100 kHz 1 MHz (SSI)
Code type	binary or gray
SSI monostable time (Tm)	20 µs
SSI pause time (Tp)	> 35 µs
Strobe time	20 μs
SSI frame	(MSB LSB) 13 bit data length
Counting direction	decreasing clockwise (shaft view)
Start-up time	150 ms
Accuracy	± 0,35° typical
Electromagnetic compatibility	according to 2014/30/EU directive
RoHS	according to 2011/65/EU (01/09/2020) directive
UL / CSA	certificate n. E212495

Gray / Binary

 G^0/B^0

G1/B1

G² / B²

G³ / B³

G4/B4

G5/B5

 G^6/B^6

G⁷ / B⁷

G8/B8

G9/ B9

G10/ B10

G11/ B11

/

Cable

green

yellow

blue

brown

orange or pink

white

grey

violet

grey / pink

white / green

brown / green

white / yellow

black

red

red / blue

yellow / brown white / grey

shield

BIT PARALLEL CONNECTIONS

Function

bit 1 (LSB)

bit 2

bit 3

bit 4

bit 5

bit 6

bit 7

bit 8

bit 9

bit 10

bit 11

bit 12

0 V

+ V DC

U/D

RESET

STROBE

ᆂ

MECHANICAL SPECIFIC	ATIONS
Bore diameter	ø 14 / 15 mm ø 5 / 6* / 8* / 10* / 12* mm * with optional shaft adapter, please refer to Accessories
Enclosure rating	X = IP 65 (IEC 60529) S = IP 67 (IEC 60529)
Max rotation speed	3000 rpm continuous
Max shaft load ³	30 N axial / 50 N radial
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)	< 0,03 Nm (4,25 Ozin)
Bearing stage material	EN-AW 2011 aluminum
Shaft material	1.4305 / AISI 303 stainless steel
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 ^{4, 5}	-25° +85°C (-13° +185°F)
Storage temperature ⁵	-25° +85°C (-13° +185°F)
Fixing torque for collar clamping	1 Nm (142 Ozin) recommended
Weight	200 g (7,05 oz)

SSI CONNECTIONS		
Function	Cable	8 pin M12
+ V DC	red	8
0 V	black	5
DATA +	green	3
DATA -	brown or grey	2
CLOCK +	yellow	4
CLOCK -	orange or pink	6
U / D	red / blue	7
RESET	white	1
÷	shield	housing

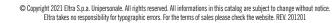
M12 connector (8 pin) M12 A coded solder side view FV



STROB	E TIMING
LSB	
LSB+1	
STROBE	20 μs min











EML 50 A / B

SOLID SHAFT MAGNETIC SINGLETURN ABSOLUTE ENCODER

MAIN FEATURES

Singleturn absolute magnetic encoder size 50 mm with solid shaft

- Resolution 12 bit
- Power supply up to +28 V DC with analogue (voltage or current) electrical interface
- Code reset for easy setup
- Cable or M12 output, other connectors available on cable end
- Sturdy construction (separated chambers)
- Solid shaft diameter up to 10 mm
- IP 67 enclosure rating
- Mounting by syncronous flange









ORDERING CODE	EML	50A	360	Х	12/28	V	05	X	6	X	3	M12	R	. 162	+XXX
magnetic singleturn absolute e synchronou	SERIES encoder EML as flange ø 25 s flange ø 30	MODEL mm 50A mm 50B our offices ACTIVI degr degr degr	E ANGLE ees 360 ees 270 ees 180 grees 90	OPTION											
		to be repo	orted if n	ot used X											
		10000 11101			R SUPPLY										
					TRICAL IN										
						current I									
						0	JT RANGE 5 V 05 10 V 010								
						0 2	0 mA 020 0 mA 420								
		+,	ho rono	tod with v	oltago out	put / 3 wi		OPTIONS							
		ι) ne repor	icu witii v	oitage out	niw 4	res current	output Q							
								(mod. 5	OA) mm 6						
								(mod. 50	0B) mm 8 B) mm 10						
								ŀ	NCLOSUR	IP 65 X					
									MA	IP 67 S AX ROTATIO	ON SPEED				
										30	000 rpm 3 0UT I	PUT TYPE			
				pr	eferred cab	le lengths 1	.,5/2/3/5	5 / 10 m, to	be added a	cable (sta fter DIRECTI M12 r		. PR5)			
													ION TYPE axial A		
												M	radial R	INFCTOR	
						to he reno	orted only w	ith connecto	or outnut (e	g. M12R.162		g connecto	or not inclu	ded .162	
						to ne teht	orton offin M	iai comicell	output (E	6. MITTIV:107	-,, ivi illatill	6 CONTINUENTE	200 UCC 22	1163	





custom version XXX

VARIANT

¹ as measured at the transducer without cable influences

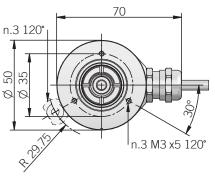
² for further details refer to OUTPUT LEVELS on TECHNICAL BASICS section

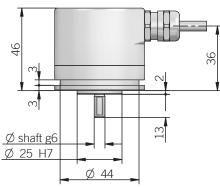
³ maximum load for static usage

⁴ measured on the transducer flange

⁵ condensation not allowed

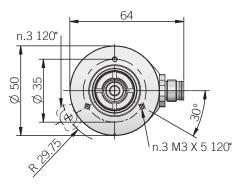
50 A radial cable output

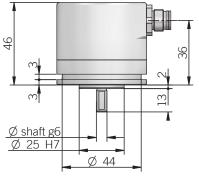




fixing clamps not included, please refer to Accessories

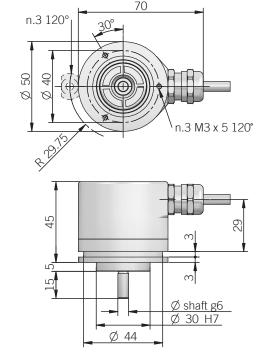
50 A radial M12 output





fixing clamps not included, please refer to Accessories

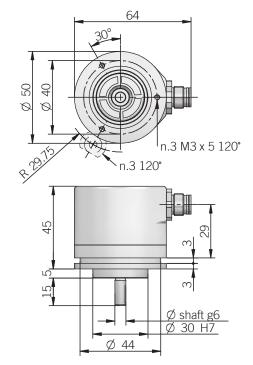
50 B radial cable output



fixing clamps not included, please refer to Accessories

recommended mating shaft tolerance H7

50 B radial M12 output



fixing clamps not included, please refer to Accessories

Axial output



ELECTRICAL SPECIFICATIONS Resolution | 12 bit Output DAC resolution | 12 bit **Active angle** 90 ... 360 mechanical degrees **Power supply**¹ 11,4 ... 29,4 V DC (reverse polarity protection) **Current consumption** 40 mA max without load voltage (0 ... 5 V / 0 ... 10 V) current (0 ... 20 mA / 4 ... 20 mA) Electrical interface² Auxiliary inputs | active high (+V DC) (U/D - RESET) | connect to 0 V if not used / RESET tmin 150 ms $\begin{array}{l} {\sf R_{min}}{=}~1~{\sf k}\Omega~({\sf voltage~output})\\ {\sf R_{max}}{=}~({\sf V~DC~-~2})~/~0.02~({\sf current~output}) \end{array}$ Output update frequency | 100 kHz **Signal pattern** | decreasing clockwise (shaft view)

according to 2014/30/EU directive

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

1 as measured at the transducer without cable influences

Linearity error

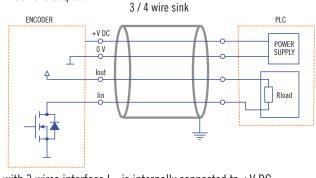
compatibility

Electromagnetic

Start-up time | 150 ms

ELECTRICAL INTERFACE

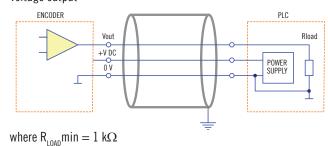
Current output



UL / CSA | certificate n. E212495

with 3 wires interface I_{out} is internally connected to +V DC where R_{10AD} max = $(V_{DC} - 2) / 0.02$

Voltage output



MECHANICAL SPECIFICATIONS Shaft diameter | ø 6 / 8 / 10 mm X = IP 65 (IEC 60529) S = IP 67 (IEC 60529) **Enclosure rating** Max rotation speed | 3000 rpm continuous / 5000 rpm peak Max shaft load³ 30 N axial / 50 N radial **Shock** 50 G, 11 ms (IEC 60068-2-27) **Vibration** 20 G, 10 ... 2000 Hz (IEC 60068-2-6) **Moment of inertia** $0.5 \times 10^{-6} \text{ kgm}^2 (12 \times 10^{-6} \text{ lbft}^2)$ Starting torque < 0,03 Nm (4,25 Ozin) (at +20°C / +68°F) 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** 10⁹ revolutions Operating temperature^{4, 5} -25° ... +85°C (-13° ... +185°F) **Storage temperature**⁵ | -25° ... +85°C (-13° ... +185°F) **Weight** 200 g (7,05 oz)

CONNECTIONS							
Function	Cable (voltage)	Cable (current)	5 pin M12	8 pin M12*			
+ V DC	red	red	2	8			
0 V	black	black	4	5			
Vout	green	/	3	/			
lin	/	yellow	3	3			
lout	/	green	/	2			
U/D	blue	blue	5	7			
RESET	white	white	1	1			
÷	shield	shield	housing	housing			

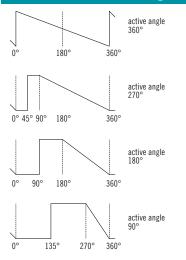
^{*} with Q current ouput

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

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



SIGNAL PATTERN (decreasing CW)









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



EML 50 F / G ANALOGUE

BLIND HOLLOW SHAFT MAGNETIC SINGLETURN ABSOLUTE ENCODER

MAIN FEATURES

Singleturn absolute magnetic encoder size 50 mm with blind hollow shaft

- Resolution 12 bit
- Power supply up to +28 V DC with analogue (voltage or current) electrical interface
- Code reset for easy setup
- Cable or M12 output, other connectors available on cable end
- Sturdy construction (separated chambers)
- Blind hollow shaft diameter up to 15 mm
- IP 67 enclosure rating
- Mounting by stator coupling or torque pin





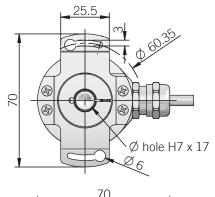


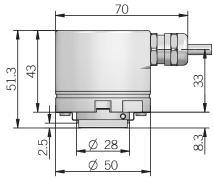


ORDERING CODE	EML	50F	360	X	12/28	٧	05	X	15	X	3	M12	R	. 162	+XXX
magnetic singleturn absolute e	SERIES encoder EML														
blind hollow shaft wit blind hollow sha	l th stator coup	ACTIV deg deg deg de to be rep		ortion ot used X input ZE POWEI 2 28 V	R SUPPLY DC 12/28 Ctrical in	voltage V current I OUTP U	JT RANGE 5 V 05								
						0 0 2	10 V 010 0 mA 020 0 mA 420								
		t	o be repoi	rted with v	voltage out	put / 3 wir 4 wir		output Q	IAMETER						
			diameter	rs 5 / 6 / 8 /	′ 10 / 12 mm	ı with option	nal shaft ad	lapter, see A	mm 14 mm 15 ccessories	F DATING					
								ı	ENCLOSUR Ma	IP 65 X IP 67 S IX ROTATIO	IN SPFFD				
										30 cable (sta	00 rpm 3 0UTI ndard lengt				
				pi	referred cab		.,5 / 2 / 3 / 5 nector inclu			M12 r	nale conne	ctor M12 code			
													axial A radial R		
						to be repo	orted only w	ith connecto	or output (eg	g. M12R.162		g connecto	ATING CON or not inclu see Accesso	ded .162	
															VARIANT

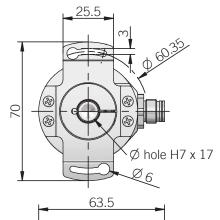
radial cable output

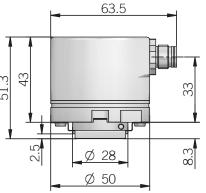
50 F



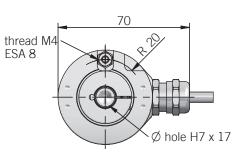


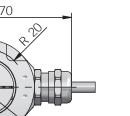
50 F radial M12 output

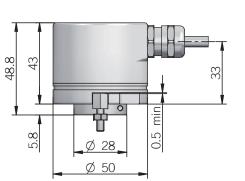




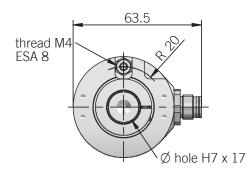
50 G radial cable output

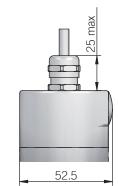




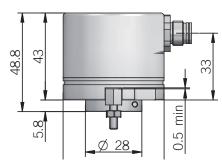


50 G radial M12 output





Axial output



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

recommended mating shaft tolerance g6 dimensions in mm









custom version XXX

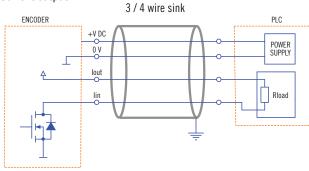
MAGNETIC SINGLETURN ABSOLUTE ENCODERS | EML 50 F/G

ELECTRICAL SPECIFICAT	TIONS
Resolution	12 bit
Output DAC resolution	12 bit
Active angle	90 360 mechanical degrees
Power supply ¹	11,4 29,4 V DC (reverse polarity protection)
Current consumption without load	40 mA max
Electrical interface ²	voltage (0 5 V / 0 10 V) current (0 20 mA / 4 20 mA)
Auxiliary inputs (U/D - RESET)	active high (+V DC) connect to 0 V if not used / RESET tmin 150 ms
Load	$\begin{array}{l} R_{\text{min}}{=}~1~\text{k}\Omega~\text{(voltage output)} \\ R_{\text{max}}{=}~\text{(V DC - 2) / 0.02 (current output)} \end{array}$
Output update frequency	100 kHz
Signal pattern	decreasing clockwise (shaft view)
Start-up time	150 ms
Linearity error	< 1 %
Electromagnetic compatibility	according to 2014/30/EU directive
RoHS	according to 2011/65/EU (01/09/2020) directive
UL / CSA	certificate n. E212495

as measured at the transducer without cable influences

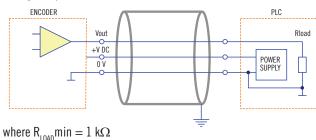
ELECTRICAL INTERFACE

Current output



with 3 wires interface I_{out} is internally connected to +V DC where $R_{toan}max = (V_{pc}-2) / 0.02$

Voltage output



MECHANICAL SPECIFICATIONS ø 14 / 15 mm **Bore diameter** | Ø 5 / 6* / 8* / 10* / 12* mm with optional shaft adapter, please refer to Accessories X = IP 65 (IEC 60529)**Enclosure rating** S = IP 67 (IEC 60529)Max rotation speed | 3000 rpm continuous Max shaft load³ | 30 N axial / 50 N radial **Shock** 50 G, 11 ms (IEC 60068-2-27) **Vibration** 20 G, 10 ... 2000 Hz (IEC 60068-2-6) **Moment of inertia** $4 \times 10^{-6} \text{ kgm}^2 (95 \times 10^{-6} \text{ lbft}^2)$ Starting torque < 0.03 Nm (4.25 Ozin) (at +20°C / +68°F) Bearing stage material | EN-AW 2011 aluminum **Shaft material** 1.4305 / AISI 303 stainless steel Shaft adapter material | CuSn12 / CC483K bronze Housing material EN-AW 2011 aluminum **Bearings** | n.2 ball bearings Bearings life | 109 revolutions Operating temperature^{4, 5} | -25° ... +85°C (-13° ... +185°F) **Storage temperature**⁵ | -25° ... +85°C (-13° ... +185°F) Fixing torque for 1 Nm (142 Ozin) recommended collar clamping

CONNECTIO	NS			
Function	Cable (voltage)	Cable (current)	5 pin M12	8 pin M12*
+ V DC	red	red	2	8
0 V	black	black	4	5
Vout	green	/	3	/
lin	/	yellow	3	3
lout	/	green	/	2
U/D	blue	blue	5	7
RESET	white	white	1	1
_	shield	shield	housing	housing

Weight | 200 g (7,05 oz)

* with Q current ouput

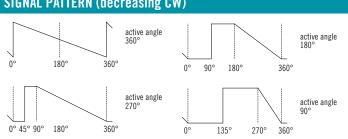
M12 connector (5 pin) M12 A coded solder side view FV

M12 A coded solder side view FV

M12 connector (8 pin)

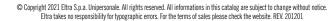
















EMA 55 A SSI

MAGNETIC SINGLETURN ABSOLUTE KIT ENCODER

MAIN FEATURES

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

- · Resolution up to 13 bit (8192 ppr) with SSI as electrical interface
- · Cable or M12 output, other connectors available on cable end
- · No wear due to no contact magnetic technology
- · Bore shaft diameter up to 10 mm
- Enclosure rating up to IP67
- Wide operating temperature -40° ... +100°C (-40° ... +212°F)

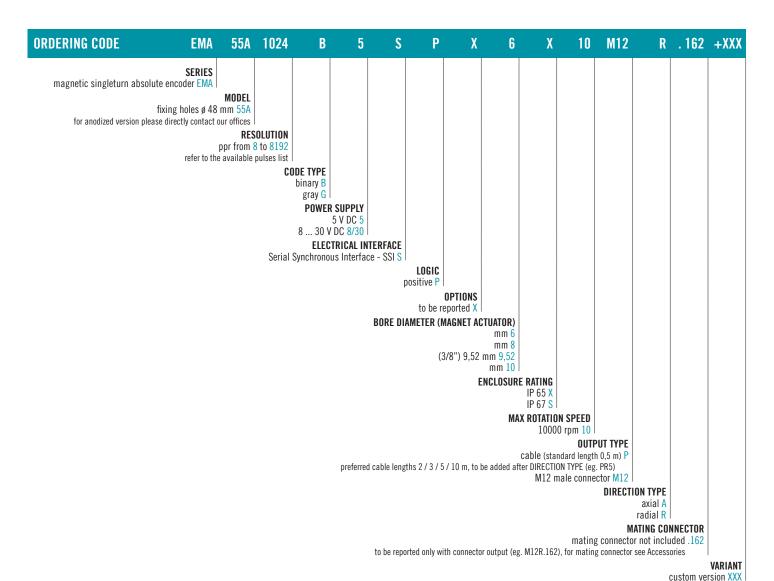
















 $^{^{\}rm 2}$ for further details refer to OUTPUT LEVELS on TECHNICAL BASICS section

³ maximum load for static usage

⁴ measured on the transducer flange

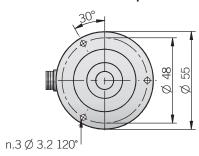
⁵ condensation not allowed

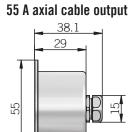
MAGNETIC SINGLETURN ABSOLUTE ENCODERS | EMA 55 A

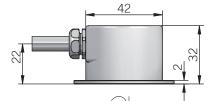
55 A radial cable output

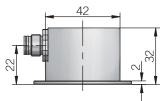
n.3 Ø 3.2 120°

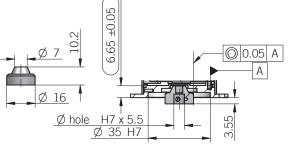
55 A radial M12 output





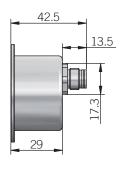








55 A axial M12 output



recommended mating shaft tolerance g6 dimensions in mm

ELECTRICAL SPECIFICA	ELECTRICAL SPECIFICATIONS					
Resolution	from 8 to 8192 ppr					
Power supply ¹	$ 5 = 4,75 \dots 5,25 \text{ V DC} $					
Power draw without load	800 mW max					
Electrical interface ²	RS-422 (SN65LBC179Q or equivalent)					
Clock frequency	100 kHz 1 MHz					
Code type	binary or gray					
SSI monostable time (Tm)	20 μs					
SSI frame	(MSB LSB) 13 bit data length					
Counting direction	decreasing 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

CONNECTIONS

UNNEGITONS		
Function	Cable	8 pin M12
+ V DC	red	8
0 V	black	5
DATA +	green	3
DATA -	brown or grey	2
CLOCK +	yellow	4
CLOCK -	orange or pink	6
÷	shield	housing

MECHANICAL SPECIFICA	ATIONS
Bore diameter (magnet actuator)	ø 6 / 8 / 9,52 (3/8") / 10 mm
Enclosure rating	X = IP 65 (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 kgm² (2,4 x 10 ⁻⁶ lbft²)
Bearing stage material	EN-AW 2011 aluminum
Housing material	painted aluminium
Magnet actuator material	EN-AW 2011 aluminum
Operating temperature ^{3, 4}	-40° +100 °C (-40° +212°F) -25° +85°C (-13° +185°F) with M12 connector
Storage temperature ⁴	-25° +85 °C (-13° +185°F)
Weight	150 g (5,29 oz)
Magnet actuator mounting tolerances (to get best electrical perfomances)	± 0,2 mm (axial) ± 0,1 mm (radial)

RESOLUTIONS

8 - 16 - 25 - 32 - 40 - 50 - 64 - 80 - 100 - 125 - 128 - 160 - 200 - 250 - 256 - 320 - 400 - 500 - 512 - 800 - 1000 - 1024 - 1600 - 2000 - 2048 - 4096 - 8192

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



AAM 38 F

BLIND HOLLOW SHAFT MULTITURN ABSOLUTE ENCODER

MAIN FEATURES

Miniaturized optical multiturn absolute encoder for high end application. Thanks to BiSS-C interface and high resolution it can be used in robotics, motor feedback and CNC machines.

- Optical sensor technology (OptoASIC + Energy Harvesting)
- 39 bit total resolution (23 bit single turn + 16 bit multiturn)
- Power supply +5 VDC with BiSS-C as electrical interface
- Cable output
- Blind hollow shaft diameter up to 8 mm
- Mounting by stator coupling
- Operating temperature -20° ... +105°C (-4° ... +221°F)



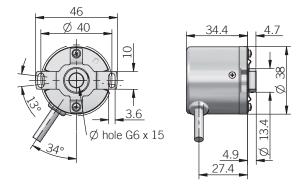




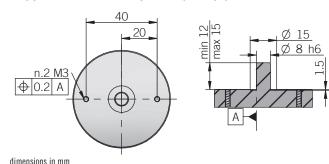


ORDERING CODE	AAM	38F	16	1	23	В	5	В	8	X	X	PR	.XXX
absolute multiurn encod	SERIES er AAM												
blind hollow shaft with sta		MODEL oling 38F TURN RES											
		SINGLE	bit 1		DLUTION bit 23								
					C	ODE TYPE binary B POWF	R SUPPLY						
							5 V DC 5						
								BORE D	mm 6 mm 6,35				
									mm 8				
											OPTIONS eported X		
									radial	cable (stan		O,2m) PR	
													VARIANT

AAM 38 F



RECOMMENDED INTERFACE FLANGE DESIGN



ELECTRICAL SPECIFICA	TIONS
Multiturn resolution	16 bit
Singleturn resolution	23 bit
Fault status	8 bit
CRC	8 bit
Power supply ¹	4,75 5,25 V DC
Current consumption without load	< 120 mA
Output type ²	BiSS-C (SN65LBC179Q)
Code type	binary
Clock frequency (MA)	80 kHz 10 MHz
Position Calculation Time	Refer to BiSS-C T _{busy time}
Counting direction	decreasing clockwise (shaft view)
Start-up time	500 ms
Accuracy	± 80 arc-sec
Electromagnetic compatibility	according to 2014/30/EU directive
RoHS	according to 2011/65/EU (01/09/2020) directive

CUNNECTIONS	
Function	Cable
+ V DC	red
GROUND	black
SERIAL DATA (SLO) +	orange
SERIAL DATA (SLO) -	blue
SERIAL CLOCK (MA)+	brown
SERIAL CLOCK (MA) -	white

MECHANICAL SPECIFICA	ATIONS
Shaft diameter	ø 6 / 6,35 (1/4") / 8 mm
Enclosure rating	IP 50 (IEC 60529)
Max rotation speed	6000 rpm continuous
Shock	200 G, 6 ms (IEC 60068-2-27)
Vibration	10 G, 10 2000 Hz (IEC 60068-2-6)
Shaft material	brass
Housing material	steel
Bearing stage material	aluminum
Bearings	n.2 ball bearings
Bearings life	10° revolutions
Operating temperature ^{3, 4}	-20° +105°C (-4° +221°F)
Storage temperature⁴	-20° +105°C (-4° +221°F)
Shaft radial play allowed	± 0,05 mm
Shaft axial play allowed	± 0,1 mm
Fixing torque for shaft grains	1 Nm recommended
Fixing torque for spring screws	0,35 Nm recommended for M3 screws (not provided)
Weight	150 g (5,29 oz)

as measured at the transducer without cable influences









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173

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

³ measured on the transducer flange



EAMR 58 B / C - 63 A / D / E BIT PARALLEL - SSI

SOLID SHAFT MULTITURN ABSOLUTE ENCODER

MAIN FEATURES

Industry standard multiturn absolute encoder for factory automation applications.

- Optical sensor technology (proprietary OptoASIC + Energy Harvesting)
- Resolution up to 65 bit (25 bit single turn + 40 bit multiturn)
- Power supply up to +30 VDC with Bit Parallel or SSI as electrical interface
- Cable or connector output
- Solid shaft diameter up to 10 mm
- Mounting by synchronous, clamping or centering 2,5" square flange











ORDERING CODE BIT PARALLEL	EAMR	63A	12	/	12	G	8/30	Р	Р	X	10	X	MA	R	.162	+XXX
multiturn absolute e	SERIES encoder EAMR															
synchronous	flange ø 31.75 m	MODEL m 634														
synchrono	us flange ø 50 m ng flange ø 36 m	m 58B														
centering square	flange ø 31.75 m are flange ø 50 m	m 63D														
centering squ	MULTITUR	N RESOL														
		it from 1 GLETUR			ON											
		b	oit from	1 to		DE TYPE										
						binary B gray G										
						POWER	SUPPLY									
							DC 8/30 Trical in	 Terface								
							pu	sh-pull P	LOGIC							
								ne F	egative Nositive P							
								to be rei	ported if n	OPTIONS ot used X						
								reset wit	h external	latch L input ZE						
							latch /	reset with	external ir	•	 DIAMETER					
									(mod 63 A		3 B) mm 6					
										- 63 A / D /	E) mm 10 E nclosur					
									IP 65		e / IP67 co					
				/ur	n to 11	2 hit as tat	al rocolutio	n, without re	est antion)	16 corps o	ahla (stan	OUTI	PUT TYPE			
				(uļ	(fr	om 14 to 2	5 bit as tota	al resolution	or options)	32 cores of	cable (stan	dard length	1,5 m) PE			
						(up to 1	3 bit as tota	hs 2 / 3 / 5 / Il resolution,	, without re	set option)	19 pin MIL	male conr	nector MA			
							(tro	m 14 to 25 t	oit as total i	resolution) .	o∠ pin Mil	male conr		ION TYPE		
													M	radial R IATING COI	INECTOR	
							to he rei	orted only v	vith connec	tor outnut (i	eg MAR 163		g connecto	or not inclu	ded .162	
							10 00 10	Jortou Ulliy V	00111160	cor output (~b. 1111 111. ± 102	-,, ivi illutill	P 00111100E01	200 11000331		VARIANT





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174

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custom version XXX

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175



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



custom version XXX

VARIANT

R . 162 +XXX

SERIES multiturn absolute encoder EAMR MODEL synchronous flange ø 31.75 mm 63A synchronous flange ø 50 mm 58B clamping flange ø 36 mm 58C centering square flange ø 31.75 mm 63D centering square flange ø 50 mm 63E MULTITURN RESOLUTION bit 12 / 14 / 15 see table for preferred combinations SINGLETURN RESOLUTION bit 13 / 18 / 25 see table for preferred combinations CODE TYPE binary B gray G POWER SUPPLY 8 ... 30 V DC 8/30 ELECTRICAL INTERFACE Serial Synchronous Interface - SSI S OPTION to be reported if not used X reset with external input ZE reset on cover or with external input ZP INCREMENTAL RESOLUTION (powers of 2) ppr from 128 to 8192 INCREMENTAL ELECTRICAL INTERFACE available with PC or HA output type line driver HTL L push pull P line driver RS-422 RS SHAFT DIAMETER (mod. 58 B) mm 6 (mod. 63 A / D) 3/8"- mm 9.52 (mod. 58 C - 63 A / D / E) mm 10 **ENCLOSURE RATING** IP 65 shaft side / IP67 cover side X IP 67 S **OUTPUT TYPE** cable (standard length 1,5 m) PC preferred cable lengths 2 / 3 / 5 / 10 m, to be added after DIRECTION TYPE (eg. PCR5) (without reset option) 7 pin MIL male connector MC (with reset option) 10 pin MIL male connector MD 12 pin M23 male connector HA 8 pin M12 male connector M12 DIRECTION TYPE radial R MATING CONNECTOR mating connector not included .162

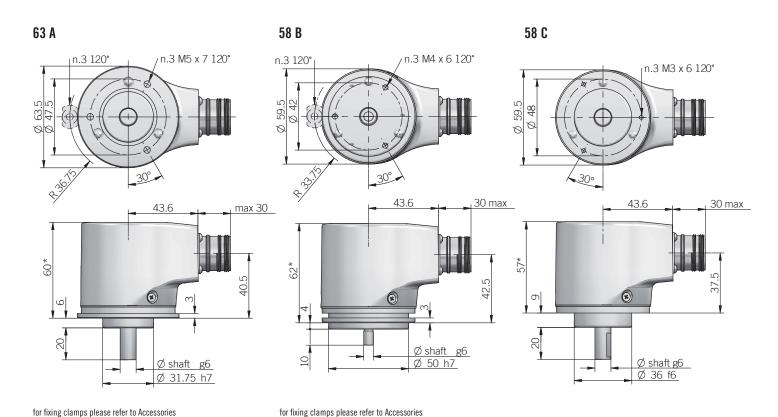
G 8/30

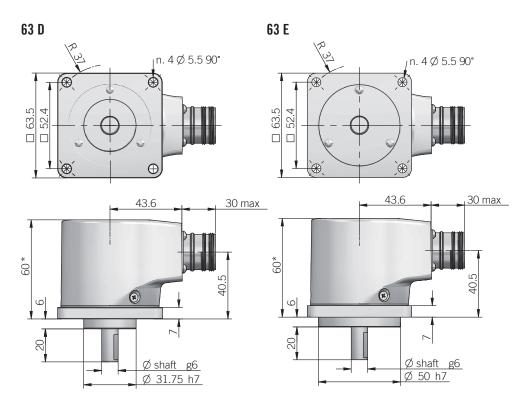
X 2048

only with additional incremental output

ORDERING CODE

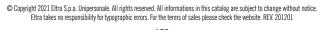
EAMR 63A 12 / 13



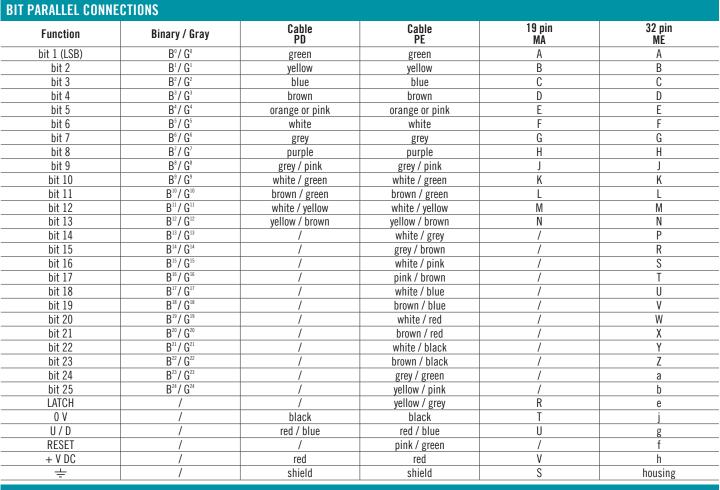












SSI CONNECTION	S					
Function	Cable PC	7 pin MC	10 pin MD	12 pin HA	12 pin HA	8 pin M12
+ V DC	red	G	G	8	8	8
0 V	black	F	F	1	1	5
DATA +	green	С	С	2	2	3
DATA -	brown	D	D	10	10	2
CLOCK +	yellow	А	A	3	3	4
CLOCK -	orange or pink	В	В	11	11	6
A+	grey	/	/	/	6	/
A-	blue	/	/	/	7	/
B+	purple	/	/	/	9	/
B-	white / green	/	/	/	12	/
U/D	red / blue	E	E	5	5	7
RESET	white	/	Н	4	4	1
÷	shield	housing	housing	9	housing	housing

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

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

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



MA connector (19 pin) Amphenol 62IN 12E 14-19 P solder side view FV

ME connector (32 pin) Glenair IPT 02 A 18-32 P F6 solder side view FV









M12 connector (8 pin)

M12 A coded

OPTICAL MULTITURN ABSOLUTE ENCODERS | EAMR 58 B/C - 63 A/D/E PAR - SSI

ELECTRICAL SPECIFICAT	TIONS
Multiturn resolution	12 / 14 / 15 bit please directly contact our offices for other pulses
Singleturn resolution	P = from 1 to 13 bit S = preferred combinations 12 multiturn / 13 singleturn 14 multiturn / 18 singleturn 15 multiturn / 25 singleturn please directly contact our offices for other pulses
Power supply ¹	7,6 30 V DC (reverse polarity protection)
Power draw without load	< 1 W
Max load current	20 mA / channel
Absolute electrical interface²	$\begin{array}{l} P = \text{push pull (iC-DL)} \\ S = RS-422 \text{ (THVD1451 or equivalent)} \end{array}$
Incremental electrical interface ²	$ \begin{array}{l} L = HTL \ diff. \ (\text{AEIC-7272}, \ \text{active short circuit protection}) \\ P = Push-Pull \ (\text{AEIC-7272}, \ \text{active short circuit protection}) \\ RS = RS-422 \ (\text{AELT-5000 or equivalent}) \end{array} $
Max incremental output frequency	128 kHz
Auxiliary inputs (U/D - RESET - LATCH)	active high (+V DC) connect to 0 V if not used / RESET - LATCH $t_{\rm min}\ 150\ ms$
Max frequency	50 kHz LSB (Bit Parallel) clock input: 100 kHz 1 MHz (SSI)
Code type	binary or gray
Logic	SSI = positive Bit parallel = positive or negative
SSI monostable time (Tm)	20 μs
SSI pause time (Tp)	> 35 µs
SSI frame	tree format (MSB LSB) up to 12 bit multiturn = length 25 bit (12MT + 13ST) 14 bit multiturn = length 32 bit (14MT + 18ST) 15 bit multiturn = length 40 bit (15MT + 25ST)
SSI status and parity bit	on request
Counting direction	decreasing clockwise (shaft view)
Start-up time	700 ms
Accuracy	± 250 arc-sec
Electromagnetic compatibility	according to 2014/30/EC directive
RoHS	according to 2011/65/EU (01/09/2020) directive
UL / CSA	certificate n. E212495

DIE DIDILIE	ACMINICATION (AD AIDLE AUAIAE
	1-114141-1-1110	OR CABLE CHOICE
	OUNTEDION	JIV OUDEF AIIAIAF

According to the resolution and the chosen number of turns is possible to calculate the connections required by the connector or the cable. See below examples:

EXAMPLE 1

Singleturn = 8 bit = 8 connections Multiturn = 5 bit = 5 connectionsTotal connections 13

EXAMPLE 2

 $Singleturn = 12 \ bit = 12 \ connections$ Multiturn = 12 bit = 12 connections

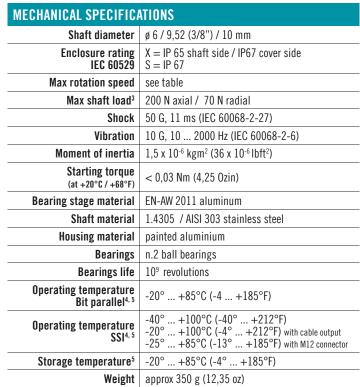
Total connections 24

From 1 to 13 connections a 16 cores cable (PD) or a 19 pin connector (MA) is required.

From 14 to 25 connections a 32 cores cable (PE) or a 32 pin connector (ME) is required.

With LATCH option a 32 cores cable (PE) or a 19 pin connector (MA) or a 32 pin

With RESET option a 32 cores cable (PE) or a 32 pin connector (ME) is required.



- 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

SSI SCHEMATICS

ROTATION SPEED DERAT	ING TABLE	
Temperature °C (°F)	Max speed (rpm)	Max continuo (rpm
up to +70 (+158)	10000	800

uous speed +70 ... +85 (+158 ... +185) 8000 5000 +85 ... +100 (+185 ... 212) 5000 3000

ENCODER RECEIVER (suggested) CLOCK + CLOCK 0+5V DC Fail-safe DATA + 120 DATA Fail-safe





RS 15 X HA

R .162 +XXX



EAMR 58 F - 63 F / G BIT PARALLEL - SSI

BLIND HOLLOW SHAFT MULTITURN ABSOLUTE ENCODER

MAIN FEATURES

Industry standard multiturn absolute encoder for factory automation applications.

EAMD 50E 12 / 12 C 0/20

- Optical sensor technology (proprietary OptoASIC + Energy Harvesting)
 Resolution up to 65 bit (25 bit single turn + 40 bit multiturn)
- Power supply up to +30 VDC with Bit Parallel or SSI as electrical interface
- · Cable or connector output
- · Blind hollow shaft up to 15 mm
- Mounting by stator coupling, torque stop slot or torque pin













custom version +XXX

eltra@eltra.it

62 +X)	.162	R	MA	X	15	Х	Р	Р	8/30	G	/ 12	12 /	58F	EAMR	BIT PARALLEL	
	Ī									ļ				SERIES e encoder EAMR	multiturn absoluti	
	1									.			MODEL			
	ı									ļ			slot 63F	with stator coup with torque stop shaft with torque	blind hollow shaf blind hollow shaft blind hollow	
	1									.			JRN RESOL	MULTITU		
	ı									ļ			bit from			
	ı									ļ		N RESUL	INGLETUR	S		
	ı									DE TYPE						
	ı									binary B gray G						
	ı								SUPPLY							
	ı								DC 8/30							
	ı							RFACE -pull P	TRICAL IN	ELEC						
	ı						LOGIC	puni	ρu							
	ı						ative N itive P									
	ı					PTIONS		μυ								
	ı					t used X	ted if no	o be repo								
	ı							latch wit eset with								
	ı					uts LZE		et with ex	latch / r							
	Ī				mm 14 mm 15	BORE D										
	ı					pter. see A	shaft ada	th optiona	/ 12 mm)	") / 10 / 13	.52 (3/8	6/8/9.	diameters (6			
	ı				ENCLOSUR			·								
	ı			ver side X IP 67 S	e / IP67 co	hatt side	IP 65 s									
	ı		PUT TYPE													
	ı			dard length												
	ı			ndard length ON TYPE (eg.							(1)					
	ı		nector MA	. male conn	19 pin MIL	t option)	thout res	solution, v	bit as tota							
	ı	ION TYPE		_ male conn	32 pm wil	solution) (is total re	4 to 25 bit	(Troi							
		radial R	DINEGI													
		MATING COM		mati-												
02		or not inclu r see Accesso		matinş 2), for matin;	eg. MAR.162	r output (e	connect	ed only wi [†]	to be rep							
VARIA																









to be added with incremental output

ORDERING CODE

multiturn absolute encoder EAMR

blind hollow shaft with stator coupling 58F blind hollow shaft with torque stop slot 63F blind hollow shaft with torque pin 63G

EAMR 58F 12 / 12

MODEL

MULTITURN RESOLUTION bit 12 / 14 / 15

SINGLETURN RESOLUTION bit 13 / 18 / 25

CODE TYPE
binary B
gray G

POWER SUPPLY
8 ... 30 V DC 8/30

see table for preferred combinations

see table for preferred combinations

SERIES

G 8/30

ELECTRICAL INTERFACESerial Synchronous Interface - SSI S

to be reported if not used X reset with external input ZE reset on cover or with external input ZP

INCREMENTAL RESOLUTION (powers of 2) ppr from 128 to 8192

diameters 6 / 8 / 9,52 (3/8") / 10 / 11 / 12 mm with optional shaft adapter, see Accessories

INCREMENTAL ELECTRICAL INTERFACE available with PC or HA output type

line driver HTL L push pull P line driver RS-422 RS

preferred cable lengths 2 / 3 / 5 / 10 m, to be added after DIRECTION TYPE (eg. PCR5)

BORE DIAMETER mm 14 mm 15

IP 65 shaft side / IP67 cover side X

(without reset option) 7 pin MIL male connector MC (with reset option) 10 pin MIL male connector MD

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

ENCLOSURE RATING

IP 67 S

cable (standard length 1,5 m) PC

12 pin M23 male connector HA 8 pin M12 male connector M12

OUTPUT TYPE

DIRECTION TYPE

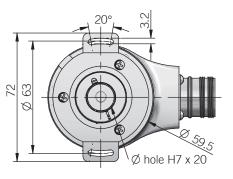
mating connector not included .162

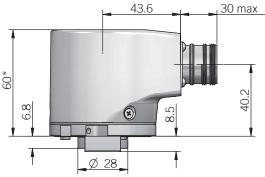
X 2048



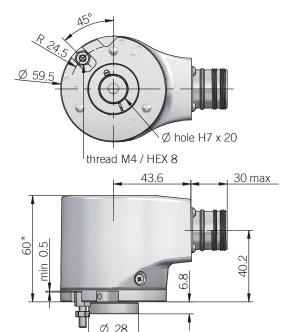
MATING CONNECTOR

VARIANT custom version XXX

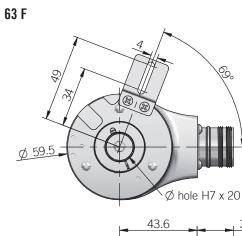


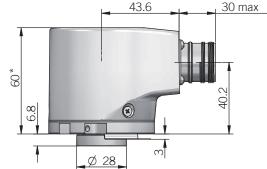


63 G



torque pin is included





for torque pin please refer to Accessories

Function	Binary / Gray	Cable PD	Cable PE	19 pin MA	32 pin ME
bit 1 (LSB)	B°/G°	green	green	A	А
bit 2	B1/ G1	yellow	yellow	В	В
bit 3	B ² / G ²	blue	blue	С	С
bit 4	B ³ / G ³	brown	brown	D	D
bit 5	B ⁴ / G ⁴	orange or pink	orange or pink	E	E
bit 6	B⁵ / G⁵	white	white	F	F
bit 7	B ⁶ /G ⁶	grey	grey	G	G
bit 8	B ⁷ / G ⁷	purple	purple	Н	Н
bit 9	B ⁸ /G ⁸	grey / pink	grey / pink	J	J
bit 10	B ⁹ /G ⁹	white / green	white / green	K	K
bit 11	B ¹⁰ / G ¹⁰	brown / green	brown / green	L	L
bit 12	B11 / G11	white / yellow	white / yellow	M	M
bit 13	B ¹² / G ¹²	yellow / brown	yellow / brown	N	N
bit 14	B13 / G13	/	white / grey	/	Р
bit 15	B14 / G14	/	grey / brown	/	R
bit 16	B15/G15	/	white / pink	/	S
bit 17	B ¹⁶ / G ¹⁶	/	pink / brown	/	T
bit 18	B ¹⁷ / G ¹⁷	/	white / blue	/	U
bit 19	B18 / G18	/	brown / blue	/	V
bit 20	B ¹⁹ / G ¹⁹	/	white / red	/	W
bit 21	B ²⁰ / G ²⁰	/	brown / red	/	Х
bit 22	B ²¹ / G ²¹	/	white / black	/	Υ
bit 23	B ²² / G ²²	/	brown / black	/	Z
bit 24	B ²³ / G ²³	/	grey / green	/	a
bit 25	B ²⁴ / G ²⁴	/	yellow / pink	/	b
LATCH	/	/	yellow / grey	R	е
0 V	/	black	black	T	j
U / D	/	red / blue	red / blue	U	g
RESET	/	/	pink / green	/	f
+ V DC	/	red	red	V	h
÷	/	shield	shield	S	housing
DNNECTIONS					

SSI CONNECTIONS	S					
Function	Cable PC	7 pin MC	10 pin MD	12 pin HA	12 pin HA	8 pin M12
+ V DC	red	G	G	8	8	8
0 V	black	F	F	1	1	5
DATA +	green	С	С	2	2	3
DATA -	brown	D	D	10	10	2
CLOCK +	yellow	A	A	3	3	4
CLOCK -	orange or pink	В	В	11	11	6
A+	grey	/	/	/	6	/
A-	blue		/	/	7	/
B+	purple	/	/	/	9	/
B-	white / green	/	/	/	12	/
U/D	red / blue	E	E	5	5	7
RESET	white	1	Н	4	4	1
÷	shield	housing	housing	9	housing	housing

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

BIT PARALLEL CONNECTIONS

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

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

MA connector (19 pin) Amphenol 62IN 12E 14-19 P solder side view FV

ME connector (32 pin) Glenair IPT 02 A 18-32 P F6 solder side view FV



















183

^{*} with option ZP + 1,5 mmrecommended mating shaft tolerance g6 dimensions in mm

ELECTRICAL SPECIFICA	TIONS				
Multiturn resolution	12 / 14 / 15 bit please directly contact our offices for other pulses				
Singleturn resolution	P = from 1 to 13 bit S = preferred combinations 12 multitum / 13 singleturn 14 multitum / 18 singleturn 15 multitum / 25 singleturn please directly contact our offices for other pulses				
Power supply ¹	7,6 30 V DC (reverse polarity protection)				
Power draw without load	< 1 W				
Max load current	20 mA / channel				
Absolute electrical interface²	P = push pull (iC-DL) S = RS-422 (THVD1451 or equivalent)				
Incremental electrical interface ²	$ \begin{array}{l} L = HTL \ diff. \ (\text{AEIC-7272}, \ \text{active short circuit protection}) \\ P = Push-Pull \ (\text{AEIC-7272}, \ \text{active short circuit protection}) \\ RS = RS-422 \ (\text{AELT-5000 or equivalent}) \end{array} $				
Max incremental output frequency	128 kHz				
Auxiliary inputs (U/D - RESET - LATCH)	active high (+V DC) connect to 0 V if not used / RESET - LATCH t _{min} 150 ms				
Max frequency	50 kHz LSB (Bit Parallel) clock input: 100 kHz 1 MHz (SSI)				
Code type	binary or gray				
Logic	SSI = positive Bit parallel = positive or negative				
SSI monostable time (Tm)	20 µs				
SSI pause time (Tp)	> 35 µs				
SSI frame	tree format (MSB LSB) up to 12 bit multiturn = length 25 bit (12MT + 13ST) 14 bit multiturn = length 32 bit (14MT + 18ST) 15 bit multiturn = length 40 bit (15MT + 25ST)				
SSI status and parity bit	on request				
Counting direction	decreasing clockwise (shaft view)				
Start-up time	700 ms				
Accuracy	± 250 arc-sec				
Electromagnetic compatibility	according to 2014/30/EC directive				
RoHS	according to 2011/65/EU (01/09/2020) directive				
UL / CSA	certificate n. E212495				

Bore diameter Enclosure rating IEC 60529	ø 14 / 15 mm ø 6 / 8* / 9,52 (3/8")* / 10* / 11* / 12* mm * with optional shaft adapter, please refer to Accessories X = IP 65 shaft side / IP67 cover side S = IP 67 see table 200 N axial / 60 N radial
IEC 60529	S = IP 67 see table
Max rotation speed	200 Navial / CO N radial
Max shaft load ³	200 N axiai / bu N faulai
Shock	50 G, 11 ms (IEC 60068-2-27)
Vibration	10 G, 10 2000 Hz (IEC 60068-2-6)
Moment of inertia	$5 \times 10^{-6} \text{ kgm}^2 \text{ (}119 \times 10^{-6} \text{ lbft}^2\text{)}$
Starting torque (at +20°C / +68°F)	< 0,03 Nm (4,25 Ozin)
Bearing stage material	EN-AW 2011 aluminum
Shaft material	1.4305 / AISI 303 stainless steel
Housing material	painted aluminium
Bearings	n.2 ball bearings
Bearings life	10 ⁹ revolutions
Operating temperature Bit parallel ^{4, 5}	-20° +85°C (-4° +185°F)
operating temperature	-40° +85°C (-40° +185°F) -20° +85°C (-4° +185°F) with cable output -25° +85°C (-13° +185°F) with M12 connector
Storage temperature ⁵	-20° +85°C (-4° +185°F)
Weight	approx 350 g (12,35 oz)

as measured at the transducer without cable influences

⁵ condensation not allowed

condensation not anowed									
ROTATION SPEED DERATING TABLE									
	Temperature °C (°F)	Max speed (rpm)	Max continuous speed (rpm)						
IP65	up to +70 (+158)	9000	6000						
1103	+70 85 (+158 185)	6000	3000						
IP67	up to +70 (+158)	8000	6000						
160/	+70 +85 (+158 185)	4000	2000						

BIT PARALLEL CONNECTOR OR CABLE CHOICE

According to the resolution and the chosen number of turns is possible to calculate the connections required by the connector or the cable. See below examples:

EXAMPLE 1

Total connections 13

Singleturn = 8 bit = 8 connectionsMultiturn = 5 bit = 5 connections

EXAMPLE 2

Singleturn = 12 bit = 12 connectionsMultiturn = 12 bit = 12 connections

Total connections 24

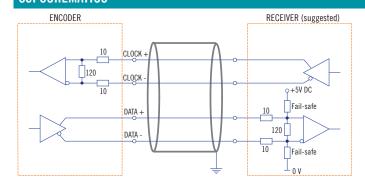
From 1 to 13 connections a 16 cores cable (PD) or a 19 pin connector (MA) is required.

From 14 to 25 connections a 32 cores cable (PE) or a 32 pin connector (ME) is required.

With LATCH option a 32 cores cable (PE) or a 19 pin connector (MA) or a 32 pin connector (ME) is required.

With RESET option a 32 cores cable (PE) or a 32 pin connector (ME) is required.

SSI SCHEMATICS







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

³ maximum load for static usage

⁴ measured on the transducer flange

·-----

RS

R . 162 +XXX

X 2048



EAMR 90 - 115 A BIT PARALLEL - SSI

SOLID SHAFT MULTITURN ABSOLUTE ENCODER

MAIN FEATURES

Industry standard multiturn absolute encoder for factory automation applications.

- Optical sensor technology (proprietary OptoASIC + Energy Harvesting)
- Resolution up to 65 bit (25 bit single turn + 40 bit multiturn)
- Power supply up to +30 VDC with Bit Parallel or SSI as electrical interface
- Cable or connector output
- Solid shaft diameter up to 11 mm
- Mounting by synchronous or REO-444 flange











EAMR 90A	12	1	12	G	8/30	P	P	X	10	X	MA	R	. 162	+XXX
SERIES niultiturn absolute encoder EAMR MODE														
synchronous flange ø 40 mm 90/ REO-444 flange 115/														
MULTITURN RES	DLUTION of 1 to 12													
SINGLETU	RN RES	OLU [.]												
	bit fror	n 1 t		ODE TYPE										
			٠	binary B gray G										
				POWE	R SUPPLY									
					/ DC 8/30 Strical in	 Terface								
						sh-pull P								
							LOGIC egative N							
							positive P	OPTIONS						
							ported if n							
					latch /	reset wi	th externa external ii	I input ZE						
					1010117	TOOUT WITH		SHAFT [DIAMETER					
							(mod	. 90) 3/8"-	mm 10					
									5) mm 11 Enclosuri	E RATING				
							IP 65		e / IP67 cov					
								10		OUT	PUT TYPE			
		(from 14 to 2	5 bit as tota	al resolution	or options)	32 cores of	cable (stand cable (stand	dard length	1,5 m) PE			
									er DIRECTION 19 pin MIL					
					(fro	m 14 to 25	bit as total	resolution)	32 pin MIL	male con		ION TYPE		
												radial R		
											g connecto	ATING CON or not inclu	ded .162	
					to be rep	oorted only	with connec	tor output (eg. MAR.162), for matir	ng connector	see Accesso		VARIANT







DIRECTION TYPE

mating connector not included .162

MATING CONNECTOR

VARIANT custom version XXX



187

custom version XXX

to be added with incremental output

ORDERING CODE

multiturn absolute encoder EAMR

EAMR 90A 12 / 13

MODEL

MULTITURN RESOLUTION bit 12 / 14 / 15

> SINGLETURN RESOLUTION bit 13 / 18 / 25

see table for preferred combinations

see table for preferred combinations

SERIES

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

G 8/30

binary B gray G POWER SUPPLY 8 ... 30 V DC 8/30

ELECTRICAL INTERFACE Serial Synchronous Interface - SSI S

> to be reported if not used X reset with external input ZE reset on cover or with external input ZP

INCREMENTAL RESOLUTION (powers of 2) ppr from 128 to 8192

> INCREMENTAL ELECTRICAL INTERFACE available with PC or HA output type line driver HTL L

push pull P line driver RS-422 RS

preferred cable lengths 2 / 3 / 5 / 10 m, to be added after DIRECTION TYPE (eg. PCR5)

SHAFT DIAMETER (mod. 90) 3/8"- mm 9,52

IP 65 shaft side / IP67 cover side X

(without reset option) 7 pin MIL male connector MC (with reset option) 10 pin MIL male connector MD

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

mm 10 (mod. 115) mm 11

ENCLOSURE RATING

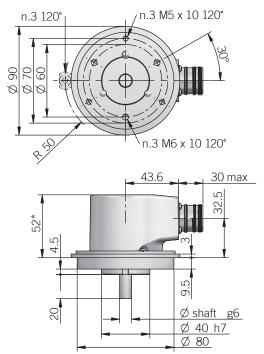
cable (standard length 1,5 m) PC

12 pin M23 male connector HA 8 pin M12 male connector M12

OUTPUT TYPE

Ø shaft g6

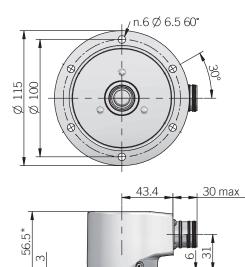
90 A



for fixing clamps please refer to Accessories * with option ZP +1,5 mm recommended mating shaft tolerance H7 dimensions in mm

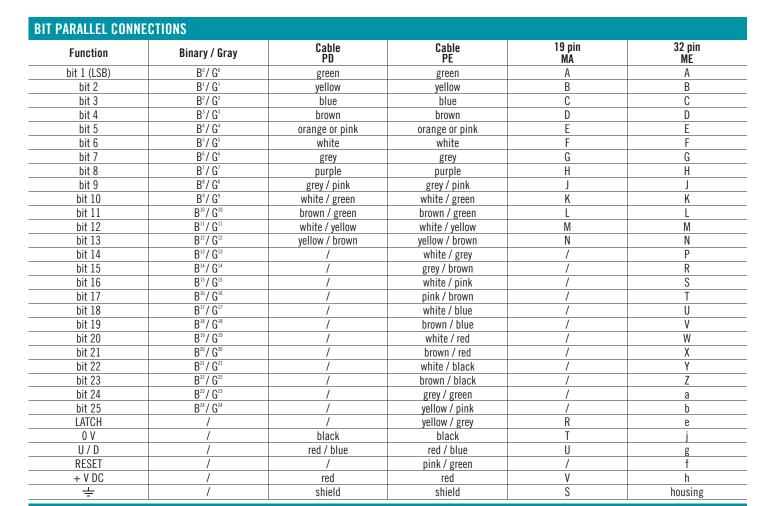
Eltra 1985-2020

115 A



Ø 85 h7





SSI CONNECTIONS	S					
Function	Cable PC	7 pin MC	10 pin MD	12 pin HA	12 pin HA	8 pin M12
+ V DC	red	G	G	8	8	8
0 V	black	F	F	1	1	5
DATA +	green	С	С	2	2	3
DATA -	brown	D	D	10	10	2
CLOCK +	yellow	A	A	3	3	4
CLOCK -	orange or pink	В	В	11	11	6
A+	grey	/	/	/	6	/
A-	blue	/	/	/	7	/
B+	purple	/	/	/	9	/
B-	white / green	/	/	/	12	/
U/D	red / blue	E	E	5	5	7
RESET	white	/	Н	4	4	1
÷	shield	housing	housing	9	housing	housing

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

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

HA connector (12 pin) M23 CCW Hummel 7.410.000000 - 7.002.912.603

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solder side view FV

MA connector (19 pin) Amphenol 62IN 12E 14-19 P solder side view FV

ME connector (32 pin) Glenair IPT 02 A 18-32 P F6 solder side view FV







M12 connector (8 pin) M12 A coded









OPTICAL MULTITURN ABSOLUTE ENCODERS | EAMR 90 - 115 A PAR - SSI

ELECTRICAL SPECIFICAT	TIONS				
Multiturn resolution	12 / 14 / 15 bit please directly contact our offices for other pulses				
Singleturn resolution	P = from 1 to 13 bit S = preferred combinations 12 multitum / 13 singleturn 14 multiturn / 18 singleturn 15 multiturn / 25 singleturn please directly contact our offices for other pulses				
Power supply ¹	7,6 30 V DC (reverse polarity protection)				
Power draw without load	< 1 W				
Max load current	20 mA / channel				
Absolute electrical interface ²	$\begin{array}{l} P = \text{push pull (iC-DL)} \\ S = RS-422 \text{ (THVD1451 or equivalent)} \end{array}$				
Incremental electrical interface²					
Max incremental output frequency	128 kHz				
Auxiliary inputs (U/D - RESET - LATCH)	active high (+V DC) connect to 0 V if not used / RESET - LATCH t _{min} 150 ms				
Max frequency	50 kHz LSB (Bit Parallel) clock input: 100 kHz 1 MHz (SSI)				
Code type	binary or gray				
Logic	SSI = positive Bit parallel = positive or negative				
SSI monostable time (Tm)	20 μs				
SSI pause time (Tp)	> 35 µs				
SSI frame	tree format (MSB LSB) up to 12 bit multiturn = length 25 bit (12MT + 13ST) 14 bit multiturn = length 32 bit (14MT + 18ST) 15 bit multiturn = length 40 bit (15MT + 25ST)				
SSI status and parity bit	on request				
Counting direction	decreasing clockwise (shaft view)				
Start-up time	700 ms				
Accuracy	± 250 arc-sec				
Electromagnetic compatibility	according to 2014/30/EC directive				
RoHS	according to 2011/65/EU (01/09/2020) directive				
UL / CSA	certificate n. E212495				

BIT PARALLEL CONNECTOR OR CABLE CHOICE

According to the resolution and the chosen number of turns is possible to calculate the connections required by the connector or the cable. See below examples:

EXAMPLE 1

Singleturn = 8 bit = 8 connections Multiturn = 5 bit = 5 connectionsTotal connections 13

EXAMPLE 2

Singleturn = 12 bit = 12 connectionsMultiturn = 12 bit = 12 connections

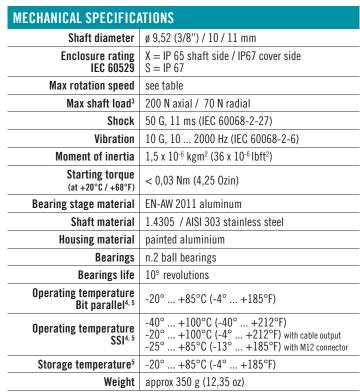
Total connections 24

From 1 to 13 connections a 16 cores cable (PD) or a 19 pin connector (MA) is required.

From 14 to 25 connections a 32 cores cable (PE) or a 32 pin connector (ME) is required.

With LATCH option a 32 cores cable (PE) or a 19 pin connector (MA) or a 32 pin connector (ME) is required

With RESET option a 32 cores cable (PE) or a 32 pin connector (ME) is required.



- 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

ROTATION SPEED DERATING TABLE									
Temperature °C (°F)	Max speed (rpm)	Max continuous speed (rpm)							
up to +70 (+158)	10000	8000							
+70 +85 (+158 +185)	8000	5000							
+85 +100 (+185 212)	5000	3000							

SSI SCHEMATICS ENCODER RECEIVER (suggested) CLOCK 0+5V DC Fail-safe DATA + 120 DATA Fail-safe



EAML 58 B / C - 63 A / D / E

SOLID SHAFT MULTITURN ABSOLUTE ENCODER

MAIN FEATURES

Industry standard multiturn absolute encoder for factory automation applications.

- Optical sensor technology (OptoASIC + Energy Harvesting)
- Programmable measuring range via teach-in function (external inputs or cover button)
- Power supply up to +30 VDC with analogue (voltage or current) electrical interface
- Cable or M12 connector output
- Solid shaft diameter up to 10 mm
- Mounting by synchronous, clamping or centering 2,5" square flange







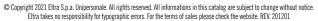




ORDERING CODE	EAML	63A	16B	12/30	V	05	X	10	X	M12	R	. 162	+XXX
synch cl centering sq	nous flange ø 31.75 nronous flange ø 50 lamping flange ø 36 uare flange ø 31.75 g square flange ø 50	mm 58B mm 58C mm 63D mm 63E	5 bit 16B POWEF 2 30 V	R SUPPLY DC 12/30 Ctrical in	voltage V current I OUTPU 0 	JT RANGE 5 V 05 10 V 010							
	t	o be repor	ted with v	roltage out	4 20 put / 3 wir 4 wir	res current res current (mod. 63 A (mod. 58 C	options output X output Q SHAFT E (mod. 58 / D) 3/8"- - 63 A / D /	IAMETER B B) mm 6	E RATING				
			preferred	Č		,		ter DIRECTIO M12 n	OUTF ndard lengtl ON TYPE (eg nale conne	. PR5) ctor M12 DIRECT M g connecto	ION TYPE radial R ATING COI or not inclu see Accesso	ded .162	













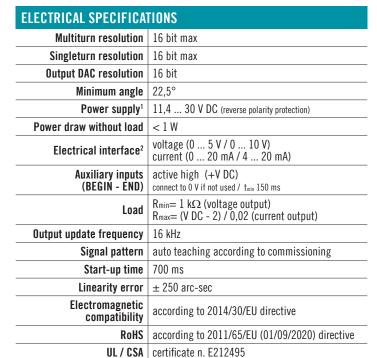
VARIANT

58 C

, n.3 M5 x 7 120° , n.3 M4 x 6 120° n.3 120° n.3 120° n.3 M3 x 6 120° 25 max 25 max 61.5 Ø 50 h7 Ø shaft g6 Ø 31.75 h7 Ø 36 f6 for fixing clamps please refer to Accessories for fixing clamps please refer to Accessories

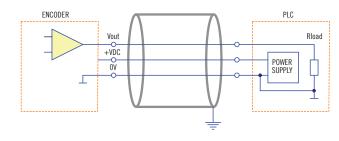
63 D		63 E	
63.5	n.4 Ø 5.5 90°	63.5 63.5 (C. 8)	n.4 Ø 5.5 90°
20 6 61.5	Ø shaft g6 Ø 31.75 h7	20 e e e e e e e e e e e e e e e e e e e	43 25 max 25 max

58 B

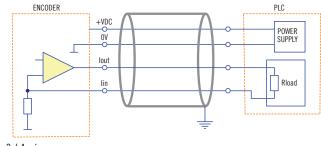


ELECTRICAL INTERFACE

Voltage output



Current output



3 / 4 wire source with 3 wires interface lin is internally connected to OV

MECHANICAL SPECIFICATIONS					
Shaft diameter	ø 6 / 9,52 (3/8") / 10 mm				
Enclosure rating IEC 60529	X = IP 65 shaft side / IP67 cover side S = IP 67				
Max rotation speed	see below table				
Max shaft load ³	200 N axial / 70 N 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)	< 0,03 Nm (4,25 Ozin)				
Bearing stage material	EN-AW 2011 aluminum				
Shaft material	1.4305 / AISI 303 stainless steel				
Housing material	painted aluminium				
Bearings	n.2 ball bearings				
Bearings life	10 ⁹ revolutions				
Operating temperature ^{4, 5}	-20° +85°C (-4° +185°F)				
Storage temperature ⁵	-20° +85°C (-4° +185°F)				
Weight	approx 350 g (12,35 oz)				
as measured at the transducer without cable influences					

⁵ condensation not allowed

ROTATION SPEED / TEMPERATURE TABLE									
Temperature °C (°F)	Max speed (rpm)	Max continuous speed (rpm)							
up to +70 (+158)	10000	8000							
+70 +85 (+158 +185)	8000	5000							

CONNECTIONS			
Function	Cable	5 pin M12	8 pin M12*
+ V DC	red	2	2
0 V	black	3	3
Vout / Iout	green	1	1
lin	yellow	/	6
BEGIN	white	4	4
END	brown or grey	5	5
÷	shield	housing	housing

^{*} with Q current ouput

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

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





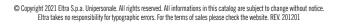


dimensions in mm

recommended mating shaft tolerance ${\rm H7}$

63 A







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

³ maximum load for static usage

⁴ measured on the transducer flange



EAML 58 F - 63 F / G Analogue

BLIND HOLLOW SHAFT MULTITURN ABSOLUTE ENCODER

MAIN FEATURES

Industry standard multiturn absolute encoder for factory automation applications.

- Optical sensor technology (OptoASIC + Energy Harvesting)
- Programmable measuring range via teach-in function (external inputs or cover button)
- Power supply up to +30 VDC with analogue (voltage or current) electrical interface
- Cable or M12 connector output
- Blind hollow shaft up to 15 mm
- Mounting by stator coupling, torque stop slot or torque pin





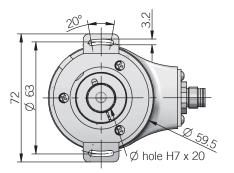


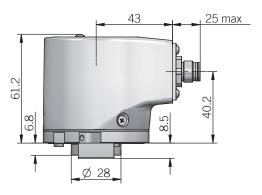




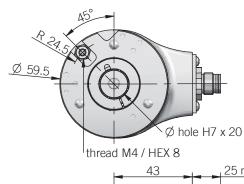
ORDERING CODE EAML	58F	16B	12/30	V	05	X	15	X	M12	R	. 162	+XXX
SERIES analogue multiturn absolute encoder EAML												
	MODEL											
blind hollow shaft with stator coup blind hollow shaft with torque stop blind hollow shaft with torque	slot 63F											
OUTPU	T DAC RES											
	16	6 bit 16B										
	1		R SUPPLY DC 12/30									
		ELEC	TRICAL IN									
				voltage V current I								
					JT RANGE							
				0	5 V 05 10 V 010							
				0 20	0 mA 020							
				4 20	0 mA 420	OPTIONS						
1	to be repor	ted with v	oltage out	out / 3 wir		OPTIONS output X						
			0	4 wir	es current	output Q						
						BORE D	IAMETER mm 14					
							mm 15					
diameters 6	/ 8 / 9,52 (3	3/8") / 10 /	11 / 12 mm	with option	nal shaft ad		ccessories NCLOSUR	E DATING				
					IP 65	shaft side						
								IP 67 S				
							cable (sta	OUTI ndard lengt	PUT TYPE			
		preferre	d cable leng	ths 2 / 3 / 5	i / 10 m, to I		ter DIRECTI	ON TYPE (eg	. PR5)			
							M12 r	male conne		ON TYPE		
									DIKEGII	radial R		
										ATING COI		
			to be repo	rted only wi	ith connecto	r output (eg	g. M12R.162	matını) 2), for matin	g connecto g connector			

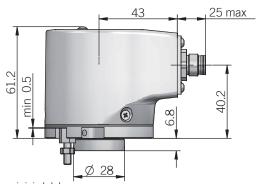
58 F





63 G

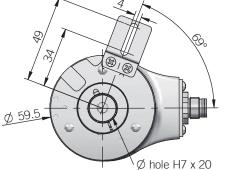


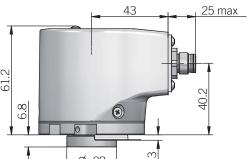


torque pin is included recommended mating shaft tolerance g6 dimensions in mm



63 F





for torque pin please refer to Accessories





VARIANT

OPTICAL MULTITURN ABSOLUTE ENCODERS | EAML 58 F - 63 F / G ANALOGUE

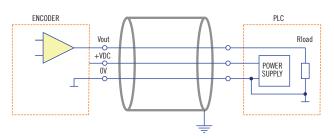
ELECTRICAL SPECIFICAT	TIONS
Multiturn resolution	16 bit max
Singleturn resolution	16 bit max
Output DAC resolution	16 bit
Minimum angle	22,5°
Power supply ¹	11,4 30 V DC (reverse polarity protection)
Power draw without load	< 1 W
Electrical interface ²	voltage (0 5 V / 0 10 V) current (0 20 mA / 4 20 mA)
Auxiliary inputs (BEGIN - END - U/D)	active high (+V DC) connect to 0 V if not used / t_{min} 150 ms
Load	$R_{\text{min}}{=}~1~\text{k}\Omega$ (voltage output) $R_{\text{max}}{=}~(\text{V DC - 2})~/~0,02$ (current output)
Output update frequency	16 kHz
Signal pattern	auto teaching according to commissioning
Start-up time	700 ms
Linearity error	± 250 arc-sec
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 14 / 15 mm Ø 6* / 8* / 9,52 (3/8")* / 10* / 11* / 12 mm * with optional shaft adapter, please refer to Accessories					
Enclosure rating IEC 60529	X = IP 65 shaft side / IP67 cover side $S = IP 67$					
Max rotation speed	see table					
Max shaft load ³	200 N axial / 60 N radial					
Shock	50 G, 11 ms (IEC 60068-2-27)					
Vibration	10 G, 10 2000 Hz (IEC 60068-2-6)					
Moment of inertia	5 x 10 ⁻⁶ kgm ² (119 x 10 ⁻⁶ lbft ²)					
Starting torque (at +20°C / +68°F)	< 0,03 Nm (4,25 Ozin)					
Bearing stage material	EN-AW 2011 aluminum					
Shaft material	1.4305 / AISI 303 stainless steel					
Housing material	painted aluminium					
Bearings	n.2 ball bearings					
Bearings life	10 ⁹ revolutions					
Operating temperature ^{4, 5}	-20° +85°C (-4° +185°F)					
Storage temperature ⁵	-20° +85°C (-4° +185°F)					
Weight	approx 350 g (12,35 oz)					

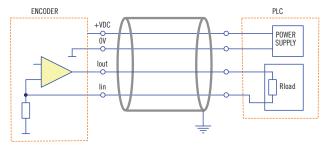
¹ as measured at the transducer without cable influences

ELECTRICAL INTERFACE

Voltage output



Current output



3 / 4 wire source with 3 wires interface lin is internally connected to OV

ROTATION SPEED / TEMPERATURE TABLE									
	Temperature °C (°F)	Max speed (rpm)	Max continuous speed (rpm)						
IDCE	up to +70 (+158)	9000	6000						
IP65	+70 +85 (+158 +185)	6000	3000						
IP67	up to +70 (+158)	8000	4000						
IPO/	+70 +85 (+158 +185)	4000	2000						

CONNECTIONS			
Function	Cable	5 pin M12	8 pin M12*
+ V DC	red	2	2
0 V	black	3	3
Vout / Iout	green	1	1
lin	yellow	/	6
BEGIN	white	4	4
END	brown or grey	5	5
÷	shield	housing	housing

* with Q current ouput

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

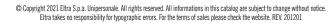
M12 connector (8 pin) M12 A coded solder side view FV













SOLID SHAFT MULTITURN ABSOLUTE ENCODER

MAIN FEATURES

Industry standard multiturn absolute encoder for factory automation applications.

- Optical sensor technology (OptoASIC + Energy Harvesting)
- Programmable measuring range via teach-in function (external inputs or cover button)
- Power supply up to +30 VDC with analogue (voltage or current) electrical interface
- Cable or M12 connector output
- Solid shaft diameter up to 11 mm
- Mounting by synchronous or REO-444 flange









ORDERING CODE EAML	90A	16B	12/30	٧	05	Х	10	X	M12	R	. 162	+XXX
SERIES analogue multiturn absolute encoder EAML synchronous flange ø 40 REO-444 fla OUTPU	MODEL 1 mm 90A nge 115A T DAC RES	OLUTION 6 bit 16B POWEI 2 30 V ELEC	R SUPPLY DC 12/30 Ctrical in	ITERFACE Voltage V current 0 UTPL 0 0 20 4 21 4 21 put / 3 wir	JT RANGE 5 V 05 10 V 010 0 mA 020 0 mA 420 res current (mod.	OPTIONS Output X output Q SHAFT D 90) 3/8"- (mod. 115	IAMETER Mm 9,52 mm 10 5) mm 11 NCLOSUR	E RATING		R	. 162	+XXX
		preferre				be added afl	ter DIRECTI M12 r	OUTI ndard lengt ON TYPE (eg nale conne matin	PUT TYPE h 1,5 m) P g. PR5) ector M12 DIRECT M g connecto	ION TYPE radial R IATING COI or not inclu	NNECTOR ded .162	
			·						-			VARIANT





custom version XXX

197

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

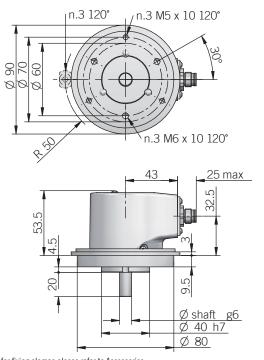
³ maximum load for static usage

⁴ measured on the transducer flange

⁵ condensation not allowed

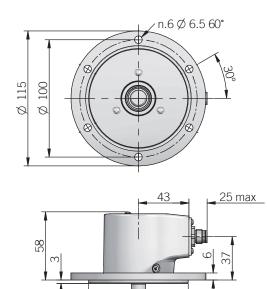
Ø shaft g6

90 A

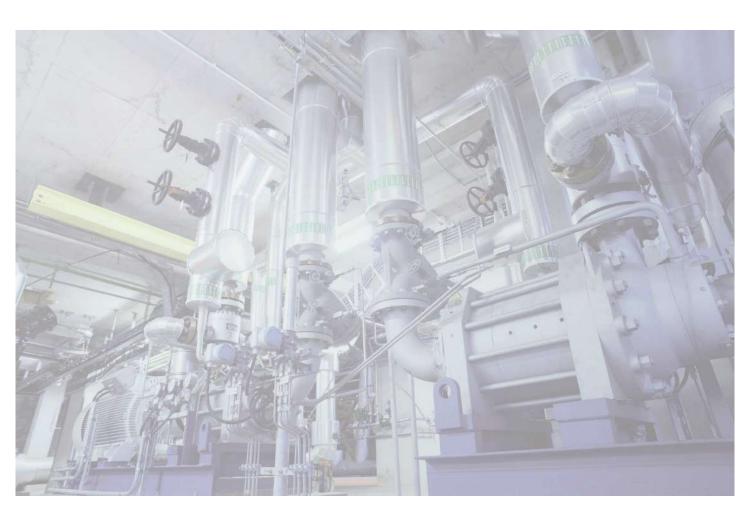


for fixing clamps please refer to Accessories recommended mating shaft tolerance H7 dimensions in mm

115 A



Ø 85 h7



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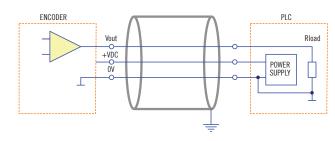
ELECTRICAL SPECIFICATIONS Multiturn resolution 16 bit max Singleturn resolution 16 bit max Output DAC resolution 16 bit Minimum angle 22,5° Power supply¹ 11,4 ... 30 V DC (reverse polarity protection) Power draw without load | < 1 Wvoltage (0 ... 5 V / 0 ... 10 V) current (0 ... 20 mA / 4 ... 20 mA) Electrical interface² Auxiliary inputs (HV DC) active high (+V DC) connect to 0 V if not used / tmin 150 ms $\begin{array}{c|c} \textbf{Load} & R_{\text{min}}{=}~1~\text{k}\Omega~\text{(voltage output)} \\ R_{\text{max}}{=}~\text{(V DC - 2) / 0,02 (current output)} \end{array}$ Output update frequency 16 kHz **Signal pattern** auto teaching according to commissioning Start-up time 700 ms **Linearity error** ± 250 arc-sec 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			
Shaft diameter	ø 9,52 (3/8") / 10 / 11 mm		
Enclosure rating IEC 60529	X = IP 65 shaft side / IP67 cover side $S = IP 67$		
Max rotation speed	see below table		
Max shaft load³	200 N axial / 70 N 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)	< 0,03 Nm (4,25 Ozin)		
Bearing stage material	EN-AW 2011 aluminum		
Shaft material	1.4305 / AISI 303 stainless steel		
Housing material	painted aluminium		
Bearings	n.2 ball bearings		
Bearings life	10 ⁹ revolutions		
Operating temperature ^{4, 5}	-20° +85°C (-4° +185°F)		
Storage temperature ⁵	-20° +85°C (-4° +185°F)		
Weight	approx 350 g (12,35 oz)		
¹ as measured at the transducer without	cable influences		

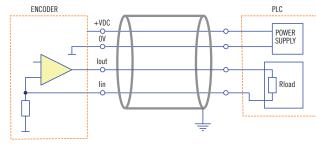
² for further details refer to OUTPUT LEVELS on TECHNICAL BASICS section

ELECTRICAL INTERFACE

Voltage output



Current output



3 / 4 wire source with 3 wires interface lin is internally connected to OV

ROTATION SPEED / TEMPERATURE TABLE								
Temperature °C (°F)	Max speed (rpm)	Max continuous speed (rpm)						
up to +70 (+158)	10000	8000						
+70 +85 (+158 +185)	8000	5000						

CONNECTIONS			
Function	Cable	5 pin M12	8 pin M12*
+ V DC	red	2	2
0 V	black	3	3
Vout / lout	green	1	1
lin	yellow	/	6
BEGIN	white	4	4
END	brown	5	5
÷	shield	housing	housing

^{*} with Q current ouput

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













³ maximum load for static usage

⁴ measured on the transducer flange

⁵ condensation not allowed

58 C



EAM 58 B / C - 63 A / D / E PROFIBUS

SOLID SHAFT MULTITURN ABSOLUTE ENCODER

MAIN FEATURES

Industry standard multiturn absolute encoder for factory automation applications.

- Optical sensor technology (OptoASIC + gears)
- 25 bit total resolution (13 bit single turn (8192 ppr) + 12 bit multiturn (4096 turns))
- Power supply up to +28 V DC with Profibus DP as electrical interface
- Intelligent status leds
- Terminal box or M12 connector for fast setup
- Solid shaft diameter up to 10 mm
- Mounting by synchronous, clamping or centering 2,5" square flange



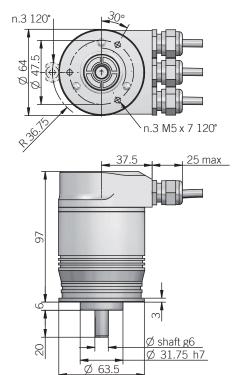




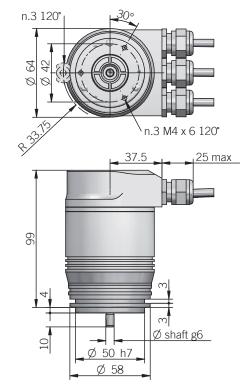


ORDERING CODE	EAM (3A	R	4096	/ 4096	В	12/28	FXX	10	X	6	M12R	. 162	+XXX
synchrond clamp centering square	MG: flange ø 31.75 mm us flange ø 50 mm ing flange ø 36 mm flange ø 31.75 mm are flange ø 50 mm	58B 58C 63D 63E rev. 2	N RES											
		31	INULL		96 / 8192									
					CI	DDE TYPE binary B								
					1		R SUPPLY DC 12/28							
						ELEC	TRICAL IN							
						PKOFIBUS	DP V0 CLA		IAMETER					
						(n	nod. 63 A / D	(mod. 58	B) mm 6					
							(mod. 58 C	- 63 A / D /	E) mm 10					
								ı	NCLOSUR	IP 54 X IP 66 S				
									MA	X ROTATIO	ON SPEED			
											00 rpm 6			
									terminal	box - radia radial M1				
										matina		TING CONI		
					to be report	ed only with	connectors	output (eg	M12R.162)			s not inclu see Accesso		

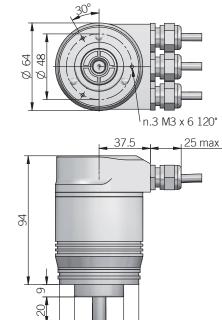
63 A 58 B



fixing clamps not included, please refer to Accessories



fixing clamps not included, please refer to Accessories

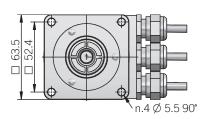


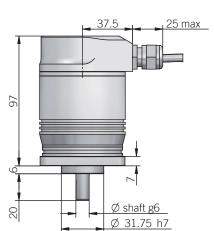
Ø 58

Ø shaft g6

Ø 36 f6

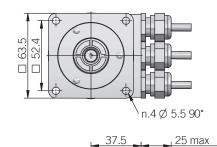
63 D

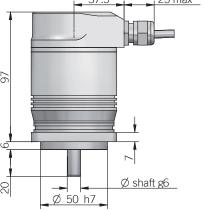




recommended mating shaft tolerance H7 dimensions in mm

63 E













VARIANT custom version XXX

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OPTICAL MULTITURN ABSOLUTE ENCODERS | EAM 58 B / C - 63 A / D / E PROFIBUS

ELECTRICAL SPECIFICATIONS					
Multiturn resolution 1 4096 turns programmable during commissioning					
Singleturn resolution 2 4096 / 2 8192 ppr programmable during commissioning					
Power supply ¹	11,4 29,4 V DC				
Current consumption without load	300 mA				
Electrical interface ²	RS 485 galvanically isolated				
Max bus frequency	12 Mbaud				
Diagnostic features	frequency warning position warning / alarm please refer to installation manual for more informations				
Max frequency	max 25 kHz LSB				
Code type	binary				
Counting direction	programmable during commissioning				
Start-up time	500 ms				
Accuracy	± 1/2 LSB				
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	POWER	BUS OUT	BUS IN
+ V DC	2		
0 V	4		
А		2	
В		4	
А			2
В			4

MECHANICAL SPECIFICATIONS			
Shaft diameter	ø 6 / 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 - 3000 rpm		
Max shaft load ³	10 N axial / 20 N radial with ø6 shaft 100 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	painted aluminium		
Bearings	n.2 ball bearings		
Bearings life	10 ⁹ revolutions		
Operating temperature ^{4, 5}	0° +60°C (+32° +140°F)		
Storage temperature ⁵	-15° +70°C (+5° +158°F)		
Weight	650 g (22,93 oz)		

¹ as measured at the transducer without cable influences

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



M12 B coded



BUS OUT - female (5 pin) BUS IN - male (5 pin)



M12 B coded











EAM 58 F - 63 F / G

BLIND HOLLOW SHAFT MULTITURN ABSOLUTE ENCODER

MAIN FEATURES

Industry standard multiturn absolute encoder for factory automation applications.

- Optical sensor technology (OptoASIC + gears)
- 25 bit total resolution (13 bit single turn (8192 ppr) + 12 bit multiturn (4096 turns))
- Power supply up to +28 V DC with Profibus DP as electrical interface
- Intelligent status leds
- Terminal box or M12 connector for fast setup
- Blind hollow shaft up to 15 mm diameter
- Mounting by stator coupling, torque stop slot or torque pin









ORDERING CODE	EAM	63F	R	4096	/ 4096	В	12/28	FXX	15	X	3	M12R	. 162	+XXX
blind hollow sha blind hollow sha	SERIES lute encoder EAM aft with stator coupl ft with torque stop v shaft with torque	slot 63F pin 63G re	ev. 2.0 R T urn res tu	OLUTION rns 4096										
			SINGLE	TURN RES	OLUTION 6 / 8192									
				pp: 400		DE TYPE								
						binary B POWE	R SUPPLY							
					1	.2 28 V	DC 12/28							
							TRICAL IN							
							2. 10 00		IAMETER					
									mm 14 mm 15					
	d	iameters 6 /	/ 8 / 9,52 (3	3/8") / 10 /	11 / 12 mm	with optio	nal shaft ad	• /	ccessories					
								E	NCLOSURI	IP 54 X				
									MAX	X ROTATIO	N SPEED			
										30	00 rpm 3	 Put type		
									terminal b	oox - radia	l cable gla	ands P3R		
										radiai M1		ors M12R I ting con i	VECTORS	
									op 160:		connector	s not inclu	ded .162	
				t	o be reporte	ea only with	connectors	output (eg.	M12R.162),	tor mating	connectors	see Access		VARIANT





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

³ maximum load for static usage

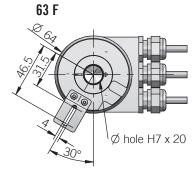
⁴ measured on the transducer flange

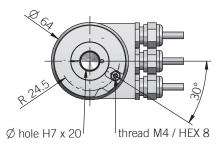
⁵ condensation not allowed

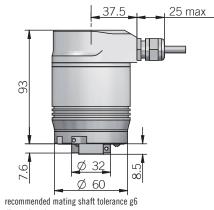
OPTICAL MULTITURN ABSOLUTE ENCODERS | EAM 58 F - 63 F / G PROFIBUS

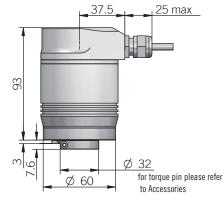
63 G

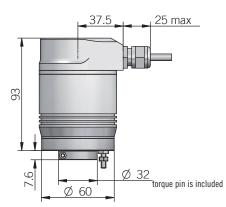
58 F











dimensions in mm

ELECTRICAL SPECIFICA	TIONS
Multiturn resolution	1 4096 turns programmable during commissioning
Singleturn resolution	2 4096 / 2 8192 ppr programmable during commissioning
Power supply 1	11,4 29,4 V DC
Current consumption without load	300 mA
Electrical interface ²	RS 485 galvanically isolated
Max bus frequency	12 Mbaud
Diagnostic features	frequency warning position warning / alarm please refer to installation manual for more informations
Max frequency	max 25 kHz LSB
Code type	binary
Counting direction	programmable during commissioning
Start-up time	500 ms
Accuracy	± 1/2 LSB
Electromagnetic compatibility	according to 2014/30/EU directive
RoHS	according to 2011/65/EU (01/09/2020) directive

CUNNECTIONS			
Function	POWER	BUS OUT	BUS IN
+ V DC	2		
0 V	4		
A		2	
В		4	
А			2
В			4

UL / CSA certificate n. E212495

MECHANICAL SPECIFICA	MECHANICAL SPECIFICATIONS					
Bore diameter	ø 14 / 15 mm ø 6* / 8* / 9,52 (3/8")* / 10* / 11* / 12 mm * with optional shaft adapter, please refer to Accessories					
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	5 x 10 ⁻⁶ kgm ² (119 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 aluminium					
Bearings	n.2 ball bearings					
Bearings life	10 ⁹ revolutions					
Operating temperature ^{3, 4}	0° +60°C (+32° +140°F)					
Storage temperature⁴	-15° +70°C (+5° +158°F)					
Fixing torque for collar clamping	1,5 Nm (212 Ozin) recommended					
Weight	650 g (22,93 oz)					

¹ as measured at the transducer without cable influences

4 condensation not allowed

POWER connector (5 pin) BUS OUT - female (5 pin) M12 A coded M12 B coded view solder side FV solder side view FV

BUS IN - male (5 pin) M12 B coded solder side view MV

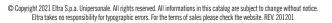
















EAM 90 A -115 A Profibus

SOLID SHAFT MULTITURN ABSOLUTE ENCODER

MAIN FEATURES

Industry standard multiturn absolute encoder for factory automation applications.

- Optical sensor technology (OptoASIC + gears)
- 25 bit total resolution (13 bit single turn (8192 ppr) + 12 bit multiturn (4096 turns))
- Power supply up to +28 V DC with Profibus DP as electrical interface
- Intelligent status leds
- Terminal box or M12 connector for fast setup
- Solid shaft diameter up to 11 mm
- Mounting by synchronous or REO-444 flange









ORDERING CODE	EAM	90A	R	4096	/ 4096	В	12/28	FXX	10	X	6	M12R	.162	+XXX
	SERIES										<u> </u>			
multiturn abs	olute encoder EAM													
synch	ronous flange ø 40 m REO444 flang													
			rev. 2.0 R Turn res	SOLUTION Irns 4096										
				TURN RES	SOLUTION 96 / 8192									
					C	DDE TYPE binary B								
					1	POWE I 2 28 V	R SUPPLY DC 12/28							
							CTRICAL IN DP VO CLA							
							(mod. 90	SHAFT D (3/8") 9,						
									5) mm 11 Enclosur	E DATING				
										IP 54 X 0) IP 66 S				
									MA	(IP 66) 30 (IP 54) 60	00 rpm 3			
									terminal	box - radia	OUTI Il cable gla			
										radial M1		OTS MIZE I ting coni	NECTORS	
					to be report	ed only with	n connectors	nutnut (eg	M12R 162)			s not inclu see Accesso		
					to so roport	ou o, ma		output (og.		,	30000010			VARIANT





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

³ measured on the transducer flange

OPTICAL MULTITURN ABSOLUTE ENCODERS | EAM 90 -115 A PROFIBUS

n.6 Ø 6,5 60°

_ 25 max

Ø shaft g6

115 A



AAM 58 B / C

SOLID SHAFT MULTITURN ABSOLUTE ENCODE

Industry standard multiturn absolute encoder for factory automation applications.

- Optical sensor technology (OptoASIC + gears)
- Power supply up to +30 V DC with Profinet IO as electrical interface
- Intelligent status leds
- M12 connector for fast setup









ORDERING CODE	AAM	58B	12	/ 13	В	10/30	PFN	6	X	X	M12R	.162
absolute multiurn e synchronou	SERIES encoder AAM	MODEL mm 58B mm 58C	OLUTION bit 12	SOLUTION bit 13 C	DDE TYPE binary B POWEI 10 30 V	R SUPPLY DC 10/30 CTRICAL IN			X	X .	MIZK	.102
								IAMETER 8B) mm 6				
							(mod. 58	C) mm 10				
							E	NCLOSUR	E RATING IP 65 X			
										OPTIONS		
									to be r	eported X NUT I	PUT TYPE	
									radial M1		ors M12R	
										MA	TING CONI	NECTORS



- 25 bit total resolution (13 bit single turn + 12 bit multiturn)

- Solid shaft diameter up to 10 mm
- Mounting by synchronous or clamping flange
- Operating temperature -40° ... +80°C (-40° ... +176°F)



Function

CONNECTIONS

90 A

n.3 120°

8

N.3 M6 120°

N.3 M5 120°

25 max

Ø shaft g6

fixing clamps not included, please refer to Accessories

Ø 40 h7

programmable during commissioning 2 ... 4096 / 2 ... 8192 ppr

programmable during commissioning

please refer to installation manual for more informations

according to 2014/30/EU directive

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

BUS OUT

BUS IN

Ø 80

Power supply¹ | 11,4 ... 29,4 V DC

300 mA

frequency warning

Counting direction programmable during commissioning

UL / CSA | certificate n. E212495

POWER

Electrical interface² RS 485 galvanically isolated

Diagnostic features | position warning / alarm

Max frequency | max 25 kHz LSB Code type | binary

Start-up time | 500 ms Accuracy ± 1/2 LSB

Electromagnetic

compatibility

ELECTRICAL SPECIFICATIONS

Multiturn resolution

Singleturn resolution

Current consumption

without load

Max bus frequency | 12 Mbaud

4 Α 2 В 4 2



MECHANICAL SPECIFICATIONS					
Shaft diameter	ø 9,52 / 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	100 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	painted aluminium				
Bearings	n.2 ball bearings				
Bearings life	10 ⁹ revolutions				
Operating temperature ^{4, 5}	0° +60°C (+32° +140°F)				
Storage temperature ⁵	-15° +70°C (+5° +158°F)				
Weight	750 g (26,46 oz)				

¹ as measured at the transducer without cable influences

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

maximum load for static usage 4 measured on the transducer flange

5 condensation not allowed

POWER connector (5 pin) BUS OUT - female (5 pin) BUS IN - male (5 pin) M12 A coded view solder side FV

M12 B coded M12 B coded solder side view MV solder side view FV











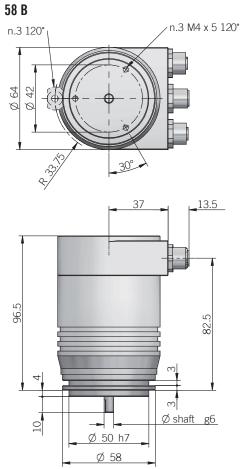






mating connectors not included .162

for mating connectors see Accessories



fixing clamps not included, please refer to Accessories recommended mating shaft tolerance H7 dimensions in mm

ELECTRICAL SPECIFICATIONS					
Multiturn resolution	1 12 bit programmabile during commissioning				
Singleturn resolution	1 13 bit programmabile during commissioning				
Power supply ¹	10 30 V DC (reverse polarity protection)				
Current consumption without load	< 200 mA				
Electrical interface ²	PROFINET IO RT Class 1 / Conformance Class B				
Hardware features	Ertec 200 auto-negotiation auto-polarity auto-crossover diagnostic LEDs				
Code type	binary				
Max bus frequency	100 Mbit/s				
Cycle time	$\leq 1 \text{ ms}$				
Accuracy	± 0,04°				
Start-up time	500 ms				
Electromagnetic compatibility	according to 2014/30/EU directive				
RoHs	according to 2011/65/EU (01/09/2020) directive				

			KUIIS	acc	oruning	LI
¹ as measured	at the	transducer	without	cable	influence	S

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

58 C	n.3 M3 x 5 120°
8 48	
1	30°
90.5	76.5
50	10

MECHANICAL SPECIFICATIONS					
Shaft diameter	ø 6 mm (mod. 58B) ø 10 mm (mod. 58C)				
Enclousure rating	IP 65 (IEC 60529)				
Max rotation speed	6000 rpm				
Max shaft load ³	80 N radial / 40 N axial				
Starting torque (at +20°C / +68°F)	< 0,05 Nm				
Moment of inertia	approx 1,8 x 10 ⁻⁶ kgm ²				
Shock	50 G, 11 ms (IEC 60068-2-27)				
Vibrations	10 G, 10 2000 Hz (IEC 60068-2-6)				
Bearings life	10 ⁹ revolutions				
Bearings	n.2 ball bearings				
Shaft material	1.4305 / AISI 303 stainless steel				
Bearing stage / cover material	EN-AW 2011 aluminium				
Housing material	painted aluminium				
Operating temperature ^{4, 5}	-40° +80°C (-40° +176°F)				
Storage temperature ⁵	-40° +85°C (-40° +185°F)				
Weight	600 g (21 oz)				

Ø shaft g6

	Pin	Function
	1	Tx D+
DODT 1 Occupation	2	Rx D+
PORT 1 Connector	3	Tx D-
•	4	Rx D-
	1	+V DC
DOWED	2	/
POWER connector	3	0 V
	4	/
	1	Tx D+
DODT O O	2	Rx D+
PORT 2 Connector	3	Tx D-
•	4	Rx D-
e connectors not included, please r	efer to Accessories	



PORT 1 / 2 connector (4 pin) M12 D coded solder side view MV POWER connector (4 pin) M12 A coded solder side view FV

CONNECTIONS





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³ maximum load for static usage

⁴ measured on the transducer flange

⁵ condensation not allowed



BLIND HOLLOW SHAFT MULTITURN ABSOLUTE ENCODER

MAIN FEATURES

Industry standard multiturn absolute encoder for factory automation applications.

- Optical sensor technology (OptoASIC + gears)
- 25 bit total resolution (13 bit single turn + 12 bit multiturn)
- Power supply up to +30 V DC with Profinet IO as electrical interface
- Intelligent status leds
- M12 connector for fast setup
- Blind hollow shaft diameter up to 15 mm
- Mounting by stator coupling
- Operating temperature -40° ... +80°C (-40° ... +176°F)

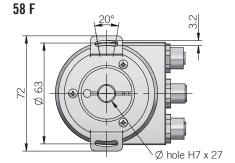


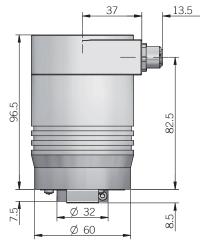






ORDERING CODE AAM	58F	12	/ 13	В	10/30	PFN	15	X	X	M12R	.162
SERIES absolute multiurn encoder AAM blind hollow shaft with stator coup	MODEL oling 58F Turn res	OLUTION bit 12 Turn res	SOLUTION bit 13 CC	DDE TYPE binary B POWEF 0 30 V	R SUPPLY DC 10/30 STRICAL IN PROFINI	TERFACE ET 10 PFN BORE D apter, see A	IAMETER mm 15	E RATING		M12R	.162
								IP 65 X	OPTIONS		
									eported X		
								radial M1	OUTI 2 connect	PUT TYPE	
								rauiai IVII		TING CONI	NECTORS
								mating		s not inclu	





recommended mating shaft tolerance g6

dimensions in mm

CONNECTIONS		
	Pin	Function
	1	Tx D+
PORT 1 Connector	2	Rx D+
PORT I Connector	3	Tx D-
	4	Rx D-
	1	+V DC
POWER connector	2	/
POWER CONNECTOR	3	0 V
	4	/
	1	Tx D+
DODT O Ossessits	2	Rx D+
PORT 2 Connector	3	Tx D-
	4	Rx D-

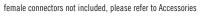


PORT 1 / 2 connector (4 pin) M12 D coded solder side view MV



POWER connector (4 pin) M12 A coded solder side view FV

(2 (1) 3 4



ELECTRICAL SPECIFICATIONS						
Multiturn resolution	1 12 bit programmabile during commissioning					
Singleturn resolution	1 13 bit programmabile during commissioning					
Power supply ¹	10 30 V DC (reverse polarity protection)					
Current consumption without load	< 200 mA					
Electrical interface ²	PROFINET IO RT Class 1 / Conformance Class B					
Hardware features	Ertec 200 auto-negotiation auto-polarity auto-crossover diagnostic LEDs					
Code type	binary					
Max bus frequency	100 Mbit/s					
Cycle time	$\leq 1 \text{ ms}$					
Accuracy	± 0,04°					
Start-up time	500 ms					
Electromagnetic compatibility	according to 2014/30/EU directive					
RoHs	according to 2011/65/EU (01/09/2020) directive					

MECHANICAL SPECIFICATIONS						
Bore diameter	ø 15 mm ø 12* / 10* mm * with optional shaft adapter, please refer to Accessories					
Enclousure rating	IP 65 (IEC 60529)					
Max rotation speed	6000 rpm					
Max shaft load ³	80 N radial / 40 N axial					
Starting torque (at +20°C / +68°F)	< 0,05 Nm					
Moment of inertia	approx 1,8 x 10 ⁻⁶ kgm ²					
Shock	50 G, 11 ms (IEC 60068-2-27)					
Vibrations	10 G, 10 2000 Hz (IEC 60068-2-6)					
Bearings life	10 ⁹ revolutions					
Bearings	n.2 ball bearings					
Shaft material	1.4305 / AISI 303 stainless steel					
Bearing stage / cover material	EN-AW 2011 aluminium					
Housing material	painted aluminium					
Flange material	EN-AW 2011 aluminium					
Operating temperature ^{4,5}	-40° +80°C (-40° +176°F)					
Storage temperature ⁵	-40° +85°C (-40° +185°F)					
Weight	600 g (21 oz)					

¹ as measured at the transducer without cable influences ² for further details refer to OUTPUT LEVELS on TECHNICAL BASICS section









for mating connectors see Accessories

Eltra takes no responsibility for typographic errors. For the terms of sales please check the website. REV. 201201

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³ maximum load for static usage

⁴ measured on the transducer flange

⁵ condensation not allowed



AAM 58 B / C ETHERCAT

SOLID SHAFT MULTITURN ABSOLUTE ENCODER

MAIN FEATURES

Industry standard multiturn absolute encoder for factory automation applications.







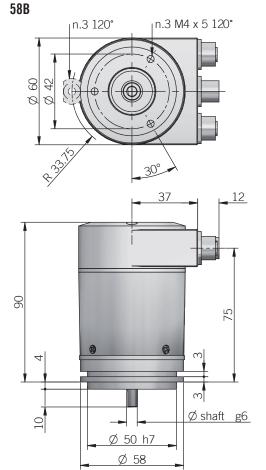
- 25 bit total resolution (13 bit single turn + 12 bit multiturn) Power supply up to +30 V DC with EtherCAT as electrical interface
- Intelligent status leds
- M12 connector for fast setup
- Solid shaft diameter up to 10 mm
- Mounting by synchronous or clamping flange

Optical sensor technology (OptoASIC + gears)

Operating temperature -40° ... +80°C (-40° ... +176°F)



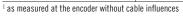
ORDERING CODE	AAM	58B	R	12	1	13	В	10/30	ETC	6	X	X	M12R	.162
ORDERING CODE	SERIES absolute multiurn encoder AAM synchronous flange ø 50 clamping flange ø 36	MODEL mm 58B mm 58C	REVISION eported R ITURN RES	SOLUTIO bit 1	DN 12	OLUTION bit 13 C	ODE TYPE binary B POWEI 10 30 V	R SUPPLY DC 10/30 Ctrical in	ITERFACE RCAT ETC SHAFT I (mod. 58		E RATING IP 65 X		M12R	.162
												OPTIONS eported X		
											radial M1		PUT TYPE ors M12R	
												M.A	ATING CONI	VECTORS



for fixing clamps please refer to Accessories

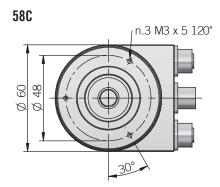
recommended mating shaft tolerance H7 dimensions in mm

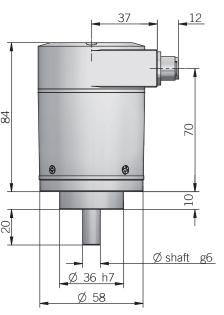
ELECTRICAL SPECIFICA	TIONS
Multiturn resolution	1 12 bit programmabile during commissioning
Singleturn resolution	1 13 bit programmabile during commissioning
Power supply ¹	10 30 V DC (with reverse polarity protection)
Current consumption without load	< 200 mA
Electrical interface ²	Ethercat
Profile	CoE (CANopen over EtherCAT, DS-301+DS-406)
Programming functions	Resolution Preset Counting direction
Code type	binary
Max bus frequency	100 Mbit/s
Cycle time	≥ 62,5 µs
Accuracy	± 0,04°
Start-up time	500 ms
Electromagnetic compatibility	according to 2014/30/EU directive
RoHs	according to 2011/65/EU (01/09/2020) directive



² for further details refer to TECHNICAL BASICS section



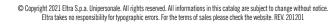




MECHANICAL SPECIFICA	MECHANICAL SPECIFICATIONS					
Shaft diameter	ø 6 mm (mod. 58B) ø 10 mm (mod. 58C)					
Enclousure rating	IP 65 (IEC 60529)					
Max rotation speed	6000 rpm					
Max shaft load ³	80 N radial / 40 N axial					
Starting torque (at +20°C / +68°F)	< 0,05 Nm					
Moment of inertia	approx 1,8 x 10 ⁻⁶ kgm ²					
Shock	50 G, 11 ms (IEC 60068-2-27)					
Vibrations	10 G, 10 2000 Hz (IEC 60068-2-6)					
Bearings life	10° revolutions					
Bearings	2 ball bearings					
Shaft material	1.4305 / AISI 303 stainless steel					
Bearing stage and cover material	EN-AW 2011 aluminium					
Housing material	EN-AW 6060 aluminium					
Operating temperature ^{4, 5}	-40° +80°C (-40° +176°F)					
Storage temperature ⁵	-40° +85°C (-40° +185°F)					
Weight	600 g (21 oz)					
	· · · · · · · · · · · · · · · · · · ·					

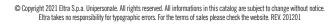








mating connectors not included .162 for mating connectors see Accessories







³ maximum load for static usage

⁴ measured on encoder flange

⁵ condensation not allowed

OPTICAL MULTITURN ABSOLUTE ENCODERS | AAM 58 B / C ETHERCAT

ECAT IN POWER ECAT OUT

CONNECTIONS								
	Pin	Function						
	1	Tx D+						
ECAT IN	2	Rx D+						
connector	3	Tx D-						
	4	Rx D-						
POWER connector	1	+V DC						
	2	/						
	3	0 V						
	4	/						
	1	Tx D+						
ECAT OUT connector	2	Rx D+						
	3	Tx D-						
	4	Rx D-						
female connectors not included, please	e refer to Accessories							





POWER connector (4 pin) M12 A coded solder side view FV

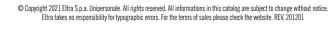


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BLIND HOLLOW SHAFT MULTITURN ABSOLUTE ENCODER

MAIN FEATURES

Industry standard multiturn absolute encoder for factory automation applications.

- Optical sensor technology (OptoASIC + gears)
- 25 bit total resolution (13 bit single turn + 12 bit multiturn)
- Power supply up to +30 V DC with EtherCAT as electrical interface
- Intelligent status leds
- M12 connector for fast setup
- Blind hollow shaft diameter up to 15 mm
- Mounting by stator coupling
- Operating temperature -40° ... +80°C (-40° ... +176°F)











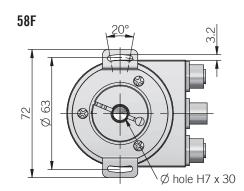
ORDERING CODE	AAM	58F	R	12	1	13	В	10/30	ETC	15	X	X	M12R	.162
	SERIES absolute multiurn encoder AAM	MODEL												
	blind hollow shaft with stator coup	oling 58F												
		to be r	REVISION eported R ITURN RES	OLUTION										
			CINOL	bit 12		NI IITION								
			SINGLE	IUKN K	E3U	DLUTION bit 13								
						C	ODE TYPE binary B							
							POWEI 10 30 V	R SUPPLY DC 10/30						
							ELEC	TRICAL IN ETHE	TERFACE RCAT ETC					
									BORE D	DIAMETER				
				diamete	rs 1	10 / 12 mr	n with option	nal shaft ad	lapter, see A	mm 15 Accessories				
							·			ENCLOSUR	E RATING IP 65 X			
												OPTIONS		
											to be r	eported X	PUT TYPE	
											radial M1	2 connect		
													TING CONI	
											mating	connector	s not inclu	ued .162

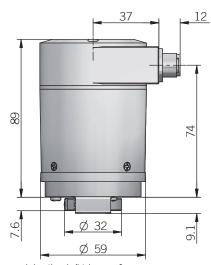


for mating connectors see Accessories



OPTICAL MULTITURN ABSOLUTE ENCODERS | AAM 58 F ETHERCAT





recommended mating shaft tolerance g6 dimensions in mm

Pin	Function
1	Tx D+
2	Rx D+
3	Tx D-
4	Rx D-
1	+V DC
2	/
3	0 V
4	/
1	Tx D+
2	Rx D+
3	Tx D-
4	Rx D-
	1 2 3 4 1 2 3 4 1 2 3

female connectors not included, please refer to Accessories



ECAT IN / OUT connector (4 pin) M12 D coded solder side view MV



POWER connector (4 pin) M12 A coded solder side view FV



ELECTRICAL SPECIFICATIONS 1 ... 12 bit **Multiturn** resolution programmabile during commissioning 1 ... 13 bit Singleturn resolution programmabile during commissioning Power supply¹ 10 ... 30 V DC (with reverse polarity protection) **Current consumption** without load Electrical interface² Ethercat Profile CoE (CANopen over EtherCAT, DS-301+DS-406) Resolution **Programming functions** Preset Counting direction Code type | binary Max bus frequency 100 Mbit/s Cycle time \geq 62,5 μ s Accuracy $\pm 0.04^{\circ}$ Start-up time 500 ms Electromagnetic according to 2014/30/EU directive

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

MECHANICAL SPECIFICA	ATIONS
Bore diameter	ø 15 mm ø 12* / 10* mm * with optional shaft adapter, please refer to Accessories
Enclousure rating	IP 65 (IEC 60529)
Max rotation speed	6000 rpm
Max shaft load ³	80 N radial / 40 N axial
Starting torque (at +20°C / +68°F)	< 0,05 Nm
Moment of inertia	approx 1,8 x 10 ⁻⁶ kgm ²
Shock	50 G, 11 ms (IEC 60068-2-27)
Vibrations	10 G, 10 2000 Hz (IEC 60068-2-6)
Bearings life	10 ⁹ revolutions
Bearings	n° 2 ball bearings
Shaft material	1.4305 / AISI 303 stainless steel
Bearing stage and cover material	EN-AW 2011 aluminium
Housing material	EN-AW 6060 aluminium
Operating temperature ^{4, 5}	-40° +80°C (-40° +176°F)
Storage temperature ⁵	-40° +85°C (-40° +185°F)
Fixing torque for collar clamping	1,5 Nm (212 Ozin) recommended
Weight	600 g (21 oz)
as massured at the encoder without ca	hla influences

as measured at the encoder without cable influences













EAMX 80 A / D

EXPLOSION PROOF ATEX MULTITURN ABSOLUTE ENCODER

MAIN FEATURES









Explosion proof encoder for applications within hazardous areas.

- Optical sensor technology (OptoASIC + gears)
- Resolution up to 27 bit (13 bit single turn (8192 ppr) + 14 bit multiturn (16384 turns)) Power supply up to +28 V DC with SSI as electrical interface
- Cable output
- Solid shaft diameter up to 10 mm
- Mounting with syncronous or centering square flange

EX CLASSIFICATION

It has been assured with EC-TYPE Examination Certificate CESI 04 ATEX 082 that the EAMX 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



ORDERING CODE E	AMX 80A	4096	/ 4096	G	8/28	S	X	X	10	X	3	PR	. XXX
multiturn absolute explosion proof encoder	SERIES EAMX												
synchronous flar	MODEL ige ø 40 mm 80A												
centering square flan	MULTITURN RE	SOLUTION											
(powers	of 2) turns from 2 SINGL	ETURN RES											
		ppr 409	96 / 8192 Cl	ODE TYPE									
				binary B gray G									
				8 28 V	R SUPPLY DC 8/28								
			Serial		TRICAL IN us Interfac								
						to be re	LOGIC eported X						
							to be re	OPTION ported X					
								SHAFT D	mm 10				
								E	NCLOSUR	IP 65 X			
									MA	X ROTATIO 30	00 rpm 3		
											dard length		
					prefer	rred cable le	ngths 2 / 3	/5/10 m,	to be added	l after OUTP	'UT TYPE (eg		VARIANT



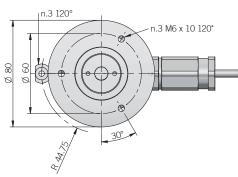


² for further details refer to TECHNICAL BASICS section

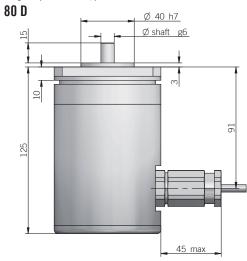
³ maximum load for static usage 4 measured on encoder flange

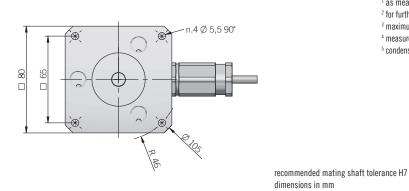
⁵ condensation not allowed

80 A Ø 40 h7 45 max



fixing clamps not included, please refer to Accessories





ELECTRICAL SPECIFICATIONS						
Multiturn resolution	from 2 to 16384 turns					
Singleturn resolution	4096 / 8192 ppr					
Power supply ¹	7,6 29,4 V DC (reverse polarity protection)					
Current consumption without load	100 mA					
Max load current	20 mA / channel					
Electrical interface ²	RS-422 compatible					
Auxiliary input	active high (+V DC)					
(U/D)	connect to 0 V if not used					
Clock frequency	100 kHz 1 MHz					
SSI monostable time (Tm)	18 μs					
SSI pause time (Tp)	> 35 µs					
SSI frame	Tree format (MSB LSB) up to 12 bit multiturn = length 25 bit (12MT + 13ST) 13 to 14 bit multiturn = length 27 bit (14MT + 13ST)					
Counting direction	decreasing clockwise (shaft view)					
Start-up time	700 ms					
Accuracy	± 1/2 LSB					
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 10 mm
Enclosure rating	IP 65 (IEC 60529)
Max rotation speed	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	1,5 x 10 ⁻⁶ kgm ² (36 x 10 ⁻⁶ lbft ²)
Starting torque (at +20°C / +68°F)	< 0,06 Nm (8,50 Ozin)
Bearing stage material	anodized aluminum
Shaft material	1.4305 / AISI 303 stainless steel
Housing material	anodized aluminum
Bearings	n.2 ball bearings
Bearings life	10° revolutions
Operating temperature ^{4, 5}	0° +50°C (+32° +122°F)
Storage temperature ⁴ 5	-15° +70°C (+5° +158°F)
Weight	1200 g (42,33 oz)

¹ as measured at the transducer without cable influences

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

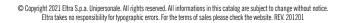
Db: product with a high level of protection

CONNECTIONS	
Function	Cable
+ V DC	red
0 V	grey
DATA +	green
DATA -	brown
CLOCK +	yellow
CLOCK -	pink
U/D	blue
-	shield











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



EAM 36 B

SOLID SHAFT MAGNETIC MULTITURN ABSOLUTE ENCODER

MAIN FEATURES

Miniaturized multiturn absolute encoder for limited size applications.

- ROHS (E C TUS
- Magnetic sensor technology without contact (Magnetic ASIC + Patented Energy Harvesting)
- Up to 55 bit as total resolution (15 bit single turn + 40 bit multiturn)
- Power supply up to +30 V DC with SSI as electrical interface
- Code reset for easy setup
- Cable or M12 output, other connectors available on cable end
- 6 mm diameter solid shaft
- Mounting by syncronous flange



ORDERING CODE	EAM	36B	12	1	13 (8/30	S	P	X	6	X	8	M12R	. 162	+XXX
magnetic multiturn absolute en	SERIES														
magnetic mutitum absolute en	COUCH EAW!	MODEL													
syncronous	flange ø 33														
		IRN RESO													
		s from 1 to INGLETUR			ON										
	3		from 1												
					CODE TYP										
					binary gray										
						ER SUPPLY									
					8 30	5 V DC 5 V DC 8/30									
					EL	ECTRICAL II	NTERFACE								
				Se	rial Synchro	nous Interfa	ice - SSI S	LOGIC							
								positive P							
									OPTIONS						
								ported if n th external							
									-	DIAMETER					
										mm 6					
								IP 67		ENCLOSUR / IP 65 sha					
										MA	X ROTATIO				
											80	000 rpm 8	I Put type		
												dard length	0,5 m) PR		
						preferred	cable length	s 1,5 / 2 / 3	/ 5 / 10 m,	to be added	l after OUTF	OT TYPE (eg	g. PR5) ctor M12R		
										o hiii ivii i	- rauiai III		IATING CO		
						to bo	orted only w	!th		~ M10D 100			or not inclu		
						то ре гер	ortea only w	itii coiiilecto	n output (e)	g. WIIZN.102	.), ioi illatin	ig connecto	SEE ACCESS		VARIANT

36 B n.4 M3 x 6 90°

recommended mating shaft tolerance H7 dimensions in mm

fixing clamps not included, please refer to Accessories

ELECTRICAL	SPECIFI	CATIONS	
			ī

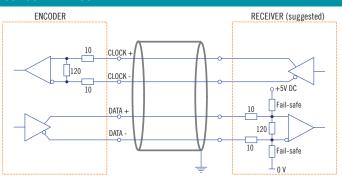
ELECTRICAL SPECIFICATIONS		
Multiturn resolution	1 to 17 bit for multiturn resolution > 17 bit please contact our offices	
Singleturn resolution	1 to 15 bit	
Power supply ¹	$5 = 4,75 \dots 5,25 \text{ V DC}$ $8/30 = 7,6 \dots 30 \text{ V DC}$ (reverse polarity protection)	
Power draw without load	< 400 mW	
Electrical interface ²	RS-422 (THVD1451 or equivalent)	
Auxiliary inputs (U/D - RESET)	active high (+V DC) connect to 0 V if not used / RESET $t_{\rm min}\ 150\ ms$	
Clock frequency	100 kHz 1 MHz	
Code type	binary or gray	
SSI monostable time (Tm)	20 µs	
SSI pause time (Tp)	> 35 µs	
SSI frame	Tree format (MSB LSB) up to 12 bit multiturn = length 25 bit (12MT + 13ST) 13 to 14 bit multiturn = length 27 bit (14MT + 13ST) 15 to 17 bit multiturn = length 32 bit (17MT + 15ST)	
SSI status and parity bit	on request	
Counting direction	decreasing clockwise (shaft view)	
Start-up time	e 150 ms	
Accuracy	± 0,35° max	
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	8 pin M12
+ V DC	red	8
0 V	black	5
DATA +	green	3
DATA -	brown	2
CLOCK +	yellow	4
CLOCK -	orange	6
U/D	red / blue	7
RESET	white	1
÷	shield	housing

MECHANICAL SPECIFICATIONS			
Shaft diameter	ø 6 mm		
Enclosure rating	IP 67 cover side / IP 65 shaft side (IEC 60529)		
Rotation speed	8000 rpm continuous / 10000 rpm max		
Max shaft load ³	20 N axial / radial		
Shock	50 G, 11 ms (IEC 60068-2-27)		
Vibration	20 G, 10 2000 Hz (IEC 60068-2-6)		
Moment of inertia	0,001 x 10 ⁻⁶ kgm ² (0,02 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	1.0503 / AISI 1045 chrome plated steel		
Bearings	n.2 ball bearings		
Bearings life	10 ⁹ revolutions		
Operating temperature ^{4, 5}	-30° +100°C (-22° +212°F) -25° +85°C (-13° +185°F) with M12 connector		
Storage temperature ⁵	-25° +85°C (-13° +185°F)		
Weight	150 g (5,29 oz)		

¹ as measured at the transducer without cable influences

SSI SCHEMATICS



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

















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



EAM 36 F / G

BLIND HOLLOW SHAFT MAGNETIC MULTITURN ABSOLUTE ENCODER

MAIN FEATURES

Miniaturized multiturn absolute encoder for limited size applications.





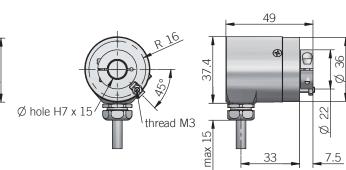


- Magnetic sensor technology without contact (Magnetic ASIC + Patented Energy Harvesting) Up to 55 bit as total resolution (15 bit single turn + 40 bit multiturn)
- Power supply up to +30 V DC with SSI as electrical interface
- Code reset for easy setup
- Cable or M12 output, other connectors available on cable end
- Blind hollow shaft up to 10 mm diameter
- Mounting by stator coupling or torque pin



mating connector not included .162 to be reported only with connector output (eg. M12R.162), for mating connector see Accessories VARIANT custom version XXX

36 G



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

recommended mating shaft tolerance g6 dimensions in mm

Ø hole H7 x 15

36 F

ELEC'	TRICAL	. SPECII	FICATI	ONS

50 Ø 42.7

Multiturn resolution	1 to 17 bit for multiturn resolution > 17 bit please contact our offices	
Singleturn resolution	1 to 15 bit	
Power supply ¹	$5 = 4,75 \dots 5,25 \text{ V DC}$ $8/30 = 7,6 \dots 30 \text{ V DC}$ (reverse polarity protection)	
Power draw without load	< 400 mW	
Electrical interface ²	RS-422 (THVD1451 or equivalent)	
Auxiliary inputs (U/D - RESET)	active high (+V DC) connect to 0 V if not used / RESET t _{min} 150 ms	
Clock frequency	100 kHz 1 MHz	
Code type	binary or gray	
SSI monostable time (Tm)	20 μs	
SSI pause time (Tp)	> 35 µs	
SSI frame	Tree format (MSB LSB) up to 12 bit multiturn = length 25 bit (12MT + 13ST) 13 to 14 bit multiturn = length 27 bit (14MT + 13ST) 15 to 17 bit multiturn = length 32 bit (17MT + 15ST)	
SSI status and parity bit	on request	
Counting direction	decreasing clockwise (shaft view)	
Start-up time	150 ms	
Accuracy	± 0,35° 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 1 1 1 1 1 1 1		

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

⁵ condensation not allowed

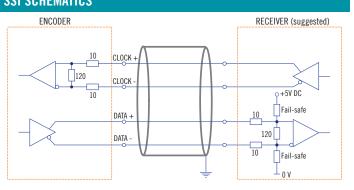
rn	МΜ		4111
υU	NIN	EC1	w

COMMECTIONS		
Function	Cable	8 pin M12
+ V DC	red	8
0 V	black	5
DATA +	green	3
DATA -	brown	2
CLOCK +	yellow	4
CLOCK -	orange	6
U / D	red / blue	7
RESET	white	1
<u></u>	shield	housing

MECHANICAL SPECIFICATIONS

Bore diameter	Ø 9,52 (3/8") / 10 mm Ø 4* / 5* / 6* / 6,35 (1/4")* / 8* mm * with optional shaft adapter, please refer to Accessories
Enclosure rating	IP 67 cover side / IP 65 shaft side (IEC 60529)
Rotation speed	8000 rpm continuous / 10000 rpm max
Max shaft load ³	20 N axial / radial
Shock	50 G, 11 ms (IEC 60068-2-27)
Vibration	20 G, 10 2000 Hz (IEC 60068-2-6)
Moment of inertia	0,001 x 10 ⁻⁶ kgm ² (0,02 x 10 ⁻⁶ lbft ²)
Starting torque (at +20°C / +68°F)	< 0,01 Nm (1,42 Ozin)
Bearing stage material	EN-AW 2011 aluminium
Shaft material	1.4305 / AISI 303 stainless steel
Shaft adapter material	CuSn12 / CC483K bronze
Housing material	1.0503 / AISI 1045 chrome plated steel
Bearings	n.2 ball bearings
Bearings life	10° revolutions
Operating temperature ^{4, 5}	-30° +100°C (-22° +212°F) -25° +85°C (-13° +185°F) with M12 connector
Storage temperature ⁵	-25° +85°C (-13° +185°F)
Weight	150 g (5,29 oz)

SSI SCHEMATICS



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











⁴ measured on the transducer flange

SOLID SHAFT MAGNETIC MULTITURN ABSOLUTE ENCODER

MAIN FEATURES

Industry standard multiturn absolute encoder for factory automation applications.

- Magnetic sensor technology without contact (magnetic ASIC + Energy Harvesting)
- Sturdy construction thanks to separated chambers
- Power supply up to +32 VDC with CANopen interface
- Cable or M12 connector axial output
- 6 mm diameter solid shaft
- Mounting by syncronous flange

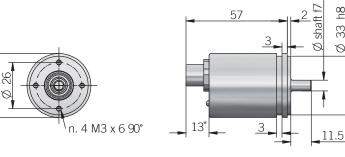






ORDERING CODE AAM	36B	24	/ 14	В	10/30	CNP	6	X	X	M12A	. 162	+XXX
SERIES magnetic multiturn absolute encoder series AAM												
syncronous flange ø 3: MULTI T	MODEL 3 mm 36B TURN RESO											
	SINGLETUR											
			C	DDE TYPE binary B								
			1	10 30 V	R SUPPLY DC 10/30							
				ELEU	CAN	open CNP	DIAMETER					
							mm 6 ENCLOSUR	F RATING				
					IP67		/ IP 65 sha	aft side X	OPTIONS			
									eported X	PUT TYPE		
								cable (stan 12 axial m	dard length	2 m) PA2		
			to be rep	orted only w	ith connecto	or output (e:			N g connecto	IATING CON or not inclu	ded .162	
				,		,						VARIANT rsion XXX

AAM 36B



recommended mating shaft tolerance H7 dimensions in mm

4	with	cable	output	_	7mn
×	WILLIAM	Capic	uulbul	т.	/ 111111

LECTRICAL SPECIFICA [*]	TIONS
Multiturn resolution	24 bit
	programmable during commissioning
Singleturn resolution	14 bit
	programmable during commissioning
Power supply ¹	+10 32 V DC (with reverse polarity protection)
Power draw without load	0,5 W
Electrical interface ²	CAN
Protocol	CANopen Communication profile CiA 301 Encoder profile CiA 406 V3.2 class C2
Node number	1 127 (default 127) programmable during commissioning
Baud rate	10 kBaud 1 Mbaud with automatic bit rate detection
LSS protocol	according to CiA 305
CAN transmission modes	programmable (Synchronous and Asynchronous
LED error messages	according to CiA 303-3
Code type	binary
Position update rate	≤ 600 µs
Start-up time	< 1,5 s
Accuracy	± 0,35°
Electromagnetic compatibility	according to 2014/30/EU directive
RoHS	according to 2011/65/EU (01/09/2020) directive

CONNECTIONS						
Function	5 pin M12					
+ V DC	2					
0 V	3					
CAN_H	4					
CAN_L	5					
CAN_GND (shield)	1					
<u></u>	shield connected to encoder housing					

MECHANICAL SPECIFICATION				
Shaft diameter	ø6 mm			
Enclosure rating IEC 60529	IP 67 cover side / IP65 shaft side			
Max rotation speed	12000 rpm			
Max shaft load ³	80 N radial / 50 N axial			
Shock	100 G, 6 ms (IEC 60068-2-27)			
Vibrations	30 G, 10 2000 Hz (IEC 60068-2-6)			
Starting torque (at +20°C / +68°F)	< 0,002 Nm (0,28 Ozin)			
Bearing stage material	aluminium			
Shaft material	stainless steel			
Housing material	chromium plated steel			
Bearings	2 ball bearings			
Bearings life	10 ⁹ revolutions			
Operating temperature ^{4, 5}	-40° +85°C (-40° +185°F)			
Storage temperature ⁵	-40° +100°C (-40 +212°F)			
Weight	110 g (3,88 oz) approx			

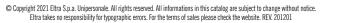
as measured at the transducer without cable influences

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



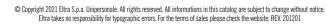






224





225





² for further details refer to TECHNICAL BASICS section

³ maximum load for static usage

⁴ measured on the transducer flange

⁵ condensation not allowed



AAM 36 F

BLIND HOLLOW SHAFT MAGNETIC MULTITURN ABSOLUTE ENCODER

MAIN FEATURES

Industry standard multiturn absolute encoder for factory automation applications.

- Magnetic sensor technology without contact (magnetic ASIC + Energy Harvesting)
- Sturdy construction thanks to separated chambers
- Power supply up to +32 VDC with CANopen interface
- Cable or M12 connector axial output
- 8 or 10 mm blind hollow shaft
- Mounting by stator coupling



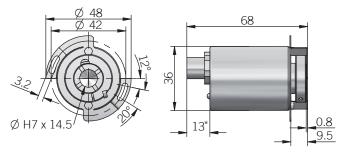






ORDERING CODE	AAM	36F	24	/ 14	В	10/30	CNP	10	X	Х	M12A	. 162	+XXX
magnetic multiturn absolute encoder seri	SERIES es AAM												
blind hollow shaft with sta		MODEL oling 36F IRN RESO											
	S	INGLETUR	bit 24 IN RESO										
				CI	DDE TYPE binary B								
				1	POWER	R SUPPLY DC 10/30							
					ELEC	TRICAL IN	TERFACE open CNP						
						07		IAMETER mm 8					
								mm 10	F DATING				
						IP67		NCLOSUR / IP 65 sha	aft side X				
										OPTIONS eported X			
								axial (cable (stan		PUT TYPE 2 m) PA2		
								5 pin M1	.2 axial ma	ale connec	tor M12A	INECTOR	
				to be re-	urbad anlı:	:th conno-t-		- M10A 100		g connecto		ded .162	
				то ре гер	ortea only w	ith connecto	ıı output (eş	g. W1ZA.16Z), ior matin	g connector	See Accesso		VARIANT

AAM 36F



recommended mating shaft tolerance g6 dimensions in mm

*	with	cable	output	+	7m

ELECTRICAL SPECIFICA	TIONS				
Multiturn resolution	24 bit programmable during commissioning				
Singleturn resolution	14 bit programmable during commissioning				
Power supply ¹	+10 32 V DC (with reverse polarity protection)				
Power draw without load	0,5 W				
Electrical interface ²	CAN				
Protocol	CANopen Communication profile CiA 301 Encoder profile CiA 406 V3.2 class C2				
Node number	1 127 (default 127) programmable during commissioning				
Baud rate	10 kBaud 1 Mbaud with automatic bit rate detection				
LSS protocol	according to CiA 305				
CAN transmission modes	programmable (Synchronous and Asynchronous)				
LED error messages	according to CiA 303-3				
Code type	binary				
Position update rate	≤ 600 µs				
Start-up time	< 1,5 s				
Accuracy	± 0,35°				
Electromagnetic compatibility	according to 2014/30/EU directive				
RoHS	according to 2011/65/EU (01/09/2020) directive				

Function	5 pin M12
+ V DC	2
0 V	3
CAN_H	4
CAN_L	5
CAN_GND (shield)	1
÷	shield connected to encoder housing

MECHANICAL SPECIFICATION				
Bore diameter	ø8/10 mm			
Enclosure rating IEC 60529	IP 67 cover side / IP65 shaft side			
Max rotation speed	6000 rpm			
Max shaft load ³	80 N radial / 50 N axial			
Shock	100 G, 6 ms (IEC 60068-2-27)			
Vibrations	30 G, 10 2000 Hz (IEC 60068-2-6)			
Starting torque (at +20°C / +68°F)	< 0,002 Nm (0,28 Ozin)			
Bearing stage material	aluminium			
Shaft material	stainless steel			
Housing material	chromium plated steel			
Bearings	2 ball bearings			
Bearings life	10° revolutions			
Operating temperature ^{4, 5}	-40° +85°C (-40° +185°F)			
Storage temperature ⁵	-40° +100°C (-40 +212°F)			
Weight	110 g (3,88 oz) approx			

¹ as measured at the transducer without cable influences

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











² for further details refer to TECHNICAL BASICS section

³ maximum load for static usage

⁴ measured on the transducer flange

⁵ condensation not allowed