

TOCOS®

P'GRID® Type

The world's first-and-only
detent structure.

Coded Switches & Incremental Encoders & SW+Potentiometers TP7 Series

RoHS/ELV
Compliant

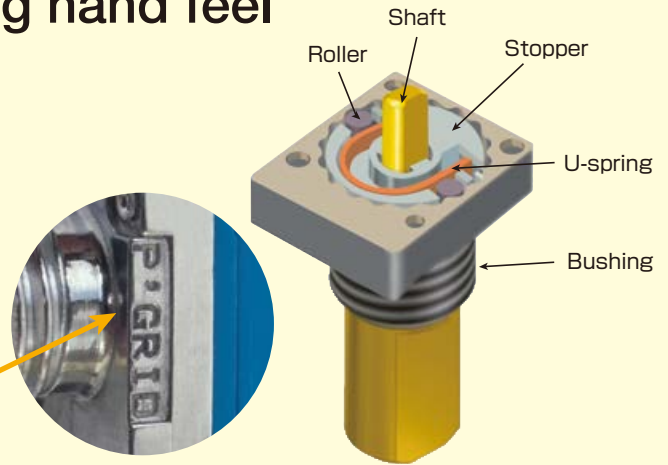
Tokyo Cosmos Electric Co., Ltd.

TP7 Series P'GRID[®] Type

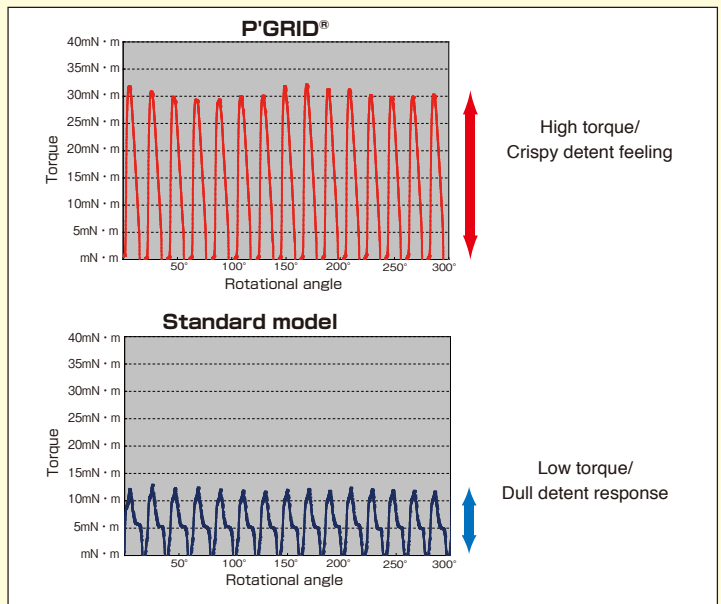
TOCOS P'GRID[®] is the world's first-and-only detent structure.

Detent rollers provide smooth, crispy and strong response switching hand feel

TOCOS has developed a very unique and new SW detent structure (P'GRID[®]) that provides accurate and smooth switching operations for 2-way radios and transceivers under any severe conditions.



■ Innovations of detent feeling



■ Features of P' GRID[®]

● Crispy Switching

P' GRID[®] brings a secure ON-OFF feeling even when slow knob turning is given

● Silky and smooth

Two rollers provide smoother hand feel

● Strong response

Provides a crispy feeling in occasions like an operator turns large knob by wearing thick gloves

■ Other improvements

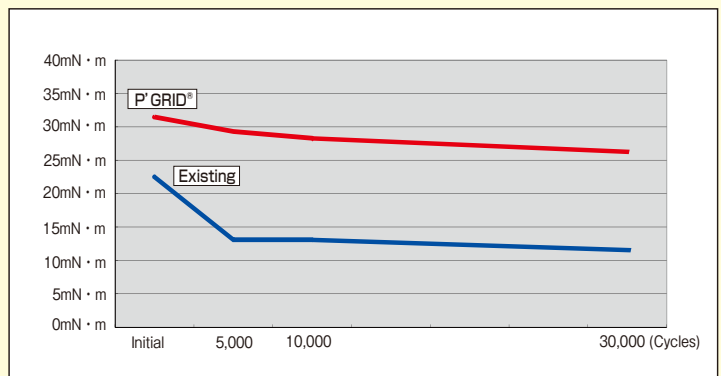
- (1) Increased shaft inner dia. provides secure shaft drop strength on a par with TP9 series.
- (2) M6 bushing shape is suitably designed for panel sealed.

■ Further Developments expected

- (1) Dual shafts: Inner shaft with Incremental encoder
- (2) Single shaft : 2ch/3ch/4ch coded SW

Options : Waterproof (Sealed with O ring in between shaft and bushing). Stainless shafts.

■ Innovations of detent life

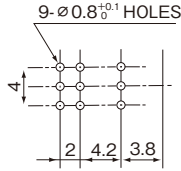
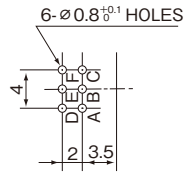


Note: The data described here is only one example and does not provide any guarantees.

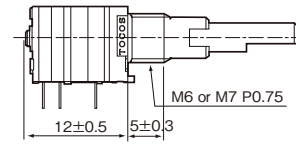
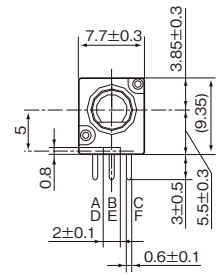
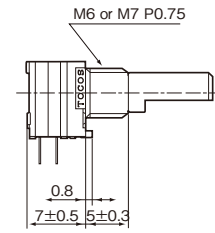
Coded Switches



Dimensions



16CH



Specifications

Items	Spec.
	16CH
Rating	DC5V/1mA
Contact resistance	ON: 1 Ω max. OFF: 1 MΩ min.
Dielectric strength	AC300V at 1 minute
Insulation resistance	DC250V 100MΩ min.
Operating force	19.6-39.2 mN·m (200-400 gf·cm)
Step angle	20±3°, 22.5±3°
Rotational angle	300±5°, endless
Shaft stopper strength	0.39 N·m min. (4kgf·cm min.)
Shaft wobble and bend	Radial: 0.5×Shaft length / 30 mm max. (Single shaft, Dual outer shaft)
	0.7×Shaft length / 30 mm max. (Dual inner shaft)
	Thrust: 0.5 mm max.
	* 2.5 N (250 gf) applied to tip of the shaft
Rotational life	30,000 cycles

16CH CODE (20° step 300° type)

	A-B	B-C	B-D	B-F
1	●	○	●	○
2	○	○	●	○
3	○	○	○	○
4	●	○	○	○
5	●	●	○	○
6	○	●	○	○
7	○	●	●	○
8	●	○	●	○
9	●	●	●	●
10	●	○	○	●
11	○	○	●	●
12	○	○	○	●
13	●	○	○	●
14	●	●	○	●
15	○	●	○	●
16	○	●	●	●

16CH CODE (22.5° step Endless type)

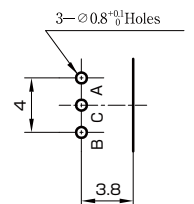
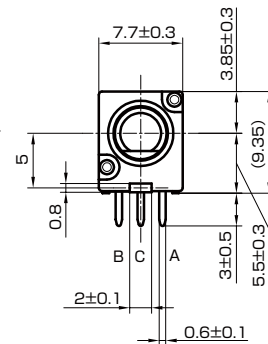
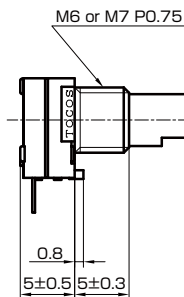
	A-B	B-C	B-D	B-F
1	●	●	●	○
2	●	○	●	○
3	○	○	●	○
4	○	●	●	○
5	○	●	○	○
6	○	○	○	○
7	●	○	○	○
8	●	●	○	○
9	●	●	○	●
10	●	○	○	●
11	○	○	○	●
12	○	●	○	○
13	○	●	●	○
14	○	○	●	○
15	●	○	●	○
16	●	●	●	○

●:ON
○:OFF

Incremental Encoders



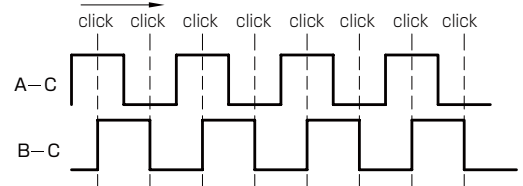
Dimensions



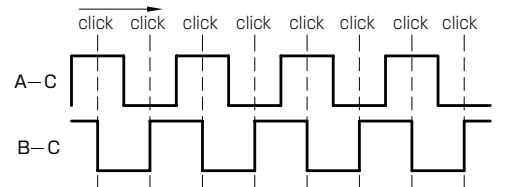
Specifications

Rating	DC5V/1mA
Contact resistance	ON: 1Ω max. OFF: 1MΩ min.
Dielectric strength	AC300V at 1 minute
Insulation resistance	DC250V 100MΩ min.
Pulse	10 pulses
The number of detents	20 detents
Switching angle	18±5°
Operating force	4.9-19.6mN·m (50-200gf·cm) 19.6-39.2mN·m (200-400gf·cm)
Strength	Shaft push/pull 98.1N (10kgf) min.
Shaft wobble and bend	Radial: 0.5× (Shaft length / 30mm) max.
	Thrust: 0.5mm max.
Rotational life	30,000 cycles

CW direction



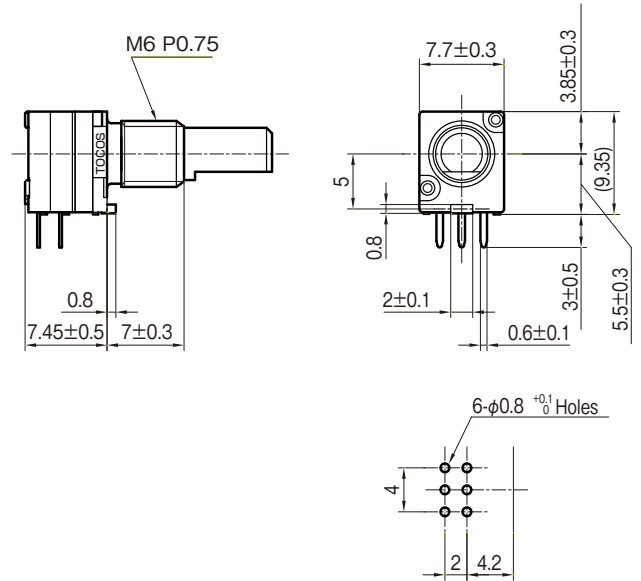
CCW direction



SW+Potentiometers



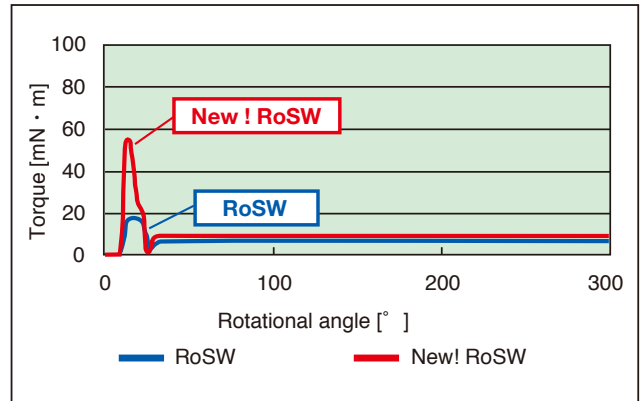
■Dimensions



■Specifications

Total resistance	15A · 1B · 15C 2k to 500kΩ
End resistance	50Ω max.
Noise	100mV max.(JIS method-A)
Insulation resistance	DC250V 100MΩ min.
Dielectric strength	1 minute at AC300V
Rotational torque	2.0 to 24.5mN · m(20 to 250gf · cm)
Shaft stopper strength	0.3N · m(3kgf · cm) min.
Strength	Shaft push/pull 98.1N (10kgf) min.
Rotational life	15,000 cycles
Switch configuration	S.P.S.T
Switch rating	DC10V 0.1A
Switch angle	50° max.
Switch torque	98.1mN · m(1kgf · cm) max.
Switch contact resistance	500mΩ max.
Switch life	10,000 cycles

■Torque



●Any part of this catalog may be modified for improvements without prior notice. Please therefore read and confirm the contents of the catalog.



ISO9001-2008, ISO14001-2004 Certified

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