



*Mini Series*



## LED Illuminated pushbutton micro-switch

### KEY FEATURES

- Small size.
- Right angle and vertical PCB terminal
- Choice of painted colored caps.
- Laser marking service.
- Available with small quantity order.

### MAIN APPLICATIONS

- Studio equipment.
- Audio/Video products,
- Broadcast system,
- Instrumentation,
- Telecommunications ... etc.



### GENERAL SPECIFICATIONS

- Circuit: 1P2T, 2P2T Lock/Non-lock action with led
- Contact Rating: 0.1A 30V DC/0.1mA 5V DC
- Contact Resistance: 50mΩ Max. 1.5V DC/ 100 mA,  
by method of voltage drop
- Insulation Resistance: 100mΩ Min. 500 V DC
- Dielectric Strength: Breakdown is not allowable;  
500V AC for 1 minute
- Actuation Force: 250 ± 100gf
- Total Travel: 1.5mm ± 0.3mm
- Operating Life: 50,000 cycles
- Operating Temperature: -20° C to 70° C



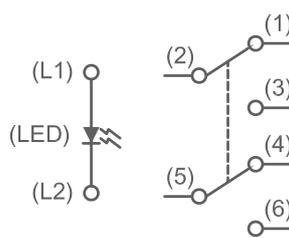
### MATERIALS

- Frame: Polyamide(PA)+GF
- Actuator: Polyamide(PA)+GF
- Base: Polyamide(PA)+GF
- Terminal: Brass with silver plating

### LED SPECIFICATIONS

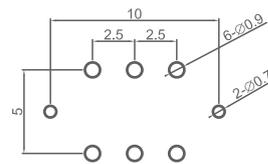
| Color  | V     |      | Recommended Operating Current | VF   |      |
|--------|-------|------|-------------------------------|------|------|
|        |       |      |                               | Nom  | Max  |
| Red    | DC 5V | 20mA | 20mA                          | 1.7V | 2.4V |
| Green  | DC 5V | 20mA | 20mA                          | 1.9V | 2.4V |
| Yellow | DC 5V | 20mA | 20mA                          | 1.9V | 2.4V |
| Blue   | DC 5V | 20mA | 20mA                          | 3.0V | 3.6V |
| White  | DC 5V | 20mA | 20mA                          | 3.0V | 3.6V |

### CIRCUIT

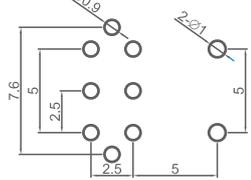


### PCB LAYOUT

#### STANDARD TYPE



#### RIGHT ANGLE TYPE



### HOW TO ORDER

| SERIES | OPERATION                 | POLE                 | TERMINAL   | LED COLOR   | LED BRIGHTNESS                 | LED COLOR   | LED BRIGHTNESS                 | FRAME TYPE   | FRAME COLOR                            | CAP COLOR   | CAP SYMBOL |
|--------|---------------------------|----------------------|--|---|--------------------------------|---|--------------------------------|--|--|---|------------|
| PLA    | N<br>L                    | 2                    | P  | R   | 1                              | R   | 1                              | S1   | K                                      | T   | P5         |
|        | N=NON-LOCK<br>L=LOCK TYPE | 1=1 POLE<br>2=2 POLE | P=PCB TYPE<br>R=RIGHT ANGLE TYPE<br>R1=R1 TYPE<br>R2=R2 TYPE | B=BLUE<br>G=GREEN<br>R=RED<br>Y=YELLOW<br>W=WHITE<br>N=NONE | 1=STANDARD<br>2=HIGH<br>N=NONE | B=BLUE<br>G=GREEN<br>R=RED<br>Y=YELLOW<br>W=WHITE<br>N=NONE | 1=STANDARD<br>2=HIGH<br>N=NONE | S1=S1 sq<br>S2=S2 sq<br>S3=S3 sq<br>R1=R1 ro<br>R2=R2 ro<br>R3=R3 ro<br>R4=R4 ro<br>N=NONE | K=BLACK<br>W=WHITE<br>A=GRAY<br>N=NONE | T=TRANSPARENT<br>R=RED<br>G=GREEN<br>B=BLUE<br>Y=YELLOW<br>S=SILVER<br>N=NONE |            |

CAP Symbol: Please refer to cap selection for all available symbols on cap surface, and any customization is welcomed

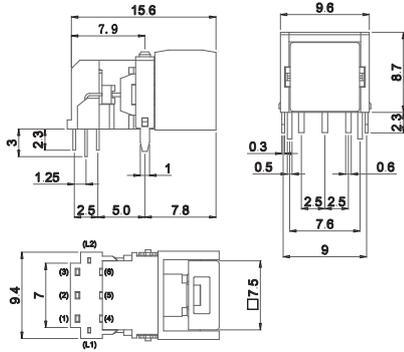
# Series PLA

LED Illuminated pushbutton micro-switch

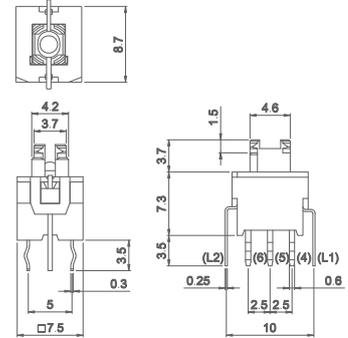


## CONFIGURATION EXAMPLES

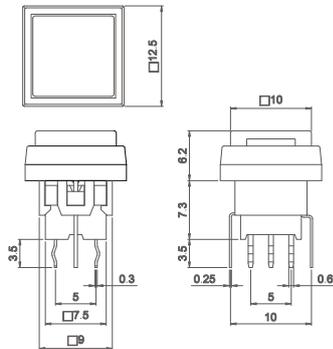
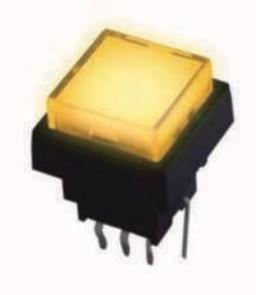
**PLA-N2R2-G1NN-S1KT**



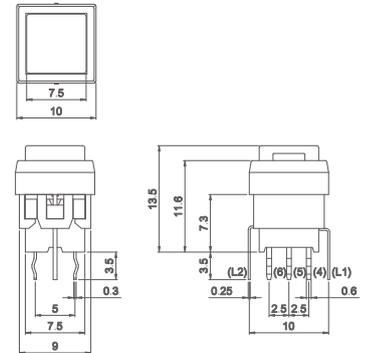
**PLA-N2P-R1NN-NNN**



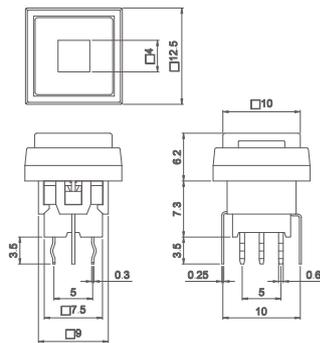
**PLA-N2P-Y1NN-S2KT**



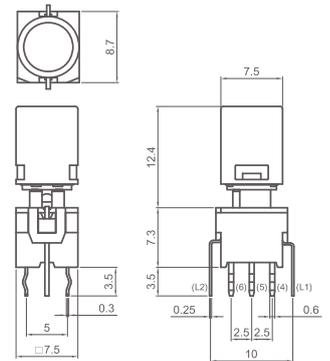
**PLA-N2P-B1NN-S1KT**



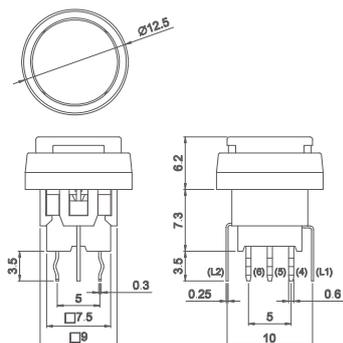
**PLA-N2P-R1NN-S3KK**



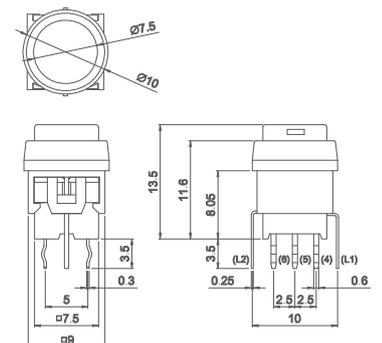
**PLA-N2P-Y1NN-R1NT**



**PLA-N2P-B1NN-R3KT**



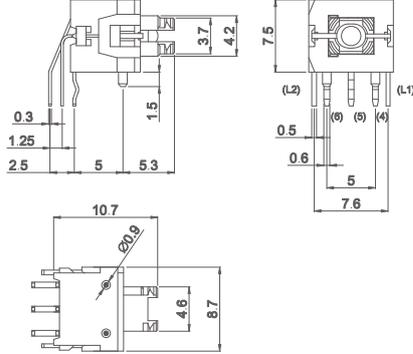
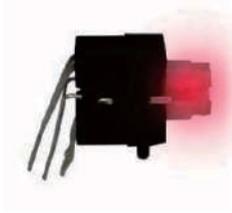
**PLA-N2P-Y1NN-R2KT**



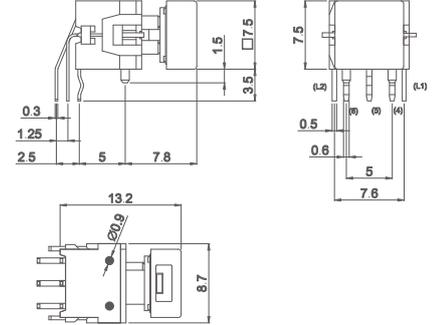
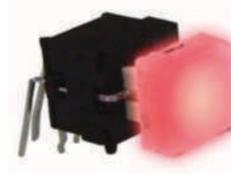
# Series PLA

LED Illuminated pushbutton micro-switch

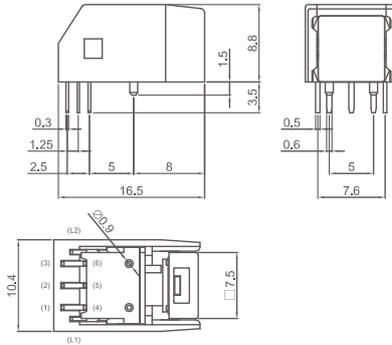
**PLA-N2R-R1NN-NNN**



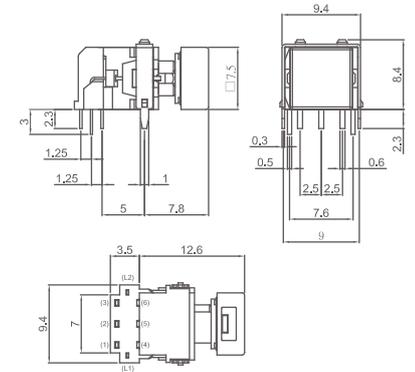
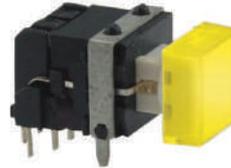
**PLA-N2R-R1NN-S1NT**



**PLA-N2R-G1NN-S1KT**



**PLA-N2R1-Y1NN-S1KT**



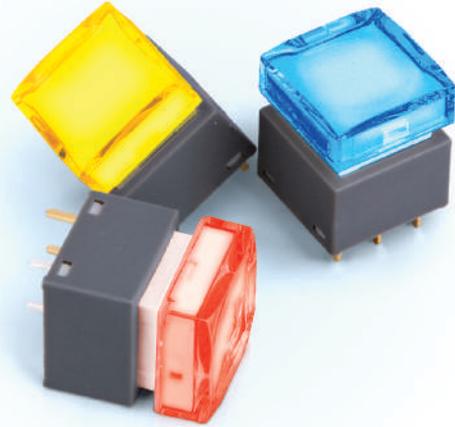
## LED Illuminated pushbutton micro-switch

### KEY FEATURES

- Small size
- Momentary and alternate action
- RGB color option
- Long life cycle
- Laser marking service

### MAIN APPLICATIONS

- Studio equipment.
- Audio/Video products,
- Broadcast system,
- Instrumentation,.
- Telecommunications ... etc.



### GENERAL SPECIFICATIONS

|   |
|---|
| Function: Momentary or Alternate                                      |
| Contact Rating: Gold, 0.4A Max. @ 28V (AC or DC)                      |
| Silver, 0.5A @ 25V DC; 0.2A @ 250V AC                                 |
| Contact Resistance: 50mΩ silver, 100mΩ gold (initial max)             |
| Insulation Resistance: 100MΩ @ 500V DC                                |
| Dielectric Strength: Breakdown is not allowable; 500V AC for 1 minute |
| Actuation Force: 200 ± 100 gf SPDT                                    |
| 300 ± 150 gf DPDT   |
| Total Travel: 2.2mm ± 0.2mm   |
| Life Expectancy (Mechanical): 1,000,000 cycles                        |
| Life Expectancy (Electrical): 200,000 cycles silver                   |
| 200,000 cycles gold   |
| Operating Temperature: -20° C to 70° C                                |

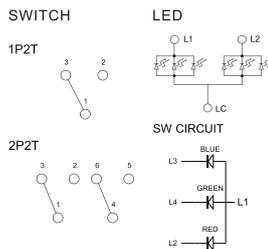
### MATERIALS

|                                   |
|-----------------------------------|
| Cover: Polycarbonate(PC)          |
| Actuator: Polyoxymethylen(POM)    |
| Base Frame: Polyamide(PA)+GF      |
| Terminal: Brass with gold plating |

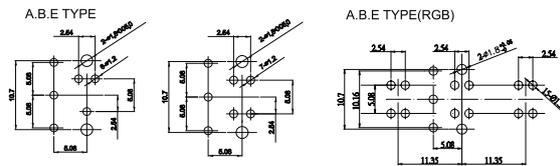
### LED SPECIFICATIONS

| Color  | V     |      | Recommended Operating Current | VF   |      |
|--------|-------|------|-------------------------------|------|------|
|        |       |      |                               | Nom  | Max  |
| Red    | DC 5V | 20mA | 20mA                          | 1.7V | 2.4V |
| Green  | DC 5V | 20mA | 20mA                          | 1.9V | 2.4V |
| Yellow | DC 5V | 20mA | 20mA                          | 1.9V | 2.4V |
| Blue   | DC 5V | 20mA | 20mA                          | 3.0V | 3.6V |
| White  | DC 5V | 20mA | 20mA                          | 3.0V | 3.6V |

### CIRCUIT



### PCB LAYOUT



### HOW TO ORDER

| SERIES | OPERATION                 | POLE                 | TERMINAL                    | LED COLOR  | LED COLOR  | FRAME TYPE   | CAP COLOR   | DIFFUSER COLOR                                    | CAP SYMBOL |
|--------|---------------------------|----------------------|-----------------------------|--|--|--|---|---|------------|
| PLBx   | N                         | 1                    | P                           | R  | N  | A  | T   | W   | P5         |
|        | N=NON-LOCK<br>L=LOCK TYPE | 1=1 POLE<br>2=2 POLE | P=P.C.B TYPE<br>W=WIRE TYPE | B=BLUE<br>G=GREEN<br>R=RED<br>Y=YELLOW<br>F=FULL COLOR<br>N=NONE | B=BLUE<br>G=GREEN<br>R=RED<br>Y=YELLOW<br>F=FULL COLOR<br>N=NONE | A=A TYPE<br>B=B TYPE<br>C=C TYPE<br>D=D TYPE<br>E=E TYPE<br>F=F TYPE | T=TRANSPARENT<br>R=RED<br>G=GREEN<br>B=BLUE<br>Y=YELLOW<br>S=SILVER | W=WHITE<br>R=RED<br>G=GREEN<br>B=BLUE<br>Y=YELLOW |            |

CAP Symbol: Please refer to cap selection for all available symbols on cap surface, and any customization is welcomed

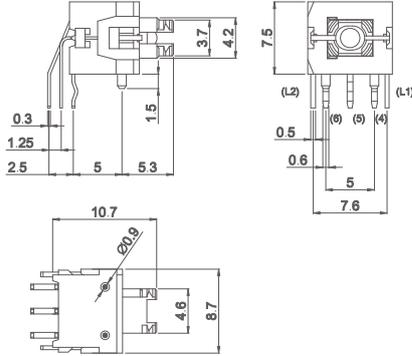
# Series PLBx

LED Illuminated pushbutton micro-switch

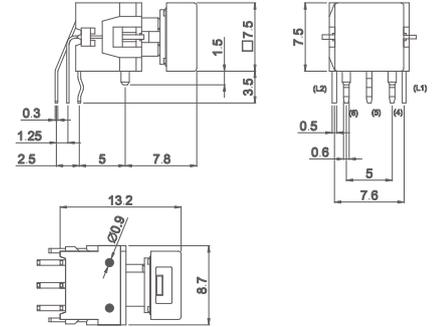


## CONFIGURATION EXAMPLES

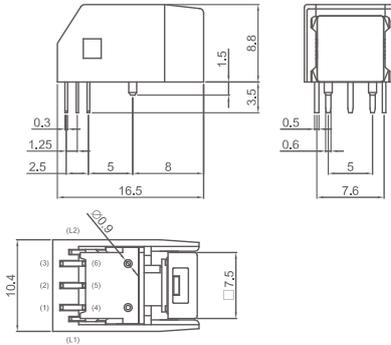
**PLBx-N1PRN-ATW**



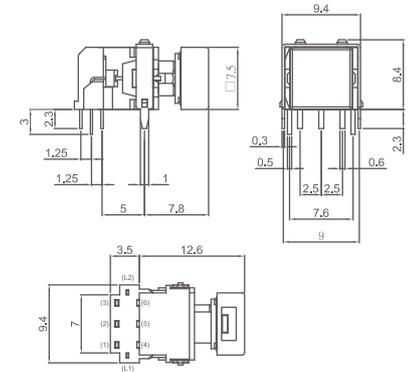
**PLBx-N1PGN-ETW**



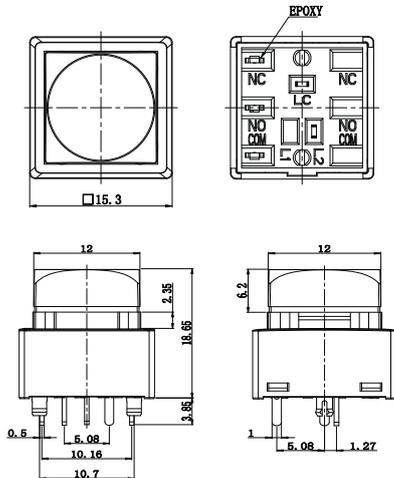
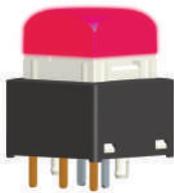
**PLBx-N1PBN-BTW**



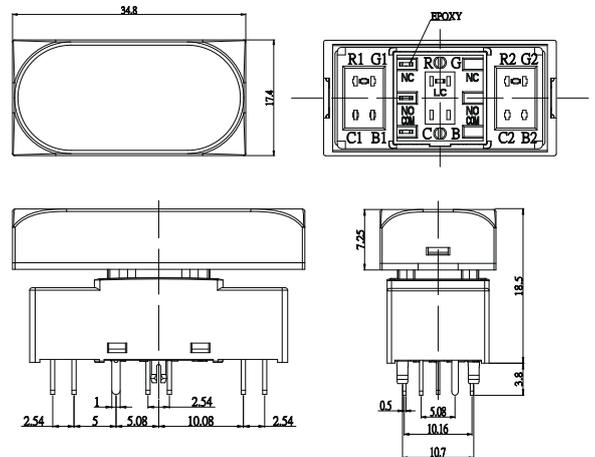
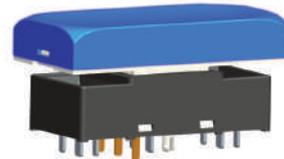
**PLBx-N1PNN-ATW-PKT**



**PLBx-N1PNR-FTW**



**PLBx-N1PNB-DTW**



## LED Illuminated pushbutton micro-switch

### KEY FEATURES

- Long electrical life cycles.
- Choice of multiple colored caps.
- Choice of painted colored caps.
- Laser marking service.
- Available with small quantity order.

### MAIN APPLICATIONS

- Studio equipment.
- Audio/Video products,
- Broadcast system,
- Instrumentation,.
- Telecommunications ... etc.



### GENERAL SPECIFICATIONS

- Circuit: OFF-ON For Momentary Type, SPST, DPST
- Contact Rating: 12mA 12V DC
- Contact Resistance: 200mΩ Max.
- Insulation Resistance: 100MΩ Min. 500 V DC
- Dielectric Strength: Breakdown is not allowable;  
500V AC for 1 minute
- Actuation Force: 150 ± 100 gf SPST  
200 ± 150 gf DPST
- Total Travel: 2.2mm ± 0.2mm
- Operating Life: 200,000 cycles
- Operating Temperature: -20° C to 70° C

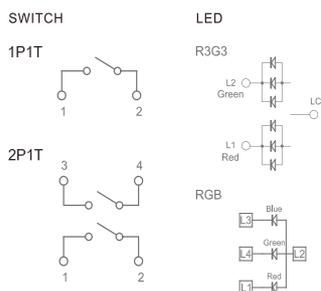
### MATERIALS

- Cover: Polycarbonate(PC)
- Actuator: Polyoxymethylen(POM)
- Base: Polyamide(PA)+GF
- Terminal: Brass with nickel plating&gold flash
- Moving Contact: Brass with nickel plating&gold flash

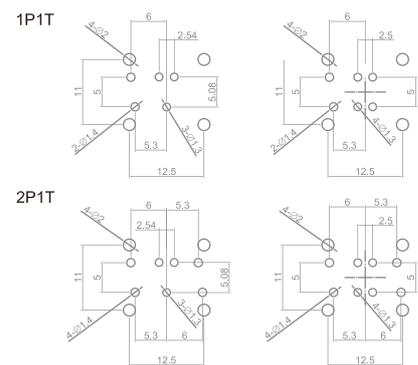
### LED SPECIFICATIONS

| Color  | V     |      | Recommended Operating Current | VF   |      |
|--------|-------|------|-------------------------------|------|------|
|        |       |      |                               | Nom  | Max  |
| Red    | DC 5V | 20mA | 20mA                          | 1.7V | 2.4V |
| Green  | DC 5V | 20mA | 20mA                          | 1.9V | 2.4V |
| Yellow | DC 5V | 20mA | 20mA                          | 1.9V | 2.4V |
| Blue   | DC 5V | 20mA | 20mA                          | 3.0V | 3.6V |
| White  | DC 5V | 20mA | 20mA                          | 3.0V | 3.6V |

### CIRCUIT



### PCB LAYOUT



### HOW TO ORDER

| SERIES | OPERATION   | POLE                 | LED COLOR  | LED BRIGHTNESS                 | LED COLOR  | LED BRIGHTNESS                 | CAP TYPE    | CAP COLOR   | PLATE COLOR                                       | CAP SYMBOL |
|--------|-------------|----------------------|--|--------------------------------|--|--------------------------------|-------------|---|---|------------|
| PLDx   | N           | 1                    | R  | 1                              | R  | 1                              | A           | T   | W   | P5         |
|        | N=MOMENTARY | 1=1 POLE<br>2=2 POLE | B=BLUE<br>G=GREEN<br>R=RED<br>Y=YELLOW<br>F=FULL COLOR<br>N=NONE | 1=STANDARD<br>2=HIGH<br>N=NONE | B=BLUE<br>G=GREEN<br>R=RED<br>Y=YELLOW<br>F=FULL COLOR<br>N=NONE | 1=STANDARD<br>2=HIGH<br>N=NONE | A=15.5mm sq | T=TRANSPARENT<br>R=RED<br>G=GREEN<br>B=BLUE<br>Y=YELLOW<br>S=SILVER | W=WHITE<br>R=RED<br>G=GREEN<br>B=BLUE<br>Y=YELLOW |            |

CAP Symbol: Please refer to cap selection for all available symbols on cap surface, and any customization is welcomed

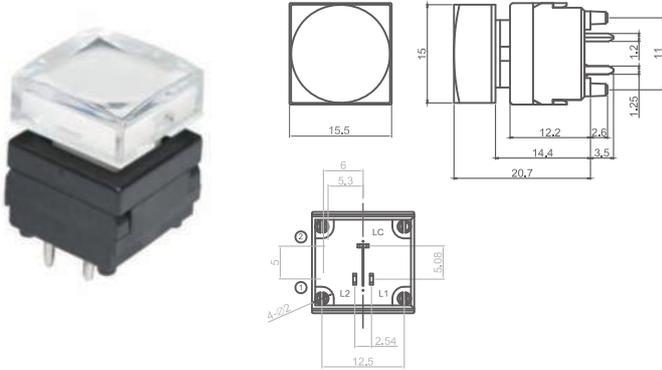
# Series PLDx

LED Illuminated pushbutton micro-switch

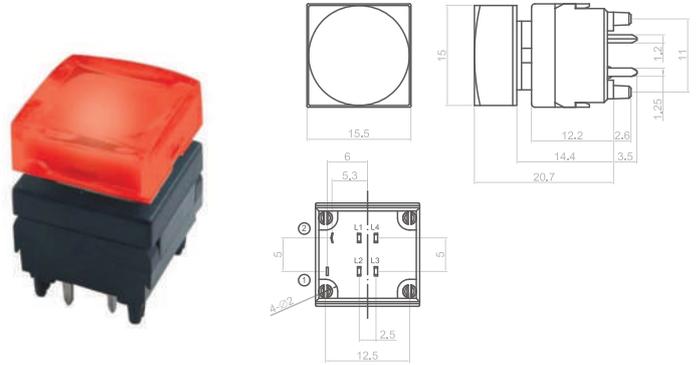


## CONFIGURATION EXAMPLES

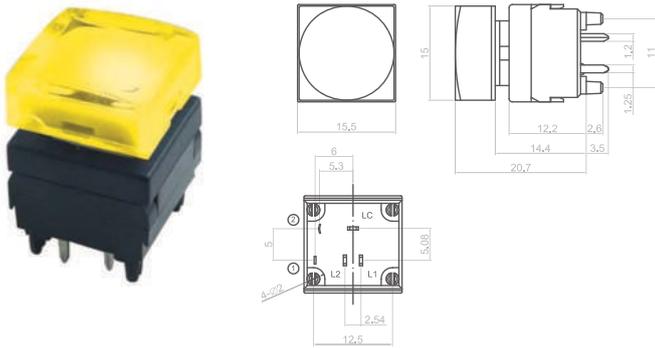
### PLDx-N1W1NN-ATW



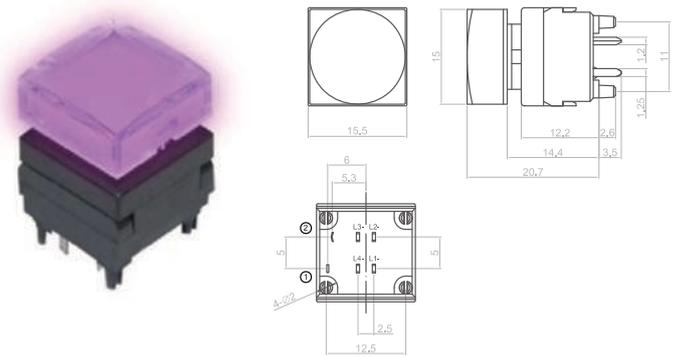
### PLDx-N1R1NN-ATW



### PLDx-N1Y1NN-ATW



### PLDx-N1FN-ATW



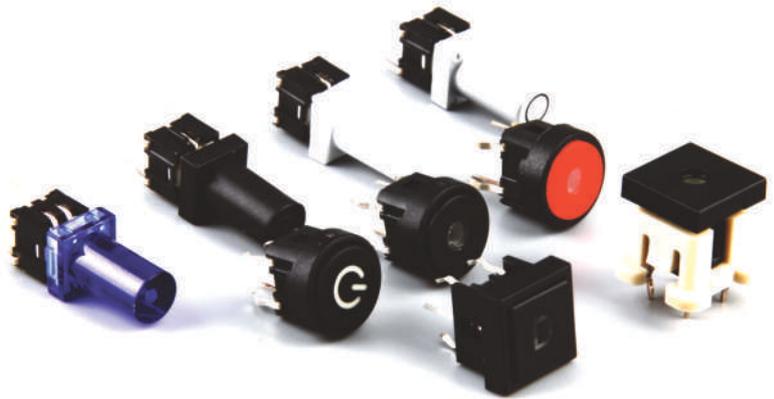
## LED Illuminated pushbutton tact-switch

### KEY FEATURES

- Super bright LED of single, Dual or RGB colors available.
- Choice of colored caps.
- Choice of painted colored caps.
- Laser marking service.
- Available with Tactile or Silent feeling
- With silicon dust cover to keep contact point clean

### MAIN APPLICATIONS

- Consumer products
- Computer products
- Instrumentation
- Communication equipments
- Home Security... etc.



### GENERAL SPECIFICATIONS

- Contact Rating: 50mA 12V DC
- Contact Resistance: 100mΩ Max. (initial)
- Insulation Resistance: 100MΩ Min. 500V DC
- Dielectric Strength: Breakdown is not allowable;  
500V AC for 1 minute
- Actuation Force: 180 ±50gf
- Total Travel: 0.2mm±0.1mm
- Operating Life: 500,000 cycles Min.
- Operating Temperature: -20°C to 70°C

### MATERIALS

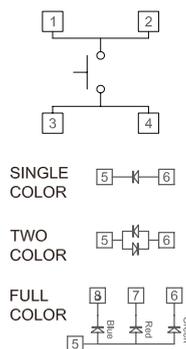
- Cover: Polyamide(PA)
- Actuator: Polyamide(PA)
- Base Frame: Polyamide(PA)
- Terminal: Brass with silver plating

### LED SPECIFICATIONS

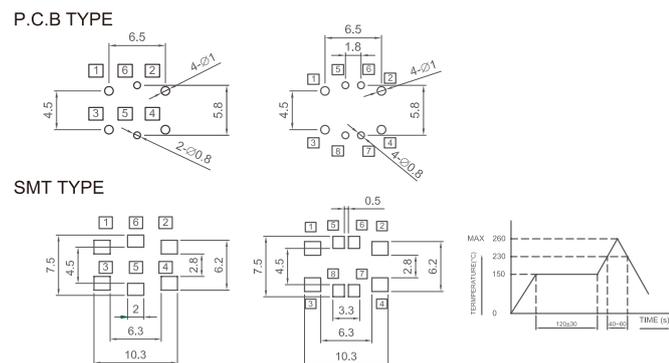
| Color  | V     |      | Recommended Operating Current | VF   |      |
|--------|-------|------|-------------------------------|------|------|
|        |       |      |                               | Nom  | Max  |
| Red    | DC 5V | 20mA | 20mA                          | 1.7V | 2.4V |
| Green  | DC 5V | 20mA | 20mA                          | 1.9V | 2.4V |
| Yellow | DC 5V | 20mA | 20mA                          | 1.9V | 2.4V |
| Blue   | DC 5V | 20mA | 20mA                          | 3.0V | 3.6V |
| White  | DC 5V | 20mA | 20mA                          | 3.0V | 3.6V |



### CIRCUIT



### PCB LAYOUT



### HOW TO ORDER

| SERIES | FRAME TYPE  | FRAME COLOR      | CAP TYPE                            | CAP COLOR                       | LED COLOR                  | LED BRIGHTNESS | LED COLOR                  | LED BRIGHTNESS | TERMINAL                   | CAP SYMBOL |
|--------|-------------|------------------|-------------------------------------|---------------------------------|----------------------------|----------------|----------------------------|----------------|----------------------------|------------|
| TL1x   | S<br>R<br>N | K<br>W<br>A<br>N | S<br>S1<br>S2<br>R<br>R1<br>R2<br>N | T<br>R<br>G<br>K<br>A<br>S<br>N | B<br>G<br>R<br>Y<br>W<br>N | 1<br>2<br>N    | B<br>G<br>R<br>Y<br>W<br>N | 1<br>2<br>N    | --P.C.B TYPE<br>S-SMT TYPE |            |

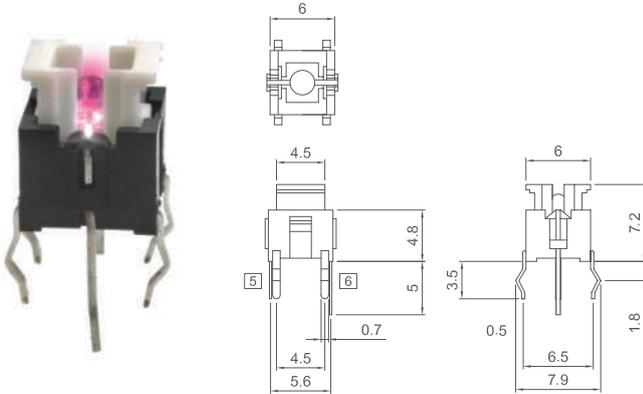
CAP Symbol: Please refer to cap selection for all available symbols on cap surface, and any customization is welcomed

# Series TL1x

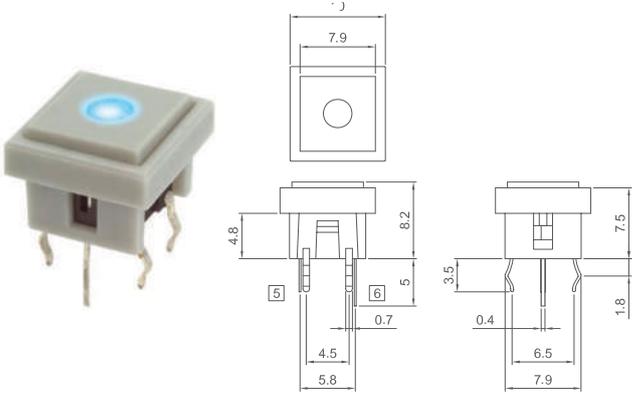
LED Illuminated pushbutton tact-switch

## CONFIGURATION EXAMPLES

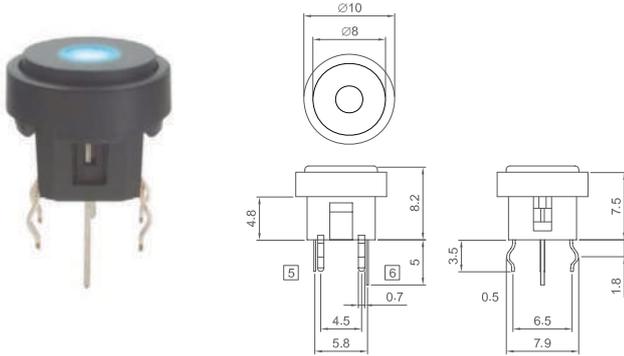
**TL1x-NNNN-R1NN**



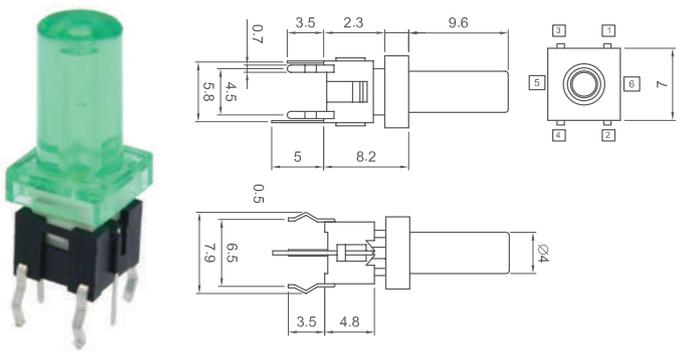
**TL1x-SASA-B1NN**



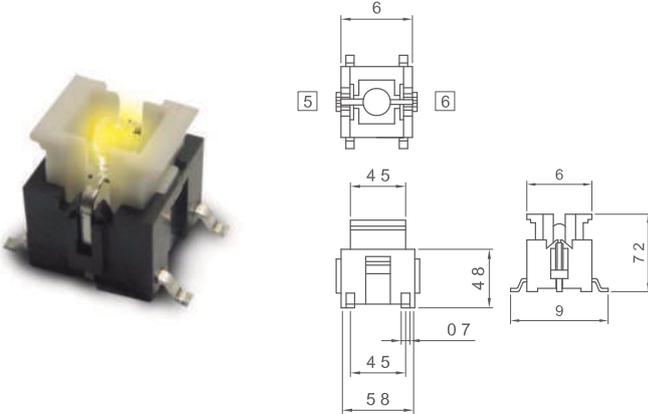
**TL1x-RKRK-B1NN**



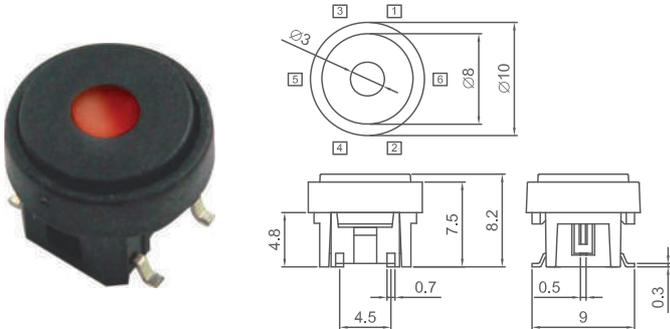
**TL1x-NNS1T-G1NN**



**TL1x-NNNN-Y1NNS**



**TL1x-RKRK-R1NNS**



## LED Illuminated pushbutton tact-switch

### KEY FEATURES

- Super bright LED of single, Dual or RGB colors available
- Choice of colored caps.
- Choice of painted colored caps
- Laser marking service.
- Available with Tactile or Silent feeling.
- With silicon dust cover to keep contact point clean.

### MAIN APPLICATIONS

- Consumer products
- Computer products
- Instrumentation
- Communication equipments
- Home Security...etc.



### GENERAL SPECIFICATIONS

- Contact Rating: 50mA 12V DC
- Contact Resistance: 100mΩ Max. ( initial )
- Insulation Resistance: 100MΩ Min. 500V DC
- Dielectric Strength: Breakdown is not allowable;  
500V AC for 1 minute
- Actuation Force: 180 ±50gf
- Total Travel: 0.2mm±0.1mm
- Operating Life: 500,000 cycles Min.
- Operating Temperature: -20°C to 70°C

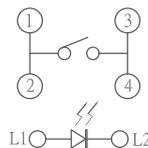
### MATERIALS

- Cover: Polyamide(PA)
- Actuator: Polyamide(PA)+GF
- Base Frame: Polyamide(PA)+GF
- Terminal: Brass with silver plating

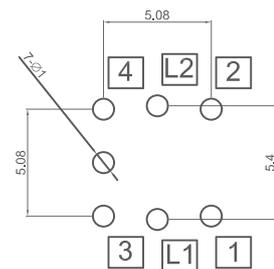
### LED SPECIFICATIONS

| Color  | V     |      | Recommended Operating Current | VF   |      |
|--------|-------|------|-------------------------------|------|------|
|        |       |      |                               | Nom  | Max  |
| Red    | DC 5V | 20mA | 20mA                          | 1.7V | 2.4V |
| Green  | DC 5V | 20mA | 20mA                          | 1.9V | 2.4V |
| Yellow | DC 5V | 20mA | 20mA                          | 1.9V | 2.4V |
| Blue   | DC 5V | 20mA | 20mA                          | 3.0V | 3.6V |
| White  | DC 5V | 20mA | 20mA                          | 3.0V | 3.6V |

### CIRCUIT



### PCB LAYOUT



### HOW TO ORDER

| SERIES | FRAME TYPE  | FRAME COLOR                            | CAP TYPE  | CAP COLOR  | LED COLOR   | LED BRIGHTNESS                 | LED COLOR   | LED BRIGHTNESS                 | TERMINAL                   | CAP SYMBOL |
|--------|---|--|---|--|---|--------------------------------|---|--------------------------------|----------------------------|------------|
| TL2x   | S   | A                                      | S   | A  | R   | 1                              | R   | 1                              |                            |            |
|        | S=SQUARE<br>S1=S1 sq<br>S2=S2 sq<br>S3=S3 sq<br>R=ROUND<br>R1=R1 ro<br>R2=R2 ro<br>R3=R3 ro<br>N=NONE | K=BLACK<br>W=WHITE<br>A=GRAY<br>N=NONE | S=SQUARE<br>S1=S1 sq<br>S2=S2 sq<br>S3=S3 sq<br>R=ROUND<br>R1=R1 ro<br>R2=R2 ro<br>R3=R3 ro<br>N=NONE | T=TRANSPARENT<br>R=RED<br>W=WHITE<br>K=BLACK<br>A=GRAY<br>S=SILVER<br>N=NONE | B=BLUE<br>G=GREEN<br>R=RED<br>Y=YELLOW<br>W=WHITE<br>N=NONE | 1=STANDARD<br>2=HIGH<br>N=NONE | B=BLUE<br>G=GREEN<br>R=RED<br>Y=YELLOW<br>W=WHITE<br>N=NONE | 1=STANDARD<br>2=HIGH<br>N=NONE | --P.C.B TYPE<br>S=SMT TYPE |            |

CAP Symbol: Please refer to cap selection for all available symbols on cap surface, and any customization is welcomed



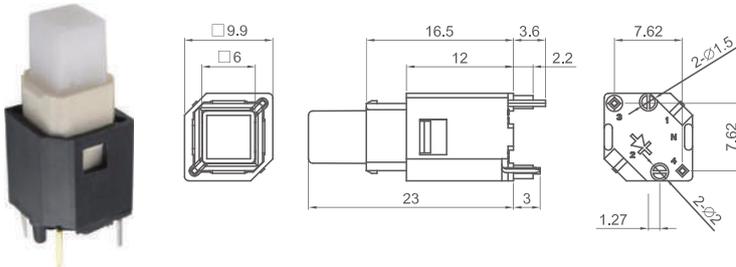


# Series TL3x

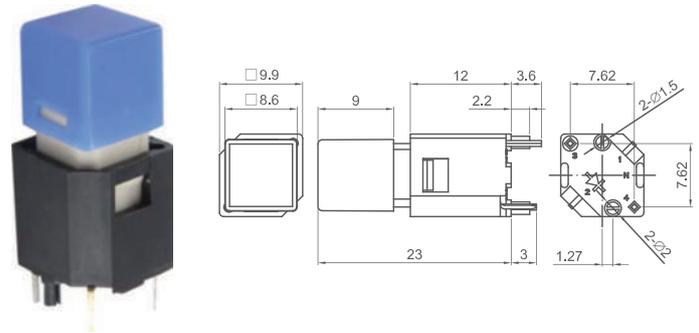
LED Illuminated pushbutton tact-switch

## CONFIGURATION EXAMPLES

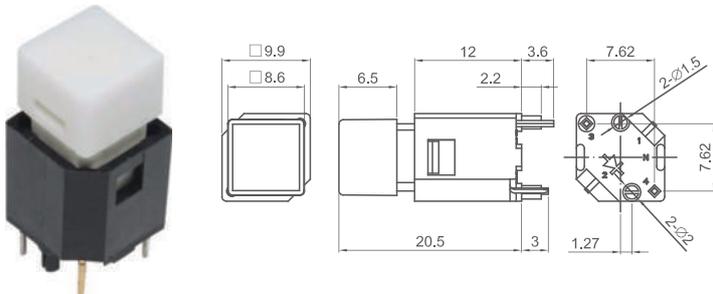
**TL3x-N1W1NN-AAW**



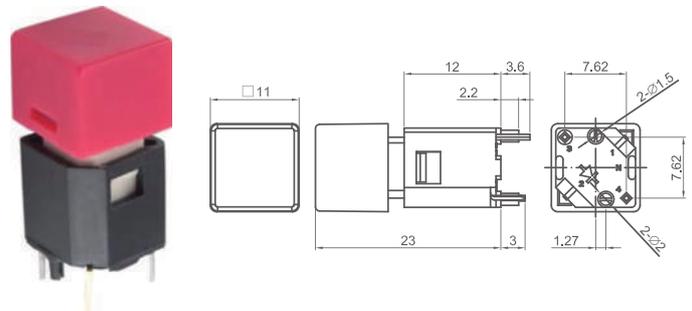
**TL3x-N1B1NN-ABB**



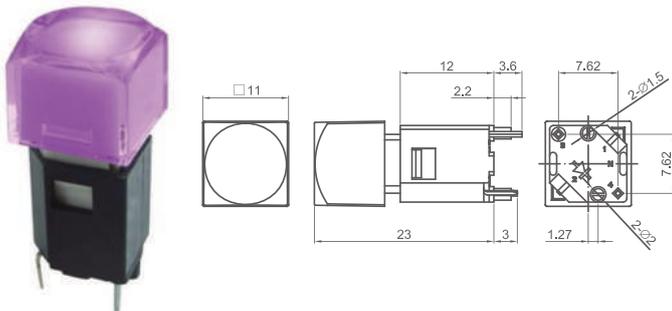
**TL3x-N1W1NN-BBW**



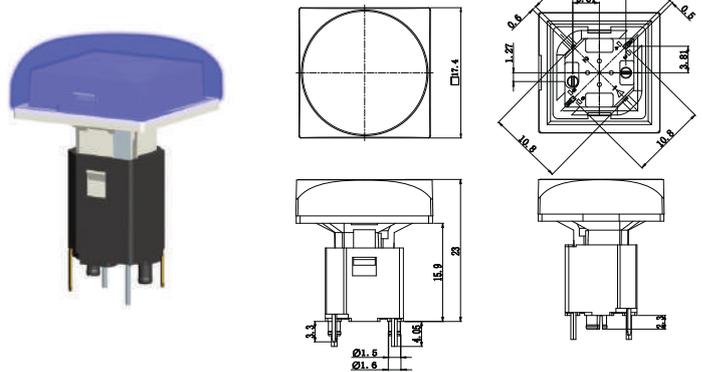
**TL3x-N1R1NN-ACR**



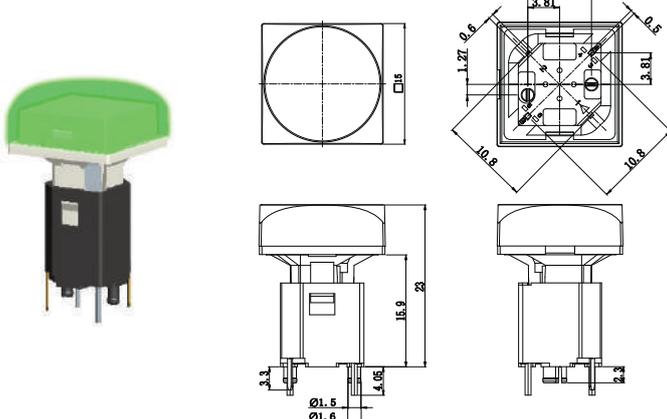
**TL3x-N1B1BB-ADT**



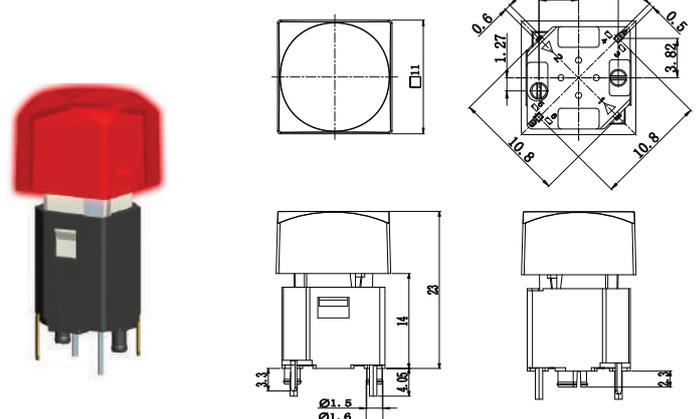
**TL3x-N1B1NN-AFT**



**TL3x-N1G1NN-AET**



**TL3x-N1R1NN-ADT**



## LED Illuminated pushbutton tact-switch

### KEY FEATURES

- Light click feeling
- Super high quality
- Conductive Rubber
- RGB LED illuminated available
- Long electrical life cycles

### MAIN APPLICATIONS

- Studio equipment.
- Audio/Video products,
- Broadcast system,
- Instrumentation,.
- Telecommunications ...etc



### GENERAL SPECIFICATIONS

- Circuit: OFF-<ON>For Momentary Type,SPST
- Contact Rating: Max.:1mA 20V DC or 5mA 5V DC  
Min.:1mA 5V DC
- Contact Resistance: 200Ω Max.
- Insulation Resistance: 100MΩ Min.100V DC
- Dielectric Strength:Breakdown is not allowable;  
250V AC for 1 minute
- Actuation Force: 160 ±40gf
- Total Travel:1.3mm±0.3mm
- Operating Life: 500,000 cycles Min.
- Operating Temperature: -20°C to 70°C

### MATERIALS

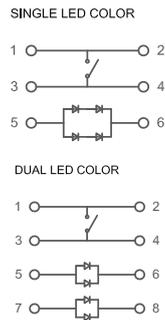
- Actuator: Polyoxymethylen(POM)
- Frame:Steel plate
- Terminal:Brass with silver plating

### LED SPECIFICATIONS

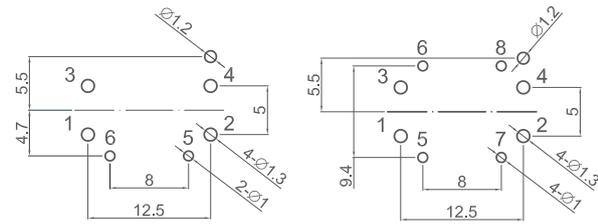
| Color  | V     |      | Recommended Operating Current | VF   |      |
|--------|-------|------|-------------------------------|------|------|
|        |       |      |                               | Nom  | Max  |
| Red    | DC 5V | 20mA | 20mA                          | 1.7V | 2.4V |
| Green  | DC 5V | 20mA | 20mA                          | 1.9V | 2.4V |
| Yellow | DC 5V | 20mA | 20mA                          | 1.9V | 2.4V |
| Blue   | DC 5V | 20mA | 20mA                          | 3.0V | 3.6V |
| White  | DC 5V | 20mA | 20mA                          | 3.0V | 3.6V |



### CIRCUIT



### PCB LAYOUT



### HOW TO ORDER

| SERIES | OPERATION   | POLE     | LED COLOR   | LED BRIGHTNESS                 | LED COLOR   | LED BRIGHTNESS                 | CAP TYPE                       | CAP COLOR   | PLATE COLOR   | CAP SYMBOL |
|--------|-------------|----------|---|--------------------------------|---|--------------------------------|--------------------------------|---|---|------------|
| TL5x   | N           | 1        | R   | 1                              | R   | 1                              | S                              | T   | W   | P5         |
|        | N=MOMENTARY | 1=1 POLE | B=BLUE<br>G=GREEN<br>R=RED<br>Y=YELLOW<br>W=WHITE<br>N=NONE | 1=STANDARD<br>2=HIGH<br>N=NONE | B=BLUE<br>G=GREEN<br>R=RED<br>Y=YELLOW<br>W=WHITE<br>N=NONE | 1=STANDARD<br>2=HIGH<br>N=NONE | S=SQUARE<br>S1=S1 sq<br>N=NONE | T=TRANSPARENT<br>R=RED<br>G=GREEN<br>B=BLUE<br>Y=YELLOW<br>S=SILVER<br>N=NONE | W=WHITE<br>R=RED<br>G=GREEN<br>B=BLUE<br>Y=YELLOW<br>N=NONE |            |

CAP Symbol:Please refer to cap selection for all available symbols on cap surface,and any customization is welcomed

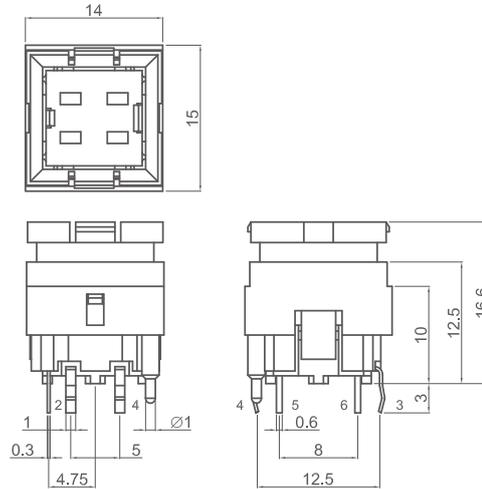
# Series TL5x

LED Illuminated pushbutton tact-switch

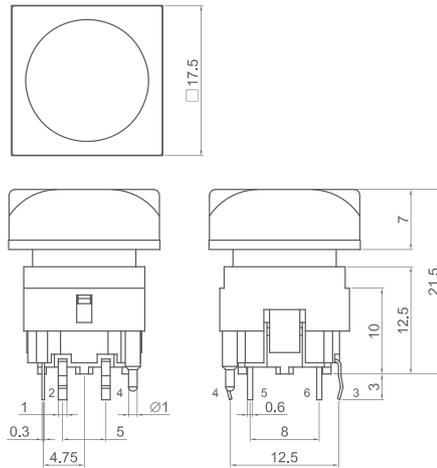


## CONFIGURATION EXAMPLES

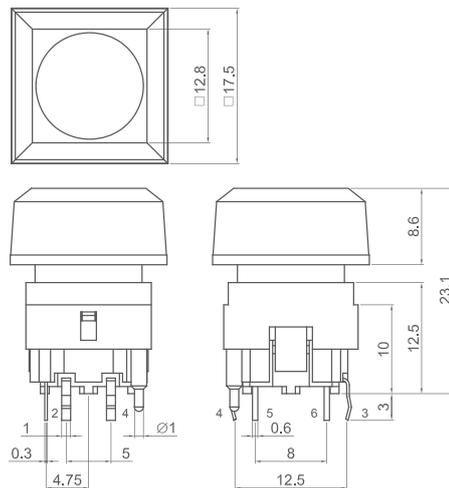
### TL5x-N1NNNN-NNN



### TL5x-N1R1NN-S1TW



### TL5x-N1Y1NN-STW



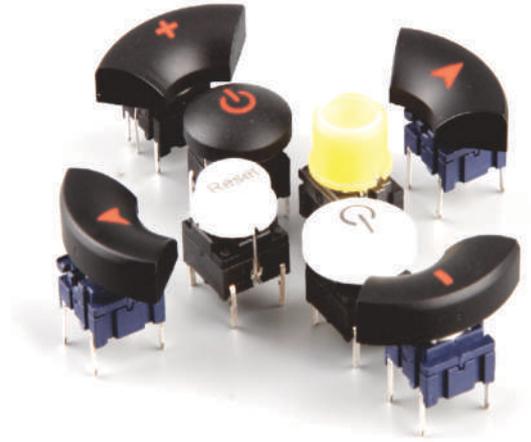
## LED Illuminated pushbutton tact-switch

### KEY FEATURES

- Water proof Ip67 sealed.
- Medium size.
- Bi-color LED illuminated available.
- SMT and vertical PCB terminal.

### MAIN APPLICATIONS

- Studio equipment.
- Audio/Video products,
- Broadcast system,
- Instrumentation,.
- Telecommunications ...etc



### GENERAL SPECIFICATIONS

|   |
|---|
| Circuit: SPST,With led  |
| Contact Rating: 50mA 24V DC   |
| Contact Resistance: 200mΩ Max.  |
| Insulation Resistance: 100MΩ Min.500V DC                                |
| Dielectric Strength:Breakdown is not allowable;<br>500V AC for 1 minute |
| Actuation Force: 300 ± 100gf  |
| Total Travel: 1.0mm ± 0.3mm   |
| Operating Life: 1,500,000 cycles  |
| Operating Temperature: -20° C to 70° C                                  |



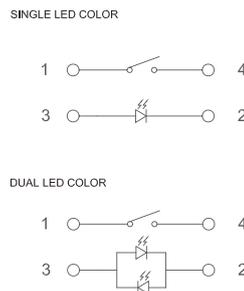
### MATERIALS

Cover: Polycarbonate(PC)  
 Actuator:Polyoxymethylen(POM)  
 Base:Polyamide(PA)+GF  
 Terminal:Brass with nickel plating&gold flash  
 Moving Contact: Brass with nickel plating&gold flash

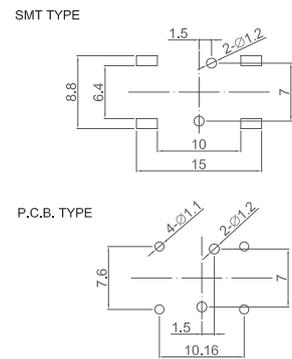
### LED SPECIFICATIONS

| Color  | V     |      | Recommended Operating Current | VF   |      |
|--------|-------|------|-------------------------------|------|------|
|        |       |      |                               | Nom  | Max  |
| Red    | DC 5V | 20mA | 20mA                          | 1.7V | 2.4V |
| Green  | DC 5V | 20mA | 20mA                          | 1.9V | 2.4V |
| Yellow | DC 5V | 20mA | 20mA                          | 1.9V | 2.4V |
| Blue   | DC 5V | 20mA | 20mA                          | 3.0V | 3.6V |
| White  | DC 5V | 20mA | 20mA                          | 3.0V | 3.6V |

### CIRCUIT



### PCB LAYOUT



### HOW TO ORDER

| SERIES | OPERATION  | POLE     | LED COLOR   | LED BRIGHTNESS                 | LED COLOR   | LED BRIGHTNESS                 | CAP TYPE  | CAP COLOR  | TERMINAL                    | CAP SYMBOL |
|--------|------------|----------|---|--------------------------------|---|--------------------------------|---|--|-----------------------------|------------|
| TL13x  | N          | 1        | R   | 1                              | R   | 1                              | S   | T  |                             | P5         |
|        | N=NON-LOCK | 1=1 POLE | B=BLUE<br>G=GREEN<br>R=RED<br>Y=YELLOW<br>W=WHITE<br>N=NONE | 1=STANDARD<br>2=HIGH<br>N=NONE | B=BLUE<br>G=GREEN<br>R=RED<br>Y=YELLOW<br>W=WHITE<br>N=NONE | 1=STANDARD<br>2=HIGH<br>N=NONE | S=SQUARE<br>S1=S1 sq<br>R=ROUND<br>R1=R1 ro<br>R2=R2 ro<br>R3=R3 ro<br>N=NONE | T=TRANSPARENT<br>R=RED<br>W=WHITE<br>K=BLACK<br>A=GRAY<br>S=SILVER<br>N=NONE | --=P.C.B TYPE<br>S=SMT TYPE |            |

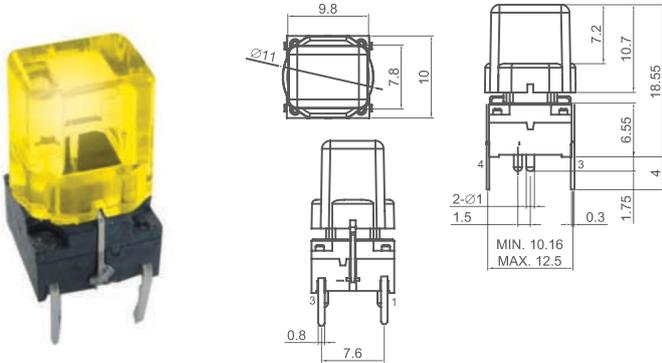
CAP Symbol:Please refer to cap selection for all available symbols on cap surface,and any customization is welcomed

# Series TL13x

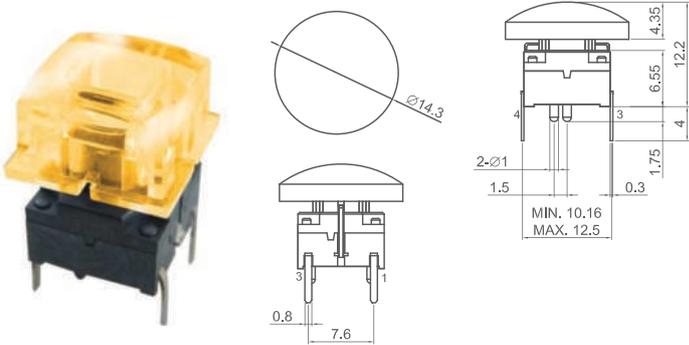
LED Illuminated pushbutton tact-switch

## CONFIGURATION EXAMPLES

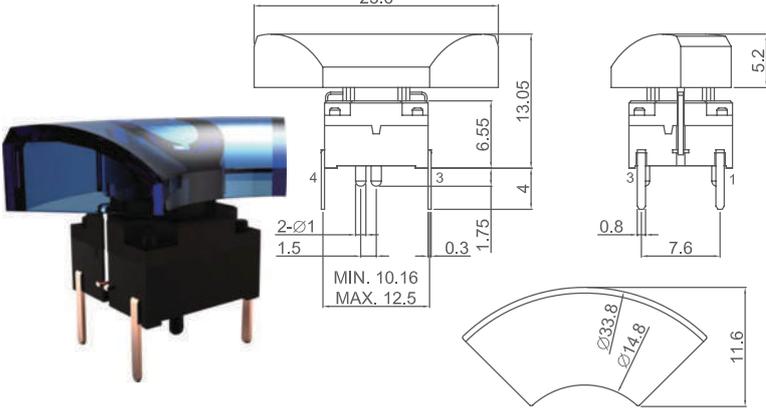
**TL13x-N1Y1NN-ST**



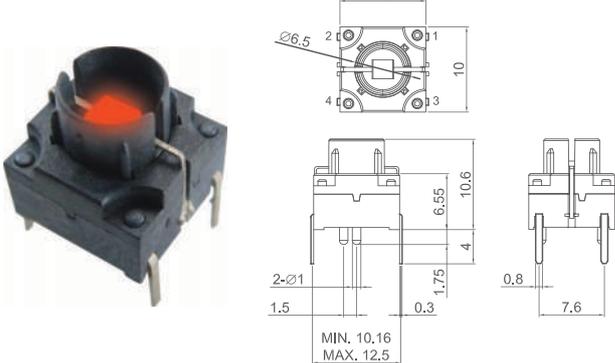
**TL13x-N1Y1NN-S1T**



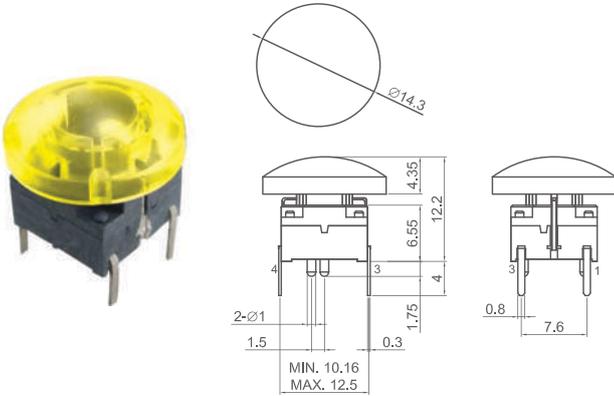
**TL13x-N1B1NN-R2T**



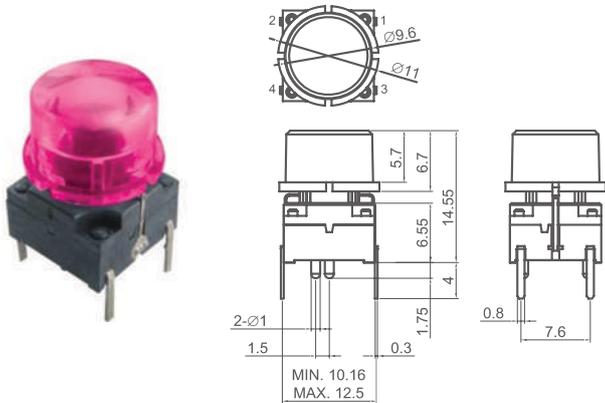
**TL13x-N1R1NN-NN**



**TL13x-N1Y1NN-RT**



**TL13x-N1R1NN-R1T**



## LED Illuminated ultra-miniature pushbutton switch

### KEY FEATURES

- Snap in panel mount installation
- Durable, vivid LED illumination
- Choice of painted colored caps.
- Laser marking service.
- Available with wires soldered to terminal

### MAIN APPLICATIONS

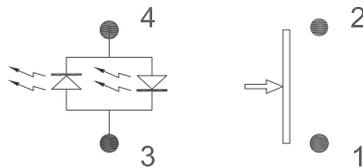
- Automotive industry
- Office appliance
- Communication equipments
- Racing helmet...etc.



### GENERAL SPECIFICATIONS

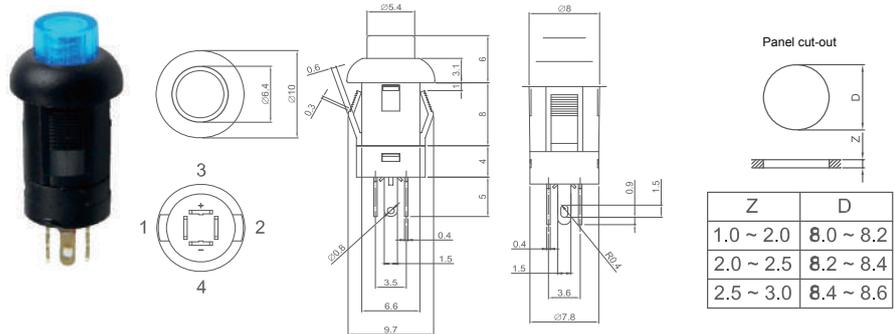
- Function: Momentary Type, SPST with led
- Contact Rating: 0.1A 30V DC
- Contact Resistance: 50mΩ Max. 1.5V DC/ 100 mA,  
by method of Voltage drop
- Insulation Resistance: 100MΩ Min. 500 V DC
- Dielectric Strength: Breakdown is not allowable;  
500V AC for 1 minute
- Actuation Force: 250 ± 100gf
- Total Travel: 1.3mm ± 0.3mm
- Operating Life: 50,000 cycles
- Operating Temperature: -20° C to 70° C

### CIRCUIT



### LED SPECIFICATIONS

| Color  | V     |      | Recommended Operating Current | VF   |      |
|--------|-------|------|-------------------------------|------|------|
|        |       |      |                               | Nom  | Max  |
| Red    | DC 5V | 20mA | 20mA                          | 1.7V | 2.4V |
| Green  | DC 5V | 20mA | 20mA                          | 1.9V | 2.4V |
| Yellow | DC 5V | 20mA | 20mA                          | 1.9V | 2.4V |
| Blue   | DC 5V | 20mA | 20mA                          | 3.0V | 3.6V |
| White  | DC 5V | 20mA | 20mA                          | 3.0V | 3.6V |



### HOW TO ORDER

| SERIES           | OPERATION  | POLE     | TERMINAL    | LED COLOR   | LED BRIGHTNESS                 | LED COLOR   | LED BRIGHTNESS                 | CAP SYMBOL |
|------------------|------------|----------|-------------|---|--------------------------------|---|--------------------------------|------------|
| PLE <sub>x</sub> | N          | 1        | W           | R   | 1                              | R   | 1                              | P5         |
|                  | N=NON-LOCK | 1=1 POLE | W=WIRE TYPE | B=BLUE<br>G=GREEN<br>R=RED<br>Y=YELLOW<br>W=WHITE<br>N=NONE | 1=STANDARD<br>2=HIGH<br>N=NONE | B=BLUE<br>G=GREEN<br>R=RED<br>Y=YELLOW<br>W=WHITE<br>N=NONE | 1=STANDARD<br>2=HIGH<br>N=NONE |            |

CAP Symbol: Please refer to cap selection for all available symbols on cap surface, and any customization is welcomed

## LED Illuminated pushbutton tact-switch

### KEY FEATURES

- Excellent contact Feeling
- Super bright LED
- Smooth illuminated
- Small size cap
- Bright LEDS of single
- Dual and RGB colors available

### MAIN APPLICATIONS

- Studio equipment.
- Audio/Video products,
- Broadcast system,
- Instrumentation,.
- Telecommunications ...etc



### GENERAL SPECIFICATIONS

|  |
|--|
| Function:SPST,Momentary action                                     |
| Contact Rating: 100mA 20VDC  |
| Contact Resistance: 1Ω Max.5V DC;<br>1mA by method of Voltage DROP |
| Insulation Resistance: 100mΩ Min. 100V DC for 1 Minute             |
| Actuation Force: 125 ± 50 gf                                       |
| Total Travel:1.3mm ± 0.1mm   |
| Operating Life:500,000 cycles Min.                                 |
| Operating Temperature: -20° C to 70° C                             |

### MATERIALS

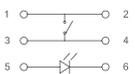
|                                  |
|----------------------------------|
| Cover: Polycarbonate(PC)         |
| Actuator: Polyamide(PA)+GF       |
| Base Frame:Polyamide(PA)+GF      |
| Terminal:Brass with gold plating |

### LED SPECIFICATIONS

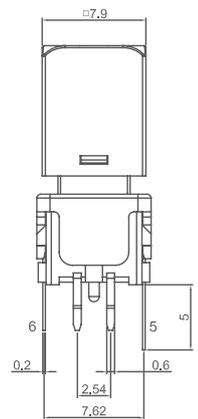
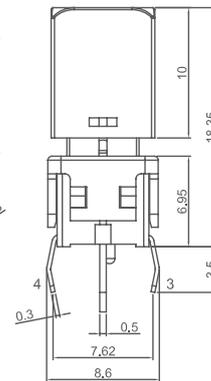
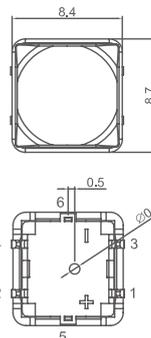
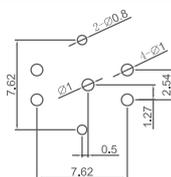
| Color  | V     |      | Recommended Operating Current | VF   |      |
|--------|-------|------|-------------------------------|------|------|
|        |       |      |                               | Nom  | Max  |
| Red    | DC 5V | 20mA | 20mA                          | 1.7V | 2.4V |
| Green  | DC 5V | 20mA | 20mA                          | 1.9V | 2.4V |
| Yellow | DC 5V | 20mA | 20mA                          | 1.9V | 2.4V |
| Blue   | DC 5V | 20mA | 20mA                          | 3.0V | 3.6V |
| White  | DC 5V | 20mA | 20mA                          | 3.0V | 3.6V |



### CIRCUIT



### PCB LAYOUT



### HOW TO ORDER

| SERIES | OPERATION  | POLE     | TERMINAL                 | LED COLOR   | LED COLOR  | CAPTYP                           | CAP COLOR   | PLATE COLOR                                       | CAP SYMBOL |
|--------|------------|----------|--------------------------|---|--|----------------------------------|---|---|------------|
| TL9x   | N          | 1        | P                        | R   | G  | A                                | T   | W   | P5         |
|        | N=NON-LOCK | 1=1 POLE | P=P.C.BTYPE<br>S=SMTTYPE | B=BLUE<br>G=GREEN<br>R=RED<br>Y=YELLOW<br>F=FULLCOLOR<br>N=NONE | B=BLUE<br>G=GREEN<br>R=RED<br>Y=YELLOW<br>F=FULL COLOR<br>N=NONE | A=A TYPE<br>B=B TYPE<br>C=C TYPE | T=TRANSPARENT<br>R=RED<br>G=GREEN<br>B=BLUE<br>Y=YELLOW<br>S=SILVER | W=WHITE<br>R=RED<br>G=GREEN<br>B=BLUE<br>Y=YELLOW |            |

CAP Symbol:Please refer to cap selection for all available symbols on cap surface,and any customization is welcomed



## CAP SYMBOLS TABLE

|    |       |             |       |        |        |          |             |          |             |         |         |         |         |         |         |           |         |             |           |           |           |           |           |
|----|-------|-------------|-------|--------|--------|----------|-------------|----------|-------------|---------|---------|---------|---------|---------|---------|-----------|---------|-------------|-----------|-----------|-----------|-----------|-----------|
| A  | 0     | 1           | 2     | 3      | 4      | 5        | 6           | 7        | 8           | 9       | J       | K       | L       | M       | N       | O         | P       | 15          | 16        | 17        | 18        | 19        | T         |
| 0  | 0     | A           | C     | D      | E      | F        | G           | H        | I           | J       | J       | K       | L       | M       | N       | O         | P       | 15          | 16        | 17        | 18        | 19        | T         |
| 1  | A     | B           | C     | D      | E      | F        | G           | H        | I           | J       | J       | K       | L       | M       | N       | O         | P       | 15          | 16        | 17        | 18        | 19        | T         |
| 2  | K     | L           | M     | N      | O      | P        | Q           | R        | S           | T       | T       | REPLAY  | RET1    | RET2    | KEY ON  | AUTO TAKE | 15      | 16          | 17        | 18        | 19        | T         | T         |
| 3  | U     | V           | W     | X      | Y      | Z        | POWER       | ON/OFF   | ON          | OFF       | OFF     | OFF         | OFF       | OFF       | OFF       | OFF       | OFF       |
| 4  | OK    | OK          | Auto  | Enter  | Start  | STOP     | OPEN        | CLOSE    | Exit        | Move      | Move    | Move        | Move      | Move      | Move      | Move      | Move      |
| 5  | SET   | Reset       | Light | Alarm  | Menu   | Next     | Back        | Delete   | Motor       | Save      | Save    | Save        | Save      | Save      | Save      | Save      | Save      |
| 6  | Up    | Down        | Right | Left   | Test   | End      | Insert      | Lock     | Print       | +/-     | +/-     | +/-     | +/-     | +/-     | +/-     | +/-       | +/-     | +/-         | +/-       | +/-       | +/-       | +/-       | +/-       |
| 7  | ESC   | BC          | HOME  | Health | D-LED2 | OC GENIE | VIDEO INPUT | clr CMOS | Green Power | Save OK   | Save OK | Save OK     | Save OK   | Save OK   | Save OK   | Save OK   | Save OK   |
| 8  | B/R + | Undo/Cancel | T/L   | F1     | F2     | F3       | F4          | F5       | F6          | F7      | F7      | SEEK    | TRACK   | RNA     | AS/RPT  | Select    | ON AIR  | SET         | ON        | SOS       | TC        | TURBO     | OP        |
| 9  | F8    | F9          | F10   | F11    | F12    | F13      | F14         | IN 1     | IN 2        | IN 3    | IN 3    | TEST    | INFO    | STOP    | OPEN    | Menu      | ON AIR  | O           | D.        | D.        | M.        | J         | J         |
| 10 | IN 4  | IN 5        | IN 6  | Power  | Power  | Power    | Power       | Power    | Power       | Power   | Power   | Power   | Power   | Power   | Power   | Power     | Power   | VGA         | PURGE     | R/HR      | PARL      | IOD       | IOD       |
| 11 | +     | -           | X     | ÷      | =      | ↑        | ↑           | ↑        | ↑           | ↑       | ↑       | ↑       | ↑       | ↑       | ↑       | ↑         | ↑       | PUMP ON/OFF | EFF LEVEL |
| 12 | ↕     | ✖           | ↻     | ↻      | ↻      | ↻        | ↻           | ↻        | ↻           | ↻       | ↻       | ↻       | ↻       | ↻       | ↻       | ↻         | ↻       | GAS         | GAS       | GAS       | GAS       | GAS       | GAS       |





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Kynoppe S.A.S.  
18 avenue Raspail  
Batiment C  
94100 Saint-Maur-des-Fossés  
France

Tel. +33 1 48 75 92 76  
Fax. +33 1 48 75 75 18

[sales@kynoppe.com](mailto:sales@kynoppe.com)

[www.kynoppe.com](http://www.kynoppe.com)



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