

# EtherNet/IP Absolute Encoders

Catalog Numbers 842E-SIPxBA, 842E-MIPxBA

**IMPORTANT** Save these instructions for future use.

## Introduction

The 842E is an ultra-high resolution encoder with an EtherNet/IP™ interface. These encoders provide 18-bit single-turn resolution and 30-bit multi-turn resolution. The EtherNet/IP encoder is targeted for high performance and reliability in harsh industrial environments. These encoders include an embedded EtherNet/IP switch to connect additional EtherNet/IP capable product in series and/or support a Device Level Ring (DLR) for Ethernet media redundancy.

## Features

- EtherNet/IP
- Embedded switch
- Hardware/software IP address setting
- Resolution up to 30 bits
- Protection class up to IP67
- Simple and fast install
- Device Level Ring (DLR)
- Revolution divisor
- Solid and blind hollow shaft options

## Configurable Parameters

- Count direction
- Counts per resolution
- Counts of revolution
- Preset value
- Velocity unit
- IP address

## Typical Applications

- Packing machines
- Robotics
- Printing machines
- Rotary table positioning

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## Specifications

Attribute	Value
Certifications	CE Marked for all applicable directives
<b>Electrical</b>	
Bus connection	EtherNet/IP IEC 61784-1
Transmission rate	10/100 Mbps
Transmission medium	Cat-5e cable
Code type	Binary
Operating voltage range	10...30V
Power consumption	3.0 W
Resolution	262,144 (18 bit)
No. of revolutions, max	4096 (12 bit)
Error limits	±0.03°
Repeatability	±0.002°
Operating current, max, no load; 10...30V supply	≤200 mA
<b>Mechanical</b>	
Moment of inertia	≤6.2 gcm <sup>2</sup> (solid shaft) of the rotor ≤35 gcm <sup>2</sup> (blind hollow shaft) of the rotor
Operating speed	9000 RPM (solid shaft), max 6000 RPM (blind hollow shaft), max
Shaft loading	Radial: 80 N max (solid shaft) Axial: 40 N max (solid shaft)
Permissible shaft movement	Radial (static/dynamic): ±0.3 / ±0.05 mm (0.002 in.) [of drive element (blind hollow shaft)] Axial (static/dynamic): ±0.5 / ±0.1 mm (0.004 in.) [of drive element (blind hollow shaft)]
Bearing lifetime	3 x 10 <sup>9</sup> revolutions
Angular acceleration	5 x 10 <sup>5</sup> rad/s <sup>2</sup> , max
Operating torque	0.3 Ncm (solid shaft) @ 20 °C (68 °F) 0.6 Ncm (blind hollow shaft) @ 20 °C (68 °F)
Starting torque	0.5 Ncm (solid shaft) at 20 °C (68 °F) 0.8 Ncm (blind hollow shaft) at 20 °C (68 °F)
<b>Environmental</b>	
Housing material	Aluminum
Shaft material	Stainless steel
Operating temperature	-30...+85 °C (-22...+185 °F)
Storage temperature <sup>1</sup>	-40...+100 °C (-40...+212 °F)
Relative humidity <sup>2</sup>	90%
Shock <sup>3</sup>	100 g/6 ms
Vibration <sup>4</sup>	20 g/10...2000 Hz
Enclosure rating shaft	IP65
Housing enclosure rating <sup>5</sup>	IP67 (IEC 60529)
Weight	0.2 kg (0.44 lb)
Standards	EN 61000-6-2 and EN 61000-6-3 EMC

<sup>1</sup> Without packaging.  
<sup>2</sup> To condensation not permitted.  
<sup>3</sup> To DIN EN 60068-2-27.  
<sup>4</sup> To DIN EN 60068-2-6.  
<sup>5</sup> With mating connector inserted.

## Summary of Changes

Added additional variants to the Product Selection table and Dimensional drawings.

## Product Selection

842E — S IP 10 B A  
a b c d

a  
Number of Turns

Code	Description
S	Single-turn (one turn)
M	Multi-turn (4096 turns)

b  
Mechanical Interface

Code	Description
1	Solid shaft 9.52 mm (3/8 in.)
2	Solid shaft 9.52 mm (3/8 in.) with flat
3	Solid shaft 10 mm (0.39 in.)
4	Solid shaft 10 mm (0.39 in.) with flat
5	Hollow shaft 6.35 mm (1/4 in.)
6	Hollow shaft 8 mm (0.31 in.)
7	Hollow shaft 9.52 mm (3/8 in.)
8	Hollow shaft 10 mm (0.39 in.)
9	Hollow shaft 12 mm (0.47 in.)
10	Hollow shaft 12.7 mm (1/2 in.)
11	Hollow shaft 14 mm (0.55 in.)
12	Hollow shaft 15 mm (0.59 in.)
13	Servo mount solid shaft 6 mm (0.24 in.) with flat
14	Solid shaft 10 mm (0.39 in.) with key

c Connector		d Resolution	
Code	Description	Code	Description
B	M12 connector	A	262,144 (18 bit) steps per revolution

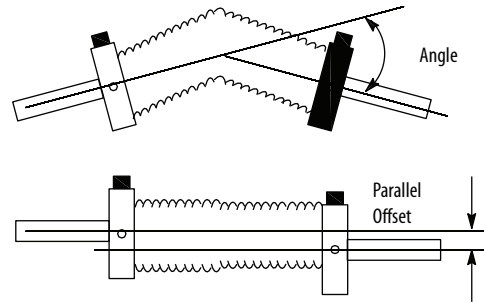
### Accessories

Description	Note
Flexible couplings	For information on these products, visit our website at <a href="http://www.rockwellautomation.com/">http://www.rockwellautomation.com/</a>
Mounting plates	
Ethernet media	
Cordsets and patchcords	

### Suggested Mating Cables

Description	Cat. No.
4-wire cable spool, robotic TPE, 100 m (328 ft)	1585-C4TB-S100
M12 D-code patchcord, male/male, 1 m (3.28 ft)	1585D-M4TBJM-2
DC micro QD cordset, 4-pin, 2 m (6.56 ft)	889D-F4AC-2
DC micro QD patchcord, 4-pin, 2 m (6.56 ft)	889D-F4ACDM-2

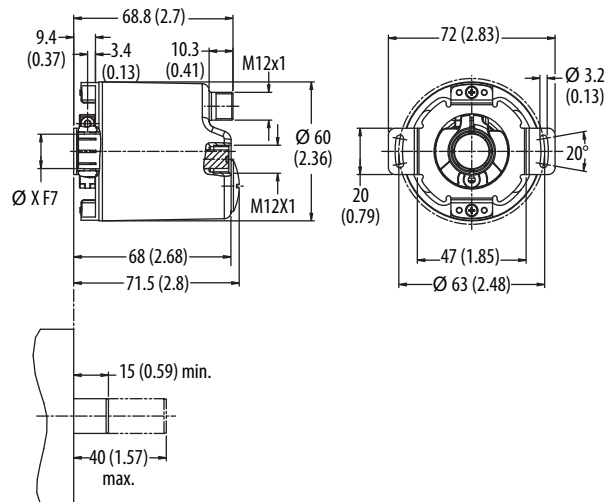
## Flexible Shaft Couplings



**ATTENTION:** Rigidly coupling the encoder shaft to the machine shaft causes a failure in either the bearings of the encoder or the bearings of the machine shaft.

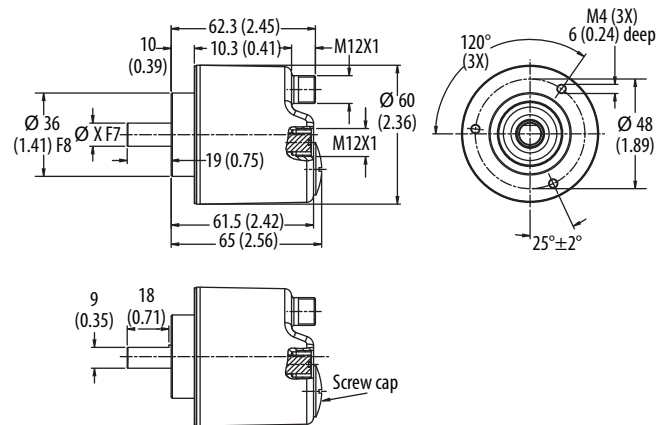
## Approximate Dimensions [mm (in.)]

### Blind Hollow Shaft



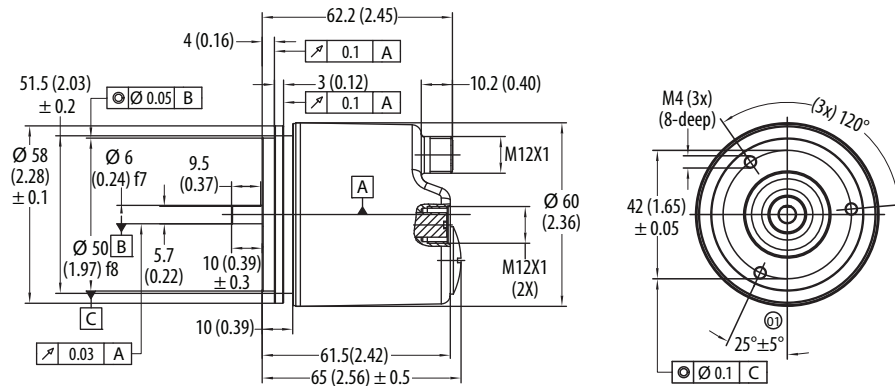
Tighten torque for screw cap is 0.8 N•m (7 in•lb).

### Solid Shaft

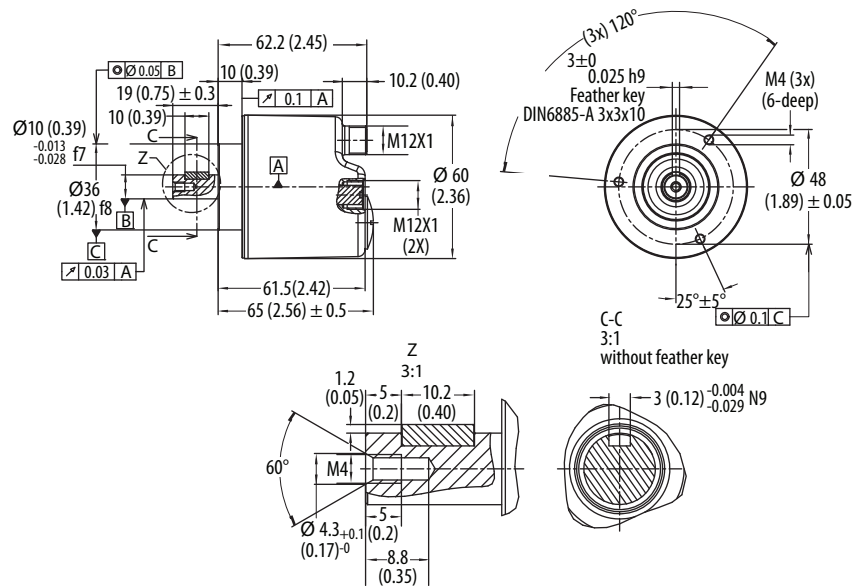


## Approximate Dimensions (Continued) [mm (in.)]

### 6 mm Servo Mount Solid Shaft with Flat



### 10 mm Solid Shaft with Key



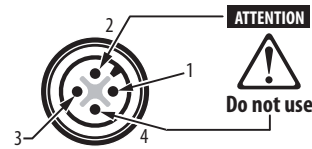
# Pinout and Color Code

## EtherNet/IP Pinout



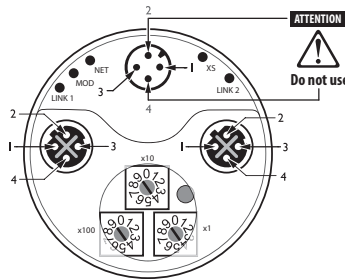
Pin	Signal Name	Color Code	Pair Assignment
1	TXD+	White Orange	Pair 1
3	TXD-	Orange	
2	RXD+	White Green	Pair 2
4	RXD-	Green	

## Power Supply Pinout



Pin	Signal Name	Color Code	Pair Assignment
1	Versus	Brown	Supply voltage 10...32V DC
2	—	White	Do not use
3	GND	Blue	0V DC (ground)
4	—	Black	Do not use

## LED Status



Module Status LED	Short Description
OFF	No power
Green	Device operational
Green flashing	Standby
Red flashing	Minor fault
Red	Major fault
Green/red flashing	Self-test

Network Status LED	Short Description
OFF	No power/IP address
Green flashing	No connected
Green	Connected
Red flashing	Minor fault
Red	Major fault
Green/red flashing	Self-test

Encoder Status LED	Short Description
OFF	No power
Green flashing	Wrong parameter
Green	Device operational
Red flashing	Minor fault
Red	Major fault
Green/red flashing	Self-test

Link 1 Status LED	Short Description
OFF	No link/power off
Green solid	LINK
Amber solid	Port disabled
Green flashing	Port activity
Amber flashing	Collision

Link 2 Status LED	Short Description
OFF	No link/power off
Green solid	LINK
Amber solid	Port disabled
Green flashing	Port activity
Amber flashing	Collision

1 Applying power to pins 2 and 4 will damage the encoder.

## Waste Electrical and Electronic Equipment (WEEE)



At the end of life, this equipment can be collected separately from any unsorted municipal waste.

Rockwell Automation maintains current product environmental information on its website at <http://www.rockwellautomation.com/rockwellautomation/about-us/sustainability-ethics/product-environmental-compliance.page>.

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Rockwell Otomasyon Ticaret A.Ş., Kar Plaza İş Merkezi E Blok Kat:6 34752 İçerenköy, İstanbul, Tel: +90 (216) 5698400

[www.rockwellautomation.com](http://www.rockwellautomation.com)

## Power, Control and Information Solutions Headquarters

Americas: Rockwell Automation, 1201 South Second Street, Milwaukee, WI 53204-2496 USA, Tel: (1) 414.382.2000, Fax: (1) 414.382.4444  
 Europe/Middle East/Africa: Rockwell Automation NV, Pegasus Park, De Kleetlaan 12a, 1831 Diegem, Belgium, Tel: (32) 2 663 0600, Fax: (32) 2 663 0640  
 Asia Pacific: Rockwell Automation, Level 14, Core F, Cyberport 3, 100 Cyberport Road, Hong Kong, Tel: (852) 2887 4788, Fax: (852) 2508 1846

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