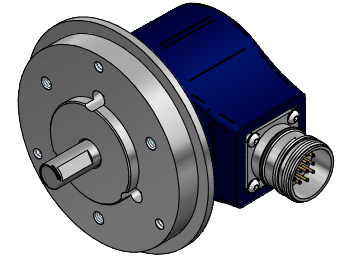


MAIN FEATURES

Industry standard singleturn absolute encoder for factory automation applications.

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

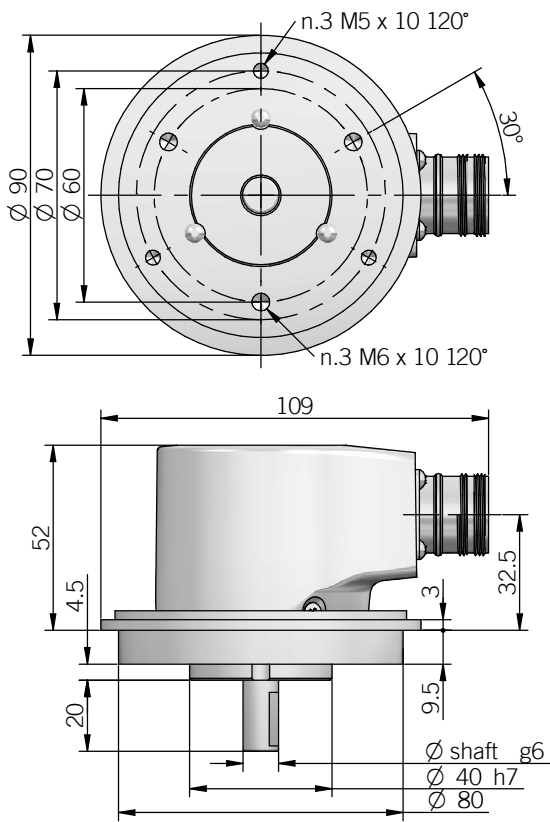


ORDERING CODE BIT PARALLEL	EAR	90A	12	G	8/30	P	P	X	10	X	PD	R	.XXX
SERIES singleturn absolute encoder EAMR													
MODEL synchronous flange \varnothing 40 mm 90A REO-444 flange 115A													
RESOLUTION bit from 1 to 13 (multiples and submultiples of 360) ppr from 90 to 3600													
CODE 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 ... 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 strobe S reset ZE latch / reset LZE strobe / reset SZE													
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 (without options) cable (standard length 1,5 m) PD cable (standard length 1,5 m) PE (with option "latch" or "strobe") 19 pin MIL connector MA female connector included, without female please add 162 as variant code													
DIRECTION TYPE radial R													
VARIANT custom version XXX													

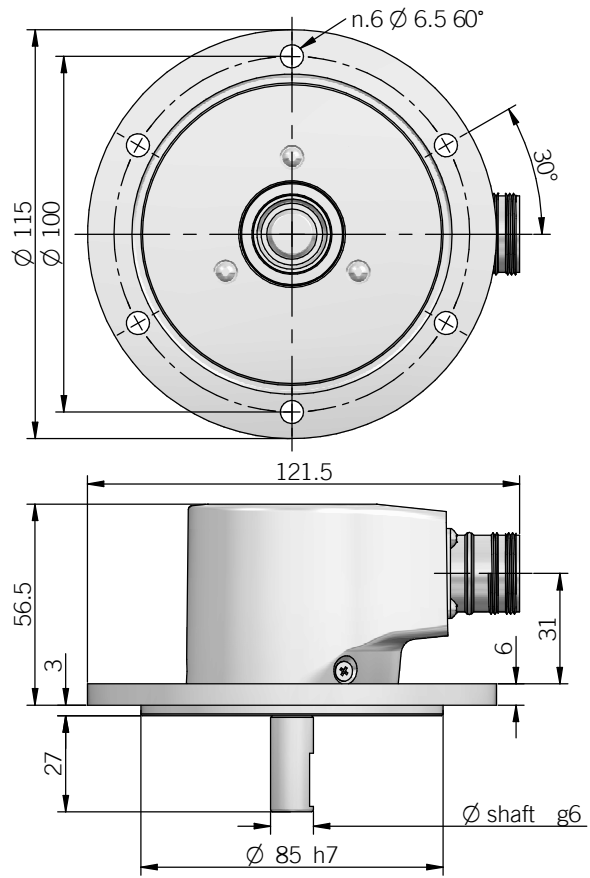
ORDERING CODE	EAR	90A	13	G	8/30	S	X	2048	RS	10	X	MC	R	.XXX
SSI														
SERIES singleturn absolute encoder	EAR													
MODEL synchronous flange ø 40 mm REO-444 flange	90A	115A												
RESOLUTION bit ppr	13 / 16 / 17 / 18 / 21 / 25													
CODE TYPE binary gray (no powers of 2) binary offset code (0-XXX) (no powers of 2) gray offset code (0-XXX)	B	G	BC	GC										
POWER SUPPLY 8 ... 30 V DC	8/30													
ELECTRICAL INTERFACE Serial Synchronous Interface - SSI	S													
OPTION to be reported if not used reset	X	ZE												
INCREMENTAL RESOLUTION (powers of 2) ppr from	128	8192												
INCREMENTAL ELECTRICAL INTERFACE available with PC or HA output type line driver HTL push pull line driver RS-422	L	P	RS											
SHAFT DIAMETER (mod. 90) 3/8" - mm (mod. 115) mm	9,52	10	11											
ENCLOSURE RATING IP 65 shaft side / IP67 cover side IP 67	X	S												
OUTPUT TYPE cable (standard length 1.5 m) 7 pin MIL connector (with reset option) 10 pin MIL connector 12 pin M23 connector 8 poles M12 connector female connector included, without female please add 162 as variant code	PC	MC	MD	HA	M12									
DIRECTION TYPE radial	R													
VARIANT custom version	XXX													

 only with additional incremental output

90 A



115 A



fixing clamps not included, please refer to Accessories section

dimensions in mm

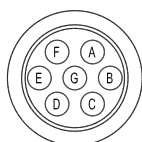
BIT PARALLEL CONNECTIONS

Function	Binary / Gray	Cable PD	Cable 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	grey / pink	grey / pink	J
bit 10	B ⁹ / G ⁹	white / green	white / green	K
bit 11	B ¹⁰ / G ¹⁰	brown / green	brown / green	L
bit 12	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 V	/	black	black	T
U / D	/	red / blue	red / blue	U
RESET	/	/	pink / green	/
+ V DC	/	red	red	V
≡	/	shield	shield	S

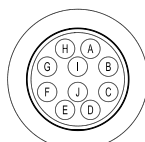
SSI CONNECTIONS

Function	Cable PC	7 pin MC	10 pin MD	12 pin HA	12 pin HA	8 pin M12
+ V DC	red	G	G	8	8	8
0 V	black	F	F	1	1	5
data +	green	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

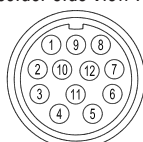
MC connector (7 pin)
Amphenol MS3102-E-16-S
solder side view FV



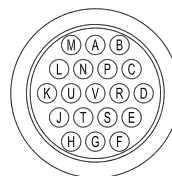
MD connector (10 pin)
Amphenol MS3102-E-18-1P
solder side view FV



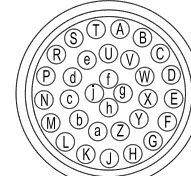
HA connector (12 pin)
M23 CCW Hummel
7.410.000000 - 7.002.912.603
solder side view FV



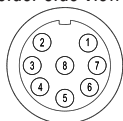
MA connector (19 pin)
Amphenol 62IN 12E 14-19 P
solder side view FV



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



ELECTRICAL SPECIFICATIONS	
Resolution	P = from 90 ppr to 13 bit S = from 360 ppr to 25 bit
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 compatible
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 (+V DC) connect to 0 V if not used / Reset - Latch t_{min} 150 ms
Max frequency	50 kHz LSB (Bit Parallel) clock input: 100 kHz ... 1 MHz (SSI)
Code type	binary or gray
Logic	SSI = positive Bit parallel = positive or negative
SSI monostable time (Tm)	20 μ s
SSI pause time (Tp)	> 35 μ s
SSI frame	left aligned format (MSB ... LSB) up to 13 bit = length 13 bit from 14 to 21 bit = length 21 bit from 22 to 25 bit = length 25 bit
SSI status and parity bit	on request
Counting direction	decreasing clockwise (shaft view)
Start-up time	700 ms
Accuracy	\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

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 x 10 ⁻⁶ kgm ² (36 x 10 ⁻⁶ lbf 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
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 300 g (10,58 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