

Singleturn absolute encoder ESS58-PZ

- Industrial standard housing Ø58 mm
- Ethernet interface with Powerlink
- 16 Bit singleturn
- Two Ethernet connectors with built in hub
- Recessed hollow shaft



ETHERNET
POWERLINK

Function

Absolute rotary encoders deliver an absolute step value for each angle setting. On account of the high number of measuring steps, this type of absolute rotary encoder can be used to divide very long linear distances into small measuring steps.

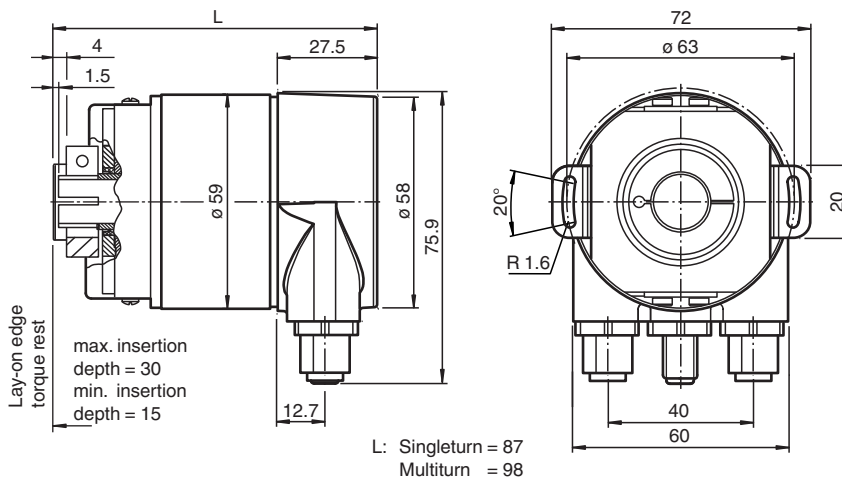
The Ethernet interface of this absolute encoder supports the Powerlink V2 protocol. An integrated hub allows wiring in a line structure (daisy chain).

In addition to various functions like resolution adjustment, rotation direction, node number setting or limit switch adjustment, the following operation modes can be selected:

- Polled mode
- Multiplexed mode
- Poll Response chaining

The absolute encoder is mounted directly onto the application shaft, without any coupling. Rotation of the absolute encoder is prevented by a torque rest.

Dimensions



Technical Data

General specifications

Detection type	photoelectric sampling
Device type	Singleturn absolute encoder

Functional safety related parameters


MTTF _d	130 a
Mission Time (T _M)	20 a
L _{10h}	1.9 E+11 at 6000 rpm and 20/40 N axial/radial shaft load

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

Technical Data

Diagnostic Coverage (DC)		0 %
Electrical specifications		
Operating voltage	U_B	10 ... 30 V DC , safe galvanic isolation per EN 50178
Power consumption	P_0	max. 3 W
Linearity		± 0.5 LSB (12 Bit) , ± 2 LSB (16 Bit)
Output code		binary code
Code course (counting direction)		programmable, cw ascending (clockwise rotation, code course ascending) cw descending (clockwise rotation, code course descending)
Interface		
Interface type		Ethernet Powerlink
Resolution		
Single turn		up to 16 Bit
Overall resolution		up to 16 Bit
Physical		Ethernet
Transfer rate		100 MBit/s
Connection		
Connector		Ethernet: 2 sockets M12 x 1, 4-pin, D-coded Supply: 1 plug M12 x 1, 5-pin, A-coded
Standard conformity		
Degree of protection		DIN EN 60529, shaft side: IP64 (without shaft seal)/IP66 (with shaft seal) housing side: IP65
Climatic testing		DIN EN 60068-2-3, no moisture condensation
Emitted interference		EN 61000-6-4:2007
Noise immunity		EN 61000-6-2:2005
Shock resistance		DIN EN 60068-2-27, 100 g, 6 ms
Vibration resistance		DIN EN 60068-2-6, 10 g, 10 ... 2000 Hz
Approvals and certificates		
UL approval		cULus Listed, General Purpose, Class 2 Power Source
CCC approval		CCC approval / marking not required for products rated ≤ 36 V
Ambient conditions		
Operating temperature		-40 ... 79 °C (-40 ... 174.2 °F)
Storage temperature		-40 ... 85 °C (-40 ... 185 °F)
Relative humidity		98 % , no moisture condensation
Mechanical specifications		
Material		housing: powder coated aluminum flange: aluminum shaft: stainless steel
Mass		approx. 550 g
Rotational speed		max. 12000 min ⁻¹
Moment of inertia		30 gcm ²
Starting torque		≤ 3 Ncm (version without shaft seal)
Tightening torque, fastening screws		max. 1.8 Nm
Shaft load		
Angle offset		$\pm 0.9^\circ$
Axial offset		static: ± 0.3 mm, dynamic: ± 0.1 mm
Radial offset		static: ± 0.5 mm, dynamic: ± 0.2 mm

Accessories

	V15-G-YE2M-PVC	Female cordset, M12, 5-pin, PVC cable
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Accessories

	V15-G-YE5M-PVC	Female cordset, M12, 5-pin, PVC cable
	V1SD-G-ABG-PG9	Male connector M12 straight D-coded 4-pin, for cable diameter 5 - 8 mm, shielded, field-attachable
	V1SD-G-2M-PUR-ABG-V45-G	Connection cable, M12 to RJ-45, PUR cable 4-pin, CAT5e
	V15-G-PG9	Female connector M12 straight A-coded 5-pin, for cable diameter 6 - 8 mm, field-attachable
	ACC-PACK-ABS-_S_58 ø15	Accessories set for Ø58 absolut rotary encoder with recessed hollow shaft 15 mm
	ACC-PACK-ABS-_S_58 ø14	Accessories set for Ø58 absolut rotary encoder with recessed hollow shaft 14 mm
	ACC-PACK-ABS-_S_58 ø12	Accessories set for Ø58 absolut rotary encoder with recessed hollow shaft 12 mm
	ACC-PACK-ABS-_S_58 ø10	Accessories set for Ø58 absolut rotary encoder with recessed hollow shaft 10 mm

Connection

Pin	Male connector M12 x 1, 4-pin, A-coded	Female connector M12 x 1, 4-pin, D-coded
1	Supply voltage +U _B	Tx +
2	-	Rx +
3	0 V	Tx -
4	-	Rx -

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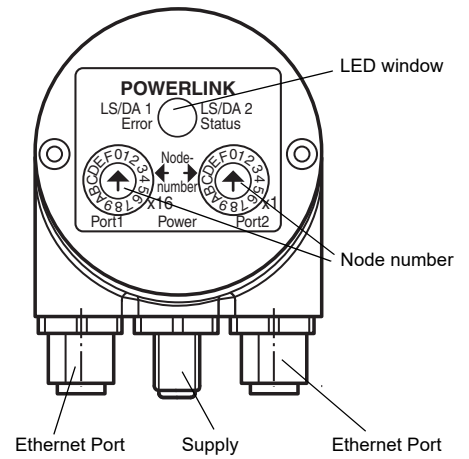
Indication

LEDs for HUB Port

LED	Color	Status	Meaning
LS/DA 1	green	on	LINK active for HUB Port 1
		blinking	Activity on HUB Port 1
LS/DA 2	green	on	LINK active for HUB Port 2
		blinking	Activity on HUB Port 2

LEDs for Powerlink

LED	Color	Status	Meaning
Error	red	on	- not allowed node number - internal communication error - buffer underrun/overflow - collision - CRC error - loss of SoC
		off	no error
Status	green	off	not active
		flickering	Basic Ethernet mode
		flashes 1x	Pre-Operational 1
		flashes 2x	Pre-Operational 2
		flashes 3x	ready to operate
		on	Operational
		blinking	Stopped



Node number adjustment

The setting of the controlled node number is achieved by 2 hexadecimal switches x16 and x1. Allowed node numbers range is 1 ... 239. The adjusted node number is calculated as follows:

$$\text{Node number} = \text{Decimal value}_{[\text{switch } x16]} \times 16 + \text{Decimal value}_{[\text{switch } x1]} \times 1$$

Example:

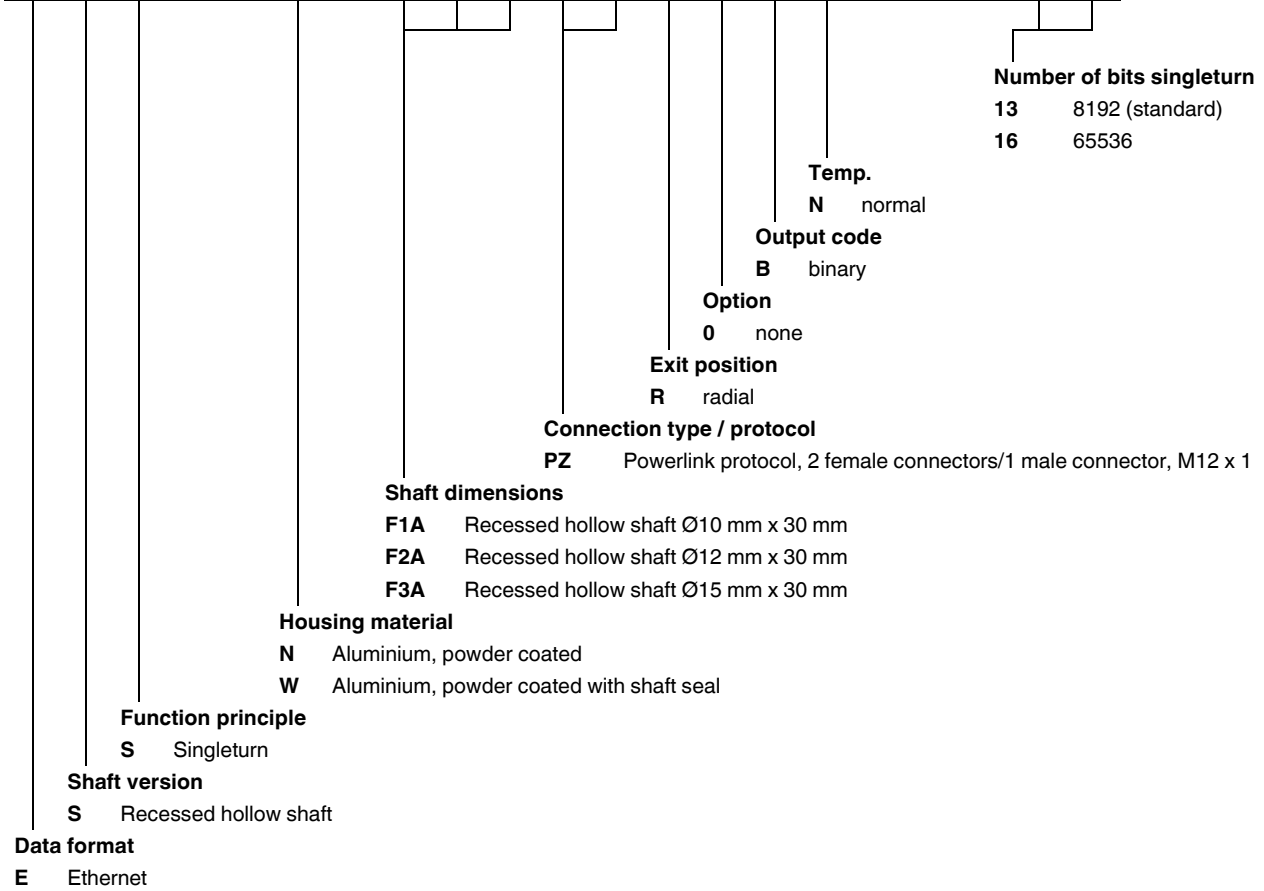
$$[\text{switch } x16] = A, [\text{switch } x1] = 5$$

$$A_{\text{hex}} = 10_{\text{dec}} \times 16 = 160 + 5 = 165$$

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Order code

E S S 5 8 N - P Z R 0 B N - 0 0



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