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With the principle of “Quality Parts,Customers Priority,Honest Operation,and Considerate Service”,our business mainly focus on the distribution of electronic components. Line cards we deal with include Microchip,ALPS,ROHM,Xilinx,Pulse,ON,Everlight and Freescale. Main products comprise IC,Modules,Potentiometer,IC Socket,Relay,Connector.Our parts cover such applications as commercial,industrial, and automotives areas.

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Contact us

Tel: +86-755-8981 8866 Fax: +86-755-8427 6832

Email & Skype: info@chipsmall.com Web: www.chipsmall.com

Address: A1208, Overseas Decoration Building, #122 Zhenhua RD., Futian, Shenzhen, China





Mechanical Encoders

510 Series



510 Series Mechanical Encoders

The 510 Series are manually operated, rotary encoders that supply a 2-bit gray code output for relative reference applications or a four-bit gray code output for absolute electrical reference applications. They combine the feel of a rotary switch with a digital output.

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.

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 may eliminate the need for analog/digital converters.

Key Features and Benefits

- **High resolution:** Up to 36 positions for applications that require high resolution
- **Gray code digital voltage output:** May eliminate the need for analog to digital converters, contributes to a more cost-effective solution
- **Wide operating temperature range of -40 °C to 105 °C [-40 °F to 221 °F]:** Helps minimize thermal performance issues
- **Mounting flexibility:** Horizontal or vertical mounting terminations promote flexibility in the application

Potential Applications

INDUSTRIAL

- Audio/visual equipment
- Smoke detectors
- Irrigation controls
- Oscilloscopes
- Robotics

MEDICAL

- EKG and defibrillation machines

Mechanical Encoders

Table 1. Electrical Specifications






| Characteristic | Parameter | | | | |
|---------------------------------------|---|---|--|---|---|
| | Termination B 3 Leads | Termination B 5 Leads | Termination C 3 Leads | Termination C 5 Leads | Termination D |
| |  |  |  |  |  |
| Output | 2-bit gray code, channel L leads channel R by 90° electrically CW | 4-bit gray code, absolute electrical position output | 2-bit gray code, channel L leads channel R by 90° electrically CW | 4-bit gray code, absolute electrical position output | 2-bit gray code, channel L leads channel R by 90° electrically CW |
| Closed circuit resistance | 5 Ohm max. | | | | |
| Open circuit resistance | 100 kOhm min. | | | | |
| Contact rating | 250 mA at 28 Vdc max. | | | | |
| Switching loads: 14 Vdc 115 Vac | 150 mA 1.5 mA | | | | |
| Dielectric | 1000 Vac at sea level | | | | |
| Rotational life | 100,000 cycles at rated load, typ. | | | | |
| Electrical travel | 360%/continuous | | | | |

Table 2. Mechanical Specifications

| Characteristic | Parameter | | | | |
|--|---|------------------------|----------------------------|------------------------|---|
| | Termination B 2-bit | Termination B 4-bit | Termination C 2-bit | Termination C 4-bit | Termination D |
| Mechanical travel | 360%/continuous | | | | |
| Detent positions | 16, 24, or 36 ¹ | 16 | 16, 24, or 36 ¹ | 16 | 16 |
| Operating torque | 21 mN m to 23 mN m [3 in-oz to 5 in-oz] | | | | |
| Operating speed | 50 rpm, max. | | | | |
| Termination type | formed, C-30 type | | straight, B-110 type | | formed, C-30 type with mounting bracket |
| Material: housing, bushing, shaft terminals PCB | glass-reinforced thermoplastic tin-plated brass FR4 | | | | |

¹See Order Guide Tables on pp. 5-7.

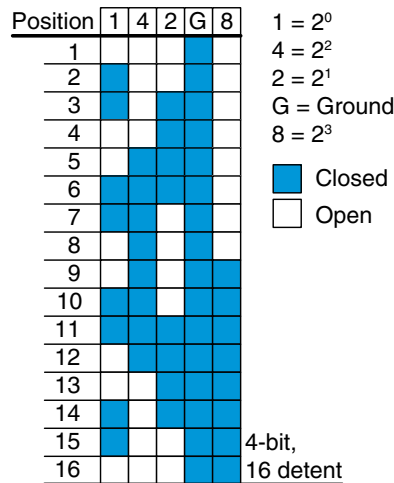
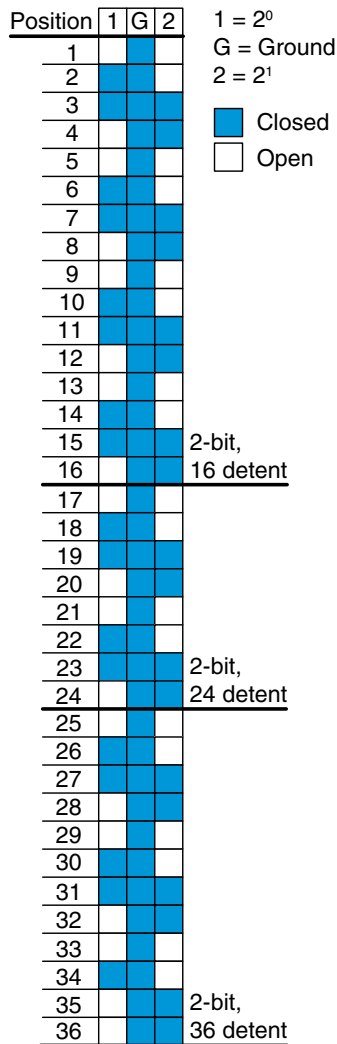
Table 3. Environmental Specifications

| Characteristic | Parameter | | | | |
|-----------------------|---|------------------------|------------------------|------------------------|---------------|
| | Termination B 2-bit | Termination B 4-bit | Termination C 2-bit | Termination C 4-bit | Termination D |
| 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. | | | | |

510 Series

Figure 1. Output Information

Incremental Output Graphs (Clockwise Rotation)



Channel Graph

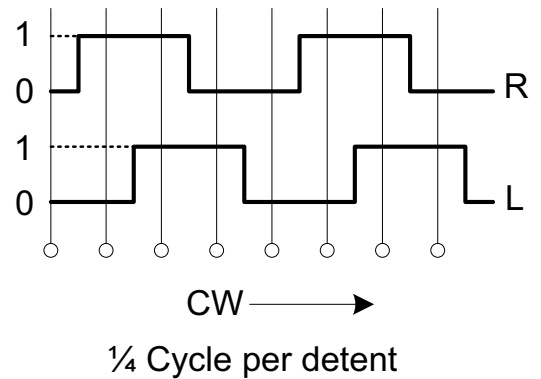
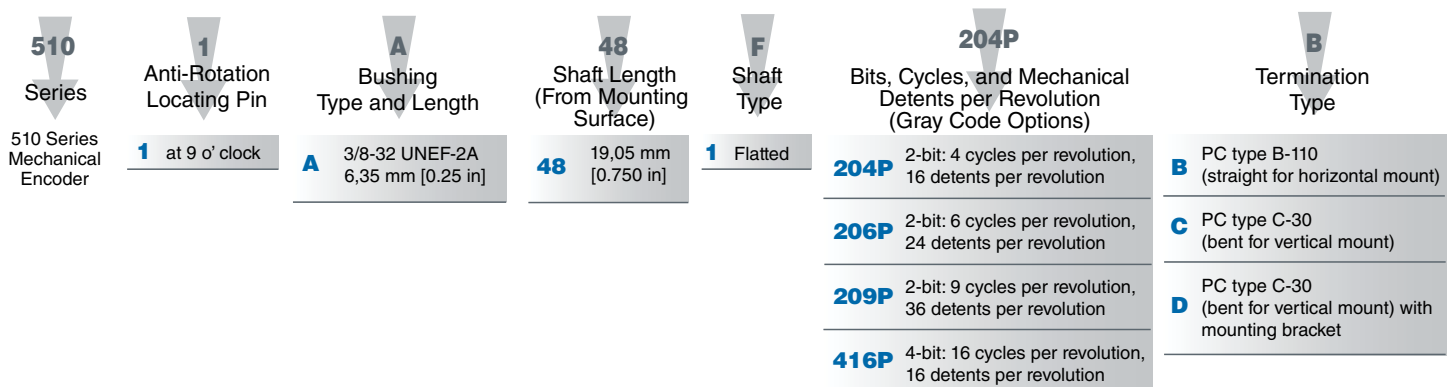


Figure 2. Nomenclature Tree

For example, **5101A48F204PB** defines a 510 Series Mechanical Encoder, anti-rotation locating pin at the 9 o' clock position, 3/8-32 UNEF-2A, 9,53 mm [0.25 in] bushing type and length, 19,05 mm [0.750 in] shaft length, flatted shaft, 2-bit: 4 cycles per revolution, 16 detents per revolution, PC type B-110 termination.



Mechanical Encoders

Table 510-A Order Guide

| Catalog Listing | Electrical | Mechanical | RoHS Compliant | Mounting Hardware |
|-----------------|----------------|------------------|----------------|-------------------|
| | Number of Bits | Detent Positions | | |
| 510E1A48F204PB | 2 | 16 | yes | none |
| 510E1A48F206PB | 2 | 24 | yes | none |
| 510E1A48F209PB | 2 | 36 | yes | none |

Dimensional Drawing (For reference only: mm [in.]

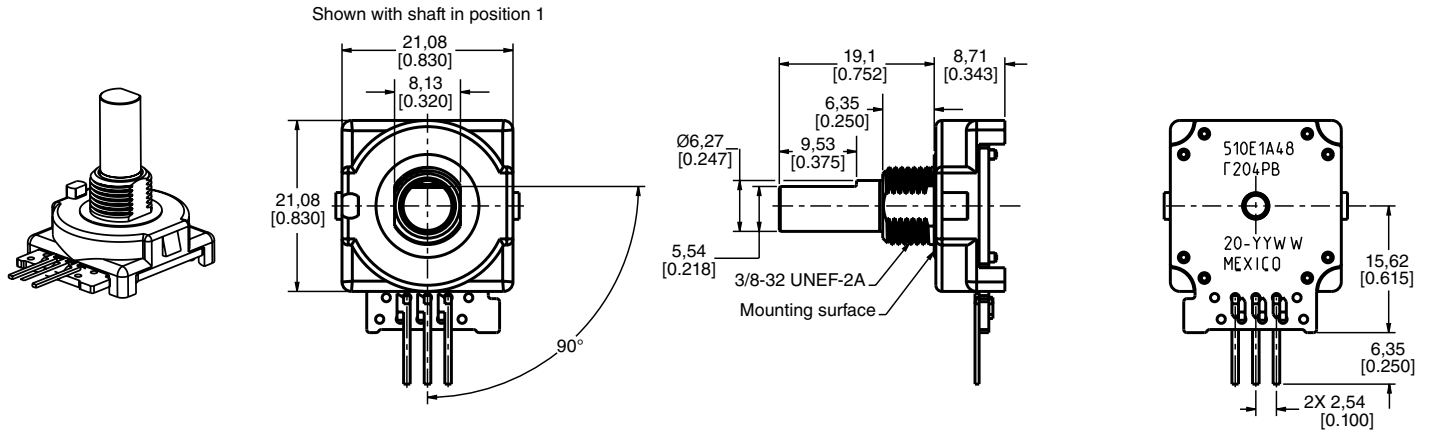
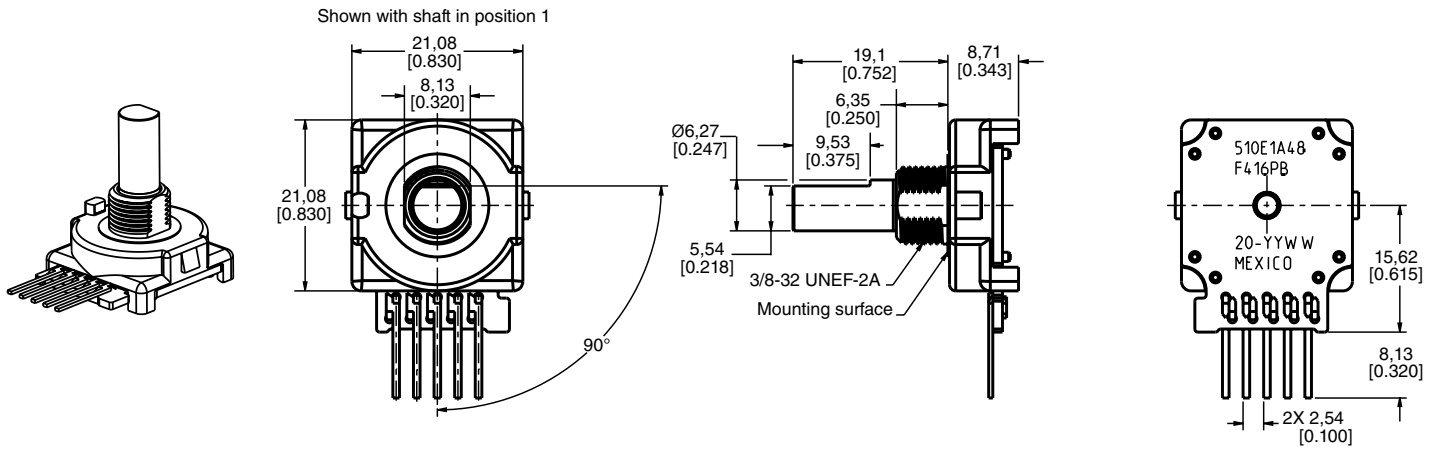


Table 510-B Order Guide

| Catalog Listing | Electrical | Mechanical | RoHS Compliant | Mounting Hardware |
|-----------------|----------------|------------------|----------------|-------------------|
| | Number of Bits | Detent Positions | | |
| 510E1A48F416PB | 4 | 16 | yes | none |

Dimensional Drawing (For reference only: mm [in.]



510 Series

Table 510-C Order Guide

| Catalog Listing | Electrical | Mechanical | RoHS Compliant | Mounting Hardware |
|-----------------|----------------|------------------|----------------|-------------------|
| | Number of Bits | Detent Positions | | |
| 510E1A48F204PC | 2 | 16 | yes | none |
| 510E1A48F206PC | 2 | 24 | yes | none |
| 510E1A48F209PC | 2 | 36 | yes | none |

Dimensional Drawing (For reference only: mm [in].)

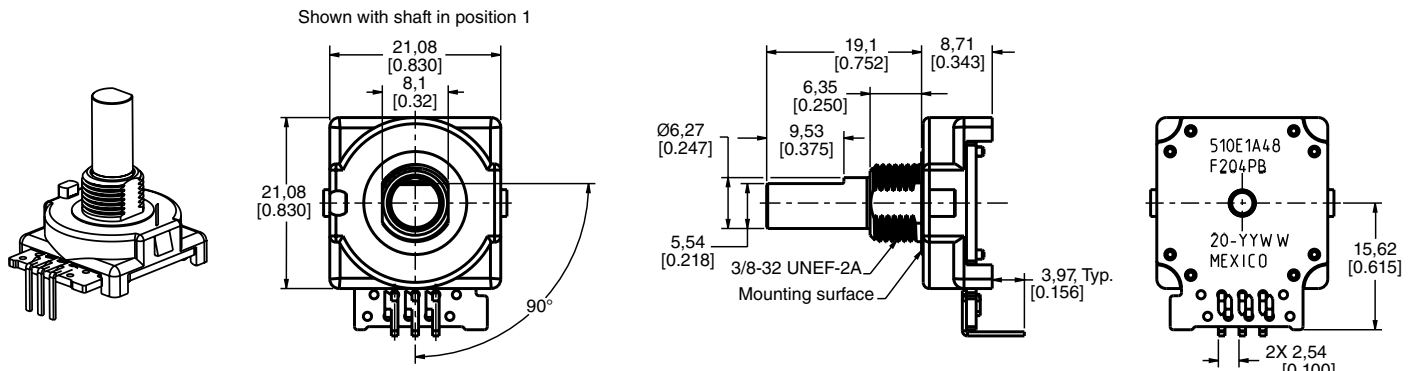
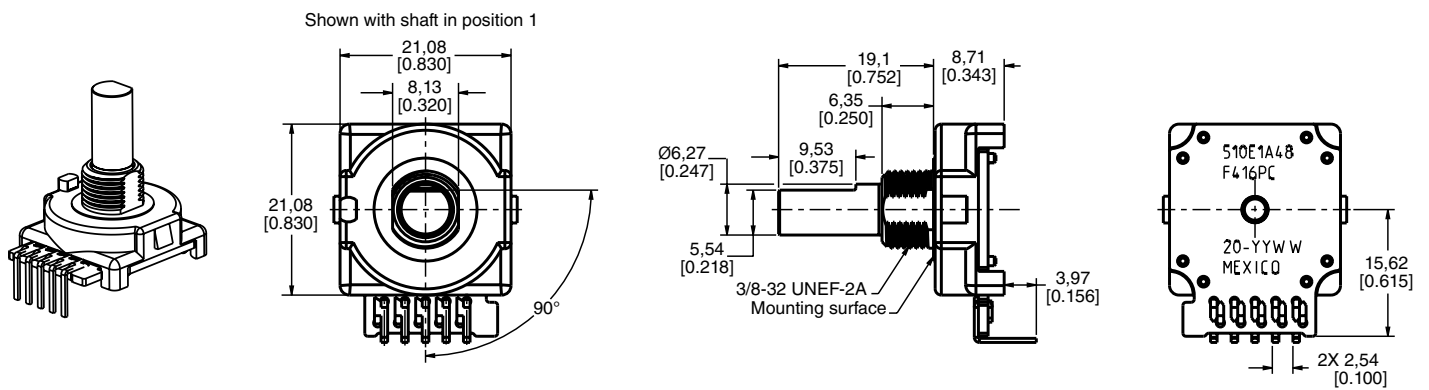


Table 510-D Order Guide

| Catalog Listing | Electrical | Mechanical | RoHS Compliant | Mounting Hardware |
|-----------------|----------------|------------------|----------------|-------------------|
| | Number of Bits | Detent Positions | | |
| 510E1A48F416PC | 4 | 16 | yes | none |

Dimensional Drawing (For reference only: mm [in].)



ADDITIONAL INFORMATION

The following associated literature is available at sensing.honeywell.com:

- Product Range Guide
- Product Line Guide
- Installation Instructions

Find out more

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.

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Sensing and Control
Honeywell
1985 Douglas Drive North
Golden Valley, MN 55422
honeywell.com

⚠ 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.

⚠ 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.

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.**

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