

Emergency Stop Switch

For Panel Cutout of 16 mm

- Modular construction, easy installation
- Positive opening mechanism with a minimum contact separation of 3 mm in accordance with EN60947-5-1, ⊕ for NC contacts
- Conforms to EN418, EN60947-5-1
- High reliability, IP65
- Short mounting depth, less than 28.5 mm below panel
- Quick and easy assembly, snap-in Switch Unit



Ordering Information

CONSTRUCTION

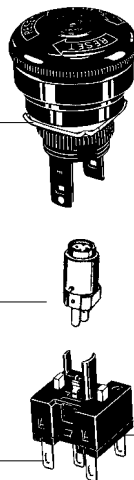
Protective Structure and Terminal Type

- Protective Structure
Oil-resistant IP65
- Terminal Type
Solder terminals
(tab terminals #110)

Lamp

- LED

Note: A165E Emergency Stop Switch must be ordered as a set. No LED is installed for the non-lighted model.



Illumination Colors

- LED Illumination Red
- Non-lighted Red

Illumination Method

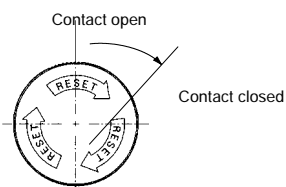
- LED

Switch Unit Specifications

- General-Purpose Loads
125 VAC: 5 A
250 VAC: 3 A
30 VDC: 3 A

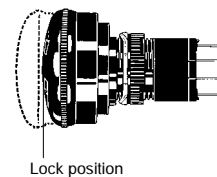
Safety Features to Prevent Misuse

Push-Lock, Turn-Reset System

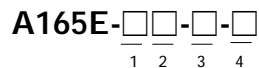


Safety Lock

Even if an object or person touches the pushbutton by mistake, the contact will not be released until after the pushbutton reaches the lock position.



■ MODEL NUMBER LEGEND







- | | |
|--|---|
| <p>1. Lighted/Non-lighted
None: Non-lighted
L: Lighted</p> <p>2. Head Size
S: 30 mm dia.
M: 40 mm dia.</p> | <p>3. Illumination (Operation Voltage/Rated Voltage)
None: Non-lighted
24D: LED (24 VDC)</p> <p>4. Contacts
01: SPST (NC)
02: DPST (NC)
03U: TPST (NC)
One body type, Non-lighted type only</p> |
|--|---|

■ EMERGENCY STOP SWITCHES

Description						Part number
Illumination	Rated voltage	Operating part color	Operating part size	Terminal	Contact	General-purpose load (125 VAC at 5 A, 250 VAC at 3 A, 30 VDC at 3 A)
LED	24 VDC	Red	30 dia.	Solder terminal	SPST-NC	A165E-LS-24D-01
None	—				DPST-NC	A165E-LS-24D-02
		SPST-NC	A165E-S-01			
		DPST-NC	A165E-S-02			
LED	24 VDC	40 dia.	TPST-NC		A165E-S-03U	
			SPST-NC		A165E-LM-24D-01	
			DPST-NC		A165E-LM-24D-02	
None	—		SPST-NC		A165E-M-01	
			DPST-NC		A165E-M-02	
			TPST-NC		A165E-M-03U	

■ ACCESSORIES

Item	Shape	Type	Comments	Part number
Yellow plate		Yellow, 45 dia.	Use this as an emergency stop nameplate.	A16Z-5070
Panel plug		Rectangular	Used for covering the panel cutouts for future panel expansion.	A16ZJ-3003
		Square		A16ZA-3003
		Round		A16ZT-3003
Tightening tool		—	Useful for repetitive mounting. Be careful not to tighten excessively.	A16Z-3004
Extractor		—	Convenient for extracting the Switch Unit and Lamps.	A16Z-5080

Specifications

■ APPROVED STANDARDS

Recognized Organization	Standards	File No.
UL, cUL (see note)	UL508	E41515
AZCO	EN60947-5-1	C9805501

Note: UL: UL508, cUL: CSA C22 No. 14

■ APPROVED STANDARDS RATINGS

UL, cUL

Rated voltage	Rated current	
	A165E series	A165E-U series
125 VAC	5 A (General use)	1 A (General use)
250 VAC	3 A (General use)	0.5 A (General use)
30 VDC	3 A (Resistive)	1 A (Resistive)

■ RATINGS

Switch Ratings

Rated voltage	Resistive load	
	A165E series	A165E□-U series
125 VAC	5 A	1 A
250 VAC	3 A	0.5 A
30 VDC	3 A	1 A

■ CHARACTERISTICS

Item		Emergency Stop Switch
Allowable operating frequency	Mechanical	20 operations/min max.
	Electrical	10 operations/min max.
Insulation resistance		100 MΩ min. (at 500 VDC)
Dielectric strength		1,000 VAC, 50/60 Hz for 1 min between terminals of same polarity 2,000 VAC, 50/60 Hz for 1 min between terminals of different polarity and also between each terminal and ground 1,000 VAC, 50/60 Hz for 1 min between lamp terminals (see note)
Vibration resistance	Malfunction	10 to 55 Hz, 1.5-mm double amplitude (malfunction within 1 ms)
Shock resistance	Mechanical	500 m/s ² (50G)
	Malfunction	300 m/s ² (30G) max. (malfunction within 1 ms), 150 m/s ² (15G) max. In case of A165E□U series
Life expectancy	Mechanical	100,000 operations min.
	Electrical	100,000 operations min.
Ambient temperature		Operating: -10°C to 55°C (with no icing or condensation) Storage: -25°C to 65°C (with no icing or condensation)
Ambient humidity		Operating: 35% to 85%
Electric shock protection class		Class II
PTI (tracking characteristic)		175
Degree of contamination		3
Weight		Approx. 16 g (in case of DPDT Switches)

Note: LED not mounted. Test them with the LED removed.

■ OPERATING CHARACTERISTICS

Features	Characteristics
Operating force (OF) max.	14.7 N
Releasing force (RF) min.	0.1 N • m
Pretravel (PT)	3.5±0.5 mm (3±0.5 mm In case of A165E□U series)

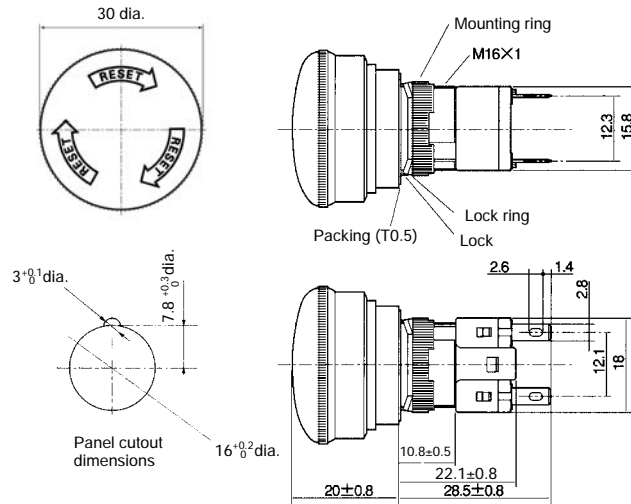
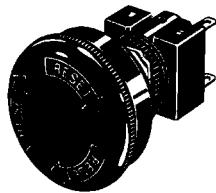
Dimensions

Unit: mm

SWITCHES

A165E

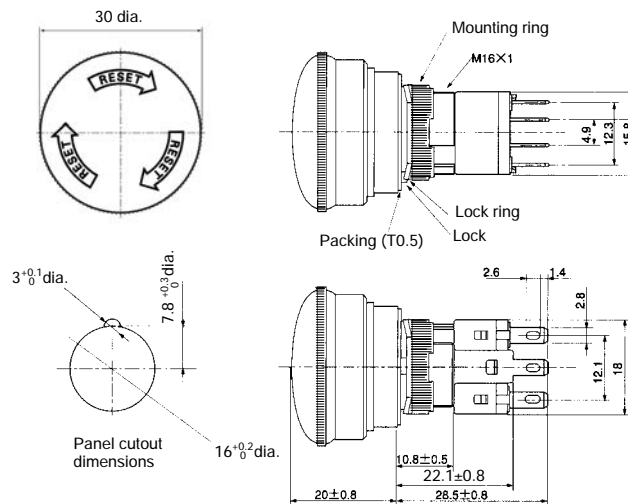
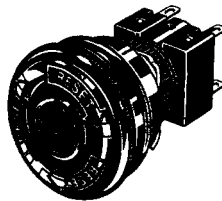
Non-lighted type
30 mm diameter



- Note:
1. When applying a coating such as paint to the panel, dimensions after the coating must satisfy the specified dimensions.
 2. Recommended panel thickness is 0.5 to 3.2 mm.

A165E

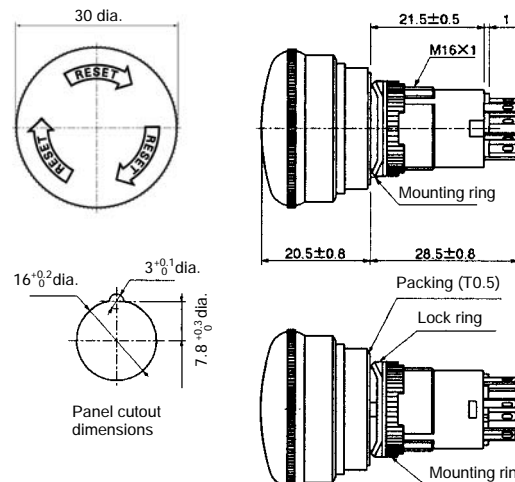
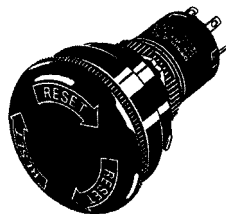
Lighted type
30 mm diameter



- Note:
1. When applying a coating such as paint to the panel, dimensions after the coating must satisfy the specified dimensions.
 2. Recommended panel thickness is 0.5 to 3.2 mm.

A165E□U

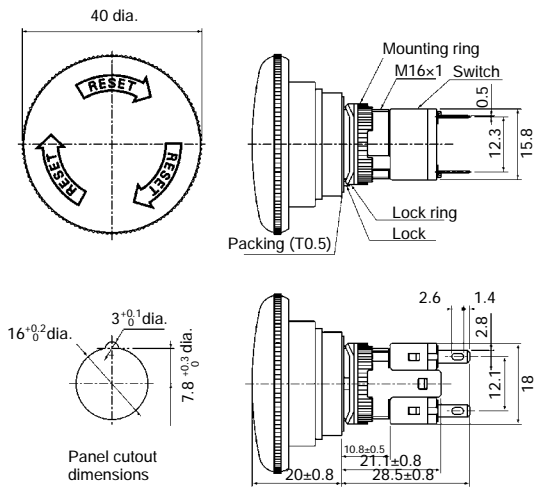
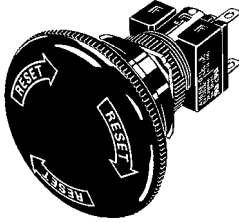
One body type
30 mm diameter



- Note:
1. When applying a coating such as paint to the panel, dimensions after the coating must satisfy the specified dimensions.
 2. Recommended panel thickness is 0.5 to 3.2 mm.

A165E

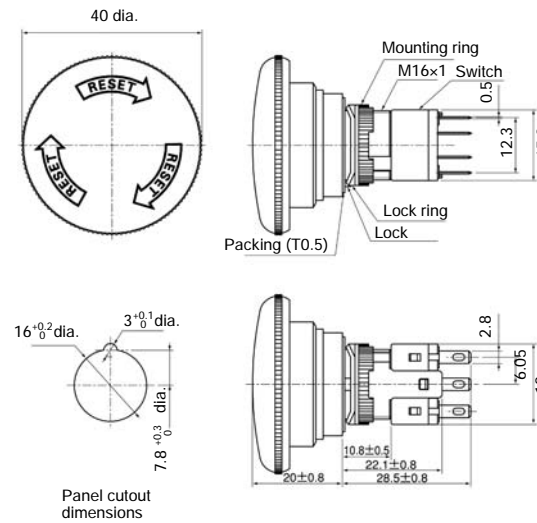
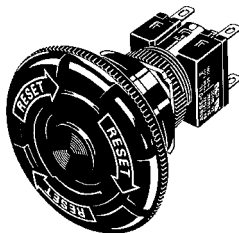
Non-lighted models
40 mm diameter



- Note:
1. When applying a coating such as paint to the panel, dimensions after the coating must satisfy the specified dimensions.
 2. Recommended panel thickness: 0.5 to 3.2 mm.

A165E

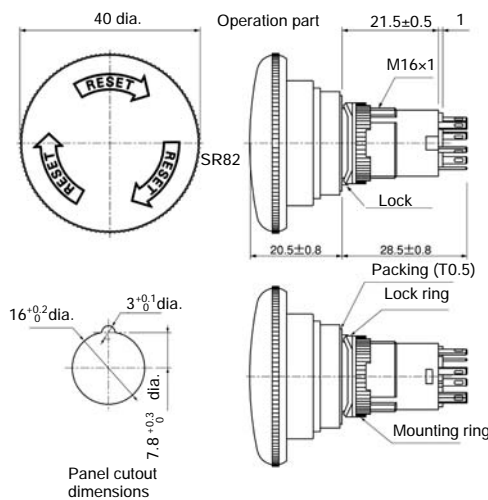
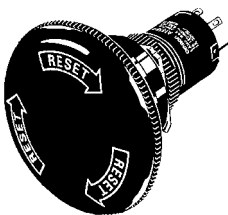
Lighted models
40 mm diameter



- Note:
1. When applying a coating such as paint to the panel, dimensions after the coating must satisfy the specified dimensions.
 2. Recommended panel thickness: 0.5 to 3.2 mm.

A165E□U

Non-lighted,
one-body models
40 mm diameter

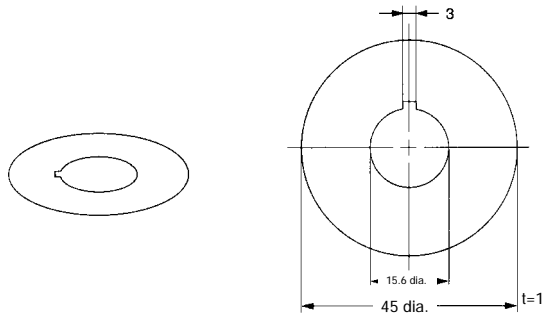


- Note:
1. When applying a coating such as paint to the panel, dimensions after the coating must satisfy the specified dimensions.
 2. Recommended panel thickness: 0.5 to 3.2 mm.

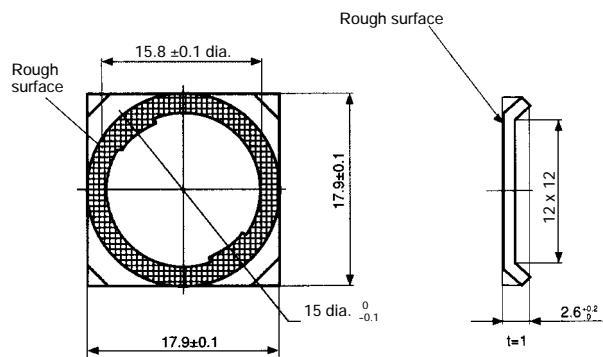
■ ACCESSORIES

Yellow Plate (Vinyl Chloride)

A16Z-5070



Lock Ring



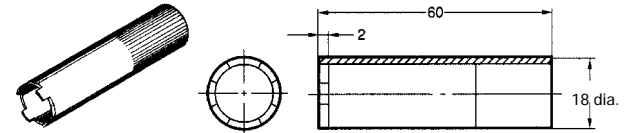
Panel Plugs

Select an appropriate Panel Plug according to the panel design and mount from the front side of the panel. Panel cutout dimensions are the same as those for the Switch.

Rectangular	Square	Round

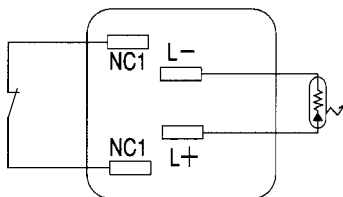
Screw Fitting

A16Z-3004

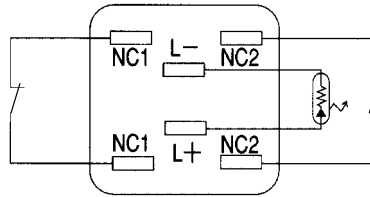


■ TERMINAL ARRANGEMENT

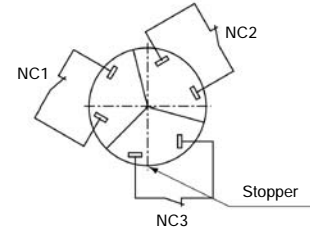
SPST Switches



DPST Switches



TPST Switches



Note: The L+ and L- terminals are not available with the non-lighted models.

Installation

■ MOUNTING THE PANEL

After installing the Switch, snap in the Socket Unit from the back of the panel.

1. Installing the Switch

Attach rubber packing or the Yellow Plate onto the Switch from its terminal side. Insert the Switch into the panel from the front. Install the lock ring and mounting nut from the terminal side and tighten.

Adjust the slits on the hole of rubber packing and Yellow Plate to the protruding part of the unit.

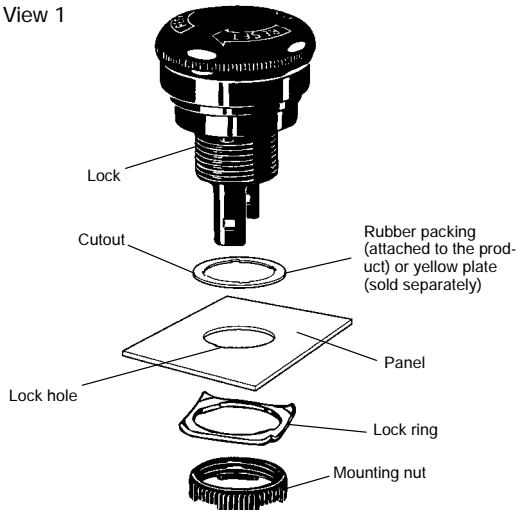
Note: Rubber packing is not necessary when the Yellow Plate is used.

Tighten the nut to the torque of 0.29 to 0.49 N • m.

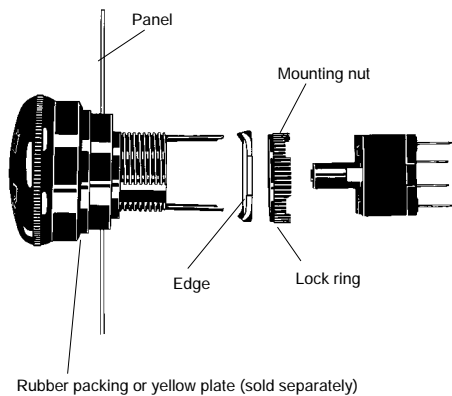
Case should be installed with its protruding part adjusted to the slit of the panel hole.

Align the lock ring to the groove of the case so that the edge is drawn to the panel side.

View 1



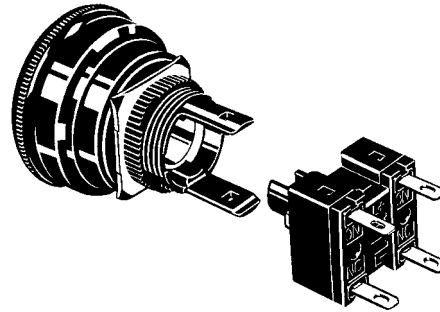
View 2



2. Mounting the Socket Unit

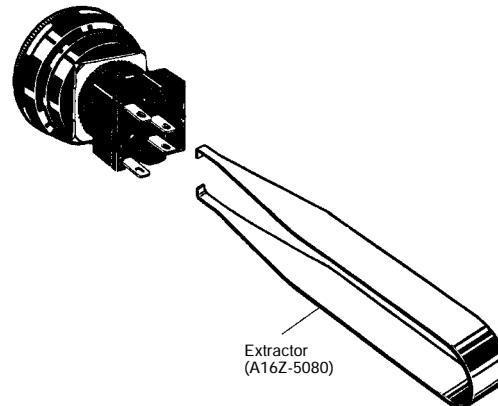
Snap on the Socket Unit to the Switch.

Make sure the Switch and the Socket Unit are in the proper orientation. Align the thin indentations on the case with the white pushbutton markings on the Socket Unit and press the parts together.



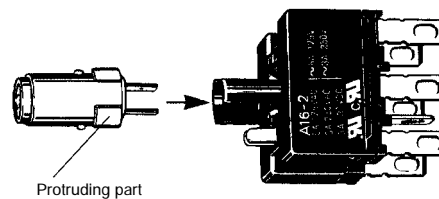
3 Removing the Switch

Grip the part between the Switch holder of the case and the Switch Unit using the A16Z-5080 Extractor, and pull to remove the Switch Unit.



4. Installing the LED Lamp

When mounting the Lamp, make sure it is facing the direction shown in the following diagram. Insert the Lamp while matching the protruding part of the Lamp and the small guides on the outer surface of the case.



Precautions

■ CORRECT USE

Mounting

Always make sure that the power is turned OFF before mounting, removing, or wiring the Switch, and before performing maintenance.

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 is 0.29 to 0.49 N • m.

Wiring

Solder terminals and quick-connect terminals (#110) are commonly used for terminals.

Be sure to use electrical wires that are a size appropriate for the applied voltage and carry current (conductor size is 0.5 to 0.75 mm²). Perform soldering according to the conditions provided below. If the soldering is not properly performed, the lead wires will become detached, resulting in short-circuits.

- Hand soldering: 30 W, within 5 s
- Dip soldering: 240°C, within 3 s

Wait for one minute after soldering before exerting any external force on the solder.

Use non-corrosive resin fluid as the flux.

Make sure that the electric cord is wired so that it does not touch the Unit. If the electric cord will touch the Unit, then electric wires with a heat resistance of 100°C min. must be used.

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

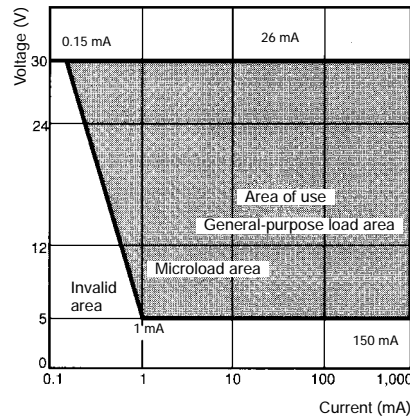
Using the Microload

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 A165E-□U allows both a general-purpose load (125 V at 5A, 250 V at 3 A) and a microload. If a general-purpose load is applied, however, the microload area cannot be used. If the microload area is used with a general-purpose load, the contact surface will become rough, and the opening and closing of the contact for a microload may become unreliable.

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, $\lambda .60 = 0.5 \times 10^{-4}/\text{time}$ indicates that the estimated malfunction rate is less than 1/2,000,000 with a reliability level of 60%.



LEDs

The LED current-limiting resistor is built-in, so internal resistance is not required.

Rated voltage	Internal limiting resistor
24 VDC	1600 Ω

Operating Environment

The IP65 model is designed with a protective structure so that it will not sustain damage if water comes in contact with the front of the panel.

The oil-resistant IP65 model uses NBR rubber and is resistant to general cutting oil and cooling oil. Since some particular oils cannot be used with the oil-resistant IP65 model, contact your OMRON representative for details.

If the panel is to be finished with coating, etc., make sure that the panel meets the specified dimensions after the coating.

ALL DIMENSIONS SHOWN ARE IN MILLIMETERS. To convert millimeters into inches, divide by 25.4



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