Pushbutton Switches/Indicators A22R/M22R series

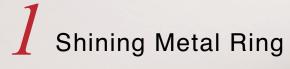


# Robust and Graceful design

# **Pushbutton Switches**

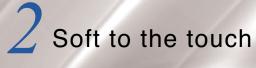


# Responds with high grade illumination to various needs



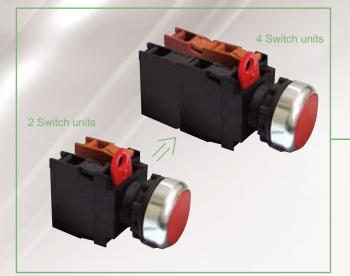
Provides shining and robust metal ring.

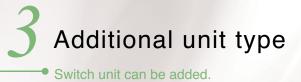




Gentle design for human.

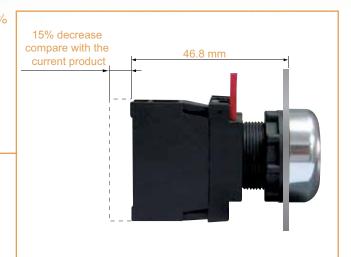


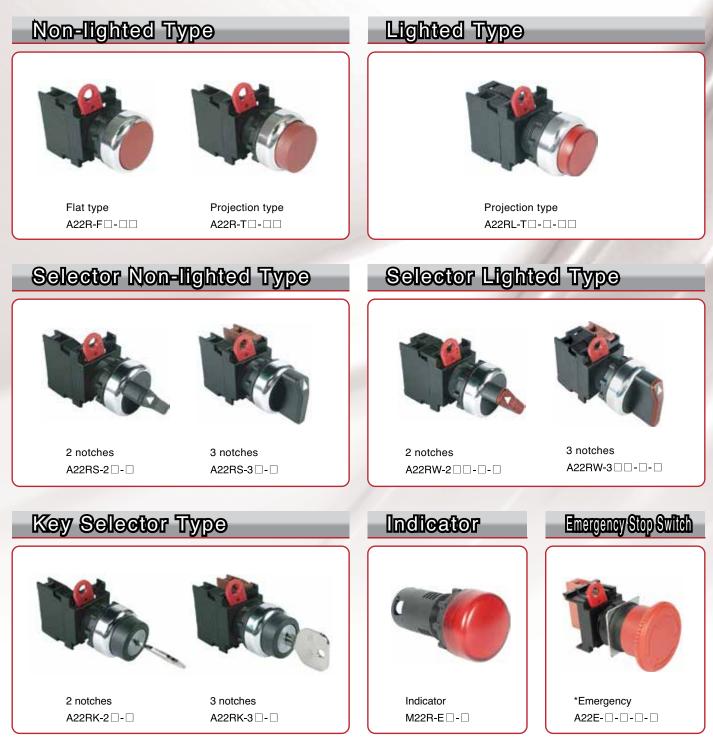




# Compact size

The body length under a panel decreased by 15% compare with our former products.





\* Refer to the Safety Components Series Catalog (Cat. No. Y106) for detail.

# **Operation Units**



# **Pushbutton Switches**

## Non-lighted/Lighted

Appearance	Pushbutton shape	Pushbutton color	Contact form	Part No.	Dimensions
A22R-F□-□□		$\bigcirc$	1 NO	A22R-FW-10	× 28°
			1 NO	A22R-FB-10	
			1 NO	A22R-FG-10	
			1 NO	A22R-FR-10	
			1 NO	A22R-FY-10	29.8
100	Round/Flat		1 NO	A22R-FA-10	→ → → → →
TO P			1 NC	A22R-FB-01	0.0.0
			1 NC	A22R-FR-01	
		Insert one of the M: Momentary A: Alternate	e following let	ters into the box $\Box$ .	
A22R-T□-□□		$\bigcirc$	1 NO	A22R-TW-10	
	Projection	Ŏ	1 NO	A22R-TB-10	<i>ϕ</i> 29.8
			1 NO	A22R-TG-10	\$23.7
			1 NO	A22R-TR-01	0.5
			1 NO	A22R-TY-10	
			1 NO	A22R-TA-10	
ALC CONTRACT			1 NC	A22R-TB-01	
			1 NC	A22R-TR-01	
		Insert one of the following letters into the box  . M: Momentary A: Alternate			
A22RL-T□-□-□□		$\bigcirc$	1 NO	A22RL-TW-24A-10	
			1 NO	A22RL-TG-24A-10	
	Projection AC, DC 24V		1 NO	A22RL-TR-24A-10	<i> ∅</i> 29.8
	710, 20 211		1 NO	A22RL-TY-24A-10	\$23.7 \$
			1 NO	A22RL-TA-24A-10	0.5
		$\bigcirc$	1 NO	A22RL-TW-T2-10	
			1 NO	A22RL-TG-T2-10	
	Draination		1 NO	A22RL-TR-T2-10	
	Projection AC 220V		1 NO	A22RL-TY-T2-10	
			1 NO	A22RL-TA-T2-10	
		Insert one of the M: Momentary A: Alternate	e following let	ters into the box $\Box$ .	

# Selector Switches

Non lightod/Light

Appearance	Number of notch	Knob position	Knob color	Contact form	Part No.	Dimensions
A22RS-2□-□		$\sim$		1 NO	A22RS-2M-10	28°
		$\sim$		1 NO/1 NC	A22RS-2M-11	
	2 notches	$\bigcirc$		1 NO	A22RS-2A-10	
		~		1 NO/1 NC	A22RS-2A-11	
A22RS-3□-□		$\geq$		2 NO	A22RS-3M-20	
		$\Leftrightarrow$		2 NO	A22RS-3A-20	↓ <u>29.6</u> ↓
		* These N	on-lightee	d types provide	e black knobs.	
	3 notches					
A22RW-2		$\searrow$		1 NO	A22RW-2MG-24A-10	, <i>\$</i> 29.8 −
	2 notches			1 NO/1 NC	A22RW-2MR-24A-11	
	AC, DC 24V	$\bigcirc$		1 NO	A22RW-2AY-24A-10	
		~		1 NO/1 NC	A22RW-2AA-24A-11	
A22RW-3				2 NO	A22RW-3MG-24A-20	
	3 notches	$\vee$		2 NO	A22RW-3MR-24A-20	
	AC, DC 24V	$\langle T \rangle$		2 NO	A22RW-3AY-24A-20	
		$\vee$		2 NO	A22RW-3AA-24A-20	

# Selector Switches

## Key Selector

Appearance	Number of notch	Key position	Contact form	Part No.	Dimensions
A22RK-2□-□		٩ /	1 NO	A22RK-2ML-10	- <u></u>
		$\sim$	1 NO/1 NC	A22RK-2ML-11	
-		٩ , ٩	1 NO	A22RK-2M-10	
	2 notches	$\sim$	1 NO/1 NC	A22RK-2M-11	
	2 notoneo	$\langle \rangle$	1 NO	A22RK-2AL-10	29.8
		$\sim$	1 NO/1 NC	A22RK-2AL-11	
		O: key release	position		
A22RK-3□-□		$\searrow$	2 NO	A22RK-3ML-20	
-		$\sim$	2 NO	A22RK-3M-20	
	3 notches	$\rightarrow$	2 NO	A22RK-3MC-20	
		¢	2 NO	A22RK-3AC-20	
		O: key release	position		

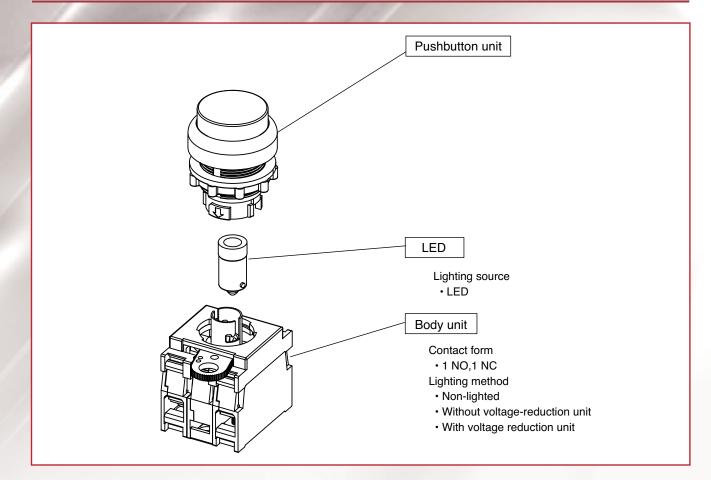
## Indicator

### All-in-one type

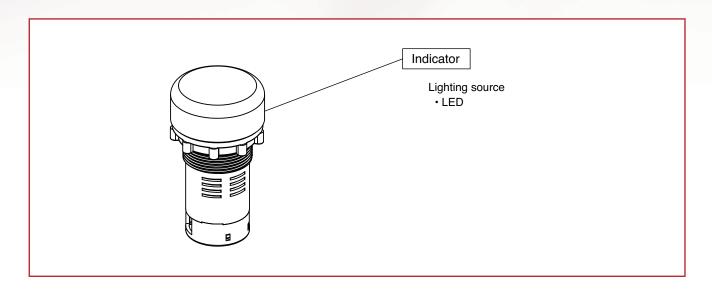
Appearance	LED rating	Indicator color	Part No.	Dimensions
M22R-E□-□		$\bigcirc$	M22R-EW-24A	¢29.8
			M22R-EG-24A	
	AC, DC 24V		M22R-ER-24A	
			M22R-EY-24A	
			M22R-EA-24A	14.4
	AC 220V	$\bigcirc$	M22R-EW-T2	
			M22R-EG-T2	
C FIL			M22R-ER-T2	40.5
- E			M22R-EY-T2	
			M22R-EA-T2	
	AC 120V	$\bigcirc$	M22R-EW-T1	
			M22R-EG-T1	
			M22R-ER-T1	
			M22R-EY-T1	
			M22R-EA-T1	

# Structure

## A22R series



## M22R series



# Pushbutton unit

Non-lighted/Lighted

Appearance	Pushbutton shape	Pushbutton color	Part No.	Dimensions
A22R-F□-□		$\bigcirc$	A22R-FW-	¢29.8
			A22R-FB-	
			A22R-FG-	
	Round/Flat		A22R-FR-	
	Round/Fiat		A22R-FY-□	
1.			A22R-FA-	
		Insert one of the M: Momentary A: Alternate	e following letters into the box $\Box$ .	
A22R-T□-□		$\bigcirc$	A22R-TW-	
	Projection		A22R-TB-	
			A22R-TG-	
			A22R-TR-	
		•	A22R-TY-	
			A22R-TA-	
		Insert one of the M: Momentary A: Alternate	e following letters into the box $\Box$ .	
A22RL-T□-□		$\bigcirc$	A22RL-TW-	
			A22RL-TG-	
	Projection		A22RL-TR-	16.7
	Lighted type		A22RL-TY-	
			A22RL-TA-	
		Insert one of the M: Momentary A: Alternate	e following letters into the box $\Box$ .	

# Selector unit

Non-lighted/Lighted					
Appearance	Number of notch	Knob position	Knob color	Part No.	Dimensions
A22RS-2		$\sim$		A22RS-2M	<i></i>
Reference		$\bigcirc$		A22RS-2A	
	2 notches				
A22RS-3		$\checkmark$		A22RS-3M	
Parties -		$\Diamond$		A22RS-3A	24.2 0.5 10 10 24.2
	3 notches	* These N	on-lighted	d types provide black knobs.	
A22RW-2□				A22RW-2MG	
		$\sim$		A22RW-2MR	
Real				A22RW-2MY	
	2 notches Lighted			A22RW-2MA	
	Туре			A22RW-2AG	
		$\bigcirc$		A22RW-2AR	24.2
				A22RW-2AY	
				A22RW-2AA	
A22RW-3				A22RW-3MG	⊻Uſ_↓IJ
		$\checkmark$		A22RW-3MR	
	3 notches Lighted			A22RW-3MY	
	Туре			A22RW-3AA	
		$\bigcirc$		A22RW-3AG	
				A22RW-3AR	

# Selector unit

## Key Selector

Appearance	Number of notch	Key position	Part No.	Dimensions
A22RK-2		$\sim$	A22RK-2ML	¢29.8
8.70		$\checkmark$	A22RK-2M	
	2 notches	$\diamond$	A22RK-2AL	
		O: key release positio	on .	
A22RK-3		$\sim$	A22RK-3ML	12 <b>123K</b>
attan		°√∕°	A22RK-3M	
3 notches	3 notches	, V	A22RK-3MC	
		$\diamondsuit$	A22RK-3AC	
		O: key release positio	n	, , , , , , , , , , , , , , , , , , ,

# Switch unit

## For Lighted type

Appearance	Туре	Contact form	Part No.	Dimensions
A22RL-OM-O		1 NO	A22RL-10M	
		1 NC	A22RL-01M	29.8
	Standard	2 NO	A22RL-20M	→ <sup>∅10.3</sup>
		2 NC	A22RL-02M	
San al		1 NO/1 NC	A22RL-11M	
52%		1 NO	A22RL-10M-T2	
0.7		1 NC	A22RL-01M-T2	
	AC 220V	2 NO	A22RL-20M-T2	
		2 NC	A22RL-02M-T2	
		1 NO/1 NC	A22RL-11M-T2	
		1 NO	A22RL-10M-T1	
		1 NC	A22RL-01M-T1	
	AC 120V	2 NO	A22RL-20M-T1	
		2 NC	A22RL-02M-T1	
		1 NO/1 NC	A22RL-11M-T1	

## For Non-lighted type

Appearance	Туре	Contact form	Part No.	Dimensions
A22R-□M		1 NO	A22R-10M	29.8
		1 NC	A22R-01M	
	Socket	2 NO	A22R-20M	
		1 NO/1 NC	A22R-11M	
		2 NC	A22R-02M	

# Switch / Lamp units

## Switch unit

Appearance	Unit	Contact form	Part No.	Dimensions
A22R-		1 NO	A22R-10	9.8
		1 NC		
	Contact block	* Additional one block can be or 1 NO/1 NC.	mountet to make 2 NO, 2 NC,	

## Lamp socket

Appearance	Unit	Rating	Part No.	Dimensions
A22R-		Without voltage reduction unit AC/DC6V, AC/DC12V, AC/DC24V	A22R-TN	
E	Lamp socket	With voltage reduction unit AC220V	A22R-T2	
		With voltage reduction unit AC120V	A22R-T1	

# Mounting plate

Appearance	Unit	Part No.	Dimensions
A22R-3200	Mounting plate	A22R-3200	28°

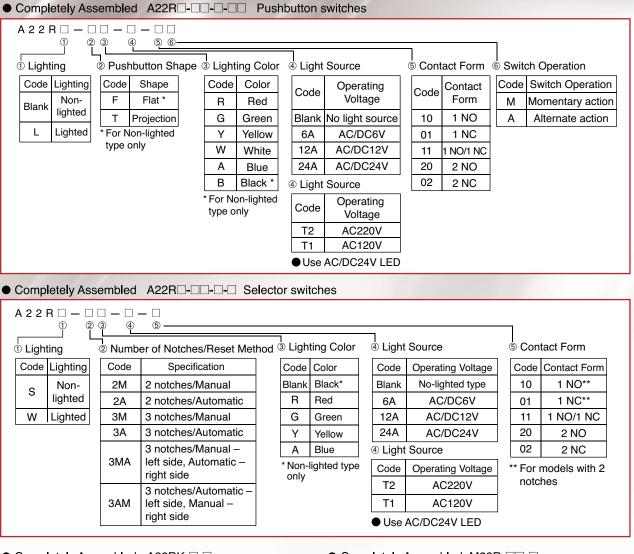
# Lamp unit

## • LED

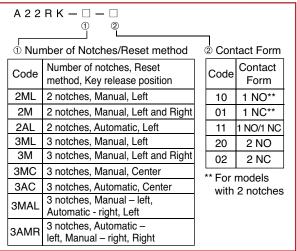
Appearance	LED operating voltage	Lighting color	Part No.	Dimensions
A22R-@@		$\bigcirc$	A22R-6AW	
			A22R-6AG	
	LED AC/DC6V		A22R-6AR	
		•	A22R-6AY	
			A22R-6AA	
	LED AC/DC12V	$\bigcirc$	A22R-12AW	<mark>⊢<sup>∅9.6</sup>−</mark>
			A22R-12AG	BA9S/13
			A22R-12AR	
			A22R-12AY	¢9.3
			A22R-12AA	
		$\bigcirc$	A22R-24AW	
			A22R-24AG	
	LED AC/DC24V		A22R-24AR	
		•	A22R-24AY	
			A22R-24AA	

# Nomenclature

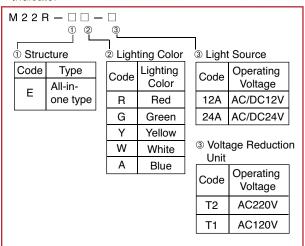
## Nomenclature



### ● Completely Assembled A22RK-□-□ Key selector switches



### ● Completely Assembled M22R-□□-□ Indicator



## Nomenclature

### ● Individual unit (Pushbutton unit) A22R□-□□-□ Pushbutton switches A 2 2 R 🗆 — 🗆 🗆 — 🗆 23 1 4 Switch Operation <sup>2</sup> Pushbutton Shape 1 Lighting **③** Pushbutton Color Code Pushbutton Shape Code Lighting Code Pushbutton Color Code Switch Operation Blank Non-lighted F Flat\* Red Μ Momentary action R Lighted Т Projection G Green А Alternate action L \*For Non-lighted type only Υ Yellow W White Α Blue В Black\* \*For Non-lighted type only

### ● Individual unit (Selector unit) A22R□-□□ Selector switches

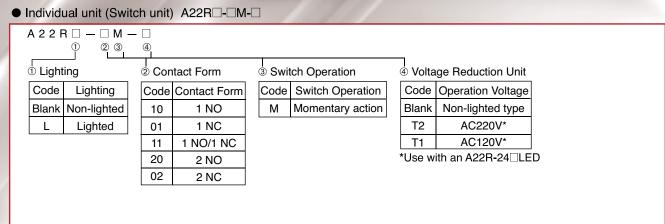
A 2 2 R					
				_	
1 Light	1 Lighting 2 Number of notches, Reset Method 3 Knob				
Code	Lighting	Code	Number of notches, Reset Method	Code	Color
S	Non-lighted	2M	2 notches, Manual	Blank	Black*
W	Lighted	2A	2 notches, Automatic	R	Red
		ЗM	3 notches, Manual	G	Green
		ЗA	3 notches, Automatic	Y	Yellow
	3MA 3 notches, Manual – left, Automatic – right A Blue			Blue	
3AM 3 notches, Automatic – left, Manual - right *Non-ligh		ghted type			

● Individual unit (Key selector unit) A22RK-□ Key selector switches

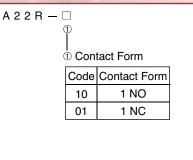
A 2 2 R	A 2 2 R K — 🗆						
① Num	Number of notches, Reset Method, Key Release Position						
Code	Number of notches, Reset Method, Key Release Position						
2ML	2 notches, Manual, Left	2 notches, Manual, Left					
2M	2 notches, Manual, Left and Right						
2AL	2 notches, Automatic, Left						
3ML	3ML 3 notches, Manual, Left						
ЗM	3M 3 notches, Manual, Left and Right						
3MC							
3AC							
3MAL							
3AMR	3AMR 3 notches, Automatic – left, Manual – right, Right						

# Nomenclature

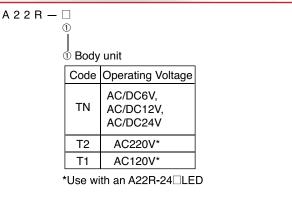
## Nomenclature



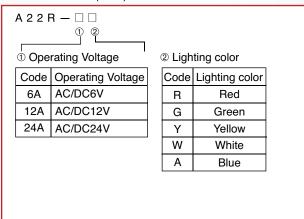
Individual unit (Switch block) A22R-



● Individual unit (Voltage-reduction unit) A22R-□



## ● Individual unit (LED) A22R-□ □ LED



# Accessories / Tools

## **Items**

• Acces	sories						1
lt	em	Appearance	Clas	ssification		Part No.	Remarks
		dard			White	A22Z-3321	
	Standard			With Snap-in Legend Plate (without text)	Red	A22Z-3322	Snap-in Legend Plate is acrylic.
	size				Black	A22Z-3323	Shap-in Legend Flate is acrylic.
Legend Plate			Without Snap	o-in Legend	Plate	A22Z-3320	
Frames		~			White	A22Z-3331	
	Large		With Snap-ir Plate (with		Red	A22Z-3332	Span in Lagand plate is convin
	size				Black	A22Z-3333	Snap-in Legend plate is acrylic.
			Without Snap	o-in Legend	Plate	A22Z-3330	
Locł	< Ring		F	Round		A22Z-3360	The Lock Ring is used when more secure lock feature is required.
Coolin			For flat models		A22Z-3600F	Used to prevent dust or water from entering the Operation Unit (Pushbutton, etc.). Color: opaque Material: silicon	
Seam	Sealing Caps		For projection models		A22Z-3600T		
Hole	e plug		Round		A22Z-3530	Can be plugged into pre-cut panel holes for future expansion. The color is black.	
			One hole		A22Z-B101		
Contro	ol Boxes		Two holes		A22Z-B102	Material: Polycarbonate resin.	
			Three holes		A22Z-B103		
Conr	nectors	R	Applicable		9	A22Z-3500-1	Plastic connector used to extend
Com	10015		(mm)	diameter (mm) ø9 to1		A22Z-3500-2	a cable from the Switch Box. (See page 30)
Black	< Bezel		Black plastic bezel		A22RZ-3580-P	This bezel can be replaced from any metal bezel of A22R-F, A22RL-F, A22R-T, and A22RL-T series pushbuttons.	

# Accessories / Tools

ltems							
Acces	ssories	and the second of the			1.11		
lt	em	Appearance		Classification		Part No.	Remarks
				Black		A22Z-3443B	
			Without	It Red		A22Z-3443R	
			text	White		A22Z-3443W	
				Trans	parent	A22Z-3443C	
				White text on red	0	A22Z-3443R-2	
		$\sim$		background	STOP	A22Z-3443R-4	
	Standard					A22Z-3443B-1	Attached to the Standard
	size				START	A22Z-3443B-3	Plate Frame. Material: Acrylic.
Legend			With text		ON	A22Z-3443B-5	
Plates				White text on black background	OFF	A22Z-3443B-6	
					UP	A22Z-3443B-7	
					DOWN	A22Z-3443B-8	
					POWER ON	A22Z-3443B-9	
					OFF-ON	A22Z-3443B-10	
					RESET	A22Z-3443B-11	
				Black		A22Z-3453B	
	Large		Without	Re	ed	A22Z-3453R	Attached to the Large-size
	size		text	White		A22Z-3453W	Legend Plate Frame. Material: Acrylic.
				Transparent		A22Z-3453C	
				No print (Rou	nd)	A22Z-3460	
					A22Z-3460-1	After printing on a film,	
Charac	Character Films	ł ż	Character Print	(		A22Z-3460-2	affix to the indicator Plate of the Lighted Pushbotton Switch. (The back is coated with
			(Round)	STA	ART	A22Z-3460-3	adhesive.)
				ST	OP	A22Z-3460-4	1

## • Tools

Item	Appearance	Part No.	Remarks	
Lamp Extractor	Simo	A22Z-3901	Rubber tool used to easily replace Lamps.	
Tightening wrench		A22Z-3905	Tool used to tighten nuts from the back of the panel.	

# Specifications

## Approved standards

<ul> <li>Switch unit</li> </ul>				
cULus         UL 508/CSA C22.2 No.14           File No. E76675         6A 240VAC/10A 120VAC				
EN	EN60947-5-1 (low voltage directive) 3A 240VAC (AC-15)			
ссс	GB/14048.5-2001 3A 240VAC/1.5A 24VDC			
Lamp unit				
cULus	UL 508/CSA C22.2 No.14 File No. E76675 24VAC/DC MAX			
<ul> <li>Voltage-reduction unit</li> </ul>				
UL 508/CSA C22.2 No.14           File No. E76675           T2: 220VAC, T1: 120VAC				
ссс	GB/14048.5-2001 T2: 220VAC, T1: 120VAC			

### Indicator

cULus	UL 508/CSA C22.2 No.14 File No. E76675 12A: 12VAC/DC 24A: 24VAC/DC T2 : 220VAC, T1: 120VAC
ccc	GB/14048.5-2001 T2 : 220VAC, T1: 120VAC

## Ratings

### Contacts

Rated current	Rated voltage	Inductive lo	ad
(A)	(V)	Rated current (A)	Power facfor
10	240	3	0.4

Rated current values are determined according to the testing conditions. The above ratings were obtained by conducting tests under the following conditions:

Ambient temperature: 20+/- 2°C

Ambient humidity: 65+/-5%RH Operating frequency: 30 operations/minute

## • LED (For pushbutton unit)

Operating voltage	Current consumption
AC/DC 6V±5%	20mA
AC/DC 12V±5%	20mA
AC/DC 24V±5%	20mA

### • LED (For indicator unit)

Operating voltage	Current consumption
AC/DC 12V±5%	20mA
AC/DC 24V±5%	20mA

### • Voltage reduction unit (For lighted pushbutton units)

Operating voltage	Current consumption
T2: AC 200V (190 to 230V)	20mA
T1: AC 120V (110 to 130V)	20mA

# Characteristics

## Characteristics

Environment		
Ambient temperature*1	Non-lighted type: -20 to +60°C Lighted type: -20 to +50°C	
Ambient humidity	-35 to 85%RH	
Storage temperature*1	-40 to +70°C	
Protective code*2	IP65	
Vibration resistance	10 to 55Hz, Double amplitude 1.5mm	
Shock resistance	Non-lighted type: 1,000m/s <sup>2</sup> Lighted type: 600m/s <sup>2</sup>	

\*1: With no icing or condensation

\*2: Protection against dust or water from the front of a mounting panel side

## Operation

Operation		Slow action
Operating	Mechanical	Momentary operation: 60 operations/minute max.
frequency Electrical	Knob-type and Key-type selector: 30 operations/minute max.	
Mechanical durability		Momentary switch :3,000,000 operations Alternate, Key/Knob Selector switches: 300,000 operations

## • Electrical Characteristics (Switch block)

Insulation resistance	100MΩ Minimum (At 500VDC)	
	Detuces terminals of come valuety ACO 5001/ 50/00115 for 1 minute	
Dielectric strength	Between terminals of same polarity: AC2,500V 50/60Hz for 1 minute Between terminals of different polarity: AC2,500V 50/60Hz for 1 minute	
Rating	AC-15, A600, Ue=240V, Ie=3A	
Rated insulation voltage	Ui=600V, Pollution degree: 3	
Conditional short-circuit current	10A, IEC60209-1	
Electrical durability	500,000 operations Minimum (at AC 240V, 3A, cosø=0.4)	

# Characteristics

# Operating characteristics

## • Pushbutton switch (1 NO / 1 NC)

Total Travel Force (TTF)	29.4N Maximum
Total Travel (TT)	5.5mm Maximum

## Knob-type selector switch (1 NO / 1 NC)

Total Travel Force (TTF)	Manual reset: 0.34N·m Maximum * Auto-reset 2-notch: 0.25N·m * 3-notch: 0.34N·m *	
Total Travel (TT)	2-notch: approx. 90 degree (3-notch: approx.45 degree)	
Releasing Force (RF)	Manual reset: 0.34N·m Maximum *	

\* Rotation torque for knob type/key type selector switches.

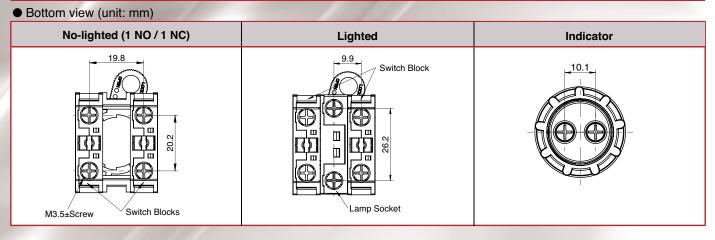
## • Key-type selector switch (1 NO / 1 NC)

Total Travel Force (TTF)	Manual reset: 0.34N·m Maximum * Auto-reset 2-notch: 0.25N·m * 3-notch: 0.34N·m *	
Total Travel (TT)	2-notch: approx. 90 degree (3-notch: approx.45 degree)	
Releasing Force (RF)	Manual reset: 0.34N·m Maximum *	

\* Rotation torque for knob type/key type selector switches.

# Terminal

# Terminal Arrangement



# Terminal connection

Туре	Terminal connection	
Non-lighted (1 NO / 1 NC)	BOTTOM VIEW (1) (3) (2) (4)	
Lighted without voltage reduction unit (1 NO / 1 NC)	BOTTOM VIEW	
Lighted with voltage reduction unit (1 NO / 1 NC)	BOTTOM VIEW (1) (3) (2) (3) (4) (4)	

# Precautions

## Precautions

## Warning

Do not wire and/or touch the switch terminal while power is supplied to the switch to avoid electric shock.



## Correct Use

### Mounting

- Always make sure that the power is turned OFF before mounting, removing, or wiring the Switch, or performing maintenance.
- Do not tighten the mounting ring more than necessary using tools such as pointed-nose pliers. Doing so will damage the mounting ring. The tightening torque is 0.98 to 1.96N·m.
  Recommended panel thickness: 1 to 5 mm.
- Wiring
- Terminal screws must be Phillips with a square washer.
- The tightening torque is 1.08 to 1.27N·m.
- Single wires, stranded wires and crimp terminals except round type can be connected to the Switch.
- Applicable Wire Size

Strand wire: 2mm<sup>2</sup> Maximum Solid wire: 1.6mm diameter Maximum

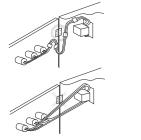
Bare Crimp Terminals



### Crimp Terminal with Insulating Sheath



Secure appropriate insulation distance after wiring of the Switch.
Perform wiring so that the lead wires will not be caught on other objects as this will cause stress on the Switch terminals. Wire the Switch so that there is slack in the lead wires and fix lead wires at intermediate points. If the panel to which the Switch is mounted needs to be opened and closed for maintenance purpose, perform wiring so that the opening and closing of the panel will not interfere with the wiring.

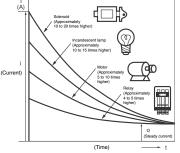


### Operational Environment

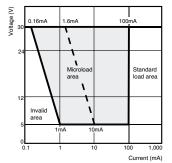
- The IP65 model is designed with a degree of protection so that it will not sustain damage if it is subject to water from any direction to front of the panel.
  This Switch is indoor use only. Outdoor use of the Switch will cause
- This Switch is indoor use only. Outdoor use of the Switch will cause operation failure of the Switch.
- Do not use the Switch in the water, oil, or in locations where water, oils, detergent, chemicals, or solvent is applied to the Switch always.
   Otherwise, switching failure will be happened.
- Do not use the Switch under the environmental condition where corrosive gas (ammonia, chlorine, dioxide sulfur...etc.) is generated. Otherwise, the Switch will corrode.
- Do not use the Switch in locations where dust, metal or plastic dust exists. Dust will accumulate o the Switch, and then the Switch wouldn't operate normally.
- Do not use the Switch under the environmental condition where excessive vibration or shock exists. Otherwise, incorrect switching would occur.

### Electrical Conditions

- The switching load capacity of the Switch greatly varies between AC and DC. Always be sure to apply the rated load. The control capacity will drastically drop if it is a DC load. This is because a DC load has no current zero-cross point, unlike an AC load. Therefore, if an arc is generated, it may continue for a comparatively long time. Furthermore, the current direction is always the same, which results in a contact relocation phenomena whereby the contacts easily stick to each other and do not separate when the surfaces of the contacts are uneven.
- Some types of load have a great difference between normal current and inrush current. Make sure that the inrush current is within the permissible value. The greater the inrush current in the closed circuit is, the greater the contact abrasion or shift will be. Consequently, contact weld, contact separation failures, or insulation failures may result. Furthermore, the Switch may be broken or damaged.
- If the load is inductive, counter-electromotive voltage will be generated. The higher the voltage is, the higher the generated energy will be, which increase the abrasion of the contacts and contact relocation phenomena. Be sure to use the Switch within the rated conditions.



Before using the Switch, be sure to test the Switch under actual conditions.
This product is a standard load type Switch. Using the Switch for opening and closing a microload circuit may cause contact failure. Use the Switch within the operating range as shown in below chart.



• When use the Switch for opening and closing a microload or large-load, use the Switch with an appropriate relay.

# Precautions

## Precautions

### Switching

- Do not use the Switch for loads that exceed the rated switching capacity or other contact ratings. Doing so may result in contact weld, separation failure, or insulation failures. Furthermore, the Switch may be broken or damaged.
- Do not touch the charged switch terminals while power is supplied, otherwise an electric shock may be received.
- The life of the Switch varies greatly with switching conditions. Before using the Switch, be sure to test the Switch under actual conditions. Make sure that the number of switching operations is within the permissible range. If a deteriorated Switch is used continuously, insulation failures, contact weld, contact failures, switch damage, or switch burnout may result.
- Do not apply excessive or incorrect voltages to the Switch or incorrectly wire the terminals. Otherwise, the Switch may not function properly and have an adverse effect on external circuitry.
- Furthermore, the Switch itself may become damaged or burnt.
- Do not use the Switch in locations where flammable or explosive gasses are present. Otherwise switching arcs or heat radiation may cause a fire or explosion.
- Do not drop or disassemble the Switch, otherwise it may not be capable of full performance. Furthermore, it may be broken or burnt.

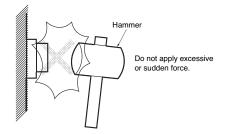
### • LED

- The LED current-limiting resistor is built-in, so internal resistance is not required.
- If commercially available LEDs are used, select the ones that meet the following conditions:
  - Base: BA9S/13
- Power consumption: 2.6 W Maximum

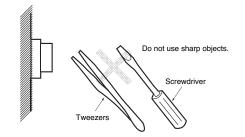
### Storage

- When the Switch is left unused or stored for long periods, the ambient conditions can have a great effect on the condition of the Switch. In certain environments, leaving the Switch exposed may result I deterioration (i.e., oxidation, or the creation of an oxide film) of the contacts and terminals, causing the contact resistance to increase, and making it difficult to solder the lead wires. Therefore, store in a well-ventilated room, inside, for example, a non-hygroscopic case, in a location where no corrosive gasses are present.
- If the Switch is stored in a location where it will be exposed to direct light, colored resin in the colored plate may fade.
   Therefore, do not store the Switch I locations where it will be exposed to direct light.

- Mechanical Conditions
- Operating the Switch using a hard object (e.g., metal), or with a large or sudden force, may deform or damage the Switch, resulting in faulty or rough operation, or shortening of the Switch life.



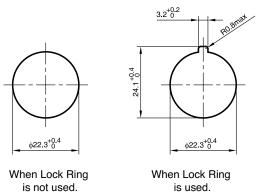
 The pushbutton surface is composed of resin. Therefore, do not attempt to operate the pushbutton using a sharp object, such as a screwdriver or a pair of tweezers. Also, do not drop, throw, or knock the Switch. Doing so may damage or deform the pushbutton surface and result in faulty operation.



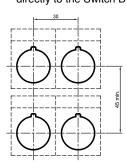
• Periodic maintenance is required to use the Switch stably.

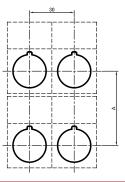
## Mounting to the Panel

- ① Panel Hole Dimensions
- · The cutout dimensions are as shown in below:



- · Recommended panel thickness is 1 to 5mm.
- In outer surface treatment such as coating is performed for the panel, the panel dimensions after outer surface treatment must meet the specified panel dimensions.
- ② Matrix Installation
- (1) The following panel hole dimensions apply when Switch Unit and the Standard-size Legend Plate Frame and Lock Ring are mounted, and lead wires are connected directly to the Switch Block.
- (2) The following panel hole dimensions apply when the Large-size Legend Plate Frame is mounted, and when crimp terminals are connected to the Switch Block terminals.

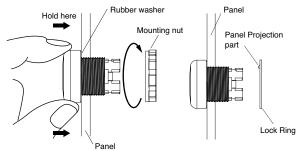




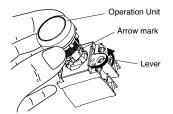
Type of crimp terminal	Dimension A
Bare crimp terminals	51 mm Minimum
Crimp terminals with insulating sheath	60 mm Minimum

Note: The above dimensions are the minimum dimensions for when the wires described under "Applicable Wire Size". If a different wires are used, the wiring dimensions may be different so determine an appropriate pitch before setup.

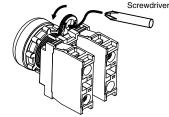
- 3 Mounting the Operation Unit on the Panel
- Insert the Operation Unit (Pushbutton, etc.) from the front surface of the panel, insert the Lock Ring and the mounting nut from the terminal side, then tighten the nut. Before tightening, check that the rubber washer is present between the Pushbutton Unit and the panel.
- When using a Legend Plate Frame, put one rubber washer each between the Legend Plate Frame and the panel and between the Operation Unit and the Legend Plate Frame. (One rubber washer will be provided when one Legend Plate Frame is ordered.)
- Align the Lock Ring with the groove in the casing, then insert the Lock Ring so that its edge is located on the panel side.
- Tighten the mounting nut at a torque of 0.98 to 1.96N·m.
- When using a Lock Ring, replace with the supplied Lock Ring, insert the projecting part into the lock slot, and then tighten the mounting nut.



- Mounting the Switch on the Pushbutton Unit
- Insert the Pushbutton Unit into the Switch Unit, aligning the arrow mark inscribed on the Case with the lever on the Switch Blocks, then move the lever in the direction indicated by the arrow in the following figure.

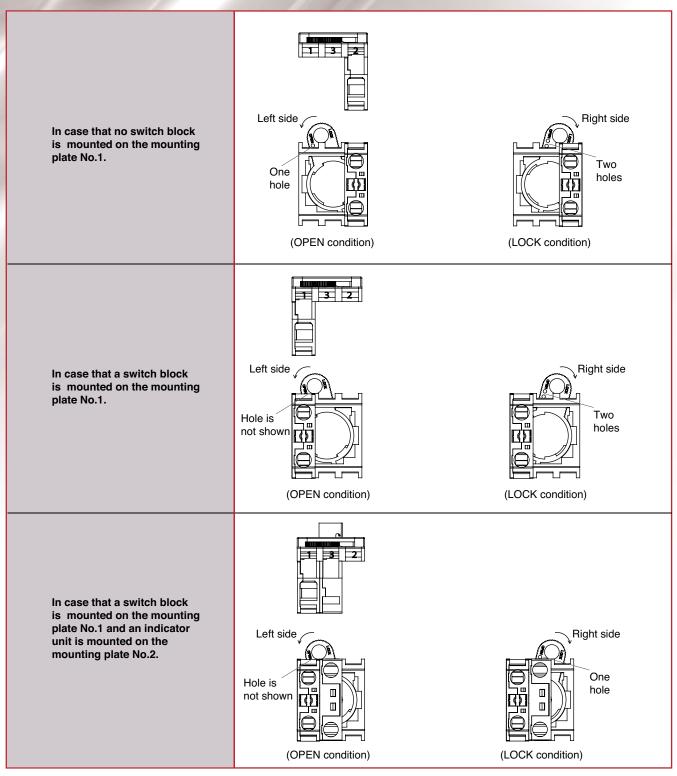


- 5 Removing the Switch
- Move the lever in the direction indicated by the arrow in the following figure, then pull the Pushbutton Unit or the Switch Blocks.
- Since the lever has a hole with an inside diameter of 6.5mm, the lever can be moved in the specified direction by inserting a screwdriver into the hole and then moving the screwdriver.

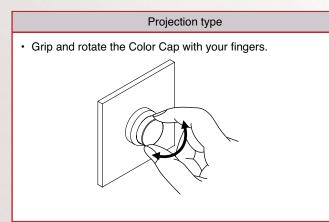


## How to confirm the Lever Position, OPEN or LOCK

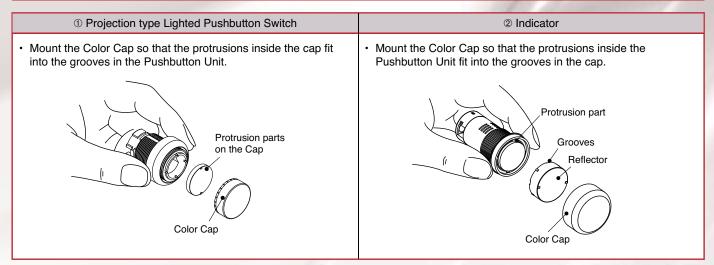
• The Lever Position, OPEN (Operation unit is not fixed)/LOCK (Operation unit is fixed), can be confirmed from the Switch terminal side.



## Mounting/Replacing the Color Cap



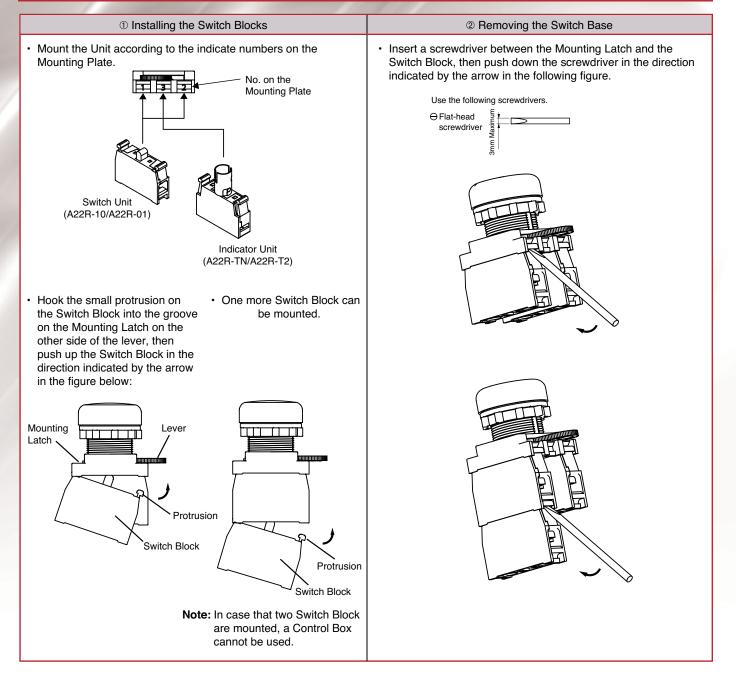
# Assembling the Cap



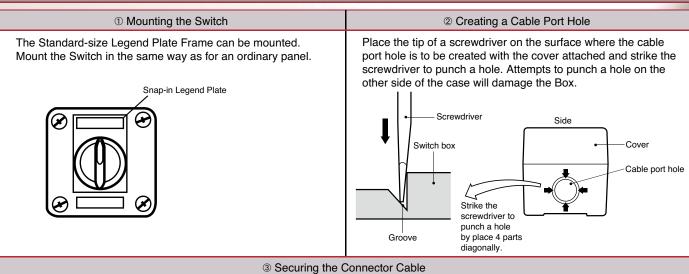
## Installing/Replacing the LED

① Installing/Replacing from the Panel Surface	② Installing/Replacing on the Switch
<ul> <li>Insert the Lamp Extractor(A22Z-3901) into the lamp, then rotate the Extractor while pressing it.</li> </ul>	<ul> <li>Grip the lamp with your fingers, then rotate the lamp while pressing it against the Switch.</li> </ul>

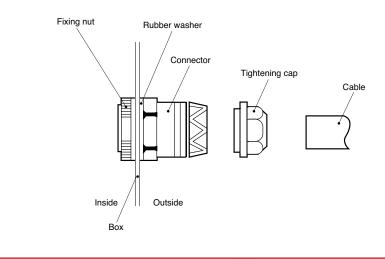
## Mounting/Replacing the Switch Unit and Indicator Unit



## **Control Box**



- ① Insert the connector into the cable port in the Box and secure with the fixing nut inside the box.
- <sup>②</sup> Open a hole in the thin rubber section of the rubber ring.
- ③ Pass the tightening cap through the cable, insert the cable into the connector, and tighten the hexagonal nut to secure the cable.



Cable diameter (mm)	Connector
7 to 9 mm dia.	A22Z-3500-1
9 to 11 mm dia.	A22Z-3500-2

## Engraving

- Engrave the characters on the surface on the Cap. Make sure that the characters are aligned parallel to the imaginary lie connecting the two protruding portions to the left and right of the Cap.
- The characters must not be engraved deeper than 0.5mm. Apply an alcohol-based paint coating, such as melamine, alkyd, or acrylic resin paint coating, to the engraved characters.

Protruding portions of the Cap



### Material: Acrylic

- Engrave the characters directly on the matted side of the Snap-in Legend Plate.
- The characters must be engraved no deeper than 0.5mm.
- Apply alcohol-based paint coating to the engraved characters.
- If the Snap-in Legend Plate is transparent, engrave the mirror-written characters on the back of the Snap-in Legend Plate and apply paint coating of a different color to the remaining part of the Snap-in Legend Plate.

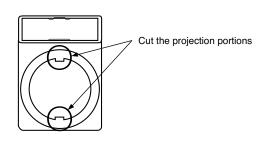
## Affixing Character Film

 Hold the Cap, remove the cardboard o the Film, and attach the Film to the Cap. Make sure that the protruding portions of the Cap engage the cutout portions of the Film and that the characters are aligned parallel to the imaginary line connecting the two protruding portions to the left and right of the Cap.



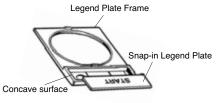
## Precautions when use the Indicators

- · Lock Ring (A22Z-3360) cannot be used.
- When use the Legend Plate Frames (A22Z-332, A22Z-333) cut the projection portions shown in the below fig.



## Mounting and Dismounting Snap-in Legend

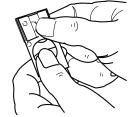
- Press and secure the Snap-in Legend Plate onto the Legend Plate Frame.
- The direction of the characters will vary with the mounting direction of the control panel if the Switch is a knob or key selector model.



• To easily remove the Snap-in Legend Plate from the Legend Plate Frame mounted to the panel. Insert a Tool with a thin tip into the space between the Snap-in Legend Plate and the Legend Plate Frame.



- The Snap-in Legend Plate is easily removed by pressing the Snap-I Legend Plate from the back of the Legend Plate Frame.
- The Legend Plate Frame is made of acrylic resin, which is easily damaged by shock. Be sure to handle the Legend Plate Frame with care.



• When use the Control Box (A22Z-B10<sup>-</sup>), cut the projection portions shown in the below fig.

# Terms and Conditions of Sale

- Offer: Acceptance. These terms and conditions (these "Terms") are deemed part of all quotes, agreements, purchase orders, acknowledgments, price lists, catalogs, manuals, brochures and other documents, whether electronic or in writing, relating to the sale of products or services (collectively, the "Products") by Omron Electronics LLC and its subsidiary companies ("<u>Omron</u>"). Omron objects to any terms or conditions proposed in Buyer's purchase order or other documents which are inconsistent with, or in addition to, these Terms.
- Prices: Payment Terms. All prices stated are current, subject to change with-out notice by Omron. Omron reserves the right to increase or decrease prices on any unshipped portions of outstanding orders. Payments for Products are 2
- due net 30 days unless otherwise stated in the invoice. <u>Discounts.</u> Cash discounts, if any, will apply only on the net amount of invoices 3. sent to Buyer after deducting transportation charges, taxes and duties, and will be allowed only if (i) the invoice is paid according to Omron's payment terms and (ii) Buyer has no past due amounts.
- Interest. Omron, at its option, may charge Buyer 1-1/2% interest per month or the maximum legal rate, whichever is less, on any balance not paid within the 4. stated terms
- 5
- Orders. Omron will accept no order less than \$200 net billing. Governmental Approvals. Buyer shall be responsible for, and shall bear all 6. costs involved in, obtaining any government approvals required for the importation or sale of the Products.
- Taxes. All taxes, duties and other governmental charges (other than general real property and income taxes), including any interest or penalties thereon, imposed directly or indirectly on Omron or required to be collected directly or 7 indirectly by Omron for the manufacture, production, sale, delivery, importa-tion, consumption or use of the Products sold hereunder (including customs duties and sales, excise, use, turnover and license taxes) shall be charged to and remitted by Buyer to Omron. <u>Financial.</u> If the financial position of Buyer at any time becomes unsatisfactory
- to Omron, Omron reserves the right to stop shipments or require satisfactory security or payment in advance. If Buyer fails to make payment or otherwise comply with these Terms or any related agreement, Omron may (without liability and in addition to other remedies) cancel any unshipped portion of Prod-ucts sold hereunder and stop any Products in transit until Buyer pays all amounts, including amounts payable hereunder, whether or not then due, which are owing to it by Buyer. Buyer shall in any event remain liable for all unpaid accounts.
- <u>Cancellation: Etc.</u> Orders are not subject to rescheduling or cancellation unless Buyer indemnifies Omron against all related costs or expenses. <u>Force Majeure</u>. Omron shall not be liable for any delay or failure in delivery 9
- 10 resulting from causes beyond its control, including earthquakes, fires, floods, strikes or other labor disputes, shortage of labor or materials, accidents to strikes of other labor disputes, shortage of labor of materials, accidents to machinery, acts of sabotage, riots, delay in or lack of transportation or the requirements of any government authority.
  11. <u>Shipping: Delivery.</u> Unless otherwise expressly agreed in writing by Omron:

  a. Shipments shall be by a carrier selected by Omron; Omron will not drop ship except in "break down" situations.
- Such carrier shall act as the agent of Buyer and delivery to such carrier shall constitute delivery to Buyer;
- c. All sales and shipments of Products shall be FOB shipping point (unless otherwise stated in writing by Omron), at which point title and risk of loss shall pass from Omron to Buyer; provided that Omron shall retain a security interest in the Products until the full purchase price is paid;

- d. Delivery and shipping dates are estimates only; and
  e. Omron will package Products as it deems proper for protection against normal handling and extra charges apply to special conditions.
  12. <u>Claims</u>. Any claim by Buyer against Omron for shortage or damage to the Products occurring before delivery to the carrier must be presented in writing to Omron within and ext raction charges apply to special conditions. to Omron within 30 days of receipt of shipment and include the original trans-portation bill signed by the carrier noting that the carrier received the Products rom Omron in the condition claimed.
- Warranties (a) Exclusive Warranty. Omron's exclusive warranty is that the Products will be free from defects in materials and workmanship for a period of 13 twelve months from the date of sale by Omron (or such other period expressed in writing by Omron). Omron disclaims all other warranties, express or implied. (b) <u>Limitations</u>. OMRON MAKES NO WARRANTY OR REPRESENTATION, EXPRESS OR IMPLIED, ABOUT NON-INFRINGEMENT, MERCHANTABIL-

## Certain Precautions on Specifications and Use

Suitability of Use. Omron Companies shall not be responsible for conformity with any standards, codes or regulations which apply to the combination of the Product in the Buyer's application or use of the Product. At Buyer's request, Omron will provide applicable third party certification documents identifying ratings and limitations of use which apply to the Product. This information by itself is not sufficient for a complete determination of the suitability of the Product in combination with the end product, machine, system, or other application or use. Buyer shall be solely responsible for determining appropriateness of the particular Product with respect to Buyer's application, product or system. Buyer shall take application responsibility in all cases but the following is a non-exhaustive list of applications for which particular attention must be given: (i) Outdoor use, uses involving potential chemical contamination or electrical interference, or conditions or uses not described in this document.

Use in consumer products or any use in significant quantities.

(iii) Energy control systems, combustion systems, railroad systems, aviation systems, medical equipment, amusement machines, vehicles, safety equipment, and installations subject to separate industry or government regulations. (iv) Systems, machines and equipment that could present a risk to life or prop-erty. Please know and observe all prohibitions of use applicable to this Product

NEVER USE THE PRODUCT FOR AN APPLICATION INVOLVING SERIOUS RISK TO LIFE OR PROPERTY OR IN LARGE QUANTITIES WITHOUT ENSURING THAT THE SYSTEM AS A WHOLE HAS BEEN DESIGNED TO

ITY OR FITNESS FOR A PARTICULAR PURPOSE OF THE PRODUCTS BUYER ACKNOWLEDGES THAT IT ALONE HAS DETERMINED THAT THE PRODUCTS WILL SUITABLY MEET THE REQUIREMENTS OF THEIR INTENDED USE. Omron further disclaims all warranties and responsibility of any type for claims or expenses based on infringement by the Products or otherwise of any intellectual property right. (c) <u>Buyer Remedy</u>. Omron's sole obli-gation hereunder shall be, at Omron's election, to (i) replace (in the form originally shipped with Buyer responsible for labor charges for removal or replacement thereof) the non-complying Product, (ii) repair the non-complying Product, or (iii) repay or credit Buyer an amount equal to the purchase price of the non-complying Product; provided that in no event shall Omron be responsi-ble for warranty, repair, indemnity or any other claims or expenses regarding the Products unless Omron's analysis confirms that the Products were prop-erly handled, stored, installed and maintained and not subject to contamination, abuse, misuse or inappropriate modification. Return of any Products by Buyer must be approved in writing by Omron before shipment. Omron Compa-nies shall not be liable for the suitability or unsuitability or the results from the use of Products in combination with any electrical or electronic components, circuits, system assemblies or any other materials or substances or environ-ments. Any advice, recommendations or information given orally or in writing, are not to be construed as an amendment or addition to the above warranty. See http://www.omron247.com or contact your Omron representative for published information

- Limitation on Liability: Etc. OMRON COMPANIES SHALL NOT BE LIABLE FOR SPECIAL, INDIRECT, INCIDENTAL, OR CONSEQUENTIAL DAMAGES, LOSS OF PROFITS OR PRODUCTION OR COMMERCIAL LOSS IN ANY WAY CONNECTED WITH THE PRODUCTS, WHETHER SUCH CLAIM IS BASED IN CONTRACT, WARRANTY, NEGLIGENCE OR STRICT LIABILITY Further, in no event shall liability of Omron Companies exceed the individual price of the Product on which liability is asserted.
- Indemnities. Buyer shall indemnify and hold harmless Omron Companies and their employees from and against all liabilities, losses, claims, costs and expenses (including attorney's fees and expenses) related to any claim, invescosts and tigation, litigation or proceeding (whether or not Omron is a party) which arises or is alleged to arise from Buyer's acts or omissions under these Terms or in any way with respect to the Products. Without limiting the foregoing, Buyer (at its own expense) shall indemnify and hold harmless Omron and defend or set-tle any action brought against such Companies to the extent based on a claim that any Product made to Buyer specifications infringed intellectual property rights of another party.
- 16. Property: Confidentiality. Any intellectual property in the Products is the exclusive property of Omron Companies and Buyer shall not attempt to duplicate it in any way without the written permission of Omron. Notwithstanding any charges to Buyer for engineering or tooling, all engineering and tooling shall remain the exclusive property of Omron. All information and materials supplied by Omron to Buyer relating to the Products are confidential and proprietary, and Buyer shall limit distribution thereof to its trusted employees and strictly prevent disclosure to any third party.
- Export Controls, Buyer shall comply with all applicable laws, regulations and licenses regarding (i) export of products or information; (iii) sale of products to "forbidden" or other proscribed persons; and (ii) disclosure to non-citizens of 17. regulated technology or information. <u>Miscellaneous</u>. (a) <u>Waiver</u>. No failure or delay by Omron in exercising any right
- 18. Miscellatieuus, (a) <u>Waiver</u>. No laitle of delay by Ofmon in exercising any ngint and no course of dealing between Buyer and Omron shall operate as a waiver of rights by Omron. (b) <u>Assignment</u>. Buyer may not assign its rights hereunder without Omron's written consent. (c) <u>Law</u>. These Terms are governed by the law of the jurisdiction of the home office of the Omron company from which Buyer is purchasing the Products (without regard to conflict of law princi-ples). (d) <u>Amendment</u>. These Terms constitute the entire agreement between Buyer and Omron relating to the Products and no provision may be changed pies). (d) <u>Amendment</u>. These Terms constitute the entire agreement between Buyer and Omron relating to the Products, and no provision may be changed or waived unless in writing signed by the parties. (e) <u>Severability</u>. If any provi-sion hereof is rendered ineffective or invalid, such provision shall not invalidate any other provision. (f) <u>Setoff</u>. Buyer shall have no right to set off any amounts against the amount owing in respect of this invoice. (g) <u>Definitions</u>. As used herein, <u>"including"</u> means "including without limitation"; and <u>"Omron Compa-nies</u>" (or similar words) mean Omron Corporation and any direct or indirect subscidary or affiliate thereof. subsidiary or affiliate thereof.

ADDRESS THE RISKS, AND THAT THE OMRON'S PRODUCT IS PROP-ERLY RATED AND INSTALLED FOR THE INTENDED USE WITHIN THE OVERALL EQUIPMENT OR SYSTEM.

- Programmable Products. Omron Companies shall not be responsible for the
- user's programming of a programmable Product, or any consequence thereof. <u>Performance Data</u>. Data presented in Omron Company websites, catalogs and other materials is provided as a guide for the user in determining suitabil-ity and does not constitute a warranty. It may represent the result of Omron's test conditions, and the user must correlate it to actual application require mante. Actual packmanace is ubject to the Omron's Warranty and Limitation. 3. ments. Actual performance is subject to the Omron's Warranty and Limitations of Liability.
- <u>Change in Specifications</u>. Product specifications and accessories may be changed at any time based on improvements and other reasons. It is our practice to change part numbers when published ratings or features are changed, 4 or when significant construction changes are made. However, some specifica-tions of the Product may be changed without any notice. When in doubt, special part numbers may be assigned to fix or establish key specifications for your application. Please consult with your Omron's representative at any time to confirm actual specifications of purchased Product.
- Errors and Omissions. Information presented by Omron Companies has been checked and is believed to be accurate; however, no responsibility is assumed 5. for clerical, typographical or proofreading errors or omissions.



### OMRON AUTOMATION AND SAFETY • THE AMERICAS HEADQUARTERS • Chicago, IL USA • 847.843.7900 • 800.556.6766 • www.omron247.com

**OMRON CANADA, INC. • HEAD OFFICE** Toronto, ON, Canada • 416.286.6465 • 866.986.6766 • www.omron247.com

OMRON ELECTRONICS DE MEXICO • HEAD OFFICE México DF • 52.55.59.01.43.00 • 01-800-226-6766 • mela@omron.com

OMRON ELECTRONICS DE MEXICO • SALES OFFICE Apodaca, N.L. • 52.81.11.56.99.20 • 01-800-226-6766 • mela@omron.com

OMRON ELETRÔNICA DO BRASIL LTDA • HEAD OFFICE São Paulo, SP, Brasil • 55.11.2101.6300 • www.omron.com.br OMRON ARGENTINA • SALES OFFICE Cono Sur • 54.11.4783.5300

**OMRON CHILE • SALES OFFICE** Santiago • 56.9.9917.3920

**OTHER OMRON LATIN AMERICA SALES** 54.11.4783.5300

OMRON EUROPE B.V. • Wegalaan 67-69, NL-2132 JD, Hoofddorp, The Netherlands. • +31 (0) 23 568 13 00 • www.industrial.omron.eu

Authorized Distributor:

### **Automation Control Systems**

- Machine Automation Controllers (MAC) 
   Programmable Controllers (PLC)
- Operator interfaces (HMI) 
   Distributed I/O 
   Software

### **Drives & Motion Controls**

Servo & AC Drives 
 Motion Controllers & Encoders

### **Temperature & Process Controllers**

Single and Multi-loop Controllers

### **Sensors & Vision**

- Proximity Sensors 
   Photoelectric Sensors 
   Fiber-Optic Sensors
- Amplified Photomicrosensors 
   Measurement Sensors
- Ultrasonic Sensors 
   Vision Sensors

### **Industrial Components**

- RFID/Code Readers Relays Pushbuttons & Indicators
- Limit and Basic Switches 
   Timers 
   Counters 
   Metering Devices
- Power Supplies

### Safety

• Laser Scanners • Safety Mats • Edges and Bumpers • Programmable Safety Controllers • Light Curtains • Safety Relays • Safety Interlock Switches

## **X-ON Electronics**

Largest Supplier of Electrical and Electronic Components

Click to view similar products for Switch Fixings category:

Click to view products by Omron manufacturer:

Other Similar products are found below :

 893102000
 00-5150
 LZZ1A
 0098.9234
 M2PA-5011
 630155
 635401
 6PA113
 6PA147-E6
 6PA32
 6PA9
 700106
 700109

 700303A56
 700C1GRY
 700C2GRN
 704-6001
 704.960.9
 704.965.2
 704.965.6
 704.966.0
 7089-3
 710082-B11
 71M1048
 757200264

 764300000
 MHU35
 MHU37
 807039-1
 825.003.011
 825.005.011
 825.055.011
 826.000.071
 827.020.011
 827.400.021

 835.900.023
 MML52C10C
 MML92HGH
 MML93K
 84211M02CNNS
 84217A8.0LNOS
 842.500.011

 843.000.011
 843187-000
 843487-000
 84-901
 842.500.011
 842.500.011