Model Number

ESS58-TZ

Features

- **Industrial standard housing Ø58 mm**
- **Ethernet interface with TCP/IP**
- **16 Bit singleturn**
- **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 singleturn 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).

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

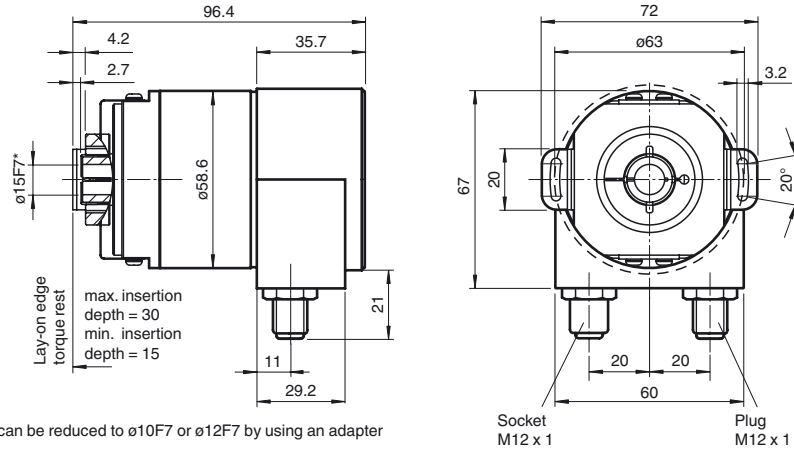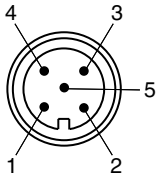| General specifications	
Detection type	photoelectric sampling
Device type	Singleturn absolute encoder
Functional safety related parameters	
$MTTF_d$	130 a
Mission Time (T_M)	20 a
L_{10}	1.9 E+11 at 6000 rpm and 20/40 N axial/radial shaft load
Diagnostic Coverage (DC)	0 %
Electrical specifications	
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
Resolution	
Single turn	up to 16 Bit
Overall resolution	up to 16 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
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
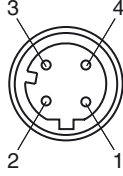
Refer to "General Notes Relating to Pepperl+Fuchs Product Information".

Dimensions

Recessed hollow shaft

96.4
4.2
2.7
35.7
ø15F7*
ø58.6
Lay-on edge torque rest
max. insertion depth = 30
min. insertion depth = 15
21
11
29.2

* shaft can be reduced to ø10F7 or ø12F7 by using an adapter

72
ø63
3.2
67
20
20°
20
20
60
Socket M12 x 1
Plug M12 x 1

Refer to "General Notes Relating to Pepperl+Fuchs Product Information".

Pepperl+Fuchs Group	USA: +1 330 486 0001	Germany: +49 621 776 1111	Singapore: +65 6779 9091
www.pepperl-fuchs.com	fa-info@us.pepperl-fuchs.com	fa-info@de.pepperl-fuchs.com	fa-info@sg.pepperl-fuchs.com

PEPPERL+FUCHS

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	

Refer to "General Notes Relating to Pepperl+Fuchs Product Information".

Pepperl+Fuchs Group   USA: +1 330 486 0001   Germany: +49 621 776 1111   Singapore: +65 6779 9091
www.pepperl-fuchs.com   fa-info@us.pepperl-fuchs.com   fa-info@de.pepperl-fuchs.com   fa-info@sg.pepperl-fuchs.com

PEPPERL+FUCHS

3

Release date: 2018-11-07 15:30   Date of issue: 2018-11-16   t31168_eng.xml

Indicators and operation means

LED-window

Voltage supply   Ethernet-Port

S2: IP address
ON: locked
OFF: adjustable
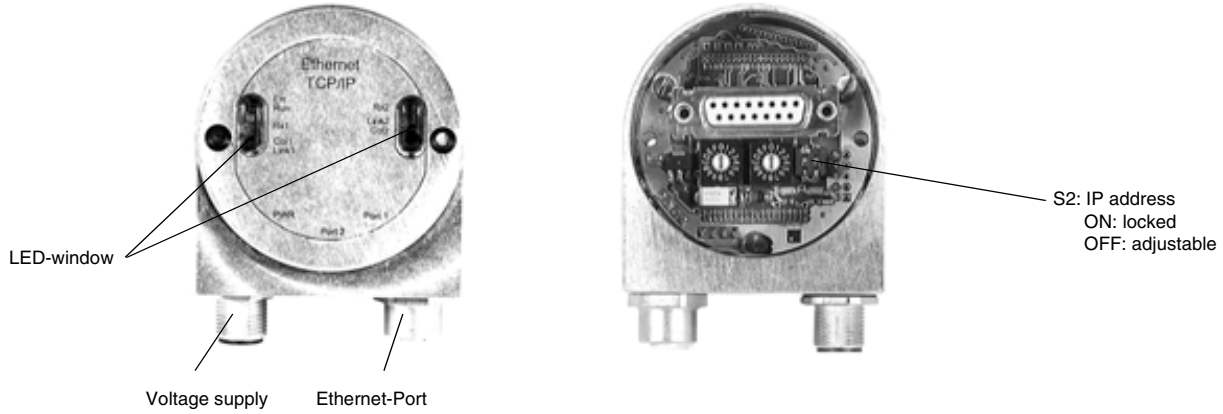
LED-indicators

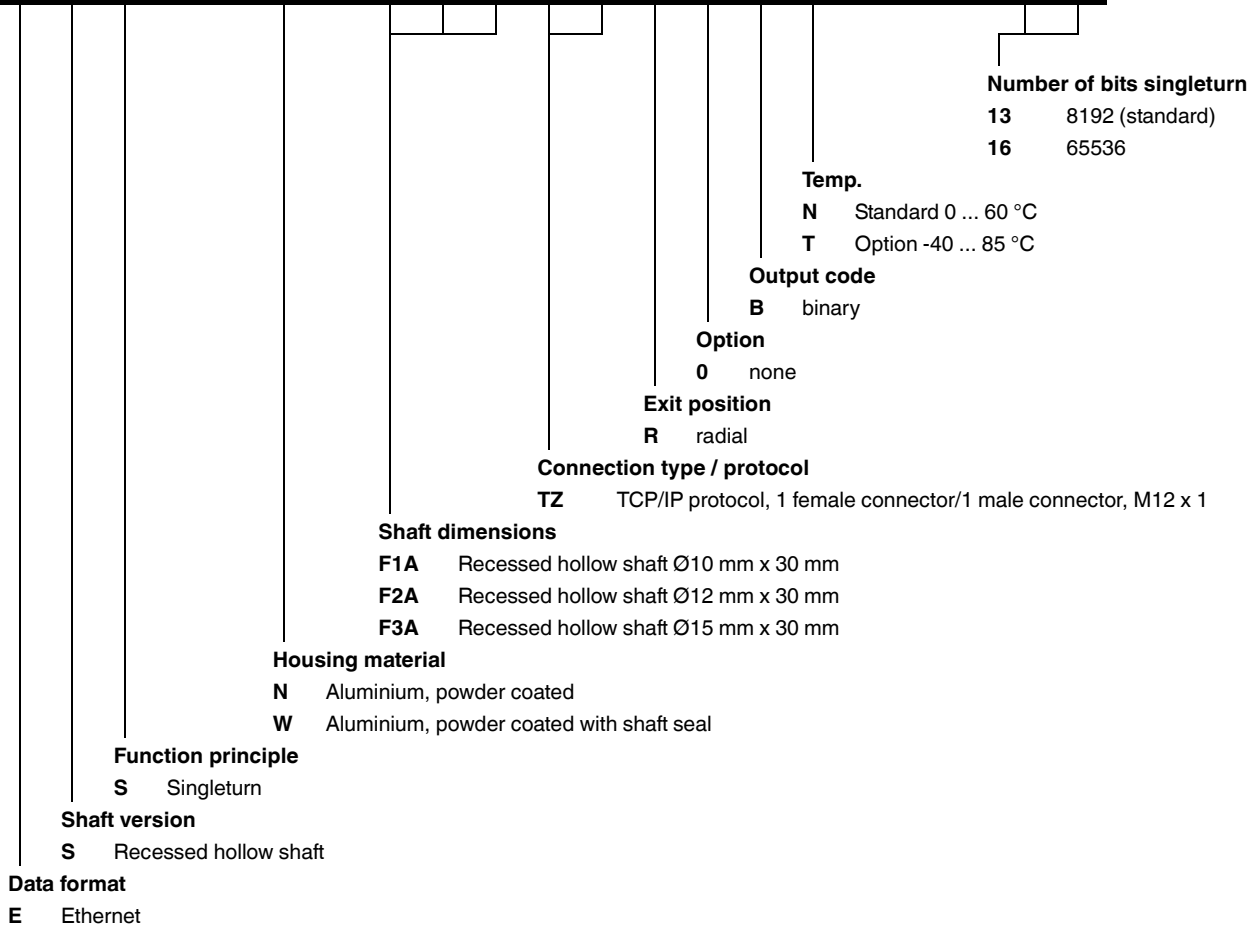| LED	Colour	Meaning
Rx1	yellow	Data traffic on Port 1
Link1	green	Connection to an Ethernet device on Port 1
Col1	red	Bus collision on Port 1
Err	red	Internal error
Run	green	Ethernet interface ready to work

IP address adjustment

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.

Order code

E	S	S	5	8	N	–			T	Z	R	0	B		–	0	0	

Number of bits singleturn
13   8192 (standard)
16   65536

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
S   Singleturn

Shaft version
S   Recessed hollow shaft

Data format
E   Ethernet