# Emergency Stop Pushbutton Switches (22-dia. or 25-dia.) A22E/A22NE-P

# Install in 22-dia. or 25-dia. Panel Cutout (When Using a Ring)

- Direct opening mechanism to open the circuit when the contact welds.
- Safety lock mechanism prevents operating errors.
- · Lever for easily mounting and removing the Switch Blocks.
- Finger protection mechanism on Switch Unit provided as a standard feature.
- Use 25-dia. ring to install in 25-dia. panel cutouts.

Be sure to read the "Safety Precautions" on pages 15, 28, and 37.



For the most recent information on models that have been certified for safety standards, refer to your OMRON website.

#### **Types of Emergency Stop Pushbutton Switches**

A22E Screw Terminal Block Types ......from page 2

A22NE-P Push-in Plus Terminal Block Types .....from page 16

#### **Common Items**

Common Accessories / Tools......from page 32
Safety Precautions.....from page 37

# **A22E**

#### Install in 22-dia. or 25-dia. Panel Cutout

#### (When Using a Ring)

- Increase wiring efficiency with three-row mounting of Switch Units. (with non-lighted Switch Blocks, three Units can be mounted for multiple contacts).
- Mounted using either open-type (fork-type) or closed-type (round-type) crimp terminals.
- Oil-resistant to IP65 (non-lighted models) / IP65 (lighted models).
- A lock plate is provided as a standard feature to ensure that the control box and switch are not easily separated.



Be sure to read the "Safety Precautions" on pages 15 and 37.

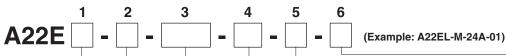
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For the most recent information on models that have been certified for safety standards, refer to your OMRON website.

#### **Model Number Structure**

#### Model Number Legend (Completely Assembled)......Shipped as a set which includes the Operation Unit, LED

....Shipped as a set which includes the Operation Unit, LEI Lamp (lighted model only), Mounting Latches, Switch Block, and Lock Plate



#### 1. Lighted/Non-lighted

Code	Description	
None	Non-lighted	
L	Lighted *	

Lighted Emergency Stop Switches are available only for the medium (M). turn-reset models.

#### 2. Operation Unit size (diameter)/Reset function

Code	Size	Description
MP	40 dia.	Pull-reset
S	30 dia.	
М	40 dia.	Turn-reset
L	60 dia.	

#### 3. LED Lamp voltage

#### Lighting unit (Direct lighting)

Code	Description	Operating Voltage
None	Non-lighted	
6 A		6 VAC/DC
12 A	Lighted (LED) *	12 VAC/DC
24 A	(LLD) **	24 VAC/DC

#### Lighting unit (Voltage-reduction lighting)

Code	Description	Operating Voltage
T1	Lighted	100 VAC
T2	(LED) *	200 VAC

\* Equipped with 24-VAC/DC LED.

#### 4. Contacts

Number of				Unit position					
	Code	Switch	Blocks	Non-lighted		Lighted			
		NO	NC	1	2	3	1	2	3
	01	0	1			NC		Lighting unit	NC
	11	1	1	NO		NC	NO	Lighting unit	NC
	02	0	2	NC		NC	NC	Lighting unit	NC
	12	1	2	NO	NC	NC			
	03	0	3	NC	NC	NC			

Note 1. NO: 1a-contact NC: 1b-contact

2. For details on the unit position, refer to the figure below.



#### 5. Configuration

Code	Configuration
None	Switch only
В	Switch with Integrated Control Box

#### 6. Configuration

Code	Configuration
None	Neither "EMO" nor "EMS" printed, arrows engraved in red.
EMO	"EMO" and arrows printed in white.
EMO-RD	"EMO" printed in white, arrows engraved in red.
EMS	"EMS" and arrows printed in white.
EMS-RD	"EMS" printed in white, arrows engraved in red.

#### **Ordering Information**

#### **List of Models (Completely Assembled)**

Non-lighted Models (Without EMO/EMS Indication)

Ope	ration		
Appearance	Contact configuration (Number of switch blocks)	Set Model	Color of cap
40-dia. head	1NC (1)	A22E-MP-01	
Medium Pull-reset A22E-MP	1NC, 1NO (2)	A22E-MP-11	
	2NC (2)	A22E-MP-02	
30-dia. head	1NC (1)	A22E-S-01 *	
Small Turn-reset	1NC, 1NO (2)	A22E-S-11 *	
A22E-S	2NC (2)	A22E-S-02 *	
	2NC, 1NO (3)	A22E-S-12 *	
	3NC (3)	A22E-S-03 *	Red
40-dia. head	1NC (1)	A22E-M-01 *	neu
Medium Turn-reset	1NC, 1NO (2)	A22E-M-11 *	
AZZE-IVI	2NC (2)	A22E-M-02 *	
	2NC, 1NO (3)	A22E-M-12 *	
	3NC (3)	A22E-M-03 *	
60-dia.	1NC (1)	A22E-L-01 *	
Large Turn-reset A22E-L	1NC, 1NO (2)	A22E-L-11 *	
	2NC (2)	A22E-L-02 *	

Note: Yellow cap models are also available (not for emergency stop use). Contact your OMRON representative.

#### Non-lighted Models (With EMO/EMS Indication)

0	peration		
Appearance	Contact configuration (Number of switch blocks)	Set Model	Color of cap
40-dia. head	4NO (4)	A22E-M-01-EMO *	
Medium Turn-reset	1NC (1)	A22E-M-01-EMO-RD	
With EMO Indication	100 100 (0)	A22E-M-11-EMO *	
(EMO)	1NC, 1NO (2)	A22E-M-11-EMO-RD	
	0110 (0)	A22E-M-02-EMO *	
	2NC (2)	A22E-M-02-EMO-RD	
	010 410 (0)	A22E-M-12-EMO *	
	2NC, 1NO (3)	A22E-M-12-EMO-RD	-
	ONO (O)	A22E-M-03-EMO *	
	3NC (3)	A22E-M-03-EMO-RD	D. J
10-dia. head	410 (1)	A22E-M-01-EMS *	Red
Medium Turn-reset	1NC (1)	A22E-M-01-EMS-RD	
With EMS Indication	410 410 (0)	A22E-M-11-EMS *	
EMS	1NC, 1NO (2)	A22E-M-11-EMS-RD	
	0110 (0)	A22E-M-02-EMS *	
	2NC (2)	A22E-M-02-EMS-RD	
	3110 (1110 (0)	A22E-M-12-EMS *	
	2NC, 1NO (3)	A22E-M-12-EMS-RD	
	ONO (O)	A22E-M-03-EMS *	
	3NC (3)	A22E-M-03-EMS-RD	1

\* Models with Korean S-mark certification

Note: The colors of switch blocks are as follows:

NO (a-contact): Black NC (b-contact): Red

The above illustration shows the 2NC (2b-contact) configuration.

#### **Lighted Models**

	Operation		Push-lock turn-reset system	
Appearance	Contacts (Number of switch blocks)	LED Lamp voltage	Set Model	Color of cap
40-dia. head		6 VAC/VDC	A22EL-M-6A-01 *	
Push-lock Turn-reset	1NC (1)	12 VAC/VDC	A22EL-M-12A-01 *	
Lighting unit		24 VAC/VDC	A22EL-M-24A-01 *	
(Direct lighting)		6 VAC/VDC	A22EL-M-6A-11 *	
A22E	1NC, 1NO (2)	12 VAC/VDC	A22EL-M-12A-11 *	
		24 VAC/VDC	A22EL-M-24A-11 *	
		6 VAC/VDC	A22EL-M-6A-02 *	
	2NC (2)	12 VAC/VDC	A22EL-M-12A-02 *	Red
		24 VAC/VDC	A22EL-M-24A-02 *	
40-dia. head	4110 (4)	100 VAC	A22EL-M-T1-01	
Push-lock	1NC (1)	200 VAC	A22EL-M-T2-01	
Turn-reset Lighting unit (Voltage- reduction lighting)	410, 410, (0)	100 VAC	A22EL-M-T1-11	
	1NC, 1NO (2)	200 VAC	A22EL-M-T2-11	
	ONO (0)	100 VAC	A22EL-M-T1-02	
A22E	2NC (2)	200 VAC	A22EL-M-T2-02	

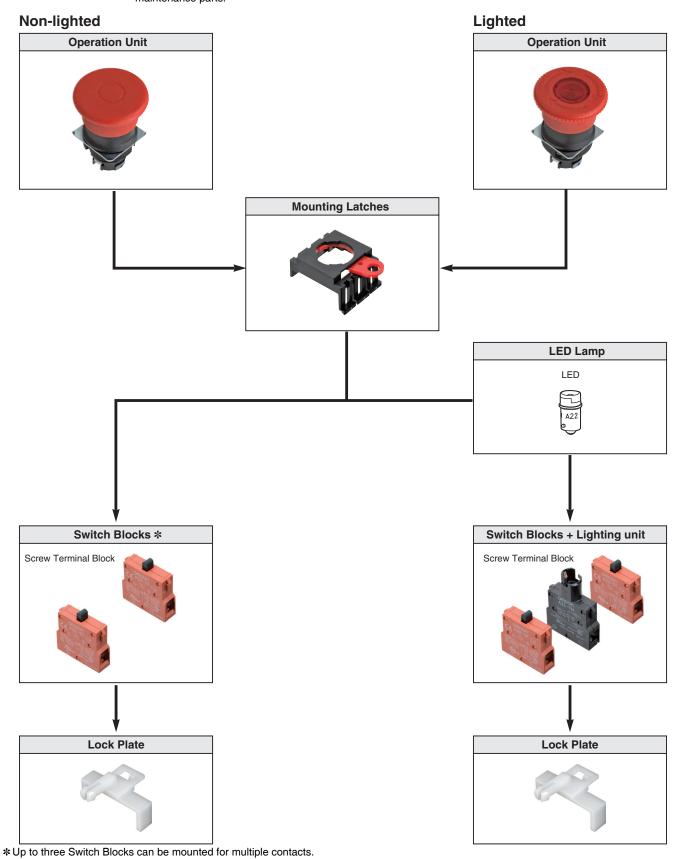
<sup>\*</sup> Models with Korean S-mark certification

#### **Switch with Integrated Control Box**

Appearance	Contact configuration (Number of switch blocks)	Model
2	1NC (1)	A22E-M-01B *
	1NC, 1NO (2)	A22E-M-11B *
0	2NC (2)	A22E-M-02B *

Note: The A22Z-B101Y Control Box is used. \* Models with Korean S-mark certification

**Subassembled**.... The Operation Unit, LED Lamp, Mounting Latches, and Switch Blocks can be ordered separately. Use them in combination for models that are not available as assembled Units. These can also be used as inventory for maintenance parts.



# Operation Unit Non-lighted

Sealing capability		IP65 oil-resistant models		
Function Size	Small (30 dia.)	Medium (40 dia.)	Large (60 dia.)	
Pull-reset		A22E-MP		
Turn-reset	A22E-S	A22E-M-EMO A22E-M-EMO-RD  A22E-M-EMS A22E-M-EMS A22E-M-EMS-RD	A22E-L	
		EMS		

#### Lighted

	Sealing capability	IP65
Function	Size	Medium (40 dia.)
		A22EL-M
Turn-reset		

#### **LED lamp**

Appearance	LED light		Rated voltage	Model
0			6 VAC/VDC	A22-6AR
A22	Red	Standard	12 VAC/VDC	A22-12AR
igorplus			24 VAC/VDC	A22-24AR

Note: For a model with a Lighting unit (Voltage-reduction lighting), use the A22-24AR.

#### Switch Non-lighted / Direct lighting

Classification		Non-lighted	Direct lighting
	Appearance		
Contact specificate Configuration (Nu	tions/ mber of switch blocks)	Model	Model
	1NC (1)	A22-01M	A22L-01M
For Standard loads	1NC, 1NO (2)	A22-11M	A22L-11M
	2NC (2)	A22-02M	A22L-02M

#### Voltage-reduction lighting (100 VAC, 200 VAC)

Classification		100 VAC, Lighted	200 VAC, Lighted
	Appearance		
Contact specification (Nu	tions/ mber of switch blocks)	Model	Model
	1NC (1)	A22L-01M-T1	A22L-01M-T2
For Standard loads	1NC, 1NO (2)	A22L-11M-T1	A22L-11M-T2
	2NC (2)	A22L-02M-T1	A22L-02M-T2

Note: For a model with a Lighting unit (Voltage-reduction lighting), use the A22-24AR.

#### **Accessories (Order Separately)**

Item	Appearance	Contact spec	cifications	Model	Remarks
	•	1NO (Black)	Standard load	A22-10	
Switch Blocks	C (2) (2) (2) (2) (2) (2) (2) (2) (2) (2)	TNO (Black)	Microload	A22-10S	Provided as standard.  Order Switch Blocks only when adding or replacing them.
(one contact)		1NC (Red)	Standard load	A22-01	
		TNC (Red)	Microload	A22-01S	
		ONO (Plack)	Standard load	A22-20	
		2NO (Black)	Microload	A22-20S	
Switch Blocks		2NC (Red)	Standard load	A22-02	Order Switch Blocks only when
(two contacts)		ZNC (neu)	Microload	A22-02S	adding or replacing them.
		1NC + 1NO	Standard load	A22-11	1
		Contact (Black/ Red)	Microload	A22-11S	
		Direct lighting		A22-TN	
Lighting unit		Voltage-reduction lighting	100 VAC	A22-T1	Used when changing the lighting method.
			200 VAC	A22-T2	
Mounting Latches				A22-3200	Provided as standard. Order Mounting Latches only when mounting Switch Blocks or Lighting Units that are purchased individually.
Lock Plate				A22Z-3380	Use to fix the lever on the Switch.
Control Boxes		One hole w			Material: Polycarbonate resin. The A22Z-B101Y does not support
(Enclosures)		One hole, yellow box		A22Z-B201Y	2NO, 2NC, or 1NC + 1NO two- contacts Switch Blocks.

Note: For details on the accessories common to the screw terminal block types and push-in plus terminal block types, refer to "Common Accessories and Tools (Order Separately)" on page 32.

#### **Specifications**

#### **Certified Standard Ratings**

- UL, cUL (File No. E41515)
   6 A at 220 VAC, 10 A at 110 VAC
- TÜV (EN60947-5-1) (Low Voltage Directive) 3 A at 220 VAC
- CCC (GB14048.5)
   3 A at 240 VAC, 1.5 A at 24 VDC

### Certified Standards

	Certification body	Standards	File No.	
	UL <b>*</b> 1	UL508, C22.2 No.14	E41515	
-	TÜV SÜD	EN60947-5-1 (Certified direct opening), EN60947-5-5	Consult your OMRON representative for details.	
_	CQC (CCC)	GB14048.5	2003010303070635	
	KOSHA *2	EN60947-5-1	Consult your OMRON representative for details.	

Note: Only models with NC contacts have a direct opening mechanism. \*1. UL-certification for CSA C22.2 No. 14 has been obtained. Certification has been obtained for individual Switch Blocks and Lighting Units.

\*2. Some models have been certified.

#### **Ratings**

#### **Contacts (Standard Load)**

Rated carry	Rated voltage (V)	Rated current (A)			
current (A)		AC15 (Inductive load)	AC12 (Resistive load)	DC13 (Inductive load)	DC12 (Resistive load)
	24 VAC	10	10		
	110 VAC	5	10		
	220 VAC	3	6		
	380 VAC	2	3		
10	440 VAC	1	2		
	24 VDC			1.5	10
	110 VDC			0.5	2
	220 VDC			0.2	0.6
	380 VDC			0.1	0.2

Note: 1. Rated current values are determined according to the testing conditions. The above ratings were obtained by conducting tests under the following conditions.

- (1) Ambient temperature: 20°±2°C
- (2) Ambient humidity:  $65\pm5\%$
- (3) Operating frequency: 20 operations/minute
  2. Minimum applicable load: 10 mA at 5 VDC

#### **LED Lamp**

Rated voltage	Operating voltage	Current value
6 VAC/VDC	6 VAC/VDC ± 5%	
12 VAC/VDC	12 VAC/VDC ± 5%	Approx. 8 mA
24 VAC/VDC	24 VAC/VDC ± 5%	

#### Voltage-reduction lighting

Rated voltage	Operating voltage	Rated current	Applicable lamp (BA9S/Base: 13)
110 VAC	100 VAC (95 to 115 V)	Approx. 8 mA	LED lamp
220 VAC	200 VAC (190 to 230 V)	Approx. 6 IIIA	A22-24A□

#### **Characteristics**

	Туре	Turn-	-reset	Pull-reset			
Item		Non-lighted model	Lighted model	Non-lighted model			
Allowable operating	Mechanical	30 operations/minute (One operation consists of set and reset operations.)					
frequency	Electrical	30 operations/minute (One o	30 operations/minute (One operation consists of set and reset operations.)				
Insulation resistance		100 MΩ min. (at 500 VDC)					
Contact resistance		100 m $\Omega$ max. (initial value)					
Dielectric strength	Between terminals of same polarity	2,500 VAC, 50/60 Hz for 1 min.					
Dielectric Strength	Between each terminal and ground	2,500 VAC, 50/60 Hz for 1 min.					
Vibration resistance		10 to 55 Hz, 1.5-mm double am	nplitude (contact separation with	in 1 ms)			
Shock resistance	Destruction	1000 m/s <sup>2</sup>					
SHOCK resistance	Malfunction	250 m/s² max. (contact separation within 1 ms)					
Durability	Mechanical	300,000 operations min. (One operation consists of set and reset operations.)					
Durability	Electrical	300,000 operations min. (One operation consists of set and reset operations.)					
Ambient operating temperature	erature *1	-20 to +70°C	-20 to +55°C	-20 to +70°C			
Ambient operating humic	dity	35 to 85% RH					
Ambient storage tempera	ature	-40 to +70°C					
Degree of protection		IP65 (oil-resistant) *2 *3	IP65 *2	IP65 (oil-resistant) *2 *3			
Electric shock protection	class	Class II					
PTI (tracking characteristic)		175					
Degree of contamination		3 (EN60947-5-1)					
Minimum direct opening stroke		11 mm					
Minimum direct opening	force	45 N					
Conditional short-circuit	current	100 A (EN 60947-5-1)					
Weight (for a 40-dia. head	d 1NC/1NO Operation Unit)	Approx. 65 g	Approx. 80 g	Approx. 100 g			

- \*1. With no icing or condensation.
- **\*2.** The degree of protection from the front of the panel.
- \*3. The degree of protection is IP65 even with an integrated control box, but the system is not oil resistant.

#### **Operating Characteristics**

Item	Turn-reset	Pull-reset
Total travel force (TTF)	44.1 N max.	58.8 N max.
Return force (RF)	0.25 N·m * max.	58.8 N max.
Total travel (TT)	10 ±1 mm	5.5 ±1 mm

<sup>\*</sup> Rotation torque value.

#### **Terminal Arrangement (BOTTOM VIEW)**

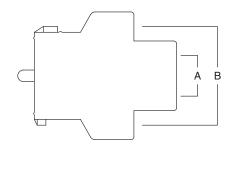
Non-lighted (two contacts)	Non-lighted (three contacts)	Lighted (two contacts)
M3.5 screws Switch Blocks	Switch Blocks	Switch Blocks  22  Lighting unit

#### **Terminal connection**

Typo	Terminal Connection (BOTTOM VIEW)					
Туре	1NC, 1NO (two contacts)	2NC (two contacts)	2NC, 1NO (three contacts)	3NC (three contacts)		
Non-lighted	NC NO	NC NC	NC NC NO	NC NC NC		
Lighted with Direct lighting	(2) (4) (1) (x) (3) (+) (x) (4) (2) (2) (2) (4)	(2) (2) (1) (X) (1) (+) (X) 7 (2) (2) (2)	2 2 4	(2) (2)		
Lighted with Voltage-reduction lighting	(1) (X1) (3) (3) (4) (4) (4) (4) (4) (4) (4) (4) (4) (4					

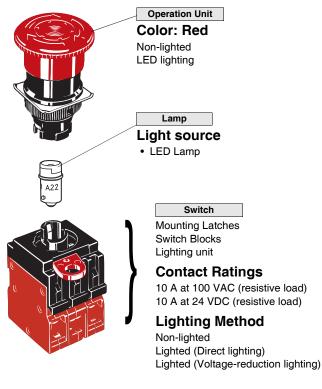
Note: The above terminal connection diagrams are examples of the number of contacts.

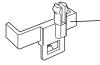
#### Terminal wiring drawings of two-contact Switch Units



Type	Termin	al Connection (BOTTOM	VIEW)
Туре	2NC (two contacts)	2NO (two contacts)	1NC, 1NO (two contacts)
Α	(21)	23)	(23)
В	11) (12)	(13)	11)

#### **Structure and Nomenclature**



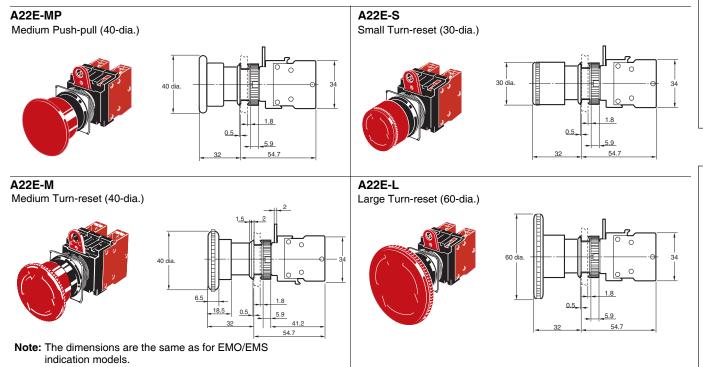


#### Lock Plate (Attached with the Operation Unit)

(Refer to the "Mounting the Lock Plate" on page 15 for use.)

Dimensions (Unit: mm)

#### **Non-lighted Models**

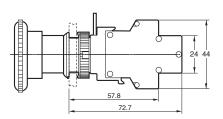


Note: Unless otherwise specified, a tolerance of ±0.8mm applies to all dimensions.

#### **Lighted Model**

# A22EL-M Medium Turn-reset (40-dia.) 40 dia. 40 dia. 41.2 54.7

# Switch dimensions when mounted to a 2NO (2NC) one-piece switch block



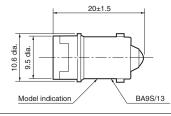
Note: The operation unit is an example for the A22E-M.

**Note:** Unless otherwise specified, a tolerance of  $\pm 0.8$ mm applies to all dimensions.

#### **Accessories (Order Separately)**

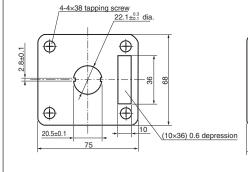
**LED Lamp A22-6**□, 12□, 24□

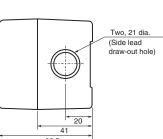




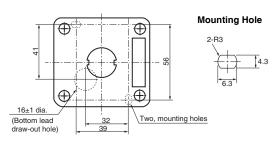
#### **Control Box**

#### A22Z-B101Y (1-hole)



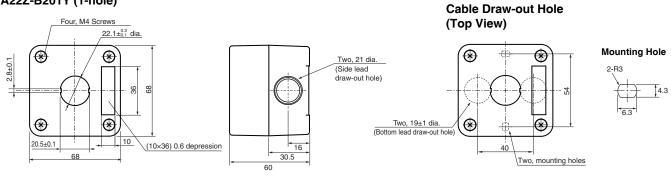


# Cable Draw-out Hole (Top View)



#### **Control Box**

#### A22Z-B201Y (1-hole)



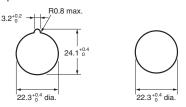
Note: For details on the accessories common to the screw terminal block types and push-in plus terminal block types, refer to "Common Accessories and Tools (Order Separately)" on page 32.

#### Installation

#### Mounting to the Panel

#### (1) Preparing the Panel

- The panel dimensions are shown below.
- The panel thickness must be 1 to 5 mm.



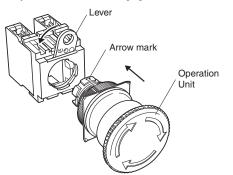
#### With Lock Ring

#### Without Lock Ring

- Always use a 25-mm-dia. A22Z-R25 Lock Ring for a 25-mm-dia. hole. IP65 degree of protection will be lost if the 25-mm-dia. Lock Ring is not used because of the larger size of a 25-mm-dia. hole.
- When painting or coating the panel, make sure that the specified panel dimensions apply to the panel after painting or coating.

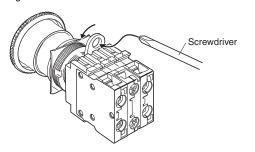
#### (3) Mounting the Switch on the Operation Unit

• Insert the Operation 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.



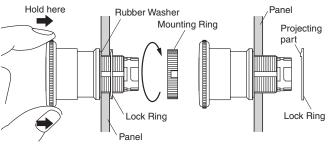
#### (4) Removing the Switch

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

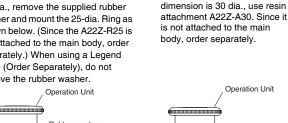


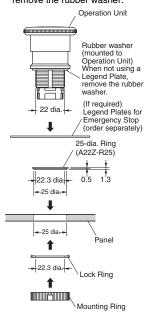
#### (2) Mounting the Operation Unit on the Panel

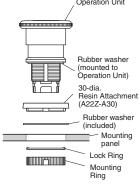
- Insert the Operation Unit from the front surface of the panel, insert the Lock Ring and the mounting Ring from the terminal side, then tighten the Ring. Before tightening, check that the rubber washer is present between the Operation Unit and the panel.
- · Align the Lock Ring with the groove in the 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 1.96 N·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 Ring.



1. When the panel cutout dimension is 25 dia., remove the supplied rubber washer and mount the 25-dia. Ring as shown below. (Since the A22Z-R25 is not attached to the main body, order separately.) When using a Legend Plate (Order Separately), do not remove the rubber washer.





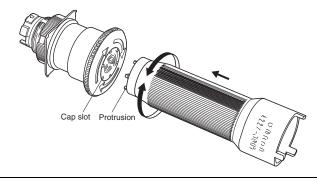


2. When the panel cutout

#### Assembling the Cap

#### **Emergency Stop Switch**

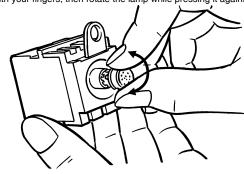
• Insert the protrusion of the Tightening Wrench (A22Z-3905) into the Cap slot and then turn to remove the Cap.



#### Installing/Replacing the LED Lamp

#### Installing/Replacing on the Switch

• Grip the lamp with your fingers, then rotate the lamp while pressing it against the Switch.

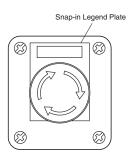


#### **Control Box (Enclosure)**

#### (1) Mounting the Switch

The Standard-size Legend Plate Frame can be mounted.

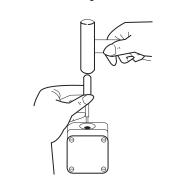
Mount the Frame as shown in the following diagram. Mount the Switch in the same way as for an ordinary panel.



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.

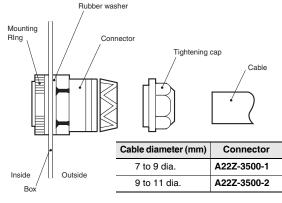
(2) Creating a Cable Port Hole

Attempts to punch a hole on the other side of the case will damage the Box.



#### (3) Securing the Connector Cable

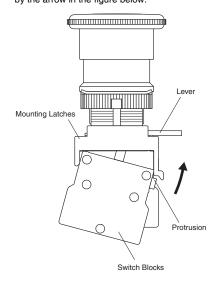
- Insert the connector into the cable port hole in the Box and secure with the Mounting Ring inside the box.
- Pass the tightening cap through the cable, insert the cable into the connector, and tighten the tightening cap to secure the cable.



#### Installing/Removing the Switch Blocks

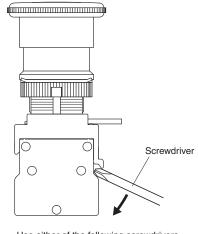
#### (1) Installing the Switch Blocks

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



#### (2) Removing the Switch Blocks

 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.



Use either of the following screwdrivers.

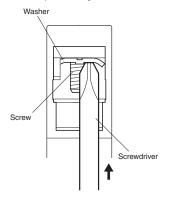
⊖ Flat-head screwdriver 3 to 6 mm
 ⊕ Phillips screwdriver 3 to 6 mm dia.

#### Wiring

#### **Wiring Round Crimp Terminals**

 Loosen the terminal screw from the Switch Unit until it completely comes off the groove, insert a screwdriver as shown in the following figure, then push up the washer in the direction indicated by the arrow to temporarily secure it.

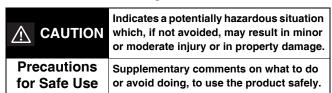
Now, a round crimp terminal can be connected. After inserting the terminal, tighten the screws to complete wiring.



#### **Safety Precautions**

Be sure to read the precautions for All PushButton Switches in the website at:http://www.ia.omron.com/.

#### Indication and Meaning for Safe Use



#### 

If the Operation Unit is separated from the Socket Unit, the equipment will not stop, creating a hazardous condition. Secure the lever on the Socket Unit by using the A22Z-3380 Lock Plate so that the Operation Unit cannot be easily separated from the Socket Unit.

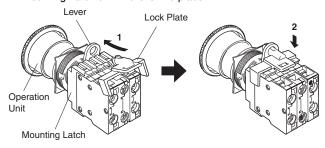


(Refer to "Mounting the Lock Plate" at the below.)

#### **Precautions for Correct Use**

#### Mounting the Lock Plate

- Confirm that the lever on the Mounting Latch is on the side where the Operation Unit is secured and then insert the protrusion on the Lock Plate into the hole in the lever on the Mounting Latch.
- Press the hole on the Lock Plate onto the protrusion on the Mounting Latch until it clicks into place.

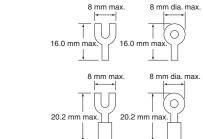


#### Wiring

- Terminal screws must be Phillips or slotted M3.5 screws with a square washer.
- The tightening torque is 1.08 to 1.27 N·m.
- Single wires, stranded wires, and crimp terminals can be connected to the Switch.
- Applicable Wiring Materials: Twisted strands: 2 mm<sup>2</sup> max.
   Solid wire: 1.6 mm dia. max.

**Naked Crimp Terminals** 

Crimp Terminals with Insulating Sheaths



 After wiring the Switch, maintain an appropriate clearance and creepage distance.

#### **LED Lamps**

- 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: 26 mm max.

Power consumption: 2.6 W max.

When DC-specific LEDs are used, wire the Switch so that the X1 terminal is positive.

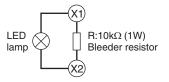
Mis-lighting of the LED

The LED lights with approx. 0.1 mA or less of micro-current. Take a countermeasure like adding a resistor to prevent mis-lighting in parallel to the LED.

The micro-current varies with the machine (leak current or stray capacity between cables, etc.). Select resistance value and allowable power consumption that meet the actual current.

#### (Circuit example)

In case of using 24 VAC/VDC, Direct lighting



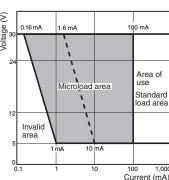
• Do not use a lamp that does not satisfy the rating.

#### **Using the Microload**

Contact failure may occur if a Switch designed for a standard load is used to switch a microload. Use Switches within the application ranges shown in the following graph. Even within the application range, insert a contact protection circuit, if necessary, to prevent the reduction of life expectancy due to extreme wear on the contacts caused by loads where inrush current occurs when the contact is opened and closed.

The minimum applicable load is the N-level reference value. This value indicates the malfunction reference level for the reliability level of 60% ( $\lambda$  60) (conforming to JIS C5003).

The equation,  $\lambda$  60 = 0.5 x 10<sup>-6</sup>/time indicates that the estimated malfunction rate is less than 1/2,000,000 with a reliability level of 60%.



Be sure to read the "Safety Precautions" on page 37.

# A22NE-P

# Install in 22-dia. or 25-dia. Panel Cutout

#### (When Using a Ring)

- The small size of the control panel is realized by conserving space and changing the direction of the wiring.
- Since there is no looseness in the wiring, there is a reduction in the maintenance efforts.
- A lock lever mechanism that can be easily operated is adopted.
- A maximum of up to six contact points can be combined together in the contact-point configuration.
- Oil-resistant to IP65 (non-lighted models) / IP65 (lighted models).



For the most recent information on models that have been certified for safety standards, refer to your OMRON website.



Be sure to read the "Safety Precautions" on pages 28 and 37.

#### **Model Number Structure**

#### Model Number Legend (Completely Assembled)......Shipped as a set which includes the Operation Unit, LED

..Shipped as a set which includes the Operation Unit, LEI Lamp (lighted model only), Mounting Latches, Lighting Units (lighted model only), and Switch Block.



#### 1. Operation Unit size (diameter)

Code	Description	
S	30 dia.	
М	40 dia.	
L	60 dia.	

#### 2. Reset function

Code	Description
None	Turn-reset
Р	Pull-reset *

\* The pull-reset type is only available on the 40 dia. Operation Unit, non-lighted type. Not available on lighted types.

#### 3. Contact specification/Terminal specification

Code	Description
Р	Standard load/Push-in plus terminal block

#### 4. Contacts

	Num	ber of	Unit position				osition	
Code	Switch	Blocks	S Non-lighted		ited		Lighted	
	NO	NC	1	2	3	1	2	3
002	0	1			NC		Lighting unit	NC
102	1	1	NO		NC	NO	Lighting unit	NC
202	0	2	NC		NC	NC Lighting unit N		NC
212	1	2	NC	NO	NC			
222	0	3	NC	NC	NC			

Note 1. NO: 1a-contact NC: 1b-contact

2. For details on the unit position, refer to the figure below.



#### 5. LED lamp voltage

Code	Description	LED Lamp Voltage
N	Non-lighted	
Α		6 VAC/DC
В		12 VAC/DC
С	Lighted (LED) *	24 VAC/DC
D	. (223) 1	100/110/120 VAC
E		200/220/230/240 VAC

\* Lighting color is red.

#### 6. Others

Code	Configuration	
None	Standard	
B *	Built-in control box	

\* One-contact unit type.

### **Ordering Information**

#### **Non-lighted Models**

Appearance	Contact configuration (Number of switch blocks)	Set Model	Color of cap
40-dia. head	1NC (1)	A22NE-MP-P002-N	
Medium Pull-reset	1NC, 1NO (2)	A22NE-MP-P102-N	
A22NE-MP-P□□2-N	2NC (2)	A22NE-MP-P202-N	
	2NC, 1NO (3)	A22NE-MP-P212-N	
	3NC (3)	A22NE-MP-P222-N	
30-dia. head	1NC (1)	A22NE-S-P002-N	
Small Turn-reset	1NC, 1NO (2)	A22NE-S-P102-N	
A22NE-S-P□□2-N	2NC (2)	A22NE-S-P202-N	
	2NC, 1NO (3)	A22NE-S-P212-N	
	3NC (3)	A22NE-S-P222-N	D. J
40-dia. head	1NC (1)	A22NE-M-P002-N	Red
Medium Turn-reset	1NC, 1NO (2)	A22NE-M-P102-N	
A22NE-M-P□□2-N	2NC (2)	A22NE-M-P202-N	
	2NC, 1NO (3)	A22NE-M-P212-N	
	3NC (3)	A22NE-M-P222-N	
60-dia.	1NC (1)	A22NE-L-P002-N	
Large Turn-reset	1NC, 1NO (2)	A22NE-L-P102-N	
A22NE-L-P□□2-N	2NC (2)	A22NE-L-P202-N	
	2NC, 1NO (3)	A22NE-L-P212-N	
	3NC (3)	A22NE-L-P222-N	

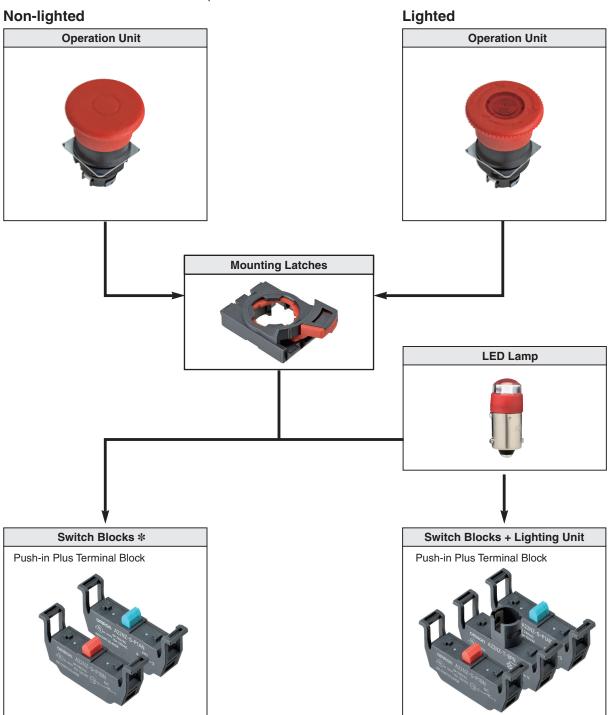
#### **Lighted Model**

Appearance	Contacts (Number of switch blocks)	Contacts (Number of switch blocks) LED lamp voltage		Color of cap
40-dia. head	1NC (1)		A22NE-M-P002-A	
Medium Turn-reset A22NE-M-P□□2-A	1NC, 1NO (2)	6 VAC/VDC	A22NE-M-P102-A	
	2NC (2)		A22NE-M-P202-A	
40-dia. head	1NC (1)		A22NE-M-P002-B	
Medium Turn-reset A22NE-M-P□□2-B	1NC, 1NO (2)	12 VAC/VDC	A22NE-M-P102-B	
	2NC (2)		A22NE-M-P202-B	
40-dia. head	1NC (1)		A22NE-M-P002-C	
Medium Turn-reset A22NE-M-P□□2-C	1NC, 1NO (2)	24 VAC/VDC	A22NE-M-P102-C	Red
	2NC (2)		A22NE-M-P202-C	
40-dia. head	1NC (1)		A22NE-M-P002-D	
Medium Turn-reset A22NE-M-P□□2-D	1NC, 1NO (2)	100, 110, 120 VAC	A22NE-M-P102-D	
	2NC (2)		A22NE-M-P202-D	
40-dia. head	1NC (1)		A22NE-M-P002-E	
Medium Turn-reset A22NE-M-P□□2-E	1NC, 1NO (2)	220, 230, 240 VAC	A22NE-M-P102-E	
	2NC (2)		A22NE-M-P202-E	1

#### Switch with Integrated Control Box

Appearance	Contact configuration (Number of switch blocks)	Model	
	1NC (1)	A22NE-M-P002-N-B	
***************************************	1NC, 1NO (2)	A22NE-M-P102-N-B	
0	2NC (2)	A22NE-M-P202-N-B	

 $\textbf{Subassembled} ....... \textbf{The Operation Unit, LED Lamp, Mounting Latches, Switch Blocks, and Lighting Unit can be ordered separately. Use a substitution of the property of$ them in combination for models that are not available as assembled Units. These can also be used as inventory for maintenance parts.



 $\ensuremath{\bigstar}$  Up to three Switch Blocks can be mounted for multiple contacts.

#### **Operation Unit**

#### Non-lighted

Sealing capability		IP65 oil-resistant models	
Function Size	Small (30 dia.)	Medium (40 dia.)	Large (60-dia.)
Pull-reset		A22NE-MP-N	
Turn-reset	A22NE-S-N	A22NE-MRO-N A22NE-MRO-N-RD  A22NE-MRS-N A22NE-MRS-N A22NE-MRS-N-RD	A22NE-L-N

#### Lighted

	Sealing capability	IP65
Function	Size	Medium (40 dia.)
		A22NE-M-L
Turn-reset		

#### LED lamp

Appearance	LED light	Rated voltage	Model	Remarks
	Red 2	6 VAC/VDC	A22NZ-L-RA	These LED lamps are for
		12 VAC/VDC	A22NZ-L-RB	exclusive use with the A22N and the A22NE-P. These are
		24 VAC/VDC	A22NZ-L-RC	provided with the completely assembled set of lighted models. Order LED lamps only
		100, 110, 120 VAC	A22NZ-L-RD	
		200, 220, 230, 240 VAC	A22NZ-L-RE	when replacing them.

#### **Accessories (Order Separately)**

Item	Appearance	Contact s	pecifications	Model	Remarks
Switch Blocks	P. P.	1NO (Blue)	Standard load	A22NZ-S-P1AN	Provided as standard.  Order Switch Blocks only when
(one contact)	(one contact)	1NC (Red)	Standard load	A22NZ-S-P1BN	adding or replacing them.
Switch Blocks	B	2NC (Red)	Standard load	A22NZ-S-P2BN	Order Switch Blocks only when
(two contacts)		1NO/1NC (White)	Standard load	A22NZ-S-P2CN	adding or replacing them.
-		6 VAC/VDC		A22NZ-T-APN	These are provided with the completely assembled set of lighted models. Order Lighting Units only when replacing them.
		12 VAC/VDC		A22NZ-T-BPN	
Lighting unit	GREAT STATE	24 VAC/VDC		A22NZ-T-CPN	
	William States	100, 110, 120 VAC		A22NZ-T-DPN	
		200, 220, 230, 240 VAC		A22NZ-T-EPN	
Mounting Latches				A22NZ-H-02	This Mounting Latch is for exclusive use with the A22NE-P. It is provided with the completely assembled set. Order Mounting Latches only when mounting Switch Blocks or Lighting Units that are purchased individually.
Control Boxes (Enclosures)	0,	One hole, yellow box		A22NZ-A-B01Y	Material: Polycarbonate resin. Can be used only with a one- contact Switch Block.*

Note: For details on the accessories common to the screw terminal block types and push-in plus terminal block types, refer to "Common

<sup>\*</sup>The A22NZ-A-B01Y Control Box cannot be used in combination with the A22Z-3476-1 90-dia. Legend Plates for Emergency Stop or the A22Z-EG

E-stop Shrouds.

#### **Specifications**

#### **Certified Standard Ratings**

- UL508 (File No. E76675), CSA C22.2 No.14
   6 A at 240 VAC, 10 A at 120 VAC
- TÜV (EN60947-5-1) Certified direct opening -(EN60947-5-5)

AC-15 3 A at 240 VAC DC-13 4 A at 24 VDC

CCC (GB14048.5)
 AC-15 3 A at 240 VAC
 DC-13 4 A at 24 VDC

#### **Applicable Standards**

UL1059, UL486E (Push-in Plus Terminal Block Types)

**Note:** Use a 10 A fuse type gl or gG that conforms to IEC60269 as a short-circuit protection device. This fuse is not provided in the main unit.

#### **Ratings**

#### **Contacts (Standard Load)**

Rated	Rated carry	Rated		Rated cu	rrent (A)	
insulation voltage (V)	current (A)	voltage (V)	AC15 (Inductive load)	AC12 (Resistive load)	DC13 (Inductive load)	DC12 (Resistive load)
		24 VAC	10	10		
		120 VAC	6	10		
		240 VAC	3	6		
600	10	380 VAC	1.9	2		
600	10	440 VAC	1.6	2		
		24 VDC		4	4	8
		120 VDC			1.1	2.2
	1	240 VDC			0.55	1.1

**Note: 1.** The above ratings were obtained by conducting tests under the following conditions.

- (1) Ambient temperature: 20°±2°C
- (2) Ambient humidity: 65±5%
- (3) Operating frequency: 30 operations/minute
- 2. Minimum applicable load: 10 mA at 5 VDC (Resistive load) The operating range may vary depending on the usage conditions and type of load.

#### **Certified Standards**

Certification body	Standards	File No.
UL*	UL508, C22.2 No.14	E76675
TÜV SÜD	EN60947-5-1 (Certified direct opening), EN60947-5-5	Consult your OMRON representative for details.
CQC (CCC)	GB14048.5	2017010305959182

**Note:** Only models with NC contacts have a direct opening mechanism.

\* UL-certification for CSA C22.2 No. 14 has been obtained.

#### **LED Lamp**

Rated voltage	Operating voltage	Current value
6 VAC/VDC	6 VAC/VDC ± 10%	Approx. 11 mA
12 VAC/VDC	12 VAC/VDC ± 10%	Approx. 12 mA
24 VAC/VDC	24 VAC/VDC ± 10%	Approx. 12 mA
100 VAC	100 VAC ± 10%	
110 VAC	110 VAC ± 10%	Approx. 12 mA
120 VAC	100 VAC to 130 VAC	
200 VAC	200 VAC ± 10%	
220 VAC	220 VAC ± 10%	Approx. 12 mA
230 VAC	230 VAC ± 10%	Applox. 12 IIIA
240 VAC	220 VAC to 250 VAC	

#### **Characteristics**

Туре		Turn	Pull-reset				
Item		Non-lighted model	Lighted Model	Non-lighted model			
Allowable operating	Mechanical	30 operations/minute or less (One operation consists of set and reset operations.)					
frequency	Electrical	30 operations/minute or less (0	30 operations/minute or less (One operation consists of set and reset operations.)				
Insulation resistance	*1	100 MΩ min. (at 500 VDC)					
Contact resistance		100 m $\Omega$ max. (initial value)					
Between terminals of same polarity *1		2,500 VAC, 50/60 Hz 1 minute	e (initial value)				
Dielectric strength	Between each terminal and ground	2,500 VAC, 50/60 Hz 1 minute (initial value)					
Vibration resistance	Malfunction	10 to 55 Hz, 1.5 mm double a	mplitude (contact separation wi	thin 1 ms)			
Shock resistance	Malfunction	250 m/s <sup>2</sup> max. (contact separa	ation within 1 ms)				
Durability	Mechanical	300,000 operations min. (One	operation consists of set and re	eset operations.)			
Durability	Electrical	300,000 operations min. (One operation consists of set and reset operations.)					
Ambient operating to	Ambient operating temperature *2		-20 to +55°C	-20 to +70°C			
Ambient operating h	umidity	35 to 85% RH					
Ambient storage tem	perature *2	-40 to +70°C					
Degree of protection	*3	IP65 (oil-resistant) *4	IP65	IP65 (oil-resistant) *4			
Electric shock protect	ction class	Class II					
PTI (tracking charact	eristic)	175					
Degree of contamination		3 (EN 60947-5-1)					
Minimum direct opening stroke		11 mm					
Minimum direct opening force		45 N					
Conditional short-circuit current		100 A (EN 60947-5-1)					
Wight (for a 40-dia. head 1NC/1NO Operation Unit)		Approx. 55g	Approx. 60g	Approx. 85 g			

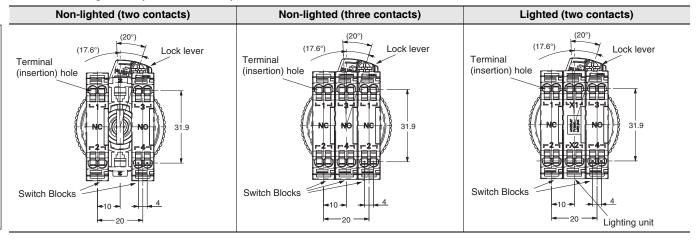
- \*1. State when an LED is not added between terminals of the same polarity on a lighting unit. Does not apply to lighted-type 100 to 200 V lighting units.
- \*2. With no icing or condensation.
- **\*3.** The degree of protection from the front of the panel.
- \*4. The degree of protection is IP65 even with an integrated control box, but the system is not oil resistant.

#### **Operating Characteristics**

Item	Turn-reset	Pull-reset
Total travel force (TTF)	45 N max.	60 N max.
Return force (RF)	0.25N·m * max.	60 N max.
Total travel (TT)	10 ±1 mm	5.5 ±1 mm

<sup>\*</sup> Rotation torque value.

#### **Terminal Arrangement (BOTTOM VIEW)**

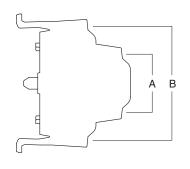


#### **Terminal connection**

Туре	Terminal Connection (BOTTOM VIEW)			
Туре	1NC, 1NO (two contacts)	2NC (two contacts)	2NC, 1NO (three contacts)	3NC (three contacts)
Non-lighted	NC NO  1 3	NC NC	NC NC NO  1 1 3  2 2 4	NC NC NC  1 1 1 1  2 2 2 2
Lighted	(+) X (3) (2) (2) (4)	(+) X Z Z (-)		

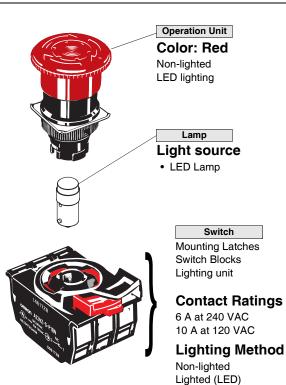
Note: The above terminal connection diagrams are examples for 1NO, 1NC (two contacts), or 2NC (two contacts).

#### Terminal wiring drawings of two-contact Switch Units



Туре	Terminal Connection (BOTTOM VIEW)			
Type	2NC (two contacts)	1NC, 1NO (two contacts)		
Α	(21)	(21)		
В	(11)	13 /		

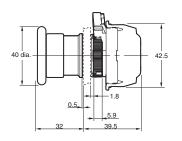
#### **Structure and Nomenclature**



**Non-lighted Models** 

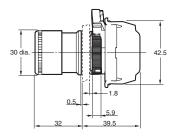
#### A22NE-MP-P□□2-N Pull-reset (40-dia.)





#### A22NE-S-P□□2-N Small Turn-reset (30-dia.)



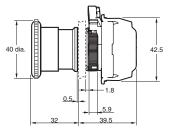


(Unit: mm)

A22NE-M-P□□2-N

Medium Turn-reset (40-dia.)



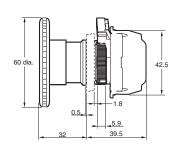


Note: The dimensions the same even if the Operation Unit is replaced with the A22NE-MR□-N or the A22NE-MR□-N-RD.

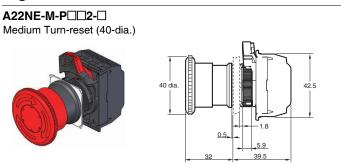
#### A22NE-L-P□□2-N

Large Turn-reset (60-dia.)



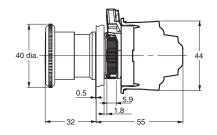


#### **Lighted Model**



Note: Unless otherwise specified, a tolerance of  $\pm 0.8$ mm applies to all dimensions.

#### Dimensions when a two-contact Switch Block is attached

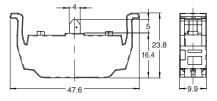


#### **Accessories (Order Separately)**

#### Switch Block with Push-In Plus technology

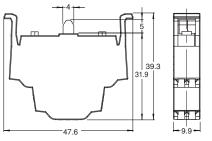
#### Switch Block (one contact) A22NZ-S-P1□N



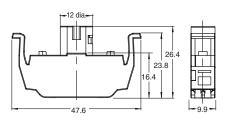


#### Switch Block (two contacts) A22NZ-S-P2□N

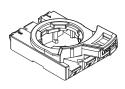


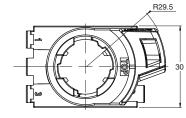


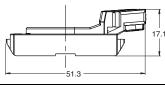
**Lighting unit** A22NZ-T-□PN



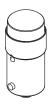
Mounting Latches A22NZ-H-02

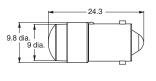






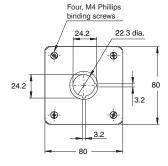
LED Lamp A22NZ-L-□□

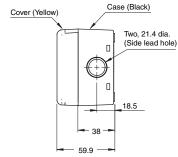


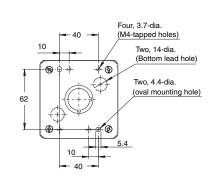


#### Control Box A22NZ-A-B01Y









Note: For details on the accessories common to the screw terminal block types and push-in plus terminal block types, refer to "Common Accessories and Tools (Order Separately)" on page 32.

#### **Application** Mounting to the Panel

#### (1) Preparing the Panel

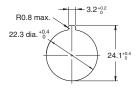
#### Panel hole dimension and panel thickness

• If outer surface treatment such as coating is performed for the panel, the panel dimensions after outer surface treatment must meet the specified panel

Panel hole dimension	Panel thickness
22.3 dia.	1 to 5 mm



#### When using a A22Z-3360 (Order Separately) Lock Ring



#### For 25-dia.

· Use the A22Z-R25 (Order Separately) rubber ring.



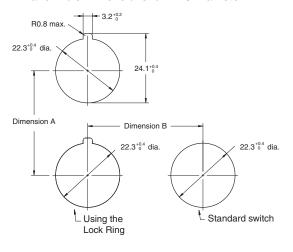
#### (2) Minimum mounting pitch (Dimension A, Dimension B)

#### Minimum mounting pitch

Type of operation unit	Dimension A (mm) min.	Dimension B (mm) min.
30-dia., 40-dia. models	50 <b>*</b> 1	50
60-dia. model	70	70

- \*1. If the Mounting Collar lock levers all face the same direction at the minimum mounting pitch, be sure to note the order the mounting collars are attached to the Operation Unit.
- **\*2.** When using each accessory (Order Separately), set the A and B dimensions in view of the dimensions of the accessories.
- \*3. Make sure the mounting pitch does not hinder the operation.

#### Panel Hole Dimensions for 22.3 Diameter

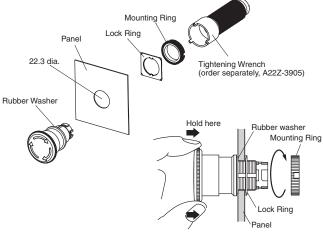


#### (3) Mounting the Operation Unit on the Panel

- Do not tighten the Mounting Nut more than necessary using tools such as pointed-nose pliers.
- Doing so will damage the Mounting Nut. (The tightening torque of the Mounting Nut is 1.0 to 2.0 N·m.) Tightening Wrench: A22Z-3905

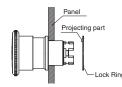
#### Panel Hole of 22.3-mm Diameter

• Insert the Operation Unit from the front of the panel, insert the Lock Ring and Mounting Nut from the back of the panel, and tighten the Mounting Nut. Before tightening, check that the rubber washer is present between the Operation Unit and the panel.



#### When the A22Z-3360 Lock Ring (Order Separately) is used

Take note of the direction when mounting the Lock Ring.



#### Panel Hole of 25.5-mm Diameter

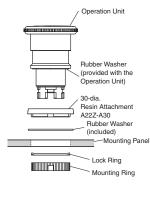
Insert the A22Z-R25 (Order Separately) between the Operation Unit and Panel, and tighten the clamping nut to mount. Before tightening, check that the rubber washer supplied with the Operation Unit is present between the Operation Unit and the 25-dia.

#### Rubber washer (provided with the Operation Unit) 25-dia. Ring A22Z-R25 22.3 dia. 0.5 25 dia. 1 22.3 dia. 1 22.3 dia. t Lock Ring

Mounting Ring

#### Panel Hole of 30-mm Diameter

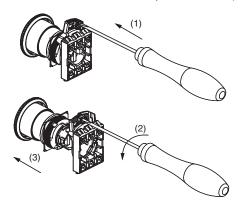
 Insert the A22Z-R30 (Order Separately) between the Operation Unit and Panel, and tighten the clamping nut to mount. Before tightening, check that the supplied rubber washer is present between the Operation Unit and the panel, and between the 30-dia. Resin Attachment and the panel. Recommended panel thickness: 1 to 3 mm



#### Removing the Mounting Latch

#### When the Mounting Latch is to be Removed

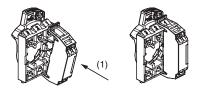
• Press the lock lever in from the back side to release the lock, and then hook the Mounting Collar with a screwdriver, move it in the direction indicated at (2), and remove it. Turn the lever all of the way until it clicks into place.



#### **Switch Blocks and Lighting Unit**

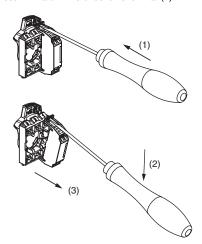
#### (1) Installing the Switch Blocks and Lighting Unit

• Catch the projection on the opposite side of the Mounting Collar from the lever side and press the Switch Block in the direction indicated at (1).



#### (2) Removing the Switch Blocks and Lighting Units

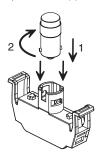
• Insert a screwdriver into the gap between the Mounting Collar and Switch Block and press it inward in the direction shown at (2).



#### Attaching the LED Lamp to the Lighting Unit

#### When the LED Lamp is to be Installed

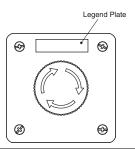
• Insert the protrusions on the LED Lamp into the guides on the Lighting Unit and then turn the LED Lamp in direction (2) to lock it in place.



#### **Control Box**

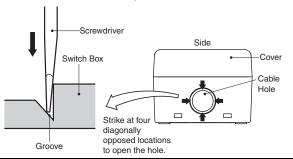
#### (1) Mounting the Switch

Mount the Switch in the same way as for a standard panel. The tightening torque of the Box screws is 1.4 to 2.0 N·m.



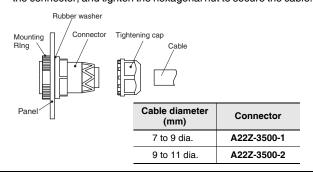
#### (2) Creating a Cable Hole

To open a cable hole, leave the cover attached, place the tip of a screwdriver in the grooves at four locations around the cable hole, and strike the screwdriver with a hammer to open the hole.



#### (3) Securing the Connector Cable

- 1. Insert the connector into the cable port hole 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.



#### **Safety Precautions**

Be sure to read the precautions for All PushButton Switches in the website at: http://www.ia.omron.com/.

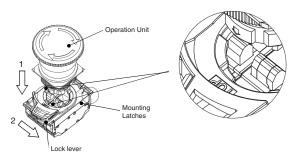
#### Indication and Meaning for Safe Use

Precautions for Safe Use	Comments on what to do or avoid doing, to use the product safely.	
Precautions for Correct Use	Supplementary comments on what to do or avoid doing to use the product safely and prevent its malfunctioning or an adverse effect on its performance or functions.	

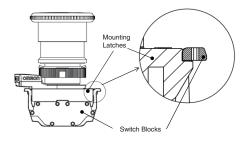
#### **Precautions for Safe Use**

 If the Operation Unit is separated from the Switch Units, the equipment will not stop, resulting in a hazardous situation.
 Make sure the Operation Unit, Mounting Latches, and the Switch Units are properly assembled.

<Assembling the Operation Unit and the Mounting Latches> Align the TOP indication (the mark) on the Operation Unit with the TOP indication on the Mounting Latches to fit it properly, and turn the lock lever on the Mounting Latch in the direction shown in the figure below until a clicking sound is heard.



<Assembling the Mounting Latches and Switch Blocks> Make sure the hooking part (convex part) on the Mounting Latches is perfectly latched into the hooking part (concave part) on the Switch Block



- When transition wiring is performed, make sure the switching current inside the Switch and the current based on the transition wiring is below the rated current of the Switch.
   If a current value higher than the rated current flows, it could result in emission of heat, or damage and deformation of the Switch, which could cause fire and locking of the contact, and thus a loss
- Do not perform wiring with power supplied to the Switch/Indicator.
   Do not touch the terminals or other charged parts while power is being supplied. Doing so may result in electric shock.
- Do not disassemble or modify the Switch/Indicator under any circumstances.
- Doing so may prevent the Switch/Indicator from functioning to its full capability. Do not drop the Switch/Indicator. Do not apply pressure that may deform or alter the Switch/Indicator.
- The durability of the Switch varies considerably depending on the switching conditions. Always test the Switch/Indicator under actual working conditions before application and use the Switch/Indicator only for the number of switching operations allowed.
- Do not allow the load voltage and current to exceed the rated value. This may damage or burn out the Switch/Indicator.

- Do not use the Switch/Indicator in locations where explosive or flammable gases or liquid may be present or scattered. The electric ark or the heat caused by switching contacts may cause a fire or explosion.
- Do not use the Switch/Indicator in locations where toxic gases, such as H<sub>2</sub>S, SO<sub>2</sub>, NH<sub>3</sub>, HNO<sub>3</sub>, and Cl<sub>2</sub>, may be present, or in locations subject to high temperature or humidity. Doing so may damage the Switch/Indicator due to contact failure or corrosion.
- Do not use the Switch/Indicator submersed in oil or water, or in locations continuously subject to splashes of oil or water. Doing so may result in oil or water entering and damaging the Switch/ Indicator
- Do not use or keep the Switch/Indicator under the following conditions:
  - Subject to severe temperature changes.
  - · Subject to high humidity or condensation.
  - Subject to severe vibration or shock.
  - Where direct rays of the sun strike.
  - Where sea breeze may be present.
- Make sure that a rubber washer is present between the Operation Unit and the panel. Otherwise, the specifications of the protective structure may not be satisfied.
- Do not apply excessive force to the Switch or wirings. Damage or deformation of the Switch Block could cause an improper contact or a loss of safety.
- Use an appropriate wiring and crimp terminals (hereinafter, called ferrule terminals).
- Exercise caution to avoid wiring errors when connecting the terminals.
- To prevent wiring materials from smoking or ignition, confirm wire ratings and use the wiring materials given in the following table.

Wire Type	Wire	Recommended	Wire coating peeling
	material	Wire	amount
Solid wire/ Stranded Wire	Copper	0.25 to 1.5 mm <sup>2</sup> AWG 24 to 16	Ferrules used: 10 to 12 mm (Varies depending on the recommended ferrule conductor length) Ferrules not used: 8 mm

Use wiring crimp terminals and ferrule terminals of the specified size

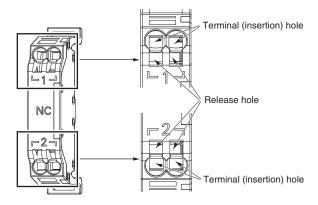
- After storing the product for a long time exceeding 1 year, perform, at a minimum, inspections of the operating characteristics, contact resistance, insulation resistance, and dielectric strength as well as evaluate the product under the working conditions.
- This Switch/Indicator is intended for indoor use only.
   Using the Switch/Indicator outdoors may result in failure.

- Do not wire anything to the release holes.
- Do not tilt or twist a flat-blade screwdriver while it is inserted into a release hole on the terminal block. The terminal block may be damaged.
- Insert a flat-blade screwdriver into the release holes at an angle.
   The terminal block may be damaged if you insert the screwdriver straight in.
- Do not allow the flat-blade screwdriver to fall out while it is inserted into a release hole.
- Do not bend a wire past its natural bending radius or pull on it with excessive force.
  - Doing so may cause the wire disconnection.
- Do not insert more than one wire into each terminal insertion hole.
- Do not mount A22N-P or A22NE-P Push-In Plus terminal switch blocks on A22N screw terminal blocks. Doing so may result in unsatisfactory performance.

#### **Precautions for Correct Use**

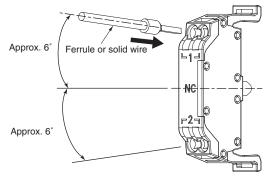
#### Wiring

# 1. Connecting Wires to the Push-In Plus Terminal Block Part Names of the Terminal Block



#### **Connecting Wires with Ferrules and Solid Wires**

- Insert the solid wire or ferrule straight into the terminal block until the end strikes the terminal block. The angle should be approximately 6°.
- If a wire is difficult to connect because it is too thin, use a flat-blade screwdriver in the same way as when connecting stranded wires.

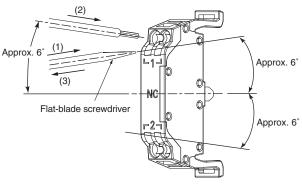


The wiring for the Lighting Unit and Switch Block (2 contacts) are the same as for the Switch Block (1 contact) shown in the above illustration.

#### **Connecting Stranded Wires**

Use the following procedure to connect the wires to the terminal block.

- Hold a flat-blade screwdriver at an angle and insert it into the release hole.
  - The angle should be approximately  $6^{\circ}$ . If the flat-blade screwdriver is inserted correctly, you will feel the spring in the release hole.
- With the flat-blade screwdriver still inserted into the release hole, insert the wire into the terminal hole until the end strikes the terminal block.
- 3. Remove the flat-blade screwdriver from the release hole.



The wiring and screwdriver angles for the Lighting Unit and Switch Block (2 contacts) are the same as for the Switch Block (1 contact) shown in the above illustration.

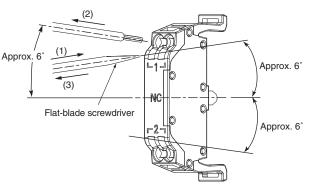
#### **Checking Connections**

- After the insertion, pull gently on the wire to make sure that it will not come off and it is securely fastened to the terminal block.
- If you use a ferrule with a conductor length of 10 mm, part of the conductor may be visible after the ferrule is inserted into the terminal block, but the product insulation distance will still be satisfied.

#### 2. Removing Wires from the Push-In Plus Terminal Block

Use the following procedure to remove wires from the terminal block. The same method is used to remove stranded wires, solid wires, and ferrules.

- Hold a flat-blade screwdriver at an angle and insert it into the release hole. The angle should be approximately 6°.
- With the flat-blade screwdriver still inserted into the release hole, remove the wire from the terminal insertion hole.
- 3. Remove the flat-blade screwdriver from the release hole.



The wiring and screwdriver angles for the Lighting Unit and Switch Block (2 contacts) are the same as for the Switch Block (1 contact) shown in the above illustration.

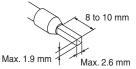
# 3. Recommended Ferrules and Crimp Tools Coating peeling amount

Recommend Wire Type	Stripping length (Ferrules not used)	
0.25 to 1.5 mm <sup>2</sup> /AWG 24 to AWG 16	8 mm	

#### **Recommended ferrules**

Appli wi		Ferrule conductor	Stripping length (mm)	Recommended ferrules		ules
(mm²)	(AWG)	length (mm)	(Ferrules not used)	Phoenix Contact product	Weidmuller product	Wago product
0.25	24	8	10	Al 0, 25-8	H0.25/12	216-301
0.23	24	10	12	Al 0, 25-10		
0.34	22	8	10	AI 0, 34-8	H0.34/12	216-302
0.54	22	10	12	AI 0, 34-10		
0.5	20	8	10	AI 0, 5-8	H0.5/14	216-201
0.5	20	10	12	AI 0, 5-10	H0.5/16	216-241
0.75	18	8	10	AI 0, 75-8	H0.75/14	216-202
0.75	10	10	12	AI 0, 75-10	H0.75/16	216-242
1/1.25	18/17	8	10	AI 1-8	H1.0/14	216-203
1/1.23	10/17	10	12	AI 1-10	H1.0/16	216-243
1.25/1.5	17/16	8	10	Al 1, 5-8	H1.5/14	216-204
1.23/1.3	17/16		12	Al 1, 5-10	H1.5/16	216-244
Recommended Crimp Tools			CRIMPFOX6 CRIMPFOX6T-F CRIMPFOX10S	PZ6 roto	Variocri mp4	

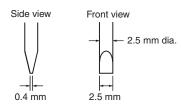
- Note: 1. Make sure that the outer diameter of the wire coating is smaller than the inner diameter of the insulation sleeve of the recommended ferrule.
  - 2. Make sure that the ferrule processing dimensions conform to the following figures.



#### **Recommended Flat-Blade Screwdrivers**

Use a flat-blade screwdriver to connect and remove wires. Use one of the following flat-blade screwdrivers.

The following table shows manufacturers and models as of 2015/Dec.



Model	Manufacture
ESD 0,40 × 2,5	Wera
SZS 0,4 × 2,5 SZF 0-0,4 × 2,5 *	Phoenix Contact
0.4 × 2.5 × 75 302	Wiha
AEF.2,5 × 75	Facom
210-719	Wago
SDI 0,4 × 2,5 × 75	Weidmuller

- ★ The SZF 0-0,4 x 2,5 (manufactured by Phoenix Contact) can be procured through an OMRON exclusive purchase form (XW4Z-00B).
- After wiring the Switch/Indicator, provide a sufficient insulation distance.

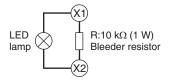
#### **LED Lamps**

- A current-limiting resistor is built in the LED lamp, so the installation of an external resistance is not required.
- Lighting malfunction of the LED lamp
   A micro-current of approximately 0.1 mA or less is sufficient to turn
   on the LED lamps. Take a countermeasure like adding a resistor to
   prevent mis-lighting in parallel to the LED lamp.

The micro-current varies with the machine (leak current or stray capacity between cables, etc.). Select resistance value and allowable power consumption that meet the actual current.

#### (Example of lighting malfunction prevention circuit)

When using a 24-VAC/VDC lighted unit



Be sure to read the "Safety Precautions" on page 37.

#### **Common Accessories and Tools (Order Separately)**

#### **Ordering Information**

#### Common to Screw Terminal Block types (A22E)/Push-in Plus Terminal Block types (A22NE-P)

Item	Appearance	Classification		Model	Remarks	
	SERGENC	60-dia. black letters on yellow back-ground		A22Z-3466-1	Used in combination with the washer rubber when the level of	
Legend Plates for Emergency Stop	STOP	90-dia. black lette back-ground	l-dia. black letters on yellow lick-ground		protection is to be met between panels.	
Emergency Clop	OFF	60-dia. black letters on yellow background		A22Z-3466-2	Cannot be used in combination with the Control Boxes. Used in combination with the washer rubber when the level of protection is to be met between panels.	
Hole Plug		Round		A22Z-3530	Used for covering the panel cutouts for future panel expansion. Black color.	
Connectors		Applicable cable	7 to 9 dia.	A22Z-3500-1	Plastic connector used to extend a cable from the Switch Box.	
		diameter	9 to 11 dia.	A22Z-3500-2	(Refer to page 27).	
25-dia. Ring	0			A22Z-R25	Use when mounting to a panel with a 25-dia. hole. (Refer to page 26).  Material: Rubber, Level of protection: IP65	
30-dia. Resin Attachment				A22Z-A30	Use when mounting to a panel with a 30-dia. hole. (Refer to page 26).  A rubber washer (A22Z-R) is provided with the product.	
Lock Ring	0			A22Z-3360	The body is equipped with a Lock Ring. This Lock Ring is used when a more secure lock feature is required. (Refer to page 26).	
Tightening Tool				A22Z-3905	Used for tightening the mounting ring from the back side of the panel, and for removing the cap in lighted models.	
E-stop Shroud for EMO, Yellow	EMERGING OF THE PROPERTY OF TH			A22Z-EG1	Provides SEMI-S2/SEMATECH APPLICATION GUIDE FOR SEMI-S2 compatibility. The SEMI-S2-compatible Shroud and legend plate for EMERGENCY OFF come as a set. Use with an A22E Emergency Stop Switch (for emergency shutoff) *1 *2	
E-stop Shroud for EMO, Yellow		Legend plate for EMERGENCY OFF is not included.		A22Z-EG10	Provides SEMI-S2/SEMATECH APPLICATION GUIDE FOR SEMI S2 compatibility. Use with an A22E with EMO indication. (for emergency off) *2	
E-stop Shroud for EMS, White	EMERGUE OF			A22Z-EG1-W	Provides SEMI-S2/SEMATECH APPLICATION GUIDE FOR SEMI-S2 compatibility. The SEMI-S2-compatible Shroud and legend plate for EMERGENCY STOP come as a set. Use with an A22E Emergency Stop Switch. (for emergency stop) *1*2	
E-stop Shroud for EMS, White		Legend plate for EMERGENCY STOP is not included.		A22Z-EG10-W	Provides SEMI-S2/SEMATECH APPLICATION GUIDE FOR SEMI S2 compatibility. Use with an A22E with EMS indication. (for emergency stop) *2	
		Spacer Unit is no	t included.	A22Z-EG2		
E-stop Shroud, Yellow		One Spacer Unit is included.		A22Z-EG21	SEMI-S2/SEMATECH APPLICATION GUIDE FOR SEMI S2-compatible Shroud. (for emergency shutoff) *1 *2	
· CHOW		Two Spacer Units	are included.	A22Z-EG22	Use together with an A22E Emergency Stop Switch.	
E-stop Shroud for EMO, Yellow	EMERGE OF S			A22Z-EG3	Provides SEMI-S2/SEMATECH APPLICATION GUIDE FOR SEMI-S2 compatibility. The SEMI-S2-compatible Shroud and legend plate for EMERGENCY OFF come as a set. Use with an A22E Emergency Stop Switch.(for emergency shutoff) \$1 \$2	
Rubber Packing		-		A22Z-R	Used together with accessories. Contains 10 packings.	

**<sup>\*1.</sup>** These Shrouds are for use with the equipment only that conforms to SEMI standards. Do not use them for any other applications (e.g. emergency stop switches for machines or devices such as Machine tools, Printing presses, Industrial machinery, etc).

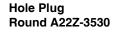
<sup>\*2.</sup> The Control Boxes cannot be used in combination with the A22Z-3476-1 Legend Plates for Emergency Stop or the A22Z-EG□ E-stop Shrouds.

Note: 1. Accessories for A22Z-EG1: one "EMERGENCY OFF" label, two rubber packings, and one lock ring

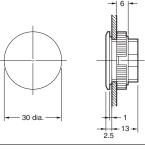
<sup>2.</sup> Accessories for A22Z-EG10: one rubber packing and one lock ring (without label)

#### **Dimensions** (Unit: mm)

#### Screw Terminal Block Type/Push-in Plus Terminal Block Type

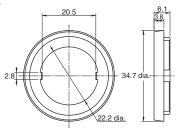






30-dia. Resin Attachment A22Z-A30





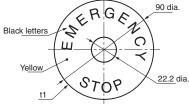
**Legend Plates for Emergency Stop** 

A22Z-3476-1 (90 dia.)

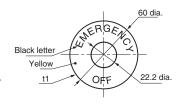


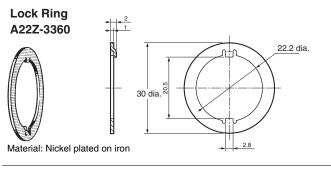
A22Z-3466-2 (60 dia.)







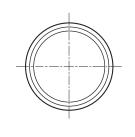




25-dia. Ring A22Z-R25



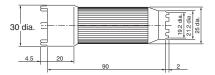




**Tightening Tool** 



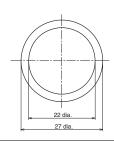




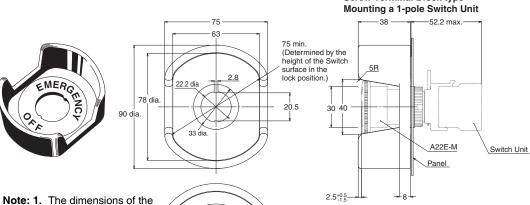
**Rubber Packing** A22Z-R







#### **Common E-stop Shrouds** A22Z-EG1, A22Z-EG1-W, A22Z-EG10, A22Z-EG10-W



Shroud conform to the specifications of the SEMATECH Application Guide for SEMI S2-93.

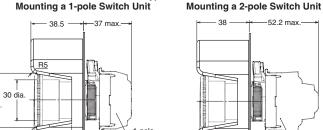
2. The Shroud is not provided with the Switch.



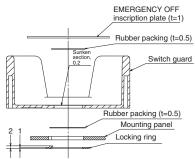
"EMERGENCY STOP" is indicated on A22Z-EG1-W. Legend plate is not provided with A22Z-EG10 and A22Z-EG10-W.

Push-in Plus Terminal Block type Mounting a 1-pole Switch Unit

**Screw Terminal Block type** 



Switch Mounting 2.3 +0.5 Switch Mounting Dimension 2.3  $^{+0.5}_{-1.5}$ 8.5

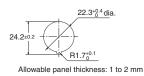


Push-in Plus Terminal Block type

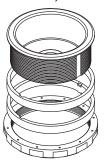
Switch Unit

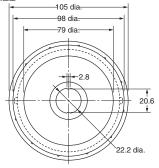
#### **Panel Cutout Dimensions**

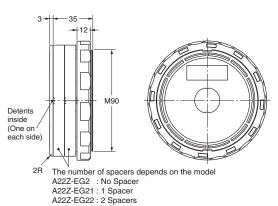
40 dia



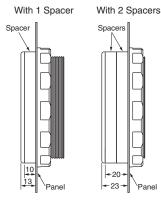
#### E-stop Shrouds A22Z-EG2, A22Z-EG21, A22Z-EG22

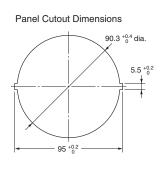






#### **During spacer attachment**





**Note: 1.** The dimensions of the Shroud conform to the specifications of the SEMATECH *Application Guide for SEMI S2-93.* 

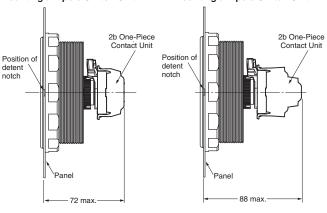
- 2. The Shroud is not provided with the Switch.
- 3. Tighten to a torque of 1.96 to 2.94 N·m.
- 4. The allowable panel thicknesses are as follows:

Without Spacers: t=1.3 to 22.5 mm
With 1 Spacer: t=1.3 to 12.5 mm
With 2 Spacers: t=1.3 to 2.5 mm

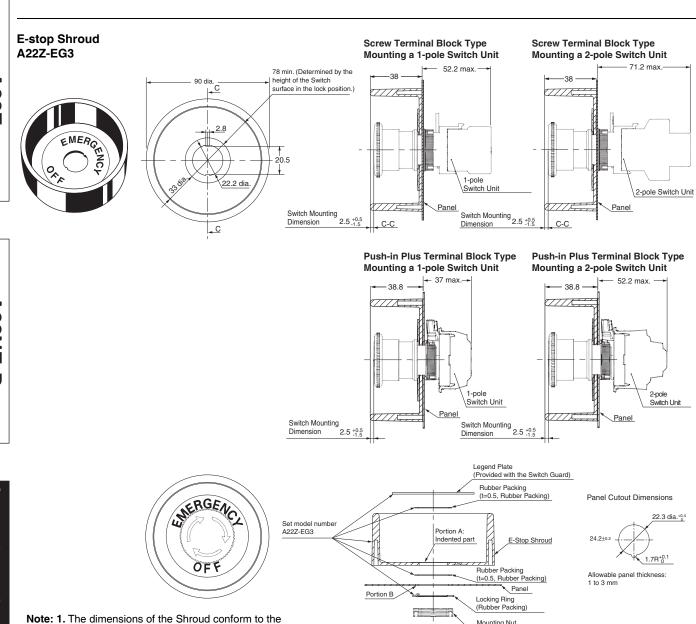
# Screw Terminal Block Type Mounting a 1-pole Switch Unit \* Position of detent notch Panel Screw Terminal Block Type Mounting a 2-pole Switch Unit \* Position of detent notch 105 max.

#### Push-in Plus Terminal Block Type Mounting a 1-pole Switch Unit \*





 $\boldsymbol{\ast}$  These are the dimension from the front of the panel when the Switch Unit is attached.



Mounting Nut (Provided with the Operation Unit)

SEMI S2-93.

specifications of the SEMATECH Application Guide for

#### **Safety Precautions**

Be sure to read the precautions for All PushButton Switches in the website at:http://www.ia.omron.com/.

#### **Indication and Meaning for Safe Use**

<b>Precautions</b>	Supplementary comments on what to do
for Safe Use	or avoid doing, to use the product safely.

#### **Precautions for Correct Use**

#### Mounting

- Always make sure that the power is turned OFF before wiring the Switch. Also, do not touch the terminals or other current-carrying ports while power is being supplied. Electric shock may occur.
- 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 1.96 N·m.
- Recommended panel thickness: 1 to 5 mm.
- When mounting the caps after changing the LED or the caps, tighten the caps at a tightening torque of 0.49 to 0.78 N·m.

#### **Operating Environment**

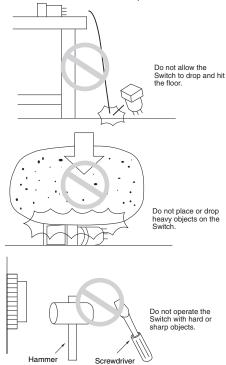
- The IP65 model is designed with a protective structure so that it will
  not sustain damage if it is subjected to water from any direction to
  the front of the panel.
- The Switch is intended for indoor use only. Using the Switch outdoor may cause it to fail.

#### Others

- If the panel is to be coated, make sure that the panel meets the specified dimensions after coating.
- Due to the structure of the Switch, severe shock or vibration may cause malfunctions or damage to the Switch.

Also, most Switches are made from resin and will be damaged if they come into contact with sharp objects. Particularly scratches on the Operation Unit may create visual and operational obtrusions.

Handle the Switches with care, and do not throw or drop them.



MEMO

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