

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 - 100°C

Storage: -30°C - 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 not listed features 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
POS. NO.	A	0	1	1	0	0	1	1	0	0	1	1	0	0	1	0
1	0	1	1	0	0	1	1	0	0	1	1	0	0	1	1	0
2	0	1	1	0	0	1	1	0	0	1	1	0	0	1	1	0
3	0	1	1	0	0	1	1	0	0	1	1	0	0	1	1	0
4	0	1	1	0	0	1	1	0	0	1	1	0	0	1	1	0
5	0	1	1	0	0	1	1	0	0	1	1	0	0	1	1	0
6	0	1	1	0	0	1	1	0	0	1	1	0	0	1	1	0
7	0	1	1	0	0	1	1	0	0	1	1	0	0	1	1	0
8	0	1	1	0	0	1	1	0	0	1	1	0	0	1	1	0
9	0	1	1	0	0	1	1	0	0	1	1	0	0	1	1	0
10	0	1	1	0	0	1	1	0	0	1	1	0	0	1	1	0
11	0	1	1	0	0	1	1	0	0	1	1	0	0	1	1	0
12	0	1	1	0	0	1	1	0	0	1	1	0	0	1	1	0
13	0	1	1	0	0	1	1	0	0	1	1	0	0	1	1	0
14	0	1	1	0	0	1	1	0	0	1	1	0	0	1	1	0
15	0	1	1	0	0	1	1	0	0	1	1	0	0	1	1	0
16	0	1	1	0	0	1	1	0	0	1	1	0	0	1	1	0

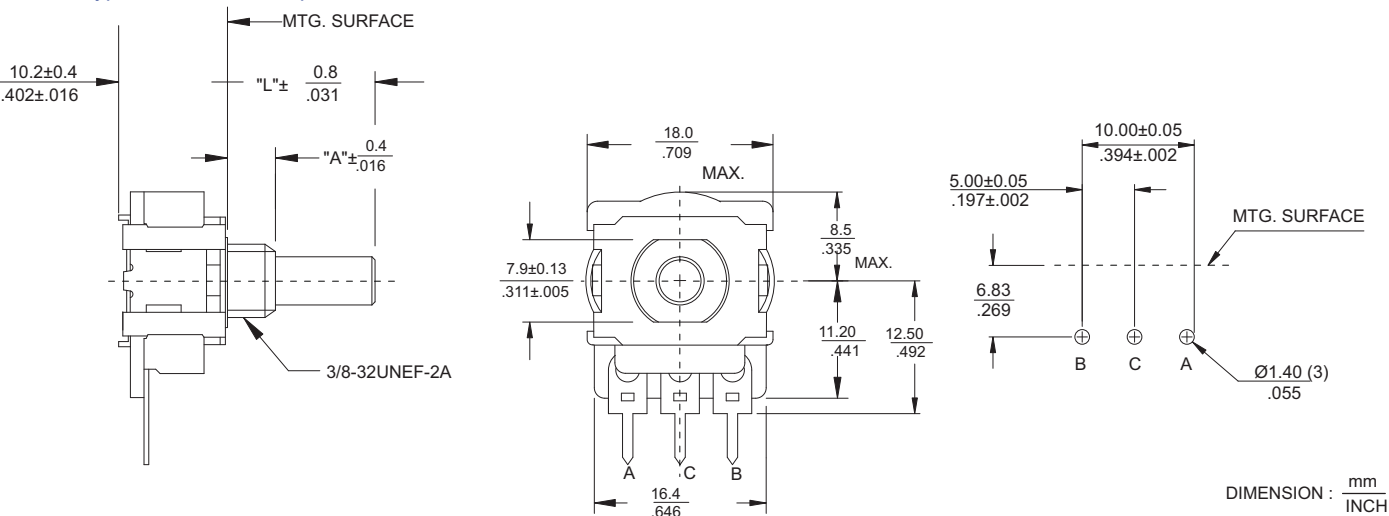
4 BIT GRAY CODE

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

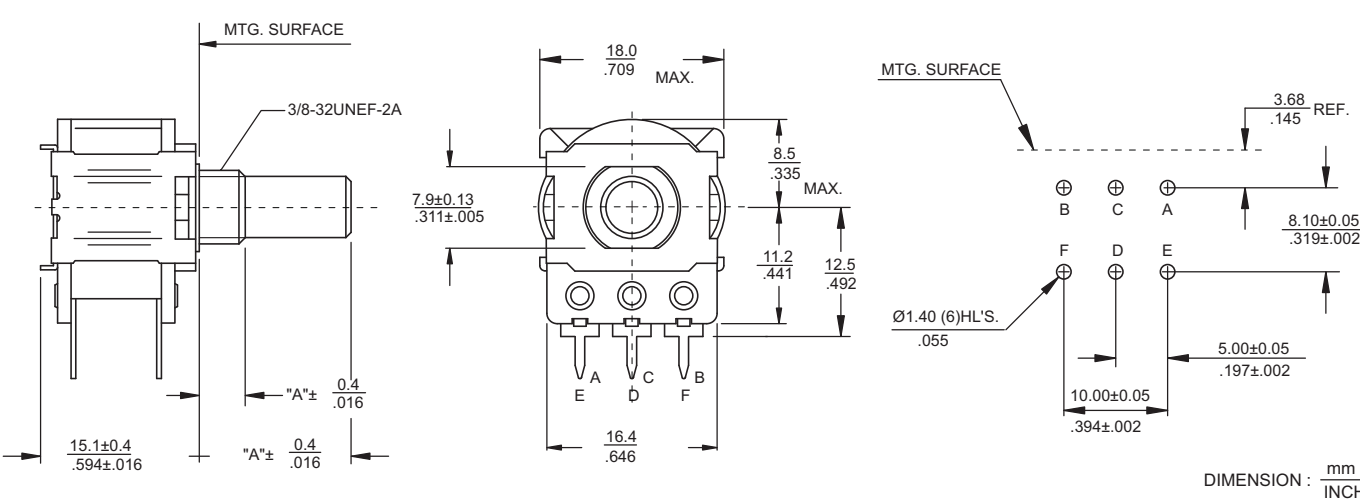
4 BIT HEXIDECIMAL CODE

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

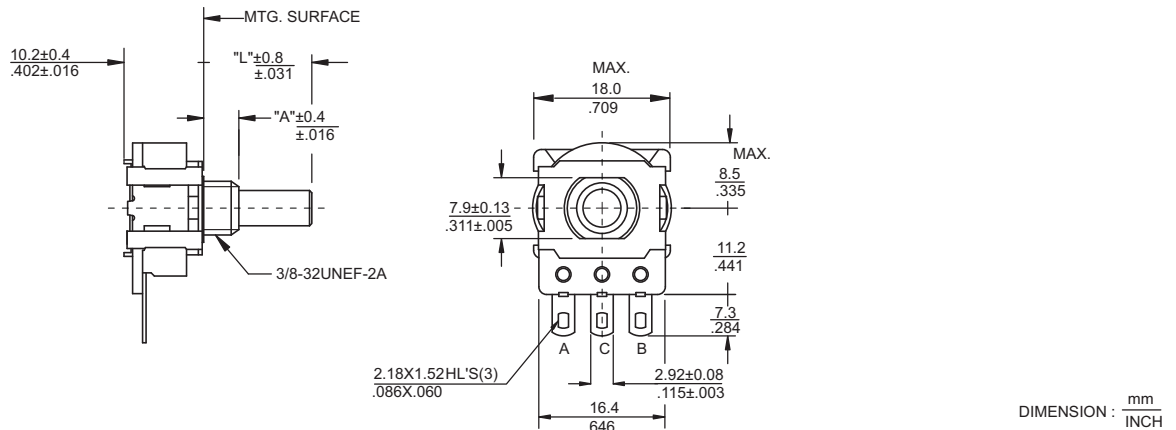
288X Typical 2-bit Encoder parallel to P.C. Board



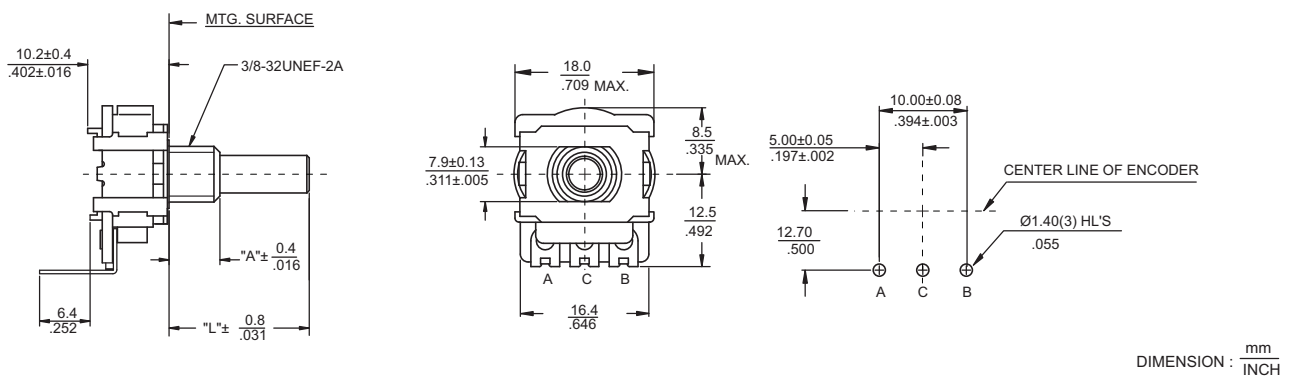
2-288X Typical 4-bit Encoder parallel to P.C. Board



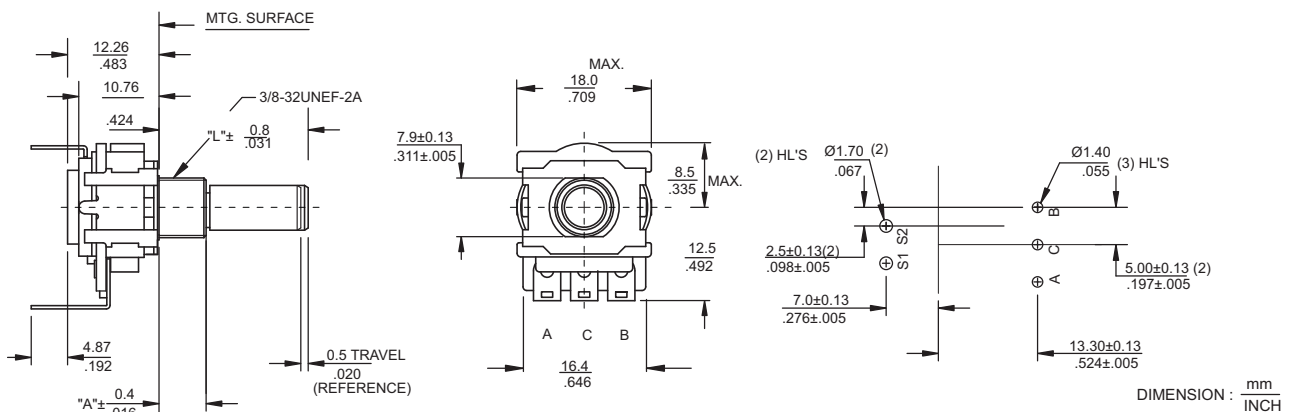
288T Typical 2-bit Encoder With Solder Lug Terminals



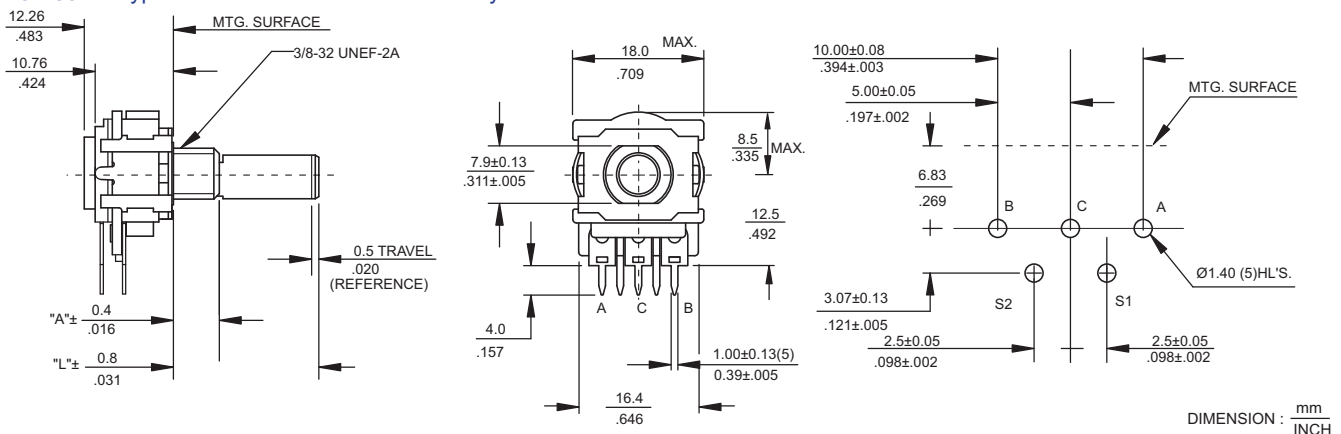
288V Typical 2-bit Perpendicular to P.C. Board



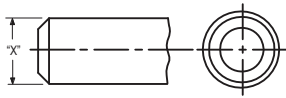
MC-288V Typical 2-bit Encoder With Momentary Switch Perpendicular to P.C. Board



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

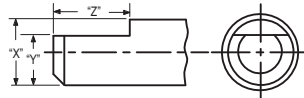


Shaft Trim



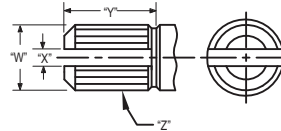
R - ROUND

	X
Imperial Shaft	.250"
Metric Shaft	6.00



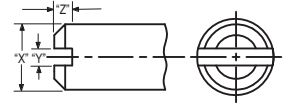
F - FLATTED

	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	.250"	.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 HEXIDECIMAL
* 16 COMBINATION ONLY

COMBINATION
16 - 16 COM (4 PULSES)
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 not listed features.