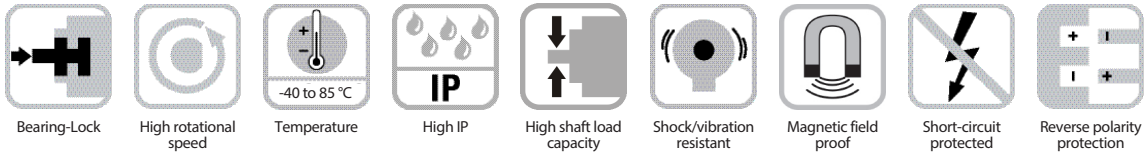


### Incremental Type RI-65 (Shaft) / RI-96 (Hollow Shaft), Stainless Steel



#### Versatile

- **Reliable mounting in a wide variety of installation situations:** Comprehensive and proven mounting options.
- **Standard encoder for use worldwide:** compatible with II US and European standards, supply voltage 5-30 VDC, various interface options, max. 5000 ppr.



#### Rugged

- Stays sealed even when subjected to harsh everyday use:
  - IP67 Protection
  - Rugged stainless-steel housing
  - Viton seals
  - High security against failures in the field, ideal for use in outdoor applications
- **Can be used in a wide temperature range:** -40 to +185 °F (-40 to +85 °C)
- **Increased ability to withstand vibration and installation errors:** Eliminates machine downtime and repairs. Sturdy double bearing lock design.

#### Compact

- **Can be used even where space is tight:** outer diameter 50 mm, installation depth max. 47 mm.

#### Mechanical Characteristics:

Speed <sup>1)</sup> :	max. 6,000 RPM	Working temperature:	-40 to +185 °F (-40 to +85 °C)
Rotor moment of inertia:	approx. 0.098 oz-in <sup>2</sup> (1.8 x 10 <sup>-6</sup> kgm <sup>2</sup> )	Materials:	Housing, flange, Shaft: 1.4305 (303) stainless steel Connector: stainless steel Seals: viton
Starting torque:	< 7 oz-in (< 0.05 Nm)	Shock resistance acc. to EN 60068-2-27:	250 g (2,500 m/s <sup>2</sup> ), 6 ms
Weight:	approx. 0.9 lbs (0.4 kg)	Vibration resistance to EN 60068-2-6:	10 g (100 m/s <sup>2</sup> ), 10-2,000 Hz
Radial load capacity of the shaft:	18 lbs (80 N)		
Axial load capacity of the shaft:	9 lbs (40 N)		
Protection acc. to EN 60 529 with shaft sealing:	IP66/IP67		

<sup>1)</sup> For continuous operation 3,000 RPM

#### Electrical Characteristics:

Output circuit [Key Code]:	RS 422 [4A] (TTL compatible)	Push-Pull [2B]	Push-Pull [2F] (7272 compatible)
Supply voltage:	5 V ±5%	10-30 VDC	5-30 VDC
Power consumption (no load):	typ. 40 mA max. 90 mA	typ. 50 mA max. 100 mA	typ. 50 mA max. 100 mA
Permissible load/channel:	max. ±20 mA	max. ±20 mA	max. ±20 mA
Pulse frequency:	max. 300 kHz	max. 300 kHz	max. 300 kHz <sup>3)</sup>
Signal level high:	min. 2.5 V	min. +V -1.0 V	min. +V -2.0 V
Signal level low:	max. 0.5 V	max. 0.5 V	max. 0.5 V
Rise time t <sub>r</sub> :	max. 200 ns	max. 1 µs	max. 1 µs
Fall time t <sub>f</sub> :	max. 200 ns	max. 1 µs	max. 1 µs
Short-circuit protected <sup>1)</sup> :	yes <sup>2)</sup>	yes	yes <sup>2) 4)</sup>
Reverse polarity protection:	no	yes	no

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

<sup>1)</sup> If supply voltage correctly applied

<sup>2)</sup> 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.)

<sup>3)</sup> Max. recommended cable length 30 m

<sup>4)</sup> Approximately one minute

# Rotary Position Technology

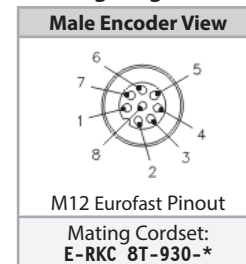
## Incremental Encoders

### Incremental Type RI-65 (Shaft) / RI-96 (Hollow Shaft), Stainless Steel

#### Standard Wiring:

Connection Type	Case Ground	Common (0V)	+V	A	$\bar{A}$	B	$\bar{B}$	Z	$\bar{Z}$
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:



\* Length in meters.

#### Part Number Key: RI-65 Shaft Version

A	B	C		D	E		F
RI-65S	6	C	-	2B	360	-	H1181

A	Type
RI-65S	Ø 2" Shaft, IP67 Shaft Seal

B	Shaft (Ø x L)
6	Ø 6 mm x 10 mm
10	Ø 10 mm x 20 mm
A1	Ø 3/8" x 7/8"

C	Flange
C	Ø 58 mm Clamping Flange
S	Ø 58 mm Servo Flange
R	2.5" Square Flange

D	Voltage Supply and Output Type
2B	10-30 VDC, Push-Pull (w/ Inverted Signal)
2F	5-30 VDC, Push-Pull (w/ Inverted Signal)
4A	5 VDC, RS 422 (w/ Inverted Signal)

E	Pulse Rate
	1, 5, 10, 12, 36, 100, 200, 250, 256, 360, 400, 500, 512, 600, 800, 1000, 1024, 1200, 2000, 2048, 2500, 3600, 4096, 5000 (e.g. 250 Pulses => 250) Other Pulse Rates Available on Request

F	Type of Connection
H1181	Radial 8-pin M12 Eurofast Connector

#### Part Number Key: RI-96 Hollow Shaft Version

A	B	C		D	E		F
RI-96H	A0	E	-	2B	360	-	H1181

A	Type
RI-96H	Ø 2" Hollow Shaft, IP67 Shaft Seal

B	Bore
10	Ø 10 mm
12	Ø 12 mm
15	Ø 15 mm
A0	Ø 1/4"
A1	Ø 3/8"
A3	Ø 1/2"

C	Flange
E	Ø 63 mm w/ Slotted Flex Mount
T	Flange w/ Torque Stop

D	Voltage Supply and Output Type
2B	10-30 VDC, Push-Pull (w/ Inverted Signal)
2F	5-30 VDC, Push-Pull (w/ Inverted Signal)
4A	5 VDC, RS 422 (w/ Inverted Signal)

E	Pulse Rate
	1, 5, 10, 12, 36, 100, 200, 250, 256, 360, 400, 500, 512, 600, 800, 1000, 1024, 1200, 2000, 2048, 2500, 3600, 4096, 5000 (e.g. 250 Pulses => 250) Other Pulse Rates Available on Request

F	Type of Connection
H1181	Radial 8-pin M12 Eurofast Connector

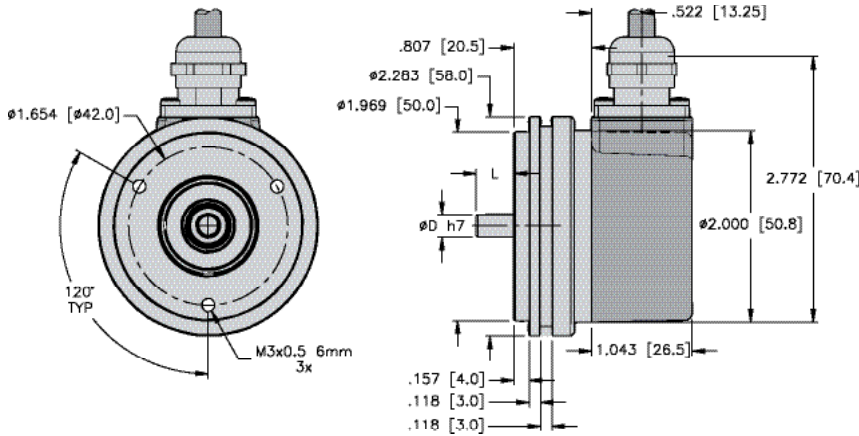
#### Accessories:

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

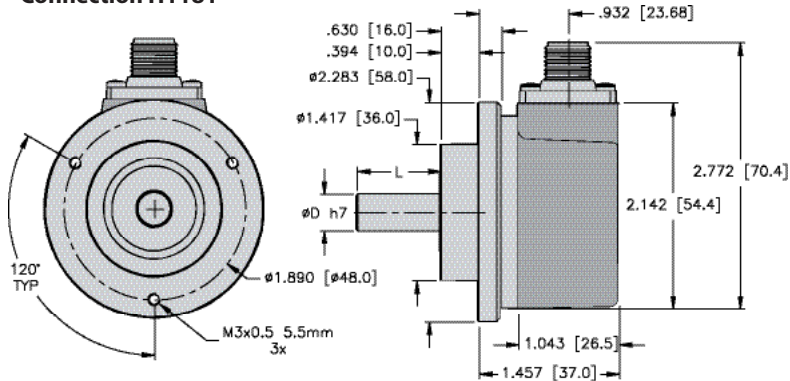
**Incremental Type RI-65 (Shaft) / RI-96 (Hollow Shaft), Stainless Steel**

Dimensions: RI-65 Shaft Version

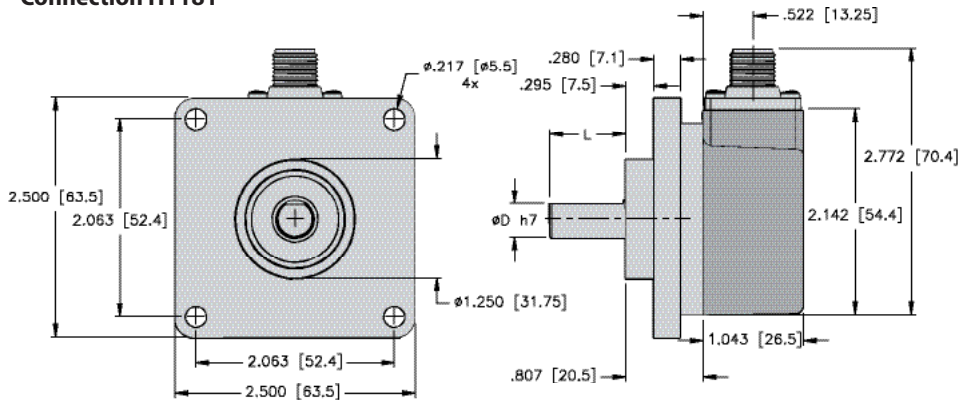
**RI-65 Flange S**  
**Connection C**



**RI-65 Flange C**  
**Connection H1181**



**RI-65 Flange R**  
**Connection H1181**



**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).

