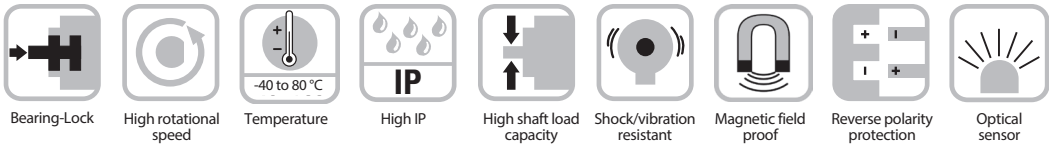


Absolute, Multiturn Type RM-105 (Shaft) / RM-106 (Blind Hollow Shaft) EtherNet/IP



Reliable

- Direct mapping of pitch ratios, e.g. for gear ratios or gear reductions.
- Precise position detection.
- Wide temperature range of -40 to +176 °F (-40 to +80 °C).
- Cost and time savings when setting up the control system.



Absolute



EtherNet/IP™

Versatile

- Device Level Ring (DLR) ring redundancy of the network with two network ports.
- 43 bits total resolution. Singleturn resolution up to 19 bit, Multi-turn up to 24 bit.
- Scaling of the total resolution via the gear factor.
- High precision setting of velocity and acceleration values through filter and hysteresis.

Fast

- 5x faster position value transfer than the usual market encoder – RPI time of 1 ms.
- Communication is maintained when the ring structure is interrupted.
- Low RPI time of 1ms minimum - this makes the encoder usable for time critical applications up to 1000 Hz update frequency.

Mechanical Characteristics:

Max. speed:	9000 RPM 6000 RPM (continuous)
Starting torque at 68 °F (20 °C):	1.4 oz-in (< 0.01 Nm)
Moment of inertia:	Shaft version: 0.16 oz-in ² (3.0 x 10 ⁻⁶ kgm ²) Hollow shaft version: 0.32 oz-in ² (6.0 x 10 ⁻⁶ kgm ²)
Radial load capacity of shaft:	18 lbs (80 N)
Axial load capacity of shaft:	9 lbs (40 N)
Weight:	approx. 1.0 lbs (0.45 kg)
Protection acc. to EN 60529:	IP65/IP67
Working temperature:	-40 to +176 °F (-40 to +80 °C)
Materials:	Shaft: stainless steel, Flange: aluminum, Housing: aluminum
Shock resistance acc. to EN 60068-2-27:	> 250 g (> 2,500 m/s ²), 6 ms
Vibration resistance acc. to EN 60068-2-26:	> 10 g (> 100 m/s ²), 55-2,000 Hz

General Information about EtherNet/IP

EtherNet/IP conformance tested acc. to version CT-12 of Dec. 11, 2014
EtherNet/IP specification Vol 2, Ed 1.17
CIP specification Vol 1, Ed 3.16.

Protocol:

9N43B: CIP Version v3.32
EtherNet/IP Version: v1.30
LLDP
BOOTP
DHCP
Device Profile: Encoder Device

Rotary Position Technology

Absolute Encoders, Multiturn

Absolute, Multiturn Type RM-105 (Shaft) / RM-106 (Blind Hollow Shaft) EtherNet/IP

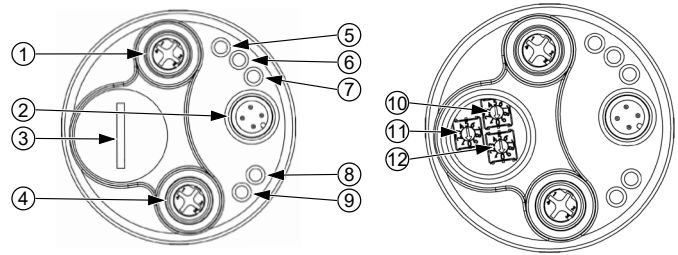
General Electrical Characteristics:

Supply voltage:	10-30 VDC
Current consumption (without output load):	Max. 250 mA
Reverse polarity protection at power supply (+V):	Yes
CE compliant acc. to:	EMC guideline 2014/30/EU RoHS guideline 2011/65/EU
UL approval:	file E356899

Device Characteristics:

Singleturn resolution Default value: (MUR):	1 - 524288 (19 bit), scalable 262144 (18 bit)
Number of revolutions (NDR):	1 - 16777216 (24 bit), scalable
Default value:	4096 (12 bit)
Total resolution (TMR):	1 - 8796093022208 (43 bit), scalable
Default value:	1073741824 (30 bit)

Rear side connection and display elements



1 Ethernet Port – Link 2	5 Link 2	9 Link 1
2 Supply voltage	6 NET - Network	10 Switch: x100
3 Cover screw	7 MOD - Module	11 Switch: x10
4 Ethernet Port – Link 1	8 ENC – Encoder	12 Switch: x1

The following functionalities are integrated:

Objects (CIP Objects)

- Identity Object
- Message Router
- Assembly Object
- Connection Manager
- Position Sensor Object
- Qos Object
- Port Object
- TCP / IP Interface Object
- EtherNet Link Object

EtherNet/IP features

- DLR (Device Level Ring) possible
- Qos (Quality of Service) possible
- ACD (Address Conflict Detection)
- Multicast and unicast capability
- Up to 5 PLC connections

Process Data

- Position
- Speed data
- Acceleration
- Errors
- Alarms
- Warnings
- Offset (for preset)
- Battery voltage
- Operating voltage
- Temperature

Adjustable parameters

- Preset
- Count direction
- Resolution
- Unity of speed
- IP address
- Number of revolutions
- Position
- Position format
- Position limit
- Acceleration unit
- Speed limit
- Acceleration limit
- Scaling
- Gear factor
- Filter for speed and acceleration
- Hysteresis for speed and acceleration

Standard Wiring (Bus):

(M12 Eurofast Connector, D-Coded)

Direction:	Port 1				Port 2			
	Transmit data+	Receive data+	Transmit data-	Receive data-	Transmit data+	Receive data+	Transmit data-	Receive data-
Signal:	TxD+	RxD+	TxD-	RxD-	TxD+	RxD+	TxD-	RxD-
Abbrev:	TxD+	RxD+	TxD-	RxD-	TxD+	RxD+	TxD-	RxD-
M12 Eurofast:	1	2	3	4	1	2	3	4

Standard Wiring (Power Supply):

M12 Eurofast Connector

Signal:	Power Supply	N/C	Common	N/C
Abbrev:	+V	-	0V	-
M12 Eurofast:	1	2	3	4

Wiring Diagrams:

Bus	Power Supply
Female Encoder View	Male Encoder View
M12 Eurofast Pinout	M12 Eurofast Pinout
Mating Cordset: RSSD 441-*	Mating Cordset: RK 4.4T-*

Rotary Switch settings

Switch position:	Definition
000:	Address assignment via DHCP use stored subnet
1-254:	(standard 192.168.1.x, mask 255.255.255.0) the last digit "x" of the IP address is determined by the rotary switch
300:	Explicit protection mode OFF Resetting the encoder to factory default. To reset, this switch position must be set. If necessary, switch off the operating voltage and switch it on again within 10s. After that, the encoder can be switched off and switch setting desired during operation can be made. All parameters are now set to the factory settings - both the encoder objects and the TCP/IP settings.
555:	
800:	Explicit protection mode ON
Other positions:	Reserved, do not use!

Absolute, Multiturn Type RM-105 (Shaft) / RM-106 (Blind Hollow Shaft)

EtherNet/IP

Part Number Key: RM-105 Shaft Version

A	B	C		D		E
RM-105S	6	C	-	9N43B	-	B3M12

A	Type
RM-105S	Ø 58 mm, Shaft, IP67 Shaft Seal
RM-105T	Ø 58 mm, Shaft, IP65 Shaft Seal

B	Shaft (Ø x L)
6	Ø 6 mm x 10 mm
10	Ø 10 mm x 20 mm
A0	Ø 1/4" x 7/8"
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
9N43B	10-30 VDC, EtherNet/IP

E	Type of Connection
B3M12	Axial 3 x M12 Eurofast Connectors

Part Number Key: RM-106 Blind Hollow Shaft Version

A	B	C		D		E
RM-106C	10	T	-	9N43B	-	B3M12

A	Type
RM-106B	Ø 58 mm, Blind Hollow Shaft, IP67 Shaft Seal
RM-106C	Ø 58 mm, Blind Hollow Shaft, IP65 Shaft Seal

B	Bore (30 mm Insertion Depth)
10	Ø 10 mm
12	Ø 12 mm
14	Ø 14 mm
15	Ø 15 mm
A1	Ø 3/8"
A3	Ø 1/2"

C	Flange
E	Ø 63 mm Flange w/ Slotted Flex Mount
E1	Ø 65 mm Flange w/ Flex Mount
SF	Long Flexible Tether Arm
T	Flange w/ Torque Stop

D	Voltage Supply and Output Type
9N43B	10-30 VDC, EtherNet/IP

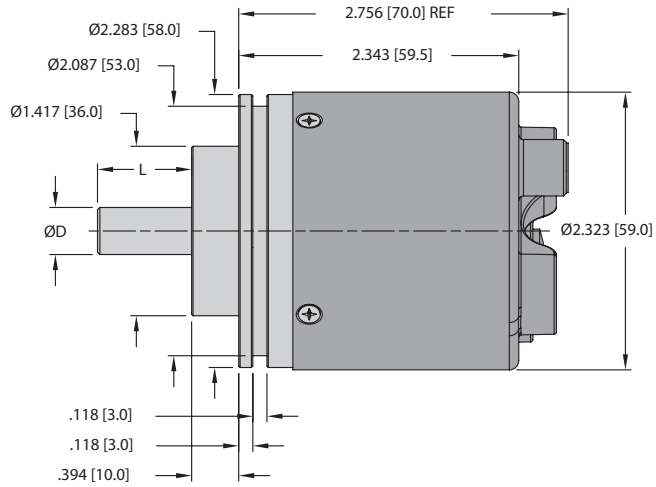
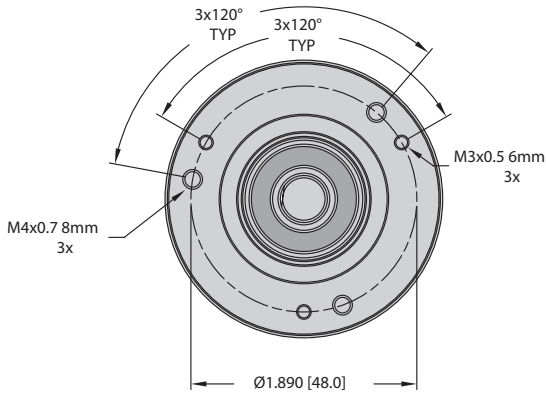
E	Type of Connection
B3M12	Axial 3 x M12 Eurofast Connectors

Accessories:

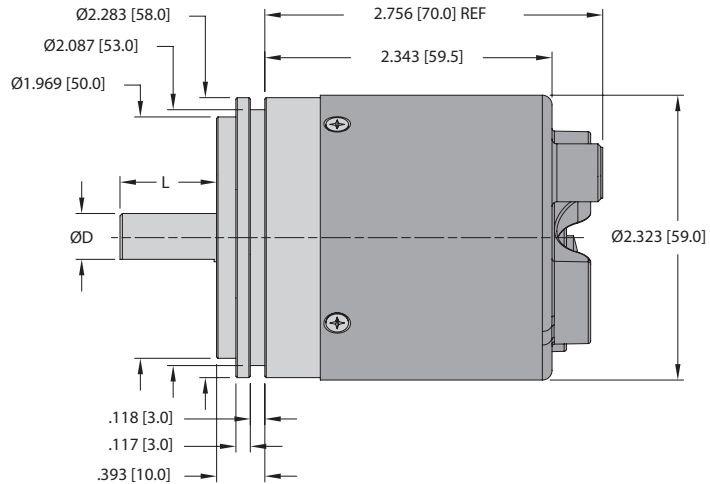
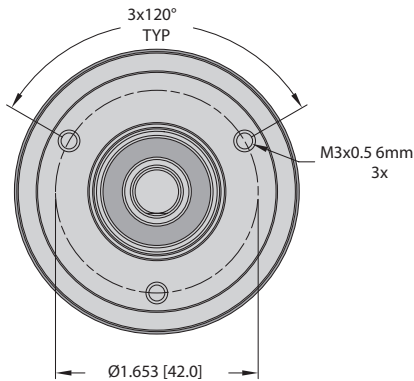
- See page H1, Connectivity, for cables and connectors
- See page G1, Accessories, for mounting attachments and couplings

Dimensions: RM-105 Shaft Version

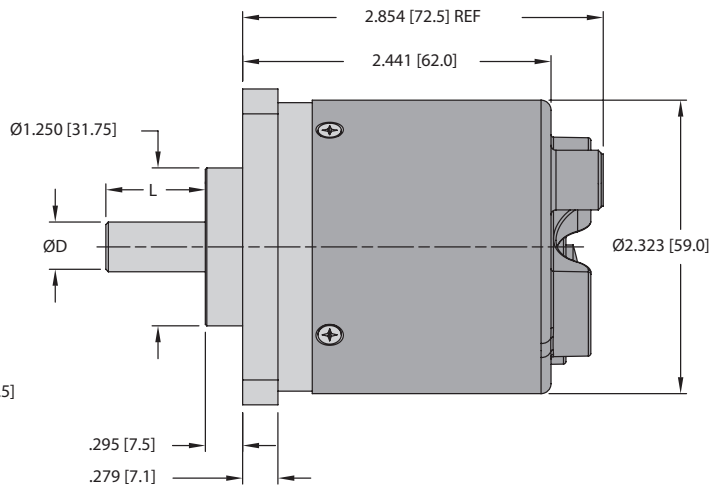
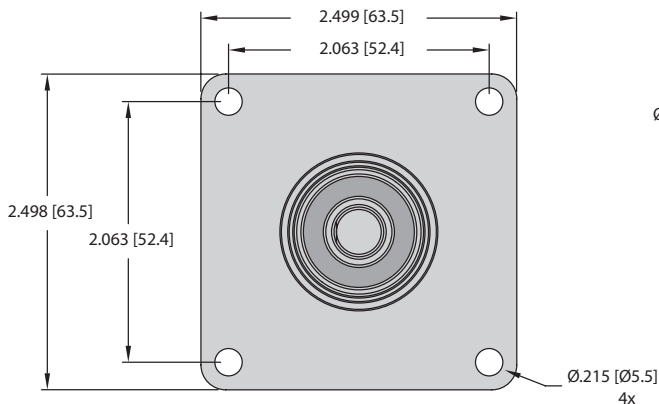
**RM-105 Flange C
Connection B3M12**



**RM-105 Flange S
Connection B3M12**



**RM-105 Flange R
Connection B3M12**

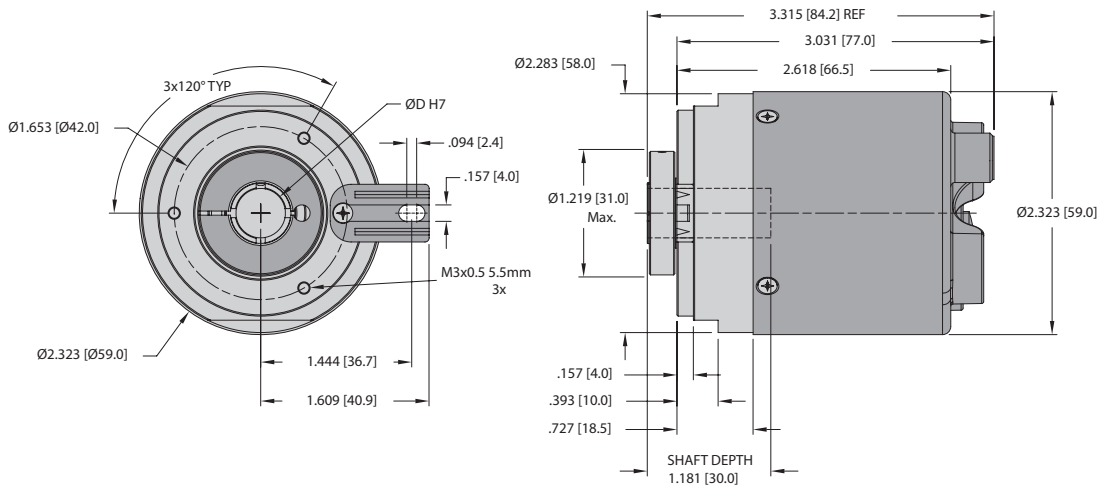


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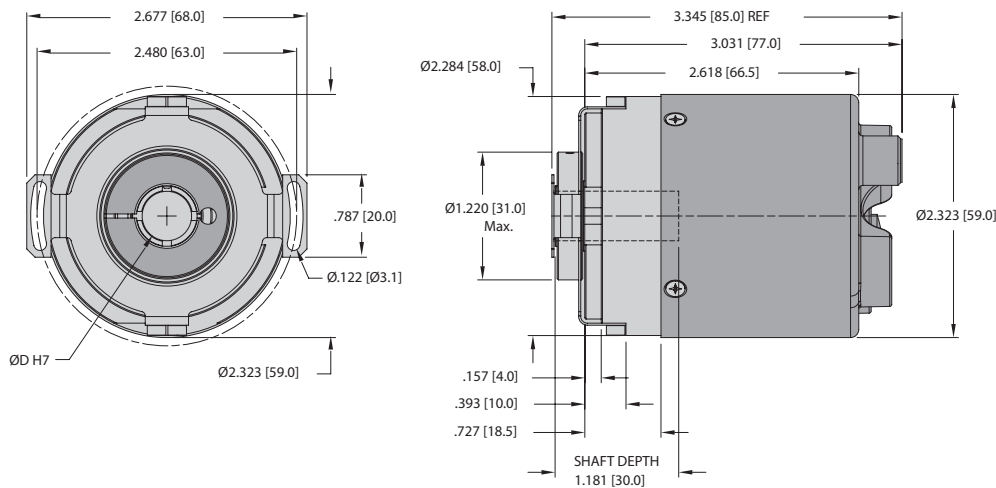
Absolute, Multiturn Type RM-105 (Shaft) / RM-106 (Blind Hollow Shaft) EtherNet/IP

Dimensions: RM-106 Blind Hollow Shaft Version

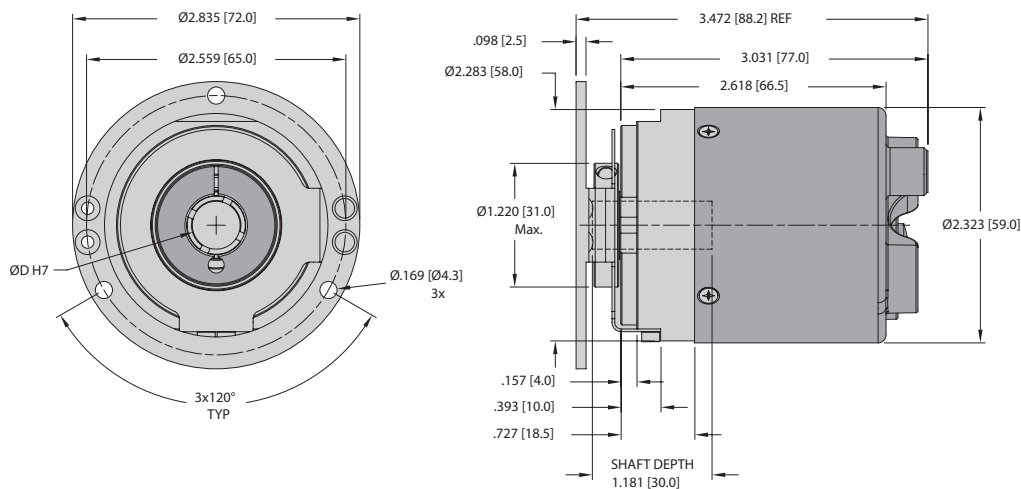
RM-106 Flange T Connection B3M12



RM-106 Flange E Connection B3M12



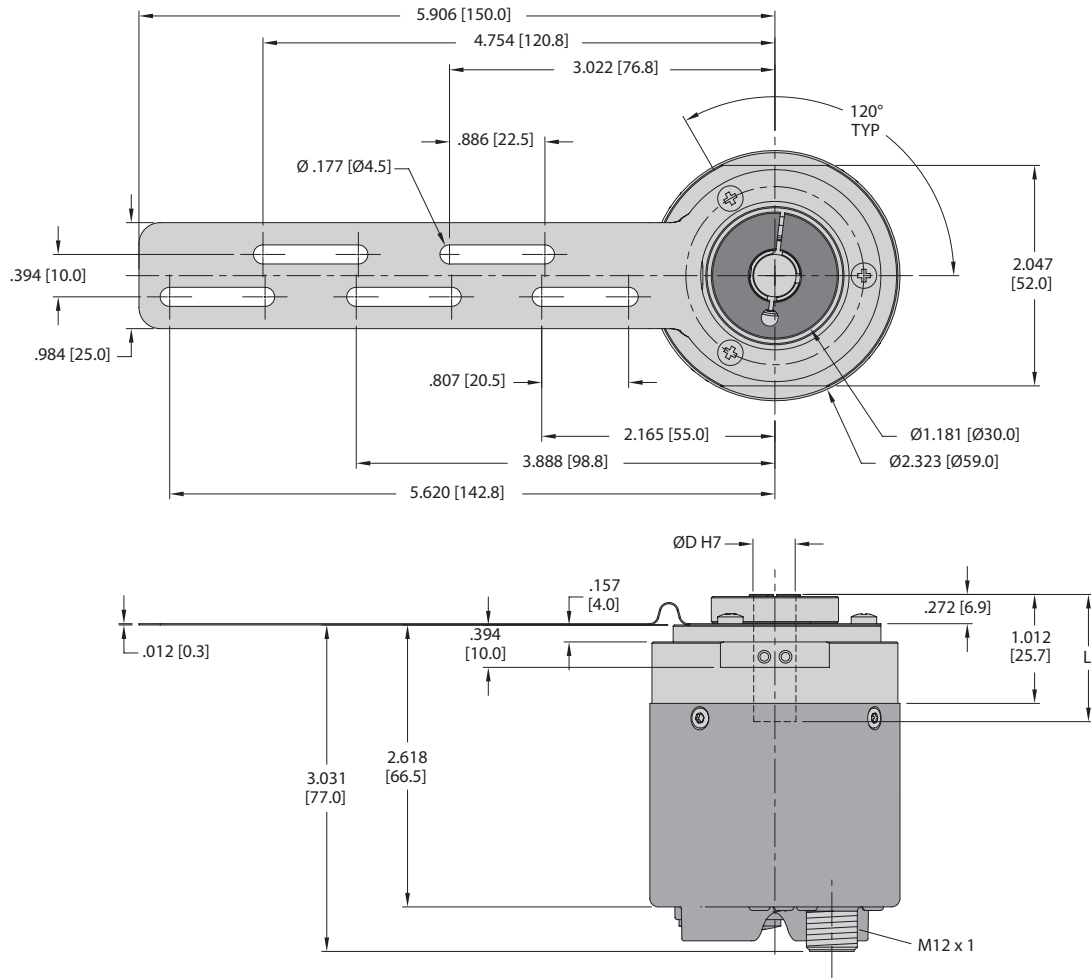
RM-106 Flange E1 Connection B3M12



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Absolute Encoders

**RM-106 Flange SF
 Connection B3M12**



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