

# Safety-door Switch D4NS

## Multi-contact, Labor-saving, Environment-friendly, Next-generation Safety-door Switch

- Lineup includes three contact models with 2NC/1NO and 3NC contact forms and MBB models in addition to the previous contact forms 1NC/1NO, and 2NC.
- M12-connector models are available, saving on labor and simplifying replacement.
- Standardized gold-clad contacts provide high contact reliability.
- Applicable to both standard loads and microloads.
- Free of lead, cadmium, and hexavalent chrome, reducing the burden on the environment.

**Note:** Be sure to read the “Safety Precautions” on page A-12 and the “Precautions for All Safety Door Switches” on page A-2.



## Model Number Structure

### ■ Model Number Legend

#### Switch

D4NS-□□□  
1 2 3

##### 1. Conduit/Connector size

- 1: Pg13.5 (1-conduit)
- 2: G1/2 (1-conduit)
- 3: 1/2-14NPT (1-conduit)
- 4: M20 (1-conduit)
- 5: Pg13.5 (2-conduit)
- 6: G1/2 (2-conduit)
- 7: 1/2-14NPT compatible (2-conduit model with M20 conduit size includes an M20-to-1/2-14NPT conversion adapter)
- 8: M20 (2-conduit)
- 9: M12 connector (1-conduit)

##### 2. Built-in Switch

- A: 1NC/1NO (slow-action)
- B: 2NC (slow-action)
- C: 2NC/1NO (slow-action)
- D: 3NC (slow-action)
- E: 1NC/1NO (MBB contact)
- F: 2NC/1NO (MBB contact)

#### Operation Key

D4DS-K□  
1

##### 1. Operation Key Type

- 1: Horizontal mounting
- 2: Vertical mounting
- 3: Adjustable mounting (Horizontal)
- 5: Adjustable mounting (Horizontal/ Vertical)

**Note:** An order for the head part or the switch part alone cannot be accepted. The Operation Key is sold separately.

# Ordering Information

## ■ List of Models



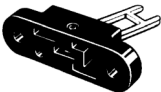
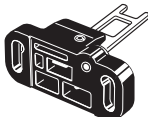
### Switches (Operation Keys are sold separately.)

| Type                      | Contact configuration   |   | Conduit opening/Connector                         | Model    |
|---------------------------|-------------------------|---|---|----------|
| 1-Conduit                 | Slow-action             | 1NC/1NO   | Pg13.5  | D4NS-1AF |
|                           |                         |   | G1/2  | D4NS-2AF |
|                           |                         |   | 1/2-14NPT   | D4NS-3AF |
|                           |                         |   | M20   | D4NS-4AF |
|                           |                         | 2NC   | Pg13.5  | D4NS-1BF |
|                           |                         |   | G1/2  | D4NS-2BF |
|                           |                         |   | 1/2-14NPT   | D4NS-3BF |
|                           |                         |   | M20   | D4NS-4BF |
|                           |                         | 2NC/1NO   | Pg13.5  | D4NS-1CF |
|                           |                         |   | G1/2  | D4NS-2CF |
|                           |                         |   | 1/2-14NPT   | D4NS-3CF |
|                           |                         |   | M20   | D4NS-4CF |
|                           |                         | 3NC   | Pg13.5  | D4NS-1DF |
|                           |                         |   | G1/2  | D4NS-2DF |
|                           |                         |   | 1/2-14NPT   | D4NS-3DF |
|                           |                         |   | M20   | D4NS-4DF |
|                           | Slow-action MBB contact | 1NC/1NO   | Pg13.5  | D4NS-1EF |
|                           |                         |   | G1/2  | D4NS-2EF |
|                           |                         |   | 1/2-14NPT   | D4NS-3EF |
|                           |                         |   | M20   | D4NS-4EF |
| 2NC/1NO                   |                         | Pg13.5  | D4NS-1FF  |          |
|                           |                         | G1/2  | D4NS-2FF  |          |
|                           |                         | 1/2-14NPT   | D4NS-3FF  |          |
|                           |                         | M20   | D4NS-4FF  |          |
| 2-Conduit                 | Slow-action             | 1NC/1NO   | Pg13.5  | D4NS-5AF |
|                           |                         |   | G1/2  | D4NS-6AF |
|                           |                         |   | M20, includes M20-to-1/2-14NPT conversion adapter | D4NS-7AF |
|                           |                         |   | M20   | D4NS-8AF |
|                           |                         | 2NC   | Pg13.5  | D4NS-5BF |
|                           |                         |   | G1/2  | D4NS-6BF |
|                           |                         |   | M20, includes M20-to-1/2-14NPT conversion adapter | D4NS-7BF |
|                           |                         |   | M20   | D4NS-8BF |
|                           |                         | 2NC/1NO   | Pg13.5  | D4NS-5CF |
|                           |                         |   | G1/2  | D4NS-6CF |
|                           |                         |   | M20, includes M20-to-1/2-14NPT conversion adapter | D4NS-7CF |
|                           |                         |   | M20   | D4NS-8CF |
|                           |                         | 3NC   | Pg13.5  | D4NS-5DF |
|                           |                         |   | G1/2  | D4NS-6DF |
|                           |                         |   | M20, includes M20-to-1/2-14NPT conversion adapter | D4NS-7DF |
|                           |                         |   | M20   | D4NS-8DF |
|                           | Slow-action MBB contact | 1NC/1NO   | Pg13.5  | D4NS-5EF |
|                           |                         |   | G1/2  | D4NS-6EF |
|                           |                         |   | M20, includes M20-to-1/2-14NPT conversion adapter | D4NS-7EF |
|                           |                         |   | M20   | D4NS-8EF |
| 2NC/1NO                   |                         | Pg13.5  | D4NS-5FF  |          |
|                           |                         | G1/2  | D4NS-6FF  |          |
|                           |                         | M20, includes M20-to-1/2-14NPT conversion adapter | D4NS-7FF  |          |
|                           |                         | M20   | D4NS-8FF  |          |
| 1-Conduit, with connector | Slow-action             | 1NC/1NO   | M12 connector                                     | D4NS-9AF |
|                           |                         | 2NC   |   | D4NS-9BF |
|                           | Slow-action MBB contact | 1NC/1NO   |   | D4NS-9EF |

**Note:** 1. The recommended models for equipment and machinery being exported to Europe are those with an M20 or Pg13.5 conduit sizes, and for North America, the recommended models are those with a 1/2-14NPT conduit sizes.  
 2. Resin is used as the material for the D4NS housing and head. Use the metal D4BS Safety-door Switch for applications requiring greater mechanical strength.

Safety Door Switches  
D4NS

## Operation Keys

| Type   | Model   |
|--|---------|
| Horizontal mounting<br>                       | D4DS-K1 |
| Vertical mounting<br>                         | D4DS-K2 |
| Adjustable mounting (Horizontal)<br>          | D4DS-K3 |
| Adjustable mounting (Horizontal/Vertical)<br> | D4DS-K5 |

## Specifications

### Standards and EC Directives

- Conforms to the following EC Directives:
  - Machinery Directive
  - Low Voltage Directive
  - EN50047
  - EN1088
  - GS-ET-15

### Approved Standards

| Agency              | Standard                              | File No.          |
|---------------------|---------------------------------------|-------------------|
| TÜV Product Service | EN60947-5-1 (approved direct opening) | (See note 1.)     |
| UL (See note.)      | UL508, CSA C22.2 No.14                | E76675            |
| CQC (CCC)           | GB14048.5                             | 2003010305077 330 |

- Note:**
- Consult your OMRON representative for details.
  - Approval for CSA C22.2 No. 14 is authorized by the UL mark.
  - Ask your OMRON representative for information on approved models.

### Approved Standard Ratings

#### TÜV (EN60947-5-1), CCC (GB14048.5)

| Item                              | Utilization category | AC-15 | DC-13  |
|-----------------------------------|----------------------|-------|--------|
| Rated operating current ( $I_e$ ) |                      | 3 A   | 0.27 A |
| Rated operating voltage ( $U_e$ ) |                      | 240 V | 250 V  |

**Note:** Use a 10-A fuse type gI or gG that conforms to IEC60269 as a short-circuit protection device. This fuse is not built into the Switch.

#### UL/CSA (UL508, CSA C22.2 No. 14)

##### A300

| Rated voltage | Carry current | Current |       | Volt-amperes |        |
|---------------|---------------|---------|-------|--------------|--------|
|               |               | Make    | Break | Make         | Break  |
| 120 VAC       | 10 A          | 60 A    | 6 A   | 7,200 VA     | 720 VA |
| 240 VAC       |               | 30 A    | 3 A   |              |        |

##### Q300

| Rated voltage | Carry current | Current |        | Volt-amperes |       |
|---------------|---------------|---------|--------|--------------|-------|
|               |               | Make    | Break  | Make         | Break |
| 125 VDC       | 2.5 A         | 0.55 A  | 0.55 A | 69 VA        | 69 VA |
| 250 VDC       |               | 0.27 A  | 0.27 A |              |       |

## ■ Characteristics

|   |             |   |        |
|---|-------------|---|--------|
| Degree of protection (See note 3.)            |             | IP67 (EN60947-5-1)<br>(This applies for the Switch only. The degree of protection for the key hole is IP00.)                                    |        |
| Durability<br>(See note 4.)                   | Mechanical  | 1,000,000 operations min.   |        |
|   | Electrical  | 500,000 operations min. for a resistive load of 3 A at 250 VAC (See note 5.)<br>300,000 operations min. for a resistive load of 10 A at 250 VAC |        |
| Operating speed                               |             | 0.05 to 0.5 m/s   |        |
| Operating frequency                           |             | 30 operations/minute max.   |        |
| Direct opening force (See note 6.)            |             | 60 N min.   |        |
| Direct opening travel (See note 6.)           |             | 10 mm min.  |        |
| Contact resistance                            |             | 25 mΩ max. (initial value)  |        |
| Minimum applicable load (See note 7.)         |             | Resistive load of 1 mA at 5 VDC (N-level reference value)   |        |
| Rated insulation voltage (U <sub>i</sub> )    |             | 300 V   |        |
| Protection against electric shock             |             | Class II (double insulation)  |        |
| Pollution degree (operating environment)      |             | 3 (EN60947-5-1)   |        |
| Impulse withstand voltage (EN60947-5-1)       |             | Between terminals of the same polarity  | 2.5 kV |
|   |             | Between terminals of different polarities   | 4 kV   |
|   |             | Between other terminals and uncharged metallic parts  | 6 kV   |
| Insulation resistance                         |             | 100 MΩ min.   |        |
| Contact gap                                   |             | 2 x 2 mm min  |        |
| Vibration resistance                          | Malfunction | 10 to 55 Hz, 0.75-mm single amplitude   |        |
| Shock resistance                              | Destruction | 1,000 m/s <sup>2</sup> min.   |        |
|   | Malfunction | 300 m/s <sup>2</sup> min.   |        |
| Conditional short-circuit current             |             | 100 A (EN60947-5-1)   |        |
| Rated open thermal current (I <sub>th</sub> ) |             | 10 A (EN60947-5-1)  |        |
| Ambient temperature                           |             | Operating: -30°C to 70°C with no icing  |        |
| Ambient humidity                              |             | Operating: 95% max.   |        |
| Weight  |             | Approx. 96 g (D4NS-1CF)   |        |

**Note:** 1. The above values are initial values.

2. The Switch contacts can be used with either standard loads or microloads. Once the contacts have been used to switch a load, however, they cannot be used to switch smaller loads. The contact surfaces will become rough once they have been used and contact reliability for smaller loads may be reduced.
3. The degree of protection is tested using the method specified by the standard (EN60947-5-1). Confirm that sealing properties are sufficient for the operating conditions and environment beforehand. Although the switch box is protected from dust or water penetration, do not use the D4NS in places where foreign material may enter through the key hole on the head, otherwise Switch damage or malfunctioning may occur.
4. The durability is for an ambient temperature of 5°C to 35°C and an ambient humidity of 40% to 70%. For more details, consult your OMRON representative.
5. If the ambient temperature is greater than 35°C, do not pass the 3-A, 250-VAC load through more than 2 circuits.
6. These figures are minimum requirements for safe operation.
7. This value will vary with the switching frequency, environment, and reliability level. Confirm that correct operation is possible with the actual load beforehand.

# Connections

## ■ Contact Form (Diagrams Show State with Key Inserted)

| Model    | Contact     | Contact form | Operating pattern | Remarks   |
|----------|-------------|--------------|-------------------|---|
| D4NS-□A□ | 1NC/1NO     |              |                   | Only NC contacts 11-12 have an approved direct opening mechanism. (→)<br>The terminals 11-12 and 33-34 can be used as unlike poles.                           |
| D4NS-□B□ | 2NC         |              |                   | Only NC contacts 11-12 and 31-32 have an approved direct opening mechanism. (→)<br>The terminals 11-12 and 31-32 can be used as unlike poles.                 |
| D4NS-□C□ | 2NC/1NO     |              |                   | Only NC contacts 11-12 and 21-22 have an approved direct opening mechanism. (→)<br>The terminals 11-12, 21-22, and 33-34 can be used as unlike poles.         |
| D4NS-□D□ | 3NC         |              |                   | Only NC contacts 11-12, 21-22, and 31-32 have an approved direct opening mechanism. (→)<br>The terminals 11-12, 21-22, and 31-32 can be used as unlike poles. |
| D4NS-□E□ | 1NC/1NO MBB |              |                   | Only NC contacts 11-12 have an approved direct opening mechanism. (→)<br>The terminals 11-12 and 33-34 can be used as unlike poles.                           |
| D4NS-□F□ | 2NC/1NO MBB |              |                   | Only NC contacts 11-12 and 21-22 have an approved direct opening mechanism. (→)<br>The terminals 11-12, 21-22 and 33-34 can be used as unlike poles.          |

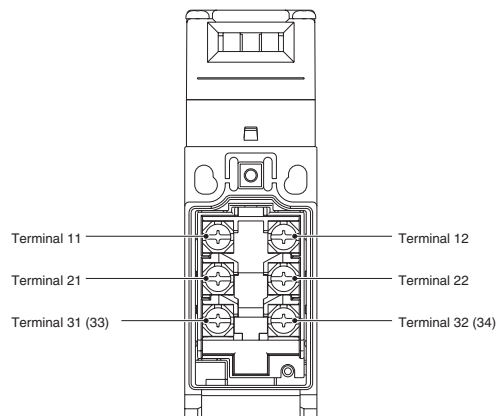
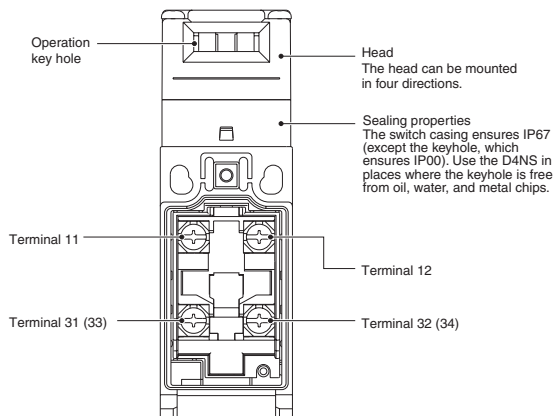
**Note:** MBB (Make Before Break) contacts have an overlapping structure, so that before the normally closed contact (NC) opens, the normally open contact (NO) closes.

## Nomenclature

### ■ Structure

D4NS-□A□, D4NS-□B□, D4NS-□E□

D4NS-□C□, D4NS-□D□, D4NS-□F□



**Note:** The 2-conduit models have the same terminal arrangement.

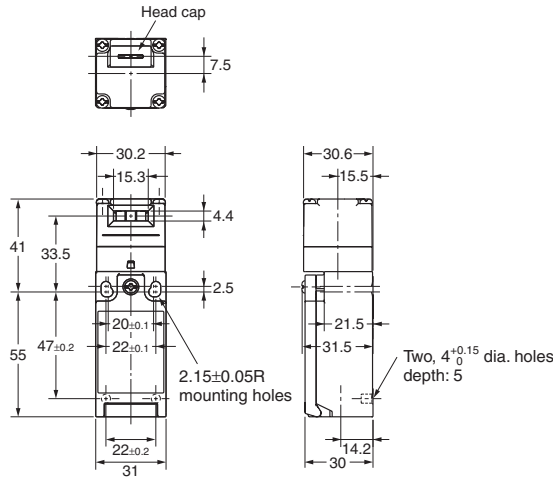
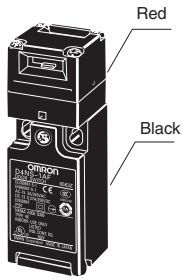
# Dimensions

Note: All units are in millimeters unless otherwise indicated.

## Switches

### 1-Conduit Models

- D4NS-1□F
- D4NS-2□F
- D4NS-3□F
- D4NS-4□F

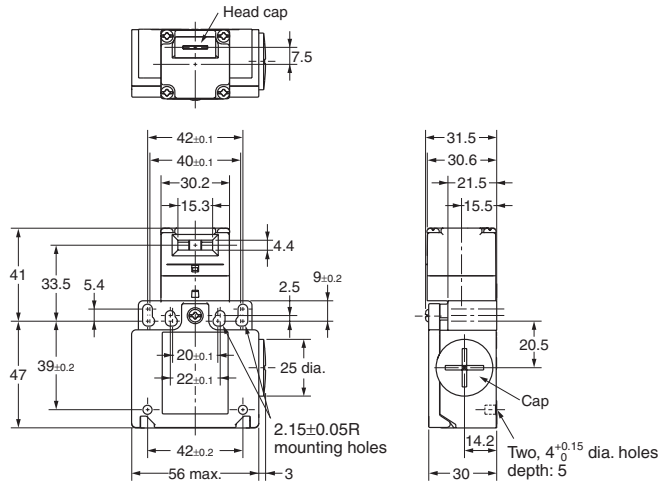
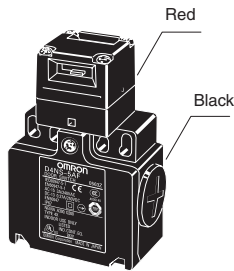


| Operating characteristics | D4NS-1□F<br>D4NS-2□F<br>D4NS-3□F<br>D4NS-4□F |
|---------------------------|--|
| Key insertion force       | 15 N max.                                    |
| Key extraction force      | 30 N max.                                    |
| Pretravel (PT)            | 6±3 mm                                       |
| Total travel (TT)         | (28 mm)                                      |
| Direct opening force*     | 60 N min.                                    |
| Direct opening stroke*    | 10 mm min.                                   |

\* Always maintain the above operating characteristics for safe use.

### 2-Conduit Models

- D4NS-5□F
- D4NS-6□F
- D4NS-7□F
- D4NS-8□F

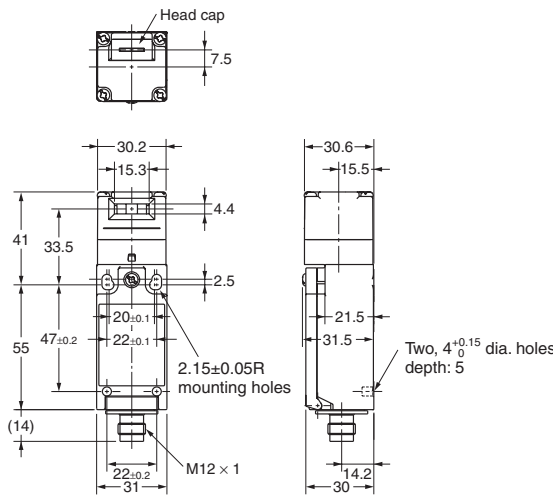
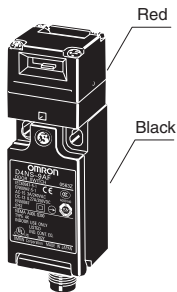


| Operating characteristics | D4NS-5□F<br>D4NS-6□F<br>D4NS-7□F<br>D4NS-8□F |
|---------------------------|--|
| Key insertion force       | 15 N max.                                    |
| Key extraction force      | 30 N max.                                    |
| Pretravel (PT)            | 6±3 mm                                       |
| Total travel (TT)         | (28 mm)                                      |
| Direct opening force*     | 60 N min.                                    |
| Direct opening stroke*    | 10 mm min.                                   |

\* Always maintain the above operating characteristics for safe use.

### 1-Conduit Connector Models

- D4NS-9□F



| Operating characteristics | D4NS-9□F   |
|---------------------------|------------|
| Key insertion force       | 15 N max.  |
| Key extraction force      | 30 N max.  |
| Pretravel (PT)            | 6±3 mm     |
| Total travel (TT)         | (28 mm)    |
| Direct opening force*     | 60 N min.  |
| Direct opening stroke*    | 10 mm min. |

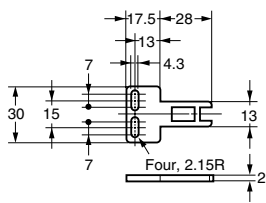
\* Always maintain the above operating characteristics for safe use.

- Note: 1. Unless otherwise specified, a tolerance of ±0.4 mm applies to all dimensions.  
 2. There are fluctuations in the contact ON/OFF timing for Switches with multiple poles (2NC, 2NC/1NO, or 3NC). Confirm performance before application.

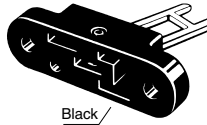
# ■ Operation Keys

**Note:** Unless otherwise specified, a tolerance of  $\pm 0.4$  mm applies to all dimensions.

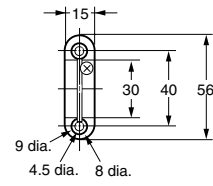
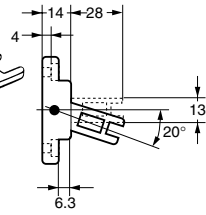
**D4DS-K1**



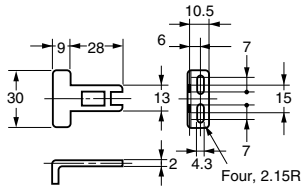
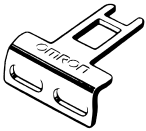
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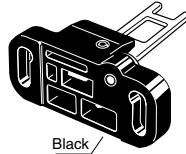
Black



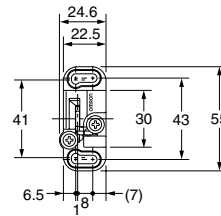
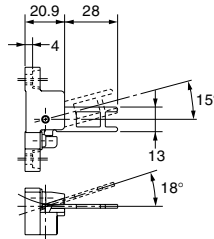
**D4DS-K2**



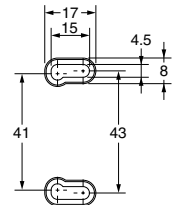
**D4DS-K5**



Black



**Mounting Holes**



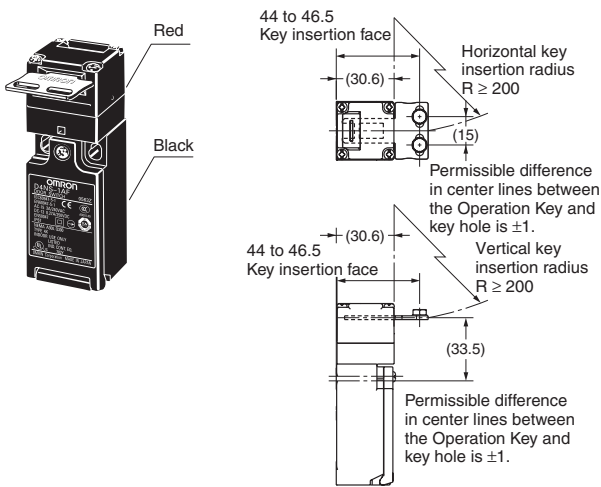
Safety Door Switches  
D4NS

# ■ With Operation Key Inserted (Relationship between Insertion Radius and Key Hole)

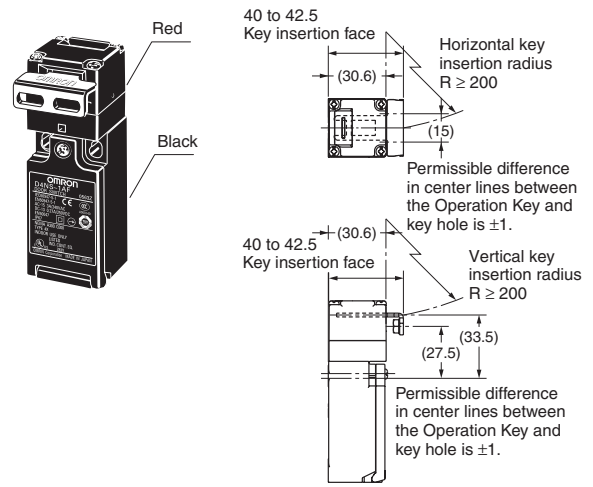
Note: Unless otherwise specified, a tolerance of  $\pm 0.4$  mm applies to all dimensions.

Safety Door Switches  
D4NS

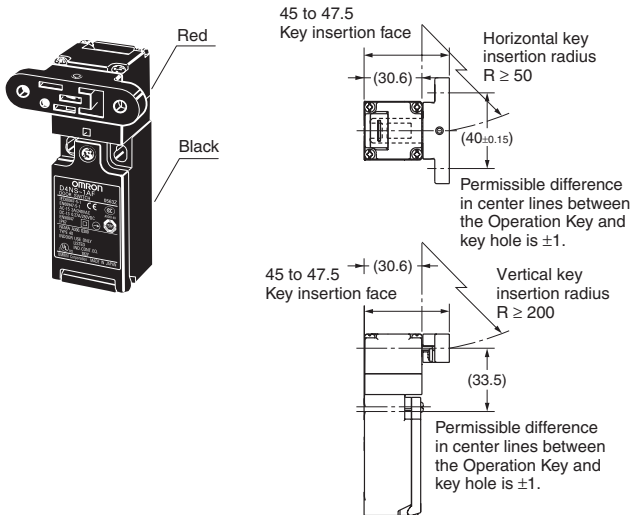
D4NS-1□F + D4DS-K1



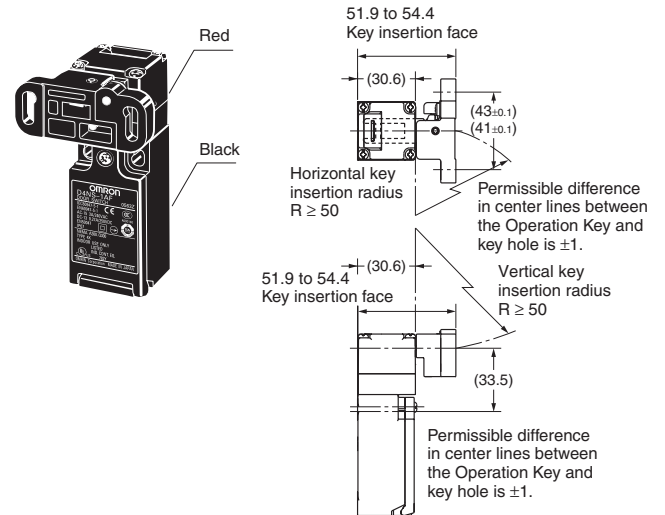
D4NS-1□F + D4DS-K2



D4NS-1□F + D4DS-K3

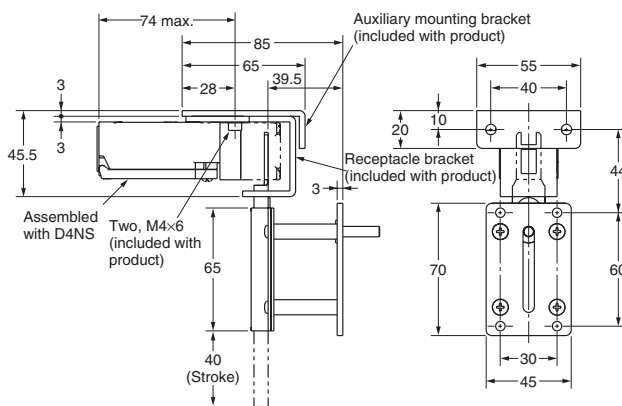


D4NS-1□F + D4DS-K5

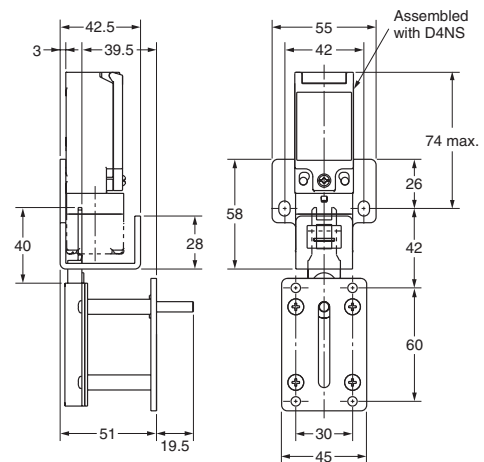


D4NS-1□F + D4NS-SK01

Switch Mounting Pattern 1



Switch Mounting Pattern 2





# Safety Precautions

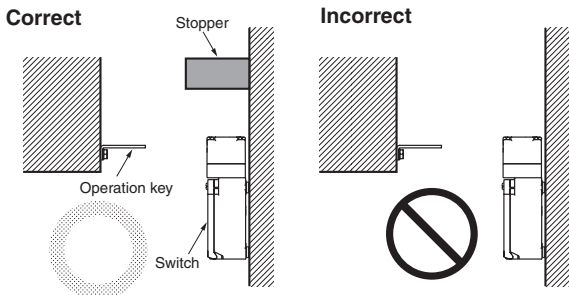
Refer to the "Precautions for All Switches" on page I-2 and "Precautions for All Safety Door Switches" on page A-2.

## ■ Precautions for Safe Use

- Never disassemble or modify your D4NS in any way, or the D4NS will not operate normally.
- Do not use the Switch 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 the Switch. (The IP67 degree of protection of the Switch specifies the amount of water penetration after the Switch is submerged in water for a certain period of time.)
- Although the switch body is protected from the ingress of dust or water, avoid the ingress of foreign substance through the key hole on the head. Otherwise, accelerated wear or breaking may result.
- Always be sure that the power supply is turned OFF while wiring the Switch.
- Always attach the cover after completing wiring and before using the Switch. Electric shock may occur if the Switch is used without the cover attached.
- Connect a fuse in series with the D4NS to protect it from short-circuit damage. The value of the breaking current of the fuse must be calculated by multiplying the rated current by 150% to 200%. When using the D4NS for an EN rating, use a 10-A fuse of type gI or gG that complies with IEC 60269.
- When switching general loads (250 VAC/3 A), do not operate two circuits or more at the same time. Otherwise, insulation performance may be degraded.

## Stopper Installation

Do not use a Switch as a stopper. Be sure to install a stopper as shown in the following illustration when mounting the Switch so that the base of the Operation Key does not strike the Head.



## ■ Precautions for Correct Use

The Switch contacts can be used with either standard loads or microloads. Once the contacts have been used to switch a load, however, they cannot be used to switch smaller loads. The contact surfaces will become rough once they have been used and contact reliability for smaller loads may be reduced.

## Mounting Method

### Tightening Torque

Loose screws may result in malfunction. Tighten the screws to the specified torques.

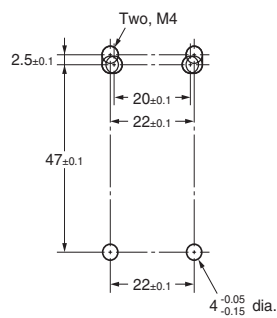
|   |                                   |
|---|-----------------------------------|
| Terminal screw                              | 0.6 to 0.8 N-m                    |
| Cover clamping screw                        | 0.5 to 0.7 N-m                    |
| Head clamping screw                         | 0.5 to 0.6 N-m                    |
| Operation Key clamping screw                | 2.4 to 2.8 N-m                    |
| Body clamping screw                         | 0.5 to 0.7 N-m                    |
| Conduit mounting connection and M12 adaptor | 1.8 to 2.2 N-m (except 1/2-14NPT) |
|   | 1.4 to 1.8 N-m (1/2-14NPT)        |
| Cap screw                                   | 1.3 to 1.7 N-m                    |

### Mounting Holes

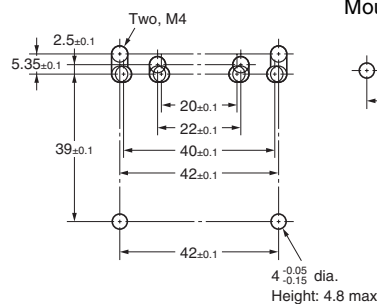
- Use M4 screws and washers to mount the Switch and Operation Key, and tighten the screws to the proper tightening torque. For safety, use screws that cannot be easily removed or a similar means to prevent the Switch and Operation Key from being easily removed.
- As shown below, two studs with a maximum height of 4.8 mm and a diameter of  $4^{+0.05}_{-0.15}$  mm can be provided, the studs inserted into the holes on the bottom of the Switch, and the Switch secured at four locations to increase the mounting strength.

#### Switch Mounting Holes and Studs

- 1-Conduit Modules

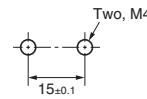


- 2-Conduit Modules

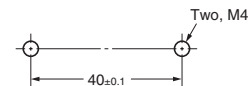


#### Operation Key Mounting Holes

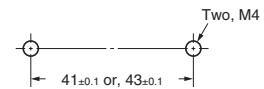
- Horizontal/Vertical Mounting (D4DS-K1/-K2)



- Horizontal Adjustable Mounting (D4DS-K3)



- Horizontal/Vertical Adjustable Mounting (D4DS-K5)



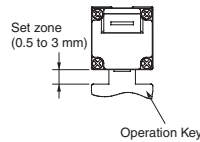
- Use the designated OMRON Operation Key with the Switch. Using another Operation Key may result in Switch damage.
- Set the Operation Key so that it is within 1 mm of the center of the key hole. If the Operation Key is offset or at an angle, accelerated wear or breaking may result.
- Observe the specified insertion radius for the Operation Key and insert it in a direction perpendicular to the key hole.

### Head Direction

- The rotation of the Switch head may be adjusted to any of the four directions by loosening the head clamping screws at the four corners of the head. Make sure that no foreign materials enter through the head.
- When changing the direction of the head, do so while the Operation Key is inserted.

### Securing the Door

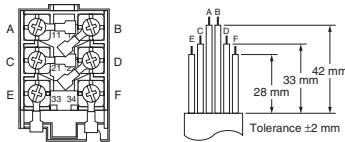
When the door is closed (with the Operation Key inserted), it may be pulled beyond the set zone because of, for example, the door's weight, or the door cushion rubber. Also, if a load is applied to the Operation Key, the door may fail to unlock properly. Use hooks to ensure that the door stays within the set zone.



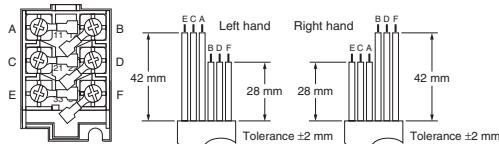
### Wiring

- When connecting with insulation tubes and M3.5 crimp terminals, connect the terminals as shown in the following figure and wire without overriding to the case and the cover. Adequate conductor size is AWG 20 to AWG18 (0.5 to 0.75 mm<sup>2</sup>). Prepare lead wires using the lengths given in the following diagrams. If lead wires are too long, they will press against the cover causing the cover to not close properly.

1-Conduit Models with 3 Poles



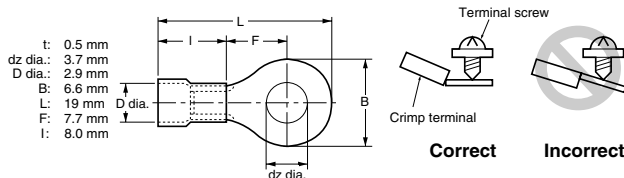
2-Conduit Models with 3 Poles



- Do not push the crimp terminal and the likes into the opening between the parts to prevent the case from being broken and deformed.
- Use terminals having the thickness of 0.5 mm or less to avoid the contact between the terminal and the Switch case inside.  
The terminals listed below have thickness of 0.5 mm or less.

| Manufacture    | Type   | Applicable lead wire size    |
|----------------|--|------------------------------|
| J.S.T. Mfg Co. | FV0.5-3.7 (F type)<br>V0.5-3.7 (straight type) | AWG20 (0.5 mm <sup>2</sup> ) |

J.S.T is a Japanese manufacturer.

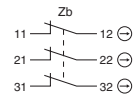


### Contact Arrangement

- The following show a safety contact and an auxiliary contact for 3 contacts and 2 contacts types.

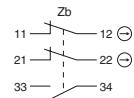
(Screw terminal type)

D4NS-□DF (3NC)

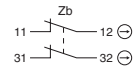


D4NS-□CF (2NC/1NO)

D4NS-□FF (2NC/1NO (MBB))

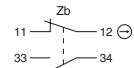


D4NS-□BF (2NC)

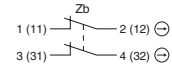


D4NS-□AF (1NC/1NO)

D4NS-□EF (1NC/1NO (MBB))



D4NS-9BF (2NC)

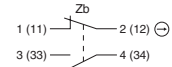


(Connector type)



D4NS-9AF (1NC/1NO)

D4NS-9EF (1NC/1NO (MBB))



Pin No. (Terminal No.)

Suitable socket is Type XS2F (OMRON).

- Refer to the Connector Catalog for corresponding Socket pin numbers and lead wire colors.

### Socket Tightening (Models with Connectors)

- Turn the tightening screws on the Socket by hand and tighten them until the gap between the Socket and Plug essentially disappears.
- Make sure, however, that the Socket's connector is tightened securely, otherwise the rated degree of protection (IP67) of the D4NS may not be maintained. Furthermore, the Socket connector may be loosened by vibration.

### Conduit Opening

- When using 1/2-14NPT conduits, apply sealing tape between the connector and conduit opening to maintain the degree of protection (IP67) of the Switch.
- Use cables with suitable diameters for the connector being used.
- When wiring, place the enclosed cap screw on unused conduit openings (for 2-Conduit Switches) and tighten them to the suitable tightening torque.

## Recommended Connectors

Use the connector with thread section of 9 mm long or less. In the case of the connector with longer thread section, protruded part may interfere with the other parts inside the body. Use below listed connector to secure IP67.

| Size      | Manufacture | Type                      | Adequate cable diameter |
|-----------|-------------|---------------------------|-------------------------|
| G1/2      | LAPP        | ST-PF1/2<br>5380-1002     | 6.0 to 12.0 mm          |
| Pg13.5    | LAPP        | S-13.5<br>5301-5030       | 6.0 to 12.0 mm          |
| M20       | LAPP        | ST-M20 × 1.5<br>5311-1020 | 7.0 to 13.0 mm          |
| 1/2-14NPT | LAPP        | ST-NPT1/2<br>5301-6030    | 6.0 to 12.0 mm          |

When use LAPP's products, use together with a Seal Packing which is sold separately (Type names, JPK-16, GP-13.5, GPM20. GPM12 is for M12 connector) and tighten with proper tightening torque.

LAPP is a German manufacturer.

Before using the 2 conduit type 1/2-14NPT connector, attach the appended changing adapter to the Switch, and wind the seal tape about the joint of the adapter and Switch.

When use M12 conduit type, connect the above listed connector, after tightened the M12 changing adaptor to the Switch.

Safety Door Switches

D4NS

# Production Discontinuation

Following the release of the D4NS, production of the D4DS will be discontinued.

## Date of Production Discontinuation

Production of the D4DS Series will be discontinued as of the end of March 2006.

## Date of Substitute Product Release

Sale of the D4NS Series commenced in July 2003.

## Product Replacement

1. Dimensions  
The D4DS and D4NS have basically the same structure, and use the same mounting method, Operation Keys, mounting hole and Operation Key insertion positions. The multi-contact structure and the extra 4 mm in length, however, are different.
2. Terminal Numbers  
For the 2-contact model, the terminals 21, 22, 23, and 24 on the D4DS are 31, 32, 33, and 34 on the D4NS.
3. Recommended Terminals  
If the recommended terminals are not used, the Switch may not be compatible. Make sure that the Switch is compatible with the terminals.

## Operation Key

- D4DS-K1
- D4DS-K2
- D4DS-K3
- D4DS-K5

All of the above Operation Keys can be used with the D4NS.

## Comparison of the D4DS and Substitute Products

|                           |                         |
|---------------------------|-------------------------|
| Model                     | D4NS-□                  |
| Switch color              | Very similar            |
| Dimensions                | Very similar            |
| Wiring/connection         | Significantly different |
| Mounting method           | Completely compatible   |
| Ratings/performance       | Very similar            |
| Operating characteristics | Very similar            |
| Operating method          | Completely compatible   |

## List of Recommended Substitute Products

### Switch

| D4DS product | Recommended substitute product |
|--------------|--------------------------------|
| D4DS-15FS    | D4NS-1AF                       |
| D4DS-25FS    | D4NS-2AF                       |
| D4DS-35FS    | D4NS-3AF                       |
| D4DS-55FS    | D4NS-5AF                       |
| D4DS-65FS    | D4NS-6AF                       |
| D4DS-1AFS    | D4NS-1BF                       |
| D4DS-2AFS    | D4NS-2BF                       |
| D4DS-3AFS    | D4NS-3BF                       |
| D4DS-5AFS    | D4NS-5BF                       |
| D4DS-6AFS    | D4NS-6BF                       |



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