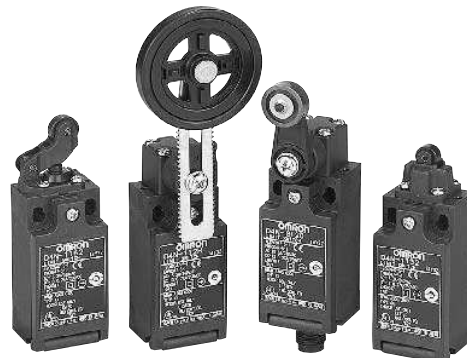


# Safety Limit Switch D4N

## Upgraded Safety Limit Switches Based on the Popular D4D, Providing a Full Lineup Conforming to International Standards

- Lineup includes three contact models with 2NC/1NO and 3NC contact forms in addition to the previous contact forms 1NC/1NO, and 2NC. Models with MBB contacts are also available.
- 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.
- Free of lead, cadmium, and hexavalent chrome, reducing the burden on the environment.
- Conforms to EN115 and EN81-1.
- Lineup includes both slow-action and snap-action models with Zb contacts.
- Approved standards: UL, EN (TÜV), and CCC

**Note:** Be sure to read the "Safety Precautions" on page B-23.



**NEW**

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

Safety Limit  
Switches  
D4N

## Model Number Structure

### Model Number Legend

D4N-□□□□  
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 (2-conduit)
- 8: M20 (2-conduit)
- 9: M12 connector (1-conduit)

#### 2. Built-in Switch

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

#### 3. Head and Actuator

- 20: Roller lever (resin lever, resin roller)
- 22: Roller lever (metal lever, resin roller)
- 25: Roller lever (metal lever, metal roller)
- 26: Roller lever (metal lever, bearing 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)
- 80: Cat whisker
- 87: Plastic rod
- RE: Fork lever lock (right operation)
- LE: Fork lever lock (left operation)















































# Ordering Information





































## List of Models

### Switches with Two Contacts

Safety Limit Switches










D4N
































































Actuator	Conduit size		Built-in switch mechanism							
			1NC/1NO (Snap-action)		2NC (Snap-action)		1NC/1NO (Slow-action)		2NC (Slow-action)	
			Direct opening	Model	Direct opening	Model	Direct opening	Model	Direct opening	Model
	1-conduit	Pg13.5		D4N-1120		D4N-1220		D4N-1A20		D4N-1B20
		G1/2		D4N-2120		D4N-2220		D4N-2A20		D4N-2B20
		1/2-14NPT		D4N-3120		D4N-3220		D4N-3A20		D4N-3B20
		M20		D4N-4120		D4N-4220		D4N-4A20		D4N-4B20
		M12 connector		D4N-9120		D4N-9220		D4N-9A20		D4N-9B20
	2-conduit	Pg13.5		D4N-5120		D4N-5220		D4N-5A20		D4N-5B20
		G1/2		D4N-6120		D4N-6220		D4N-6A20		D4N-6B20
		M20		D4N-8120		D4N-8220		D4N-8A20		D4N-8B20
	1-conduit	Pg13.5		D4N-1122		D4N-1222		D4N-1A22		D4N-1B22
		G1/2		D4N-2122		D4N-2222		D4N-2A22		D4N-2B22
		1/2-14NPT		D4N-3122		D4N-3222		D4N-3A22		D4N-3B22
		M20		D4N-4122		D4N-4222		D4N-4A22		D4N-4B22
		M12 connector		D4N-9122		D4N-9222		D4N-9A22		D4N-9B22
	2-conduit	Pg13.5		D4N-5122		D4N-5222		D4N-5A22		D4N-5B22
		G1/2		D4N-6122		D4N-6222		D4N-6A22		D4N-6B22
		M20		D4N-8122		D4N-8222		D4N-8A22		D4N-8B22
	1-conduit	Pg13.5		D4N-1125		D4N-1225		D4N-1A25		D4N-1B25
		G1/2		D4N-2125		D4N-2225		D4N-2A25		D4N-2B25
		1/2-14NPT		D4N-3125		D4N-3225		D4N-3A25		D4N-3B25
		M20		D4N-4125		D4N-4225		D4N-4A25		D4N-4B25
		M12 connector		D4N-9125		D4N-9225		D4N-9A25		D4N-9B25
	1-conduit	Pg13.5		D4N-1126		D4N-1226		D4N-1A26		D4N-1B26
		G1/2		D4N-2126		D4N-2226		D4N-2A26		D4N-2B26
		1/2-14NPT		D4N-3126		D4N-3226		D4N-3A26		D4N-3B26
		M20		D4N-4126		D4N-4226		D4N-4A26		D4N-4B26
		M12 connector		D4N-9126		D4N-9226		D4N-9A26		D4N-9B26
	1-conduit	Pg13.5		D4N-1131		D4N-1231		D4N-1A31		D4N-1B31
		G1/2		D4N-2131		D4N-2231		D4N-2A31		D4N-2B31
		1/2-14NPT		D4N-3131		D4N-3231		D4N-3A31		D4N-3B31
		M20		D4N-4131		D4N-4231		D4N-4A31		D4N-4B31
		M12 connector		D4N-9131		D4N-9231		D4N-9A31		D4N-9B31
	2-conduit	Pg13.5		D4N-5131		D4N-5231		D4N-5A31		D4N-5B31
		G1/2		D4N-6131		D4N-6231		D4N-6A31		D4N-6B31
		M20		D4N-8131		D4N-8231		D4N-8A31		D4N-8B31
	1-conduit	Pg13.5		D4N-1132		D4N-1232		D4N-1A32		D4N-1B32
		G1/2		D4N-2132		D4N-2232		D4N-2A32		D4N-2B32
		1/2-14NPT		D4N-3132		D4N-3232		D4N-3A32		D4N-3B32
		M20		D4N-4132		D4N-4232		D4N-4A32		D4N-4B32
		M12 connector		D4N-9132		D4N-9232		D4N-9A32		D4N-9B32
	2-conduit	Pg13.5		D4N-5132		D4N-5232		D4N-5A32		D4N-5B32
		G1/2		D4N-6132		D4N-6232		D4N-6A32		D4N-6B32
		M20		D4N-8132		D4N-8232		D4N-8A32		D4N-8B32



















Actuator	Conduit size		Built-in switch mechanism							
			1NC/1NO (Snap-action)		2NC (Snap-action)		1NC/1NO (Slow-action)		2NC (Slow-action)	
			Direct opening	Model	Direct opening	Model	Direct opening	Model	Direct opening	Model
One-way roller arm lever (horizontal) 	1-conduit	Pg13.5		D4N-1162		D4N-1262		D4N-1A62		D4N-1B62
		G1/2		D4N-2162		D4N-2262		D4N-2A62		D4N-2B62
		1/2-14NPT		D4N-3162		D4N-3262		D4N-3A62		D4N-3B62
		M20		D4N-4162		D4N-4262		D4N-4A62		D4N-4B62
		M12 connector		D4N-9162		D4N-9262		D4N-9A62		D4N-9B62
	2-conduit	Pg13.5		D4N-5162		D4N-5262		D4N-5A62		D4N-5B62
		G1/2		D4N-6162		D4N-6262		D4N-6A62		D4N-6B62
		M20		D4N-8162		D4N-8262		D4N-8A62		D4N-8B62
One-way roller arm lever (vertical) 	1-conduit	Pg13.5		D4N-1172		D4N-1272		D4N-1A72		D4N-1B72
		G1/2		D4N-2172		D4N-2272		D4N-2A72		D4N-2B72
		1/2-14NPT		D4N-3172		D4N-3272		D4N-3A72		D4N-3B72
		M20		D4N-4172		D4N-4272		D4N-4A72		D4N-4B72
		M12 connector		D4N-9172		D4N-9272		D4N-9A72		D4N-9B72
	2-conduit	Pg13.5		D4N-5172		D4N-5272		D4N-5A72		D4N-5B72
		G1/2		D4N-6172		D4N-6272		D4N-6A72		D4N-6B72
		M20		D4N-8172		D4N-8272		D4N-8A72		D4N-8B72
Adjustable roller lever, form lock (metal lever, resin roller) 	1-conduit	Pg13.5		D4N-112G		D4N-122G		D4N-1A2G		D4N-1B2G
		G1/2		D4N-212G		D4N-222G		D4N-2A2G		D4N-2B2G
		1/2-14NPT		D4N-312G		D4N-322G		D4N-3A2G		D4N-3B2G
		M20		D4N-412G		D4N-422G		D4N-4A2G		D4N-4B2G
		M12 connector		D4N-912G		D4N-922G		D4N-9A2G		D4N-9B2G
	2-conduit	G1/2		D4N-612G		D4N-622G		D4N-6A2G		D4N-6B2G
		M20		D4N-812G		D4N-822G		D4N-8A2G		D4N-8B2G
Adjustable roller lever, form lock (metal lever, rubber roller) 	1-conduit	Pg13.5		D4N-112H		D4N-122H		D4N-1A2H		D4N-1B2H
		G1/2		D4N-212H		D4N-222H		D4N-2A2H		D4N-2B2H
		1/2-14NPT		D4N-312H		D4N-322H		D4N-3A2H		D4N-3B2H
		M20		D4N-412H		D4N-422H		D4N-4A2H		D4N-4B2H
		M12 connector		D4N-912H		D4N-922H		D4N-9A2H		D4N-9B2H
	2-conduit	G1/2		D4N-612H		D4N-622H		D4N-6A2H		D4N-6B2H
		M20		D4N-812H		D4N-822H		D4N-8A2H		D4N-8B2H

**Note:** It is recommended that M20 be used for Switches to be exported to Europe and 1/2-14NPT be used for Switches to be exported to North American countries.

## Switches with Three Contacts and MBB Contacts





Actuator	Conduit size		Built-in switch mechanism							
			2NC/1NO (Slow-action)		3NC (Slow-action)		1NC/1NO MBB (Slow-action)		2NC/1NO MBB (Slow-action)	
			Direct opening	Model	Direct opening	Model	Direct opening	Model	Direct opening	Model
Roller lever (resin lever, resin roller) 	1-conduit	Pg13.5		D4N-1C20		D4N-1D20		D4N-1E20		D4N-1F20
		G1/2		D4N-2C20		D4N-2D20		D4N-2E20		D4N-2F20
		1/2-14NPT		D4N-3C20		D4N-3D20		D4N-3E20		D4N-3F20
		M20		D4N-4C20		D4N-4D20		D4N-4E20		D4N-4F20
		M12 connector		---		---		D4N-9E20		---
	2-conduit	Pg13.5		D4N-5C20		D4N-5D20		D4N-5E20		D4N-5F20
		G1/2		D4N-6C20		D4N-6D20		D4N-6E20		D4N-6F20
		M20		D4N-8C20		D4N-8D20		D4N-8E20		D4N-8F20

Actuator	Conduit size		Built-in switch mechanism							
			2NC/1NO (Slow-action)		3NC (Slow-action)		1NC/1NO MBB (Slow-action)		2NC/1NO MBB (Slow-action)	
			Direct opening	Model	Direct opening	Model	Direct opening	Model	Direct opening	Model
Roller lever (metal lever, resin roller) 	1-conduit	Pg13.5		D4N-1C22		D4N-1D22		D4N-1E22		D4N-1F22
		G1/2		D4N-2C22		D4N-2D22		D4N-2E22		D4N-2F22
		1/2-14NPT		D4N-3C22		D4N-3D22		D4N-3E22		D4N-3F22
		M20		D4N-4C22		D4N-4D22		D4N-4E22		D4N-4F22
		M12 connector		---		---		D4N-9E22		---
	2-conduit	Pg13.5		D4N-5C22		D4N-5D22		D4N-5E22		D4N-5F22
		G1/2		D4N-6C22		D4N-6D22		D4N-6E22		D4N-6F22
		M20		D4N-8C22		D4N-8D22		D4N-8E22		D4N-8F22
Roller lever (metal lever, metal roller) 	1-conduit	Pg13.5		D4N-1C25		D4N-1D25		D4N-1E25		D4N-1F25
		G1/2		D4N-2C25		D4N-2D25		D4N-2E25		D4N-2F25
		1/2-14NPT		D4N-3C25		D4N-3D25		D4N-3E25		D4N-3F25
		M20		D4N-4C25		D4N-4D25		D4N-4E25		D4N-4F25
		M12 connector		---		---		D4N-9E25		---
	2-conduit	Pg13.5		D4N-5C26		D4N-5D26		D4N-5E26		D4N-5F26
		G1/2		D4N-6C26		D4N-6D26		D4N-6E26		D4N-6F26
		1/2-14NPT		D4N-3C26		D4N-3D26		D4N-3E26		D4N-3F26
		M20		D4N-4C26		D4N-4D26		D4N-4E26		D4N-4F26
		M12 connector		---		---		D4N-9E26		---
Roller lever (metal lever, bearing roller) 	1-conduit	Pg13.5		D4N-1C26		D4N-1D26		D4N-1E26		D4N-1F26
		G1/2		D4N-2C26		D4N-2D26		D4N-2E26		D4N-2F26
		1/2-14NPT		D4N-3C26		D4N-3D26		D4N-3E26		D4N-3F26
		M20		D4N-4C26		D4N-4D26		D4N-4E26		D4N-4F26
		M12 connector		---		---		D4N-9E26		---
	2-conduit	Pg13.5		D4N-5C31		D4N-5D31		D4N-5E31		D4N-5F31
		G1/2		D4N-6C31		D4N-6D31		D4N-6E31		D4N-6F31
		1/2-14NPT		D4N-3C31		D4N-3D31		D4N-3E31		D4N-3F31
		M20		D4N-4C31		D4N-4D31		D4N-4E31		D4N-4F31
		M12 connector		---		---		D4N-9E31		---
Plunger 	1-conduit	Pg13.5		D4N-1C31		D4N-1D31		D4N-1E31		D4N-1F31
		G1/2		D4N-2C31		D4N-2D31		D4N-2E31		D4N-2F31
		1/2-14NPT		D4N-3C31		D4N-3D31		D4N-3E31		D4N-3F31
		M20		D4N-4C31		D4N-4D31		D4N-4E31		D4N-4F31
		M12 connector		---		---		D4N-9E31		---
	2-conduit	Pg13.5		D4N-5C31		D4N-5D31		D4N-5E31		D4N-5F31
		G1/2		D4N-6C31		D4N-6D31		D4N-6E31		D4N-6F31
		1/2-14NPT		D4N-3C31		D4N-3D31		D4N-3E31		D4N-3F31
		M20		D4N-4C31		D4N-4D31		D4N-4E31		D4N-4F31
		M12 connector		---		---		D4N-9E31		---
Roller plunger 	1-conduit	Pg13.5		D4N-1C32		D4N-1D32		D4N-1E32		D4N-1F32
		G1/2		D4N-2C32		D4N-2D32		D4N-2E32		D4N-2F32
		1/2-14NPT		D4N-3C32		D4N-3D32		D4N-3E32		D4N-3F32
		M20		D4N-4C32		D4N-4D32		D4N-4E32		D4N-4F32
		M12 connector		---		---		D4N-9E32		---
	2-conduit	Pg13.5		D4N-5C32		D4N-5D32		D4N-5E32		D4N-5F32
		G1/2		D4N-6C32		D4N-6D32		D4N-6E32		D4N-6F32
		1/2-14NPT		D4N-3C32		D4N-3D32		D4N-3E32		D4N-3F32
		M20		D4N-4C32		D4N-4D32		D4N-4E32		D4N-4F32
		M12 connector		---		---		D4N-9E32		---
One-way roller arm lever (horizontal) 	1-conduit	Pg13.5		D4N-1C62		D4N-1D62		D4N-1E62		D4N-1F62
		G1/2		D4N-2C62		D4N-2D62		D4N-2E62		D4N-2F62
		1/2-14NPT		D4N-3C62		D4N-3D62		D4N-3E62		D4N-3F62
		M20		D4N-4C62		D4N-4D62		D4N-4E62		D4N-4F62
		M12 connector		---		---		D4N-9E62		---
	2-conduit	Pg13.5		D4N-5C62		D4N-5D62		D4N-5E62		D4N-5F62
		G1/2		D4N-6C62		D4N-6D62		D4N-6E62		D4N-6F62
		1/2-14NPT		D4N-3C62		D4N-3D62		D4N-3E62		D4N-3F62
		M20		D4N-4C62		D4N-4D62		D4N-4E62		D4N-4F62
		M12 connector		---		---		D4N-9E62		---
One-way roller arm lever (vertical) 	1-conduit	Pg13.5		D4N-1C72		D4N-1D72		D4N-1E72		D4N-1F72
		G1/2		D4N-2C72		D4N-2D72		D4N-2E72		D4N-2F72
		1/2-14NPT		D4N-3C72		D4N-3D72		D4N-3E72		D4N-3F72
		M20		D4N-4C72		D4N-4D72		D4N-4E72		D4N-4F72
		M12 connector		---		---		D4N-9E72		---
	2-conduit	Pg13.5		D4N-5C72		D4N-5D72		D4N-5E72		D4N-5F72
		G1/2		D4N-6C72		D4N-6D72		D4N-6E72		D4N-6F72
		1/2-14NPT		D4N-3C72		D4N-3D72		D4N-3E72		D4N-3F72
		M20		D4N-4C72		D4N-4D72		D4N-4E72		D4N-4F72
		M12 connector		---		---		D4N-9E72		---

Actuator	Conduit size		Built-in switch mechanism							
			2NC/1NO (Slow-action)		3NC (Slow-action)		1NC/1NO MBB (Slow-action)		2NC/1NO MBB (Slow-action)	
			Direct opening	Model	Direct opening	Model	Direct opening	Model	Direct opening	Model
Adjustable roller lever, form lock (metal lever, resin roller) 	1-conduit	Pg13.5		D4N-1C2G		D4N-1D2G		D4N-1E2G		D4N-1F2G
		G1/2		D4N-2C2G		D4N-2D2G		D4N-2E2G		D4N-2F2G
		1/2-14NPT		D4N-3C2G		D4N-3D2G		D4N-3E2G		D4N-3F2G
		M20		D4N-4C2G		D4N-4D2G		D4N-4E2G		D4N-4F2G
		M12 connector		---		---		D4N-9E2G		---
	2-conduit	G1/2		D4N-6C2G		D4N-6D2G		D4N-6E2G		D4N-6F2G
		M20		D4N-8C2G		D4N-8D2G		D4N-8E2G		D4N-8F2G
Adjustable roller lever, form lock (metal lever, rubber roller) 	1-conduit	Pg13.5		D4N-1C2H		D4N-1D2H		D4N-1E2H		D4N-1F2H
		G1/2		D4N-2C2H		D4N-2D2H		D4N-2E2H		D4N-2F2H
		1/2-14NPT		D4N-3C2H		D4N-3D2H		D4N-3E2H		D4N-3F2H
		M20		D4N-4C2H		D4N-4D2H		D4N-4E2H		D4N-4F2H
		M12 connector		---		---		D4N-9E2H		---
	2-conduit	G1/2		D4N-6C2H		D4N-6D2H		D4N-6E2H		D4N-6F2H
		M20		D4N-8C2H		D4N-8D2H		D4N-8E2H		D4N-8F2H

**Note:** It is recommended that M20 be used for Switches to be exported to Europe and 1/2-14NPT be used for Switches to be exported to North American countries.





## General-purpose Switches with Two Contacts

Actuator	Conduit size		Built-in switch mechanism							
			1NC/1NO (Snap-action)		2NC (Snap-action)		1NC/1NO (Slow-action)		2NC (Slow-action)	
			Direct opening	Model	Direct opening	Model	Direct opening	Model	Direct opening	Model
Fork lever lock (right operation) 	1-conduit	G1/2	---	---	---	---	---	D4N-2ARE	---	D4N-2BRE
		1/2-14NPT						D4N-3ARE		D4N-3BRE
		M20						D4N-4ARE		D4N-4BRE
	2-conduit	G1/2	---	---	---	---	---	D4N-6ARE	---	D4N-6BRE
		M20						D4N-8ARE		D4N-8BRE
Fork lever lock (left operation) 	1-conduit	G1/2	---	---	---	---	---	D4N-2ALE	---	D4N-2BLE
		1/2-14NPT						D4N-3ALE		D4N-3BLE
		M20						D4N-4ALE		D4N-4BLE
	2-conduit	G1/2	---	---	---	---	---	D4N-6ALE	---	D4N-6BLE
		M20						D4N-8ALE		D4N-8BLE
Cat whisker 	1-conduit	G1/2	---	D4N-2180	---	D4N-2280	---	---	---	D4N-2B80
		1/2-14NPT		D4N-3180		D4N-3280				D4N-3B80
		M20		D4N-4180		D4N-4280				D4N-4B80
	2-conduit	G1/2	---	D4N-6180	---	D4N-6280	---	---	---	D4N-6B80
		M20		D4N-8180		D4N-8280				D4N-8B80
Plastic rod 	1-conduit	G1/2	---	D4N-2187	---	D4N-2287	---	---	---	D4N-2B87
		1/2-14NPT		D4N-3187		D4N-3287				D4N-3B87
		M20		D4N-4187		D4N-4287				D4N-4B87
	2-conduit	G1/2	---	D4N-6187	---	D4N-6287	---	---	---	D4N-6B87
		M20		D4N-8187		D4N-8287				D4N-8B87

**Note: 1.** It is recommended that M20 be used for Switches to be exported to Europe and 1/2-14NPT be used for Switches to be exported to North American countries.

**2.** Mechanically speaking, these models are basic limit switches.

# General-purpose Switches with Three Contacts and MBB Contacts

Actuator	Conduit size		Built-in switch mechanism							
			Direct opening	2NC/1NO (Slow-action)	Direct opening	3NC (Slow-action)	Direct opening	1NC/1NO MBB (Slow-action)	Direct opening	2NC/1NO MBB (Slow-action)
Fork lever lock (right operation) 	1-conduit	G1/2	---	D4N-2CRE	---	D4N-2DRE	---	D4N-2ERE	---	D4N-2FRE
		1/2-14NPT	---	D4N-3CRE	---	D4N-3DRE	---	D4N-3ERE	---	D4N-3FRE
		M20	---	D4N-4CRE	---	D4N-4DRE	---	D4N-4ERE	---	D4N-4FRE
	2-conduit	G1/2	---	D4N-6CRE	---	D4N-6DRE	---	D4N-6ERE	---	D4N-6FRE
		M20	---	D4N-8CRE	---	D4N-8DRE	---	D4N-8ERE	---	D4N-8FRE
		M20	---	D4N-8CRE	---	D4N-8DRE	---	D4N-8ERE	---	D4N-8FRE
Fork lever lock (left operation) 	1-conduit	G1/2	---	D4N-2CLE	---	D4N-2DLE	---	D4N-2ELE	---	D4N-2FLE
		1/2-14NPT	---	D4N-3CLE	---	D4N-3DLE	---	D4N-3ELE	---	D4N-3FLE
		M20	---	D4N-4CLE	---	D4N-4DLE	---	D4N-4ELE	---	D4N-4FLE
	2-conduit	G1/2	---	D4N-6CLE	---	D4N-6DLE	---	D4N-6ELE	---	D4N-6FLE
		M20	---	D4N-8CLE	---	D4N-8DLE	---	D4N-8ELE	---	D4N-8FLE
		M20	---	D4N-8CLE	---	D4N-8DLE	---	D4N-8ELE	---	D4N-8FLE
Cat whisker 	1-conduit	G1/2	---	---	---	D4N-2D80	---	---	---	---
		1/2-14NPT	---	---	---	D4N-3D80	---	---	---	---
		M20	---	---	---	D4N-4D80	---	---	---	---
	2-conduit	G1/2	---	---	---	D4N-6D80	---	---	---	---
		M20	---	---	---	D4N-8D80	---	---	---	---
		M20	---	---	---	D4N-8D80	---	---	---	---
Plastic rod 	1-conduit	G1/2	---	---	---	D4N-2D87	---	---	---	---
		1/2-14NPT	---	---	---	D4N-3D87	---	---	---	---
		M20	---	---	---	D4N-4D87	---	---	---	---
	2-conduit	G1/2	---	---	---	D4N-6D87	---	---	---	---
		M20	---	---	---	D4N-8D87	---	---	---	---
		M20	---	---	---	D4N-8D87	---	---	---	---

**Note:** 1. It is recommended that M20 be used for Switches to be exported to Europe and 1/2-14NPT be used for Switches to be exported to North American countries.

2. Mechanically speaking, these models are basic limit switches.

## Specifications

### Standards and EC Directives

- Conforms to the following EC Directives:
  - Machinery Directive
  - Low Voltage Directive
  - EN50047
  - EN1088 (slow-action models only)
  - GS-ET-15

### Approved Standards

Agency	Standard	File No.
TÜV Product Service	EN60947-5-1 (approved direct opening)	(See note 1.)
UL (See note 2.)	UL508, CSA C22.2 No.14	E76675
CCC (CQC)	GB14048.5	2004010305105973

- Note:** 1. Consult your OMRON representative for details.
2. Approval for CSA C22.2 No. 14 is authorized by the UL mark.
3. 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 IEC269 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)
Durability (See note 4.)	Mechanical	15,000,000 operations min. (See note 7.)
	Electrical	500,000 operations min. for a resistive load of 3 A at 250 VAC (See note 5.) 300,000 operations min. for a resistive load of 10 A at 250 VAC
Operating speed		1 to 500 mm/s (D4N-1120)
Operating frequency		30 operations/minute max.
Contact resistance		25 mΩ max.
Minimum applicable load (See note 6.)		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)		Level 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		Snap-action: 2 x 0.5 mm min
		Slow-action: 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. 82 g (D4N-1120)
		Approx. 99 g (D4N-5120)

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

- 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.
- 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 in places where foreign material such as dust, dirt, oil, water, or chemicals may penetrate through the head. Otherwise, premature wear, Switch damage or malfunctioning may occur.
- 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.
- If the ambient temperature is greater than 35°C, do not pass the 3-A, 250-VAC load through more than 2 circuits.
- This value will vary with the switching frequency, environment, and reliability level. Confirm that correct operation is possible with the actual load beforehand.
- The mechanical durability of fork lever lock models is 10,000,000 operations min.

# Connections

## ■ Contact Form

Model	Contact	Contact form	Operating pattern	Remarks
D4N-□1□	1NC/1NO (Snap-action)			Only NC contacts 31-32 have an approved direct opening mechanism. (→)  The terminals 13-14 and 31-32 can be used as unlike poles.
D4N-□2□	2NC (Snap-action)			Only NC contacts 11-12 and 31-32 have an approved direct opening mechanism. (→)  The terminals 11-12 and 31-32 can be used as unlike poles.
D4N-□A□	1NC/1NO (Slow-action)			Only NC contacts 11-12 have an approved direct opening mechanism. (→)  The terminals 11-12 and 33-34 can be used as unlike poles.
D4N-□B□	2NC (Slow-action)			Only NC contacts 11-12 and 31-32 have an approved direct opening mechanism. (→)  The terminals 11-12 and 31-32 can be used as unlike poles.
D4N-□C□	2NC/1NO (Slow-action)			Only NC contacts 11-12 and 21-22 have an approved direct opening mechanism. (→)  The terminals 11-12, 21-22, and 33-34 can be used as unlike poles.
D4N-□D□	3NC (Slow-action)			Only NC contacts 11-12, 21-22, and 31-32 have an approved direct opening mechanism. (→)  The terminals 11-12, 21-22, and 31-32 can be used as unlike poles.
D4N-□E□	1NC/1NO MBB (Slow-action)			Only NC contacts 11-12 have an approved direct opening mechanism. (→)  The terminals 11-12 and 33-34 can be used as unlike poles.
D4N-□F□	2NC/1NO MBB (Slow-action)			Only NC contacts 11-12 and 21-22 have an approved direct opening mechanism. (→)  The terminals 11-12, 21-22 and 33-34 can be used as unlike poles.

**Note:** 1. Terminals are numbered according to EN50013 and the contact forms are according to IEC947-5-1.

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

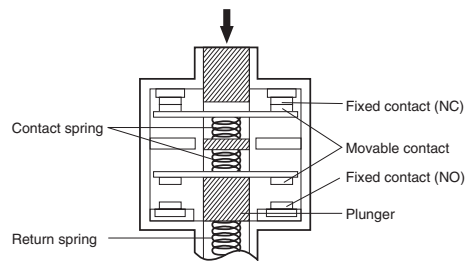
Safety Limit Switches

D4N

# Operation

## ■ Direct Opening Mechanism

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

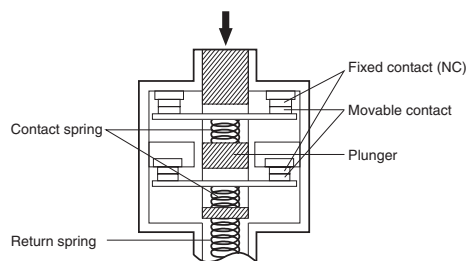


Conforms to EN60947-5-1 Direct Opening Operation ⊖

(Only the NC contact side 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)

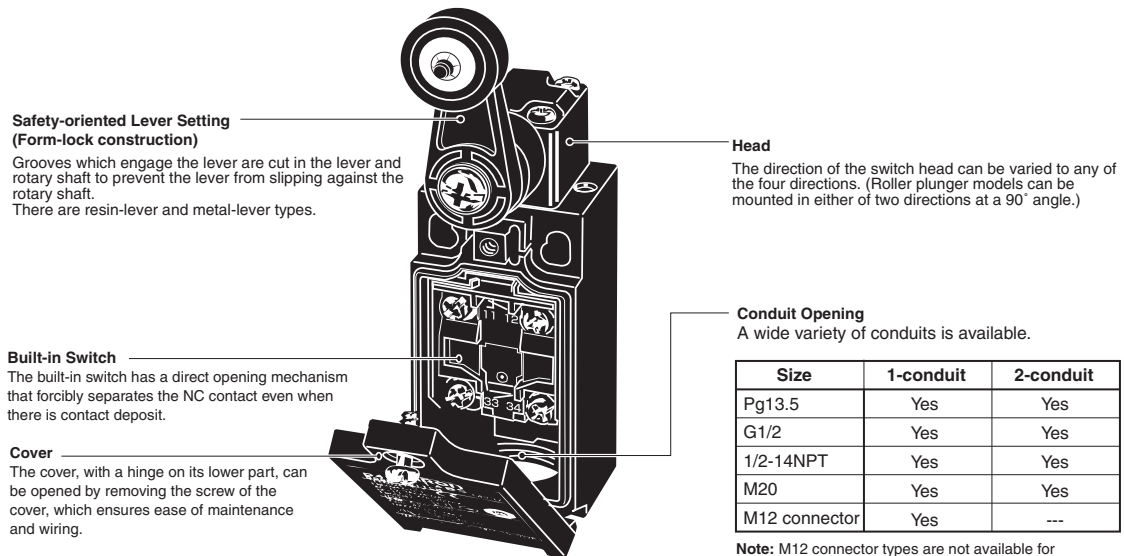


Conforms to EN60947-5-1 Direct Opening Operation ⊖

(Both NC contacts have a direct opening mechanism.)

# Nomenclature

## ■ Structure



# Dimensions

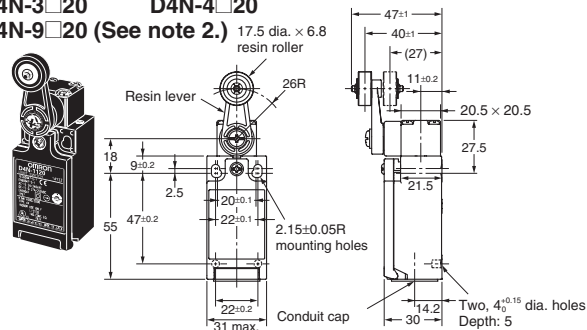
## Switches

Note: All units are in millimeters unless otherwise indicated.

### 1-conduit Models

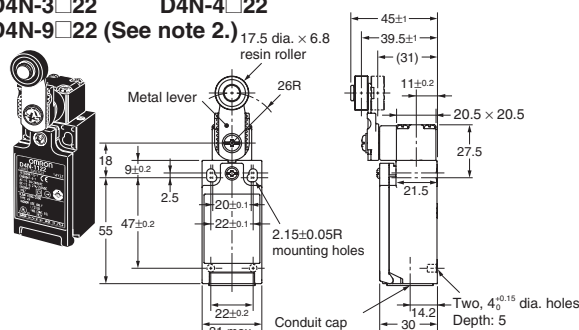
#### Roller Lever (Resin Lever, Resin Roller)

D4N-1□20 D4N-2□20  
D4N-3□20 D4N-4□20  
D4N-9□20 (See note 2.)



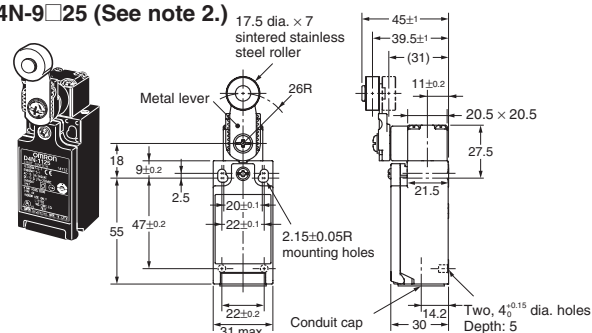
#### Roller Lever (Metal Lever, Resin Roller)

D4N-1□22 D4N-2□22  
D4N-3□22 D4N-4□22  
D4N-9□22 (See note 2.)



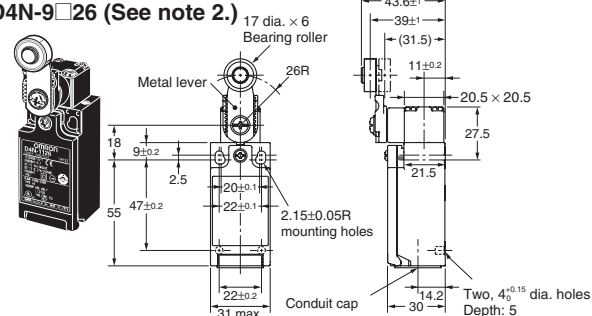
#### Roller Lever (Metal Lever, Metal Roller)

D4N-1□25 D4N-2□25  
D4N-3□25 D4N-4□25  
D4N-9□25 (See note 2.)



#### Roller Lever (Metal Lever, Bearing Roller)

D4N-1□26 D4N-2□26  
D4N-3□26 D4N-4□26  
D4N-9□26 (See note 2.)



Note: 1. Unless otherwise specified, a tolerance of  $\pm 0.4$  mm applies to all dimensions.  
2. Refer to page B-17 for details on M12 connectors.

### Snap-action (1NC/1NO) (2NC), Slow-action (2NC) (3NC)

Model	D4N-□120 D4N-□220 D4N-□B20 D4N-□D20	D4N-□122 D4N-□222 D4N-□B22 D4N-□D22	D4N-□125 D4N-□225 D4N-□B25 D4N-□D25	D4N-□126 D4N-□226 D4N-□B26 D4N-□D26
OF max.	5.0 N			
RF min.	0.5 N			
PT	18° to 27°			
OT min.	40°			
MD max. (See note 2.)	14°			
OP	---			
TT (See note 3.)	(80°)			
DOT min. (See note 4.)	50°			
DOF min. (See note 4.)	20 N			

Note: 1. Variation occurs in the simultaneity of contact opening/closing operations of 2NC, 2NC/1NO, and 3NC contacts. Check contact operation.  
2. Only for snap-action models.  
3. Reference value.  
4. Only for slow-action models. For safe use, always make sure that the minimum values or greater are provided.

### Slow-action (1NC/1NO) (2NC/1NO)

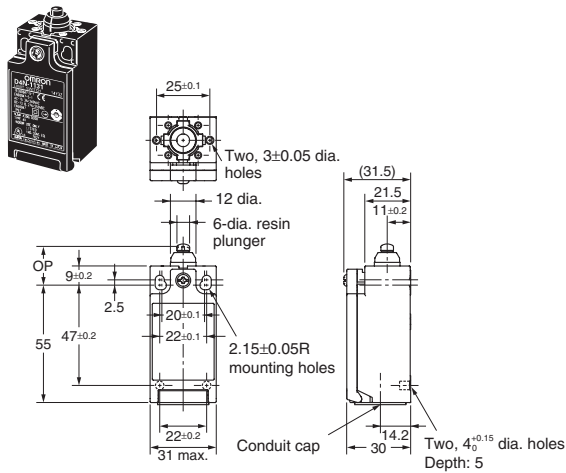
Model	D4N-□A20 D4N-□C20 D4N-□E20 D4N-□F20	D4N-□A22 D4N-□C22 D4N-□E22 D4N-□F22	D4N-□A25 D4N-□C25 D4N-□E25 D4N-□F25	D4N-□A26 D4N-□C26 D4N-□E26 D4N-□F26
OF max.	5.0 N			
RF min.	0.5 N			
PT (See note 1.)	18° to 27°			
PT (2nd) (See note 2.)	(44°)			
PT (See note 3.)	27.5° to 36.5°			
PT (2nd) (See note 4.)	(18°)			
OT min.	40°			
OP	---			
TT (See note 5.)	(80°)			
DOT min. (See note 6.)	50°			
DOF min. (See note 6.)	20 N			

Note: 1. These PT values are possible when the NC contacts are open (OFF).  
2. These PT values are possible when the NO contacts are closed (ON).  
3. Only for MBB models.  
4. Reference values for MBB models only.  
5. Reference values.  
6. For safe use, always make sure that the minimum values or greater are provided.

## 1-conduit Models

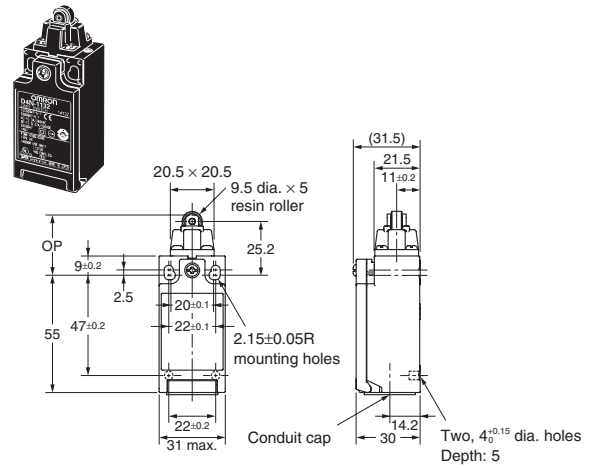
### Plunger

D4N-1□31 D4N-2□31  
D4N-3□31 D4N-4□31  
D4N-9□31 (See note 2.)



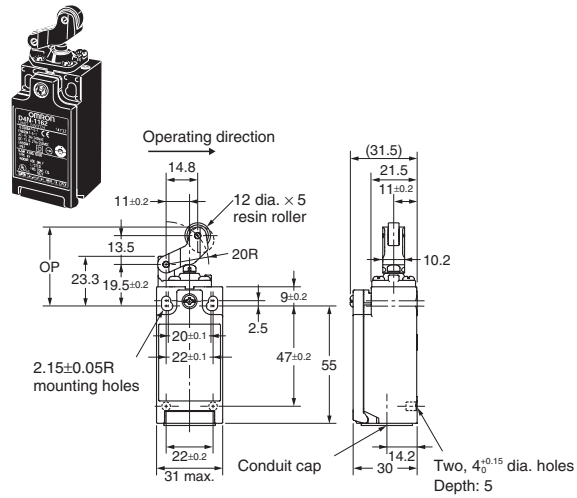
### Roller Plunger

D4N-1□32 D4N-2□32  
D4N-3□32 D4N-4□32  
D4N-9□32 (See note 2.)



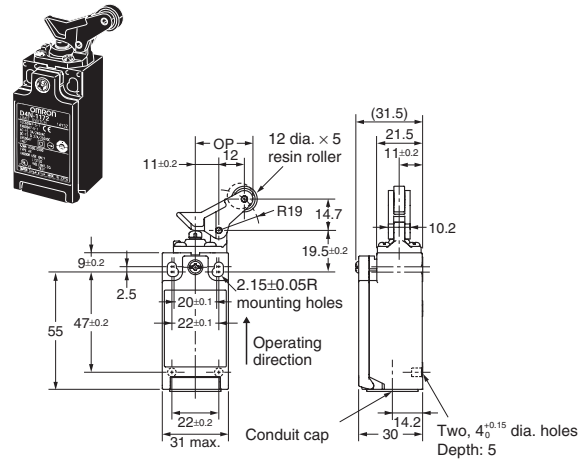
### One-way Roller Arm Lever (Horizontal)

D4N-1□62 D4N-2□62  
D4N-3□62 D4N-4□62  
D4N-9□62 (See note 2.)



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

D4N-1□72 D4N-2□72  
D4N-3□72 D4N-4□72  
D4N-9□72 (See note 2.)



**Note: 1.** Unless otherwise specified, a tolerance of ±0.4 mm applies to all dimensions.

**2.** Refer to page B-17 for details on M12 connectors.

# Snap-action (1NC/1NO) (2NC), Slow-action (2NC) (3NC)

Model	D4N-□131 D4N-□231 D4N-□B31 D4N-□D31	D4N-□132 D4N-□232 D4N-□B32 D4N-□D32	D4N-□162 D4N-□262 D4N-□B62 D4N-□D62	D4N-□172 D4N-□272 D4N-□B72 D4N-□D72
OF max.	6.5 N	6.5 N	5.0 N	5.0 N
RF min.	1.5 N	1.5 N	0.8 N	0.8 N
PT max.	2 mm	2 mm	4 mm	4 mm
OT min.	4 mm	4 mm	5 mm	5 mm
MD max. (See note 2.)	1 mm	1 mm	1.5 mm	1.5 mm
OP	18.2 ±0.5 mm	28.6 ±0.8 mm	37 ±0.8 mm	27 ±0.8 mm
TT (See note 3.)	(6 mm)	(6 mm)	(9 mm)	(9 mm)
DOT min. (See note 4.)	3.2 mm	3.2 mm	5.8 mm	4.8 mm
DOF min. (See note 4.)	20 N	20 N	20 N	20 N

- Note:** 1. Variation occurs in the simultaneity of contact opening/closing operations of 2NC, 2NC/1NO, and 3NC contacts. Check contact operation.
2. Only for snap-action models.
3. Reference value.
4. Only for slow-action models. For safe use, always make sure that the minimum values or greater are provided.

## Slow-action (1NC/1NO) (2NC/1NO)

Model	D4N-□A31 D4N-□C31 D4N-□E31 D4N-□F31	D4N-□A32 D4N-□C32 D4N-□E32 D4N-□F32	D4N-□A62 D4N-□C62 D4N-□E62 D4N-□F62	D4N-□A72 D4N-□C72 D4N-□E72 D4N-□F72
OF max.	6.5 N	6.5 N	5.0 N	5.0 N
RF min.	1.5 N	1.5 N	0.8 N	0.8 N
PT max. (See note 1.)	2 mm	2 mm	4 mm	4 mm
PT (2nd) (See note 2.)	(2.9 mm)	(2.9 mm)	(5.2 mm)	(4.3 mm)
PT max. (See note 3.)	2.8 mm	2.8 mm	4 mm	4 mm
PT (2nd) (See note 4.)	(1 mm)	(1 mm)	(1.5 mm)	(1.5 mm)
OT min.	4 mm	4 mm	5 mm	5 mm
OP	18.2 ±0.5 mm	28.6 ±0.8 mm	37 ±0.8 mm	27 ±0.8 mm
OP (See note 5.)	17.4 ±0.5 mm	28 ±0.8 mm	36 ±0.8 mm	26.1 ±0.8 mm
TT (See note 6.)	(6 mm)	(6 mm)	(9 mm)	(9 mm)
DOT min. (See note 7.)	3.2 mm	3.2 mm	5.8 mm	4.8 mm
DOF min. (See note 7.)	20 N	20 N	20 N	20 N

- Note:** 1. These PT values are possible when the NC contacts are open (OFF).
2. These PT values are possible when the NO contacts are closed (ON).
3. Only for MBB models.
4. Reference values for MBB models.
5. Only for MBB models.
6. Reference value.
7. For safe use, always make sure that the minimum values or greater are provided.

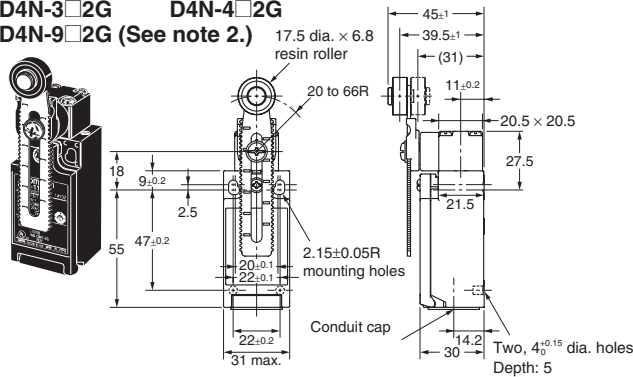
Safety Limit  
Switches

D4N

# 1-conduit Models

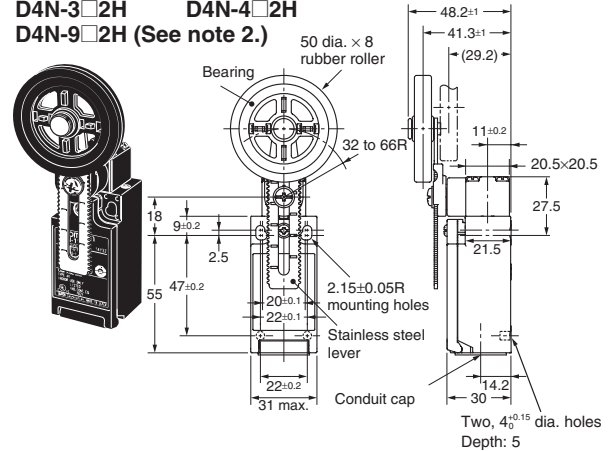
## Adjustable Roller Lever, Form Lock (with Metal Lever, Resin Roller)

D4N-1□2G D4N-2□2G  
D4N-3□2G D4N-4□2G  
D4N-9□2G (See note 2.)



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

D4N-1□2H D4N-2□2H  
D4N-3□2H D4N-4□2H  
D4N-9□2H (See note 2.)



- Note:** 1. Unless otherwise specified, a tolerance of  $\pm 0.4$  mm applies to all dimensions.  
2. Refer to following diagrams for details on M12 connectors.

## Snap-action (1NC/1NO) (2NC), Slow-action (2NC) (3NC)

Model	D4N-□12H D4N-□22H D4N-□B2H D4N-□D2H	D4N-□12G D4N-□22G D4N-□B2G D4N-□D2G (See note 2.)
OF max.	4.5 N	
RF min.	0.4 N	
PT	18° to 27°	
OT min.	40°	
MD max. (See note 3.)	14°	
OP	---	
TT (See note 4.)	(80°)	
DOT min. (See note 5.)	50°	
DOF min. (See note 5.)	20 N	

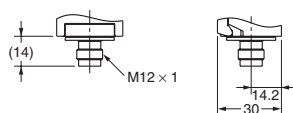
- Note:** 1. Variation occurs in the simultaneity of contact opening/closing operations of 2NC, 2NC/1NO, and 3NC contacts. Check contact operation.  
2. The operating characteristics of these Switches were measured with the roller lever set at 32 mm.  
3. Only for snap-action models.  
4. Reference value.  
5. Only for slow-action models. For safe use, always make sure that the minimum values or greater are provided.

## Slow-action (1NC/1NO) (2NC/1NO)

Model	D4N-□A2H D4N-□C2H D4N-□E2H D4N-□F2H	D4N-□A2G D4N-□C2G D4N-□E2G D4N-□F2G (See note 1.)
OF max.	4.5 N	
RF min.	0.4 N	
PT (See note 2.)	18° to 27°	
PT (2nd) (See note 3.)	(44°)	
PT (See note 4.)	27.5° to 36.5°	
PT (2nd) (See note 5.)	(18°)	
OT min.	40°	
OP	---	
TT (See note 6.)	(80°)	
DOT min.	50°	
DOF min. (See note 7.)	20 N	

- Note:** 1. The operating characteristics of these Switches were measured with the roller lever set at 32 mm.  
2. This PT value is possible when the NC contacts are open (OFF).  
3. This PT value is possible when the NO contacts are closed (ON).  
4. Only for MBB models.  
5. Reference value for MBB models only.  
6. Reference value.  
7. For safe use, always make sure that the minimum values or greater are provided.

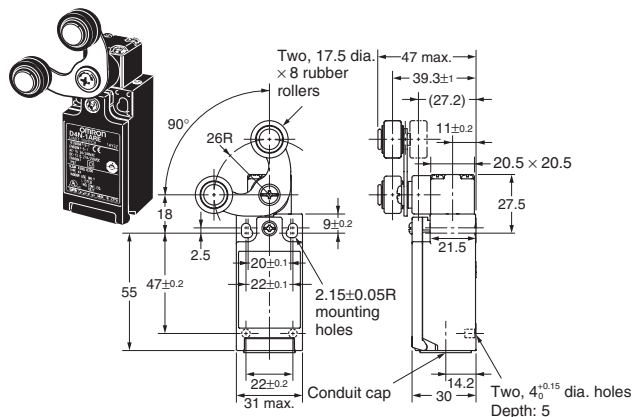
## 1-conduit M12 Connector D4N-9□□□



# 1-conduit Models

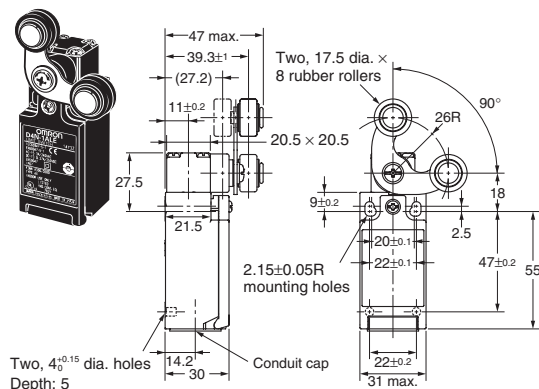
## Fork Lever Lock (Right Operation)

D4N-1□RE D4N-2□RE  
D4N-3□RE D4N-4□RE



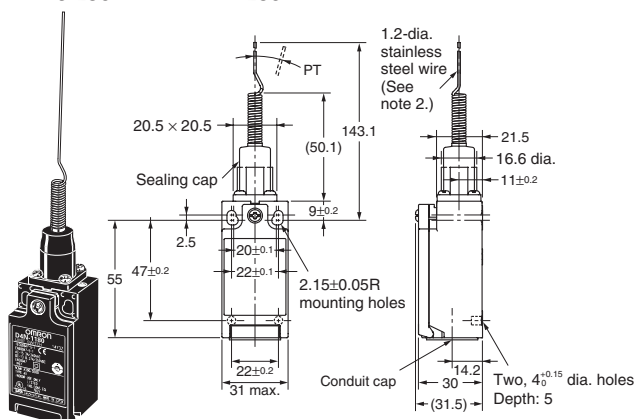
## Fork Lever Lock (Left Operation)

D4N-1□LE D4N-2□LE  
D4N-3□LE D4N-4□LE



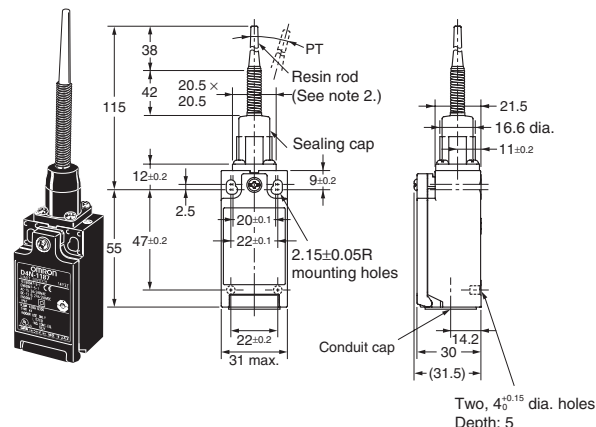
## Cat Whisker

D4N-1□80 D4N-2□80  
D4N-3□80 D4N-4□80



## Plastic Rod

D4N-1□87 D4N-2□87  
D4N-3□87 D4N-4□87



**Note:** 1. Unless otherwise specified, a tolerance of ±0.4 mm applies to all dimensions.

2. The usable range for stainless steel wires and resin rods is 35 mm max. from the end with a total travel of 70 mm max.

## Slow-action (1NC/1NO) (2NC/1NO) (2NC) (3NC)

Model	D4N-□□RE	D4N-□□LE
Force necessary to reverse the direction of the lever: max.	6.4 N	6.4 N
Movement until the lever reverses	55 ±10°	55 ±10°
Movement until switch operation (NC)	6.5° (MBB: 10°)	6.5° (MBB: 10°)
Movement until switch operation (NO)	18.5° (MBB: 5°)	18.5° (MBB: 5°)
DOT min.	30°	30°
DOF min.	20 N	20 N

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

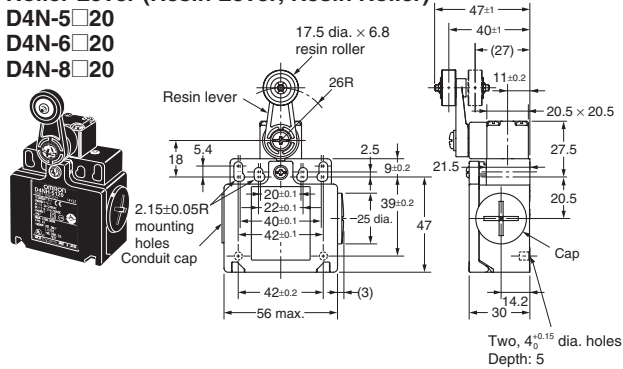
## Snap-action (1NC/1NO) (2NC), Slow-action (2NC) (3NC)

Model	D4N-□□80	D4N-□□87
OF max.	1.5 N	1.5 N
PT max.	15°	15°

## 2-conduit Models

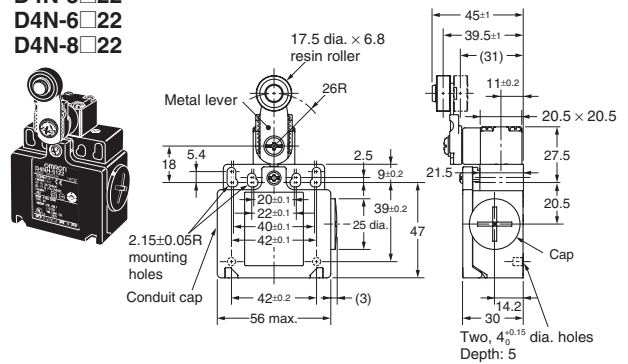
### Roller Lever (Resin Lever, Resin Roller)

D4N-5□20  
D4N-6□20  
D4N-8□20



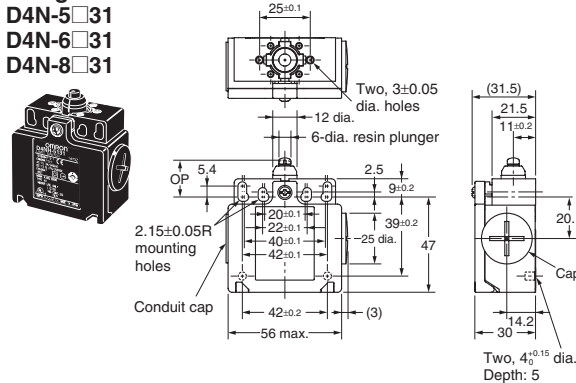
### Roller Lever (Metal Lever, Resin Roller)

D4N-5□22  
D4N-6□22  
D4N-8□22



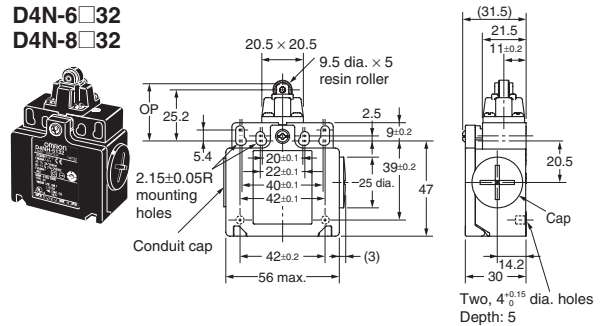
### Plunger

D4N-5□31  
D4N-6□31  
D4N-8□31



### Roller Plunger

D4N-5□32  
D4N-6□32  
D4N-8□32



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

## Snap-action (1NC/1NO) (2NC), Slow-action (2NC) (3NC)

Model	D4N-□120 D4N-□220 D4N-□B20 D4N-□D20	D4N-□122 D4N-□222 D4N-□B22 D4N-□D22	D4N-□131 D4N-□231 D4N-□B31 D4N-□D31	D4N-□132 D4N-□232 D4N-□B32 D4N-□D32
OF max.	5 N	5 N	6.5 N	6.5 N
RF min.	0.5 N	0.5 N	1.5 N	1.5 N
PT	18° to 27°	18° to 27°	2 mm	2 mm
OT min.	40°	40°	4 mm	4 mm
MD max. (See note 2.)	14°	14°	1 mm	1 mm
OP	---	---	18 ±0.5 mm	28.2 ±0.8 mm
TT (See note 3.)	(80°)	(80°)	(6 mm)	(6 mm)
DOT min. (See note 4.)	50°	50°	3.2 mm	3.2 mm
DOF min. (See note 4.)	20 N	20 N	20 N	20 N

- Note:**
1. Variation occurs in the simultaneity of contact opening/closing operations of 2NC, 2NC/1NO, and 3NC contacts. Check contact operation.
  2. Only for snap-action models.
  3. Reference value.
  4. Only for slow-action models. For safe use, always make sure that the minimum values or greater are provided.

## Slow-action (1NC/1NO) (2NC/1NO)

Model	D4N-□A20 D4N-□C20 D4N-□E20 D4N-□F20	D4N-□A22 D4N-□C22 D4N-□E22 D4N-□F22	D4N-□A31 D4N-□C31 D4N-□E31 D4N-□F31	D4N-□A32 D4N-□C32 D4N-□E32 D4N-□F32
OF max.	5 N	5 N	6.5 N	6.5 N
RF min.	0.5 N	0.5 N	1.5 N	1.5 N
PT (See note 1.)	18° to 27°	18° to 27°	2 mm	2 mm
PT (2nd) (See note 2.)	(44°)	(44°)	(2.9 mm)	(2.9 mm)
PT (See note 3.)	27.5° to 36.5°	27.5° to 36.5°	2.8 mm	2.8 mm
PT (2nd) (See note 4.)	(18°)	(18°)	(1 mm)	(1 mm)
OT min.	40°	40°	4 mm	4 mm
OP	---	---	18 ±0.5 mm	28.2 ±0.8 mm
OP (See note 5.)	---	---	17.4 ±0.5 mm	28 ±0.8 mm
TT (See note 6.)	(80°)	(80°)	(6 mm)	(6 mm)
DOT min. (See note 7.)	50°	50°	3.2 mm	3.2 mm
DOF min. (See note 7.)	20 N	20 N	20 N	20 N

- Note:**
1. This PT value is possible when the NC contacts are open (OFF).
  2. This PT value is possible when the NO contacts are closed (ON).
  3. Only for MBB models.
  4. Reference value for MBB models.
  5. Only for MBB models.
  6. Reference value.
  7. For safe use, always make sure that the minimum values or greater are provided.

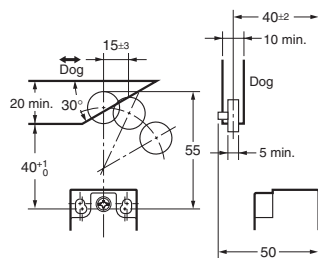




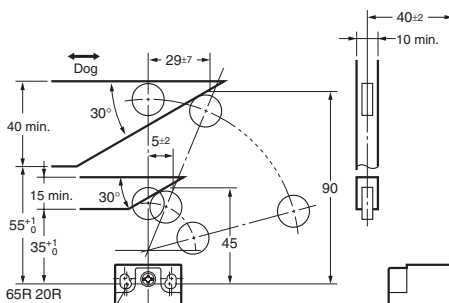
# Levers

Refer to the following for the angles and positions of the watchdogs (source: EN50047.)

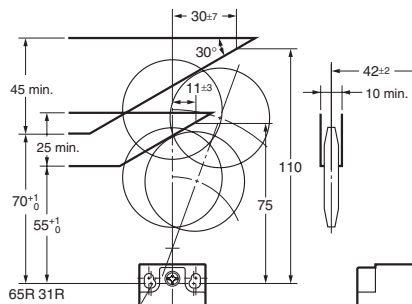
**Roller Lever**  
(D4N-□□20)



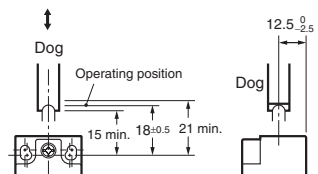
**Adjustable Roller Lever, Form Lock**  
(with Metal Lever, Resin Roller)  
(D4N-□□2G) (Reference Values)



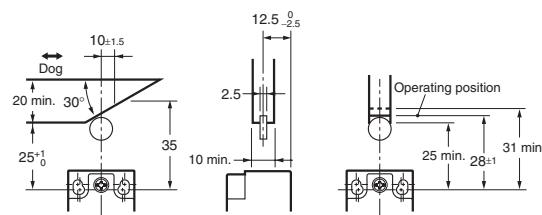
**Adjustable Roller Lever, Form Lock**  
(with Metal Lever, Rubber Roller)  
(D4N-□□2H) (Reference Values)



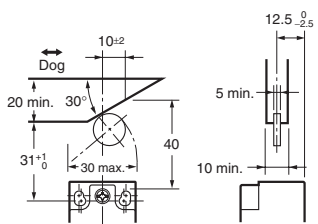
**Sealed Plunger**  
(D4N-□□31)



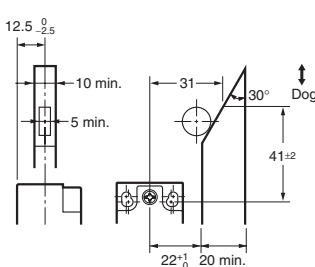
**Roller Plunger**  
(D4N-□□32)



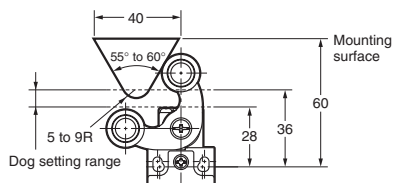
**One-way Roller Arm Lever**  
(Horizontal)  
(D4N-□□62)



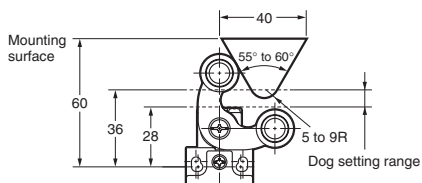
**One-way Roller Arm Lever**  
(Vertical) (Reference Values)  
(D4N-□□72)



**Fork Lever Lock**  
(Right Operation)  
(D4N-□□RE)



**Fork Lever Lock**  
(Left Operation)  
(D4N-□□LE)



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

Safety Limit  
Switches  
D4N

# Safety Precautions

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

## CAUTION

Do not use metal connectors or conduits. If the Switch is made of resin, damage at the conduit section may cause electric shock.



## Precautions for Safe Use

- Do not drop the Switch. Doing so may result in the Switch not performing to its full capacity.
- Do not attempt to disassemble or modify the Switch. Doing so may cause the Switch to malfunction.
- Do not use the Switch where explosive gas or flammable gas may be present.
- 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.)
- Protect the head from foreign material. Subjecting the head to foreign material may result in premature wear or damage to the Switch. Although the switch body is protected from penetration by dust or water, the head is not protected from penetration by minute particles or water.
- Turn the power OFF before wiring. Not doing so may result in electric shock.
- Install the cover after wiring. Not doing so may result in electric shock.
- Connect a fuse to the Switch in series to protect the Switch from short-circuit damage. Use a fuse with a breaking current 1.5 to 2 times larger than the rated current. To conform to EN ratings, use an IEC60269-compliant 10-A fuse type gI or gG.
- Do not switch circuits for two or more standard loads (250 VAC, 3 A) at the same time. Doing so may adversely affect insulation performance.
- The durability of the Switch is greatly affected by operating conditions. Evaluate the Switch under actual working conditions before permanent installation and use within a number of switching operations that will not adversely affect the Switch's performance.
- Be sure to indicate in the machine manufacturer's instruction manual that the user must not attempt to repair or maintain the Switch and must contact the machine manufacturer for any repairs or maintenance.
- Check the Switches before use and inspect regularly, replacing them when necessary. If a Switch is kept pressed for an extended period of time, the components may deteriorate quickly, and the Switch may not release.

## Precautions for Correct Use

### Environment

- The Switch is intended for indoor use only.
- Do not use the Switch outdoors. Doing so may cause the Switch to malfunction.
- Do not use the Switch where corrosive gases (e.g.,  $H_2S$ ,  $SO_2$ ,  $NH_3$ ,  $HNO_3$ ,  $Cl_2$ ) are present or in locations subject to high temperature and humidity. Doing so may result in damage to the Switch caused by contact failure or corrosion.
- Do not use the Switches in the following locations.
  - Locations subject to severe temperature changes
  - Locations subject to high temperatures or condensation
  - Locations subject to severe vibration

- Locations where the interior of the Protective Door may come into direct contact with cutting chips, metal filings, oil, or chemicals
- Locations where the Switch may come into contact with thinner or detergents

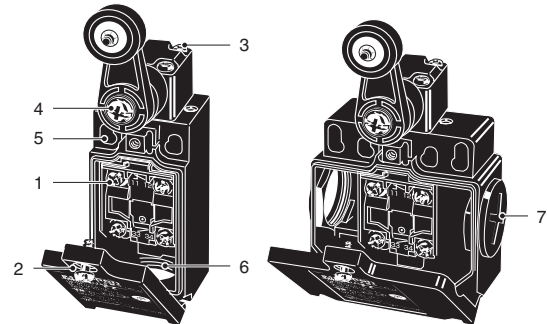
## Mounting Method

### Mounting Screw 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 clamping screw	0.5 to 0.7 N·m
3	Head clamping screw	0.5 to 0.6 N·m
4	Lever clamping screw	1.6 to 1.8 N·m
5	Body clamping screw	0.5 to 0.7 N·m
6	Conduit mounting connection, M12 adaptor	1.8 to 2.2 N·m (except 1/2-14NPT) 1.4 to 1.8 N·m (1/2-14NPT)
7	Cap screw	1.3 to 1.7 N·m

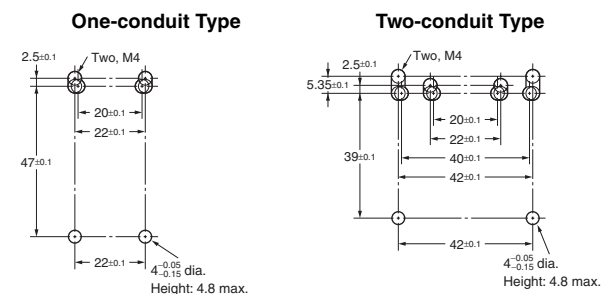
Safety Limit Switches  
D4N



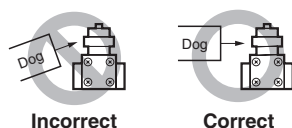
### Switch Mounting

- Mount the Switch using M4 screws and 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.
- Secure the Switch with two M4 bolts and washers. Provide studs with a diameter of  $4^{+0.05}_{-0.15}$  and a height of 4.8 mm max. at two places, inserting into the holes at the bottom of the Switch as shown below so that the Switch is firmly fixed at four points.

### Switch Mounting Holes



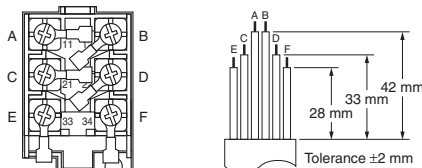
- Make sure that the dog contacts the actuator at a right angle. Applying a load to the switch actuator (roller) on a slant may result in deformation or damage of the actuator or rotary shaft.



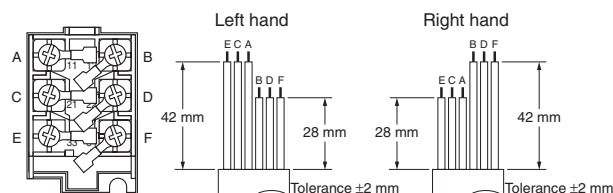
## Wiring

- 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)



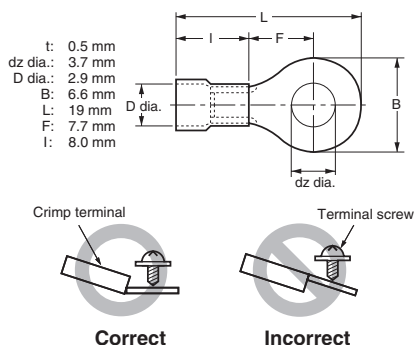
### Two-conduit Type (3 Poles)



- 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. The crimp terminals shown below are not more than 0.5 mm thick.

Manufacture	Type	Wire size
J.S.T.	FV0.5-3.7 (F type)	AWG20 (0.5 mm <sup>2</sup> )
	V0.5-3.7 (straight type)	

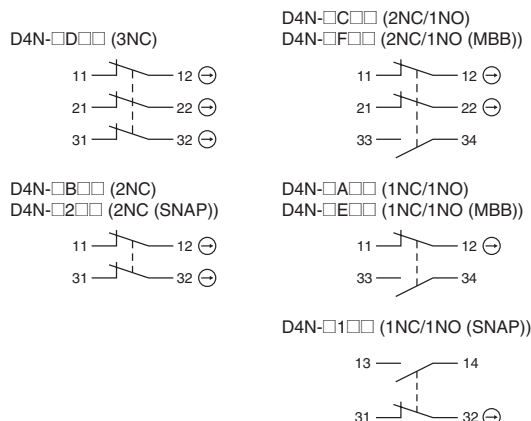
J.S.T. is a Japanese manufacturer.



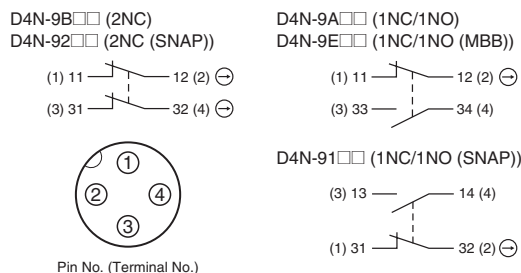
## Contact Arrangement

- The following diagrams show the contact arrangements used for screw terminal types and connector types.

### Screw Terminal Type



### Connector Type



Pin No. (Terminal No.)

- Applicable socket: XS2F (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.
- When using 1/2-14NPT, wind sealing tape around the joint between the connector and conduit opening so that the enclosure will conform to IP67.
- 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).

## 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.

## 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
1/2-14NPT	LAPP	ST-NPT1/2 5301-6030	6.0 to 12.0 mm
M12	LAPP	ST-M12 × 1.5 5311-1000	3.5 to 7.0 mm

Use LAPP connectors together with seal packing (JPK-16, GP-13.5, GPM20, or GPM12), and tighten to the specified tightening torque. Seal packing is sold separately.

LAPP is a German manufacturer.

Before using an M12 type, attaching the provided changing adaptor to the Switch and then connect the recommended connector.

Before using a 2-conduit 1/2-14NPT type, attach the provided changing adaptor to the Switch and then connect the recommended connector.

## Storage

Do not store the Switch in locations where corrosive gases (e.g., H<sub>2</sub>S, SO<sub>2</sub>, NH<sub>3</sub>, HNO<sub>3</sub>, Cl<sub>2</sub>) or dust is present, or in locations subject to high temperatures and humidity.

## Others

- Do not allow the load current to exceed the rated value.
- Confirm that the seal rubber has no defects before use. If the seal rubber is displaced or raised, or has foreign particles adhered to it, the sealing capability of the seal rubber will be adversely affected.
- Use the correct cover mounting screws only, or the sealing capability of the seal rubber will deteriorate.
- Inspect the Switch regularly.
- Make sure that foreign particles do not enter the head when removing the screws from the four corners to change the head position in any of the four directions.
- 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.
  3. Use or set a Switch that is operated in one direction only.

## Production Discontinuation

Following the release of the D4N, production of the D4D-N will be discontinued.

### Date of Production Discontinuation

Production of the D4D-N Series will be discontinued as of the end of March 2006.

### Product Replacement

#### 1. Dimensions

The D4D-N and D4N use the same mounting method, and mounting hole. The multi-contact structure and the extra 4 mm in length, however, are different.

#### 2. Terminal Numbers

For the 2-contact slow-action model, the terminals 21, 22, 23, and 24 on the D4D-N are 31, 32, 33, and 34 on the D4N.

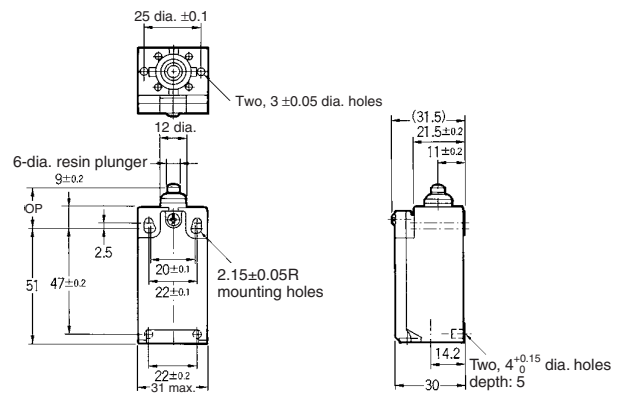
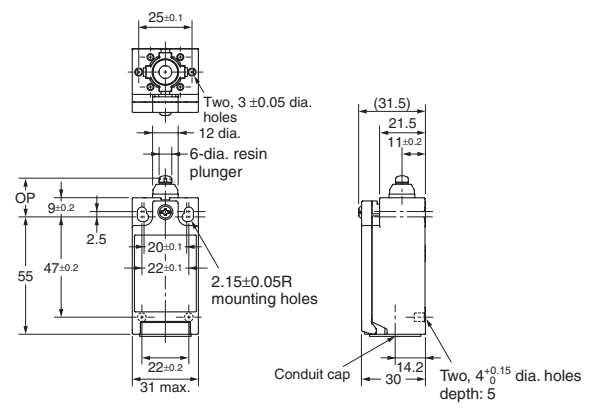
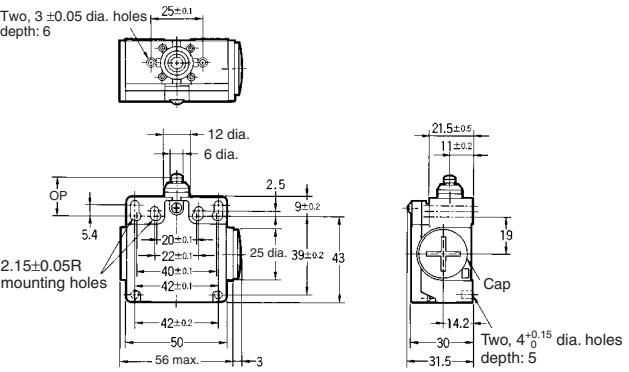
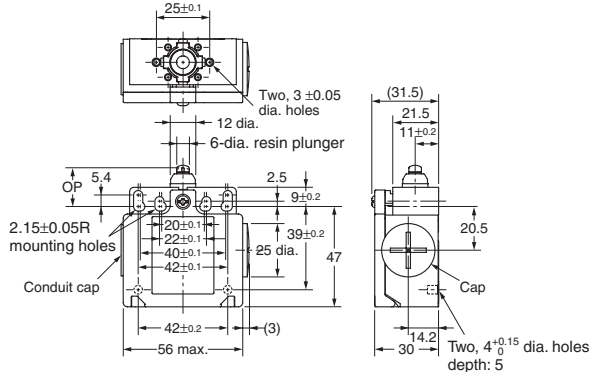
#### 3. Recommended Terminals

If the recommended terminals are not used, the Switch may not be compatible. Make sure that the Switch is compatible with the terminals.

## Comparison of the D4D-N and Substitute Products

Model	D4N
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

# Dimensions (Unit: mm)

Discontinued Models (1-conduit Plunger-type D4D-N)	Replacement Products (1-conduit Plunger-type D4N)
 <p>25 dia. <math>\pm 0.1</math></p> <p>Two, 3 <math>\pm 0.05</math> dia. holes</p> <p>12 dia.</p> <p>6-dia. resin plunger</p> <p>9 <math>\pm 0.2</math></p> <p>OP</p> <p>2.5</p> <p>51</p> <p>47 <math>\pm 0.2</math></p> <p>20 <math>\pm 0.1</math></p> <p>22 <math>\pm 0.1</math></p> <p>2.15 <math>\pm 0.05</math>R mounting holes</p> <p>22 <math>\pm 0.2</math></p> <p>31 max.</p> <p>31.5</p> <p>21.5 <math>\pm 0.2</math></p> <p>11 <math>\pm 0.2</math></p> <p>14.2</p> <p>Two, 4 <math>^{+0.15}_0</math> dia. holes depth: 5</p> <p>30</p>	 <p>25 <math>\pm 0.1</math></p> <p>Two, 3 <math>\pm 0.05</math> dia. holes</p> <p>12 dia.</p> <p>6-dia. resin plunger</p> <p>9 <math>\pm 0.2</math></p> <p>OP</p> <p>2.5</p> <p>55</p> <p>47 <math>\pm 0.2</math></p> <p>20 <math>\pm 0.1</math></p> <p>22 <math>\pm 0.1</math></p> <p>2.15 <math>\pm 0.05</math>R mounting holes</p> <p>22 <math>\pm 0.2</math></p> <p>31 max.</p> <p>31.5</p> <p>21.5</p> <p>11 <math>\pm 0.2</math></p> <p>14.2</p> <p>Two, 4 <math>^{+0.15}_0</math> dia. holes depth: 5</p> <p>30</p> <p>Conduit cap</p>
Discontinued Models (2-conduit Plunger-type D4D-N)	Replacement Products (2-conduit Plunger-type D4N)
 <p>Two, 3 <math>\pm 0.05</math> dia. holes depth: 6</p> <p>25 <math>\pm 0.1</math></p> <p>12 dia.</p> <p>6 dia.</p> <p>OP</p> <p>5.4</p> <p>2.15 <math>\pm 0.05</math>R mounting holes</p> <p>20 <math>\pm 0.1</math></p> <p>22 <math>\pm 0.1</math></p> <p>40 <math>\pm 0.1</math></p> <p>42 <math>\pm 0.1</math></p> <p>25 dia.</p> <p>39 <math>\pm 0.2</math></p> <p>43</p> <p>42 <math>\pm 0.2</math></p> <p>50</p> <p>56 max.</p> <p>3</p> <p>21.5 <math>\pm 0.5</math></p> <p>11 <math>\pm 0.2</math></p> <p>19</p> <p>Cap</p> <p>14.2</p> <p>Two, 4 <math>^{+0.15}_0</math> dia. holes depth: 5</p> <p>30</p> <p>31.5</p>	 <p>25 <math>\pm 0.1</math></p> <p>Two, 3 <math>\pm 0.05</math> dia. holes</p> <p>12 dia.</p> <p>6-dia. resin plunger</p> <p>5.4</p> <p>OP</p> <p>2.5</p> <p>9 <math>\pm 0.2</math></p> <p>2.15 <math>\pm 0.05</math>R mounting holes</p> <p>20 <math>\pm 0.1</math></p> <p>22 <math>\pm 0.1</math></p> <p>40 <math>\pm 0.1</math></p> <p>42 <math>\pm 0.1</math></p> <p>25 dia.</p> <p>39 <math>\pm 0.2</math></p> <p>47</p> <p>42 <math>\pm 0.2</math></p> <p>56 max.</p> <p>(3)</p> <p>31.5</p> <p>21.5</p> <p>11 <math>\pm 0.2</math></p> <p>20.5</p> <p>Cap</p> <p>14.2</p> <p>Two, 4 <math>^{+0.15}_0</math> dia. holes depth: 5</p> <p>30</p> <p>Conduit cap</p>

Safety Limit Switches

D4N

## List of Recommended Substitute Products

■ : The actuator on the D4D-N is a non-safety type. The D4N is recommended for safety applications (form lock type). Be sure to mount it correctly.

■ : M screws are recommended to comply with European standards. Therefore, the M20 type is recommended as a substitute when the Pg13.5 conduit-type is not available in a D4N model.

### Safety Limit Switches

D4D-N product to be discontinued	Recommended substitute product	D4D-N product to be discontinued	Recommended substitute product	D4D-N product to be discontinued	Recommended substitute product
D4D-1120N	D4N-1120	D4D-1520N	D4N-1A20	D4D-1A20N	D4N-1B20
D4D-2120N	D4N-2120	D4D-2520N	D4N-2A20	D4D-2A20N	D4N-2B20
D4D-3120N	D4N-3120	D4D-3520N	D4N-3A20	D4D-3A20N	D4N-3B20
D4D-5120N	D4N-5120	D4D-5520N	D4N-5A20	D4D-5A20N	D4N-5B20
D4D-6120N	D4N-6120	D4D-6520N	D4N-6A20	D4D-6A20N	D4N-6B20
D4D-1122N	D4N-1122	D4D-1522N	D4N-1A22	D4D-1A22N	D4N-1B22
D4D-2122N	D4N-2122	D4D-2522N	D4N-2A22	D4D-2A22N	D4N-2B22
D4D-3122N	D4N-3122	D4D-3522N	D4N-3A22	D4D-3A22N	D4N-3B22
D4D-5122N	D4N-5122	D4D-5522N	D4N-5A22	D4D-5A22N	D4N-5B22
D4D-6122N	D4N-6122	D4D-6522N	D4N-6A22	D4D-6A22N	D4N-6B22
D4D-1125N	D4N-1125	D4D-1525N	D4N-1A25	D4D-1A25N	D4N-1B25
D4D-2125N	D4N-2125	D4D-2525N	D4N-2A25	D4D-2A25N	D4N-2B25
D4D-3125N	D4N-3125	D4D-3525N	D4N-3A25	D4D-3A25N	D4N-3B25
D4D-1131N	D4N-1131	D4D-1531N	D4N-1A31	D4D-1A31N	D4N-1B31
D4D-2131N	D4N-2131	D4D-2531N	D4N-2A31	D4D-2A31N	D4N-2B31
D4D-3131N	D4N-3131	D4D-3531N	D4N-3A31	D4D-3A31N	D4N-3B31
D4D-5131N	D4N-5131	D4D-5531N	D4N-5A31	D4D-5A31N	D4N-5B31
D4D-6131N	D4N-6131	D4D-6531N	D4N-6A31	D4D-6A31N	D4N-6B31
D4D-1132N	D4N-1132	D4D-1532N	D4N-1A32	D4D-1A32N	D4N-1B32
D4D-2132N	D4N-2132	D4D-2532N	D4N-2A32	D4D-2A32N	D4N-2B32
D4D-3132N	D4N-3132	D4D-3532N	D4N-3A32	D4D-3A32N	D4N-3B32
D4D-5132N	D4N-5132	D4D-5532N	D4N-5A32	D4D-5A32N	D4N-5B32
D4D-6132N	D4N-6132	D4D-6532N	D4N-6A32	D4D-6A32N	D4N-6B32
D4D-1162N	D4N-1162	D4D-1562N	D4N-1A62	D4D-1A62N	D4N-1B62
D4D-2162N	D4N-2162	D4D-2562N	D4N-2A62	D4D-2A62N	D4N-2B62
D4D-3162N	D4N-3162	D4D-3562N	D4N-3A62	D4D-3A62N	D4N-3B62
D4D-5162N	D4N-5162	D4D-5562N	D4N-5A62	D4D-5A62N	D4N-5B62
D4D-6162N	D4N-6162	D4D-6562N	D4N-6A62	D4D-6A62N	D4N-6B62
D4D-1172N	D4N-1172	D4D-1572N	D4N-1A72	D4D-1A72N	D4N-1B72
D4D-2172N	D4N-2172	D4D-2572N	D4N-2A72	D4D-2A72N	D4N-2B72
D4D-3172N	D4N-3172	D4D-3572N	D4N-3A72	D4D-3A72N	D4N-3B72
D4D-5172N	D4N-5172	D4D-5572N	D4N-5A72	D4D-5A72N	D4N-5B72
D4D-6172N	D4N-6172	D4D-6572N	D4N-6A72	D4D-6A72N	D4N-6B72
D4D-112HN	D4N-112H	D4D-152HN	D4N-1A2H	D4D-1A2HN	D4N-1B2H
D4D-212HN	D4N-212H	D4D-252HN	D4N-2A2H	D4D-2A2HN	D4N-2B2H
D4D-312HN	D4N-312H	D4D-352HN	D4N-3A2H	D4D-3A2HN	D4N-3B2H

Safety Limit  
Switches  
D4N

General-purpose Limit Switches

D4D-N product to be discontinued	Recommended substitute product	D4D-N product to be discontinued	Recommended substitute product	D4D-N product to be discontinued	Recommended substitute product
D4D-1121N	D4N-112G	D4D-15REN	D4N-1ARE	D4D-1AREN	D4N-1BRE
D4D-2121N	D4N-212G	D4D-25REN	D4N-2ARE	D4D-2AREN	D4N-2BRE
D4D-3121N	D4N-312G	D4D-35REN	D4N-3ARE	D4D-3AREN	D4N-3BRE
D4D-5121N	D4N-512G	D4D-55REN	D4N-5ARE	D4D-5AREN	D4N-5BRE
D4D-6121N	D4N-612G	D4D-65REN	D4N-6ARE	D4D-6AREN	D4N-6BRE
D4D-1127N	D4N-112H	D4D-15LEN	D4N-1ALE	D4D-1ALEN	D4N-1BLE
D4D-2127N	D4N-212H	D4D-25LEN	D4N-2ALE	D4D-2ALEN	D4N-2BLE
D4D-3127N	D4N-312H	D4D-35LEN	D4N-3ALE	D4D-3ALEN	D4N-3BLE
D4D-5127N	D4N-512H	D4D-55LEN	D4N-5ALE	D4D-5ALEN	D4N-5BLE
D4D-6127N	D4N-612H	D4D-65LEN	D4N-6ALE	D4D-6ALEN	D4N-6BLE
D4D-1180N	D4N-4180	D4D-1521N	D4N-1A2G	D4D-1A21N	D4N-1B2G
D4D-2180N	D4N-2180	D4D-2521N	D4N-2A2G	D4D-2A21N	D4N-2B2G
D4D-3180N	D4N-3180	D4D-3521N	D4N-3A2G	D4D-3A21N	D4N-3B2G
D4D-5180N	D4N-8180	D4D-5521N	D4N-5A2G	D4D-5A21N	D4N-5B2G
D4D-6180N	D4N-6180	D4D-6521N	D4N-6A2G	D4D-6A21N	D4N-6B2G
D4D-1187N	D4N-4187	D4D-1527N	D4N-1A2H	D4D-1A27N	D4N-1B2H
D4D-2187N	D4N-2187	D4D-2527N	D4N-2A2H	D4D-2A27N	D4N-2B2H
D4D-3187N	D4N-3187	D4D-3527N	D4N-3A2H	D4D-3A27N	D4N-3B2H
D4D-5187N	D4N-8187	D4D-5527N	D4N-5A2H	D4D-5A27N	D4N-5B2H
D4D-6187N	D4N-6187	D4D-6527N	D4N-6A2H	D4D-6A27N	D4N-6B2H
				D4D-1A80N	D4N-4B80
				D4D-2A80N	D4N-2B80
				D4D-3A80N	D4N-3B80
				D4D-5A80N	D4N-8B80
				D4D-6A80N	D4N-6B80
				D4D-1A87N	D4N-4B87
				D4D-2A87N	D4N-2B87
				D4D-3A87N	D4N-3B87
				D4D-5A87N	D4N-8B87
				D4D-6A87N	D4N-6B87

Safety Limit  
Switches

D4N

ALL DIMENSIONS SHOWN ARE IN MILLIMETERS.

To convert millimeters into inches, multiply by 0.03937. To convert grams into ounces, multiply by 0.03527.

Cat. No. C130-E1-02

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

# Terms and Conditions of Sale

- Offer; Acceptance.** These terms and conditions (these "Terms") are deemed part of all quotes, agreements, purchase orders, acknowledgments, price lists, catalogs, manuals, brochures and other documents, whether electronic or in writing, relating to the sale of products or services (collectively, the "Products") by Omron Electronics LLC and its subsidiary companies ("Omron"). Omron objects to any terms or conditions proposed in Buyer's purchase order or other documents which are inconsistent with, or in addition to, these Terms.
- Prices; Payment Terms.** All prices stated are current, subject to change without notice by Omron. Omron reserves the right to increase or decrease prices on any unshipped portions of outstanding orders. Payments for Products are due net 30 days unless otherwise stated in the invoice.
- Discounts.** Cash discounts, if any, will apply only on the net amount of invoices sent to Buyer after deducting transportation charges, taxes and duties, and will be allowed only if (i) the invoice is paid according to Omron's payment terms and (ii) Buyer has no past due amounts.
- Interest.** Omron, at its option, may charge Buyer 1-1/2% interest per month or the maximum legal rate, whichever is less, on any balance not paid within the stated terms.
- Orders.** Omron will accept no order less than \$200 net billing.
- Governmental Approvals.** Buyer shall be responsible for, and shall bear all costs involved in, obtaining any government approvals required for the importation or sale of the Products.
- Taxes.** All taxes, duties and other governmental charges (other than general real property and income taxes), including any interest or penalties thereon, imposed directly or indirectly on Omron or required to be collected directly or indirectly by Omron for the manufacture, production, sale, delivery, importation, consumption or use of the Products sold hereunder (including customs duties and sales, excise, use, turnover and license taxes) shall be charged to and remitted by Buyer to Omron.
- Financial.** If the financial position of Buyer at any time becomes unsatisfactory to Omron, Omron reserves the right to stop shipments or require satisfactory security or payment in advance. If Buyer fails to make payment or otherwise comply with these Terms or any related agreement, Omron may (without liability and in addition to other remedies) cancel any unshipped portion of Products sold hereunder and stop any Products in transit until Buyer pays all amounts, including amounts payable hereunder, whether or not then due, which are owing to it by Buyer. Buyer shall in any event remain liable for all unpaid accounts.
- Cancellation; Etc.** Orders are not subject to rescheduling or cancellation unless Buyer indemnifies Omron against all related costs or expenses.
- Force Majeure.** Omron shall not be liable for any delay or failure in delivery resulting from causes beyond its control, including earthquakes, fires, floods, strikes or other labor disputes, shortage of labor or materials, accidents to machinery, acts of sabotage, riots, delay in or lack of transportation or the requirements of any government authority.
- Shipping; Delivery.** Unless otherwise expressly agreed in writing by Omron:
  - Shipments shall be by a carrier selected by Omron; Omron will not drop ship except in "break down" situations.
  - Such carrier shall act as the agent of Buyer and delivery to such carrier shall constitute delivery to Buyer;
  - All sales and shipments of Products shall be FOB shipping point (unless otherwise stated in writing by Omron), at which point title and risk of loss shall pass from Omron to Buyer; provided that Omron shall retain a security interest in the Products until the full purchase price is paid;
  - Delivery and shipping dates are estimates only; and
  - Omron will package Products as it deems proper for protection against normal handling and extra charges apply to special conditions.
- Claims.** Any claim by Buyer against Omron for shortage or damage to the Products occurring before delivery to the carrier must be presented in writing to Omron within 30 days of receipt of shipment and include the original transportation bill signed by the carrier noting that the carrier received the Products from Omron in the condition claimed.
- Warranties.** (a) **Exclusive Warranty.** Omron's exclusive warranty is that the Products will be free from defects in materials and workmanship for a period of twelve months from the date of sale by Omron (or such other period expressed in writing by Omron). Omron disclaims all other warranties, express or implied. (b) **Limitations.** OMRON MAKES NO WARRANTY OR REPRESENTATION, EXPRESS OR IMPLIED, ABOUT NON-INFRINGEMENT, MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE OF THE PRODUCTS. BUYER ACKNOWLEDGES THAT IT ALONE HAS DETERMINED THAT THE PRODUCTS WILL SUITABLY MEET THE REQUIREMENTS OF THEIR INTENDED USE. Omron further disclaims all warranties and responsibility of any type for claims or expenses based on infringement by the Products or otherwise of any intellectual property right. (c) **Buyer Remedy.** Omron's sole obligation hereunder shall be, at Omron's election, to (i) replace (in the form originally shipped with Buyer responsible for labor charges for removal or replacement thereof) the non-complying Product, (ii) repair the non-complying Product, or (iii) repay or credit Buyer an amount equal to the purchase price of the non-complying Product; provided that in no event shall Omron be responsible for warranty, repair, indemnity or any other claims or expenses regarding the Products unless Omron's analysis confirms that the Products were properly handled, stored, installed and maintained and not subject to contamination, abuse, misuse or inappropriate modification. Return of any Products by Buyer must be approved in writing by Omron before shipment. Omron Companies shall not be liable for the suitability or unsuitability or the results from the use of Products in combination with any electrical or electronic components, circuits, system assemblies or any other materials or substances or environments. Any advice, recommendations or information given orally or in writing, are not to be construed as an amendment or addition to the above warranty. See <http://oeweb.omron.com> or contact your Omron representative for published information.
- Limitation on Liability; Etc.** OMRON COMPANIES SHALL NOT BE LIABLE FOR SPECIAL, INDIRECT, INCIDENTAL, OR CONSEQUENTIAL DAMAGES, LOSS OF PROFITS OR PRODUCTION OR COMMERCIAL LOSS IN ANY WAY CONNECTED WITH THE PRODUCTS, WHETHER SUCH CLAIM IS BASED IN CONTRACT, WARRANTY, NEGLIGENCE OR STRICT LIABILITY. Further, in no event shall liability of Omron Companies exceed the individual price of the Product on which liability is asserted.
- Indemnities.** Buyer shall indemnify and hold harmless Omron Companies and their employees from and against all liabilities, losses, claims, costs and expenses (including attorney's fees and expenses) related to any claim, investigation, litigation or proceeding (whether or not Omron is a party) which arises or is alleged to arise from Buyer's acts or omissions under these Terms or in any way with respect to the Products. Without limiting the foregoing, Buyer (at its own expense) shall indemnify and hold harmless Omron and defend or settle any action brought against such Companies to the extent based on a claim that any Product made to Buyer specifications infringed intellectual property rights of another party.
- Property; Confidentiality.** Any intellectual property in the Products is the exclusive property of Omron Companies and Buyer shall not attempt to duplicate it in any way without the written permission of Omron. Notwithstanding any charges to Buyer for engineering or tooling, all engineering and tooling shall remain the exclusive property of Omron. All information and materials supplied by Omron to Buyer relating to the Products are confidential and proprietary, and Buyer shall limit distribution thereof to its trusted employees and strictly prevent disclosure to any third party.
- Export Controls.** Buyer shall comply with all applicable laws, regulations and licenses regarding (i) export of products or information; (ii) sale of products to "forbidden" or other proscribed persons; and (iii) disclosure to non-citizens of regulated technology or information.
- Miscellaneous.** (a) **Waiver.** No failure or delay by Omron in exercising any right and no course of dealing between Buyer and Omron shall operate as a waiver of rights by Omron. (b) **Assignment.** Buyer may not assign its rights hereunder without Omron's written consent. (c) **Law.** These Terms are governed by the law of the jurisdiction of the home office of the Omron company from which Buyer is purchasing the Products (without regard to conflict of law principles). (d) **Amendment.** These Terms constitute the entire agreement between Buyer and Omron relating to the Products, and no provision may be changed or waived unless in writing signed by the parties. (e) **Severability.** If any provision hereof is rendered ineffective or invalid, such provision shall not invalidate any other provision. (f) **Setoff.** Buyer shall have no right to set off any amounts against the amount owing in respect of this invoice. (g) **Definitions.** As used herein, "including" means "including without limitation"; and "Omron Companies" (or similar words) mean Omron Corporation and any direct or indirect subsidiary or affiliate thereof.

## Certain Precautions on Specifications and Use

- Suitability of Use.** Omron Companies shall not be responsible for conformity with any standards, codes or regulations which apply to the combination of the Product in the Buyer's application or use of the Product. At Buyer's request, Omron will provide applicable third party certification documents identifying ratings and limitations of use which apply to the Product. This information by itself is not sufficient for a complete determination of the suitability of the Product in combination with the end product, machine, system, or other application or use. Buyer shall be solely responsible for determining appropriateness of the particular Product with respect to Buyer's application, product or system. Buyer shall take application responsibility in all cases but the following is a non-exhaustive list of applications for which particular attention must be given:
  - Outdoor use, uses involving potential chemical contamination or electrical interference, or conditions or uses not described in this document.
  - Use in consumer products or any use in significant quantities.
  - Energy control systems, combustion systems, railroad systems, aviation systems, medical equipment, amusement machines, vehicles, safety equipment, and installations subject to separate industry or government regulations.
  - Systems, machines and equipment that could present a risk to life or property. Please know and observe all prohibitions of use applicable to this Product.
 NEVER USE THE PRODUCT FOR AN APPLICATION INVOLVING SERIOUS RISK TO LIFE OR PROPERTY OR IN LARGE QUANTITIES WITHOUT ENSURING THAT THE SYSTEM AS A WHOLE HAS BEEN DESIGNED TO ADDRESS THE RISKS, AND THAT THE OMRON'S PRODUCT IS PROPERLY RATED AND INSTALLED FOR THE INTENDED USE WITHIN THE OVERALL EQUIPMENT OR SYSTEM.
- Programmable Products.** Omron Companies shall not be responsible for the user's programming of a programmable Product, or any consequence thereof.
- Performance Data.** Data presented in Omron Company websites, catalogs and other materials is provided as a guide for the user in determining suitability and does not constitute a warranty. It may represent the result of Omron's test conditions, and the user must correlate it to actual application requirements. Actual performance is subject to the Omron's Warranty and Limitations of Liability.
- Change in Specifications.** Product specifications and accessories may be changed at any time based on improvements and other reasons. It is our practice to change part numbers when published ratings or features are changed, or when significant construction changes are made. However, some specifications of the Product may be changed without any notice. When in doubt, special part numbers may be assigned to fix or establish key specifications for your application. Please consult with your Omron's representative at any time to confirm actual specifications of purchased Product.
- Errors and Omissions.** Information presented by Omron Companies has been checked and is believed to be accurate; however, no responsibility is assumed for clerical, typographical or proofreading errors or omissions.

Complete "Terms and Conditions of Sale" for product purchase and use are on Omron's website at [www.omron.com/oei](http://www.omron.com/oei) – under the "About Us" tab, in the Legal Matters section.

**ALL DIMENSIONS SHOWN ARE IN MILLIMETERS.**

To convert millimeters into inches, multiply by 0.03937. To convert grams into ounces, multiply by 0.03527.



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