Incremental Shaft Encoders Type RI 58-D
with Hollow Shaft

Blind shaft

Clamping shaft

- Flexible hollow shaft design up to diameter 14 mm
- Short overall length
- Easy installation by means of clamping shaft or blind shaft
- Application e.g.:
  - actuators
  - length measuring machines
  - motors
- Operating temperature up to 100 °C (RI 58 TD)

NUMBER OF PULSES

RI 58-D: 1 / 2 / 3 / 4 / 5 / 10 / 20 / 25 / 29 / 30 / 35 / 40 / 45 / 50 / 60 / 64 / 70 / 72 / 80 / 100 / 117 / 120 / 125 / 128 / 136 / 144 / 150 / 160 /180 / 200 / 226 / 230 / 250 / 256 / 280 / 300 / 314 / 350 / 360 / 375 / 400 / 460 / 480 / 500 / 512 / 600 / 625 / 720 / 889 / 900 / 942 / 1000 / 1024 / 1250 / 1270 / 1500 / 1600 / 1800 / 1885 / 2000 / 2048 / 2400 / 2500 / 3000 / 3400 / 3480 / 3600 / 3925 / 4000 / 4096 / 5000

RI 58 TD: (high temperature); As above, but only within the range 4...2,500
Other numbers of pulses available on request

SHAFT VARIANTS

E = End shaft (non-through shaft)
F = Clamping shaft (non-through shaft)
D = Clamping shaft (through shaft)

TECHNICAL DATA
mechanical

Mounting	synchro flange with clamping shaft or blind shaft
Shaft diameter	hollow shaft 10 mm hollow shaft 12 mm hollow shaft 14 mm (not through) required dimension of mounting shaft: Ø 10 mm, tolerance g8 (-0.005...-0.027 mm) Ø 12/14 mm, tolerance g8 (-0.006...-0.033 mm)
Absolute maximum speed	E, F: max. 6,000 RPM; D = max. 4000 min^{-1}
Torque	≤ 1 Ncm with non-through shaft (E, F) ≤ 2 Ncm with through shaft D
Moment of inertia	F: approx. 35 gcm^2 (clamping non-through shaft) E: approx. 20 gcm^2 (end shaft)
	D: approx 60 gcm^2 (clamping through shaft)
Protection class (EN 60529)	E, F: housing IP 65, bearings IP 64
	D: housing IP 64, bearings IP 64
Operating temperature	–10 ... +70 °C, Option: -25 ...+100°C
Storage temperature	–25 ... +85 °C
Vibration proof (IEC 68-2-6)	10 g = 100 m/s^2 (10 ... 2,000 Hz)
Shock resistance (IEC 68-2-27)	100 g = 1,000 m/s^2 (6 ms)
Type of connection radial	1.5 m cable [1] or connector
Housing	aluminium
Weight	E, F.: 170 g approx.; D: 190 g approx.

[1] Other cable length on request

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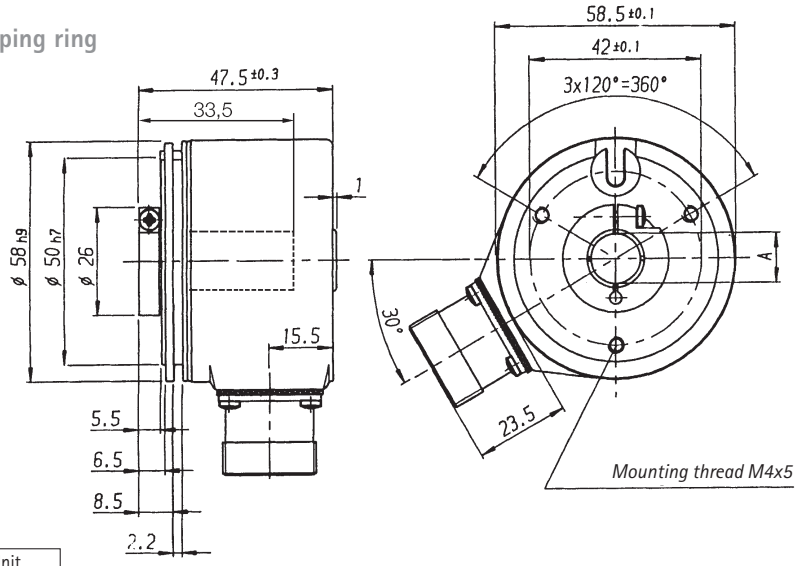
TECHNICAL DATA
electrical

General design	as per DIN VDE 0160, protection class III, contamination level 2, overvoltage class II	
Supply voltage (SELV)	with RS 422 + Sense (T):	5 VDC ± 10 %
	with RS 422 + Alarm (R):	5 VDC ± 10 % oder 10 ... 30 VDC [1]
	with push-pull (K, I):	10 ... 30 VDC 1)
Power consumption	40 mA (5 VDC), 60 mA (10 VDC), 30 mA (24 VDC)	
Standard-Output versions[2]	RS 422 (R):	A, B, N, $\overline{A}$, $\overline{B}$, $\overline{N}$, $\overline{Alarm}$
	RS 422 (T):	A, B, N, $\overline{A}$, $\overline{B}$, $\overline{N}$, Sense
	push-pull (K):	A, B, N, $\overline{Alarm}$
	push-pull complementary (I):	A, B, N, $\overline{A}$, $\overline{B}$, $\overline{N}$, $\overline{Alarm}$

[1] Pole protection with supply voltage 10...30 VDC
[2] Output description and technical data see section „Output".

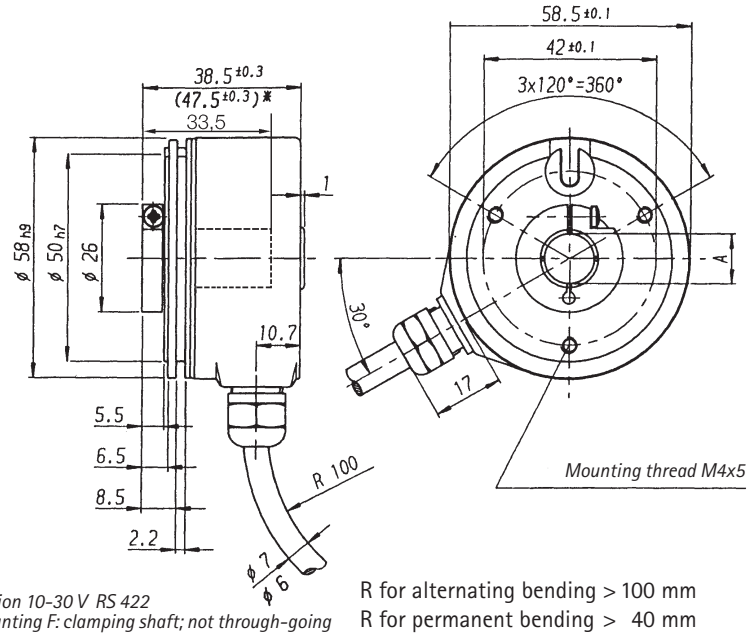
DIMENSIONED DRAWING

Mounting = F:
blind shaft with clamping ring



Dim.:	Ø of hollow shaft			Unit
A	10^{H7}	12^{H7}	14^{H7}	mm
A*	10_{g8}	12_{g8}	14_{g8}	mm

A = Diameter of connection shaft*



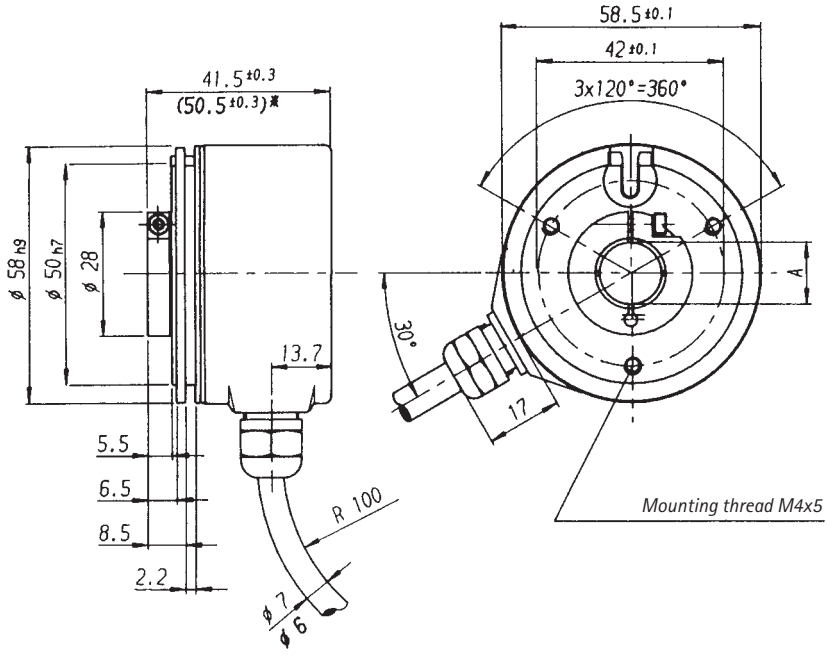
Dimensions in mm

** with Version 10-30 V RS 422*
***with mounting F: clamping shaft; not through-going*

R for alternating bending > 100 mm
R for permanent bending > 40 mm

DIMENSIONED DRAWING

Mounting = D:
through shaft with clamping ring



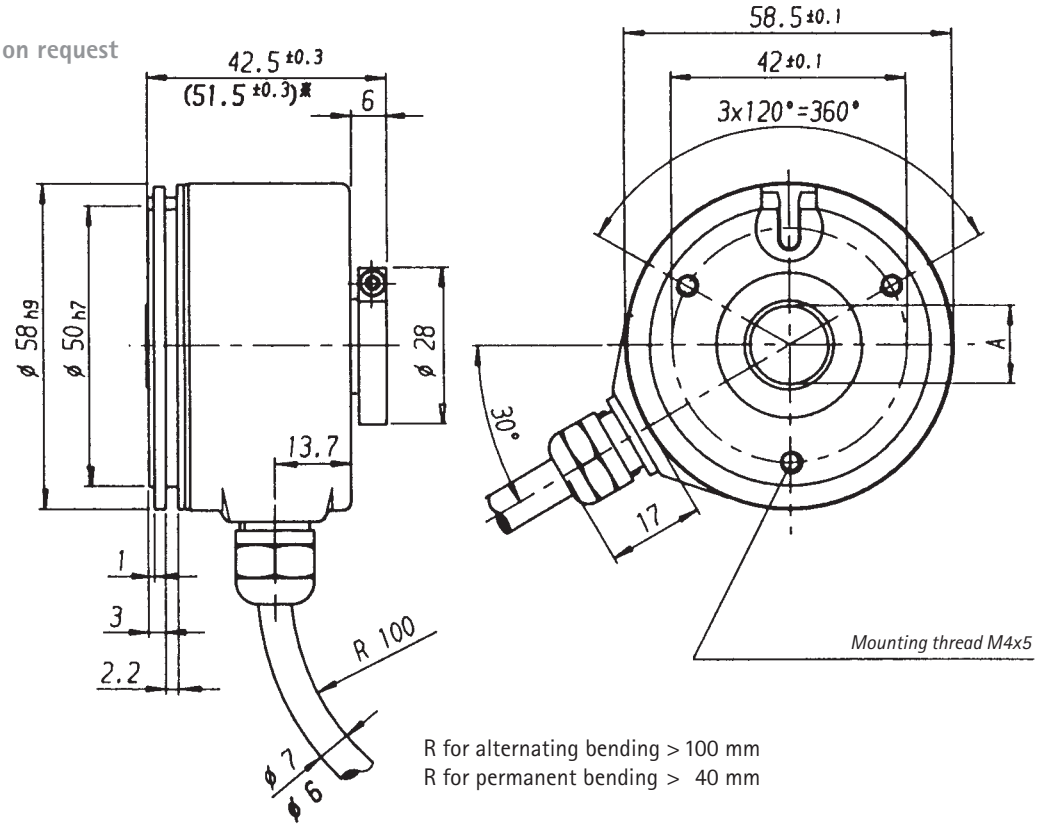
Dim.:	Ø of hollow shaft			Unit
A	10^{H7}	12^{H7}	14^{H7}	mm
A*	10_{g8}	12_{g8}	14_{g8}	mm

A = Diameter of connection shaft*

** with Version 10-30 V RS 422*

R for alternating bending > 100 mm
R for permanent bending > 40 mm

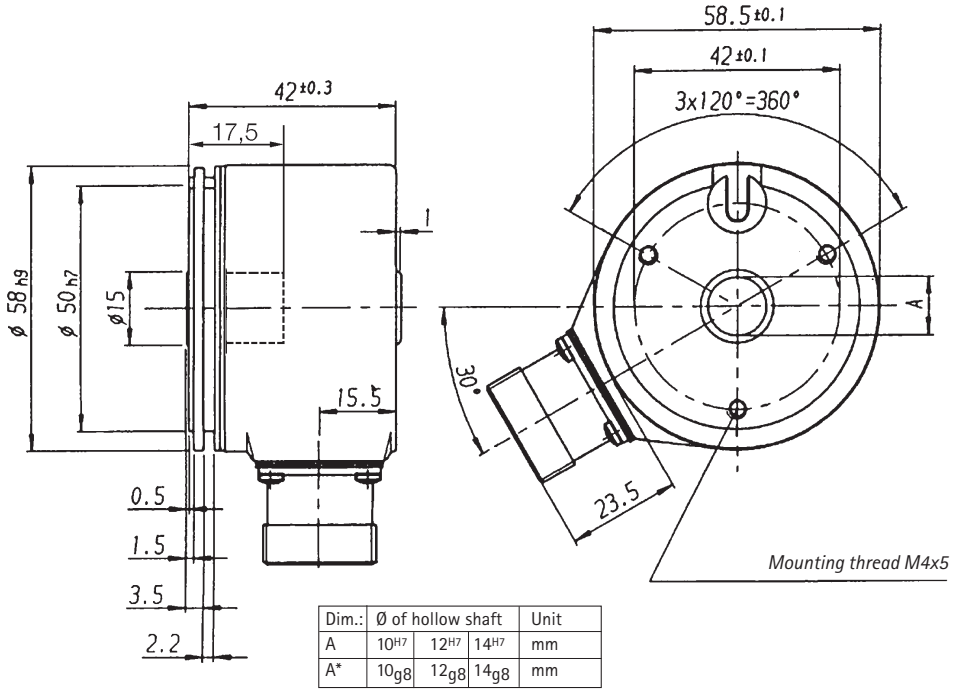
OPTION:
Clamping ring at rear on request



R for alternating bending > 100 mm
R for permanent bending > 40 mm

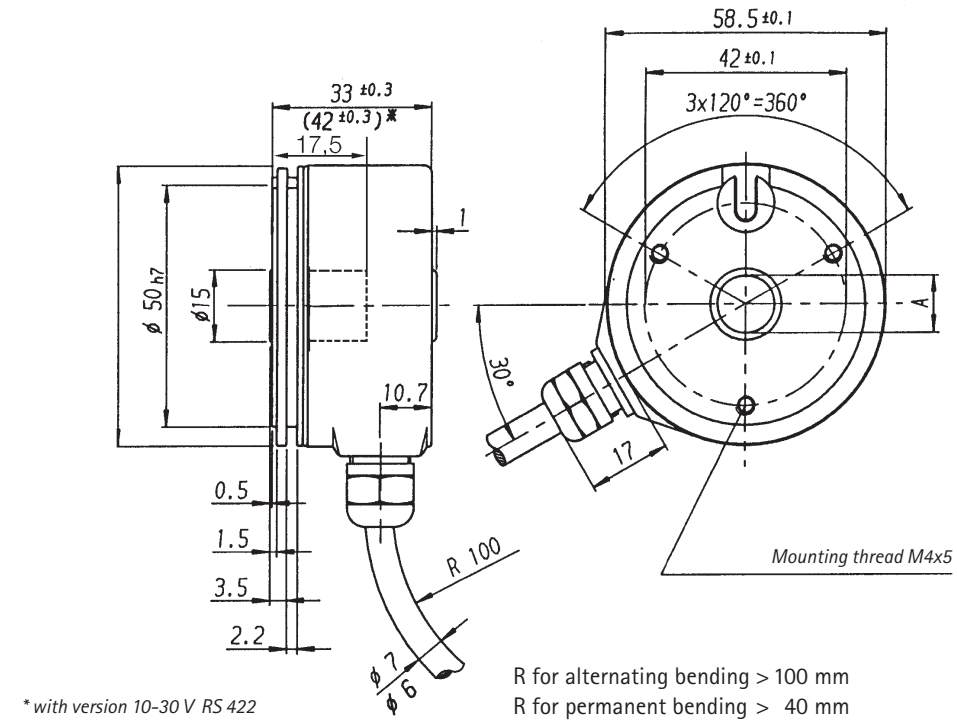
DIMENSIONED DRAWING

Mounting of version E, blind shaft (no through shaft)



Dim.:	Ø of hollow shaft			Unit
A	10^{H7}	12^{H7}	14^{H7}	mm
A*	10_{g8}	12_{g8}	14_{g8}	mm

A = Diameter of connection shaft*



** with version 10-30 V RS 422*

R for alternating bending > 100 mm
R for permanent bending > 40 mm

Dimensions in mm

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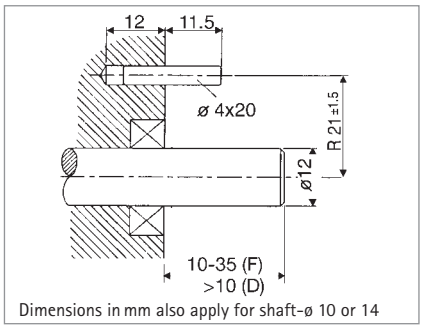
MOUNTING NECESSITIES

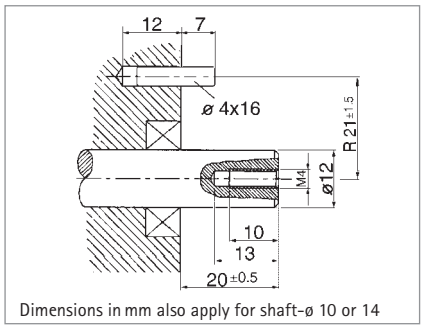
In order to be able to compensate an axial and radial misalignment of the shaft, the encoder flange must not be fixed rigidly.
Fix the flanges by means of a stator coupling (e.g. spring plate) as torque support (see "Accessories") or by means of a cylindrical pin:



Dimensions in mm also apply for shaft-ø 10 or 14

Mounting D, F (Clamping shaft)

Preparation of the machine flange1) (all mounting versions):
In the machine flange a straight pin must be installed (diameter 4x16 resp. 4x20, DIN 6325).
This pin is required as a torque support.



Dimensions in mm also apply for shaft-ø 10 or 14

Mounting E (Blind shaft)

Preparation of the drive shaft (only in mounting = E):
The drive shaft must be provided with a threaded bore M 4 x10:
This bore accepts the fastening screw of the shaft encoder.

1) Or as an option: stator coupling as torque support

CONNECTION DIAGRAM CABLE PVC

		Output circuit		
Cable PVC	RS 422	RS 422	push-pull (K)	push-pull
Colour	+ Sense (T)	+ Alarm (R)		complementary (I)
white	Channel A	Channel A	Channel A	Channel A
white/brown	Channel $\overline{A}$	Channel $\overline{A}$		Channel $\overline{A}$
green	Channel B	Channel B	Channel B	Channel B
green/brown	Channel $\overline{B}$	Channel $\overline{B}$		Channel $\overline{B}$
yellow	Channel N	Channel N	Channel N	Channel N
yellow/brown	Channel $\overline{N}$	Channel $\overline{N}$		Channel $\overline{N}$
yellow/black	Sense GND	$\overline{Alarm}$	$\overline{Alarm}$	$\overline{Alarm}$
yellow/red	Sense V_{CC}	Sense V_{CC}		Sense V_{CC}
red	5 V DC=	5/10...30 V DC=	10...30 V DC=	10...30 V DC=
black	GND	GND	GND	GND
Cable screen 1)	Cable screen 1)	Cable screen 1)	Cable screen 1)	Cable screen 1)

1) connected to housing

CONNECTION DIAGRAM CABLE TPE

		Output circuit		
Cable TPE	RS 422	RS 422	push-pull (K)	push-pull
Colour	+ Sense (T)	+ Alarm (R)		complementary (I)
brown	Channel A	Channel A	Channel A	Channel A
green	Channel $\overline{A}$	Channel $\overline{A}$		Channel $\overline{A}$
grey	Channel B	Channel B	Channel B	Channel B
pink	Channel $\overline{B}$	Channel $\overline{B}$		Channel $\overline{B}$
red	Channel N	Channel N	Channel N	Channel N
black	Channel $\overline{N}$	Channel $\overline{N}$		Channel $\overline{N}$
violet (white) 2)	Sense GND	$\overline{Alarm}$	$\overline{Alarm}$	$\overline{Alarm}$
blue	Sense V_{CC}	Sense V_{CC}		Sense V_{CC}
brown/green	5 V DC=	5/10...30 V DC=	10...30 V DC=	10...30 V DC=
white/green	GND	GND	GND	GND
Cable screen 1)	Cable screen 1)	Cable screen 1)	Cable screen 1)	Cable screen 1)

1) connected to housing
2) white with Version Sense (T)

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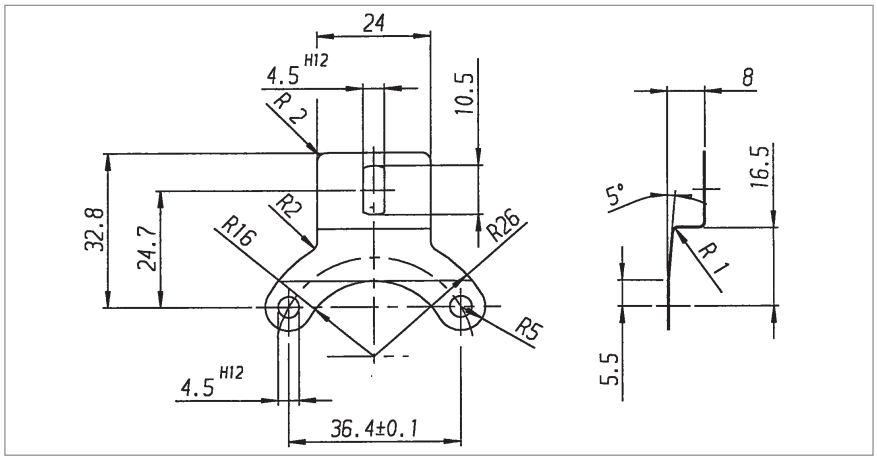
CONNECTION DIAGRAM CONNECTOR (CONIN)

Pin	RS 422 + Sense (T)	RS 422 + Alarm (R)	push-pull (K)	push-pull complementary (I)
1	Channel $\overline{B}$	Channel $\overline{B}$	N.C.	Channel $\overline{B}$
2	Sense V_{CC}	Sense V_{CC}	N.C.	Sense V_{CC}
3	Channel N	Channel N	Channel N	Channel N
4	Channel $\overline{N}$	Channel $\overline{N}$	N.C.	Channel $\overline{N}$
5	Channel A	Channel A	Channel A	Channel A
6	Channel $\overline{A}$	Channel $\overline{A}$	N.C.	Channel $\overline{A}$
7	N.C.	$\overline{Alarm}$	$\overline{Alarm}$	$\overline{Alarm}$
8	Channel B	Channel B	Channel B	Channel B
9	N.C. [1]	N.C. [1]	N.C. [1]	N.C. [1]
10	GND	GND	GND	GND
11	Sense GND	N.C.	N.C.	N.C.
12	5 V DC=	5/10 ... 30 V DC=	10 ... 30 V DC=	10 ... 30 V DC=

[1] screen with cable version with CONIN-connector

ACCESSORIES

Spring plate as stator coupling: **Ordering code 1 531 162**



ORDERING DATA

-D hollow shaft
TD hollow shaft 100° C

Supply voltage
A 5 VDC
E 10 ... 30 VDC

Mounting
synchro flange with
E blind shaft [1]
F clamping shaft [1]
D clamping shaft [2]

Shaft diameter
2 10 mm
7 12 mm
9 14 mm [1]

RI 58 ☐ / ☐ ☐ ☐ · ☐ ☐ ☐ ☐

Number of pulses
1 ... 5,000

Protection class
3 IP 642)
4 IP 641)

Output
K push-pull
T RS 422 + Sense
R RS 422 + Alarm
I push-pull complementary

Type of connection
B PVC-cable radial
F TPE-cable radial
D CONIN-connector radial, clockwise3)
H CONIN-connector radial, counter3) clockwise

[1] Mounting E, F; no through shaft, protection class code 4
[2] through shaft, protection class code 3, only cable connection
[3] only with mounting E or F (not through going)