hohner
Elektrotechnik Werne

TECHNICAL DATASHEET

Incremental Encoder RI 76TD

- Through hollow shaft Ø 15 bis 42 mm
- Outside diameter only 76 mm
- Easy installation by means of clamping ring front or rear
- Operating temperature up to 100 °C
- Applications: motors, printing machines, lifts

CE   cULus LISTED   RoHS 2002/95/EG

NUMBER OF PULSES

50 / 100 / 128 / 250 / 256 / 300 / 314 / 360 / 500 / 600 / 720 / 900 / 1000 / 1024 / 1250 / 1500 / 2048 / 2500 / 3072 / 4096 / 5000 / 9000 / 10000
Other number of pulses on request

TECHNICAL DATA
mechanical

Housing diameter	76 mm
Shaft diameter	15 mm / 16 mm / 18 mm / 20 mm / 24 mm / 25 mm / 27 mm / 28 mm / 30 mm / 32 mm / 38 mm / 40 mm (Hub shaft)
Flange (Mounting of housing)	Tether
Mounting of shaft	Front clamping ring, Rear clamping ring
Protection class shaft input (EN 60529)	IP40 or IP64
Protection class housing (EN 60529)	IP50 (IP65 optional)
Minimum length of mountig shaft clamping ring front	32 mm with Ø 15 ... 30, 35 mm with Ø >30 ... 42
Mimimum length of mounting shaft clamping ring rear	corresponding to total length of encoder
Axial endplay of mounting shaft (hubshaft)	With stator coupling A (flexible): ± 2 mm With 1x stator coupling (torsionally rigid): ± 0.5 mm With 2x stator coupling (torsionally rigid): ± 0.3 mm
Radial runout of mating shaft (hubshaft)	With stator coupling A (flexible): ± 0.15 mm With 1x stator coupling (torsionally rigid): ± 0.3 mm With 2x stator coupling (torsionally rigid): ± 0.2 mm
Max. speed	for Ø 15 ... 25 mm at 70 °C and IP64: max. 3600 rpm for Ø >25 ... 42 mm bei 70 °C and IP64: max. 1800 rpm for Ø 15 ... 42 mm at 70 °C and IP40: max. 6000 rpm for Ø 15 ... 42 mm at 100 °C always: max. 1800 rpm
Torque	3 ... 10 Ncm (depending on version)
Moment of inertia	approx. 140 ... 420 gcm² (depending on version)
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	-25 °C ... +100 °C
Storage temperature	-25 °C ... +100 °C
Material housing	Aluminum
Weight	approx. 320 ... 580 g (depending on version)
Connection	Cable, radial

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TECHNICAL DATA
electrical

General design	as per DIN EN 61010-1, 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	60 mA (DC 5 V), 60 mA (DC 10 V), 35 mA (DC 24 V)
Max. pulse frequency	RS422: 300 kHz Push-pull: 200 kHz
Standard output versions	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 ... 10 000
Alarm output	NPN-O.C., max. 5 mA
Pulse shape	Square wave
Pulse duty factor	1:1

[1] Pole protection with supply voltage DC 10 - 30 V

SHAFT CONNECTION

Shaft fixing is done through a clamping ring either on the flange or cap side. As a rule, flange side clamping is better for smaller motors as the available shaft stub is correspondingly shorter.

On the other hand, cap side clamping is easier when there is sufficient shaft length available.

MOUNTING NECESSITIES

In order to compensate for axial and radial shaft eccentricity as well as any angle offset, the encoder flange must not be rigidly mounted. Please mount the flange with a flexible stator coupling (e.g. hubshaft with tether) as torque support

There are two flexible mounting plates:
- A flexible hubshaft with tether (A) for higher levels of play and lower requirements for accuracy.
- A rigid hubshaft with tether (N) for reduced play and rigid connection with reduced swing angle. This is suitable in the case of higher accuracy and dynamics requirements.

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ELECTRICAL CONNECTIONS
Cable TPE

Colour (TPE)	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	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) [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 for version Sense (T)

[2] connected with encoder housing

DIMENSIONED DRAWINGS

With hubshaft with tether "rigid"
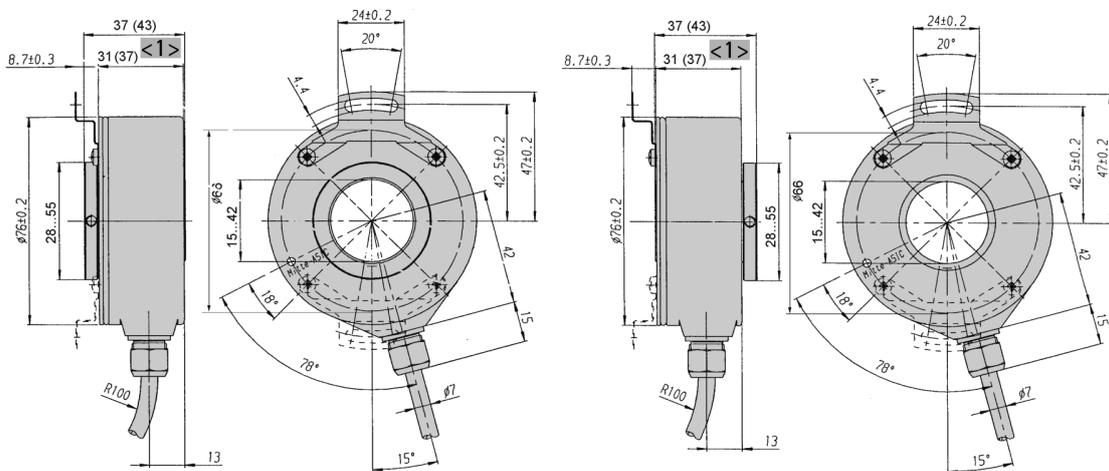
<1> Values in brackets for shaft diameter > 30, diameter of connection
shaft 15^{98} ... 42 ^{98}

Cable bending radius R for flexible installation ≥ 100 mm
Cable bending radius R for fixed installation ≥ 40 mm   Dimensions in mm

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TECHNICAL DATASHEET

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DIMENSIONED DRAWINGS (continued)

With hubshaft with tether "flexible"

<1> Values in brackets for shaft diameter > 30, diameter of connection shaft 15^{g8} ... 42^{g8}

Cable bending radius R for flexible installation $\geq$ 100 mm
Cable bending radius R for fixed installation $\geq$ 40 mm

Dimensions in mm
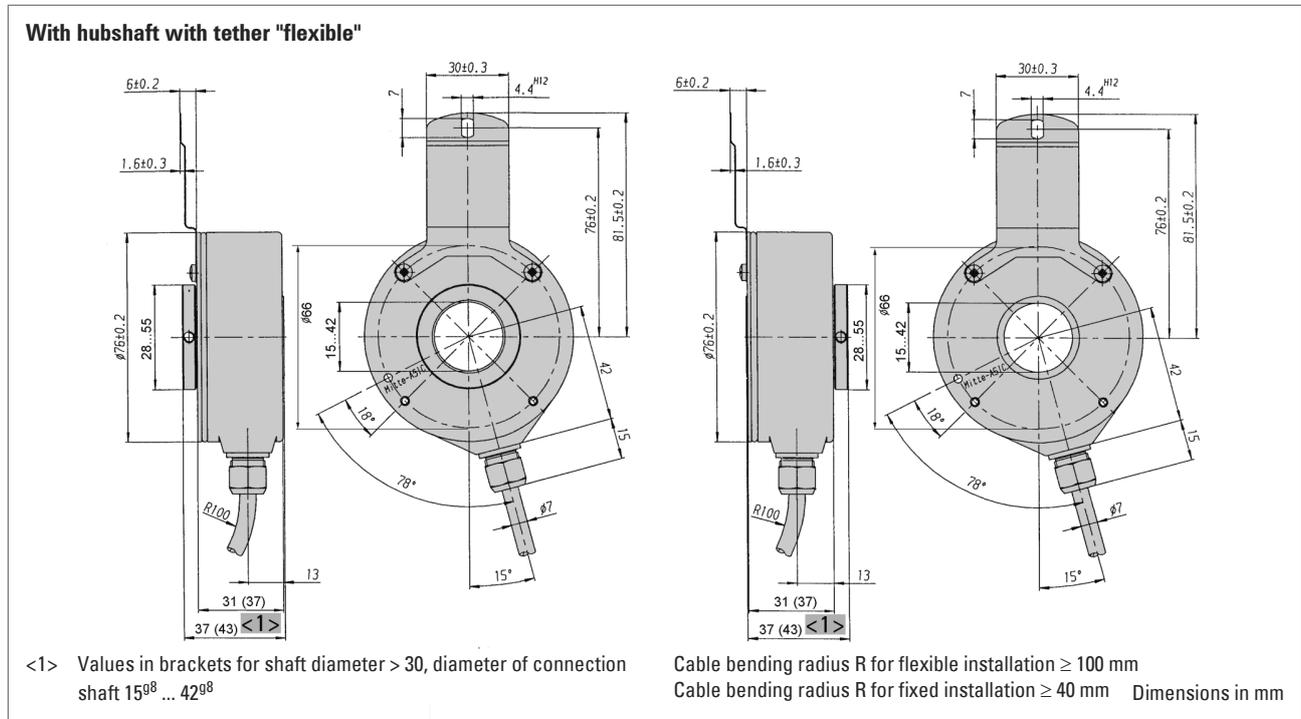
ORDERING INFORMATION

Type	Number of pulses	Supply voltage [1, 2]	Shaft	Protec-tion	Spring tether	Shaft Ø [3, 4, 5, 6]		Output	Connection
□	□	□	□	□	□	□		□	□
RI76TD	**1 ... 10000**	**A** DC 5 V **E** DC 10 - 30 V	**D** Clamping shaft with clamping ring front **H** Clamping shaft with clamping ring rear	**1** IP40 **4** IP64	**O** Wit-hout **A** Flexible **N** Rigid	**15 ... 42** **50 ... 99** **50** **51** **52**	15 ... 42 mm 50 ... 99 Zoll = 5/8" = 1 5/8" = 3/4"	**R** RS422 +Alarm **T** RS422 +Sense **K** Push-pull **I** Push-pull complemen-tary	**F** TPE cable, radial

[1] DC 5 V: only with output "T", "R" available

[2] DC 10 - 30 V: only with output "K", "I", "R" available

[3] Available with front clamping ring and IP40: 15, 20, 24, 25, 27, 28, 30, 38, 40, 42, 50 (5/8"), 51 (1 5/8")

[4] Available with front clamping ring and IP64: 15, 16, 18, 20, 24, 25, 27, 28, 30, 32, 38, 40, 42, 50 (5/8"), 51 (1 5/8"), 52 (3/4")

[5] Available with rear clamping ring and IP40: 25, 28, 30, 32, 38, 40, 42

[6] Available with rear clamping ring and IP64: 20, 25, 30, 32, 38, 40, 42

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ORDERING INFORMATION
Selection of cable length

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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