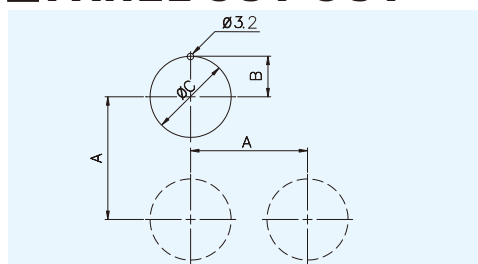


# tend TS2 Ø22/Ø25 SERIES CONTROL COMPONENTS TS2

## PANEL CUT-OUT Ø22/Ø25 series



## DIMENSIONS(mm)

| Series |                                  | Ø22    | Ø25  |
|--------|----------------------------------|--------|------|
| A      | Pilot Lamp, Push Button Selector | 31min. |      |
|        | Mushroom Head                    | 39min. |      |
| B      | All types                        | 11.2   | 12.7 |
| C      | All types                        | 22.4   | 25.4 |

## CONTACT RATING

| AC | AC11           | AC24V | AC110V | AC220V | AC380V | AC440V | DC | DC11           | DC24V | DC110V | DC220V | DC380V |
|----|----------------|-------|--------|--------|--------|--------|----|----------------|-------|--------|--------|--------|
|    | Inductive load | 7.5A  | 4.5A   | 3A     | 2A     | 2A     |    | Inductive load | 1.5A  | 0.5A   | 0.2A   | 0.1A   |
|    | Resistive load | 7.5A  | 7.5A   | 4.5A   | 4A     | 4A     |    | DC14           | DC24V | DC110V | DC220V | DC380V |
|    |                |       |        |        |        |        |    | Resistive load | 10A   | 2A     | 0.6A   | 0.2A   |

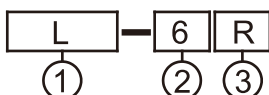
## CHARACTERISTICS

|                       |                               |                                                                          |
|-----------------------|-------------------------------|--------------------------------------------------------------------------|
| 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                    | 1000m/s <sup>2</sup>                                                     |
|                       | Malfunction                   | Push button(momentary) 1000m/s <sup>2</sup> . Others 250m/s <sup>2</sup> |
| Vibration             | Malfunction                   | 10~55Hz double amplitude 1.5mm                                           |
| Contact resistance    | 50mΩ max. (Initial value)     |                                                                          |
| Insulation resistance | 100MΩ min.(500VDC)            |                                                                          |
| Dielectric strength   | 2500VAC,50/60 Hz for 1 minute |                                                                          |
| Ambient temperature   | -20°C~+60°C                   |                                                                          |
| Humidity              | 45~85%RH                      |                                                                          |

## WIRING DIAGRAM

| Type                | TS2-A | TS2-B | TS2-C | TS2-2A | TS2-2B |
|---------------------|-------|-------|-------|--------|--------|
| Contact             | 1a    | 1b    | 1a1b  | 2a     | 2b     |
| Contact Arrangement |       |       |       |        |        |

## MODEL DESIGNATION



| Designation | Signal | Description       |
|-------------|--------|-------------------|
| 1.Lamp Type | I      | Incandescent lamp |
|             | L      | LED lamp          |
| 2. Voltage  | 6      | 6V AC/DC          |
|             | 12     | 12V AC/DC         |
|             | 18     | 18V AC/DC         |
|             | 24     | 24V AC/DC         |
|             | 30     | 30V AC/DC         |
|             | 110    | 110V AC           |
|             | 220    | 220V AC           |
| 3.Color     | R      | Red               |
|             | G      | Green             |
|             | O      | Orange            |
|             | W      | White             |
|             | BL     | Blue              |

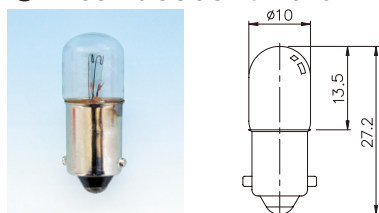
## BULB TYPE AND CHARACTERISTICS

| Lamp Type         | Rated Voltage | Rated Current |
|-------------------|---------------|---------------|
| Incandescent lamp | 6V AC/DC      | 150mA         |
|                   | 12V AC/DC     | 100mA         |
|                   | 18V AC/DC     | 66mA          |
|                   | 24V AC/DC     | 50mA          |
|                   | 30V AC/DC     | 40mA          |
| LED lamp          | 6V AC/DC      | 9~13mA        |
|                   | 12V AC/DC     | 9~13mA        |
|                   | 24V AC/DC     | 8~13mA        |
|                   | 30V AC/DC     | 8~13mA        |
|                   | 110V AC       | 3~5mA         |
|                   | 220V AC       | 3~5mA         |

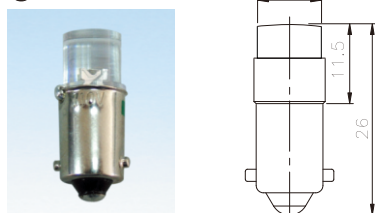
BA9S-11X28mm-1.2W max.

## DIMENSIONS OF BULB

### Incandescent Bulb

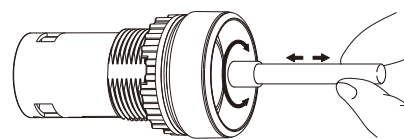


### LED Bulb



## Method to replace lamp

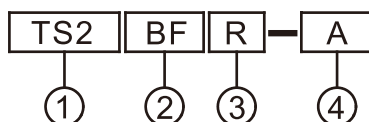
Put the fixing-disassembling tool into the lamp, turn clockwise and the lamp is fixed. If counter-clockwise, the lamp is disassembled.



# tend TS2 Ø22/Ø25 PUSH BUTTON SWITCH

TS2

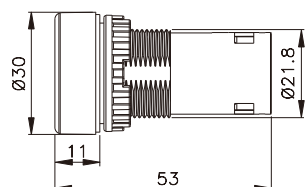
## MODEL DESIGNATION



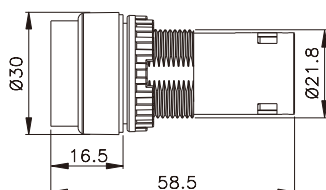
| Designation       | Signal                  | Description                              |
|-------------------|-------------------------|------------------------------------------|
| 1.Mounting Hole   | TS2                     | Ø22mm/Ø25mm                              |
| 2.Type            | BF<br>BL<br>BM          | Flat Head<br>Long Head<br>Mushroom Head  |
| 3.Lens Color      | R<br>G<br>Y<br>W<br>B   | Red<br>Green<br>Yellow<br>White<br>Black |
| 4.Type of contact | A<br>B<br>C<br>2A<br>2B | 1a<br>1b<br>1a1b<br>2a<br>2b             |

## OPERATING HEADS DIMENSIONS

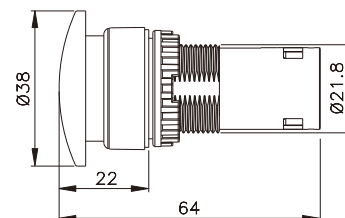
TS2BF



TS2BL



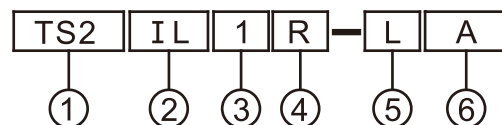
TS2BM



# tend TS2 Ø22/Ø25 ILLUMINATED PUSH BUTTON(DIRECT POWER)

TS2

## MODEL DESIGNATION



| Designation     | Signal                          | Description                                                                                                                                                         |
|-----------------|---------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1.Mounting Hole | TS2                             | Ø22mm/Ø25mm                                                                                                                                                         |
| 2.Type          | IL<br>IM                        | Long Head<br>Mushroom Head                                                                                                                                          |
| 3.Voltage       | 1<br>2<br>5<br>6<br>7<br>8<br>9 | 110VAC LED<br>220VAC LED<br>6VAC/DC Incandescent ,LED<br>18VAC/DC Incandescent<br>24VAC/DC Incandescent ,LED<br>30VAC/DC Incandescent<br>12VAC/DC Incandescent ,LED |

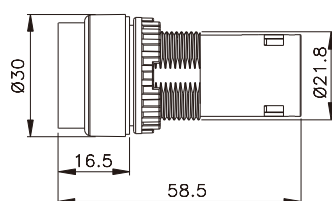
| Designation                    | Signal                 | Description                             |
|--------------------------------|------------------------|-----------------------------------------|
| 4.Lens Color                   | R<br>G<br>O<br>W<br>BL | Red<br>Green<br>Orange<br>White<br>Blue |
| 5.No.of Contacts Fitted        | I<br>L                 | Incandescent<br>LED                     |
| 6.Type of contact Block Fitted | A<br>B                 | 1a<br>1b                                |

## ILLUMINATED PUSH BUTTON(DIRECT POWER)CONTACT BLOCKS

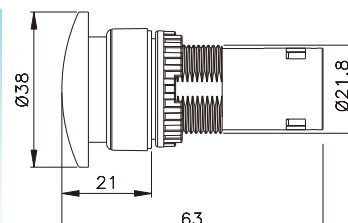
| Type                | TS2-A | TS2-B |
|---------------------|-------|-------|
| Contact             | 1a    | 1b    |
| Contact Arrangement |       |       |

## OPERATING HEAD DIMENSIONS

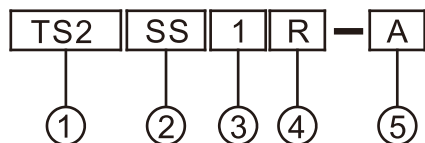
TS2IL








TS2IM



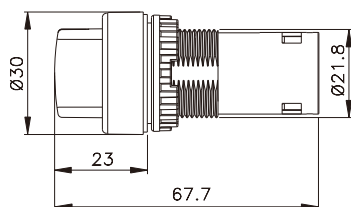
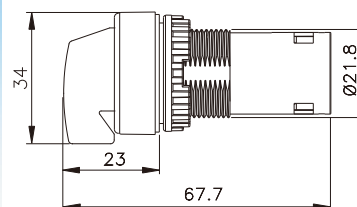
## MODEL DESIGNATION



| Designation     | Signal   | Description                     |
|-----------------|----------|---------------------------------|
| 1.Mounting Hole | TS2      | Ø22mm/Ø25mm                     |
| 2.Type          | SS<br>SH | Knob Operator<br>Lever Operator |

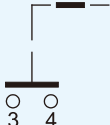
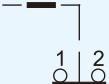
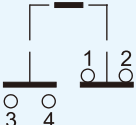
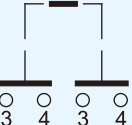
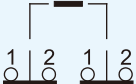
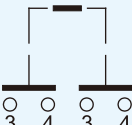
| Designation                       | Signal | Description                                                                         |                                               |
|-----------------------------------|--------|-------------------------------------------------------------------------------------|-----------------------------------------------|
| 3.Positions                       | 1      |  | 90° X2 2-Position                             |
|                                   | 2      |  | 45° X2 3-Position                             |
|                                   | 3      |  | 45° X2 3-Position<br>Spring return from right |
|                                   | 4      |  | 45° X2 3-Position<br>Spring return from left  |
|                                   | 5      |  | 45° X2 3-Position<br>2-Way spring return      |
| 4.Lens Color                      | R      | Red                                                                                 |                                               |
|                                   | G      | Green                                                                               |                                               |
|                                   | B      | Black                                                                               |                                               |
| 5.Type of contact<br>Block Fitted |        | 2-Position                                                                          | 3-Position                                    |
|                                   | A      | 1a                                                                                  | —                                             |
|                                   | B      | 1b                                                                                  | —                                             |
|                                   | C      | 1a1b                                                                                | 1a 0 1a                                       |
|                                   | 2A     | 2a                                                                                  | —                                             |
|                                   | 2B     | 2b                                                                                  | —                                             |

## OPERATING HEADS DIMENSIONS

**TS2SS**

**TS2SH**


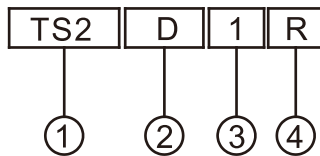
## SELECTOR SWITCH 2-POSITION CONTACT ARRANGEMENT

## SELECTOR SWITCH 3-POSITION CONTACT ARRANGEMENT

| Type                   | TS2-A                                                                                                | TS2-B                                                                               | TS2-C                                                                               | TS2-2A                                                                              | TS2-2B                                                                               | Type                   | TS2-C                                                                                 |   |                                                                                                      |         |   |   |     |   |  |                                                                                                                                              |         |   |   |     |   |  |     |  |   |                                                                                                      |         |   |   |     |  |   |                                                                                                                                              |         |   |   |     |   |  |     |   |  |                                                                                                                                                                          |         |   |   |   |     |   |  |  |     |  |  |   |
|------------------------|------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|------------------------|---------------------------------------------------------------------------------------|---|------------------------------------------------------------------------------------------------------|---------|---|---|-----|---|--|----------------------------------------------------------------------------------------------------------------------------------------------|---------|---|---|-----|---|--|-----|--|---|------------------------------------------------------------------------------------------------------|---------|---|---|-----|--|---|----------------------------------------------------------------------------------------------------------------------------------------------|---------|---|---|-----|---|--|-----|---|--|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|---|---|---|-----|---|--|--|-----|--|--|---|
| Contact                | 1a                                                                                                   | 1b                                                                                  | 1a1b                                                                                | 2a                                                                                  | 2b                                                                                   | Contact                | 1a 0 1a                                                                               |   |                                                                                                      |         |   |   |     |   |  |                                                                                                                                              |         |   |   |     |   |  |     |  |   |                                                                                                      |         |   |   |     |  |   |                                                                                                                                              |         |   |   |     |   |  |     |   |  |                                                                                                                                                                          |         |   |   |   |     |   |  |  |     |  |  |   |
| Contact<br>Arrangement |                   |  |  |  |  | Contact<br>Arrangement |  |   |                                                                                                      |         |   |   |     |   |  |                                                                                                                                              |         |   |   |     |   |  |     |  |   |                                                                                                      |         |   |   |     |  |   |                                                                                                                                              |         |   |   |     |   |  |     |   |  |                                                                                                                                                                          |         |   |   |   |     |   |  |  |     |  |  |   |
|                        | <table><tr><td>Contact</td><td>0</td><td>1</td></tr><tr><td>3-4</td><td></td><td>X</td></tr></table> | Contact                                                                             | 0                                                                                   | 1                                                                                   | 3-4                                                                                  |                        |                                                                                       | X | <table><tr><td>Contact</td><td>0</td><td>1</td></tr><tr><td>1-2</td><td>X</td><td></td></tr></table> | Contact | 0 | 1 | 1-2 | X |  | <table><tr><td>Contact</td><td>0</td><td>1</td></tr><tr><td>1-2</td><td>X</td><td></td></tr><tr><td>3-4</td><td></td><td>X</td></tr></table> | Contact | 0 | 1 | 1-2 | X |  | 3-4 |  | X | <table><tr><td>Contact</td><td>0</td><td>1</td></tr><tr><td>3-4</td><td></td><td>X</td></tr></table> | Contact | 0 | 1 | 3-4 |  | X | <table><tr><td>Contact</td><td>0</td><td>1</td></tr><tr><td>1-2</td><td>X</td><td></td></tr><tr><td>1-2</td><td>X</td><td></td></tr></table> | Contact | 0 | 1 | 1-2 | X |  | 1-2 | X |  | <table><tr><td>Contact</td><td>1</td><td>0</td><td>2</td></tr><tr><td>3-4</td><td>X</td><td></td><td></td></tr><tr><td>3-4</td><td></td><td></td><td>X</td></tr></table> | Contact | 1 | 0 | 2 | 3-4 | X |  |  | 3-4 |  |  | X |
|                        | 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                                                                                   |                                                                                     |                                                                                     |                                                                                      |                        |                                                                                       |   |                                                                                                      |         |   |   |     |   |  |                                                                                                                                              |         |   |   |     |   |  |     |  |   |                                                                                                      |         |   |   |     |  |   |                                                                                                                                              |         |   |   |     |   |  |     |   |  |                                                                                                                                                                          |         |   |   |   |     |   |  |  |     |  |  |   |
| Contact                | 0                                                                                                    | 1                                                                                   |                                                                                     |                                                                                     |                                                                                      |                        |                                                                                       |   |                                                                                                      |         |   |   |     |   |  |                                                                                                                                              |         |   |   |     |   |  |     |  |   |                                                                                                      |         |   |   |     |  |   |                                                                                                                                              |         |   |   |     |   |  |     |   |  |                                                                                                                                                                          |         |   |   |   |     |   |  |  |     |  |  |   |
| 1-2                    | X                                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                      |                        |                                                                                       |   |                                                                                                      |         |   |   |     |   |  |                                                                                                                                              |         |   |   |     |   |  |     |  |   |                                                                                                      |         |   |   |     |  |   |                                                                                                                                              |         |   |   |     |   |  |     |   |  |                                                                                                                                                                          |         |   |   |   |     |   |  |  |     |  |  |   |
| 1-2                    | X                                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                      |                        |                                                                                       |   |                                                                                                      |         |   |   |     |   |  |                                                                                                                                              |         |   |   |     |   |  |     |  |   |                                                                                                      |         |   |   |     |  |   |                                                                                                                                              |         |   |   |     |   |  |     |   |  |                                                                                                                                                                          |         |   |   |   |     |   |  |  |     |  |  |   |
| Contact                | 1                                                                                                    | 0                                                                                   | 2                                                                                   |                                                                                     |                                                                                      |                        |                                                                                       |   |                                                                                                      |         |   |   |     |   |  |                                                                                                                                              |         |   |   |     |   |  |     |  |   |                                                                                                      |         |   |   |     |  |   |                                                                                                                                              |         |   |   |     |   |  |     |   |  |                                                                                                                                                                          |         |   |   |   |     |   |  |  |     |  |  |   |
| 3-4                    | X                                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                      |                        |                                                                                       |   |                                                                                                      |         |   |   |     |   |  |                                                                                                                                              |         |   |   |     |   |  |     |  |   |                                                                                                      |         |   |   |     |  |   |                                                                                                                                              |         |   |   |     |   |  |     |   |  |                                                                                                                                                                          |         |   |   |   |     |   |  |  |     |  |  |   |
| 3-4                    |                                                                                                      |                                                                                     | X                                                                                   |                                                                                     |                                                                                      |                        |                                                                                       |   |                                                                                                      |         |   |   |     |   |  |                                                                                                                                              |         |   |   |     |   |  |     |  |   |                                                                                                      |         |   |   |     |  |   |                                                                                                                                              |         |   |   |     |   |  |     |   |  |                                                                                                                                                                          |         |   |   |   |     |   |  |  |     |  |  |   |

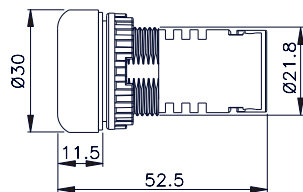
# tend TS2 Ø22/Ø25 PILOT LAMP (DIRECT POWER) TS2

## MODEL DESIGNATION



## PILOT LAMP (DIRECT POWER) DIMENSIONS

TS2D

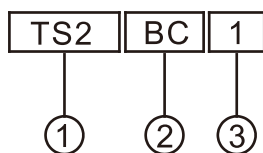


| Designation      | Signal                     | Description                                                  |
|------------------|----------------------------|--------------------------------------------------------------|
| 1. Mounting Hole | TS2                        | Ø22mm/Ø25mm                                                  |
| 2. Type          | D<br>F                     | LED Continuous light<br>LED Flashing light                   |
| 3. Voltage       | 1<br>2<br>3<br>4<br>7<br>9 | 110VAC<br>220VAC<br>380VAC<br>440VAC<br>24VAC/DC<br>12VAC/DC |
| 4. Lens Color    | R<br>G<br>O<br>W<br>BL     | Red<br>Green<br>Orange<br>White<br>Blue                      |

# tend TS2 Ø22/Ø25 BUZZER AND BUZZER PILOT LAMP TS2

- The color of lens for Buzzer pilot lamp is Red LED.
- The color of lens for Buzzer is Black.

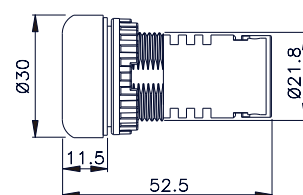
## MODEL DESIGNATION



| Designation      | Signal                 | Description                                                                                                           |
|------------------|------------------------|-----------------------------------------------------------------------------------------------------------------------|
| 1. Mounting Hole | TS2                    | Ø22mm/Ø25mm                                                                                                           |
| 2. Type          | BC<br>BI<br>BCL<br>BIL | Continuous Buzzer<br>Intermittence Buzzer<br>Continuous Light with Audible Alarm<br>Flashing Light with Audible Alarm |
| 3. Voltage       | 1<br>2<br>7<br>9       | 110VAC<br>220VAC<br>24VAC/DC<br>12VAC/DC                                                                              |

## BUZZER AND BUZZER PILOT LAMP DIMENSIONS

TS2BCL



TS2BC

