This document provides information mainly for selecting suitable models. Please read the document Instruction Sheet carefully for information that the user must understand and accept before purchase, including information on warranty, limitations of liability, and precautions.

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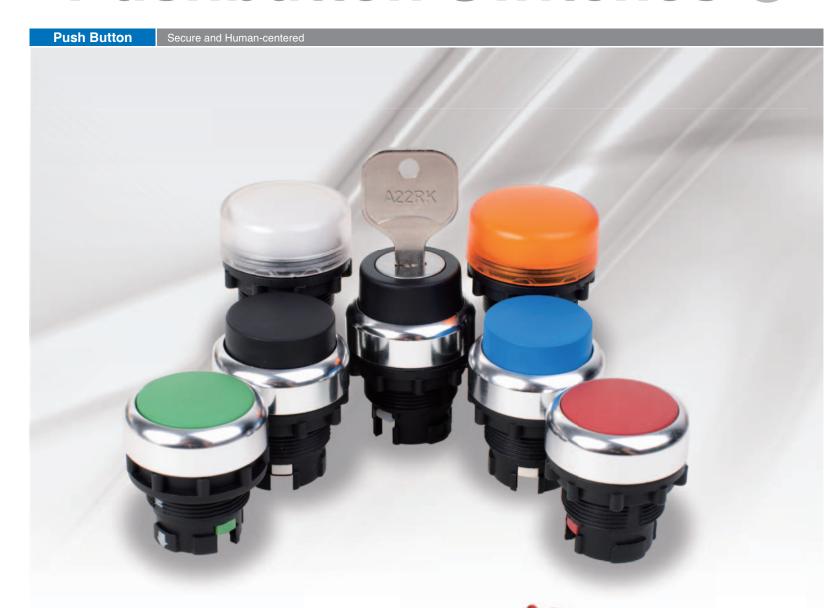
NEW

Pushbutton Switches/Indicators A22R/M22R series



Robust and Graceful design

Pushbutton Switches







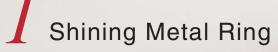
2 A22R/M22R Series Push Button

Responds with high grade

illumination to **Various needs**

2 Soft to the touch
• Gentle design for human.





Provides shining and robust metal ring.







3 Additional unit type
Switch unit can be added.

4 Compact size

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





A22R/M22R Series Push Button A22R/M22R Series Push Button

Assembled Models

Non-lighted Type



Lighted Type



Selector Non-lighted Type

 $A22R-T \square - \square \square$



Selector Lighted Type



Key Selector Type



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

Indicator

Indicator

M22R-E □ - □

Emergency Stop Switch



Switch Block

2 notches

A22RK-2 □

Key Selector



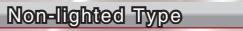
Lamp Socket

3 notches

A22RK-3 □



Operation Units





A22R-T □ - □

Lighted Type



Projection type A22RL-T□-□

Selector Non-lighted Type

Flat type A22R-F□-□







Switch Unit







Socket

Socket A22R-□M

A22R-□

Mounting Plate



LED

LED A22R-□□ A22R/M22R Series Push Button

A22R/M22R Series Push Button

Assembled Models

Pushbutton Switches

Non-lighted/Lighted

Appearance	Pushbutton shape	Pushbutton color	Contact form	Part No.	Dimensions
A22R-F□-□□			1a	A22R-FW-10□	28°
			1a	A22R-FB-10□	
			1a	A22R-FG-10□	88
			1a	A22R-FR-10□	
			1a	A22R-FY-10□	29.8
100	Round/Flat		1a	A22R-FA-10□	φ29.8
			1b	A22R-FB-01□	10.8
			1b	A22R-FR-01□	© (T)
		Insert one of the M: Momentary A: Alternate	e following let	ters into the box \square .	46.8
A22R-T□-□□			1a	A22R-TW-10□	
	Projection		1a	A22R-TB-10□	
			1a	A22R-TG-10□	Ø23.7
			1a	A22R-TR-01□	0.5 0.5 0.5
			1a	A22R-TY-10□	
THE STATE OF THE S			1a	A22R-TA-10□	
4			1b	A22R-TB-01□	899
			1b	A22R-TR-01□	1
		Insert one of the following letters into the box □. M: Momentary A: Alternate			
A22RL-T□-□-□□			1a	A22RL-TW-24A-10□	
			1a	A22RL-TG-24A-10□	
	Projection AC, DC 24V		1a	A22RL-TR-24A-10□	<u></u>
	7.0, 50 2.1		1a	A22RL-TY-24A-10□	Ø23.7
			1a	A22RL-TA-24A-10□	16.7
			1a	A22RL-TW-T2-10□	
			1a	A22RL-TG-T2-10□	
			1a	A22RL-TR-T2-10□	4 86.8
	Projection AC 220V		1a	A22RL-TY-T2-10□	
			1a	A22RL-TA-T2-10□	
		Insert one of the M: Momentary A: Alternate	e following let	ters into the box \square .	

Assembled Models

Selector Switches

Non-lighted/Lighte

Appearance	Number of notch	Knob position	Knob color	Contact form	Part No.	Dimensions
A22RS-2□-□		\ /		1a	A22RS-2M-10	28°
1				1a1b	A22RS-2M-11	
1676	2 notches	\bigcirc		1a	A22RS-2A-10	
				1a1b	A22RS-2A-11	9 %
A22RS-3□-□		\downarrow		2a	A22RS-3M-20	
		\Diamond		2a	A22RS-3A-20	29.8
		* These N	on-lighted	d types provid	de black knobs.	
	3 notches					46.8 6 10 24.2 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0
A22RW-2□□-□-□		\/		1a	A22RW-2MG-24A-10	φ29.8
	2 notches AC, DC 24V			1a1b	A22RW-2MR-24A-11	24.2
9	AG, DG 24V	\bigcirc		1a	A22RW-2AY-24A-10	01 01 00.5
		~		1a1b	A22RW-2AA-24A-11	
A22RW-3□□-□-□				2a	A22RW-3MG-24A-20	88.8
	3 notches	\vee		2a	A22RW-3MR-24A-20	4
	AC, DC 24V			2a	A22RW-3AY-24A-20	
		\vee		2a	A22RW-3AA-24A-20	

Assembled Models

Selector Switches

Key Selector

Appearance	Number of notch	Key position	Contact form	Part No.	Dimensions
A22RK-2□-□		۹ ,	1a	A22RK-2ML-10	28°
			1a1b	A22RK-2ML-11	
-		٩٧	1a	A22RK-2M-10	
	2 notches		1a1b	A22RK-2M-11	
10	2 Holdries	9	1a	A22RK-2AL-10	
			1a1b A22RK-2AL	A22RK-2AL-11	29.8
		O: key release	position		
A22RK-3□-□		*	2a	A22RK-3ML-20	
		~~	2a	A22RK-3M-20	
O and taken	Ų.	2a	A22RK-3MC-20		
	3 notches	\Diamond	2a	A22RK-3AC-20	φ
		O: key release	position		96.8

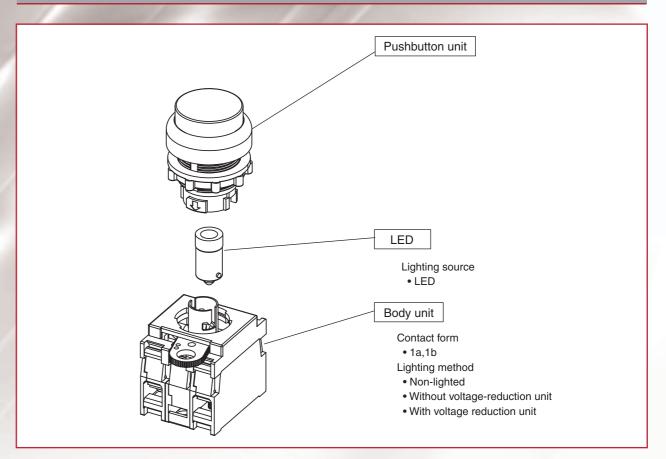
Indicator

All-in-one type

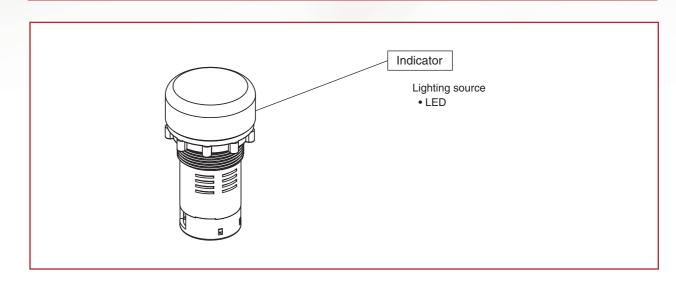
All-ill-olle type				
Appearance	LED rating	Indicator color	Part No.	Dimensions
M22R-E□-□		\bigcirc	M22R-EW-24A	φ29.8
			M22R-EG-24A	
	AC, DC 24V		M22R-ER-24A	
			M22R-EY-24A	
			M22R-EA-24A	3.6
and the same		\bigcirc	M22R-EW-T2	4, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0,
			M22R-EG-T2	٥
	AC 220V		M22R-ER-T2	40.5
			M22R-EY-T2	
			M22R-EA-T2	<u> </u>

Structure

A22R series



M22R series



A22R/M22R Series Push Button A22R/M22R Series Push Button

Individual Unit

Pushbutton unit

Non-lighted/Lighted

Appearance	Pushbutton shape	Pushbutton color	Part No.	Dimensions	
A22R-F□-□			A22R-FW-□	Ø29.8	
			A22R-FB-□		
			A22R-FG-□		
	Round/Flat		A22R-FR-□		
	nound/Flat		A22R-FY-□	m Lul	
			A22R-FA-□	100 00 00 00 00 00 00 00 00 00 00 00 00	
		Insert one of the M: Momentary A: Alternate	e following letters into the box \square .	8	
A22R-T□-□		\bigcirc	A22R-TW-□		
	Projection		A22R-TB-□]	
~			A22R-TG-□	16.7	
			A22R-TR-□	10 16	
			A22R-TY-□	8 0	
			A22R-TA-□		
		Insert one of the M: Momentary A: Alternate	e following letters into the box \square .		
A22RL-T□-□			A22RL-TW-□		
			A22RL-TG-□		
	Projection		A22RL-TR-□	16.7	
	Lighted type		A22RL-TY-□		
			A22RL-TA-□	2 4	
		Insert one of the M: Momentary A: Alternate	e following letters into the box \square .	<u>+ </u>	

Individual Unit

Selector unit

Appearance	Number of notch	Knob position	Knob color	Part No.	Dimensions
A22RS-2□		\		A22RS-2M	<i> </i>
All Control		\Diamond		A22RS-2A	
	2 notches				
A22RS-3□		\bigvee		A22RS-3M	
		\Diamond		A22RS-3A	24.2
3 notches	3 notches	* These N	on-lighted type	es provide black knobs.	
A22RW-2□				A22RW-2MG	
				A22RW-2MR	
A STATE OF THE STA				A22RW-2MY	
18/1/	2 notches			A22RW-2MA	
100	Lighted Type			A22RW-2AG	
		\bigcirc		A22RW-2AR	0.5
				A22RW-2AY	Ť 0
				A22RW-2AA	8 0
				A22RW-3MG	
		\downarrow		A22RW-3MR	
	3 notches Lighted			A22RW-3MY	
	Type			A22RW-3AA	
				A22RW-3AG	
				A22RW-3AR	

A22R/M22R Series Key/Switch Section/Mounting Console

Individual Unit

Selector unit

Key Selector

Appearance	Number of notch	Key position	Part No.	Dimensions
A22RK-2□		~	A22RK-2ML	φ29.8 —
17		~~	A22RK-2M	
1	2 notches	\langle	A22RK-2AL	
		O: key release position	on .	
A22RK-3□		<u> </u>	A22RK-3ML	A228K
8/10		~	A22RK-3M	
TO .	3 notches	Ů,	A22RK-3MC	100000000000000000000000000000000000000
		\diamondsuit	A22RK-3AC	88 9
		O: key release position	n	, ", ", ", ", ", ", ", ", ", ", ", ", ",

Switch unit

For Lighted type

Appearance	Туре	Contact form	Part No.	Dimensions
A22RL-□M-□		1a	A22RL-10M	
, 		1b	A22RL-01M	29.8
	Standard	2a	A22RL-20M	<u></u>
	49	2b	A22RL-02M	(a)
		1a1b	A22RL-11M	
125		1a	A22RL-10M-T2	368
		1b	A22RL-01M-T2	
	AC 220V	2a	A22RL-20M-T2	
		2b	A22RL-02M-T2	
		1a1b	A22RL-11M-T2	

● For Non-lighted type

Appearance	Туре	Contact form	Part No.	Dimensions
A22R-□M		1a	A22R-10M	29.8
		1b	A22R-01M	10.5
	Socket	2a	A22R-20M	33.5
		1a1b	A22R-11M	
		2b	A22R-02M	

Individual Unit

Switch / Lamp units

Switch unit

Appearance	Unit	Contact form	Part No.	Dimensions
A22R-□		1a	A22R-10	9.8
		1b	A22R-01	5.6
	Contact block	* Additional one block can be 1a1b.	98 98 98 98 98 98 98 98 98 98 98 98 98 9	

Lamp socket

Appearance	Unit	Rating	Part No.	Dimensions
A22R-□	Lamp socket	Without voltage reduction unit AC/DC6V, AC/DC12V, AC/DC24V	A22R-TN	\$\frac{\phi^{10.3}}{2}\$
E	Lamp socker	With voltage reduction unit AC220V	A22R-T2	9.8

Mounting plate

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

4 A22R/M22R Series LED/Button/Knob/Key/Signal Indicator A22R/M22R Series LED/Button/Knob/Key/Signal Indicator

Individual Unit

Lamp unit

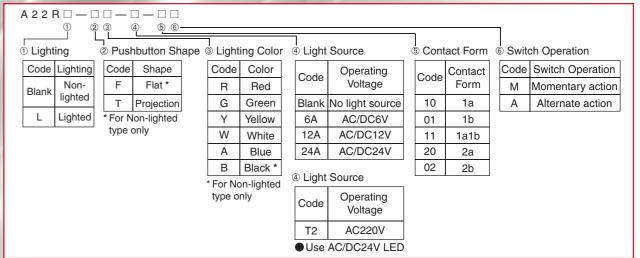
• LED

Appearance	LED operating voltage	Lighting color	Part No.	Dimensions
A22R-□□		\bigcirc	A22R-6AW	
			A22R-6AG	
	LED AC/DC6V		A22R-6AR	
		0	A22R-6AY	
			A22R-6AA	
		\bigcirc	A22R-12AW	<u></u>
			A22R-12AG	BA9S/13
	LED AC/DC12V		A22R-12AR	00 0
			A22R-12AY	φ9.3
			A22R-12AA	
			A22R-24AW	
			A22R-24AG	
	LED AC/DC24V		A22R-24AR	
		•	A22R-24AY	
			A22R-24AA	

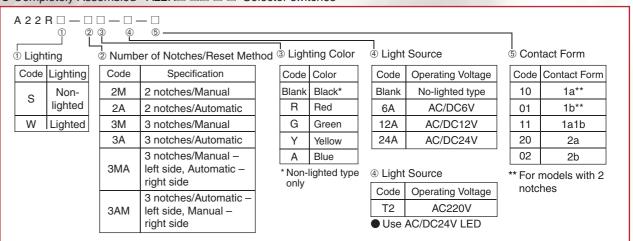
Nomenclature

Nomenclature

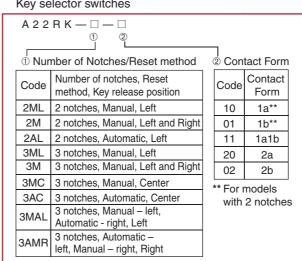
● Completely Assembled A22R□-□□-□-□ Pushbutton switches



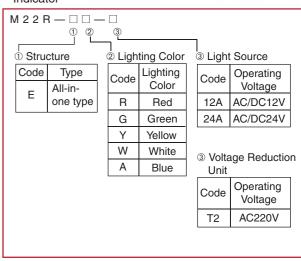
● Completely Assembled A22R□-□□-□ Selector switches



Completely Assembled A22RK-□-□
 Key selector switches



● Completely Assembled M22R-□□-□ Indicator



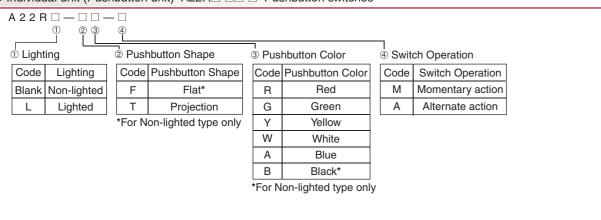
16 A22R/M22R Series Switch Section/ Indicator Section/LED

17

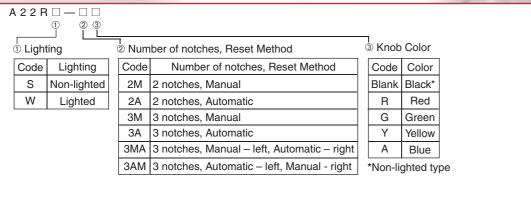
Individual Unit

Nomenclature

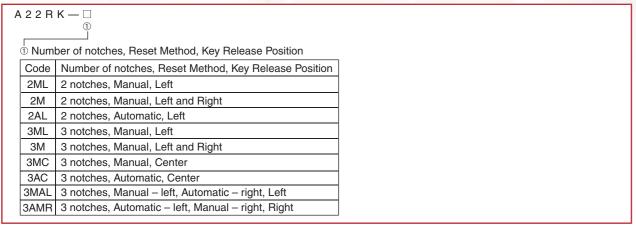
● Individual unit (Pushbutton unit) A22R□-□□-□ Pushbutton switches



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



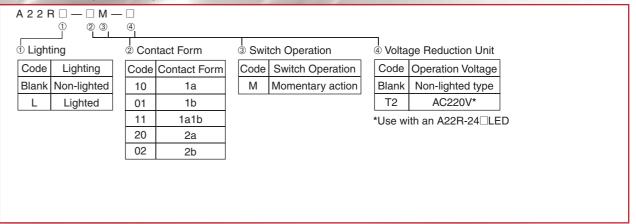
■ Individual unit (Key selector unit) A22RK-□ Key selector switches



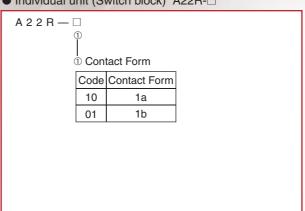
Nomenclature

Nomenclature

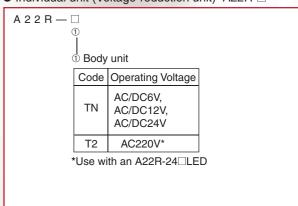
● Individual unit (Switch unit) A22R□-□M-□



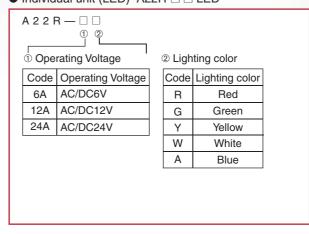
● Individual unit (Switch block) A22R-□



■ Individual unit (Voltage-reduction unit) A22R-



■ Individual unit (LED) A22R-□□ LED



A22R/M22R Series 1

Accessories / Tools

Items

Accessories

	em	Appearance	Clas	ssification		Part No.	Remarks			
					White	A22Z-3321				
	Standard		With Snap-in Legend Plate (without text)		Red	A22Z-3322				
	size		,	,	Black	A22Z-3323	Snap-in Legend Plate is acrylic.			
Legend Plate		•	Without Snap	o-in Legend	Plate	A22Z-3320				
Frames					White	A22Z-3331				
	Large		With Snap-i Plate (with		Red	A22Z-3332	Chan in Lagand plate is condic			
	size				Black	A22Z-3333	Snap-in Legend plate is acrylic.			
			Without Snap	o-in Legend	Plate	A22Z-3330				
Lock	k Ring	(v)	Round		A22Z-3360	The Lock Ring is used when more secure lock feature is required.				
Soalin	ıg Caps	Cone	For flat models		A22Z-3600F	Used to prevent dust or water from entering the Operation Unit (Pushbutton, etc.).				
Sealin	ig Caps		For projection models		ls	A22Z-3600T	Color: opaque Material: silicon			
Hole	e plug		F	Round		A22Z-3530	Can be plugged into pre-cut panel holes for future expansion. The color is black.			
	Control Boxes Two holes			A22Z-B101						
Contro			o holes		A22Z-B102	Material: Polycarbonate resin.				
		Three holes			A22Z-B103					
Conn	noctoro		Applicable ø7~9)	A22Z-3500-1	Plastic connector used to extend			
Conn	nectors		(mm)	diameter		(mm)	9~11 A22Z-3500-2	A22Z-3500-2	a cable from the Switch Box. (See page 30)	

Accessories / Tools

Items

Λ	 		· vi	~
 А	н.	550	110	-

It	em	Appearance		Classification	n	Part No.	Remarks				
				Bla	ack	A22Z-3443B					
			Without	Red		A22Z-3443R					
			text	Wh	nite	A22Z-3443W					
				Trans	parent	A22Z-3443C					
				White text	0	A22Z-3443R-2					
		\sim		on red background	STOP	A22Z-3443R-4					
	Standard				I	A22Z-3443B-1	Attached to the Standard				
	size				START	A22Z-3443B-3	Plate Frame. Material: Acrylic.				
Legend			Male Accel		ON	A22Z-3443B-5	1				
Plates			with text	With text	With text	With text	White text	OFF	A22Z-3443B-6	1	
				on black background	UP	A22Z-3443B-7					
									DOWN	A22Z-3443B-8	1
										POWER ON	A22Z-3443B-9
					OFF-ON	A22Z-3443B-10					
		_		Bla	ack	A22Z-3453B					
	Large		Without	Re	ed	A22Z-3453R	Attached to the Large-size				
	size		text			A22Z-3453W	Legend Plate Frame. Material: Acrylic.				
				Transp	parent	A22Z-3453C					
				No print (Round)		A22Z-3460					
								ı		A22Z-3460-1	After printing on a film,
Charac	ter Films	{ }	Character	7 7 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1)	A22Z-3460-2	affix to the indicator Plate of the Lighted Pushbotton Switch			
			Print (Round)	STA	ART	A22Z-3460-3	(The back is coated with adhesive.)				
			1	STOP			-				

Tools

Item	Appearance	Part No.	Remarks
Lamp Extractor	5	A22Z-3901	Rubber tool used to easily replace Lamps.
Tightening wrench		A22Z-3905	Tool used to tighten nuts from the back of the panel.

A22R/M22R Series

Specifications

Approved standards

Switch unit

- CWILOT GITE			
UL, cUL	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)		
GB/14048.5-2001 3A 240VAC/1.5A 24VDC			

Lamp unit

	UL 508/CSA C22.2 No.14
UL, cUL	File No. E76675
	24VAC/DC MAX

Voltage-reduction unit

UL, cUL	UL 508/CSA C22.2 No.14 File No. E76675 220VAC
ccc	GB/14048.5-2001 220VAC

Indicator

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

Ratings

Contacts

Rated current	Rated voltage	Inductive load		
(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 pushbutton and indicator units)

Operating voltage	Current consumption	
AC 200V(190 to 230V)	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
7	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/s² Lighted type: 600m/s²

^{*1:} With no icing or condensation

Operation

Operation		Slow action
Operating	Mechanical	Momentary operation: 60 operations/minute max.
frequency Electrical K	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)
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)

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

A22R/M22R Series 2

Characteristics

Operating characteristics

Pushbutton switch (1a1b)

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

Knob-type selector switch (1a1b)

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) Manual reset: 0.34N·m Maximum *	
Releasing Force (RF)		

^{*} Rotation torque for knob type/key type selector switches.

Key-type selector switch (1a1b)

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

Bottom view (unit: mm)

No-lighted (1a1b)	Lighted	Indicator
M3.5±Screw Switch Blocks	9.9 Switch Block Switch Block Lamp Socket	10.1

Terminal connection

Туре	Terminal connection	
Non-lighted (1a1b)	BOTTOM VIEW (1) (3) (2) (4)	
Lighted without voltage reduction unit (1a1b)	BOTTOM VIEW ① ② ② ④ ④ * LED: For AC/DC	
Lighted with voltage reduction unit (1a1b)	BOTTOM VIEW (1) (3) (4) (4)	

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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.

Wirin

- 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: 2mm² Maximum

Solid wire: 1.6mm diameter Maximum

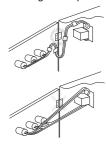
Bare Crimp Terminals



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
- 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.

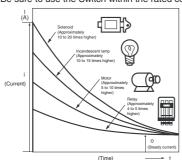
 Output

 Description:
- Do not use the Switch under the environmental condition where excessive vibration or shock exists. Otherwise, incorrect switching would occur.

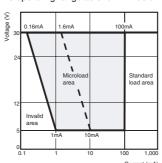
Electrical Conditions

- 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
- 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□

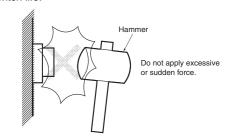
Overall length: 26mm Maximum
Power consumption: 2.6 W Maximum

Storage

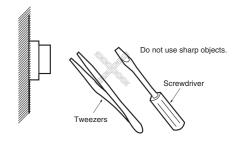
- When the Switch is left unused or stored for long periods, the ambient conditions can have a great effect on the condition of the Switch. In certain environments, leaving the Switch exposed may result I deterioration (i.e., oxidation, or the creation of an oxide film) of the contacts and terminals, 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.

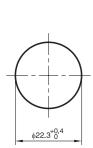
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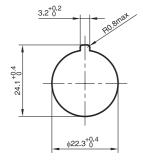
Installation

Mounting to the Panel

① Panel Hole Dimensions

• The cutout dimensions are as shown in below:

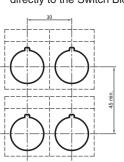


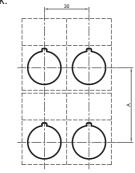


When Lock Ring is not used.

When Lock Ring is used.

- 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.

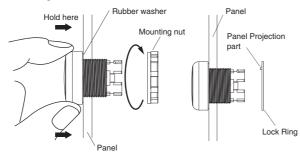




	Type of crimp terminal	Dimension A
	Bare crimp terminals	51 mm Minimum
	Crimp terminals with insulating sheath	60 mm Minimum

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.

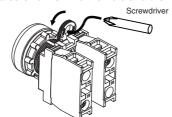
- 3 Mounting the Operation Unit on the Panel
- Insert the Operation Unit (Pushbutton, etc.) from the front surface of the panel, insert the Lock Ring and the mounting nut from the terminal side, then tighten the nut. Before tightening, check that the rubber washer is present between the Pushbutton Unit 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.



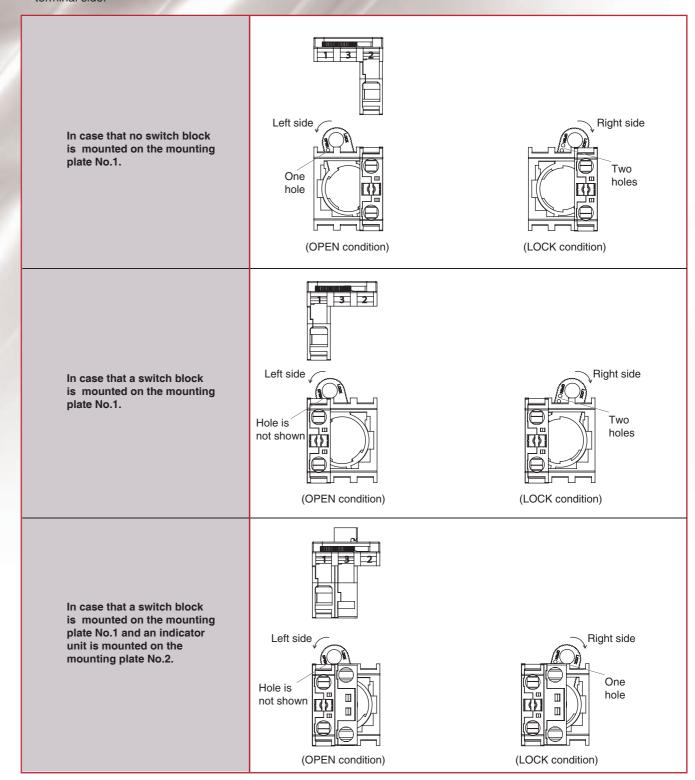
- ⑤ Removing the Switch
- Move the lever in the direction indicated by the arrow in the following figure, then pull the Pushbutton Unit or the Switch Blocks.
- Since the lever has a hole with an inside diameter of 6.5mm, the lever can be moved in the specified direction by inserting a screwdriver into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



Installation

How to confirm the Lever Position, OPEN or LOCK

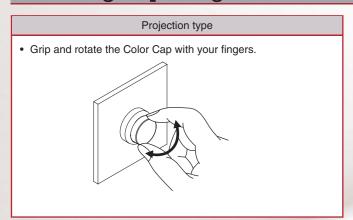
• The Lever Position, OPEN (Operation unit is not fixed)/LOCK (Operation unit is fixed), can be confirmed from the Switch terminal side.



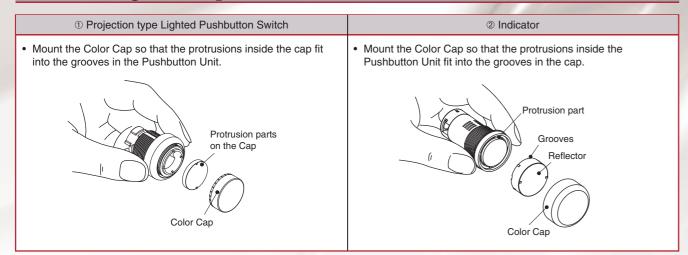
A22R/M22R Series A22R/M22R Series

Installation

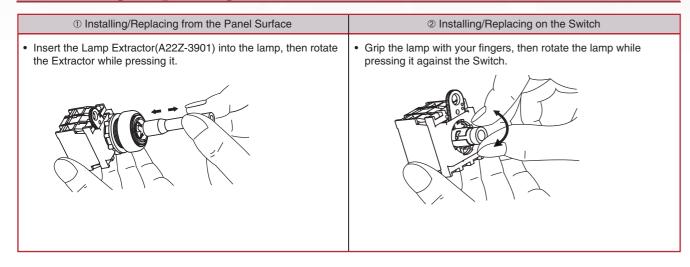
Mounting/Replacing the Color Cap



Assembling the Cap



Installing/Replacing the LED

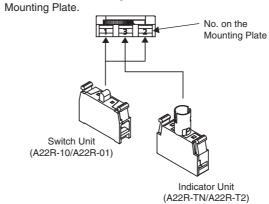


Installation

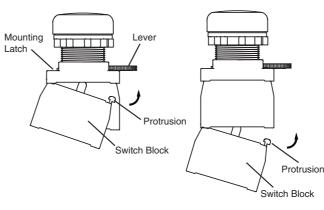
Mounting/Replacing the Switch Unit and Indicator Unit

Mount the Unit according to the indicate numbers on the

① Installing the Switch Blocks



 Hook the small protrusion on the Switch Block into the groove on the Mounting Latch on the other side of the lever, then push up the Switch Block in the direction indicated by the arrow in the figure below:

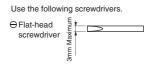


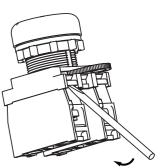
Note: In case that two Switch Block are mounted, a Control Box cannot be used.

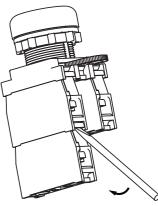
· One more Switch Block can

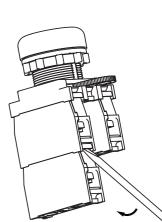
• Insert a screwdriver between the Mounting Latch and the Switch Block, then push down the screwdriver in the direction indicated by the arrow in the following figure.

2 Removing the Switch Base









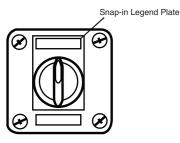
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Installation

Control Box

The Standard-size Legend Plate Frame can be mounted. Mount the Switch in the same way as for an ordinary panel.

① Mounting the Switch

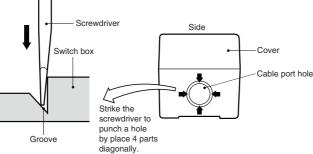


Place the tip of a screwdriver on the surface where the cable port hole is to be created with the cover attached and strike the screwdriver to punch a hole. Attempts to punch a hole on the other side of the case will damage the Box.

Screwdriver

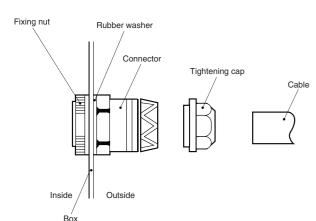
Side

② Creating a Cable Port Hole



3 Securing the Connector Cable

- ① Insert the connector into the cable port in the Box and secure with the fixing nut inside the box.
- ② 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	

Installation

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

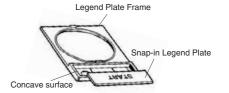
- Engrave the characters directly on the matted side of the Snap-in Legend Plate.
- The characters must be engraved no deeper than 0.5mm.
- Apply alcohol-based paint coating to the engraved characters.
 If the Snap-in Legend Plate is transparent, engrave the mirror-written characters on the back of the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



Mounting and Dismounting Snap-in Legend

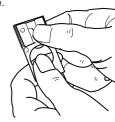
- Press and secure the Snap-in Legend Plate onto the Legend Plate Frame.
- The direction of the characters will vary with the mounting direction of the control panel if the Switch is a knob or key selector model.



 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.

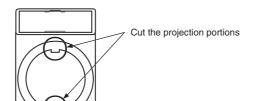


Precautions when use the Indicators

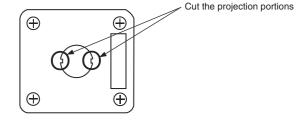
- Lock Ring (A22Z-3360) cannot be used.
 When use the Legend Plate Frames
- When use the Legend Plate Frames (A22Z-332

 , A22Z-333

) cut the projection portions shown in the below fig.



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



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