Hi-density LCD Display with Push-Button Switch

Type **TD** Subminiature LCD Display Switch

Sunmulon.Co.Ltd.

TD

Sunmulon

Type TD Subminiature LCD Display Switch

**The collaboration of LCD Display and
Push-Button Switch gives more reliable control.**

■ 20×52dots(1,040dots)FSTN LCD can be possible to indicate maximum 9
characters×2 columns and also graphics.
■ The negative type LCD gives high visibility and wide view.
■ Mono-color, Dual-color, Multi-color(RGB) Backlight LED provided.
■ The Push Button Switch has three types of
A) "Click"　B) small "Click"　C) non "Click"(silent).
■ In compliance with RoHS order.

SPECIFICATIONS

<table>
<tr><td rowspan="8">Switch</td><td>Contact</td><td colspan="4">Gold plated silver contact</td></tr>
<tr><td>Electrical Rating</td><td colspan="4">DC12V 100mA (Resistive)　※Minimum DC5V 1mA (Resistive)</td></tr>
<tr><td>Insulation Resistance</td><td colspan="4">More than 100MΩ at 500V DC</td></tr>
<tr><td rowspan="3">Dielectric Strength</td><td colspan="4">300V AC RMS between NC and NO terminal (switch)</td></tr>
<tr><td colspan="4">1000V AC RMS between terminals and ground (switch)</td></tr>
<tr><td colspan="4">50/60Hz for 60sec. At normal ambient temperature and humidity</td></tr>
<tr><td>Mechanical Life</td><td colspan="4">More than 1,000,000 operations　More than 3,000,000 operations (push type C)</td></tr>
<tr><td>Electrical Life</td><td colspan="4">More than 200,000 operations at max. rated load</td></tr>
</table>

Switch	Very little current loaded	More than 500,000 operations at DC5V 1mA, less than 100Ω			
	Operation Force (MAX)		2.5N	Total Travel(MAX)	3.0mm
LCD	Display	FSTN type LCD （1/6 bias　1/25 duty）	Dot Area	5.98mm×13.5mm	
	Display capacity	20×52 dots (1,040dots)	Display Data	Anti-synchronous latch type	
	Dot Size	0.24mm×0.28mm	Display Mode	Graphics/Characters	
Ambient Temperature		−10℃～40℃			
Ambient Humidity		80%RH(max.)			

ELECTRICAL & OPTICAL CHARACTERISTICS

Item	Symbol	Conditions	MIN	TYP	MAX	Unit
Power Supply	V_{DD}	────	＋4.75	＋5	＋5.25	V
Visible Degrees	θ Note 1)	Ta25℃		−50～60		deg
	ϕ Note 2)	Ta25℃		−50～50		deg
Contrast Ratio	C.R.	Ta25℃	──	25	──	──

Note 1）θ：Up/Down direction　　Note 2）ϕ：Left/Right direction

DIMENSIONS

SWITCH TYPE

PCB Type

Upper view — Sunmulon mark

ACTIVE AREA : 5.98×13.5
VIEW AREA : 7.9×14.7

In case of Flat Indicator
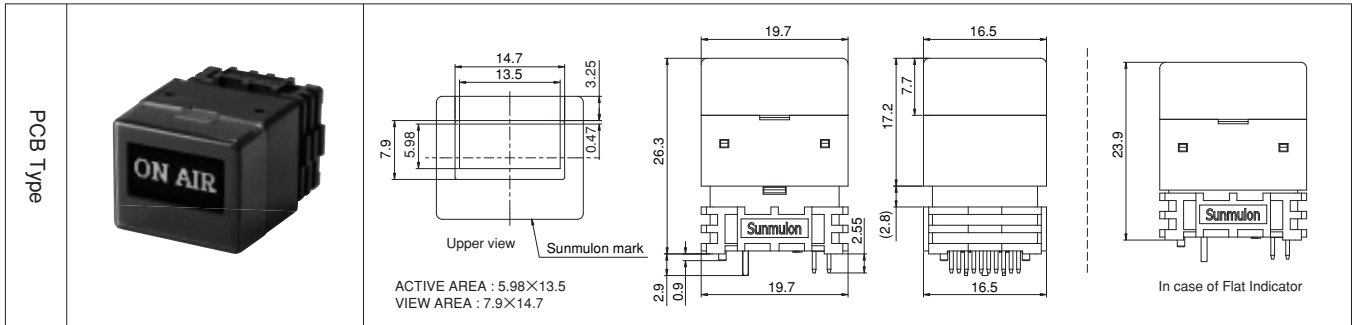
Tolerance：±0.4mm

LCD MODULE TYPE

PCB Type

Sunmulon mark

Self-supporting pin
(Close up)

Self-supporting pin

Socket Type

Sunmulon mark
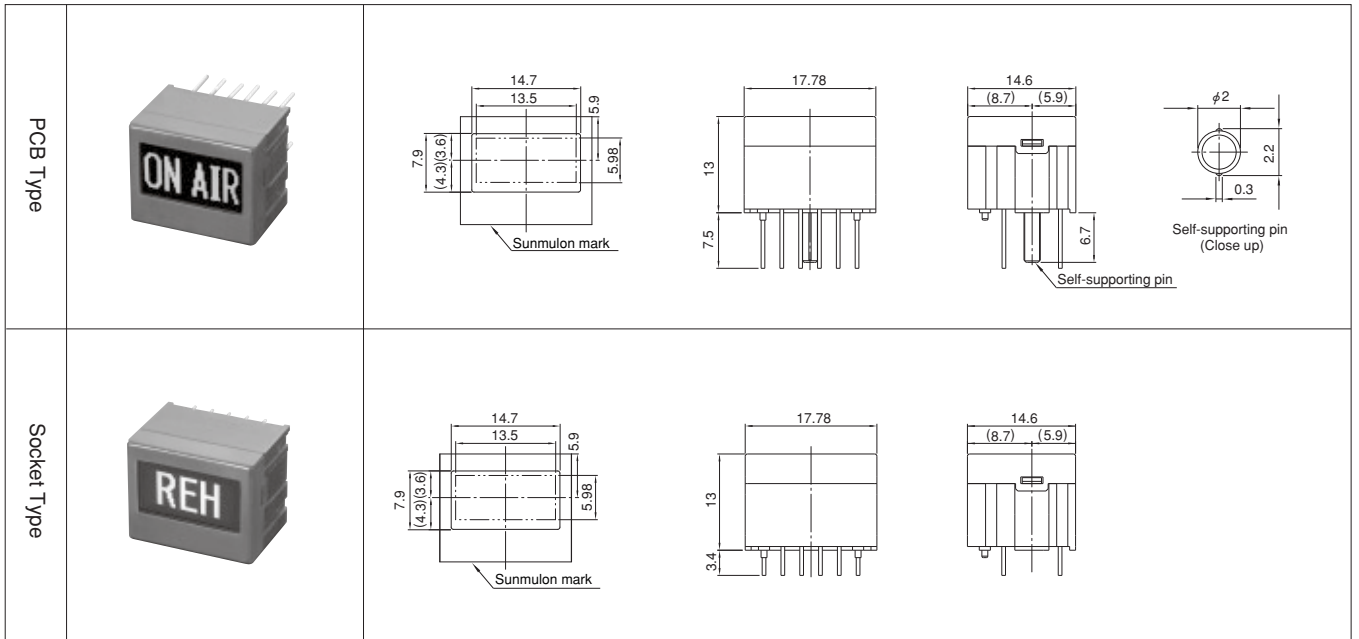
Tolerance：±0.4mm

INTERNAL CIRCUIT

SWITCH TYPE

TD（Switch type）

Pin		Driver IC		LCD Glass
/CS	3	/CS	COM 4	
SLC	4	SLC	COM24	
GND	5	GND		20×52 DOT
+5V	6	+5V	SEG 51	
SI	7	SI	SEG 0	
A0	8	A0		

LED Backlight

LC 10
L1 1
L2 2
L3 9

（Multi Color）

COM — Switch
NO

LCD MODULE TYPE

TD（LCD Module Type）

Pin		Driver IC		LCD Glass
A0	2	A0	COM 4	
SI	4	SIL		
SLC	6	SLC	COM24	
CS	7	CS		20×52 DOT
GND	9	GND	SEG 51	
+5V	11	VDD	SEG 0	
RES	12	RES		

LED Backlight

LC 3
L1 8
L2 10
L3 1
L4 5

（L3：Multi Color）
（L4：Multi Color + White）

3
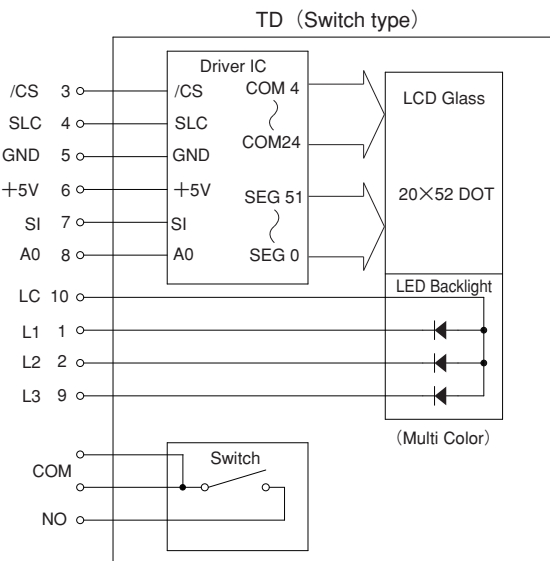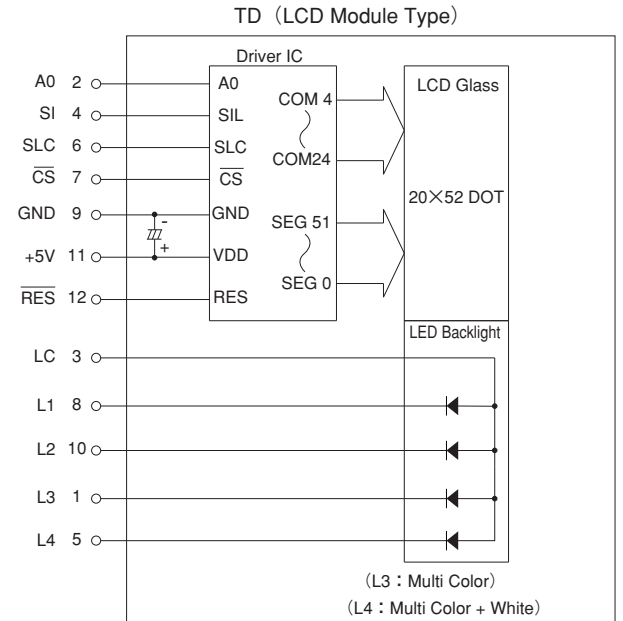
ORDERING CODE

SWITCH TYPE

$$TD \square - \square\square KC \square$$

● OPERATION

M	Momentary
F	Flat Indicator

● PUSH FEELING

A	Click
B	Click (Small)
C	Non Click(Silent)
✕	Flat Indicator

● COLOR CODE FOR BACKLIGHT LED

7	Red	Mono Color (Note 1)
8	Green	
◆ 9	Yellow	
16	White	
78	Red/Green	Dual Color (Note1, Note 2)
◆ 89	Green/Yellow	
718	Red/Super Green	
◆ 916	Yellow/White	
◆ 918	Yellow/Super Green	
22	Multi Color	(Note 3)

◆ Yellow = Actually Orange Yellow

● BACKLIGHT LED Voltage

1	5V Built-in Resistor
2	12V Built-in Resistor
4	Without Built-in Resistor	Note 4)

● TERMINAL SHAPE

C	PCB Type

● Button Color

K	Black

Note 1) In case of 24V use for Backlight LED, please select Without Built-in Resistor type(4) and apply external resistor.
Note 2) In case of Dual Color type simultaneous lighting for Backlight LED, please select Without Built-in Resistor type (4) and apply external resistor.
Note 3) In case of Multi Color type use for Backlight LED, please select Without Built-in Resistor type (4) and apply external resistor.
Note 4) Connecting arrangement of Without Built-in Resistor type (4) is all the same.

LCD MODULE TYPE

$$TD-M \square\square - \square$$

● COLOR CODE FOR BACKLIGHT LED

7	Red	Mono Color (Note 1)
8	Green	
◆ 9	Yellow	
14	Blue	
16	White	
18	Super Green	
78	Red/Green	Dual Color (Note1, Note 2)
◆ 89	Green/Yellow	
718	Red/Super Green	
◆ 916	Yellow/White	
◆ 918	Yellow/Super Green	
22	Multi Color	(Note 3)
2216	Multi Color/White	(Note 3)

◆ Yellow = Actually Orange Yellow

● BACKLIGHT LED Voltage

1	5V Built-in Resistor
2	12V Built-in Resistor
4	Without Built-in Resistor	Note 4)

● TERMINAL SHAPE

C	PCB Type (with Supporting pin)
T	Socket Type (without Supporting pin)

Note 1) In case of 24V use for Backlight LED, please select Without Built-in Resistor type(4) and apply external resistor.
Note 2) In case of Dual Color type simultaneous lighting for Backlight LED, please select Without Built-in Resistor type (4) and apply external resistor.
Note 3) In case of Multi Color type/Multi Color+White) use for Backlight LED, please select Without Built-in Resistor type (4) and apply external resistor.
Note 4) Connecting arrangement Without Built-in Resistor type (4) is all the same.