Incremental Hollow Shaft

Clamping shaft

Blind shaft

- Direct mounting without coupling
- Flexible hollow shaft design up to diameter 14 mm
- Through hollow shaft or as end shaft (blind shaft)
- Easy installation by means of clamping shaft or blind shaft
- Short overall length of 33 mm
- Fixing of flage by means of a stator coupling or set screw
- Various shaft versions
- Applications: actuators, motors
- Operating temperature up to 100 °C (RI 58TD)

NUMBER OF PULSES

RI 58-D

1 / 2 / 3 / 4 / 5 / 10 / 20 / 25 / 30 / 35 / 40 / 45 / 50 / 60 / 64 / 70 / 72 / 80 / **100** / 125 / 128 / 144 / 150 / 180 / 200 / **250** / 256 / 300 / 314 / 350 / 360 / 375 / 400 / 460 / 480 / **500** / 512 / 600 / 625 / 720 / 900 / **1000** / **1024** / **1250** / 1500 / 1600 / 1800 / 2000 / 2048 / **2500** / 3000 / 3480 / **3600** / 4000 / **4096** / **5000**
Other number of pulses on request
Preferably available versions are printed in bold type.

RI 58TD

4 / 5 / 10 / 20 / 25 / 30 / 35 / 40 / 45 / 50 / 60 / 64 / 70 / 72 / 80 / **100** / 125 / 128 / 144 / 150 / 180 / 200 / **250** / 256 / 300 / 314 / 350 / 360 / 375 / 400 / 460 / 480 / **500** / 512 / 600 / 625 / 720 / 900 / **1000** / **1024** / **1250** / 1500 / 1600 / 1800 / 2000 / 2048 / **2500**
Other number of pulses on request
Preferably available versions are printed in bold type.

TECHNICAL DATA
mechanical

Housing diameter	58 mm
Shaft diameter [1]	10 mm / 12 mm (Through hollow shaft) 10 mm / 12 mm / 14 mm (Hubshaft)
Flange (Mounting of housing)	Synchro flange
Mounting of shaft	RI 58-D: Front clamping ring, Center bolt RI 58TD: Front clamping ring, Rear clamping ring, Center bolt
Protection class shaft input (EN 60529)	IP64
Protection class housing (EN 60529)	Through hollow shaft - D: IP64 Hubshaft - E,F: IP65
Shaft tolerance	Ø 10 mm, tolerance g8 (-0.005 ... -0.027 mm), Ø 12/ 14 mm, tolerance g8 (-0.006 ... -0.033 mm)
Max. speed	Hub shaft - E,F: max. 6000 rpm Through hollow shaft - D: max. 4000 rpm

Incremental Hollow Shaft

TECHNICAL DATA
mechanical (continued)

Torque	≤ 1 Ncm (Hub shaft - E,F) ≤ 2 Ncm (Through hollow shaft - D)
Moment of inertia	approx. 35 gcm² (Hub shaft with clamping ring front - F) approx. 20 gcm² (Hub shaft, mountig with set screw - E) approx. 60 gcm² (Through hollow shaft with clamping ring front - D)
Vibration resistance (DIN EN 60068-2-6)	10 g = 100 m/s² (10 ... 2000 Hz)
Shock resistance (DIN EN 60068-2-27)	100 g = 1000 m/s² (6 ms)
Operating temperature	RI 58-D: -10 °C ... +70 °C RI 58TD: -25 °C ... +100 °C
Storage temperature	-25 °C ... +85 °C
Material housing	Aluminum
Weight	approx. 170 g with hubshaft (E,F), approx. 190 g with trough hollow shaft (D)
Connection [2]	Cable, axial or radial M23 connector (Conin), radial

[1] Other shaft diameters on request
[2] Standard cable length: 1.5 m cable, other cable length on request (only RI 58TD)

TECHNICAL DATA
electrical

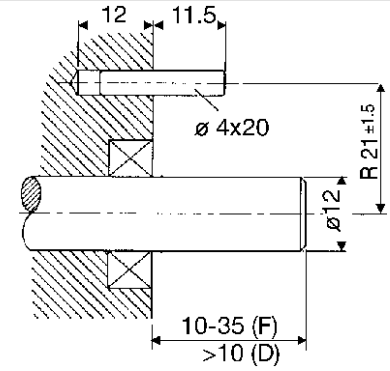
General design	as per DIN VDE 0160, protection class III, contamination level 2, overvoltage class II
Supply voltage [1]	RS422 + Sense (T): DC 5 V ±10 % RS422 + Alarm (R): ± 10% DC 5 V or DC 10 - 30 V Push-pull (K), Push-pull antivalent (I): DC 10-30 V
Max. current w/o load	40 mA (DC 5 V), 60 mA (DC 10 V), 30 mA (DC 24 V)
Max. pulse frequency	RS422: 300 kHz Push-pull: 200 kHz
Standard output versions [2]	RS422 + Alarm (R): A, B, N, $\overline{A}$, $\overline{B}$, $\overline{N}$, $\overline{Alarm}$ RS422 + Sense (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, $\overline{A}$, $\overline{B}$, $\overline{N}$, $\overline{Alarm}$
Pulse width error	± max. 25° electrical
Number of pulses	1 ... 5000
Alarm output	NPN-O.C., max. 5 mA
Pulse shape	Square wave
Pulse duty factor	1:1

[1] With push-pull (K): pole protection
[2] Output description and technical data see chapter "Technical basics"

Incremental Hollow Shaft

MOUNTING NECESSITIES

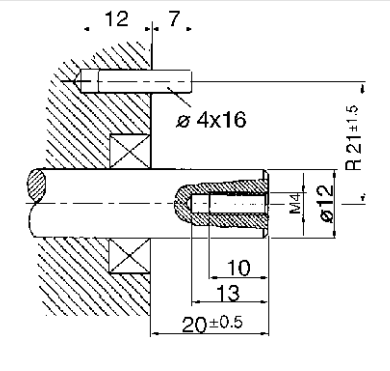
In order to be able to compensate an axial and radial misalignment of the shaft, the encoder flange must not be fixed rigidly. Fix the flanges by means of a stator coupling (e.g. hubshaft with tether) as torque support (see "Accessories") or by means of a cylindrical pin:



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

Mounting = D, F (Clamping ring)

Preparation of the machine flange [1]
(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 (mounting with center screw)

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**

ELECTRICAL CONNECTIONS
Cable PVC

Cable PVC Colour	**Output circuit**			
	RS422 + Sense (T)	**RS422 + Alarm (R)**	**push-pull (K)**	**push-pull 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	DC 5 V	DC 5 / 10 - 30 V	DC 10 - 30 V	DC 10 - 30 V
black	GND	GND	GND	GND
Cable screen [1]	Cable screen [1]	Cable screen [1]	Cable screen [1]	Cable screen [1]

[1] connected with encoder housing

Incremental Hollow Shaft

ELECTRICAL CONNECTIONS
Cable TPE

Cable TPE Colour	Output circuit			
	RS422 + Sense (T)	**RS422 + Alarm (R)**	**push-pull (K)**	**push-pull 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	Channe $\overline{B}$	Channe $\overline{B}$		Channe $\overline{B}$
red	Channel N	Channel N	Channel N	Channel N
black	Channel $\overline{N}$	Channel $\overline{N}$		Channel $\overline{N}$
violet (white) [1]	Sense GND	$\overline{Alarm}$	$\overline{Alarm}$	$\overline{Alarm}$
blue	Sense V_{CC}	Sense V_{CC}		Sense V_{CC}
brown/green	DC 5 V	DC 5 / 10 - 30 V	DC 10 - 30 V	DC 10 - 30 V
white/green	GND	GND	GND	GND
Cable screen [2]	Cable screen [2]	Cable screen [2]	Cable screen [2]	Cable screen [2]

[1] white with RS422 + Sense (T)

[2] connected with encoder housing

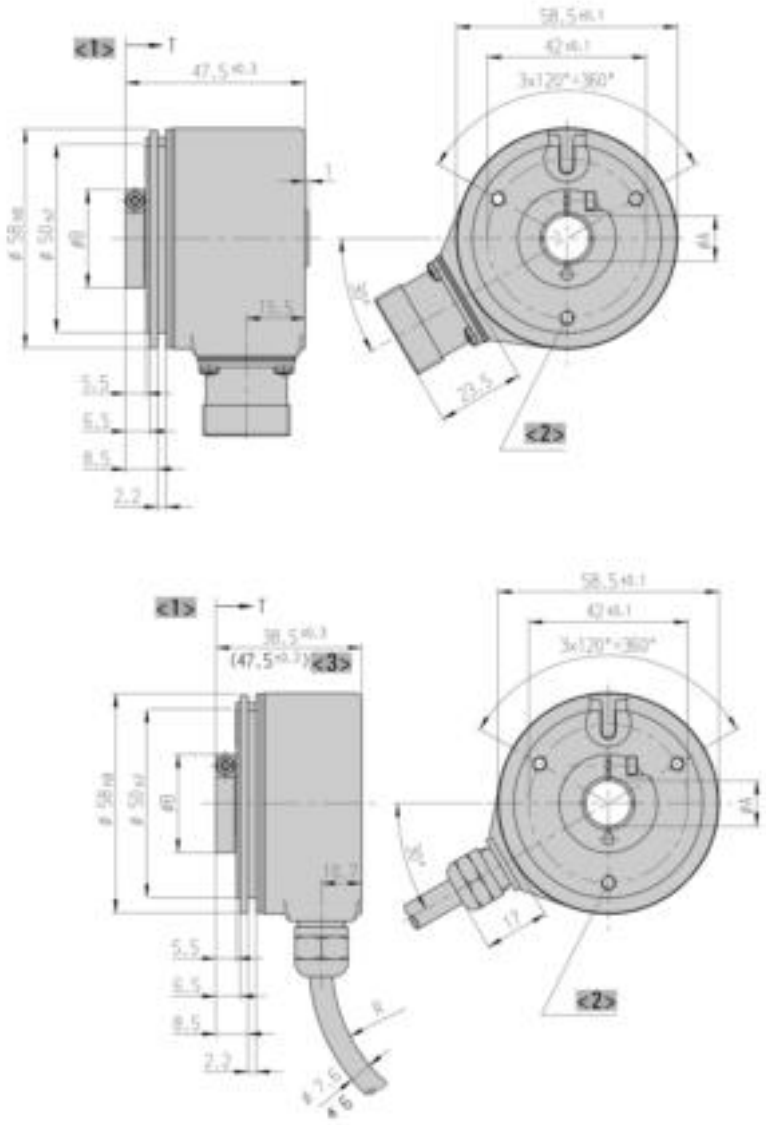
ELECTRICAL CONNECTIONS
M23 connector (Conin), 12 pole

Pin	RS422 + Sense (T)	RS422 + 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	DC 5 V	DC 5/10 - 30 V	DC 10 - 30 V	DC 10 - 30 V

[1] screen for cable with CONIN connector

DIMENSIONED DRAWINGS

Mounting F: Hubshaft with clamping ring front



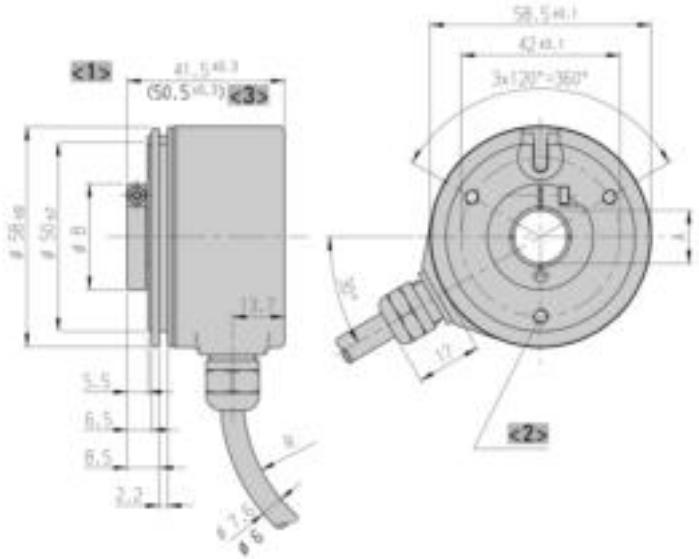
Dim.	Hollow shaft Ø			Unit
A	10 H7	12 H7	14 H7	mm
A*	10 g8	12 g8	14 g8	mm
B	26	28	30	mm
T	33.5	33.5	22.5	mm
A* = diameter of connection shaft				

<1> View turned 60°
<2> mounting thread M4x5
<3> value in brackets with version DC 10 - 30 V, RS422
Cable bending radius R for flexible installation ≥ 100 mm
Cable bending radius R for fixed installation ≥ 40 mm

Dimensions in mm

DIMENSIONED DRAWINGS (continued)

Mounting D: Through hollow shaft with clamping ring front



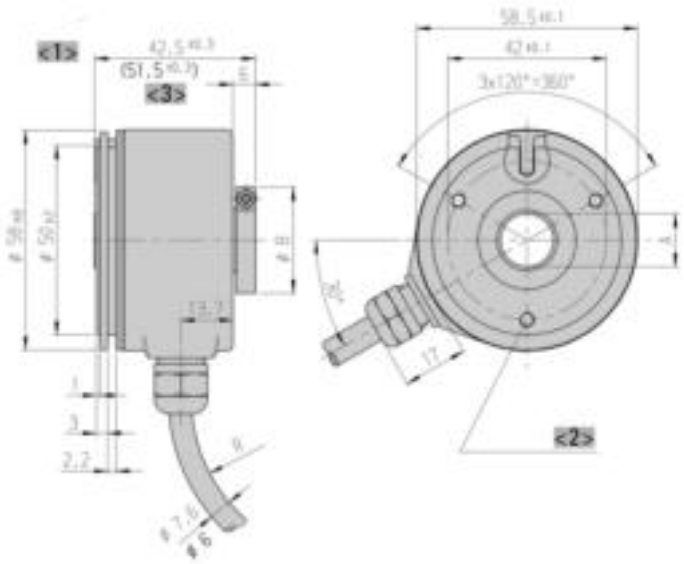
Dim.	Hollow shaft Ø		Unit
A	10 H7	12 H7	mm
A*	10 g8	12 g8	mm
B	26	28	mm
A* = diameter of connection shaft			

<1> View turned 60°
<2> mounting thread M4x5
<3> value in brackets with version DC 10 - 30 V, RS422
Cable bending radius R for flexible installation ≥ 100 mm
Cable bending radius R for fixed installation ≥ 40 mm

Dimensions in mm

DIMENSIONED DRAWINGS (continued)

Mounting H optional: Through hollow shaft with clamping ring rear on request



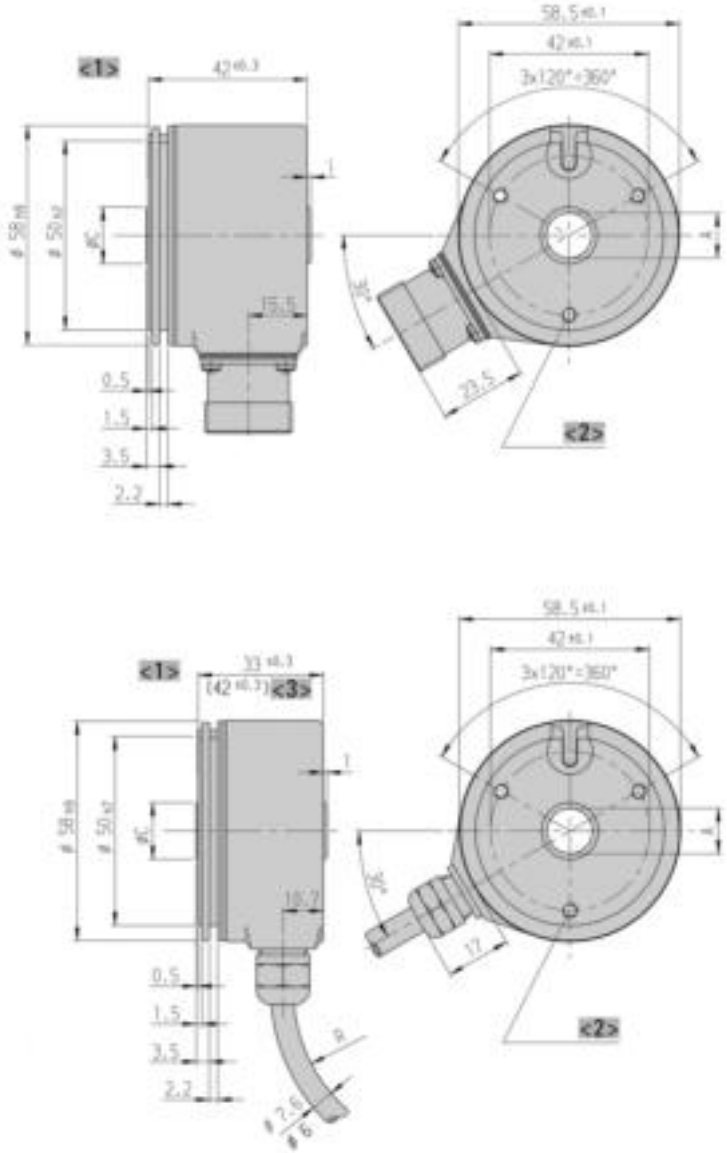
Dim.	Hollow shaft Ø		Unit
A	10 H7	12 H7	mm
A*	10 g8	12 g8	mm
B	26	28	mm
A* = diameter of connection shaft			

<1> View turned 60°
<2> mounting thread M4x5
<3> value in brackets with version DC 10 - 30 V, RS422
Cable bending radius R for flexible installation ≥ 100 mm
Cable bending radius R for fixed installation ≥ 40 mm

Dimensions in mm

DIMENSIONED DRAWINGS (continued)

Mounting E: Hubshaft, mounting with center screw



Dim.	Hollow shaft Ø			Unit
A	10 ^{H7}	12 ^{H7}	14 ^{H7}	mm
A*	10 $_{g8}$	12 $_{g8}$	14 $_{g8}$	mm
C	15	15	17	mm
T	18±0.5	18±0.5	18±0.5	mm
A* = diameter of connection shaft T = length of custom shaft in encoder				

<1> View turned 60°
<2> mounting thread M4x5
<3> value in brackets with version DC 10 - 30 V, RS422
Cable bending radius R for flexible installation ≥ 100 mm
Cable bending radius R for fixed installation ≥ 40 mm

Dimensions in mm

Incremental Hollow Shaft

ORDERING INFORMATION

Type	Number of pulses	Supply voltage [1, 2]	Flange, Protection, Shaft [3, 4, 5]	Output	Connection
☐	☐	☐	☐	☐	☐
RI58-D **RI58TD**	**1 ... 5000**	**A** DC 5 V **E** DC 10 - 30 V	**D.32** Through hollow shaft with clamping ring front, IP64, 10 mm **D.37** Through hollow shaft with clamping ring front, IP64, 12 mm **E.42** Hubshaft, mounting with set screw, IP64, 10 mm **E.47** Hubshaft, mounting with set screw, IP64, 12 mm **E.49** Hubshaft, mounting with set screw, IP64, 14 mm **F.42** Spring tether, IP64, hubshaft 10 mm, mounting with clamping ring front **F.47** Spring tether, IP64, hubshaft 12 mm, mounting with clamping ring front **F.49** Spring tether, IP64, hubshaft 14 mm, mounting with clamping ring front	**R** RS422 +Alarm **T** RS422 +Sense **K** Push-pull **I** Push-pull complementary	**B** PVC cable, radial **F** TPE cable, radial **D** M23 connector (Conin), 12 pole, radial, cw **H** M23 connector (Conin), 12 pole, radial, ccw

[1] DC 5 V: only with output "T", "R" available
[2] DC 10 - 30 V: only with output "K", "I", "R" available
[3] Mounting (flange) code "D" only with connection code "B", "F" (cable)
[4] Mounting (flange) code "E", "F" only with connection code "D", "H" (M23 connector)
[5] IP67 on cover with connector only if IP67 mating connector mounted properly.

ORDERING INFORMATION
Selection of cable length

Versions with cable outlet (connection A, B, E or F) are available with various lengths of cable. To order your desired cable length, please add the respective code to the end of your ordering code. Further cable lengths on request.

Code	Cable length
without code	1.5 m
-D0	3 m
-F0	5 m
-K0	10 m
-P0	15 m
-U0	20 m
-V0	25 m

ACCESSORIES

see chapter "Accessories", starting page 322