

# Safety Interlock Switches

# D4NS



## Safety-Door Switch

- 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.
- Variety of metallic heads available



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## Specifications

### Standards and EC Directives

Conforms to the following EC Directives:

- Machinery Directive
- Low Voltage Directive
- EN50047
- EN 1088
- EN 60204-1
- GS-ET-15

### Certified Standards

Certification body	Standard	File No.
TÜV SÜD	EN 60947-5-1 (certified direct opening)	Consult your representative for details.
UL *1	UL 508, CSA C22.2 No.14	E76675
CQC (CCC)	GB14048.5	2003010305077330
KOSHA *2	EN60947-5-1	2005-197

\*1.Certification for CSA C22.2 No. 14 is authorized by the UL mark.

\*2.Only certain models have been certified.

### Certified Standard Ratings

TÜV (EN 60947-5-1), CCC (GB14048.5)

Item	Utilization category	AC-15	DC-13
Rated operating current (Ie)		3 A	0.27 A
Rated operating voltage (Ue)		240 V	250 V

Note: Use a 10 A fuse type gI or gG that conforms to IEC 60269 as a short-circuit protection device. This fuse is not built into the Switch.

### UL/CSA (UL 508, CSA C22.2 No. 14) A300

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

### Q300

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

## 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 a certified direct opening mechanism. (→) The terminals 11-12 and 33-34 can be used as unlike poles.
D4NS-□B□	2NC			NC contacts 11-12 and 31-32 have a certified direct opening mechanism. (→) The terminals 11-12 and 31-32 can be used as unlike poles.
D4NS-□C□	2NC/1NO			NC contacts 11-12 and 21-22 have a certified direct opening mechanism. (→) The terminals 11-12, 21-22, and 33-34 can be used as unlike poles.
D4NS-□D□	3NC			NC contacts 11-12, 21-22, and 31-32 have a certified direct opening mechanism. (→) 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 a certified direct opening mechanism. (→) The terminals 11-12 and 33-34 can be used as unlike poles.
D4NS-□F□	2NC/1NO MBB*			NC contacts 11-12 and 21-22 have a certified direct opening mechanism. (→) The terminals 11-12, 21-22 and 33-34 can be used as unlike poles.

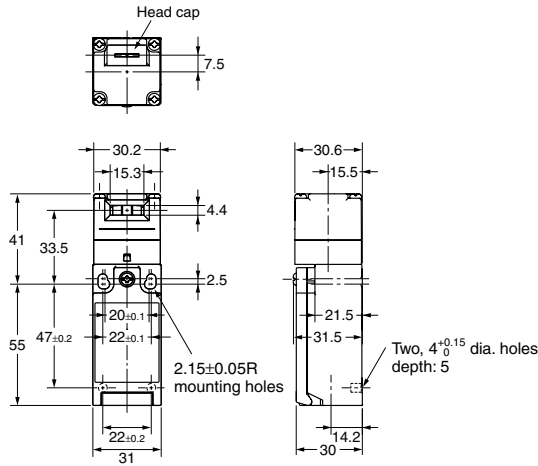
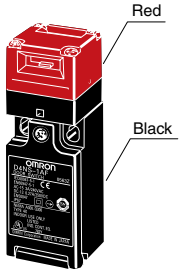
\*MBB (Make Before Break) contacts have an overlapping structure, so that before the normally closed contact (NC) opens, the normally open contact (NO) closes.

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# Dimensions and Operating Characteristics

## 1-Conduit Models

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



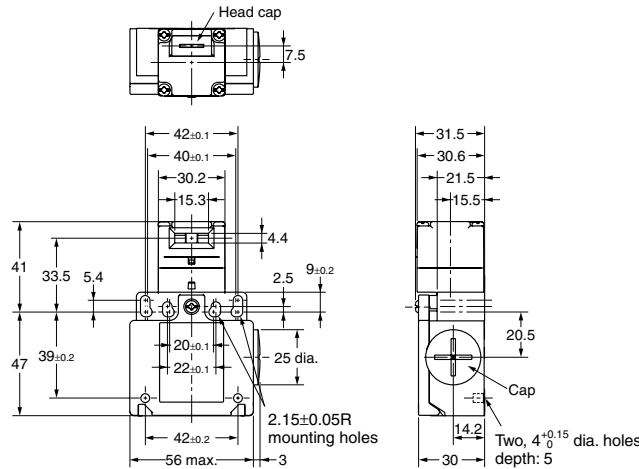
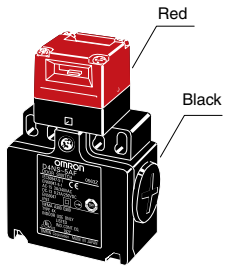
Operating characteristics	Model	D4NS-1□F D4NS-2□F D4NS-3□F D4NS-4□F
Key insertion force Key extraction force		15 N max. 30 N max.
Pretravel (PT)		6±3 mm
Total travel (TT)		(28 mm)
Direct opening force * Direct opening stroke *		60 N min. 10 mm min.

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

## 2-Conduit Models

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

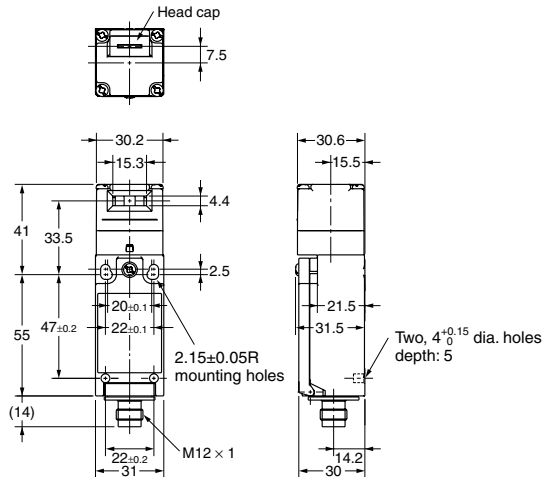
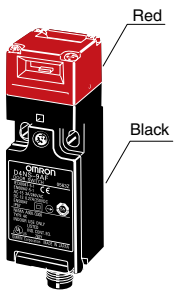


Operating characteristics	Model	D4NS-5□F D4NS-6□F D4NS-7□F D4NS-8□F
Key insertion force Key extraction force		15 N max. 30 N max.
Pretravel (PT)		6±3 mm
Total travel (TT)		(28 mm)
Direct opening force * Direct opening stroke *		60 N min. 10 mm min.

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

## 1-Conduit Connector Models

- D4NS-9□F



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

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

Notes:

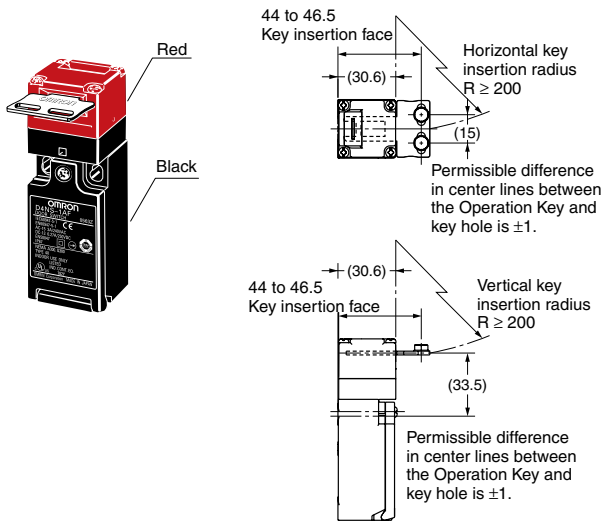
- Unless otherwise specified, a tolerance of ±0.4 mm applies to all dimensions.
- There are fluctuations in the contact ON/OFF timing for Switches with multiple poles (2NC, 2NC/1NO, or 3NC). Confirm performance before application.

Dimensions and Operating Characteristics (continued)

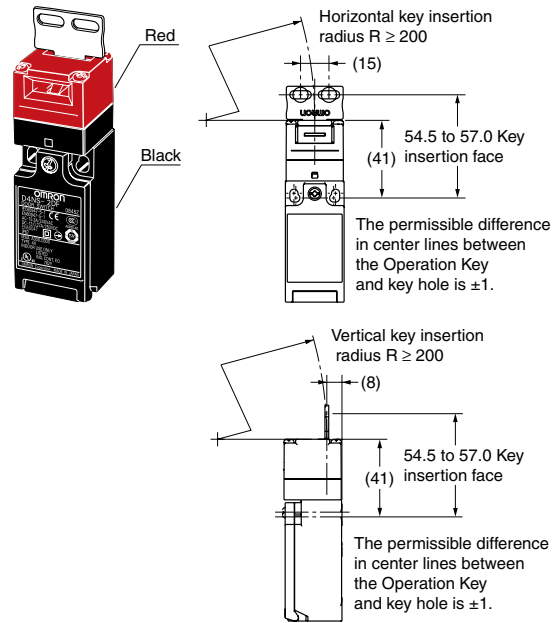
(mm)

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

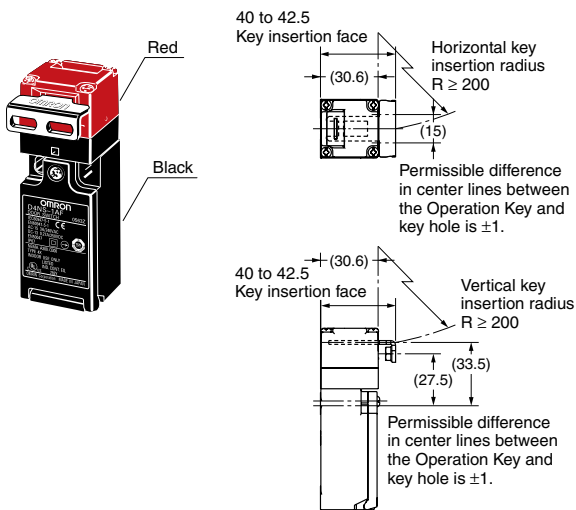
D4NS-1□F + D4DS-K1  
(with Front-inserted Operation Key)



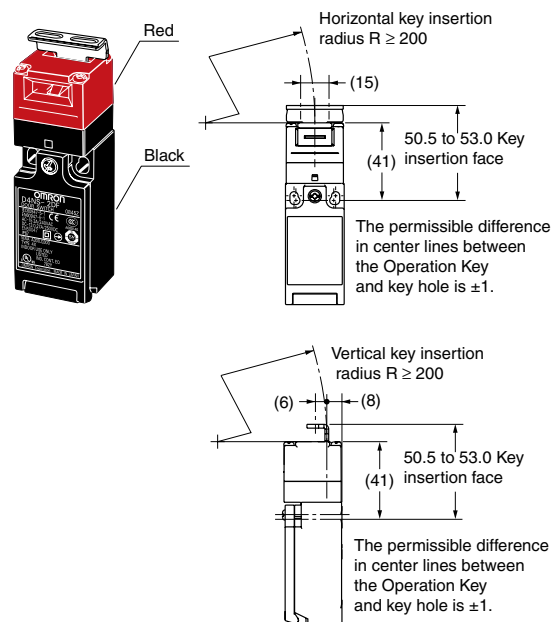
D4NS-1□F + D4DS-K1  
(with Top-inserted Operation Key)



D4NS-1□F + D4DS-K2  
(with Front-inserted Operation Key)



D4NS-1□F + D4DS-K2  
(with Top-inserted Operation Key)

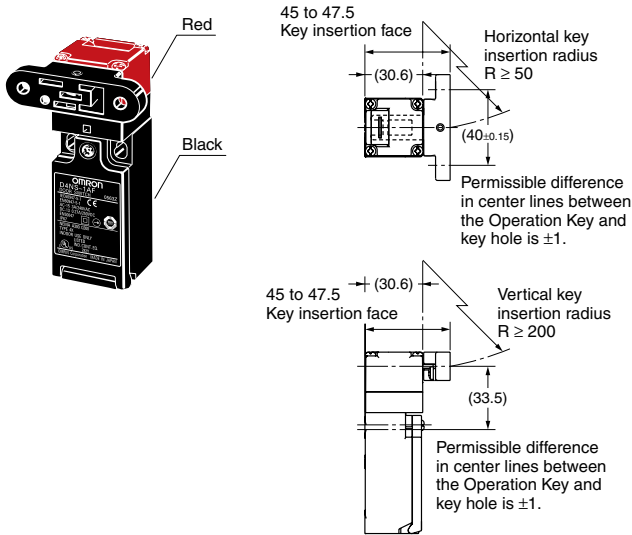


Note: Unless otherwise specified, a tolerance of  $\pm 0.4$  mm applies to all dimensions.

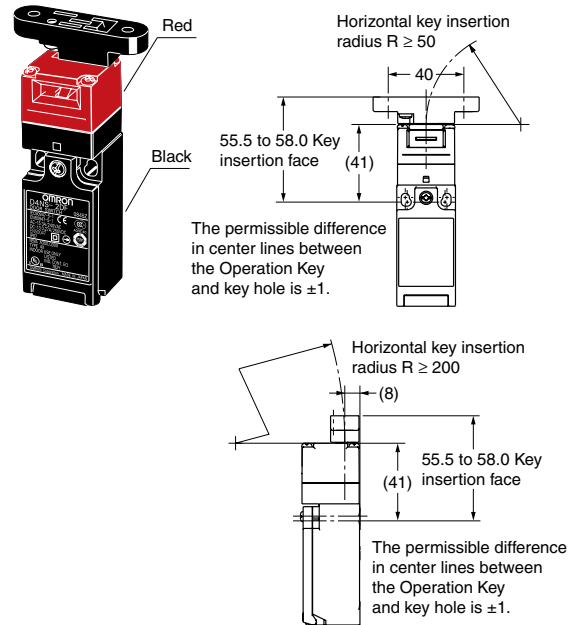
Dimensions and Operating Characteristics (continued)

(mm)

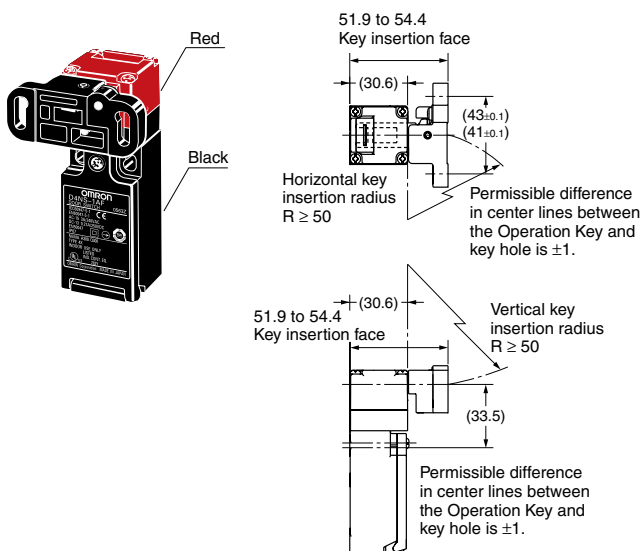
D4NS-1□F + D4DS-K3  
(with Front-inserted Operation Key)



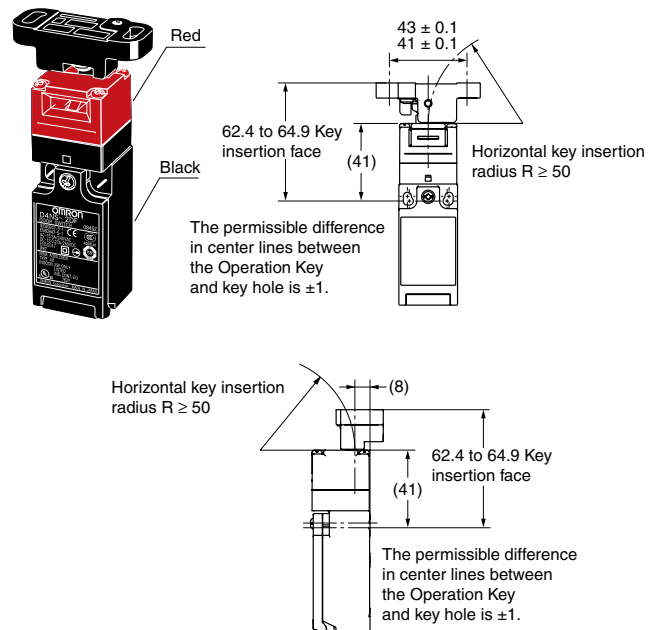
D4NS-1□F + D4DS-K3  
(with Top-inserted Operation Key)



D4NS-1□F + D4DS-K5  
(with Front-inserted Operation Key)



D4NS-1□F + D4DS-K5  
(with Top-inserted Operation Key)

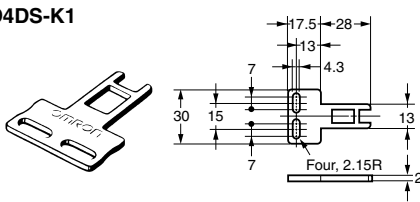


## Dimensions and Operating Characteristics (continued)

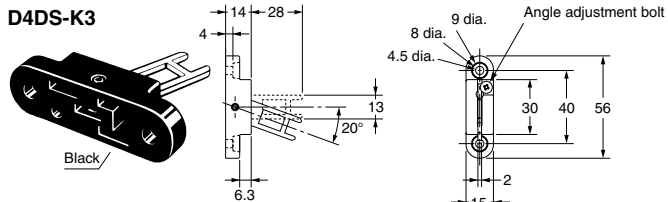
(mm)

### Operation Keys

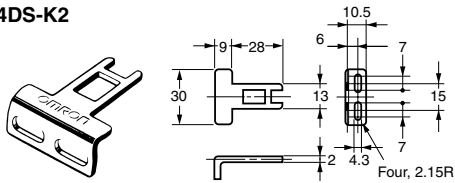
D4DS-K1



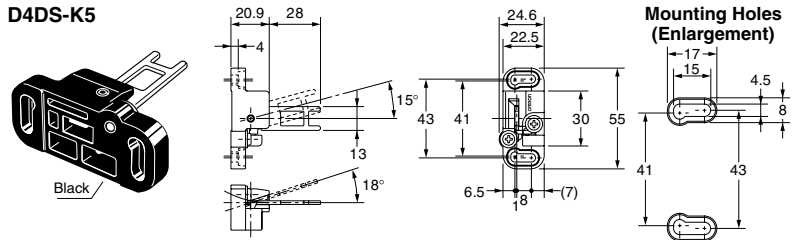
D4DS-K3



D4DS-K2



D4DS-K5



## Ordering

### Model Number Structure


#### Switch

D4NS - □ □ □

① ② ③

- ① Conduit 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: 1/2-14 NPT compatible (2-conduit model with M20 conduit size includes an M20-to-1/2-14 NPT conversion adapter)
  - 8: M20 (2-conduit)
  - 9: M12 connector (1-conduit)
- ② Built-in Switch (with Door Open/Closed Detection Switch and Lock Monitor Switch Contacts)
  - 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)
- ③ Head Mounting Direction
  - F: Four mounting directions possible (Front-side mounting at shipping)/plastic
  - D: Four mounting directions possible (Front-side mounting at shipping)/metal

Note: An order for the head part or the switch part alone cannot be accepted. (The operation key is sold separately.)

 For information on the D4NS-SK Slide Key, see page G219.


#### Operation Key

D4DS-K □

①

- ① Operation Key Type
  - 1: Horizontal mounting
  - 2: Vertical mounting
  - 3: Adjustable mounting (horizontal)
  - 5: Adjustable mounting (horizontal/vertical)

Type	Model
Horizontal mounting	D4DS-K1
Vertical mounting	D4DS-K2
Adjustable mounting (horizontal)	D4DS-K3
Adjustable mounting (horizontal/vertical)	D4DS-K5

 = Highlighted **Rapid Delivery** products are available for shipment today or within **FIVE** days.

## Ordering (continued)

### List of Models

Switches with certified direct opening mechanisms (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

- 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.
  - 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.
- \*Models with Korean S-mark certification.

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