

TECHNICAL DATASHEET

Incremental Encoder RI58-D / RI58TD / RI58CD



- Direct mounting without coupling
- Flexible hollow shaft design up to diameter 15 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 flange by means of a stator coupling or set screw
- Various shaft versions
- Applications: actuators, motors
- Operating temperature up to +100 °C (RI58TD); up to -40 °C (RI58CD)

ICURO®
industry



NUMBER OF PULSES RI58-D

1 / 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 / 360 / 375 / 400 / 460 / 480 / **500** / 512 / 600 / 625 / 720 / 900 / **1000** / **1024** / **1250** / 1500 / 1800 / 2000 / 2048 / **2500** / 3000 / 3480 / **3600** / **4000** / 4096 / **5000**

Other number of pulses on request

Preferably available versions are printed in bold type.

NUMBER OF PULSES RI58TD

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 / 360 / 375 / 400 / 460 / 480 / **500** / 512 / 600 / 625 / 720 / 900 / **1000** / **1024** / **1250** / 1500 / 1800 / 2000 / 2048 / **2500**

Other number of pulses on request

Preferably available versions are printed in bold type.

NUMBER OF PULSES RI58CD

3000 / 3480 / **3600** / **4000** / 4096 / **5000**

Other number of pulses on request

Preferably available versions are printed in bold type.

TECHNICAL DATA mechanical

| | |
|---|---|
| Housing diameter | 58 mm |
| Shaft diameter ¹ | 6 / 8 / 10 / 12 mm (Through hollow shaft) 6 / 8 / 10 / 12 / 14 / 15 mm (Hubshaft) |
| Flange (Mounting of housing) | Synchro flange |
| Mounting of shaft | Front clamping ring, Rear clamping ring, Center bolt |
| Protection class shaft input (EN 60529) | IP64 |
| Protection class housing ² (EN 60529) | Through hollow shaft: D, H: IP64 Hubshaft: E: IP65, F: IP67 |
| Shaft tolerance | Ø 10 mm, tolerance g8 (-0,005 ... -0,027 mm), Ø 12 / 14 / 15 mm, tolerance g8 (-0,006 ... -0,033 mm) |
| Max. speed ³ | Hub shaft - E, F: max. 6000 rpm Through hollow shaft - D, H: max. 4000 rpm |
| Starting torque typ. | ≤ 1 Ncm (Hub shaft - E, F) ≤ 2 Ncm (Through hollow shaft - D, H) |

¹ Other shaft diameters on request

² Further protection class upon request

³ Higher values available upon request

Specifications subject to change without notice

| | | |
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TECHNICAL DATASHEET
Incremental Encoder RI58-D / RI58TD / RI58CD
TECHNICAL DATA
mechanical (continued)

| | |
|---|--|
| Moment of inertia | approx. 35 gcm ² (Hub shaft with clamping ring front - F) approx. 20 gcm ² (Hub shaft, mounting with set screw - E) approx. 60 gcm ² (Through hollow shaft with clamping ring front - D, H) |
| 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 | RI58-D: -10 °C ... +70 °C RI58TD: -40 °C ... +100 °C RI58CD: -40 °C ... +70 °C |
| Storage temperature ¹ | -25 °C ... +85 °C |
| Material housing | Aluminum |
| Weight | approx. 170 g with hubshaft (E,F), approx. 190 g with trough hollow shaft (D, H) |
| Connection ² | Cable, axial or radial M23 connector (Conin), radial |

¹ due to packing

² Standard cable length: 1,5 m cable, other cable length on request (only RI 58-TD)

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 complementary (I): DC 10-30 V |
| Current w/o load typ. | 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 | RS422 + Alarm (R): A, B, N, \overline{A} , \overline{B} , \overline{N} , 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 ... 5.000 |
| Alarm output | NPN-O.C., max. 5 mA |
| Pulse shape | Square wave |
| Pulse duty factor | 1:1 |

¹ With push-pull (K): pole protection

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TECHNICAL DATASHEET

Incremental Encoder RI58-D / RI58TD / RI58CD

ELECTRICAL CONNECTIONS

Cable TPE
(Connection codes E and F)

| Cable TPE (E, F) | Output circuit | | | |
|-----------------------------|---------------------------|------------------------------|------------------------------|------------------------------|
| Colour | 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 | $\overline{A} \text{ alarm}$ | $\overline{A} \text{ alarm}$ | $\overline{A} \text{ alarm}$ |
| blue | Sense V cc | Sense V cc | | Sense V cc |
| brown/green | DC 5 V | DC 5/10 - 30 V | DC 5/10 - 30 V | DC 5/10 - 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
(Connection codes D and H)

M12 connector, 8 pole
(Connection code 8)

| Pin M23, 12 pole | Pin M12, 8 pole | RS422 + Sense (T) | RS422 + Alarm (R) | push-pull (K) | push-pull complementary (I) |
|------------------|-----------------|------------------------|------------------------------|------------------------------|------------------------------|
| 1 | 6 | Channel \overline{B} | Channel \overline{B} | N.C. | Channel \overline{B} |
| 2 | | Sense V cc | Sense V cc | N.C. | Sense V cc |
| 3 | 7 | Channel N | Channel N | Channel N | Channel N |
| 4 | 8 | Channel \overline{N} | Channel \overline{N} | N.C. | Channel \overline{N} |
| 5 | 3 | Channel A | Channel A | Channel A | Channel A |
| 6 | 4 | Channel \overline{A} | Channel \overline{A} | N.C. | Channel \overline{A} |
| 7 | | N.C. | $\overline{A} \text{ alarm}$ | $\overline{A} \text{ alarm}$ | $\overline{A} \text{ alarm}$ |
| 8 | 5 | Channel B | Channel B | Channel B | Channel B |
| 9 | | N.C. ¹ | N.C. ¹ | N.C. ¹ | N.C. ¹ |
| 10 | 1 | GND | GND | GND | GND |
| 11 | | Sense GND | N.C. | N.C. | N.C. |
| 12 | 2 | DC 5 V | DC 5 V / 10 - 30 V | DC 10 - 30 V | DC 10 - 30 V |

¹ screen for cable with CONIN connector

ELECTRICAL CONNECTIONS
KPT connector, 8 pole
(Connection code 2)

M16 connector (Binder), 6 pole
(Connection code J)

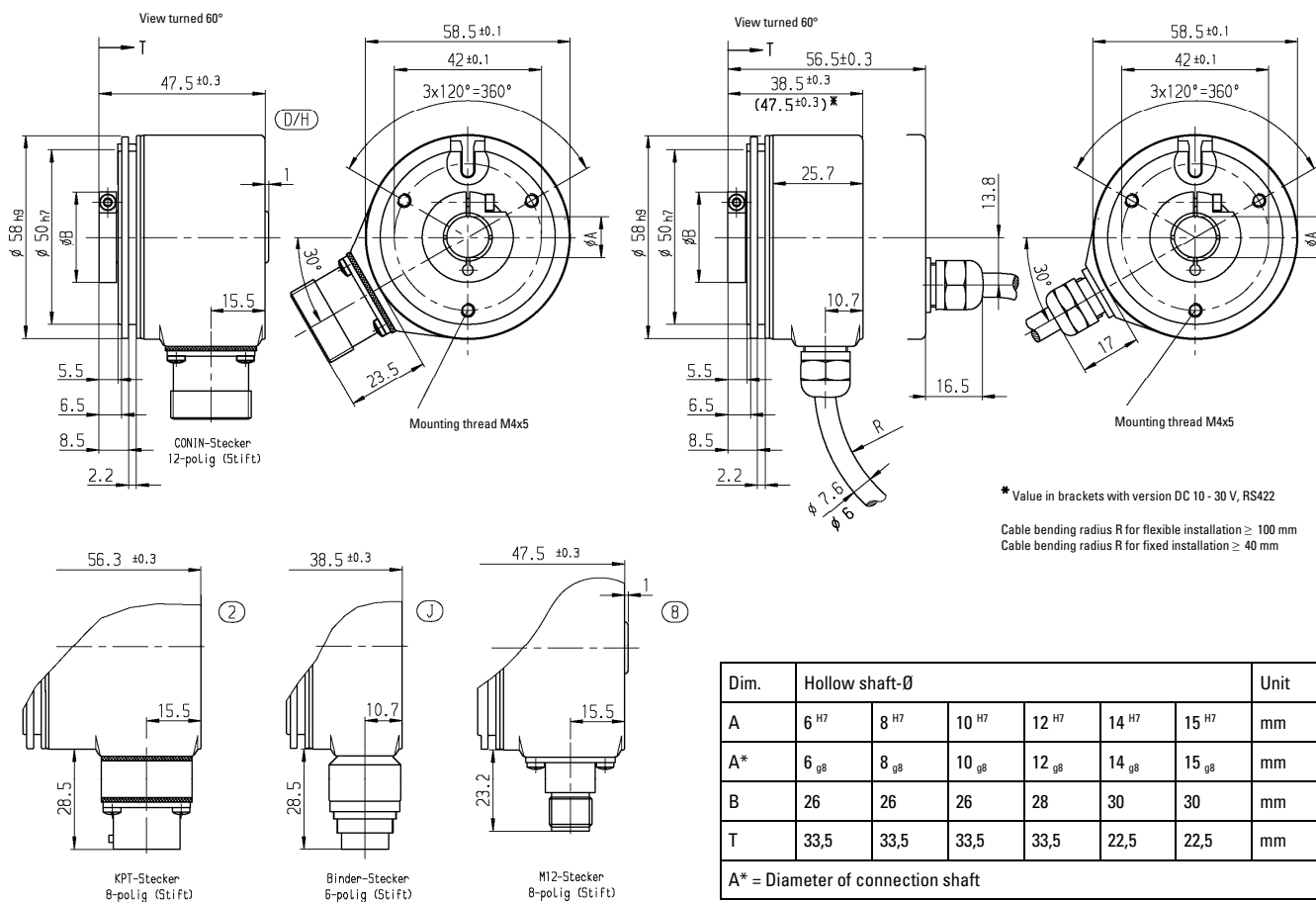
| Pin KPT, 8 pole | RS422 + Alarm (R) | push-pull (K) | push-pull complementary (I) | Pin M16, 6 pole | push-pull (K) |
|-----------------|------------------------|------------------------------|-----------------------------|-----------------|------------------------------|
| A | Channel B | Channel B | Channel B | 1 | DC 10 - 30 V |
| B | Channel \overline{B} | | Channel \overline{B} | 2 | Channel A |
| C | Channel \overline{A} | | Channel \overline{A} | 3 | Channel N |
| D | Channel A | Channel A | Channel A | 4 | Channel B |
| E | DC 5 V / 10 - 30 V | DC 10 - 30 V | DC 10 - 30 V | 5 | $\overline{A} \text{ alarm}$ |
| F | GND | GND | GND | 6 | GND |
| G | Channel N | Channel N | Channel N | | |
| H | Channel \overline{N} | $\overline{A} \text{ alarm}$ | Channel \overline{N} | | |

TECHNICAL DATASHEET

Incremental Encoder RI58-D / RI58TD / RI58CD

DIMENSIONED DRAWINGS

Mounting F: Hubshaft with clamping ring front



Dimensions in mm

Specifications subject to change without notice

| | | |
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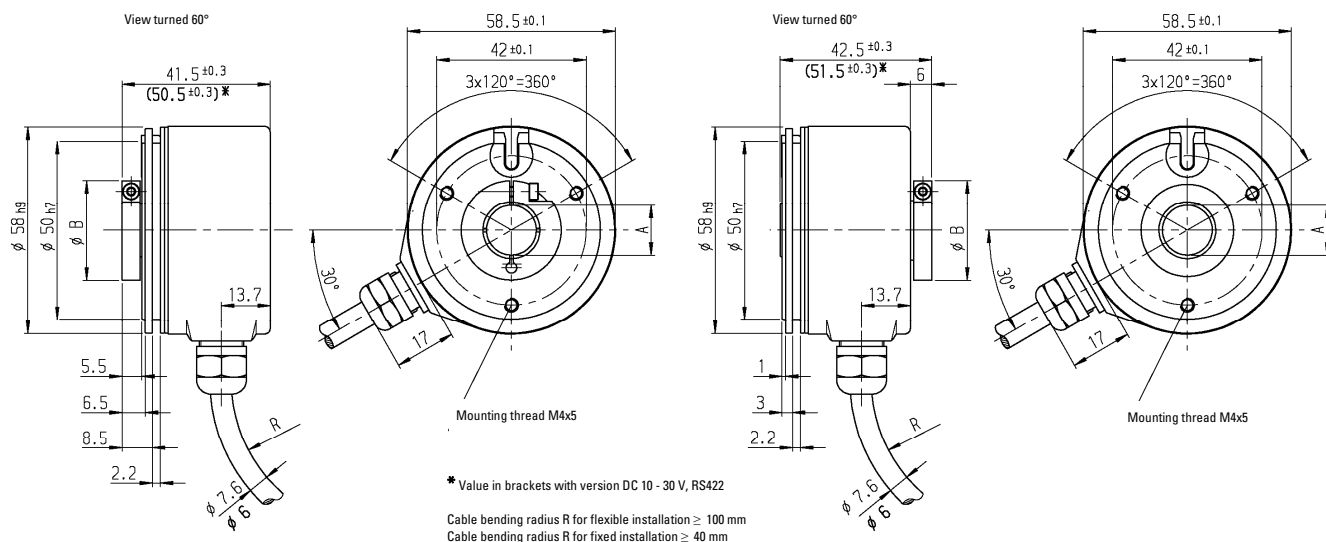
TECHNICAL DATASHEET

Incremental Encoder RI58-D / RI58TD / RI58CD

DIMENSIONED DRAWINGS (continued)

Mounting D: Through hollow shaft with clamping ring front

Mounting H: Through hollow shaft with clamping ring rear



| Dim. | Hollow shaft-Ø | | | | Unit |
|--------------|-----------------|-----------------|------------------|------------------|------|
| A | 6 ^{H7} | 8 ^{H7} | 10 ^{H7} | 12 ^{H7} | mm |
| A* | 6 ^{g8} | 8 ^{g8} | 10 ^{g8} | 12 ^{g8} | mm |
| B | 26 | 26 | 26 | 28 | mm |
| Mounting "D" | X | X | X | X | |
| Mounting "H" | | | X | X | |

A* = Diameter of connection shaft
X = Available connection shafts

Dimensions in mm

Specifications subject to change without notice

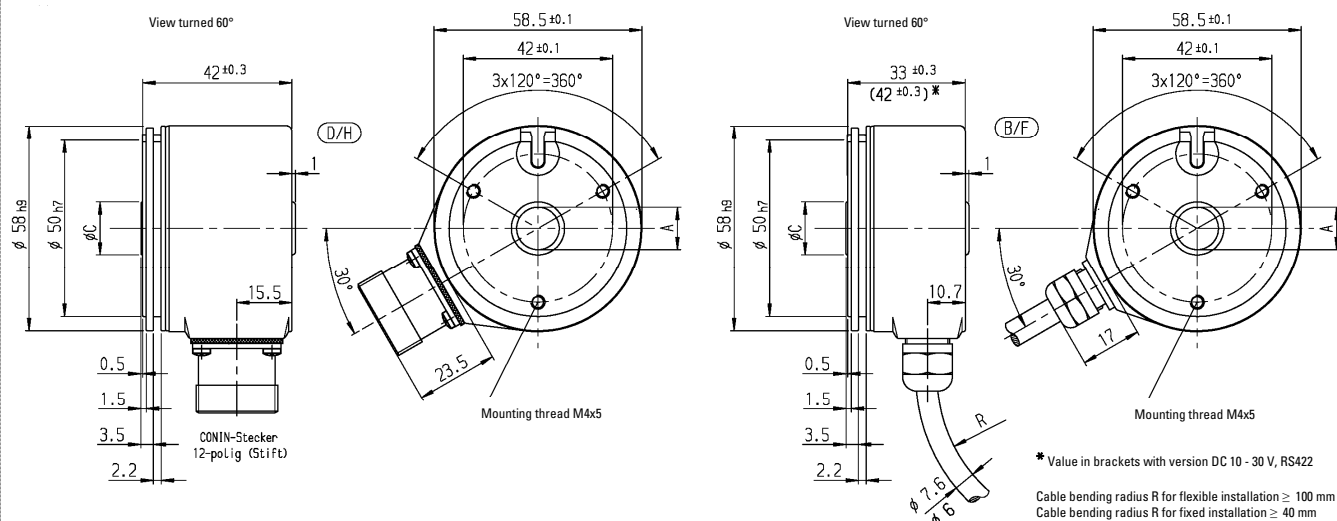
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TECHNICAL DATASHEET

Incremental Encoder RI58-D / RI58TD / RI58CD

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 |
| A* = Diameter of connection shaft | | | | |

Dimensions in mm

Specifications subject to change without notice

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TECHNICAL DATASHEET
Incremental Encoder RI58-D / RI58TD / RI58CD
ORDERING INFORMATION

| Type | Number of pulses | Supply voltage | Flange, Protection, Shaft ³ | Output | Connection |
|---|---|--|---|---|---|
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| RI58-D RI58TD* RI58CD* | RI58-D: 1 ...5000 RI 58TD: 4 ...2500 RI58CD: >2500 ... 5000 Others available upon request | A DC 5 V ¹ E DC 10 - 30 V ² | D.31 Through hollow shaft with clamping ring front, IP64, 6 mm D.3C Through hollow shaft with clamping ring front, IP64, 8 mm D.32 Through hollow shaft with clamping ring front, IP64, 10 mm D.37 Through hollow shaft with clamping ring front, IP64, 12 mm H.32 Through hollow shaft with clamping ring rear, IP64, 10 mm H.37 Through hollow shaft with clamping ring rear, 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.41 Hubshaft, mounting with clamping ring front, IP64, 6 mm F.4C Hubshaft, mounting with clamping ring front, IP64, 8 mm F.42 Hubshaft, mounting with clamping ring front, IP64, 10 mm F.47 Hubshaft, mounting with clamping ring front, IP64, 12 mm F.49 Hubshaft, mounting with clamping ring front, IP64, 14 mm F.4D Hubshaft, mounting with clamping ring front, IP64, 15 mm | R RS422 + Alarm T RS422 + Sense K Push-pull I Push-pull com- plementary | A PVC cable, axial B PVC cable, radial E PVC cable, axial F TPE cable, radial D M23 connector (Conin), 12 pole, radial, cw H M23 connector (Conin), 12 pole, radial, ccw 8 M12 connector, 8 pole, radial J M16 connector (Binder), 6pole, radial 2 KPT connector, 8 pole, radial Others available upon request |

¹ only with output "T", "R" available

² only with output "K", "I", "R" available

³ Mounting (flange) code "D", "H" only with connection code "B" and "F" (cable)

*RI58TD and RI58CD not available with connection code "A" and "B"

Specifications subject to change without notice

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TECHNICAL DATASHEET
Incremental Encoder RI58-D / RI58TD / RI58CD
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 |
| -W0 | 30 m |
| -X0 | 40 m |
| -Y0 | 50 m |

Examples:

Cable 3 m length: ... B - D0

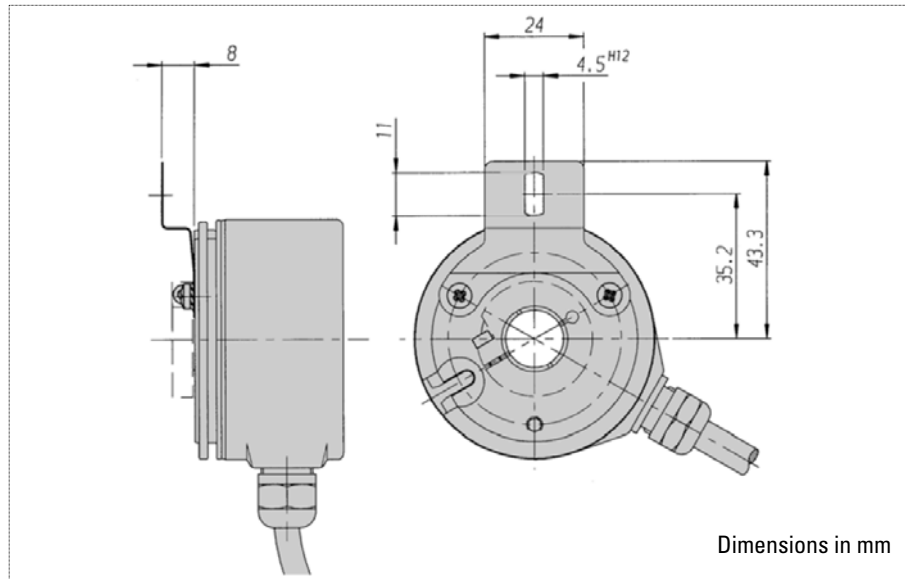
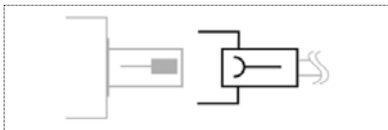
Cable mit 3 m length and M23 connector, cw: ... F - D0 - I

Specifications subject to change without notice

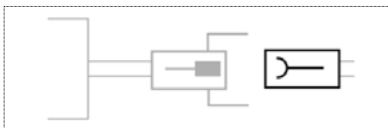
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TECHNICAL DATASHEET
Incremental Encoder RI58-D / RI58TD / RI58CD
Accessories

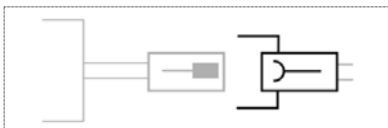
ACCESSORIES Hubshaft with tether as stator coupling, ordering code 1 531 162


CONNECTORS


| Connector (socket) matching with encoder connector | Ordering code |
|---|---------------|
| M16 (Binder), 6 pole, bent, IP40, mating connector for connection J/N | 3 539 209 |
| M16 (Binder), 6 pole, straight, IP67, mating connector for connection J/N | 3 539 472 |
| M23 (Conin), 12 pole, PG9, cw, mating connector for connection C/D/-I | 3 539 202 |

CONNECTORS


| Coupling (socket) matching with encoder cable with connector | Ordering code |
|---|---------------|
| M23 (Conin), 12 pole, cw, mating connector for connection -C (cable plug 3 539 186) | 3 539 187 |
| M23 (VDW), 12 pole, cw, mating connector for connection -B (cable plug 3 539 252) | 3 539 304 |

CONNECTORS


| Connector (socket) matching with encoder cable with connector | Ordering code |
|--|---------------|
| M23 (Conin), 12 pole, ccw, mating connector for connection G/H/-D/-H | 3 539 229 |
| M23 (VDW), 12 pole, ccw, mating connector for connection -E (cable plug 3 539 274) | 3 539 305 |

COUNTERS

| Counters | Art.-Nr. |
|----------------------------------|-------------------|
| Multifunctional counter tico 732 | www.hengstler.com |
| Multifunctional counter tico 772 | www.hengstler.com |

Specifications subject to change without notice

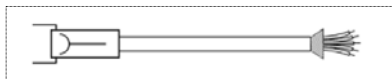
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TECHNICAL DATASHEET

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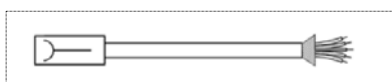
Accessories

CONNECTING CABLES



| Connecting cables with plug (socket) on one end | Ordering code |
|---|---------------|
| M16 (Binder), 6 pole, PVC cable, mating connector for connection J/N, 3 m | 1 522 405 |
| M16 (Binder), 6 pole, PVC cable, mating connector for connection J/N, 5 m | 1 522 406 |
| M16 (Binder), 6 pole, PVC cable, mating connector for connection J/N, 10 m | 1 522 340 |
| M16 (Binder), 6 pole, PVC cable, mating connector for connection J/N, 15 m | 1 522 833 |
| M16 (Binder), 6 pole, PVC cable, mating connector for connection J/N, 50 m | 1 522 836 |
| M23 (Conin), 12 pole, TPE cable, cw, mating connector for connection C/D/-I, 3 m | 1 522 348 |
| M23 (Conin), 12 pole, TPE cable, cw, mating connector for connection C/D/-I, 5 m | 1 522 349 |
| M23 (Conin), 12 pole, TPE cable, cw, mating connector for connection C/D/-I, 10 m | 1 522 350 |
| M23 (Conin), 12 pole, TPE cable, cw, mating connector for connection C/D/-I, 15 m | 1 522 454 |
| M23 (Conin), 12 pole, TPE cable, cw, mating connector for connection C/D/-I, 20 m | 1 522 456 |
| M23 (Conin), 12 pole, TPE cable, cw, mating connector for connection C/D/-I, 25 m | 1 522 457 |
| M23 (Conin), 12 pole, TPE cable, cw, mating connector for connection C/D/-I, 30 m | 1 522 464 |
| M23 (Conin), 12 pole, TPE cable, cw, mating connector for connection C/D/-I, 40 m | 1 522 643 |
| M23 (Conin), 12 pole, TPE cable, cw, mating connector for connection C/D/-I, 50 m | 1 522 793 |
| M23 (Conin), 12 pole, TPE cable, ccw, mating connector for connection G/H/-D/-H, 3 m | 1 522 394 |
| M23 (Conin), 12 pole, TPE cable, ccw, mating connector for connection G/H/-D/-H, 5 m | 1 522 395 |
| M23 (Conin), 12 pole, TPE cable, ccw, mating connector for connection G/H/-D/-H, 10 m | 1 522 396 |
| M23 (Conin), 12 pole, TPE cable, ccw, mating connector for connection G/H/-D/-H, 15 m | 1 522 447 |
| M23 (Conin), 12 pole, TPE cable, ccw, mating connector for connection G/H/-D/-H, 20 m | 1 522 461 |
| M23 (Conin), 12 pole, TPE cable, ccw, mating connector for connection G/H/-D/-H, 25 m | 1 522 462 |
| M23 (Conin), 12 pole, TPE cable, ccw, mating connector for connection G/H/-D/-H, 30 m | 1 522 463 |
| M23 (Conin), 12 pole, TPE cable, ccw, mating connector for connection G/H/-D/-H, 40 m | 1 522 779 |

CONNECTING CABLES



| Connecting cables with coupling (socket) on one end | Ordering code |
|---|---------------|
| M23 (Conin), 12 pole, TPE cable, cw, mating connector for connection -C, 10 m | 1 522 735 |
| M23 (Conin), 12 pole, TPE cable, cw, mating connector for connection -C, 20 m | 1 522 621 |

CONNECTING CABLES

| Cable not made up with connectors | Ordering code |
|-----------------------------------|--------------------|
| PVC cable, 10-core + screen | 3 280 114 + length |
| PVC cable, 6-core + screen | 3 280 113 + length |
| TPE cable, 12-core + screen | 3 280 112 + length |

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