

Series 288 Data Sheet Rotary Encoder

Commercial Miniature 16mm Size Rotary Encoder

Features

- Robust Construction
- 2-bit Incremental or 4-bit Absolute Encoder
- Optional Momentary Switch
- · Available with 16 Detents
- · Continuous Rotation
- Bushing Mount
- Solder Lug or PCB Terminals
- RoHS Compliant



Electrical and Mechanical Specifications

Encoder:

Contact Resistance 500Ω maximum

Voltage Rating 5 VDC @ 0.5mA maximum

Detent Points16 detents available

Rotational Life 50,000 cycles

Resolution

2-bit: 4, 6, 8,10 or 12 pulses in 360° 4-bit: 16 combinations in 360°

Insulation Resistance

10MΩ minimum at 50 VDC

Temperature Range

Operating: -25°C to +100°C Storage: -30°C to +100°C

Rotational Torque

No Detent: 36 - 216 gf.cm With Detent: 100 - 500 gf.cm

Solder Heat Resistance 260°C for 5 seconds

Push-Pull Strength of Shaft 8 kg minimum for 10 seconds

Special

Consult CTS for customized or features not listed, including other detent points, resolution, torque and mounting style.

Electrical and Mechanical Specifications (continued)

Optional Momentary Switch:

Switch Contact Resistance

Initial: $100m\Omega$ maximum

After Life Cycles: 200mΩ maximum

Switch Rating

16 VDC @ 20mA maximum

Switch Bounce

5 milliseconds maximum

Switch Operating Force

 $350 \pm 150 \text{ g} (12.3 \pm 5.3 \text{ oz.})$

Switch Life

15,000 operations

Switch Travel

0.5mm (.020")

Truth Table

2 BIT BINARY CODE

| DENOTES CONTACT | В | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 1 | | 0 | 1 | 1 |
|--------------------|---|---|---|---|---|---|---|---|---|---|----|----|----|----|----|----|----|---|----|----|----|
| CLOSURE TO COMMON | Α | 0 | 1 | 1 | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 1 | 0 | \ | 1 | 1 | 0 |
| POS. NO. | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | | 46 | 47 | 48 |

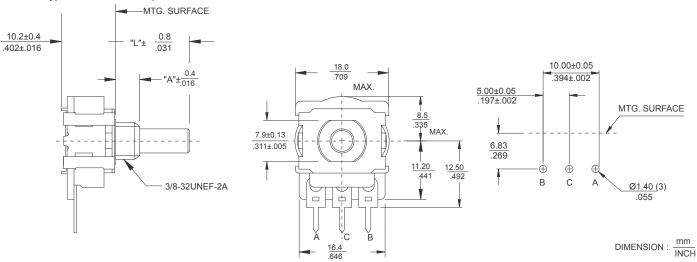
4 BIT GRAY CODE

4 BIT HEXADECIMAL CODE

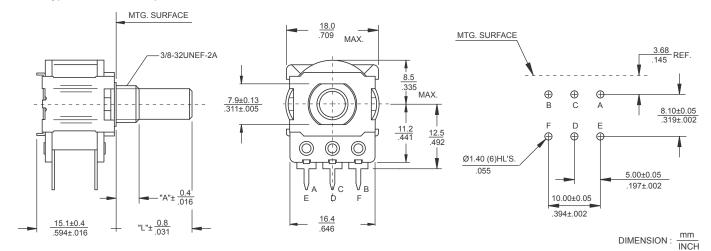
| POS. | DENOTES CONTACT CLOSURE TO COMMON | | | | | | | | | | |
|------|--------------------------------------|---|---|---|--|--|--|--|--|--|--|
| NO. | Α | В | Е | F | | | | | | | |
| 1 | 0 | 0 | 0 | 0 | | | | | | | |
| 2 | 0 | 0 | 0 | 1 | | | | | | | |
| 3 | 0 | 0 | 1 | 1 | | | | | | | |
| 4 | 0 | 0 | 1 | 0 | | | | | | | |
| 5 | 1 | 0 | 1 | 0 | | | | | | | |
| 6 | 1 | 0 | 1 | 1 | | | | | | | |
| 7 | 1 | 1 | 1 | 1 | | | | | | | |
| 8 | 1 | 1 | 1 | 0 | | | | | | | |
| 9 | 0 | 1 | 1 | 0 | | | | | | | |
| 10 | 0 | 1 | 1 | 1 | | | | | | | |
| 11 | 0 | 1 | 0 | 1 | | | | | | | |
| 12 | 0 | 1 | 0 | 0 | | | | | | | |
| 13 | 1 | 1 | 0 | 0 | | | | | | | |
| 14 | 1 | 1 | 0 | 1 | | | | | | | |
| 15 | 1 | 0 | 0 | 1 | | | | | | | |
| 16 | 1 | 0 | 0 | 0 | | | | | | | |

| POS. | | | OTES CONTACT JRE TO COMMON | | | | | | | | |
|------|---|---|-------------------------------|---|--|--|--|--|--|--|--|
| NO. | Α | В | Е | F | | | | | | | |
| 1 | 0 | 0 | 0 | 0 | | | | | | | |
| 2 | 0 | 1 | 0 | 0 | | | | | | | |
| 3 | 1 | 0 | 0 | 0 | | | | | | | |
| 4 | 1 | 1 | 0 | 0 | | | | | | | |
| 5 | 0 | 0 | 0 | 1 | | | | | | | |
| 6 | 0 | 1 | 0 | 1 | | | | | | | |
| 7 | 1 | 0 | 0 | 1 | | | | | | | |
| 8 | 1 | 1 | 0 | 1 | | | | | | | |
| 9 | 0 | 0 | 1 | 0 | | | | | | | |
| 10 | 0 | 1 | 1 | 0 | | | | | | | |
| 11 | 1 | 0 | 1 | 0 | | | | | | | |
| 12 | 1 | 1 | 1 | 0 | | | | | | | |
| 13 | 0 | 0 | 1 | 1 | | | | | | | |
| 14 | 0 | 1 | 1 | 1 | | | | | | | |
| 15 | 1 | 0 | 1 | 1 | | | | | | | |
| 16 | 0 | 1 | 1 | 1 | | | | | | | |

288X Typical 2-bit Encoder parallel to P.C. Board



2-288X Typical 4-bit Encoder parallel to P.C. Board

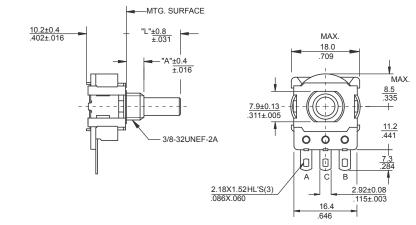


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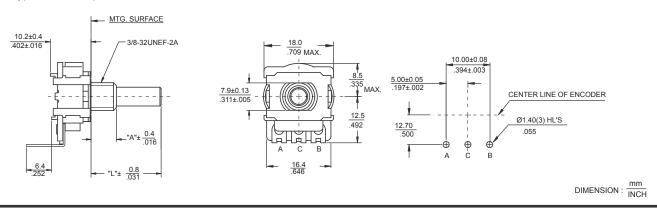
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CTS Electrocomponents

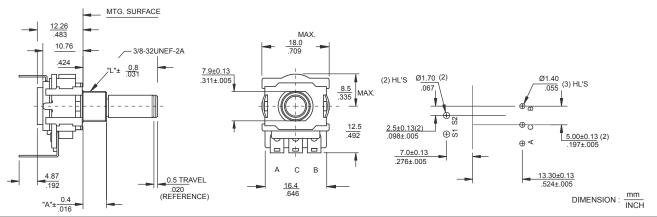
288T Typical 2-bit Encoder With Solder Lug Terminals



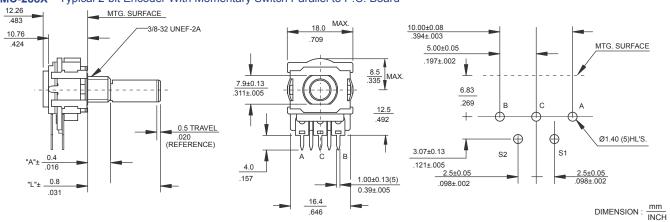
288V Typical 2-bit Perpendicular to P.C. Board



MC-288V Typical 2-bit Encoder With Momentary Switch Perpendicular to P.C. Board

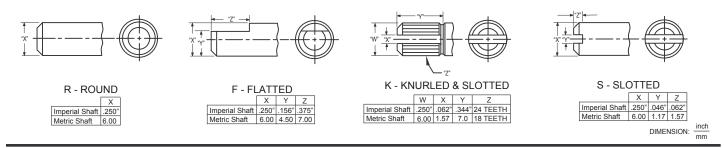


MC-288X Typical 2-bit Encoder With Momentary Switch Parallel to P.C. Board

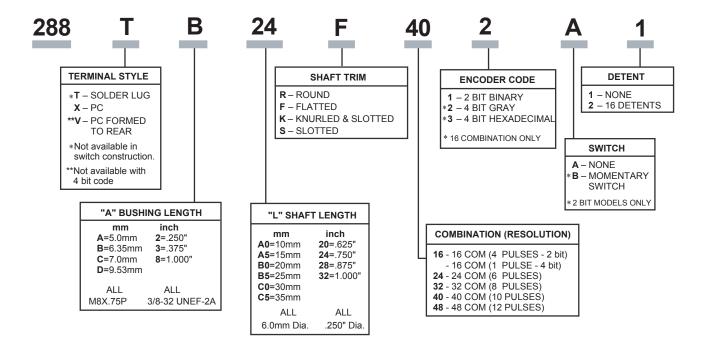


 $\mathsf{DIMENSION}: \frac{\mathsf{mm}}{\mathsf{INCH}}$

Shaft Trim



Ordering Information



Please consult CTS for customized or features not listed.