



ABSOLUTE ENCODERS

NO NEED TO BE RESET.

Absolute encoders are capable to provide the correct data after a power-down event without needing to be reset to the zero point.

Thanks to these specifications and the possibility to transfer data over a field bus, absolute encoders are nowadays used more frequently in various application fields.

Max resolution: 13 bit (8192 ppr)

Max number of turns: 39 bit

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

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 VDC with Bit Parallel or SSI as electronic interface
- Code reset for easy setup
- Cable or connector output
- Solid shaft diameter up to 10 mm
- Mounting by synchronous, clamping or centering 2,5" square flange



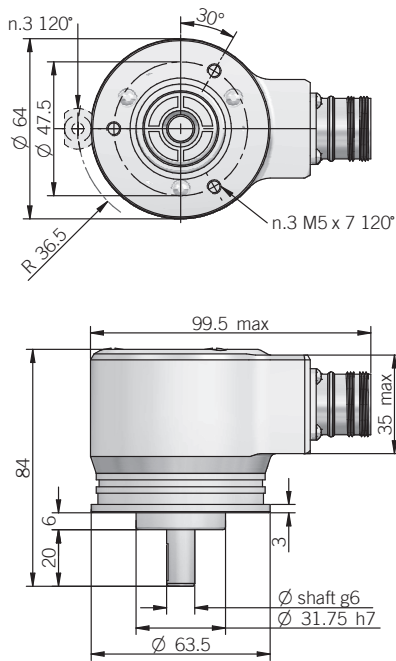
ORDERING CODE BIT PARALLEL

EA	63A	256	G	8/28	P	P	X	10	X	6	PD	R	.XXX
SERIES singleturn absolute encoder EA													
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													
RESOLUTION (powers of 2) ppr from 2 to 8192 (multiples and submultiples of 360) ppr from 90 to 3600 (multiples and submultiples of 1000) ppr from 250 to 4000													
CODE TYPE binary B gray G (no powers of 2) binary offset code (0-XXX) BC (no powers of 2) gray offset code (0-XXX) GC													
POWER SUPPLY 8 ... 28 V DC 8/28													
ELECTRONIC INTERFACE push pull P													
LOGIC negative N positive P													
OPTIONS latch L (binary code) strobe S to be reported if not used X													
SHAFT DIAMETER (mod. 58 B) mm 6 (mod. 63 A / D) (9,52mm 3/8") mm 9 (mod. 58 C - 63 A / D / E) mm 10													
ENCLOSURE RATING IP 54 X IP 66 S													
MAX ROTATION SPEED (IP 66) 3000 rpm 3 (IP 54) 6000 rpm 6													
OUTPUT TYPE cable (standard length 1,5 m) PD (with option "latch") cable (standard length 1,5 m) PE 19 pin MIL connector MA <i>female connector included, without female please add 162 as variant code</i>													
DIRECTION TYPE axial A radial R													
VARIANT custom version XXX													

ORDERING CODE SSI	EA	63A	256	G	8/28	S	X	X	10	X	6	PC	R	.XXX
SERIES singleturn absolute encoder EA														
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														
RESOLUTION (powers of 2) ppr from 2 to 8192 (multiples and submultiples of 360) ppr from 90 to 3600 (multiples and submultiples of 1000) ppr from 250 to 4000														
CODE TYPE binary B gray G (no powers of 2) binary offset code (0-XXX) BC (no powers of 2) gray offset code (0-XXX) GC														
POWER SUPPLY 8 ... 28 V DC 8/28														
ELECTRONIC INTERFACE Serial Synchronous Interface - SSI S														
LOGIC to be reported X														
OPTIONS to be reported if not used X reset ZE														
SHAFT DIAMETER (mod. 58 B) mm 6 (mod. 63 A / D (9,52mm 3/8") mm 9 (mod. 58 C - 63 A / D / E) mm 10														
ENCLOSURE RATING IP 54 X IP 66 S														
MAX ROTATION SPEED (IP 66) 3000 rpm 3 (IP 54) 6000 rpm 6														
OUTPUT TYPE cable (standard length 1,5 m) PC 7 pin MIL connector MC (with option "reset") 10 pin MIL connector MD 12 pin M23 connector HA 8 pin M12 connector M12 female connector included, without female please add 162 as variant code														
DIRECTION TYPE axial A radial R														
VARIANT custom version XXX														

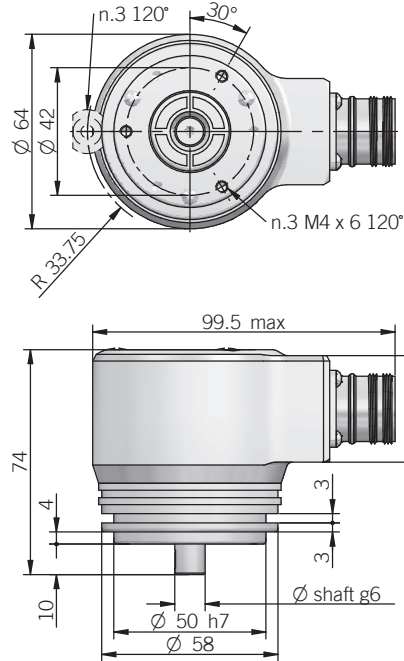
EA 63 A

fixing clamps not included

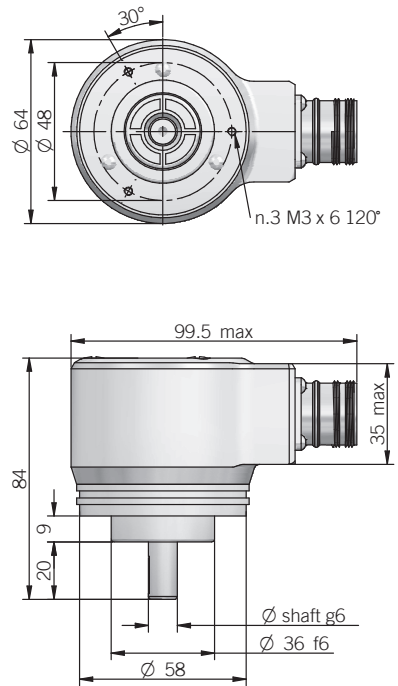


EA 58 B

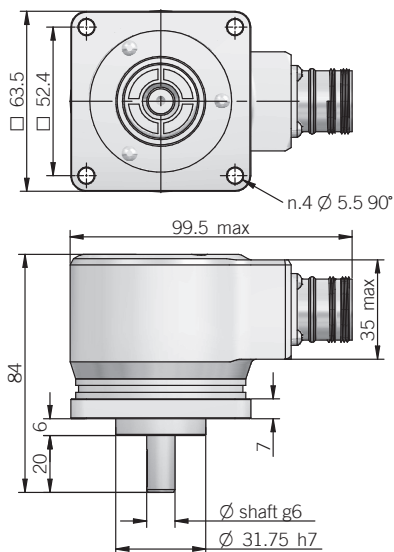
fixing clamps not included



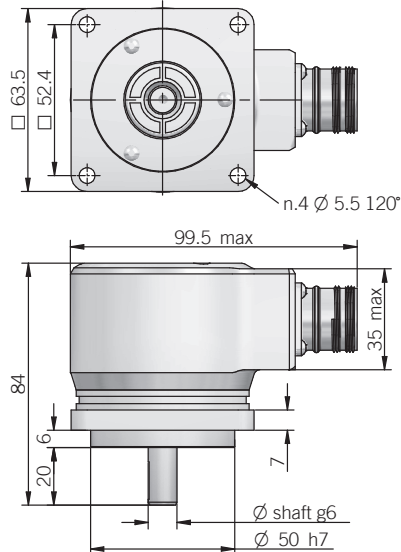
EA 58 C



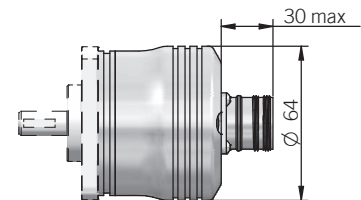
EA 63 D



EA 63 E



Dimensions with axial output



dimensions in mm

ELECTRICAL SPECIFICATIONS

Resolution	from 2 to 8192 ppr
Power supply	8/28 = 7,6 ... 29,4 V DC
Current consumption without load	100 mA
Max load current	20 mA / channel
Output type	P = push-pull (active short circuit protection)* S = RS-422
Auxiliary inputs (U/D - Latch - Reset)	active high (+Vdc) connect to 0V if not used / Reset tmin 150 ms
Max frequency	output: 25 kHz LSB (Bit Parallel) clock input: 100 kHz ... 1 MHz (SSI)
SSI monostable time (Tm)	18 µs
SSI pause time (Tp)	> 35 µs
SSI frame	(MSB ... LSB) 13 bit data length
Accuracy	± 1/2 LSB
Counting direction	decreasing clockwise (shaft view)
Start-up time	150 ms
Electromagnetic compatibility	IEC 61000-6-2 IEC 61000-6-4

*output levels according to power supply, for further details please see under Technical basics section

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	3000 rpm (IP 66) 6000 rpm (IP 54)
Max shaft load	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
Starting torque (at +20°C / +68°F)	< 0,02 Nm (IP 54) < 0,06 Nm (IP 66)
Body material	EN-AW 2011 aluminum
Shaft material	1.4305 / AISI 303 stainless steel
Housing material	painted aluminum
Bearings	2 ball bearings
Bearings life	10 ⁹ revolutions
Operating temperature	0° ... +60°C (+32° ... +140°F)
Storage temperature	-15° ... +70°C (+5° ... +158°F)
Weight	500 g (17,64 oz)

BIT PARALLEL CONNECTIONS

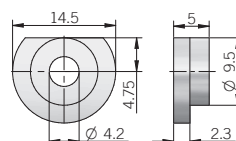
Function	Binary / Gray	Cable output PD	Cable output PE	19 pin MA
bit 1 (LSB)	B ⁰ / G ⁰	green	green	A
bit 2	B ¹ / G ¹	yellow	yellow	B
bit 3	B ² / G ²	blue	blue	C
bit 4	B ³ / G ³	brown	brown	D
bit 5	B ⁴ / G ⁴	orange or pink	orange or pink	E
bit 6	B ⁵ / G ⁵	white	white	F
bit 7	B ⁶ / G ⁶	grey	grey	G
bit 8	B ⁷ / G ⁷	purple	purple	H
bit 9	B ⁸ / G ⁸	gray / pink	gray / 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	B ¹¹ / G ¹¹	white / yellow	white / yellow	M
bit 13	B ¹² / G ¹²	yellow / brown	yellow / brown	N
STROBE	/	/	green / blue	P
LATCH	/	/	yellow / grey	R
0 Volt	/	black	black	T
U / D	/	red / blue	red / blue	U
+ Vdc	/	red	red	V
≡	/	shield	shield	S

SSI CONNECTIONS

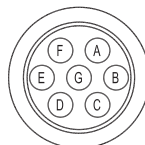
Function	Cable output PC	7 pin MC	10 pin MD	12 pin HA	8 pin M12
+ Vdc	red	G	G	8	8
0 Volt	black	F	F	1	5
data +	green	C	C	2	3
data -	brown	D	D	10	2
clock +	yellow	A	A	3	4
clock -	orange or pink	B	B	11	6
RESET	white	/	H	4	1
U / D	red / blue	E	E	5	7
≡	shield	housing	J	9	housing

ACCESSORIES

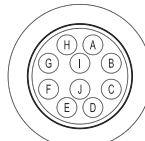
set n.3 fixing clamps for model 58 B - 63 A
P/N 94080001



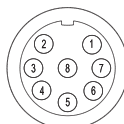
MC connector (7 pin)
Amphenol MS3102-E-16-S
solder side view FV



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



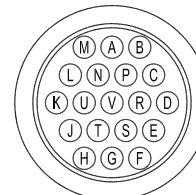
M12 connector (8 pin)
M12 A coded
solder side view FV



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



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 VDC with Bit Parallel or SSI as electronic interface
- Code reset for easy setup
- Cable or connector output
- Blind hollow shaft diameter up to 15 mm
- Mounting by stator coupling, spring or anti-rotation pin

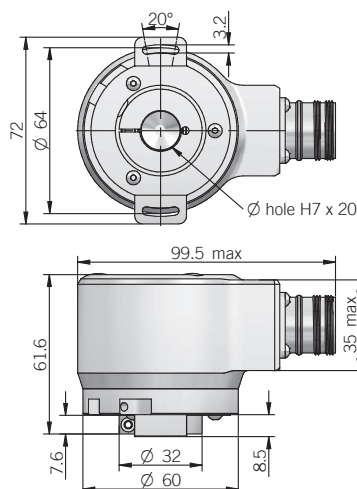


ORDERING CODE BIT PARALLEL

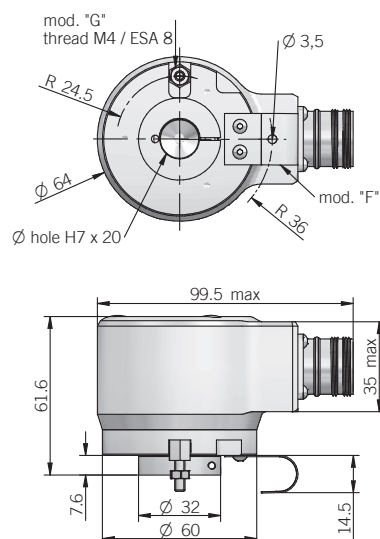
EA	63G	256	G	8/28	P	P	X	8	X	3	PD	R	.XXX
SERIES singleturn absolute encoder EA													
MODEL blind hollow shaft with stator coupling 58F blind hollow shaft with spring 63F blind hollow shaft with anti-rotation pin 63G													
RESOLUTION (powers of 2) ppr from 2 to 8192 (multiples and submultiples of 360) ppr from 90 to 3600 (multiples and submultiples of 1000) ppr from 250 to 4000													
CODE TYPE binary B gray G (no powers of 2) binary offset code (0-XXX) BC (no powers of 2) gray offset code (0-XXX) GC													
POWER SUPPLY 8 ... 28 V DC 8/28													
ELECTRONIC INTERFACE push pull P													
LOGIC negative N positive P													
OPTIONS latch L (binary code) strobe S to be reported if not used X													
BORE DIAMETER mm 8 (9,52mm 3/8") mm 9 mm 10 mm 12 mm 14 mm 15													
ENCLOSURE RATING IP 54 X													
MAX ROTATION SPEED 3000 rpm 3													
OUTPUT TYPE cable (standard length 1,5 m) PD (with option "latch") cable (standard length 1,5 m) PE 19 pin MIL connector MA <i>female connector included, without female please add 162 as variant code</i>													
DIRECTION TYPE axial A radial R													
VARIANT custom version XXX													

ORDERING CODE SSI	EA	63G	256	G	8/28	S	X	X	8	X	3	PC	R	.XXX
SERIES singleturn absolute encoder EA														
MODEL blind hollow shaft with stator coupling 58F blind hollow shaft with spring 63F blind hollow shaft with anti-rotation pin 63G														
RESOLUTION (powers of 2) ppr from 2 to 8192 (multiples and submultiples of 360) ppr from 90 to 3600 (multiples and submultiples of 1000) ppr from 250 to 4000														
CODE TYPE binary B gray G (no powers of 2) binary offset code (0-XXX) BC (no powers of 2) gray offset code (0-XXX) GC														
POWER SUPPLY 8 ... 28 V DC 8/28														
ELECTRONIC INTERFACE Serial Synchronous Interface - SSI S														
LOGIC to be reported X														
OPTIONS to be reported if not used X reset ZE														
BORE DIAMETER mm 8 (9,52mm 3/8") mm 9 mm 10 mm 12 mm 14 mm 15														
ENCLOSURE RATING IP 54 X														
MAX ROTATION SPEED 3000 rpm 3														
OUTPUT TYPE cable (standard length 1,5 m) PC 7 pin MIL connector MC (with option "reset") 10 pin MIL connector MD 12 pin M23 connector HA 8 pin M12 connector M12 female connector included, without female please add 162 as variant code														
DIRECTION TYPE axial A radial R														
VARIANT custom version XXX														

EA 58 F

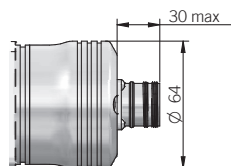


EA 63 F - G



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

Dimensions with axial output



dimensions in mm

ELECTRICAL SPECIFICATIONS

Resolution	from 2 to 8192 ppr
Power supply	8/28 = 7,6 ... 29,4 V DC
Current consumption without load	100 mA
Max load current	20 mA / channel
Output type	P = push-pull (active short circuit protection)* S = RS-422
Auxiliary inputs (U/D - Latch - Reset)	active high (+Vdc) connect to 0V if not used / Reset tmin 150 ms
Max frequency	output: 25 kHz LSB bit parallel clock input: 100 kHz ... 1 MHz SSI
SSI monostable time (Tm)	18 µs
SSI pause time (Tp)	> 35 µs
SSI frame	(MSB ... LSB) 13 bit data length
Accuracy	± 1/2 LSB
Counting direction	decreasing clockwise (shaft view)
Start-up time	150 ms
Electromagnetic compatibility	IEC 61000-6-2 IEC 61000-6-4

*output levels according to power supply, for further details please see under Technical basics section

MECHANICAL SPECIFICATIONS

Bore diameter	ø 8* / 9* / 10* / 12* / 14 / 15 mm
Enclosure rating	IP 54 (IEC 60529)
Max rotation speed	3000 rpm
Shock	50 G, 11 ms (IEC 60068-2-27)
Vibration	10 G, 10 ... 2000 Hz (IEC 60068-2-6)
Moment of inertia	5 x 10 ⁻⁶ kgm ²
Starting torque (at +20°C / +68°F)	< 0,02 Nm
Body material	EN-AW 2011 aluminum
Shaft material	1.4305 / AISI 303 stainless steel
Housing material	painted aluminum
Bearings	2 ball bearings
Bearings life	10 ⁹ revolutions
Operating temperature	0° ... +60°C (+32° ... +140°F)
Storage temperature	-15° ... +70°C (+5° ... +158°F)
Fixing torque for collar clamping	1,5 Nm recommended
Weight	450 g (15,87 oz)

* with supplied adapter shaft

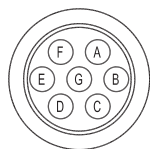
BIT PARALLEL CONNECTIONS

Function	Binay / Gray	Cable output PD	Cable output PE	MA 19 pin
bit 1 (LSB)	B ⁰ / G ⁰	green	green	A
bit 2	B ¹ / G ¹	yellow	yellow	B
bit 3	B ² / G ²	blue	blue	C
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	H
bit 9	B ⁸ / G ⁸	gray / pink	gray / 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	B ¹¹ / G ¹¹	white / yellow	white / yellow	M
bit 13	B ¹² / G ¹²	yellow / brown	yellow / brown	N
STROBE	/	/	green / blue	P
LATCH	/	/	yellow / grey	R
0 Volt	/	black	black	T
U / D	/	red / blue	red / blue	U
+ Vdc	/	red	red	V
⏏	/	shield	shield	S

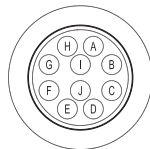
SSI CONNECTIONS

Function	Cable output PC	7 pin MC	10 pin MD	12 pin HA	8 pin M12
+ Vdc	red	G	G	8	8
0 Volt	black	F	F	1	5
data +	green	C	C	2	3
data -	brown	D	D	10	2
clock +	yellow	A	A	3	4
clock -	orange or pink	B	B	11	6
RESET	white	/	H	4	1
U / D	red / blue	E	E	5	7
⏏	shield	housing	J	9	housing

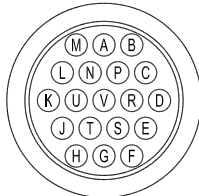
MC connector (7 pin)
Amphenol MS3102-E-16-S
solder side view FV



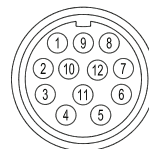
MD connector (10 pin)
Amphenol MS3102-E-18-1
solder side view FV



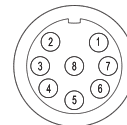
MA connector (19 pin)
Amphenol 62IN 12E 14-19 P
solder side view FV



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



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



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 VDC with Bit Parallel or SSI as electronic interface
- Code reset for easy setup
- Cable or connector output
- Solid shaft diameter up to 11 mm
- Mounting by synchronous or REO-444 flange



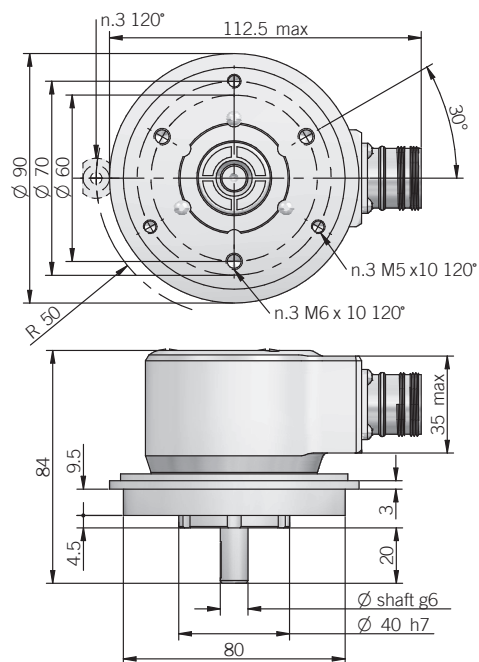
ORDERING CODE BIT PARALLEL

EA	90A	256	G	8/28	P	P	X	10	X	6	PD	R	.XXX
SERIES singleturn absolute encoder EA													
MODEL synchronous flange ø 40 mm 90A REO-444 flange 115A													
RESOLUTION (powers of 2) ppr from 2 to 8192 (multiples and submultiples of 360) ppr from 90 to 3600 (multiples and submultiples of 1000) ppr from 250 to 4000													
CODE TYPE binary B gray G (no powers of 2) binary offset code (0-XXX) BC (no powers of 2) gray offset code (0-XXX) GC													
POWER SUPPLY 8 ... 28 V DC 8/28													
ELECTRONIC INTERFACE push pull P													
LOGIC negative N positive P													
OPTIONS latch L (binary code) strobe S to be reported if not used X													
SHAFT DIAMETER (mod. 90) (9,52mm 3/8") mm 9 mm 10 (mod. 115) mm 11													
ENCLOSURE RATING IP 54 X (mod. 90) IP 66 S													
MAX ROTATION SPEED (IP 66) 3000 rpm 3 (IP 54) 6000 rpm 6													
OUTPUT TYPE cable (standard length 1,5 m) PD (with option "latch") cable (standard length 1,5 m) PE 19 pin MIL connector MA <i>female connector included, without female please add 162 as variant code</i>													
DIRECTION TYPE axial A radial R													
VARIANT custom version XXX													

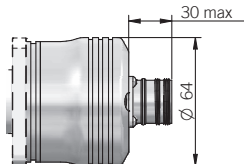
ORDERING CODE SSI	EA	90A	256	G	8/28	S	X	X	10	X	6	PC	R	.XXX
SERIES singleturn absolute encoder	EA													
MODEL synchronous flange ø 40 mm REO-444 flange		90A 115A												
RESOLUTION (powers of 2) ppr from (multiples and submultiples of 360) ppr from (multiples and submultiples of 1000) ppr from			2 to 8192 90 to 3600 250 to 4000											
CODE TYPE binary gray (no powers of 2) binary offset code (0-XXX) (no powers of 2) gray offset code (0-XXX)				B G BC GC										
POWER SUPPLY 8 ... 28 V DC					8/28									
ELECTRONIC INTERFACE Serial Synchronous Interface - SSI						S								
LOGIC to be reported							X							
OPTIONS to be reported if not used reset								X ZE						
SHAFT DIAMETER (mod. 90) (9,52mm 3/8") mm (mod. 115) mm									9 10 11					
ENCLOSURE RATING IP 54 (mod. 90) IP 66									X S					
MAX ROTATION SPEED (IP 66) 3000 rpm (IP 54) 6000 rpm										3 6				
OUTPUT TYPE cable (standard length 1,5 m) 7 pin MIL connector (with option "reset") 10 pin MIL connector 12 pin M23 connector 8 pin M12 connector											PC MC MD HA M12			
female connector included, without female please add 162 as variant code														
DIRECTION TYPE axial radial													A R	
VARIANT custom version														XXX

EA 90 A

fixing clamps not included

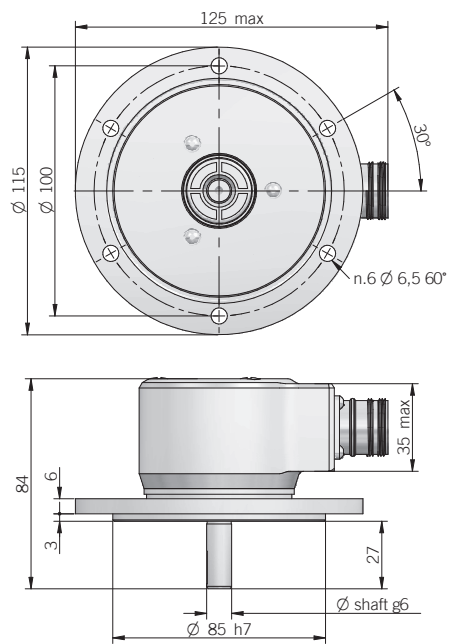


Dimensions with axial output



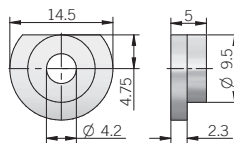
dimensions in mm

EA 115 A



ACCESSORIES

set n.3 fixing clamps for model 90 A
P/N 94080001



ELECTRICAL SPECIFICATIONS

Resolution	from 2 to 8192 ppr
Power supply	8/28 = 7,6 ... 29,4 V DC
Current consumption without load	100 mA
Max load current	20 mA / channel
Output type	P = push-pull (active short circuit protection)* S = RS-422
Auxiliary inputs (U/D - Latch - Reset)	active high (+Vdc) connect to 0V if not used / Reset tmin 150 ms
Max frequency	output: 25 kHz LSB bit parallel clock input: 100 kHz ... 1 MHz SSI
SSI monostable time (Tm)	18 µs
SSI pause time (Tp)	> 35 µs
SSI frame	(MSB ... LSB) 13 bit data length
Accuracy	± 1/2 LSB
Counting direction	decreasing clockwise (shaft view)
Start-up time	150 ms
Electromagnetic compatibility	IEC 61000-6-2 IEC 61000-6-4

*output levels according to power supply, for further details please see under Technical basics section

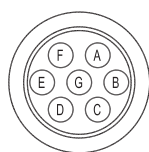
MECHANICAL SPECIFICATIONS

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	3000 rpm (IP 66) 6000 rpm (IP 54)
Max shaft load	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
Starting torque (at +20°C / +68°F)	< 0,02 Nm (IP 54) < 0,06 Nm (IP 66)
Body material	EN-AW 2011 aluminum
Shaft material	1.4305 / AISI 303 stainless steel
Housing material	painted aluminum
Bearings	2 ball bearings
Bearings life	10 ⁹ revolutions
Operating temperature	0° ... +60°C (+32° ... +140°F)
Storage temperature	-15° ... +70°C (+5° ... +158°F)
Weight	650 g (22,93 oz)

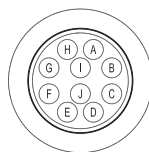
BIT PARALLEL CONNECTIONS

Function	Binay / Gray	Cable output PD	Cable output PE	MA 19 pin
bit 1 (LSB)	B ⁰ / G ⁰	green	green	A
bit 2	B ¹ / G ¹	yellow	yellow	B
bit 3	B ² / G ²	blue	blue	C
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	H
bit 9	B ⁸ / G ⁸	gray / pink	gray / 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	B ¹¹ / G ¹¹	white / yellow	white / yellow	M
bit 13	B ¹² / G ¹²	yellow / brown	yellow / brown	N
STROBE	/	/	green / blue	P
LATCH	/	/	yellow / grey	R
0 Volt	/	black	black	T
U / D	/	red / blue	red / blue	U
+ Vdc	/	red	red	V
≡	/	shield	shield	S

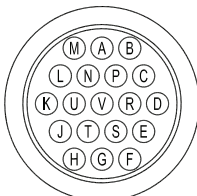
MC connector (7 pin)
Amphenol MS3102-E-16-S
solder side view FV



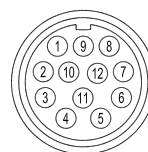
MD connector (10 pin)
Amphenol MS3102-E-18-1
solder side view FV



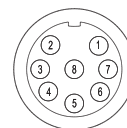
MA connector (19 pin)
Amphenol 62IN 12E 14-19 P
solder side view FV



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



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



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 VDC with Profibus DP as electronic 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 63A 4096 B 12/28 FXX 10 X 6 P3R .XXX

SERIES
singleturn absolute encoder EA

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

RESOLUTION
ppr 4096 / 8192

CODE TYPE
binary B

POWER SUPPLY
12 ... 28 V DC 12/28

ELECTRONIC INTERFACE
PROFIBUS DP V0 CLASS 2 FXX

SHAFT DIAMETER
(mod. 58 B) mm 6
(mod. 63 A / D) (9,52mm 3/8") mm 9
(mod. 58 C - 63 A / D / E) mm 10

ENCLOSURE RATING
IP 54 X
IP 66 S

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

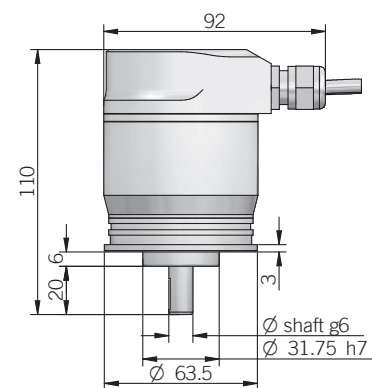
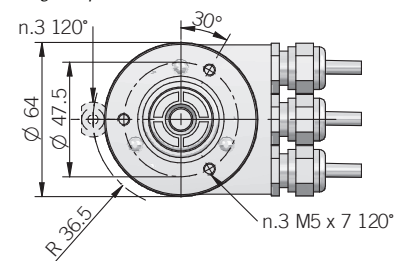
OUTPUT TYPE
terminal box - radial cable glands P3R
radial M12 connectors M12R

female connector included, without female please add 162 as variant code

VARIANT
custom version XXX

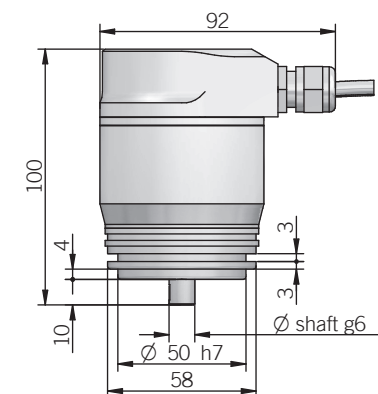
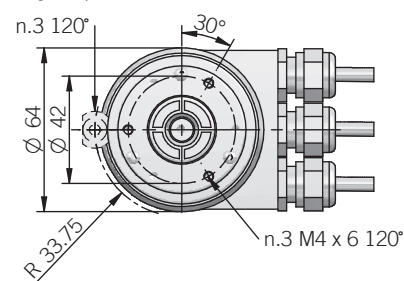
EA 63 A

fixing clamps not included

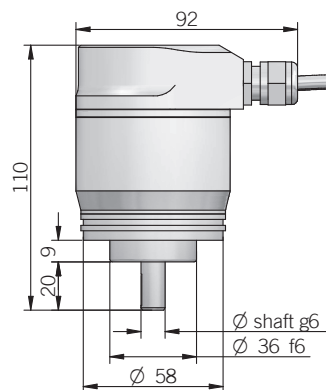
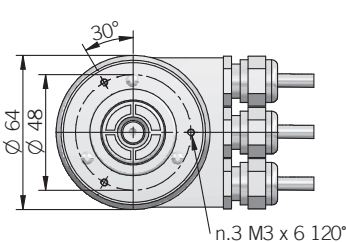


EA 58 B

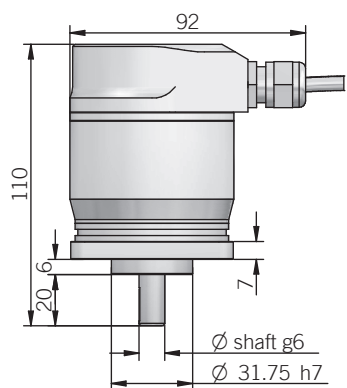
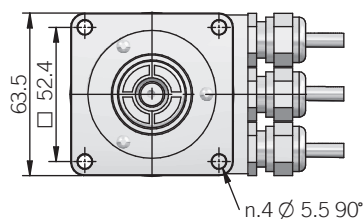
fixing clamps not included



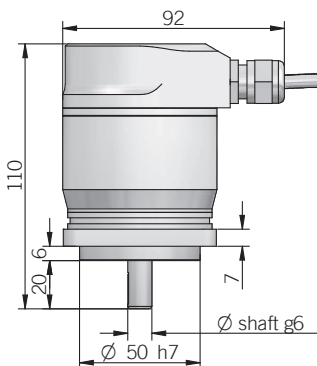
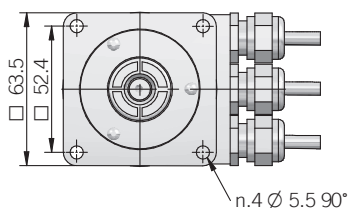
EA 58 C



EA 63 D



EA 63 E



dimensions in mm

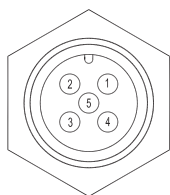
ELECTRICAL SPECIFICATIONS

Resolution	2 ... 4096 / 2 ... 8192 ppr <i>programmable during commissioning</i>
Power supply	12/28 = 11,4 ... 29,4 V DC
Current consumption without load	300 mA
Output type	RS 485 galvanically isolated
Max bus frequency	12 Mbaud
Diagnostic features	frequency warning position warning / alarm <i>please refer to installation guide for more informations</i>
Max frequency	max 25 kHz LSB
Accuracy	± 1/2 LSB
Counting direction	programmable during commissioning
Start-up time	500 ms
Electromagnetic compatibility	IEC 61000-6-2 IEC 61000-6-4

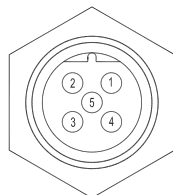
CONNECTIONS

Function	S3 connector 5-pin (power supply)	S3 connector 5-pin (line out)	S3 connector 5-pin (line in)
+ Vdc	2		
0 Volt	4		
signal A (out)		2	
signal B (out)		4	
signal A (in)			2
signal B (in)			4

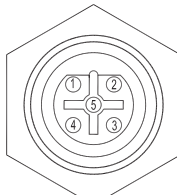
S3 connector
(M12 5 pins A coded)
power supply
view solder side FV



S3 connector
(M12 5 pins B coded)
line out - female
view solder side FV



S3 connector
(M12 5 pins B coded)
line in - male
view solder side MV

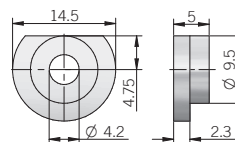


MECHANICAL SPECIFICATIONS

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	3000 rpm (IP 66) 6000 rpm (IP 54)
Max shaft load	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
Starting torque (at +20°C / +68°F)	< 0,02 Nm (IP 54) < 0,06 Nm (IP 66)
Body material	EN-AW 2011 aluminum
Shaft material	1.4305 / AISI 303 stainless steel
Housing material	painted aluminium
Flange material	EN-AW 2011 aluminum
Bearings	2 ball bearings
Bearings life	10 ⁹ revolutions
Operating temperature	0° ... +60°C (+32° ... +140°F)
Storage temperature	-15° ... +70°C (+5° ... +158°F)
Weight	650 g (22,93 oz)

ACCESSORIES

set n.3 fixing clamps for model 58 B - 63 A
P/N 94080001



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 VDC with Profibus DP as electronic interface
- Cable gland or M12 connector output
- Blind hollow shaft diameter up to 15 mm
- Mounting by stator coupling, spring or anti-rotation pin

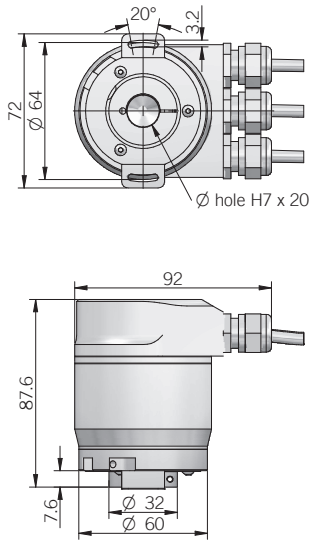


ORDERING CODE

EA 58F 4096 B 12/28 FXX 10 X 3 P3R .XXX

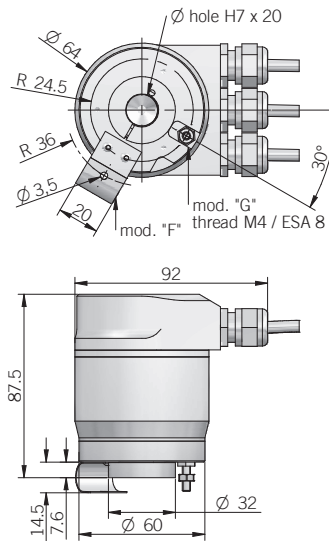
SERIES singleturn absolute encoder EA												
MODEL blind hollow shaft with stator coupling 58F blind hollow shaft with spring 63F blind hollow shaft with anti-rotation pin 63G												
RESOLUTION ppr max 4096 / 8192												
CODE TYPE binary B												
POWER SUPPLY 12 ... 28 V DC 12/28												
ELECTRONIC INTERFACE PROFIBUS DP V0 CLASS 2 FXX												
BORE DIAMETER mm 8 (9,52mm 3/8") mm 9 mm 10 mm 12 mm 14 mm 15												
ENCLOSURE RATING IP 54 X												
MAX ROTATION SPEED 3000 rpm 3												
OUTPUT TYPE terminal box - radial cable glands P3R radial M12 connectors M12R <i>female connector included, without female please add 162 as variant code</i>												
VARIANT custom version XXX												

EA 58 F



dimensions in mm

EA 63 F - G



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

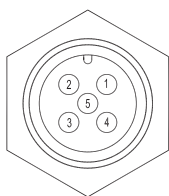
ELECTRICAL SPECIFICATIONS

Resolution	2 ... 4096 / 2 ... 8192 ppr programmable during commissioning
Power supply	12/28 = 11,4 ... 29,4 V DC
Current consumption without load	300 mA
Output type	RS 485 galvanically isolated
Max bus frequency	12 Mbaud
Diagnostic features	frequency warning position warning / alarm please refer to installation guide for more informations
Max frequency	25 kHz LSB
Accuracy	± 1/2 LSB
Counting direction	programmable during commissioning
Start-up time	500 ms
Electromagnetic compatibility	IEC 61000-6-2 IEC 61000-6-4

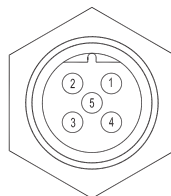
CONNECTIONS

Function	S3 connector 5-pin (power supply)	S3 connector 5-pin (line out)	S3 connector 5-pin (line in)
+ Vdc	2		
0 Volt	4		
signal A (out)		2	
signal B (out)		4	
signal A (in)			2
signal B (in)			4

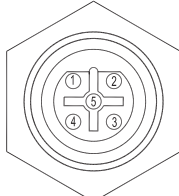
S3 connector
(M12 5 pins A coded)
power supply
view solder side FV



S3 connector
(M12 5 pins B coded)
line out
view solder side FV



S3 connector
(M12 5 pins B coded)
line in
view solder side MV



MECHANICAL SPECIFICATIONS

Bore diameter	ø 8* / 9* / 10* / 12* / 14 / 15 mm
Enclosure rating	IP 54 (IEC 60529)
Max rotation speed	3000 rpm continuous
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
Starting torque (at +20°C / +68°F)	< 0,02 Nm
Body material	EN-AW 2011 aluminum
Shaft material	1.4305 / AISI 303 stainless steel
Housing material	painted aluminium
Flange material	EN-AW 2011 aluminum
Bearings	2 ball bearings
Bearings life	10 ⁹ revolutions
Operating temperature	0° ... +60°C (+32° ... +140°F)
Storage temperature	-15° ... +70°C (+5° ... +158°F)
Fixing torque for collar clamping	1,5 Nm recommended
Weight	650 g (22,93 oz)

* with supplied adapter shaft

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 VDC with Profibus DP as electronic 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 B 12/28 FXX 10 X 6 P3R .XXX

SERIES
singleturn absolute encoder **EA**

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

RESOLUTION
ppr max **4096 / 8192**

CODE TYPE
binary **B**

POWER SUPPLY
12 ... 28 V DC **12/28**

ELECTRONIC INTERFACE
PROFIBUS DP V0 CLASS 2 **FXX**

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

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

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

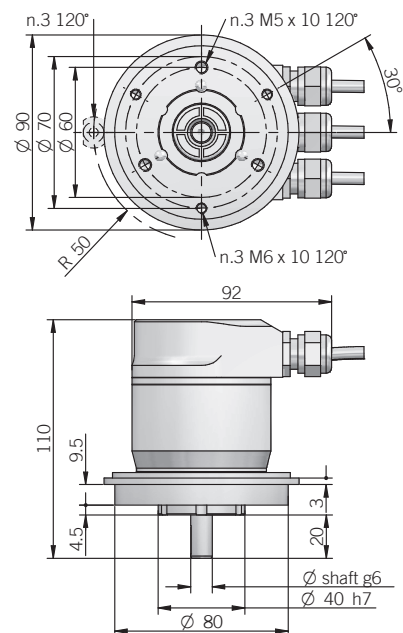
OUTPUT TYPE
terminal box - radial cable glands **P3R**
radial M12 connectors **M12R**

female connector included, without female please add 162 as variant code

VARIANT
custom version **XXX**

EA 90 A

fixing clamps not included



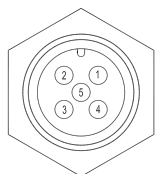
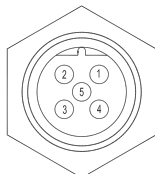
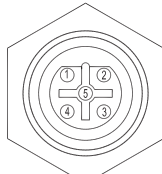
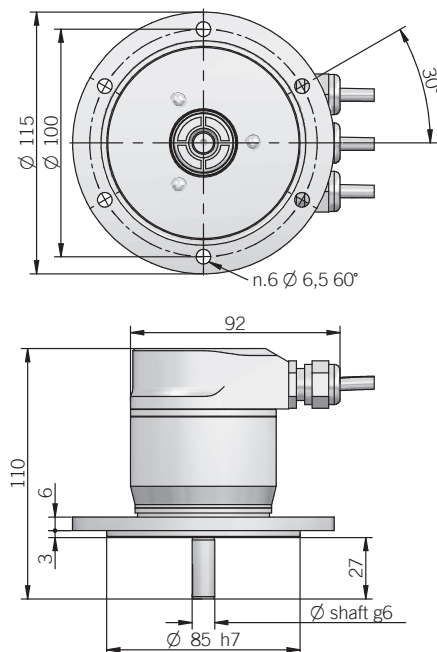
dimensions in mm

ELECTRICAL SPECIFICATIONS

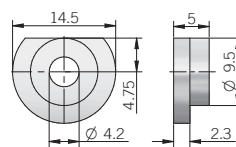
Resolution	2 ... 4096 / 2 ... 8192 ppr <i>programmable during commissioning</i>
Power supply	12/28 = 11,4 ... 29,4 V DC
Current consumption without load	300 mA
Output type	RS 485 galvanically isolated
Max bus frequency	12 Mbaud
Diagnostic features	frequency warning position warning / alarm <i>please refer to installation guide for more informations</i>
Max frequency	25 kHz LSB
Accuracy	± 1/2 LSB
Counting direction	programmable during commissioning
Start-up time	500 ms
Electromagnetic compatibility	IEC 61000-6-2 IEC 61000-6-4

CONNECTIONS

Function	S3 connector 5-pin (power supply)	S3 connector 5-pin (line out)	S3 connector 5-pin (line in)
+ Vdc	2		
0 Volt	4		
signal A (out)		2	
signal B (out)		4	
signal A (in)			2
signal A (in)			4

S3 connector
(M12 5 pins A coded)
power supply
view solder side FVS3 connector
(M12 5 pins B coded)
line out
view solder side FVS3 connector
(M12 5 pins B coded)
line in
view solder side MV**EA 115 A****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	3000 rpm (IP 66) 6000 rpm (IP 54)
Max shaft load	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
Starting torque (at +20°C / +68°F)	< 0,02 Nm (IP 54) < 0,06 Nm (IP 66)
Body material	EN-AW 2011 aluminum
Shaft material	1.4305 / AISI 303 stainless steel
Housing material	painted aluminium
Flange material	EN-AW 2011 aluminum
Bearings	2 ball bearings
Bearings life	10 ⁹ revolutions
Operating temperature	0° ... +60°C (+32° ... +140°F)
Storage temperature	-15° ... +70°C (+5° ... +158°F)
Weight	750 g (26,46 oz)

ACCESSORIESset n.3 fixing clamps for model 90 A
P/N 94080001

MAIN FEATURES

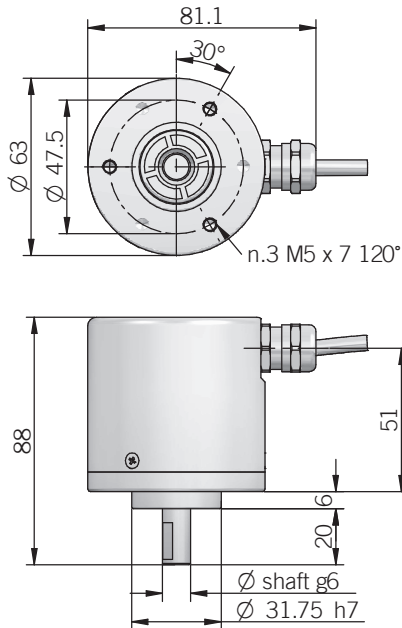
Thanks to the stainless steel enclosure, the encoder is suitable for food and beverage machinery, cranes and winches for ships, offshore applications, washing systems and all those environments where high corrosion resistance is required.

- Optical sensor technology (OptoASIC)
- Resolution up to 13 bit (8192 ppr)
- Power supply up to +28 VDC with SSI as electronic interface
- Cable output
- Solid shaft diameter up to 10 mm
- Mounting by clamping or centering 2,5" square flange

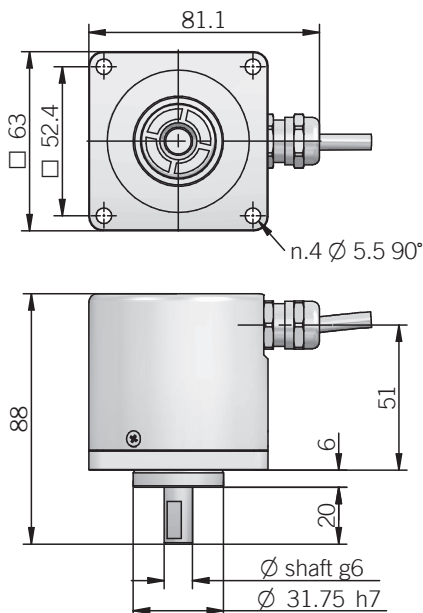


ORDERING CODE	EA	63DX	256	G	8/28	S	X	X	8	S	3	PCR	.XXX
SERIES singleturn absolute encoder	EA												
MODEL clamping flange ø 31.75 mm centering square flange ø 31.75 mm		63AX 63DX											
RESOLUTION (powers of 2) ppr from (multiples and submultiples of 360) ppr from (multiples and submultiples of 1000) ppr from			2 to 8192 90 to 3600 250 to 4000										
CODE TYPE binary gray (no powers of 2) binary offset code (0-XXX) (no powers of 2) gray offset code (0-XXX)				B G BC GC									
POWER SUPPLY 8 ... 28 V DC					8/28								
ELECTRONIC INTERFACE Serial Synchronous Interface - SSI						S							
LOGIC to be reported							X						
OPTIONS to be reported if not used reset								X ZE					
SHAFT DIAMETER (9,52mm 3/8") mm mm									9 10				
ENCLOSURE RATING IP 66										S			
MAX ROTATION SPEED 3000 rpm											3		
OUTPUT TYPE radial cable (standard length 1,5 m)												PCR	
VARIANT custom version													XXX

EA 63 AX



EA 63 DX



dimensions in mm

ELECTRICAL SPECIFICATIONS

Resolution	from 2 to 8192 ppr
Power supply	8/28 = 7,6 ... 29,4 V DC
Current consumption without load	100 mA
Output type	RS-422
Auxiliary inputs (U/D - Reset)	active high (+Vdc) connect to 0V 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
Accuracy	± 1/2 LSB
Counting direction	decreasing clockwise (shaft view)
Start-up time	150 ms
Electromagnetic compatibility	IEC 61000-6-2 IEC 61000-6-4

MECHANICAL SPECIFICATIONS

Shaft diameter	ø 9,52 (3/8") / 10 mm
Enclosure rating	IP 66 (IEC 60529)
Max rotation speed	3000 rpm
Max shaft load	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
Starting torque (at +20°C / +68°F)	< 0,06 Nm
Body material	1.4305 / AISI 303 stainless steel
Shaft material	1.4305 / AISI 303 stainless steel
Housing material	1.4305 / AISI 303 stainless steel
Bearings	2 ball bearings
Bearings life	10 ⁹ revolutions
Operating temperature	0° ... +60°C (+32° ... +140°F)
Storage temperature	-15° ... +70°C (+5° ... +158°F)
Weight	1000 g (35,27 oz)

CONNECTIONS

Function	Cable output
+ Vdc	red
0 Volt	black
U / D	red / blue
data +	green
data -	brown
clock +	yellow
clock -	orange or pink
RESET	white
⏏	shield

MAIN FEATURES

Thanks to the stainless steel enclosure, the encoder is suitable for food and beverage machinery, cranes and winches for ships, offshore applications, washing systems and all those environments where high corrosion resistance is required.

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

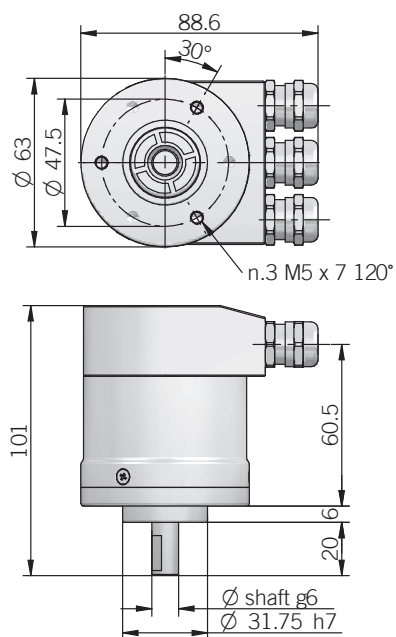


ORDERING CODE

EA 63DX 4096 B 12/28 FXX 10 S 3 P3R .XXX

SERIES singleturn absolute encoder EA												
MODEL clamping flange ø 31.75 mm 63AX centering square flange ø 31.75 mm 63DX												
RESOLUTION ppr max 4096 / 8192												
CODE TYPE binary B												
POWER SUPPLY 12 ... 28 V DC 12/28												
ELECTRONIC INTERFACE PROFIBUS DP V0 CLASS 2 FXX												
SHAFT DIAMETER (9,52mm 3/8") mm 9 mm 10												
ENCLOSURE RATING IP 66 S												
MAX ROTATION SPEED 3000 rpm 3												
OUTPUT TYPE terminal box - radial cable glands P3R												
VARIANT custom version XXX												

EA 63 AX

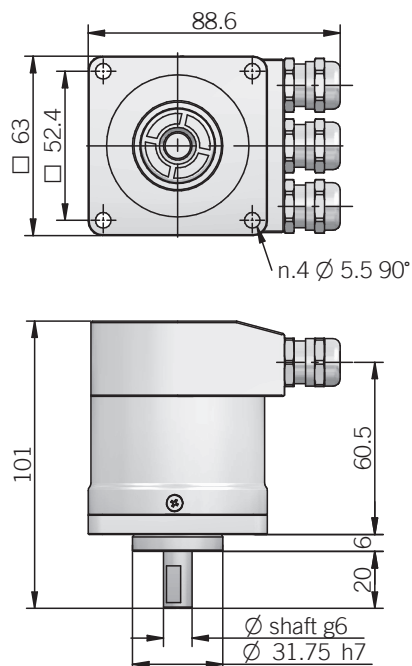


dimensions in mm

ELECTRICAL SPECIFICATIONS

Resolution	2 ... 4096 / 2 ... 8192 ppr <i>programmable during commissioning</i>
Power supply	12/28 = 11,4 ... 29,4 V DC
Current consumption without load	300 mA
Output type	RS 485 galvanically isolated
Max bus frequency	12 Mbaud
Diagnostic features	frequency warning position warning / alarm <i>please refer to installation guide for more informations</i>
Max frequency	25 kHz LSB
Accuracy	$\pm 1/2$ LSB
Counting direction	programmable during commissioning
Start-up time	500 ms
Electromagnetic compatibility	IEC 61000-6-2 IEC 61000-6-4

EA 63 DX



MECHANICAL SPECIFICATIONS

Shaft diameter	$\varnothing 9,52$ (3/8") / 10 mm
Enclosure rating	IP 66 (IEC 60529)
Max rotation speed	3000 rpm
Max shaft load	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	$1,5 \times 10^{-6} \text{ kgm}^2$
Starting torque (at +20°C / +68°F)	< 0,06 Nm
Body material	1.4305 / AISI 303 stainless steel
Shaft material	1.4305 / AISI 303 stainless steel
Housing material	1.4305 / AISI 303 stainless steel
Bearings	2 ball bearings
Bearings life	10^9 revolutions
Operating temperature	0° ... +60°C (+32° ... +140°F)
Storage temperature	-15° ... +70°C (+5° ... +158°F)
Weight	1200 g (42,33 oz)

MAIN FEATURES

Explosion proof encoder for applications within explosive and hazardous areas.

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

EX CLASSIFICATION

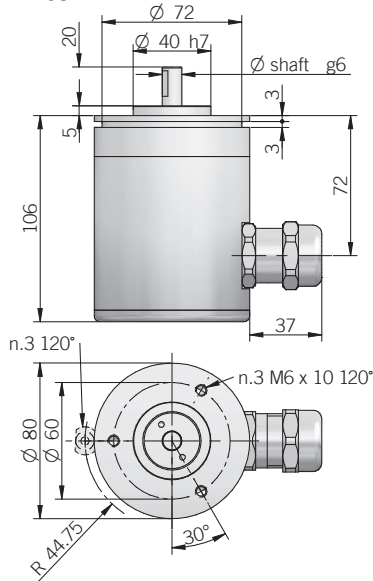
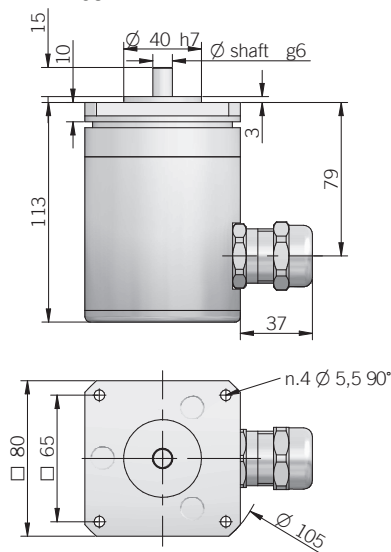
It has been assured with EC-TYPE Examination Certificate CESI 04 ATEX 082 that the EAX 80 comply with essential health and safety requirements according to

- EN 60079-0:2012+A11:2013
- EN 60079-1:2007
- EN 60079-31:2014

Declaration of conformity and CE declaration are available for download from Eltra website 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													
MODEL synchronous flange ø 40 mm 80A centering square flange ø 40 mm 80D													
RESOLUTION (powers of 2) ppr from 2 to 8192 (multiples and submultiples of 360) ppr from 90 to 3600 (multiples and submultiples of 1000) ppr from 250 to 4000													
CODE TYPE binary B gray G (no powers of 2) binary offset code (0-XXX) BC (no powers of 2) gray offset code (0-XXX) GC													
POWER SUPPLY 8 ... 28 V DC 8/28													
ELECTRONIC INTERFACE Serial Synchronous Interface - SSI S													
LOGIC to be reported X													
OPTIONS to be reported if not used X reset ZE													
SHAFT DIAMETER mm 10													
ENCLOSURE RATING IP 65 X													
MAX ROTATION SPEED 3000 rpm 3													
OUTPUT TYPE radial cable (standard length 1,5 m) PR													
VARIANT custom version XXX													

EAX 80 A**EAX 80 D**

dimensions in mm

ELECTRICAL SPECIFICATIONS

Resolution	from 2 to 8192 ppr
Power supply	8/28 = 7,6 ... 29,4 V DC
Current consumption without load	100 mA
Output type	RS-422
Auxiliary inputs (U/D - Reset)	active high (+Vdc) connect to OV 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
Accuracy	± 1/2 LSB
Counting direction	decreasing clockwise (shaft view)
Start-up time	150 ms
Electromagnetic compatibility	IEC 61000-6-2 IEC 61000-6-4

ATEX MARKING

II 2GD
Ex d 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 d IIC T6 Gb

Ex d: 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

MECHANICAL SPECIFICATIONS

Shaft diameter	Ø 10 mm
Enclosure rating	IP 65 (IEC 60529)
Max rotation speed	3000 rpm
Max shaft load	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
Starting torque (at +20°C / +68°F)	< 0,03 Nm
Body material	anodized aluminum
Shaft material	1.4305 / AISI 303 stainless steel
Housing material	anodized aluminum
Bearings	2 ball bearings
Bearings life	10 ⁹ revolutions
Operating temperature	0° ... +50°C (+32° ... +122°F)
Storage temperature	-15° ... +70°C (+5° ... +158°F)
Weight	1200 g (42,33 oz)

CONNECTIONS

Function	Cable output
+ Vdc	red
0 Volt	grey
data +	green
data -	brown
clock +	yellow
clock -	pink
U / D	blue
RESET	white
⏏	shield

MAIN FEATURES

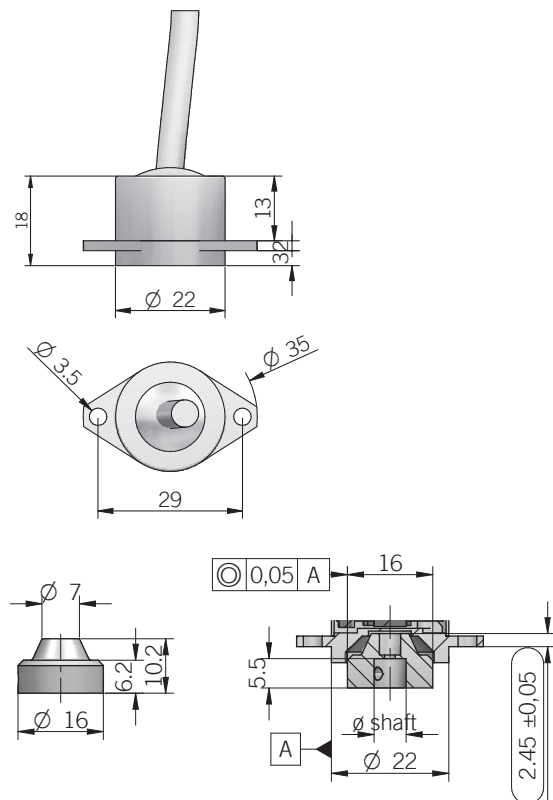
EM series encoders are suitable for several application fields like electric motors marine industry, iron and steel industry, textile machines, wood-working, paper-working, glass working, marble-working machinery and, more generally, automation and process control fields.

- Resolution up to 13 bit (8192 ppr) with SSI as electronic interface
- Cable output, connector 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° ... +125°C (-40° ... +257°F)



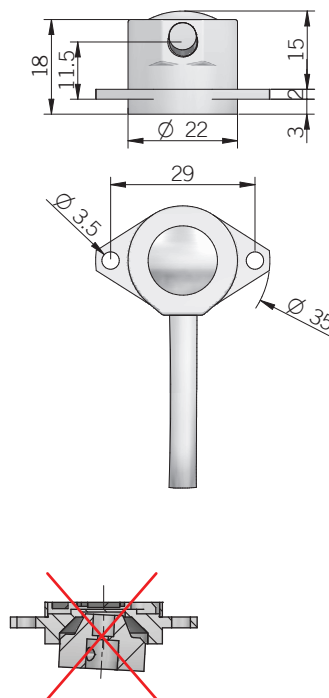
ORDERING CODE	EMA	22A	1024	B	5	S	P	X	6	S	10	P	R	.XXX
SERIES magnetic singleturn absolute encoder EMA														
MODEL clamping flange ø 22 mm 22A for anodized version please directly contact our offices														
RESOLUTION ppr from 8 to 8192 see table for pulses availability														
CODE TYPE binary B gray G														
POWER SUPPLY 5 V DC 5														
ELECTRONIC INTERFACE Serial Synchronous Interface - SSI S														
LOGIC positive P														
OPTIONS to be reported X														
BORE DIAMETER (MAGNET ACTUATOR) mm 6 mm 8 (9,52mm 3/8") mm 9 mm 10														
ENCLOSURE RATING IP 67 S														
MAX ROTATION SPEED 10000 rpm 10														
OUTPUT TYPE cable (standard length 0,5 m) P														
DIRECTION TYPE axial A radial R														
VARIANT custom version XXX														

EMA 22 axial cable output



dimensions in mm

EMA 22 radial cable output



ELECTRICAL SPECIFICATIONS	
Resolution	from 8 to 8192 ppr
Power supply	5 = 4,75 ... 5,25 V DC
Current consumption without load	100 mA max
Output type	RS-422
SSI output code	binary or gray
Clock frequency	100 kHz ... 1 MHz
SSI monostable time (Tm)	20 µs
SSI frame	(MSB ... LSB) 13 bit data length
Accuracy	± 0,35° typical / ± 0,50° max
Counting direction	decreasing clockwise (magnet actuator view)
Electromagnetic compatibility	IEC 61000-6-1 IEC 61000-6-4

CONNECTIONS	
Function	Cable output
+ Vdc	red
0 Volt	black
data +	green
data -	brown
clock +	yellow
clock -	orange
⏏	shield

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

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	

MAIN FEATURES

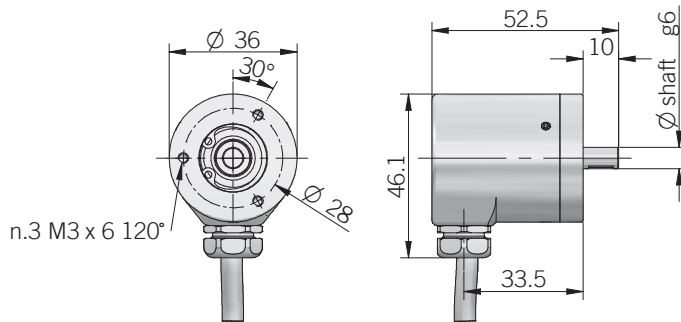
Miniaturized singleturn absolute encoder for limited size applications.

- Magnetic sensor technology without contact (Magnetic ASIC)
- Sturdy construction thanks to separated chambers
- Resolution up to 12 bit (4096 ppr)
- Power supply up to +30 VDC with SSI as electronic interface
- Code reset for easy setup
- Cable output, connectors available on cable end
- 6 mm diameter solid shaft
- Mounting by fixing flange



ORDERING CODE	EA	36A	12	G	8/30	S	P	X	6	X	8	P	R	.XXX
SERIES magnetic singleturn absolute encoder series EA														
MODEL fixing flange screw holes $\varnothing$ 28 mm 36A														
SINGLETURN RESOLUTION from 1 to 12 bit 360 / 720 ppr <i>please directly contact our offices for other pulses</i>														
CODE TYPE binary B gray G (no powers of 2) binary offset code (0-XXX) BC (no powers of 2) gray offset code (0-XXX) GC														
POWER SUPPLY 5 V DC 5 8 ... 30 V DC 8/30														
ELECTRONIC INTERFACE Serial Synchronous Interface - SSI S														
LOGIC positive P														
OPTIONS to be reported if not used X reset ZE														
SHAFT DIAMETER mm 6														
ENCLOSURE RATING IP 67 cover side / IP 65 shaft side X														
MAX ROTATION SPEED 8000 rpm 8														
OUTPUT TYPE cable (standard length 0,5 m) P														
DIRECTION TYPE radial R														
VARIANT custom version XXX														

EA 36 A



dimensions in mm

ELECTRICAL SPECIFICATIONS

Singleturn resolution	from 1 to 12 bit 360 / 720 ppr
Power supply	5 = 4,75 ... 5,25 V DC 8/30 = 7,6 ... 30 V DC (reverse polarity protection)
Power draw without load	< 400 mW
Output type	RS-422
Code type	binary or gray
Auxiliary inputs (U/D - Reset)	active high (+Vdc) connect to 0V if not used / Reset tmin 150 ms
Clock frequency	100 kHz ... 1 MHz
SSI monostable time (Tm)	20 µs
SSI pause time (Tp)	> 35 µs
SSI frame	(MSB ... LSB) 1 ... 12 bit = 13 bit data length
Accuracy	± 0,35° typical
Counting direction	decreasing clockwise (shaft view)
Start-up time	150 ms
Electromagnetic compatibility	IEC 61000-6-2 IEC 61000-6-4

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	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
Starting torque (at +20°C / +68°F)	< 0,01 Nm
Body material	EN-AW 2011 aluminum
Shaft material	1.4305 / AISI 303 stainless steel
Housing material	AISI 420 stainless steel
Bearings	2 ball bearings
Bearings life	10 ⁹ revolutions
Operating temperature	-20° ... +85°C (-4° ... +185°F)
Storage temperature	-20° ... +85°C (-4° ... +185°F)
Weight	150 g (5,29 oz)

CONNECTIONS

Function	Cable output
+ Vdc	red
0 Volt	black
U / D	red / blue
data +	green
data -	brown
clock +	yellow
clock -	orange
RESET	white
⏏	shield

MAIN FEATURES

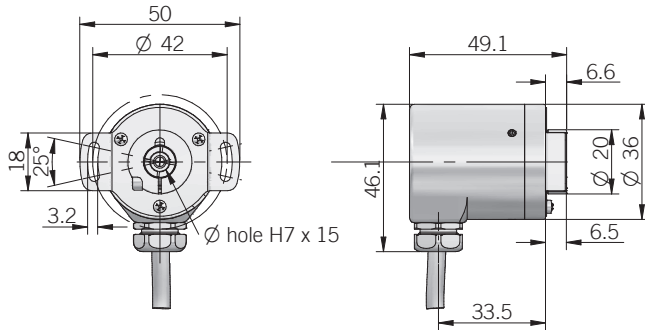
Miniaturized singleturn absolute encoder for limited size applications.

- Magnetic sensor technology without contact (Magnetic ASIC)
- Sturdy construction thanks to separated chambers
- Resolution up to 12 bit (4096 ppr)
- Power supply up to +30 VDC with SSI as electronic interface
- Code reset for easy setup
- Cable output, connectors available on cable end
- 6 mm diameter blind hollow shaft
- Mounting by stator coupling or anti-rotation pin



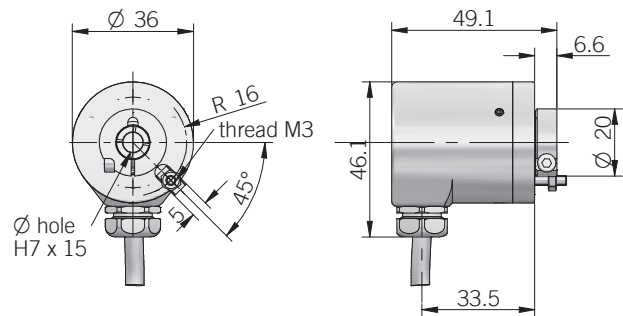
ORDERING CODE	EA	36G	12	G	8/30	S	P	X	6	X	8	P	R	.XXX
SERIES magnetic singleturn absolute encoder series EA														
MODEL blind hollow shaft with stator coupling 36F blind hollow shaft with antirotation pin 36G														
SINGLETURN RESOLUTION from 1 to 12 bit 360 / 720 ppr <i>please directly contact our offices for other pulses</i>														
CODE TYPE binary B gray G (no powers of 2) binary offset code (0-XXX) BC (no powers of 2) gray offset code (0-XXX) GC														
POWER SUPPLY 5 V DC 5 8 ... 30 V DC 8/30														
ELECTRONIC INTERFACE Serial Synchronous Interface - SSI S														
LOGIC positive P														
OPTIONS to be reported if not used X reset ZE														
BORE DIAMETER mm 6														
ENCLOSURE RATING IP 67 cover side / IP 65 shaft side X														
MAX ROTATION SPEED 8000 rpm 8														
OUTPUT TYPE cable (standard length 0,5 m) P														
DIRECTION TYPE radial R														
VARIANT custom version XXX														

EA 36 F



dimensions in mm

EA 36 G



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

ELECTRICAL SPECIFICATIONS

Singleturn resolution	from 1 to 12 bit 360 / 720 ppr
Power supply	5 = 4,75 ... 5,25 V DC 8/30 = 7,6 ... 30 V DC (reverse polarity protection)
Power draw without load	< 400 mW
Output type	RS-422
Code type	binary or gray
Auxiliary inputs (U/D - Reset)	active high (+Vdc) connect to 0V if not used / Reset tmin 150 ms
Clock frequency	100 kHz ... 1 MHz
SSI monostable time (Tm)	20 µs
SSI pause time (Tp)	> 35 µs
SSI frame	(MSB ... LSB) 1 ... 12 bit = 13 bit data length
Accuracy	± 0,35° typical
Counting direction	decreasing clockwise (shaft view)
Start-up time	150 ms
Electromagnetic compatibility	IEC 61000-6-2 IEC 61000-6-4

MECHANICAL SPECIFICATIONS

Bore 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	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
Starting torque (at +20°C / +68°F)	< 0,01 Nm
Body material	EN-AW 2011 aluminium
Shaft material	1.4305 / AISI 303 stainless steel
Housing material	AISI 420 stainless steel
Bearings	2 ball bearings
Bearings life	10 ⁹ revolutions
Operating temperature	-20° ... +100°C (-4° ... +212°F)
Storage temperature	-20° ... +100°C (-4° ... +212°F)
Fixing torque for collar clamping	0,6 Nm recommended
Weight	150 g (5,29 oz)

CONNECTIONS

Function	Cable output
+ Vdc	red
0 Volt	black
U / D	red/blue
data +	green
data -	brown
clock +	yellow
clock -	orange
RESET	white
⏏	shield

MAIN FEATURES

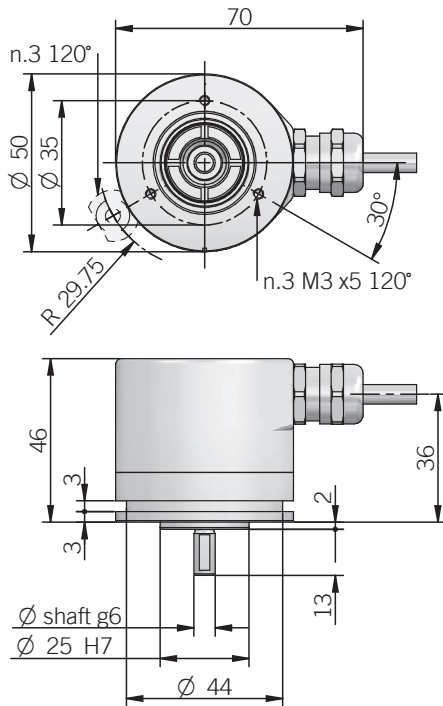
Singleturn absolute magnetic encoder size 50 mm with solid shaft

- Resolution up to 13 bit (8192 ppr)
- Power supply up to +30 VDC with SSI or Bit Parallel as electronic 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 synchronous flange

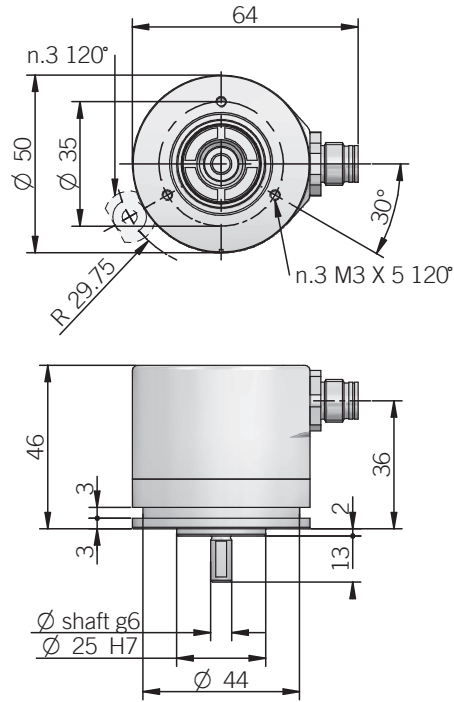


ORDERING CODE	EMA	50B	1024	G	8/30	N	N	X	6	X	3	P	R	.XXX
SERIES magnetic singleturn absolute encoder EMA														
MODEL synchronous flange ø 25 mm 50A synchronous flange ø 30 mm 50B synchronous flange ø 25 mm anodized 50BY														
RESOLUTION (N / C / R / U / P interface) ppr from 2 to 4096 (S interface) ppr from 2 to 8192														
CODE TYPE binary B gray G (no powers of 2) binary offset code (0-XXX) BC (no powers of 2) gray offset code (0-XXX) GC														
POWER SUPPLY 5 V DC 5 8 ... 30 V DC 8/30														
ELECTRONIC INTERFACE NPN N NPN open collector C PNP R PNP open collector U push pull P Serial Synchronous Interface - SSI S														
LOGIC negative N positive P														
OPTIONS to be reported if not used X reset ZE (with binary or offset binary code) strobe S (with binary or offset binary code) strobe and code reset SIZE														
SHAFT DIAMETER mm 6 mm 8 9,52 (3/8") mm 9 mm 10														
ENCLOSURE RATING IP 65 X IP 67 S														
MAX ROTATION SPEED 3000 rpm 3														
OUTPUT TYPE cable (standard length 0,5 m) P (S interface) M12 connector M12 <i>female connector included, without female please add 162 as variant code</i>														
DIRECTION TYPE axial A radial R														
VARIANT custom version XXX														

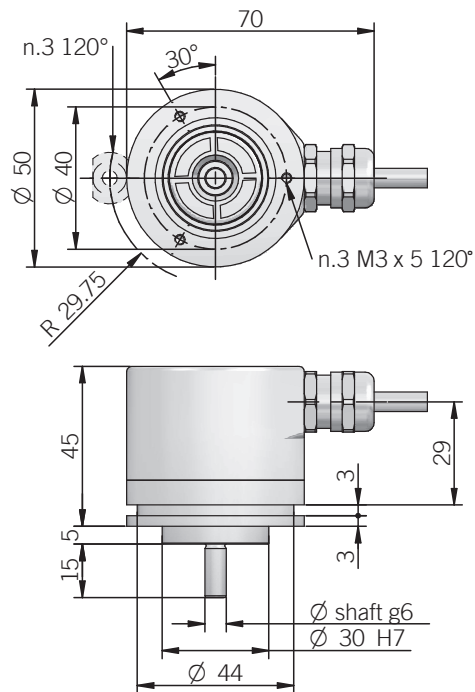
EMA 50 A
radial cable output



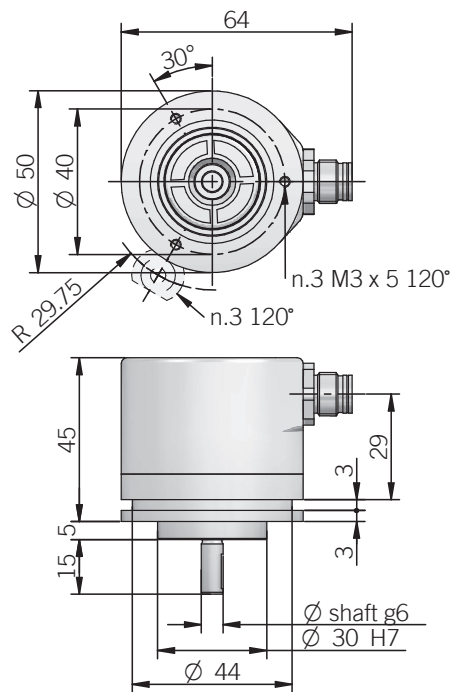
EMA 50 A
radial M12 output



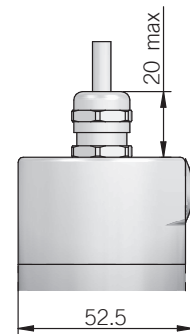
EMA 50 B / BY
radial cable output



EMA 50 B / BY
radial M12 output



Axial output



dimensions in mm

ELECTRICAL SPECIFICATIONS

Resolution	from 2 to 4096 ppr with N / C / P / R / U interface from 2 to 8192 ppr with S interface
Power supply	5 = 4,5 ... 5,5 V DC 8/30 = 7,6 ... 31,5 V DC
Current consumption without load	< 100 mA
Max load current	20 mA / channel (push pull) 40 mA / channel (NPN / PNP)
Output type*	NPN / NPN open collector / PNP / PNP open collector / push pull / RS-422
Auxiliary inputs (U/D - Reset)	active high (+Vdc) <i>connect to OV if not used / Reset t_{min} 150 ms</i>
Max frequency	output: 25 kHz LSB (Bit parallel) clock input: 100 kHz ... 1 MHz (SSI)
SSI monostable time (T_m)	20 µs
SSI pause time (T_p)	> 35 µs
Strobe time	20 µs
Accuracy	± 0,35° typical
SSI frame	(MSB ... LSB) 13 bit data length
Counting direction	decreasing clockwise (shaft view)
Start-up time	150 ms
Electromagnetic compatibility	IEC 61000-6-2 IEC 61000-6-4

*output levels according to power supply, for further details please see under Technical basics section

BIT PARALLEL CONNECTIONS

Function	Gray / Binary	Cable output
bit 1 (LSB)	G ⁰ / B ⁰	green
bit 2	G ¹ / B ¹	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	G ⁸ / B ⁸	grey / pink
bit 10	G ⁹ / B ⁹	white / green
bit 11	G ¹⁰ / B ¹⁰	brown / green
bit 12	G ¹¹ / B ¹¹	white / yellow
0 Volt	/	black
+ Vdc	/	red
U / D	/	red / blue
RESET	/	yellow / brown
STROBE	/	white / grey
≡	/	shield

SSI CONNECTIONS

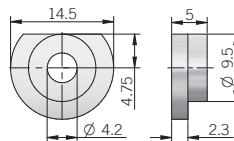
Function	Cable output	8 pin M12 connector
+ Vdc	red	8
0 Volt	black	5
data +	green	3
data -	brown	2
clock +	yellow	4
clock -	orange or pink	6
U / D	red / blue	7
RESET	white	1
≡	shield	housing

MECHANICAL SPECIFICATIONS

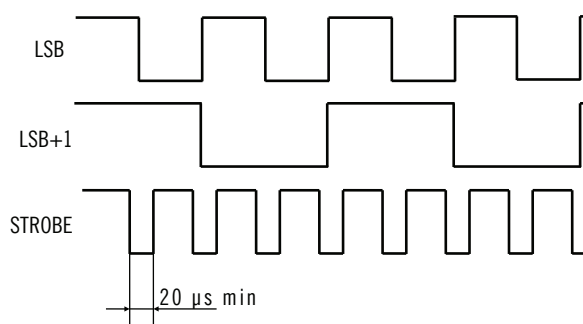
Shaft diameter	ø 6 / 8 / 9,52 (3/8") / 10 mm
Enclosure rating	X = IP 65 (IEC 60529) S = IP 67 (IEC 60529)
Max rotation speed	3000 rpm continuous / 5000 rpm instantaneous
Max shaft load	30 N axial / 50 N radial
Shock	50 G, 11 ms (IEC 60068-2-27)
Vibration	20 G, 10 ... 2000 Hz (IEC 60068-2-6)
Moment of inertia	0,5 x 10 ⁻⁶ kgm ²
Starting torque (at +20°C / +68°F)	< 0,03 Nm
Body material	EN-AW 2011 aluminum
Shaft material	1.4305 / AISI 303 stainless steel
Housing material	EN-AW 2011 aluminum
Bearings	2 ball bearings
Bearings life	10 ⁹ revolutions
Operating temperature	-25° ... +85°C (-13° ... +185°F)
Storage temperature	-25° ... +85°C (-13° ... +185°F)
Weight	200 g (7,05 oz)

ACCESSORIES

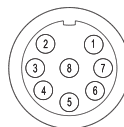
set n.3 fixing clamps
P/N 94080001



STROBE TIMING



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



MAIN FEATURES

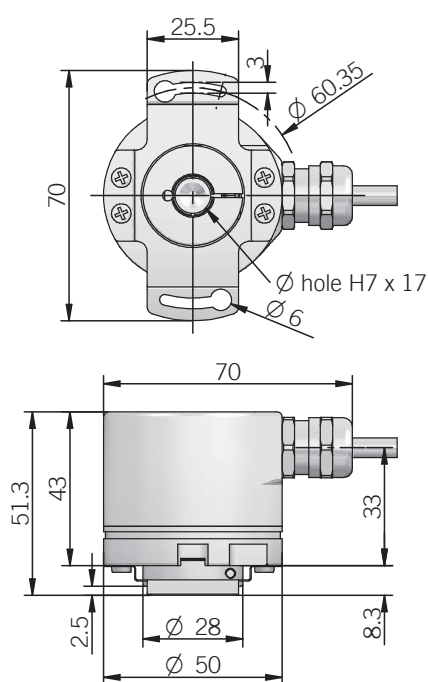
Singleturn absolute magnetic encoder size 50 mm with blind hollow shaft

- Resolution up to 13 bit (8192 ppr)
- Power supply up to +30 VDC with SSI or Bit Parallel as electronic 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 anti-rotation pin

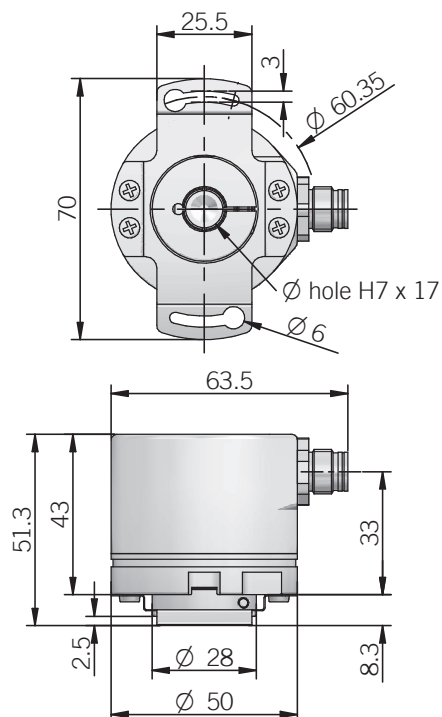


ORDERING CODE	EMA	50F	1024	G	8/30	N	N	X	6	X	3	P	R	.XXX
SERIES magnetic singleturn absolute encoder EMA														
MODEL blind hollow shaft with stator coupling 50F blind hollow shaft with anti-rotation pin 50G														
RESOLUTION (N / C / R / U / P interface) ppr from 2 to 4096 (S interface) ppr from 2 to 8192														
CODE TYPE binary B gray G (no powers of 2) binary offset code (0-XXX) BC (no powers of 2) gray offset code (0-XXX) GC														
POWER SUPPLY 5 V DC 5 8 ... 30 V DC 8/30														
ELECTRONIC INTERFACE NPN N NPN open collector C PNP R PNP open collector U push pull P Serial Synchronous Interface - SSI S														
LOGIC negative N positive P														
OPTIONS to be reported if not used X reset ZE (with binary or offset binary code) strobe S (with binary or offset binary code) strobe and code reset SZE														
BORE DIAMETER mm 6 mm 8 9,52 (3/8") mm 9 mm 10 mm 12 mm 14 mm 15														
ENCLOSURE RATING IP 65 X IP 67 S														
MAX ROTATION SPEED 3000 rpm 3														
OUTPUT TYPE cable (standard length 0,5 m) P (S interface) M12 connector M12 <i>female connector included, without female please add 162 as variant code</i>														
DIRECTION TYPE axial A radial R														
VARIANT custom version XXX														

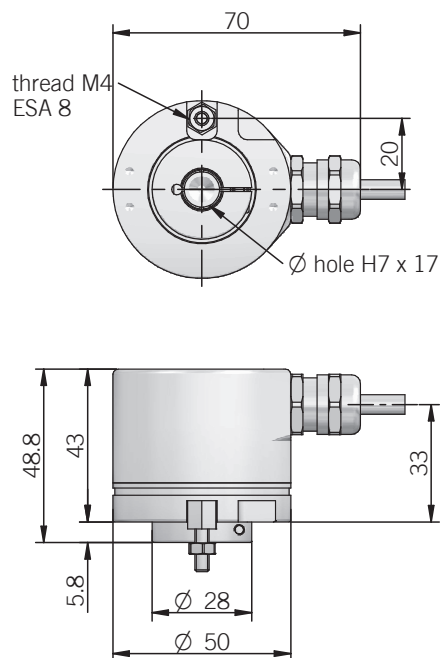
EMA 50 F
radial cable output



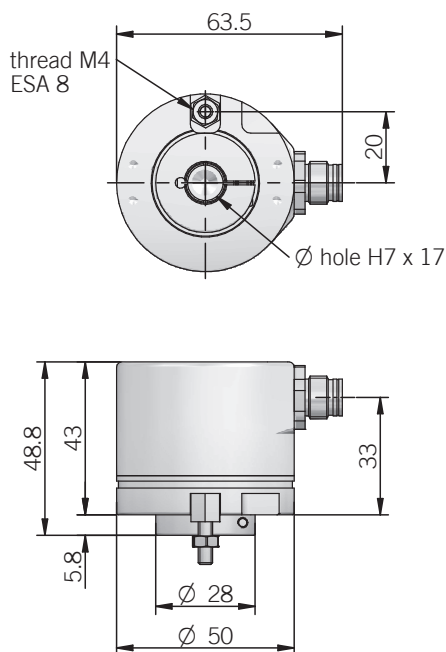
EMA 50 F
radial M12 output



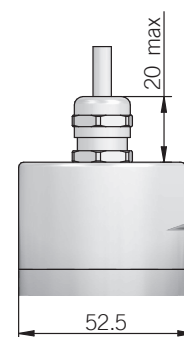
EMA 50 G
radial cable output



EMA 50 G
radial M12 output



Axial output



anti-rotation pin is included in model G, for mounting instruction please refer to product installation notes
dimensions in mm

ELECTRICAL SPECIFICATIONS

Resolution	from 2 to 4096 ppr with N / C / P / R / U interface from 2 to 8192 ppr with S interface
Power supply	5 = 4,5 ... 5,5 V DC 8/30 = 7,6 ... 31,5 V DC
Current consumption without load	< 100 mA
Max load current	20 mA / channel (push pull) 40 mA / channel (NPN / PNP)
Output type*	NPN / NPN open collector / PNP / PNP open collector / push pull / RS-422
Auxiliary inputs (U/D - Reset)	active high (+Vdc) <i>connect to OV if not used / Reset tmin 150 ms</i>
Max frequency	output: 25 kHz LSB (Bit parallel) clock input: 100 kHz ... 1 MHz (SSI)
SSI monostable time (Tm)	20 µs
SSI pause time (Tp)	> 35 µs
Strobe time	20 µs
Accuracy	± 0,35° typical
SSI frame	(MSB ... LSB) 13 bit data length
Counting direction	decreasing clockwise (shaft view)
Start-up time	150 ms
Electromagnetic compatibility	IEC 61000-6-2 IEC 61000-6-4

*output levels according to power supply, for further details please see under Technical basics section

BIT PARALLEL CONNECTIONS

Function	Gray / Binary	Cable output
bit 1 (LSB)	G ⁰ / B ⁰	green
bit 2	G ¹ / B ¹	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	G ⁸ / B ⁸	grey / pink
bit 10	G ⁹ / B ⁹	white / green
bit 11	G ¹⁰ / B ¹⁰	brown / green
bit 12	G ¹¹ / B ¹¹	white / yellow
0 Volt	/	black
+ Vdc	/	red
U / D	/	red / blue
RESET	/	yellow / brown
STROBE	/	white / grey
≡	/	shield

SSI CONNECTIONS

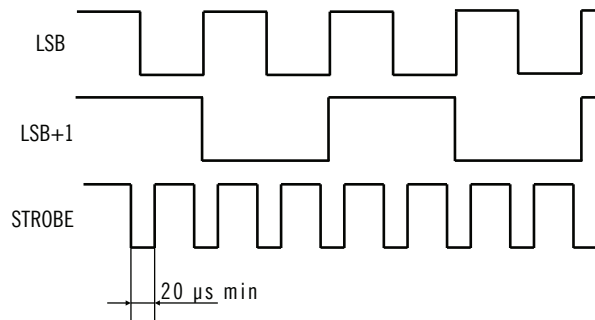
Function	Cable output	8 pin M12 connector
+ Vdc	red	8
0 Volt	black	5
data +	green	3
data -	brown	2
clock +	yellow	4
clock -	orange or pink	6
U / D	red / blue	7
RESET	white	1
≡	shield	housing

MECHANICAL SPECIFICATIONS

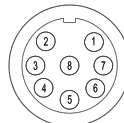
Bore diameter	ø 6* / 8* / 9,52* (3/8") / 10* / 12* / 14 / 15 mm
Enclosure rating	X = IP 65 (IEC 60529) S = IP 67 (IEC 60529)
Max rotation speed	3000 rpm continuous
Max shaft load	30 N axial / 50 N radial
Shock	50 G, 11 ms (IEC 60068-2-27)
Vibration	20 G, 10 ... 2000 Hz (IEC 60068-2-6)
Moment of inertia	4 x 10 ⁻⁶ kgm ²
Starting torque (at +20°C / +68°F)	< 0,03 Nm
Body material	EN-AW 2011 aluminum
Shaft material	1.4305 / AISI 303 stainless steel
Housing material	EN-AW 2011 aluminum
Bearings	2 ball bearings
Bearings life	10 ⁹ revolutions
Operating temperature	-25° ... +85°C (-13° ... +185°F)
Storage temperature	-25° ... +85°C (-13° ... +185°F)
Fixing torque for collar clamping	1,5 Nm recommended
Weight	200 g (7,05 oz)

* with supplied adapter shaft

STROBE TIMING



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



MAIN FEATURES

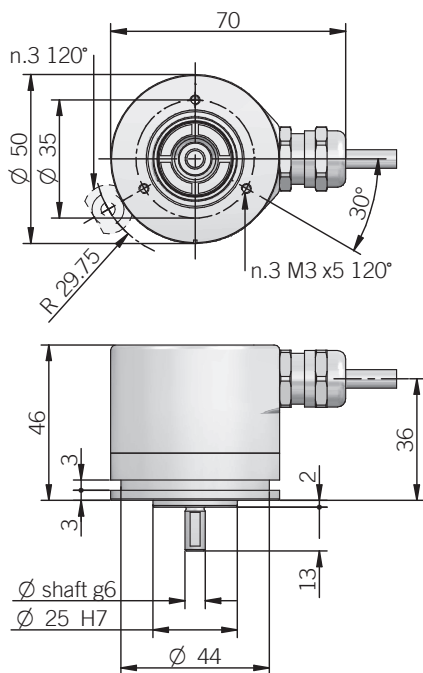
Singleturn absolute magnetic encoder size 50 mm with solid shaft

- Resolution 12 bit
- Power supply up to +28 VDC with analogue (voltage or current) as electronic 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 synchronous flange

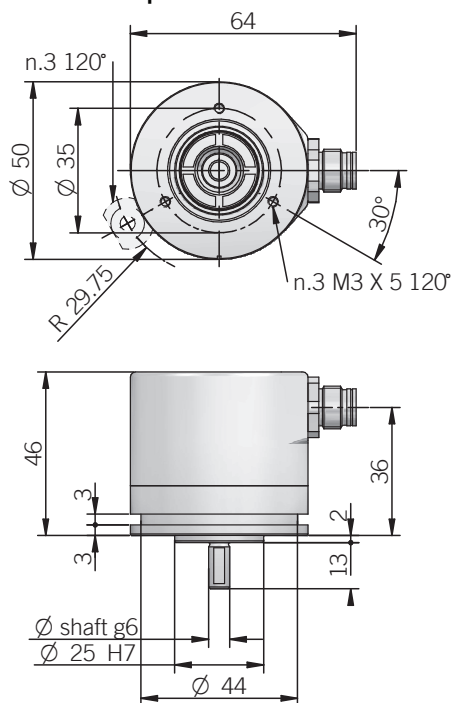


ORDERING CODE	EML	50A	360	X	12/28	V	05	X	6	X	3	P	R	.XXX
SERIES analogue magnetic singleturn absolute encoder EML														
MODEL synchronous flange ø 25 mm 50A synchronous flange ø 30 mm 50B synchronous flange ø 25 mm anodized 50BY														
ACTIVE ANGLE degrees 360 degrees 270 degrees 180 degrees 90														
OPTION to be reported if not used X reset ZE														
POWER SUPPLY 12 ... 28 V DC 12/28														
ELECTRONIC INTERFACE voltage V current I														
OUTPUT RANGE 0 ... 5 V 05 0 ... 10 V 010 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 mm 6 mm 8 9,52 (3/8") mm 9 mm 10														
ENCLOSURE RATING IP 65 X IP 67 S														
MAX ROTATION SPEED 3000 rpm 3														
OUTPUT TYPE cable (standard length 0,5 m) P M12 connector M12 <i>female connector included, without female please add 162 as variant code</i>														
DIRECTION TYPE axial A radial R														
VARIANT custom version XXX														

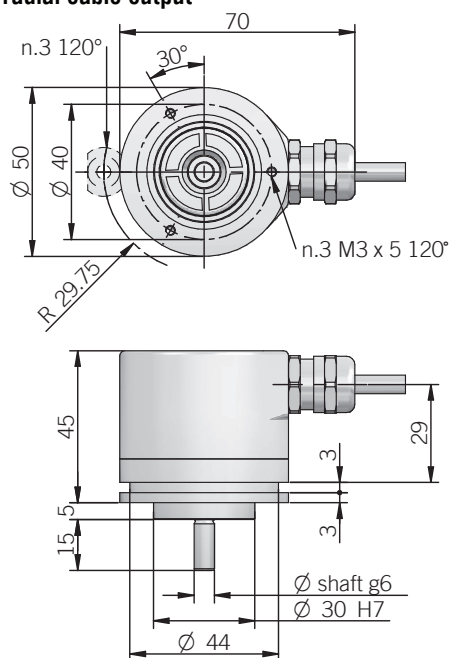
EML 50 A
radial cable output



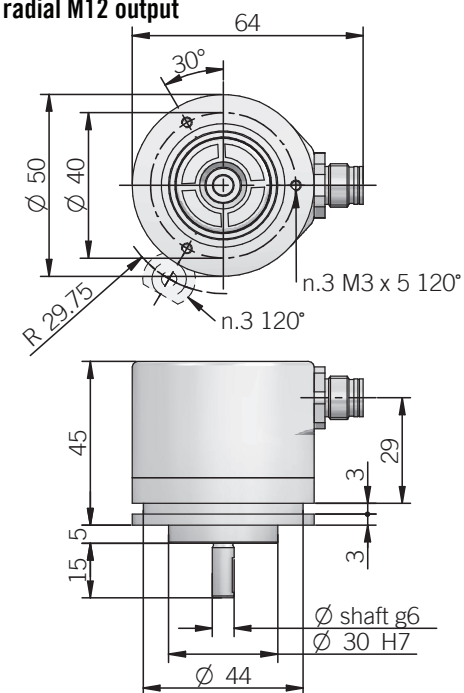
EML 50 A
radial M12 output



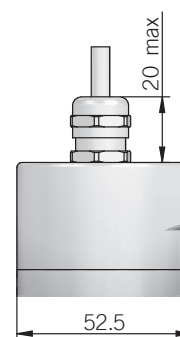
EML 50 B / BY
radial cable output



EML 50 B / BY
radial M12 output



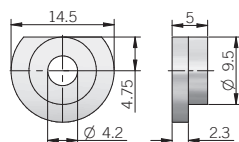
Axial output



dimensions in mm

ACCESSORIES

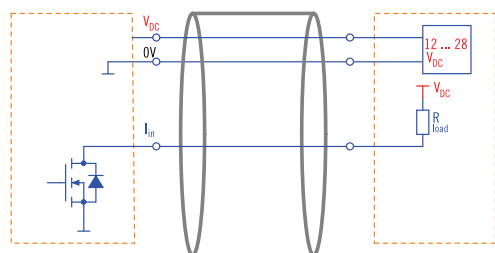
set n.3 fixing clamps
P/N 94080001



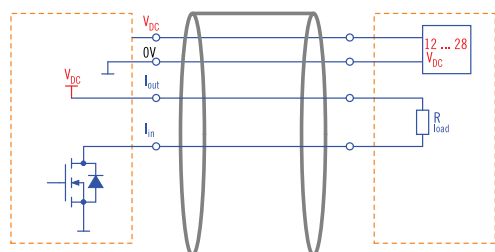
ELECTRICAL INTERFACE

Current output

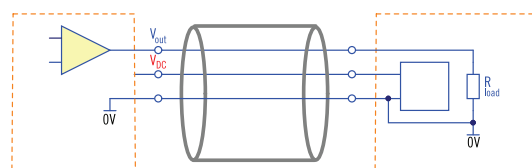
3 wire sink



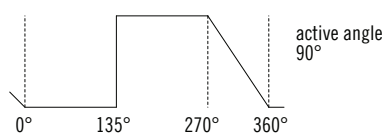
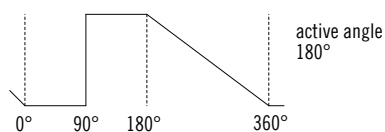
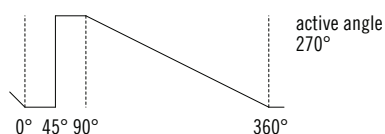
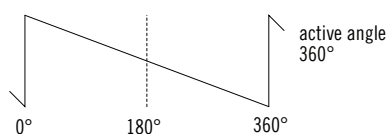
4 wire sink



Voltage output



SIGNAL PATTERN (decreasing CW)



ELECTRICAL SPECIFICATIONS

Resolution	12 bits per revolution
Output update frequency	100 kHz
Active angle	90 ... 360 mechanical degrees
Power supply	12/28 = 11,4 ... 29,4 V DC (reverse polarity protection)
Current consumption without load	40 mA max
Output type	voltage (0 ... 5 V / 0 ... 10 V) current (0 ... 20 mA / 4 ... 20 mA)
Auxiliary inputs (U/D - Reset)	active high (+Vdc) connect to 0V if not used / Reset tmin 150 ms
Load	Rmin= 1 kΩ (voltage output) Rmax= (Vdc - 2) / 0.02 (current output)
Linearity error	< 1%
Signal pattern	decreasing clockwise (shaft view)
Start-up time	150 ms
Electromagnetic compatibility	IEC 61000-6-2 IEC 61000-6-4

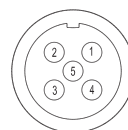
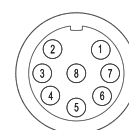
MECHANICAL SPECIFICATIONS

Shaft diameter	ø 6 / 8 / 9,52 (3/8") / 10 mm
Enclosure rating	X = IP 65 (IEC 60529) S = IP 67 (IEC 60529)
Max rotation speed	3000 rpm continuous / 5000 rpm peak
Max shaft load	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
Starting torque (at +20°C / +68°F)	< 0,03 Nm
Body material	EN-AW 2011 aluminum
Shaft material	1.4305 / AISI 303 stainless steel
Housing material	EN-AW 2011 aluminum
Bearings	2 ball bearings
Bearings life	10 ⁹ revolutions
Operating temperature	-25° ... +85°C (-13° ... +185°F)
Storage temperature	-25° ... +85°C (-13° ... +185°F)
Weight	200 g (7,05 oz)

CONNECTIONS

Function	Cable output (voltage)	Cable output (current)	5 pin M12 connector	8 pin M12 connector*
+ Vdc	red	red	2	8
0 Volt	black	black	4	5
Vout	green	/	3	/
Iin	/	yellow	3	3
Iout	/	green	/	2
U / D	blue	blue	5	7
RESET	white	white	1	1
≡	shield	shield	housing	housing

* with Q current output

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

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


MAIN FEATURES

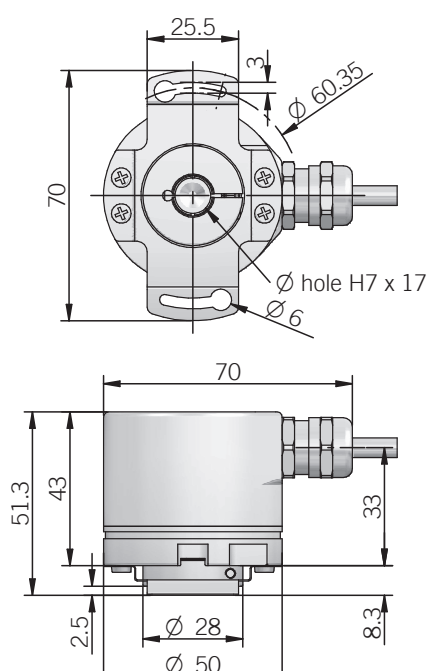
Singleturn absolute magnetic encoder size 50 mm with blind hollow shaft

- Resolution 12 bit
- Power supply up to +28 VDC with analogue (voltage or current) as electronic 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 anti-rotation pin

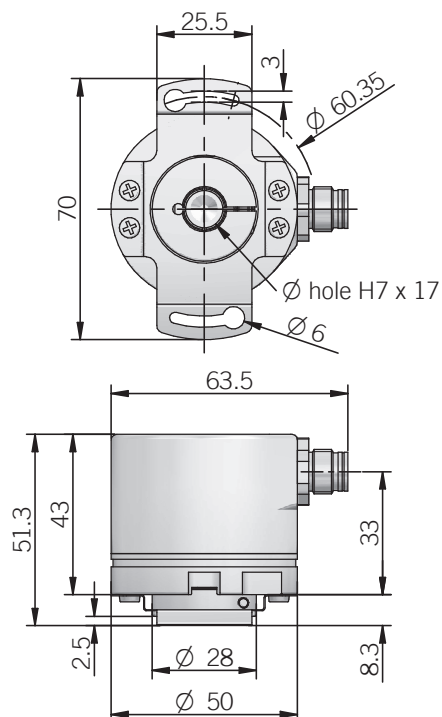


ORDERING CODE	EML	50F	360	X	12/28	V	05	X	6	X	3	P	R	.XXX
SERIES analogue magnetic singleturn absolute encoder EML														
MODEL blind hollow shaft with stator coupling 50F blind hollow shaft with anti-rotation pin 50G														
ACTIVE ANGLE degrees 360 degrees 270 degrees 180 degrees 90														
OPTION to be reported if not used X reset ZE														
POWER SUPPLY 12 ... 28 V DC 12/28														
ELECTRONIC INTERFACE voltage V current I														
OUTPUT RANGE 0 ... 5 V 05 0 ... 10 V 010 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														
BORE DIAMETER mm 6 mm 8 9,52 (3/8") mm 9 mm 10 mm 12 mm 14 mm 15														
ENCLOSURE RATING IP 65 X IP 67 S														
MAX ROTATION SPEED 3000 rpm 3														
OUTPUT TYPE cable (standard length 0,5 m) P M12 connector M12 <i>female connector included, without female please add 162 as variant code</i>														
DIRECTION TYPE axial A radial R														
VARIANT custom version XXX														

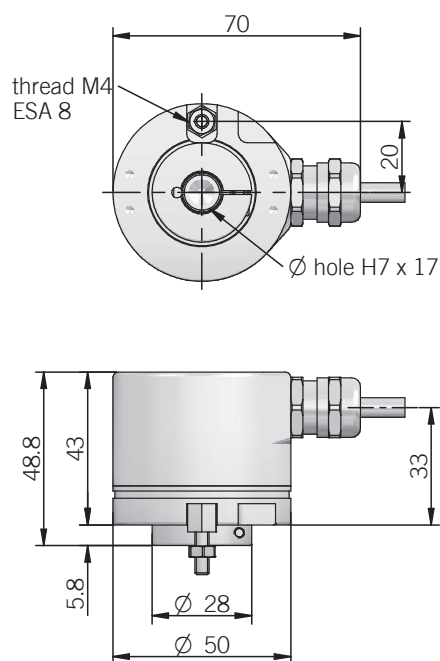
EML 50 F
radial cable output



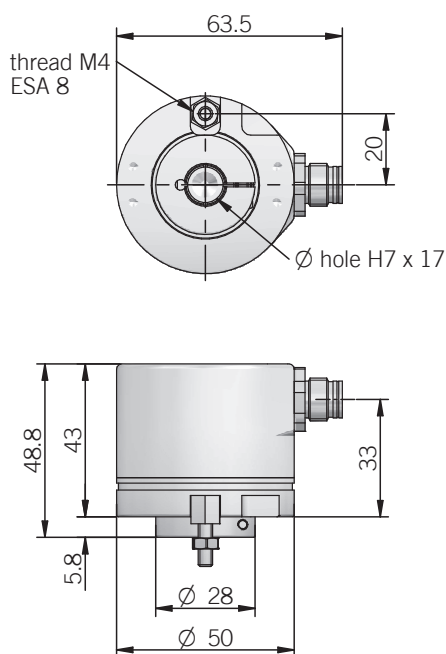
EMA 50 F
radial M12 output



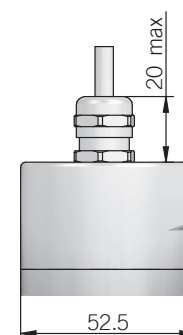
EML 50 G
radial cable output



EMA 50 G
radial M12 output



Axial output



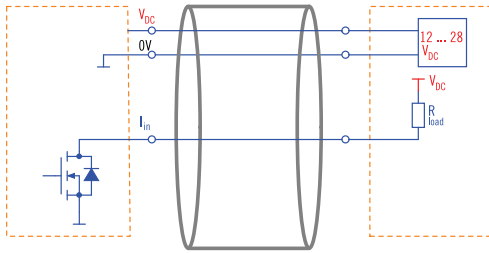
anti-rotation pin is included in model G, for mounting instruction please refer to product installation notes

dimensions in mm

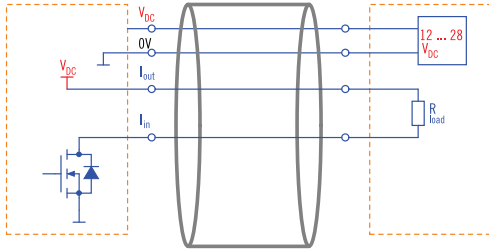
ELECTRICAL INTERFACE

Current output

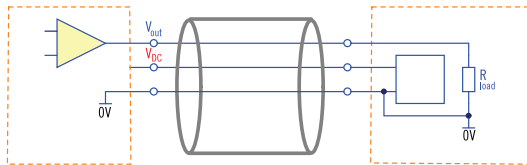
3 wire sink



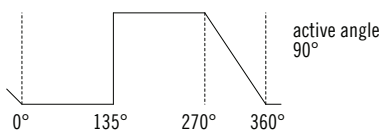
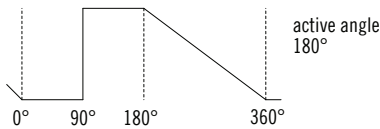
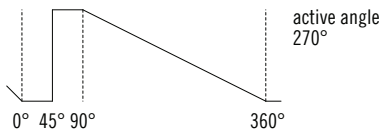
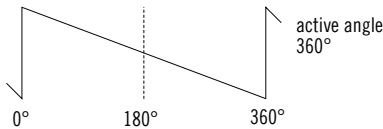
4 wire sink



Voltage output



SIGNAL PATTERN (decreasing CW)



ELECTRICAL SPECIFICATIONS

Resolution	12 bits per revolution
Output update frequency	100 kHz
Active angle	90 ... 360 mechanical degrees
Power supply	12/28 = 11,4 ... 29,4 V DC (reverse polarity protection)
Current consumption without load	40 mA max
Output type	voltage (0 ... 5 V / 0 ... 10 V) current (0 ... 20 mA / 4 ... 20 mA)
Auxiliary inputs (U/D - Reset)	active high (+Vdc) connect to 0V if not used / Reset tmin 150 ms
Load	Rmin= 1 kΩ (voltage output) Rmax= (Vdc - 2) / 0.02 (current output)
Linearity error	< 1%
Signal pattern	decreasing clockwise (shaft view)
Start-up time	150 ms
Electromagnetic compatibility	IEC 61000-6-2 IEC 61000-6-4

MECHANICAL SPECIFICATIONS

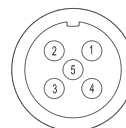
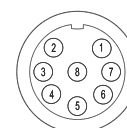
Bore diameter	ø 6* / 8* / 9,52* (3/8") / 10* / 12* / 14 / 15 mm
Enclosure rating	X = IP 65 (IEC 60529) S = IP 67 (IEC 60529)
Max rotation speed	3000 rpm
Max shaft load	30 N axial / 50 N radial
Shock	50 G, 11 ms (IEC 60068-2-27)
Vibration	20 G, 10 ... 2000 Hz (IEC 60068-2-6)
Moment of inertia	4 x 10 ⁻⁶ kgm ²
Starting torque (at +20°C / +68°F)	< 0,03 Nm
Body material	EN-AW 2011 aluminum
Shaft material	1.4305 / AISI 303 stainless steel
Housing material	EN-AW 2011 aluminum
Bearings	2 ball bearings
Bearings life	10 ⁹ revolutions
Operating temperature	-25° ... +85°C (-13° ... +185°F)
Storage temperature	-25° ... +85°C (-13° ... +185°F)
Fixing torque for collar clamping	1,5 Nm recommended
Weight	200 g (7,05 oz)

* with supplied adapter shaft

CONNECTIONS

Function	Cable output (voltage)	Cable output (current)	5 pin M12 connector	8 pin M12 connector*
+ Vdc	red	red	2	8
0 Volt	black	black	4	5
Vout	green	/	3	/
Iin	/	yellow	3	3
Iout	/	green	/	2
U / D	blue	blue	5	7
RESET	white	white	1	1
≡	shield	shield	housing	housing

* with Q current output

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

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


MAIN FEATURES

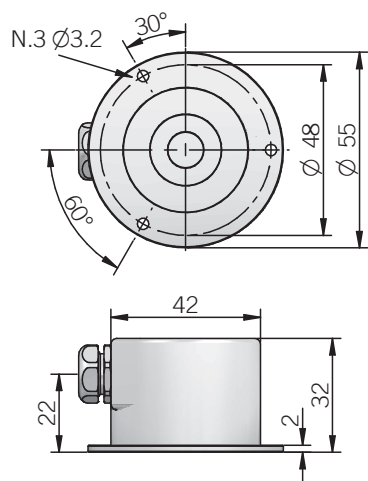
EM series encoders are suitable for several application fields like electric motors marine industry, iron and steel industry, textile machines, wood-working, paper-working, glass working, marble-working machinery and, more generally, automation and process control fields.

- Resolution up to 13 bit (8192 ppr) with SSI as electronic 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)

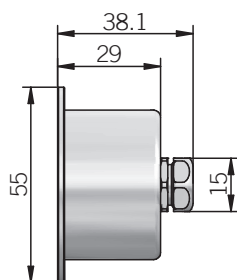


ORDERING CODE	EMA	55A	1024	B	5	S	P	X	6	X	10	P	R	.XXX
SERIES magnetic singleturn absolute encoder EMA														
MODEL fixing holes ø 48 mm 55A fixing holes ø 48 mm anodized 55AY														
RESOLUTION ppr from 8 to 8192 <i>see table for pulses availability</i>														
CODE TYPE binary B gray G														
POWER SUPPLY 5 V DC 5 8 ... 30 V DC 8/30														
ELECTRONIC INTERFACE Serial Synchronous Interface - SSI S														
LOGIC positive P														
OPTIONS to be reported X														
BORE DIAMETER (MAGNET ACTUATOR) mm 6 mm 8 9,52 (3/8") mm 9 mm 10														
ENCLOSURE RATING IP 65 X IP 67 S														
MAX ROTATION SPEED 10000 rpm 10														
OUTPUT TYPE cable (standard length 0,5 m) P M12 connector M12 <i>female connector included, without female please add 162 as variant code</i>														
DIRECTION TYPE axial A radial R														
VARIANT custom version XXX														

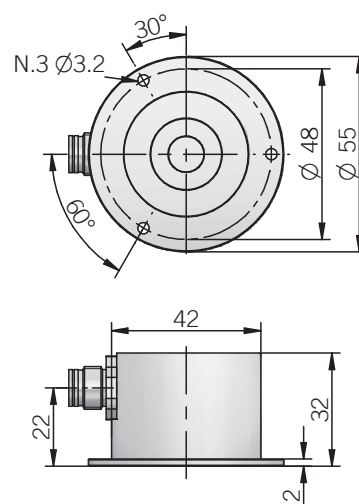
EMA 55 A / AY
radial cable output



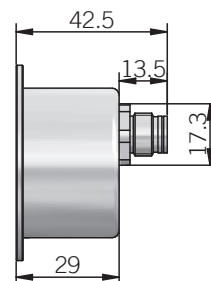
EMA 55 A / AY
axial cable output



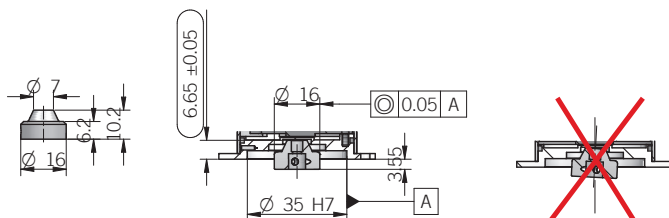
EMA 55 A / AY
radial M12 output



EMA 55 A / AY
axial M12 output



dimensions in mm



ELECTRICAL SPECIFICATIONS

Resolution	from 8 to 8192 ppr
Power supply	5 = 4,75 ... 5,25 V DC 8/30 = 7,6 ... 31,5 V DC
Power draw without load	800 mW max
Output type	RS-422
SSI output code	binary or gray
Clock frequency	100 kHz ... 1 MHz
SSI monostable time (Tm)	20 µs
SSI frame	(MSB ... LSB) 13 bit data length
Accuracy	± 0,35° typical / ± 0,50° max
Counting direction	decreasing clockwise (magnet actuator view)
Electromagnetic compatibility	IEC 61000-6-1 IEC 61000-6-4

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

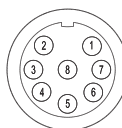
CONNECTIONS

Function	Cable output	8 pin M12 connector
+ Vdc	red	8
0 Volt	black	5
data +	green	3
data -	brown	2
clock +	yellow	4
clock -	orange or pink	6
⏏	shield	housing

MECHANICAL SPECIFICATIONS

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 kgm ²
Body material	EN-AW 2011 aluminum
Housing material	painted aluminium
Magnet actuator material	EN-AW 2011 aluminum
Operating temperature	-40° ... +100 °C (-40° ... +212°F)
Storage temperature	-25° ... +85 °C (-13° ... +185°F)
Weight	150 g (5,29 oz)
Magnet actuator mounting tolerances (to get best electrical performances)	± 0,2 mm (axial) ± 0,1 mm (radial)

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



MAIN FEATURES

Industry standard multiturn absolute encoder for factory automation applications.

- 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 VDC with Bit Parallel or SSI as electronic interface
- Cable or connector output
- Solid shaft diameter up to 10 mm
- Mounting by synchronous, clamping or centering 2,5" square flange

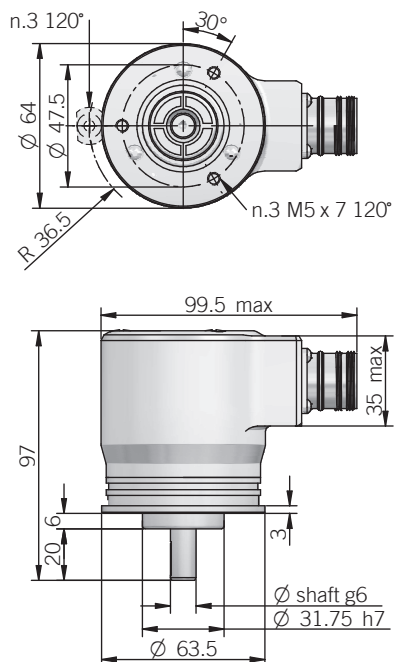


ORDERING CODE BIT PARALLEL	EAM	63A	R	512 / 512	G	8/28	P	P	X	10	X	6	PE	R	.XXX
SERIES multiturn absolute encoder EAM															
MODEL synchronous flange ø 31.75 mm 63A synchronous flange ø 50 mm 58B clamping flange ø 36 mm 58C centering square flange ø 31.75 mm 63D centering square flange ø 50 mm 63E															
rev. 2.0 R															
MULTITURN RESOLUTION (powers of 2) turns from 2 to 16384															
SINGLETURN RESOLUTION (powers of 2) ppr from 2 to 8192															
CODE TYPE binary B gray G															
POWER SUPPLY 8 ... 28 V DC 8/28															
ELECTRONIC INTERFACE push-pull P															
LOGIC negative N positive P															
OPTIONS latch L to be reported if not used X															
SHAFT DIAMETER (mod. 58 B) mm 6 (mod. 63 A / D) (9,52mm 3/8") mm 9 (mod. 58 C - 63 A / D / E) mm 10															
ENCLOSURE RATING IP 54 X IP 66 S															
MAX ROTATION SPEED (IP 66) 3000 rpm 3 (IP 54) 6000 rpm 6															
OUTPUT TYPE (up to 13 bit as total resolution) 16 cores cable (standard length 1,5 m) PD (from 14 to 27 bit as total resolution or with latch option) 32 cores cable (standard length 1,5 m) PE (up to 13 bit as total resolution) 19 pin MIL connector MA (from 14 to 27 bit as total resolution) 32 pin MIL connector ME <i>female connector included, without female please add 162 as variant code</i>															
DIRECTION TYPE axial A radial R															
VARIANT custom version XXX															

ORDERING CODE SSI	EAM	63A	R	512 / 512	G	8/28	S	X	X	10	X	3	MC	R	.XXX
SERIES multiturn absolute encoder EAM															
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															
rev. 2.0 R															
MULTITURN RESOLUTION (powers of 2) turns from 2 to 16384															
SINGLETURN RESOLUTION (powers of 2) ppr from 2 to 8192															
CODE TYPE binary B gray G															
POWER SUPPLY 8 ... 28 V DC 8/28															
ELECTRONIC INTERFACE Serial Synchronous Interface - SSI S															
LOGIC to be reported X															
OPTIONS to be reported X															
SHAFT DIAMETER (mod. 58 B) mm 6 (mod. 63 A / D) (9,52mm 3/8") mm 9 (mod. 58 C - 63 A / D / E) mm 10															
ENCLOSURE RATING IP 54 X IP 66 S															
MAX ROTATION SPEED (IP 66) 3000 rpm 3 (IP 54) 6000 rpm 6															
OUTPUT TYPE cable (standard length 1,5 m) PC 7 pin MIL connector MC 12 pin M23 connector HA 8 poles M12 connector M12 <i>female connector included, without female please add 162 as variant code</i>															
DIRECTION TYPE axial A radial R															
VARIANT custom version XXX															

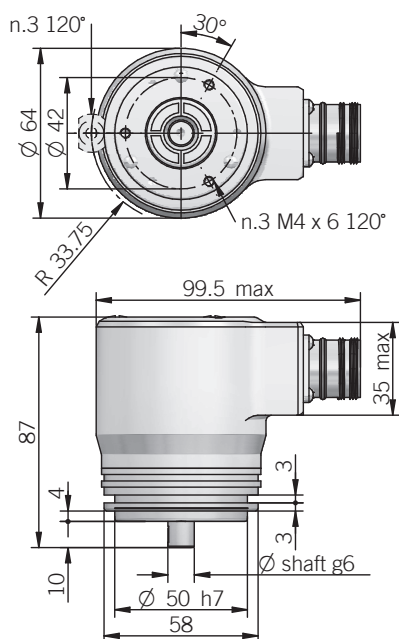
EAM 63 A

fixing clamps not included

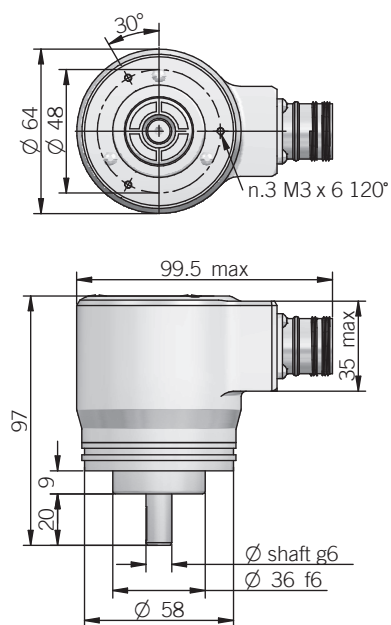


EAM 58 B

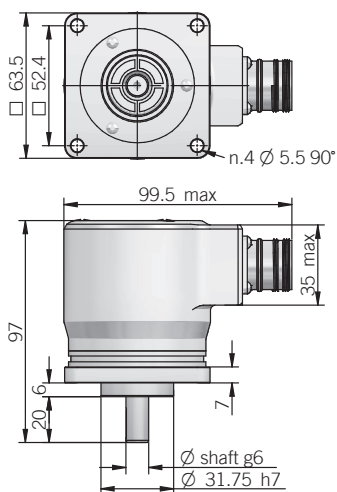
fixing clamps not included



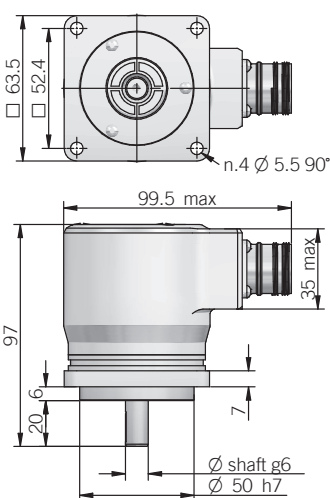
EAM 58 C



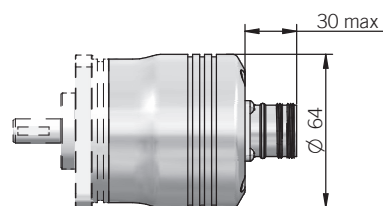
EAM 63 D



EAM 63 E



Dimensions with axial output



dimensions in mm

BIT PARALLEL CONNECTIONS

Function	Binary / Gray	Cable output PD	Cable output PE	19 pin MA connector	32 pin ME connector
bit 1 (LSB)	B ⁰ / G ⁰	green	green	A	A
bit 2	B ¹ / G ¹	yellow	yellow	B	B
bit 3	B ² / G ²	blue	blue	C	C
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	B ⁵ / G ⁵	white	white	F	F
bit 7	B ⁶ / G ⁶	grey	grey	G	G
bit 8	B ⁷ / G ⁷	purple	purple	H	H
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	B ¹¹ / G ¹¹	white / yellow	white / yellow	M	M
bit 13	B ¹² / G ¹²	yellow / brown	yellow / brown	N	N
bit 14	B ¹³ / G ¹³	/	white / grey	/	P
bit 15	B ¹⁴ / G ¹⁴	/	grey / brown	/	R
bit 16	B ¹⁵ / G ¹⁵	/	white / pink	/	S
bit 17	B ¹⁶ / G ¹⁶	/	pink / brown	/	T
bit 18	B ¹⁷ / G ¹⁷	/	white / blue	/	U
bit 19	B ¹⁸ / G ¹⁸	/	brown / blue	/	V
bit 20	B ¹⁹ / G ¹⁹	/	white / red	/	W
bit 21	B ²⁰ / G ²⁰	/	brown / red	/	X
bit 22	B ²¹ / G ²¹	/	white / black	/	Y
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
bit 26	B ²⁵ / G ²⁵	/	yellow / blue	/	c
bit 27	B ²⁶ / G ²⁶	/	green / blue	/	d
LATCH	/	yellow / grey	yellow / grey	R	e
0 Volt	/	black	black	T	j
U / D	/	red / blue	red / blue	U	g
+ Vdc	/	red	red	V	h
≡	/	shield	shield	S	housing

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. From the below table is possible to know the connection number.

EXAMPLE 1:

256 PPR = 8 connections
N° turns 32 = 5 connections
Total connections 13.

EXAMPLE 2:

4096 PPR = 12 connections
N° turns 4096 = 12 connections
Total connections 24.

From 1 to 13 connections a 16 cores cable (PD) or a 19 cores connector (MA) have to be considered.

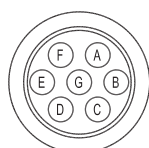
From 14 to 27 connections a 32 cores cable (PE) or a 32 cores connector (ME) have to be considered.

If LATCH is used a cable or a 32 poles connector is required.

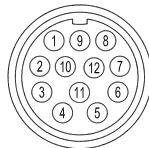
SSI CONNECTIONS

Function	Cable output PC	7 pin MC	12 pin HA	8 pin M12
+ Vdc	red	G	8	8
0 Volt	black	F	1	5
data +	green	C	2	3
data -	brown	D	10	2
clock +	yellow	A	3	4
clock -	orange or pink	B	11	6
U / D	red / blue	E	5	7
≡	shield	housing	9	housing

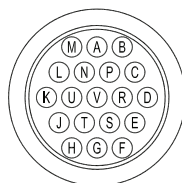
MC connector (7 pin)
Amphenol MS3102-E-16-S
solder side view FV



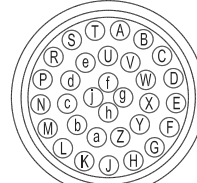
HA connector (12 pin) - M23 CCW
Hummel 7.410.000000 -
7.002.912.603
solder side view FV



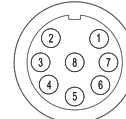
MA connector (19 pin)
Amphenol 62IN 12E 14-19 P
solder side view FV



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



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



ELECTRICAL SPECIFICATIONS

Multiturn resolution	from 2 to 16384 turns
Singleturn resolution	from 2 to 8192 ppr
Power supply	8/28 = 7,6 ... 29,4 V DC
Current consumption without load	100 mA
Max load current	20 mA / channel
Output type	P = push pull (active short circuit protection)* S = RS-422
Auxiliary inputs (U/D - Latch)	active high (+Vdc) <i>connect to OV if not used</i>
Max frequency	output: 25 kHz LSB (Bit Parallel) clock input: 100 kHz ... 1 MHz (SSI)
SSI monostable time (Tm)	18 µs
SSI pause time (Tp)	> 35 µs
Accuracy	± 1/2 LSB
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	150 ms
Electromagnetic compatibility	IEC 61000-6-2 IEC 61000-6-4

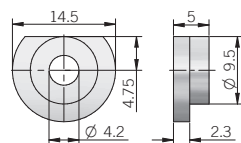
*output levels according to power supply, for further details please see under Technical basics section

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	3000 rpm (IP 66) 6000 rpm (IP 54)
Max shaft load	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
Starting torque (at +20°C / +68°F)	< 0,02 Nm (IP 54) < 0,06 Nm (IP 66)
Body material	EN-AW 2011 aluminum
Shaft material	1.4305 / AISI 303 stainless steel
Housing material	painted aluminium
Bearings	2 ball bearings
Bearings life	10 ⁹ revolutions
Operating temperature	0° ... +60°C (+32° ... +140°F)
Storage temperature	-15° ... +70°C (+5° ... +158°F)
Weight	500 g (17,64 oz)

ACCESSORIES

set n.3 fixing clamps for model 58 B - 63 A
P/N 94080001



MAIN FEATURES

Industry standard multiturn absolute encoder for factory automation applications.

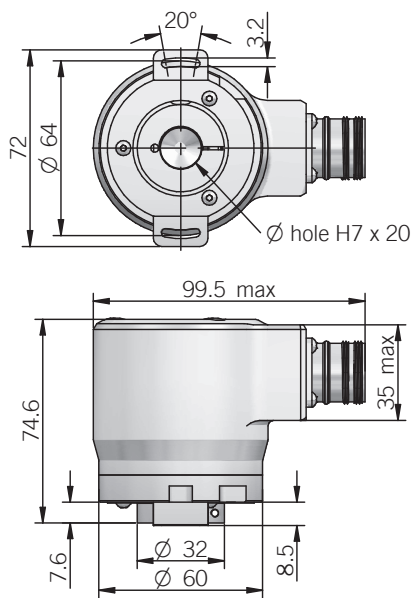
- Optical sensor technology (OptoASIC + gears)
- Resolution up to 27 bit (13 bit single turn (8192 ppr) + 14 bit multiturn (16384 turns))
- Power supply up to +28 VDC with Bit Parallel or SSI as electronic interface
- Cable or connector output
- Blind hollow shaft diameter up to 15 mm
- Mounting by stator coupling, spring or anti-rotation pin



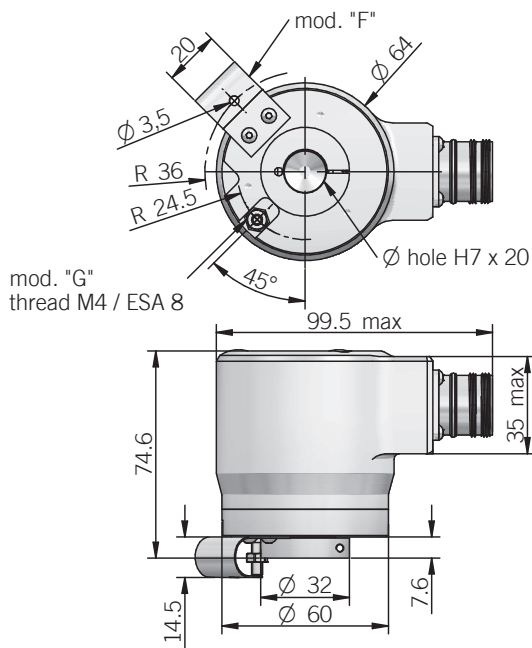
ORDERING CODE BIT PARALLEL	EAM	63G	R	512 / 512	G	8/28	P	P	X	8	X	3	PD	R	.XXX
SERIES multiturn absolute encoder EAM															
MODEL blind hollow shaft with stator coupling 58F blind hollow shaft with spring 63F blind hollow shaft with anti-rotation pin 63G															
rev. 2.0 R															
MULTITURN RESOLUTION (powers of 2) turns from 2 to 16384															
SINGLETURN RESOLUTION (powers of 2) ppr from 2 to 8192															
CODE TYPE binary B gray G															
POWER SUPPLY 8 ... 28 V DC 8/28															
ELECTRONIC INTERFACE push-pull P															
LOGIC negative N positive P															
OPTIONS latch L to be reported if not used X															
BORE DIAMETER mm 8 (9,52mm 3/8") mm 9 mm 10 mm 12 mm 14 mm 15															
ENCLOSURE RATING IP 54 X															
MAX ROTATION SPEED 3000 rpm 3															
OUTPUT TYPE (up to 13 bit as total resolution) 16 cores cable (standard length 1,5 m) PD (from 14 to 27 bit as total resolution or with latch option) 32 cores cable (standard length 1,5 m) PE (up to 13 bit as total resolution) 19 pin MIL connector MA (from 14 to 27 bit as total resolution) 32 pin MIL connector ME <i>female connector included, without female please add 162 as variant code</i>															
DIRECTION TYPE axial A radial R															
VARIANT custom version XXX															

ORDERING CODE SSI	EAM	63G	R	512 / 512	G	8/28	S	X	X	8	X	3	PC	R	.XXX
SERIES multiturn absolute encoder EAM															
MODEL blind hollow shaft with stator coupling 58F blind hollow shaft with spring 63F blind hollow shaft with anti-rotation pin 63G															
rev. 2.0 R															
MULTITURN RESOLUTION (powers of 2) turns from 2 to 16384															
SINGLETURN RESOLUTION (powers of 2) ppr from 2 to 8192															
CODE TYPE binary B gray G															
POWER SUPPLY 8 ... 28 V DC 8/28															
ELECTRONIC INTERFACE Serial Synchronous Interface - SSI S															
LOGIC to be reported X															
OPTIONS to be reported X															
BORE DIAMETER mm 8 (9,52mm 3/8") mm 9 mm 10 mm 12 mm 14 mm 15															
ENCLOSURE RATING IP 54 X															
MAX ROTATION SPEED 3000 rpm 3															
OUTPUT TYPE cable (standard length 1,5 m) PC 7 pin MIL connector MC 12 pin M23 connector HA 8 pin M12 connector M12 <i>female connector included, without female please add 162 as variant code</i>															
DIRECTION TYPE axial A radial R															
VARIANT custom version XXX															

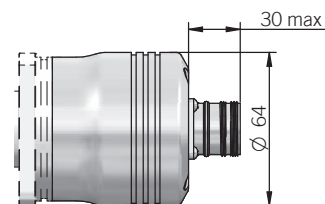
EAM 58 F



EAM 63 F - G



Dimensions with axial output



dimensions in mm

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

ELECTRICAL SPECIFICATIONS

Multiturn resolution	from 2 to 16384 turns
Singleturn resolution	from 2 to 8192 ppr
Power supply	8/28 = 7,6 ... 29,4 V DC
Current consumption without load	100 mA
Max load current	20 mA / channel
Output type	P = push pull (active short circuit protection)* S = RS-422
Auxiliary inputs (U/D - Latch)	active high (+Vdc) <i>connect to 0V if not used</i>
Max frequency	output: 25 kHz LSB (Bit Parallel) clock input: 100 kHz ... 1 MHz (SSI)
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)
Accuracy	± 1/2 LSB
Counting direction	decreasing clockwise (shaft view)
Start-up time	150 ms
Electromagnetic compatibility	IEC 61000-6-2 IEC 61000-6-4

**output levels according to power supply, for further details please see under Technical basics section*

MECHANICAL SPECIFICATIONS

Bore diameter	ø 8* / 9* (3/8") / 10* / 12* / 14 / 15 mm
Enclosure rating	IP 54 (IEC 60529)
Max rotation speed	3000 rpm
Shock	50 G, 11 ms (IEC 60068-2-27)
Vibration	10 G, 10 ... 2000 Hz (IEC 60068-2-6)
Moment of inertia	5 x 10 ⁻⁶ kgm ²
Starting torque (at +20°C / +68°F)	< 0,02 Nm
Body material	EN-AW 2011 aluminum
Shaft material	1.4305 / AISI 303 stainless steel
Housing material	painted aluminium
Bearings	2 ball bearings
Bearings life	10 ⁹ revolutions
Operating temperature	0° ... +60°C (+32° ... +140°F)
Storage temperature	-15° ... +70°C (+5° ... +158°F)
Fixing torque for collar clamping	1,5 Nm recommended
Weight	450 g (15,87 oz)

* with supplied adapter shaft

BIT PARALLEL CONNECTIONS

Function	Binary / Gray	Cable output PD	Cable output PE	19 pin MA connector	32 pin ME connector
bit 1 (LSB)	B ⁰ / G ⁰	green	green	A	A
bit 2	B ¹ / G ¹	yellow	yellow	B	B
bit 3	B ² / G ²	blue	blue	C	C
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	B ⁵ / G ⁵	white	white	F	F
bit 7	B ⁶ / G ⁶	grey	grey	G	G
bit 8	B ⁷ / G ⁷	purple	purple	H	H
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	B ¹¹ / G ¹¹	white / yellow	white / yellow	M	M
bit 13	B ¹² / G ¹²	yellow / brown	yellow / brown	N	N
bit 14	B ¹³ / G ¹³	/	white / grey	/	P
bit 15	B ¹⁴ / G ¹⁴	/	grey / brown	/	R
bit 16	B ¹⁵ / G ¹⁵	/	white / pink	/	S
bit 17	B ¹⁶ / G ¹⁶	/	pink / brown	/	T
bit 18	B ¹⁷ / G ¹⁷	/	white / blue	/	U
bit 19	B ¹⁸ / G ¹⁸	/	brown / blue	/	V
bit 20	B ¹⁹ / G ¹⁹	/	white / red	/	W
bit 21	B ²⁰ / G ²⁰	/	brown / red	/	X
bit 22	B ²¹ / G ²¹	/	white / black	/	Y
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
bit 26	B ²⁵ / G ²⁵	/	yellow / blue	/	c
bit 27	B ²⁶ / G ²⁶	/	green / blue	/	d
LATCH	/	yellow / grey	yellow / grey	R	e
0 Volt	/	black	black	T	j
U / D	/	red / blue	red / blue	U	g
+ Vdc	/	red	red	V	h
⏏	/	shield	shield	S	housing

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. From the below table is possible to know the connection number.

EXAMPLE 1:

256 PPR = 8 connections
N° turns 32 = 5 connections
Total connections 13.

EXAMPLE 2:

4096 PPR = 12 connections
N° turns 4096 = 12 connections
Total connections 24.

From 1 to 13 connections a 16 cores cable (PD) or a 19 cores connector (MA) have to be considered.

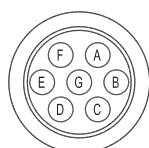
From 14 to 27 connections a 32 cores cable (PE) or a 32 cores connector (ME) have to be considered.

If LATCH is used a cable or a 32 poles connector is required.

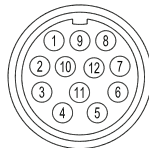
SSI CONNECTIONS

Function	Cable output PC	7 pin MC	12 pin HA	8 pin M12
+ Vdc	red	G	8	8
0 Volt	black	F	1	5
data +	green	C	2	3
data -	brown	D	10	2
clock +	yellow	A	3	4
clock -	orange or pink	B	11	6
U / D	red / blue	E	5	7
⏏	shield	housing	9	housing

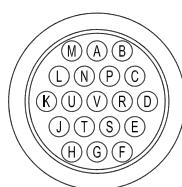
MC connector (7 pin)
Amphenol MS3102-E-16-S
solder side view FV



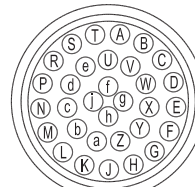
HA connector (12 pin) - M23 CCW
Hummel 7.410.000000 -
7.002.912.603
solder side view FV



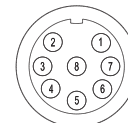
MA connector (19 pin)
Amphenol 62IN 12E 14-19 P
solder side view FV



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



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



MAIN FEATURES

Optical absolute multiturn encoder for general factory automation.

- 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 VDC with Bit Parallel or SSI as electronic interface
- Cable or connector output
- Solid shaft up to 11 mm diameter
- Mounting by synchronous or REO-444 flange

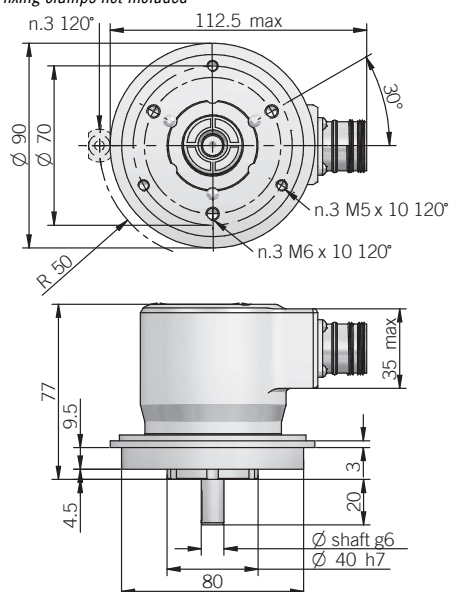
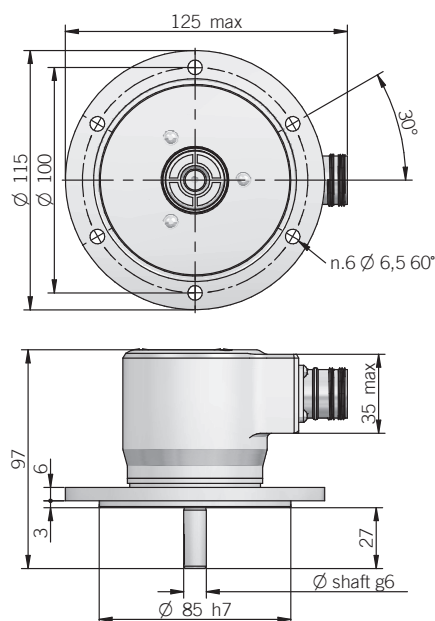
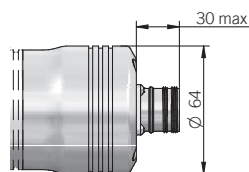


ORDERING CODE BIT PARALLEL	EAM	90A	R	512 / 512	G	8/28	P	P	X	10	X	6	PD	R	.XXX
SERIES multiturn absolute encoder EAM															
MODEL synchronous flange ø 40 mm 90A REO444 flange 115A															
rev. 2.0 R															
MULTITURN RESOLUTION (powers of 2) turns from 2 to 16384															
SINGLETURN RESOLUTION (powers of 2) ppr from 2 to 8192															
CODE TYPE binary B gray G															
POWER SUPPLY 8 ... 28 V DC 8/28															
ELECTRONIC INTERFACE push-pull P															
LOGIC negative N positive P															
OPTIONS latch L to be reported if not used X															
SHAFT DIAMETER (mod. 90) (9,52mm 3/8") mm 9 mm 10 (mod. 115) mm 11															
ENCLOSURE RATING IP 54 X (mod. 90) IP 66 S															
MAX ROTATION SPEED (IP 66) 3000 rpm 3 (IP 54) 6000 rpm 6															
OUTPUT TYPE (up to 13 bit as total resolution) 16 cores cable (standard length 1,5 m) PD (from 14 to 27 bit as total resolution or with latch option) 32 cores cable (standard length 1,5 m) PE (up to 13 bit as total resolution) 19 pin MIL connector MA (from 14 to 27 bit as total resolution) 32 pin MIL connector ME <i>female connector included, without female please add 162 as variant code</i>															
DIRECTION TYPE axial A radial R															
VARIANT custom version XXX															

ORDERING CODE SSI	EAM	90A	R	512 / 512	G	8/28	S	X	X	10	X	6	MC	R	.XXX
SERIES multiturn absolute encoder EAM															
MODEL synchronous flange ø 40 mm 90A RE0444 flange 115A															
rev. 2.0 R															
MULTITURN RESOLUTION (powers of 2) turns from 2 to 16384															
SINGLETURN RESOLUTION (powers of 2) ppr from 2 to 8192															
CODE TYPE binary B gray G															
POWER SUPPLY 8 ... 28 V DC 8/28															
ELECTRONIC INTERFACE Serial Synchronous Interface - SSI S															
LOGIC to be reported X															
OPTIONS to be reported X															
SHAFT DIAMETER (mod. 90) (9,52mm 3/8") mm 9 mm 10 (mod. 115) mm 11															
ENCLOSURE RATING IP 54 X (mod. 90) IP 66 S															
MAX ROTATION SPEED (IP 66) 3000 rpm 3 (IP 54) 6000 rpm 6															
OUTPUT TYPE cable (standard length 1,5 m) PC 7 pin MIL connector MC 12 pin M23 connector HA 8 pin M12 connector M12 <i>female connector included, without female please add 162 as variant code</i>															
DIRECTION TYPE axial A radial R															
VARIANT custom version XXX															

EAM 90 A

fixing clamps not included

**EAM 115 A****Dimensions with axial output**

dimensions in mm

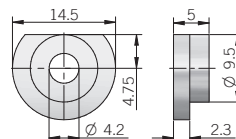
ELECTRICAL SPECIFICATIONS

Multiturn resolution	from 2 to 16384 turns
Singleturn resolution	from 2 to 8192 ppr
Power supply	8/28 = 7,6 ... 29,4 V DC
Current consumption without load	100 mA
Max load current	20 mA / channel
Output type*	P = push pull (active short circuit protection)* S = RS-422
Auxiliary inputs (U/D - Latch)	active high (+Vdc) connect to 0V if not used
Max frequency	output: 25 kHz LSB (Bit Parallel) clock input: 100 kHz ... 1 MHz (SSI)
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)
Accuracy	± 1/2 LSB
Counting direction	decreasing clockwise (shaft view)
Start-up time	150 ms
Electromagnetic compatibility	IEC 61000-6-2 IEC 61000-6-4

*output levels according to power supply, for further details please see under Technical basics section

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	3000 rpm (IP 66) 6000 rpm (IP 54)
Max shaft load	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
Starting torque (at +20°C / +68°F)	< 0,02 Nm (IP 54) < 0,06 Nm (IP 66)
Body material	EN-AW 2011 aluminum
Shaft material	1.4305 / AISI 303 stainless steel
Housing material	painted aluminium
Bearings	2 ball bearings
Bearings life	10 ⁹ revolutions
Operating temperature	0° ... +60°C (+32° ... +140°F)
Storage temperature	-15° ... +70°C (+5° ... +158°F)
Weight	650 g (22,93 oz)

ACCESSORIESset n.3 fixing clamps for model 90 A
P/N 94080001

BIT PARALLEL CONNECTIONS

Function	Binary / Gray	Cable output PD	Cable output PE	19 pin MA connector	32 pin ME connector
bit 1 (LSB)	B ⁰ / G ⁰	green	green	A	A
bit 2	B ¹ / G ¹	yellow	yellow	B	B
bit 3	B ² / G ²	blue	blue	C	C
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	B ⁵ / G ⁵	white	white	F	F
bit 7	B ⁶ / G ⁶	grey	grey	G	G
bit 8	B ⁷ / G ⁷	purple	purple	H	H
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	B ¹¹ / G ¹¹	white / yellow	white / yellow	M	M
bit 13	B ¹² / G ¹²	yellow / brown	yellow / brown	N	N
bit 14	B ¹³ / G ¹³	/	white / grey	/	P
bit 15	B ¹⁴ / G ¹⁴	/	grey / brown	/	R
bit 16	B ¹⁵ / G ¹⁵	/	white / pink	/	S
bit 17	B ¹⁶ / G ¹⁶	/	pink / brown	/	T
bit 18	B ¹⁷ / G ¹⁷	/	white / blue	/	U
bit 19	B ¹⁸ / G ¹⁸	/	brown / blue	/	V
bit 20	B ¹⁹ / G ¹⁹	/	white / red	/	W
bit 21	B ²⁰ / G ²⁰	/	brown / red	/	X
bit 22	B ²¹ / G ²¹	/	white / black	/	Y
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
bit 26	B ²⁵ / G ²⁵	/	yellow / blue	/	c
bit 27	B ²⁶ / G ²⁶	/	green / blue	/	d
LATCH	/	yellow / grey	yellow / grey	R	e
0 Volt	/	black	black	T	j
U / D	/	red / blue	red / blue	U	g
+ Vdc	/	red	red	V	h
⏏	/	shield	shield	S	housing

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. From the below table is possible to know the connection number.

EXAMPLE 1:

256 PPR = 8 connections
N° turns 32 = 5 connections
Total connections 13.

EXAMPLE 2:

4096 PPR = 12 connections
N° turns 4096 = 12 connections
Total connections 24.

From 1 to 13 connections a 16 cores cable (PD) or a 19 cores connector (MA) have to be considered.

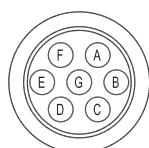
From 14 to 27 connections a 32 cores cable (PE) or a 32 cores connector (ME) have to be considered.

If LATCH is used a cable or a 32 poles connector is required.

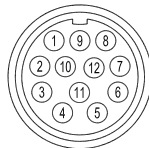
SSI CONNECTIONS

Function	Cable output PC	7 pin MC	12 pin HA	8 pin M12
+ Vdc	red	G	8	8
0 Volt	black	F	1	5
data +	green	C	2	3
data -	brown	D	10	2
clock +	yellow	A	3	4
clock -	orange or pink	B	11	6
U / D	red / blue	E	5	7
⏏	shield	housing	9	housing

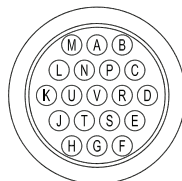
MC connector (7 pin)
Amphenol MS3102-E-16-S
solder side view FV



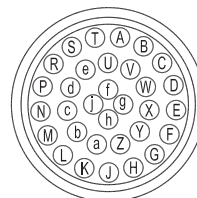
HA connector (12 pin) - M23 CCW
Hummel 7.410.000000 -
7.002.912.603
solder side view FV



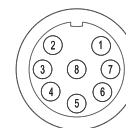
MA connector (19 pin)
Amphenol 62IN 12E 14-19 P
solder side view FV



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



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



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.

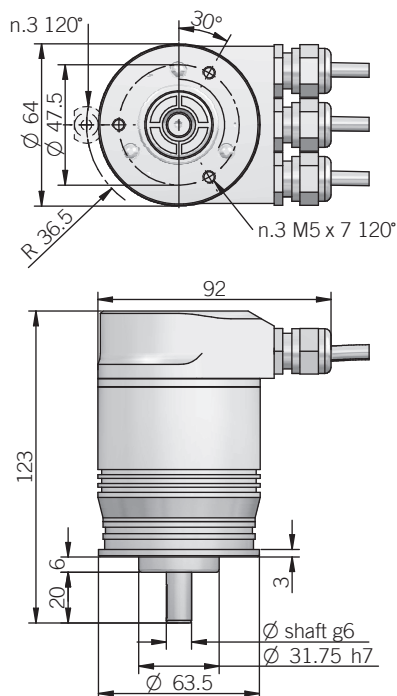
- Optical sensor technology (OptoASIC + gears)
- 25 bit total resolution (13 bit single turn (8192 ppr) + 12 bit multiturn (4096 turns))
- Power supply up to +28 VDC with Profibus DP as electronic interface
- Intelligent status leds
- Terminal box or M12 connectors for fast setup
- Solid shaft diameter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



EAM	63A	R	4096 / 4096	B	12/28	FX	10	X	6	P3R	.XXX
SERIES multiturn absolute encoder EAM											
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											
rev. 2.0 R											
MULTITURN RESOLUTION turns 4096											
SINGLETURN RESOLUTION ppr 4096 / 8192											
CODE TYPE binary B											
POWER SUPPLY 12 ... 28 V DC 12/28											
ELECTRONIC INTERFACE PROFIBUS DP V0 CLASS 2 FX											
SHAFT DIAMETER (mod. 58 B) mm 6 (mod. 63 A / D) (9,52mm 3/8") mm 9 (mod. 58 C - 63 A / D / E) mm 10											
ENCLOSURE RATING IP 54 X IP 66 S											
MAX ROTATION SPEED (IP 66) 3000 rpm 3 (IP 54) 6000 rpm 6											
OUTPUT TYPE terminal box - radial cable glands P3R radial M12 connectors M12R											
<i>female connector included, without female please add 162 as variant code</i>											
VARIANT custom version XXX											

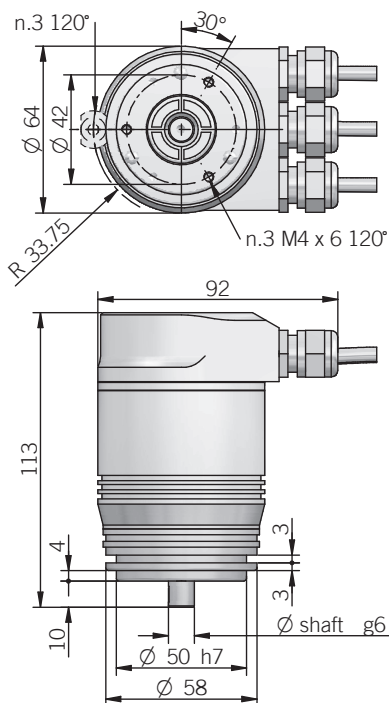
EAM 63 A

fixing clamps not included

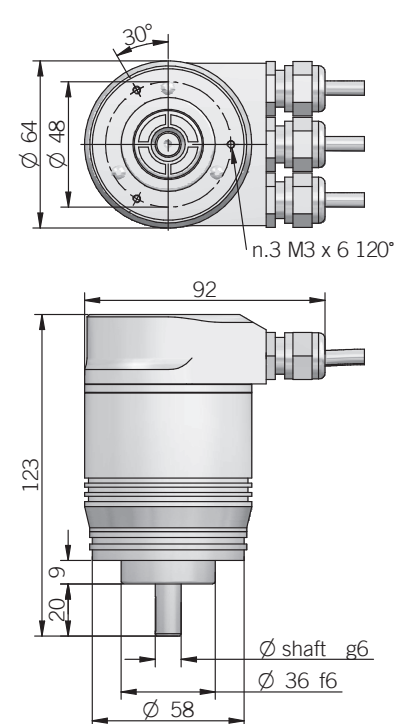


EAM 58 B

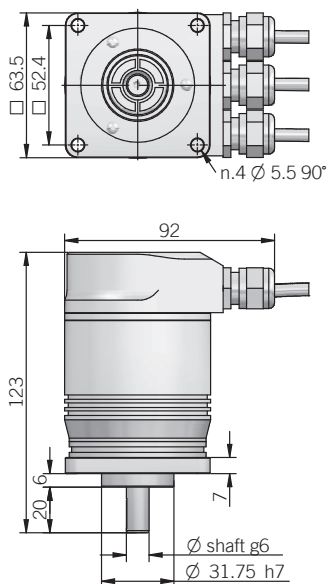
fixing clamps not included



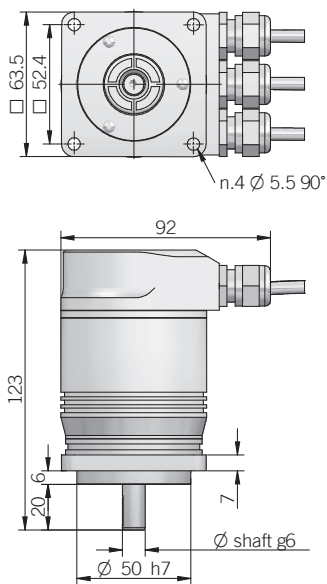
EAM 58 C



EAM 63 D



EAM 63 E



dimensions in mm

ELECTRICAL SPECIFICATIONS

Multiturn resolution	1 ... 4096 turns <i>programmable during commissioning</i>
Singleturn resolution	2 ... 4096 / 2 ... 8192 ppr <i>programmable during commissioning</i>
Power supply	12/28 = 11,4 ... 29,4 V DC
Current consumption without load	300 mA
Output type	RS 485 galvanically isolated
Max bus frequency	12 Mbaud
Diagnostic features	frequency warning position warning / alarm <i>please refer to installation guide for more informations</i>
Max frequency	25 kHz LSB
Accuracy	$\pm 1/2$ LSB
Counting direction	programmable during commissioning
Start-up time	500 ms
Electromagnetic compatibility	IEC 61000-6-2 IEC 61000-6-4

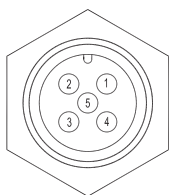
MECHANICAL SPECIFICATIONS

Shaft diameter	$\varnothing 6 / 9,52 (3/8") / 10$ mm
Enclosure rating	X = IP 54 (IEC 60529) S = IP 66 (IEC 60529)
Max rotation speed	3000 rpm (IP 66) 6000 rpm (IP 54)
Max shaft load	10 N axial / 20 N radial with $\varnothing 6$ 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	$1,5 \times 10^{-6}$ kgm ²
Starting torque (at +20°C / +68°F)	< 0,02 Nm (IP 54) < 0,06 Nm (IP 66)
Body material	EN-AW 2011 aluminum
Shaft material	1.4305 / AISI 303 stainless steel
Housing material	painted aluminium
Bearings	2 ball bearings
Bearings life	10 ⁹ revolutions
Operating temperature	0° ... +60°C (+32° ... +140°F)
Storage temperature	-15° ... +70°C (+5° ... +158°F)
Weight	650 g (22,93 oz)

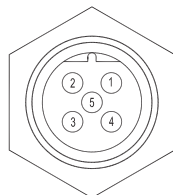
CONNECTIONS

Function	S3 connector 5-pin (power supply)	S3 connector 5-pin (line out)	S3 connector 5-pin (line in)
+ Vdc	2		
0 Volt	4		
signal A (out)		2	
signal B (out)		4	
signal A (in)			2
signal B (in)			4

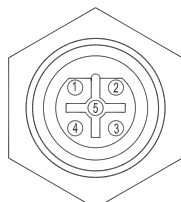
S3 connector
(M12 5 pins A coded)
power supply
view solder side FV



S3 connector
(M12 5 pins B coded)
line out
view solder side FV

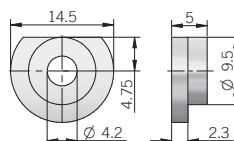


S3 connector
(M12 5 pins B coded)
line in
view solder side MV



ACCESSORIES

set n.3 fixing clamps for model 58 B - 63 A
P/N 94080001



MAIN FEATURES

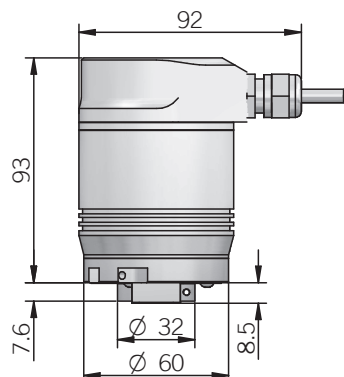
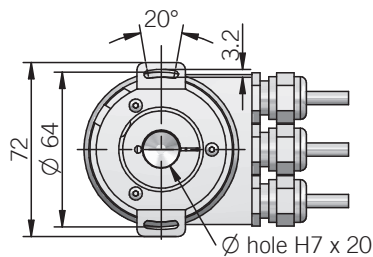
Industry standard multiturn absolute encoder for factory automation applications.

- 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 VDC with Profibus DP as electronic interface
- Intelligent status leds
- Terminal box or M12 connectors for fast setup
- Blind hollow shaft up to 15 mm diameter
- Mounting by stator coupling, spring or anti-rotation pin



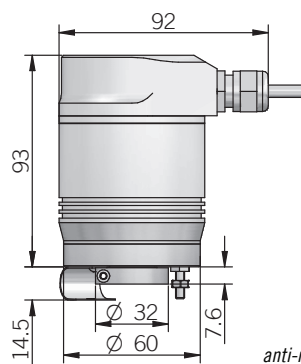
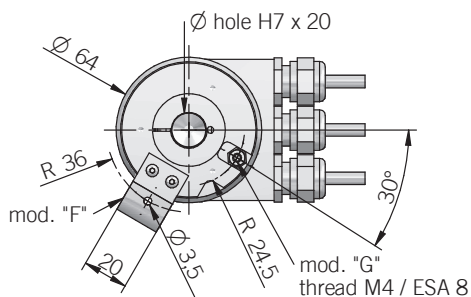
ORDERING CODE	EAM	63F	R	4096 / 4096	B	12/28	FX	8	X	3	P3R	.XXX
SERIES multiturn absolute encoder EAM												
MODEL blind hollow shaft with stator coupling 58F blind hollow shaft with spring 63F blind hollow shaft with anti-rotation pin 63G												
rev. 2.0 R												
MULTITURN RESOLUTION turns 4096												
SINGLETURN RESOLUTION ppr 4096 / 8192												
CODE TYPE binary B												
POWER SUPPLY 12 ... 28 V DC 12/28												
ELECTRONIC INTERFACE PROFIBUS DP V0 CLASS 2 FX												
BORE DIAMETER mm 8 (9,52mm 3/8") mm 9 mm 10 mm 12 mm 14 mm 15												
ENCLOSURE RATING IP 54 X												
MAX ROTATION SPEED 3000 rpm 3												
OUTPUT TYPE terminal box - radial cable glands P3R radial M12 connectors M12R <i>female connector included, without female please add 162 as variant code</i>												
VARIANT custom version XXX												

EAM 58 F



dimensions in mm

EAM 63 F - G



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

ELECTRICAL SPECIFICATIONS

Multiturn resolution	1 ... 4096 turns <i>programmable during commissioning</i>
Singleturn resolution	2 ... 4096 / 2 ... 8192 ppr <i>programmable during commissioning</i>
Power supply	12/28 = 11,4 ... 29,4 V DC
Current consumption without load	300 mA
Output type	RS 485 galvanically isolated
Max bus frequency	12 Mbaud
Diagnostic features	frequency warning position warning / alarm <i>please refer to installation guide for more informations</i>
Max frequency	25 kHz LSB
Accuracy	± 1/2 LSB
Counting direction	programmable during commissioning
Start-up time	500 ms
Electromagnetic compatibility	IEC 61000-6-2 IEC 61000-6-4

MECHANICAL SPECIFICATIONS

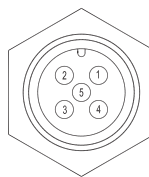
Bore diameter	ø 8* / 9* / 10* / 12* / 14 / 15 mm
Enclosure rating	IP 54 (IEC 60529)
Max rotation speed	3000 rpm
Shock	50 G, 11 ms (IEC 60068-2-27)
Vibration	10 G, 10 ... 2000 Hz (IEC 60068-2-6)
Moment of inertia	5 x 10 ⁻⁶ kgm ²
Starting torque (at +20°C / +68°F)	< 0,02 Nm
Body material	EN-AW 2011 aluminum
Shaft material	1.4305 / AISI 303 stainless steel
Housing material	painted aluminium
Bearings	2 ball bearings
Bearings life	10 ⁹ revolutions
Operating temperature	0° ... +60°C (+32° ... +140°F)
Storage temperature	-15° ... +70°C (+5° ... +158°F)
Fixing torque for collar clamping	1,5 Nm recommended
Weight	650 g (22,93 oz)

* with supplied adapter shaft

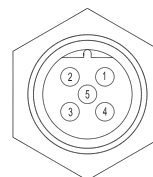
CONNECTIONS

Function	S3 connector 5-pin (power supply)	S3 connector 5-pin (line out)	S3 connector 5-pin (line in)
+ Vdc	2		
0 Volt	4		
signal A (out)		2	
signal B (out)		4	
signal A (in)			2
signal A (in)			4

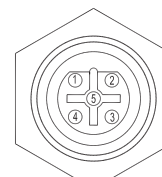
S3 connector
(M12 5 pins A coded)
power supply
view solder side FV



S3 connector
(M12 5 pins B coded)
line out
view solder side FV



S3 connector
(M12 5 pins B coded)
line in
view solder side MV



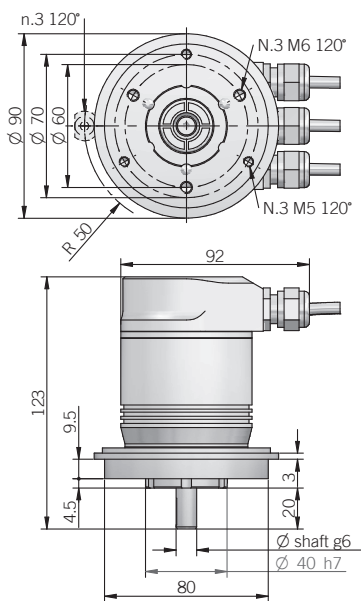
MAIN FEATURES

Industry standard multiturn absolute encoder for factory automation applications.

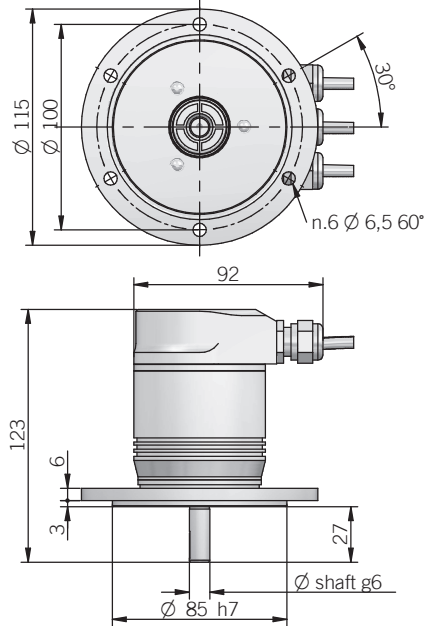
- Optical sensor technology (OptoASIC + gears)
- 25 bit total resolution (13 bit single turn (8192 ppr) + 12 bit multiturn (4096 turns))
- Power supply up to +28 VDC with Profibus DP as electronic interface
- Intelligent status leds
- Terminal box or M12 connectors for fast setup
- Solid shaft diameter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



ORDERING CODE	EAM	90A	R	4096 / 4096	B	12/28	FX	8	X	6	P3R	.XXX
SERIES multiturn absolute encoder EAM												
MODEL synchronous flange ø 40 mm 90A REO444 flange 115A												
rev. 2.0 R												
MULTITURN RESOLUTION turns 4096												
SINGLETURN RESOLUTION ppr 4096 / 8192												
CODE TYPE binary B												
POWER SUPPLY 12 ... 28 V DC 12/28												
ELECTRONIC INTERFACE PROFIBUS DP V0 CLASS 2 FX												
SHAFT DIAMETER (mod. 90) (9,52mm 3/8") mm 9 mm 10 (mod. 115) mm 11												
ENCLOSURE RATING IP 54 X (mod. 90) IP 66 S												
MAX ROTATION SPEED (IP 66) 3000 rpm 3 (IP 54) 6000 rpm 6												
OUTPUT TYPE terminal box - radial cable glands P3R radial M12 connectors M12R												
<i>female connector included, without female please add 162 as variant code</i>												
VARIANT custom version XXX												

EAM 90 A

fixing clamps not included

EAM 115 A

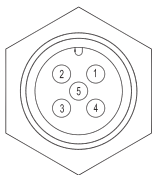
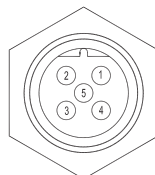
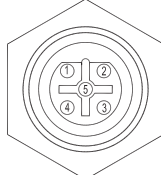
dimensions in mm

ELECTRICAL SPECIFICATIONS

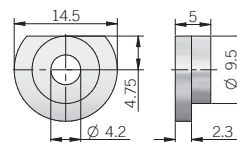
Multiturn resolution	1 ... 4096 turns <i>programmable during commissioning</i>
Singleturn resolution	2 ... 4096 / 2 ... 8192 ppr <i>programmable during commissioning</i>
Power supply	12/28 = 11,4 ... 29,4 V DC
Current consumption without load	300 mA
Output type	RS 485 galvanically isolated
Max bus frequency	12 Mbaud
Diagnostic features	frequency warning position warning / alarm <i>please refer to installation guide for more informations</i>
Max frequency	25 kHz LSB
Accuracy	± 1/2 LSB
Counting direction	programmable during commissioning
Start-up time	500 ms
Electromagnetic compatibility	IEC 61000-6-2 IEC 61000-6-4

CONNECTIONS

Function	S3 connector 5-pin (power supply)	S3 connector 5-pin (line out)	S3 connector 5-pin (line in)
+ Vdc	2		
0 Volt	4		
signal A (out)		2	
signal B (out)		4	
signal A (in)			2
signal B (in)			4

S3 connector
(M12 5 pins A coded)
power supply
view solder side FVS3 connector
(M12 5 pins B coded)
line out
view solder side FVS3 connector
(M12 5 pins B coded)
line in
view solder side MV**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	3000 rpm (IP 66) 6000 rpm (IP 54)
Max shaft load	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
Starting torque (at +20°C / +68°F)	< 0,02 Nm (IP 54) < 0,06 Nm (IP 66)
Body material	EN-AW 2011 aluminum
Shaft material	1.4305 / AISI 303 stainless steel
Housing material	painted aluminium
Bearings	2 ball bearings
Bearings life	10 ⁹ revolutions
Operating temperature	0° ... +60°C (+32° ... +140°F)
Storage temperature	-15° ... +70°C (+5° ... +158°F)
Weight	750 g (26,46 oz)

ACCESSORIESset n.3 fixing clamps for model 90 A
P/N 94080001

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 VDC with Profinet IO as electronic interface
- Intelligent status leds
- M12 connectors for fast setup
- Solid shaft diameter up to 10 mm
- Mounting by synchronous or clamping flange
- Operating temperature -40° ... +80°C (-40° ... +176°F)



ORDERING CODE

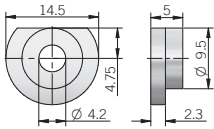
AAM	58B	12	/	13	B	10/30	PFN	6	X	X	M12R	.162
SERIES absolute multiturn encoder AAM												
MODEL synchronous flange ø 50 mm 58B clamping flange ø 36 mm 58C												
MULTITURN RESOLUTION bit 12												
SINGLETURN RESOLUTION bit 13												
CODE TYPE binary B												
POWER SUPPLY 10 ... 30 V DC 10/30												
ELECTRONIC INTERFACE PROFINET IO PFN												
SHAFT DIAMETER (mod. 58B) mm 6 (mod. 58C) mm 10												
ENCLOSURE RATING IP 65 X												
OPTIONS to be reported X												
OUTPUT TYPE radial M12 connectors M12R												
VARIANT without mating connectors 162												

ELECTRICAL SPECIFICATIONS

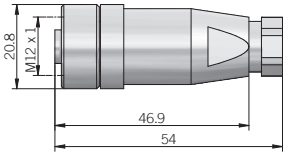
Multiturn resolution	1 ... 12 bit <i>programmabile during commissioning</i>
Singleturn resolution	1 ... 13 bit <i>programmabile during commissioning</i>
Power supply	10 ... 30 V DC (with reverse polarity protection)
Current consumption without load	< 200 mA
Electronic interface	PROFINET IO RT Class 1 / Conformance Class B
Encoder profile	V 4.1 - Application Class 3
Code type	binary
Max bus frequency	100 Mbit/s
Cycle time	≤ 1 ms
Accuracy	± 0,04°
Electromagnetic compatibility	according to 2014/30/EU directive

ACCESSORIES

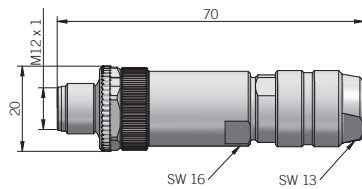
set n.3 fixing clamps for model 58 B
P/N 94080001



M12 female connector for power supply (POWER)
P/N 22030091



M12 male connector for I/O (PORT 1 / 2)
P/N 22030152



MECHANICAL SPECIFICATIONS

Solid shaft diameter	∅ 6 mm (mod. 58B) ∅ 10 mm (mod. 58C)
Enclosure rating	IP 65 (IEC 60529)
Max rotation speed	6000 rpm
Max shaft load	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
Body / cover material	EN-AW 2011 aluminium
Housing material	painted aluminium
Operating temperature	-40° ... +80°C (-40° ... +176°F)
Storage temperature	-40° ... +85°C (-40° ... +185°F)
Weight	600 g (21 oz)

CONNECTIONS

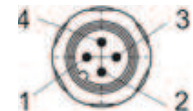
	Pin	Function
PORT 1 Connector	1	Tx D+
	2	Rx D+
	3	Tx D-
	4	Rx D-
POWER connector	1	+Vdc
	2	/
	3	0V
	4	/
PORT 2 Connector	1	Tx D+
	2	Rx D+
	3	Tx D-
	4	Rx D-

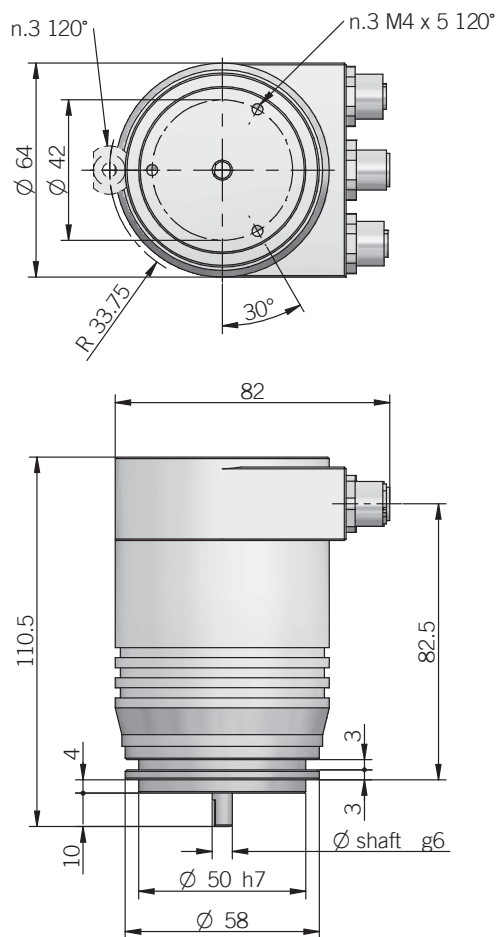
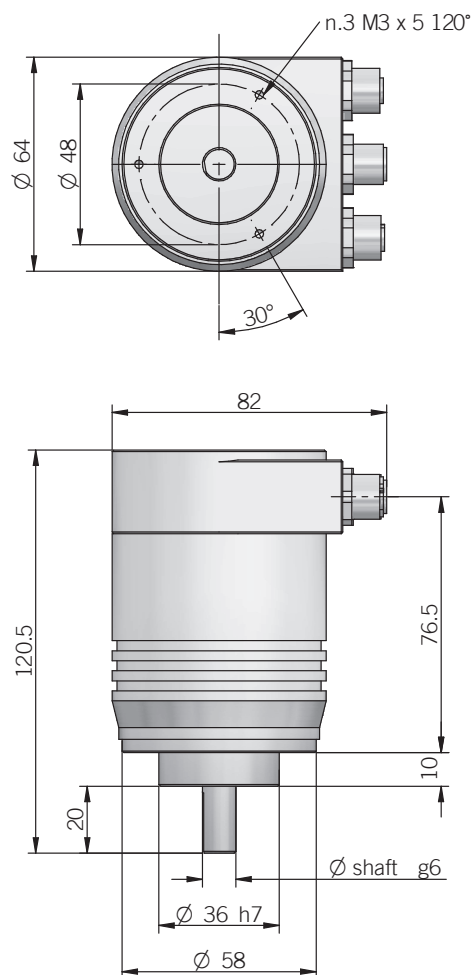


PORT 1 / 2 connector
M12 D-coded (4-pin)
(front view)



POWER connector
M12 A-coded
(front view)



AAM 58 B*fixing clamps not included***AAM 58 C**

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 VDC with Profinet IO as electronic interface
- Intelligent status leds
- M12 connectors 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	B	10/30	PFN	15	X	X	M12R	.162
SERIES absolute multiurn encoder AAM												
MODEL blind hollow shaft with stator coupling 58F												
MULTITURN RESOLUTION bit 12												
SINGLETURN RESOLUTION bit 13												
CODE TYPE binary B												
POWER SUPPLY 10 ... 30 V DC 10/30												
ELECTRONIC INTERFACE PROFINET IO PFN												
BORE DIAMETER mm 15												
ENCLOSURE RATING IP 65 X												
OPTIONS to be reported X												
OUTPUT TYPE radial M12 connectors M12R												
VARIANT without mating connectors 162												

ELECTRICAL SPECIFICATIONS

Multiturn resolution	1 ... 12 bit <i>programmabile during commissioning</i>
Singleturn resolution	1 ... 13 bit <i>programmabile during commissioning</i>
Power supply	10 ... 30 V DC (with reverse polarity protection)
Current consumption without load	< 200 mA
Electronic interface	PROFINET IO RT Class 1 / Conformance Class B
Encoder profile	V 4.1 - Application Class 3
Code type	binary
Max bus frequency	100 Mbit/s
Cycle time	≤ 1 ms
Accuracy	± 0,04°
Electromagnetic compatibility	according to 2014/30/EU directive

CONNECTIONS

	Pin	Function
PORT 1 Connector	1	Tx D+
	2	Rx D+
	3	Tx D-
	4	Rx D-
POWER connector	1	+Vdc
	2	/
	3	0V
	4	/
PORT 2 Connector	1	Tx D+
	2	Rx D+
	3	Tx D-
	4	Rx D-

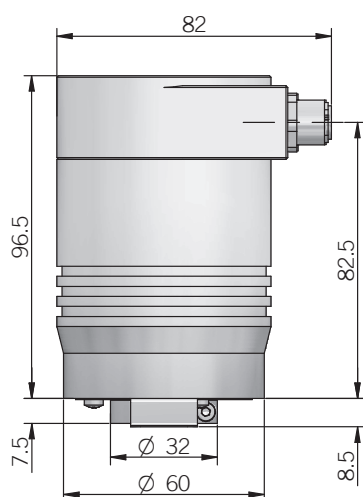
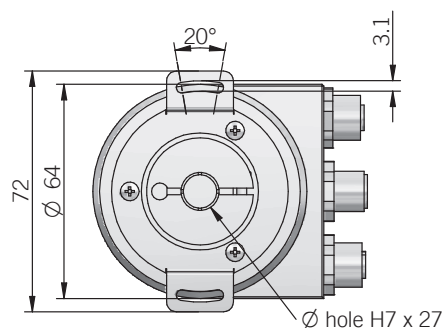
PORT 1 / 2 connector
M12 D-coded (4-pin)
(front view)POWER connector
M12 A-coded
(front view)

MECHANICAL SPECIFICATIONS

Bore diameter	ø 15 / 12* / 10* mm
Enclosure rating	IP 65 (IEC 60529)
Max rotation speed	6000 rpm
Max shaft load	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
Body / cover material	EN-AW 2011 aluminium
Housing material	painted aluminium
Flange material	EN-AW 2011 aluminium
Operating temperature	-40° ... +80°C (-40° ... +176°F)
Storage temperature	-40° ... +85°C (-40° ... +185°F)
Weight	600 g (21 oz)

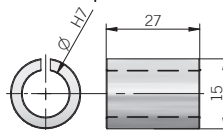
* with optional adapter shaft

AAM 58 F



ACCESSORIES

Shaft adapter

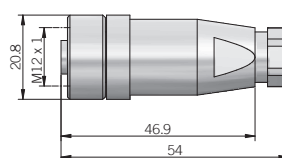


Description	P/N
AAM 58 F adapter shaft 15/12 mm	41890398
AAM 58 F adapter shaft 15/10 mm	41890399

For further shaft adapter diameters please directly contact our offices

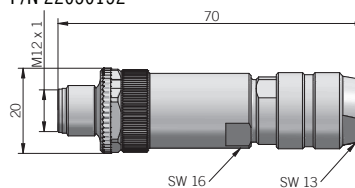
M12 female connector for power supply (POWER)

P/N 22030091



M12 male connector for I/O (PORT 1 / 2)

P/N 22030152



MAIN FEATURES

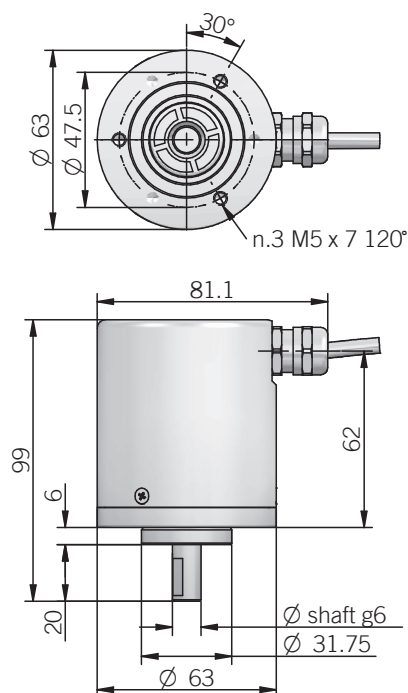
Thanks to the stainless steel enclosure, the encoder is suitable for food and beverage machinery, cranes and winches for ships, offshore applications, washing systems and all those environments where high corrosion resistance is required. EAM 63 AX / DX is available with SSI output.

- 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 VDC with SSI as electronic interface
- Cable or connector output
- Solid shaft diameter up to 10 mm
- Mounting by clamping or centering 2,5" square flange



ORDERING CODE	EAM	63AX	4096 / 4096	G	8/28	S	X	X	10	S	3	PC	R	.XXX
SERIES multiturn absolute encoder EAM														
MODEL clamping flange ø 31.75 mm 63AX centering square flange ø 31.75 mm 63DX														
MULTITURN RESOLUTION (powers of 2) turns from 2 to 16384														
SINGLETURN RESOLUTION (powers of 2) ppr from 2 to 8192														
CODE TYPE binary B gray G														
POWER SUPPLY 8 ... 28 V DC 8/28														
ELECTRONIC INTERFACE Serial Synchronous Interface - SSI S														
LOGIC to be reported X														
OPTIONS to be reported X														
SHAFT DIAMETER (9,52mm 3/8") mm 9 mm 10														
ENCLOSURE RATING IP 66 S														
MAX ROTATION SPEED 3000 rpm 3														
OUTPUT TYPE cable (standard length 1,5 m) PC														
DIRECTION TYPE radial R														
VARIANT custom version XXX														

EAM 63 AX



dimensions in mm

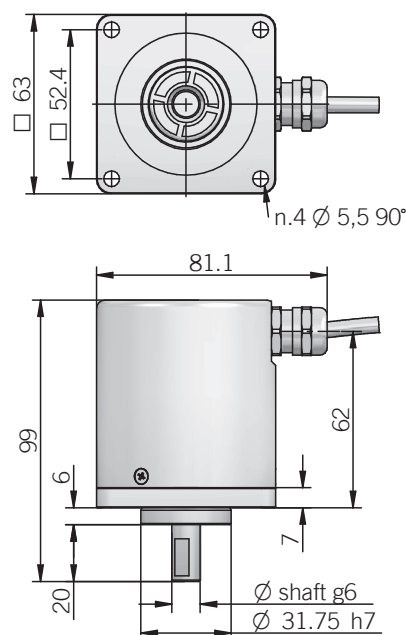
ELECTRICAL SPECIFICATIONS

Multiturn resolution	from 2 to 16384 turns
Singleturn resolution	from 2 to 8192 ppr
Power supply	8/28 = 7,6 ... 29,4 V DC
Current consumption without load	100 mA
Output type	RS-422
Auxiliary inputs (U/D)	active high (+Vdc) connect to OV if not used
Clock frequency	100 kHz ... 1 MHz
SSI monostable time (Tm)	18 µs
SSI pause time (Tp)	> 35 µs
Accuracy	± 1/2 LSB
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	150 ms
Electromagnetic compatibility	IEC 61000-6-2 IEC 61000-6-4

CONNECTIONS

Function	Cable output
+ Vdc	red
0 Volt	black
data +	green
data -	brown
clock +	yellow
clock -	orange or pink
U / D	red / blue
⏏	shield

EAM 63 DX



MECHANICAL SPECIFICATIONS

Shaft diameter	ø 9,52 (3/8") / 10 mm
Enclosure rating	IP 66 (IEC 60529)
Max rotation speed	3000 rpm
Max shaft load	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
Starting torque (at +20°C / +68°F)	< 0,06 Nm
Body material	1.4305 / AISI 303 stainless steel
Shaft material	1.4305 / AISI 303 stainless steel
Housing material	1.4305 / AISI 303 stainless steel
Bearings	2 ball bearings
Bearings life	10 ⁹ revolutions
Operating temperature	0° ... +60°C (+32° ... +140°F)
Storage temperature	-15° ... +70°C (+5° ... +158°F)
Weight	1000 g (35,27 oz)

MAIN FEATURES

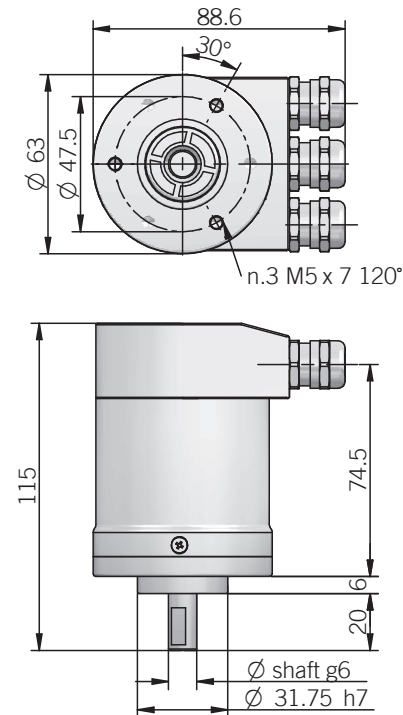
Thanks to the stainless steel enclosure, the encoder is suitable for food and beverage machinery, cranes and winches for ships, offshore applications, washing systems and all those environments where high corrosion resistance is required.

- 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 VDC with Profibus DP as electronic interface
- Terminal box for fast setup
- Solid shaft diameter up to 10 mm
- Mounting by clamping or centering 2,5" square flange



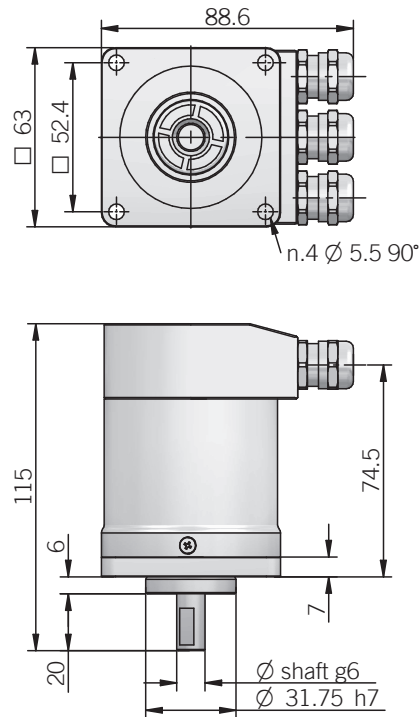
ORDERING CODE		EAM	63DX	4096 / 4096	B	12/28	FX	10	S	3	P3R	.XXX
SERIES												
multiturn absolute encoder												
MODEL												
clamping flange ø 31.75 mm												
centering square flange ø 31.75 mm												
MULTITURN RESOLUTION												
turns												
SINGLETURN RESOLUTION												
ppr												
CODE TYPE												
binary												
POWER SUPPLY												
12 ... 28 V DC												
ELECTRONIC INTERFACE												
PROFIBUS DP V0 CLASS 2												
SHAFT DIAMETER												
(9,52mm 3/8") mm												
mm												
ENCLOSURE RATING												
IP 66												
MAX ROTATION SPEED												
3000 rpm												
OUTPUT TYPE												
terminal box - radial cable glands												
VARIANT												
custom version												

EAM 63 AX



dimensions in mm

EAM 63 DX



ELECTRICAL SPECIFICATIONS

Multiturn resolution	1 ... 4096 turns <i>programmable during commissioning</i>
Singleturn resolution	2 ... 4096 / 2 ... 8192 ppr <i>programmable during commissioning</i>
Power supply	12/28 = 11,4 ... 29,4 V DC
Current consumption without load	300 mA
Output type	RS 485 galvanically isolated
Max bus frequency	12 Mbaud
Diagnostic features	frequency warning position warning / alarm <i>please refer to installation guide for more informations</i>
Max frequency	25 kHz LSB
Accuracy	± 1/2 LSB
Counting direction	programmable during commissioning
Start-up time	500 ms
Electromagnetic compatibility	IEC 61000-6-2 IEC 61000-6-4

MECHANICAL SPECIFICATIONS

Shaft diameter	Ø 9,52 (3/8") / 10 mm
Enclosure rating	IP 66 (IEC 60529)
Max rotation speed	3000 rpm
Max shaft load	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
Starting torque (at +20°C / +68°F)	< 0,06 Nm
Body material	1.4305 / AISI 303 stainless steel
Shaft material	1.4305 / AISI 303 stainless steel
Housing material	1.4305 / AISI 303 stainless steel
Bearings	2 ball bearings
Bearings life	10 ⁹ revolutions
Operating temperature	0° ... +60°C (+32° ... +140°F)
Storage temperature	-15° ... +70°C (+5° ... +158°F)
Weight	1200 g (42,33 oz)

MAIN FEATURES

Explosion proof encoder for applications within explosive and 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 VDC with SSI as electronic interface
- Cable output
- Solid shaft diameter up to 10 mm
- Mounting with synchronous 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

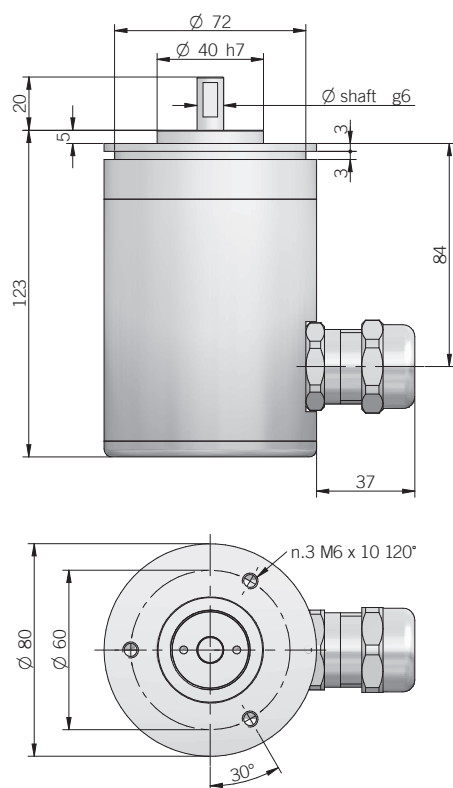
- EN 60079-0:2012+A11:2013
- EN 60079-1:2007
- EN 60079-31:2014

Declaration of conformity and CE declaration are available for download from Eltra website www.eltra.it



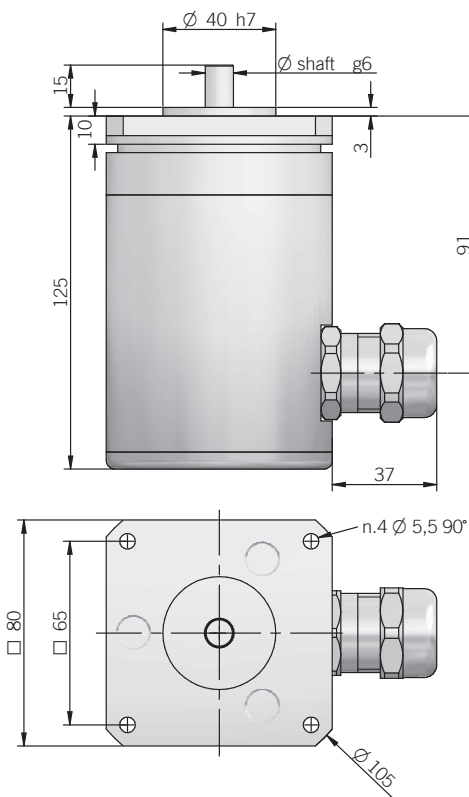
ORDERING CODE	EAMX	80A	256 / 256	G	8/28	S	X	X	10	S	3	PR	.XXX
SERIES multiturn absolute explosion proof encoder EAMX													
MODEL synchronous flange ø 40 mm 80A centering square flange ø 40 mm 80D													
MULTITURN RESOLUTION (powers of 2) turns from 2 to 16384													
SINGLETURN RESOLUTION (powers of 2) ppr from 2 to 8192													
CODE TYPE binary B gray G													
POWER SUPPLY 8 ... 28 V DC 8/28													
ELECTRONIC INTERFACE Serial Synchronous Interface - SSI S													
LOGIC to be reported X													
OPTION to be reported X													
SHAFT DIAMETER mm 10													
ENCLOSURE RATING IP 65 X													
MAX ROTATION SPEED 3000 rpm 3													
OUTPUT TYPE radial cable (standard length 1,5 m) PR													
VARIANT custom version XXX													

EAMX 80 A



dimensions in mm

EAMX 80 D



ELECTRICAL SPECIFICATIONS	
Multiturn resolution	from 2 to 16384 turns
Singleturn resolution	from 2 to 8192 ppr
Power supply	8/28 = 7,6 ... 29,4 V DC
Current consumption without load	100 mA
Output type	RS-422
Auxiliary inputs (U/D)	active high (+Vdc) <i>connect to OV if not used</i>
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)
Accuracy	± 1/2 LSB
Counting direction	decreasing clockwise (shaft view)
Start-up time	150 ms
Electromagnetic compatibility	IEC 61000-6-2 IEC 61000-6-4

MECHANICAL SPECIFICATIONS	
Shaft diameter	ø 10 mm
Enclosure rating	IP 65 (IEC 60529)
Max rotation speed	3000 rpm
Max shaft load	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
Starting torque (at 20°C / +68°F)	< 0,03 Nm
Body material	anodized aluminum
Shaft material	1.4305 / AISI 303 stainless steel
Housing material	anodized aluminum
Bearings	2 ball bearings
Bearings life	10 ⁹ revolutions
Operating temperature	0° ... +50°C (+32° ... +122°F)
Storage temperature	-15° ... +70°C (+5° ... +158°F)
Weight	1200 g (42,33 oz)

ATEX MARKING

II 2GD
Ex d 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 d IIC T6 Gb

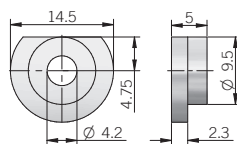
Ex d: flameproof enclosure for explosive atmospheres with gases, vapours and mists
 IIC: group of gas IIC
 T6: max surface temperature +85°C of the device for atmospheres with gas
 Gb: product with a high level of protection

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

ACCESSORIES

set n.3 fixing clamps for model 80 A
 P/N 94080001



CONNECTIONS

Function	Cable output
+ Vdc	red
0 Volt	grey
data +	green
data -	brown
clock +	yellow
clock -	pink
U / D	blue
≡	shield

MAIN FEATURES

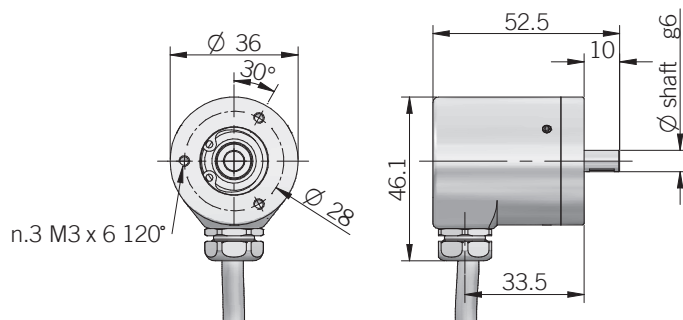
Miniaturized multiturn absolute encoder for limited size applications.

- Magnetic sensor technology without contact (Magnetic ASIC + Energy Harvesting)
- Sturdy construction thanks to separated chambers
- Up to 51 bit as total resolution (12 bit single turn + 39 bit multiturn)
- Power supply up to +30 VDC with SSI as electronic interface
- Code reset for easy setup
- Cable output, connectors available on cable end
- 6 mm diameter solid shaft
- Mounting by fixing flange



ORDERING CODE	EAM	36A	13	/	12	B	5	S	P	X	6	X	8	P	R	.XXX
SERIES magnetic multiturn absolute encoder series EAM																
MODEL fixing flange ø 28 mm 36A																
MULTITURN RESOLUTION turns from 1 to 39 bit																
SINGLETURN RESOLUTION from 1 to 12 bit																
CODE TYPE binary B gray G																
POWER SUPPLY 5 V DC 5 8 ... 30 V DC 8/30																
ELECTRONIC INTERFACE Serial Synchronous Interface - SSI S																
LOGIC positive P																
OPTIONS to be reported if not used X reset ZE																
SHAFT DIAMETER mm 6																
ENCLOSURE RATING IP 67 cover side / IP 65 shaft side X																
MAX ROTATION SPEED 8000 rpm 8																
OUTPUT TYPE cable (standard length 0,5 m) P																
DIRECTION TYPE radial R																
VARIANT custom version XXX																

EAM 36 A



dimensions in mm

ELECTRICAL SPECIFICATIONS

Multiturn resolution	turns from 1 to 39 bit
Singleturn resolution	ppr from 1 to 12 bit
Power supply	5 = 4,75 ... 5,25 V DC 8/30 = 7,6 ... 30 V DC (reverse polarity protection)
Power draw without load	< 400 mW
Output type	RS-422
Code type	binary or gray
Auxiliary inputs (U/D - Reset)	active high (+Vdc) connect to 0V if not used / Reset t_{min} 150 ms
Clock frequency	100 kHz ... 1 MHz
SSI monostable time (Tm)	20 μ s
SSI pause time (Tp)	> 35 μ s
SSI frame	Tree format (MSB ... LSB) up to 12 bit multiturn = length 25 bit (12MT + 12ST + '0') 13 to 14 bit multiturn = length 27 bit (14MT + 12ST + '0') 15 to 19 bit multiturn = length 32 bit (19MT + 12ST + '0')
Accuracy	$\pm 0,35^\circ$ typical
Counting direction	decreasing clockwise (shaft view)
Start-up time	150 ms
Electromagnetic compatibility	IEC 61000-6-2 IEC 61000-6-4

CONNECTIONS

Function	Cable output
+ Vdc	red
0 Volt	black
data +	green
data -	brown
clock +	yellow
clock -	orange
U / D	red / blue
RESET	white
$\varnothing$	shield

MECHANICAL SPECIFICATIONS

Shaft diameter	$\varnothing$ 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	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	$0,001 \times 10^{-6} \text{ kgm}^2$
Starting torque (at +20°C / +68°F)	< 0,01 Nm
Shaft material	1.4305 / AISI 303 stainless steel
Housing material	AISI 420 stainless steel
Bearing stage material	EN-AW 2011 aluminium
Bearings	2 ball bearings
Bearings life	10^9 revolutions
Operating temperature	-20° ... +85°C (-4° ... +185°F)
Storage temperature	-20° ... +85°C (-4° ... +185°F)
Weight	150 g (5,29 oz)

MAIN FEATURES

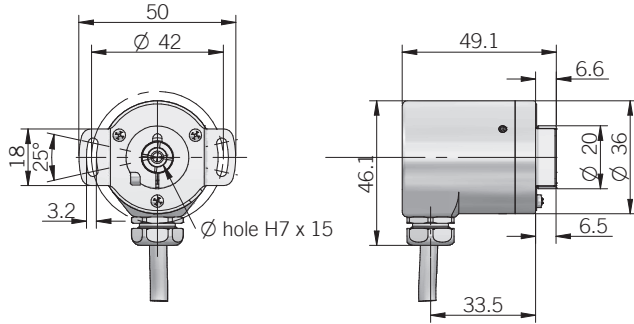
Miniaturized multiturn absolute encoder for limited size applications.

- Magnetic sensor technology without contact (Magnetic ASIC + Energy Harvesting)
- Sturdy construction thanks to separated chambers
- Up to 51 bit as total resolution (12 bit single turn + 39 bit multiturn)
- Power supply up to +30 VDC with SSI as electronic interface
- Code reset for easy setup
- Cable output, connectors available on cable end
- 6 mm diameter blind hollow shaft
- Mounting by stator coupling or anti-rotation pin



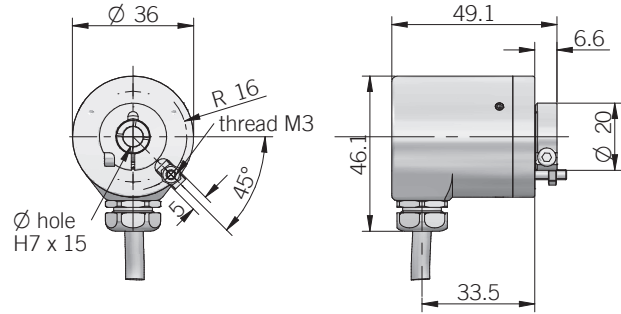
ORDERING CODE	EAM	36F	13	/	12	G	8/30	S	P	X	6	X	8	P	R	.XXX
SERIES magnetic multiturn absolute encoder series EAM																
MODEL blind hollow shaft with stator coupling 36F blind hollow shaft with antirotation pin 36G																
MULTITURN RESOLUTION turns from 1 to 39 bit																
SINGLETURN RESOLUTION from 1 to 12 bit																
CODE TYPE binary B gray G																
POWER SUPPLY 5 V DC 5 8 ... 30 V DC 8/30																
ELECTRONIC INTERFACE Serial Synchronous Interface - SSI S																
LOGIC positive P																
OPTIONS to be reported if not used X reset ZE																
BORE DIAMETER mm 6																
ENCLOSURE RATING IP 67 cover side / IP 65 shaft side X																
MAX ROTATION SPEED 8000 rpm 8																
OUTPUT TYPE cable (standard length 0,5 m) P																
DIRECTION TYPE radial R																
VARIANT custom version XXX																

EAM 36 F



dimensions in mm

EAM 36 G



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

ELECTRICAL SPECIFICATIONS

Multiturn resolution	turns from 1 to 39 bit
Singleturn resolution	from 1 to 12 bit
Power supply	5 = 4,75 ... 5,25 V DC 8/30 = 7,6 ... 30 V DC (reverse polarity protection)
Power draw without load	< 400 mW
Output type	RS-422
Code type	binary or gray
Auxiliary inputs (U/D - Reset)	active high (+Vdc) connect to OV if not used / Reset t_{min} 150 ms
Clock frequency	100 kHz ... 1 MHz
SSI monostable time (Tm)	20 μ s
SSI pause time (Tp)	> 35 μ s
SSI frame	Tree format (MSB ... LSB) up to 12 bit multiturn = length 25 bit (12MT + 12ST + '0') 13 to 14 bit multiturn = length 27 bit (14MT + 12ST + '0') 15 to 19 bit multiturn = length 32 bit (19MT + 12ST + '0')
Accuracy	$\pm 0,35^\circ$ typical
Counting direction	decreasing clockwise (shaft view)
Start-up time	150 ms
Electromagnetic compatibility	IEC 61000-6-2 IEC 61000-6-4

CONNECTIONS

Function	Cable colours
+ Vdc	red
0 Volt	black
data +	green
data -	brown
clock +	yellow
clock -	orange
U / D	red-blue
RESET	white
---	shield

MECHANICAL SPECIFICATIONS

Bore diameter	$\varnothing$ 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	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	$0,001 \times 10^{-6} \text{ kgm}^2$
Starting torque (at +20°C / +68°F)	< 0,01 Nm
Shaft material	1.4305 / AISI 303 stainless steel
Housing material	AISI 420 stainless steel
Bearing stage material	EN-AW 2011 aluminium
Bearings	2 ball bearings
Bearings life	10^9 revolutions
Operating temperature	-20° ... +85°C (-4° ... +185°F)
Storage temperature	-20° ... +85°C (-4° ... +185°F)
Fixing torque for collar clamping	0,6 Nm recommended
Weight	150 g (5,29 oz)

MAIN FEATURES

Industry standard multiturn absolute encoder for factory automation applications.

- Magnetic sensor technology without contact (Magnetic ASIC + Energy Harvesting)
- Up to 24 bit as total resolution (12 bit single turn + 12 bit multiturn)
- Power supply up to +30 VDC with SSI as electronic interface
- Code reset for easy setup
- Cable or connector output
- Solid shaft diameter up to 10 mm
- Mounting by synchronous, clamping or centering 2,5" square flange



ORDERING CODE	EAMW	58B	12	/	12	G	8/30	S	P	ZE	6	X	X	P	R	.XXX
SERIES magnetic multiturn absolute encoder series EAMW																
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																
MULTITURN RESOLUTION 12 bit																
SINGLETURN RESOLUTION 8 / 10 / 12 bit																
CODE TYPE binary B gray G																
POWER SUPPLY 8 ... 30 V DC 8/30																
ELECTRONIC INTERFACE Serial Synchronous Interface - SSI S																
LOGIC positive P																
OPTIONS reset ZE																
SHAFT DIAMETER (mod. 58 B) mm 6 (mod. 63 A / D) (9,52 mm 3/8") mm 9 (mod. 58 C - 63 A / D) mm 10																
ENCLOSURE RATING IP 67 cover side / IP 65 shaft side X																
OPTIONS to be reported X																
OUTPUT TYPE cable (standard length 0,5 m) P M12 connector M12 <i>female connector included, without female please add 162 as variant code</i>																
DIRECTION TYPE radial R																
VARIANT custom version XXX																

ELECTRICAL SPECIFICATIONS

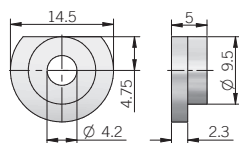
Multiturn resolution	12 bit
Singleturn resolution	8 / 10 / 12 bit
Power supply	8/30 = 7,6 ... 30 V DC
Power draw without load	< 400 mW
Output type	RS-422
Code type	binary or gray
Auxiliary inputs (U/D - Reset)	active high (+Vdc) <i>connect to 0V if not used / Reset t_{min} 150 ms</i>
Clock frequency	100 kHz ... 1 MHz
SSI monostable time (Tm)	20 μ s
SSI pause time (Tp)	> 35 μ s
SSI frame	tree format (MSB ... LSB) 25 bit length (12MT + 12ST + '0')
Accuracy	$\pm 0,35^\circ$ typical
Counting direction	decreasing clockwise (shaft view)
Start-up time	150 ms
Electromagnetic compatibility	IEC 61000-6-2 IEC 61000-6-4

CONNECTIONS

Function	Cable output	8 pin M12 connector
+ Vdc	red	8
0 Volt	black	5
data +	green	3
data -	brown	2
clock +	yellow	4
clock -	orange or pink	6
U / D	red / blue	7
RESET	white	1
	shield	housing

ACCESSORIES

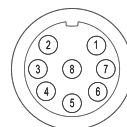
set n.3 fixing clamps for model 58 B
P/N 94080001



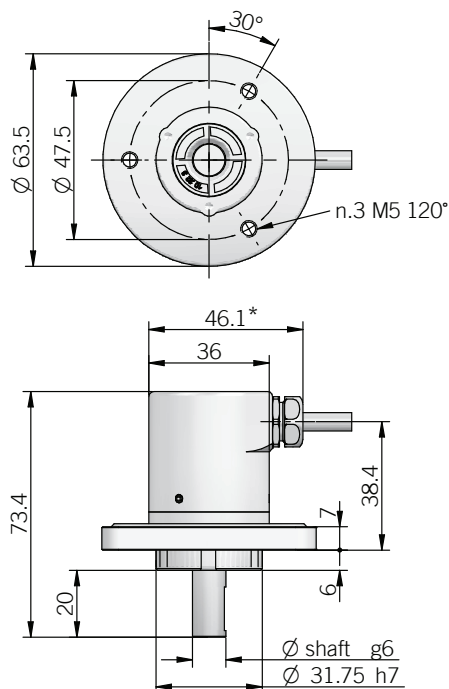
MECHANICAL SPECIFICATIONS

Shaft diameter	$\varnothing$ 6 mm / 9,52 mm (3/8") / 10 mm
Enclosure rating	IP 67 cover side / IP 65 shaft side (IEC 60529)
Max rotation speed	6000 rpm continuous
Max shaft load	10 N axial / 20 N radial with $\varnothing$ 6 shaft 100 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	$0,5 \times 10^{-6}$ kgm ²
Starting torque (at +20°C / +68°F)	< 0,03 Nm
Shaft material	AISI 303 stainless steel
Housing material	AISI 420 stainless steel
Bearing stage material	EN-AW 2011 aluminium
Bearings	2 ball bearings
Bearings life	10 ⁹ revolutions
Operating temperature	-20° ... +85°C (-4° ... +185°F)
Storage temperature	-20° ... +85°C (-4° ... +185°F)
Weight	350 g (12,35 oz)

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

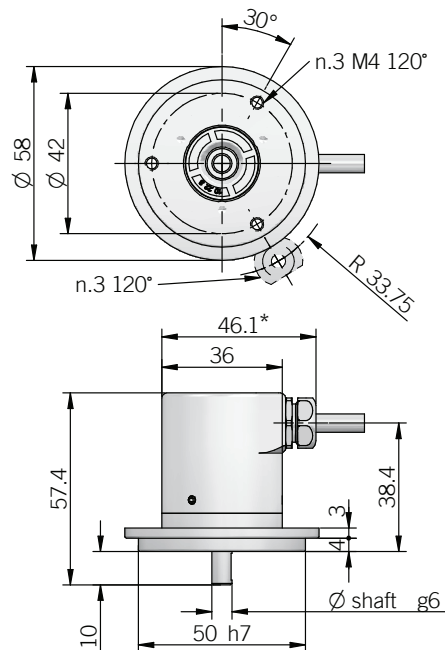


EAMW 63 A

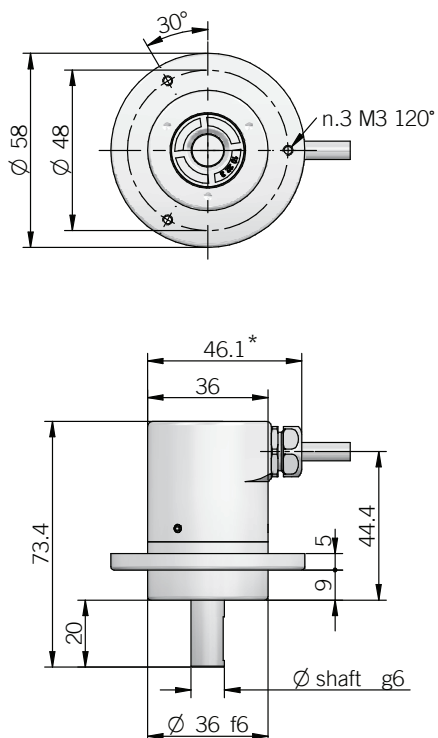


EAMW 58 B

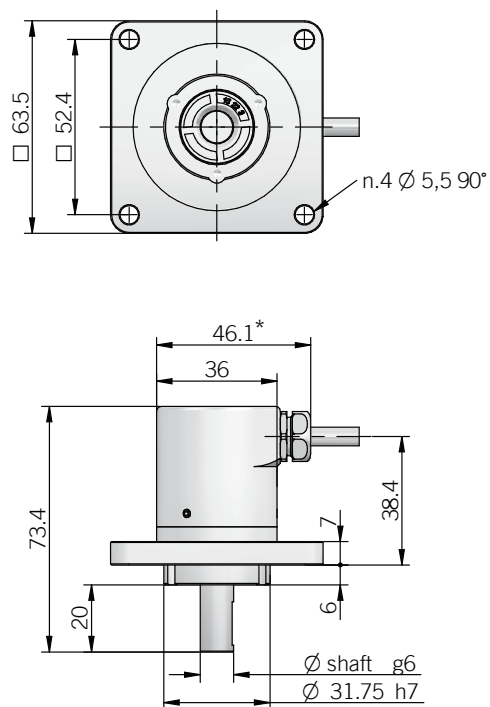
fixing clamps not included



EAMW 58 C



EAMW 63 D



* with M12 + 10

dimensions in mm