

### MAIN FEATURES

Industry standard multiturn absolute encoder for factory automation applications.

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

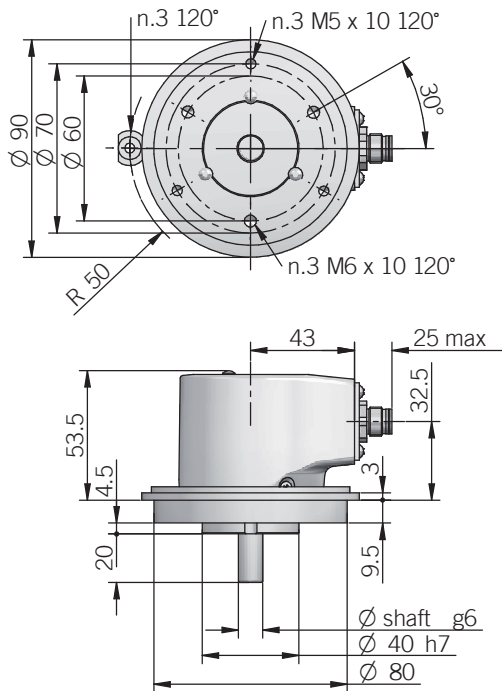


### ORDERING CODE

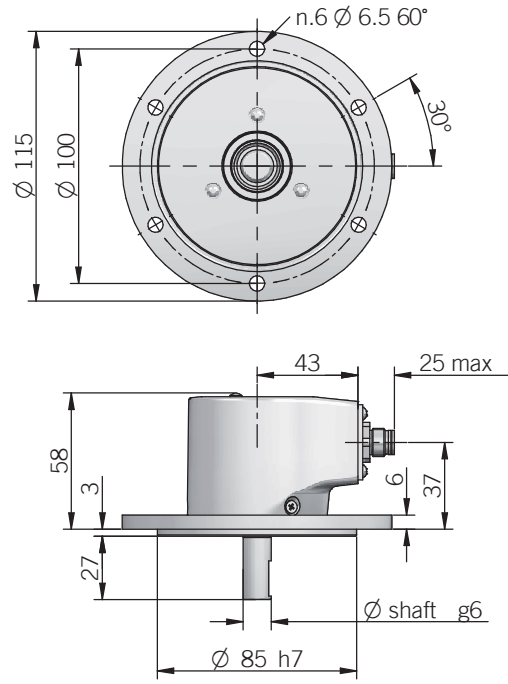
**EAML 90A 16B 12/30 V 05 X 10 X P R .XXX**

<b>SERIES</b> analogue multiturn absolute encoder <b>EAML</b>	<b>MODEL</b> synchronous flange $\varnothing$ 40 mm <b>90A</b> REO-444 flange <b>115A</b>	<b>OUTPUT DAC RESOLUTION</b> 16 bit <b>16B</b>	<b>POWER SUPPLY</b> 12 ... 30 V DC <b>12/30</b>	<b>ELECTRICAL INTERFACE</b> voltage <b>V</b> current <b>I</b>	<b>OUTPUT RANGE</b> 0 ... 5 V <b>05</b> 0 ... 10 V <b>010</b> 0 ... 20 mA <b>020</b> 4 ... 20 mA <b>420</b>	<b>OPTIONS</b> to be reported with voltage output / 3 wires current output <b>X</b> 4 wires current output <b>Q</b>	<b>SHAFT DIAMETER</b> (mod. 90) 3/8" - mm <b>9,52</b> mm <b>10</b> (mod. 115) mm <b>11</b>	<b>ENCLOSURE RATING</b> IP 65 shaft side / IP67 cover side <b>X</b> IP 67 <b>S</b>	<b>OUTPUT TYPE</b> cable (standard length 1,5 m) <b>P</b> M12 connector <b>M12</b> female connector included, without female please add 162 as variant code	<b>DIRECTION TYPE</b> radial <b>R</b>	<b>VARIANT</b> custom version <b>XXX</b>
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90 A



115 A



for fixing clamps please refer to Accessories  
dimensions in mm



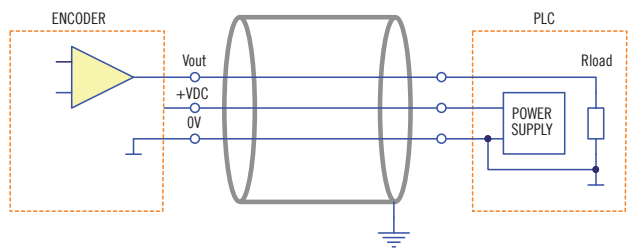
ELECTRICAL SPECIFICATIONS	
Multiturn resolution	16 bit max
Singleturn resolution	16 bit max
Output DAC resolution	16 bit
Minimum angle	22,5°
Power supply <sup>1</sup>	11,4 ... 30 V DC (reverse polarity protection)
Power draw without load	< 1 W
Electrical interface <sup>2</sup>	voltage (0 ... 5 V / 0 ... 10 V) current (0 ... 20 mA / 4 ... 20 mA)
Auxiliary inputs (BEGIN - END)	active high (+V DC) connect to 0 V if not used / $t_{min}$ 150 ms
Load	$R_{min} = 1 \text{ k}\Omega$ (voltage output) $R_{max} = (V \text{ DC} - 2) / 0,02$ (current output)
Output update frequency	16 kHz
Signal pattern	auto teaching according to commissioning
Start-up time	700 ms
Linearity error	$\pm 250$ arc-sec
Electromagnetic compatibility	according to 2014/30/EU directive
RoHS	according to 2015/863/EU directive
UL / CSA	certificate n. E212495

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 below table
Max shaft load <sup>3</sup>	200 N axial / 70 N radial
Shock	50 G, 11 ms (IEC 60068-2-27)
Vibration	10 G, 10 ... 2000 Hz (IEC 60068-2-6)
Moment of inertia	$1,5 \times 10^{-6} \text{ kgm}^2$ ( $36 \times 10^{-6} \text{ lbf}^2$ )
Starting torque (at +20°C / +68°F)	< 0,03 Nm (4,25 Ozin)
Bearing stage material	EN-AW 2011 aluminum
Shaft material	1.4305 / AISI 303 stainless steel
Housing material	painted aluminium
Bearings	n.2 ball bearings
Bearings life	$10^9$ revolutions
Operating temperature <sup>4, 5</sup>	-20° ... +85°C (-4° ... +185°F)
Storage temperature <sup>5</sup>	-20° ... +85°C (-4° ... +185°F)
Weight	approx 350 g (12,35 oz)

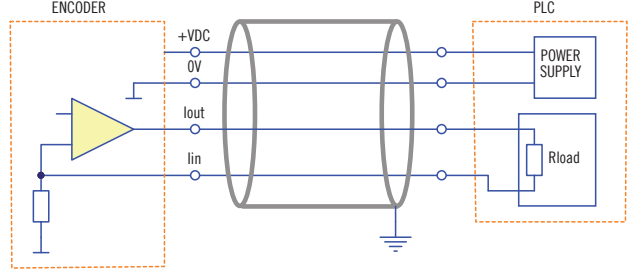
<sup>1</sup> as measured at the transducer without cable influences  
<sup>2</sup> for further details refer to OUTPUT LEVELS on TECHNICAL BASICS section  
<sup>3</sup> maximum load for static usage  
<sup>4</sup> measured on the transducer flange  
<sup>5</sup> condensation not allowed

**ELECTRICAL INTERFACE**

Voltage output



Current output



3 / 4 wire source  
with 3 wires interface I<sub>in</sub> is internally connected to 0V

**ROTATION SPEED / TEMPERATURE TABLE**

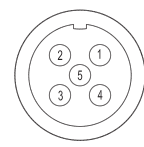
Temperature °C (°F)	Max speed (rpm)	Max continuous speed (rpm)
up to +70 (+158)	10000	8000
+70 ... +85 (+158 ... +185)	8000	5000

**CONNECTIONS**

Function	Cable	5 pin M12	8 pin M12*
+ V DC	red	2	2
0 V	black	3	3
V <sub>out</sub> / I <sub>out</sub>	green	1	1
I <sub>in</sub>	yellow	/	6
BEGIN	white	4	4
END	brown	5	5
⊕	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

