## Popular Safety Limit Switches Providing a Full Lineup Conforming to International Standards

- Lineup includes models with $1 \mathrm{NC} / 1 \mathrm{NO}, 2 \mathrm{NC}, 2 \mathrm{NC} / 1 \mathrm{NO}$ and 3NC contact forms.
(Slow-action models with MBB contacts are available.)
- M12-connector models are also 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 the requirements for safety contacts in EN 115-1, EN 81-20, and EN 81-50 (slow-action models only).
- Certified standards: UL, EN (TÜV), and CCC

Be sure to read the "Safety Precautions" on page 17.

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


CCCs


For the most recent information on models that have been certified for safety standards, refer to your OMRON website.

## Model Number Structure

## Model Number Legend

1-Conduit Models


1. Conduit size

1: Pg13.5
2: G1/2
4: M20
9: M12 connector
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: Plunger
32: 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)

2-Conduit Models
D4N- $\frac{\square}{1} \frac{\square}{2} \frac{\square \square}{3}$

1. Conduit size

6: G1/2
8: M20
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: Plunger
32: Roller Plunger
62: One-way roller arm lever (horizontal)
72: One-way roller arm lever (vertical)

Ordering Information
List of Models
Consult with your OMRON representative when ordering any models that are not listed in this table.
Switches with Two Contacts (with Direct Opening Mechanism)

| Actuator | Conduit size |  | Built-in switch mechanism |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  | 1NC/1NO (Snap-action) |  | 2NC(Snap-action) |  | 1NC/1NO(Slow-action) |  | 2NC(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-1120 | $\Theta$ | D4N-1220 | $\Theta$ | D4N-1A20 | $\Theta$ | D4N-1B20 | $\Theta$ |
|  |  | G1/2 | D4N-2120 |  | D4N-2220 |  | D4N-2A20 |  | D4N-2B20 |  |
|  |  | M20 | D4N-4120 |  | D4N-4220 |  | D4N-4A20 |  | D4N-4B20 |  |
|  |  | M12 connector | D4N-9120 |  | D4N-9220 |  | D4N-9A20 |  | D4N-9B20 |  |
|  | 2-conduit | G1/2 | D4N-6120 | $\Theta$ | D4N-6220 | $\Theta$ | D4N-6A20 | $\Theta$ | D4N-6B20 | $\Theta$ |
|  |  | M20 | D4N-8120 |  | D4N-8220 |  | D4N-8A20 |  | D4N-8B20 |  |
| Roller lever (metal lever, resin roller) | 1-conduit | Pg13.5 | D4N-1122 | $\Theta$ | D4N-1222 | $\Theta$ | D4N-1A22 | $\Theta$ | D4N-1B22 | $\Theta$ |
|  |  | G1/2 | D4N-2122 |  | D4N-2222 |  | D4N-2A22 |  | D4N-2B22 |  |
|  |  | M20 | D4N-4122 |  | D4N-4222 |  | D4N-4A22 |  | D4N-4B22 |  |
|  |  | M12 connector | D4N-9122 |  | D4N-9222 |  | D4N-9A22 |  | D4N-9B22 |  |
|  | 2-conduit | G1/2 | D4N-6122 | $\Theta$ | D4N-6222 | $\Theta$ | D4N-6A22 | $\Theta$ | D4N-6B22 | $\Theta$ |
|  |  | M20 | D4N-8122 |  | D4N-8222 |  | D4N-8A22 |  | D4N-8B22 |  |
| Roller lever (metal lever, metal roller) | 1-conduit | Pg13.5 | D4N-1125 | $\Theta$ | D4N-1225 | $\Theta$ | D4N-1A25 | $\Theta$ | D4N-1B25 | $\Theta$ |
|  |  | G1/2 | D4N-2125 |  | D4N-2225 |  | D4N-2A25 |  | D4N-2B25 |  |
|  |  | M20 | D4N-4125 |  | D4N-4225 |  | D4N-4A25 |  | D4N-4B25 |  |
|  |  | M12 connector | D4N-9125 |  | D4N-9225 |  | D4N-9A25 |  | D4N-9B25 |  |
| Roller lever (metal lever, bearing roller) | 1-conduit | Pg13.5 | D4N-1126 | $\Theta$ | D4N-1226 | $\Theta$ | D4N-1A26 | $\Theta$ | D4N-1B26 | $\Theta$ |
|  |  | G1/2 | D4N-2126 |  | D4N-2226 |  | D4N-2A26 |  | D4N-2B26 |  |
|  |  | M20 | D4N-4126 |  | D4N-4226 |  | D4N-4A26 |  | D4N-4B26 |  |
|  |  | M12 connector | D4N-9126 |  | D4N-9226 |  | D4N-9A26 |  | D4N-9B26 |  |
| Adjustable roller lever, form lock (metal lever, resin roller) | 1-conduit | Pg13.5 | D4N-112G | $\Theta$ | D4N-122G | $\Theta$ | D4N-1A2G | $\Theta$ | D4N-1B2G | $\Theta$ |
|  |  | G1/2 | D4N-212G |  | D4N-222G |  | D4N-2A2G |  | D4N-2B2G |  |
|  |  | 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 | $\Theta$ | D4N-622G | $\Theta$ | D4N-6A2G | $\Theta$ | D4N-6B2G | $\Theta$ |
|  |  | M20 | D4N-812G |  | D4N-822G |  | D4N-8A2G |  | D4N-8B2G |  |
| Adjustable roller lever, form lock (metal lever, rubber roller) | 1-conduit | Pg13.5 | D4N-112H | $\Theta$ | D4N-122H | $\Theta$ | D4N-1A2H | $\Theta$ | D4N-1B2H | $\Theta$ |
|  |  | G1/2 | D4N-212H |  | D4N-222H |  | D4N-2A2H |  | D4N-2B2H |  |
|  |  | 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 | $\Theta$ | D4N-622H | $\Theta$ | D4N-6A2H | $\Theta$ | D4N-6B2H | $\Theta$ |
|  |  | M20 | D4N-812H |  | D4N-822H |  | D4N-8A2H |  | D4N-8B2H |  |
| Plunger | 1-conduit | Pg13.5 | D4N-1131 | $\Theta$ | D4N-1231 | $\Theta$ | D4N-1A31 | $\Theta$ | D4N-1B31 | $\Theta$ |
|  |  | G1/2 | D4N-2131 |  | D4N-2231 |  | D4N-2A31 |  | D4N-2B31 |  |
|  |  | M20 | D4N-4131 |  | D4N-4231 |  | D4N-4A31 |  | D4N-4B31 |  |
|  |  | M12 connector | D4N-9131 |  | D4N-9231 |  | D4N-9A31 |  | D4N-9B31 |  |
|  | 2-conduit | G1/2 | D4N-6131 | $\Theta$ | D4N-6231 | $\Theta$ | D4N-6A31 | $\Theta$ | D4N-6B31 | $\Theta$ |
|  |  | M20 | D4N-8131 |  | D4N-8231 |  | D4N-8A31 |  | D4N-8B31 |  |
| Roller plunger | 1-conduit | Pg13.5 | D4N-1132 | $\Theta$ | D4N-1232 | $\Theta$ | D4N-1A32 | $\Theta$ | D4N-1B32 | $\Theta$ |
|  |  | G1/2 | D4N-2132 |  | D4N-2232 |  | D4N-2A32 |  | D4N-2B32 |  |
|  |  | M20 | D4N-4132 |  | D4N-4232 |  | D4N-4A32 |  | D4N-4B32 |  |
|  |  | M12 connector | D4N-9132 |  | D4N-9232 |  | D4N-9A32 |  | D4N-9B32 |  |
|  | 2-conduit | G1/2 | D4N-6132 | $\Theta$ | D4N-6232 | $\Theta$ | D4N-6A32 | $\Theta$ | D4N-6B32 | $\Theta$ |
|  |  | M20 | D4N-8132 |  | D4N-8232 |  | D4N-8A32 |  | D4N-8B32 |  |
| One-way roller arm lever (horizontal) | 1-conduit | Pg13.5 | D4N-1162 | $\Theta$ | D4N-1262 | $\Theta$ | D4N-1A62 | $\Theta$ | D4N-1B62 | $\Theta$ |
|  |  | G1/2 | D4N-2162 |  | D4N-2262 |  | D4N-2A62 |  | D4N-2B62 |  |
|  |  | M20 | D4N-4162 |  | D4N-4262 |  | D4N-4A62 |  | D4N-4B62 |  |
|  |  | M12 connector | D4N-9162 |  | D4N-9262 |  | D4N-9A62 |  | D4N-9B62 |  |
|  | 2-conduit | G1/2 | D4N-6162 | $\Theta$ | D4N-6262 | $\Theta$ | D4N-6A62 | $\Theta$ | D4N-6B62 | $\Theta$ |
|  |  | M20 | D4N-8162 |  | D4N-8262 |  | D4N-8A62 |  | D4N-8B62 |  |
| One-way roller arm lever (vertical) | 1-conduit | Pg13.5 | D4N-1172 | $\Theta$ | D4N-1272 | $\Theta$ | D4N-1A72 | $\Theta$ | D4N-1B72 | $\Theta$ |
|  |  | G1/2 | D4N-2172 |  | D4N-2272 |  | D4N-2A72 |  | D4N-2B72 |  |
|  |  | M20 | D4N-4172 |  | D4N-4272 |  | D4N-4A72 |  | D4N-4B72 |  |
|  |  | M12 connector | D4N-9172 |  | D4N-9272 |  | D4N-9A72 |  | D4N-9B72 |  |
|  | 2-conduit | G1/2 | D4N-6172 | $\Theta$ | D4N-6272 | $\Theta$ | D4N-6A72 | $\Theta$ | D4N-6B72 | $\Theta$ |
|  |  | M20 | D4N-8172 |  | D4N-8272 |  | D4N-8A72 |  | D4N-8B72 |  |

Switches with Three Contacts and MBB Contacts (with Direct Opening Mechanism)

| Actuator | Conduit size |  | Built-in switch mechanism |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  | 2NC/1NO (Slow-action) |  | 3NC <br> (Slow-action) |  | 1NC/1NO MBB (Slow-action) |  | 2NC/1NO MBB (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-1C20 | $\Theta$ | D4N-1D20 | $\Theta$ | D4N-1E20 | $\Theta$ | D4N-1F20 | $\Theta$ |
|  |  | G1/2 | D4N-2C20 |  | D4N-2D20 |  | D4N-2E20 |  | D4N-2F20 |  |
|  |  | M20 | D4N-4C20 |  | D4N-4D20 |  | D4N-4E20 |  | D4N-4F20 |  |
|  |  | M12 connector |  |  |  |  | D4N-9E20 |  |  |  |
|  | 2-conduit | G1/2 | D4N-6C20 | $\Theta$ | D4N-6D20 | $\Theta$ | D4N-6E20 | $\Theta$ | D4N-6F20 | $\Theta$ |
|  |  | M20 | D4N-8C20 |  | D4N-8D20 |  | D4N-8E20 |  | D4N-8F20 |  |
| Roller lever (metal lever, resin roller) | 1-conduit | Pg13.5 | D4N-1C22 | $\Theta$ | D4N-1D22 | $\Theta$ | D4N-1E22 | $\Theta$ | D4N-1F22 | $\Theta$ |
|  |  | G1/2 | D4N-2C22 |  | D4N-2D22 |  | D4N-2E22 |  | D4N-2F22 |  |
| 品 |  | M20 | D4N-4C22 |  | D4N-4D22 |  | D4N-4E22 |  | D4N-4F22 |  |
|  |  | M12 connector | --- |  | --- |  | D4N-9E22 |  | --- |  |
|  | 2-conduit | G1/2 | D4N-6C22 | $\Theta$ | D4N-6D22 | $\Theta$ | D4N-6E22 | $\Theta$ | D4N-6F22 | $\Theta$ |
|  |  | M20 | D4N-8C22 |  | D4N-8D22 |  | D4N-8E22 |  | D4N-8F22 |  |
| Roller lever (metal lever, metal roller) | 1-conduit | Pg13.5 | D4N-1C25 | $\Theta$ | D4N-1D25 | $\Theta$ | D4N-1E25 | $\Theta$ | D4N-1F25 | $\Theta$ |
|  |  | G1/2 | D4N-2C25 |  | D4N-2D25 |  | D4N-2E25 |  | D4N-2F25 |  |
|  |  | M20 | D4N-4C25 |  | D4N-4D25 |  | D4N-4E25 |  | D4N-4F25 |  |
|  |  | M12 connector | --- |  | --- |  | D4N-9E25 |  | --- |  |
| Roller lever (metal lever, bearing roller) | 1-conduit | Pg13.5 | D4N-1C26 | $\Theta$ | D4N-1D26 | $\Theta$ | D4N-1E26 | $\Theta$ | D4N-1F26 | $\Theta$ |
|  |  | G1/2 | D4N-2C26 |  | D4N-2D26 |  | D4N-2E26 |  | D4N-2F26 |  |
|  |  | M20 | D4N-4C26 |  | D4N-4D26 |  | D4N-4E26 |  | D4N-4F26 |  |
|  |  | M12 connector | --- |  | --- |  | D4N-9E26 |  | --- |  |
| Adjustable roller lever, form lock (metal lever, resin roller) | 1-conduit | Pg13.5 | D4N-1C2G | $\Theta$ | D4N-1D2G | $\Theta$ | D4N-1E2G | $\Theta$ | D4N-1F2G | $\Theta$ |
|  |  | G1/2 | D4N-2C2G |  | D4N-2D2G |  | D4N-2E2G |  | D4N-2F2G |  |
|  |  | M20 | D4N-4C2G |  | D4N-4D2G |  | D4N-4E2G |  | D4N-4F2G |  |
|  |  | M12 connector | --- |  | --- |  | D4N-9E2G |  | --- |  |
|  | 2-conduit | G1/2 | D4N-6C2G | $\Theta$ | D4N-6D2G | $\Theta$ | D4N-6E2G | $\Theta$ | D4N-6F2G | $\Theta$ |
|  |  | M20 | D4N-8C2G |  | D4N-8D2G |  | D4N-8E2G |  | D4N-8F2G |  |
| Adjustable roller lever, form lock (metal lever, rubber roller) | 1-conduit | Pg13.5 | D4N-1C2H | $\Theta$ | D4N-1D2H | $\Theta$ | D4N-1E2H | $\bigcirc$ | D4N-1F2H | $\Theta$ |
|  |  | G1/2 | D4N-2C2H |  | D4N-2D2H |  | D4N-2E2H |  | D4N-2F2H |  |
|  |  | M20 | D4N-4C2H |  | D4N-4D2H |  | D4N-4E2H |  | D4N-4F2H |  |
|  |  | M12 connector | --- |  | --- |  | D4N-9E2H <br> D4N-6E2H <br> D4N-8E2H |  | --- |  |
|  | 2-conduit | G1/2 | D4N-6C2H | $\Theta$ | D4N-6D2H | $\Theta$ |  | $\Theta$ | D4N-6F2H <br> D4N-8F2H | $\Theta$ |
|  |  | M20 | D4N-8C2H |  | D4N-8D2H |  |  |  |  |  |
| Plunger | 1-conduit | Pg13.5 | $\begin{array}{\|l\|} \hline \text { D4N-1C31 } \\ \hline \text { D4N-2C31 } \\ \hline \text { D4N-4C31 } \\ \hline \end{array}$ | $\Theta$ | D4N-1D31 <br> D4N-2D31 <br> D4N-4D31 | $\Theta$ | D4N-1E31 | $\Theta$ | $\begin{array}{\|l\|} \hline \text { D4N-1F31 } \\ \hline \text { D4N-2F31 } \\ \hline \text { D4N-4F31 } \\ \hline \end{array}$ | $\Theta$ |
|  |  | G1/2 |  |  |  |  | D4N-2E31 |  |  |  |
|  |  | M20 |  |  |  |  | D4N-4E31 |  |  |  |
|  |  | M12 connector | --- |  | --- |  | D4N-9E31 |  | --- |  |
|  | 2-conduit | G1/2 | D4N-6C31 | $\Theta$ | D4N-6D31 | $\Theta$ | $\begin{array}{\|l\|} \hline \text { D4N-6E31 } \\ \hline \text { D4N-8E31 } \\ \hline \end{array}$ | $\Theta$ | D4N-6F31 <br> D4N-8F31 | $\Theta$ |
|  |  | M20 | D4N-8C31 |  | D4N-8D31 |  |  |  |  |  |
| Roller plunger | 1-conduit | Pg13.5 | D4N-1C32 <br> D4N-2C32 <br> D4N-4C32 | $\Theta$ | D4N-1D32 <br> D4N-2D32 <br> D4N-4D32 | $\Theta$ | D4N-1E32 | $\Theta$ | D4N-1F32 <br> D4N-2F32 <br> D4N-4F32 | $\Theta$ |
|  |  | G1/2 |  |  |  |  | D4N-2E32 |  |  |  |
|  |  | M20 |  |  |  |  | $\begin{array}{\|l} \text { D4N-4E32 } \\ \hline \text { D4N-9E32 } \\ \hline \end{array}$ |  |  |  |
|  |  | M12 connector | --- |  | --- |  |  |  | --- |  |
|  | 2-conduit | G1/2 | D4N-6C32 | $\Theta$ | D4N-6D32 | $\Theta$ | $\begin{array}{\|l\|} \hline \text { D4N-6E32 } \\ \hline \text { D4N-8E32 } \\ \hline \end{array}$ | $\Theta$ | D4N-6F32 | $\Theta$ |
|  |  | M20 | D4N-8C32 |  | D4N-8D32 |  |  |  | D4N-8F32 |  |
| One-way roller arm lever (horizontal) | 1-conduit | Pg13.5 | D4N-1C62 | $\Theta$ | D4N-1D62 | $\Theta$ |  | $\Theta$ | D4N-1F62 | $\Theta$ |
|  |  | G1/2 | D4N-2C62 |  | D4N-2D62 |  |  |  | D4N-2F62 |  |
|  |  | M20 | D4N-4C62 |  | D4N-4D62 |  |  |  | D4N-4F62 |  |
|  |  | M12 connector | --- |  | --- |  |  |  | D. |  |
|  | 2-conduit | G1/2 | D4N-6C62 | $\Theta$ | D4N-6D62 | $\Theta$ | $\begin{array}{\|l\|} \hline \text { D4N-6E62 } \\ \hline \text { D4N-8E62 } \\ \hline \end{array}$ | $\Theta$ | D4N-6F62 | $\Theta$ |
|  |  | M20 | D4N-8C62 |  | D4N-8D62 |  |  |  | D4N-8F62 |  |
| One-way roller arm lever (vertical) | 1-conduit | Pg13.5 | D4N-1C72 | $\Theta$ | D4N-1D72 | $\Theta$ | $\begin{array}{\|l\|} \hline \text { D4N-1E72 } \\ \hline \text { D4N-2E72 } \\ \hline \text { D4N-4E72 } \\ \hline \end{array}$ | $\Theta$ | D4N-1F72 | $\Theta$ |
|  |  | G1/2 | D4N-2C72 |  | D4N-2D72 |  |  |  | D4N-2F72 |  |
|  |  | M20 | D4N-4C72 |  | D4N-4D72 |  |  |  | D4N-4F72 |  |
|  |  | M12 connector | --- |  | --- |  | D4N-9E72 |  | --- |  |
|  | 2-conduit | G1/2 | D4N-6C72 | $\Theta$ | D4N-6D72 | $\Theta$ | D4N-6E72 | $\Theta$ | D4N-6F72 | $\Theta$ |
|  |  | M20 | D4N-8C72 |  | D4N-8D72 |  | D4N-8E72 |  | D4N-8F72 |  |

## 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) |  |
|  |  |  | Model | Direct opening | Model | Direct opening | Model | Direct opening | Model | Direct opening |
| Fork lever lock (right operation) | 1-conduit | G1/2 | --- |  | --- |  | D4N-2ARE | --- | D4N-2BRE | --- |
| $0$ |  | M20 |  |  | D4N-4ARE | D4N-4BRE |  |  |
| Fork lever lock (left operation) |  | G1/2 |  |  | D4N-2ALE | D4N-2BLE |  |  |
| 80 |  | M20 |  |  | D4N-4ALE | D4N-4BLE |  |  |
| Cat whis |  | G1/2 | D4N-2180 | --- |  |  | D4N-2280 | --- | --- |  | D4N-2B80 |
|  |  | M20 | D4N-4180 |  |  |  | D4N-4280 |  |  |  |  | D4N-4B80 |
| astic |  | G1/2 | D4N-2187 |  |  |  | D4N-2287 |  |  |  |  | D4N-2B87 |
|  |  | M20 | D4N-4187 |  | D4N-4287 | D4N-4B87 |  |  |  |  |

Note: Mechanically speaking, these models are general-purpose switches with no direct opening mechanism.
General-purpose 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) |  |
|  |  |  | Model | Direct opening | Model | Direct opening | Model | Direct opening | Model | Direct opening |
| Fork lever lock (right operation) | 1-conduit | G1/2 | D4N-2CRE | --- | D4N-2DRE | --- | D4N-2ERE | --- | D4N-2FRE | --- |
| 保 |  | M20 | D4N-4CRE |  | D4N-4DRE |  | D4N-4ERE |  | D4N-4FRE |  |
| Fork lever lock (left operation) |  | G1/2 | D4N-2CLE |  | D4N-2DLE |  | D4N-2ELE |  | D4N-2FLE |  |
| 品 |  | M20 | D4N-4CLE |  | D4N-4DLE |  | D4N-4ELE |  | D4N-4FLE |  |
| Cat whisker |  | G1/2 | --- |  | D4N-2D80 |  | --- |  | --- |  |
|  |  | M20 |  |  | D4N-4D80 |  |  |  |  |  |  |  |
| Plastic rod |  | G1/2 |  |  | D4N-2D87 |  |  |  |  |  |  |  |
|  |  | M20 |  |  | D4N-4D87 |  |  |  |  |  |  |  |

Note: Mechanically speaking, these models are general-purpose switches with no direct opening mechanism.

## 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 <br> body | Standard | File No. |
| :--- | :--- | :--- |
| TÜV SÜD | EN60947-5-1 <br> (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 <br> category | AC-15 |
| :--- | :--- | :--- |
| Rated operating current (le) | 3 A | DC-13 |
| Rated operating voltage ( $\left.\mathrm{U}_{\mathrm{e}}\right)$ | 240 V | 0.27 A |

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 <br> 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 <br> 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

| Degree of protection *1 |  | IP67 (EN60947-5-1) |
| :---: | :---: | :---: |
| Durability *2 | Mechanical | 15,000,000 operations min. *5 |
|  | Electrical | 500,000 operations min. (3 A resistive load at 250 VAC) $* 3$ 300,000 operations min. (10 A resistive load at 250 VAC) |
| Operating speed |  | 1 to $500 \mathrm{~mm} / \mathrm{s}$ (D4N-1120) |
| Operating frequency |  | 30 operations/minute max. |
| Contact resistance |  | $25 \mathrm{~m} \Omega$ max. |
| Minimum applicable load *4 |  | 1 mA resistive load at 5 VDC (N-level reference value) |
| Rated insulation voltage ( $\mathrm{U}_{\mathrm{i}}$ ) |  | 300 V |
| Rated frequency |  | $50 / 60 \mathrm{~Hz}$ |
| Protection against electric shock |  | Class II (double insulation) |
| Pollution degree (operating environment) |  | 3 (EN60947-5-1) |
| Impulse withstand voltage (EN60947-5-1) | Between terminals of same polarity | 2.5 kV |
|  | Between terminals of different polarity | 4 kV |
|  | Between each terminal and non-current carrying metallic parts | 6 kV |
| Insulation resistance |  | $100 \mathrm{M} \Omega \mathrm{min}$. |
| Contact gap |  | Snap-action: $2 \times 0.5 \mathrm{~mm}$ min. Slow-action: $2 \times 2 \mathrm{~mm}$ min. |
| Vibration resistance | Malfunction | 10 to $55 \mathrm{~Hz}, 0.75 \mathrm{~mm}$ single amplitude |
| Shock resistance | Destruction | $1,000 \mathrm{~m} / \mathrm{s}^{2} \mathrm{~min}$. |
|  | Malfunction | $300 \mathrm{~m} / \mathrm{s}^{2} \mathrm{~min}$. |
| Conditional short-circuit current |  | 100 A (EN60947-5-1) |
| Conventional free air thermal current (lth) |  | 10 A (EN60947-5-1) |
| Ambient operating temperature |  | -30 to $70^{\circ} \mathrm{C}$ (with no icing) |
| Ambient operating humidity |  | 95\% max. |
| Weight |  | Approx. 82 g (D4N-1120) Approx. 99 g (D4N-6120) |

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 D 4 N 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 $35^{\circ} \mathrm{C}$ 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.
$* 5$. The mechanical durability of fork lever lock models is $10,000,000$ operations min.

## Structure and Nomenclature

## Structure



## Direct Opening Mechanism 1NC/1NO Contact (Slow-action)



## Conforms to EN60947-5-1 Direct Opening Operation $\Theta$

(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 $\Theta$
(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.

Contact Form

| Model | Contact | Contact form |  | Operating pattern |  | Remarks |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| D4N- $\square 1 \square$ | 1NC/1NO (Snap-action) |  | $\begin{aligned} & 13-14 \\ & 31-32 \end{aligned}$ | Stroke | $\square \mathrm{ON}$ | Only NC contacts 31-32 have a certified direct opening mechanism. <br> The terminals 13-14 and 31-32 can be used as unlike poles. |
| D4N- $\square 2 \square$ | 2NC (Snap-action) |  | $\begin{aligned} & 11-12 \\ & 31-32 \end{aligned}$ |  | $\square \mathrm{ON}$ | Only NC contacts 11-12 and 31-32 have a certified direct opening mechanism. <br> The terminals 11-12 and 31-32 can be used as unlike poles. |
| D4N- $\square$ A $\square$ | 1NC/1NO <br> (Slow-action) |  | $\begin{aligned} & 11-12 \\ & 33-34 \end{aligned}$ | Stroke | $\square \mathrm{ON}$ | Only NC contacts 11-12 have a certified direct opening mechanism. <br> The terminals 11-12 and 33-34 can be used as unlike poles. |
| D4N- $\square \mathrm{B} \square$ | 2NC (Slow-action) |  | $\begin{aligned} & 11-12 \\ & 31-32 \end{aligned}$ |  | $\square \mathrm{ON}$ | Only NC contacts 11-12 and 31-32 have a certified direct opening mechanism. <br> The terminals 11-12 and 31-32 can be used as unlike poles. |
| D4N- $\square \mathrm{C} \square$ | 2NC/1NO <br> (Slow-action) |  | $\begin{aligned} & 11-12 \\ & 21-22 \\ & 33-34 \end{aligned}$ |  | $\square \mathrm{ON}$ | Only NC contacts 11-12 and 21-22 have a certified direct opening mechanism. <br> The terminals 11-12, 21-22, and 33-34 can be used as unlike poles. |
| D4N- $\square \square \square$ | 3NC (Slow-action) |  | $\begin{aligned} & 11-12 \\ & 21-22 \\ & 31-32 \end{aligned}$ | Stroke | $\square \mathrm{ON}$ | Only NC contacts 11-12, 21-22, and 31-32 have a certified direct opening mechanism. <br> The terminals 11-12, 21-22, and 31-32 can be used as unlike poles. |
| D4N- $\square$ E $\square$ | 1NC/1NO MBB * (Slow-action) |  | $\begin{aligned} & 11-12 \\ & 33-34 \end{aligned}$ | $\xrightarrow[\text { Stroke } \longrightarrow]{\square}$ | $\square \mathrm{ON}$ | Only NC contacts 11-12 have a certified direct opening mechanism. <br> The terminals 11-12 and 33-34 can be used as unlike poles. |
| D4N- $\square \mathrm{F} \square$ | 2NC/1NO MBB * (Slow-action) |  | $\begin{aligned} & 11-12 \\ & 21-22 \\ & 33-34 \end{aligned}$ |  | $\square \mathrm{ON}$ | Only NC contacts 11-12 and 21-22 have a certified direct opening mechanism. <br> The terminals 11-12, 21-22 and 33-34 can be used as unlike poles. |

Note: The terminal numbers are according to EN 50013 and the contact symbols are according to EN 60947-5-1.

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


## Switches

1-conduit Models


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

* Refer to page 12 for details on M12 connectors.

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

| Model <br> Operating characteristics |  | $\begin{array}{\|l} \hline \text { D4N- } \square 120 \\ \text { D4N- } \square 220 \\ \text { D4N- B20 } \\ \text { D4N- D20 } \end{array}$ | D4N- $\square 122$ <br> D4N- -222 <br> D4N- $\square$ B22 <br> D4N- $\square$ D22 | $\begin{aligned} & \text { D4N- } \square 125 \\ & \text { D4N- } \square 225 \\ & \text { D4N- } \square \text { B25 } \\ & \text { D4N- } \square \text { D25 } \end{aligned}$ | D4N- $\square 126$ <br> D4N- $\square 226$ <br> D4N- - B26 <br> D4N-DD26 |
| :---: | :---: | :---: | :---: | :---: | :---: |
| Operating force | OF max. | 5.0 N |  |  |  |
| Release force | RF min. | 0.5 N |  |  |  |
| Pretravel | PT | $18^{\circ}$ to $27^{\circ}$ |  |  |  |
| Overtravel | OT min. | $40^{\circ}$ |  |  |  |
| Movement differential | I MD max. *1 | $14^{\circ}$ |  |  |  |
| Operating position | OP | --- |  |  |  |
| Total travel | TT *2 | (80 ${ }^{\circ}$ ) |  |  |  |
| Direct opening travel | $\begin{aligned} & \text { DOT min. } \\ & * 3 \end{aligned}$ | $50^{\circ}$ |  |  |  |
| Direct opening force | $\begin{aligned} & \text { DOF min. } \\ & * 3 \end{aligned}$ | 20 N |  |  |  |

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

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

| Operating character | Model | $\begin{aligned} & \text { D4N- } \square \text { A20 } \\ & \text { D4N- } \square \text { C20 } \\ & \text { D4N- } \square \text { E20 } \\ & \text { D4N- } \square \text { F20 } \end{aligned}$ | $\begin{aligned} & \hline \text { D4N- } \square \text { A22 } \\ & \text { D4N- } \square \text { C22 } \\ & \text { D4N- } \square \text { E22 } \\ & \text { D4N- } \square \text { F22 } \end{aligned}$ | $\begin{aligned} & \text { D4N- } \square \text { A25 } \\ & \text { D4N- C25 } \\ & \text { D4N- E25 } \\ & \text { D4N- } \square \text { F25 } \end{aligned}$ | $\begin{aligned} & \text { D4N- } \square \text { A26 } \\ & \text { D4N }-\square \text { C26 } \\ & \text { D4N }-\square \text { E26 } \\ & \text { D4N- }- \text { F26 } \end{aligned}$ |
| :---: | :---: | :---: | :---: | :---: | :---: |
| Operating force | OF max. | 5.0 N |  |  |  |
| Release force | RF min. | 0.5 N |  |  |  |
|  | PT (NC) | $18^{\circ}$ to $27^{\circ}$ |  |  |  |
|  | $\begin{aligned} & \text { PT (NO) } \\ & \text { *1 } \end{aligned}$ | (44) |  |  |  |
|  | $\begin{aligned} & \text { PT (NC) } \\ & \text { *2 } \end{aligned}$ | $27.5^{\circ}$ to 36 | $6.5^{\circ}$ |  |  |
|  | $\begin{aligned} & \text { PT (NO) } \\ & * 1, * 2 \end{aligned}$ | $\left(18^{\circ}\right)$ |  |  |  |
| Overtravel | OT min. | $40^{\circ}$ |  |  |  |
| Operating position | OP | --- |  |  |  |
| Total travel | TT *1 | (80 ${ }^{\circ}$ ) |  |  |  |
| Direct opening travel | $\begin{aligned} & \text { DOT min. } \\ & \text { *3 } \end{aligned}$ | $50^{\circ}$ |  |  |  |
| Direct opening force | $\begin{aligned} & \text { DOF min. } \\ & * 3 \end{aligned}$ | 20 N |  |  |  |

*1. Reference values.
*2. Only for MBB models. (D4N- $\square \mathrm{E} \square \square$ or $\mathrm{D} 4 \mathrm{~N}-\square \mathrm{F} \square \square$ )
*3. For safe use, always make sure that the minimum values or greater are provided.

## 1-conduit Models



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

* Refer to page 12 for details on M12 connectors.


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

| Model |  | $\begin{aligned} & \text { D4N- } \square 131 \\ & \text { D4N- } \square 231 \\ & \text { D4N- } \square \text { B31 } \\ & \text { D4N- } \square \text { D31 } \end{aligned}$ | $\begin{aligned} & \text { D4N- } \square 132 \\ & \text { D4N- } \square \mathbf{2 3 2} \\ & \text { D4N- }-\square \text { B32 } \\ & \text { D4N- } \square \text { D32 } \end{aligned}$ | $\begin{array}{\|l} \hline \text { D4N- } \square 162 \\ \text { D4N- } \square 262 \\ \text { D4N- } \square \text { B62 } \\ \text { D4N- } \square \text { D62 } \\ \hline \end{array}$ | $\begin{aligned} & \text { D4N- } \square 172 \\ & \text { D4N- } \square \mathbf{2 7 2} \\ & \text { D4N- } \square \text { B72 } \\ & \text { D4N- } \square \text { D72 } \end{aligned}$ |
| :---: | :---: | :---: | :---: | :---: | :---: |
| Operating force | OF max. | 6.5 N | 6.5 N | 5.0 N | 5.0 N |
| Release force | RF min. | 1.5 N | 1.5 N | 0.8 N | 0.8 N |
| Pretravel | PT max. | 2 mm | 2 mm | 4 mm | 4 mm |
| Overtravel | OT min. | 4 mm | 4 mm | 5 mm | 5 mm |
| Movement differential | MD max. *1 | 1 mm | 1 mm | 1.5 mm | 1.5 mm |
| Operating position | OP | $18.2 \pm 0.5 \mathrm{~mm}$ | $28.6 \pm 0.8 \mathrm{~mm}$ | $37 \pm 0.8 \mathrm{~mm}$ | $27 \pm 0.8 \mathrm{~mm}$ |
| Total travel | TT *2 | ( 6 mm ) | ( 6 mm ) | ( 9 mm ) | (9 mm) |
| Direct opening travel | DOT min. *3 | 3.2 mm | 3.2 mm | 5.8 mm | 4.8 mm |
| Direct opening force | DOF min. *3 | 20 N | 20 N | 20 N | 20 N |

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

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

| Model |  | $\begin{aligned} & \hline \text { D4N- } \square \mathbf{A 3 1} \\ & \text { D4N- } \square \mathbf{C 3 1} \\ & \text { D4N- } \square \text { E31 } \\ & \text { D4N- } \square \text { F31 } \end{aligned}$ | D4N- $\square$ A32 D4N- $\square$ C32 D4N- $\square$ E32 D4N- $\square$ F32 | $\begin{array}{\|l\|} \hline \text { D4N- } \square \text { A62 } \\ \text { D4N- } \square \text { C62 } \\ \text { D4N- } \square 62 \\ \text { D4N- } \square \text { F62 } \\ \hline \end{array}$ | D4N- $\square$ A72 <br> D4N- $\square$ C72 <br> D4N- $\square$ E72 <br> D4N- $\square$ F72 |
| :---: | :---: | :---: | :---: | :---: | :---: |
| Operating force | OF max. | 6.5 N | 6.5 N | 5.0 N | 5.0 N |
| Release force | RF min. | 1.5 N | 1.5 N | 0.8 N | 0.8 N |
| Pretravel | PT max. (NC) | 2 mm | 2 mm | 4 mm | 4 mm |
|  | PT (NO) *1 | ( 2.9 mm ) | (2.9 mm) | ( 5.2 mm ) | ( 4.3 mm ) |
|  | PT max. (NC) *2 | 2.8 mm | 2.8 mm | 4 mm | 4 mm |
|  | PT (NO) *1, *2 | (1 mm) | (1 mm) | (1.5 mm) | (1.5 mm) |
| Overtravel | OT min. | 4 mm | 4 mm | 5 mm | 5 mm |
| Operating position | OP | $18.2 \pm 0.5 \mathrm{~mm}$ | $28.6 \pm 0.8 \mathrm{~mm}$ | $37 \pm 0.8 \mathrm{~mm}$ | $27 \pm 0.8 \mathrm{~mm}$ |
|  | OP *2 | $17.4 \pm 0.5 \mathrm{~mm}$ | $28 \pm 0.8 \mathrm{~mm}$ | $36 \pm 0.8 \mathrm{~mm}$ | $26.1 \pm 0.8 \mathrm{~mm}$ |
| Total travel | TT *1 | ( 6 mm ) | (6 mm) | ( 9 mm ) | ( 9 mm ) |
| Direct opening travel DOT min. *3 Direct opening force DOF min. *3 |  | 3.2 mm | 3.2 mm | 5.8 mm | 4.8 mm |
|  |  | 20 N | 20 N | 20 N | 20 N |

*1. Reference values.
*2. Only for MBB models. (D4N- $\square \mathrm{E} \square \square$ or D4N- $\square$ F $\square \square$ )
*3. For safe use, always make sure that the minimum values or greater are provided.

## 1-conduit Models

Adjustable Roller Lever, Form Lock
(with Metal Lever, Resin Roller)
D4N-1 $\square 2 G \quad$ D4N-2 $\square 2 G$
D4N-4 $\square 2 G \quad$ D4N-9 $\square 2 G *$


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

* Refer to following diagrams for details on M12 connectors.

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

| Operating characteristics Model |  | D4N- $\square 12 H$ D4N- $\square 22 \mathrm{H}$ D4N- $\square$ B2H D4N- -D 2 H | D4N- $\square 12 G$ D4N- $\square 22 G$ D4N- $\square$ B2G D4N- $\square$ D2G *1 |
| :---: | :---: | :---: | :---: |
| Operating force | OF max. | 4.5 N |  |
| Release force | RF min. | 0.4 N |  |
| Pretravel | PT | $18^{\circ}$ to $27^{\circ}$ |  |
| Overtravel | OT min. | $40^{\circ}$ |  |
| Movement differential | MD max. *2 | $14^{\circ}$ |  |
| Operating position | OP | --- |  |
| Total travel | TT *3 | (80 ${ }^{\circ}$ ) |  |
| Direct opening travel | DOT min. $* 4$ | $50^{\circ}$ |  |
| Direct opening force | DOF min. *4 | 20 N |  |

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

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

| Operating characteristics Model |  | D4N- $\square$ A2H <br> D4N- $\square$ C2H <br> D4N- $\square$ E2H <br> D4N- $\square$ F2H | D4N- $\square$ A2G <br> D4N-DC2G <br> D4N-DE2G <br> D4N- $\square$ F2G <br> *1 |
| :---: | :---: | :---: | :---: |
| Operating force | OF max. | 4.5 N |  |
| Release force | RF min. | 0.4 N |  |
| Pretravel | PT (NC) | $18^{\circ}$ to $27^{\circ}$ |  |
|  | PT (NO) *2 | (44 ${ }^{\circ}$ |  |
|  | PT (NC) *3 | $27.5^{\circ}$ to $36.5^{\circ}$ |  |
|  | PT (NO) *2, *3 | (18) |  |
| Overtravel | OT min. | $40^{\circ}$ |  |
| Operating position | OP | --- |  |
| Total travel | TT *2 | (80 ${ }^{\circ}$ ) |  |
| Direct opening travel | DOT min. | $50^{\circ}$ |  |
| Direct opening force | DOF min. *4 | 20 N |  |

[^0][^1]
## 1-conduit Models



Note: Unless otherwise specified, a tolerance of $\pm 0.4 \mathrm{~mm}$ applies to all dimensions.
*1. 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.
*2. In terms of construction, the Switch is a General-purpose Limit Switch rather than a Safety Limit Switch.
Slow-action (1NC/1NO) (2NC/1NO) (2NC) (3NC)

| Operating characteristics ${ }^{\text {Model }}$ | D4N- $\square \square \mathrm{RE}$ | D4N- $\square \square \mathbf{L E}$ |
| :---: | :---: | :---: |
| Force necessary to reverse the direction of the lever: max. | 6.4 N | 6.4 N |
| Movement until the lever reverses | $55 \pm 10^{\circ}$ | $55 \pm 10^{\circ}$ |
| Movement until switch operation (NC) | $\begin{aligned} & \left(6.5^{\circ}\right) \\ & \left(\text { MBB: } 10^{\circ}\right) \end{aligned}$ | $\begin{aligned} & \left(6.5^{\circ}\right) \\ & \left(\text { MBB: } 10^{\circ}\right) \end{aligned}$ |
| Movement until switch operation (NO) | $\begin{aligned} & \left(18.5^{\circ}\right) \\ & \left(\mathrm{MBB}: 5^{\circ}\right) \end{aligned}$ | $\begin{aligned} & \left(18.5^{\circ}\right) \\ & \left(\text { MBB: } 5^{\circ}\right) \end{aligned}$ |

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)

| Operating characteristics Model |  | D4N- $\square 80$ | D4N- $\square \square 87$ |
| :---: | :---: | :---: | :---: |
| Operating force <br> Pretravel | OF max. PT max. | $\begin{aligned} & 1.5 \mathrm{~N} \\ & 15^{\circ} \end{aligned}$ | $\begin{aligned} & 1.5 \mathrm{~N} \\ & 15^{\circ} \end{aligned}$ |

## 2-conduit Models



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

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

| Model | $\begin{aligned} & \text { D4N- } \square 120 \\ & \text { D4N- } \square 220 \\ & \text { D4N- } \square \text { B20 } \\ & \text { D4N- } \square \text { D20 } \end{aligned}$ | D4N- $\square 122$ D4N- $\square 222$ D4N- $\square$ B22 D4N- $\square$ D22 | $\begin{aligned} & \text { D4N- } \square 131 \\ & \text { D4N- } \square \text { 231 } \\ & \text { D4N- B31 } \\ & \text { D4N- } \square \text { D31 } \end{aligned}$ | D4N- $\square 132$ D4N- $\square 232$ D4N- $\square$ B32 D4N- $\square$ D32 |
| :---: | :---: | :---: | :---: | :---: |
| Operating force OF max. | 5 N | 5 N | 6.5 N | 6.5 N |
| Release force RF min. | 0.5 N | 0.5 N | 1.5 N | 1.5 N |
| Pretravel PT | $18^{\circ}$ to $27^{\circ}$ | $18^{\circ}$ to $27^{\circ}$ | 2 mm | 2 mm |
| Overtravel OT min. | $40^{\circ}$ | $40^{\circ}$ | 4 mm | 4 mm |
| Movement differential |  |  |  |  |
| MDmax. <br> *1 | $14^{\circ}$ | $14^{\circ}$ | 1 mm | 1 mm |
| Operating position OP | --- | --- | $\begin{aligned} & 18 \\ & \pm 0.5 \mathrm{~mm} \end{aligned}$ | $\begin{aligned} & 28.2 \\ & \pm 0.8 \mathrm{~mm} \end{aligned}$ |
| Total travel TT *2 | $\left(80^{\circ}\right)$ | $\left(80^{\circ}\right)$ | (6 mm) | (6 mm) |
| Direct opening travel |  |  |  |  |
| DOTmin. <br> *3 | $50^{\circ}$ | $50^{\circ}$ | 3.2 mm | 3.2 mm |
| Direct opening force |  |  |  |  |
| DOFmin. <br> *3 | 20 N | 20 N | 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.
*1. Only for snap-action models.
*2. Reference value.
*3. For safe use, always make sure that the minimum values or greater are provided.

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

| Operating charact | Model | D4N- $\square$ A20 <br> D4N- $\square$ C20 <br> D4N- $\square$ E20 <br> D4N- $\square$ F20 | D4N- $\square$ A22 <br> D4N- $\square$ C22 <br> D4N- <br> D4N- $-\square$ F22 | D4N- $\square$ A31 D4N- $\square$ C31 D4N- $\square$ E31 D4N- $\square$ F31 | $\begin{aligned} & \text { D4N- } \square \text { A32 } \\ & \text { D4N }-\square \text { C32 } \\ & \text { D4N }-\square \text { E32 } \\ & \text { D4N } \square \text { F32 } \end{aligned}$ |
| :---: | :---: | :---: | :---: | :---: | :---: |
| Operating force | OF max. | 5 N | 5 N | 6.5 N | 6.5 N |
| Release force | RF min. | 0.5 N | 0.5 N | 1.5 N | 1.5 N |
| Pretravel | PT (NC) | $18^{\circ}$ to $27^{\circ}$ | $18^{\circ}$ to $27^{\circ}$ | 2 mm | 2 mm |
|  | $\begin{aligned} & \text { PT (NO) } \\ & \text { *1 } \end{aligned}$ | $\left(44^{\circ}\right)$ | (44 ${ }^{\circ}$ | ( 2.9 mm ) | ( 2.9 mm ) |
|  | $\begin{aligned} & \text { PT (NC) } \\ & * 2 \end{aligned}$ | $\begin{aligned} & 27.5^{\circ} \text { to } \\ & 36.5^{\circ} \end{aligned}$ | $\begin{aligned} & 27.5^{\circ} \text { to } \\ & 36.5^{\circ} \end{aligned}$ | 2.8 mm | 2.8 mm |
|  | $\begin{aligned} & \text { PT (NO) } \\ & * 1, * 2 \end{aligned}$ | (18) | (18) | (1 mm) | (1 mm) |
| Overtravel | OT min. | $40^{\circ}$ | $40^{\circ}$ | 4 mm | 4 mm |
| Operating position | OP | --- | --- | $\begin{aligned} & 18 \\ & \pm 0.5 \mathrm{~mm} \end{aligned}$ | $\begin{aligned} & 28.2 \\ & \pm 0.8 \mathrm{~mm} \end{aligned}$ |
|  | OP *2 | --- | --- | $\begin{aligned} & 17.4 \\ & \pm 0.5 \mathrm{~mm} \end{aligned}$ | $\begin{aligned} & 28 \\ & \pm 0.8 \mathrm{~mm} \end{aligned}$ |
| Total travel | TT *1 | (80 ${ }^{\circ}$ ) | (80 ${ }^{\circ}$ ) | (6 mm) | (6 mm) |
| Direct opening travel DOT min. *3 |  | $50^{\circ}$ | $50^{\circ}$ | 3.2 mm | 3.2 mm |
| Direct opening force DOF min. *3 |  | 20 N | 20 N | 20 N | 20 N |

*1. Reference values.
*2. Only for MBB models. (D4N- $\square \mathrm{E} \square \square$ or D4N- $\square \mathrm{F} \square \square$ )
*3. For safe use, always make sure that the minimum values or greater are provided.

## 2-conduit Models



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

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


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 30 mm .
*2. The operating characteristics of these Switches were measured with the roller lever set at 31 mm .
*3. Only for snap-action models.
*4. Reference value.
*5. For safe use, always make sure that the minimum values or greater are provided.

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

| Model |  | D4N- $\square$ A62 D4N- $\square$ C62 D4N- D4N- D62 | $\begin{aligned} & \text { D4N- } \square \text { A72 } \\ & \text { D4N- C72 } \\ & \text { D4N- E72 } \\ & \text { D4N- } \square \text { F72 } \end{aligned}$ | $\begin{aligned} & \text { D4N- } \square \text { A2G } \\ & \text { D4N- } \square \text { C2G } \\ & \text { D4N- E2G } \\ & \text { D4N- F2G } \\ & \text { *1 } \end{aligned}$ | $\begin{aligned} & \text { D4N- } \square \text { A2H } \\ & \text { D4N- } \square \text { C2H } \\ & \text { D4N- }- \text { E2H } \\ & \text { D4N- } \square \mathbf{F} 2 H \\ & \text { *2 } \end{aligned}$ |
| :---: | :---: | :---: | :---: | :---: | :---: |
| Operating force Release force Pretravel | OF max. | 5.0 N | 5.0 N | 4.5 N | 4.5 N |
|  | RF min. | 0.8 N | 0.8 N | 0.4 N | 0.4 N |
|  | PTmax. <br> (NC) | 4 mm | 4 mm | $18^{\circ}$ to $27^{\circ}$ | $18^{\circ}$ to $27^{\circ}$ |
|  | $\begin{aligned} & \text { PT (NO) } \\ & * 3 \end{aligned}$ | (5.2 mm) | ( 4.3 mm ) | $\left(44^{\circ}\right)$ | (44 ${ }^{\circ}$ |
|  | PT max. (NC) *4 | 4 mm | 4 mm | $27.5^{\circ}$ to $36.5^{\circ}$ | $27.5{ }^{\circ}$ to $36.5^{\circ}$ |
|  | $\begin{aligned} & \text { PT (NO) } \\ & * 3,4 \end{aligned}$ | (1.5 mm) | (1.5 mm) | $\left(18^{\circ}\right)$ | $\left(18^{\circ}\right)$ |
| Overtravel | OT min. | 5 mm | 5 mm | $40^{\circ}$ | $40^{\circ}$ |
| Operating position |  | $37 \pm 0.8 \mathrm{~mm}$ | $27 \pm 0.8 \mathrm{~mm}$ | -- | --- |
|  | OP *4 | $36 \pm 0.8 \mathrm{~mm}$ | $\begin{aligned} & 26.1 \\ & \pm 0.8 \mathrm{~mm} \end{aligned}$ | --- | --- |
| Total travel | TT *3 | (9 mm) | (9 mm) | (70 ${ }^{\circ}$ ) | (70 ${ }^{\circ}$ ) |
| Direct opening travel DOT min. *5 |  | 5.8 mm | 4.8 mm | $50^{\circ}$ | $50^{\circ}$ |
| Direct opening force DOF min. *5 |  | 20 N | 20 N | 20 N | 20 N |

*1. The operating characteristics of these Switches were measured with the roller lever set at 30 mm .
*2. The operating characteristics of these Switches were measured with the roller lever set at 31 mm .
*3. Reference values.
*4. Only for MBB models. (D4N- $\square \mathrm{E} \square \square$ or D4N- $\square \mathrm{F} \square \square$ )
*5. 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.)


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

## Safety Precautions

Be sure to read the precautions for All Safety Limit Switches in the website at:http://www.ia.omron.com/.

Indication and Meaning for Safe Use

| $\triangle$ CAUTION | Indicates a potentially hazardous situation <br> which, if not avoided, may result in minor <br> or moderate injury or in property damage. |
| :--- | :--- |
| Precautions <br> for Safe Use | Supplementary comments on what to do <br> or avoid doing, to use the product safely. |
| Precautions <br> for Correct <br> Use | Supplementary comments on what to do <br> or avoid doing, to prevent failure to <br> operate, or undesirable effect on product <br> performance. |

## $\triangle$ 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.


## 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.

| $\mathbf{1}$ | Terminal screw | 0.6 to $0.8 \mathrm{~N} \cdot \mathrm{~m}$ |
| :--- | :--- | :--- |
| $\mathbf{2}$ | Cover mounting screw | 0.5 to $0.7 \mathrm{~N} \cdot \mathrm{~m}$ |
| $\mathbf{3}$ | Head mounting screw | 0.5 to $0.6 \mathrm{~N} \cdot \mathrm{~m}$ |
| $\mathbf{4}$ | Lever mounting screw | 1.6 to $1.8 \mathrm{~N} \cdot \mathrm{~m}$ |
| $\mathbf{5}$ | Body mounting screw | 0.5 to $0.7 \mathrm{~N} \cdot \mathrm{~m}$ |
| $\mathbf{6}$ | Connector, M12 adaptor | 1.8 to $2.2 \mathrm{~N} \cdot \mathrm{~m}$ |
| $\mathbf{7}$ | Cap screw | 1.3 to $1.7 \mathrm{~N} \cdot \mathrm{~m}$ |



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 $4_{-0.15}^{-0.05} \mathrm{~mm}$ 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



- 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.


Incorrect


Correct

## Wiring

## 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 $0.75 \mathrm{~mm}^{2}$ ). 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

D4N- $\square \mathrm{D} \square \square$ (3NC)
D4N- $\square \mathrm{C} \square \square$ (2NC/1NO)
D4N- $\square \mathrm{F} \square \square(2 \mathrm{NC} / 1 \mathrm{NO}$ (MBB))

D4N- $\square \mathrm{B} \square \square$ (2NC)
D4N- $\square 2 \square \square$ (2NC (SNAP))

D4N- $\square \mathrm{A} \square \square$ (1NC/1NO)
D4N- $\square \mathrm{E} \square \square$ ( $1 \mathrm{NC} / 1 \mathrm{NO}$ (MBB))

D4N- $\square 1 \square \square$ (1NC/1NO (SNAP))


## Connector Type

D4N-9B $\square \square$ (2NC)
D4N-92 $\square$ (2NC (SNAP))


D4N-9A $\square \square$ (1NC/1NO)
D4N-9E $\square \square$ (1NC/1NO (MBB))



Pin No. (Terminal No.)

D4N-91■ (1NC/1NO (SNAP))


- 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).


## Changing the Lever

The lever mounting screws can be used to set the lever position to any position in a $360^{\circ}$ angle at $7.5^{\circ}$ 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 $180^{\circ}$ 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 <br> diameter |
| :--- | :--- | :--- | :--- |
| G1/2 | LAPP | ST-PF1/2 <br> $5380-1002$ | 6.0 to 12.0 mm |
| Pg13.5 | LAPP | ST-13.5 <br> $5301-5030$ | 6.0 to 12.0 mm |
| M20 | LAPP | ST-M20 $\times 1.5$ <br> $5311-1020$ | 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.
- 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 $15^{\circ}$ to $30^{\circ}$ or make it in the shape of a quadratic curve.
2. Design the circuit so that no error signal will be generated.

## Terms and Conditions Agreement

Read and understand this catalog.
Please read and understand this catalog before purchasing the products. Please consult your OMRON representative if you have any questions or comments.

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://www.omron.com/global/ 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.

## 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.
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 PRODUCT(S) 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.

## X-ON Electronics

Largest Supplier of Electrical and Electronic Components
Click to view similar products for Basic / Snap Action Switches category:
Click to view products by Omron manufacturer:
Other Similar products are found below :
$\underline{8328001} \underline{01.098 .1358 .1}$ 602EN532 602EN535-RB 602HE5-RB1 604HE162 604HE223-6B 624HE17-RB 6HM89 6PA78-JM 6SE1 6SX1-H58 $70500216 \underline{70500840} 70599106$ MBD5B1 MBH2731 73-316-0012 $792117597 \underline{79211923} \underline{79218589}$ 7AS12 ML-1155 ML-1376 831010C3.0 831090C2.EL $83131904 \underline{84212012}$ 8AS239 8HM73-3 903VB1-PG 914CE1-6G PL-100 11SM1077-H4 11SM1077-H58 11SM1-TN107 11SM405 11SM8423-H2 11SX37-T 11SX48-H58 11SX55-H58 11SM2442-T 11SM76-T 11SM77-H58 11SM77-T 11SM863-T 11SM866 11SX47-H58 A7CN-1M-1-LEFT A831700C7.0


[^0]:    *1. The operating characteristics of these Switches were measured with the roller lever set at 32 mm .
    *2. Reference values.
    *3. Only for MBB models. (D4N- $\square E \square \square$ or D4N- $\square \mathrm{F} \square \square$ )
    *4. For safe use, always make sure that the minimum values or greater are provided.

[^1]:    1-conduit M12 Connector
    D4N-9 $\square \square$
    

