On-site Flexible Rod Switch

TP70

CSM_TP70_DS_E_5_5

Easy on-site input on-the-move

- Incorporation of plastic rod actuator makes the Switch easy on hands.
- One-way operation:
  Equipped with stopper so that operation is only possible from one direction.
- Distinctive yellow used for the body.
- Three different types of mounting are available.
- Models with emergency-stop switch are available to suit the application.

⚠ Be sure to read *Safety Precautions* on page 5

Model Number Structure

Model Number Legend

TP70 - □ □ □
(1) (2) (3)

(1) Built-in Switch Model

1 : D4N-2187

(2) Function

A : Integrated switch only
S : With separable emergency-stop switch

(3) Mounting Method

1 : Front mounting
2 : Base mounting (with height adjustment)
3 : C-clamp mounting (with height adjustment)

Ordering Information

Name	Mounting method	Model
On-site Flexible Rod Switch (integrated switch only)	Front mounting	**TP70-1A1**
	Base mounting	**TP70-1A2**
	C-clamp mounting	**TP70-1A3**
On-site Flexible Rod Switch (with separable emergency-stop switch)	Front mounting	**TP70-1S1**
	Base mounting	**TP70-1S2**
	C-clamp mounting	**TP70-1S3**

Specifications

Approved Standards

Agency	Standard	File No.
CCC (CQC)	GB/T14048.5	Contact your OMRON representative for details.

Ratings

Rated voltage	Carry current	Current (A)		Volt-amperes (V)	
		Make	Break	Make	Break
120 VAC 240 VAC	10 A	60 30	6 3	7,200	720
125 VDC 250 VDC	2.5 A	0.55 0.27	0.55 0.27	69	69

Approved Standard Ratings

CCC (GB/T14048.5)

Applicable category and ratings
AC-15 3A/240V DC-13 0.27A/250V

Characteristics

Degree of protection *1			IP65
Vibration resistance			Malfunction: 10 to 55 Hz, 0.65-mm single amplitude, 100 m/s² max.
Shock resistance	**Destruction**		1,000 m/s² max.
	Malfunction		20 m/s² max.
Operating environment	**Ambient operating temperature**		−10°C to +70°C
	Ambient operating humidity		35% to 95%RH
Built-in switch specifications	**Switch model**		D4N-2187
	Allowable operating speed		1 mm/s to 0.5 m/s
	Allowable operating frequency	**Mechanical**	60 operations/min
		Electrical	30 operations/min (with resistive load)
	Durability *2	**Mechanical**	1,000,000 operations min.
		Electrical	200,000 operations min. (for a resistive load of 10 A at 125 VAC)
	Contact type		SPST-NO+SPST-NC
	Terminal type		Screw terminals
Emergency-stop switch specifications	**Switch model**		A165E-M-02
	Operating method		Slow action, Direct-opening mechanism
	Operating functions		Push to lock, turn to reset Contact is opened by pushing in switch and closed by returning switch to original position.
	Contact type		DPST-NC
	Operating part		Size: 40 dia. Color: red, non-illuminated
	Terminal type		Soldered terminals

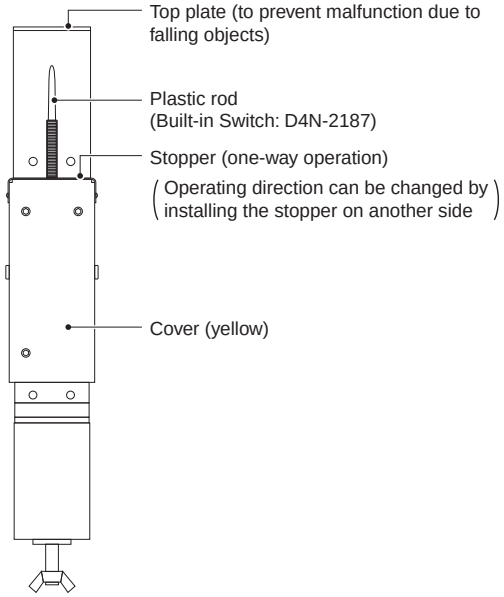
Note: 1. The values in the above table are the initial values.
2. For more details on specifications, refer to individual specification sheets for the relevant models.

*1. The specification given for the degree of protection is for the built-in switch (D4N-2187) and does not apply to the casing for the whole product.

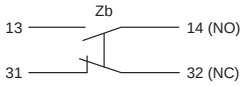
*2. The durability values shown above are for operation at an ambient temperature of 5°C to 35°C, an ambient humidity of 40% to 70%RH, with an operating stroke of 30 mm at a point 20 mm away from the end of the actuator.
Contact your OMRON representative for details on other operating conditions.

Structure and Nomenclature

Nomenclature



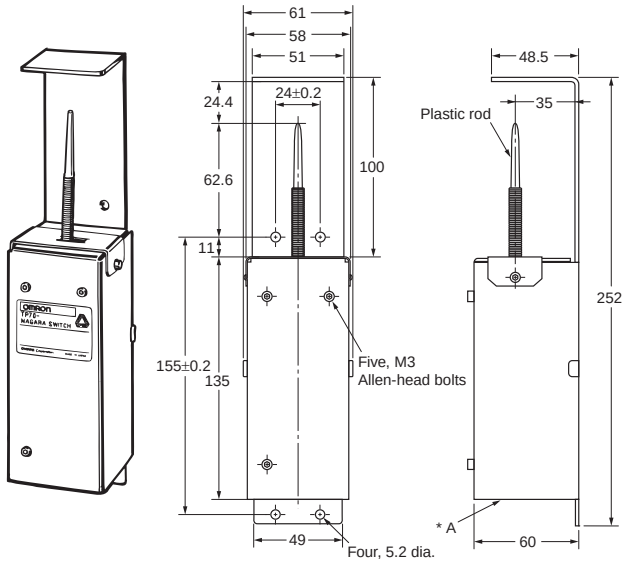
Contact Form



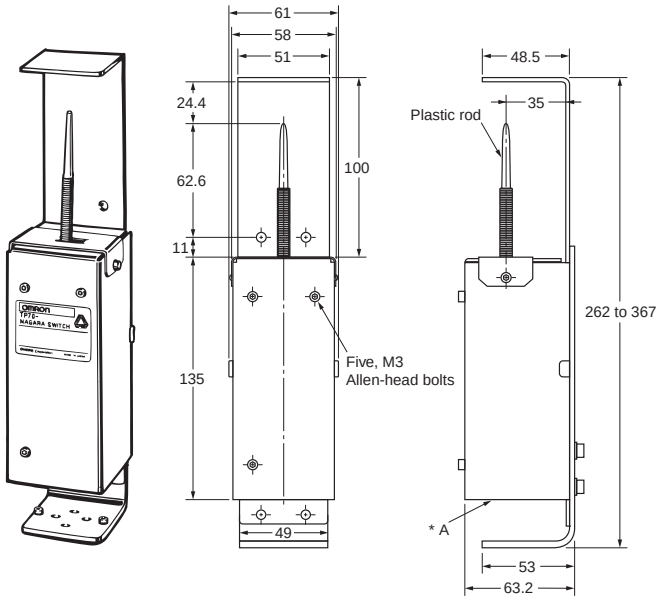
Dimensions

(Unit: mm)

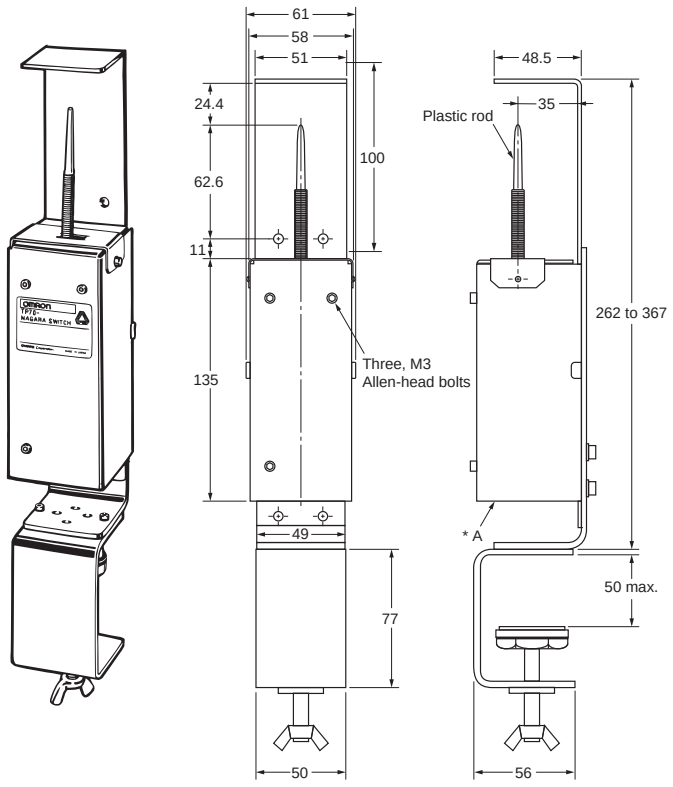
TP70-1A1



TP70-1A2



TP70-1A3



Note: Unless otherwise specified, a tolerance of ±4 mm applies to all dimensions.
* There is no base plate at A.

Operating Characteristics

Item	Standard value
OF max.	1.5 N
PT max.	15°

Safety Precautions

Refer to *Safety Precautions for All Limit Switches*.

Precautions for Safe Use

- Do not use the product in installations that require safety countermeasures for operation, such as presses, shears, mills, spinning machinery, or cotton-making machinery.
- To prevent damage to the switch due to short-circuiting, connect a fuse that has a breaking current value of 1.5 to 2 times the rated current in series with the switch.
- Do not use the product in locations subject to explosive or flammable gases.
- Be sure to use the product only at load currents less than the rated values.
- The casing has no sealing properties. The bottom of the casing is open. Do not use the product in locations subject to splashes of oil or chemicals.

Do not handle the product with oily or wet hands. Bringing the product into contact with certain types of oil or chemical may result in faulty contact, insulation problems, current leakage, or fire.

- For details and other handling procedures for the TP70 Switches, refer to the datasheet for the D4N Safety Limit Switch or the A165E Emergency Stop Pushbutton Switch.

Precautions for Correct Use

Operating Environment

(1) Do not use the product in the following environments:
- Locations subject to severe changes in temperature.
- Locations subject to condensation as a result of high humidity.
- Locations subject to severe vibration.

(2) The product is intended for indoor use only. Using the product outdoors may result in malfunction.

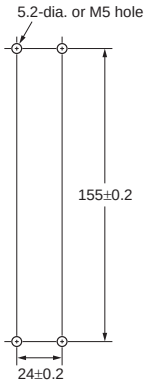
Mounting the Main Body

<Front Mounting and Base Mounting>

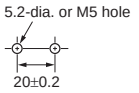
Mount the product using M5 screws and washers. Be sure to tighten the screws to the correct torque.

Mounting Hole Dimensions

● Front Mounting

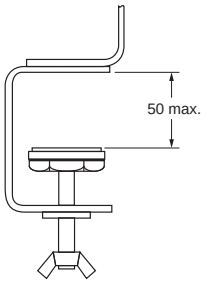


● Base Mounting



<C-clamp Mounting>

Mount the product using a wing nut. Ensure that there is no looseness or rattling. The maximum mountable panel thickness is 50 mm.



Tightening Torque

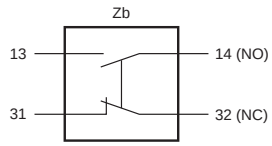
Type	Appropriate tightening torque
Main body mounting screws (M5 screws)	2.4 to 2.7 N·m
Terminal screws (M3.5 screws)	0.6 to 0.8 N·m
Mounting screws for built-in switch cover	0.5 to 0.7 N·m
Connectors	1.8 to 2.2 N·m
Stopper mounting bolts (M3 Allen-head bolts)	1.3 to 1.9 N·m
Cover mounting bolts (M3 Allen-head bolts)	1.3 to 1.9 N·m

Removing the Cover

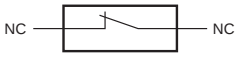
Remove the cover by loosening the Allen-head bolts that are located in 3 places on the front of the cover, and perform wiring for the built-in switch and indicator. After wiring is completed, remount the cover by tightening the bolts to the correct torque.

Contact Form

Built-in Switch



Emergency-stop Switch



Wiring

- Do not connect the lead wires for the built-in switch or counter directly to terminals. Wire via insulating tubes and crimp terminals and tighten securely.
- Connect lead wires to the indicator or emergency-stop switch by soldering. Perform soldering at 30 W within 5 seconds. Do not apply any external force to the soldered parts for 1 minute after soldering.

Processing the Conduit Opening

Tighten the connector to a torque of 1.8 to 2.2 N·m. Excessive tightening torque may damage the casing.

Recommended Connector

Use a connector with a threaded length of 9 mm max. to prevent interfering with the built-in switch.

Recommended Connector

Size	Manufacturer	Model	Applicable cable diameter
G1/2	LAPP	ST-PF1/2 5380-1002	6.0 to 12.0 mm

If a connector from LAPP is used, also use the separately sold Seal Packing (model number JPK-16) and tighten it with the appropriate tightening torque.

Operating direction

- Stopper is installing for one-way operation.
- Operating direction can be changed by installing the stopper on another side.

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