

3-position Enabling Switch for Safer Robot Operation

- Clicking feel.
- Conforms to U.S. standards (ANSI/RIA R15.06-1999) for 3-position switches.
- Can be mounted in two directions.



 Be sure to read the "Safety Precautions" on page 5.

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

A4E-□□□□□□
 1 2 3 4 5 6

1. Total contact number

- B: Two contacts
- C: Four contacts

2. Enable outputs

- 2: Two contacts

3. Release monitor outputs

- 0: None
- 1: One contact

4. Grip monitor outputs

- 0: None
- 1: One contact

5. Mounting bracket

- S: No mounting bracket
- H: Horizontal mounting bracket
- V: Vertical mounting bracket

6. Cover

- S: No cover
- A: Rubber cover

Ordering Information

List of Models

Model	Specification
A4E-B200SS	Two contacts, no mounting bracket, no rubber seal
A4E-B200HS	Two contacts, horizontal mounting, no rubber seal
A4E-B200VS	Two contacts, vertical mounting, no rubber seal
A4E-B200VA	Two contacts, vertical mounting, with rubber seal
A4E-C211SS	Four contacts, no mounting bracket, no rubber seal
A4E-C211HS	Four contacts, horizontal mounting, no rubber seal
A4E-C211VS	Four contacts, vertical mounting, no rubber seal
A4E-C211VA	Four contacts, vertical mounting, with rubber seal

Specifications

Certified Standards

Certification body	Standard	File No.
UL *	UL508 CSA C22.2 No.14	E76675
TÜV SÜD	EN60947 5-1 (certified direct opening) EN60947-5-8	Consult your OMRON representative for details.
CQC (CCC)	GB14048.5	2003010305070634

* Certification for CSA C22.2 No. 14 by UL has been obtained.

Certified Standard Ratings

TÜV (EN60947-5-1)

Item	Utilization category	AC-15	DC-13
Rated operating current (Ie)		0.75 A	0.55 A
Rated operating voltage (Ue)		240 V	125 V

UL/CSA (UL508, CSA C22.2 No.14), CCC (GB 14048.5)

300 mA at 24 VDC (Inductive load)

1 A at 125 VAC (Resistive load)

Ratings

Rated insulation voltage	250 V
Rated ON current	2.5 A
Rated load	24 VDC, 300 mA (inductive load) 125 VAC, 1 A (resistive load)
Minimum applicable load	24 VDC, 4 mA
Impulse withstand voltage	4.0 kV between terminals of different polarity, 2.5 kV between terminals of same polarity
Ambient operating temperature	-10 to 55°C (with no icing)
Ambient operating humidity	35% to 85% (with no condensation)
Ambient storage temperature	-25 to 65°C

Characteristics

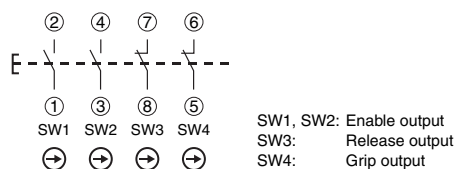
Insulation resistance	100 MΩ min. (at 500 VDC)
Contact resistance	100 mΩ max. (initial value)
Vibration resistance	10 to 55 Hz, 0.75-mm single amplitude min.
Shock resistance	150 m/s ²
Mechanical durability	OFF-ON: 1,000,000 operations min. OFF-ON-OFF (direct opening): 100,000 operations min.
Electrical durability	100,000 operations min.
Degree of protection	IP65 (rubber seal type only)

Structure

Contact form	4-Contact Type: 2NO (enable output) 1NC (release output) 1NC (grip output) Direct opening for all contacts *
	2-Contact Type: 2NO (enable output) Direct opening for all contacts *
Operating pattern	During operation: OFF-ON-OFF During reset: OFF-OFF momentary 3-position operation
Terminal shape	Solder terminals

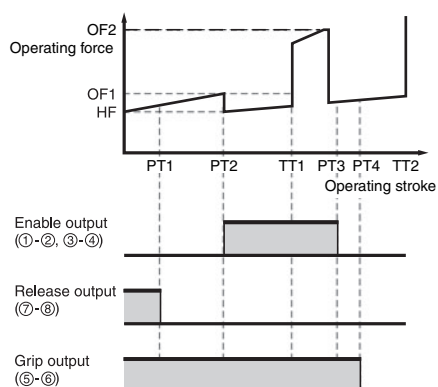
* Direct opening only during grip.

Contact form



Note: SW3 and SW4 are for 4-Contact Types only.

Operating Characteristics



Operating stroke

Symbol	Name	A4E-B200□S	A4E-B200VA	A4E-C211□S	A4E-C211VA
PT1	Release output (ON)	---	---	1 mm max.	1.2 mm max.
PT2	Enable output (ON)	3.2 mm max.	3.4 mm max.	3.2 mm max.	3.4 mm max.
TT1	Max. enable holding position	Approx. 4 mm	Approx. 4.2 mm	Approx. 4 mm	Approx. 4.2 mm
PT3	Enable direct opening position	5.4 mm max.	5.6 mm max.	5.4 mm max.	5.6 mm max.
PT4	Grip output (ON)	---	---	5.4 mm min.	5.6 mm min.
TT2	Max. stroke	Approx. 6.5 mm	Approx. 6.7 mm	Approx. 6.5 mm	Approx. 6.7 mm

Operating force (reference values)

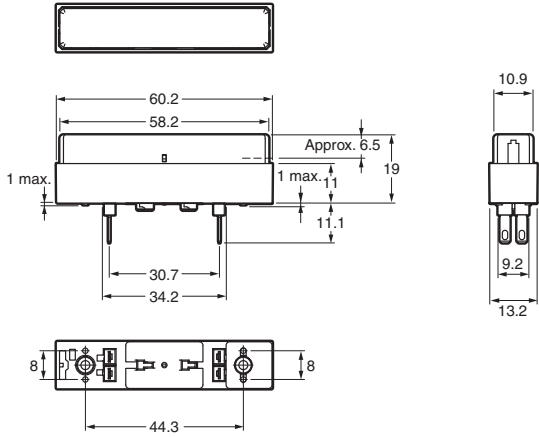
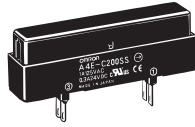
Symbol	Name	A4E-B200□S	A4E-B200VA	A4E-C211□S	A4E-C211VA
OF1	Enable operating force	7 N max.	14 N max.	7 N max.	14 N max.
HF *	Enable holding force	Approx. 5.5 N	Approx. 8 N	Approx. 5.5 N	Approx. 8 N
OF2	Grip operating force	35 N max.	40 N max.	35 N max.	40 N max.

* HF indicates "holding force".

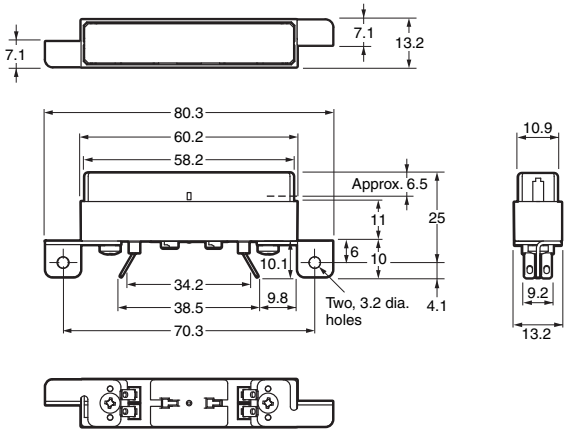
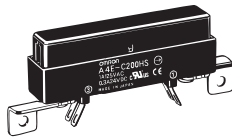
Dimensions

2-Contact Type

No mounting bracket
A4E-B200SS

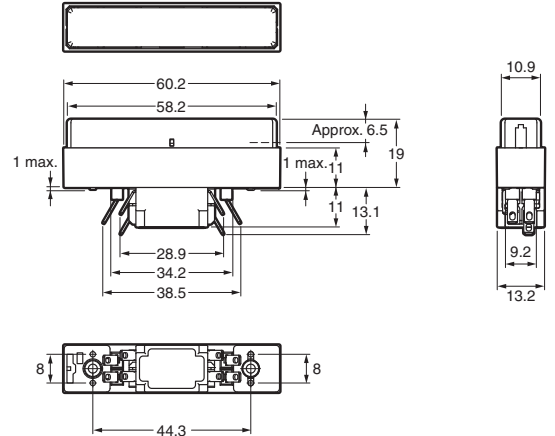
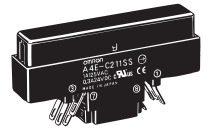


Horizontal mounting
A4E-B200HS

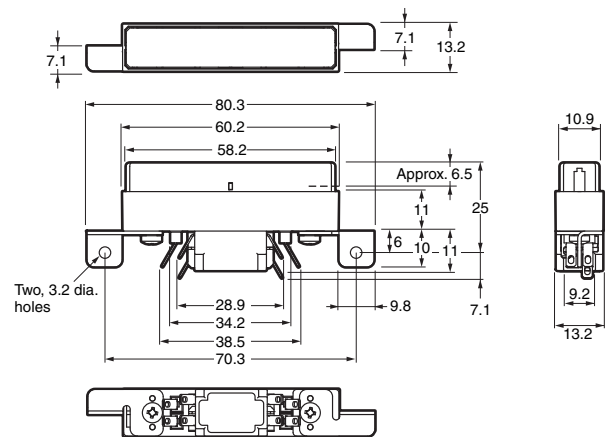
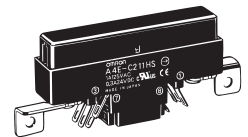


4-Contact Type

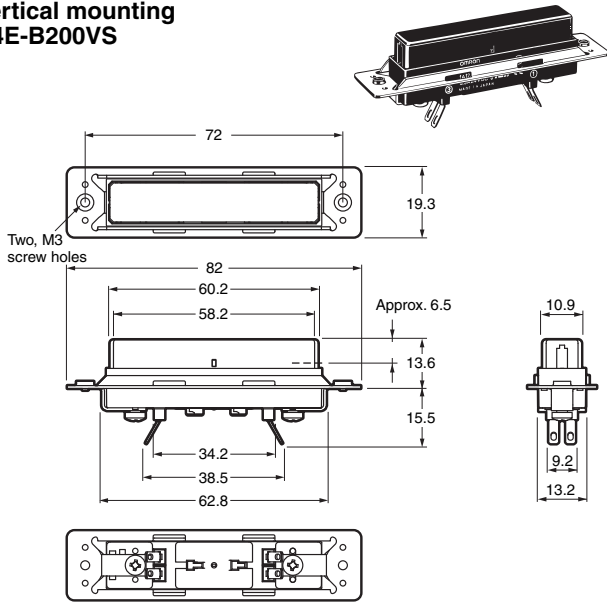
No mounting bracket
A4E-C211SS



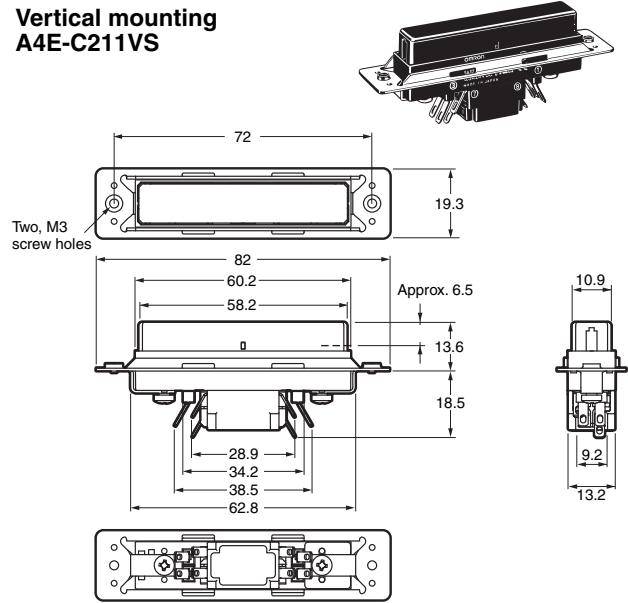
Horizontal mounting
A4E-C211HS



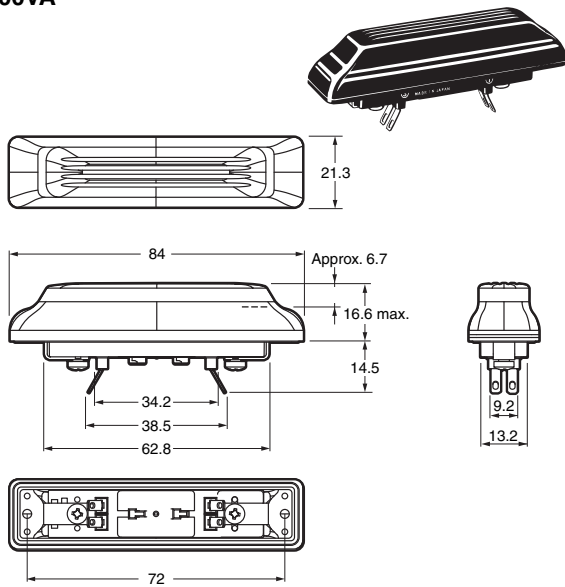
**Vertical mounting
A4E-B200VS**



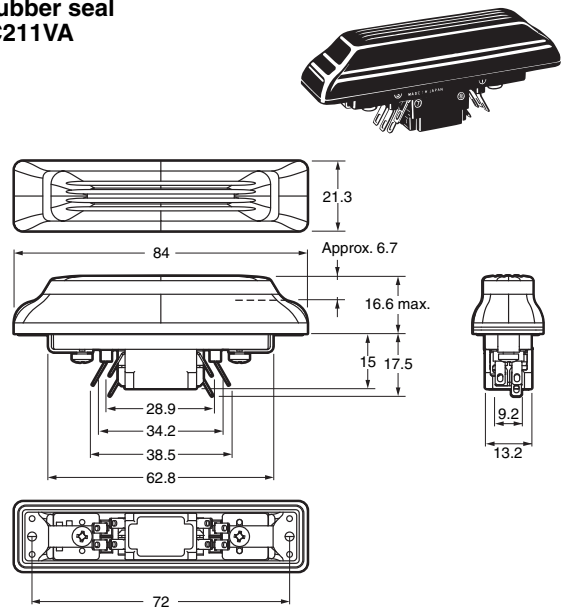
**Vertical mounting
A4E-C211VS**



**Vertical mounting
with rubber seal
A4E-B200VA**




**Vertical mounting
with rubber seal
A4E-C211VA**





Safety Precautions


Indication and Meaning for Safe Use


 WARNING	<p>Indicates a potentially hazardous situation which, if not avoided, will result in minor or moderate injury, or may result in serious injury or death. Additionally there may be significant property damage.</p>
Precautions for Safe Use	<p>Supplementary comments on what to do or avoid doing, to use the product safely.</p>


WARNING

Do not wire the Switch or touch any terminal of the Switch while power is being supplied. Doing so may result in electric shock. 

Always use the Switch in a system that is operated directly by hand. Do not operate the Switch with a mechanical actuator. Insufficient Switch strength may result in damage to the Switch, electric shock, or fire. 

Design a safe system for using the Switch, based on a risk assessment that takes into account all reasonably foreseeable malfunctions. 

Determine the Switch mounting direction and structural design only after thorough risk assessment. For example, in a structure where the Switch protrudes from the pendant perimeter, the weight of the pendant itself could place the Switch into the enable condition and operate the machine. Likewise, in a buried structure where the Switch lies below the surface of the pendant, the Switch may not enter the grip condition when pressed and thus fail to stop the machine. 

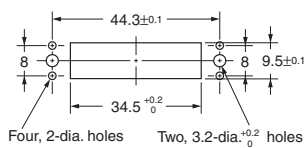
Configure the system so that the machine operates only when the Switch is in the enable position. 

Precautions for Correct Use

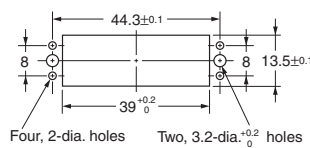
Mounting

Use M3 screws and flat washers or spring washers to mount the Switch securely. Use a tightening torque of 0.39 to 0.59 N·m.

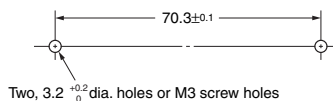
No-mounting-bracket type 2-Contact type



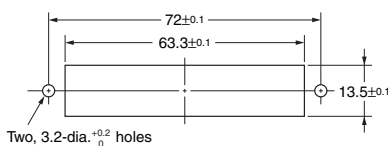
4-Contact type



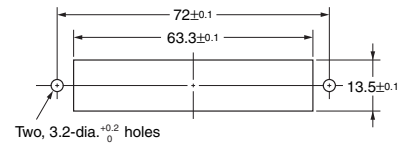
Horizontal mounting type (2-Contact type/4-Contact type)



Vertical mounting type (2-Contact type/4-Contact type)



Vertical mounting type with rubber seal (2-Contact type/4-Contact type)



Wiring

- Use an appropriate wire size (0.5 to 0.75 mm²) for the applied voltage and carry current.
- Do not use a #110 tab receptacle.
- Wire according to the terminal numbers. Mistaken wiring may damage the Switch and result in fire.
- Wire according to the terminal arrangement.
- Use good-quality 6:4 (tin:lead) solder.
- Use a resin flux cored solder.
- Do not use a liquid or chlorine type flux.
- Perform soldering within 3 s using a 30-W max. soldering iron (temperature at the tip of the soldering iron: 350°C max.). Insulate with an insulation tube.
- Do not move the terminal for at least one minute after soldering.
- Do not apply a force that would deform the terminal when wiring.

Operating Environment

Prior to using the Switch in places that are subject to contact with oil, water, or chemicals, check the effect of those substances on the Switch.

Some types of oil, water, and chemicals will degrade the sealing capability, which may result in contact failure, defective insulation, ground fault, or burning damage.

Improper Operating Environment

- Do not use the Switch in places that are subject to sudden temperature change.
- Do not use the Switch in places that are subject to high temperatures and condensation.
- Do not use the Switch in places that are subject to strong vibration.
- Do not use the Switch in places that are subject to direct contact with machine filings or dust.

Storage

- Do not store the Switch in places with hydrogen sulfide or other corrosive gas or sea breeze.
- Do not store the Switch in places where the level of dust is high enough to be visible.
- Do not store the Switch in direct sunlight.
- Do not impose excessive force on the Switch during storage. Otherwise, the Switch may deform.

Handling

- Do not drop the Switch. Otherwise, the Switch may malfunction.
- Do not apply strong vibration or shock to the Switch. Otherwise, the Switch may malfunction or be damaged. Do not contact the Switch with sharp objects. Otherwise, the Switch may be scratched. Scratches on the operating portion of the Switch may result in problems both in appearance and operation.

Read and Understand This Catalog

Please read and understand this catalog before purchasing the products. Please consult your OMRON representative if you have any questions or comments.

Warranty and Limitations of Liability

WARRANTY

OMRON's exclusive warranty is that the products are free from defects in materials and workmanship for a period of one year (or other period if specified) from date of sale by OMRON.

OMRON MAKES NO WARRANTY OR REPRESENTATION, EXPRESS OR IMPLIED, REGARDING NON-INFRINGEMENT, MERCHANTABILITY, OR FITNESS FOR PARTICULAR PURPOSE OF THE PRODUCTS. ANY BUYER OR USER ACKNOWLEDGES THAT THE BUYER OR USER ALONE HAS DETERMINED THAT THE PRODUCTS WILL SUITABLY MEET THE REQUIREMENTS OF THEIR INTENDED USE. OMRON DISCLAIMS ALL OTHER WARRANTIES, EXPRESS OR IMPLIED.

LIMITATIONS OF LIABILITY

OMRON SHALL NOT BE RESPONSIBLE FOR SPECIAL, INDIRECT, OR CONSEQUENTIAL DAMAGES, LOSS OF PROFITS OR COMMERCIAL LOSS IN ANY WAY CONNECTED WITH THE PRODUCTS, WHETHER SUCH CLAIM IS BASED ON CONTRACT, WARRANTY, NEGLIGENCE, OR STRICT LIABILITY.

In no event shall the responsibility of OMRON for any act exceed the individual price of the product on which liability is asserted.

IN NO EVENT SHALL OMRON BE RESPONSIBLE FOR WARRANTY, REPAIR, OR OTHER CLAIMS REGARDING THE PRODUCTS UNLESS OMRON'S ANALYSIS CONFIRMS THAT THE PRODUCTS WERE PROPERLY HANDLED, STORED, INSTALLED, AND MAINTAINED AND NOT SUBJECT TO CONTAMINATION, ABUSE, MISUSE, OR INAPPROPRIATE MODIFICATION OR REPAIR.

Application Considerations

SUITABILITY FOR USE

OMRON shall not be responsible for conformity with any standards, codes, or regulations that apply to the combination of products in the customer's application or use of the products.

At the customer's request, OMRON will provide applicable third party certification documents identifying ratings and limitations of use that apply to the products. This information by itself is not sufficient for a complete determination of the suitability of the products in combination with the end product, machine, system, or other application or use.

The following are some examples of applications for which particular attention must be given. This is not intended to be an exhaustive list of all possible uses of the products, nor is it intended to imply that the uses listed may be suitable for the products:

- Outdoor use, uses involving potential chemical contamination or electrical interference, or conditions or uses not described in this catalog.
- Nuclear energy control systems, combustion systems, railroad systems, aviation systems, medical equipment, amusement machines, vehicles, safety equipment, and installations subject to separate industry or government regulations.
- Systems, machines, and equipment that could present a risk to life or property.

Please know and observe all prohibitions of use applicable to the products.

NEVER USE THE PRODUCTS FOR AN APPLICATION INVOLVING SERIOUS RISK TO LIFE OR PROPERTY WITHOUT ENSURING THAT THE SYSTEM AS A WHOLE HAS BEEN DESIGNED TO ADDRESS THE RISKS, AND THAT THE OMRON PRODUCTS ARE PROPERLY RATED AND INSTALLED FOR THE INTENDED USE WITHIN THE OVERALL EQUIPMENT OR SYSTEM.

PROGRAMMABLE PRODUCTS

OMRON shall not be responsible for the user's programming of a programmable product, or any consequence thereof.

Disclaimers

CHANGE IN SPECIFICATIONS

Product specifications and accessories may be changed at any time based on improvements and other reasons.

It is our practice to change model numbers when published ratings or features are changed, or when significant construction changes are made. However, some specifications of the products may be changed without any notice. When in doubt, special model numbers may be assigned to fix or establish key specifications for your application on your request. Please consult with your OMRON representative at any time to confirm actual specifications of purchased products.

DIMENSIONS AND WEIGHTS

Dimensions and weights are nominal and are not to be used for manufacturing purposes, even when tolerances are shown.

PERFORMANCE DATA

Performance data given in this catalog is provided as a guide for the user in determining suitability and does not constitute a warranty. It may represent the result of OMRON's test conditions, and the users must correlate it to actual application requirements. Actual performance is subject to the OMRON Warranty and Limitations of Liability.

ERRORS AND OMISSIONS

The information in this document has been carefully checked and is believed to be accurate; however, no responsibility is assumed for clerical, typographical, or proofreading errors, or omissions.

2012.9

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

OMRON Corporation
Industrial Automation Company

<http://www.ia.omron.com/>

(c)Copyright OMRON Corporation 2012 All Right Reserved.