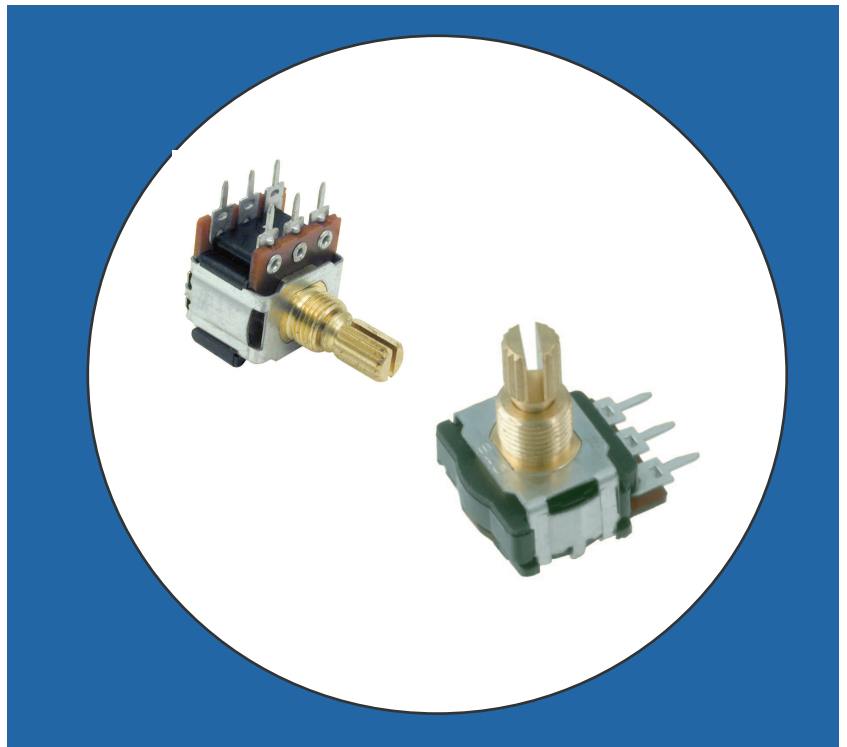


Commercial Miniature 16mm Size Rotary Encoder

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 Points
16 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: 100mΩ maximum
After Life Cycles: 200mΩ maximum

Switch Rating

16 VDC @ 20mA maximum

Switch Bounce

5 milliseconds maximum

Switch Operating Force

350 ± 150 g (12.3 ± 5.3 oz.)

Switch Life

15,000 operations

Switch Travel

0.5mm (.020")

Truth Table

2 BIT BINARY CODE

DENOTES CONTACT CLOSURE TO COMMON	2 BIT BINARY CODE															
	B	0	0	1	1	0	0	1	1	0	0	1	1	0	0	1
A	0	1	1	0	0	1	1	0	0	1	1	0	0	1	1	0
POS. NO.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16

0	1	1
1	1	0

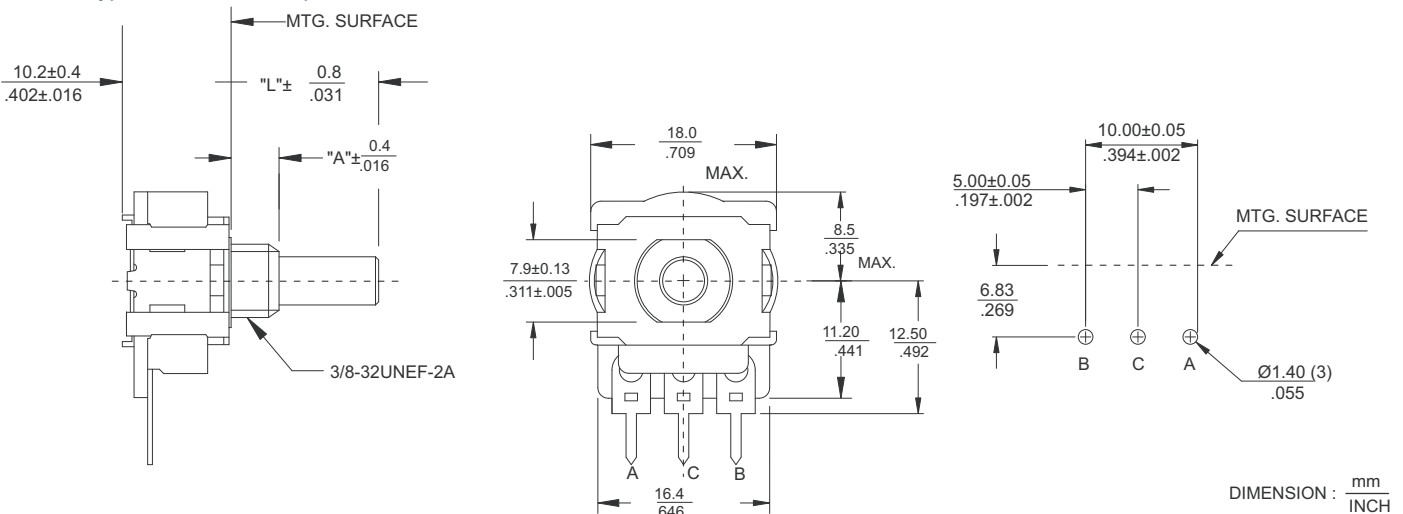
4 BIT GRAY CODE

POS. NO.	DENOTES CONTACT CLOSURE TO COMMON					
	A	B	E	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		

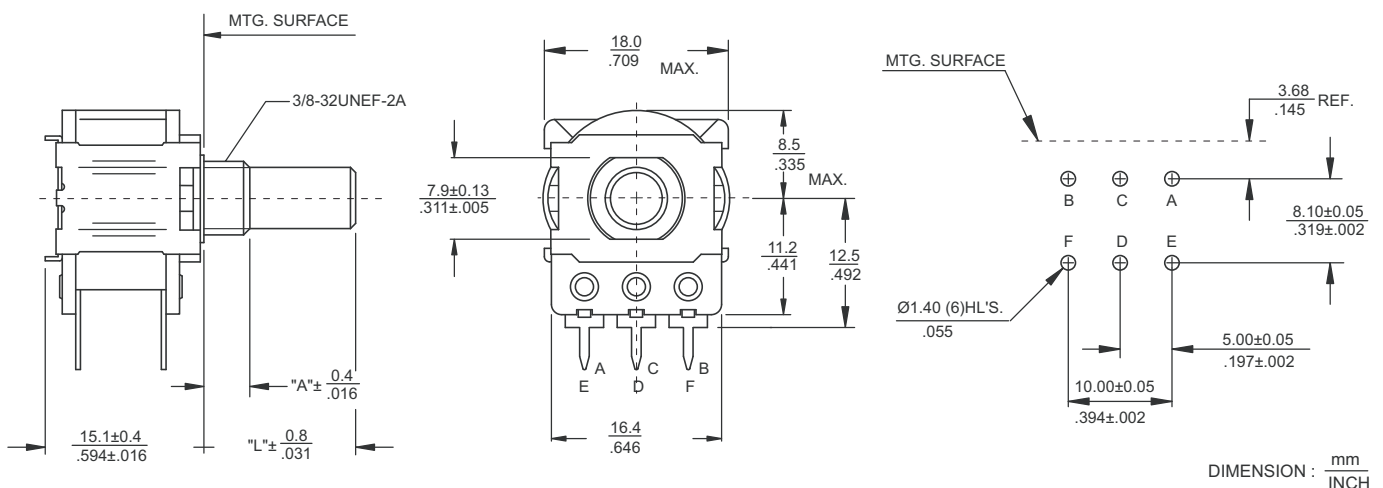
4 BIT HEXADECIMAL CODE

POS. NO.	DENOTES CONTACT CLOSURE TO COMMON					
	A	B	E	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		

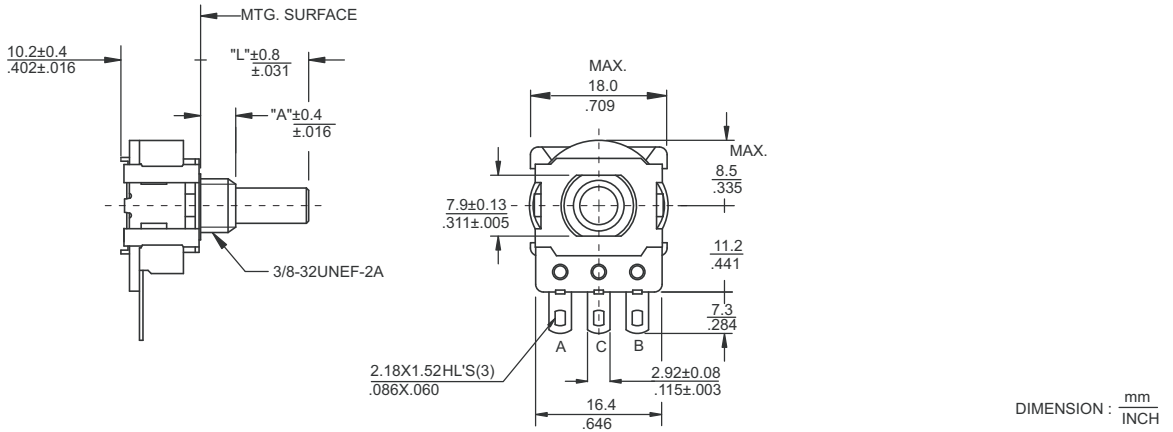
288X Typical 2-bit Encoder parallel to P.C. Board



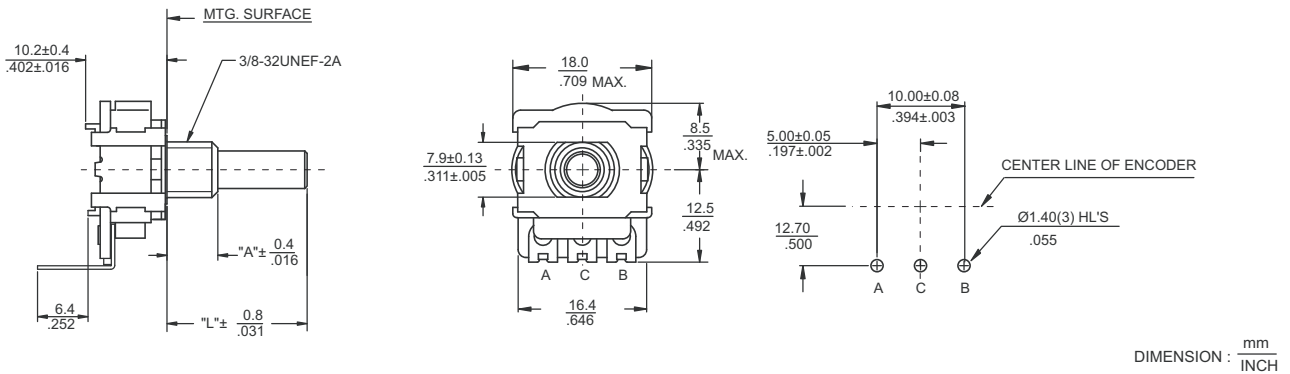
2-288X Typical 4-bit Encoder parallel to P.C. Board



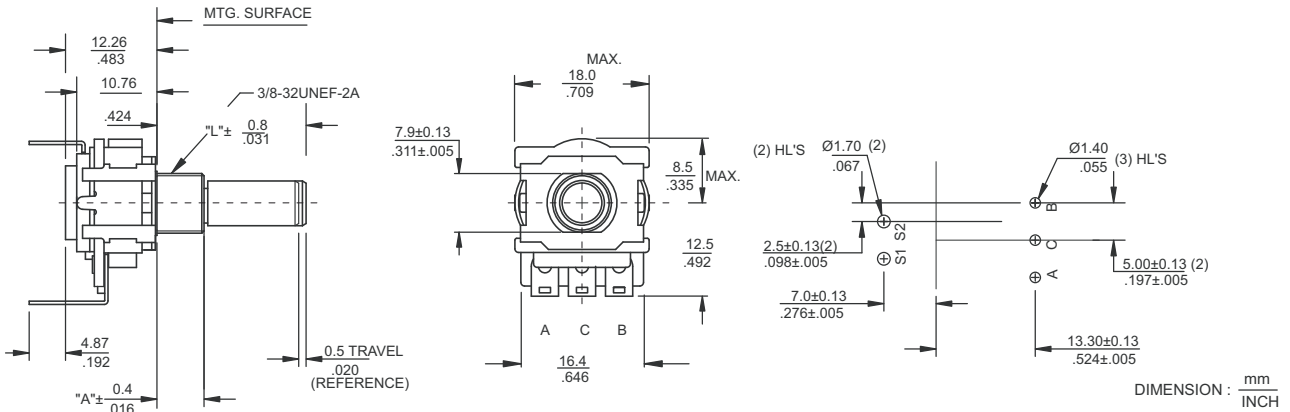
288T Typical 2-bit Encoder With Solder Lug Terminals



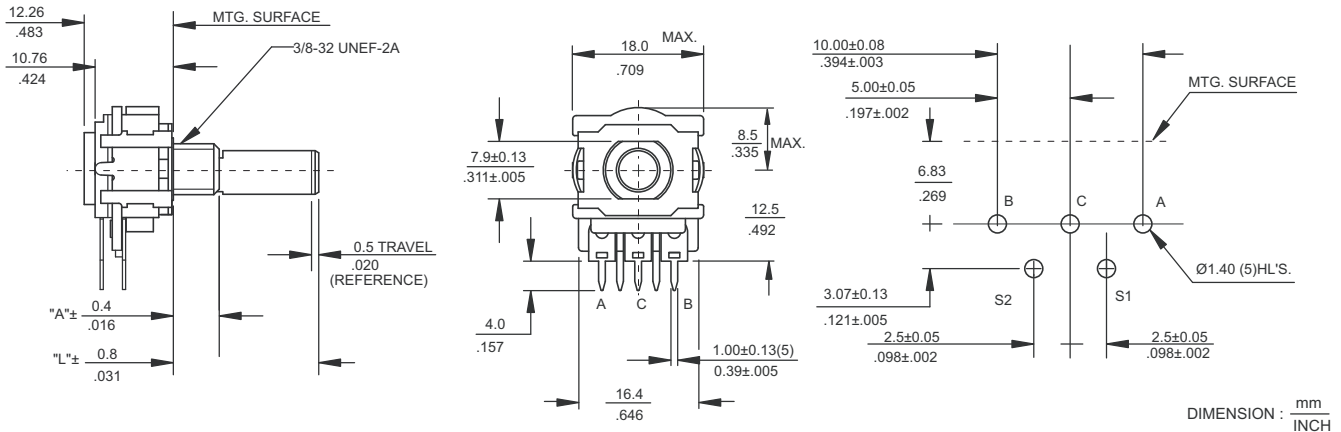
288V Typical 2-bit Perpendicular to P.C. Board



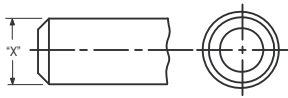
MC-288V Typical 2-bit Encoder With Momentary Switch Perpendicular to P.C. Board



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

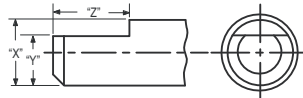


Shaft Trim



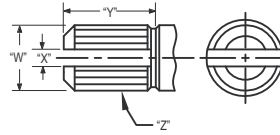
R - ROUND

	X
Imperial Shaft	.250"
Metric Shaft	6.00



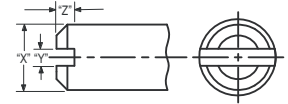
F - FLATTED

	X	Y	Z
Imperial Shaft	.250"	.156"	.375"
Metric Shaft	6.00	4.50	7.00



K - KNURLED & SLOTTED

	W	X	Y	Z
Imperial Shaft	.236"	.062"	.344"	24 TEETH
Metric Shaft	6.00	1.57	7.0	18 TEETH



S - SLOTTED

	X	Y	Z
Imperial Shaft	.250"	.046"	.062"
Metric Shaft	6.00	1.17	1.57

DIMENSION: $\frac{\text{inch}}{\text{mm}}$

Ordering Information

288

T

B

24

F

40

2

A

1

TERMINAL STYLE

- *T - SOLDER LUG
- X - PC
- **V - PC FORMED TO REAR
- *Not available in switch construction.
- **Not available with 4 bit code

"A" BUSHING LENGTH

mm	inch
A=5.0mm	2=.250"
B=6.35mm	3=.375"
C=7.0mm	8=1.000"
D=9.53mm	
ALL	ALL
M8X.75P	3/8-32 UNEF-2A

SHAFT TRIM

- R - ROUND
- F - FLATTED
- K - KNURLED & SLOTTED
- S - SLOTTED

"L" SHAFT LENGTH

mm	inch
A0=10mm	20=.625"
A5=15mm	24=.750"
B0=20mm	28=.875"
B5=25mm	32=1.000"
C0=30mm	
C5=35mm	
ALL	ALL
6.0mm Dia.	.250" Dia.

ENCODER CODE

- 1 - 2 BIT BINARY
- *2 - 4 BIT GRAY
- *3 - 4 BIT HEXADECIMAL
- * 16 COMBINATION ONLY

COMBINATION (RESOLUTION)

- 16 - 16 COM (4 PULSES - 2 bit)
- 16 COM (1 PULSE - 4 bit)
- 24 - 24 COM (6 PULSES)
- 32 - 32 COM (8 PULSES)
- 40 - 40 COM (10 PULSES)
- 48 - 48 COM (12 PULSES)

DETENT

- 1 - NONE
- 2 - 16 DETENTS

SWITCH

- A - NONE
- *B - MOMENTARY SWITCH
- * 2 BIT MODELS ONLY

Please consult CTS for customized or features not listed.