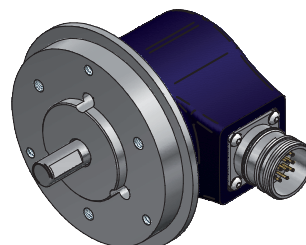


MAIN FEATURES

Industry standard multiturn absolute encoder for factory automation applications.

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



ORDERING CODE BIT PARALLEL

EAMR 90A 12 / 12 G 8/30 P P X 10 X PE R .XXX

SERIES
multiturn absolute encoder **EAMR**

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

MULTITURN RESOLUTION
bit from **1** to **12**

SINGLETURN RESOLUTION
bit from **1** to **13**

CODE TYPE
binary **B**
gray **G**

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

ELECTRICAL INTERFACE
push-pull **P**

LOGIC
negative **N**
positive **P**

OPTIONS
to be reported if not used **X**
latch **L**
reset **ZE**
latch / reset **LZE**

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

ENCLOSURE RATING
IP 65 shaft side / IP67 cover side **X**
IP 67 **S**

OUTPUT TYPE
(up to 13 bit as total resolution) 16 cores cable (standard length 1,5 m) **PD**
(from 14 to 25 bit as total resolution or options) 32 cores cable (standard length 1,5 m) **PE**
(up to 13 bit as total resolution) 19 pin MIL connector **MA**
(from 14 to 25 bit as total resolution) 32 pin MIL connector **ME**
female connector included, without female please add 162 as variant code

DIRECTION TYPE
radial **R**

VARIANT
custom version **XXX**

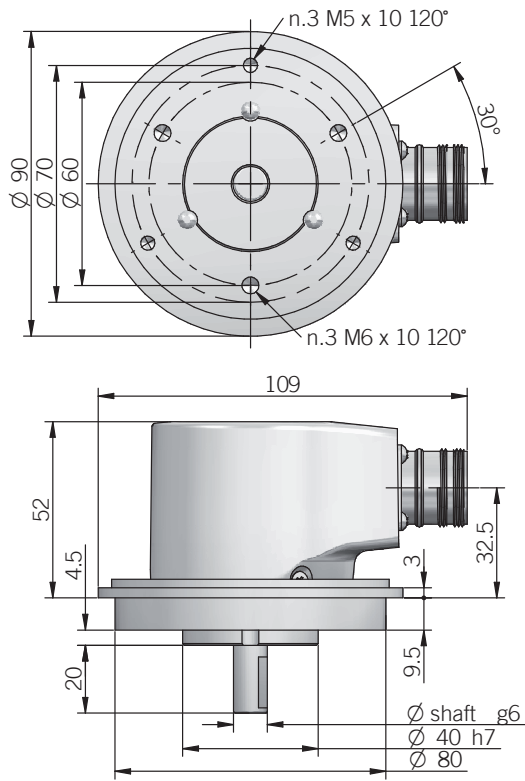
PRELIMINARY

ORDERING CODE SSI	EAMR	90A	12 / 13	G	8/30	S	X	2048	RS	10	X	MC	R	.XXX
SERIES multiturn absolute encoder EAMR														
MODEL synchronous flange ø 40 mm 90A REO-444 flange 115A														
MULTITURN RESOLUTION bit 12 / 14 / 15 see table for preferred combinations														
SINGLETURN RESOLUTION bit 13 / 18 / 25 see table for preferred combinations														
CODE TYPE binary B gray G														
POWER SUPPLY 8 ... 30 V DC 8/30														
ELECTRICAL INTERFACE Serial Synchronous Interface - SSI S														
OPTION to be reported if not used X reset ZE														
INCREMENTAL RESOLUTION (powers of 2) ppr from 128 to 8192														
INCREMENTAL ELECTRICAL INTERFACE available with PC or HA output type line driver HTL L push pull P line driver RS-422 RS														
SHAFT DIAMETER (mod. 90) 3/8"- mm 9,52 mm 10 (mod. 115) mm 11														
ENCLOSURE RATING IP 65 shaft side / IP67 cover side X IP 67 S														
OUTPUT TYPE cable (standard length 1,5 m) PC 7 pin MIL connector MC (with reset option) 10 pin MIL connector MD 12 pin M23 connector HA 8 poles M12 connector M12 female connector included, without female please add 162 as variant code														
DIRECTION TYPE radial R														
VARIANT custom version XXX														

only with additional incremental output

PRELIMINARY

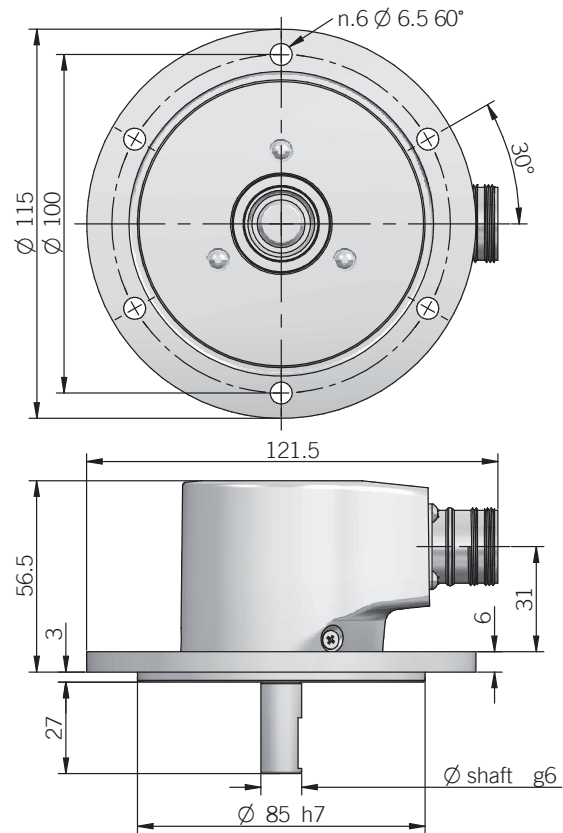
90 A



fixing clamps not included, please refer to Accessories section

dimensions in mm

115 A



PRELIMINARY

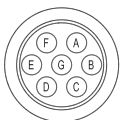
BIT PARALLEL CONNECTIONS

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
LATCH	/	/	yellow / grey	R	e
0 Volt	/	black	black	T	j
U / D	/	red / blue	red / blue	U	g
RESET	/	/	pink / green	P	f
+ Vdc	/	red	red	V	h
⏏	/	shield	shield	S	housing

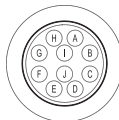
SSI CONNECTIONS

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

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



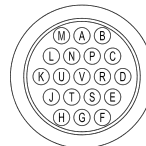
MD connector (10 pin)
Amphenol MS3102-E-18-1P
solder side view FV



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



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



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



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



PRELIMINARY

ELECTRICAL SPECIFICATIONS

Multiturn resolution	12 / 14 / 15 bit please directly contact our offices for other pulses
Singleturn resolution	P = from 1 to 13 bit S = preferred combinations 12 multiturn / 13 singleturn 14 multiturn / 18 singleturn 15 multiturn / 25 singleturn please directly contact our offices for other pulses
Power supply	+7,6 ... +30 V DC (reverse polarity protection)
Power draw without load	< 1 W
Max load current	20 mA / channel
Output type	P = push pull* S = RS-422
Incremental A / B electrical interface	L = HTL differential (active short circuit protection)* P = Push-Pull (active short circuit protection)* RS = RS-422
Max incremental output frequency	128 kHz
Auxiliary inputs (U/D - Reset - Latch)	active high (+Vdc) connect to 0V if not used / Reset - Latch t_{min} 150 ms
Max frequency	50 kHz LSB (Bit Parallel) clock input: 100 kHz ... 1 MHz (SSI)
Code type	binary or gray
Logic	SSI = positive Bit parallel = positive or negative
SSI monostable time (Tm)	20 μ s
SSI pause time (Tp)	> 35 μ s
SSI frame	tree format (MSB ... LSB) up to 12 bit multiturn = length 25 bit (12MT + 13ST) 14 bit multiturn = length 32 bit (14MT + 18ST) 15 bit multiturn = length 40 bit (15MT + 25ST)
Data refresh rate	TBD
SSI status and parity bit	on request
Counting direction	decreasing clockwise (shaft view)
Start-up time	150 ms
Accuracy	$\pm$ 250 arc-sec
Electromagnetic compatibility	according to 2004/108/EC directive
RoHS	according to 2011/65/EU directive
UL / CSA	certificate n. E212495

* for further details please see OUTPUT LEVELS under TECHNICAL BASICS section

BIT PARALLEL CONNECTOR OR CABLE CHOICE

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

EXAMPLE 1
Singleturn = 8 bit = 8 connections
Multiturn = 5 bit = 5 connections
Total connections 13

EXAMPLE 2
Singleturn = 12 bit = 12 connections
Multiturn = 12 bit = 12 connections
Total connections 24

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

From 14 to 25 connections a 32 cores cable (PE) or a 32 pin connector (ME) have to be considered.

With LATCH option a 32 cores cable or a 32 pin connector is required; RESET option is available with PE 32 cores cable output or 19 pin (MA) / 32 pin (ME) connector.

MECHANICAL SPECIFICATIONS

Shaft diameter	$\varnothing$ 9,52 (3/8") / 10 / 11 mm
Enclosure rating IEC 60529	X = IP 65 shaft side / IP67 cover side S = IP 67
Max rotation speed	see table
Max shaft load	80 N radial / 40 N axial (TBD)
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 (36×10^{-6} lbft ²)
Starting torque (at +20°C / +68°F)	< 0,03 Nm (4,25 Ozin)
Body material	EN-AW 2011 aluminum
Shaft material	1.4305 / AISI 303 stainless steel
Housing material	painted aluminium / mild steel
Bearings	2 ball bearings
Bearings life	10 ⁹ revolutions
Operating temperature Bit parallel	-20° ... +85°C (-4 ... +185°F)
Operating temperature SSI	-40° ... +100°C (-40° ... +212°F) -20° ... +100°C (-4 ... +212°F) with cable output -30° ... +85°C (-22 ... +185°F) with M12 connector
Storage temperature	-20° ... +85°C (-4 ... +185°F)
Weight	approx 350 g (12,35 oz)

ROTATION SPEED DERATING TABLE

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