



Model Number

ESM58-TZ

Features

- Industrial standard housing Ø58 mm
- Ethernet interface with TCP/IP
- 30 Bit multiturn
- Integrated webserver
- Recessed hollow shaft

Description

In addition to the CANopen-, DeviceNet-, PRO-FIBUS- and AS-Interface encoders, we have broadened our product line of bus-capable absolute encoders with the ESM58 for Ethernet.

Absolute multiturn rotary encoders deliver an absolute step value for each angle setting.

This device has a maximum basic resolution of 65536 steps per revolution (16 bits) and codes up to 16384 revolutions (14 bits). Thus the overall resolution amounts to 30 bits. On account of the high number of measuring steps resulting (more than 1 billion), this type of encoder can be used to divide very long linear distances into small measuring steps.

The Ethernet interface of this absolute encoder supports the TCP/IP protocol. The integrated webserver provides Java applets, which allow the whole parameterisation of the encoder via any web browser. In addition to various functions like resolution adjustment, e-mail-services, change of the IP address and many others, the following operation modes can be selected:

- Polled Mode
- Cyclic Mode
- Change of State Mode

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

Technical data

General specifications

Detection type	photoelectric sampling
Device type	Multiturn absolute encoder

Functional safety related parameters

MTTF _d	120 a
Mission Time (T _M)	20 a
L ₁₀	1.9 E+11 at 6000 rpm and 20/40 N axial/radial shaft load
Diagnostic Coverage (DC)	0 %

Electrical specifications

Operating voltage U _B	10 ... 30 V DC
Power consumption P ₀	max. 4 W
Linearity	± 0.5 LSB (12 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	TCP/IP
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Resolution	
Single turn	up to 16 Bit
Multiturn	14 Bit
Overall resolution	up to 30 Bit

Physical	Ethernet
Transfer rate	10 MBit/s / 100 MBit/s

Connection

Connector	Ethernet: 1 socket M12 x 1, 4-pin, D-coded Supply: 1 plug M12 x 1, 5-pin, A-coded
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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 ... 1000 Hz

Ambient conditions

Operating temperature	0 ... 60 °C (32 ... 140 °F) Standard , with Option T -40 ... 85 °C (-40 ... 185 °F)
Storage temperature	-40 ... 85 °C (-40 ... 185 °F)

Mechanical specifications

Material	housing: powder coated aluminum flange: aluminum shaft: stainless steel
Mass	approx. 500 g
Rotational speed	max. 12000 min ⁻¹ without shaft seal max. 3000 min ⁻¹ with shaft seal
Moment of inertia	30 gcm ²
Starting torque	≤ 3 Ncm without shaft seal ≤ 5 Ncm with shaft seal
Tightening torque, fastening screws	max. 1.8 Nm
Shaft load	
Angle offset	± 0.9 °
Axial offset	static: ± 0.3 mm, dynamic: ± 0.1 mm
Radial offset	static: ± 0.5 mm, dynamic: ± 0.2 mm

Approvals and certificates

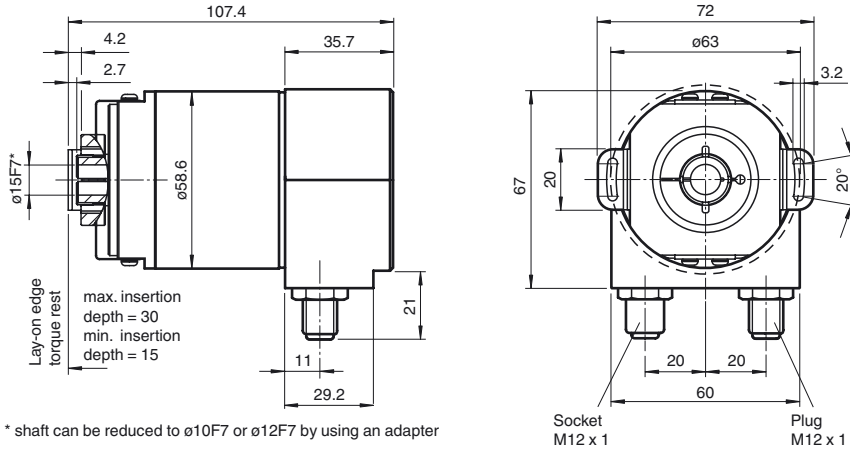
UL approval	cULus Listed, General Purpose, Class 2 Power Source
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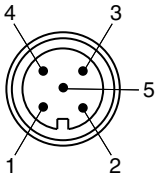
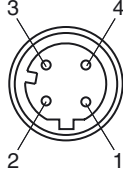
Refer to "General Notes Relating to Pepperl+Fuchs Product Information".

Dimensions

Recessed hollow shaft



Electrical connection

Pin	Male connector M12 x 1, 5-pin, A-coded	Female connector M12 x 1, 4-pin, D-coded
1	+ 24 V	Tx +
2	+ 24 V	Rx +
3	0 V	Tx -
4	0 V	Rx -
5	PE	
		

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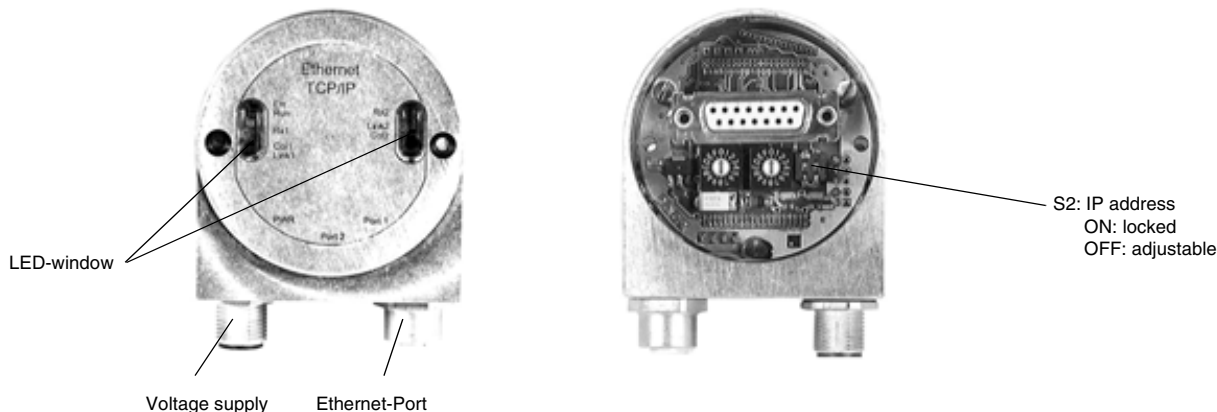
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Indicators and operation means



LED-indicators

LED	Colour	Meaning
Rx1	yellow	Data traffic on Port 1
Link1	green	Connection to an Ethernet device on Port 1
Col1	red	Bus collision on Port 1
Err	red	Internal error
Run	green	Ethernet interface ready to work

Set switch S2 to position OFF. The IP address can be adjusted now. In switch position ON, the IP address is blocked to avoid unintended change.

The rotary switches and switch S1 are without any function.

IP address adjustment

Order code

E S M 5 8 N - - - T Z R 0 B - - -

Number of bits singleturn
 13 8192 (standard)
 16 65536

Number of bits multiturn
 12 4096 (standard)
 14 16384

Temp.
 N Standard 0 ... 60 °C
 T Option -40 ... 85 °C

Output code
 B binary

Option
 0 none

Exit position
 R radial

Connection type / protocol
 TZ TCP/IP protocol, 1 female connector/1 male connector, M12 x 1

Shaft dimensions
 F1A Recessed hollow shaft Ø10 mm x 30 mm
 F2A Recessed hollow shaft Ø12 mm x 30 mm
 F3A Recessed hollow shaft Ø15 mm x 30 mm

Housing material
 N Aluminium, powder coated
 W Aluminium, powder coated with shaft seal

Function principle
 M Multiturn

Shaft version
 S Recessed hollow shaft

Data format
 E Ethernet

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