

**PART NUMBER:** C14

**DESCRIPTION:** panel mount optical encoder

**ELECTRICAL SPECIFICATIONS**

supply voltage	5 V dc $\pm 5\%$ (optional: 3.3 V dc $\pm 10\%$ )
supply current	20 mA max. (open collector)
output code	2-bit Quadature, Channel A leads Channel B by 90° with clockwise rotation
power consumption	100 mW
angle of throw	22.5° for code change and 16 detent positions 11.25° for code change and 32 detent positions

**MECHANICAL SPECIFICATIONS**

operational torque	without detent	0.2 N·cm (20.4 gf·cm max.)
	16 position w/detent	0.4 $\pm 0.2$ N·cm (40.8 $\pm 20.4$ gf·cm)
	32 position w/detent	0.4 $\pm 0.2$ N·cm (40.8 $\pm 20.4$ gf·cm)
mounting torque		100 N·cm (10.2 kgf·cm)
shaft strength	radial	10 N (1.02 kgf)
	thrust	15 N (1.53 kgf)
rotational life		1,000,000 cycles
weight (approx)		11 g

**PUSH SWITCH SPECIFICATIONS**

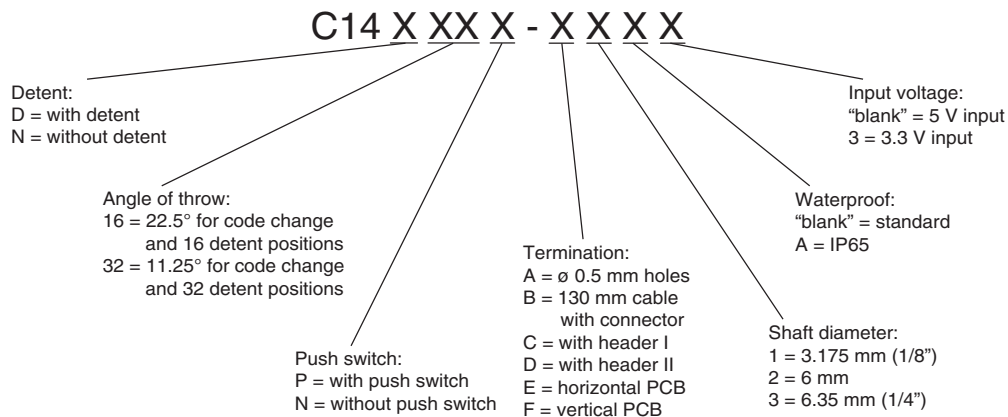
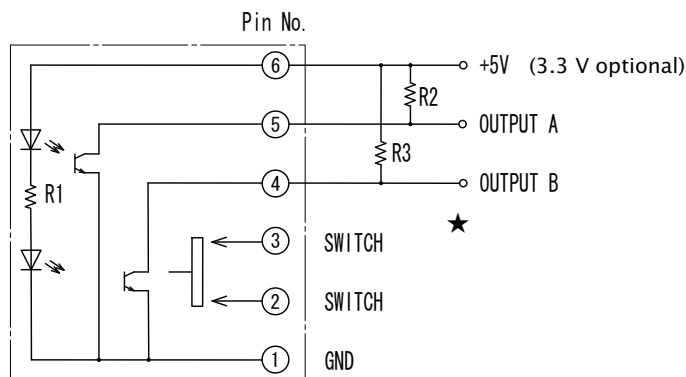
rated voltage	12 V dc, 50 mA
contact resistance	200 m $\Omega$ max.
insulation resistance	100 m $\Omega$ min.
voltage proof	250 V ac for 1 minute
operating force	4.5 $\pm$ 1 N (459 $\pm$ 102 g·f)
travel	0.5 $\pm$ 0.3 mm
bounce	10 msec.
life	1,000,000

**ENVIRONMENTAL SPECIFICATIONS**

operating temp. range	0° to +60° C
storage temp. range	-20 ~ 80°C
vibration	frequency range: 10 ~ 55 Hz, peak to peak amplitude: 1.5 mm
shock	50 G for 11 ms, half sine wave
cold proof	-20°C for 96 hours
heat proof	80°C for 96 hours
change to temp.	-10 ~ 70°C for 30 minutes each
humidity	90 ~ 95% for 96 hours at 40°C

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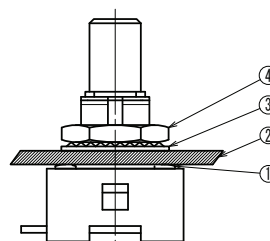
**DESCRIPTION:** panel mount optical encoder

**ORDERING INSTRUCTIONS**

**CIRCUIT CONNECTION**


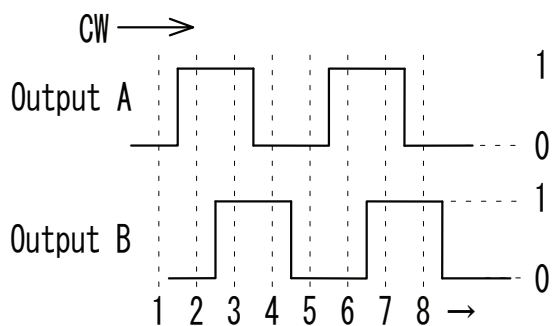
\*R2,R3:External pull-up resistors 5.1KΩ

**WATER PROOF MOUNTING**

Protects against ingress of water from mounting panel side only.



1	Water proof washer
2	Panel
3	Toothed lock washer
4	Nut

**OUTPUT WAVEFORM**


\*The code repeats from 1 to 4.

Position \ Output	1	2	3	4	5
A	0	1	1	0	0
B	0	0	1	1	0

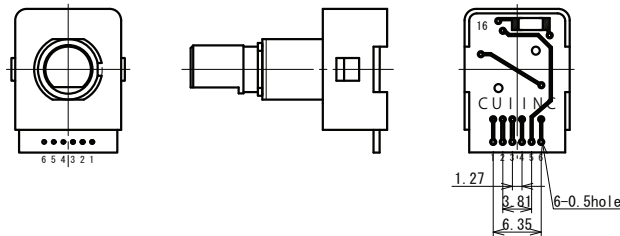
\* "0":1V max. "1":3V min.

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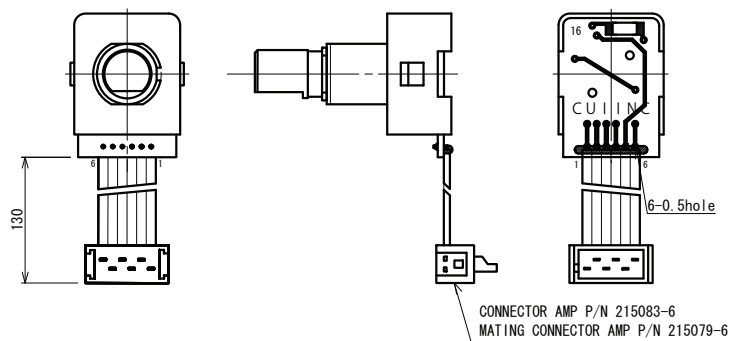
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**OPTIONS**

**A:  $\phi$  0.5 mm holes**

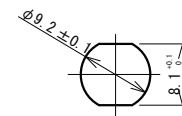


**B: 130mm cable with connector**

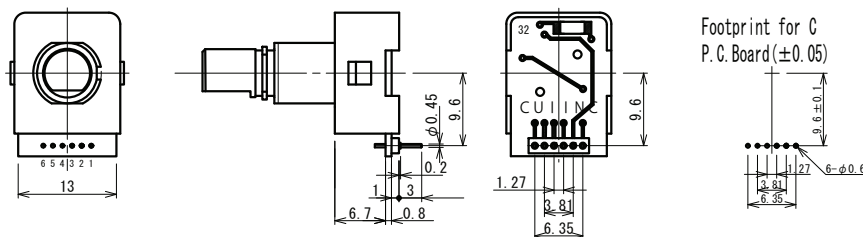


Mounting Hole Dimensions  
(for A, B, and C)

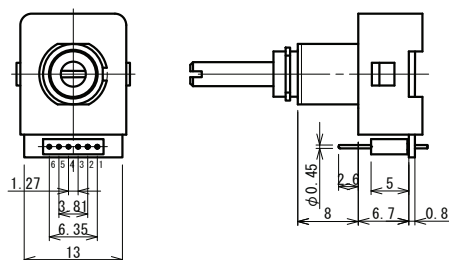
Mounting panel thickness: 3.5 mm max.



**C: Header I**

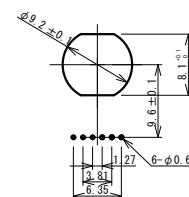


**D: Header II**



Mounting Hole dimensions and  
Footprint for D ( $\pm 0.5$  mm)

Mounting panel thickness: 3.5 mm max.

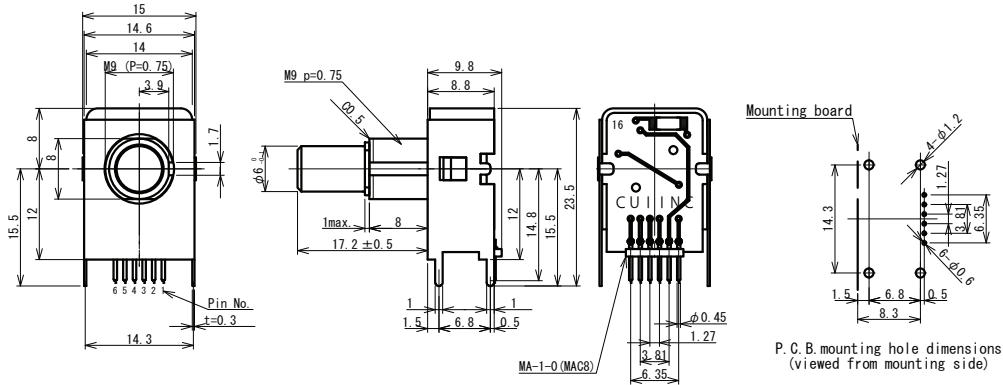


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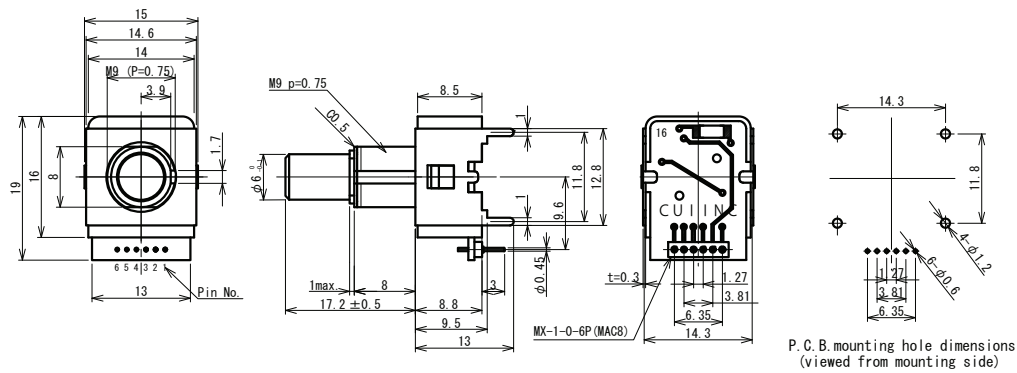
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**OPTIONS CONTINUED**

**E:Horizontal PCB**

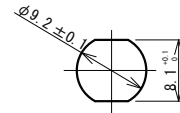


**F:Vertical PCB**



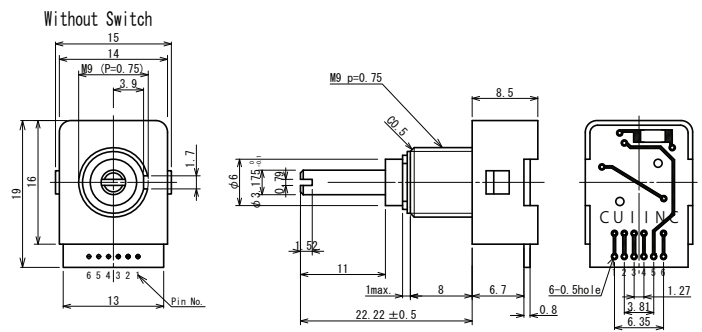
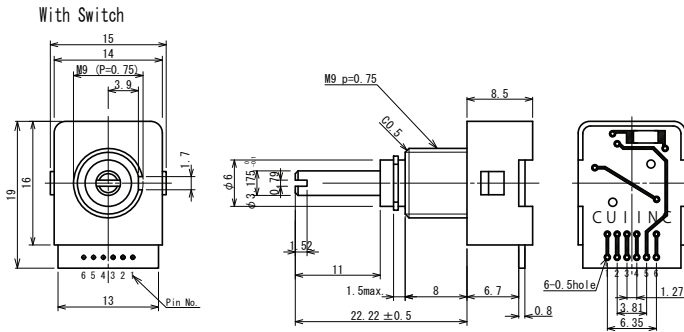
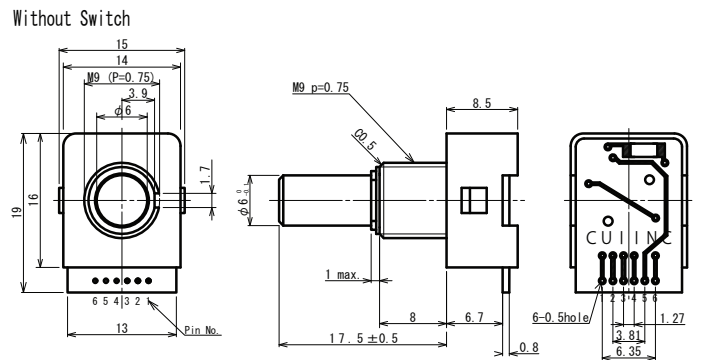
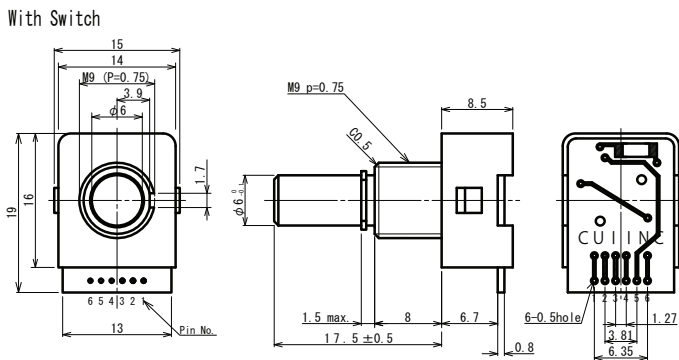
Mounting Hole Dimensions  
(for E and F)

Mounting panel thickness: 3.5 mm max.



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**MECHANICAL DRAWING**
**3.175 mm**

**6.0 mm**

**6.35 mm**
