

# TL series

Subminiature washable toggle switches



## DISTINCTIVE FEATURES

- Process sealed
- Single piece case
- Front and rear sealing
- Wide variety of contact materials
- Same PCB layout as TP, TR and TG subminiature switches



## ENVIRONMENTAL SPECIFICATIONS

- Operating temperature : -30 °C to +85 °C (-22 °F to +185 °F)
- Moisture : 21 days 95 % (NFC 20-603 - IEC 68-2-3)



## ELECTRICAL SPECIFICATIONS

- Max. current/voltage rating with resistive load :
  - gold plated contacts : 0.4 VA 20 V max. AC or DC
  - silver plated contacts : 0.5 A 48 V max. AC or DC
- Minimum load : 10 mA 50 mV - 10  $\mu$ A 5 VDC
- Contact resistance : 20 m $\Omega$  max.
- Insulation resistance : 1,000 M $\Omega$  min. at 500 VDC
- Dielectric strength :
  - 1,000 Vrms 50 Hz min. between terminals and frame
  - 500 Vrms 50 Hz min. between terminals
- Electrical life at full load :

| Contacts      | Number of cycles |             |
|---------------|------------------|-------------|
|               | 2 positions      | 3 positions |
| Gold plated   | 60,000           | 30,000      |
| Silver plated | 20,000           | 10,000      |



## GENERAL SPECIFICATIONS

- Strength of terminals : pull-out force - 10 N max.
- Cleaning : solvents or water + detergent
- Wave soldering : 260 °C (500 °F) - 5 sec.

The company reserves the right to change specifications without notice.



# TL series

Subminiature washable toggle switches



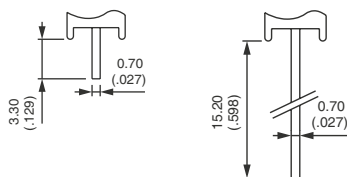
## MATERIALS

- Case : PBT
- Actuator : brass, nickel plated
- Contacts and terminals :
  - 0 : brass, gold plated
  - 1 : brass, silver plated
  - 3 : brass, gold plated (1,27 micron gold)
  - 8 : contact brass, gold plated + tin plated terminals
  - 9 : contact brass, gold plated (1,27 micron gold) + tin plated terminals
- Terminal seal : epoxy

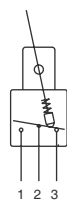
APEM products may be recycled at end-of-life for the re-claiming of valuable metal components.



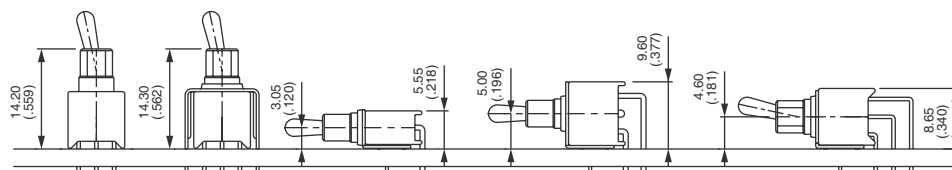
## TERMINALS



## ELECTRICAL FUNCTIONS



## PCB MOUNTING





### BUILD YOUR PART NUMBER

| BASIC PART NUMBER                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                           |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| SERIES                                                                                                                                                                                                                               | NUMBER OF POLES                                                                                                                                                                                                                                     | ELECTRICAL FUNCTIONS                                                                                                                                                                                                                                                                        | TERMINALS                                                                                                                                                                                                                                 |
| TL                                                                                                                                                                                                                                   | 3 Single pole<br>4 Double pole                                                                                                                                                                                                                      | 6 ON - ON<br>9 ON OFF ON<br>7 MOM OFF MOM<br>8 ON OFF MOM<br>2 ON - MOM                                                                                                                                                                                                                     | P0 Straight PC<br>Y0 Bracket mounting<br>W0 Right angle, horizontal mounting<br>WW Right angle, vertical mounting                                                                                                                         |
| OPTIONS                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                           |
| CONTACT AND TERMINAL MATERIALS                                                                                                                                                                                                       | LEVER STYLES / CASE COLORS                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                             | SPECIAL OPTIONS                                                                                                                                                                                                                           |
| 0 Brass, gold plated<br>1 Brass, silver plated<br>3 Brass, gold plated (1.27 micron gold)<br>8 Contact brass, gold plated + tin plated terminals<br>9 Contact brass, gold plated (1.27 micron gold) + tin plated terminals (SP only) | With blue case<br>00 Short lever, nickel plated<br>01 Short lever, black<br>02 Long lever, nickel plated<br>03 Long lever, black<br>04 Medium lever, nickel plated<br>05 Medium lever, black<br>40 Short insulated lever<br>30 Long insulated lever | With black case<br>50 Short lever, nickel plated<br>51 Short lever, black<br>52 Long lever, nickel plated<br>53 Long lever, black<br>54 Medium lever, nickel plated<br>55 Medium lever, black<br>56 Cylindrical lever, nickel plated<br>94 Short insulated lever<br>90 Long insulated lever | 00 No special requirement<br>07 Trimmed terminals - length 3.2 (.125)<br>08 Extended terminals<br>18 Switch without ground plate<br>20 Ground plate with 2 pins<br>25 Trimmed terminals - length 5 (.196)<br>50 Crimped ground plate pins |



### ABOUT THIS SERIES

On the following pages, you will find successively basic part numbers of switches and options in the same order as in above chart.



**Notice :** please note that not all combinations of above numbers are available. Refer to the following pages for further information.

# TL series

Subminiature washable toggle switches

## STRAIGHT PC TERMINALS : TL..P0



| Single pole | Double pole | III | II  | I   |
|-------------|-------------|-----|-----|-----|
| TL36P0      | TL46P0      | ON  | -   | ON  |
| TL39P0      | TL49P0      | ON  | OFF | ON  |
| TL37P0      | TL47P0      | MOM | OFF | MOM |
| TL38P0      | TL48P0      | ON  | OFF | MOM |
| TL32P0      | TL42P0      | ON  | -   | MOM |

## STRAIGHT PC TERMINALS BRACKET MOUNTING : TL..Y0



| Single pole | Double pole | III | II  | I   |
|-------------|-------------|-----|-----|-----|
| TL36Y0      | TL46Y0      | ON  | -   | ON  |
| TL39Y0      | TL49Y0      | ON  | OFF | ON  |
| TL37Y0      | TL47Y0      | MOM | OFF | MOM |
| TL38Y0      | TL48Y0      | ON  | OFF | MOM |
| TL32Y0      | TL42Y0      | ON  | -   | MOM |

## RIGHT ANGLE TERMINALS HORIZONTAL MOUNTING : TL..W0



| Single pole | Double pole | III | II  | I   |
|-------------|-------------|-----|-----|-----|
| TL36W0      | TL46W0      | ON  | -   | ON  |
| TL39W0      | TL49W0      | ON  | OFF | ON  |
| TL37W0      | TL47W0      | MOM | OFF | MOM |
| TL38W0      | TL48W0      | ON  | OFF | MOM |
| TL32W0      | TL42W0      | ON  | -   | MOM |

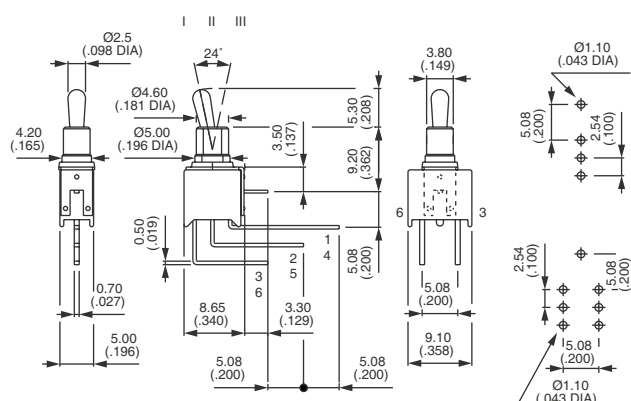
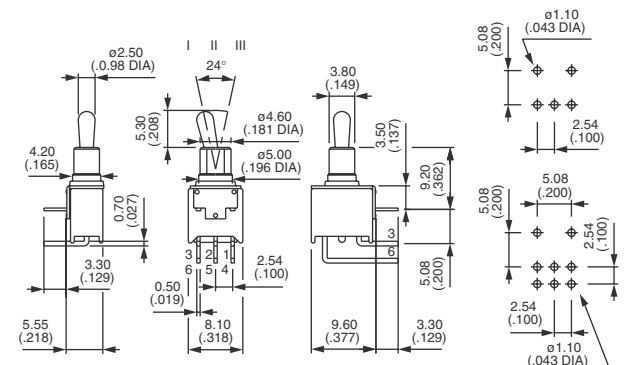
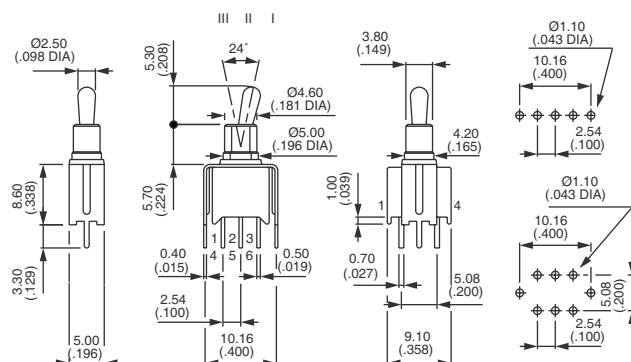
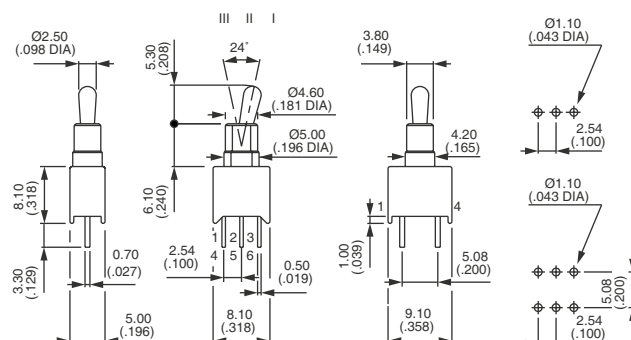
## RIGHT ANGLE TERMINALS VERTICAL MOUNTING : TL..WW



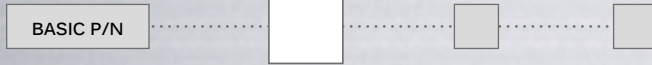
| Single pole | Double pole | III | II  | I   |
|-------------|-------------|-----|-----|-----|
| TL36WW      | TL46WW      | ON  | -   | ON  |
| TL39WW      | TL49WW      | ON  | OFF | ON  |
| TL37WW      | TL47WW      | MOM | OFF | MOM |
| TL38WW*     | TL48WW*     | ON  | OFF | MOM |
| TL32WW*     | TL42WW*     | ON  | -   | MOM |

\*Functions 2 and 8 : reversed connection available. On request.

Shown with standard lever

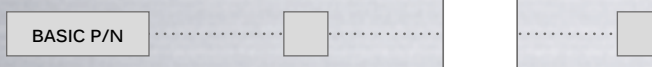


### CONTACT AND TERMINAL MATERIALS

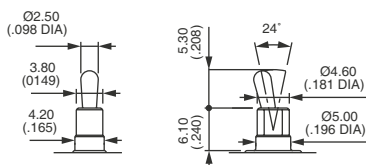


- |   |                                                                                         |
|---|-----------------------------------------------------------------------------------------|
| 0 | Brass, gold plated                                                                      |
| 1 | Brass, silver plated                                                                    |
| 3 | Brass, gold plated (1.27 micron gold)                                                   |
| 8 | Contact brass, gold plated + tin plated terminals                                       |
| 9 | Contact brass, gold plated (1.27 micron gold) + tin plated terminals (single pole only) |

### LEVER AND CASE STYLES

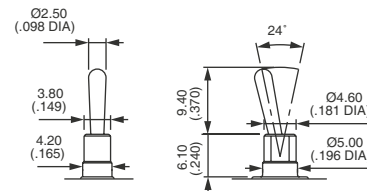


#### SHORT - STANDARD



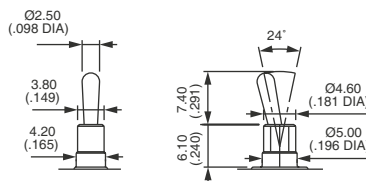
| CASE          |      |       |
|---------------|------|-------|
| LEVER         | Blue | Black |
| Nickel plated | 00   | 50    |
| Black         | 01   | 51    |

#### LONG



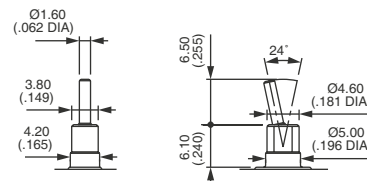
| CASE          |      |       |
|---------------|------|-------|
| LEVER         | Blue | Black |
| Nickel plated | 02   | 52    |
| Black         | 03   | 53    |

#### MEDIUM



| CASE          |      |       |
|---------------|------|-------|
| LEVER         | Blue | Black |
| Nickel plated | 04   | 54    |
| Black         | 05   | 55    |

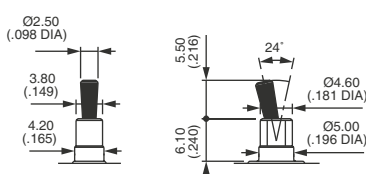
#### CYLINDRICAL



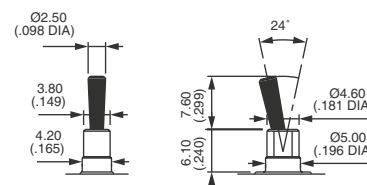
| CASE          |      |       |
|---------------|------|-------|
| LEVER         | Blue | Black |
| Nickel plated | -    | 56    |

#### INSULATED LEVERS

Protected against electrostatic discharges (ESD) up to 10 KV.



| CASE  |      |       |
|-------|------|-------|
| LEVER | Blue | Black |
| Black | 40   | 94    |



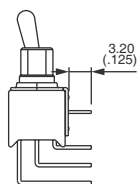
| CASE  |      |       |
|-------|------|-------|
| LEVER | Blue | Black |
| Black | 30   | 90    |

# TL series

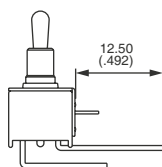
Subminiature washable toggle switches

## SPECIAL OPTIONS

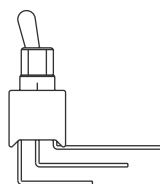
- BASIC P/N
- 00 No special requirement
  - 07 **Trimmed terminals** - length 3,2 mm (.125) for TL..WW models only
  - 08 **Extended terminals** for TL..W0 models only
  - 18 **Switch without ground plate** for TL..WW models only
  - 20 **Ground plate with 2 pins** for TL..WW models only
  - 25 **Trimmed terminals** - length 5 mm (.196) for all models, except TL..WW
  - 50 **Crimped ground plate pins.**  
Retains switch on PCB during handling and wave soldering.  
For models TL..W0, TL..WW and TL..Y0 single and double pole.



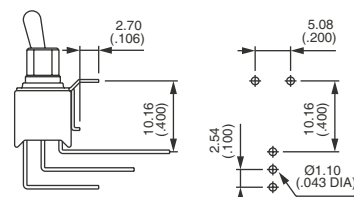
07



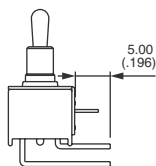
08



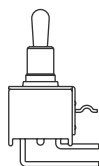
18



20



25



50