

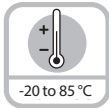
Rotary Position Technology

Incremental Encoders

Miniature Type RI-01 (Shaft) / RI-02 (Blind Hollow Shaft)



High rotational speed



Temperature



Magnetic field proof



Short-circuit protected



Reverse polarity protection

Rugged

- Wide temperature range
-4 to +185 °F
(-20 to +85 °C)
- Robust strain relief on cable outlet
- Highly flexible cable withstands constant flexing from 32 to 158 °F (0 to 70 °C)
- Very high EMC standard
Turck encoder type RI-01, RI-02 meet German Railways standard EN 50121



Versatile

- Low power consumption despite high scanning rate
- Short-circuit proof
- Temperature compensation
- Broad input voltage range (5-24 V or 8-30 V)
- Shaft and hollow shaft up to 1024 ppr

Compact

- **Can be used where space is tight**
Overall diameter of only 24 mm
Shaft diameter min. 4 mm

Mechanical Characteristics:

Speed:	max. 12,000 RPM
Rotor moment of inertia:	approx. 5.5 x 10 ⁻³ oz-in ² (0.1 x 10 ⁻⁶ kgm ²)
Starting torque:	< 1.4 oz-in (< 0.01 Nm)
Radial load capacity of shaft:	2.25 lbs (10 N)
Axial load capacity of shaft:	4.5 lbs (20 N)
Weight:	approx 0.14 lbs (0.06 kg)
Protection acc. to EN 60529:	IP65 housing side, IP50 shaft side (IP64 on request)
Working temperature:	-4 to 185 °F (-20 to +85 °C)
Materials:	Shaft: stainless steel Blind hollow shaft: brass
Shock resistance acc. to EN 60068-2-27:	100 g (1,000 m/s ²), 6 ms
Vibration resistance acc. to EN 60068-2-6:	10 g (100 m/s ²), 55-2,000 Hz

Electrical Characteristics:

Output circuit [Key Code]:	Push-Pull [1D/2D] (7272 compatible) ³⁾	Push-Pull [1A/2A] (7272 compatible) ³⁾
Supply voltage:	5-24 VDC ⁵⁾	8-30 VDC
Power consumption (no load):	max. 50 mA	max. 50 mA
Permissible load/channel:	max. 50 mA	max. 50 mA
Pulse frequency:	max. 160 kHz	max. 160 kHz
Signal level high:	min. +V -2.5 V	min. +V -3 V
Signal level low:	max. 0.5 V	max. 0.5 V
Rise time t _r :	max. 1 µs	max. 1 µs
Fall time t _f :	max. 1 µs	max. 1 µs
Short-circuit protected ¹⁾ :	yes ^{2) 4)}	yes ^{2) 4)}
UL approval:	file E356899	

RoHS compliant acc. to EU guideline 2011/65/EU

¹⁾ If supply voltage correctly applied

²⁾ Only one channel allowed to be shorted-out:
(If +V=5 V, short-circuit to channel, 0 V, or +V is permitted.)
(If +V=5-30 V, short-circuit to channel or 0 V is permitted.)

³⁾ Max. recommended cable length 30 m

⁴⁾ Approximately one minute

⁵⁾ With 24 VDC there is no tolerance above 24 VDC.
Please use output circuit 8-30 VDC.

Miniature Type RI-01 (Shaft) / RI-02 (Blind Hollow Shaft)

Standard Wiring:

Connection Type	Case Ground	Common (0 V)	+V	A	$\bar{A}$	B	$\bar{B}$	Z	$\bar{Z}$
Cable	Shield/Drain	WH	BN	GN	-	YE	-	GY	-
Cable w/ Inverted Signals	Shield/Drain	WH	BN	GN	YE	GY	PK	BU	RD

Part Number Key: RI-01 Shaft Version

A	B	C		D	E		F
RI-01Q	5	F1	-	1A	1024	-	C

A	Type
RI-01Q	Ø 24 mm, Shaft w/ Flat, IP50 Shaft Seal
RI-01T	Ø 24 mm, Shaft, IP50 Shaft Seal

B	Shaft (Ø x L)
4	Ø 4 mm x 10 mm
5	Ø 5 mm x 10 mm ¹⁾
6	Ø 6 mm x 10 mm
A0	Ø 1/4" x 10 mm ¹⁾

¹⁾ Available only with Type RI-01Q.

C	Flange
F1	Ø 24 mm
F2	Ø 30 mm
F3	Ø 28 mm

D	Voltage Supply and Output Type
1A	8-30 VDC, Push-Pull
1D	5-24 VDC, Push-Pull
2A	8-30 VDC, Push-Pull (w/ Inverted Signals)
2D	5-24 VDC, Push-Pull (w/ Inverted Signals)

E	Pulse Rate
4, 6, 8, 10, 16, 20, 25, 36, 40, 50, 60, 80, 100, 120, 125, 180, 200, 250, 300, 360, 400, 500, 512, 1000, 1024	
(e.g. 360 pulses => 360)	
Other Pulse Rates Available on Request	

F	Type of Connection
C	Radial Cable (2 m PVC)
CA	Axial Cable (2 m PVC)

Part Number Key: RI-02 Blind Hollow Shaft Version

A	B	C		D	E		F
RI-02C	4	S3	-	1A	1024	-	C

A	Type
RI-02C	Ø 24 mm, Blind Hollow Shaft, IP50 Shaft Seal

B	Bore (14 mm Insertion Depth)
4	Ø 4 mm
6	Ø 6 mm
A0	Ø 1/4"

C	Flange
S3	Flange w/ Spring Element

D	Voltage Supply and Output Type
1A	8-30 VDC, Push-Pull
1D	5-24 VDC, Push-Pull
2A	8-30 VDC, Push-Pull (w/ Inverted Signals)
2D	5-24 VDC, Push-Pull (w/ Inverted Signals)

E	Pulse Rate
4, 6, 8, 10, 16, 20, 25, 36, 40, 50, 60, 80, 100, 120, 125, 180, 200, 250, 300, 360, 400, 500, 512, 1000, 1024	
(e.g. 360 pulses => 360)	
Other Pulse Rates on Request	

F	Type of Connection
C	Radial Cable (2 m PVC)
CA	Axial Cable (2 m PVC)

Accessories:

- See page H1, Connectivity, for cables and connectors
- See page G1, Accessories, for mounting attachments and couplings

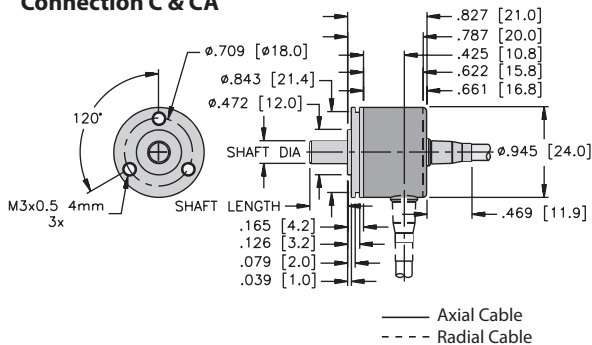
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Incremental Encoders

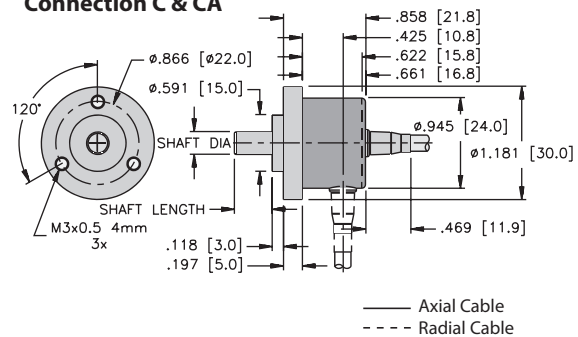
Miniature Type RI-01 (Shaft) / RI-02 (Blind Hollow Shaft)

Dimensions: RI-01 Shaft Version

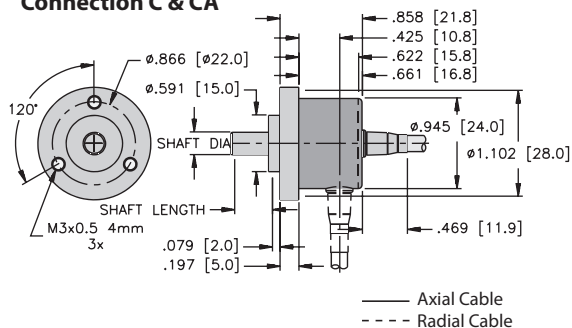
RI-01 Flange F1 Connection C & CA



RI-01 Flange F2 Connection C & CA



RI-01 Flange F3 Connection C & CA



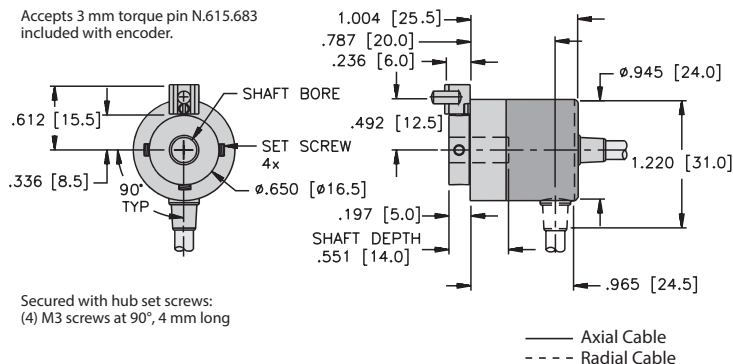
Mounting Advice:

The flanges and shafts of the encoder and drive should not be rigidly coupled together at the same time. We recommend the use of suitable couplings (see page G1, Accessories).

Dimensions: RI-02 Blind Hollow Shaft Version

RI-02 Flange S3 Connection C & CA

Accepts 3 mm torque pin N.615.683 included with encoder.



Mounting Advice:

The flanges and shafts of the encoder and drive should not both be rigidly coupled together at the same time. A cylindrical pin (RA-TP-3-S per ISO 2338-A-3m6 x 10), for use as a torque stop, is supplied.