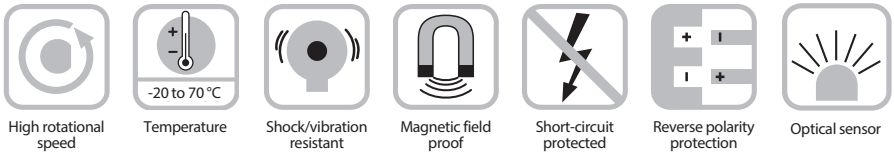
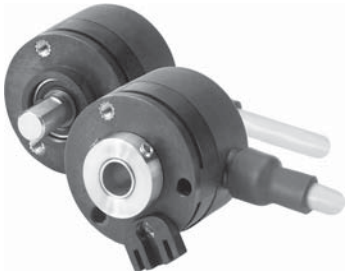
Economy Encoder Type RI-08 (Shaft) / RI-09 (Hollow Shaft)



High rotational speed | Temperature | Shock/vibration resistant | Magnetic field proof | Short-circuit protected | Reverse polarity protection | Optical sensor

Rugged
- Temperature and aging compensation
- Short-circuit protected outputs
- Flange and cover made from a new High-Tech-Material (composite material)
- High component integration leads to low profile design, high performance and economical pricing
- Cable outlet guarantees 10x higher strain relief than traditional cabling methods and ensures IP67 protection



RoHS compliant

Compact
- Compact size only Ø 37 x 33 mm

Versatile
- Hollow shaft version: Fits directly onto drive shaft - no couplings needed - saves up to 30% on cost and 60% on installation space and time
- 1 1/2" (37 mm) diameter housing suitable for replacing resolvers

Mechanical Characteristics:

Speed:	max. 6,000 RPM
Rotor moment of inertia:	Shaft version: approx. 2.2 x 10-2 oz-in^2 (0.4 x 10-6 kgm^2) Hollow shaft version: approx. 7.7 x 10-2 oz-in^2 (1.4 x 10-6 kgm^2)
Starting torque:	Shaft version: < 1.0 oz-in (< 0.007 Nm) Hollow shaft version: < 1.4 oz-in (< 0.01 Nm)
Radial load capacity of the shaft:	4.5 lbs (20 N)
Axial load capacity of the shaft:	2.25 lbs (10 N)
Weight:	approx. 0.22 lbs (0.1 kg)
Protection acc. to EN 60 529:	IP65 housing (IP67 on request)

Working temperature:	-4 to 158 °F (-20 up to +70 °C) [1]
Materials:	Shaft/hollow shaft: stainless steel; housing, flange: composite PPA, 40% CF (carbon fiber); cable: PVC
Shock resistance acc. to EN 60068-2-27:	approx. 100 g (1,000 m/s^2), 6 ms
Vibration resistance acc. to EN 60068-2-6:	approx. 10 g (100 m/s^2), 10-2,000 Hz

[1] For versions with push-pull output and supply voltage >15 VDC: max. 131 °F (55 °C)

Electrical Characteristics:

Output circuit [Key Code]:	RS422 [4A] (TTL compatible)	Push-Pull [2F] (7272) [3]	Push-Pull [2J] (7272) [3]
Supply voltage:	5 V (±5%)	5-30 VDC	10-30 VDC
Power consumption (no load) with inverted signal:	typ. 40 mA / max. 90 mA	typ. 50 mA / max. 100 mA	typ. 50 mA / max. 50 mA
Permissible load/channel:	max. ±20 mA	max. ±20 mA	max. ±20 mA
Pulse frequency:	max. 250 kHz	max. 250 kHz	max. 250 kHz
Signal level high:	min. 2.5 V	min. +V - 2.0 V	min. +V - 2.0 V
Signal level low:	max. 0.5 V	max. 0.5 V	max. 0.5 V
Rise time t_r:	max. 200 ns	max. 1 µs	max. 1 µs
Fall time t_f:	max. 200 ns	max. 1 µs	max. 1 µs
Short-circuit protected [1]:	yes [2]	yes	yes
Reverse polarity protection:	no	no	yes

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

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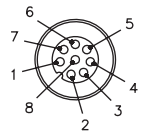
Standard Wiring:

Connection Type	Case Ground	Common (0 V)	+V	A	$\overline{A}$	B	$\overline{B}$	Z	$\overline{Z}$
M12 *eurofast*®	Coupling Nut	1	2	3	4	5	6	7	8
Cable	Shield/Drain	WH	BN	GN	YE	GY	PK	BU	RD

Wiring Diagram:

Male Encoder View

M12 *eurofast*® Pinout
Mating Cordset: **E-RKC 8T-930-***

* Length in meters.

Part Number Key: RI-08 Shaft Version

A	B	C		D	E		F
RI-08Q	4	S	-	2F	10	-	C

A	Type
RI-08Q	Ø 37 mm, Shaft w/ Flat, IP65 Shaft Seal

B	Shaft (Ø x L)
4	Ø 4 mm x 12.5 mm
5	Ø 5 mm x 12.5 mm
6	Ø 6 mm x 12.5 mm
8	Ø 8 mm x 12.5 mm
A0	Ø 1/4" x 12.5 mm

C	Flange
S	Ø 20 mm Flange w/o Adapter
S1	Ø 20 mm Flange w/ Adapter

D	Voltage Supply and Output Type
2F	5-30 VDC, Push-Pull (w/ Inverted Signals)
2J	10-30 VDC, Push-Pull (w/ Inverted Signals)
4A	5 VDC (±5%), RS422

E	Pulse Rate
	10, 25, 50, 60, 100, 200, 250, 300, 360, 400, 500, 512, 600, 1000, 1024 (e.g. 250 Pulses => 250) Other Pulse Rates Available on Request

F	Type of Connection
C	Radial Cable (2 m PVC) *
C1M	Radial Cable (1 m PVC) *
CA	Axial Cable (2 m PVC) *
CA1M	Axial Cable (1 m PVC) *

* Other Cable Lengths Available on Request

Part Number Key: RI-09 Hollow Shaft Version

A	B	C		D	E		F
RI-09I	4	E	-	2F	10	-	C

A	Type
RI-09I	Ø 36 mm, Hollow Shaft, IP65 Shaft Seal

B	Bore
4	Ø 4 mm
5	Ø 5 mm
6	Ø 6 mm
8	Ø 8 mm
A0	Ø 1/4"

C	Flange
E	Ø 19 mm Flange w/ Slotted Flex Mount
T	Ø 19 mm Flange w/ Long Torque Stop
T1	Ø 19 mm Flange w/ Short Torque Stop

D	Voltage Supply and Output Type
2F	5-30 VDC, Push-Pull (w/ Inverted Signals)
2J	10-30 VDC, Push-Pull (w/ Inverted Signals)
4A	5 VDC (±5%), RS422

E	Pulse Rate
	10, 25, 50, 60, 100, 200, 250, 300, 360, 400, 500, 512, 600, 1000, 1024 (e.g. 250 Pulses => 250) Other Pulse Rates Available on Request

F	Type of Connection
C	Radial Cable (2 m PVC) *
C1M	Radial Cable (1 m PVC) *

* Other Cable Lengths Available on Request

Accessories:

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

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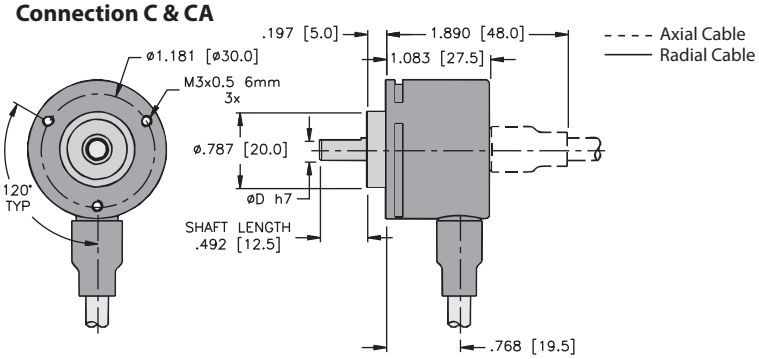
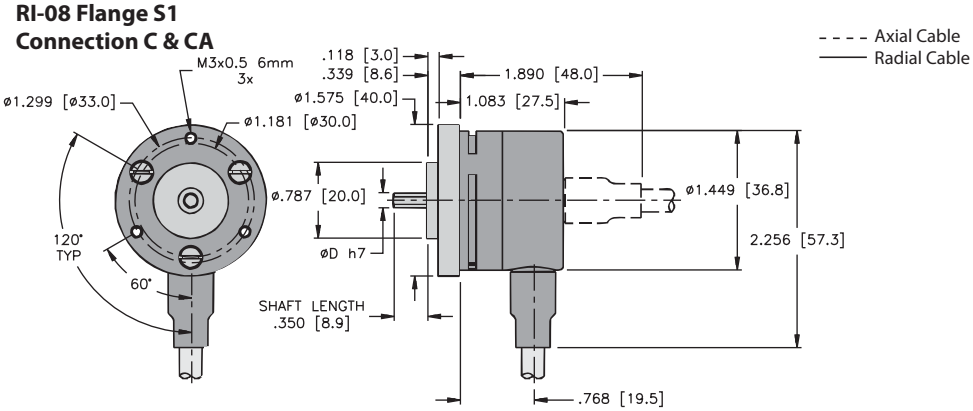
Dimensions: RI-08 Shaft Version

RI-08 Flange S
Connection C & CA



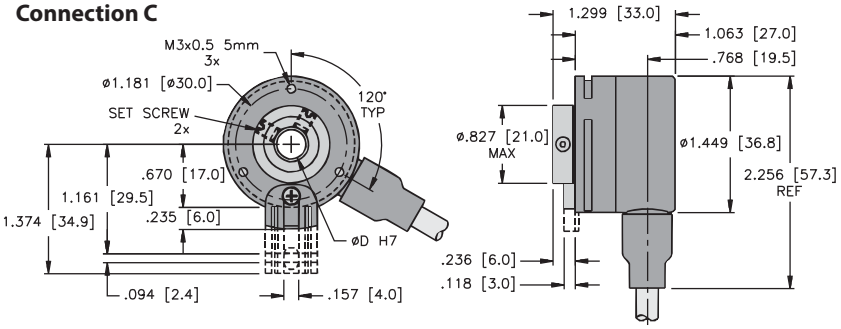
RI-08 Flange S1
Connection C & CA



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-09 Hollow Shaft Version

RI-09 Flange T & T1
Connection C



RI-09 Flange E
Connection C