

### MAIN FEATURES

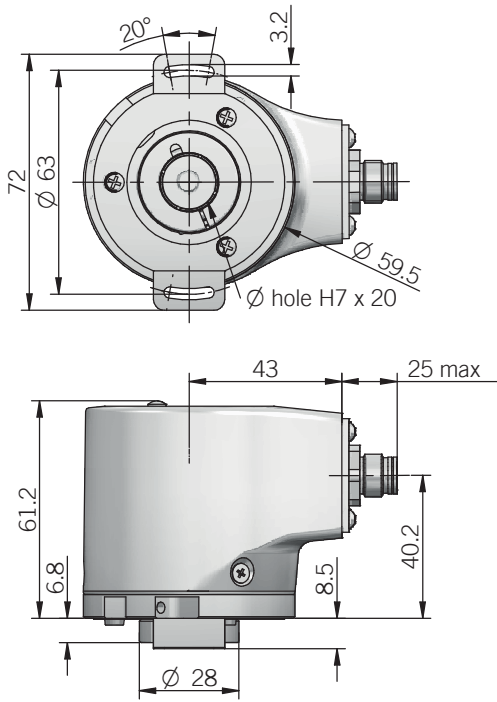
Industry standard multiturn absolute encoder for factory automation applications.

- 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
- Blind hollow shaft up to 15 mm
- Mounting by stator coupling, torque stop slot or torque pin

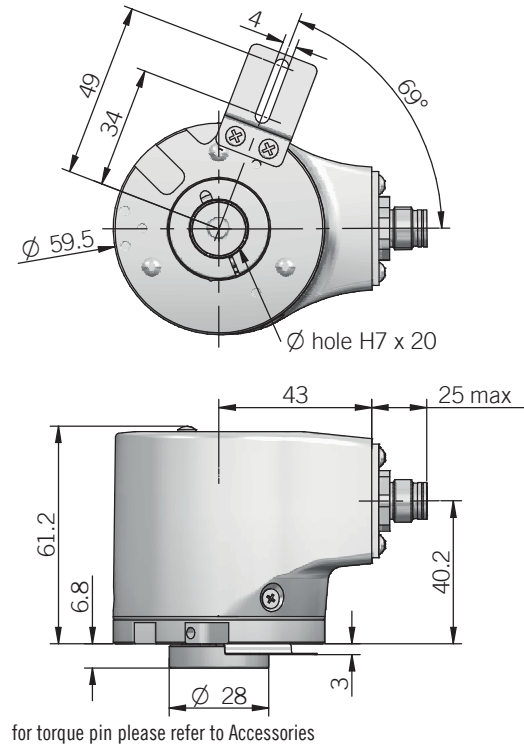


ORDERING CODE	EAML	58F	16B	12/30	V	05	X	15	X	M12	R	.162	+XXX
<b>SERIES</b> analogue multiturn absolute encoder	<b>EAML</b>												
<b>MODEL</b> blind hollow shaft with stator coupling blind hollow shaft with torque stop slot blind hollow shaft with torque pin	<b>58F</b> <b>63F</b> <b>63G</b>												
<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 current	<b>V</b> <b>I</b>												
<b>OUTPUT RANGE</b> 0 ... 5 V 0 ... 10 V 0 ... 20 mA 4 ... 20 mA	<b>05</b> <b>010</b> <b>020</b> <b>420</b>												
<b>OPTIONS</b> to be reported with voltage output / 3 wires current output 4 wires current output	<b>X</b> <b>Q</b>												
<b>BORE DIAMETER</b> mm mm diameters 6 / 8 / 9,52 (3/8") / 10 / 11 / 12 mm with optional shaft adapter, see Accessories	<b>14</b> <b>15</b>												
<b>ENCLOSURE RATING</b> IP 65 shaft side / IP67 cover side IP 67	<b>X</b> <b>S</b>												
<b>OUTPUT TYPE</b> cable (standard length 1,5 m) preferred cable lengths 2 / 3 / 5 / 10 m, to be added after DIRECTION TYPE (eg. PR5) M12 plug connector	<b>P</b> <b>M12</b>												
<b>DIRECTION TYPE</b> radial	<b>R</b>												
<b>SOCKET</b> socket not included to be reported only with connector output (eg. M12R.162), for socket see Accessories	<b>.162</b>												
<b>VARIANT</b> custom version	<b>XXX</b>												

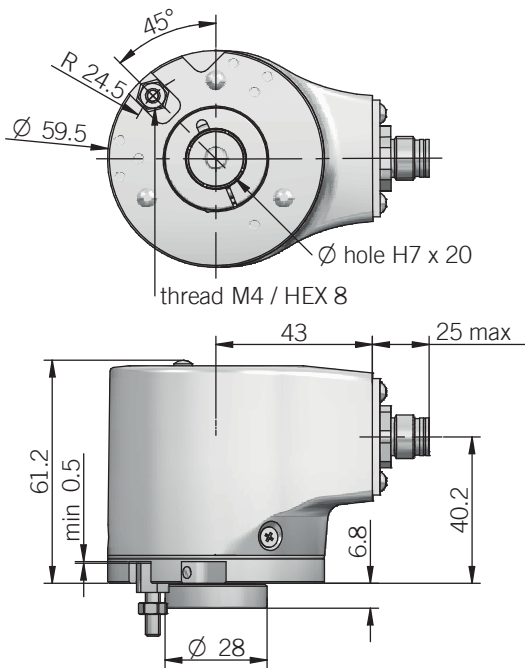
58F



63F



63G

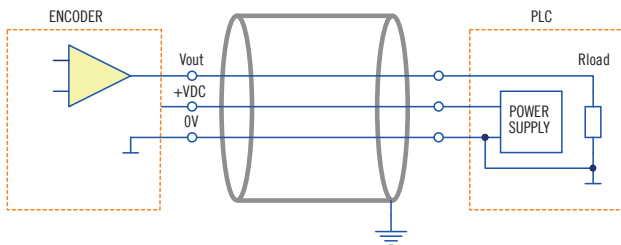


torque pin is included  
recommended mating shaft tolerance g6  
dimensions in mm

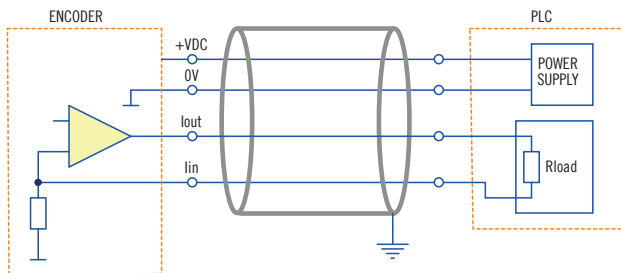
ELECTRICAL SPECIFICATIONS	
Multiturn resolution	16 bit max
Singleturn resolution	16 bit max
Output DAC resolution	16 bit
Minimum angle	22,5°
Power supply <sup>1</sup>	11,4 ... 30 V DC (reverse polarity protection)
Power draw without load	< 1 W
Electrical interface <sup>2</sup>	voltage (0 ... 5 V / 0 ... 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	$\pm 0,069^\circ$
Mean time to dangerous failure (MTTF <sub>d</sub> ) <sup>3</sup> according to EN ISO 13849-1	186 years
Mission time (Tm) <sup>3</sup>	20 years
Diagnostic coverage (DC) <sup>3</sup>	0%
Cable type	shielded - fixed installation conductors section 0,22 mm <sup>2</sup> / AWG 24 bending radius min 60 mm
Electromagnetic compatibility	according to 2014/30/EU directive
RoHS	according to 2011/65/EU directive
UL / CSA	file n. E212495

**ELECTRICAL INTERFACE**

**VOLTAGE OUTPUT**



**CURRENT OUTPUT**



3 / 4 wire source  
with 3 wires interface Iin is internally connected to 0V

MECHANICAL SPECIFICATIONS	
Bore diameter	$\phi 14 / 15 \text{ mm}$ $\phi 6 / 8^* / 9,52 (3/8)^* / 10^* / 11^* / 12^* \text{ mm}$ * with optional shaft adapter, please refer to Accessories
Enclosure rating IEC 60529	X = IP 65 shaft side / IP67 cover side S = IP 67
Max rotation speed	see table
Max shaft load <sup>4</sup>	200 N (45 lbs) axial / 60 N (13,49 lbs) radial
Shock	50 G, 11 ms (IEC 60068-2-27)
Vibration	10 G, 10 ... 2000 Hz (IEC 60068-2-6)
Moment of inertia	$5 \times 10^{-6} \text{ kgm}^2$ ( $119 \times 10^{-6} \text{ lbf}^2$ )
Starting torque (at +20°C / +68°F)	< 0,03 Nm (4,25 Ozin)
Bearing stage material	aluminum
Shaft material	stainless steel
Housing material	painted aluminium
Bearings	n.2 ball bearings
Bearings life	$10^9$ revolutions
Operating temperature <sup>5,6</sup>	-20° ... +85°C (-4° ... +185°F)
Storage temperature <sup>6</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> this product is not a safety component, for further details refer to TECHNICAL BASICS section  
<sup>4</sup> maximum load for static usage  
<sup>5</sup> measured on the transducer flange  
<sup>6</sup> condensation not allowed

**ROTATION SPEED / TEMPERATURE TABLE**

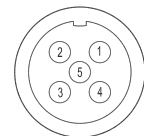
Temperature °C (°F)	Max speed (rpm)	Max continuous speed (rpm)
up to +70 (+158)	10000	8000
+70 ... +85 (+158 ... +185)	8000	5000

**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 or grey	5	5
⊥	shield	housing	housing

\* with Q current output

M12 connector (5 pin)  
M12 A coded  
front view



M12 connector (8 pin)  
M12 A coded  
front view

