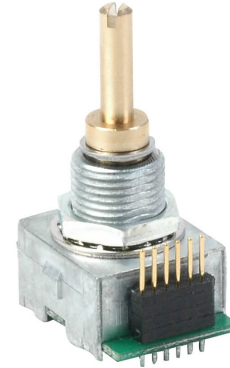


SERIES: C14 | **DESCRIPTION:** PANEL MOUNT ENCODER**FEATURES**

- 2-bit quadrature output
- compact
- rugged metal design
- 1 million cycle life
- multiple termination options
- IP65 rating option
- plastic shaft options available for medical applications

**ELECTRICAL**

parameter	conditions/description	min	typ	max	units
power supply	3.3Vdc input models	3.168	3.3	3.432	Vdc
	5Vdc input models	4.75	5	5.25	Vdc
supply current	3.3Vdc input models			40	mA
	5Vdc input models			20	mA
output	open collector				
output code	2-bit quadrature, channel A leads channel B by 90° with clockwise rotation				
power consumption	3.3Vdc input models			132	mW
	5Vdc input models			100	mW
output resolution	4 ppr (16 cpr), 8 ppr (32 cpr)				
angle of throw	16 detent position models		22.5		°
	32 detent position models		11.25		°

PUSH SWITCH SPECIFICATIONS

parameter	conditions/description	min	typ	max	units
rating	12 Vdc at 50 mA				
contact resistance				200	mΩ
isolation voltage	for 1 minute		250		Vac
insulation resistance		100			MΩ
operating push force		3.5	4.5	5.5	N
travel		0.2	0.5	0.8	mm
bounce				10	ms
push switch life			1,000,000		cycles

ENVIRONMENTAL

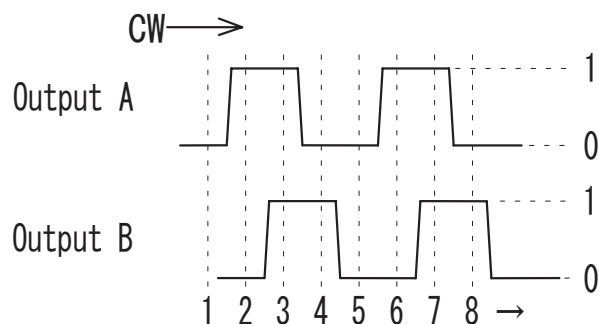
parameter	conditions/description	min	typ	max	units
operating temperature		-10		70	°C
storage temperature		-20		80	°C
vibration	10~55Hz with a peak to peak amplitude of 1.5mm				
shock	half sine wave for 11ms		50		G
cold test	at -20°C for 96 hours				
heat test	at +80°C for 96 hours				

ENVIRONMENTAL (CONTINUED)

parameter	conditions/description	min	typ	max	units
temperature change test	at -10~70°C for 30 minutes each				
humidity test	at 40°C, 90~95% humidity for 96 hours				
RoHS	yes				

MECHANICAL

parameter	conditions/description	min	typ	max	units
shaft load	radial			10	N
	axial			15	N
operational torque	without detent	0.2	0.4	0.2	N·cm
	with detent			0.6	N·cm
mounting torque			100		N·cm
rotational life			1,000,000		cycles
weight			11		g

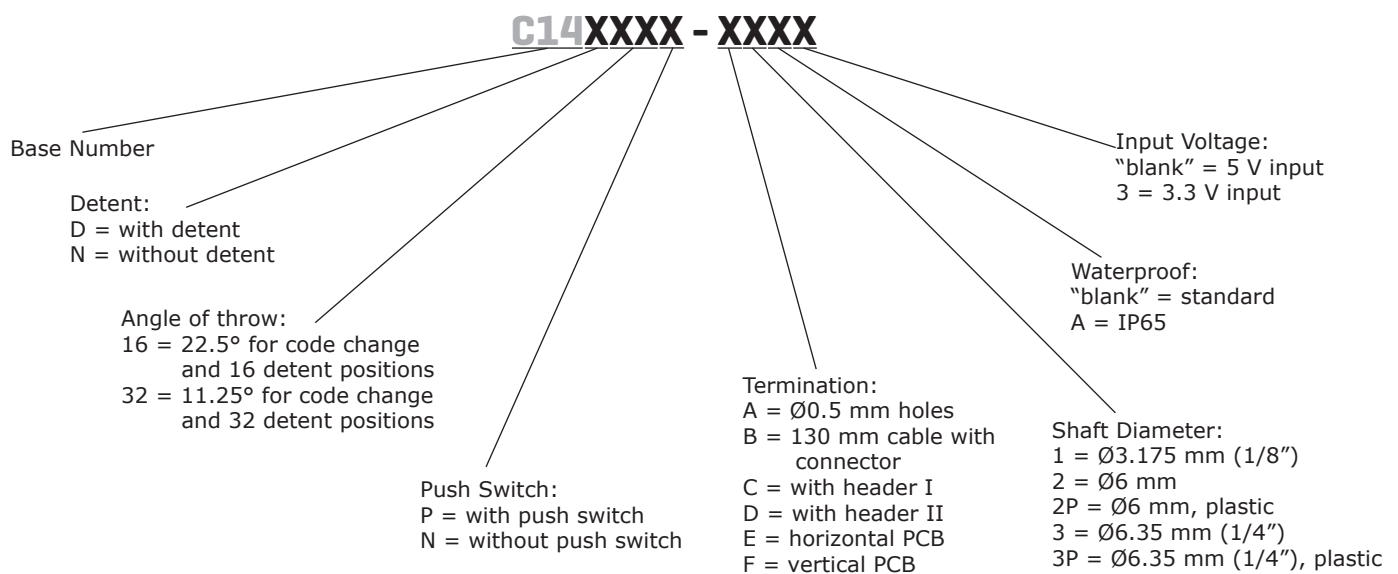
OUTPUT WAVEFORMS

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

(1) 3.3V : "0": 0.8V max. "1": 2.3V min.

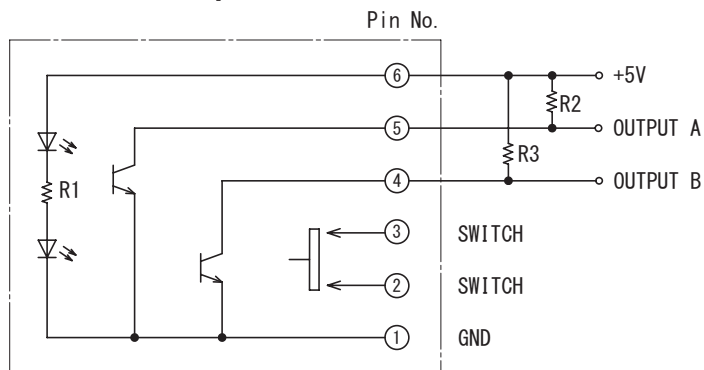
(2) 5V : "0": 1.0V max. "1": 3.0V min.

* The code repeats from 1 to 4.

PART NUMBER KEY

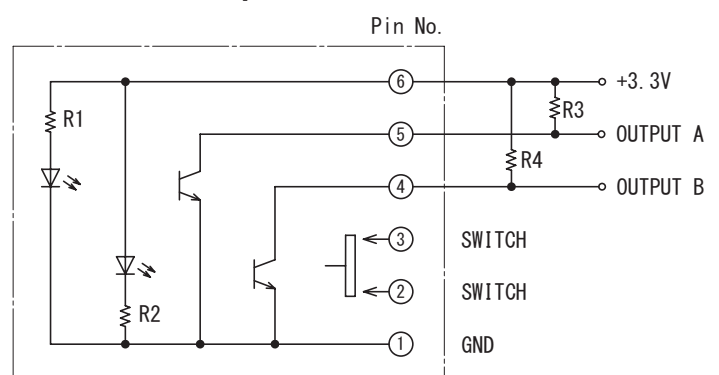
OUTPUT CIRCUIT

5V Input



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

3.3V Input

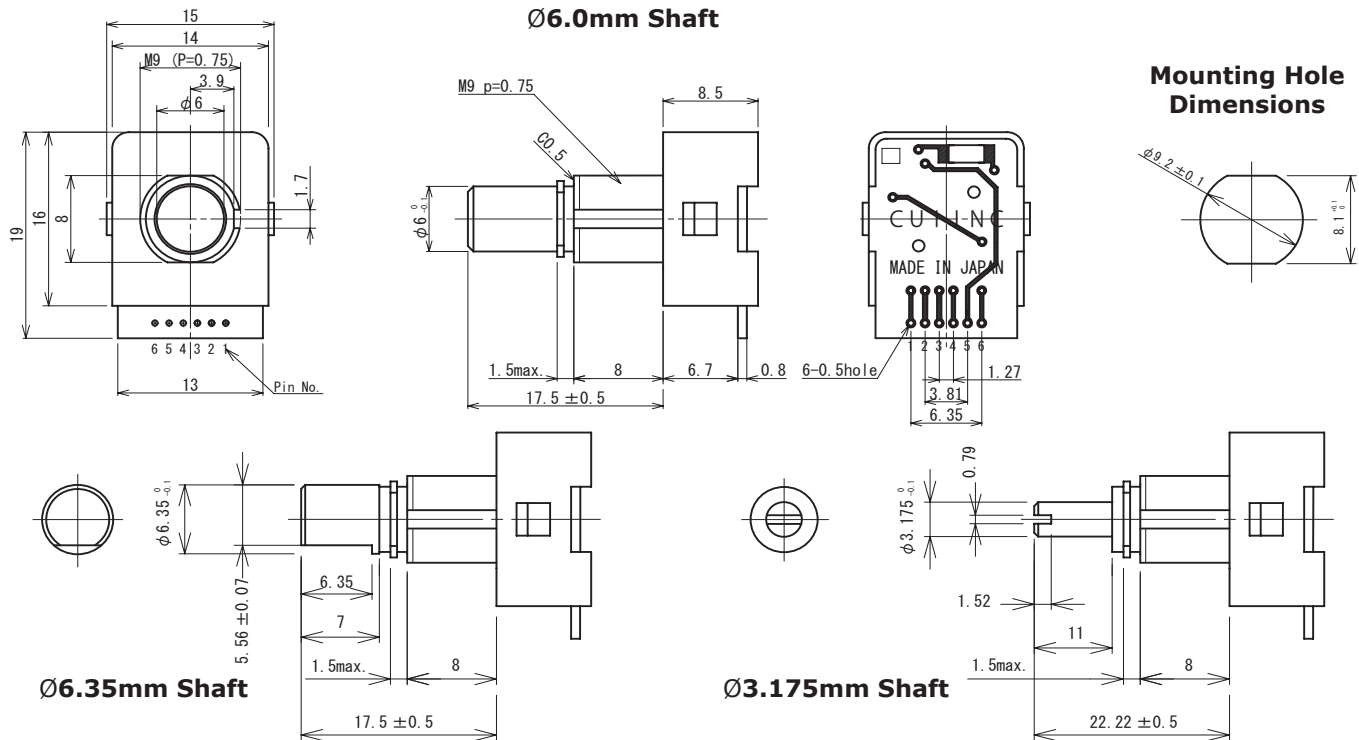


* R3, R4: External pull-up resistors 5.1K Ω

MECHANICAL DRAWING

5V INPUT, WITH PUSH SWITCH

units: mm



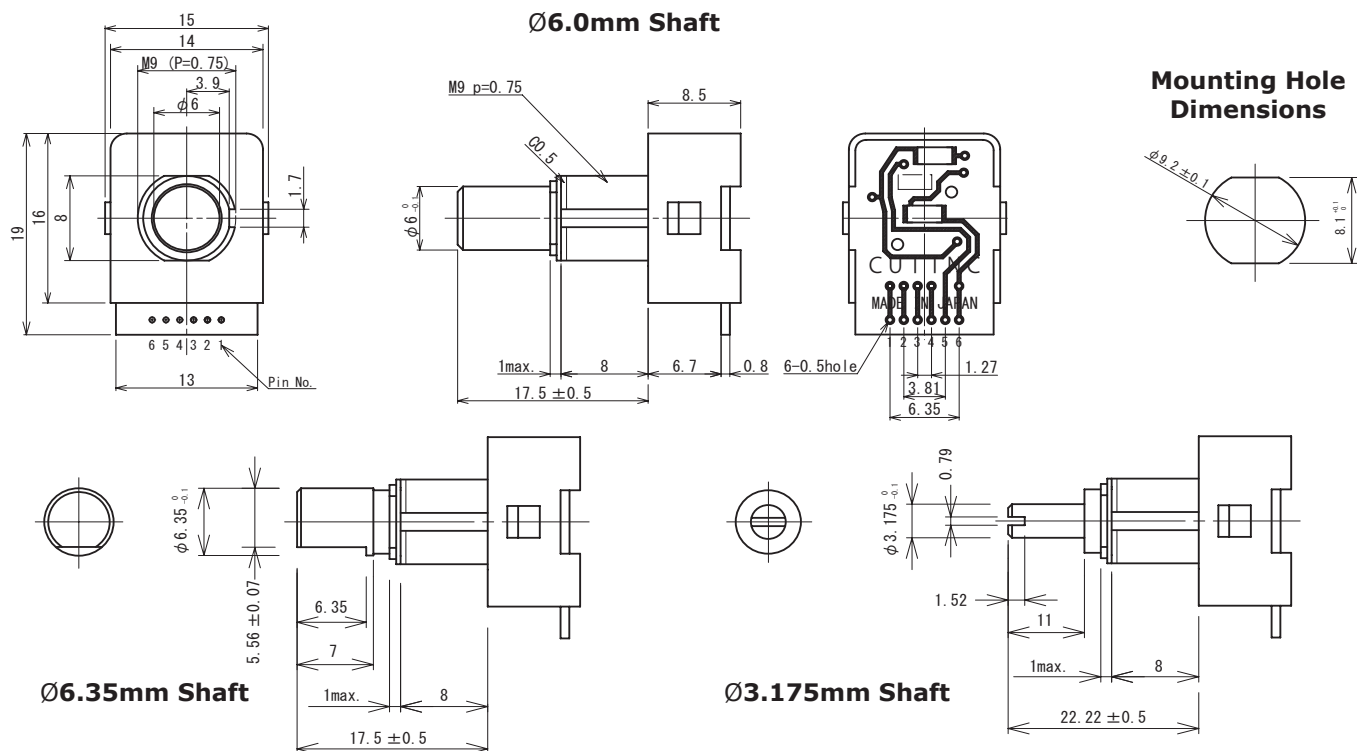
Technical drawing of the shaft assembly showing dimensions for the shaft, nut, and lock washer. The drawing includes the following dimensions:

- Shaft diameter: $\phi 3.175_{-0.1}^0$
- Lock washer thickness: 0.79
- Distance from shaft end to lock washer: 1.52
- Distance from shaft end to nut: 11
- Distance from shaft end to nut (maximum): 1.5max.
- Distance from shaft end to nut (nominal): 8
- Distance from shaft end to nut (total): 22.22 ± 0.5

MECHANICAL DRAWING (CONTINUED)

3.3V INPUT, WITHOUT PUSH SWITCH

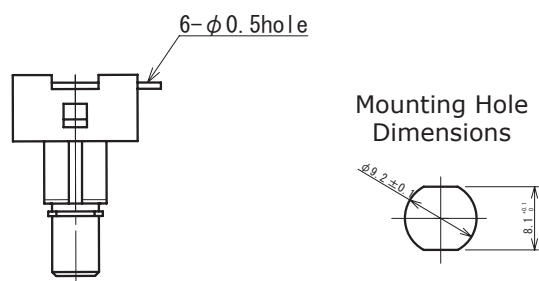
units: mm



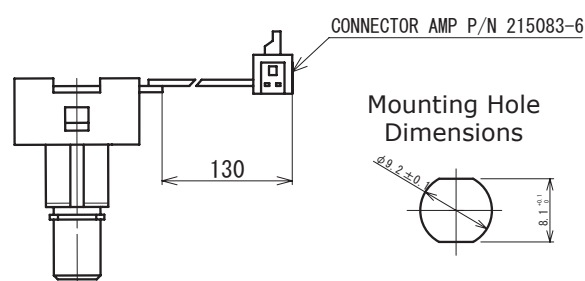
MECHANICAL DRAWING, TERMINATION OPTIONS

units: mm

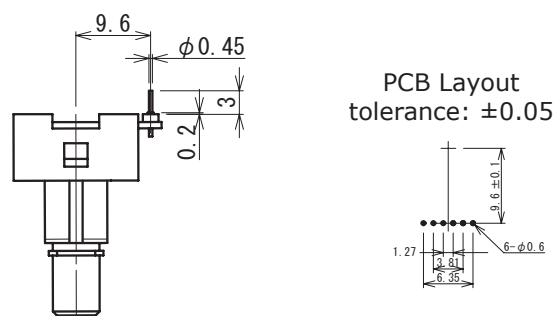
OPTION A: Ø0.5MM HOLES



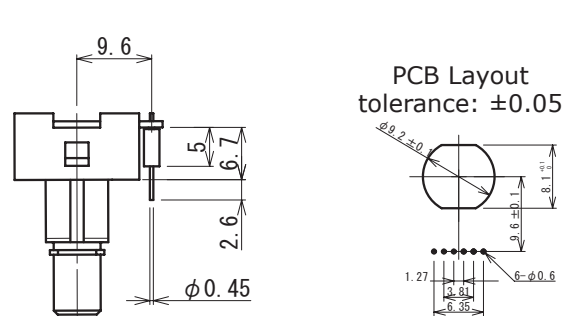
OPTION B: 130MM CABLE WITH CONNECTOR



OPTION C: HEADER I



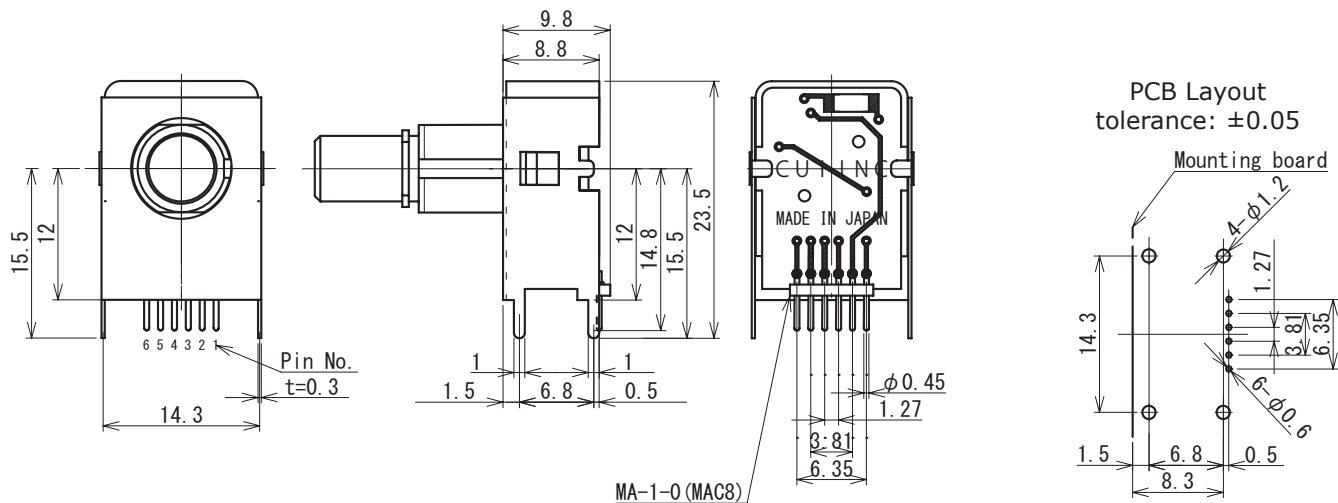
OPTION D: HEADER II



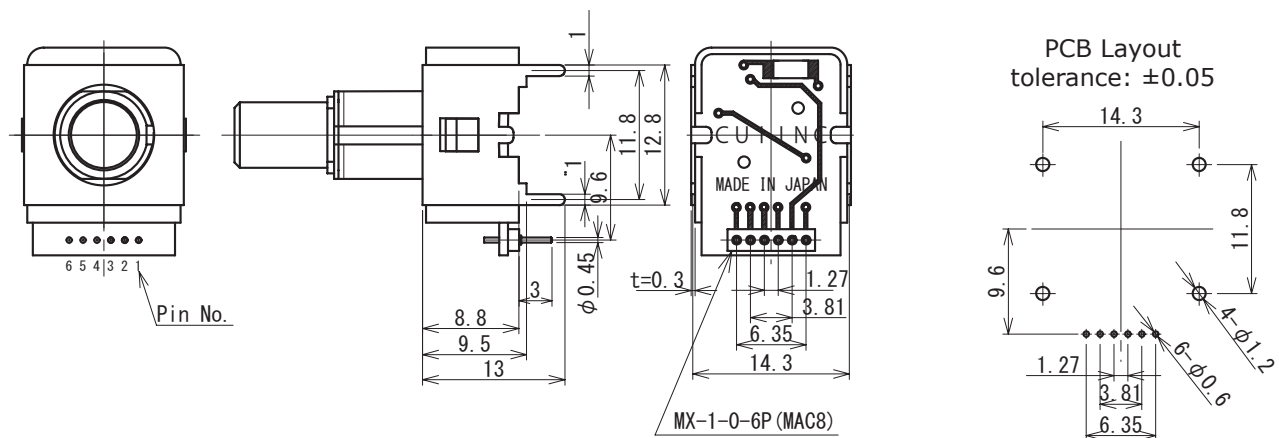
MECHANICAL DRAWING, TERMINATION OPTIONS (CONTINUED)

units: mm

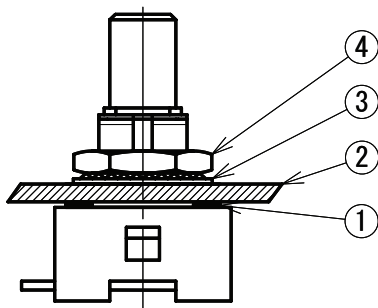
OPTION E: HORIZONTAL PCB



OPTION F: VERTICAL PCB



WATERPROOF MOUNTING



No.	Qty.	Component
1	1	waterproof washer
2	1	panel
3	1	toothed lock washer
4	1	nut

Note: 1. Protects against ingress of water (IP65) from front side of panel only.

REVISION HISTORY

rev.	description	date
1.0	initial release	02/25/2009
1.01	applied new spec template, updated operating temperature, updated 3.3V PCB	05/20/2014
1.02	brand update	10/04/2019
1.03	added plastic shaft models	10/14/2020

The revision history provided is for informational purposes only and is believed to be accurate.

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