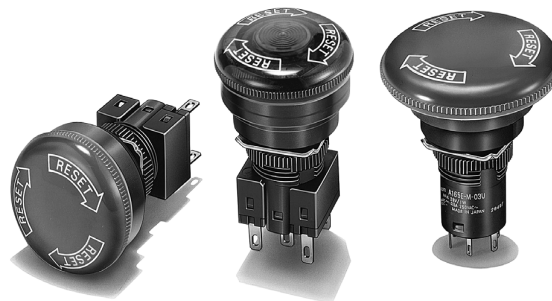


Emergency Stop Switch A165E

Separate Construction with Smallest Class of Depth in the World

- Direct opening mechanism to open contacts in emergencies, such as when they are fused.
- Conforms to EN418.
- Includes a safety lock to prevent misuse.
- Features separate construction that allows the Switch to be separated for easier wiring and one-piece-like construction that allows easier handling.
- Models available with 3 contacts built into a single block (A165E-U).



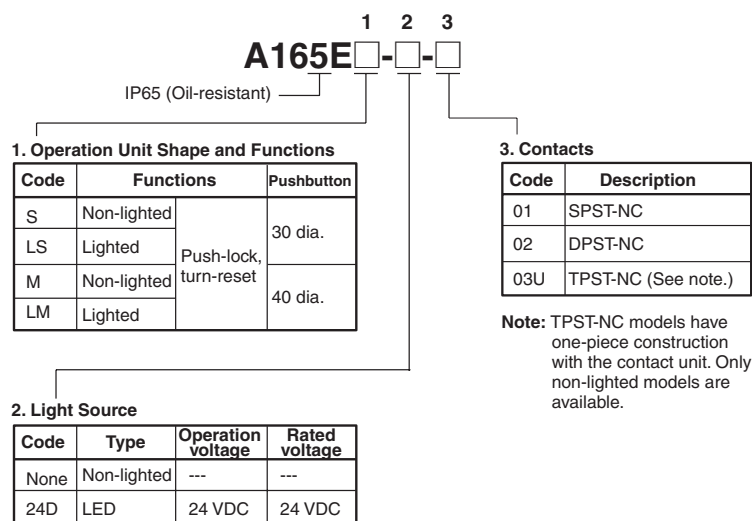
Note: Be sure to read the precautions for all pushbutton switches in the *Pushbutton Switches Group Catalog* (Cat. No. X018), as well as the "Safety Precautions" on page D-11.

Model Number Structure

Model Number Legend

Completely Assembled

Shipped as a set that includes the Operation Unit and light source.



Note: Models with separate construction (SPST-NC and DPST-NC) are for normal loads only. One-piece models (TPST-NC) are for either normal loads or microloads.

Emergency Stop Switches

A165E

Ordering Information



List of Models

Illumination	Rated voltage	Pushbutton color	Pushbutton size	Terminal	Contact	Model
LED	24 VDC	Red	30 dia.	Solder terminal	SPST-NC	A165E-LS-24D-01
Non-lighted	---				DPST-NC	A165E-LS-24D-02
					SPST-NC	A165E-S-01
LED	24 VDC				DPST-NC	A165E-S-02
			SPST-NC		A165E-LM-24D-01	
Non-lighted	---		DPST-NC		A165E-LM-24D-02	
			SPST-NC		A165E-M-01	
			DPST-NC		A165E-M-02	
		TPST-NC	A165E-M-03U			
			30 dia.			A165E-S-03U
			40 dia.			


Note: The above models have a surface indication of "RESET." Models with "STOP" indication are also available. For further information, contact your OMRON representative.

Individual Parts (for Switches with Separate Construction)


Operation Units

Appearance	Illumination	Model
30 dia. 	Non-lighted	A165E-S
	Lighted	A165E-LS
40 dia. 	Non-lighted	A165E-M
	Lighted	A165E-LM


Sockets

Appearance	Illumination	Contact form	Model
	Non-lighted	SPST-NC	A165E-01
		DPST-NC	A165E-02
	Lighted	SPST-NC	A165E-01L
		DPST-NC	A165E-02L

Socket Units





Appearance	Illumination	Contact form	Model
	Lighted	SPST-NC	A165E-R-24D-01
		DPST-NC	A165E-R-24D-02

Lamps

LED color	Rated voltage 	Standard			Bright		
		5 VDC	12 VDC	24 VDC	5 VDC	12 VDC	24 VDC
Red		A16-5DR	A16-12DR	A16-24DR	A16-5DSR	A16-12DSR	A16-24DSR

Emergency Stop Switches
A165E


■ Accessories (Order Separately)

Item	Appearance	Type	Model	Precautions
Yellow Plate		Yellow, 45 dia.	A16Z-5070	Use this as an emergency stop nameplate.
Panel Plug		Rectangular	A16ZJ-3003	Used for covering the panel cutouts for future panel expansion.
		Square	A16ZA-3003	
		Round	A16ZT-3003	Degree of protection: IP40 Color: Black
Tightening Tool		---	A16Z-3004	Useful for repetitive mounting. Be careful not to tighten excessively.
Extractor			A16Z-5080	Convenient for extracting the Switch and Lamp.

Specifications

■ Approved Standards

Recognizing Organization	Standards	File No.
UL, cUL (See note.)	UL508, CSA C22.2 No.14	E41515
TÜV Product Service	EN60947-5-1	Inquire
CQC (CCC)	GB14048.5	2003010303070678

Note: Approval for CSA C22.2 No. 14 is indicated by the  mark.

■ Approved Standard Ratings

**UL508, CSA C22.2 No.14,
CCC(GB14048.5)**

Models with Separate Construction

Rated voltage	Resistive load
125 VAC	5 A
250 VAC	3 A
30 VDC	3 A

Models with One-piece Construction

Rated voltage	Resistive load
125 VAC	1 A
250 VAC	0.5 A
30 VDC	1 A

TÜV(EN60947-5-1)

Models with Separate Construction

Rated voltage	Resistive load
250 VAC	3 A
30 VDC	3 A

Models with One-piece Construction

Rated voltage	Resistive load
250 VAC	0.5 A
30 VDC	1 A

Emergency Stop Switches

A165E

■ Ratings

Switch Ratings

Rated voltage	Resistive load	
	Models with Separate Construction	Models with One-piece Construction
	A165E series	A165E□-U series
125 VAC	5 A	1 A
250 VAC	3 A	0.5 A
30 VDC	3 A	1 A
Minimum applicable load	150 mA at 5 VDC	1 mA at 5 VDC

LED Ratings

(only for Models with LEDs)

Rated voltage	Rated current	Operation voltage
24 VDC	10 mA	24 VDC±5%

■ Characteristics

Item	Emergency Stop Switch		
	Non-lighted A165E-S/A-165E-M	Lighted A165E-LS/A165-LM	Non-lighted, One-piece construction A165E-U
Allowable operating frequency	Mechanical	20 operations/minute max.	
	Electrical	10 operations/minute 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		
Vibration resistance	1,000 VAC, 50/60 Hz for 1 min between lamp terminals (See note.)		---
	Malfunction	10 to 55 Hz, 1.5-mm double amplitude (malfunction within 1 ms)	
Shock resistance	Destruction	500 m/s ²	
	Malfunction	300 m/s ² max. (malfunction within 1 ms)	150 m/s ² max. (malfunction within 1 ms)
Durability	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%		
Degree of protection	IP65 Oil-resistant	IP65	IP65 Oil-resistant
Electric shock protection class	Class II		
PTI (tracking characteristic)	175		
Degree of contamination	3 (EN60947-5-1)		
Weight	Approx. 16 g (in case of DPST-NC Switches)		

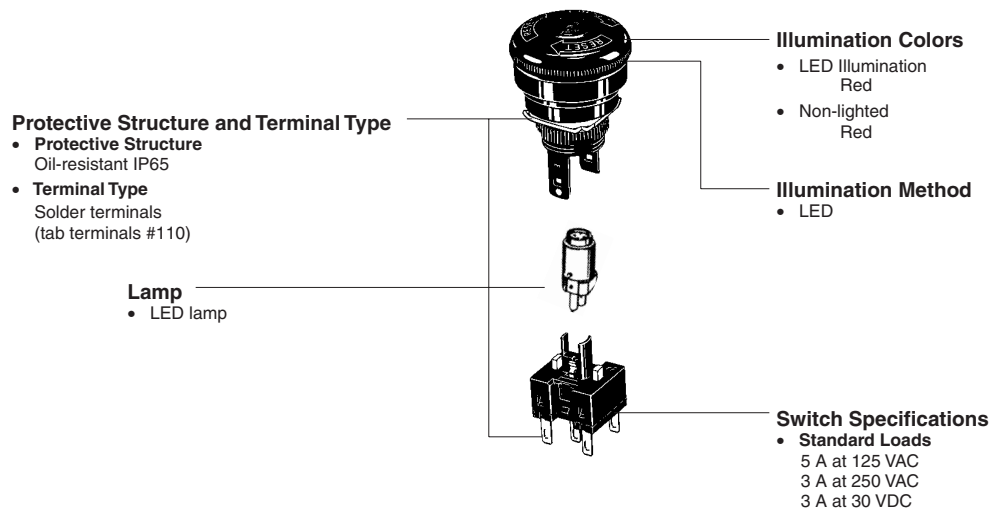
Note: LED not mounted. Test them with the LED removed.

■ 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)

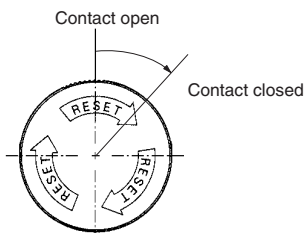
Emergency Stop Switches
A165E

Nomenclature (Models with Separate Construction)



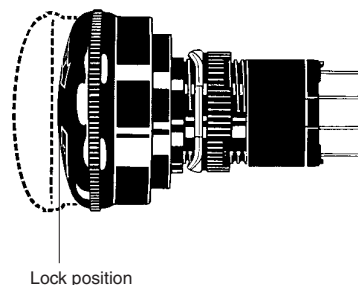
Note: A165E Emergency Stop Switch must be ordered as a set.
No LED is installed for the non-lighted models.

Push-lock, Turn-reset System Prevents Misuse



Safety Lock Prevents Misuse

Enables emergency stops only when the pushbutton is pressed intentionally and firmly. Even if an object or person touches the pushbutton by mistake, the contact will not be released unless the pushbutton reaches the lock position.



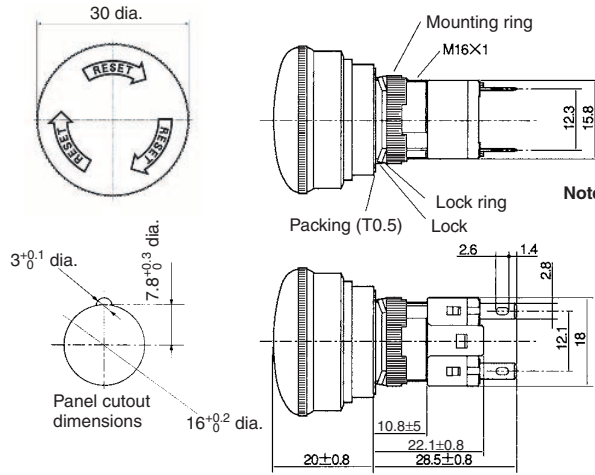
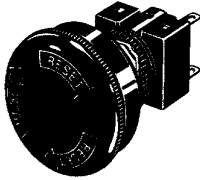
Emergency Stop
Switches

A165E

Dimensions

Note: All units are in millimeters unless otherwise indicated.

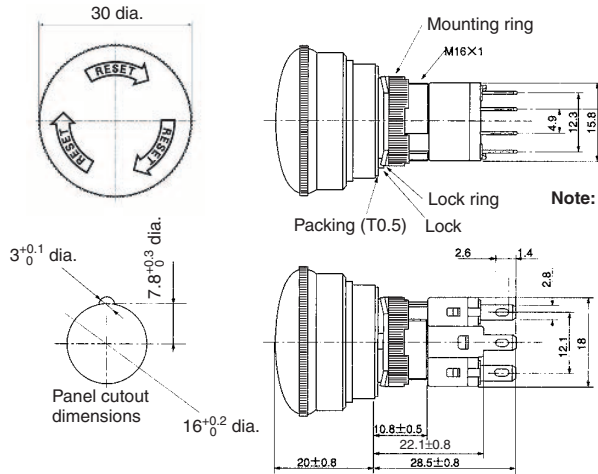
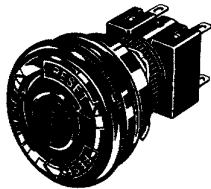
A165E-S
Non-lighted models
30 mm diameter



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: 0.5 to 3.2 mm.

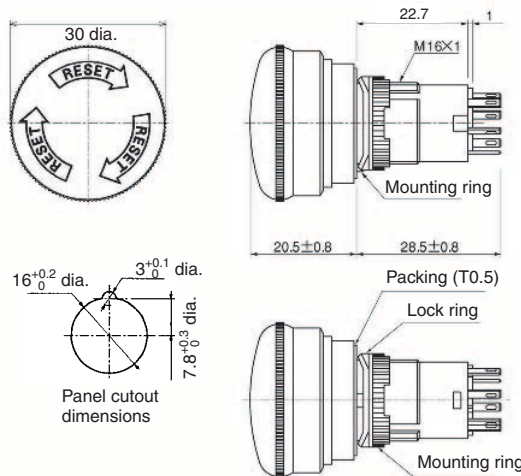
A165E-LS
Lighted models
30 mm diameter



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: 0.5 to 3.2 mm.

A165E-S-03U
Non-lighted,
one-body models
30 mm diameter



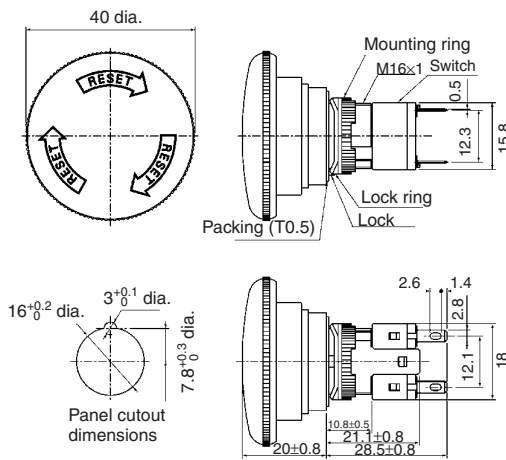
Note: 1. When applying a coating such as paint to the panel, dimensions after the coating must satisfy the specified dimensions.

2. Recommended panel thickness: 0.5 to 3.2 mm.

Emergency Stop Switches
A165E

A165E-M

Non-lighted models
40 mm diameter

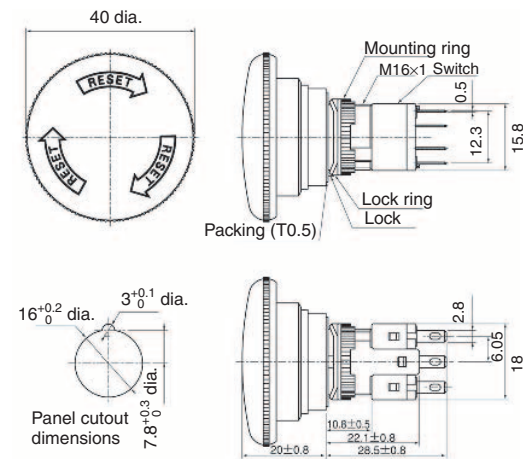


Note: 1. When applying a coating such as paint to the panel, dimensions after the coating must satisfy the specified dimensions.

2. Recommended panel thickness: 0.5 to 3.2 mm.

A165E-LM

Lighted models
40 mm diameter

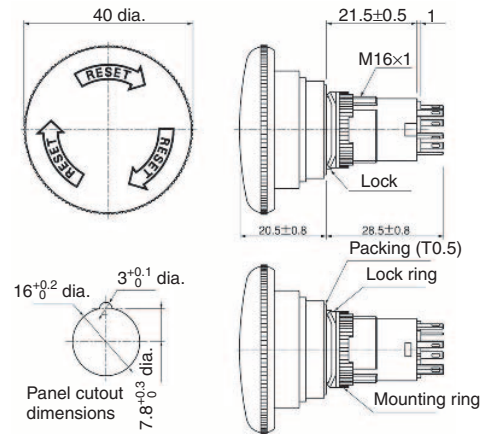
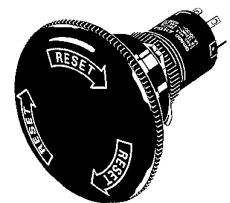


Note: 1. When applying a coating such as paint to the panel, dimensions after the coating must satisfy the specified dimensions.

2. Recommended panel thickness: 0.5 to 3.2 mm.

A165E-M-03U

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.

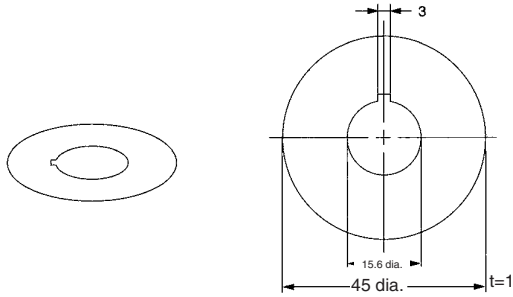
2. Recommended panel thickness: 0.5 to 3.2 mm.

Emergency Stop Switches
A165E

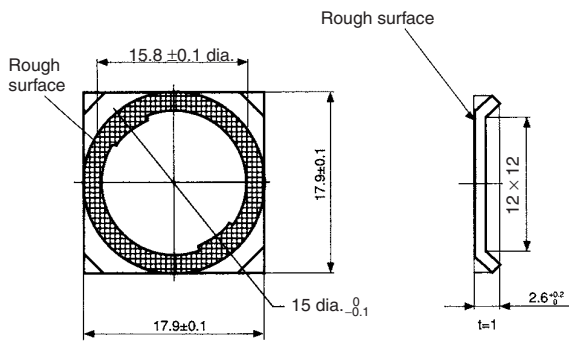
Accessories

Yellow Plate (Vinyl Chloride)

A16Z-5070

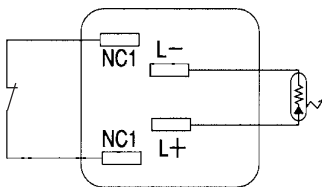


Lock Ring

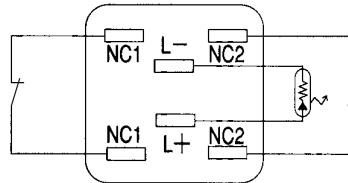


Terminal Arrangement

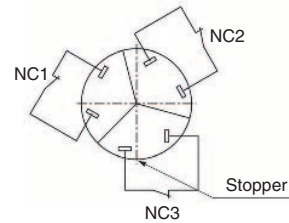
SPST Switches



DPST Switches



TPST Switches



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

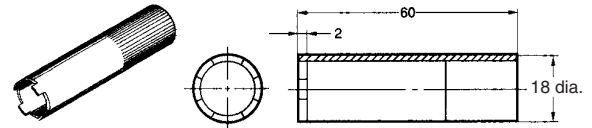
Panel Plugs

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



Emergency Stop Switches
A165E

Installation

■ Mounting to the Panel

After installing the Operation Unit, snap in the Switch 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.

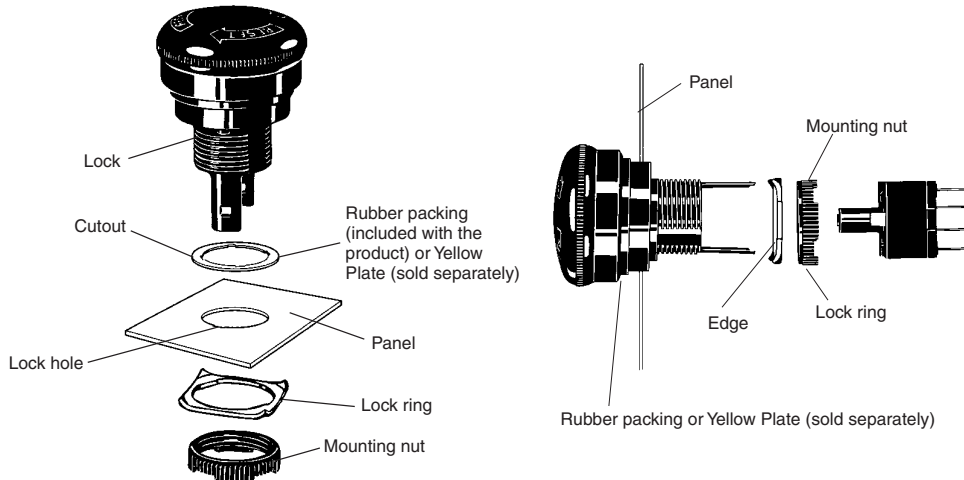
Adjust the slits on the hole of rubber packing and Yellow Plate to the protruding part of the Unit.

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.

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

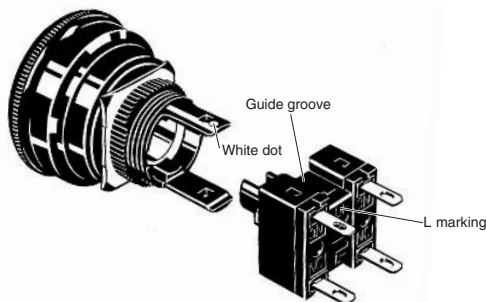
Align the lock ring to the groove of the casing so that the edge is drawn to the panel side.



2. Mounting the Switch

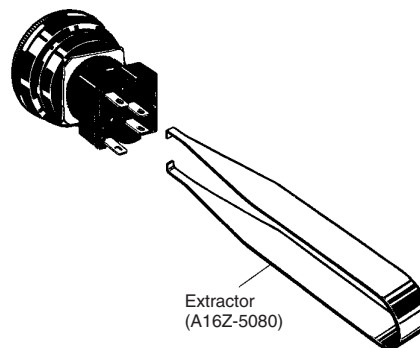
Snap on the Switch to the Operation Unit.

Make sure that the Switch has the correct orientation when snapping it onto the Operation Unit. Align the white dot on the Operation Unit with the guide groove on the side of the Switch marked with an "L" as shown below, and push the Switch into the Operation Unit until it clicks into place. Confirm that the Switch is securely in place before using.



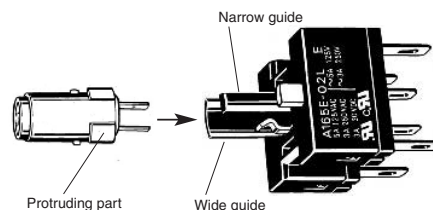
3. Removing the Switch

Insert the prongs of the A16Z-5080 Extractor between the Switch and the Operation Unit, grip the Switch, and pull to remove.



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 casing.



Emergency Stop Switches A165E

Safety Precautions

Be sure to read the precautions for all pushbutton switches in the *Pushbutton Switches Group Catalog* (Cat. No. X018).

■ Precautions for Correct Use

Mounting

Always make sure that the power is turned OFF before mounting, removing, or wiring the Switch, or performing maintenance. Electrical shock or fire may result if the power is not turned OFF.

The tightening torque is 0.29 to 0.49 N·m.

Wiring

Be sure to use electrical wires that are a size appropriate for the applied voltage and carry current. Perform soldering according to the conditions given below. If the soldering is not properly performed, abnormal heating may result, possibly resulting in fire.

1. Hand soldering: 30 W, within 5 s
2. 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.

Operating Environment

The IP65 model is designed with a degree of protection so that it will not sustain damage if it is subjected to water from any direction to the front of the panel.

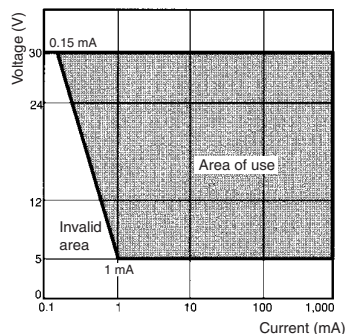
Using the Microload

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 standard load (125 V at 1 A, 250 V at 0.5 A) and a microload. If a standard load is applied, however, the microload area cannot be used. If the microload area is used with a standard 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% (λ 60) (conforming to JIS C5003).

The equation, λ 60 = 0.5×10^{-6} /time indicates that the estimated malfunction rate is less than 1/2,000,000 with a reliability level of 60%.



ALL DIMENSIONS SHOWN ARE IN MILLIMETERS.
To convert millimeters into inches, multiply by 0.03937. To convert grams into ounces, multiply by 0.03527.

Cat. No. A120-E1-04

In the interest of product improvement, specifications are subject to change without notice.

LEDs

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

Rated voltage	Internal limiting resistor
24 VDC	2000 Ω

Operating Torque

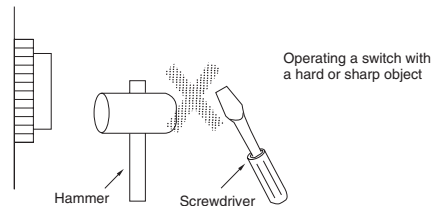
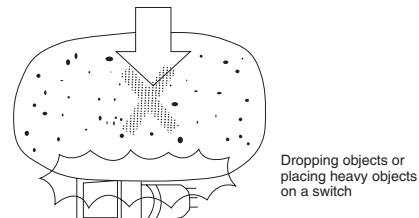
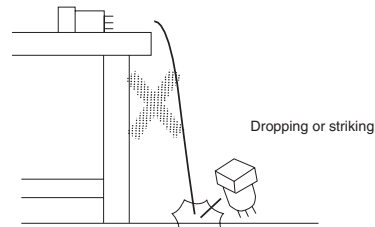
Do not exceed an operating torque of 0.49 N·m in the direction of rotation.

Others

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

When painting or coating the panel, make sure that the specified panel dimensions apply to the panel after painting or 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.



Emergency Stop Switches
A165E

Terms and Conditions of Sale

- Offer; Acceptance.** These terms and conditions (these "Terms") are deemed part of all quotes, agreements, purchase orders, acknowledgments, price lists, catalogs, manuals, brochures and other documents, whether electronic or in writing, relating to the sale of products or services (collectively, the "Products") by Omron Electronics LLC and its subsidiary companies ("Omron"). Omron objects to any terms or conditions proposed in Buyer's purchase order or other documents which are inconsistent with, or in addition to, these Terms.
- Prices; Payment Terms.** All prices stated are current, subject to change without notice by Omron. Omron reserves the right to increase or decrease prices on any unshipped portions of outstanding orders. Payments for Products are due net 30 days unless otherwise stated in the invoice.
- Discounts.** Cash discounts, if any, will apply only on the net amount of invoices sent to Buyer after deducting transportation charges, taxes and duties, and will be allowed only if (i) the invoice is paid according to Omron's payment terms and (ii) Buyer has no past due amounts.
- Interest.** Omron, at its option, may charge Buyer 1-1/2% interest per month or the maximum legal rate, whichever is less, on any balance not paid within the stated terms.
- Orders.** Omron will accept no order less than \$200 net billing.
- Governmental Approvals.** Buyer shall be responsible for, and shall bear all costs involved in, obtaining any government approvals required for the importation or sale of the Products.
- Taxes.** All taxes, duties and other governmental charges (other than general real property and income taxes), including any interest or penalties thereon, imposed directly or indirectly on Omron or required to be collected directly or indirectly by Omron for the manufacture, production, sale, delivery, importation, consumption or use of the Products sold hereunder (including customs duties and sales, excise, use, turnover and license taxes) shall be charged to and remitted by Buyer to Omron.
- Financial.** If the financial position of Buyer at any time becomes unsatisfactory to Omron, Omron reserves the right to stop shipments or require satisfactory security or payment in advance. If Buyer fails to make payment or otherwise comply with these Terms or any related agreement, Omron may (without liability and in addition to other remedies) cancel any unshipped portion of Products sold hereunder and stop any Products in transit until Buyer pays all amounts, including amounts payable hereunder, whether or not then due, which are owing to it by Buyer. Buyer shall in any event remain liable for all unpaid accounts.
- Cancellation; Etc.** Orders are not subject to rescheduling or cancellation unless Buyer indemnifies Omron against all related costs or expenses.
- Force Majeure.** Omron shall not be liable for any delay or failure in delivery resulting from causes beyond its control, including earthquakes, fires, floods, strikes or other labor disputes, shortage of labor or materials, accidents to machinery, acts of sabotage, riots, delay in or lack of transportation or the requirements of any government authority.
- Shipping; Delivery.** Unless otherwise expressly agreed in writing by Omron:
 - Shipments shall be by a carrier selected by Omron; Omron will not drop ship except in "break down" situations.
 - Such carrier shall act as the agent of Buyer and delivery to such carrier shall constitute delivery to Buyer;
 - All sales and shipments of Products shall be FOB shipping point (unless otherwise stated in writing by Omron), at which point title and risk of loss shall pass from Omron to Buyer; provided that Omron shall retain a security interest in the Products until the full purchase price is paid;
 - Delivery and shipping dates are estimates only; and
 - Omron will package Products as it deems proper for protection against normal handling and extra charges apply to special conditions.
- Claims.** Any claim by Buyer against Omron for shortage or damage to the Products occurring before delivery to the carrier must be presented in writing to Omron within 30 days of receipt of shipment and include the original transportation bill signed by the carrier noting that the carrier received the Products from Omron in the condition claimed.
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ALL DIMENSIONS SHOWN ARE IN MILLIMETERS.

To convert millimeters into inches, multiply by 0.03937. To convert grams into ounces, multiply by 0.03527.

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