EAM 58 B / C - 63 A / D / E
BIT PARALLEL - SSI
SHAFT MULTITURN ABSOLUTE ENCODER

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

ORDERING CODE BIT PARALLEL

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

ELECTRICAL 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) (3/8") 9,52 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
female connector included, without female please add 162 as variant code

DIRECTION TYPE
axial A
radial R

VARIANT
custom version XXX

1985 - 2015
eltra@eltra.it | www.eltra.it

ORDERING CODE SSI	EAM	63A	R	4096 / 4096	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
ppr 4096 / 8192

CODE TYPE
binary B
gray G

POWER SUPPLY
8 ... 28 V DC 8/28

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

ENCLOSURE RATING
IP 54 X
IP 66 S

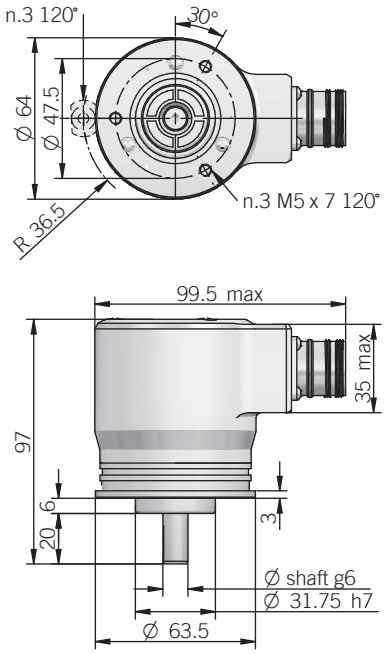
MAX ROTATION SPEED
(IP 66) 3000 rpm 3
(IP 54) 6000 rpm 6

OUTPUT TYPE
cable (standard length 1,5 m) PC
7 pin MIL connector MC
12 pin M23 connector HA
8 pin M12 connector M12
female connector included, without female please add 162 as variant code

DIRECTION TYPE
axial A
radial R

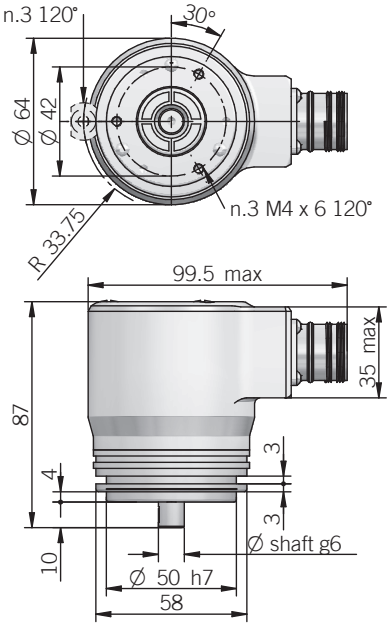
VARIANT
custom version XXX

63 A



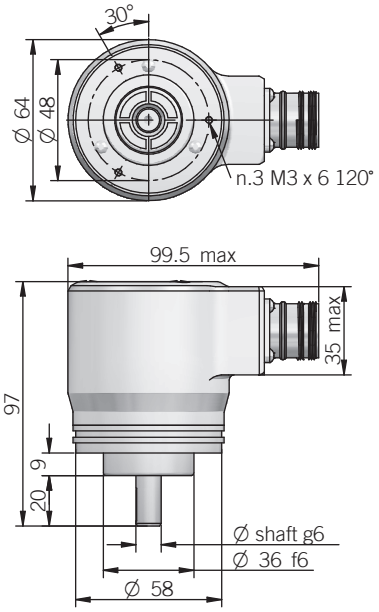
fixing clamps not included, please refer to Accessories section

58 B

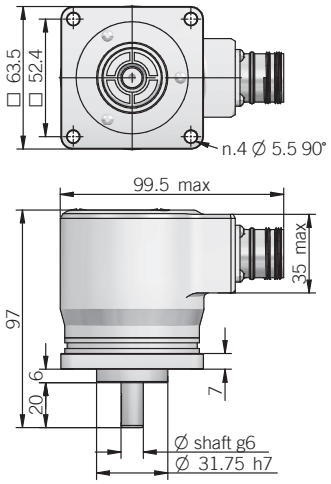


fixing clamps not included, please refer to Accessories section

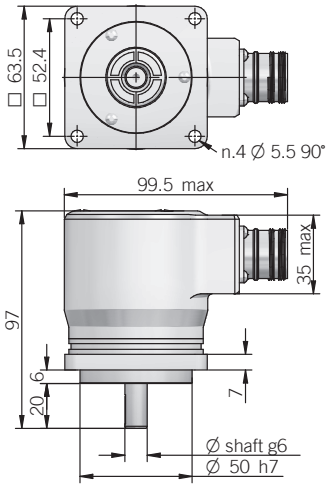
58 C



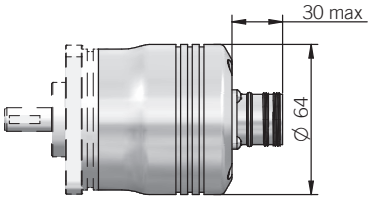
63 D



63 E



Dimensions with axial output



dimensions in mm

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ELECTRICAL SPECIFICATIONS

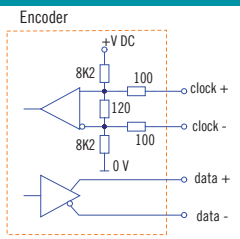
Multiturn resolution	from 2 to 16384 turns
Singleturn resolution	from 2 to 8192 ppr
Power supply	7,6 ... 29,4 V DC
Current consumption without load	100 mA
Max load current	20 mA / channel
Output type*	P = push-pull (iC-HD2) S = RS-422 (LTC1690 or equivalent)
Auxiliary inputs (U/D - Latch)	active high (+V DC) connect to 0 V 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	according to 2014/30/EU directive
RoHS	according to 2011/65/EU directive
UL / CSA	certificate n. E212495

* for further details please see OUTPUT LEVELS 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	IP 54 - 6000 rpm IP 66 - 3000 rpm
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 (36 x 10^{-6} lbft^2)
Starting torque (at +20°C / +68°F)	< 0,02 Nm (2,83 Ozin) IP 54 < 0,06 Nm (8,50 Ozin) IP 66
Bearing stage material	EN-AW 2011 aluminum
Shaft material	1.4305 / AISI 303 stainless steel
Housing material	painted aluminium
Bearings	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)

SSI SCHEMATICS



BIT PARALLEL CONNECTIONS

Function	Binary / Gray	Cable PD	Cable PE	19 pin MA	32 pin ME
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	R	e
0 V	/	black	black	T	j
U / D	/	red / blue	red / blue	U	g
+ V DC	/	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.

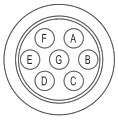
EXAMPLE 2:
4096 PPR = 12 connections
N° turns 4096 = 12 connections
Total connections 24.

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 PC	7 pin MC	12 pin HA	8 pin M12
+ V DC	red	G	8	8
0 V	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