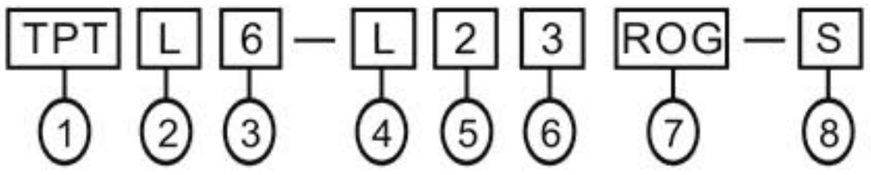
tend TOWER LIGHT

FEATURES

- Tend tower light can be installed in any machine as a status indicator by showing the color change of light and audible alarm.Tower light can be customer-made to meet different needs.
- Internal spring suspension can avoid damage to the bulb due to machine's vibration.
- Flexible wiring design: Steady,flashing of alarm are achievable through wiring by end user.
- Both bulb base for Incandescent bulb & LED is BA15S. So it is easy to change bulb type.
- Audio alarm buzzes at 90DB/30cm.

Model Designation



Item	Signal	Description
1.Mounting Method	TPT	Pole Mount
	TPW	Tray Mount
	TPF	Tented Type
	TPA	Side Hitch Type
	TPS	Pole With Tray Mount
2.Functional	L	Continuous light
	F	Continuous or flashing light
	S	Continuous of flashing light with audible alarm
	B	Audible alarm light
3.Diameter	4	Ø40mm (NO TPFL)
	5	Ø50mm
	6	Ø60mm
	7	Ø70mm
4.Bulb	Space	Incandescent
	L	LED
5.Voltage	1	110VAC
	2	220VAC
	7	24VAC/DC
	9	12VAC/DC
6.Section	1~5	1~5
7.Lens	R	Red
	O	Orange
	G	Green
	B	Blue
	W	White
8.Aluminum Tube Length	Space	Standard Length,TPT:288mm,TPF:43mm
	S	Special Length, TPT:138mm
		Special Length, TPF:193mm

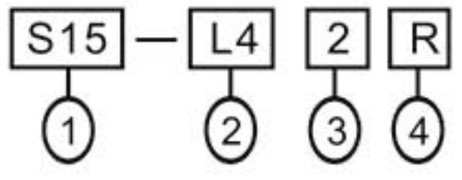
Rated current for Bulbs and Buzzers (Reference Only)

Incandescent	
S15-I49(12VAC/DC)	0.5A
S15-I47(24VAC/DC)	0.25A
S15-I41(110VAC)	0.05A
S15-I42(220VAC)	0.03A
S15-I59(12VAC/DC)	0.7A
S15-I57(24VAC/DC)	0.35A
S15-I51(110VAC)	0.06A
S15-I52(220VAC)	0.03A
S15-I69(12VAC/DC)	0.8A
S15-I67(24VAC/DC)	0.4A
S15-I61(110VAC)	0.08A
S15-I62(220VAC)	0.04A

LED	
S15-L49(12VAC/DC)	0.1A
S15-L47(24VAC/DC)	0.03A
S15-L41(110VAC)	0.02A
S15-L42(220VAC)	0.02A
S15-L59(12VAC/DC)	0.15A
S15-L57(24VAC/DC)	0.04A
S15-L51(110VAC)	0.02A
S15-L52(220VAC)	0.02A

Buzzer	
12V AC/DC	0.08A
24V AC/DC	0.02A
110V AC	0.01A
220V AC	0.01A

Bulb Model Designation

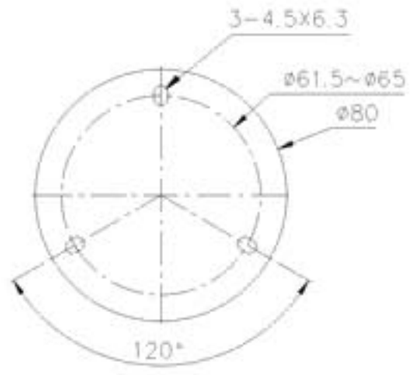


Item	Signal	Description
1.Base Type	S15	BA15S Bulb
2.Lens Diameter	I4	Ø40mm, 5W Incandescent
	I5	Ø50mm, 8W Incandescent
	I6	Ø60mm/Ø70mm,10W Incandescent
	L4	Ø40mm, LED
	L5	Ø50mm/ø60mm/ø70mm, LED
3.Voltage	1	110VAC
	2	220VAC
	7	24VAC/DC
	9	12VAC/DC
4.Color	Space	Incandescent
	R	Red
	O	Orange
	G	Green LED
	B	Blue
	W	White

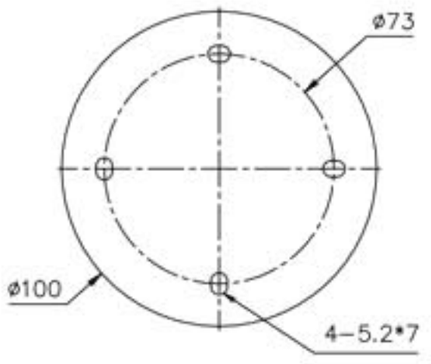
Mounting Holes

- Tray Mount

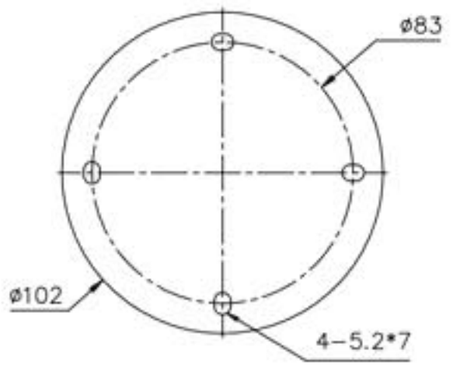
TPW □4/TPW □5



TPW □6



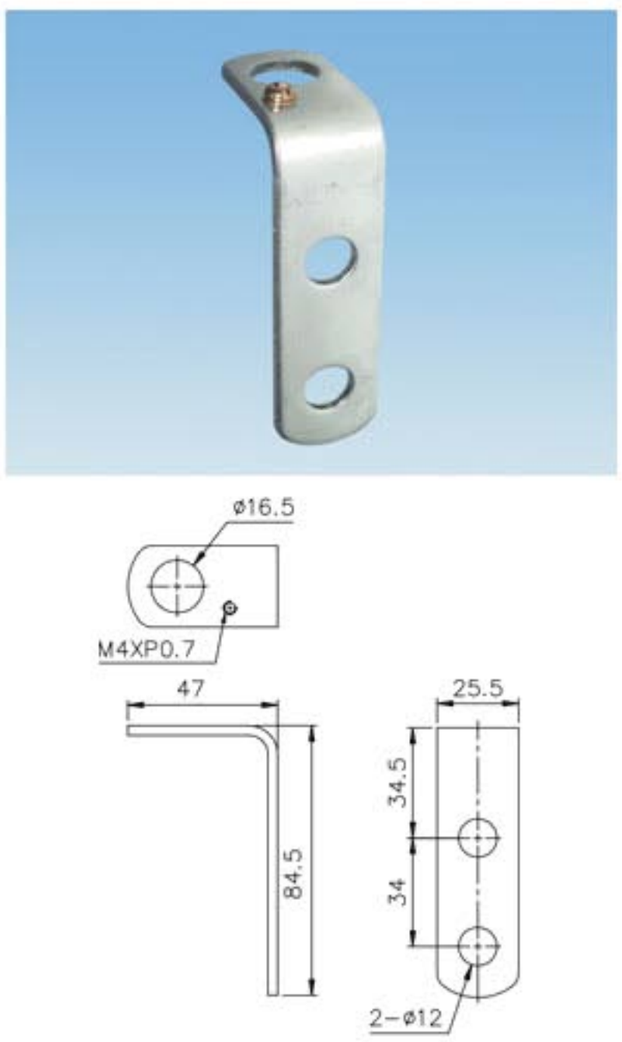
TPW □7



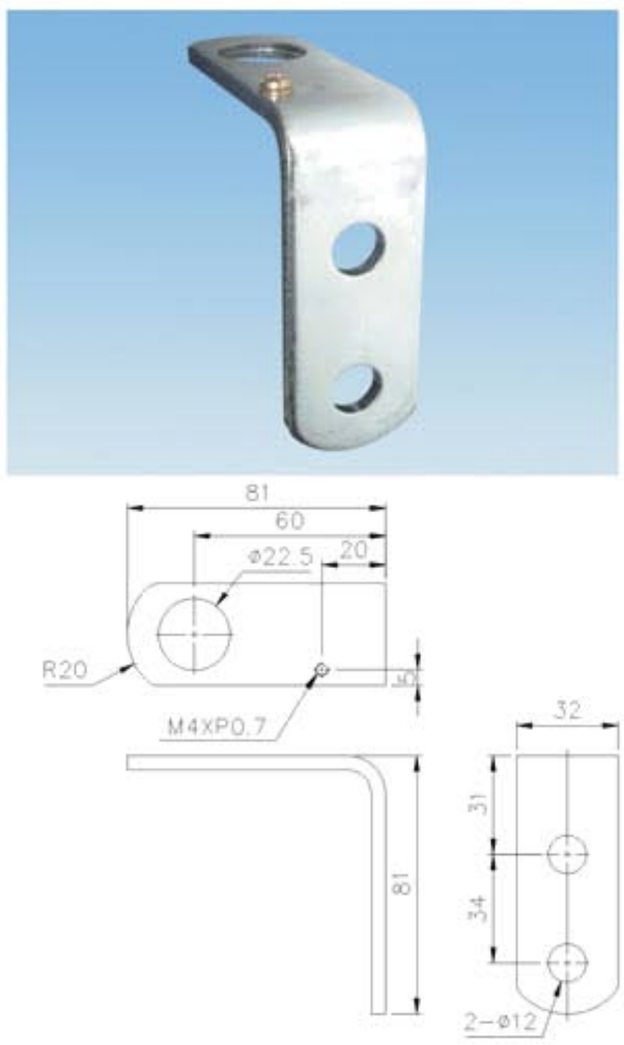
■MOUNTING HOLES

● POLE MOUNTING BRACKET

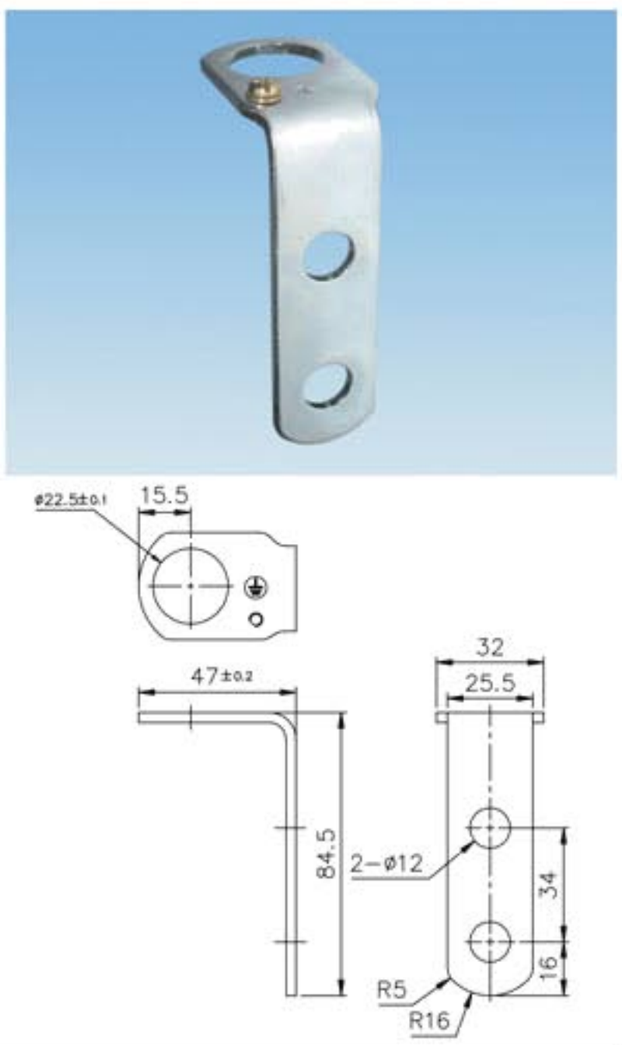
Used TPTL4



Used TPT□6/TPT□7



Used TPTF4/TPTS4/TPTB4
TPT□5

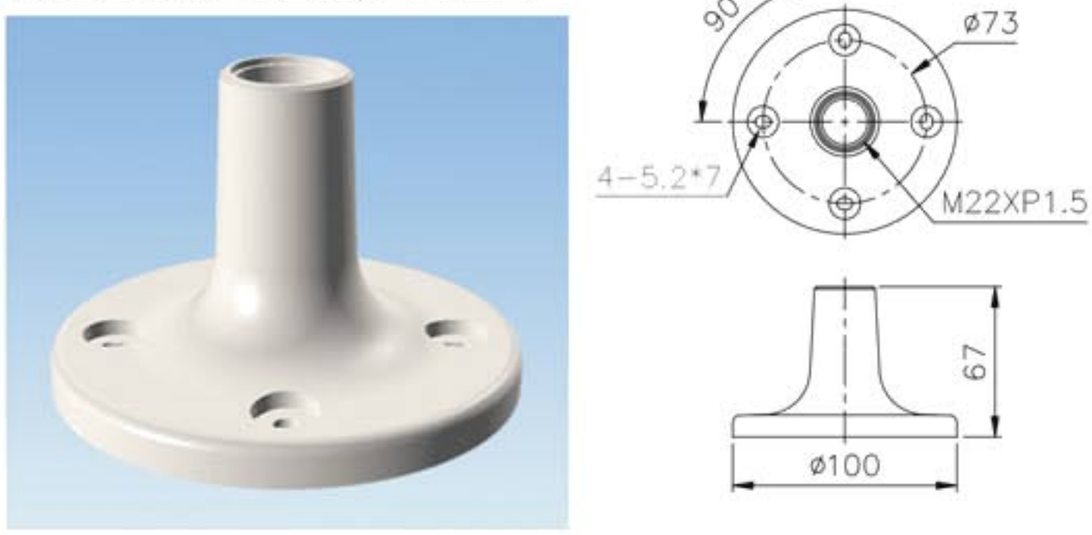


■MOUNTING HOLES

● POLE MOUNTING BRACKET(OPTIONAL)

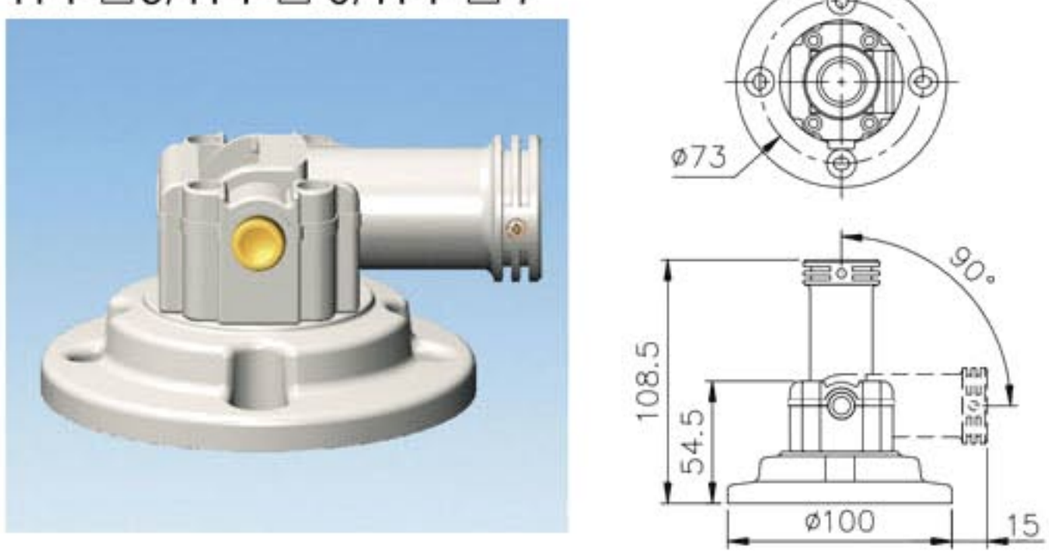
TPTL-S
Used TPTS4

TPTL6-S
Used TPSS4/TPSF4/TPSB4
TPS□5/TPS□6/TPS□7



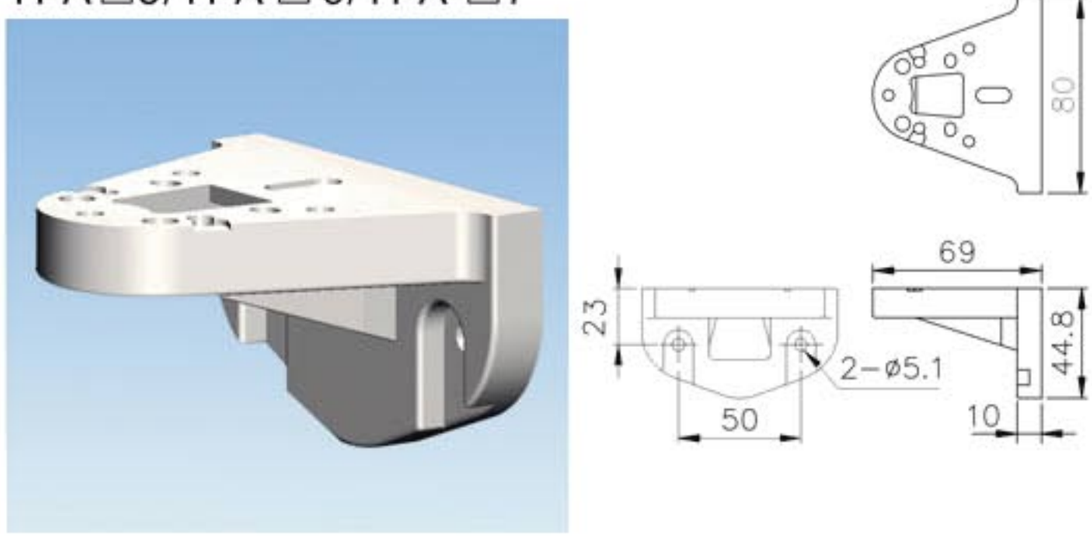
● FOLDABLE MOUNTING BRACKET(OPTIONAL)

TPTL6-F
Used TPFS4/TPFF4/TPFB4
TPF□5/TPF□6/TPF□7



● SIDE MOUNTING BRACKET(OPTIONAL)

TPTL6-A
Used TPA□4
TPA□5/TPA□6/TPA□7



■TPTL4/TPAL4/TPSL4

■TP□F4/TP□S4/TP□B4

■TPWL4

■TPWF4/TPWS4/TPWB4

■ TPTL5/TPAL5/TPFL5/TPSL5

■ TP□F5/TP□S5/TP□B5

■ TPWL5

■ TPWF5/TPWS5/TPWB5

■TPTL6/TPAL6/TPFL6/TPSL6

■TP□F6/TP□S6/TP□B6

■TPWL6

■TPWF6/TPWS6/TPWB6

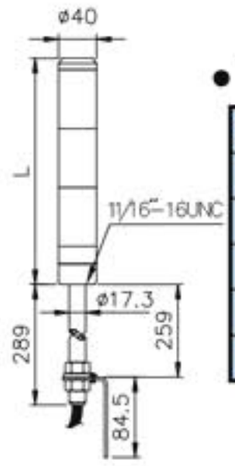
■TPTL7/TPAL7/TPTF7/TPSL7

■TP□F7/TP□S7/TP□B7

■TPWL7

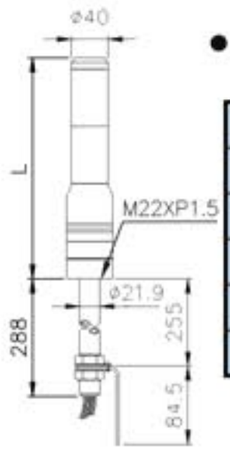
■TPWF7/TPWS7/TPWB7

DIMENSIONS



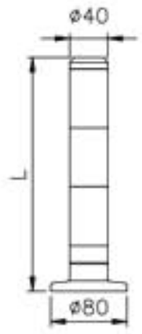
● TPTL4:

SECTION	L
1	114
2	176
3	238
4	300
5	362



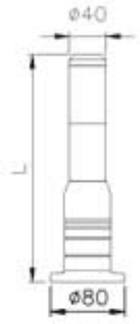
● TPTF4/TPTS4
TPTB4:

SECTION	L
1	177
2	239
3	301
4	363
5	425



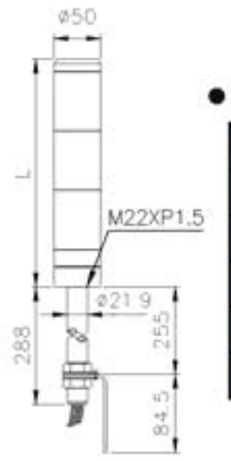
● TPWL4:

SECTION	L
1	122
2	184
3	246
4	308
5	370



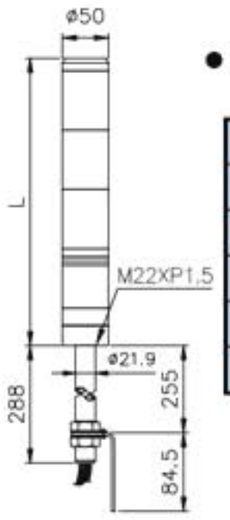
● TPWF4/TPWS4
TPWB4:

SECTION	L
1	183
2	245
3	307
4	369
5	431



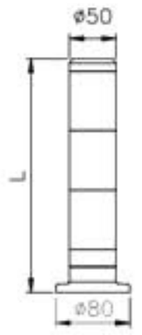
● TPTL5:

SECTION	L
1	118
2	182
3	246
4	310
5	374



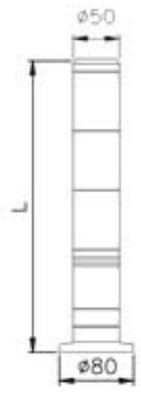
● TPTF5/TPTS5
TPTB5:

SECTION	L
1	182
2	246
3	310
4	374
5	438



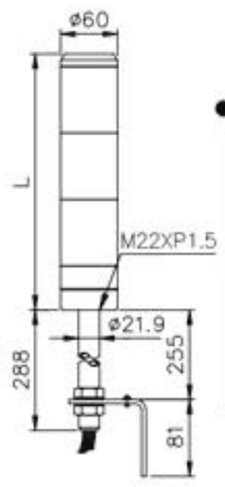
● TPWL5:

SECTION	L
1	124
2	188
3	252
4	316
5	380



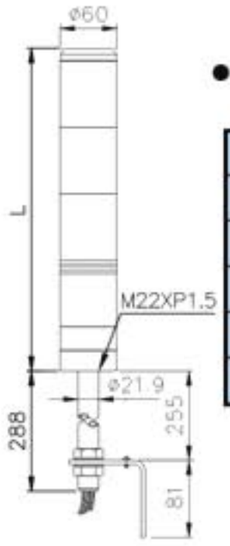
● TPWF5/TPWS5
TPWB5:

SECTION	L
1	188
2	252
3	316
4	380
5	444



● TPTL6:

SECTION	L
1	130
2	200
3	270
4	340
5	410

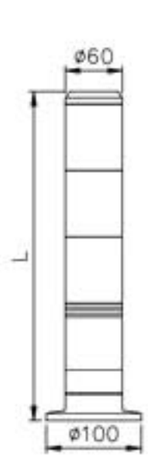


● TPTF6/TPTS6
TPTB6:

SECTION	L
1	200
2	270
3	340
4	410
5	480

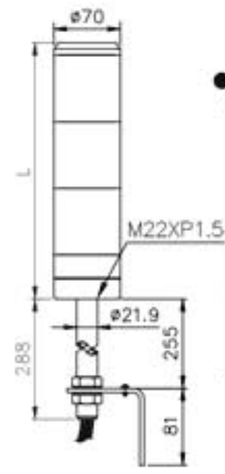
● TPWL6:

SECTION	L
1	136
2	206
3	276
4	346
5	416



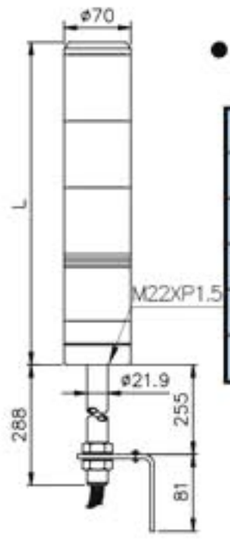
● TPWF6/TPWS6
TPWB6:

SECTION	L
1	206
2	276
3	346
4	416
5	486



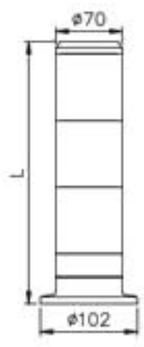
● TPTL7:

SECTION	L
1	130
2	200
3	270
4	340
5	410



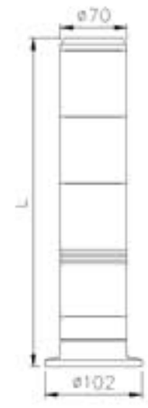
● TPTF7/TPTS7
TPTB7:

SECTION	L
1	200
2	270
3	340
4	410
5	480



● TPWL7:

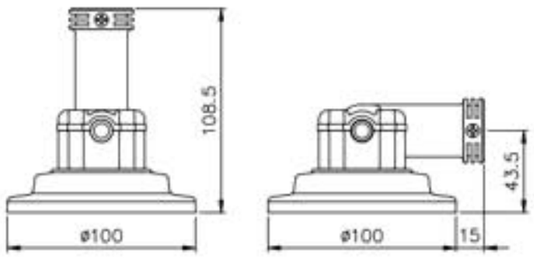
SECTION	L
1	136
2	206
3	276
4	346
5	416

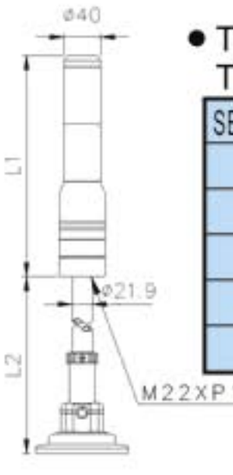


● TPWF7/TPWS7
TPWB7:

SECTION	L
1	206
2	276
3	346
4	416
5	486

● TPTL6-F

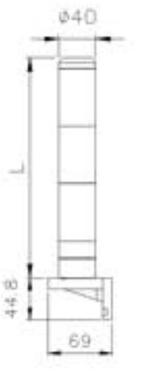




● TPFF4/TPFS4
TPFB4:

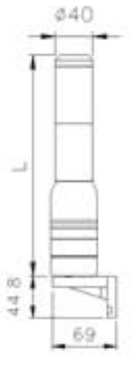
SECTION	L1
1	177
2	239
3	301
4	363
5	425

L2
Short 151
Long 301



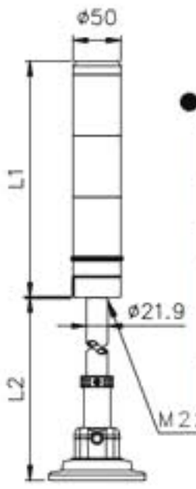
● TPAL4:

SECTION	L
1	114
2	176
3	238
4	300
5	362



● TPAF4/TPAS4
TPAB4:

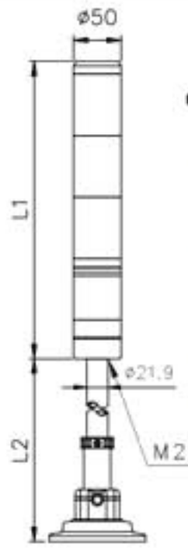
SECTION	L
1	177
2	239
3	301
4	363
5	425



● TPFL5:

SECTION	L1
1	118
2	182
3	246
4	310
5	374

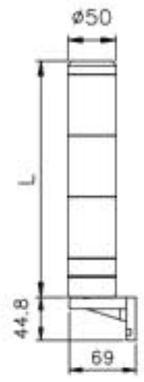
L2 Short 151 Long 301



● TPFF5/TPFS5
TPFB5:

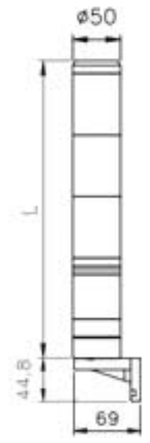
SECTION	L1
1	182
2	246
3	310
4	374
5	438

L2 Short 151 Long 301



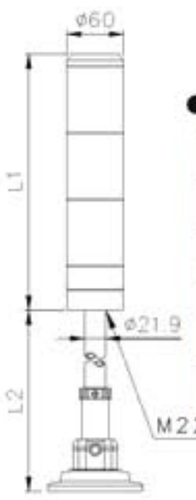
● TPAL5:

SECTION	L
1	118
2	182
3	246
4	310
5	374



● TPAF5/TPAS5
TPAB5:

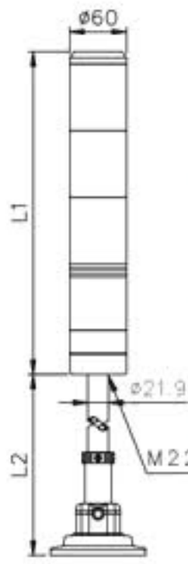
SECTION	L
1	182
2	246
3	310
4	374
5	438



● TPFL6:

SECTION	L1
1	130
2	200
3	270
4	340
5	410

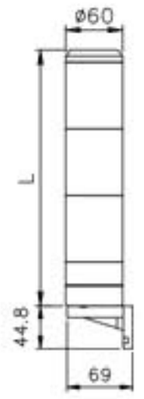
L2 Short 151 Long 301



● TPFF6/TPFS6
TPFB6:

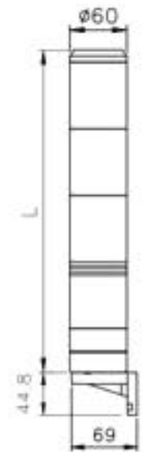
SECTION	L1
1	200
2	270
3	340
4	410
5	480

L2 Short 151 Long 301



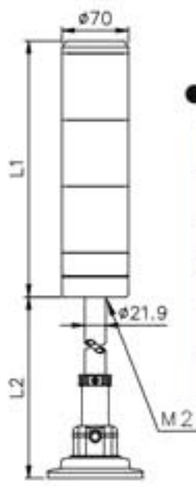
● TPAL6:

SECTION	L
1	130
2	200
3	270
4	340
5	410



● TPAF6/TPAS6
TPAB6:

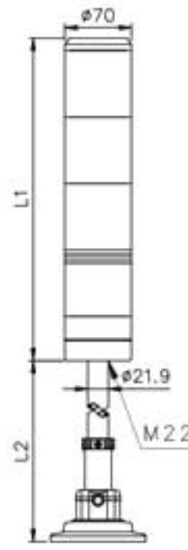
SECTION	L
1	200
2	270
3	340
4	410
5	480



● TPFL7:

SECTION	L1
1	130
2	200
3	270
4	340
5	410

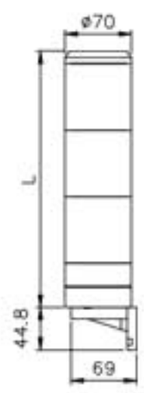
L2 Short 151 Long 301



● TPFF7/TPFS7
TPFB7:

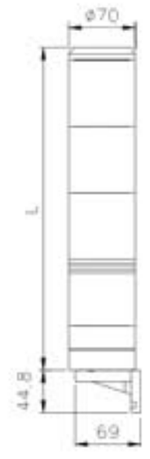
SECTION	L1
1	200
2	270
3	340
4	410
5	480

L2 Short 151 Long 301



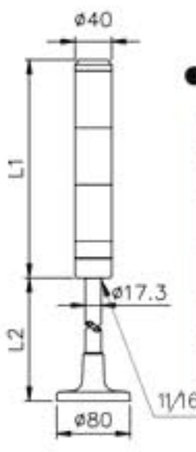
● TPAL7:

SECTION	L
1	130
2	200
3	270
4	340
5	410



● TPAF7/TPAS7
TPAB7:

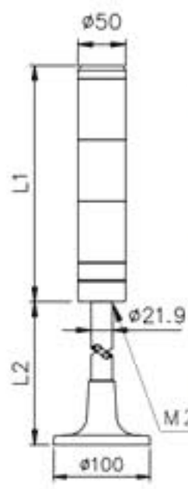
SECTION	L
1	200
2	270
3	340
4	410
5	480



● TPSL4:

SECTION	L1
1	114
2	176
3	238
4	300
5	362

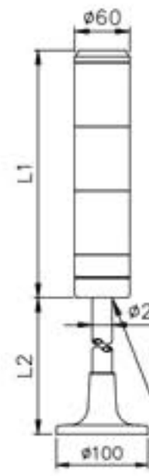
L2 Short 133 Long 298



● TPSL5:

SECTION	L1
1	118
2	182
3	246
4	310
5	374

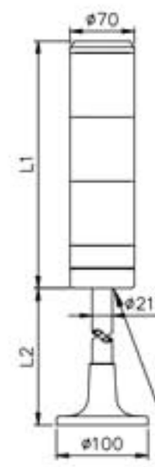
L2 Short 161 Long 322



● TPSL6:

SECTION	L1
1	130
2	200
3	270
4	340
5	410

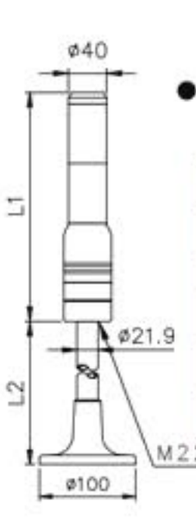
L2 Short 161 Long 322



● TPSL7:

SECTION	L1
1	130
2	200
3	270
4	340
5	410

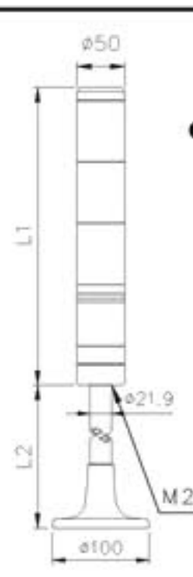
L2 Short 161 Long 322



● TPSF4/TPSS4
TPSB4:

SECTION	L1
1	177
2	239
3	301
4	363
5	425

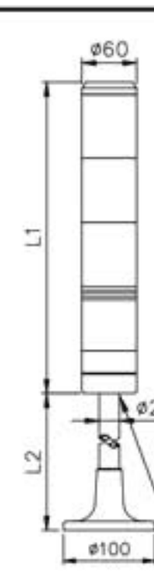
L2 Short 161 Long 322



● TPSF5/TPSS5
TPSB5:

SECTION	L1
1	182
2	246
3	310
4	374
5	438

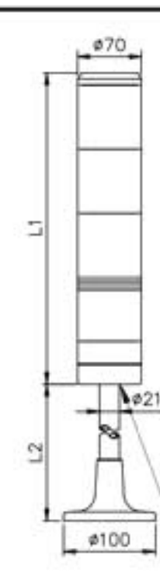
L2 Short 161 Long 322



● TPSF6/TPSS6
TPSB6:

SECTION	L1
1	200
2	270
3	340
4	410
5	480

L2 Short 161 Long 322



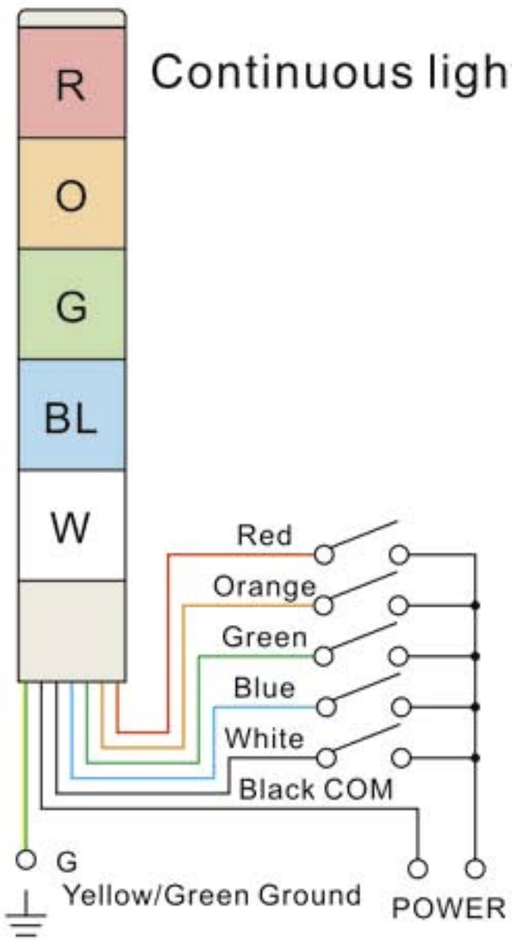
● TPSF7/TPSS7
TPSB7:

SECTION	L1
1	200
2	270
3	340
4	410
5	480

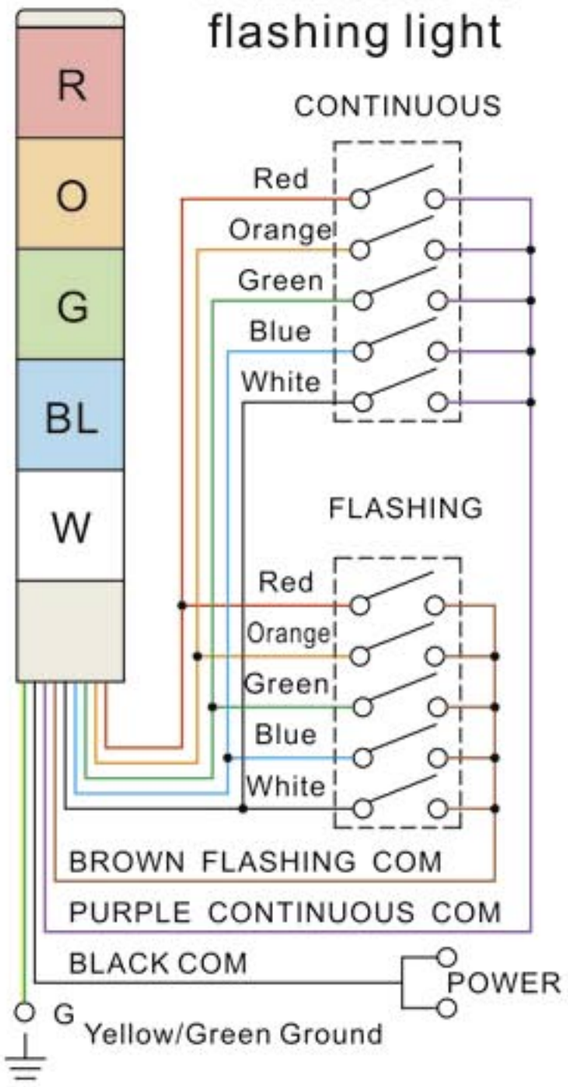
L2 Short 161 Long 322

WIRING DIAGRAM

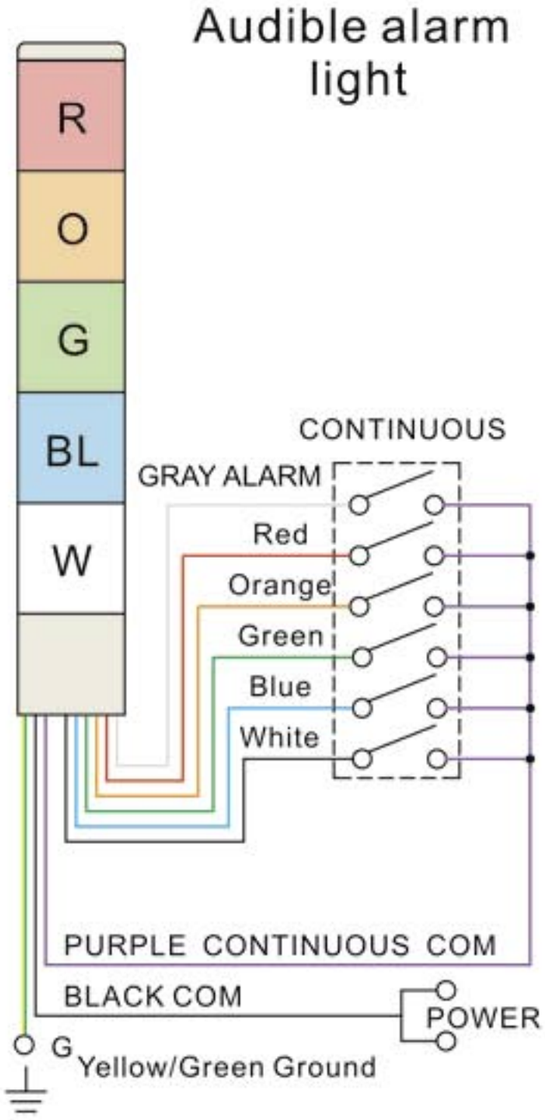
Continuous light



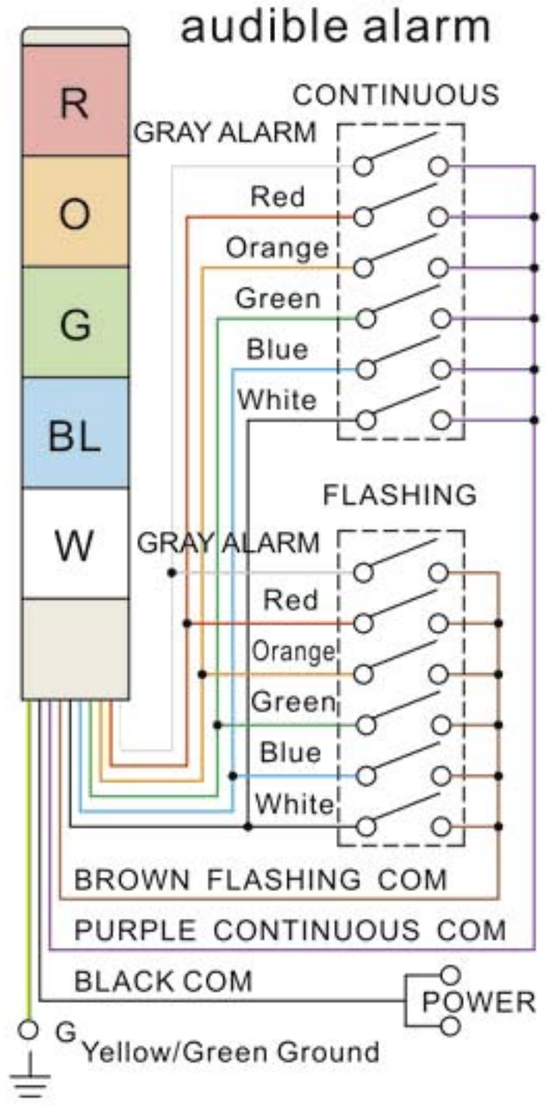
Continuous or flashing light



Audible alarm light



Continuous of flashing light with audible alarm



Feature

- These series of switches has 6 types of capacity ranging from 16A to 80A.
- Installation includes fixed way(fixed on the operating panel) and detached way(contact fixed in the control box whereas upper base and handles fixed on the tope cover of the contrlo box)
- Detachable type can be installed on TBR-N(standard aluminium rail-wide rail)
- There are two types of switching handles: standard and round.Standard is colored in red/yellow or black/silver; while round ones in red/yellow or black/gray.

Model designation

TDS25 - F R R 1

① ② ③ ④ ⑤

Designation	Signal	Description
1.Capacity	TDS16	16A
	TDS25	25A
	TDS33	33A
	TDS40	40A
	TDS66	66A
	TDS80	80A
2.Installation way	F	Fixed way
	B	Detched way
	E	Control staions
3.Handle	S	Standard handle
	R	Rotundity handle
4.Color	B	Block/silver gray
	R	Red/yellow
5.Transmission rod length (only detached way)	None	100mm
	1	150mm
	2	250mm
	3	300mm

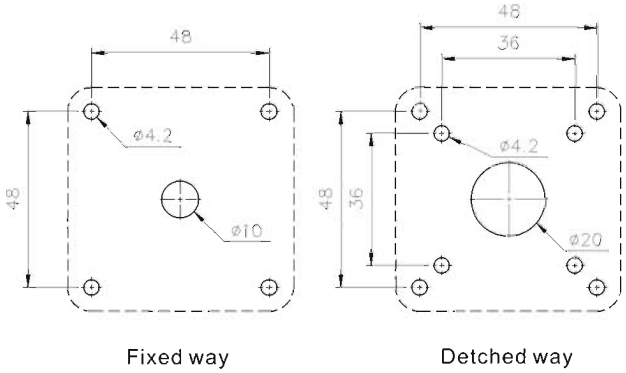
Specifications

Voltage \ Type		TDS16	TDS25	TDS33	TDS40	TDS66	TDS80
AC-3 (kw)	220V~240V	2.2	4.0	5.5	7.5	11.0	15.0
	380V~440V	3.7	5.5	7.5	11.0	18.5	22.0
	660V~690V	3.7	5.5	7.5	15.0	22.0	30.0
AC-23 (kw)	220V~240V	3.0	5.5	5.5	7.5	11.0	18.5
	380V~440V	5.5	7.5	11.5	15.0	22.0	30.0
	600V~690V	5.5	7.5	11.5	18.5	30.0	37.0
AC-21		16A	25A	33A	40A	66A	80A

Voltage \ Type		TDS16	TDS25	TDS33	TDS40	TDS66	TDS80
AC-3 (hp)	110V~120V	1	1.5	2	3	5	7.5
	220V~240V	2	3	5	7.5	10	20
	380V~440V	3	5	10	15	20	40
	500V~600V	3	5	10	15	20	50

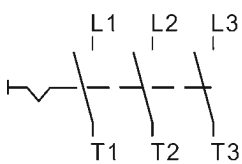
3 phase.3 poles

Plate dimensions

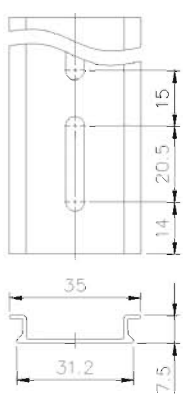


Fixed way Detched way

Wiring dragram



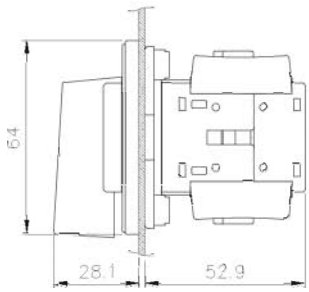
TBR-N(Dimendions)

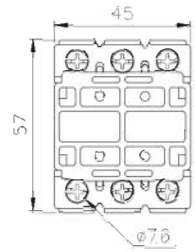


Dimensions

TDS16/25/33-FSB

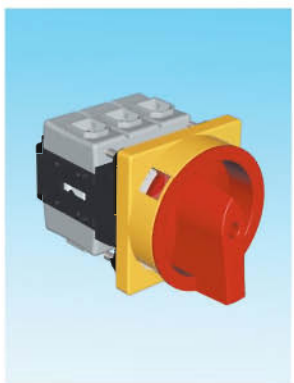
TDS16/25/33-FSR

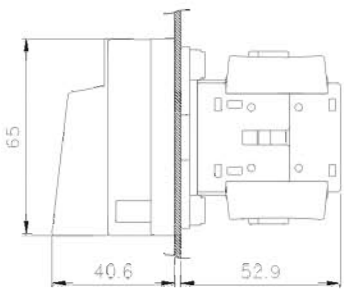


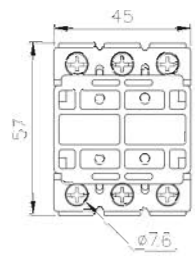


TDS16/25/33-FRB

TDS16/25/33-FRR

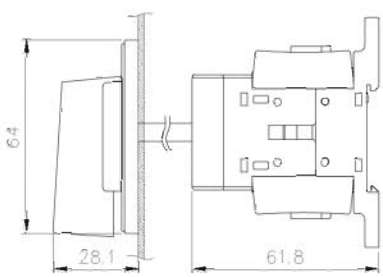


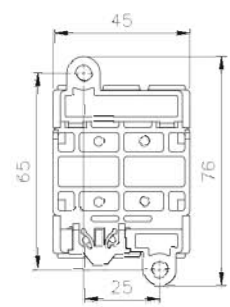




TDS16/25/33-BSB

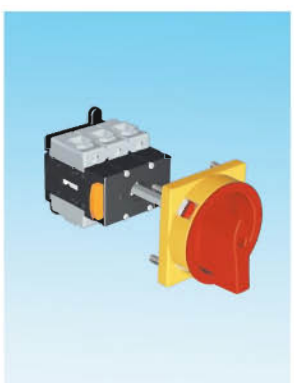
TDS16/25/33-BSR

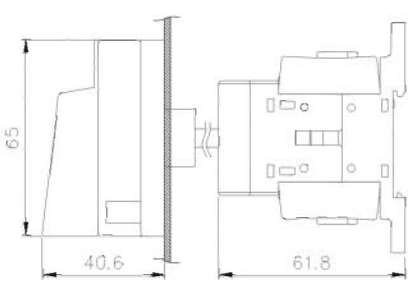


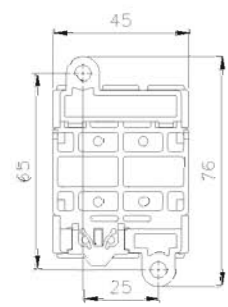


TDS16/25/33-BRB

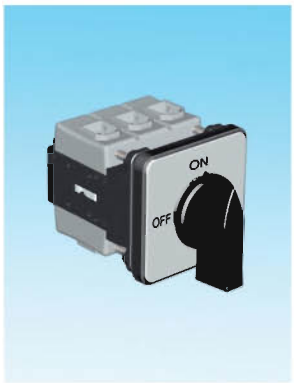
TDS16/25/33-BRR



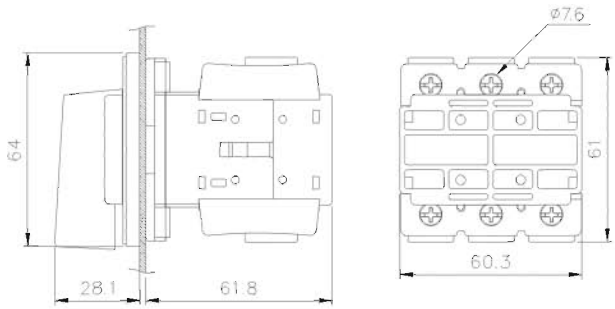




TDS40/66/80-FSB

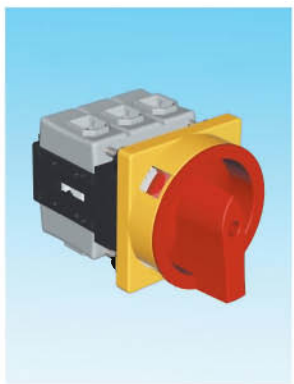


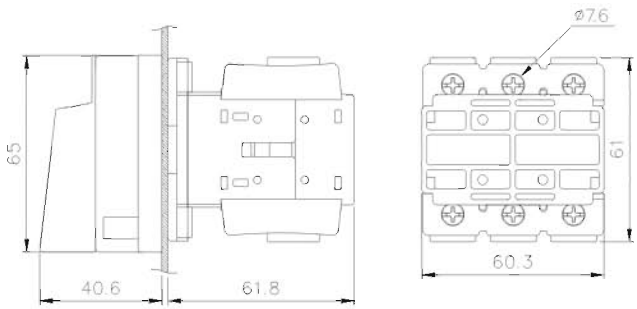
TDS40/66/80-FSR



TDS40/66/80-FRB

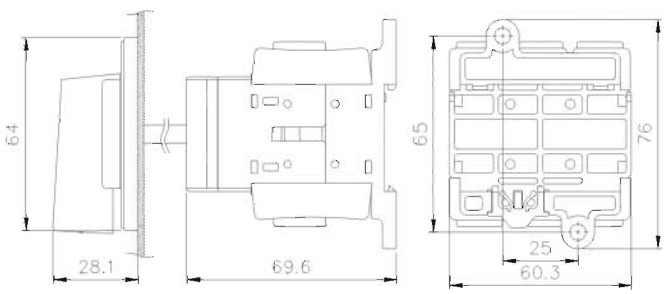
TDS40/66/80-FRR





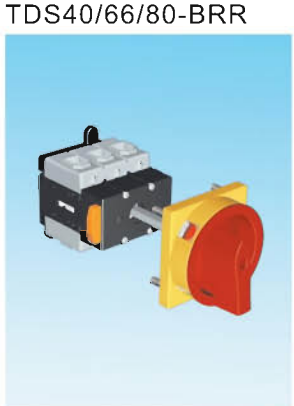
TDS40/66/80-BSB

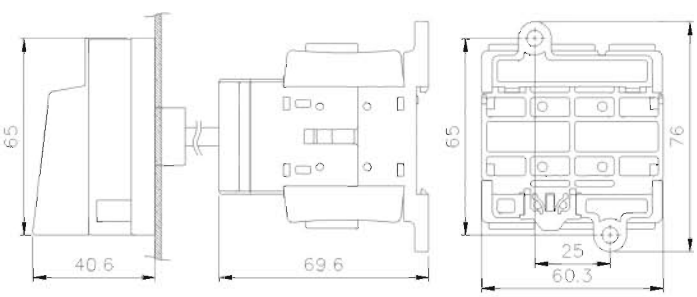
TDS40/66/80-BSR



TDS40/66/80-BRB

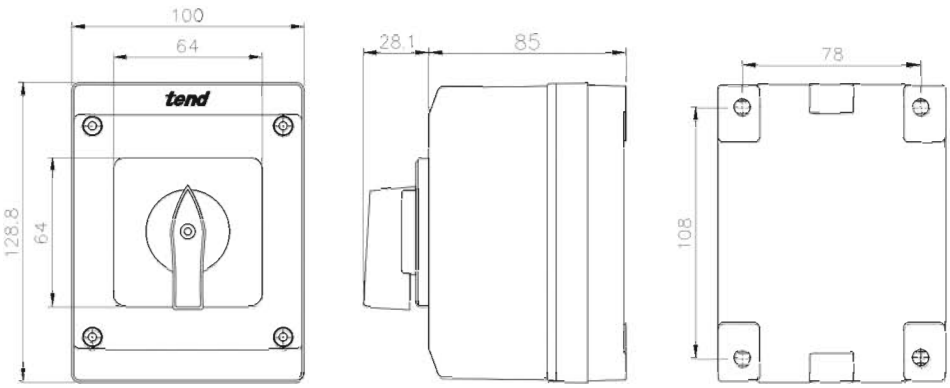
TDS40/66/80-BRR



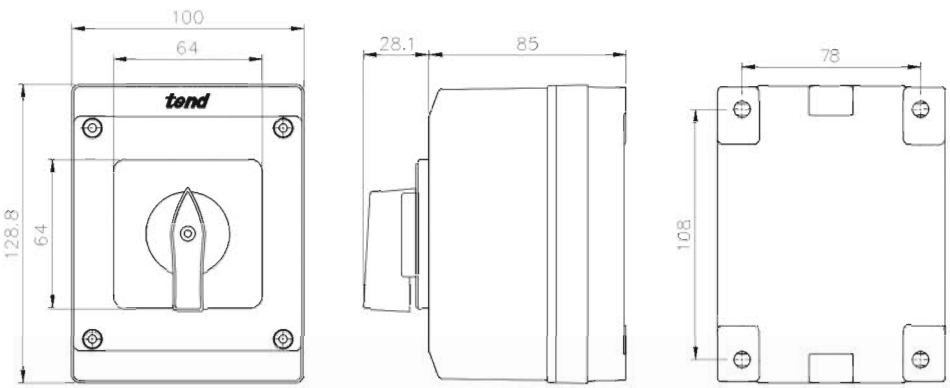


Contorl stations

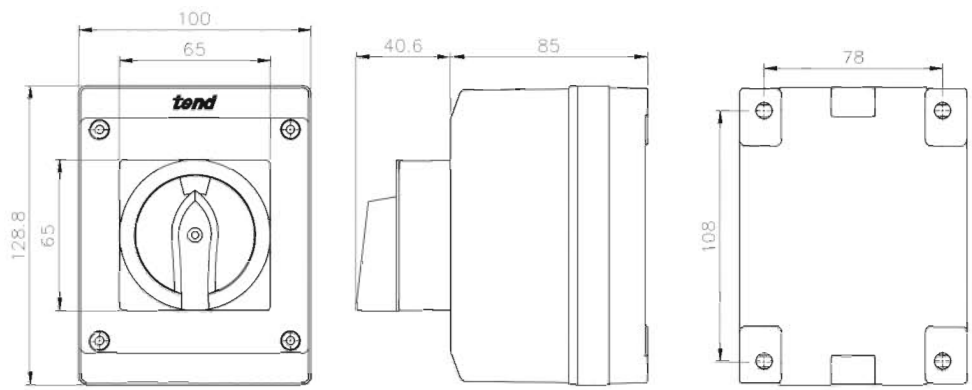
TDS□-ESB



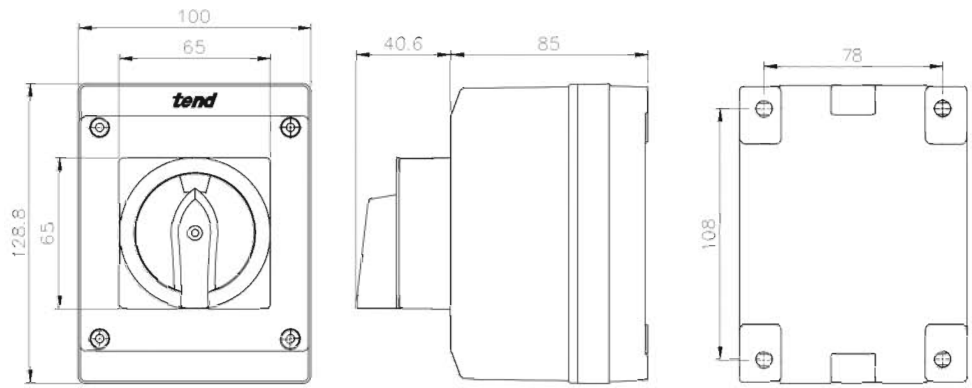
TDS□-ESR



TDS□-ERB

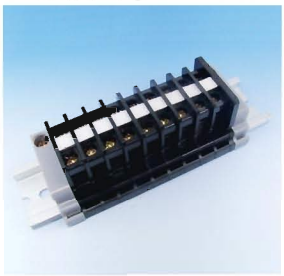


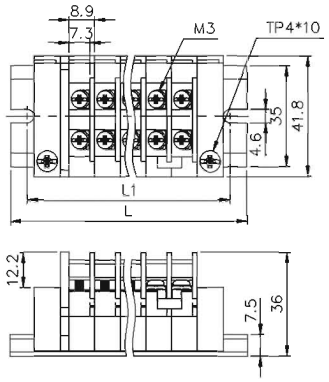
TDS□-ERR



DIMENSIONS

TBRN-10

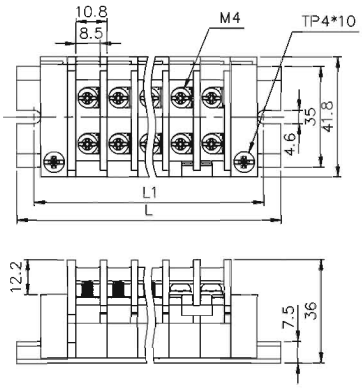




L=38+8.9*n
L1=22.5+8.9*n
n=Pole

Pole	2	3	4	5	6	7	8	9	10	11	12
L	55.8	64.7	73.6	82.5	91.4	100.3	109.2	118.1	127	135.9	144.8
L1	40.3	49.2	58.1	67	75.9	84.8	93.7	102.6	111.5	120.4	129.3

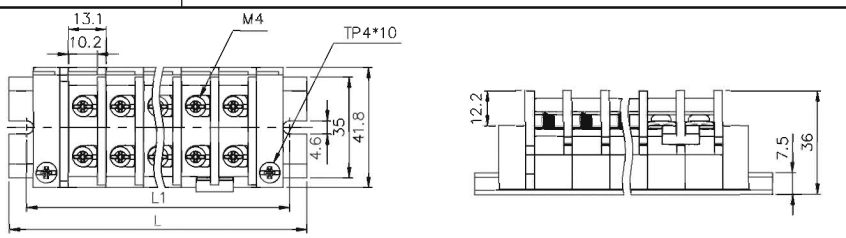
TBRN-20



L=38+10.8*n
L1=22.5+10.8*n
n=Pole

Pole	2	3	4	5	6	7	8	9	10	11	12
L	59.6	70.4	81.2	92	102.8	113.6	124.4	135.2	146	156.8	167.6
L1	44.1	54.9	65.7	76.5	87.3	98.1	108.9	119.7	130.5	141.3	152.1

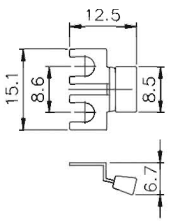
TBRN-30



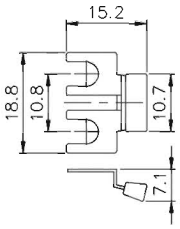
L=38+13.1*n
L1=22.5+13.1*n
n=Pole

Pole	2	3	4	5	6	7	8	9	10	11	12
L	64.2	77.3	90.4	103.5	116.6	129.7	142.8	155.9	169	182.1	195.2
L1	48.7	61.8	74.9	88	101.1	114.2	127.3	140.4	153.5	166.6	179.7

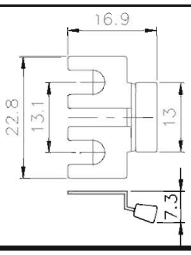
TBCN-10S



TBCN-20S



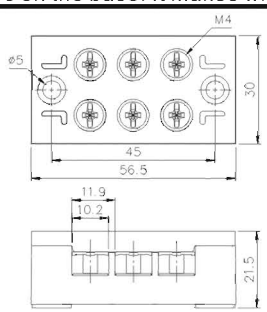
TBCN-30S



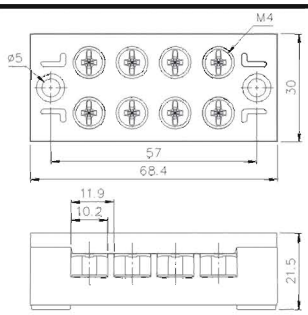
FEATURES

In assembly,there is no need to separate base from the cover or reverse loose the screws. Simply put a screwdriver through the hole on the cover to tighten the screws on the base. It makes wiring easier.

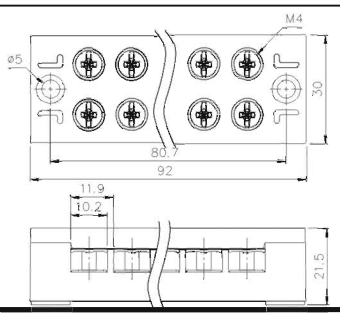
TB25-3N



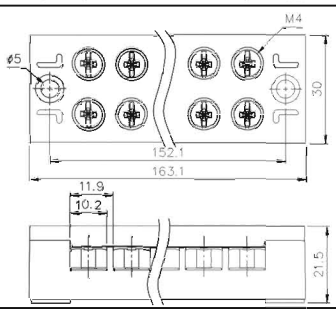
TB25-4N



TB25-6N

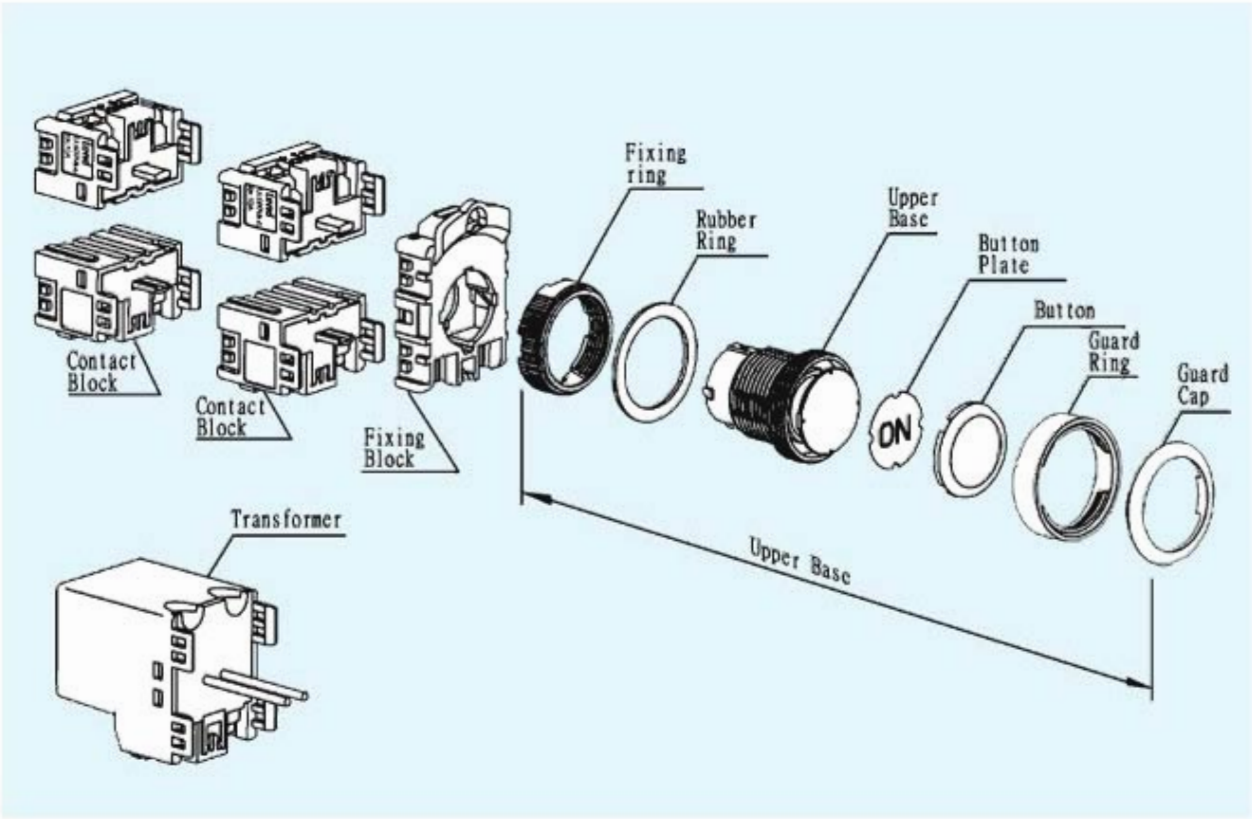


TB25-12N



The upper base and contact block of TN2 series and detachable,The protection structure for this series is IP65(IEC144)for waterproof,oil tight and dust proof in harsh environment except Twin-Touch push button and illuminated push button switches are IP40.

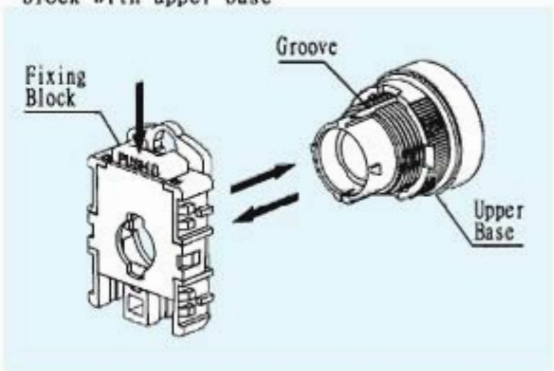
■CONFIGURATION OF SWITCHES



■FEATURES

TN2 series switches are detachable in 3 sub-assembly.It consists of upper base, fixing block and contact block

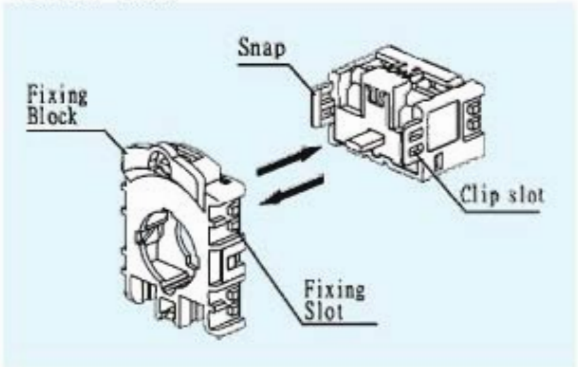
●Assembly and disassembly of fixing block with upper base



Assembly:push bown the orange button(marked with push) on the fixing block along with groove on the upper base.

Disassembly:Place downward by hand or use flat screwdriver to push down the orange button thru the hole on top of fixing block.

●assembly and disassembly of fixing block with contact block

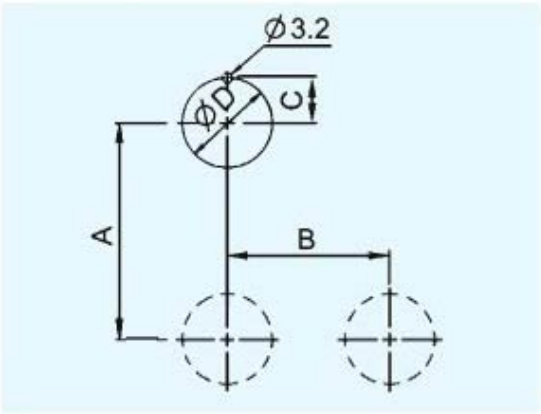


Assembly:Aling the fixing slot on the fixing block to clip slot on the contact block.

Disassembly:Use flat screwdriver toward fixing slot to lift up clip and snap for disassembly.

■ PANEL CUT-OUT

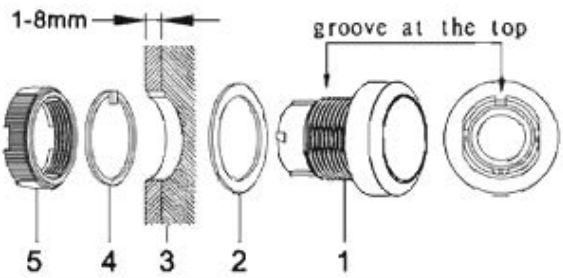
φ22 / φ25 / φ30 Series

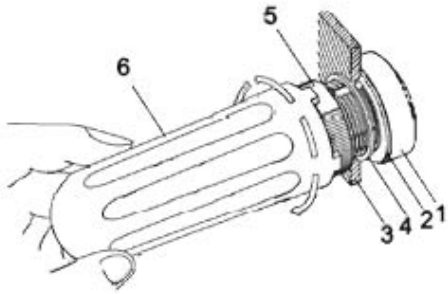


DIMENSIONS(mm)

SERIES		Ø22	Ø25	Ø30
A	All types except Twin-touch & Joystick)	50 min.		
	Twin-Touch	60 min.		
	Joystick	90 min.		
B	Light push button & selector	31	31	35
	With name plate	41 min.		
	Mushroom, Push-Lock, Long Lever Selector Twin-touch	39 min.		
	Joystick	90 min.		
C	All types	11.2	12.7	15.2
D	All types	22.4	25.4	30.4

■ MOUNTING METHOD



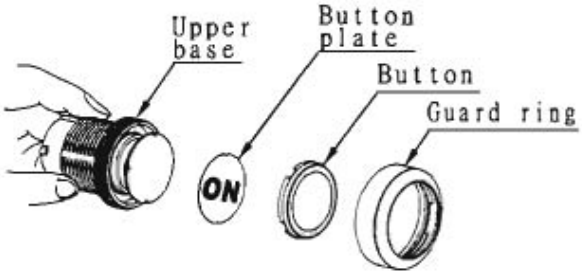


1	2	3	4	5	6
upper base	rubber ring	panel	stop ring	fixing ring	fixing tool

- Install upper base and rubber ring from front of panel into cut out hole tight fixing RING with fixing tool.

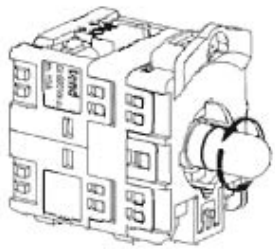
■ INDICATION OF LETTERS AND SYMBOLS

Transparent printing paper(types:see p. Ⓖ 20)

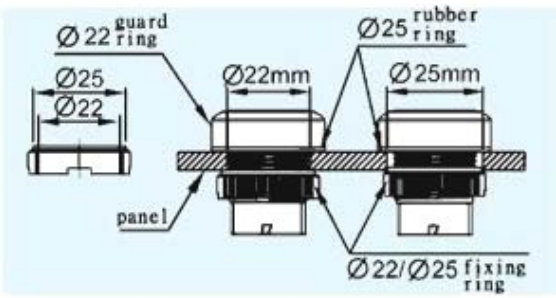


■ METHOD TO REPLACE LAMP

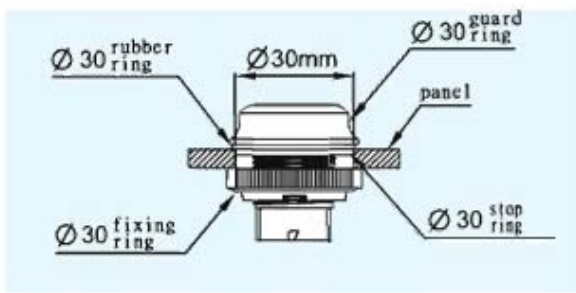
Dissemble fixing block from upper base and turn the lamp.



■ φ22/mm / φ25mm SERIES ARE THE SAME DIMENSIONS WITH COMMON FIXING RING



● THE ASSEMBLY METHOD FOR φ30 SERIES

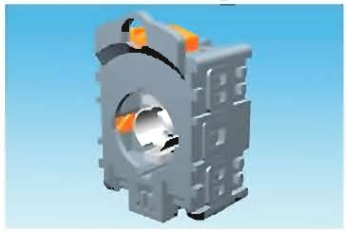


■TYPES OF FIXING BLOCK

There are three different types of fixing blocks.

STANDARD Fixing Block

Direct Fixing Block

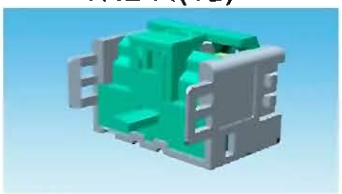


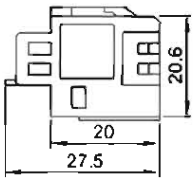
Transformer type Fixing Block

■Types of contact block and extention of contact block

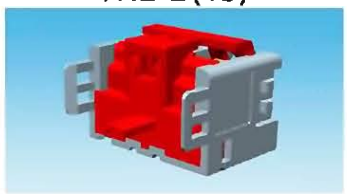
There are 1a(1NO), 1b(1NC) and 1c(1NO,1NC).

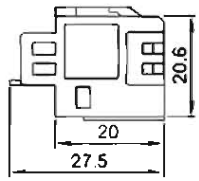
TN2-A(1a)



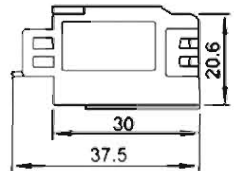


TN2-B(1b)





TN2-C(1c)



■CONTACT BLOCKS CAN HAVE FOLLOWING 3 STYLES. IT DEPENDS ON THE FIXING BLOCKS.

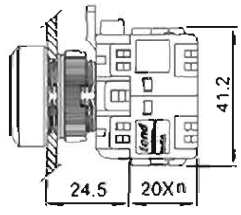
1.Standard contact block: standard fixing block with contact block. It can be extented to 4C (or 8a or 8b) used in non-illumirated pvobucts.

2.Direct contact block:direct fixing block with contact block. It can be extented to 4C(or8a or 8b) used in illuminated pvoducts.

3.Transformer type contact block: transformer type fixinng block with contact block.It can be extented to 2C (or 4a or 4b) used in transformer illuminated tr products.

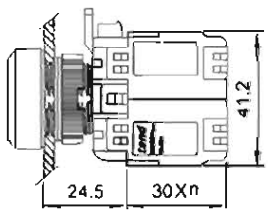
■DIMENSIONS OF STANDARD CONTACT BLOCK

TN2-1a~TN2-8a
TN2-1b~TN2-8b



n=p

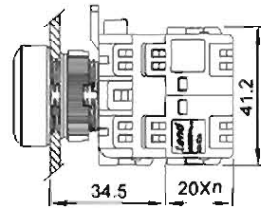
TN2-1c~TN2-4c



n=p

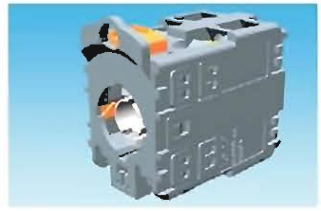
■ DIMENSIONS OF DIRET CONTACT BLOCK

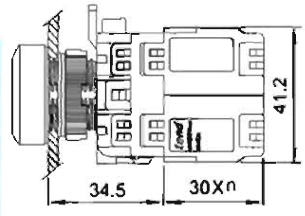
TN2-I1a~TN2-I8a
TN2-I1b~TN2-I8b



n=p

TN2-I1c~TN2-I4c

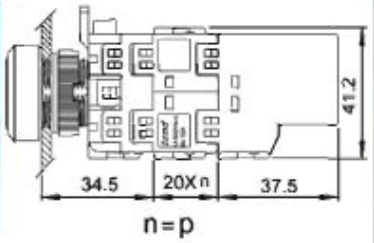




n=p

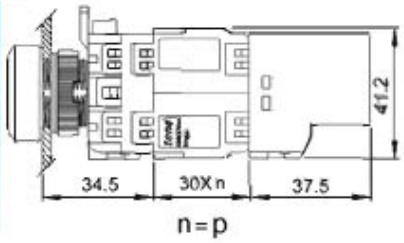
■DIMENSIONS OF TRANSFORMER TYPE OF CONTACT BLOCK.

TN2-T1a~TN2-T4•TN2-T1ab
TN2-T1b~TN2-T4b



n=p

TN2-T1c~TN2-T2c



n=p

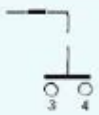
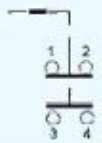
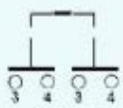
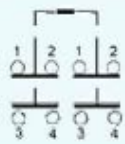
■CONTACT RATING

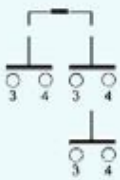
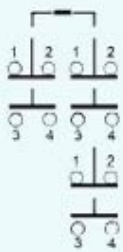
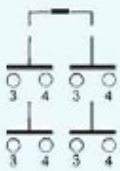
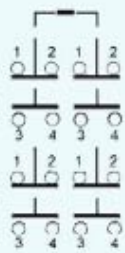
AC	AC11 Inductive load	AC24V	AC110V	AC220V	AC380V	AC440V	DC	DC11 Inductive load	DC24	DC110V	DC220V	DC380V
		10A	6A	4A	2.5A	2A			1.5A	0.5A	0.2A	0.1A
	Resistive load	10A	10A	6A	5A	4A		DC14 Resistive load	10A	2A	0.6A	0.2A

■CHARACTERISTICS

Operating frequency	Mechanically	Push button(momentary) 60 cycles / min.,others 30 cycles / min.
	Electrically	30 cycles / min.
Service life	Mechanically	Push button(momentary) 3,000,000 operations.,others 300,000 operations.
	Electrically	Push button(momentary) 500,000 operations.,others 200,000 operations.
Shock	Durability	Transformer series 600m/S².,others 1000m/S².
	Malfunction	Push button(momentary) 1000m/S².,others 250m/S².
Vibration	Malfunction	10~55HZ double amplitude 1.5mm
Contact resistance	500mΩ max.(initial value)	
Insulation resistance	100mΩ min. (500VDC)	
Dielectric strength	2500 VAC, 50/60 HZ for 1 minute	
Ambient temperature	-20°C~+60°C	
Humidity	45~85%RH	

■STANDARD CONTACT BLOCKS

Type	TN2-1A	TN2-1B	TN2-1C	TN2-2A	TN2-2B	TN2-2C
Contact	1a	1b	1c	2a	2b	2a2b
Contact Arrangement						

Type	TN2-3A	TN2-3B	TN2-3C	TN2-4A	TN2-4B	TN2-4C
Contact	3a	3b	3c	4a	4b	4a4b
Contact Arrangement						

The contact block of this series is standard see page G3 G4 for Contact arrangement and Dimensions.

■MODEL DESIGNATION

TN2 BF R – 1 A 06

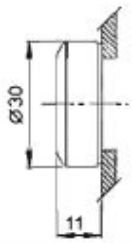
① ② ③ ④ ⑤ ⑥

It must use transparent button to have marking printing on buttons. The colors can be distinguished by using different color guard ring.

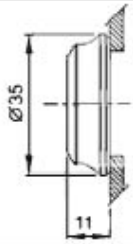
Designation	Signal	Description
1.Mounting Hole	TN2 TN3	Ø22mm/ Ø25mm Ø30mm
2.Type	BF BL BM BA BK BP BT	Flat Head Long Head Mushroom Head Long Head(Alternate) Push-Lock Push-Pull Twin-Touch
3.Lens Color	R G O W B	Red Green Yellow White Black
5.NO. of Contacts Fitted	1 2 3 4	1 2 3 4
6.Type of contact Block Fitted	A B C	1a 1b 1a1b

■OPERATING HEADS DIMENSIONS

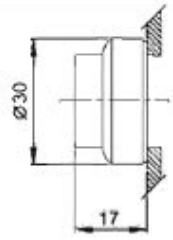
TN2BF



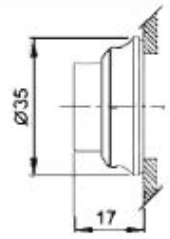
TN3BF



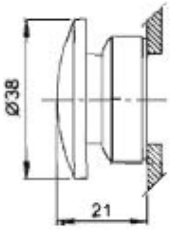
TN2BL



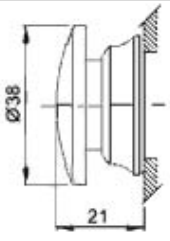
TN3BL



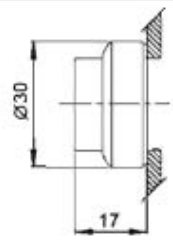
TN2BM



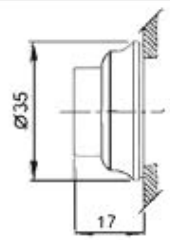
TN3BM



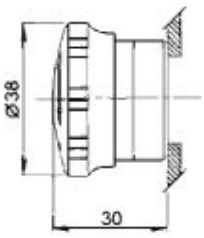
TN2BA



TN3BA

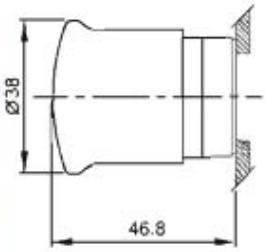


TN2BK

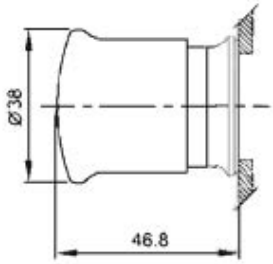


TN3BK

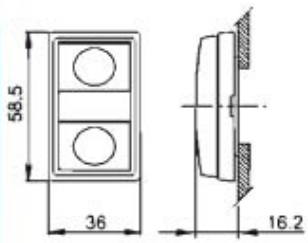
TN2BP



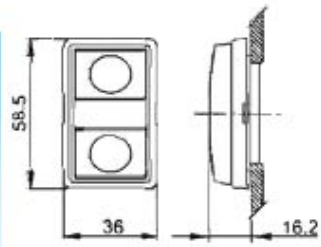
TN3BP



TN2BT



TN3BT



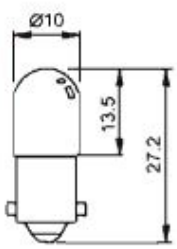
■BULB TYPE AND CHARACTERISTICS

BA9S-11X28mm-1.2Wmax.

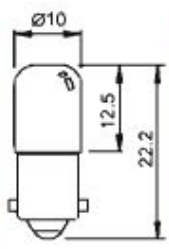
Lamp	Signal	Rated Voltage	Signal	Operating Voltage	Rated Current	Color Code	Signal	Designation
Incandescent	I	6V AC/DC	6	6V AC/DC	150mA	None	None	I - 6
		12V AC/DC	12	12V AC/DC	100mA			
		18V AC/DC	18	18V AC /DC	66mA			
		24V AC/DC	24	24V AC/DC	50mA			
		30V AC/DC	30	30V AC/DC	40mA			
Neon Bulb	N	110V AC/DC	110	110V AC/DC	1.3mA	Red	R	N - 110 R
		220V AC/DC	220	220V AC/DC	2.2mA	Green	G	
		380V AC/DC	380	380V AC/DC	1.15mA	Blue	BL	
		440V AC/DC	440	440V AC/DC	1.4mA			
LED Bulb	L	6V AC/DC	6	6V AC/DC	9~13mA	Red	R	L - 24 R
		24V AC/DC	24	24V AC/DC	8~13mA	Green	G	
		30V AC/DC	30	30V AC/DC	8~13mA	Orange	O	
		110V AC/DC	110	110V AC/DC	3~5mA	Blue	BL	
		220V AC/DC	220	220V AC/DC	3~5mA	White	W	

■DIMENSIONS BULB

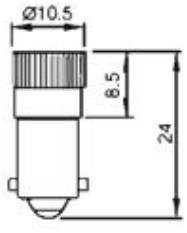
●Incandescent



●Neon Bulb



●LED Bulb



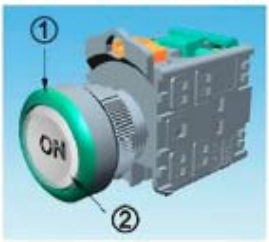
The contact block for this series is direct contact block.

■MODEL DESIGNATION

TN2 IF 1 R – N 1 A 06
① ② ③ ④ ⑤ ⑥ ⑦ ⑧

Designation	Signal	Description
1.Mounting Hole	TN2 TN3	Ø22mm/ Ø25mm Ø30mm
2.Type	IF IL IM IA IK IT	Flat Head Long Head Mushroom Head Long Head(Alternate) Push-Lock Twin-Touch

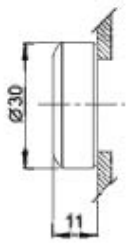
It must use transparent button to have marking printing on Buttons The colors can be distinguish by using different color guard ring.



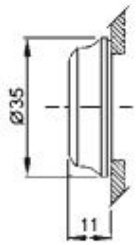
Designation	Signal	Description
3.Voltage	1 2 3 4 5 6 7 8 9	110VAC (Neon LED Bulb) 220VAC (Neon LED Bulb) 380VAC (Neon Bulb) 440VAC (Neon Bulb) 6V AC/DC (Incandescent LED Bulb) 18V AC/DC (Incandescent) 24V AC/DC (Incandescent LED Bulb) 30V AC/DC (Incandescent LED Bulb) 12V AC/DC (Incandescent)
4.Lens Color	R G O W YG	Red Green Orange White Olivine
5.Lamp	I N L	Incandescent Neon Bulb LED Bulb
6.NO. of Contacts Fitted	1 2 3 4	1 2 3 4
7.Type of contact Block Fitted	A B C AB	1a 1b 1a1b 1a+1b
8.lettering kind	01 › 43	See Page G20

■OPERATING HEAD DIMENSIONS

TN2IF



TN3IF



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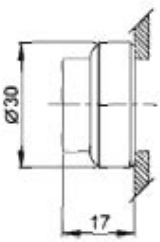

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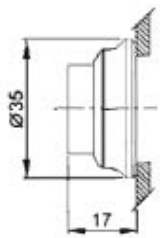
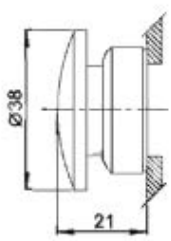


TN2IM



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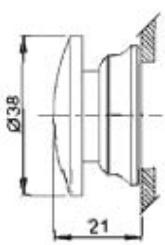

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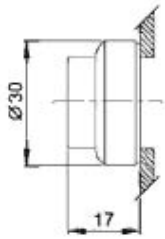

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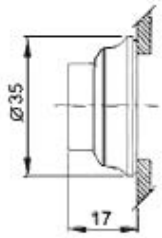
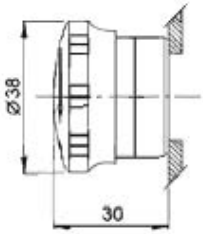


TN2IK



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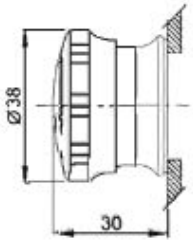
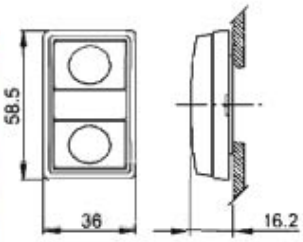
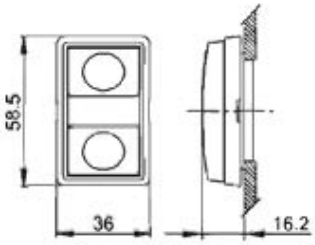


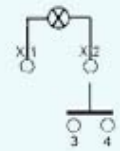
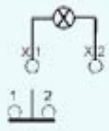
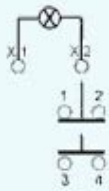
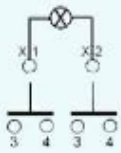
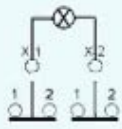
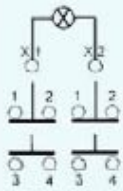
TN2IT

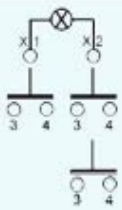
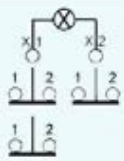
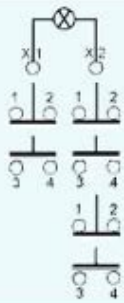
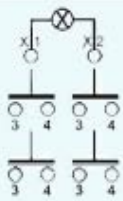
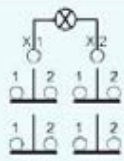
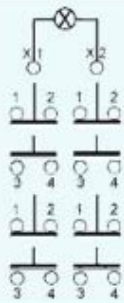


TN3IT



■ILLUMINATED PUSH BUTTON(DIRECT POWER)CONTACT BLOCKS

Type	TN2-I1A	TN2-I1B	TN2-I1C	TN2-I2A	TN2-I2B	TN2-I2C
Contact	1a	1b	1ab	2a	2b	2a2b
Contact Arrangement						

Type	TN2-I3A	TN2-I3B	TN2-I3C	TN2-I4A	TN2-I4B	TN2-I4C
Contact	3a	3b	3ab	4a	4b	4a4b
Contact Arrangement						

This series of switches come with transformers at the secondary voltage of 5V and (6V)incandeseent used.

■MODEL DESIGNATIONS

TN2 TF 1 R – 1 A

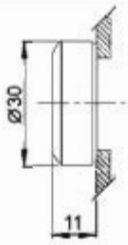
① ② ③ ④ ⑤ ⑥

Designation	Signal	Description
1.Mounting Hole	TN2 TN3	Ø22mm/ Ø25mm Ø30mm
2.Type	TF TL TM TA TK TT	Flat Head Long Head Mushroom Head Long Head(Alternate) Push-Lock Twin-Touch

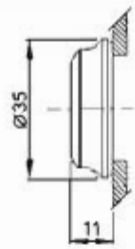
Designation	Signal	Description
3.Voltage	1 2 3 4	110VAC 220VAC 380VAC 440VAC
4.Lens Color	R G O W BL	Red Green Orange White Blue
5.NO. of Contacts Fitted	1 2	1 2
6.Type of contact Block Fitted	A B AB	1a 1b 1a+1b

■OPERATING HEADS DIMENSIONS

TN2TF



TN3TF



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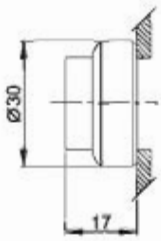
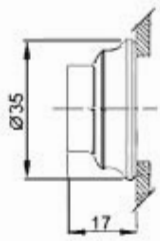
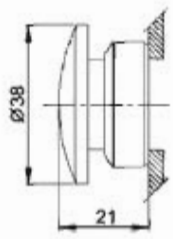


TN3TL



TN2TM



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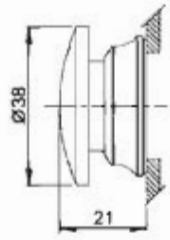
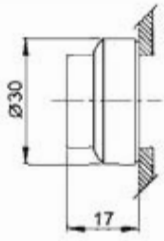
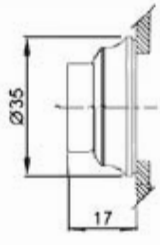


TN2TA



TN3TA



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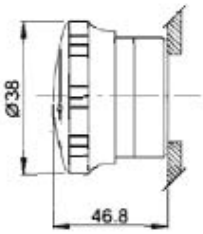
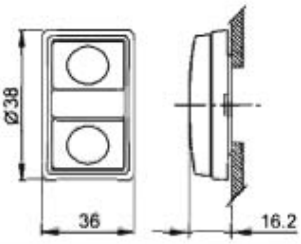


TN3TK

TN2TT



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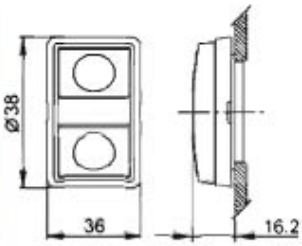
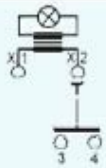
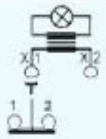
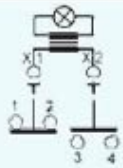
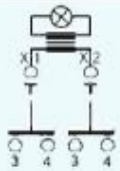
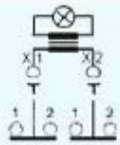
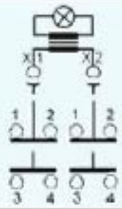


■ILLUMINATED PUSH BUTTON CONTACT BLOCKS (WITH TRANSFORMER)DIMENSIONS

Type	TN2-T1A	TN2-T1B	TN2-T1AB	TN2-T2A	TN2-T2B	TN2-T2C
Contact	1a	1b	1a+1b	2a	2b	2a2b
Contact Arrangement						

tend SELECTOR SWITCH(TN2 ϕ22/ϕ25/ϕ30)

TN2

The contact block of this series of switches is standard see page Ⓖ3 for assembly Dimension.

■MODEL DESIGNATION

TN2 SS 1 1 R – 1 A

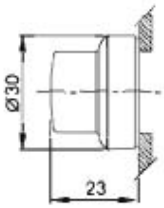
① ② ③ ④ ⑤ ⑥ ⑦

Designation	Signal	Description
1.Mounting Hole	TN2 TN3	Ø22mm/ Ø25mm Ø30mm
2.Type	SS SH KS	Knob Operator Lever Operator Key Operator
3.Positions	1	1 0 2 90°X2 3-Position
	2	0 1 90°2-Position
	3	0 1 90°2-Position spring return from right
	4	1 0 2 45°X2 3-Position
	5	1 0 2 45°X2 3-Position spring return from right
	6	1 0 2 45°X2 3-Position spring return from left
	7	1 0 2 45°X2 3-Position 2-Way spring return

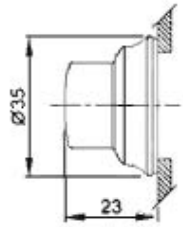
Designation	Signal		Description	
4.Key Withdrawable	1	0 1 2-Position	0.1Key with-drawable	
	2		0 Key with-drawable	
	3		1 Key with-drawable	
	4	1 0 2 3-Position	0.1.2Key with-drawable	
	5		0. Key with-drawable	
	6	1 0 2 3-Position	0.1.2Key with-drawable	
	7		0. Key with-drawable	
5.Lens Color	R G B		Red Green Black	
6.NO. of Contacts Fitted	1 2 3 4		1 2 3 4	
7.Type of contact Block Fitted			2-Position	3-Position
	A		a	—
	B		b	—
	C		a1b	1a 0 1b
	AB		a+1b	—

■OPERATING HEADS DIMENSIONS

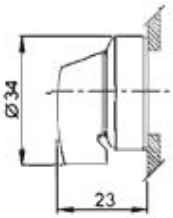
TN2SS



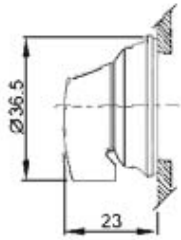
TN3SS



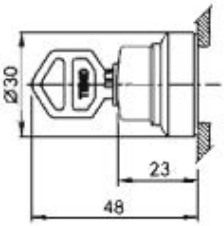
TN2SH



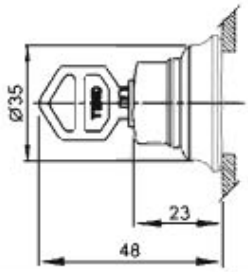
TN3SH



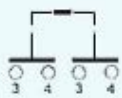
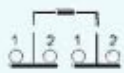
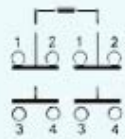
TN2KS



TN3KS



■SELECTOR SWITCH 2-POSITION CONTACT ARRANGEMENT

Type	TN2-1A	TN2-1B	TN2-1C	TN2-2A	TN2-2B	TN2-2C
Contact	1a	1b	1a1b	2a	2b	2a2b
Contact Arrangement						

Contact	0	1
3-4		X

Contact	0	1
1-2	X	

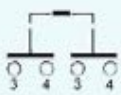
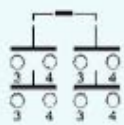
Contact	0	1
1-2	X	
3-4		X

Contact	0	1
3-4		X
3-4		X

Contact	0	1
1-2	X	
1-2	X	

Contact	0	1
1-2	X	
3-4		X
1-2	X	
3-4		X

■SELECTOR SWITCH 3-POSITION CONTACT ARRANGEMENT

Type	TN2-2A	TN2-4A
Contact	1a 0 1a	2a 02 a
Contact Arrangement		

Contact	1	0	2
3-4	X		
3-4			X

Contact	1	0	2
3-4	X		
3-4	X		
3-4			X
3-4			X

The contact block of switches is illuminated type. see page G③ for assembly dimension. The type and specification of bulb used are the. same as those for direct type illuminated push button switch. see p. G⑥

■MODEL DESIGNATION

TN2 IS 1 1 R – N 1 A

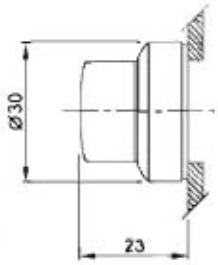
① ② ③ ④ ⑤ ⑥ ⑦ ⑧

Designation	Signal	Description
1.Mounting Hole	TN2 TN3	Ø 22mm/Ø 25mm Ø 30mm
2.Type	SS SH	Knob Operator Lever Operator
3.Positions	1	1 0 2 90°X2 3-Position
	2	0 1 90°2-Position
	3	0 1 90°2-Position spring return from right
	4	1 0 2 45°X2 3-Position
	5	1 0 2 45°X2 3-Position spring return from right
	6	1 0 2 45°X2 3-Position spring return from left
	7	1 0 2 45°X2 3-Position 2-way spring return

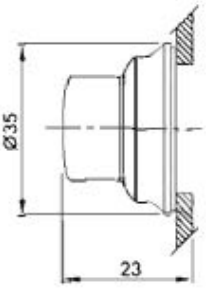
Designation	Signal	Description	
4.Key Withdrawable	1	110VAC (Neon LED Bulb)	
	2	220VAC (Neon LED Bulb)	
	3	380VAC (Neon Bulb)	
	4	440VAC (Neon Bulb)	
	5	6V AC/DC (Incandescent LED Bulb)	
	6	18V AC/DC(Incandescent)	
	7	24V AC/DC(Incandescent LED Bulb)	
	8	30V AC/DC(Incandescent LED Bulb)	
	9	12V AC/DC(Incandescent)	
5.Lens Color	R	Red	
	G	Green	
	O	Orange	
	W	White	
	BL	Black	
6.Lamp	I	Incandescent	
	N	Neon Bulb	
	L	LED Bulb	
7.NO. of Contacts Fitted	1	1	
	2	2	
	3	3	
	4	4	
8.Type of contact Block Fitted		2-Position	3-Position
	A	1a	——
	B	1b	——
	C	1c	1a 0 1a
	AB	1a+1b	——

■OPERATING HEADS DIMENSIONS

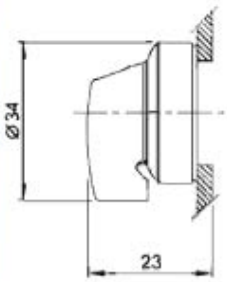
TN2IS



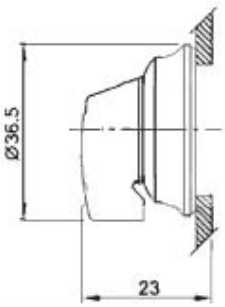
TN3IS



TN2IH



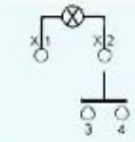
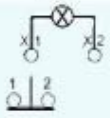
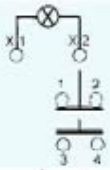
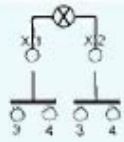
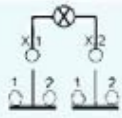
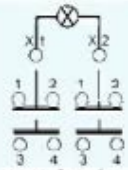
TN3IH



tend ILLUMINATED SELECTOR SWITCH(TN2φ22/φ25/φ30 DIRECT POWER)

TN2

■ILLUMINATED SELECTORS SWITCH(DIRECT POWER)2-POSITION CONTACT ARRANGEMENT

Type	TN2-11A	TN2-11B	TN2-11C	TN2-12A	TN2-12B	TN2-12C
Contact	1a	1b	1ab	2a	2b	2a2b
Contact Arrangement						

接點	0	1
3-4		X

接點	0	1
1-2	X	

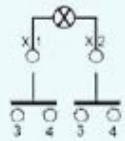
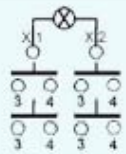
接點	0	1
1-2	X	
3-4		X

接點	0	1
3-4		X

接點	0	1
1-2	X	

接點	0	1
1-2	X	
3-4		X
1-2	X	
3-4		X

■ILLUMINATED SELECTORS SWITCH(DIRECT POWER)3-POSITION CONTACT ARRANGEMENT

Type	TN2-12A	TN2-14A
Contact	1a01a	2a02a
Contact Arrangement		

接點	1	0	2
3-4	X		
3-4			X

接點	1	0	2
3-4	X		
3-4	X		
3-4			X
3-4			X

tend ILLUMINATED SELECTOR SWITCH(TN2φ22/φ25/φ30 WITH TRANSFORMER)

TN2

The contact block of this series of switches is transformer. see page Ⓖ4 for assembly dimension.
This series of switches come with transformers at secondary voltage of 5V and (6V) bulb used. see p. Ⓖ6.

■MODEL DESIGNATION

TN2 TS 1 1 R – 1 A

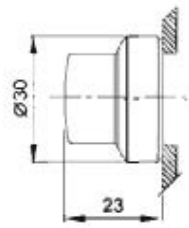
① ② ③ ④ ⑤ ⑥ ⑦

Designation	Signal	Description
1.NO. of Button	TN2 TN3	Ø22mm/ Ø25mm Ø30mm
2.Type	TS TH	Knob Operator Lever Operator
3.Positions	1	1 0 2 90°X2 3-Position
	2	0 1 90°2-Position
	3	0 1 90°2-Position spring return from right
	4	1 0 2 45°X2 3-Position
	5	1 0 2 45°X2 3-Position spring return from right
	6	1 0 2 45°X2 3-Position spring return from left
	7	1 0 2 45°X2 3-Position 2-Way spring return

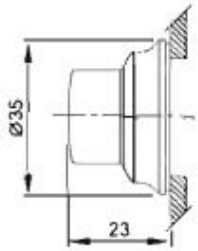
Designation	Signal	Description	
4.Voltage	1	110VAC	
	2	220VAC	
	3	380VAC	
	4	440VAC	
5.Lens Color	R	Red	
	G	Green	
	O	Orange	
	W	White	
	BL	Blue	
6.NO. of Contacts Fitted	1	1	
	2	2	
7.Type of contact Block Fitted		2-Position	3-Position
	A	1a	——
	B	1b	——
	C	1a1b	1a 0 1b
	AB	1a+1b	——

OPERATING HEADS DIMENSIONS

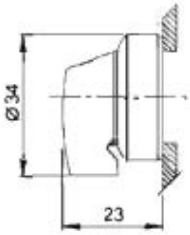
TN2TS



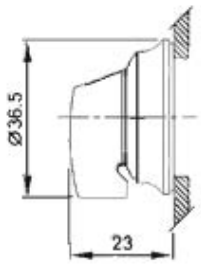
TN3TS



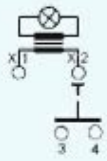
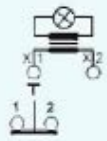
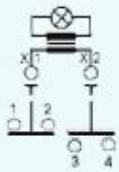
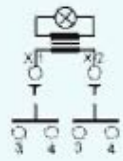
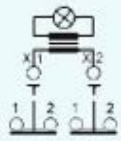
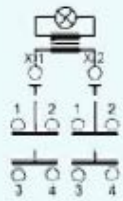
TN2TH



TN3TH



ILLUMINATED SELECTOR SWITCH(TRANSFORMER)2-POSITION CONTACT ARRANGEMENT

Type	TN2-T1A	TN2-T1B	TN2-T1AB	TN2-T2A	TN2-T2B	TN2-T2C
Contact	1a	1b	1a+1b	2a	2b	2a2b
Contact Arrangement						

Contact	0	1
3-4		X

Contact	0	1
1-2	X	

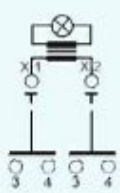
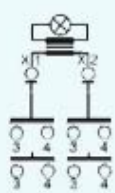
Contact	1	1
1-2	X	
3-4		X

Contact	0	1
3-4		X
3-4		X

Contact	0	1
1-2	X	
1-2	X	

Contact	0	1
1-2	X	
3-4		X
1-2	X	
3-4		X

ILLUMINATED SELECTOR SWITCH(TRANSFORMER)3-POSITION CONTACT ARRANGEMENT

Type	TN2-2A	TN2-4A
Contact	1a 0 1a	2a 0 2a
Contact Arrangement		

Contact	1	0	2
3-4	X		
3-4			X

Contact	1	0	2
3-4	X		
3-4	X		
3-4			X
3-4			X

tend PILOT LAMP(TN2 ϕ22/ϕ25/ϕ30 DIRECT POWER)

This series of bulbs used are same as those for direct type illuminated push button switch. see p. Ⓖ 6

■MODEL DESIGNATION

TN2 | P | 1 | R | N

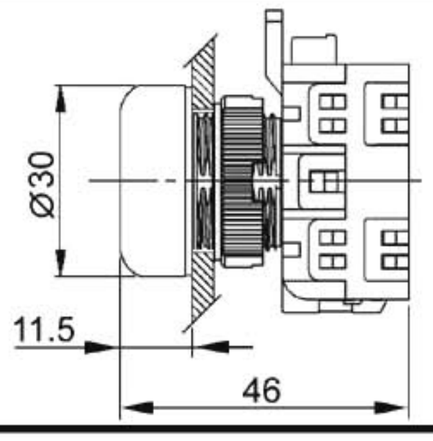
① ② ③ ④ ⑤

Designation	Signal	Description
1.Mounting Hole	TN2 TN3	Ø22mm/ Ø25mm Ø30mm
2.Type	P L N D	Direct Power Simple(Screw Terminal in the rear) Simple(Screw Terminal on the side) Big LED

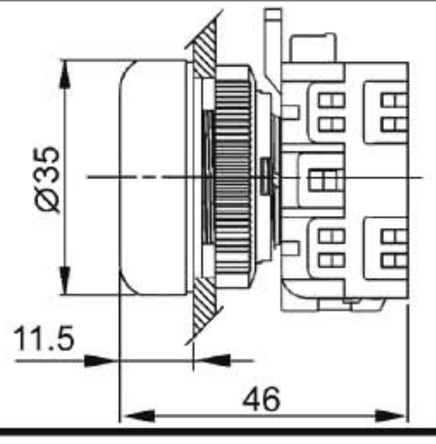
Designation	Signal	Description
3.Voltage	1 2 3 4 5 6 7 8 9	110VAC (Neon.LED Bulb) 220VAC (Neon.LED Bulb) 380VAC (Neon Bulb) 440VAC (Neon Bulb) 6V AC/DC (Incandescent.LED Bulb) 18V AC/DC(Incandescent) 24V AC/DC(Incandescent.LED Bulb) 30V AC/DC(Incandescent.LED Bulb) 12V AC/DC(Incandescent)
4.Lens Color	R G O W BL YG	Red Green Orange White Blue Olivine
5.Lamp	I N L	Neon Bulb Filament Bulb LED Bulb

■PILOT LAMP(DIRECT POWER)DIMENSIONS

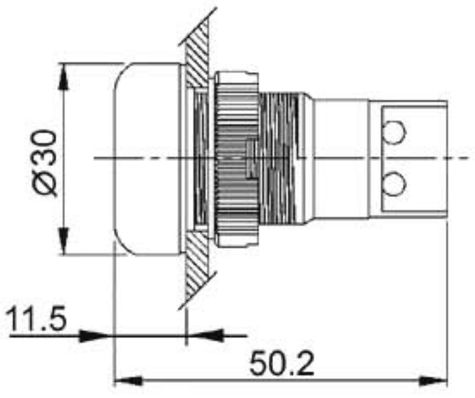
TN2P



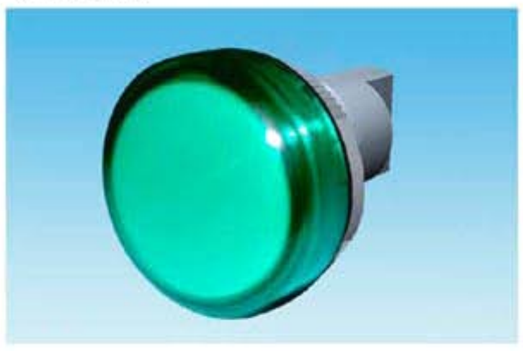
TN3P

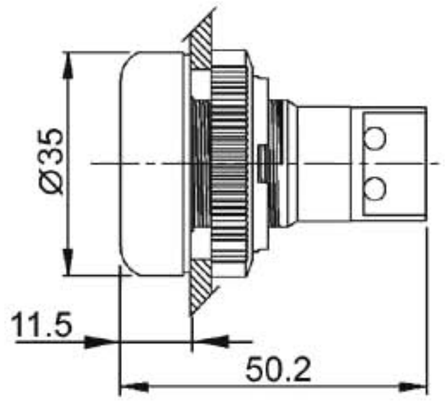


TN2L

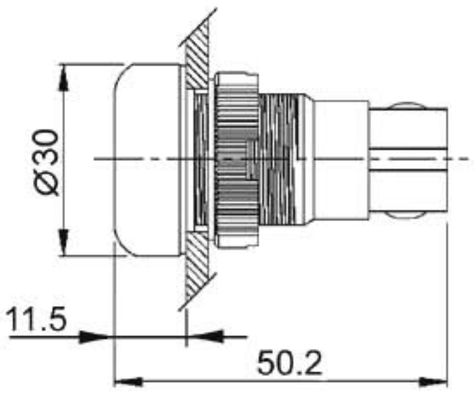


TN3L

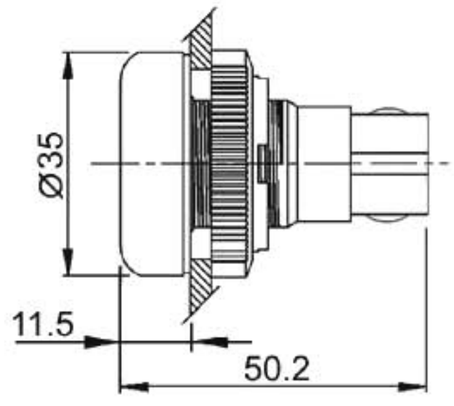




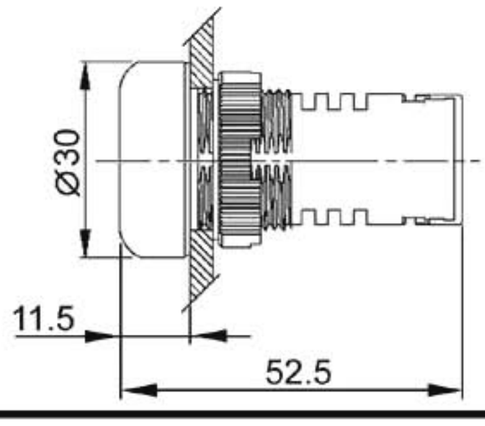
TN2N



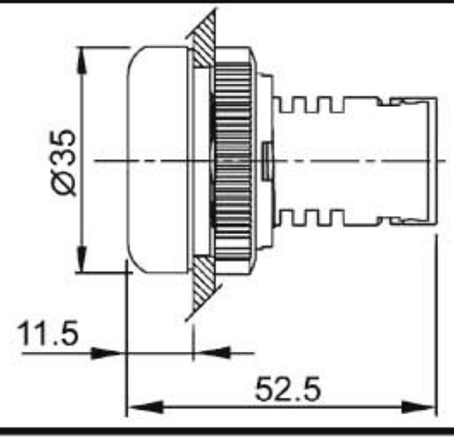
TN3N



TN2D

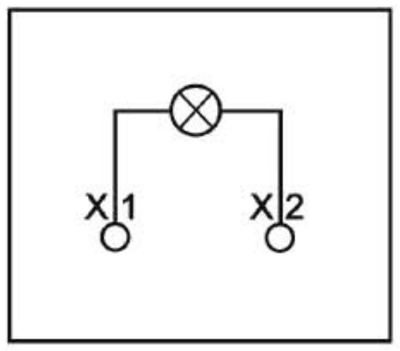


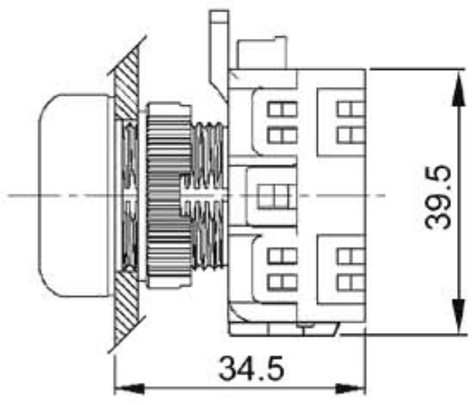
TN3D



■LAMP HOLDER BLOCKS(DIRECT POWER)

TNPS-1





tend PLOT LAMP(TN2 ϕ22/ϕ25/ϕ30)

This series of pilot lamps are equipped with transformers at the secondary voltage of 5V and (6V) bulb used. see p. Ⓖ6

■MODEL DESIGNATIONS

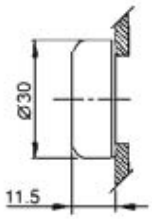
TN2 TP 1 R
① ② ③④

Designation	Signal	Description
1.Mounting Hole	TN2 TN3	Ø22mm/ Ø25mm Ø30mm
2.Type	TP	Wit Transformer

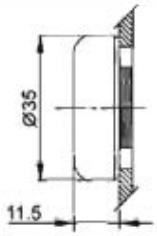
Designation	Signal	Description
3.Voltage	1 2 3 4	110V/5 VAC 220V/5 VAC 380V/5 VAC 440V/5 VAC
4.Lens Color	R G O W BL	Red Green Yellow White Blue

■PILOT LAMP DIMENSIONS

TN2TP

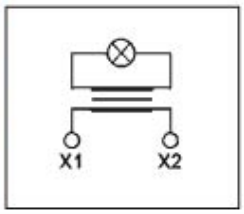


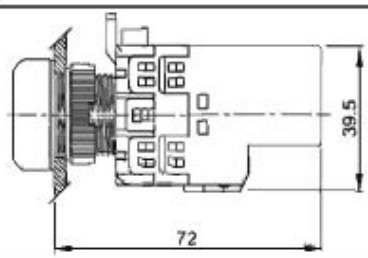
TN3TP



■LAMP HOLDER BLOCKS(WITH TRANSFORMER)

TNPS-2





tend TOY STICK(TN2 ϕ22/ϕ25/ϕ30)

■MODEL DESIGNATIONS

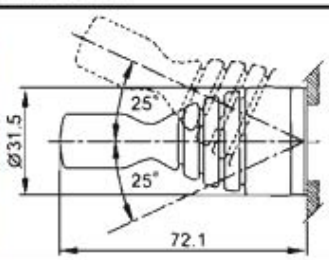
TN2 MR 2 L – 2
① ② ③④ ⑤

The contact block Joystick will have printed marking UDLR for Up,Down,Left & Right direction. The contact block is only for Joystick and can not be used in any other type of switches.

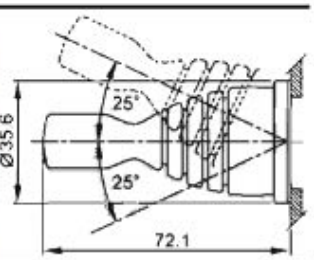
Designation	Signal	Description
1.Mounting Hole	TN2 TN3	Ø22mm/ Ø25mm Ø30mm
2.Type	MR	Joystick
3.Direct	2 4	Up & down 2 directions up,down, left&right 4 directions
4.Movement Way	L R	Retain Revert
5.No. of Contact block	2 4 8	1a at up & down each 2a at up & down or 1a at up, down, left &right 2a at up & down

■TOY STICK DIMENSIONS

TN2MR2



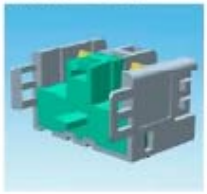
TN3MR4

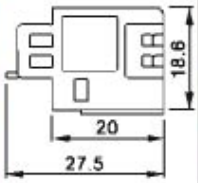


tend INSULATED ENCLOSURES(TN2φ22)

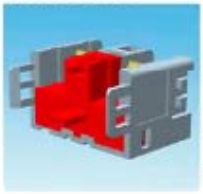
The mounting holes of this series of insulated enclosures are φ22mm.single-hole insulated enclosures are available in yellow and gray.all the others are in gray. the upper base and contact block are of exclusive type, which is different from those of φ22/φ30 series control components.
The dimension and type of the upper buse are same as those of φ22/φ30 series control components.

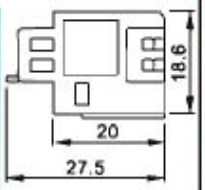
TN2-BA



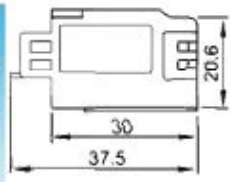


TN2-BB





TN2-BC

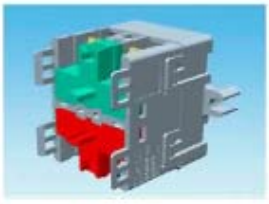


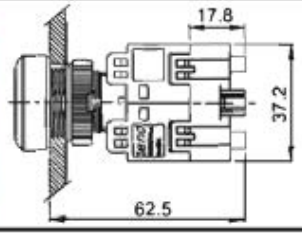
■THE ASSEMBLY OF INSULATED ENCLOSURES AND SWITCH

1.Take apart the upper cover and the lower base of the insulated enclosures.
2.Fix the contact block on the lower base, and the upper base on the upper cover.(standard contact block needs underneath packing)
3.Connect the upper cover with the lower base into one kit.

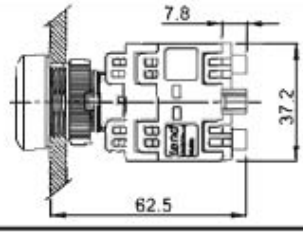
- The protection structure for this series of insulated enclosures is IP65(IEC144).
- All the illuminated switches used in the insulated enclosures are direct type.

■STANDARD CONTACT BLOCK FOR INSULATED ENCLOSURES

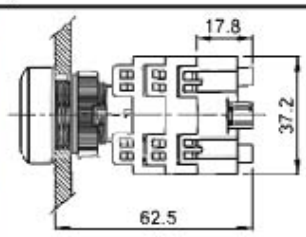




■ ILLUMINATED CONTACT BLOCK FOR INSULATED ENCLOSURES

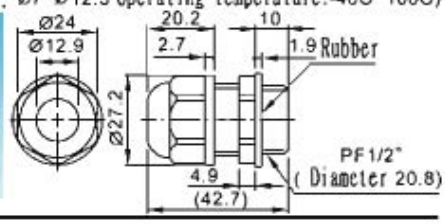


■LAMP HOLDER BLOCKS (FOR INSULATED ENCLOSURES)



■SERIES CABLE GLAND

(Diameter of Cables: ø7~ø12.5 operating temperature:-40℃~100℃)



■INSULATED ENCLOSURES DIMENSIONS TN2: φ22mm TN3: φ30mm

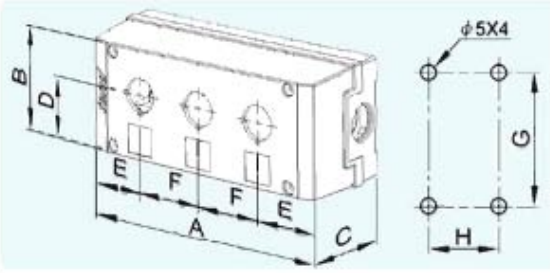
TN2-B1

TN2-B2

TN2-B3

TN2-B4

TN2-B5



Type	A	B	C	D	E	F	G	H
TN2-B1 TN3-B1	82	75	67.3	43.5	41	—	63	54
TN2-B2 TN3-B2	127	75	67.3	43.5	41	45	108	54
TN2-B3 TN3-B3	172	75	67.3	43.5	41	45	153	54
TN2-B4 TN3-B4	217	75	67.3	43.5	41	45	198	54
TN2-B5 TN3-B5	262	75	67.3	43.5	41	45	243	54

- The mounting hole of this series of insulated enclosures is 22.the illuminated push button and pilot lamp are all direct type.
- The insulated enclosures of mushroom-head and chain type push button are in yellow or gray. Others in gray.

■ONE BUTTON

MODEL DESIGNATION

TNB1 – BF R 1 2 N

① ② ③ ④ ⑤ ⑥

Designation	Signal	Description
1.NO.of Button	TNB1	1 Button
2.Type	BF	Flat Head Push Button
	BL	Long Head Push Button
	BM	Mushroom Head Push Button
	BK	Push-Lock Push Button
	IF	Flat Head Illuminated Push Button
	IL	Long Head Illuminated Push Button
	IM	Mushroom Head Illuminated Push Button
	IK	Push-Lock Illuminated Push Button
	S2	Selector Switch(2 Positions)
	S3	Selector Switch(3 Positions)

Designation	Signal	Description
3.Lens Color	R	Red
	G	Green
	B	Black
4.Name Plate	1	OFF
	2	ON
	3	EM.STOP
	4	OFF-ON
	5	ON-OFF-ON
5.Voltage	1	110VAC
	2	220VAC
	3	380VAC
	4	440VAC
	5	6V AC/DC
	6	18V AC/DC
	7	24V AC/DC
	8	30V AC/DC
	9	12V AC/DC
6.Bulb Type	I	Incandescent
	N	Neon Bulb
	L	LED bulb

TNB1-BFR1
TNB1-IFR1

TNB1-BFG2
TNB1-IFG2

TNB1-BLR1
TNB1-ILR1

TNB1-BLG2
TNB1-ILG2

TNB1-BMR3
TNB1-IMR3

TNB1-BKR3

TNB1-S2B4

TNB1-S3B5

■TWO BUTTONS

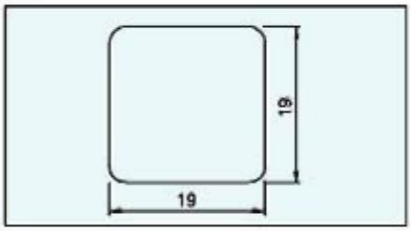
Type	Name Plate	Buttons	Voltage
TNB2-BF	ON OFF	2 Flat Head Push Buttons	
TNB2-IF2	ON OFF	2 Flat Head Illuminated Push Buttons	220VAC
TNB2-IF7	ON OFF	2 Flat Head Illuminated Push Buttons	24V

■THREE BUTTONS

Type	Name Plate	Buttons
TNB3-BF	ON OFF ON	3 Flat Head Push Buttons
TNB3-IF	ON OFF ON	3 Flat Head Illuminated Push Buttons
TNB3-PF2	220V ON OFF	1 Pilot Lamp 2Flat Head Push Buttons
TNB3-PF7	24V ON OFF	1 Pilot Lamp 2Flat Head Push Buttons

■PLATES FOR ENCLOSURES

TBP



●FOR PUSH BUTTON ILLUMINATED PUSH BUTTON,PILOT LAMP.

TBP-01	TBP-02	TBP-03	TBP-04	TBP-05	TBP-06	TBP-07	TBP-08	TBP-09	TBP-10
○	I	II	III	IV	ON	OFF	START	STOP	UP
TBP-11	TBP-12	TBP-13	TBP-14	TBP-15	TBP-16	TBP-17	TBP-18	TBP-19	TBP-20
DOWN	SOURCE	HAND	AUTO	RUN	FWD	REV	CLOSE	OPEN	FAST
TBP-21	TBP-22	TBP-23	TBP-24	TBP-25	TBP-26	TBP-27	TBP-28	TBP-29	TBP-30
SLOW	RESET	EM.STOP	12V	24V	30V	110V	220V	B	1
TBP-31	TBP-32	TBP-33	TBP-34	TBP-35	TBP-36	TBP-37	TBP-38	TBP-39	TBP-40
2	3	4	5	6	7	8	9	INCH	➡
TBP-41	TBP-42	TBP-43							
B1	B2	CLEAN							

●FOR SELECTOR SWITCH.

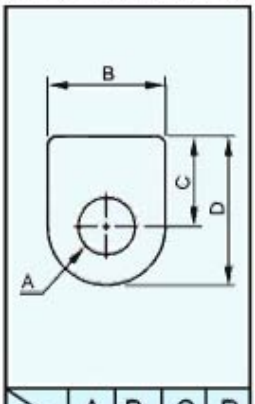
TBP-51	TBP-52	TBP-53	TBP-54	TBP-55	TBP-56	TBP-57	TBP-58	TBP-59	TBP-60
I ○	II	II ○	III	ON OFF	ON ON	ON OFF ON	REV FWD	REV OFF FWD	AUTO HAND
TBP-61	TBP-62	TBP-63	TBP-64	TBP-65	TBP-66	TBP-67			
AUTO OFF HAND	START STOP	UP DOWN	UP OFF DOWN	1 2	1 0 2	1 2 3			

tend NAME PLATES(TN2 ϕ22/ϕ25/ϕ30)

■ ϕ22/ϕ25/ϕ30 LEGEND PLATES FOR OPERATING DEVICES, Aluminum(M) OR Arcyle(P)

TN22P - (22 Arcyle) TN22M - (22 Aluminum)
TN25P - (25 Arcyle) TN25M - (25 Aluminum)
TN30P - (30 Arcyle) TN30M - (30 Aluminum)

01	02	03	04	05	06	07	08	09	10	11	12
ON	OFF	START	STOP	UP	DOWN	SOURCE	MANUEL	AUTO	RUN	FWD	REV



	A	B	C	D
TN22P	ϕ22.3	41	32	52.5
TN22M	ϕ22.2	31	27	42
TN25P	ϕ25.5	41	32	52.5
TN25M	ϕ24.9	31	27	42
TP30P	ϕ30.5	41	32	52.5
TP30M	ϕ30.3	38.5	32.5	52

13	14	15	16	17	18	19
OFF ON	ON ON	ON OFF ON	FWD REV	FWD OFF REV	AUTO MANU	AUTO OFF MANU

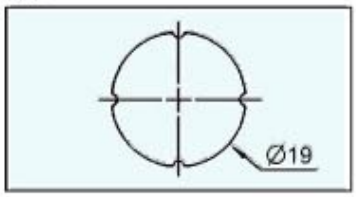
20	21	22
STOP START	HAND OFF AUTO	1 0 2

00
CLEAN

71	72	73	74
O I	I II	I O II	I II III

■BUTTON PLATES FORϕ 22/ϕ 25/ϕ 30 OPERATING DEVICES

TPP



TPP-01	TPP-02	TPP-03	TPP-04	TPP-05	TPP-06	TPP-07	TPP-08	TPP-09	TPP-10	TPP-11
O	I	II	III	IV	ON	OFF	START	STOP	UP	DOWN
TPP-12	TPP-13	TPP-14	TPP-15	TPP-16	TPP-17	TPP-18	TPP-19	TPP-20	TPP-21	TPP-22
SOURCE	HAND	AUTO	RUN	FWD	REV	CLOSE	OPEN	FAST	SLOW	RESET
TPP-23	TPP-24	TPP-25	TPP-26	TPP-27	TPP-28	TPP-29	TPP-30	TPP-31	TPP-32	TPP-33
INCH	12V	24V	30V	110V	220V	B	1	2	3	4
TPP-34	TPP-35	TPP-36	TPP-37	TPP-38	TPP-39	TPP-40	TPP-41	TPP-42	TPP-43	
5	6	7	8	9	→	B1	B2	B3	B4	