

Incremental

Hollow shaft



- Through hollow shaft \varnothing 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



NUMBER OF PULSES

50 / 100 / 250 / 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 mounting shaft clamping ring front | 32 mm with \varnothing 15 ... 30, 35 mm with \varnothing >30 ... 42 |
| Minimum length of mounting shaft clamping ring rear | corresponding to total length of encoder |
| Axial endplay of mounting shaft (hubshaft) | With stator coupling A (flexible): \pm 2 mm With 1x stator coupling (torsionally rigid): \pm 0.5 mm With 2x stator coupling (torsionally rigid): \pm 0.3 mm |
| Radial runout of mating shaft (hubshaft) | With stator coupling A (flexible): \pm 0.15 mm With 1x stator coupling (torsionally rigid): \pm 0.3 mm With 2x stator coupling (torsionally rigid): \pm 0.2 mm |
| Max. speed | for \varnothing 15 ... 25 mm at 70 °C and IP64: max. 3600 rpm for \varnothing >25 ... 42 mm bei 70 °C and IP64: max. 1800 rpm for \varnothing 15 ... 42 mm at 70 °C and IP40: max. 6000 rpm for \varnothing 15 ... 42 mm at 100 °C always: max. 1800 rpm |
| Starting torque typ. | 3 ... 10 Ncm (depending on version) |
| Moment of inertia | approx. 140 ... 420 gcm ² (depending on version) |
| Vibration resistance (DIN EN 60068-2-6) | 10 g = 100 m/s ² (10 ... 2000 Hz) |
| Shock resistance (DIN EN 60068-2-27) | 100 g = 1000 m/s ² (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 |

TECHNICAL DATA
electrical

| | |
|----------------|------------------------------------------------------------------------------------------|
| General design | as per DIN EN 61010-1, protection class III, contamination level 2, overvoltage class II |
|----------------|------------------------------------------------------------------------------------------|

Incremental

Hollow shaft

TECHNICAL DATA
electrical (continued)

| | |
|---------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 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 |
| Current w/o load typ. | 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 ² | RS422 + Alarm (R): A, B, N, \bar{A} , \bar{B} , \bar{N} , $\overline{\text{Alarm}}$ RS422 + Sense (T): A, B, N, \bar{A} , \bar{B} , \bar{N} , Sense Push-pull (K): A, B, N, $\overline{\text{Alarm}}$ Push-pull complementary (I): A, B, N, \bar{A} , \bar{B} , \bar{N} , $\overline{\text{Alarm}}$ |
| 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

² Output description and technical data see chapter "Technical basics"

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.

ELECTRICAL CONNECTIONS
Cable TPE

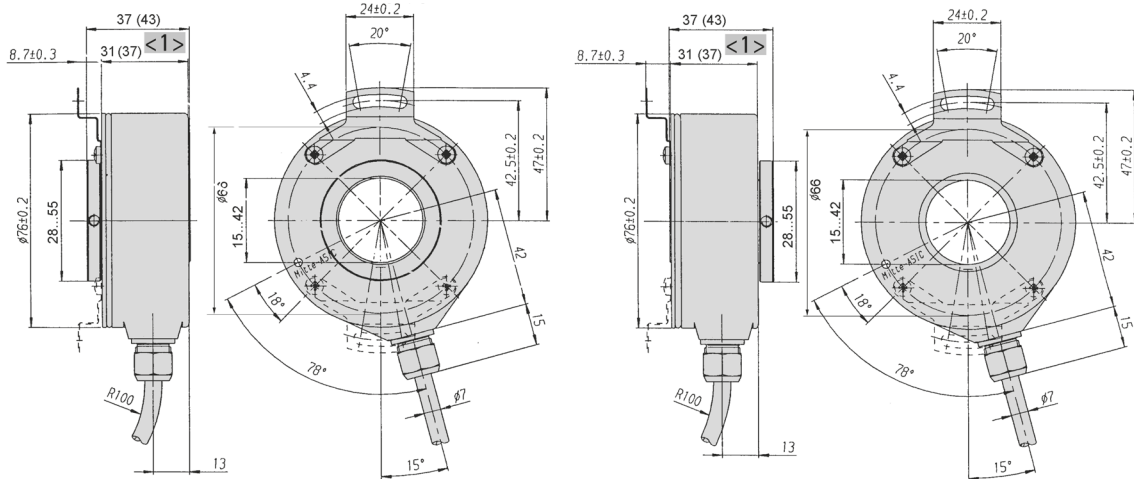
| Colour (TPE) | Output circuit | | | |
|-----------------------------|---------------------------|---------------------------|---------------------------|-----------------------------|
| | RS422 + Sense (T) | RS422 + Alarm (R) | push-pull (K) | push-pull complementary (I) |
| brown | Channel A | Channel A | Channel A | Channel A |
| green | Channel \bar{A} | Channel \bar{A} | | Channel \bar{A} |
| grey | Channel B | Channel B | Channel B | Channel B |
| pink | Channel \bar{B} | Channel \bar{B} | | Channel \bar{B} |
| red | Channel N | Channel N | Channel N | Channel N |
| black | Channel \bar{N} | Channel \bar{N} | | Channel \bar{N} |
| violet (white) ¹ | Sense GND | $\overline{\text{Alarm}}$ | $\overline{\text{Alarm}}$ | $\overline{\text{Alarm}}$ |
| 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

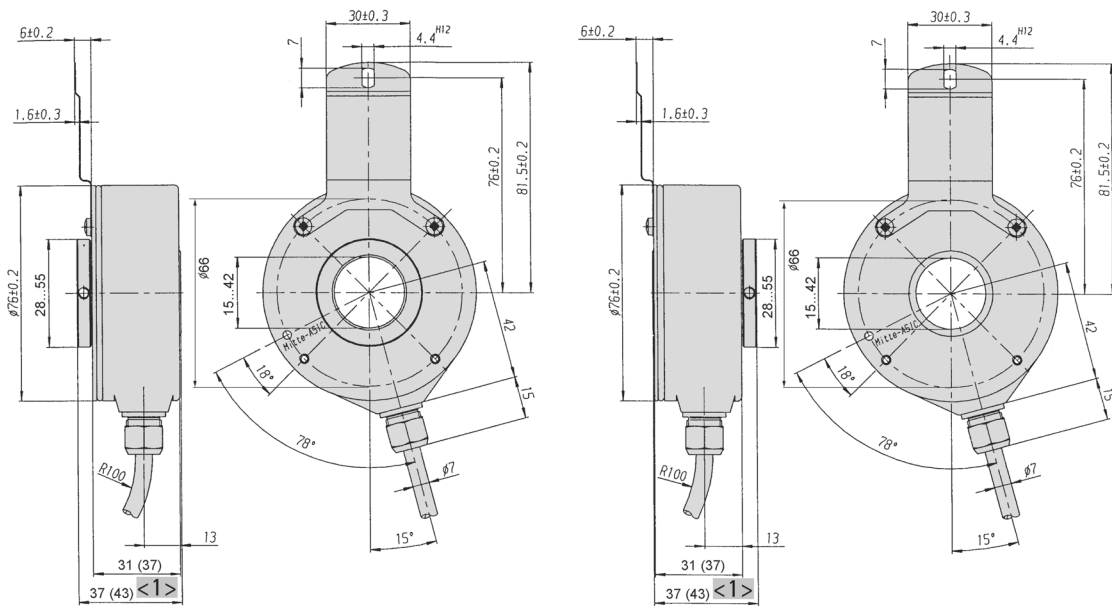
With hubshaft with tether "rigid"



<1> Values in brackets for shaft diameter > 30, diameter of connection shaft 15⁰⁸ ... 42⁰⁸

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

With hubshaft with tether "flexible"



<1> Values in brackets for shaft diameter > 30, diameter of connection shaft 15⁰⁸ ... 42⁰⁸

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

ORDERING INFORMATION

| Type | Number of pulses | Supply voltage ^{1,2} | Shaft | Protection | Spring tether | Shaft Ø ^{3,4,5,6} | Output | Connection |
|--------------------------|--------------------------|------------------------------------------|-----------------------------------------------------------------------------------------------------|--------------------------------|---------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------|----------------------------|
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 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 Without A Flexible N Rigid | 15 ... 42 15 ... 42 mm 50 ... 99 50 ... 99 inch 50 = 5/8" 51 = 1 5/8" 52 = 3/4" | R RS422 +Alarm T RS422 +Sense K Push-pull I Push-pull complementary | 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

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. For variants with connector on cable end please add cable length code in between. 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 |

Example:

Cable 3 m length: ... B - D0

Cable mit 3 m length and M23 connector, cw: ... B - D0 - I

ACCESSORIES

see chapter "Accessories"