

# Installation Instructions

## Size 25 Absolute Encoder, Bulletin 845D

IMPORTANT: SAVE THESE INSTRUCTIONS FOR FUTURE USE.

### Specifications

Electrical	
<b>Code Format</b>	Binary Coded Decimal (BCD) Gray Code Natural Binary
<b>Resolution</b>	(Gray and Natural Binary): 256 CPR (8 bit); 512 CPR (9 bit) 1024 CPR (10 bit) (BCD): 360 CPR (10 bit); 1000CPR (12 bit)
<b>Accuracy</b>	±1 bit
<b>Frequency Response</b>	16K words/sec
<b>Power Requirements</b>	Determined by catalog number: 5V DC ±5% @ 400mA maximum 8-24V DC @ 400mA maximum
<b>Output Drive Capability</b>	NPN current sink = 16mA
<b>Output Logic</b>	Parallel BCD, GRAY, or NAT BIN: Logic "0" = 0.0 to 0.6V DC Logic "1" = 3.5 to 5.0V DC (TTL) Logic "1" = 24V DC maximum (Open collector)
<b>Latch Command</b>	Optional with BCD and NAT BIN only: Logic "0" = outputs active (DC common) Logic "1" = outputs latched (+DC or open)
<b>Direction Control</b>	Field selectable for increasing counts (CW or CCW)
<b>Reset</b>	Reset position value to zero (see Reset Pin section on page 2). Only with shaft stationary.
Mechanical	
<b>Starting and Running Torque</b>	2.5 Ncm typical [3.5in-oz]
<b>Shaft Loading</b>	Axial 89N [20lbs]; Radial 178N [40lbs]
<b>Shaft Size</b>	6mm, 10mm, 1/4in, 3/8in diameter
<b>Moment of Inertia</b>	54g-cm <sup>2</sup> (0.3oz-in <sup>2</sup> )
<b>Slew Speed</b>	5000 RPM
Environmental	
<b>Housing</b>	NEMA Type 4, IP66 (IEC 529); NEMA Type 4X on selected models
<b>Temperature</b>	0°C to +85°C (+32°F to +185°F)—operating -25°C to +90°C (-13°F to +194°F)—storage
<b>Humidity</b>	98%, noncondensing
<b>Shock</b>	50g (11ms duration)
<b>Vibration</b>	20g (58 to 150Hz)
<b>Approximate Ship Weight</b>	0.91kg (2lbs)

### Accessories

Description	Catalog Number
High Performance Flexible Coupling	845-FC-*.*
Measuring Wheels	845-MW-A-*
Servo Clamps	845-SC
Pre-Wired Cables	845-CA-D-*
Mating Connectors	845-SCD

### Selection

845D — S J D Z 1 4 B D CK 4  
*a* *b* *c* *d* *e* *f* *g* *h* *i*

**a**

NEMA Rating	
Code	Description
J	NEMA 4
X	NEMA 4X

**b**

Mounting Configuration	
Code	Description
D	Square Flange
E	70mm Diameter Flange
F	90mm Diameter Flange
G	Metric Servo 48mm B.C.
H	English Servo
J	Metric Servo 42mm B.C.

**c**

Shaft Options	
Code	Description
A	6mm Diameter
B	10mm Diameter
C	1/4in Diameter
Z	3/8in Diameter
K	6mm w/Flat
L	10mm w/Flat
M	1/4in w/Flat
N	3/8in w/Flat

**d**

Power Supply Options	
Code	Description
1	5V DC ±5%
2	8-24V DC Unregulated

**e**

Output Configuration	
Code	Description
4	5V DC TTL Compatible
5	NPN Open Collector 24V DC Max.

**f**

Latch Options	
Code	Description
A	No Latch
B	Latch (Sink Output Module Compatible)

**g**

Output Code Type	
Code	Description
D	Binary Coded Decimal
G	Gray Code
N	Natural Binary

**h**

Resolution	
Code	Description
CW	256
DW	512
FW	1024
CK	360
CN	1000

Gray Code  
or  
Natural Binary  
  
Binary Coded  
Decimal

**i**

Connector Options	
Code	Description
1	Axial Connector (End) without Mate
2	Radial Connector (Side) without Mate
4	Axial Connector (End) with Mate
5	Radial Connector (Side) with Mate



**ATTENTION:** The shielded cables, output devices, and power supplies must be properly grounded. All National Electric Code and applicable local codes and ordinances must be observed when wiring the system.

## Electrical Connections

Pin	Function		
	Gray Code	Natural Binary	BCD (8421)
A	G(0)	2 <sup>0</sup>	1
B	G(1)	2 <sup>1</sup>	2
C	G(2)	2 <sup>2</sup>	4
D	G(3)	2 <sup>3</sup>	8
E	G(4)	2 <sup>4</sup>	10
F	G(5)	2 <sup>5</sup>	20
G	G(6)	2 <sup>6</sup>	40
H	G(7)	2 <sup>7</sup>	80
J	G(8)	2 <sup>8</sup>	100
K	G(9)	2 <sup>9</sup>	200
L	MSB Complement	Not Used	400
M	Not Used	Not Used	800
N	Not Used	Not Used	Not Used
P	Not Used	Not Used	Not Used
R	Not Used	Direction Control	Direction Control
S	Reset	Reset	Reset
T	DC Return	DC Return	DC Return
U	Not Used	Latch Control	Latch Control
V	DC+ Input	DC+ Input	DC+ Input

### Direction Pin

The Direction Pin can change function with code type. In parallel type Gray Code encoders, its function is Most significant Bit Complement or MSBC for short. In Natural Binary and Binary Coded Decimal encoders, its function is Direction Control.

### Direction Control ①

#### Natural Binary and BCD

A logic "1" (+DC or open) on the direction control pin will produce increasing counts with a counter-clockwise rotation of the shaft. A logic "0" (DC common) on the direction control pin will produce increasing counts with a clockwise rotation of the shaft.

#### Gray Code (parallel only)

Counterclockwise rotation of the shaft will produce increasing counts. For increasing counts with a clockwise rotation, use the Most Significant Bit Complement Pin instead of the Most Significant Bit Pin. See Electrical Connection table for pin designation.



**ATTENTION:** For parallel gray code: connecting the MSB or MSBC to +DC will result in permanent damage to the encoder.

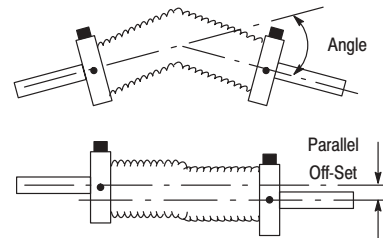
### Reset Pin

The shaft must be stationary before using the reset function. Connecting the Reset Pin to +DC will reset Natural Binary and BCD position value to zero. Connecting the Reset Pin to +DC will reset Gray Code position value to maximum (e.g., 255, 511, 1023, etc.) if MSBC is used, to zero if MSB is used. The reset function requires a connection to +DC for 0.1 seconds or longer.



**ATTENTION:** Activating the Reset Pin results in a change of position reading. This can cause unexpected motion which could result in damage to the product, equipment, or personal injury.

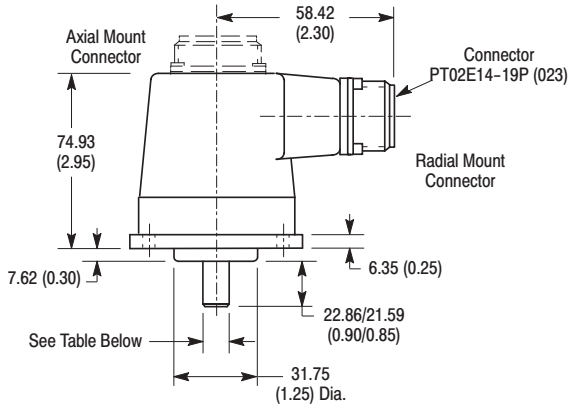
### Flexible Shaft Couplings



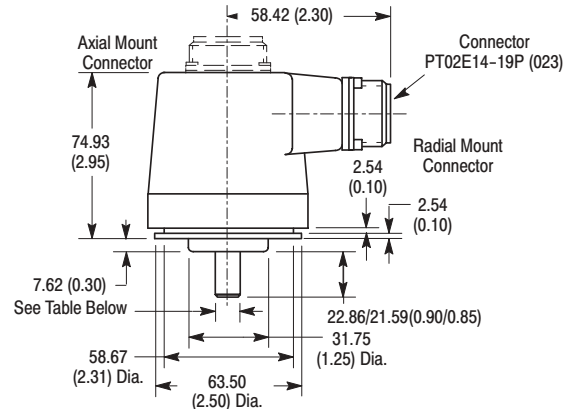
**ATTENTION:** Rigidly coupling the encoder shaft to the machine shaft **will cause a failure** in either the bearings of the encoder or the bearings of the machine shaft.

① Rotation is viewed from the end of the encoder shaft.

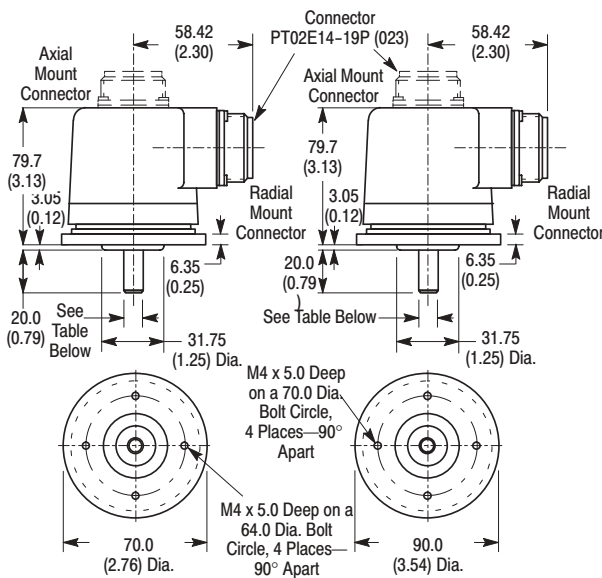
## Dimensions—mm (inches)



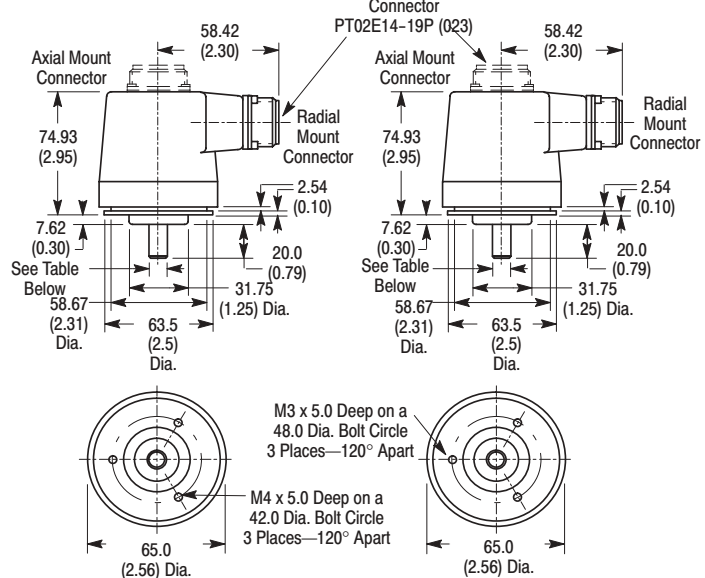
Square Flange Mount



English Servo Mount



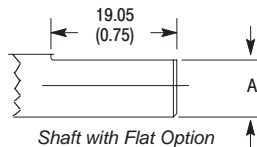
Metric Flange Mount



Metric Servo Mount

## Shaft Diameter Options

Code	Shaft Diameter
A or K	6mm +0.00mm, -0.013mm
B or L	10mm +0.00mm, -0.013mm
C or M	6.35(0.2499) +0.0000, -0.0005
Z or N	9.52 (0.3749) +0.0000, -0.0005



## Flat Dimensions

Code	Dimension "A"
K	5.3mm (0.21in)
L	9.1mm (0.36in)
M	5.5mm (0.22in)
N	8.6mm (0.34in)

