

510E Series Mechanical Encoders

DESCRIPTION

The 510E Series products are manually operated, rotary, mechanical encoders that provide a two-bit gray code output for relative reference applications and a four-bit gray code output for absolute electrical reference applications.

The "L" channel leads the "R" channel by 90° electrically in the clockwise position. This series has continuous electrical travel and has a rotational life of more than 100,000 shaft rotations with a positive detent feel.

FEATURES AND BENEFITS

- Resolution up to 36 positions provides high resolution
- Wide operating temperature range of -40 °C to 105 °C [-40 °F to 221 °F] helps minimize performance issues
- Horizontal or vertical mounting provides flexibility in the application
- Digital gray code eliminates need for A/D converters providing a cost-effective solution
- Rotational torque provides consistency

These small encoders are commonly used in limited-space, panel-mounted applications where the need for costly, front-panel displays can be completely eliminated. Digital gray code outputs eliminate the need for A/D converters.

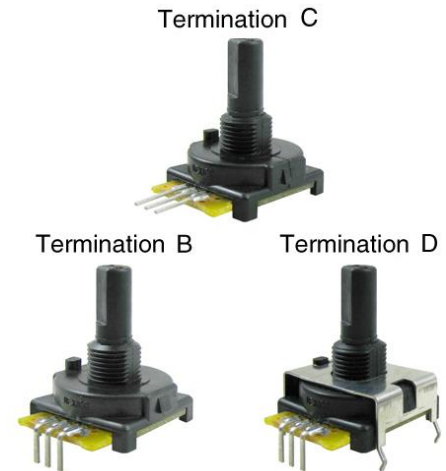
POTENTIAL APPLICATIONS

Industrial:

- Robotics
- Irrigation controls
- Audio/visual equipment

Medical:

- EGK and defibrillation machines



510E Series

Table 1. Electrical Specifications

Characteristic	Parameter
Encoder type	mechanical
Output	2-bit grey code, channel L leads channel R by 90 degrees electrically in the CW direction 4-bit grey code, absolute electrical position output
Closed circuit resistance	5 Ohm max.
Open circuit resistance	100 kOhm min.
Contact rating	resistance load 250 mA at 28 Vdc max.
Switching loads	1.5 mA at 115 Vac; 150 mA at 14 Vdc
Bounce (jitter)	5 ms/cycle at 15 RPM
Dielectric withstanding voltage	1000 Vac at sea level
Electrical travel	continuous
Operating speed	50 rotations/minute max.

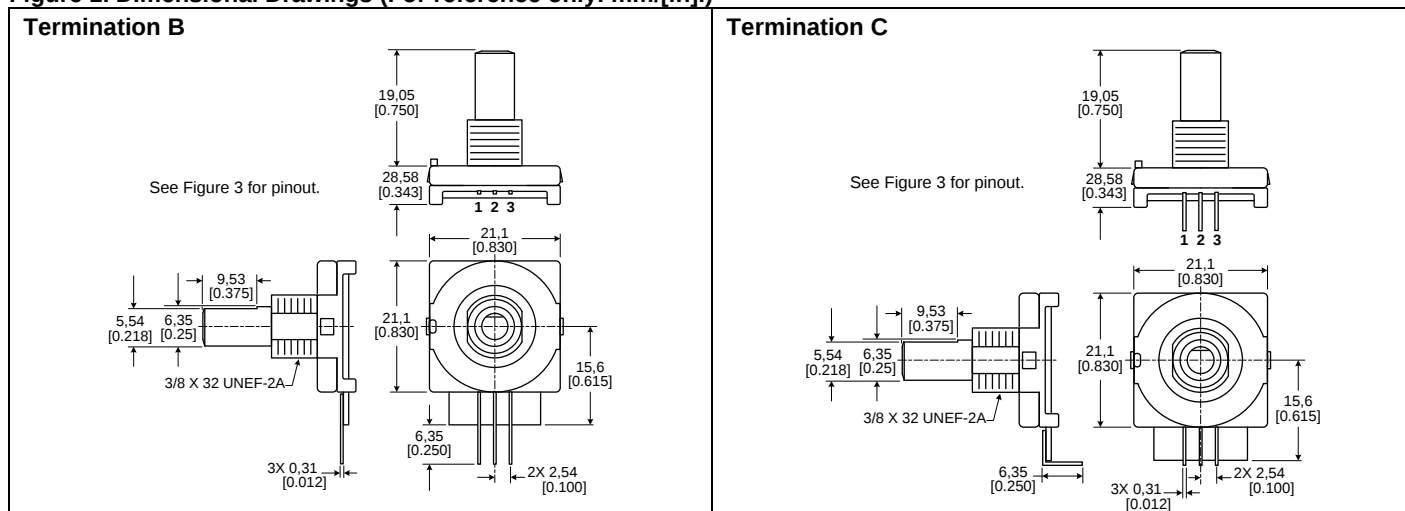
Table 2. Mechanical Specifications

Characteristic	Parameter
Rotational torque	0,0216 N m to 0,036 N m [3.0 oz in to 5.0 oz in]
Mechanical travel	continuous
Panel mounting torque	1,13 N m [10 in lb] max.
Shaft load force	1,13 N m [10 in lb] max.
Shaft pull force	44,5 N [10 lb] max.
Termination	standard PC style, B-110 or C-30
Construction:	
housing	nylon 6/6, 30% glass/Teflon filled
shaft/bushing	polyester 30% glass filled
Terminal	brass with pure matte tin over nickel underplating, solder dipped
Rotational life	100,000 detented cycles at rated load typical. (1 cycle = 720 degrees)

Table 3. Environmental Specifications

Characteristic	Parameter
Operating temperature	-40 °C to 105 °C [-40 °F to 221 °F]
Storage temperature	-55 °C to 120 °C [-67 °F to 248 °F]
Sealing	Controls are not sealed for board washing. Consult Honeywell for details.

Figure 1. Dimensional Drawings (For reference only: mm/[in].)



Mechanical Encoders

Figure 1. Dimensional Drawings (continued)

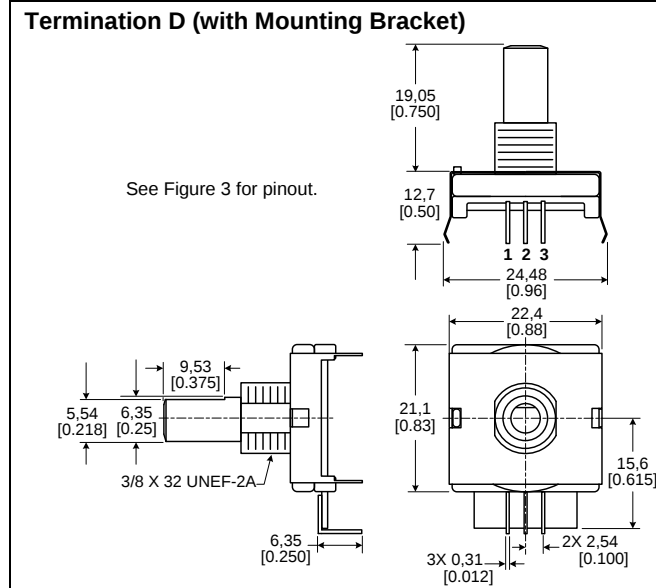


Figure 2. 510VBKT Mounting Bracket (available separately)

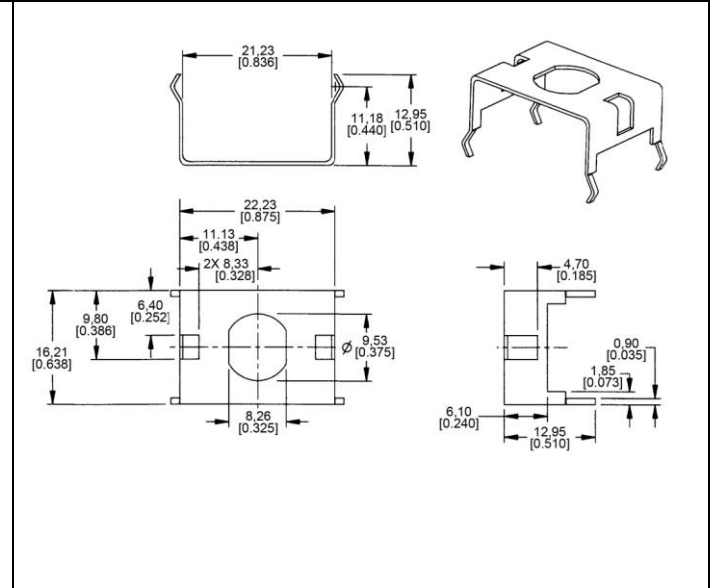


Figure 3. Output Information

2-Bit, 36 Detente Incremental Output Graph

Step	Pin 1	Pin 2	Pin 3
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			
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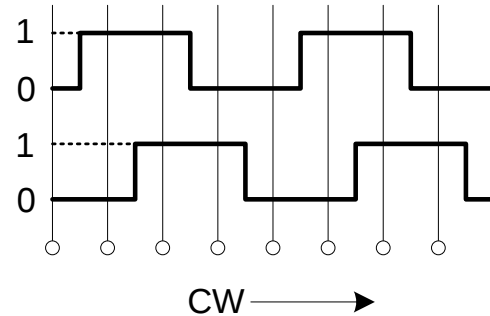
☒ Closed
☐ Open

2-bit,
16 det.

2-bit,
24 det.

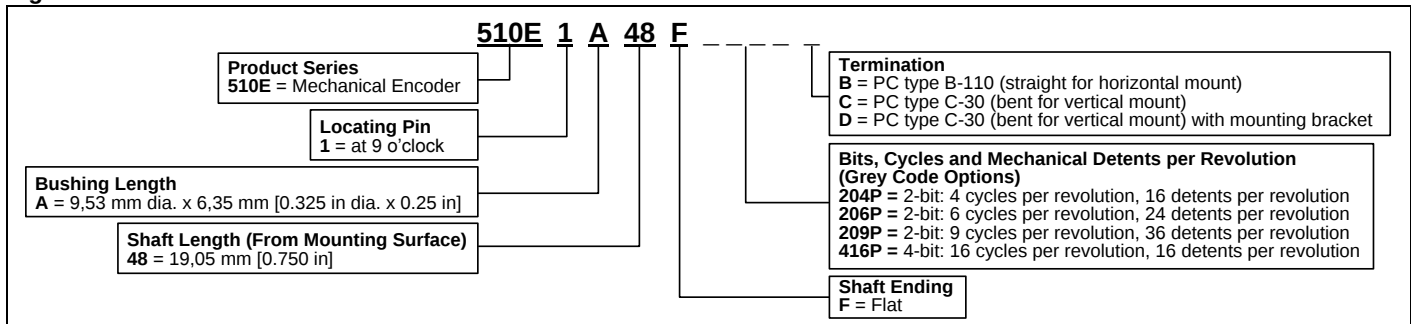
2-bit,
36 det.

Output Table



CW →

Figure 4. Nomenclature Tree



Order Guide¹

Catalog Listing	Description
510E1A48F204PB	510E Series mechanical encoder, 2-bit: 4 cycles per revolution, 16 detents per rev., PC type B-110 terminals
510E1A48F204PC	510E Series mechanical encoder, 2-bit: 4 cycles per revolution, 16 detents per rev., PC type C-30 terminals
510E1A48F204PD	510E Series mechanical encoder, 2-bit: 4 cycles per revolution, 16 detents per revolution, PC type C-30 terminals with mounting bracket
510E1A48F206PB	510E Series mechanical encoder, 2-bit: 6 cycles per revolution, 24 detents per rev., PC type B-110 terminals
510E1A48F206PC	510E Series mechanical encoder, 2-bit: 6 cycles per revolution, 24 detents per rev., PC type C-30 terminals
510E1A48F209PB	510E Series mechanical encoder, 2-bit: 9 cycles per revolution, 36 detents per rev., PC type B-110 terminals
510E1A48F209PC	510E Series mechanical encoder, 2-bit: 9 cycles per revolution, 36 detents per rev., PC type C-30 terminals
510E1A48F416PB	510E Series mechanical encoder, 2-bit: 16 cycles per revolution, 16 detents per rev., PC type B-110 terminals
510E1A48F416PC	510E Series mechanical encoder, 4-bit: 16 cycles per revolution, 16 detents per rev., PC type C-30 terminals
510VBKT	Mounting bracket

Note 1: Nuts and lock washers are not included.

WARNING

PERSONAL INJURY

DO NOT USE these products as safety or emergency stop devices or in any other application where failure of the product could result in personal injury.

Failure to comply with these instructions could result in death or serious injury.

WARRANTY/REMEDY

Honeywell warrants goods of its manufacture as being free of defective materials and faulty workmanship. Honeywell's standard product warranty applies unless agreed to otherwise by Honeywell in writing; please refer to your order acknowledgement or consult your local sales office for specific warranty details. If warranted goods are returned to Honeywell during the period of coverage, Honeywell will repair or replace, at its option, without charge those items it finds defective. **The foregoing is buyer's sole remedy and is in lieu of all other warranties, expressed or implied, including those of merchantability and fitness for a particular purpose. In no event shall Honeywell be liable for consequential, special, or indirect damages.**

While we provide application assistance personally, through our literature and the Honeywell web site, it is up to the customer to determine the suitability of the product in the application.

Specifications may change without notice. The information we supply is believed to be accurate and reliable as of this printing. However, we assume no responsibility for its use.

WARNING

MISUSE OF DOCUMENTATION

- The information presented in this product sheet is for reference only. Do not use this document as a product installation guide.
- Complete installation, operation, and maintenance information is provided in the instructions supplied with each product.

Failure to comply with these instructions could result in death or serious injury.

SALES AND SERVICE

Honeywell serves its customers through a worldwide network of sales offices, representatives and distributors. For application assistance, current specifications, pricing or name of the nearest Authorized Distributor, contact your local sales office or:

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