

PART NUMBER: C14

DESCRIPTION: panel mount optical encoder

ELECTRICAL SPECIFICATIONS

supply voltage	5 V dc $\pm 5\%$
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 ± 0.2 N·cm (40.8 ± 20.4 gf·cm)
	32 position w/detent	0.4 ± 0.2 N·cm (40.8 ± 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 Ω max.
insulation resistance	100 m Ω min.
voltage proof	250 V ac for 1 minute
operating force	4.5 ± 1 N (459 ± 102 g·f)
travel	0.5 ± 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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ORDERING INSTRUCTIONS

C14X16X-XXX

Detent:
D = with detent
N = without detent

Angle of throw:
16 = 22.5° for code change
and 16 detent positions
32 = 11.25° for code change
and 32 detent positions

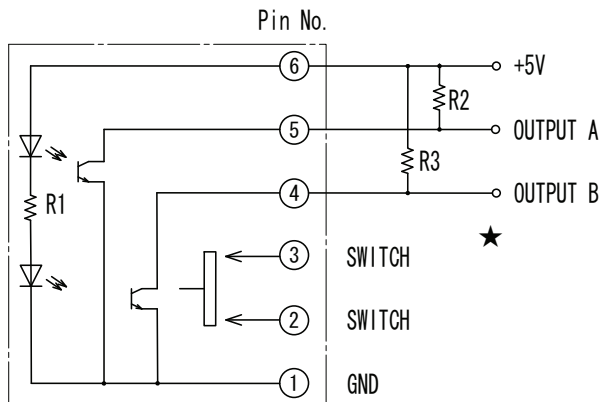
Push switch:
P = with push switch
N = without push switch

Termination:
A = $\varnothing$ 0.5 mm holes
B = 130 mm cable
with connector
C = with header I
D = with header II
E = horizontal PCB
F = vertical PCB

Shaft diameter:
1 = 3.175 mm (1/8")
2 = 6 mm
3 = 6.35 mm (1/4")

Waterproof:
A = IP65

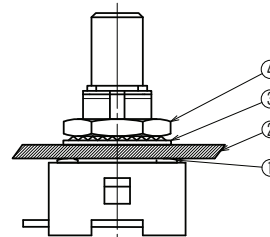
CIRCUIT CONNECTION



*R2, R3: External pull-up resistors 5.1K Ω

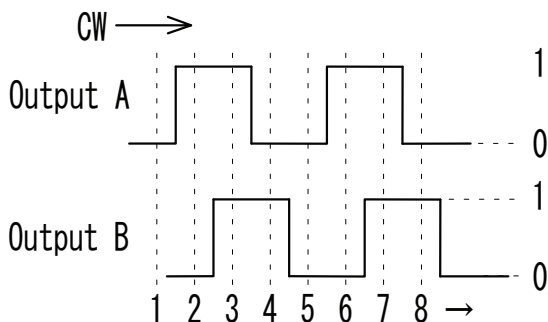
WATER PROOF MOUNTING

Protects against ingress of water from mounting panel side only.



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

OUTPUT WAVEFORM



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

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

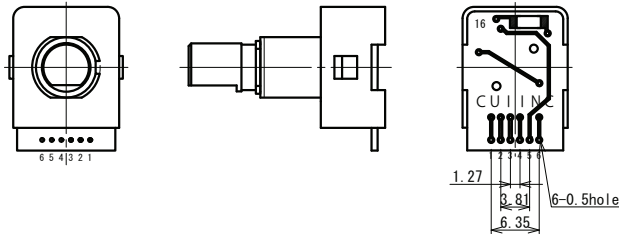
* The code repeats from 1 to 4.

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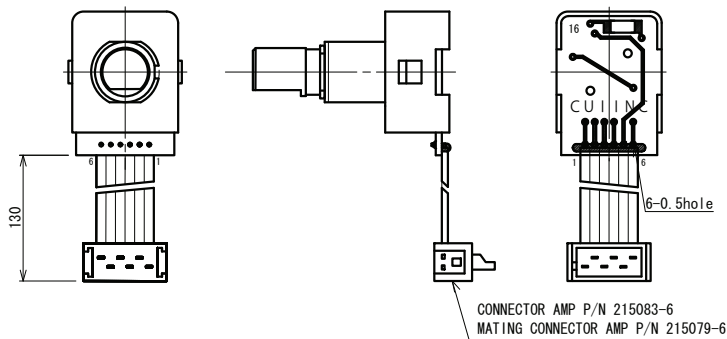
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OPTIONS

A: ϕ 0.5 mm holes

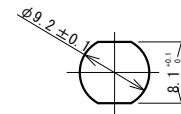


B: 130mm cable with connector

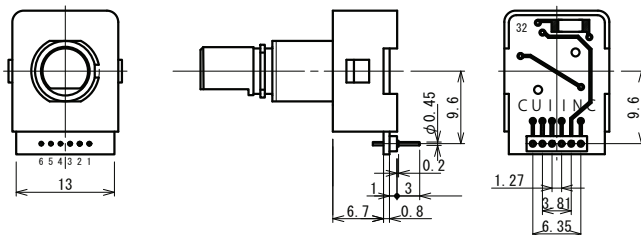


Mounting Hole Dimensions
(for A, B, and C)

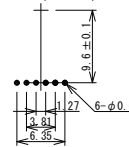
Mounting panel thickness: 3.5 mm max.



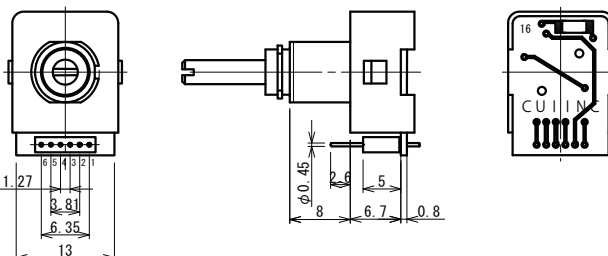
C: Header I



Footprint for C
P.C. Board (± 0.05)

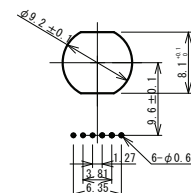


D: Header II



Mounting Hole dimensions and
Footprint for D (± 0.5 mm)

Mounting panel thickness: 3.5 mm max.

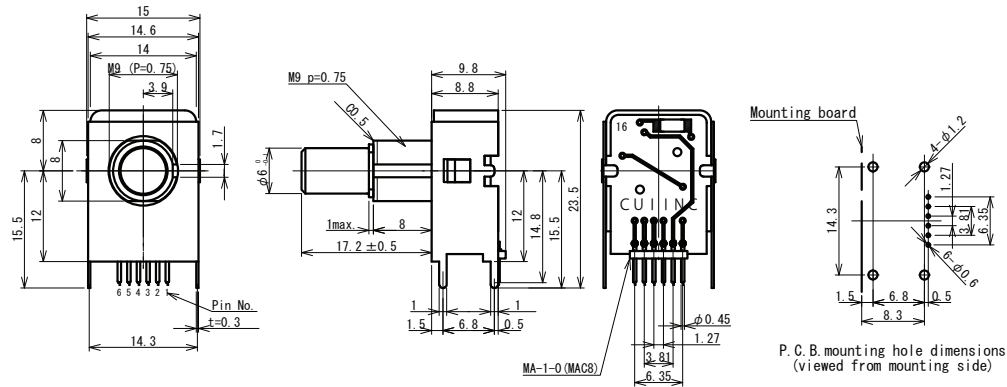


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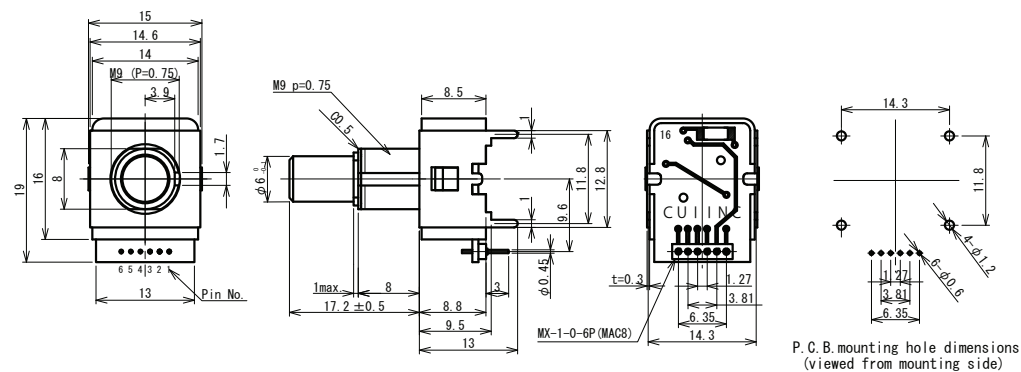
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OPTIONS CONTINUED

E: Horizontal PCB

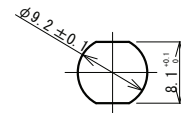


F: Vertical PCB



Mounting Hole Dimensions
(for E and F)

Mounting panel thickness: 3.5 mm max.

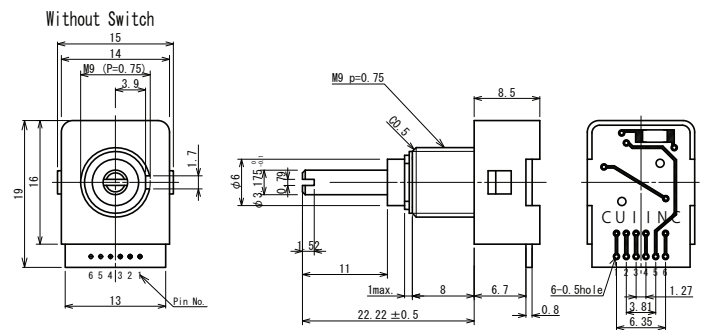
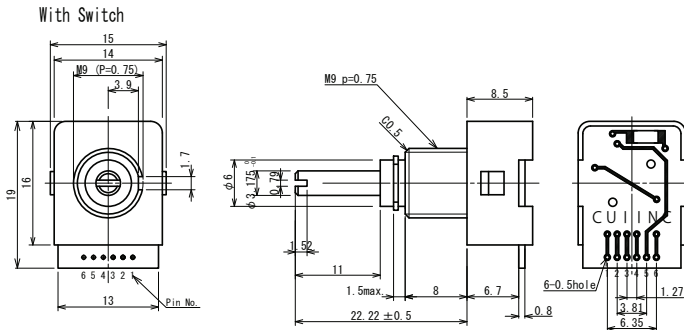


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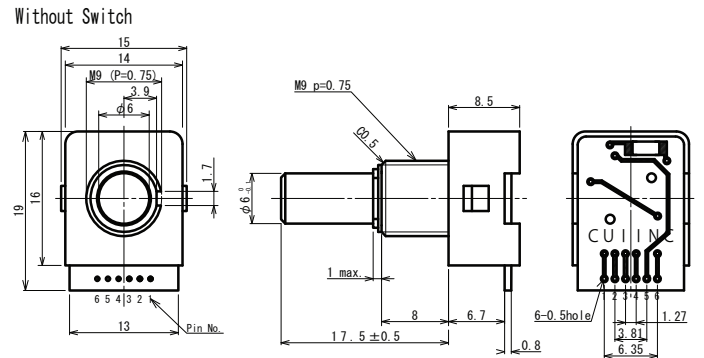
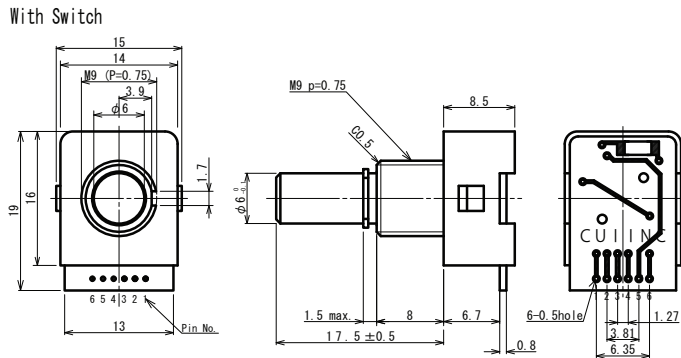
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MECHANICAL DRAWING

3.175 mm



6.0 mm



6.35 mm

