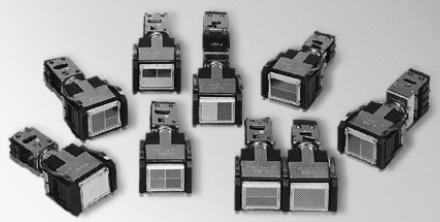
LED-Lit Push-Button Switches and Indicators

SERIES 2

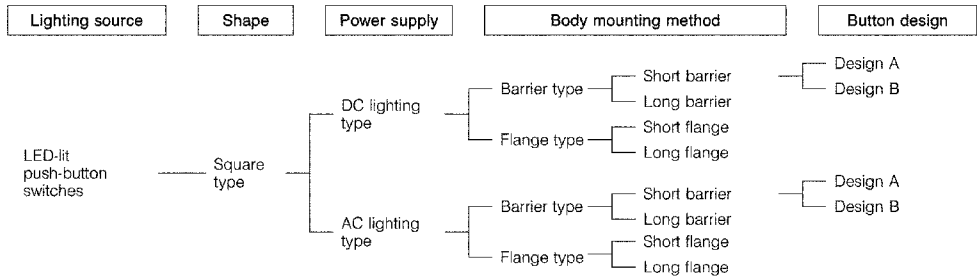
LED-lit (DC and 24Vac) switches and indicators.

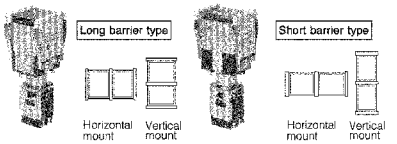
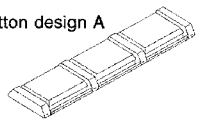
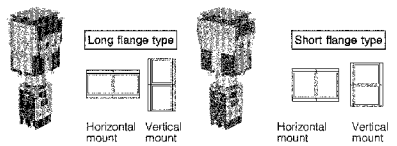
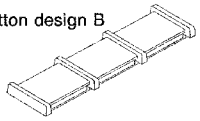


- **You can build the product best suited to your specifications by combining standard parts**
- **Both sets and individual components are available**
- **Selection of LED lamps or high-intensity LED lamps as the light source**
- **LED-lighting systems are available for DC and AC**
- **Two button design types are available**
  (LED-lighting system only)

G MANUAL SWITCHES
G
CLICK

SERIES 2 PRODUCT LINE-UP



Push-button switch or Indicator	Features	Mounting method	Button design
Square, barrier type 	- Lamp replacement is easy. (lamp tool-free type) - Erroneous operation of adjacent button prevented by barrier - Colorful barrier mounting		Button design A  - Button periphery is tapered. - Special barrier and bezel are used.
Square, flange type 	- Lamp replacement is easy. (lamp tool-free type) - Can be individually mounted and removed in a gang-mounting panel		Button design B  - Periphery of flat buttons has a collar. - Special barrier is used.

LIST OF MODELS

● LED-lit Push-button Switches (DC Lighting Type)

Shape of indicator surface	Terminal shape		Set Model No. Note 1, Note 2, Note 4	Individual Model No. Note 1, Note 3, Note 4 (1) Push-button unit	(2) Color plate	(3) LED lamp	(4) Body	(5) Switch	Body mounting method (must be procured in case of barrier type) (4) Mounting barrier Note 4	Panel cutout dimensions	External dimensions
Single-section LED-lighting	Soldered		Button design: A and B (mounting: short barrier type only)	Button design: A and B	2V-L1□ (1 p'ce)	YS4□ / YS8□ or YS8AH	2(C/F)-L□AB / 2(C/F)-L□AA	2D□□-J	2B□	See page G-063.	See page G-059 G-060 G-061.
	Catalog listing, Lamp voltage	5V	–	2T-L(C/F)A05□							
		12V	–	2T-L(C/F)A12□							
		24V	S2(C/F)-1□1□Z24D-□□	2T-L(C/F)A24□							
	Reference page for description		See page G-052.	See page G-053.			See page G-054.		See page G-057.		
Lateral split 2-section LED-lighting	Soldered		(Button design: A and B) (mounting: short barrier type only)	(Button design: A and B)	2V-L2□ (2 p'ces)	YS4□ / YS8□ or YS8AH	2(C/F)-L□BC / 2(C/F)-L□BD	2D□□-J	2B□	See page G-063.	See page G-059 G-060 G-061.
	Catalog listing, Lamp voltage	5V	–	2T-L(C/F)B05□							
		12V	–	2T-L(C/F)B12□							
		24V	S2(C/F)-1□2□□24D-□□	2T-L(C/F)B24□							
	Reference page for description		See page G-052.	See page G-053.			See page G-054.		See page G-057.		

(4 lamps required) (mounting: barrier type and flange type)

Note 1: Only short barrier types are available for models sold as set model Nos.

Note 2: Models sold as set model Nos. are delivered in a single package with the push-button unit, color plate, LED lamp, body, and switch (not delivered in the case of an indicator lamp) as a single set.

Note 3: Models sold as individual model Nos. are delivered in a bulk state with the push-button unit, color plate, LED lamp, body, and switch packaged individually.

Note 4: Barriers, bezels, etc. must be procured separately as they are not provided on both set model Nos. and models sold as individual model Nos. In particular, a mounting barrier is required in the case of switches whose body mounting method is short barrier or long barrier.

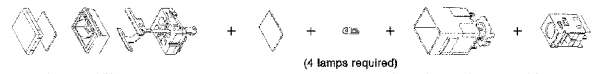
● LED-lit Push-button Switches (DC Lighting Type) (continued)

Shape of indicator surface	Terminal shape			Individual Model No. Note 3, Note 4 (1) Push-button unit	(2) Color plate	(3) LED lamp	(4) Body	(5) Switch	Body mounting method (must be procured in case of barrier type) (4) Mounting barrier Note 4	Panel cutout dimensions	External dimensions
This way up Longitudinal split LED-lighting	Soldered			(Button design: A and B)		(4 lamps required)	(mounting: barrier type and flange type)			See page G-063.	See page G-059. G-060. G-061.
	Catalog listing	Lamp voltage	5V	2T-L(C/F)C05□	2V-L3□ (2 p'ces)	YS4□ or YS8□ or YS8AH	2(C/F)-L□BC	2D□□-J	2B□		
			12V	2T-L(C/F)C12□							
			24V	2T-L(C/F)C24□			2(C/F)-L□BD				
	Reference page for description			See page G-053.			See page G-054.		See page G-057.		
This way up Lateral split 3-section LED-lighting	Soldered			(Button design: A and B)		(4 lamps required)	(mounting: barrier type and flange type)			See page G-063.	See page G-059. G-060. G-061.
	Catalog listing	Lamp voltage	5V	2T-L(C/F)D05□	2V-L2□ (1 p'ce) 2V-L4□ (2 p'ces)	YS4□ or YS8□ or YS8AH	2(C/F)-L□CE	2D□□-J	2B□		
			12V	2T-L(C/F)D12□							
			24V	2T-L(C/F)V24□			2(C/F)-L□DE				
	Reference page for description			See page G-053.			See page G-054.		See page G-057.		
This way up Lateral split 3-section LED-lit	Soldered			(Button design: A and B)		(4 lamps required)	(mounting: barrier type and flange type)			See page G-063.	See page G-059. G-060. G-061.
	Catalog listing	Lamp voltage	5V	2T-L(C/F)E05□	2V-L2□ (1 p'ce) 2V-L4□ (2 p'ce)	YS4□ or YS8□ or YS8AH	2(C/F)-L□CE	2D□□-J	2B□		
			12V	2T-L(C/F)E12□							
			24V	2T-L(C/F)W24□			2(C/F)-L□DE				
	Reference page for description			See page G-053.			See page G-054.		See page G-057.		
This way up Longitudinal 3-section LED-lit	Soldered			(Button design: A and B)		(4 lamps required)	(mounting: barrier type and flange type)			See page G-063.	See page G-059. G-060. G-061.
	Catalog listing	Lamp voltage	5V	2T-L(C/F)F05□	2V-L3□ (1 p'ce) 2V-L4□ (2 p'ces)	YS4□ or YS8□ or YS8AH	2(C/F)-L□CE	2D□□-J	2B□		
			12V	2T-L(C/F)F12□							
			24V	2T-L(C/F)X24□			2(C/F)-L□DE				
	Reference page for description			See page G-053.			See page G-054.		See page G-057.		
This way up Longitudinal 3-section LED-lit	Soldered			(Button design: A and B)		(4 lamps required)	(mounting: barrier type and flange type)			See page G-063.	See page G-059. G-060. G-061.
	Catalog listing	Lamp voltage	5V	2T-L(C/F)G05□	2V-L3□ (1 p'ce) 2V-L4□ (2 p'ces)	YS4□ or YS8□ or YS8AH	2(C/F)-L□CE	2D□□-J	2B□		
			12V	2T-L(C/F)G12□							
			24V	2T-L(C/F)Y24□			2(C/F)-L□DE				
	Reference page for description			See page G-053.			See page G-054.		See page G-057.		
4-section LED-lighting	Soldered			(Button design: A and B)		(4 lamps required)	(mounting: barrier type and flange type)			See page G-063.	See page G-059. G-060. G-061.
	Catalog listing	Lamp voltage	5V	2T-L(C/F)H05□	2V-L4□ (4 p'ces)	YS4□ or YS8□ or YS8AH	2(C/F)-L□CE	2D□□-J	2B□		
			12V	2T-L(C/F)H12□							
			24V	2T-L(C/F)Z24□			2(C/F)-L□DE				
	Reference page for description			See page G-053.			See page G-054.		See page G-057.		

Note 3: Models sold as individual model Nos. are delivered in a bulk state with push-button unit, color plate LED lamp, body and switch packaged individually.

Note 4: Barriers, bezels, etc. must be procured separately as they are not provided on models sold as individual model Nos. In particular, a mounting barrier is required in the case of switches whose body mounting method is short barrier or long barrier.

• LED-lit Push-button Switches (DC Lighting Type) (continued)

Shape of indicator surface	Terminal shape		Individual Model No. Note 3, Note 4					Body mounting method (must be procured in case of barrier type)	Panel cutout dimensions	External dimensions
			(1) Push-button unit	(2) Color plate	(3) LED lamp	(4) Body	(5) Switch	(4)' Mounting barrier Note 4		
Ⓑ Ⓐ / Ⓐ Ⓑ 2-color single-section LED-lighting	Soldered		 (Button design: A and B) (4 lamps required) (mounting: barrier type and flange type)						See page G-063.	See page G-059. G-060. G-061.
	Catalog listing: Lamp voltage	5V	2T-L(C/F)K05□	2V-L1W	YS4□	2(C/F)-L□CE	2D□□-J	2B□		
		12V	2T-L(C/F)K12□		YS8□ or YS8AH					
		24V	2T-L(C/F)P24□			2(C/F)-L□DE				
	Reference page for description		See page G-053.			See page G-054.		See page G-057.		

Note 3: Models sold as individual model Nos. are delivered in a bulk state with push-button unit, color plate, LED lamp, body and switch packaged individually.

Note 4: Barriers, bezels, etc. must be procured separately as they are not provided on models sold as individual model Nos. In particular, a mounting barrier is required in the case of switches whose body mounting method is short barrier or long barrier.

• LED-lit Push-button Switches (24Vac lighting type)

Shape of indicator surface Note 1	Terminal shape	Individual Model No. only Note 3, Note 4				Body mounting method (must be procured in case of barrier type)	Panel cutout dimensions	External dimensions
		(1) Push-button unit/body	(2) Color plate	(3) LED lamp	(4) Switch	(3)' Mounting barrier Note 4		
Single-section LED-lighting	Soldered	 (Button design: A and B) (mounting: barrier type and flange type) (4 lamps required)					See page G-063.	See page G-059. G-060. G-061.
	Catalog listing	2(C/F)-L□A24□-AC	2V-L1□	YA4□(-R)	2D□□-J	2B□		
	Reference page for description	See page G-055·G-056.				See page G-057.		
Lateral split LED-lit	Soldered	 (Button design: A and B) (mounting: barrier type and flange type) (4 lamps required)					See page G-063.	See page G-059. G-060. G-061.
	Catalog listing	2(C/F)-L□B24□-AC	2V-L2□ (2 p'ces)	YA4□(-R)	2D□□-J	2B□		
	Reference page for description	See page G-055·G-056.				See page G-057.		
Longitudinal split LED-lit	Soldered	 (Button design: A and B) (mounting: barrier type and flange type) (4 lamps required)					See page G-063.	See page G-059. G-060. G-061.
	Catalog listing	2(C/F)-L□C24□-AC	2V-L3□ (2 p'ces)	YA4□(-R)	2D□□-J	2B□		
	Reference page for description	See page G-055·G-056.				See page G-057.		

Note 1: Contact your agent separately for details when 3-section and 4-section LED lit types are required with 24Vac lighting type **SERIES 2**.

Note 3: Models sold as individual model Nos. are delivered in a bulk state with push-button unit, color plate, LED lamp, body and switch packaged individually.

Note 4: Barriers, bezels, etc. must be procured separately as they are not provided on models sold as individual model Nos. In particular, a mounting barrier is required in the case of switches whose body mounting method is short barrier or long barrier.

PERFORMANCE

Item		When **SSM** ultra miniature switchis fitted	When **V-3000** miniature switches is fitted
Allowable operating frequency	Mechanical	Momentary operation Max. 120 operations/minute, Alternating operation Max. 60 operations/minute	
	Electrical	Max. 20 operations/minute	
Insulating resistance		Min. 100MΩ (by 500Vdc megger)	
Dielectric strength		Between non-continuous terminals: 600Vac for 1 minute Between different poles: 2,000Vac for 1 minute Between each terminal and ground: 2,000Vac for 1 minute	Between non-continuous terminals: 1,000Vac for 1 minute Between different poies: 2,000Vac for 1 minute Between each terminal and ground: 2,000Vac for 1 minute
Vibration resistance	Malfunction	10 to 55Hz, 3mm peak-to-peak amplitude, constant vibration 16.7Hz, 3mm peak-to-peak amplitude	
Impact resistance	Malfunction	100m/s²	300m/s²
Mechanical Life		Min. 100,000 operations (standard model) Min. 500,000 operations (momentary low force model)	Min. 1 million operations
Electrical Life (resistive load)	Silver contact	Min. 100,000 operations 250Vac-2A Min. 40,000 operations 250Vac-5A	Min. 125,000 operations 250Vac-10A
	Gold contact	Min. 100,000 operations 50Vdc-0.5A Min. 40,000 operations 30Vdc-1A	—
Initial contact resistance (voltage drop method)	Silver contact	Max. 50mΩ 6 to 8Vdc-1A	Max. 50mΩ 6 to 8Vdc-1A
	Gold contact	Max. 100mΩ 6 to 8Vdc-1A	—
Terminal strength (tensile direction)		Soldered terminal: 64N for 1 minute	Screw tightening terminal/ soldered terminal: 102N for 1 minuts screw terminal tightening torque: 0.6Nm for 1 minute
Stroke		Approx. 3mm	
Operating ambient temperatures		−20 to +40°C	
Operating ambient humidity		Max. 85%RH	
Storage ambient temperature		−25 to +65°C	

RATING

1. Contact rating

1.1.1 **SSM** miniature switch for standard load (silver contact)

Rated energizing current		(A)	5			
Rated voltage		(V)	250Vac, 125Vdc			
AC	Operating voltage	(V)	24	48	125	250
	Resistive load	(A)	5	5	5	5
	Inductive load*	(A)	3	3	3	3
	Electric motor load	(N.C.-A)	1.5	1.5	1.5	1
	Electric motor load	(N.O.-A)	0.7	0.7	0.7	0.5
DC	Operating voltage	(V)	8	14	30	125
	Resistive load	(A)	5	5	5	—
	Inductive load#	(A)	3	3	3	—

Note 1: Steady current values are indicated for above values.

Note 2: *: Inductive load value at power-factor of 0.6

Note 3: #: Inductive load value at time constant of 7ms

1.1.2 **SSM** miniature switch for standard load (gold contact)

		SSM			
Rated energizing current	(A)	1			
Rated voltage	(V)	250Vac, 30Vdc			
Operating voltage	(V)	5	12	24	125
AC resistive load	(A)	0.1	0.1	0.1	0.1
DC resistive load	(A)	0.1	0.1	0.1	0.1

Note 1: Steady current values are indicated for above values.

Note 2: The lower limit of use is 5V-5mA.

1.2 **V-3000** miniature switches for standard load (silver contact)

Rated energizing current			(A)	10			
Rated voltage			(V)	250Vac, 250Vdc			
AC	Operating voltage		(V)	24	48	125	250
	Resistive load		(A)	10	10	10	10
	Inductive load*		(A)	6	6	6	6
	Electric motor load	(N.C.-A)		3	3	3	2
	Electric motor load	(N.O.-A)		1.5	1.5	1.5	1
DC	Operating voltage		(V)	8	30	125	250
	Resistive load		(A)	10	6	0.5	0.25
	Inductive load#		(A)	6	4	0.1	0.05

Note 1: Steady current values are indicated for above values.

Note 2: *: Inductive load value at power-factor of 0.6

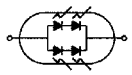
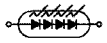
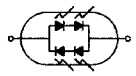
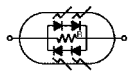
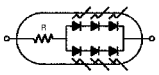
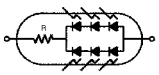
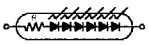
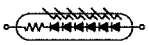
Note 3: #: Inductive load value at time constant of 7ms

2. LED lamp rating

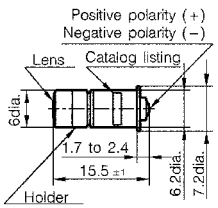
2.1 LED lamps for LED-lit **SERIES 2**

Item			Catalog listing	Rating								Unit
				For 5Vdc systems		For 12Vdc, 24Vdc systems				For 24Vac systems		
				Standard ball		Standard ball		High-intensity ball		Standard ball		
				YS4□		YS8□		YS8AH		YA4□/YA4□-R		
		Symbol		Standard value	Measurement conditions	Standard value	Measurement conditions	Standard value	Measurement conditions	Standard value	Measurement conditions	
Max. absolute rating	Forward DC current	I_F		50	–	25	–	20	–	33	–	mA
	Reverse DC voltage	V_R		8	–	16	–	16	–	V_F Max.	–	V
	Allowable loss	P_D		200				190		150		mW
	Operating temperature	Topr		−20 to +80						−20 to +85		°C
	Storage temperature	Tstg		−30 to +100								°C
	Operating humidity	–		85								%RH Max.
Electrical/optical characteristics	Forward DC voltage	V_F		4.50	I_F=30mA	9.00	I_F=15mA	8.70	I_F=15mA	4.3 (Red) 4.5 (amber/green)	I_F=23mA	V Max.
	Reverse DC current	I_R		100	V_R=8V	100	V_R=16V	100	V_R=16V	–	–	μA Max.
	Luminosity	I_V	Red	5.5	I_F=30mA	5.5	I_F=15mA	–	I_F=15mA	6	I_F=23mA	mcd (standard)
			Green	30		30		–		20		
			Amber	18		18		–		10		
			White	21		21		–		–		
			Red/Green	–		–		75		–		
	Peak light-emitting wavelength	λ_P	Red	700	I_F=30mA	700	I_F=15mA	–	I_F=15mA	630	I_F=23mA	nm
			Green	565		565		–		565		
			Amber	585		585		–		585		
			White	585/565		585/565		–		–		
			Red/Green	–		–		660/565		–		
Power voltage		Vs		5±5%		12±5% or 24±5%				24±5%		V
Lamp base shape		–		T1-3/4 Wedge base								–

2.2 Layout of chips in LED lamp

Voltage	Catalog listing	Polarity	Lens color	Product indication	Internal circuit	Base shape
5Vdc	**YS4A** **YS4G** **YS4R** **YS4W**	– – – –	Light yellow Green Pink Achromatic transparent	YS4		T-13/4 wedge base
12Vdc, 24Vdc	**YS8A** **YS8G** **YS8R** **YS8W** **YS8AH**	– – – – –	Light yellow Green Pink Achromatic transparent Achromatic transparent	YS8 S8H		
24Vac	**YA4A** **YA4G** **YA4R**	– – –	Light yellow Green Pink	YA4		
24Vac induction dark lighting countermeasure	**YA4A-R** **YA4G-R** **YA4R-R**	– – –	Light yellow Green Pink	YA4	 R=520Ω	
12Vdc	**YF12AA** **YF12GA** **YF12RA**	Positive	Achromatic transparent Light green Pink	F12□A	Solder ball  Base R=240Ω	SX6S/ 8×5.4 midget flange
	YF12AK **YF12GK** **YF12RK**	Reverse	Achromatic transparent Light green Pink	F12□K	Solder ball  Base R=240Ω	
24Vdc	**YF24AA** **YF24GA** **YF24RA**	Positive	Achromatic transparent Light green Pink	F24□A	Solder ball  Base R=1,000Ω	
	YF24AK **YF24GK** **YF24RK**	Reverse	Achromatic transparent Light green Pink	F24□K	Solder ball  Base R=1,000Ω	

YF□□ Series



3. Hold-in coil characteristics

Insulating resistance	Min. 100MΩ (by 500V megger)
Dielectric strength	1,000Vac for 1 minute
Terminal strength	2kg
Operating temperature range	−20 to +40°C
Operating humidity range	Max. 85%RH

Catalog listing	Rated voltage	Resistive value	Power
2P1-J	6Vdc	12.8Ω REF.	2.8W REF.
2P2-J	28Vdc	280Ω REF.	2.8W REF.
2P3-J	48Vdc	1,010Ω REF.	2.3W REF.

SPECIFICATIONS

● LED-lit push-button switches (DC lighting type)

Components	LED-lighting method		Single section	Lateral split 2-section	Longitudinal split 2-section	Lateral split 3-section	Longitudinal split 3-section	4-section	2-color single-section
• Button indicator [common to soldered terminal and wire-wrap terminal types]		Push-button switch	2T-LCA□□□	2T-LCB□□□	2T-LCC□□□	2T-LCV24□	2T-LCX24□	2T-LCZ24□	2T-LCP24□
						2T-LCD□□□	2T-LCF□□□	2T-LCH□□□	2T-LCK□□□
		Indicator	2T-LFA□□□	2T-LFB□□□	2T-LFC□□□	2T-LFV24□	2T-LFX24□	2T-LFZ24□	2T-LFP24□
						2T-LFD□□□	2T-LFF□□□	2T-LFH□□□	2T-LFK□□□
Button design	Lamp holder individual model No. Note 1	Shape of LED-lit indicator surface				This way up	This way up		
Cap A type B type						2T-LCW24□	2T-LCY24□		
						2T-LCE□□□	2T-LCG□□□		
Legend plate						2T-LFW24□	2T-LFY24□		
						2T-LFE□□□	2T-LFG□□□		
Color plate						This way up	This way up		
LED lamp									
Base (w/ partition plate)	Color plate	Catalog listing	2V-L1□	2V-L2□	2V-L3□	2V-L2□	2V-L3□	2V-L4□	2V-L1W
						2V-L4□	2V-L4□		
		Color	Red (R), Yellow (Y), Green (G), Milky white (W), Orange (D)						
Lamp holder	LED lamp Note 2	Catalog listing	YS4R	YS4G	YS4A	YS4W	YS8R	YS8G	YS8A	YS8W	YS8AH
		Lamp terminal voltage	5Vdc				12Vdc or 24Vdc				
		Lit color	Red	Green	Amber	Yellow/green mixed (white)	Red	Green	Amber	Yellow/green mixed (white)	Red/green mixed High-intensity (amber)
	Base, lamp holder		Base: w/ LED-lit partition plate matched to indicator surface split shape Lamp holder: built-in LED lamp (4) socket and current limiting resistor								
	Main materials		Cap: A type - polycarbonate, B type - cellulose resin, legend plate - heat-resistant acrylic resin Color plate: heat-resistant acrylic resin, base: PBT resin, lamp holder: PBT resin								

• Soldered terminal type	LED-lighting method		Single section	Lateral split	Longitudinal split	Lateral split 3-section	Longitudinal split 3-section	4-section	2-color single-section
Switch body (housing) 2C-L□□□	Shape of LED-lit indicator surface					This way up This way up	This way up This way up		
Indicator body (housing) 2F-L□□□	Push-button switch Note 3	24V system	2C-L□AA	2C-L□BD		2C-L□DE			
		12/5V system	2C-L□AB	2C-L□BC		2C-L□CE			
	Indicator	24V system	2F-L□AA	2F-L□BD		2F-L□DE			
		12/5V system	2F-L□AB	2F-L□BC		2F-L□CE			
	Mounting method		Short barrier, long barrier, long flange, short flange						
	Terminal voltage		Rated voltage (24Vdc, 12Vdc or 5Vdc) ±5%						
	Main materials		Housing: stainless steal plate, Terminals: Phenol resin						

• Switch unit 2D-□□□□□	Operation mechanism	Polarity	**SSM** ultra miniature standard switches			**V-3000** miniature switches	
			Silver contact catalog listing	Gold contact catalog listing	Operation force	Silver contact catalog listing	Operation force
	Momentary	1×SPDT	2D-11SGA	–	10.8N	2D70-J	9.4N
		2×SPDT	2D-12SGA	2D-42SGA		2D72-J	11.8N
		4×SPDT	2D-14SGA	2D-44SGA	15.7N	–	–
	Low force momentary	2×SPDT	2D-12LGA	2D-42LGA	5.4N	–	–
		4×SPDT	2D-14LGA	2D-44LGA	8.9N	–	–
	Alternate	2×SPDT	2D-22SGA	2D-52SGA	8.4N	–	–
		4×SPDT	2D-24SGA	2D-54SGA	14.7N	–	–
	Main materials		Bracket: stainless steel plate, switch: basic switch (**SSM**: Phenol, PBT resin, **V-3000**: Melamine)				

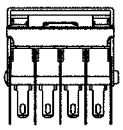
Note 1: Of the 3-section LED lit and 4-section LED lit model Nos., the upper row indicates 24Vdc systems, and the lower row indicates 5Vdc systems.
Note 2: For details on combinations and indication colors of LED lamp colors and color plates, see page G-069.
Note 3: The hold-in coil (catalog listing **2P□-J**) can be used in push-button switches.
Note 4: Maximum values are indicated for the operation force.

• LED-lit push-button switches (24Vac lighting and soldered terminal type)

Components		LED-lighting method		Single section	Lateral split 2-section	Longitudinal split 2-section
Push-button switch: Cap (A type / B type), Legend plate, Color plate, Base (w/ partition plate), LED lamp, Lamp holder, Body Indicator: Cap (A type / B type), Legend plate, Color plate, Base (w/ partition plate), LED lamp, Lamp holder, Body		Body (including lamp holder)	Push-button switch	**2C-L□A24□-AC**	**2C-L□B24□-AC**	**2C-L□C24□-AC**
			Indicator	**2F-L□A24□-AC**	**2F-L□B24□-AC**	**2F-L□C24□-AC**
		Shape of LED-lit indicator surface				
		Color plate	Catalog listing	**2V-L1□**	**2V-L2□** (2 pieces)	**2V-L3□** (2 pieces)
			Color	Red (R), Yellow (Y), Green (G), Milky white (W), Orange (D)		
		LED lamp	Standard catalog listing	**YA4R**	**YA4G**	**YA4A**
			Induction countermeasure product catalog listing	**YA4R-R**	**YA4G-R**	**YA4A-R**
			Color	Red	Green	Amber
			Lamp terminal voltage	24Vac ±5%		
		Base, lamp holder		Base: w/ LED-lit partition plate matched to indicator surface split shape Lamp holder: built-in LED lamp (4) socket and current limiting resistor		
		Main materials		Cap: A type - polycarbonate, B type - cellulose resin Legend plate: heat-resistant acrylic resin Color plate: heat-resistant acrylic resin Base: PBT resin Lamp holder: PBT resin		

• Switch unit

2D-□□□□□



Operation mechanism	Polarity	**SSM** ultra miniature standard switches: Silver contact catalog listing	Gold contact catalog listing	Operation force	**V-3000** miniature switches: Silver contact catalog listing	Operation force
Momentary	1×SPDT	**2D-11SGA**	–	10.8N	**2D70-J**	9.4N
	2×SPDT	**2D-12SGA**	**2D-42SGA**		**2D72-J**	11.8N
	4×SPDT	**2D-14SGA**	**2D-44SGA**	15.7N	–	–
Low force momentary	2×SPDT	**2D-12LGA**	**2D-42LGA**	5.4N	–	–
	4×SPDT	**2D-14LGA**	**2D-44LGA**	8.9N	–	–
Alternate	2×SPDT	**2D-22SGA**	**2D-52SGA**	8.4N	–	–
	4×SPDT	**2D-24SGA**	**2D-54SGA**	14.7N	–	–
Main materials		Bracket: stainless steel plate, switch: basic switch (**SSM**: Phenol, PBT resin, **V-3000**: Melamine)				

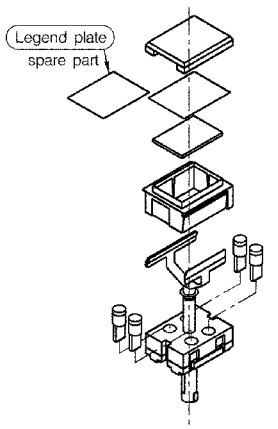
Note: Maximum values are indicated for the operation force.

- **The LED-lit SERIES 2 is available under the following set model Nos. and individual model Nos. Order push-button using these model Nos.**
  - Set model No.: These push-buttons are shipped with each of standard specification push-button, LED lamp, body and switch unit packaged as an individual set.
  - Individual model No.: These push-buttons are shipped with each individual specification push-button, LED lamp, body and switch unit packaged individually.

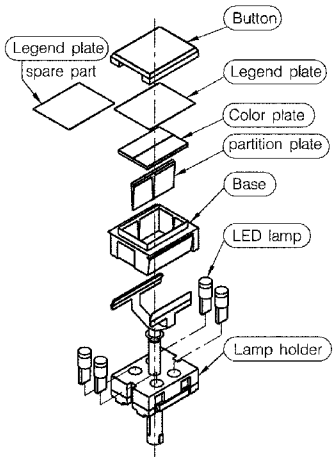
External dimensions ➡See pages G-059 and G-060.
Panel cutout dimensions ➡See page G-063.

SET MODEL No. (soldered terminal type, short barrier type mounting, single-section LED-lit/lateral split LED-lit only)

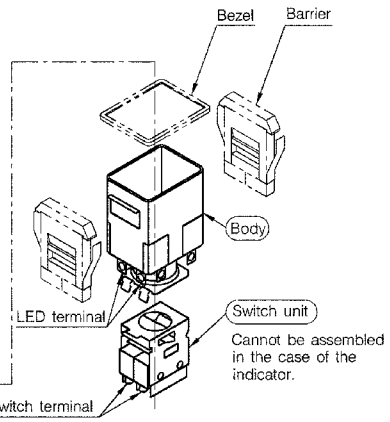
In case of single-section LED-lit type



In case of lateral split LED-lit type



The bezel and barrier are not included in this product.



Set Model No. Model selection guide Ⅰ Ⅱ Ⅲ Ⅳ Ⅴ Ⅵ Ⅶ Ⅷ Example: **S2C-1A1WZ24D-A2**

Ⅰ Basic model No.	Ⅱ Function	Ⅲ Mounting method	Ⅳ Button shape	Ⅴ Indicator shape	Ⅵ Lighting section color	Ⅶ LED lamp voltage	Ⅷ Switch specifications	Description
S2								LED-lit **SERIES 2** set Model No.
	C-							Push-button switch
	F-							Indicator
		1						Short barrier type
			A					Design A button
			B					Design B button
				1				Single-section LED-lighting
				2				Lateral split 2-section LED-lighting
					Select from Table 1.			
						24D-		24Vdc
							A2	2×SPDT, silver contact momentary
							E2	2×SPDT, silver contact alternate
							ZZ	Only in case of indicator

Table 1. Lighting section color

Shape of LED-lit surface	Catalog listing		Color when lit	Color when out (lighting surface)
Single-section LED-lighting	**WZ**		Amber	Milky white
	PZ		Pink	Milky white
	NZ		Light yellow green	Milky white
	RZ		Red	Red
	GZ		Green	Green
	DZ		Orange	Orange
Lateral split 2-section	1	2	Select 1 and 2 separately.	
1 / 2	**W**	**W**	Amber	Milky white
	R	**R**	Red	Red
	G	**G**	Green	Green
	D	**D**	Orange	Orange

Note 1: Bezels and barriers are not included in set model Nos. Order separately.

Note 2: One extra legend plate is provided as a spare part.

INDIVIDUAL MODEL No.

● Indicator, operator

(1) Push-button unit

Cap

Button design: A type / B type

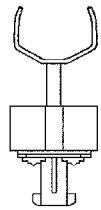
Legend plate

(2) Color plate

(3) LED lamp

Base (w/ partition plate)

Holder



(1) Push-button unit

Model selection guide Ⅰ Ⅱ Ⅲ Ⅳ Example: **2T-LCA05A**

Ⅰ Basic model No.	Ⅱ Shape of LED-lit surface	Ⅲ Terminal voltage	Ⅳ Button design	Description
2T-LC				LED-lit push-button switch
2T-LF				LED-lit indicator (without switch)
	A			Single-section 5/12/24Vdc
	B			Lateral split 2-section 5/12/24Vdc
	C			Longitudinal split 2-section 5/12/24Vdc
	V			This way up — Lateral split 3-section 24Vdc
	D			This way up — Lateral split 3-section 5/12Vdc
	W			This way up — Lateral split 3 section 24Vdc
	E			This way up — Lateral split 3-section 5/12Vdc
	X			This way up — Longitudinal split 3-section 24Vdc
	F			This way up — Longitudinal split 3-section 5/12Vdc
	Y			This way up — Longitudinal split 3-section 24Vdc
	G			This way up — Longitudinal split 3-section 5/12Vdc
	Z			4-section 24Vdc
	H			4-section 5/12Vdc
	P			2-color, single-section 24Vdc
	K			2-color, single-section 5/12Vdc
		05		5Vdc
		12		12Vdc
		24		24Vdc
			A	A type
			B	B type

(2) Color plate Model selection guide Ⅰ Ⅱ Example: **2V-L1R**

Ⅰ Basic model No.	Ⅱ Color	Description
2V-L1		Single section: 5 colors can be selected. (1 plate required per push-button unit)
		2 colors, single section: Only milky white can be selected. (1 plate required per push-button unit)
2V-L2		Lateral split 2-section: 5 colors for each of two plates can be selected. (2 plates required per push-button unit)
2V-L3		Longitudinal split 2-section: 5 colors for each of two plates can be selected. (2 plates required per push-button unit)
2V-L4		4 section: 5 colors for each of 4 sections can be selected. (4 plates required per push-button unit)
2V-L2		Lateral split 3-section (large): **2V-L2**: 5 colors can be selected. (1 plate required per push-button unit)
2V-L4		Lateral split 3-section (small): **2V-L4**: 5 colors for each of two plates can be selected. (2 plates required per push-button unit)
2V-L3		Longitudinal split 3-section (large): **2V-L3**: 5 colors can be selected. (1 plate required per push-button unit)
2V-L4		Longitudinal split 3-section (small): **2V-L4**: 5 colors for each of two plates can be selected. (2 plates required per push-button unit)
	W	Milky white
	R	Red
	G	Green
	Y	Yellow
	D	Orange

(3) LED lamp Model selection guide Ⅰ Ⅱ Example: **YS4R**

Ⅰ Basic model No.	Ⅱ LED color	Description
YS4		Terminal voltage 5Vdc (4 lamps required per push-button unit)
YS8		Terminal voltage 12/24Vdc (4 lamps required per push-button unit)
	W	White (amber × 3 + green × 1 mixed color)
	R	Red
	G	Green
	A	Amber
	AH	High-intensity orange (red × 1 + green × 3 mixed colors) Can be selected only for **YS8**.

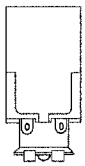
Note: How to Choose Colors

Desired Button Color	Color when out	Milky white				
	Color when lit	Light amber	Light yellow	Light orange (High-intensity)	Light yellowish green	Pink
Part color to be selected	Color plate color	W: milky white				
	LED lamp color	A: Amber	W: mixed color	AH: orange (High-intensity)	G: green	R: red

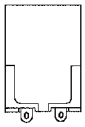
Desired Button Color	Color when out	Yellow			Orange		Green		Red	
	Color when lit	Lemon yellow	Yellow	Reddish yellow (High-intensity)	Orange	Orange (High-intensity)	Green	Green (High-intensity)	Red	Red (High-intensity)
Part color to be selected	Color plate color	Y: yellow	Y: yellow	Y: yellow	D: orange	D: orange	G: green	G: green	R: red	R: red
	LED lamp color	G: green	W: mixed color	AH: orange (High-intensity)	A: amber	AH: orange (High-intensity)	G: green	AH: orange (High-intensity)	R: red	AH: orange (High-intensity)

● Soldered terminal type

Switch body
2C-L□□□



Indicator body
2F-L□□□



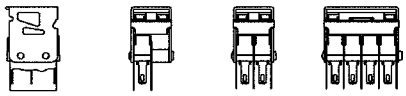
(4) Body (housing) Model selection guide Ⅰ Ⅱ Ⅲ Example: **2C-L1AA**

Ⅰ Basic model No.	Ⅱ Mounting method	Ⅲ Shape of illuminating surface/ terminal/ voltage	Description
2C-L			LED-lit push-button switch
2F-L			LED-lit indicator
	1		Short barrier type
	2		Long barrier type
	3		Long flange type
	4		Short flange type
		AA	Single section, for 24Vdc
		AB	Single section, for 5/12Vdc
		BD	Longitudinal split 2-section, lateral split 2-section, for 24Vdc
		BC	Longitudinal split 2-section, lateral split 2-section, for 5/12Vdc
		DE	Longitudinal split 3-section, lateral split 3-section, 4-section, 2-color single-section, for 24Vdc
		CE	Longitudinal split 3-section, lateral split 3-section, 4-section, 2-color single-section, for 5/12Vdc

(5) Switches

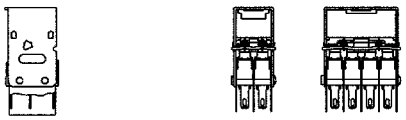
SSM ultra miniature switch unit

Momentary type



1 - pole 2 - pole 4 - pole

Alternate type/momentary, alternate type

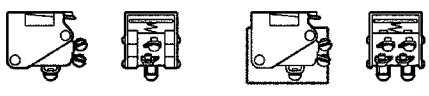


2 - pole 4 - pole

Catalog listing	Operation mechanism	Polarity	Contact material	Terminal shape
2D-11SGA	Momentary	1×SPDT	Silver	Soldered and tab terminal combined
2D-12SGA	Momentary	2×SPDT	Silver	
2D-14SGA	Momentary	4×SPDT	Silver	
2D-41SGA	Momentary	1×SPDT	Gold	
2D-42SGA	Momentary	2×SPDT	Gold	
2D-44SGA	Momentary	4×SPDT	Gold	
2D-12LGA	Low force momentary	2×SPDT	Silver	
2D-14LGA	Low force momentary	4×SPDT	Silver	
2D-42LGA	Low force momentary	2×SPDT	Gold	
2D-44LGA	Low force momentary	4×SPDT	Gold	
2D-22SGA	Alternate	2×SPDT	Silver	
2D-24SGA	Alternate	4×SPDT	Silver	
2D-52SGA	Alternate	2×SPDT	Gold	
2D-54SGA	Alternate	4×SPDT	Gold	
2D-32SGA	Momentary Alternate	2×SPDT	Silver	
2D-34SGA	Momentary Alternate	4×SPDT	Silver	

V-3000 miniature switch unit

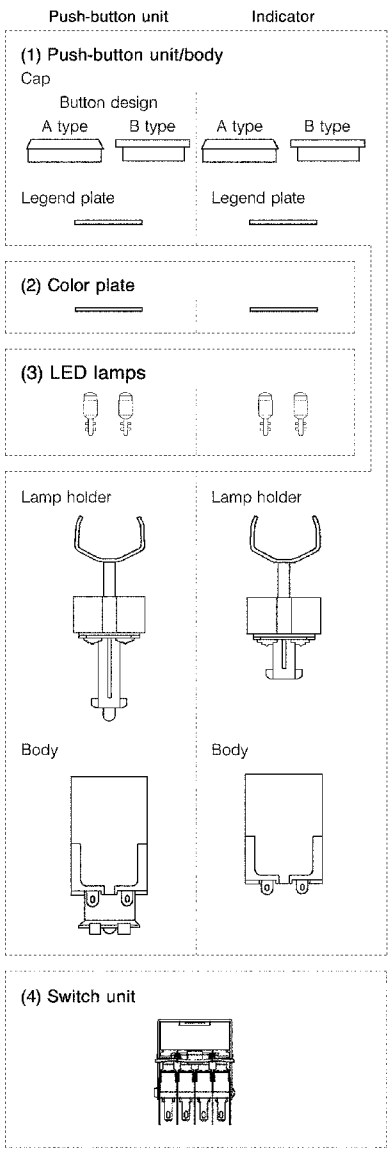
Momentary type/screw terminal



1 – pole 2 – pole

Catalog listing	Operation mechanism	Polarity	Contact material	Terminal shape
2D70-J	Momentary	1×SPDT	Silver	Screw
2D72-J	Momentary	2×SPDT	Silver	Screw

INDIVIDUAL MODEL No.



(1) Push-button unit/body Ⅰ Ⅱ Ⅲ Ⅳ Ⅴ Example: **2C-L1A24A-AC**

Ⅰ Basic model No.	Ⅱ Mounting method	Ⅲ Shape of LED-lit surface	Ⅳ LED voltage	Ⅴ Button design	Description
2C-L					LED-lit push-button switch
2F-L					LED-lit indicator
	1				Short barrier type
	2				Long barrier type
	3				Long flange type
	4				Short flange type
		A			Single section
		B			Lateral split 2-section
		C			Longitudinal split 2-section
			24		24Vac
				A-AC	Button design "A", AC lighting type
				B-AC	Button design "B", AC lighting type

(2) Color plate Ⅰ Ⅱ Example: **2V-L1R**

Ⅰ Basic model No.	Ⅱ Color		Description	
2V-L1			Single section	5 colors can be selected. (1 plate required per push-button switch)
2V-L2			Lateral split 2-section	5 colors for each of two plates can be selected. (2 plates required per push-button switch)
2V-L3			Longitudinal split 2-section	5 colors for each of two plates can be selected. (2 plates required per push-button switch)
	W	Milky white		
	R	Red		
	G	Green		
	Y	Yellow		
	D	Orange		

(3) LED lamp Ⅰ Ⅱ Ⅲ Example: **YA4R**

Ⅰ Basic model No.	Ⅱ Color	Ⅲ Lamp type	Description
YA4			AC lighting type **SERIES 2** special LED lamp
	R		Red
	G		Green
	A		Amber
		Blank	Standard lamp
		-R	Dark lit countermeasure type lamp

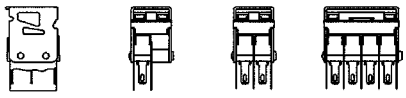
Note: How to Choose Colors

Desired Button Color	Color when out	Milky white			Yellow	Orange	Green	Red
	Color when lit	Light amber	Light yellowish green	Pink	Lemon yellow	Orange	Green	Red
	Color plate color	W: milky white	W: milky white	W: milky white	Y: yellow	D: orange	G: green	R: red
Part color to be selected	LED lamp color	A: amber or A-R: amber (dark lit countermeasure)	G: green or G-R: green (dark lit countermeasure)	R: red or R-R: red (dark lit countermeasure)	G: green or G-R: green (dark lit countermeasure)	A: amber or A-R: amber (dark lit countermeasure)	G: green or G-R: green (dark lit countermeasure)	R: red or R-R: red (dark lit countermeasure)

(4) Switch unit (continued)

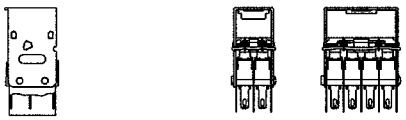
SSM ultra miniature switch unit

Momentary type



1 - pole 2 - pole 4 - pole

Alternate type/momentary, alternate type

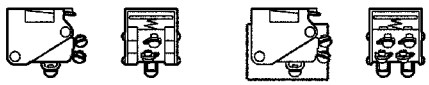


2 - pole 4 - pole

Catalog listing	Operation mechanism	Polarity	Contact material	Terminal shape
2D-11SGA	Momentary	1 × SPDT	Silver	Soldered and tab terminal combined
2D-12SGA	Momentary	2 × SPDT	Silver	
2D-14SGA	Momentary	4 × SPDT	Silver	
2D-41SGA	Momentary	1 × SPDT	Gold	
2D-42SGA	Momentary	2 × SPDT	Gold	
2D-44SGA	Momentary	4 × SPDT	Gold	
2D-12LGA	Low force momentary	2 × SPDT	Silver	
2D-14LGA	Low force momentary	4 × SPDT	Silver	
2D-42LGA	Low force momentary	2 × SPDT	Gold	
2D-44LGA	Low force momentary	4 × SPDT	Gold	
2D-22SGA	Alternate	2 × SPDT	Silver	
2D-24SGA	Alternate	4 × SPDT	Silver	
2D-52SGA	Alternate	2 × SPDT	Gold	
2D-54SGA	Alternate	4 × SPDT	Gold	
2D-32SGA	Momentary Alternate	2 × SPDT	Silver	
2D-34SGA	Momentary Alternate	4 × SPDT	Silver	

V-3000 miniature switch unit

Momentary type/screw terminal



1 – pole 2 – pole

Catalog listing	Operation mechanism	Polarity	Contact material	Terminal shape
2D70-J	Momentary	1 × SPDT	Silver	Screw
2D72-J	Momentary	2 × SPDT	Silver	Screw

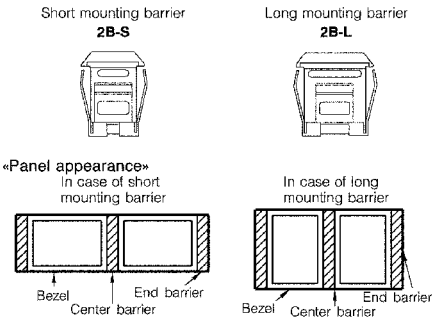
ACCESSORIES (sold separately)

● Barrier/bezel

• Mounting barrier/bezel

The mounting barrier is used for barrier type units, and, as its name implies, it has a function for mounting push-button switches/indicators onto panels. Two types, short barrier and long barrier, are available as shown in the figures below depending on the mounting direction.
The exclusive bezel is required for button design A, and not required for button design B.

Mounting barrier for button design A



Model selection guide Ⅰ Ⅱ Ⅲ Ⅳ Example: **2B-S1CK**

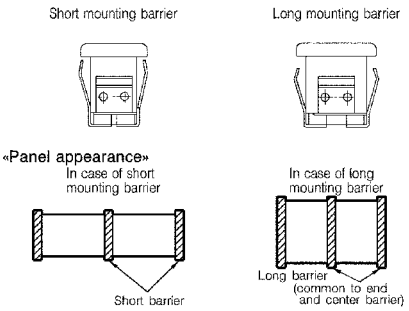
Ⅰ Basic model No.	Ⅱ Panel plate thickness	Ⅲ Mountings	Ⅳ Color	Description	Required number of barriers: Single mounting	Gang mounting
2B-S				Short mounting barrier exclusively for button design A		
2B-L				Long mounting barrier exclusively for button design A		
	1			t=1.6 to 4.8mm		
	2			t=4.8 to 7.9mm		
		C		Center barrier	0	n-1
		E		End barrier	2	2
			K	Black		

Bezel exclusively for button design A

Model selection guide Ⅰ Ⅱ Example: **2B-BEK**

Ⅰ Basic model No.	Ⅱ Color	Description
2B-BE		Bezel exclusively for button design A: common to short and long barriers
	K	Black

Bezel exclusively for button design B mounting barrier



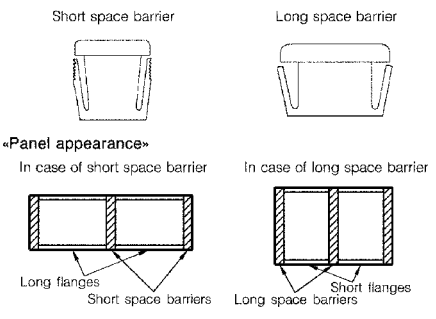
Catalog listing

Short mounting barrier: Panel plate thickness (mm) 1.6 to 4.8	Short mounting barrier: Panel plate thickness (mm) 4.8 to 7.9	Long mounting barrier: Panel plate thickness (mm) 1.6 to 4.8	Long mounting barrier: Panel plate thickness (mm) 4.8 to 7.9	Color	Number of required barriers (common to end and center barriers): Single mounting	Gang mounting
2B3-J	–	**2B4-J**	–	Black	2	n+1
	2B7-J	–	**2B8-J**	Black		

● Space barrier

The space barrier is used for flange type units, and is used for preventing the simultaneous pressing of two adjacent buttons. Space barriers do not have a function for mounting button bodies on panels. Space barriers can be applied only on button design B, and a bezel is not required.

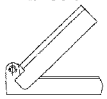
Barrier for button design B



Catalog listing

Color	Space barrier catalog listing (plate thickness 1.6 to 7.9mm): Short space barrier	Long space barrier
Black	**2B18**	**2B24**

• Switch guard

For short barrier	For long barrier	For both long barrier and short barrier
2H50-J	**2H51-J**	**2H20-J**
		

Catalog listing

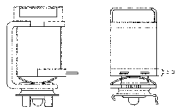
Catalog listing	Button design	Description
2H50-J	A	For short barrier
2H51-J	A	For long barrier
2H20-J	B	For both short barrier and long barrier

Noto: Be sure to use a bezel with 2H50-J and 2H51-J.

• Hold-in coil

Exclusively for soldered terminal

2P1 to 3-J



Catalog listing

Catalog listing	Rated voltage	Resistive value (Ref.)	Current (Ref.)	Remarks
2P1-J	6Vdc	12.8Ω	2.8W	Can be used only on soldered terminal type. Terminal can be rotated 90° in two different directions.
2P2-J	28Vdc	280Ω	2.8W	
2P3-J	48Vdc	1,010Ω	2.3W	

• Button replacement parts and auxiliary parts

Button design A cap	Button design B cap	Transparent legend plate
2V50-J	**2V10-J**	**2V9-J**
		

Partition plate

2V51-J	**2V52-J**	**2V53-J**	**2V54-J**
			

Base

2V55-J
2V56-J

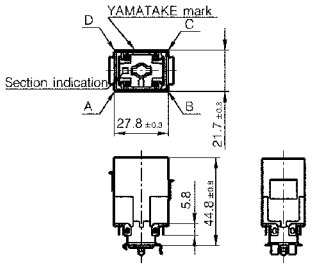
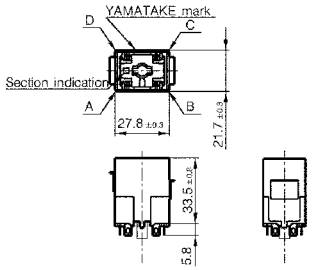
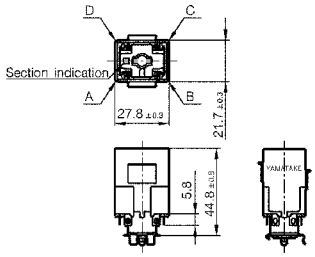
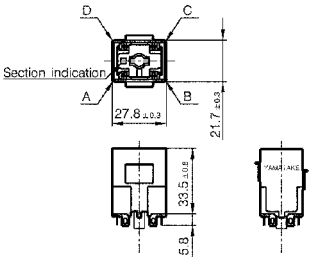
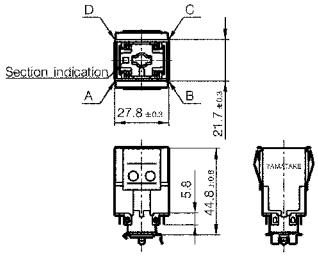
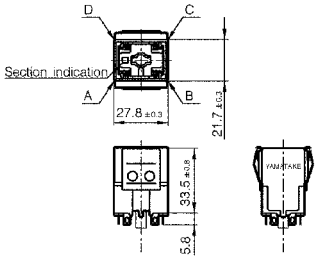
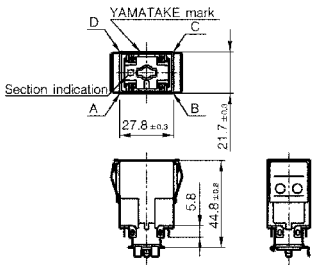
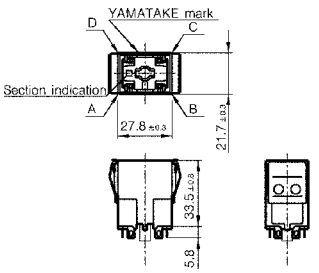
Catalog listing

Catalog listing	Description
2V50-J	Button design "A" cap
2V10-J	Button design "B" cap
2V9-J	Transparent legend plate common to button designs "A" and "B"
2V51-J	Partition plate for LED-lit, lateral split 2-section type
2V52-J	Partition plate for LED-lit, longitudinal split 2-section type
2V53-J	Length of about half that of **2V51-J**
2V54-J	Length of about half that of **2V52-J**
2V55-J	LED-lit button exclusive base
2V56-J	Used for improving brightness when incandescent lamp LED-lit **SERIES 2** is used as an LED lamp.

EXTERNAL DIMENSIONS

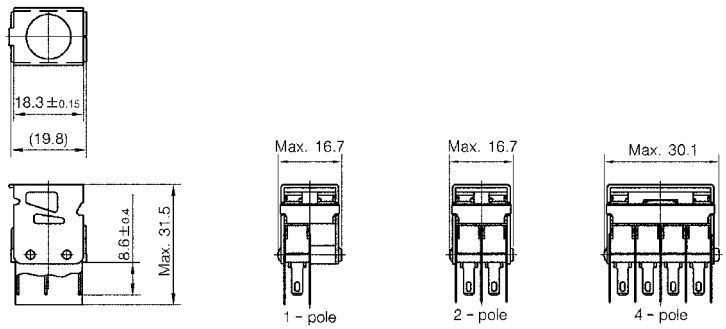
● Soldered terminal (LED lighting body)

(unit: mm)

Housing (body)	Switch housing (short barrier type) **2C-L1**□□□	Indicator housing (short barrier type) **2F-L1**□□□
		
	Switch housing (long barrier type) **2C-L2**□□□	Indicator housing (long barrier type) **2F-L2**□□□
		
	Switch housing (long flange type) **2C-L3**□□□	Indicator housing (long flange type) **2F-L3**□□□
		
	Switch housing (short flange type) **2C-L4**□□□	Indicator housing (short flange type) **2F-L4**□□□
		

● Soldered terminal type (switch unit)

(unit: mm)

<table>
<tr><td>Switch unit</td><td>Momentary type</td></tr>
<tr><td></td><td> 
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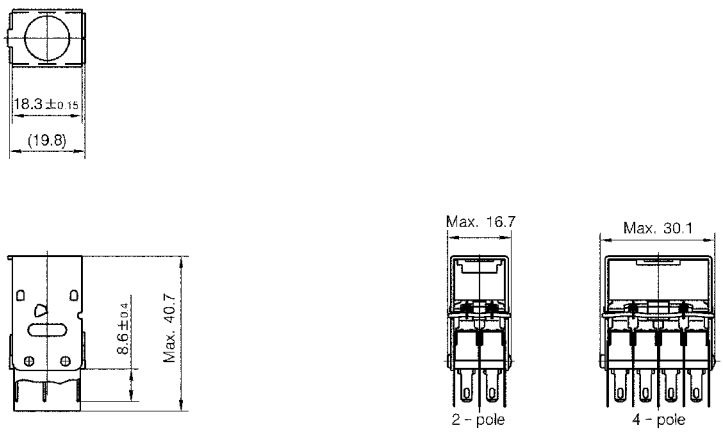
<tr><td></td><td>Alternate type/momentary, alternate type</td></tr>
<tr><td></td><td> 
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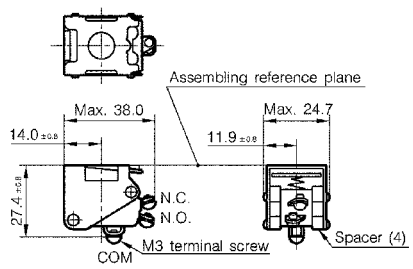
<tr><td></td><td>V-3000 built-in, momentary type, 1-pole 2D70-J</td></tr>
<tr><td></td><td> 
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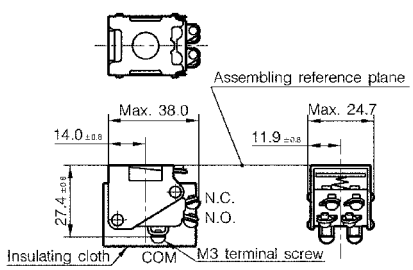
<tr><td></td><td>V-3000 built-in, momentary type, 2-pole 2D72-J</td></tr>
<tr><td></td><td> 
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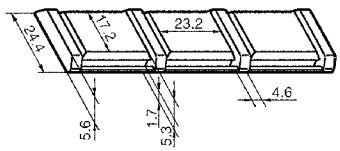
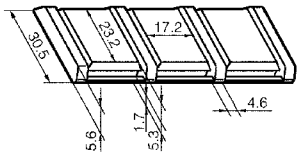
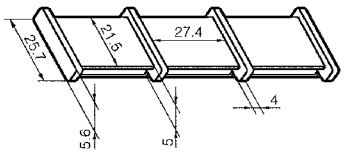
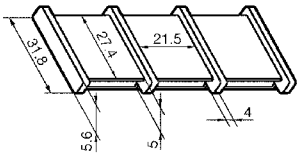
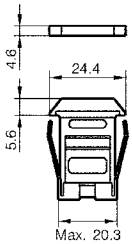
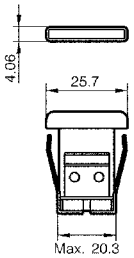
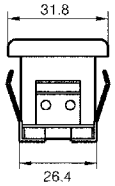
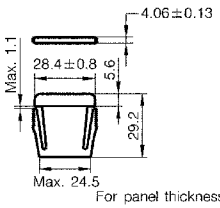
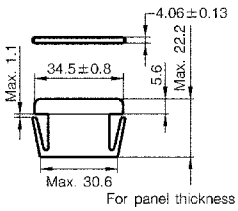
• Button

(unit: mm)

Design A type	For short barrier	For long barrier
		
Design B type	For short barrier	For long barrier
		

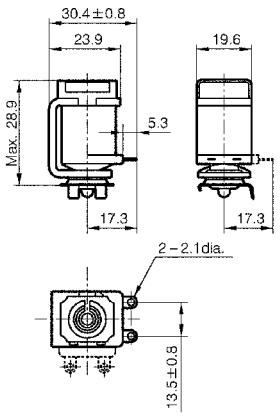
• Barrier

Mounting barrier	For design A type		For design B type	
	Short barrier	Long barrier	Short barrier	Long barrier
				
Space barrier	Short barrier		Long barrier	
				

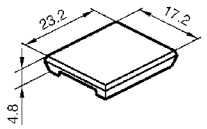
• Auxiliary and spare parts

(unit: mm)

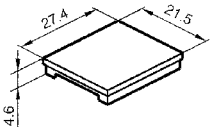
Hold-in coil, 2P1-J, 2P2-J, 2P3-J



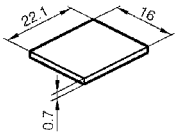
Cap for button design A **2V50-J**



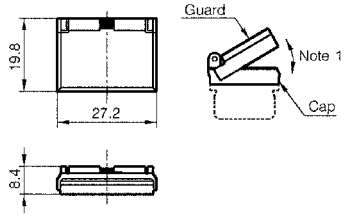
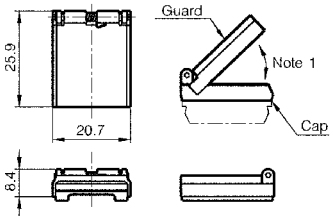
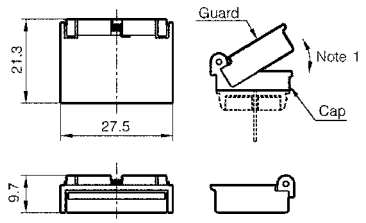
Cap for button design B **2V10-J**



Transparent legend plate (common to button design A and B) **2V9-J**



• Switch guard

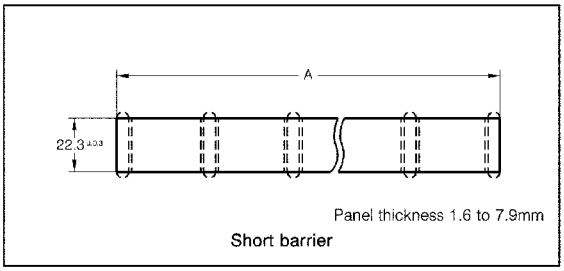
Design A	For short barrier **2H50-J**	For long barrier **2H51-J**
		
Design B	**Common to short and long barriers 2H20-J**	**Remarks**
		**Note 1:** Open guard upwards to operate the button. Guard/cap material: transparent plastic **Note 2:** The switch guard can also be used in gang mounting.

PANEL CUTOUT DIMENSIONS

- Panel cutout dimensions are common to DC lighting type LED-lit **SERIES 2**, and to AC lighting type LED-lit **SERIES 2.**

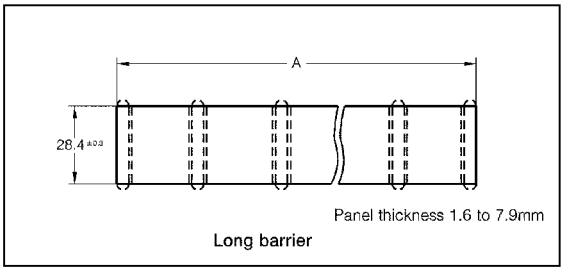
- Barrier type unit

(unit: mm)



Panel thickness 1.6 to 7.9mm

Short barrier



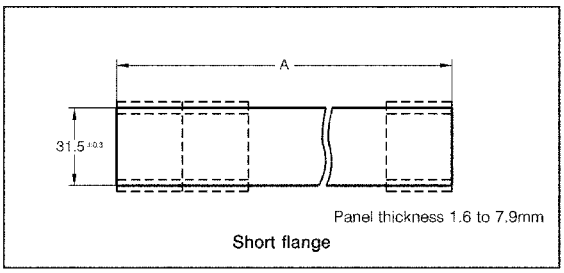
Panel thickness 1.6 to 7.9mm

Long barrier

Type \ Dimensions / Number of units	"A" dimensions											
	1	2	3	4	5	6	7	8	9	10	11	12
Short barrier (slot width 22.3)	36.1	68.0	99.9	131.8	163.6	195.5	227.4	259.3	291.1	323.0	354.9	386.7
Long barrier (slot width 28.4)	30.0	55.8	81.6	107.4	133.2	158.9	184.7	210.5	236.3	262.0	287.8	313.6

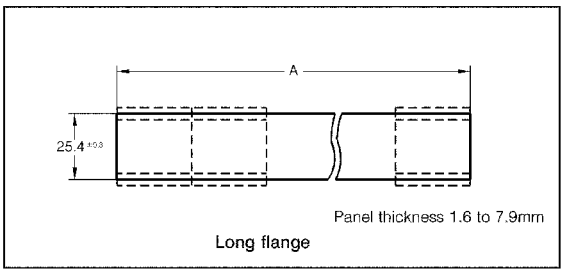
- The dimensional tolerance is ±0.3mm.
- In the case of a gang-mounting of 12 units or more, calculate as follows:
  Short barrier type: $31.86n+4^{+0.3}_{0}$
  Long barrier type: $25.76n+4^{+0.3}_{0}$

- Flange type unit



Panel thickness 1.6 to 7.9mm

Short flange



Panel thickness 1.6 to 7.9mm

Long flange

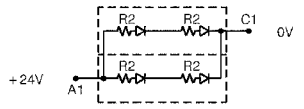
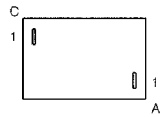
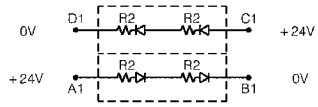
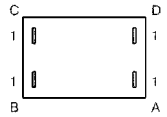
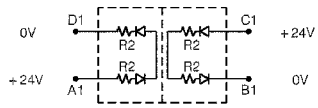
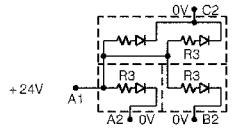
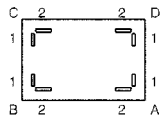
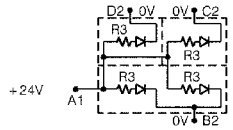
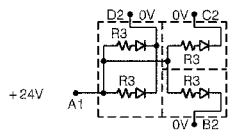
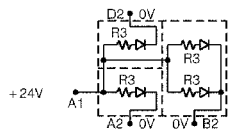
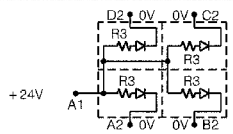
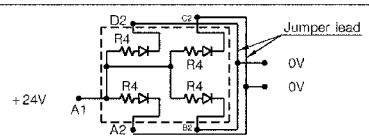
Type \ Dimensions / Number of units	"A" dimensions											
	1	2	3	4	5	6	7	8	9	10	11	12
Short flange (slot width 31.5)	21.9	43.6	65.3	87.0	108.7	130.4	152.1	173.9	195.5	217.3	238.9	260.7
Long flange (slot width 25.4)	28.0	55.8	83.6	111.4	139.2	167.0	194.8	222.6	250.4	278.2	306.0	333.8

- The dimensional tolerance is ±0.3mm. When using the space barrier on a flange type unit, add 4.2mm per space barrier to the above dimensions.

LED-LIGHTING UNIT, LED LAMP TERMINAL LAYOUT DIAGRAMS

- LED terminal wiring diagrams for 24Vdc (standard/erroneous insertion prevention countermeasure parts)

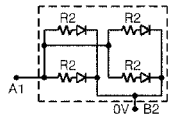
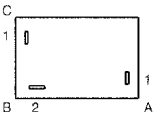
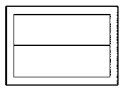
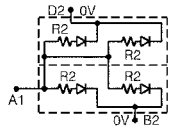
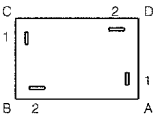
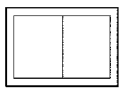
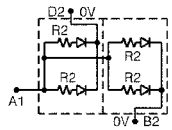
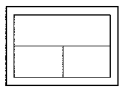
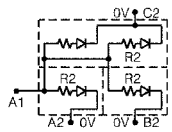
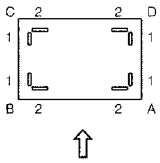
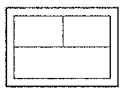
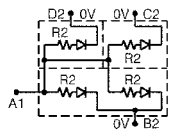
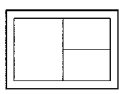
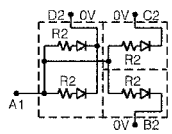
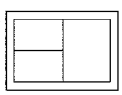
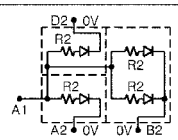
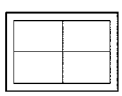
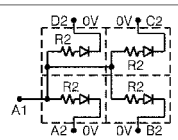
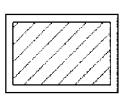
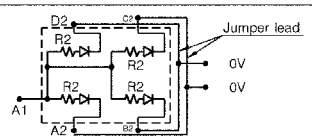
Common to push-button switch and indicator

Split shape	Holder model No. 2T-L□□24□ Code	Terminal wiring diagram (from front side)	Terminal layout diagram (from rear side)	Housing model No. 2(C-F / W-Y / WC)-L□□□ Code
Single-section LED-lighting	A			AA
Lateral split 2-section	B			BD
Longitudinal split 2-section	C			
Lateral split 3-section This way up	V			DE
Lateral split 3-section This way up	W		Note: Wire to only terminals shown in the terminal wiring diagrams on the left. Do not wire to other terminals. Doing so might damage the LED.	
Longitudinal split 3-section This way up	X			
Longitudinal split 3-section This way up	Y			
4-section	Z			
2-color single-section LED-lit	P			

Note: ⊣←: Indicates one LED lamp. LED lamp used: **YS8** Series.
The position of the resistors with respect to the LED and LED orientation are approximate.
The resistance value on the circuit is R_2=270Ω, R_3=1,400Ω and R_4=1,050Ω
Jumper leads for 2-color single-section LED-lit type are not included in the product. Wire these jumper leads at use.

LED terminal wiring diagrams for 12Vdc

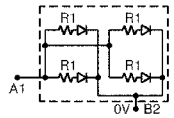
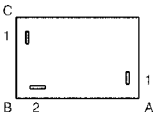
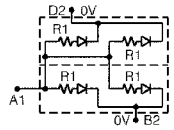
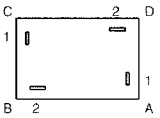
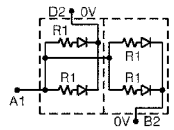
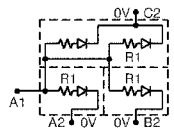
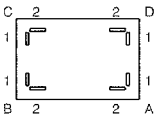
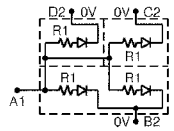
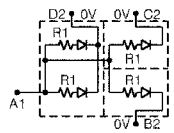
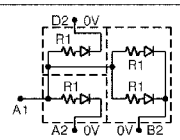
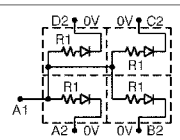
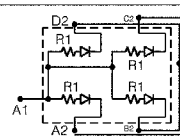
Common to push-button switch and indicator

Split shape	Holder model No. 2T-L□□12□ Code	Terminal wiring diagram (from front side)	Terminal layout diagram (from rear side)	Housing model No. 2(C-F / W-Y / WC)-L□□□ Code
Single-section LED-lighting 	A			AB
Lateral split 2-section 	B			BC
Longitudinal split 2-section 	C			
Lateral split 3-section This way up 	D		 Note: Wire to only terminals shown in the terminal wiring diagrams on the left. Do not wire to other terminals. Doing so might damage the LED.	CE
Lateral split 3-section This way up 	E			
Longitudinal split 3-section This way up 	F			
Longitudinal split 3-sections This way up 	G			
4-section 	H			
2-color single-section LED-lighting 	K			

Note: ⊣◂: Indicates one LED lamp. LED lamp used: **YS8** Series.
The position of the resistors with respect to the LED and LED orientation are approximate.
The resistance value on the circuit is R_2=270Ω.
Jumper leads for 2-color single-section LED-lit type are not included in the product. Wire these jumper leads at use.

LED terminal wiring diagrams for 5Vdc

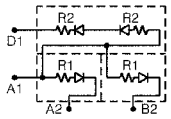
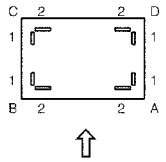
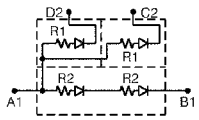
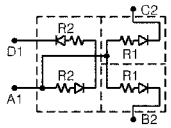
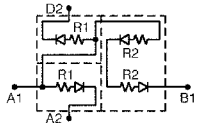
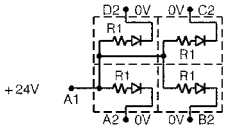
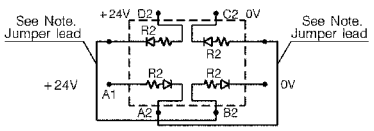
Common to push-button switch and indicator

Split shape	Terminal wiring diagram (from front side)	Terminal layout diagram (from rear side)
Single-section LED-lighting Holder model No. 2T-L□□05□ Code: A		 Housing model No. 2(C-F / W-Y / WC)-L□□ Code: AB
Lateral split 2-section Code: B		 Code: BC
Longitudinal split 2-section Code: C		
Lateral split 3-section This way up Code: D		 Note: Wire to only terminals shown in the terminal wiring diagrams on the left. Do not wire to other terminals. Doing so might damage the LED. Code: CE
Lateral split 3-section This way up Code: E		
Longitudinal split 3-section This way up Code: F		
Longitudinal split 3-section This way up Code: G		
4-section Code: H		
2-color single-section LED-lit Code: K		

Note: ⊣⊢ : Indicates one LED lamp. LED lamp used: **YS4** Series.
The position of the resistors with respect to the LED and LED orientation are approximate.
The resistance value on the circuit is $R_1 = 30\Omega$.
Jumper leads for 2-color single-section LED-lit type are not included in the product. Wire these jumper leads at use.

LED terminal wiring diagrams for 24Vdc (old type/custom order product)

Common to push-button switch and indicator

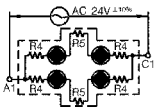
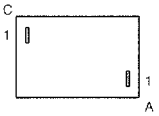
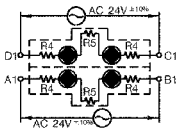
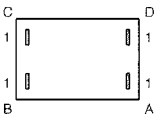
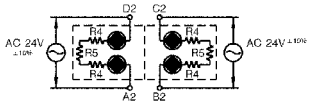
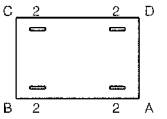
Split shape	Holder model No.	Code	Terminal wiring diagram (from front side)	Terminal layout diagram (from rear side)
Lateral split 3-section This way up	2T-L□□24□	D		 Housing model No. 2(C-F/W-Y/WC)-L□□ Code CE
Lateral split 3-section This way up		E		
Longitudinal split 3-section This way up		F		
Longitudinal split 3-section This way up		G		
4-section		H		
2-color single-section LED-lit		K		

Note: —•—: Indicates one LED lamp. LED lamp used: **YS8** Series.
The position of the resistors with respect to the LED and LED orientation are approximate.
The resistance value on the circuit is R_2=270Ω and R_1=1,400Ω.
Jumper leads for 2-color single-section LED-lit type are not included in the product. Wire these jumper leads at use.

Note: Wire to only terminals shown in the terminal wiring diagrams on the left. Do not wire to other terminals. Doing so might damage the LED.

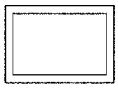
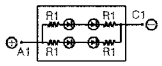
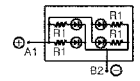
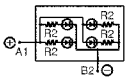
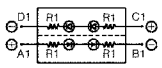
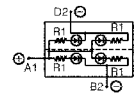
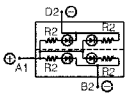
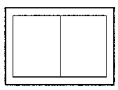
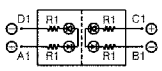
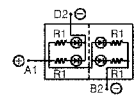
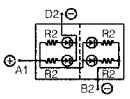
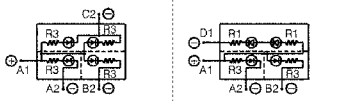
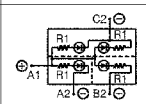
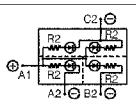
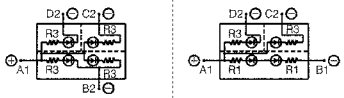
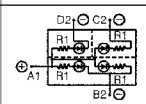
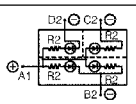
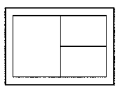
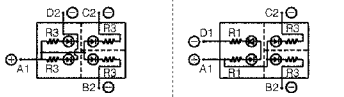
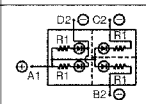
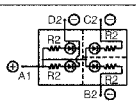
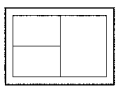
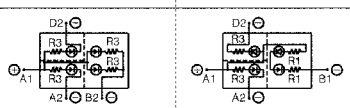
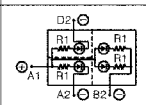
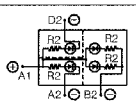
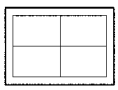
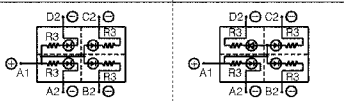
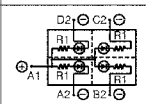
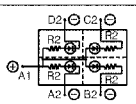
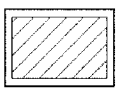
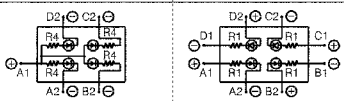
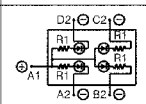
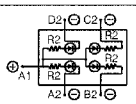
• LED terminal wiring diagrams for 24Vdc

Common to push-button switch and indicator

Split shape	Terminal wiring diagram (from front side)	Terminal layout diagram (from rear side)
Single-section LED-lit		
Lateral split 2-section		
Longitudinal split 2-section		

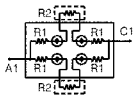
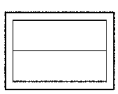
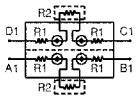
Note: —•—: Indicates one LED lamp. LED lamp used: **YA4** Series.
The resistance value on the circuit is R_4=130Ω and R_5=470Ω.

DC LIGHTING TYPE LED-LIGHTING UNIT CURRENT LIMITING RESISTORS AND INTERNAL CIRCUITS (from unit front side)

Catalog listing	Shape of LED-lit surface	24Vdc	12Vdc	5Vdc	Resistive value (Ω)
2T-L□A□□□					R_1=270 R_2= 30
2T-L□B□□□					R_1=270 R_2= 30
2T-L□C□□□					R_1=270 R_2= 30
2T-L□V24□ (left figure) **2T-L□D□□□**					R_1= 270 R_2= 30 R_3=1,400
2T-L□W24□ (left figure) **2T-L□E□□□**					R_1= 270 R_2= 30 R_3=1,400
2T-L□X24□ (left figure) **2T-L□F□□□**					R_1= 270 R_2= 30 R_3=1,400
2T-L□Y24□ (left figure) **2T-L□G□□□**					R_1= 270 R_2= 30 R_3=1,400
2T-L□Z24□ (left figure) **2T-L□H□□□**					R_1= 270 R_2= 30 R_3=1,400
2T-L□P24□ (left figure) **2T-L□K□□□**					R_1= 270 R_2= 30 R_3=1,400
		2T-L□V to Z·P24□	**2T-L□D to H·K24□**		

Note: ⊕ : Indicates one LED lamp. LED lamp used: **YS8** Series and **YS4** Series.
The position of the resistors with respect to the LED and LED orientation are approximate.
External jumper leads must be added on for 2-color single-section LED-lit units.

AC LIGHTING TYPE LED-LIGHTING UNIT CURRENT LIMITING RESISTORS AND INTERNAL CIRCUITS (from unit front side)

Catalog listing	Shape of LED-lit surface	24Vac	Resistive value (Ω)
2□-L□A□□□ -AC			R_1=130 R_2=470
2□-L□B□□□ -AC			R_1=130 R_2=470
2□-L□C□□□ -AC			R_1=130 R_2=470

Note: ◈ : Indicates one LED lamp. LED lamp used: **YS4** Series and **YA4□-R** Series.
The position of the resistors with respect to the LED lamp is approximate.
Resistors at ⋯ are attached to the body (housing) side.

HOW TO SELECT COLOR PLATES AND LED LAMP COLORS

Desired button color		Catalog listing/color of part to be selected	
Color when lamp is out	Color when lamp is lit	Color plate (base) color	LED lamp color
Milky white	Light amber	W: milky white	**YS□A** : Amber
	Light yellow		**YS□W** : Amber and green mixed color
	Light orange (high intensity)		**YS8AH** : High intensity red/green mixed color
	Light amber		**YA4A(-R)** : Amber AC lighting type ("-R" type is induction erroneous lighting countermeasure lamp.)
	Light orange (high intensity)		**YF□□A** : High intensity red/green mixed color midget flange base
	Light yellowish green		**YS□G** : Green
	Light yellowish green		**YA4G(-R)** : Green AC lighting type ("-R" type is induction erroneous lighting countermeasure lamp.)
	Light green (high intensity)		**YF□□G** : High intensity green, midget flange base
	Pink		**YS□R** : Red
	Pink		**YA3R(-R)** : Red AC lighting type ("-R" type is induction erroneous lighting countermeasure lamp.)
	Pink (high intensity)		**YF□□R** : High intensity red, midget flange base
Yellow	Lemon yellow	Y: yellow	**YS□G** : Green
	Yellow		**YS□W** : Amber/green mixed color
	Reddish yellow (high intensity)		**YS8AH** : High intensity red/green mixed color
	Lemon yellow		**YA4G(-R)** : Green AC lighting type ("-R" type is induction erroneous lighting countermeasure lamp.)
	Reddish yellow (high intensity)		**YF□□A** : High intensity red/green mixed color midget flange base
Orange	Orange	D: orange	**YS□A** : Amber
	Orange (high intensity)		**YS8AH** : High intensity red/green mixed color
	Orange		**YA4A(-R)** : Amber AC lighting type ("-R" type is induction erroneous lighting countermeasure lamp.)
	Orange (high intensity)		**YF□□A** : High intensity red/green mixed color, midget flange base
Green	Green	G: green	**YS□G** : Green
	Green (high intensity)		**YS8AH** : High intensity red/green mixed color
	Green		**YA4G(-R)** : Green AC lighting type ("-R" type is induction erroneous lighting countermeasure lamp.)
	Green (high intensity)		**YF□□G** : High intensity green, midget flange base
Red	Red	R: red	**YS□R** : Red
	Red (high intensity)		**YS8AH** : High intensity red/green mixed color
	Red		**YA3R(-R)** : Red AC lighting type ("-R" type is induction erroneous lighting countermeasure lamp.)
	Red (high intensity)		**YF□□R** : High intensity red, midget flange base

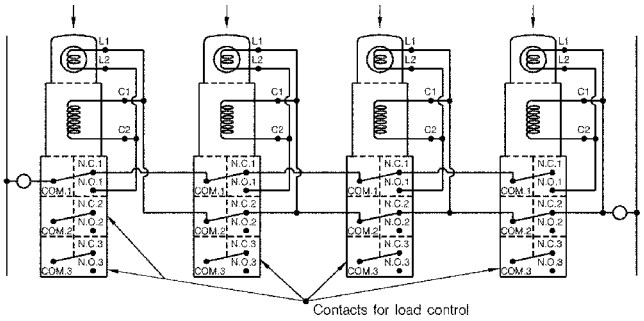
Note: The display color is referenced to a peripheral LED-lit intensity of 1,000lux. When the LED-lit intensity changes, the hue when lit also changes.
□□ indicates models that are used for improving brightness when incandescent lamp LED-lit is used as an LED lamp.

HOLD-IN COIL AND UNIT (model No. 2P□-J) APPLICATION CIRCUITS

The following applied circuits can be incorporated by fitting the hold-in coil unit into the **SERIES 2** operator/indicator (body).

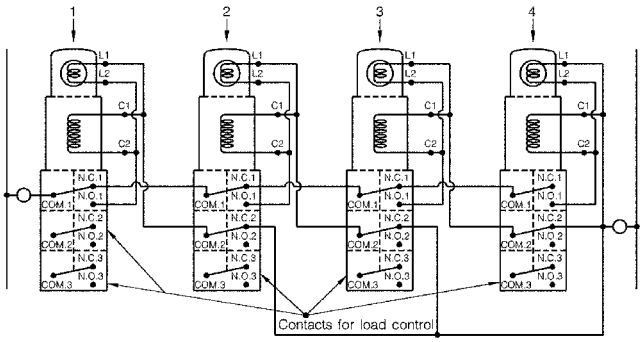
● Random point selection circuit

(1) The contact is held at the reversed position when any screen is pressed.
(2) When any other point is pressed, the first pressed contact is returned to the free position, and the pressed-in contact is held.



● Successive point selection circuit

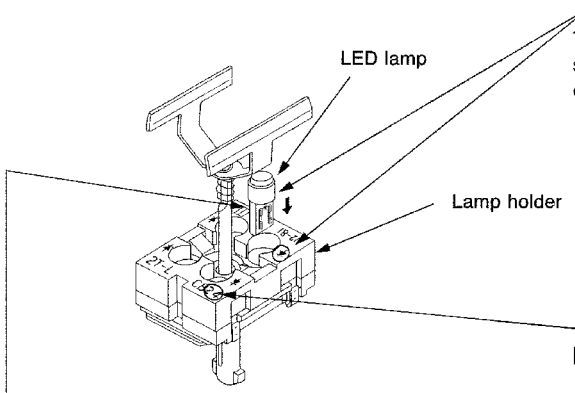
(1) The contact is held when the 1st screen is pressed.
(2) When the 2nd screen is pressed, the 1st contact is canceled, and the 2nd contact is held. (Even if the screen is pressed with the order skipped, the previous unit is not canceled, and the pressed contact is not held.)
(3) When the screen is pressed in order, any previous unit can be returned to.



PRECAUTIONS UPON USE

● How to combine lamp holders and bodies

• DC lighting type



● LED assembling direction

This part has a ⊣⊢ mark to indicate the LED polarity. Assemble so that the ⊣⊢ mark on the lamp holder matches the ⊣⊢ mark on the LED lamp.

● Indicates the operating voltage.

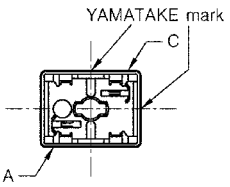
[Example] 24 → for 24Vdc
12 → for 12Vdc
05 → for 5Vdc

→ Combining lamp holders and bodies

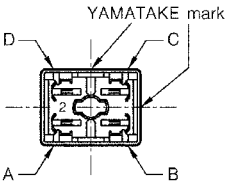
This part has a drawing (e.g. ⊟) to indicate the section shape. Combine the lamp holder and body according to the following instruction.
If the lamp holder and body are combined in the wrong way, abnormalities such as short circuits or excessive current to the LED may occur.

Body

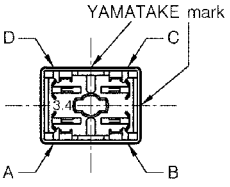
Single-section LED-lighting (excluding 2-color single-section LED-lighting) ⟷ Unmarked →



Lateral split 2-section
Longitudinal split 2-section
⟷ 2 →

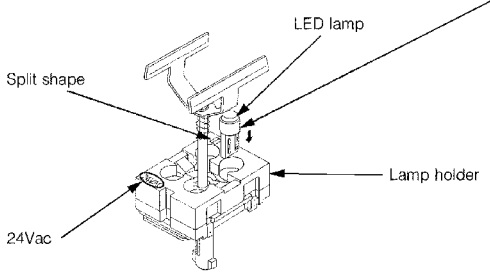


Lateral split 3-section
Longitudinal split 3-section
4-section
2-color single-section LED-lighting
⟷ 3.4 →



Note: On 24Vdc system 3-section, 4-section, 2-color single-section LED-lit types, a countermeasure (protrusion on body side inner corner, and notch on opposite corner position on holder side) for preventing erroneous insertion is adopted to prevent insertion of holders for single-section and 2-section LED-lit types.

• AC lighting type



● LED lamp assembling direction

Lamps may be fit in either direction as they have no polarity.

• Legend

The **SERIES 2** legend is performed by lettering, inscription, hot-stamping and film.

• Maximum number of letters in inscriptions

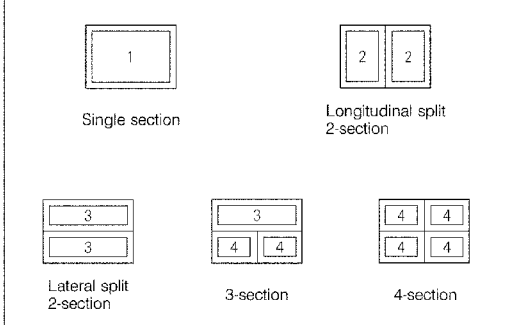
The maximum number letters of characters that can be inscribed in **SERIES 2** insert bases are as follows:

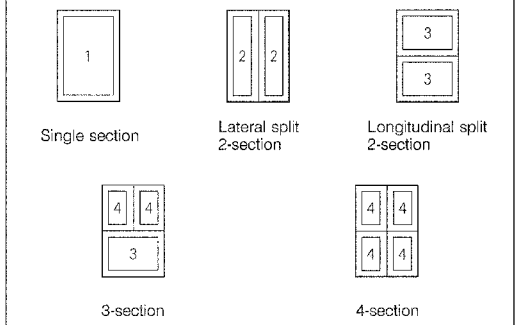
Note 1: The number of is calculated in the Modified Gothic typeface.
1-1. The standard character width (character other than the following and numbers) shall be 1.0.
1-2. M and W in the alphabet shall be 1.5, and D, H, N, O and Q shall be 1.33. Fractions shall be rounded up.

SERIES 2 Inscription Maximum Number of Characters

Inscription area	Horizontal lettering								Vertical lettering							
	1		2		3		4		1		2		3		4	
Height of characters (mm)	Number of characters /line	Max. number of lines	Number of characters /line	Max. number of lines	Number of characters /line	Max. number of lines	Number of characters /line	Max. number of lines	Number of characters /line	Max. number of lines	Number of characters /line	Max. number of lines	Number of characters /line	Max. number of lines	Number of characters /line	Max. number of lines
2.8	9	3	4	3	9	1	4	1	6	5	3	5	6	2	3	2
3.5	7	3	3	3	7	1	3	1	5	4	2	4	5	2	2	2
5.0	5	2	2	2	5	1	2	1	3	3	1	3	3	1	1	1

Inscription area





• Short barrier type panel seal (catalog listing 2H5□□-J) assembling procedure

Follow the procedure below to assemble the short barrier type panel seal.

(1) Fit the barrier and bezel onto the body. (assembling the body)
(2) Assemble the cover and base. (assembling the seal)
(3) Peel off the peel-off paper on the bottom of the base.
(4) Fit the seal assembly into the body assembly. When doing this, fit the protrusion on the base into the indentation on the barrier side.
(5) Press the body into the panel making sure that uniform force is applied on the two barriers.
(6) To ensure sealability, press the periphery of the seal assembly against the panel.

When replacing the lamp, for example, after assembling the bezel, remove the cover and use the button extractor tool (separately ordered part: model No. **YDLT-QZ**)

• Assembling the hold-in coil (model No. 2P□-J)

This coil is inserted between the operator indicator (body) and the switch for use. If this switch is operated (pressed) after the coil is excited, the contact is held electrically in a reverse state obtained by the generated magnetic force, and the original state is restored when coil excitation is canceled. The mounting direction of the hold-in coil can be rotated 90° so as to facilitate wiring.

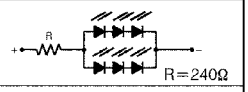
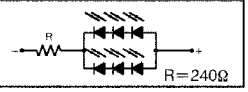
• Handling of SERIES 2

Acrylic resin is used in formed parts (e.g. display screen). When wiping dirt off such parts, use a cloth moistened with neutral detergent. Avoid using paint thinner, acid or organic solvents.
If flux flows or the mold is allowed to become deformed when soldering lead wires, the insulating resistance and dielectric strength may drop below specification.

Use the following as electrical leads for wiring the **SERIES 2**:
When wiring only one lead to one terminal: Twisted lead of 0.75mm^2 or less
When crossing over two leads to one terminal: Twisted lead of 0.5mm^2 or less

• The incandescent lamp-lit SERIES 2 can be modified into an LED lamp.

The incandescent type **SERIES 2** currently in use can be modified into an LED lamp that has a longer life and that is maintenance-free. To do this, all you need do is to replace the incandescent type (model No. **327L**) with the high-intensity type LED lamp. The button, switch and wiring already in use need not be modified at all. Note, however, that the polarity must be checked when the lamp is replaced as the LED lamp has polarity.

Model No. of incandescent lamp in use	Replacement lamp catalog listing for LED transformation	Polarity	Lens color	Product indication	Circuit diagrams
327L (28V bulb) for 24Vdc	**YF24AA**	Positive	Achromatic transparent	F24□A	
	YF24GA		Light green		
	YF24RA		Pink		
	YF24AK	Negative	Achromatic transparent	F24□K	
	YF24GK		Light green		
	YF24RK		Pink		
330L (14V bulb) for 12Vdc	**YF12AA**	Positive	Achromatic transparent	F12□A	
	YF12GA		Light green		
	YF12RA		Pink		
	YF12AK	Negative	Achromatic transparent	F12□K	
	YF12GK		Light green		
	YF12RK		Pink		

Cautions

(1) About LED lamp polarity

- Positive:
  Solder ball side of lamp is anode (plus).
  Base side of lamp is cathode (minus).
- Negative:
  Solder ball side of lamp is cathode (minus).
  Base side of lamp is anode (plus).

(2) When using 2-lamp unit for a incandescent lamp type single-section lighting type, the lamp can be modified into an LED by merely replacing the lamp. However, an even brighter LED can be obtained by adding the following parts. At this time, replace the base of the button currently in use with the following base/color plate, and use the legend plate and cap as they are.

- **2V56-J** (base)
- **2V-L1**□ (color plate)

↓

Color plate color:

R: red
Y: yellow
G: green
W: milky white
D: orange

Note: If the similar shape reflective base (model No. **2V55-J**) packaged with units for LED-lit types is used, the base will interfere with the LED lamp, and will cause defective switch operation and restoration.

Combination of button colors and LED lamps

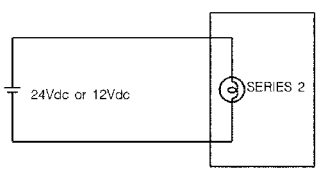
Button color		Catalog listing of combined LED lamp			
		Positive		Negative	
Color when out	Color when lit	For 12Vdc	For 24Vdc	For 12Vdc	For 24Vdc
Red	Red	**YF12AA - YF12RA**	**YF24AA - YF24RA**	**YF12AK - YF12RK**	**YF24AK - YF24RK**
Yellow	Yellow	**YF12AA**	**YF24AA**	**YF12AK**	**YF24AK**
Green	Green	**YF12AA - YF12GA**	**YF24AA - YF24GA**	**YF12AK - YF12GK**	**YF24AK - YF24GK**
Orange	Orange	**YF12AA**	**YF24AA**	**YF12AK**	**YF24AK**
Milky white	Amber	**YF12AA**	**YF24AA**	**YF12AK**	**YF24AK**
	Pink	**YF12RA**	**YF24RA**	**YF12RK**	**YF24RK**
	Green	**YF12GA**	**YF24GA**	**YF12GK**	**YF24GK**

When modifying a incandescent lamp into an LED lamp, the lamp can sometimes be modified merely by replacing the lamp as it is, and sometimes slight circuit modifications are required depending on the drive circuit of the incandescent lamp.

Refer to the following examples and take the appropriate action. The following diagrams show a circuit for a single incandescent lamp.

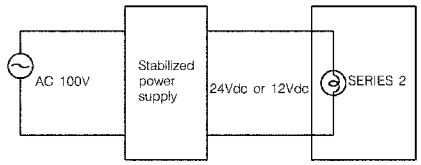
1. Cases where lamp can be modified into an LED without any problem merely by replacing the lamp

(1) When driven by a 24Vdc or 12Vdc battery power supply:



On a **SERIES 2** that is driven directly by a battery as shown in the figure on the left, merely replacing the incandescent lamp such as a **327L** with a high-intensity LED lamp such as a **YF24AA** poses no problems.

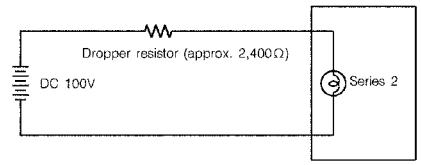
(2) When driven by 24Vdc or 12Vdc by a stabilized power supply:



On a **SERIES 2** that is driven directly by a stabilized power supply as shown in the figure on the left, merely replacing the incandescent lamp such as a **327L** with a high-intensity LED lamp such as a **YF24AA** poses no problems.

2. Cases when problems occur by simply replacing the lamp

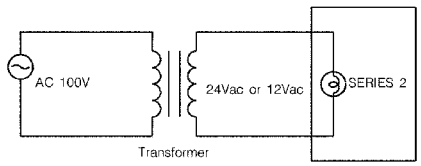
(1) When driven by a 100Vdc power supply via a dropper resistor:



On a **SERIES 2** that is driven via a dropper resistor as shown in the figure on the left, the current consumption of the incandescent lamp and the LED lamp differs. For this reason, when the lamp is simply replaced, excessive current flows to the LED lamp which will destroy the LED lamp.

Countermeasure: Change the resistance value of the dropper resistor to a value matched to the LED lamp.
Approx. 2,400Ω → approx. 6,200Ω (per lamp, when a 24Vdc LED lamp is used)

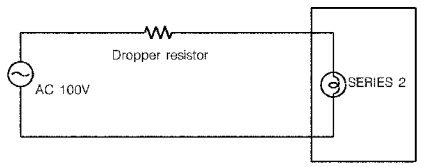
(2) When driven directly by 24Vac or 12Vac power supply:



On a **SERIES 2** driven directly by an AC power supply as shown in the figure on the left, LED lamp damage does not occur. However, flickering (conspicuous in the 50Hz area) synchronized to the power frequency occurs.
The intensity of the indicator surface also drops in proportion to DC lighting.

Countermeasure: Insert a bridge in the power circuit to drive by full-wave rectification.

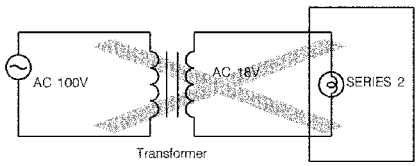
(3) When driven by a 100Vac power supply via a dropper resistor:



On a **SERIES 2** that is driven by 100Vac via a dropper resistor as shown in the figure on the left, the current consumption of the incandescent lamp and the LED lamp differ. For this reason, when the lamp is simply replaced, excessive current flows to the LED lamp which will destroy the LED lamp. The intensity of the indicator surface also drops in proportion to DC lighting.

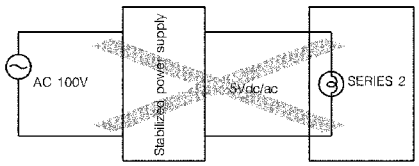
Countermeasure: Change the resistance value of the dropper resistor to a value matched to the LED lamp, insert a bridge circuit, and drive by full-wave rectification.

(4) When driven directly by 18Vac power supply:



On a **SERIES 2** driven directly by an AC power supply as shown in the figure on the left, countermeasures cannot be adopted as a power voltage 18V high-intensity LED has not yet been developed.

(5) When driven by DC or 5Vac by a stabilized power supply:



On a **SERIES 2** driven directly by an DC or 5Vac power supply as shown in the figure on the left, countermeasures cannot be adopted as a power voltage 5V high-intensity LED has not yet been developed.