### Safety Components

**OMRON Corporation**

**Contents of this document are subject to change without notice.**

**E-9 means \(^{10^{-9}}\).**

#### Safety Door Switch

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</thead>
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<tr>
<td>E-STOP Switch</td>
<td>A315E Series</td>
<td>Normally Closed contact</td>
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<td>Normally closed contact conforms to IEC 60947-5-1 (Direct Opening Mechanism).</td>
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<td>E-STOP Switch</td>
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<td>E-STOP Switch</td>
<td>A321E Series</td>
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<td>Normally closed contact has a structure that conforms to IEC 60947-5-1 (Direct opening mechanism) only when the key is turned to left.</td>
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<tr>
<td>Safety Limit Switch</td>
<td>A221L-2PSL</td>
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<td>Normally closed contact has a structure that conforms to IEC 60947-5-1 (Direct opening mechanism) only when the key is turned to left.</td>
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<tr>
<td>Key Switch</td>
<td>A231J-201</td>
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<td>Normally closed contact has a structure that conforms to IEC 60947-5-1 (Direct opening mechanism) only when the key is turned to left.</td>
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<td>Key Switch</td>
<td>A233N-2010</td>
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<td>Normally closed contact has a structure that conforms to IEC 60947-5-1 (Direct opening mechanism) only when the key is turned to left.</td>
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<td>Enabling Switch</td>
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<td>Enabling Grp Switch</td>
<td>A4EG</td>
<td>Built-in enabling switch (A4E)</td>
<td>Enable Output</td>
<td>Enable Output</td>
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</tr>
</tbody>
</table>

### Reliability Data for Safety of Machinery

**8-Aug-2019**

> Reliability Data for Safety of Machinery

**Safety Components**

**Reliability Data for Safety of Machinery**

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Reliability Data for Safety of Machinery

OMRON Corporation

Safety Components

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8-Aug-2019

E-9 means 10^9.

Products  Model  Condition / Function  SIL  PFHD  PL  Category  MTTFD(Year)  DCavg (%)  B10Y  Note

Safety Relay  STG-AE  AC-1 240V 85A  -  -  -  -  -  -  -

Safety Relay  STGA  AC-1 240V 6A  DC-1 240V 6A  -  -  -  -  -  -  -

Power Relay  ST2  Main Contact: AC-1 440V 40A  Auxiliary Contact: AC-1 440V 1A  -  -  -  -  -  -  -

Frequency Inverter MX Series  EL1G02-Y1  Stop function in conformity to Stop Category 0  SL3  2.4E-10  e  3  100  82  -

PLC Function General purpose function  EL1G02 series  STD via hardwired signal  SL3  1.2E-8  e  4  100  99  -

Non-contact Door Switch  D4QA  Safety Output  SL2  2.4E-10  d  3  100  82  -

Non-contact Door Switch  D40Z  Safety Output  SL3  1.5E-10  e  4  2500  98  -

Safety Network Controller  DST1-2256SL-1  -  SL2  2.4E-10  e  4  -  -  -

Safety Network Controller  DST1-2056SL-1  -  SL2  2.4E-10  e  4  -  -  -

Single Beam Safety sensor  ES2S-T81A  Used in combination with OMRON's dedicated controller  -  -  c  2  100  90  -

Safety Light Curtain  FS3G-2RA [5]  -  SL1  1.1E-8  c  2  100  98  -

Safety Light Curtain  FS3G-4RA [5]  -  SL3  1.1E-8  e  4  223  98  -

Safety Light Curtain  FS3G-2RE [5]  -  SL1  9.1E-9  c  2  100  98  -

Safety Light Curtain  FS3G-4RE [5]  -  SL3  9.1E-9  e  4  266  98  -

Safety Light Curtain  FS3G-4RF [5]  -  SL1  1.1E-8  e  4  223  98  -

Safety Light Curtain  FS3G-2RF [5]  -  SL3  1.1E-8  e  4  223  98  -

Safety Light Curtain  FS3G-25RE [5]  Type 2. Detection capability is 14, 25, 45, or 85 mm dia.  SL1  7.7E-9  c  2  100  98  -

Safety Light Curtain  FS3G-45RE [5]  Type 4. Detection capability is 14, 25, 45, or 85 mm dia.  SL3  7.7E-9  e  4  210  98  -

Safety Light Curtain  FS3G-2025P14 to A0461N14  -  SL3  1.7E-8  e  4  -  -  -

Safety Light Curtain  FS3G-2055P14 to A0461N14  -  SL3  2.5E-8  e  4  -  -  -

Safety Light Curtain  FS3G-2065P14 to A0461N14  -  SL3  3.3E-8  e  4  -  -  -

Safety Light Curtain  FS3G-1425P14 to A1271XN4  -  SL3  4.0E-8  e  4  -  -  -

Safety Light Curtain  FS3G-1915P14  -  SL3  4.5E-8  e  4  -  -  -

Safety Light Curtain  FS3G-2025N14 to A2459N20  -  SL3  2.0E-8  e  4  -  -  -

Safety Light Curtain  FS3G-2055N14 to A2459N20  -  SL3  3.5E-8  e  4  -  -  -

Safety Light Curtain  FS3G-2105N14 to A2459N20  -  SL3  1.7E-8  e  4  -  -  -

Safety Light Curtain  FS3G-2025PD to A0461N14  -  SL3  2.5E-8  e  4  -  -  -

Safety Light Curtain  FS3G-2055PD to A0461N14  -  SL3  3.3E-8  e  4  -  -  -

Safety Light Curtain  FS3G-2065PD to A0461N14  -  SL3  4.0E-8  e  4  -  -  -

Safety Light Curtain  FS3G-1925PD to A2459N20  -  SL3  2.0E-8  e  4  -  -  -

Safety Light Curtain  FS3G-2055PD to A2459N20  -  SL3  3.5E-8  e  4  -  -  -

Safety Light Curtain  FS3G-2065PD to A2459N20  -  SL3  4.0E-8  e  4  -  -  -

Safety Light Curtain  FS3G-2105PD to A2459N20  -  SL3  4.5E-8  e  4  -  -  -

Safety Light Curtain  FS3G-2025PD to A1271XN4  -  SL3  2.0E-8  e  4  -  -  -

Safety Light Curtain  FS3G-2055PD to A1271XN4  -  SL3  3.5E-8  e  4  -  -  -

Safety Light Curtain  FS3G-2105PD to A1271XN4  -  SL3  1.7E-8  e  4  -  -  -

The data is applicable for the models with a protective hight from 983 to 1271mm.

The data is applicable for the models with a protective hight from 1487 to 1631mm.

The data is applicable for the models with a protective hight from 2405 to 2495mm.

The data is applicable for the models with a protective hight from 245 to 755mm.

The data is applicable for the models with a protective hight from 551 to 911mm.

The data is applicable for the models with a protective hight from 983 to 1271mm.

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The data is applicable for the models with a protective hight from 983 to 1271mm.
As a subsystem, it conforms to IEC 62061 SIL3. 
SIL3
Release delayed safety output
1.8E-8

As a subsystem, it conforms to IEC61508 SIL3. The PL of the whole system is determined upon it being combined with a non-contact switch (D40A or D40B).

As a subsystem, it conforms to ISO13849-1 PLd. 
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As a subsystem, it conforms to ISO13849-1 PLe. 
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### Safety Components

OMRON Corporation

8-Aug-2019

Contents of this document are subject to change without notice.

E-9 means \(10^{-9}\).

<table>
<thead>
<tr>
<th>Products</th>
<th>Model</th>
<th>Condition / Function</th>
<th>SIL</th>
<th>PFH(_D)</th>
<th>PL</th>
<th>Category</th>
<th>MTTF(_D)(Year)</th>
<th>DCavg (%)</th>
<th>B10(_D)</th>
<th>Note</th>
</tr>
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<tbody>
<tr>
<td>Safety Network Controller</td>
<td>NE1A-SCPU02</td>
<td>SIL3</td>
<td>e</td>
<td>6.5E-10</td>
<td>e</td>
<td>4</td>
<td>2500</td>
<td>99</td>
<td></td>
<td>As a subsystem, it conforms to IEC61508 SIL3. The value of PFHD is not including the PFHD of FSoE connection. Users must add PFHD of a FSoE connection (1.0E-9) to the system PFHD for calculating the PL of the system according to IEC 61784-3:2016.</td>
</tr>
<tr>
<td>NX-series Safety Control Unit</td>
<td>NX-SID800</td>
<td>SIL3</td>
<td>e</td>
<td>4.3E-10</td>
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<td>2500</td>
<td>98</td>
<td></td>
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<tr>
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<td>NX-SIH400</td>
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<td>2500</td>
<td>98</td>
<td></td>
<td>As a subsystem, it conforms to IEC61508 SIL3. The value of PFHD is not including the PFHD of FSoE connection. Users must add PFHD of a FSoE connection (1.0E-9) to the system PFHD for calculating the PL of the system according to IEC 61784-3:2016.</td>
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<tr>
<td>NX-series Safety Control Unit</td>
<td>NX-SL3300</td>
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<td>3.0E-10</td>
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<td>96</td>
<td></td>
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<tr>
<td>NX-series Safety Control Unit</td>
<td>NX-SL3500</td>
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<td>e</td>
<td>5.0E-11</td>
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<td>4</td>
<td>2500</td>
<td>96</td>
<td></td>
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<td>NX-series Safety Control Unit</td>
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<tr>
<td>NX-series Safety Control Unit</td>
<td>NX-SL2400</td>
<td>SIL3</td>
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<tr>
<td>NX-series Safety Control Unit</td>
<td>NX-SL2500</td>
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<tr>
<td>NX-series Safety Control Unit</td>
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<tr>
<td>Safety Laser Scanner</td>
<td>NS-200</td>
<td>SIL2</td>
<td>d</td>
<td>6.0E-8</td>
<td>d</td>
<td>3</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>Users must add PFHD of a FSoE connection (1.0E-9) to the system PFHD for calculating the PL of the system according to IEC 61784-3:2016.</td>
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<tr>
<td>AC Servo System 1S-series</td>
<td>RMD-12D0-ECT</td>
<td>SIL2</td>
<td>d</td>
<td>1.4E-9</td>
<td>d</td>
<td>3</td>
<td>100</td>
<td>99</td>
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<td>Users must add PFHD of a FSoE connection (1.0E-9) to the system PFHD for calculating the PL of the system according to IEC 61784-3:2016.</td>
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<tr>
<td>AC Servo System 1S-series</td>
<td>RMD-12D6-ECT</td>
<td>SIL2</td>
<td>d</td>
<td>1.7E-11</td>
<td>d</td>
<td>3</td>
<td>100</td>
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<td>Users must add PFHD of a FSoE connection (1.0E-9) to the system PFHD for calculating the PL of the system according to IEC 61784-3:2016.</td>
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<tr>
<td>AC Servo Drive GC Series</td>
<td>RMD-XT-KON</td>
<td>SIL2</td>
<td>d</td>
<td>2.8E-9</td>
<td>d</td>
<td>3</td>
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<td>Users must add PFHD of a FSoE connection (1.0E-9) to the system PFHD for calculating the PL of the system according to IEC 61784-3:2016.</td>
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<td>6.0E-8</td>
<td>d</td>
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<td>100</td>
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<td></td>
<td>When combined with a connected safety edge, it conforms to both ISO 13849-1 PLd and ISO 13856-2. When combined with a connected safety mat, it conforms to both ISO 13849-1 PLd and ISO 13856-1.</td>
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