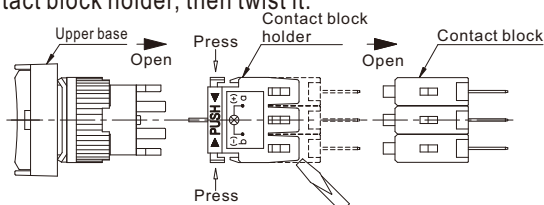
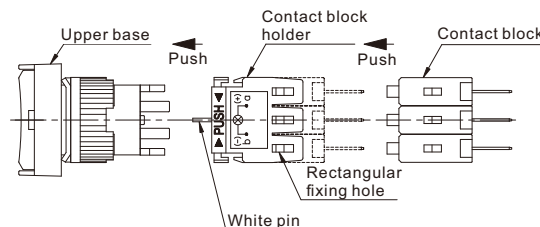


## ■ Features

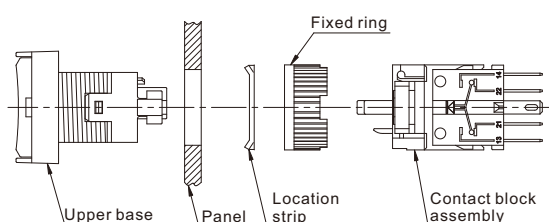
- TN16 series are highly modular detachable switches, including upper base contact block holder and contact block. When disassembling, press the contact block holder in the direction of arrow with "Push by manual or a flat"- screwdriver to disassemble contact block assembly from upper base. To disassemble contact block from contact block holder, insert the screwdriver in the groove between contact block and contact block holder, then twist it.



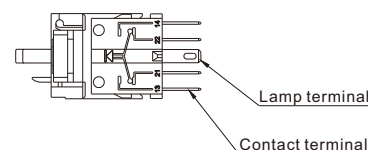
- When Assembling the contact block and contact block holder, aiming the rectangular spot on the contact block to the rectangular fixing hole on the contact block holder then push in. Aiming the white pin of the contact block assembly to the slot of white pin located on the upper base to assemble the switch.



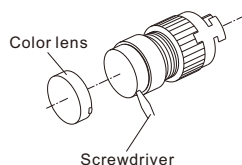
## ● Mounting method



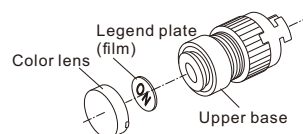
- The lamp terminal for pilot lamp and illuminated push button switch is in the middle position which is 90 degrees from other terminals.



- Method of replacing color lens, insert a flat"- screwdriver into the groove of the lens twist it.

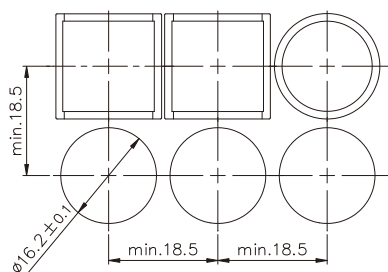


- The legend plate can be removed by detaching the lens, and replace the legend you need.

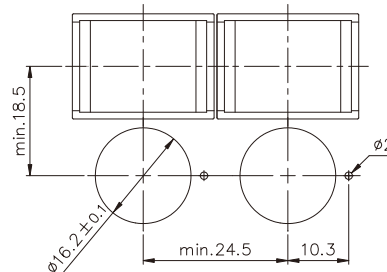


## ■ The space of mounting holes(mm)

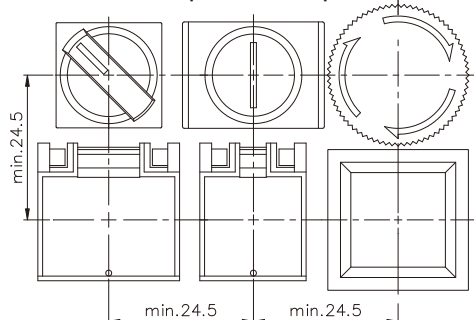
- (Round, square) pilot lamp, illuminated push button Switch



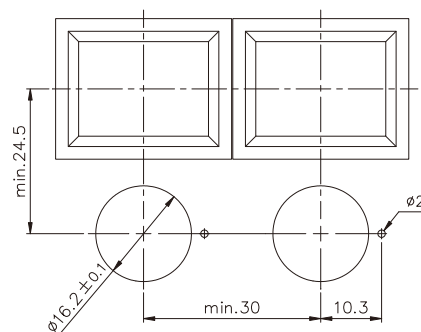
- (Rectangular) pilot lamp, illuminated push button Switch (Square) protection cover



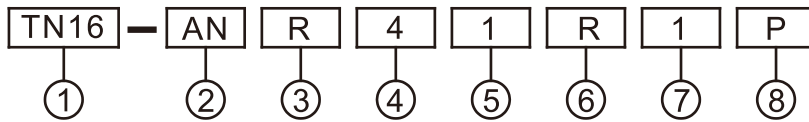
- (Round, square, rectangular) selector, key switch  
(Round, square) waterproof cap  
(Rectangular) protection cover  
Mushroom head, push-lock push button Switch



- Rectangular waterproof cap



## MODEL DESIGNATION



Designation	Signal	Description
1.Mounting Hole	TN16	16mm Series
2.Type	AI	Illuminated Push Button (Alternate)(Incandescent lamp)
	AL	Illuminated Push Button (Alternate)(LED lamp)
	AN	Illuminated Push Button (Alternate)(Neon lamp)
	MI	Illuminated Push Button (Momentary)(Incandescent lamp)
	ML	Illuminated Push Button (Momentary)(LED lamp)
	MN	Illuminated Push Button (Momentary)(Neon lamp)
	PI	Pilot lamp incandescent lamp)
	PL	Pilot lamp (LED lamp)
	PN	Pilot lamp (Neon lamp)
3.Shape	R	Round
	S	Square
	L	Rectangular

Designation	Signal	Description
4.Operator Protection	4	IP40
	6	IP65
5.Voltage	1	110V AC (Neon and LED lamp)
	2	220V AC (Neon and LED lamp)
	3	380V AC (Neon lamp)
	5	6V (incandescent and LED lamp)
	7	24V (incandescent and LED lamp)
	8	28V (incandescent and LED lamp)
	9	12V (incandescent and LED lamp)
6.Lens Color	R	Red
	G	Green
	Y	Yellow
	O	Orange
	W	White
	BL	Blue
7.Contact Blocks	1	1a1b
	2	2a2b
	3	3a3b
8.Terminal	NONE	Solder/Plug-in
	P	PC Board

AC/DC:Incandescent lamp; DC: LED lamp

## CHARACTERISTICS

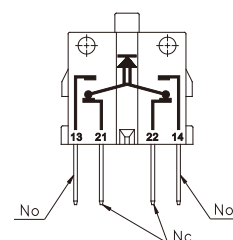
Contact resistance	50mΩ max.(initial)
Insulation resistance	100MΩ min.(at 500VDC)
Dielectric strength	1000VAC,50/60 Hz for 1 minute between non-continuous terminals 2000VAC,50/60 Hz for 1 minute between current-carrying part and ground
Vibration	Mechanical durability:10 to 55Hz 1.5 min double amplitude
Shock	Mechanical durability: Approx. 500m/sec <sup>2</sup> (approx. 50G's) Malfunction durability: Approx. 500m/sec <sup>2</sup> (approx. 50G's)
Ambient perating temperature	Operating:-25 C to 55 C Storage:-30 C to 80 C
Humidity	45% to 80% RH
Mechanical Life (min)	Momentary:2,000,000 Alternate:250,000
Electrical Life (min)	Momentary:100,000(1800 operations/hour) Alternate:100,000(1200 operations/hour)

## RATING(CONTACT)

Rated insulation voltage			250VAC	125VAC	
Rated continuous current(A)			3A	5A	
Rated operating current(A)					
AC			DC		
Voltage	AC13	AC12	Voltage	DC13	DC12
110V	0.7A	1A	12V	0.7A	1A
220V	0.5A	0.5A	24V	0.7A	1A

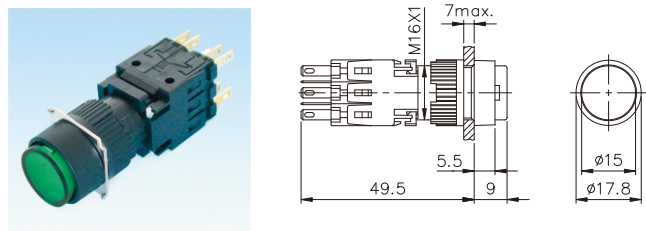
AC13/DC13:Inductive load; AC12/DC12:Resistiw load.

## CONTACT CONFIGURATION

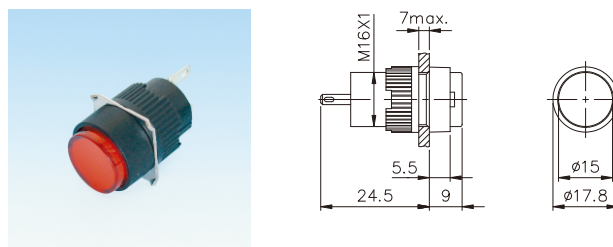


## DIMENSIONS

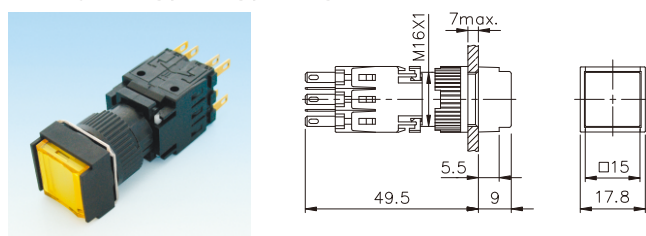
TN16-AIR/ALR/ANR  
TN16-MIR/MLR/MNR



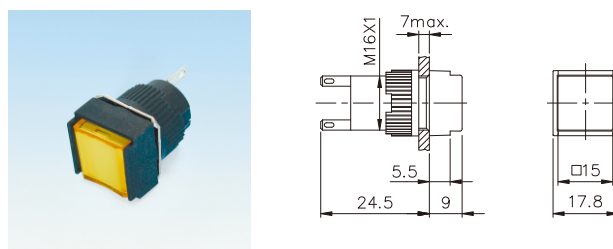
TN16-PIR/PLR/PNR



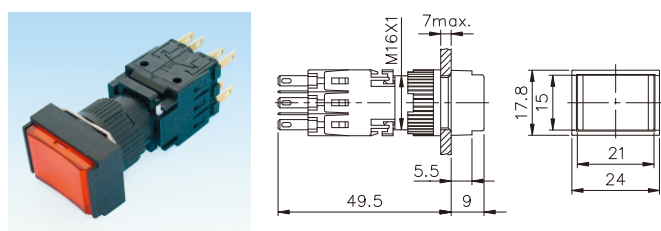
TN16-AIS/ALS/ANS  
TN16-MIS/MLS/MNS



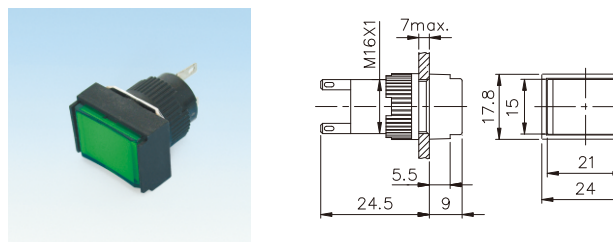
TN16-PIS/PLS/PNS



TN16-AIL/ALL/ANL  
TN16-MIL/MLL/MNL



TN16-PIL/PLL/PNL



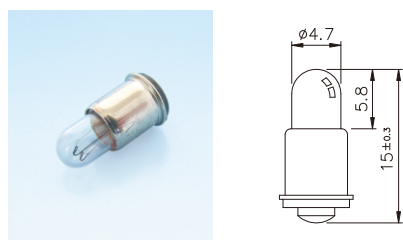
## LAMP DESIGNATION

LAMP TYPE	Signal	Rated Voltage	Signal	Operating Voltage	Rated Current	Color Code	Signal	Designation
Incandescent	I	6.3V AC/DC	6	6V AC/DC	110mA		None	I - 6
		14V AC/DC	14	12V AC/DC	50mA			
		28V AC/DC	28	24/28V AC/DC	25mA			
LED	L	6V DC	6	6V DC	26mA	Red Blue Green White Orange	R BL G W O	L - 6 R
		12V DC	12	12V DC	26mA			
		24V DC	24	24V DC	26mA			
		110VAC	110	110VAC	2mA			
		220VAC	220	220VAC	2mA			
Neon	N	110V AC	110	110V AC	1.5mA	Red Green	R G	N - 110 R
		220V AC	220	220V AC	1.5mA			
		380V AC	380	380V AC	1.5mA			

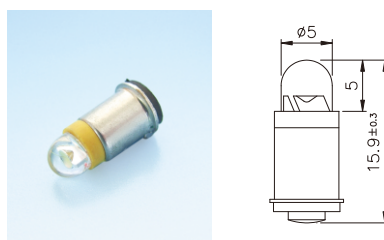
● Designation need to be completed according to signals.

## LAMP DESIGNATION (T1¾ base)

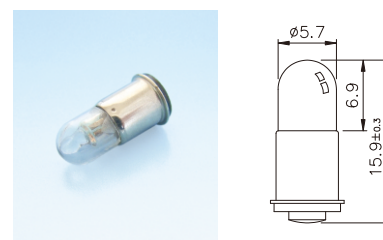
Incandescent I-□□



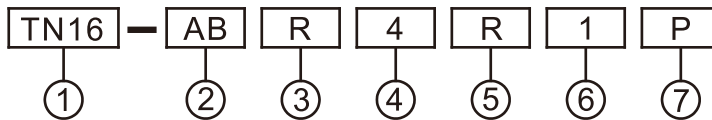
LED L-□□



Neon N-□□



## MODEL DESIGNATION



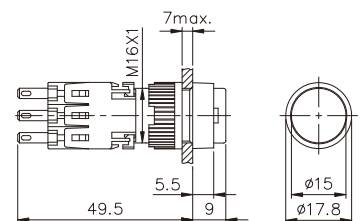
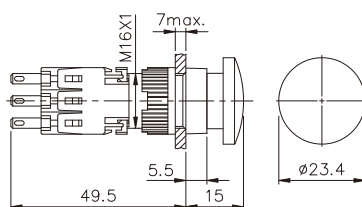
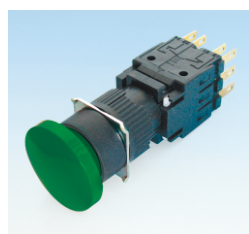
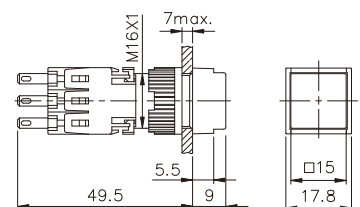
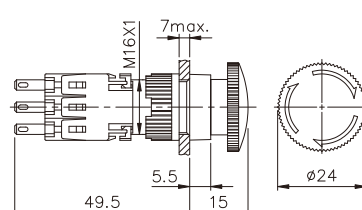
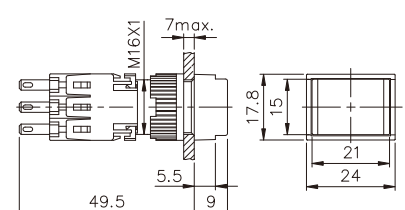
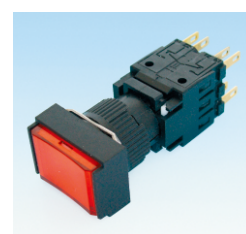
Designation	Signal	Description
1.Mounting Hole	TN16	16m/mSeries
2.Type	AB	Push Button (Alternate)
	MB	Push Button (Momentary)
	AM	Push Button (Alternate) (Mushroom Head)
	MM	Push Button (Momentary) (Mushroom Head)
	BK	Push-lock Turn-reset
3.Shape	R	Round
	S	Square
	L	Rectangular
4.Operator Protection	4	IP40
	6	IP65
5.Lens Color	R	Red
	G	Green
	Y	Yellow
	O	Orange
	W	White
	BL	Blue
	B	Black
6.Contact Blocks	1	1a1b
	2	2a2b
	3	3a3b
7.Terminal	None	Solder/Plug-in
	P	PC Board

- AM/MM/BK Types only available in round shape.
- AM/MM Types available in Red, Yellow, Green, Black colors.
- BK Types available in Red color.

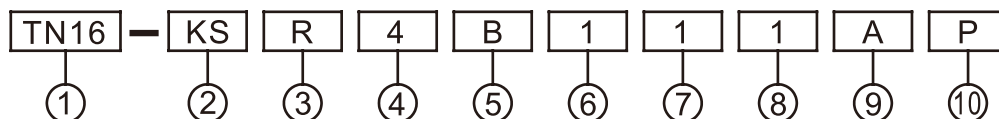
## CHARACTERISTICS







Contact resistance	50mΩ max.(initial)
Insulation resistance	100MΩ min.(at 500VDC)
Dielectric strength	1000VAC,50/60 Hz for 1 minute between non-continuous terminals 2000VAC,50/60 Hz for 1 minute between current-carrying part and ground
Vibration	Mechanical durability:10 to 55Hz 1.5 min double amplitude
Shock	Mechanical durability: Approx. 500m/sec <sup>2</sup> (approx.50G's) Malfunction durability: Approx. 500m/sec <sup>2</sup> (approx. 50G's)
Ambient perating temperature	Operating:-25 C to 55 C Storage:-30 C to 80 C
Humidity	45% to 80% RH
Mechanical Life (min)	Momentary:2,000,000 Alternate/BKR:250,000
Electrical Life (min)	Momentary:100,000(1800 operations/hour) Alternate/BKR:100,000(1200 operations/hour)





## DIMENSIONS

**TN16-ABR/MBR**

**TN16-AMR/MMR**

**TN16-ABS/MBS**

**TN16-BKR**

**TN16-ABL/MBL**


## MODEL DESIGNATION



Designation	Signal	Description
1.Mounting Hole	TN16	16m/m Series
2.Type	SS KS	Knob Operator Key Operator
3.Shape	R S L	Round Square Rectangular
4.Operator Protection	4 6	IP40 IP65
5.Color	R G B	Red Green Black
6.Position	1	 90° 2-Position
	2	 90° 2-Position Spring return from right
	3	 180° 3-Position
	4	 150° 3-Position Spring return from right
	5	 150° 3-Position
	6	 150° 3-Position 2-Way spring return

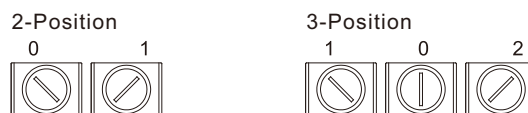
Designation	Signal	Description
6.Position	7	 90° 3-Position
	8	 90° 3-Position Spring return from right
	9	 90° 3-Position Spring return from left
	0	 90° 3-Position 2-Way spring return
7.Type of Contact Blocks Fitted		2-Position      3-Position
	1	1a1b      —
	2	2a2b      1a1b 0 1a1b
8.Key withdrawable	3	3a3b      1a1b 1a1b 1a1b
	1	0.1 Key withdrawable
	2	0 Key withdrawable
	3	2-Position      1 Key withdrawable
	4	0.1.2 Key withdrawable
9.Key NO.	5	3-Position      0 Key withdrawable
	A	F      2132      3123
	B	G      2231      3133
	C	H      2313      3213
	D	I      2331      3231
10.Terminal	E	J      3131      3331
	None P	Solder/Plug-in PC Board

● KSR/KSS/KSL Types only available in black colors.

## CHARACTERISTICS

Contact resistance	50mΩ max.(initial)
Insulation resistance	100MΩ min.(at 500VDC)
Dielectric strength	1000VAC, 50/60 Hz for 1 minute between non-continuous terminals 2000VAC, 50/60 Hz for 1 minute between current-carrying part and ground
Vibration	Mechanical durability: 10 to 55Hz 1.5 min double amplitude
Shock	Mechanical durability: Approx. 500m/sec <sup>2</sup> (approx. 50G's) Malfunction durability: Approx. 500m/sec <sup>2</sup> (approx. 50G's)
Ambient perating temperature	Operating: -25 C to 55 C Storage: -30 C to 80 C
Humidity	45% to 80% RH
Mechanical Life (min)	250,000 operations
Electrical Life (min)	100,000 operations

## KEY WITHDRAWABLE



2-Position

Key withdrawable Position	1		2		3	
	0	1	0	1	0	1
1	●	●	●	—	—	●
2	—	—	●	—	—	—

3-Position

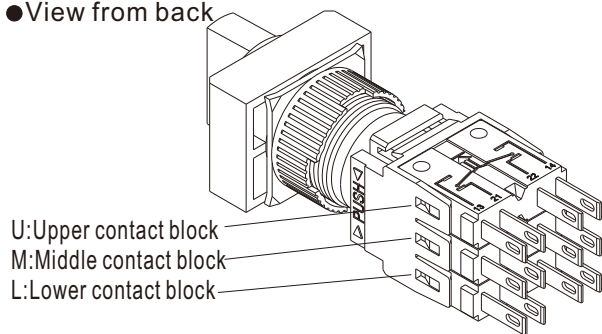
Key withdrawable Position	4			5		
	1	0	2	1	0	2
3	●	●	●	—	●	—
4	—	—	—	—	●	—
5	—	—	—	—	●	—
6	—	—	—	—	●	—
7	—	—	—	—	●	—
8	—	—	—	—	●	—
9	—	—	—	—	●	—
0	—	—	—	—	●	—

● : Key withdrawable

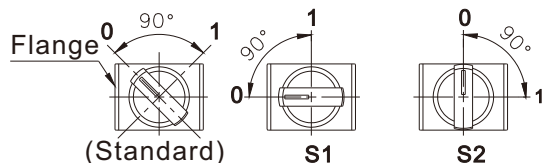


## CONTACT BLOCK POSITIONS

### ●View from back



• The operating angle range can be changed as shown below by setting the attached flange shifted by 45° in combination with the contact block. In this case, the minimum mounting pitch is 26mm because the contact block is shifted by 45° from the flange.



### ●Contact arrangement and operator positions: 2-Position selector switch/Key switch

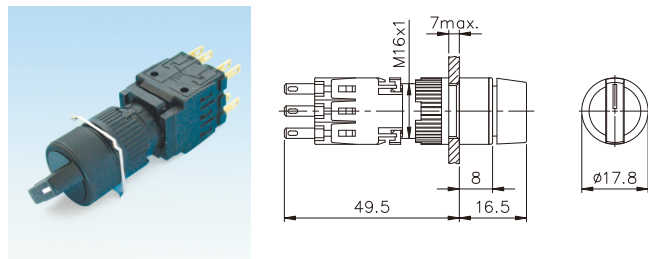
Contact arrangement		1NO+1NC (1a1b)	2NO+2NC (2a2b)	3NO+3NC (3a3b)
Operator position	Left	$\begin{array}{c} 21 \text{ } \circ \text{ } 22 \\ 13 \text{ } \circ \text{ } 14 \end{array}$	$\begin{array}{c} 21 \text{ } \circ \text{ } 22 \\ 13 \text{ } \circ \text{ } 14 \\ 21 \text{ } \circ \text{ } 22 \\ 13 \text{ } \circ \text{ } 14 \end{array}$	$\begin{array}{c} 21 \text{ } \circ \text{ } 22 \\ 13 \text{ } \circ \text{ } 14 \\ 21 \text{ } \circ \text{ } 22 \\ 13 \text{ } \circ \text{ } 14 \\ 21 \text{ } \circ \text{ } 22 \\ 13 \text{ } \circ \text{ } 14 \end{array}$
	Right	$\begin{array}{c} 21 \text{ } \circ \text{ } 22 \\ 13 \text{ } \circ \text{ } 14 \end{array}$	$\begin{array}{c} 21 \text{ } \circ \text{ } 22 \\ 13 \text{ } \circ \text{ } 14 \\ 21 \text{ } \circ \text{ } 22 \\ 13 \text{ } \circ \text{ } 14 \end{array}$	$\begin{array}{c} 21 \text{ } \circ \text{ } 22 \\ 13 \text{ } \circ \text{ } 14 \\ 21 \text{ } \circ \text{ } 22 \\ 13 \text{ } \circ \text{ } 14 \\ 21 \text{ } \circ \text{ } 22 \\ 13 \text{ } \circ \text{ } 14 \end{array}$

### 3-Position selector switch/Key switch

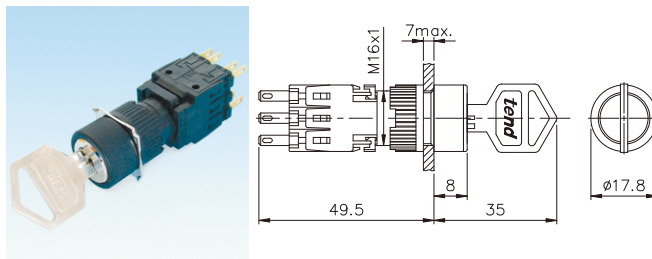
Contact arrangement		2NO+2NC (2a2b)	3NO+3NC (3a3b)
Operator position	Left	$\begin{array}{c} \text{U} \quad \text{L} \\ 21 \text{ } \circ \text{ } 22 \quad 21 \text{ } \circ \text{ } 22 \\ 13 \text{ } \circ \text{ } 14 \quad 13 \text{ } \circ \text{ } 14 \end{array}$	$\begin{array}{c} \text{U} \quad \text{M} \quad \text{L} \\ 21 \text{ } \circ \text{ } 22 \quad 21 \text{ } \circ \text{ } 22 \quad 21 \text{ } \circ \text{ } 22 \\ 13 \text{ } \circ \text{ } 14 \quad 13 \text{ } \circ \text{ } 14 \quad 13 \text{ } \circ \text{ } 14 \end{array}$
	Center	$\begin{array}{c} 21 \text{ } \circ \text{ } 22 \quad 21 \text{ } \circ \text{ } 22 \\ 13 \text{ } \circ \text{ } 14 \quad 13 \text{ } \circ \text{ } 14 \end{array}$	$\begin{array}{c} 21 \text{ } \circ \text{ } 22 \quad 21 \text{ } \circ \text{ } 22 \quad 21 \text{ } \circ \text{ } 22 \\ 13 \text{ } \circ \text{ } 14 \quad 13 \text{ } \circ \text{ } 14 \quad 13 \text{ } \circ \text{ } 14 \end{array}$
	Right	$\begin{array}{c} 21 \text{ } \circ \text{ } 22 \quad 21 \text{ } \circ \text{ } 22 \\ 13 \text{ } \circ \text{ } 14 \quad 13 \text{ } \circ \text{ } 14 \end{array}$	$\begin{array}{c} 21 \text{ } \circ \text{ } 22 \quad 21 \text{ } \circ \text{ } 22 \quad 21 \text{ } \circ \text{ } 22 \\ 13 \text{ } \circ \text{ } 14 \quad 13 \text{ } \circ \text{ } 14 \quad 13 \text{ } \circ \text{ } 14 \end{array}$

## DIMENSIONS

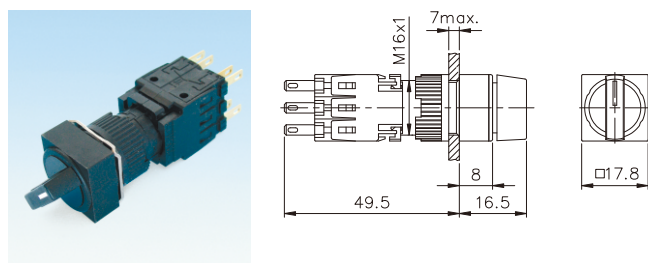
### TN16-SSR



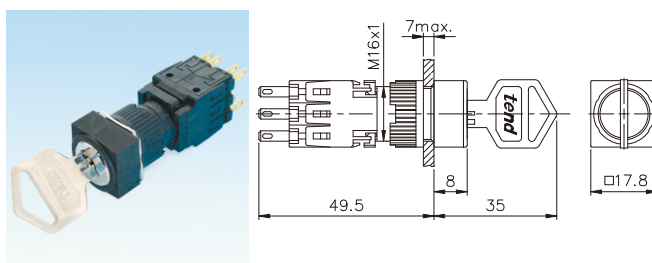
### TN16-KSR



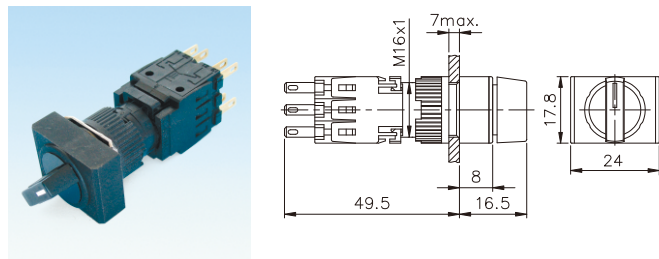
### TN16-SSS



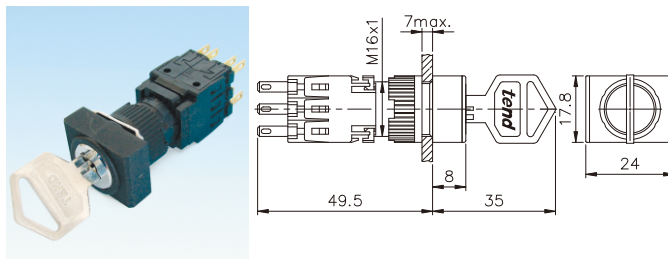
### TN16-KSS



### TN16-SSL

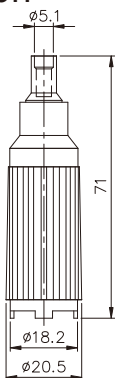


### TN16-KSL

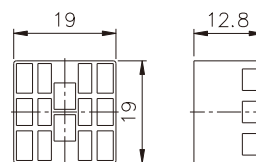
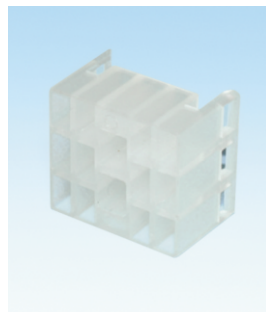


## ■ DIMENSIONS

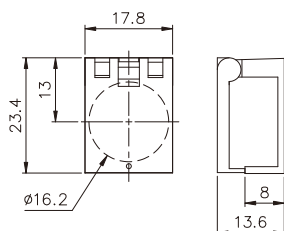
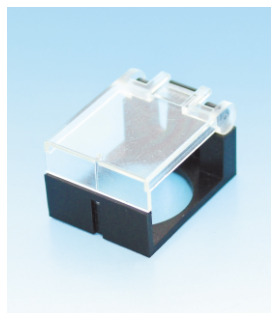
Lamp Changer and Wrench  
TN16-A



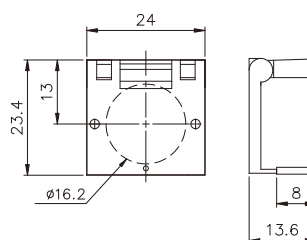
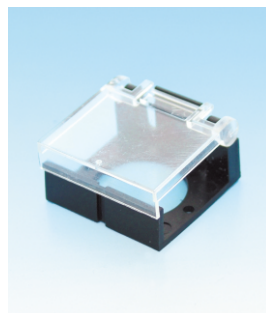
TN16-Terminal Cover  
TN16-TC



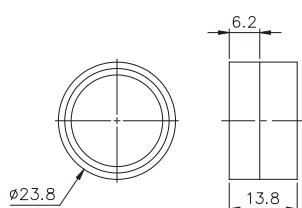
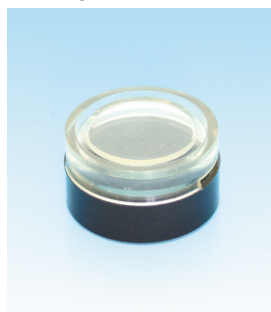
TN16-Round/Square Protection Cover  
TN16-GS



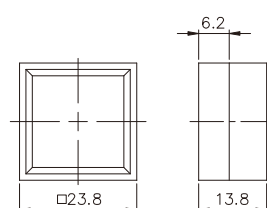
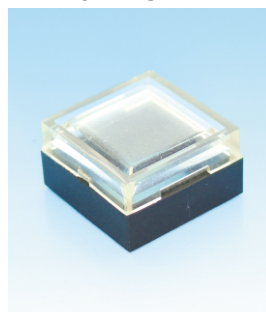
Ractangular Protection Cover  
TN16-GL



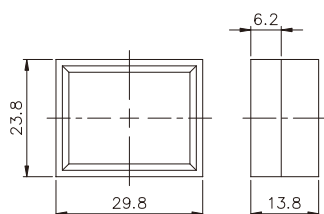
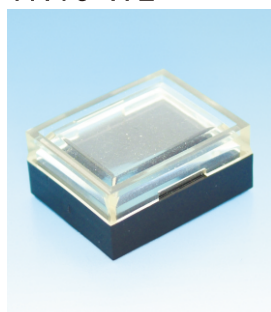
Round Head Dust-Tight Cover  
TN16-WR



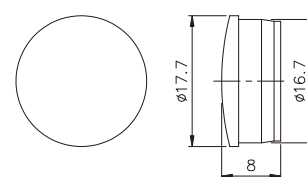
Square Head Dust-Tight Cover  
TN16-WS



Ractangular Head Dust-Tight Cover  
TN16-WL



Blanking Plug  
TN16-BP



## TN16-RL ☐ Round Lens



Please choose the color code for ☐

Color	Code
Red	R
Green	G
Yellow	Y
Orange	O
White	W
Blue	BL

## TN16-SL ☐ Square Lens



Please choose the color code for ☐

Color	Code
Red	R
Green	G
Yellow	Y
Orange	O
White	W
Blue	BL

## TN16-LL ☐ Rectangular Lens



Please choose the color code for ☐

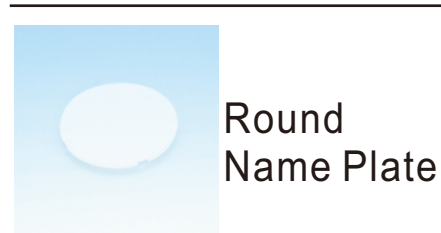
Color	Code
Red	R
Green	G
Yellow	Y
Orange	O
White	W
Blue	BL

## TN16-MM ☐ Mushroom Head



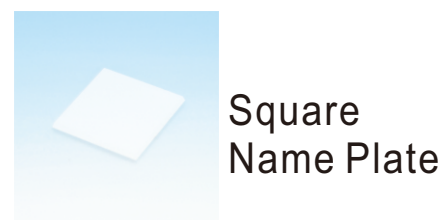
Please choose the color code for ☐

Color	Code
Red	R
Green	G
Yellow	Y
Blue	B



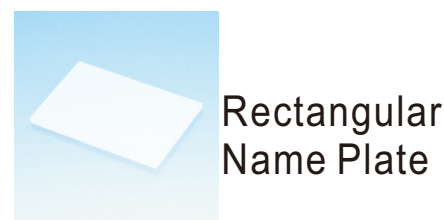
Round  
Name Plate

TN16-RP ☐  
Please choose  
signal for ☐



Square  
Name Plate

TN16-SP ☐  
Please choose  
signal for ☐




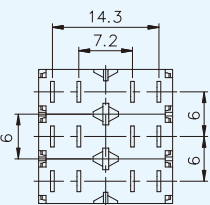



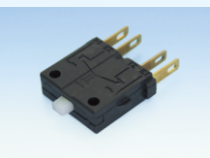


Rectangular  
Name Plate

TN16-LP ☐  
Please choose  
signal for ☐

## Signals for Name Plate

01	02	03	04	05	06	07
○		ON	OFF	START	STOP	UP
08	09	10	11	12	13	14
DOWN	SOURCE	HAND	AUTO	RUN	FWD	REV
15	16	17	18	19	20	21
CLOSE	OPEN	FAST	SLOW	RESET	INCH	→
22	23	24	25	26	27	
B	1	2	3	4	5	



Features	Model	Type	Description					
	Contact Blocks Assembly  (View from back)	TN16-A <table><tr><td>B</td><td>1</td><td>P</td></tr></table> Please choose Signal for <input type="checkbox"/>	B	1	P	Item	Signal	Designation
B			1	P				
			1.Contact Blocks Holder	B	Contact Blocks Holder for Push Button			
				I	Contact Blocks Holder for Illuminated Button			
	S	Contact Blocks Holder for SS.KS.BK						
2.Contact Blocks Fitted	1	1a1b (1NO+1NC)						
	2	2a2b (2NO+2NC)						
	3	3a3b (3NO+3NC)						
3.Type of Contact Holder	None P	Solder/Plug-in PC Board Terminal						
TN16-BB 	Contact Blocks Holder	TN16-B <table><tr><td>B</td></tr></table> Please choose Signal for <input type="checkbox"/>	B	Contact Blocks Holder	B	Contact Blocks Holder for Push Button		
B								
TN16-BI 			I		Contact Blocks Holder for Illuminated Button Contact Blocks			
TN16-BS 	S	Contact Blocks Holder for SS.KS.BK						
TN16-C 	Contact Blocks	TN16-C <table><tr><td>P</td></tr></table> Please choose Signal for <input type="checkbox"/>	P	Contact Blocks	None	Solder/Plug-in		
P								
TN16-CP 	P	PC Board Terminal						
	Blocks	TN16-D						