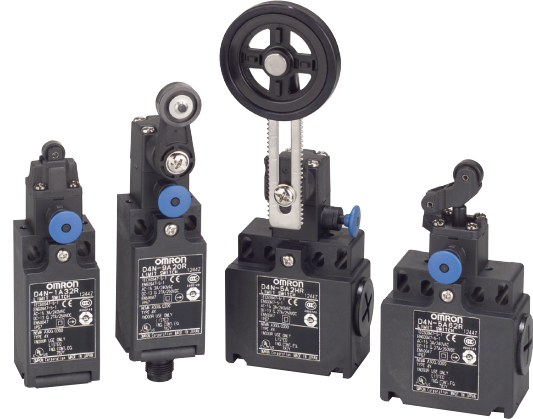


## A Series of Pull-reset Models Now Available

- Lineup includes three contact models with 2NC/1NO and 3NC contact forms 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. Can be used with both standard loads and microloads.
- Conforms to EN115, EN81-1 and EN81-2.
- Certified standards: UL, EN (TÜV), and CCC
- Conforms to ISO 14119

**Note:** Contact your sales representative for details on models with safety standard certification.



Be sure to read the "Safety Precautions" on page 12.

## Model Number Structure

### Model Number Legend

D4N-□□□R  
1 2 3

#### 1. Conduit size

- 1: Pg13.5 (1-conduit)
- 2: G1/2 (1-conduit)
- 4: M20 (1-conduit)
- 6: G1/2 (2-conduit)
- 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)

#### 3. Actuator
































































- 20: Roller lever (resin lever, resin roller)
- 2G: Adjustable roller lever, form lock (metal lever, resin roller)
- 2H: Adjustable roller lever, form lock (metal lever, rubber roller)
- 31: Top plunger
- 32: Top roller plunger
- 62: One-way roller arm lever (horizontal)
- 72: One-way roller arm lever (vertical)

## Ordering Information

### List of Models

#### Safety Limit Switches (with Direct Opening Mechanism)

Consult with your OMRON representative when ordering any models that are not listed in this table.

Actuator	Conduit size		Built-in switch mechanism							
			1NC/1NO (Slow-action)		2NC (Slow-action)		2NC/1NO (Slow-action)		3NC (Slow-action)	
			Model	Direct opening	Model	Direct opening	Model	Direct opening	Model	Direct opening
Roller lever (resin lever, resin roller) 	1-conduit	Pg13.5	D4N-1A20R		D4N-1B20R		D4N-1C20R		D4N-1D20R	
		G1/2	D4N-2A20R		D4N-2B20R		D4N-2C20R		D4N-2D20R	
		M20	D4N-4A20R		D4N-4B20R		D4N-4C20R		D4N-4D20R	
		M12 connector	D4N-9A20R		D4N-9B20R		---		---	
	2-conduit	G1/2	D4N-6A20R		D4N-6B20R		D4N-6C20R		D4N-6D20R	
		M20	D4N-8A20R		D4N-8B20R		D4N-8C20R		D4N-8D20R	
Adjustable roller lever, form lock (metal lever, resin roller) 	1-conduit	Pg13.5	D4N-1A2GR		D4N-1B2GR		D4N-1C2GR		D4N-1D2GR	
		G1/2	D4N-2A2GR		D4N-2B2GR		D4N-2C2GR		D4N-2D2GR	
		M20	D4N-4A2GR		D4N-4B2GR		D4N-4C2GR		D4N-4D2GR	
		M12 connector	D4N-9A2GR		D4N-9B2GR		---		---	
	2-conduit	G1/2	D4N-6A2GR		D4N-6B2GR		D4N-6C2GR		D4N-6D2GR	
		M20	D4N-8A2GR		D4N-8B2GR		D4N-8C2GR		D4N-8D2GR	
Adjustable roller lever, form lock (metal lever, rubber roller) 	1-conduit	Pg13.5	D4N-1A2HR		D4N-1B2HR		D4N-1C2HR		D4N-1D2HR	
		G1/2	D4N-2A2HR		D4N-2B2HR		D4N-2C2HR		D4N-2D2HR	
		M20	D4N-4A2HR		D4N-4B2HR		D4N-4C2HR		D4N-4D2HR	
		M12 connector	D4N-9A2HR		D4N-9B2HR		---		---	
	2-conduit	G1/2	D4N-6A2HR		D4N-6B2HR		D4N-6C2HR		D4N-6D2HR	
		M20	D4N-8A2HR		D4N-8B2HR		D4N-8C2HR		D4N-8D2HR	
Plunger 	1-conduit	Pg13.5	D4N-1A31R		D4N-1B31R		D4N-1C31R		D4N-1D31R	
		G1/2	D4N-2A31R		D4N-2B31R		D4N-2C31R		D4N-2D31R	
		M20	D4N-4A31R		D4N-4B31R		D4N-4C31R		D4N-4D31R	
		M12 connector	D4N-9A31R		D4N-9B31R		---		---	
	2-conduit	G1/2	D4N-6A31R		D4N-6B31R		D4N-6C31R		D4N-6D31R	
		M20	D4N-8A31R		D4N-8B31R		D4N-8C31R		D4N-8D31R	
Roller plunger 	1-conduit	Pg13.5	D4N-1A32R		D4N-1B32R		D4N-1C32R		D4N-1D32R	
		G1/2	D4N-2A32R		D4N-2B32R		D4N-2C32R		D4N-2D32R	
		M20	D4N-4A32R		D4N-4B32R		D4N-4C32R		D4N-4D32R	
		M12 connector	D4N-9A32R		D4N-9B32R		---		---	
	2-conduit	G1/2	D4N-6A32R		D4N-6B32R		D4N-6C32R		D4N-6D32R	
		M20	D4N-8A32R		D4N-8B32R		D4N-8C32R		D4N-8D32R	
One-way roller arm lever (horizontal) 	1-conduit	Pg13.5	D4N-1A62R		D4N-1B62R		D4N-1C62R		D4N-1D62R	
		G1/2	D4N-2A62R		D4N-2B62R		D4N-2C62R		D4N-2D62R	
		M20	D4N-4A62R		D4N-4B62R		D4N-4C62R		D4N-4D62R	
		M12 connector	D4N-9A62R		D4N-9B62R		---		---	
	2-conduit	G1/2	D4N-6A62R		D4N-6B62R		D4N-6C62R		D4N-6D62R	
		M20	D4N-8A62R		D4N-8B62R		D4N-8C62R		D4N-8D62R	
One-way roller arm lever (vertical) 	1-conduit	Pg13.5	D4N-1A72R		D4N-1B72R		D4N-1C72R		D4N-1D72R	
		G1/2	D4N-2A72R		D4N-2B72R		D4N-2C72R		D4N-2D72R	
		M20	D4N-4A72R		D4N-4B72R		D4N-4C72R		D4N-4D72R	
		M12 connector	D4N-9A72R		D4N-9B72R		---		---	
	2-conduit	G1/2	D4N-6A72R		D4N-6B72R		D4N-6C72R		D4N-6D72R	
		M20	D4N-8A72R		D4N-8B72R		D4N-8C72R		D4N-8D72R	

## Specifications

### Standards and EC Directives

#### Conforms to the following EC Directives:

- Machinery Directive
- Low Voltage Directive
- EN50047
- EN60204-1
- EN ISO 14119
- GS-ET-15

### Certified Standards

Certification body	Standard	File No.
TÜV SÜD	EN60947-5-1 (certified direct opening)	*1
UL *2	UL508, CSA C22.2 No.14	E76675
CQC (CCC) *3	GB14048.5	2004010305105973

\*1. Consult your OMRON representative for details.

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

\*3. Ask your OMRON representative for information on certified models.

### Certified 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 (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		

## Characteristics

<b>Degree of protection *1</b>		IP67 (EN60947-5-1)
<b>Durability *2</b>	<b>Mechanical</b>	1,000,000 operations min.
	<b>Electrical</b>	500,000 operations min. (3 A resistive load at 250 VAC) *3 300,000 operations min. (10 A resistive load at 250 VAC)
<b>Operating speed</b>		1 to 500 mm/s (D4N-1A20R)
<b>Operating frequency</b>		30 operations/minute max.
<b>Contact resistance</b>		25 mΩ max.
<b>Minimum applicable load *4</b>		1 mA resistive load at 5 VDC (N-level reference value)
<b>Rated insulation voltage (U<sub>i</sub>)</b>		300 V
<b>Rated frequency</b>		50/60 Hz
<b>Protection against electric shock</b>		Class II (double insulation)
<b>Pollution degree (operating environment)</b>		3 (EN60947-5-1)
<b>Impulse withstand voltage (EN60947-5-1)</b>	<b>Between terminals of same polarity</b>	2.5 kV
	<b>Between terminals of different polarity</b>	4 kV
	<b>Between each terminal and non-current carrying metallic parts</b>	6 kV
<b>Insulation resistance</b>		100 MΩ min.
<b>Contact gap</b>		2 × 2 mm min.
<b>Vibration resistance</b>	<b>Malfunction</b>	10 to 55 Hz, 0.75 mm single amplitude
<b>Shock resistance</b>	<b>Destruction</b>	1,000 m/s <sup>2</sup>
	<b>Malfunction</b>	300 m/s <sup>2</sup>
<b>Conditional short-circuit current</b>		100 A (EN60947-5-1)
<b>Conventional free air thermal current (I<sub>th</sub>)</b>		10 A (EN60947-5-1)
<b>Ambient operating temperature</b>		–30 to 70°C (with no icing)
<b>Ambient operating humidity</b>		95% max.
<b>Weight</b>		Approx. 92 g (D4N-1A20R)

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

2. Once a contact has been used to switch a standard load, it cannot be used for a load of a smaller capacity.

Doing so may result in roughening of the contact surface and contact reliability may be lost.

\*1. 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 D4N-□R in places where foreign material such as dust, dirt, oil, water, or chemicals may penetrate through the head. Otherwise, accelerated wear, Switch damage or malfunctioning may occur.

\*2. The durability is for an ambient temperature of 5 to 35°C and an ambient humidity of 40% to 70%. For more details, consult your OMRON representative.

\*3. Do not pass the 3 A, 250 VAC load through more than 2 circuits.

\*4. This value will vary with the switching frequency, environment, and reliability level. Confirm that correct operation is possible with the actual load beforehand.

Structure and Nomenclature

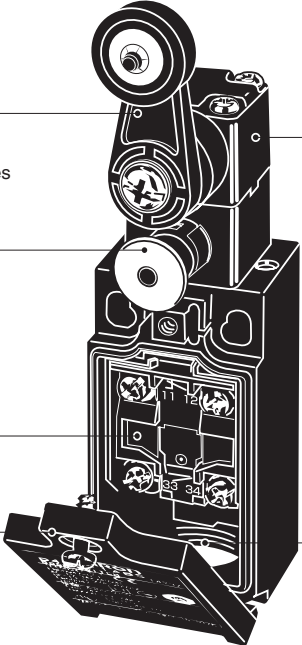
Structure

**Safety-oriented Lever Setting (Form lock mechanism)**  
Grooves which engage the lever are cut in the lever and rotary shaft to prevent the lever from slipping against the rotary shaft. The actuator locks (self-holding) when it moves to the lock position.

**Reset Head (Blue)**  
The direction of the reset head can be adjusted to any of the four directions.

**Built-in Switch**  
The built-in switch has a direct opening mechanism that forcibly separates the NC contact even when there is contact deposit.

**Cover**  
The cover, with a hinge on its lower part, can be opened by removing the screw of the cover, which ensures ease of maintenance and wiring.



**Head**  
The direction of the Switch Head can be adjusted to any of the four directions, except for Switches with Roller Plungers, which can be adjusted to either of two directions differing by 90°C.

**Conduit**  
A wide variety of conduits is available.

Size	Box	1-conduit model	2-conduit model
Pg13.5		Yes	---
G1/2		Yes	Yes
M20		Yes	Yes
M12 connector		Yes	---

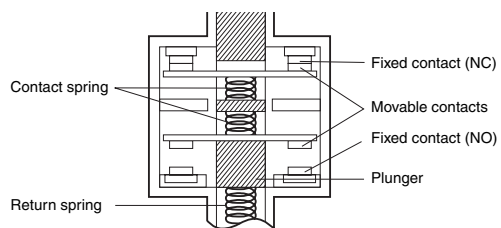
**Note:** M12 connector types are not available for Switches with three contacts.

Contact Form

Model	Contact	Contact form	Operating pattern	Remarks
D4N-□A□R	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.
D4N-□B□R	2NC			Only 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.
D4N-□C□R	2NC/1NO			Only 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.
D4N-□D□R	3NC			Only 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.

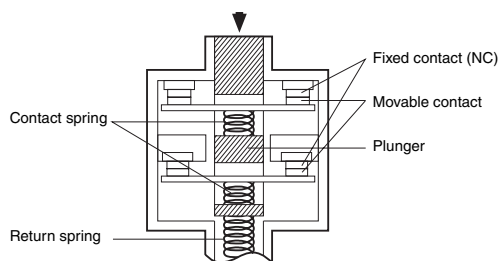
## Direct Opening Mechanism

### 1NC/1NO Contact (Slow-action)



Conforms to EN60947-5-1 Direct Opening ⊕  
(Only NC Contact has a direct opening mechanism.)  
When contact welding occurs, the contacts are separated from each other by the plunger being pushed in.

### 2NC Contact (Slow-action)



Conforms to EN60947-5-1 Direct Opening ⊕  
(Both NC Contacts have a direct opening mechanism.)  
When contact welding occurs, the contacts are separated from each other by the plunger being pushed in.

# Dimensions and Operating Characteristics

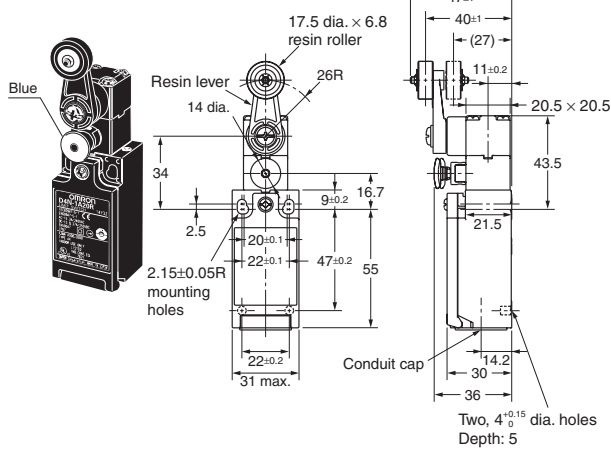
(Unit: mm)

## Switches

### 1-conduit Models

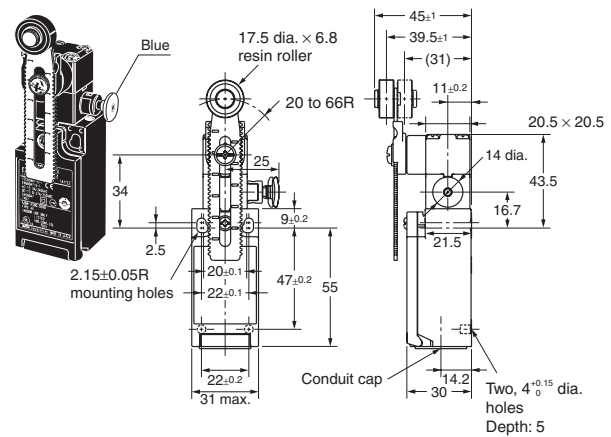
#### Roller Lever (Resin Lever, Resin Roller)

D4N-1□20R D4N-2□20R  
D4N-4□20R D4N-9□20R \*



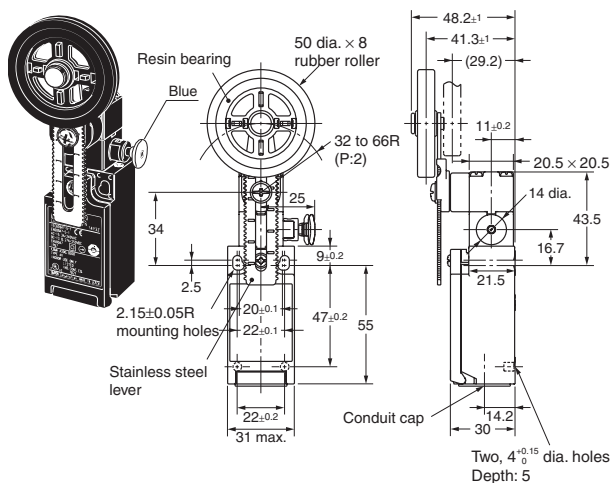
#### Adjustable Roller Lever, Form Lock (with Metal Lever, Resin Roller)

D4N-1□2GR D4N-2□2GR  
D4N-4□2GR D4N-9□2GR \*



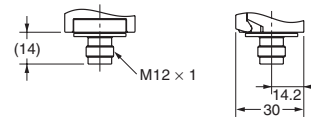
#### Adjustable Roller Lever, Form Lock (with Metal Lever, Rubber Roller)

D4N-1□2HR D4N-2□2HR  
D4N-4□2HR D4N-9□2HR \*



### 1-conduit M12 Connectors

D4N-9□□□R



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

\* Refer to the right above diagram for details on 1-conduit M12 connectors.

Operating characteristics		Model	D4N-□□20R	D4N-□□2GR *1	D4N-□□2HR *1
Locking force	LF max.		6.4 N	5.6 N	5.4 N
Locking travel	LT max.		55°	55°	55°
Pretravel	PT 1 *2		18 to 27°	18 to 27°	18 to 27°
Pretravel	(PT 2) *3		(44°)	(44°)	(44°)
Total travel	(TT) *4		80°	80°	80°
Direct opening force	DOF min. *5		20 N	20 N	20 N
Direct opening travel	DOT min. *5		50°	50°	50°

**Note:** Variation occurs in the simultaneity of contact opening/closing operations of 2NC, 2NC/1NO, and 3NC contacts. Check contact operation.

\*1. The operating characteristics of these Switches were measured with the roller lever set at 32 mm.

\*2. These PT values are possible when the NC contacts are open (OFF).

\*3. These PT values are reference values possible when the NO contacts are closed (ON). (1NC/1NO models only)

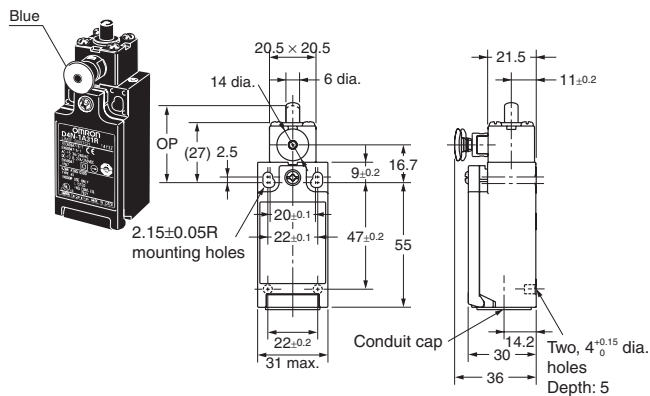
\*4. Reference value.

\*5. For safe use, always make sure that the minimum values or greater are provided.

## 1-conduit Models

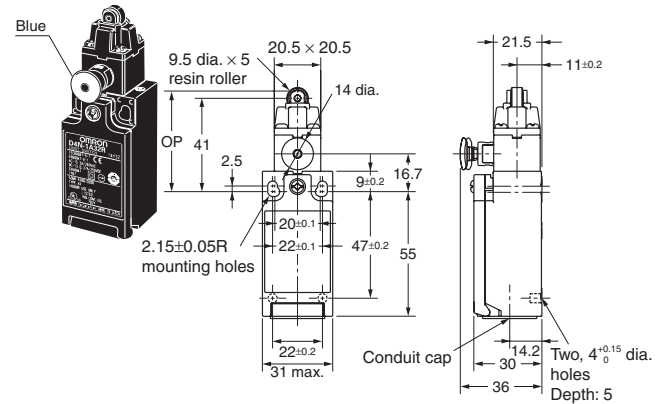
### Plunger

D4N-1□31R D4N-2□31R  
D4N-4□31R D4N-9□31R \*



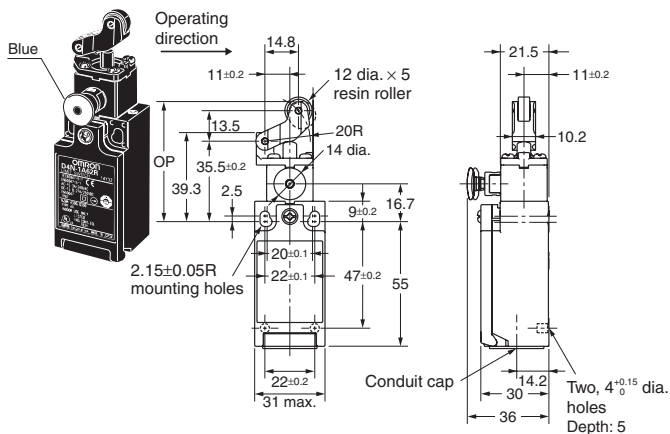
### Roller Plunger

D4N-1□32R D4N-2□32R  
D4N-4□32R D4N-9□32R \*



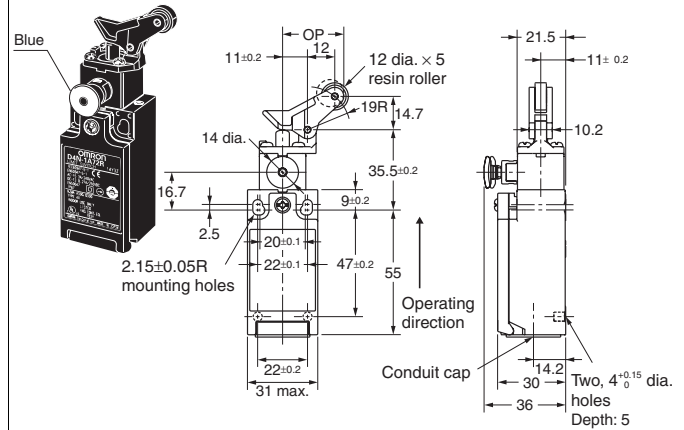
### One-way Roller Arm Lever (Horizontal)

D4N-1□62R D4N-2□62R  
D4N-4□62R D4N-9□62R \*



### One-way Roller Arm Lever (Vertical)

D4N-1□72R D4N-2□72R  
D4N-4□72R D4N-9□72R \*



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

\* Refer to page 7 for details on 1-conduit M12 connectors.

Model		D4N-□□31R	D4N-□□32R	D4N-□□62R	D4N-□□72R
Operating characteristics					
Locking force	LF max.	10.8 N	10.8 N	7.5 N	7.9 N
Locking travel	LT max.	4.5 mm	4.5 mm	7 mm	7 mm
Pretravel	PT 1 max. *1	2 mm	2 mm	4 mm	4 mm
Pretravel	(PT 2) *2	(2.9 mm)	(2.9 mm)	(5.2 mm)	(4.3 mm)
Operating position	OP	34 ±0.5 mm	44.4 ±0.8 mm	53 ±0.8 mm	27 ±0.8 mm
Total travel	(TT) *3	(6 mm)	(6 mm)	(9 mm)	(9 mm)
Direct opening force	DOF min. *4	20 N	20 N	20 N	20 N
Direct opening travel	DOT min. *4	3.2 mm	3.2 mm	5.8 mm	4.8 mm

**Note:** Variation occurs in the simultaneity of contact opening/closing operations of 2NC, 2NC/1NO, and 3NC contacts. Check contact operation.

\*1. These PT values are possible when the NC contacts are open (OFF).

\*2. These PT values are reference values possible when the NO contacts are closed (ON). (1NC/1NO models only)

\*3. Reference value.

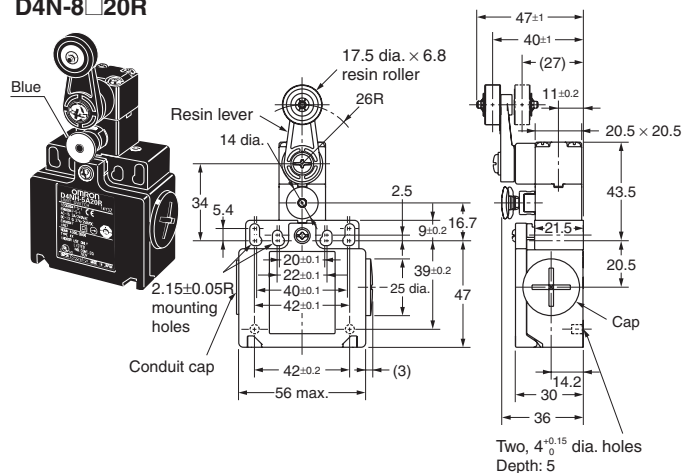
\*4. For safe use, always make sure that the minimum values or greater are provided.

## 2-conduit Models

### Roller Lever (Resin Lever, Resin Roller)

D4N-6□20R

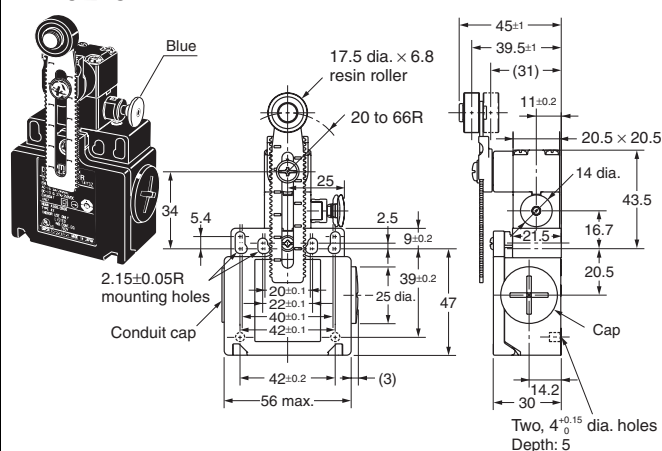
D4N-8□20R



### Adjustable Roller Lever, Form Lock (with Metal Lever, Resin Roller)

D4N-6□2GR

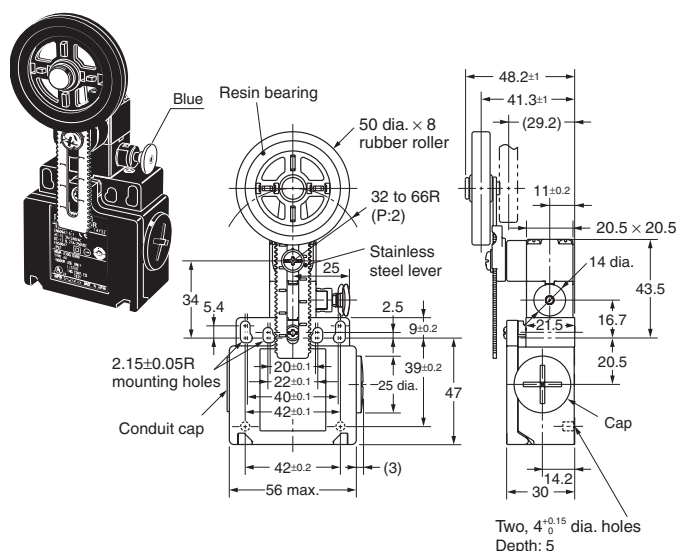
D4N-8□2GR



### Adjustable Roller Lever, Form Lock (with Metal Lever, Rubber Roller)

D4N-6□2HR

D4N-8□2HR



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

Model		D4N-□□20R	D4N-□□2GR	D4N-□□2HR
Operating characteristics				
Locking force	LF max.	6.4 N	5.6 N	5.4 N
Locking travel	LT max.	55°	55°	55°
Pretravel	PT 1 *1	18° to 27°	18° to 27°	18° to 27°
Pretravel	(PT 2) *2	(44°)	(44°)	(44°)
Total travel	(TT) *3	80°	80°	80°
Direct opening force	DOF min. *4	20 N	20 N	20 N
Direct opening travel	DOT min. *4	50°	50°	50°

**Note:** Variation occurs in the simultaneity of contact opening/closing operations of 2NC, 2NC/1NO, and 3NC contacts. Check contact operation.

\*1. These PT values are possible when the NC contacts are open (OFF).

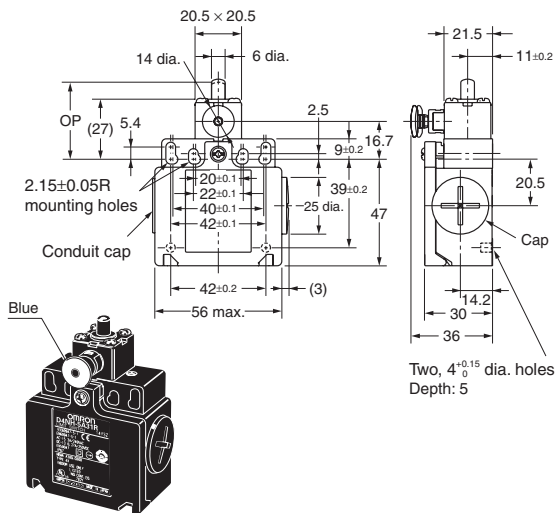
\*2. These PT values are reference values possible when the NO contacts are closed (ON). (1NC/1NO models only)

\*3. Reference value.

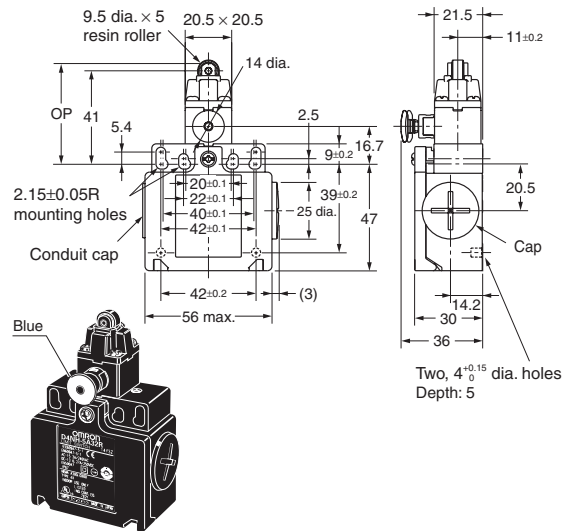
\*4. For safe use, always make sure that the minimum values or greater are provided.

## 2-conduit Models

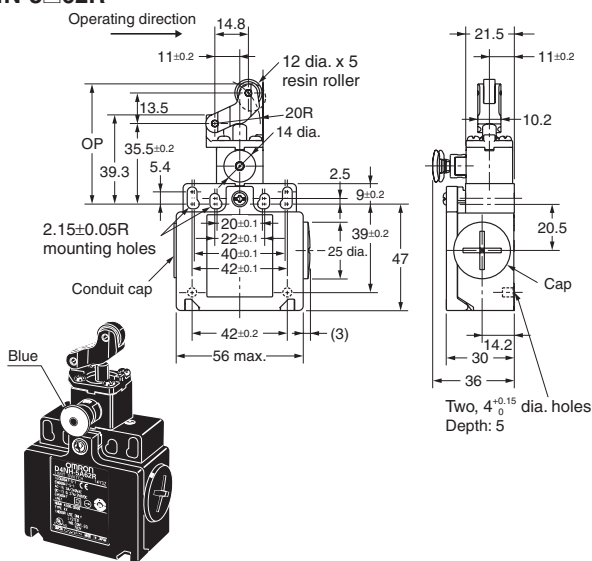
### Plunger D4N-6□31R D4N-8□31R



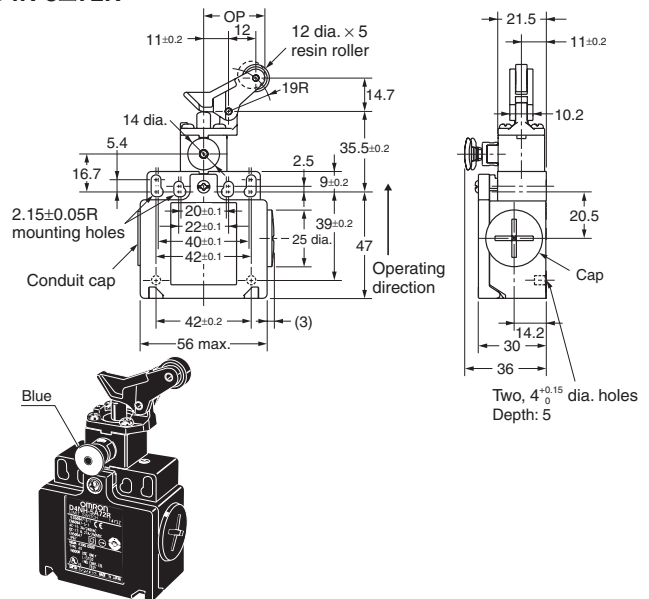
### Roller Plunger D4N-6□32R D4N-8□32R



### One-way Roller Arm Lever (Horizontal) D4N-6□62R D4N-8□62R



### One-way Roller Arm Lever (Vertical) D4N-6□72R D4N-8□72R



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

Model		D4N-□□31R	D4N-□□32R	D4N-□□62R	D4N-□□72R
Operating characteristics					
Locking force	LF max.	10.8 N	10.8 N	7.5 N	7.9 N
Locking travel	LT max.	4.5 mm	4.5 mm	7 mm	7 mm
Pretravel	PT 1 max. *1	2 mm	2 mm	4 mm	4 mm
Pretravel	(PT 2) *2	(2.9 mm)	(2.9 mm)	(5.2 mm)	(4.3 mm)
Operating position	OP	34 ±0.5 mm	44.4 ±0.8 mm	53 ±0.8 mm	27 ±0.8 mm
Total travel	(TT) *3	(6 mm)	(6 mm)	(9 mm)	(9 mm)
Direct opening force	DOF min. *4	20 N	20 N	20 N	20 N
Direct opening travel	DOT min. *4	3.2 mm	3.2 mm	5.8 mm	4.8 mm

**Note:** Variation occurs in the simultaneity of contact opening/closing operations of 2NC, 2NC/1NO, and 3NC contacts. Check contact operation.

\*1. These PT values are possible when the NC contacts are open (OFF).

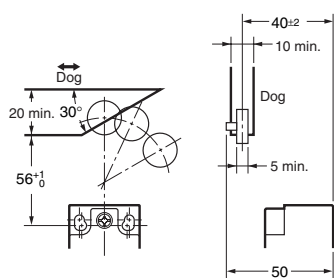
\*2. These PT values are reference values possible when the NO contacts are closed (ON). (1NC/1NO models only)

\*3. Reference value.

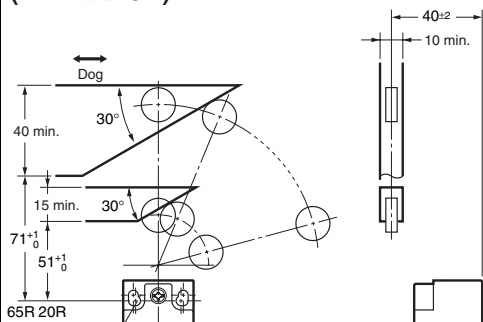
\*4. For safe use, always make sure that the minimum values or greater are provided.

**Levers** Refer to the following diagrams for the angles and positions of the dogs.

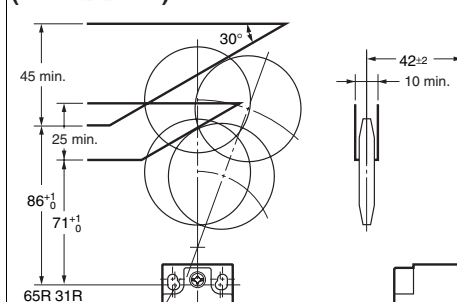
### Roller Lever (D4N-□□20R)



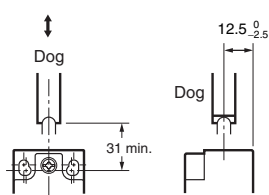
### Adjustable Roller Lever, Form Lock (with Metal Lever, Resin Roller) (D4N-□□2GR)



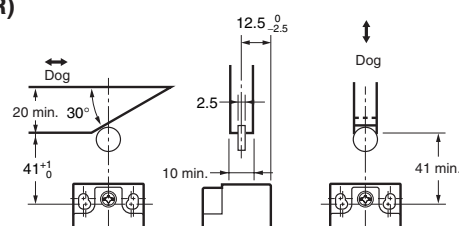
### Adjustable Roller Lever, Form Lock (with Metal Lever, Rubber Roller) (D4N-□□2HR)



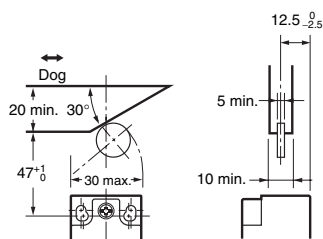
### Sealed Plunger (D4N-□□31R)



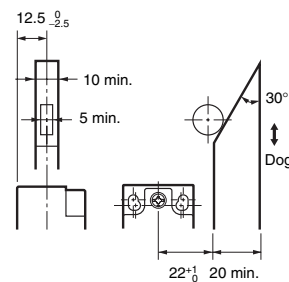
### Roller Plunger (D4N-□□32R)



### One-way Roller Arm Lever (Horizontal) (D4N-□□62R)



### One-way Roller Arm Lever (Vertical) (D4N-□□72R)



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

# Safety Precautions

● Be sure to read the precautions for all D4N-□R models in the website at: <http://www.ia.omron.com/>.

## CAUTION

Electric shock may occasionally occur.  
Do not use metal connectors or metal conduits.



## Precautions for Safe Use

- Do not use the Switch submerged 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 interior. (The IP67 degree of protection specification for the Switch refers to water penetration while the Switch is submersed in water for a specified period of time.)
- Always attach the cover after completing wiring and before using the Switch. Also, do not turn ON the Switch with the cover open. Doing so may result in electric shock.
- Do not switch circuits for two or more standard loads (250 VAC, 3 A). Doing so may adversely affect insulation performance.
- Make sure that the actuator is pushed into the lock position. Not doing so may result in the actuator becoming unlocked, causing an accident.
- Always reset the Switch manually. Not doing so may result in damage to the reset function.

## Precautions for Correct Use

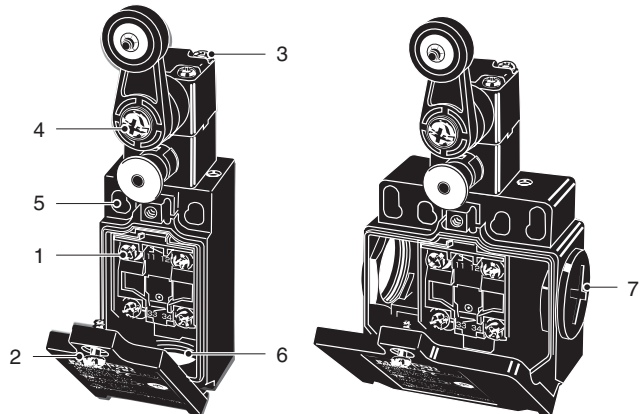
The Switch contacts can be used with either standard loads or microloads. Once the contacts have been used to switch a load, however, they cannot be used to switch smaller loads. The contact surfaces will become rough once they have been used and contact reliability for smaller loads may be reduced.

## Mounting Method

### Appropriate Tightening Torque

Tighten each of the screws to the specified torque. Loose screws may result in malfunction of the Switch within a short time.

1	Terminal screw	0.6 to 0.8 N·m
2	Cover mounting screw	0.5 to 0.7 N·m
3	Head mounting screw	0.5 to 0.6 N·m
4	Lever mounting screw	1.6 to 1.8 N·m
5	Body mounting screw	0.5 to 0.7 N·m
6	Connector, M12 adaptor	1.8 to 2.2 N·m
7	Cap screw	1.3 to 1.7 N·m

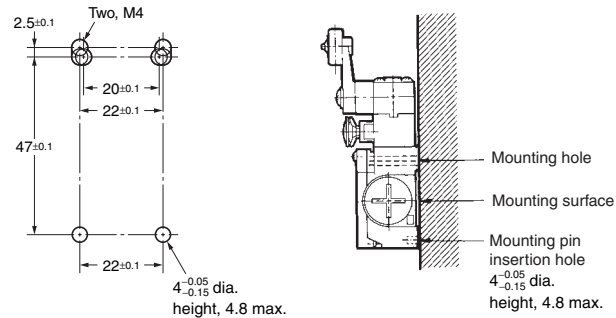


## Switch Mounting

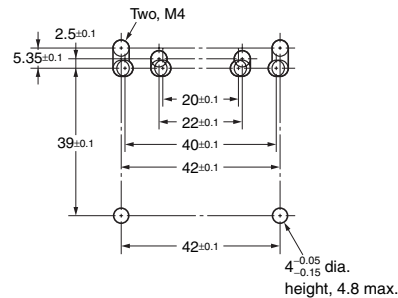
- Mount the Switch using M4 screws and spring washers and tighten the screws to the specified torque.
- For safety, use screws that cannot be easily removed, or use an equivalent measure to ensure that the Switch is secure.
- As shown below, two studs with a maximum height of 4.8 mm and a diameter of  $4_{-0.05}^{+0.05}$  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

### One-conduit Type



### Two-conduit Type



## Changing the Head Direction

By removing the four screws of the head, the mounting direction of the head can be changed. The head can be mounted in four directions. Be sure that no foreign material will enter the head during a change in direction.

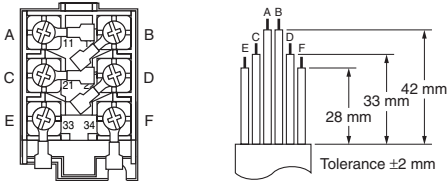
## Changing the Lever

The lever mounting screws can be used to set the lever position to any position in a 360° angle at 7.5° increments. Grooves are incised on the lever and rotary shaft that engage to prevent the lever from slipping against the rotary shaft. The screws on adjustable roller lever models can also loosened to change the length of the lever. Remove the screws from the front of the lever before mounting the lever in reverse (front/back), and set the level so that operation will be completed before exceeding a range of 180° on the horizontal.

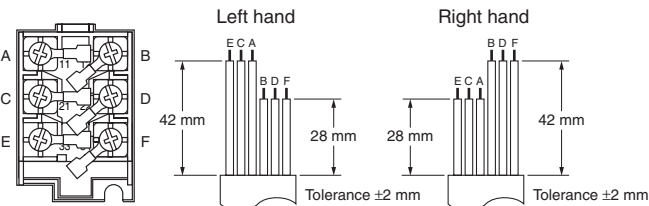
Wiring

- When connecting to the terminals via insulating tube and M3.5 crimp terminals, arrange the crimp terminals as shown below so that they do not rise up onto the case or the cover.
- Applicable lead wire size: AWG20 to AWG18 (0.5 to 0.75 mm<sup>2</sup>). Use lead wires of an appropriate length, as shown below. Not doing so may result in excess length causing the cover to rise and not fit properly.

One-conduit Type (3 Poles)



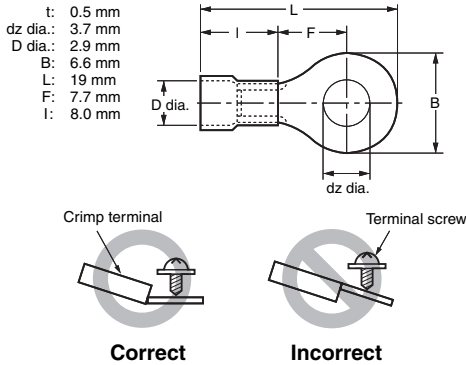
Two-conduit Type (3 Poles)



- Do not push crimp terminals into gaps in the case interior. Doing so may cause damage or deformation of the case.
- Use crimp terminals not more than 0.5 mm in thickness. Otherwise, they will interfere with other components inside the case.

[Reference] The crimp terminals shown below are not more than 0.5 mm thick.

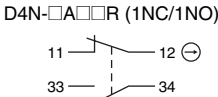
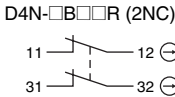
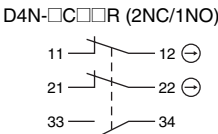
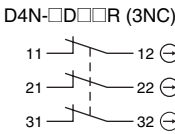
Manufacturer	Type
J.S.T. Mfg. Co.	FN0.5-3.7 (F Type)
	N0.5-3.7 (Straight Type)



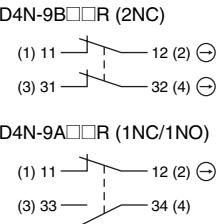
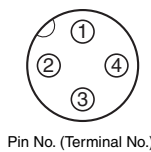
Contact Arrangement

- The contact arrangements are shown below.

Screw Terminal Type



Connector Type



- Applicable socket: XS2F-D421 series (OMRON).
- Refer to the *Connector Catalog* for details on socket pin numbers and lead wire colors.

Socket Tightening (Connector Type)

- Turn the socket connector screws by hand and tighten until no space remains between the socket and the plug.
- Make sure that the socket connector is tightened securely. Otherwise, the rated degree of protection (IP67) may not be maintained and vibration may loosen the socket connector.

Conduit Opening

- Connect a recommended connector to the opening of the conduit and tighten the connector to the specified torque. The case may be damaged if an excessive tightening torque is applied.
- Use a cable with a suitable diameter for the connector.
- Attach and tighten a conduit cap to the unused conduit opening when wiring. Tighten the conduit cap to the specified torque. The conduit cap is provided with the Switch (2-conduit types).

## Recommended Connectors

Use connectors with screws not exceeding 9 mm, otherwise the screws will protrude into the case interior, interfering with other components in the case.

The connectors listed in the following table have connectors with thread sections not exceeding 9 mm.

Use the recommended connectors to ensure conformance to IP67.

Size	Manufacturer	Model	Applicable cable diameter
G1/2	LAPP	ST-PF1/2 5380-1002	6.0 to 12.0 mm
Pg13.5	LAPP	ST-13.5 5301-5030	6.0 to 12.0 mm
M20	LAPP	ST-M20 × 1.5 5311-1020	7.0 to 13.0 mm

Use LAPP connectors together with seal packing (JPK-16, GP-13.5, or GPM20), and tighten to the specified tightening torque. Seal packing is sold separately.

- LAPP is a German manufacturer.

## Others

- When attaching a cover, be sure that the seal rubber is in place and that there is no foreign material present. If the cover is attached with the seal rubber out of place or if foreign material is stuck to the rubber, a proper seal will not be obtained.
- Do not use any screws to connect the cover other than the specified ones. The seal characteristics may be reduced.
- With rubber roller lever models, the rubber roller may turn white over time, but this will not affect the quality of operation.
- Use the following recommended countermeasures to prevent telegraphing when using adjustable or long levers.
  1. Make the rear edge of the dog smooth with an angle of 15° to 30° or make it in the shape of a quadratic curve.
  2. Design the circuit so that no error signal will be generated.

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