

MAIN FEATURES

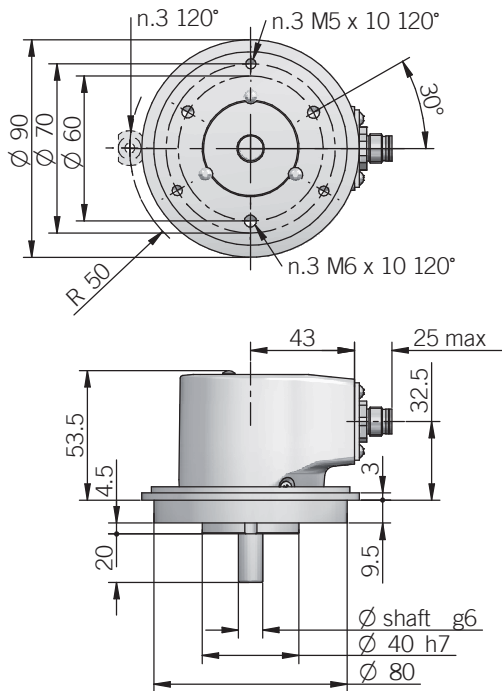
Industry standard multiturn absolute encoder for factory automation applications.

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

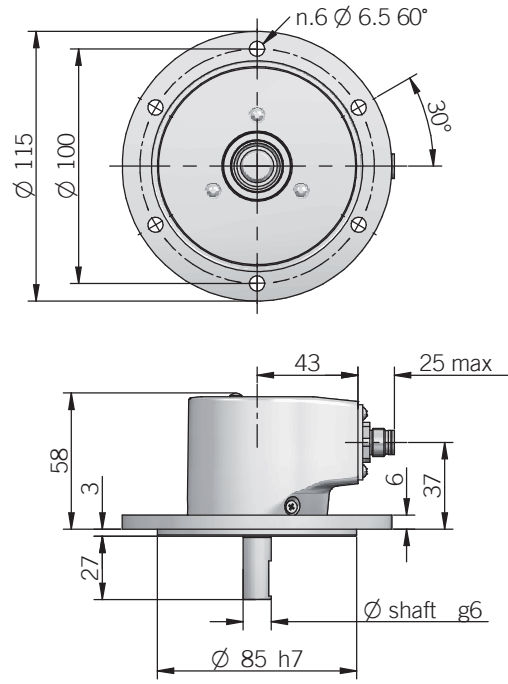


ORDERING CODE	EAML	90A	16B	12/30	V	05	X	10	X	M12	R	.162	+XXX
SERIES analogue multiturn absolute encoder	EAML												
MODEL synchronous flange ø 40 mm REO-444 flange	90A 115A												
OUTPUT DAC RESOLUTION 16 bit	16B												
POWER SUPPLY 12 ... 30 V DC	12/30												
ELECTRICAL INTERFACE voltage current	V												
OUTPUT RANGE 0 ... 5 V 0 ... 10 V 0 ... 20 mA 4 ... 20 mA	05 010 020 420												
OPTIONS to be reported with voltage output / 3 wires current output 4 wires current output	X Q												
SHAFT DIAMETER (mod. 90) 3/8" - mm 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) preferred cable lengths 2 / 3 / 5 / 10 m, to be added after DIRECTION TYPE (eg. PR5) M12 male connector	P M12												
DIRECTION TYPE radial	R												
MATING CONNECTOR mating connector not included to be reported only with connector output (eg. M12R.162), for mating connector see Accessories	.162												
VARIANT custom version	XXX												

90 A



115 A



for fixing clamps please refer to Accessories
recommended mating shaft tolerance H7
dimensions in mm



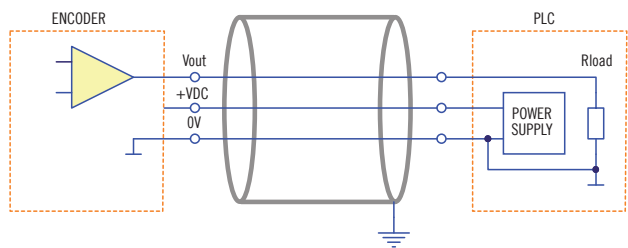
ELECTRICAL SPECIFICATIONS	
Multiturn resolution	16 bit max
Singleturn resolution	16 bit max
Output DAC resolution	16 bit
Minimum angle	22,5°
Power supply ¹	11,4 ... 30 V DC (reverse polarity protection)
Power draw without load	< 1 W
Electrical interface ²	voltage (0 ... 5 V / 0 ... 10 V) current (0 ... 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) $R_{max} = (V_{DC} - 2) / 0,02$ (current output)
Output update frequency	16 kHz
Signal pattern	auto teaching according to commissioning
Start-up time	700 ms
Linearity error	± 250 arc-sec
Electromagnetic compatibility	according to 2014/30/EU directive
RoHS	according to 2011/65/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 ³	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	$1,5 \times 10^{-6} \text{ kgm}^2$ ($36 \times 10^{-6} \text{ lbft}^2$)
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 ^{4, 5}	-20° ... +85°C (-4° ... +185°F)
Storage temperature ⁵	-20° ... +85°C (-4° ... +185°F)
Weight	approx 350 g (12,35 oz)

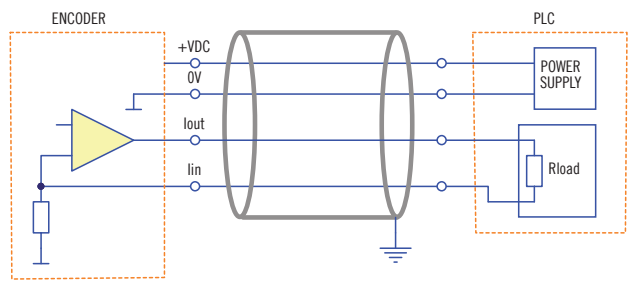
¹ as measured at the transducer without cable influences
² for further details refer to OUTPUT LEVELS on TECHNICAL BASICS section
³ maximum load for static usage
⁴ measured on the transducer flange
⁵ condensation not allowed

ELECTRICAL INTERFACE

Voltage output



Current output



3 / 4 wire source
with 3 wires interface I_{in} is internally connected to 0V

ROTATION SPEED / TEMPERATURE TABLE

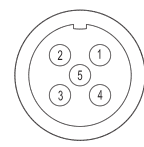
Temperature °C (°F)	Max speed (rpm)	Max continuous speed (rpm)
up to +70 (+158)	10000	8000
+70 ... +85 (+158 ... +185)	8000	5000

CONNECTIONS

Function	Cable	5 pin M12	8 pin M12*
+ V DC	red	2	2
0 V	black	3	3
V _{out} / I _{out}	green	1	1
I _{in}	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

