EC Type-Examination Certificate

Functional Safety Type Approved

TÜVRheinland CERTIFIED

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Reg.-No.: 01/205/5434.00/15

Product tested	Safety relay unit for emergency stop applications	**Certificate holder**	OMRON Corporation Safety Standards Group Shiokoji Horikawa, Shimogyo-ku Kyoto 600-8530 Japan
Type designation	G9SE-201, -401, -221-T05, -221-T30		
Codes and standards	EN ISO 13849-1:2008 + AC:2009 EN 62061:2005 + AC:2010 + A1:2013 IEC 61508 Parts 1-7:2010 EN 60204-1:2006 + A1:2009 + AC:2010 (in extracts)		EN ISO 13850:2008 EN 60947-5-1:2004 + AC:2005 + A1:2009 EN 50178:1997
Intended application	The devices comply in a dual channel sensor/contactor configuration with the requirements of the relevant standards (Cat. 4 / PL e acc. to EN ISO 13849-1, SIL CL 3 acc. to EN 62061 / IEC 61508) and can be used in applications up to PL e acc. to EN ISO 13849-1 and SIL 3 acc. to EN 62061 / IEC 61508.		
Specific requirements	The instructions of the associated User's Manual shall be considered.		

It is confirmed, that the product under test complies with the requirements for machines defined in Annex I of the EC Directive 2006/42/EC.

Valid until 2020-02-12

The issue of this certificate is based upon an examination, whose results are documented in Report No. 968/FSP 1086.00/15 dated 2015-02-12.
This certificate is valid only for products which are identical with the product tested. It becomes invalid at any change of the codes and standards forming the basis of testing for the intended application.

TÜV Rheinland 0035 Notified Body

Berlin, 2015-02-12

Certification Body for Machinery, NB 0035

Dipl.-Ing. Eberhard Frejno

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Reliability Data for Safety of Machinery

Safety Components

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12-May-2015

Contents of this document are subject to change without notice.

E-9 means $*10^{-9}$.

Products	Model	Condition / Function	SIL	PFHd	PL	Category	MTTFd(Year)	DCavg (%)	B10d	Note
E-STOP Switch	A165E series	Normally Closed contact	-	-	-	-	-	-	1.0E+5	Normally closed contact conforms to IEC60947-5-1 (Direct Opening Mechanism).
E-STOP Switch	A22E series	Normally Closed contact	-	-	-	-	-	-	1.0E+5	Normally closed contact conforms to IEC60947-5-1 (Direct Opening Mechanism).
Guard Lock Safety Key Selector Switch	A22LK-2RL*	Normally Closed contact	-	-	-	-	-	-	1.0E+5	Normally closed contact has a structure that conforms to IEC60947-5-1 (Direct opening mechanism) only when the key is turned to right.
Key Selector Switch	A22TK-2*L	Normally Closed contact	-	-	-	-	-	-	1.0E+5	Normally closed contact has a structure that conforms to IEC60947-5-1 (Direct opening mechanism) only when the key is turned to
Key Selector Switch	A22TK-2*R	Normally Closed contact	-	-	-	-	-	-	1.0E+5	Normally closed contact has a structure that conforms to IEC60947-5-1 (Direct opening mechanism) only when the key is turned to
Enabling Switch	A4E	Enable output	-	-	-	-	-	-	1.0E+5	The enabling output has a structure that conforms to IEC60947-5-8 (Three-position enabling switch). The enabling output has a structure that conforms to IEC60947-5-1 (Direct Opening Mechanism) only when the switch is gripped.
Enabling Grip Switch	A4EG	Built-in enabling switch (A4E) Enable Output	-	-	-	-	-	-	1.0E+5	The enabling output has a structure that conforms to IEC60947-5-8 (Three-position enabling switch). Enabling outputs conform to IEC60947-5-1 (Direct Opening Mechanism) only when the switch is gripped.
Enabling Grip Switch	A4EG	Built-in E-Stop (A165E) NC contact *only A4EG-BE2R041	-	-	-	-	-	-	1.0E+5	Normally closed contact conforms to IEC60947-5-1 (Direct Opening Mechanism).
Safety Limit Switch	D4B-**11N	Normally Closed contact	-	-	-	-	-	-	2.0E+7	It can be applicable as Type 1 interlocking switch according to ISO 14119. Normally closed contact conforms to IEC 60947-5-1 (Direct Opening Mechanism).
Safety Limit Switch	D4B-**15N	Normally Closed contact	-	-	-	-	-	-	2.0E+7	It can be applicable as Type 1 interlocking switch according to ISO 14119. Normally closed contact conforms to IEC 60947-5-1 (Direct Opening Mechanism).
Safety Limit Switch	D4B-**70N	Normally Closed contact	-	-	-	-	-	-	2.0E+7	It can be applicable as Type 1 interlocking switch according to ISO 14119. Normally closed contact conforms to IEC 60947-5-1 (Direct Opening Mechanism).
Safety Limit Switch	D4B-**71N	Normally Closed contact	-	-	-	-	-	-	2.0E+7	It can be applicable as Type 1 interlocking switch according to ISO 14119. Normally closed contact conforms to IEC 60947-5-1 (Direct Opening Mechanism).
Safety Door Switch	D4BL Series	Normally Closed contact	-	-	-	-	-	-	2.0E+6	It can be applicable as Type 2 interlocking switch according to ISO 14119. Normally closed contact conforms to IEC 60947-5-1 (Direct Opening Mechanism).
Safety Door Switch	D4BS Series	Normally Closed contact	-	-	-	-	-	-	2.0E+6	It can be applicable as Type 2 interlocking switch according to ISO 14119. Normally closed contact conforms to IEC 60947-5-1 (Direct Opening Mechanism).
Safety Limit Switch	D4F-*02	Normally Closed contact	-	-	-	-	-	-	2.0E+7	It can be applicable as Type 1 interlocking switch according to ISO 14119. Normally closed contact conforms to IEC 60947-5-1 (Direct Opening Mechanism).
Safety Limit Switch	D4F-*20	Normally Closed contact	-	-	-	-	-	-	2.0E+7	It can be applicable as Type 1 interlocking switch according to ISO 14119. Normally closed contact conforms to IEC 60947-5-1 (Direct Opening Mechanism).
Safety Door Switch	D4GL Series	Normally Closed contact	-	-	-	-	-	-	2.0E+6	It can be applicable as Type 2 interlocking switch according to ISO 14119. Normally closed contact conforms to IEC 60947-5-1 (Direct Opening Mechanism).
Safety Door Switch	D4GS-N Series	Normally Closed contact	-	-	-	-	-	-	2.0E+6	It can be applicable as Type 2 interlocking switch according to ISO 14119. Normally closed contact conforms to IEC 60947-5-1 (Direct Opening Mechanism).
Safety Door Switch	D4JL Series	Normally Closed contact	-	-	-	-	-	-	2.0E+6	It can be applicable as Type 2 interlocking switch according to ISO 14119. Normally closed contact conforms to IEC 60947-5-1 (Direct Opening Mechanism).
Safety Limit Switch	D4N-**20	Normally Closed contact	-	-	-	-	-	-	2.0E+7	It can be applicable as Type 1 interlocking switch according to ISO 14119. Normally closed contact conforms to IEC 60947-5-1 (Direct Opening Mechanism).
Safety Limit Switch	D4N-**20R	Normally Closed contact	-	-	-	-	-	-	2.0E+7	It can be applicable as Type 1 interlocking switch according to ISO 14119. Normally closed contact conforms to IEC 60947-5-1 (Direct Opening Mechanism).
Safety Limit Switch	D4N-**22	Normally Closed contact	-	-	-	-	-	-	2.0E+7	It can be applicable as Type 1 interlocking switch according to ISO 14119. Normally closed contact conforms to IEC 60947-5-1 (Direct Opening Mechanism).
Safety Limit Switch	D4N-**25	Normally Closed contact	-	-	-	-	-	-	2.0E+7	It can be applicable as Type 1 interlocking switch according to ISO 14119. Normally closed contact conforms to IEC 60947-5-1 (Direct Opening Mechanism).
Safety Limit Switch	D4N-**26	Normally Closed contact	-	-	-	-	-	-	2.0E+7	It can be applicable as Type 1 interlocking switch according to ISO 14119. Normally closed contact conforms to IEC 60947-5-1 (Direct Opening Mechanism).
Safety Limit Switch	D4N-**2G	Normally Closed contact	-	-	-	-	-	-	2.0E+7	It can be applicable as Type 1 interlocking switch according to ISO 14119. Normally closed contact conforms to IEC 60947-5-1 (Direct Opening Mechanism).
Safety Limit Switch	D4N-**2GR	Normally Closed contact	-	-	-	-	-	-	2.0E+7	It can be applicable as Type 1 interlocking switch according to ISO 14119. Normally closed contact conforms to IEC 60947-5-1 (Direct Opening Mechanism).
Safety Limit Switch	D4N-**2H	Normally Closed contact	-	-	-	-	-	-	2.0E+7	It can be applicable as Type 1 interlocking switch according to ISO 14119. Normally closed contact conforms to IEC 60947-5-1 (Direct Opening Mechanism).
Safety Limit Switch	D4N-**2HR	Normally Closed contact	-	-	-	-	-	-	2.0E+7	It can be applicable as Type 1 interlocking switch according to ISO 14119. Normally closed contact conforms to IEC 60947-5-1 (Direct Opening Mechanism).
Safety Limit Switch	D4N-**31	Normally Closed contact	-	-	-	-	-	-	2.0E+7	It can be applicable as Type 1 interlocking switch according to ISO 14119. Normally closed contact conforms to IEC 60947-5-1 (Direct Opening Mechanism).
Safety Limit Switch	D4N-**31R	Normally Closed contact	-	-	-	-	-	-	2.0E+7	It can be applicable as Type 1 interlocking switch according to ISO 14119. Normally closed contact conforms to IEC 60947-5-1 (Direct Opening Mechanism).
Safety Limit Switch	D4N-**32	Normally Closed contact	-	-	-	-	-	-	2.0E+7	It can be applicable as Type 1 interlocking switch according to ISO 14119. Normally closed contact conforms to IEC 60947-5-1 (Direct Opening Mechanism).
Safety Limit Switch	D4N-**32R	Normally Closed contact	-	-	-	-	-	-	2.0E+7	It can be applicable as Type 1 interlocking switch according to ISO 14119. Normally closed contact conforms to IEC 60947-5-1 (Direct Opening Mechanism).
Safety Limit Switch	D4N-**62	Normally Closed contact	-	-	-	-	-	-	2.0E+7	It can be applicable as Type 1 interlocking switch according to ISO 14119. Normally closed contact conforms to IEC 60947-5-1 (Direct Opening Mechanism).
Safety Limit Switch	D4N-**62R	Normally Closed contact	-	-	-	-	-	-	2.0E+7	It can be applicable as Type 1 interlocking switch according to ISO 14119. Normally closed contact conforms to IEC 60947-5-1 (Direct Opening Mechanism).
Safety Limit Switch	D4N-**72	Normally Closed contact	-	-	-	-	-	-	2.0E+7	It can be applicable as Type 1 interlocking switch according to ISO 14119. Normally closed contact conforms to IEC 60947-5-1 (Direct Opening Mechanism).
Safety Limit Switch	D4N-**72R	Normally Closed contact	-	-	-	-	-	-	2.0E+7	It can be applicable as Type 1 interlocking switch according to ISO 14119. Normally closed contact conforms to IEC 60947-5-1 (Direct Opening Mechanism).
Safety Door Hinge Switch	D4NH Series	Normally Closed contact	-	-	-	-	-	-	2.0E+7	It can be applicable as Type 1 interlocking switch according to ISO 14119. Normally closed contact conforms to IEC 60947-5-1 (Direct Opening Mechanism).
Safety Door Switch	D4NL Series	Normally Closed contact	-	-	-	-	-	-	2.0E+6	It can be applicable as Type 2 interlocking switch according to ISO 14119. Normally closed contact conforms to IEC 60947-5-1 (Direct Opening Mechanism).
Safety Door Switch	D4NS Series	Normally Closed contact	-	-	-	-	-	-	2.0E+6	It can be applicable as Type 2 interlocking switch according to ISO 14119. Normally closed contact conforms to IEC 60947-5-1 (Direct Opening Mechanism).
Safety Door Switch	D4SL Series, D4SL-N Series	Normally Closed contact	-	-	-	-	-	-	2.0E+6	It can be applicable as Type 2 interlocking switch according to ISO 14119. Normally closed contact conforms to IEC 60947-5-1 (Direct Opening Mechanism).
Safety Relay	G7S-[]-E	AC-15 240V 5A	-	-	-	-	-	-	2.0E+5	This product conforms to EN50205 Forcibly Guided Contact Structure.
Safety Relay	G7S-[]-E	AC-15 240V 1.5A	-	-	-	-	-	-	5.0E+5	This product conforms to EN50205 Forcibly Guided Contact Structure.
Safety Relay	G7S-[]-E	AC-15 240V 0.75A	-	-	-	-	-	-	9.0E+5	This product conforms to EN50205 Forcibly Guided Contact Structure.

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Products	Model	Condition / Function	SIL	PFHd	PL	Category	MTTFd(Year)	DCavg (%)	B10d	Note
Safety Relay	G7SA	AC-1 AC250V 6A, DC-1 DC30V 6A	-	-	-	-	-	-	4.0E+5	This product conforms to EN50205 Forcibly Guided Contact Structure.
Frequency Inverter MX2 Series	3G3MX2-V1	Stop function in conformity to Stop Category 0	-	-	d	3	100	71	-	It has a structure that conforms to IEC60204-1 Stop Category 0. As a subsystem, it comforms to ISO13849-1 PLd.
Non-conntact Door Switch	D40A	Safety Output	SIL2	2.4E-8	d	3	-	-	-	It can be applicable as Type 4 interlocking switch according to ISO 14119. A non-contact door switch alone conforms as a subsystem to IEC61508 SIL2. The reliability of the whole system is determined upon it being combined with a connected dedicated controller
Non-conntact Door Switch	D40Z	Safety Output	SIL3	1.5E-10	e	4	-	-	-	It can be applicable as Type 4 interlocking switch according to ISO 14119. A non-contact door switch alone conforms as a subsystem to IEC61508 SIL3. The reliability of the whole system is determined upon it being combined with a connected dedicated controller
Safety Network Controller	DST1-ID12SL-1		SIL3	2.4E-10	e	4	-	-	-	As a subsystem, it conforms to IEC61508 SIL3.
Safety Network Controller	DST1-MD16SL-1		SIL3	2.4E-10	e	4	-	-	-	As a subsystem, it conforms to IEC61508 SIL3.
Safety Network Controller	DST1-XD0808SL-1		SIL3	2.4E-10	e	4	-	-	-	As a subsystem, it conforms to IEC61508 SIL3.
Safety Network Controller	DST1-MRD08SL-1		SIL3	5.1E-9	e	4	-	-	-	As a subsystem, it conforms to IEC61508 SIL3.
Safety Light Curtain	F3SG-2RA*		SIL1	1.1E-8	c	2	100	98	-	It comforms to IEC 61496-1 TYPE 2. As subsystem, it conforms to IEC61508 SIL 1 and ISO13849-1 PL c. For a cascade configuration, multiply the PFHd value by the number of sensor segments cascaded. The MTTFd value does not change when in a cascade configuration.
Safety Light Curtain	F3SG-4RA*		SIL3	1.1E-8	e	4	100	98	-	It comforms to IEC 61496-1 TYPE 4. As subsystem, it conforms to IEC61508 SIL 3 and ISO13849-1 PL e. For a cascade configuration, multiply the PFHd value by the number of sensor segments cascaded. The MTTFd value does not change when in a cascade configuration.
Safety Light Curtain	F3SG-2RE*		SIL1	9.1E-9	c	2	100	98	-	It comforms to IEC 61496-1 TYPE 2. As subsystem, it conforms to IEC61508 SIL 1 and ISO13849-1 PL c. For a cascade configuration, multiply the PFHd value by the number of sensor segments cascaded. The MTTFd value does not change when in a cascade configuration.
Safety Light Curtain	F3SG-4RE*		SIL3	9.1E-9	e	4	100	98	-	It comforms to IEC 61496-1 TYPE 4. As subsystem, it conforms to IEC61508 SIL 3 and ISO13849-1 PL e. For a cascade configuration, multiply the PFHd value by the number of sensor segments cascaded. The MTTFd value does not change when in a cascade configuration.
Safety Light Curtain	F3SJ-A0245P14 to A0461P14		SIL3	1.7E-8	e	4	-	-	-	The data is applicable for the models with a protective hight from 245 to 461mm. It comforms to IEC 61496-1 TYPE4. As subsystem, it conforms to IEC61508 SIL3 and ISO13849-1 PLe.
Safety Light Curtain	F3SJ-A0533P14 to A0875P14		SIL3	2.5E-8	e	4	-	-	-	The data is applicable for the models with a protective hight from 533 to 875mm. It comforms to IEC 61496-1 TYPE4. As subsystem, it conforms to IEC61508 SIL3 and ISO13849-1 PLe.
Safety Light Curtain	F3SJ-A0983P14 to A1271P14		SIL3	3.3E-8	e	4	-	-	-	The data is applicable for the models with a protective hight from 983 to 1271mm. It comforms to IEC 61496-1 TYPE4. As subsystem, it conforms to IEC61508 SIL3 and ISO13849-1 PLe.
Safety Light Curtain	F3SJ-A1487P14 to A1631P14		SIL3	4.0E-8	e	4	-	-	-	The data is applicable for the models with a protective hight from 1487 to 1631mm. It comforms to IEC 61496-1 TYPE4. As subsystem, it conforms to IEC61508 SIL3 and ISO13849-1 PLe.
Safety Light Curtain	F3SJ-A1784P14		SIL3	4.5E-8	e	4	-	-	-	The data is applicable for the models with a protective hight 1784mm. It comforms to IEC 61496-1 TYPE4. As subsystem, it conforms to IEC61508 SIL3 and ISO13849-1 PLe.
Safety Light Curtain	F3SJ-A0245N14 to A0461N14		SIL3	2.0E-8	e	4	-	-	-	The data is applicable for the models with a protective hight from 245 to 461mm. It comforms to IEC 61496-1 TYPE4. As subsystem, it conforms to IEC61508 SIL3 and ISO13849-1 PLe.
Safety Light Curtain	F3SJ-A0551N14 to A0911N14		SIL3	2.7E-8	e	4	-	-	-	The data is applicable for the models with a protective hight from 551 to 911mm. It comforms to IEC 61496-1 TYPE4. As subsystem, it conforms to IEC61508 SIL3 and ISO13849-1 PLe.
Safety Light Curtain	F3SJ-A0983N14 to A1271N14		SIL3	3.5E-8	e	4	-	-	-	The data is applicable for the models with a protective hight from 983 to 1271mm. It comforms to IEC 61496-1 TYPE4. As subsystem, it conforms to IEC61508 SIL3 and ISO13849-1 PLe.
Safety Light Curtain	F3SJ-A0245P20 to A0755P20		SIL3	1.7E-8	e	4	-	-	-	The data is applicable for the models with a protective hight from 245 to 755mm. It comforms to IEC 61496-1 TYPE4. As subsystem, it conforms to IEC61508 SIL3 and ISO13849-1 PLe.
Safety Light Curtain	F3SJ-A0785P20 to A1505P20		SIL3	2.5E-8	e	4	-	-	-	The data is applicable for the models with a protective hight from 770 to 1505mm. It comforms to IEC 61496-1 TYPE4. As subsystem, it conforms to IEC61508 SIL3 and ISO13849-1 PLe.
Safety Light Curtain	F3SJ-A1565P20 to A2255P20		SIL3	3.3E-8	e	4	-	-	-	The data is applicable for the models with a protective hight from 1565 to 2255mm. It comforms to IEC 61496-1 TYPE4. As subsystem, it conforms to IEC61508 SIL3 and ISO13849-1 PLe.
Safety Light Curtain	F3SJ-A2405P20 to A2495P20		SIL3	4.0E-8	e	4	-	-	-	The data is applicable for the models with a protective hight from 2405 to 2495mm. It comforms to IEC 61496-1 TYPE4. As subsystem, it conforms to IEC61508 SIL3 and ISO13849-1 PLe.
Safety Light Curtain	F3SJ-A0245N20 to A0755N20		SIL3	2.0E-8	e	4	-	-	-	The data is applicable for the models with a protective hight from 245 to 755mm. It comforms to IEC 61496-1 TYPE4. As subsystem, it conforms to IEC61508 SIL3 and ISO13849-1 PLe.
Safety Light Curtain	F3SJ-A0785N20 to A1505N20		SIL3	2.7E-8	e	4	-	-	-	The data is applicable for the models with a protective hight from 785 to 1505mm. It comforms to IEC 61496-1 TYPE4. As subsystem, it conforms to IEC61508 SIL3 and ISO13849-1 PLe.
Safety Light Curtain	F3SJ-A1655N20 to A2255N20		SIL3	3.5E-8	e	4	-	-	-	The data is applicable for the models with a protective hight from 1655 to 2255mm. It comforms to IEC 61496-1 TYPE4. As subsystem, it conforms to IEC61508 SIL3 and ISO13849-1 PLe.
Safety Light Curtain	F3SJ-A2405N20 to A2495N20		SIL3	4.3E-8	e	4	-	-	-	The data is applicable for the models with a protective hight from 2405 to 2495mm. It comforms to IEC 61496-1 TYPE4. As subsystem, it conforms to IEC61508 SIL3 and ISO13849-1 PLe.
Safety Light Curtain	F3SJ-A0260P25 to A0940P25		SIL3	1.7E-8	e	4	-	-	-	The data is applicable for the models with a protective hight from 260 to 940mm. It comforms to IEC 61496-1 TYPE4. As subsystem, it conforms to IEC61508 SIL3 and ISO13849-1 PLe.
Safety Light Curtain	F3SJ-A1020P25 to A1900P25		SIL3	2.5E-8	e	4	-	-	-	The data is applicable for the models with a protective hight from 1020 to 1900mm. It comforms to IEC 61496-1 TYPE4. As subsystem, it conforms to IEC61508 SIL3 and ISO13849-1 PLe.
Safety Light Curtain	F3SJ-A2060P25 to A2500P25		SIL3	3.3E-8	e	4	-	-	-	The data is applicable for the models with a protective hight from 2060 to 2500mm. It comforms to IEC 61496-1 TYPE4. As subsystem, it conforms to IEC61508 SIL3 and ISO13849-1 PLe.
Safety Light Curtain	F3SJ-A0260N25 to A0940N25		SIL3	2.0E-8	e	4	-	-	-	The data is applicable for the models with a protective hight from 260 to 940mm. It comforms to IEC 61496-1 TYPE4. As subsystem, it conforms to IEC61508 SIL3 and ISO13849-1 PLe.
Safety Light Curtain	F3SJ-A1020N25 to A1900N25		SIL3	2.7E-8	e	4	-	-	-	The data is applicable for the models with a protective hight from 1020 to 1900mm. It comforms to IEC 61496-1 TYPE4. As subsystem, it conforms to IEC61508 SIL3 and ISO13849-1 PLe.
Safety Light Curtain	F3SJ-A2060N25 to A2500N25		SIL3	3.5E-8	e	4	-	-	-	The data is applicable for the models with a protective hight from 2060 to 2500mm. It comforms to IEC 61496-1 TYPE4. As subsystem, it conforms to IEC61508 SIL3 and ISO13849-1 PLe.
Safety Light Curtain	F3SJ-A0245P30 to A1195P30		SIL3	1.7E-8	e	4	-	-	-	The data is applicable for the models with a protective hight from 245 to 1195mm. It comforms to IEC 61496-1 TYPE4. As subsystem, it conforms to IEC61508 SIL3 and ISO13849-1 PLe.
Safety Light Curtain	F3SJ-A1270P30 to A2495P30		SIL3	2.5E-8	e	4	-	-	-	The data is applicable for the models with a protective hight from 1270 to 2495mm. It comforms to IEC 61496-1 TYPE4. As subsystem, it conforms to IEC61508 SIL3 and ISO13849-1 PLe.
Safety Light Curtain	F3SJ-A0245N30 to A1195N30		SIL3	2.0E-8	e	4	-	-	-	The data is applicable for the models with a protective hight from 245 to 1195mm. It comforms to IEC 61496-1 TYPE4. As subsystem, it conforms to IEC61508 SIL3 and ISO13849-1 PLe.
Safety Light Curtain	F3SJ-A1270N30 to A2495N30		SIL3	2.7E-8	e	4	-	-	-	The data is applicable for the models with a protective hight from 1270 to 2495mm. It comforms to IEC 61496-1 TYPE4. As subsystem, it conforms to IEC61508 SIL3 and ISO13849-1 PLe.
Safety Light Curtain	F3SJ-A0270P55 to A2470P55		SIL3	1.7E-8	e	4	-	-	-	The data is applicable for the models with a protective hight from 270 to 2470mm. It comforms to IEC 61496-1 TYPE4. As subsystem, it conforms to IEC61508 SIL3 and ISO13849-1 PLe.

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Safety Light Curtain	F3SJ-A0270N55 to A2470N55		SIL3	2.0E-8	e	4	-	-	-	The data is applicable for the models with a protective hight from 270 to 2470mm. It comforms to IEC 61496-1 TYPE4. As subsystem, it conforms to IEC61508 SIL3 and ISO13849-1 PLe.
Safety Light Curtain	F3SJ-B0185P25 to B1025P25		SIL3	1.2E-8	e	4	-	-	-	The data is applicable for the models with a protective hight from 185 to 1025mm. It comforms to IEC 61496-1 TYPE4. As subsystem, it conforms to IEC61508 SIL3 and ISO13849-1 PLe.
Safety Light Curtain	F3SJ-B1105P25 to B2065P25		SIL3	1.8E-8	e	4	-	-	-	The data is applicable for the models with a protective hight from 1105 to 2065mm. It comforms to IEC 61496-1 TYPE4. As subsystem, it conforms to IEC61508 SIL3 and ISO13849-1 PLe.
Safety Light Curtain	F3SJ-B0185N25 to B1025N25		SIL3	1.2E-8	e	4	-	-	-	The data is applicable for the models with a protective hight from 185 to 1025mm. It comforms to IEC 61496-1 TYPE4. As subsystem, it conforms to IEC61508 SIL3 and ISO13849-1 PLe.
Safety Light Curtain	F3SJ-B1105N25 to B2065N25		SIL3	1.9E-8	e	4	-	-	-	The data is applicable for the models with a protective hight from 1105 to 2065mm. It comforms to IEC 61496-1 TYPE4. As subsystem, it conforms to IEC61508 SIL3 and ISO13849-1 PLe.
Safety Light Curtain	F3SJ-E0185P25 to E1105P25		SIL3	1.2E-8	e	4	-	-	-	The data is applicable for all models. It comforms to IEC 61496-1 TYPE4. As subsystem, it conforms to IEC61508 SIL3 and ISO13849-1 PLe.
Safety Light Curtain	F3SJ-E0185N25 to E1105N25		SIL3	1.2E-8	e	4	-	-	-	The data is applicable for all models. It comforms to IEC 61496-1 TYPE4. As subsystem, it conforms to IEC61508 SIL3 and ISO13849-1 PLe.
Safety Light Curtain	F3SR-430B0190 to 430B0990		SIL3	1.4E-8	e	4	-	-	-	The data is applicable for the models with a protective hight from 190 to 990mm. It comforms to IEC 61496-1 TYPE4. As subsystem, it conforms to IEC61508 SIL3 and ISO13849-1 PLe.
Safety Light Curtain	F3SR-430B1070 to 430B2270		SIL3	2.1E-8	e	4	-	-	-	The data is applicable for the models with a protective hight from 1070 to 2270mm. It comforms to IEC 61496-1 TYPE4. As subsystem, it conforms to IEC61508 SIL3 and ISO13849-1 PLe.
Safety Relay Unit	G9SA-300-SC		-	-	e	4	100	99	-	As a subsystem, it conforms to ISO13849-1 PLe.
Safety Relay Unit	G9SA-301		-	-	e	4	100	99	-	As a subsystem, it conforms to ISO13849-1 PLe.
Safety Relay Unit	G9SA-321-T	Instantaneous Safety Output	-	-	e	4	82	99	-	As a subsystem, it conforms to ISO13849-1 PLe.
Safety Relay Unit	G9SA-321-T	Release delayed safety output	-	-	d	3	62	60	-	As a subsystem, it conforms to ISO13849-1 PLd.
Safety Relay Unit	G9SA-501		-	-	e	4	100	99	-	As a subsystem, it conforms to ISO13849-1 PLe.
Safety Relay Unit	G9SA-EX301	Instantaneous Safety Output	-	-	e	4	100	99	-	As a subsystem, it conforms to ISO13849-1 PLe.
Safety Relay Unit	G9SA-EX031-T	Release delayed safety output	-	-	d	3	65	90	-	As a subsystem, it conforms to ISO13849-1 PLd.
Safety Relay Unit	G9SA-TH301		-	-	e	4	86	99	-	It has a structure of a controller, when combined with the Two-Hand Control Device that conforms to EN574 Type IIIC. As a subsystem, it conforms to ISO13849-1 PLe.
Safety Relay Unit	G9SB series (except G9SB-3010)		-	-	e	4	100	99	-	As a subsystem, it conforms to ISO13849-1 PLe.
Safety Relay Unit	G9SB-3010		-	-	d	3	100	99	-	As a subsystem, it conforms to ISO13849-1 PLd.
Safety Relay Unit	G9SE-201		SIL3	2.8E-8	e	4	100	98	-	As a subsystem, it conforms to IEC 62061 SIL3.
Safety Relay Unit	G9SE-401		SIL3	5.1E-8	e	4	53	99	-	As a subsystem, it conforms to IEC 62061 SIL3.
Safety Relay Unit	G9SE-221-T*	Instantaneous Safety Output, Release delayed safety	SIL3	5.1E-8	e	4	53	99	-	As a subsystem, it conforms to IEC 62061 SIL3.
Safety Controller	G9SP-N10D		SIL3	1.2E-10	e	4	-	-	-	As a subsystem, it conforms to IEC61508 SIL3.
Safety Controller	G9SP-N10S		SIL3	9.4E-11	e	4	-	-	-	As a subsystem, it conforms to IEC61508 SIL3.
Safety Controller	G9SP-N20S		SIL3	1.1E-10	e	4	-	-	-	As a subsystem, it conforms to IEC61508 SIL3.
Flexible Safety Unit	G9SX-AD		SIL3	5.7E-9	e	4	-	-	-	As a subsystem, it conforms to IEC61508 SIL3.
Flexible Safety Unit	G9SX-ADA		SIL3	5.7E-9	e	4	-	-	-	As a subsystem, it conforms to IEC61508 SIL3.
Flexible Safety Unit	G9SX-BC		SIL3	4.1E-9	e	4	-	-	-	As a subsystem, it conforms to IEC61508 SIL3.
Flexible Safety Unit	G9SX-EX		SIL3	5.8E-11	e	4	-	-	-	As a subsystem, it conforms to IEC61508 SIL3.
Flexible Safety Unit	G9SX-GS		SIL3	9.0E-9	e	4	-	-	-	As a subsystem, it conforms to IEC61508 SIL3.
Low-speed Monitoring Unit	G9SX-LM	Integrated system of G9SX-LM and E2E proximity	-	-	d	3	50	86	-	As a subsystem integrated with the E2E (E2E-X1R5F1, -X2MF1, -X2F1, -X5MF1, -X5F1, -X10MF1), it conforms to ISO13849-1 PLd.
Low-speed Monitoring Unit	G9SX-LM	Without proximity sensor	SIL3	1.2E-8	d	3	-	-	-	As a subsystem, the G9SX-LM alone conforms to ISO13849-1 PLd. The DC of the proximity sensor to be connected to the rotation detection input is 90%.
Flexible Safety Unit	G9SX-NS	Noncontact switch input (D40A or D40Z)	SIL3	4.2E-9	e	4	-	-	-	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 (D40Z or D40A).
Flexible Safety Unit	G9SX-NSA	Noncontact switch input (D40A or D40Z)	SIL3	5.5E-9	e	4	-	-	-	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 (D40Z or D40A).
Standstill Monitoring Unit	G9SX-SM		SIL3	4.8E-9	e	4	-	-	-	As a subsystem, it conforms to IEC61508 SIL3.
Safety Light Curtain	MS4800 series		SIL3	5.9E-8	e	4	-	-	-	It comforms to IEC61508 SIL3 and IEC 61496-1 TYPE4
Safety Network Controller	NE1A-SCPU01-V1		SIL3	5.1E-10	e	4	-	-	-	As a subsystem, it conforms to IEC61508 SIL3.
Safety Network Controller	NE1A-SCPU02		SIL3	6.5E-10	e	4	-	-	-	As a subsystem, it conforms to IEC61508 SIL3.
NX-series Safety Control Unit	NX-SID800		SIL3	4.3E-10	e	4	-	-	-	As a subsystem, it conforms to IEC61508 SIL3.
NX-series Safety Control Unit	NX-SIH400		SIL3	3.1E-10	e	4	-	-	-	As a subsystem, it conforms to IEC61508 SIL3.
NX-series Safety Control Unit	NX-SL3300		SIL3	3.1E-10	e	4	-	-	-	As a subsystem, it conforms to IEC61508 SIL3.
NX-series Safety Control Unit	NX-SL3500		SIL3	3.0E-10	e	4	-	-	-	As a subsystem, it conforms to IEC61508 SIL3.
NX-series Safety Control Unit	NX-SOD400		SIL3	5.5E-10	e	4	-	-	-	As a subsystem, it conforms to IEC61508 SIL3.
NX-series Safety Control Unit	NX-SOH200		SIL3	3.6E-10	e	4	-	-	-	As a subsystem, it conforms to IEC61508 SIL3.
Safety Laser Scanner	OS32C		SIL2	8.3E-8	d	3	-	-	-	It comforms to IEC 61496-1 TYPE3. As subsystem, it conforms to IEC61508 SIL2 and ISO13849-1 PLd.
AC Servo Driver G5 Series	R88D-KT/KN	STO function (STO input and EDM output)	SIL2	2.8E-8	d	3	-	-	-	It has a structure that conforms to IEC61800-5-2 STO function. As a subsystem, it conforms to IEC61508 SIL2.
Safety Edge and Edge Controller	SGE / SCC	Integrated system of edge sensor and controller	-	-	e	3	100	97	-	When combined with a connected dedicated controller, it conforms to both ISO 13849-1 PLe and EN1760-2.
Safety Mat System	UM / MC3	Integrated system of mats and controller	SIL2	4.8E-8	d	3	-	-	-	When combined with a connected dedicated controller, it conforms to both ISO 13849-1 PLd and EN1760-1.

Reliability Data for Safety of Machinery

Safety Components

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12-May-2015

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E-9 means $*10^{-9}$.

Products	Model	Condition / Function	SIL	PFHd	PL	Category	MTTFd(Year)	DCavg (%)	B10d	Note
E-STOP Switch	A165E series	Normally Closed contact	-	-	-	-	-	-	1.0E+5	Normally closed contact conforms to IEC60947-5-1 (Direct Opening Mechanism)
E-STOP Switch	A22E series	Normally Closed contact	-	-	-	-	-	-	1.0E+5	Normally closed contact conforms to IEC60947-5-1 (Direct Opening Mechanism).
Guard Lock Safety Key Selector Switch	A22LK-2RL*	Normally Closed contact	-	-	-	-	-	-	1.0E+5	Normally closed contact has a structure that conforms to IEC60947-5-1 (Direct opening mechanism) only when the key is turned to right
Key Selector Switch	A22TK-2*L	Normally Closed contact	-	-	-	-	-	-	1.0E+5	Normally closed contact has a structure that conforms to IEC60947-5-1 (Direct opening mechanism) only when the key is turned to
Key Selector Switch	A22TK-2*R	Normally Closed contact	-	-	-	-	-	-	1.0E+5	Normally closed contact has a structure that conforms to IEC60947-5-1 (Direct opening mechanism) only when the key is turned to
Enabling Switch	A4E	Enable output	-	-	-	-	-	-	1.0E+5	The enabling output has a structure that conforms to IEC60947-5-8 (Three-position enabling switch). The enabling output has a structure that conforms to IEC60947-5-1 (Direct Opening Mechanism) only when the switch is gripped.
Enabling Grip Switch	A4EG	Built-in enabling switch (A4E) Enable Output	-	-	-	-	-	-	1.0E+5	The enabling output has a structure that conforms to IEC60947-5-8 (Three-position enabling switch). Enabling outputs conform to IEC60947-5-1 (Direct Opening Mechanism) only when the switch is gripped.
Enabling Grip Switch	A4EG	Built-in E-Stop (A165E) NC contact *only A4EG-BE2R041	-	-	-	-	-	-	1.0E+5	Normally closed contact conforms to IEC60947-5-1 (Direct Opening Mechanism).
Safety Limit Switch	D4B-**11N	Normally Closed contact	-	-	-	-	-	-	2.0E+7	It can be applicable as Type 1 interlocking switch according to ISO 14119. Normally closed contact conforms to IEC 60947-5-1 (Direct Opening Mechanism).
Safety Limit Switch	D4B-**15N	Normally Closed contact	-	-	-	-	-	-	2.0E+7	It can be applicable as Type 1 interlocking switch according to ISO 14119. Normally closed contact conforms to IEC 60947-5-1 (Direct Opening Mechanism).
Safety Limit Switch	D4B-**70N	Normally Closed contact	-	-	-	-	-	-	2.0E+7	It can be applicable as Type 1 interlocking switch according to ISO 14119. Normally closed contact conforms to IEC 60947-5-1 (Direct Opening Mechanism).
Safety Limit Switch	D4B-**71N	Normally Closed contact	-	-	-	-	-	-	2.0E+7	It can be applicable as Type 1 interlocking switch according to ISO 14119. Normally closed contact conforms to IEC 60947-5-1 (Direct Opening Mechanism).
Safety Door Switch	D4BL Series	Normally Closed contact	-	-	-	-	-	-	2.0E+6	It can be applicable as Type 2 interlocking switch according to ISO 14119. Normally closed contact conforms to IEC 60947-5-1 (Direct Opening Mechanism).
Safety Door Switch	D4BS Series	Normally Closed contact	-	-	-	-	-	-	2.0E+6	It can be applicable as Type 2 interlocking switch according to ISO 14119. Normally closed contact conforms to IEC 60947-5-1 (Direct Opening Mechanism).
Safety Limit Switch	D4F-*02	Normally Closed contact	-	-	-	-	-	-	2.0E+7	It can be applicable as Type 1 interlocking switch according to ISO 14119. Normally closed contact conforms to IEC 60947-5-1 (Direct Opening Mechanism).
Safety Limit Switch	D4F-*20	Normally Closed contact	-	-	-	-	-	-	2.0E+7	It can be applicable as Type 1 interlocking switch according to ISO 14119. Normally closed contact conforms to IEC 60947-5-1 (Direct Opening Mechanism).
Safety Door Switch	D4GL Series	Normally Closed contact	-	-	-	-	-	-	2.0E+6	It can be applicable as Type 2 interlocking switch according to ISO 14119. Normally closed contact conforms to IEC 60947-5-1 (Direct Opening Mechanism).
Safety Door Switch	D4GS-N Series	Normally Closed contact	-	-	-	-	-	-	2.0E+6	It can be applicable as Type 2 interlocking switch according to ISO 14119. Normally closed contact conforms to IEC 60947-5-1 (Direct Opening Mechanism).
Safety Door Switch	D4JL Series	Normally Closed contact	-	-	-	-	-	-	2.0E+6	It can be applicable as Type 2 interlocking switch according to ISO 14119. Normally closed contact conforms to IEC 60947-5-1 (Direct Opening Mechanism).
Safety Limit Switch	D4N-**20	Normally Closed contact	-	-	-	-	-	-	2.0E+7	It can be applicable as Type 1 interlocking switch according to ISO 14119. Normally closed contact conforms to IEC 60947-5-1 (Direct Opening Mechanism).
Safety Limit Switch	D4N-**20R	Normally Closed contact	-	-	-	-	-	-	2.0E+7	It can be applicable as Type 1 interlocking switch according to ISO 14119. Normally closed contact conforms to IEC 60947-5-1 (Direct Opening Mechanism).
Safety Limit Switch	D4N-**22	Normally Closed contact	-	-	-	-	-	-	2.0E+7	It can be applicable as Type 1 interlocking switch according to ISO 14119. Normally closed contact conforms to IEC 60947-5-1 (Direct Opening Mechanism).
Safety Limit Switch	D4N-**25	Normally Closed contact	-	-	-	-	-	-	2.0E+7	It can be applicable as Type 1 interlocking switch according to ISO 14119. Normally closed contact conforms to IEC 60947-5-1 (Direct Opening Mechanism).
Safety Limit Switch	D4N-**26	Normally Closed contact	-	-	-	-	-	-	2.0E+7	It can be applicable as Type 1 interlocking switch according to ISO 14119. Normally closed contact conforms to IEC 60947-5-1 (Direct Opening Mechanism).
Safety Limit Switch	D4N-**2G	Normally Closed contact	-	-	-	-	-	-	2.0E+7	It can be applicable as Type 1 interlocking switch according to ISO 14119. Normally closed contact conforms to IEC 60947-5-1 (Direct Opening Mechanism).
Safety Limit Switch	D4N-**2GR	Normally Closed contact	-	-	-	-	-	-	2.0E+7	It can be applicable as Type 1 interlocking switch according to ISO 14119. Normally closed contact conforms to IEC 60947-5-1 (Direct Opening Mechanism).
Safety Limit Switch	D4N-**2H	Normally Closed contact	-	-	-	-	-	-	2.0E+7	It can be applicable as Type 1 interlocking switch according to ISO 14119. Normally closed contact conforms to IEC 60947-5-1 (Direct Opening Mechanism).
Safety Limit Switch	D4N-**2HR	Normally Closed contact	-	-	-	-	-	-	2.0E+7	It can be applicable as Type 1 interlocking switch according to ISO 14119. Normally closed contact conforms to IEC 60947-5-1 (Direct Opening Mechanism).
Safety Limit Switch	D4N-**31	Normally Closed contact	-	-	-	-	-	-	2.0E+7	It can be applicable as Type 1 interlocking switch according to ISO 14119. Normally closed contact conforms to IEC 60947-5-1 (Direct Opening Mechanism).
Safety Limit Switch	D4N-**31R	Normally Closed contact	-	-	-	-	-	-	2.0E+7	It can be applicable as Type 1 interlocking switch according to ISO 14119. Normally closed contact conforms to IEC 60947-5-1 (Direct Opening Mechanism).
Safety Limit Switch	D4N-**32	Normally Closed contact	-	-	-	-	-	-	2.0E+7	It can be applicable as Type 1 interlocking switch according to ISO 14119. Normally closed contact conforms to IEC 60947-5-1 (Direct Opening Mechanism).
Safety Limit Switch	D4N-**32R	Normally Closed contact	-	-	-	-	-	-	2.0E+7	It can be applicable as Type 1 interlocking switch according to ISO 14119. Normally closed contact conforms to IEC 60947-5-1 (Direct Opening Mechanism).
Safety Limit Switch	D4N-**62	Normally Closed contact	-	-	-	-	-	-	2.0E+7	It can be applicable as Type 1 interlocking switch according to ISO 14119. Normally closed contact conforms to IEC 60947-5-1 (Direct Opening Mechanism).
Safety Limit Switch	D4N-**62R	Normally Closed contact	-	-	-	-	-	-	2.0E+7	It can be applicable as Type 1 interlocking switch according to ISO 14119. Normally closed contact conforms to IEC 60947-5-1 (Direct Opening Mechanism).
Safety Limit Switch	D4N-**72	Normally Closed contact	-	-	-	-	-	-	2.0E+7	It can be applicable as Type 1 interlocking switch according to ISO 14119. Normally closed contact conforms to IEC 60947-5-1 (Direct Opening Mechanism).
Safety Limit Switch	D4N-**72R	Normally Closed contact	-	-	-	-	-	-	2.0E+7	It can be applicable as Type 1 interlocking switch according to ISO 14119. Normally closed contact conforms to IEC 60947-5-1 (Direct Opening Mechanism).
Safety Door Hinge Switch	D4NH Series	Normally Closed contact	-	-	-	-	-	-	2.0E+7	It can be applicable as Type 1 interlocking switch according to ISO 14119. Normally closed contact conforms to IEC 60947-5-1 (Direct Opening Mechanism).
Safety Door Switch	D4NL Series	Normally Closed contact	-	-	-	-	-	-	2.0E+6	It can be applicable as Type 2 interlocking switch according to ISO 14119. Normally closed contact conforms to IEC 60947-5-1 (Direct Opening Mechanism).
Safety Door Switch	D4NS Series	Normally Closed contact	-	-	-	-	-	-	2.0E+6	It can be applicable as Type 2 interlocking switch according to ISO 14119. Normally closed contact conforms to IEC 60947-5-1 (Direct Opening Mechanism).
Safety Door Switch	D4SL Series, D4SL-N Series	Normally Closed contact	-	-	-	-	-	-	2.0E+6	It can be applicable as Type 2 interlocking switch according to ISO 14119. Normally closed contact conforms to IEC 60947-5-1 (Direct Opening Mechanism).
Safety Relay	G7S-[]-E	AC-15 240V 5A	-	-	-	-	-	-	2.0E+5	This product conforms to EN50205 Forcibly Guided Contact Structure.
Safety Relay	G7S-[]-E	AC-15 240V 1.5A	-	-	-	-	-	-	5.0E+5	This product conforms to EN50205 Forcibly Guided Contact Structure.
Safety Relay	G7S-[]-E	AC-15 240V 0.75A	-	-	-	-	-	-	9.0E+5	This product conforms to EN50205 Forcibly Guided Contact Structure.

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E-9 means $*10^{-9}$.

Products	Model	Condition / Function	SIL	PFHd	PL	Category	MTTFd(Year)	DCavg (%)	B10d	Note
Safety Relay	G7SA	AC-1 AC250V 6A, DC-1 DC30V 6A	-	-	-	-	-	-	4.0E+5	This product conforms to EN50205 Forcibly Guided Contact Structure.
Frequency Inverter MX2 Series	3G3MX2-V1	Stop function in conformity to Stop Category 0	-	-	d	3	100	71	-	It has a structure that conforms to IEC60204-1 Stop Category 0. As a subsystem, it comforms to ISO13849-1 PLd.
Non-conntact Door Switch	D40A	Safety Output	SIL2	2.4E-8	d	3	-	-	-	It can be applicable as Type 4 interlocking switch according to ISO 14119. A non-contact door switch alone conforms as a subsystem to IEC61508 SIL2. The reliability of the whole system is determined upon it being combined with a connected dedicated controller
Non-conntact Door Switch	D40Z	Safety Output	SIL3	1.5E-10	e	4	-	-	-	It can be applicable as Type 4 interlocking switch according to ISO 14119. A non-contact door switch alone conforms as a subsystem to IEC61508 SIL3. The reliability of the whole system is determined upon it being combined with a connected dedicated controller
Safety Network Controller	DST1-ID12SL-1		SIL3	2.4E-10	e	4	-	-	-	As a subsystem, it conforms to IEC61508 SIL3.
Safety Network Controller	DST1-MD16SL-1		SIL3	2.4E-10	e	4	-	-	-	As a subsystem, it conforms to IEC61508 SIL3.
Safety Network Controller	DST1-XD0808SL-1		SIL3	2.4E-10	e	4	-	-	-	As a subsystem, it conforms to IEC61508 SIL3.
Safety Network Controller	DST1-MRD08SL-1		SIL3	5.1E-9	e	4	-	-	-	As a subsystem, it conforms to IEC61508 SIL3.
Safety Light Curtain	F3SG-2RA*		SIL1	1.1E-8	c	2	100	98	-	It comforms to IEC 61496-1 TYPE 2. As subsystem, it conforms to IEC61508 SIL 1 and ISO13849-1 PL c. For a cascade configuration, multiply the PFHd value by the number of sensor segments cascaded. The MTTFd value does not change when in a cascade configuration.
Safety Light Curtain	F3SG-4RA*		SIL3	1.1E-8	e	4	100	98	-	It comforms to IEC 61496-1 TYPE 4. As subsystem, it conforms to IEC61508 SIL 3 and ISO13849-1 PL e. For a cascade configuration, multiply the PFHd value by the number of sensor segments cascaded. The MTTFd value does not change when in a cascade configuration.
Safety Light Curtain	F3SG-2RE*		SIL1	9.1E-9	c	2	100	98	-	It comforms to IEC 61496-1 TYPE 2. As subsystem, it conforms to IEC61508 SIL 1 and ISO13849-1 PL c. For a cascade configuration, multiply the PFHd value by the number of sensor segments cascaded. The MTTFd value does not change when in a cascade configuration.
Safety Light Curtain	F3SG-4RE*		SIL3	9.1E-9	e	4	100	98	-	It comforms to IEC 61496-1 TYPE 4. As subsystem, it conforms to IEC61508 SIL 3 and ISO13849-1 PL e. For a cascade configuration, multiply the PFHd value by the number of sensor segments cascaded. The MTTFd value does not change when in a cascade configuration.
Safety Light Curtain	F3SJ-A0245P14 to A0461P14		SIL3	1.7E-8	e	4	-	-	-	The data is applicable for the models with a protective hight from 245 to 461mm. It comforms to IEC 61496-1 TYPE4. As subsystem, it conforms to IEC61508 SIL3 and ISO13849-1 PLe.
Safety Light Curtain	F3SJ-A0533P14 to A0875P14		SIL3	2.5E-8	e	4	-	-	-	The data is applicable for the models with a protective hight from 533 to 875mm. It comforms to IEC 61496-1 TYPE4. As subsystem, it conforms to IEC61508 SIL3 and ISO13849-1 PLe.
Safety Light Curtain	F3SJ-A0983P14 to A1271P14		SIL3	3.3E-8	e	4	-	-	-	The data is applicable for the models with a protective hight from 983 to 1271mm. It comforms to IEC 61496-1 TYPE4. As subsystem, it conforms to IEC61508 SIL3 and ISO13849-1 PLe.
Safety Light Curtain	F3SJ-A1487P14 to A1631P14		SIL3	4.0E-8	e	4	-	-	-	The data is applicable for the models with a protective hight from 1487 to 1631mm. It comforms to IEC 61496-1 TYPE4. As subsystem, it conforms to IEC61508 SIL3 and ISO13849-1 PLe.
Safety Light Curtain	F3SJ-A1784P14		SIL3	4.5E-8	e	4	-	-	-	The data is applicable for the models with a protective hight 1784mm. It comforms to IEC 61496-1 TYPE4. As subsystem, it conforms to IEC61508 SIL3 and ISO13849-1 PLe.
Safety Light Curtain	F3SJ-A0245N14 to A0461N14		SIL3	2.0E-8	e	4	-	-	-	The data is applicable for the models with a protective hight from 245 to 461mm. It comforms to IEC 61496-1 TYPE4. As subsystem, it conforms to IEC61508 SIL3 and ISO13849-1 PLe.
Safety Light Curtain	F3SJ-A0551N14 to A0911N14		SIL3	2.7E-8	e	4	-	-	-	The data is applicable for the models with a protective hight from 551 to 911mm. It comforms to IEC 61496-1 TYPE4. As subsystem, it conforms to IEC61508 SIL3 and ISO13849-1 PLe.
Safety Light Curtain	F3SJ-A0983N14 to A1271N14		SIL3	3.5E-8	e	4	-	-	-	The data is applicable for the models with a protective hight from 983 to 1271mm. It comforms to IEC 61496-1 TYPE4. As subsystem, it conforms to IEC61508 SIL3 and ISO13849-1 PLe.
Safety Light Curtain	F3SJ-A0245P20 to A0755P20		SIL3	1.7E-8	e	4	-	-	-	The data is applicable for the models with a protective hight from 245 to 755mm. It comforms to IEC 61496-1 TYPE4. As subsystem, it conforms to IEC61508 SIL3 and ISO13849-1 PLe.
Safety Light Curtain	F3SJ-A0785P20 to A1505P20		SIL3	2.5E-8	e	4	-	-	-	The data is applicable for the models with a protective hight from 770 to 1505mm. It comforms to IEC 61496-1 TYPE4. As subsystem, it conforms to IEC61508 SIL3 and ISO13849-1 PLe.
Safety Light Curtain	F3SJ-A1565P20 to A2255P20		SIL3	3.3E-8	e	4	-	-	-	The data is applicable for the models with a protective hight from 1565 to 2255mm. It comforms to IEC 61496-1 TYPE4. As subsystem, it conforms to IEC61508 SIL3 and ISO13849-1 PLe.
Safety Light Curtain	F3SJ-A2405P20 to A2495P20		SIL3	4.0E-8	e	4	-	-	-	The data is applicable for the models with a protective hight from 2405 to 2495mm. It comforms to IEC 61496-1 TYPE4. As subsystem, it conforms to IEC61508 SIL3 and ISO13849-1 PLe.
Safety Light Curtain	F3SJ-A0245N20 to A0755N20		SIL3	2.0E-8	e	4	-	-	-	The data is applicable for the models with a protective hight from 245 to 755mm. it comforms to IEC 61496-1 TYPE4. As subsystem, it conforms to IEC61508 SIL3 and ISO13849-1 PLe.
Safety Light Curtain	F3SJ-A0785N20 to A1505N20		SIL3	2.7E-8	e	4	-	-	-	The data is applicable for the models with a protective hight from 785 to 1505mm. It comforms to IEC 61496-1 TYPE4. As subsystem, it conforms to IEC61508 SIL3 and ISO13849-1 PLe.
Safety Light Curtain	F3SJ-A1655N20 to A2255N20		SIL3	3.5E-8	e	4	-	-	-	The data is applicable for the models with a protective hight from 1655 to 2255mm. It comforms to IEC 61496-1 TYPE4. As subsystem, it conforms to IEC61508 SIL3 and ISO13849-1 PLe.
Safety Light Curtain	F3SJ-A2405N20 to A2495N20		SIL3	4.3E-8	e	4	-	-	-	The data is applicable for the models with a protective hight from 2405 to 2495mm. It comforms to IEC 61496-1 TYPE4. As subsystem, it conforms to IEC61508 SIL3 and ISO13849-1 PLe.
Safety Light Curtain	F3SJ-A0260P25 to A0940P25		SIL3	1.7E-8	e	4	-	-	-	The data is applicable for the models with a protective hight from 260 to 940mm. It comforms to IEC 61496-1 TYPE4. As subsystem, it conforms to IEC61508 SIL3 and ISO13849-1 PLe.
Safety Light Curtain	F3SJ-A1020P25 to A1900P25		SIL3	2.5E-8	e	4	-	-	-	The data is applicable for the models with a protective hight from 1020 to 1900mm. It comforms to IEC 61496-1 TYPE4. As subsystem, it conforms to IEC61508 SIL3 and ISO13849-1 PLe.
Safety Light Curtain	F3SJ-A2060P25 to A2500P25		SIL3	3.3E-8	e	4	-	-	-	The data is applicable for the models with a protective hight from 2060 to 2500mm. It comforms to IEC 61496-1 TYPE4. As subsystem, it conforms to IEC61508 SIL3 and ISO13849-1 PLe.
Safety Light Curtain	F3SJ-A0260N25 to A0940N25		SIL3	2.0E-8	e	4	-	-	-	The data is applicable for the models with a protective hight from 260 to 940mm. It comforms to IEC 61496-1 TYPE4. As subsystem, it conforms to IEC61508 SIL3 and ISO13849-1 PLe.
Safety Light Curtain	F3SJ-A1020N25 to A1900N25		SIL3	2.7E-8	e	4	-	-	-	The data is applicable for the models with a protective hight from 1020 to 1900mm. It comforms to IEC 61496-1 TYPE4. As subsystem, it conforms to IEC61508 SIL3 and ISO13849-1 PLe.
Safety Light Curtain	F3SJ-A2060N25 to A2500N25		SIL3	3.5E-8	e	4	-	-	-	The data is applicable for the models with a protective hight from 2060 to 2500mm. It comforms to IEC 61496-1 TYPE4. As subsystem, it conforms to IEC61508 SIL3 and ISO13849-1 PLe.
Safety Light Curtain	F3SJ-A0245P30 to A1195P30		SIL3	1.7E-8	e	4	-	-	-	The data is applicable for the models with a protective hight from 245 to 1195mm. It comforms to IEC 61496-1 TYPE4. As subsystem, it conforms to IEC61508 SIL3 and ISO13849-1 PLe.
Safety Light Curtain	F3SJ-A1270P30 to A2495P30		SIL3	2.5E-8	e	4	-	-	-	The data is applicable for the models with a protective hight from 1270 to 2495mm. It comforms to IEC 61496-1 TYPE4. As subsystem, it conforms to IEC61508 SIL3 and ISO13849-1 PLe.
Safety Light Curtain	F3SJ-A0245N30 to A1195N30		SIL3	2.0E-8	e	4	-	-	-	The data is applicable for the models with a protective hight from 245 to 1195mm. It comforms to IEC 61496-1 TYPE4. As subsystem, it conforms to IEC61508 SIL3 and ISO13849-1 PLe.
Safety Light Curtain	F3SJ-A1270N30 to A2495N30		SIL3	2.7E-8	e	4	-	-	-	The data is applicable for the models with a protective hight from 1270 to 2495mm. It comforms to IEC 61496-1 TYPE4. As subsystem, it conforms to IEC61508 SIL3 and ISO13849-1 PLe.
Safety Light Curtain	F3SJ-A0270P55 to A2470P55		SIL3	1.7E-8	e	4	-	-	-	The data is applicable for the models with a protective hight from 270 to 2470mm. It comforms to IEC 61496-1 TYPE4. As subsystem, it conforms to IEC61508 SIL3 and ISO13849-1 PLe.

Reliability Data for Safety of Machinery

Safety Components

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12-May-2015

Contents of this document are subject to change without notice.

E-9 means $*10^{-9}$.

Products	Model	Condition / Function	SIL	PFHd	PL	Category	MTTFd(Year)	DCavg (%)	B10d	Note
Safety Light Curtain	F3SJ-A0270N55 to A2470N55		SIL3	2.0E-8	e	4	-	-	-	The data is applicable for the models with a protective hight from 270 to 2470mm. It comforms to IEC 61496-1 TYPE4. As subsystem, it conforms to IEC61508 SIL3 and ISO13849-1 PLe.
Safety Light Curtain	F3SJ-B0185P25 to B1025P25		SIL3	1.2E-8	e	4	-	-	-	The data is applicable for the models with a protective hight from 185 to 1025mm. It comforms to IEC 61496-1 TYPE4. As subsystem, it conforms to IEC61508 SIL3 and ISO13849-1 PLe.
Safety Light Curtain	F3SJ-B1105P25 to B2065P25		SIL3	1.8E-8	e	4	-	-	-	The data is applicable for the models with a protective hight from 1105 to 2065mm. It comforms to IEC 61496-1 TYPE4. As subsystem, it conforms to IEC61508 SIL3 and ISO13849-1 PLe.
Safety Light Curtain	F3SJ-B0185N25 to B1025N25		SIL3	1.2E-8	e	4	-	-	-	The data is applicable for the models with a protective hight from 185 to 1025mm. It comforms to IEC 61496-1 TYPE4. As subsystem, it conforms to IEC61508 SIL3 and ISO13849-1 PLe.
Safety Light Curtain	F3SJ-B1105N25 to B2065N25		SIL3	1.9E-8	e	4	-	-	-	The data is applicable for the models with a protective hight from 1105 to 2065mm. It comforms to IEC 61496-1 TYPE4. As subsystem, it conforms to IEC61508 SIL3 and ISO13849-1 PLe.
Safety Light Curtain	F3SJ-E0185P25 to E1105P25		SIL3	1.2E-8	e	4	-	-	-	The data is applicable for all models. It comforms to IEC 61496-1 TYPE4. As subsystem, it conforms to IEC61508 SIL3 and ISO13849-1 PLe.
Safety Light Curtain	F3SJ-E0185N25 to E1105N25		SIL3	1.2E-8	e	4	-	-	-	The data is applicable for all models. It comforms to IEC 61496-1 TYPE4. As subsystem, it conforms to IEC61508 SIL3 and ISO13849-1 PLe.
Safety Light Curtain	F3SR-430B0190 to 430B0990		SIL3	1.4E-8	e	4	-	-	-	The data is applicable for the models with a protective hight from 190 to 990mm. It comforms to IEC 61496-1 TYPE4. As subsystem, it conforms to IEC61508 SIL3 and ISO13849-1 PLe.
Safety Light Curtain	F3SR-430B1070 to 430B2270		SIL3	2.1E-8	e	4	-	-	-	The data is applicable for the models with a protective hight from 1070 to 2270mm. It comforms to IEC 61496-1 TYPE4. As subsystem, it conforms to IEC61508 SIL3 and ISO13849-1 PLe.
Safety Relay Unit	G9SA-300-SC		-	-	e	4	100	99	-	As a subsystem, it conforms to ISO13849-1 PLe.
Safety Relay Unit	G9SA-301		-	-	e	4	100	99	-	As a subsystem, it conforms to ISO13849-1 PLe.
Safety Relay Unit	G9SA-321-T	Instantaneous Safety Output	-	-	e	4	82	99	-	As a subsystem, it conforms to ISO13849-1 PLe.
Safety Relay Unit	G9SA-321-T	Release delayed safety output	-	-	d	3	62	60	-	As a subsystem, it conforms to ISO13849-1 PLd.
Safety Relay Unit	G9SA-501		-	-	e	4	100	99	-	As a subsystem, it conforms to ISO13849-1 PLe.
Safety Relay Unit	G9SA-EX301	Instantaneous Safety Output	-	-	e	4	100	99	-	As a subsystem, it conforms to ISO13849-1 PLe.
Safety Relay Unit	G9SA-EX031-T	Release delayed safety output	-	-	d	3	65	90	-	As a subsystem, it conforms to ISO13849-1 PLd.
Safety Relay Unit	G9SA-TH301		-	-	e	4	86	99	-	It has a structure of a controller, when combined with the Two-Hand Control Device that conforms to EN574 Type IIIC. As a subsystem, it conforms to ISO13849-1 PLe.
Safety Relay Unit	G9SB series (except G9SB-3010)		-	-	e	4	100	99	-	As a subsystem, it conforms to ISO13849-1 PLe.
Safety Relay Unit	G9SB-3010		-	-	d	3	100	99	-	As a subsystem, it conforms to ISO13849-1 PLd.
Safety Relay Unit	G9SE-201		SIL3	2.8E-8	e	4	100	98	-	As a subsystem, it conforms to IEC 62061 SIL3.
Safety Relay Unit	G9SE-401		SIL3	5.1E-8	e	4	53	99	-	As a subsystem, it conforms to IEC 62061 SIL3.
Safety Relay Unit	G9SE-221-T*	Instantaneous Safety Output, Release delayed safety	SIL3	5.1E-8	e	4	53	99	-	As a subsystem, it conforms to IEC 62061 SIL3.
Safety Controller	G9SP-N10D		SIL3	1.2E-10	e	4	-	-	-	As a subsystem, it conforms to IEC61508 SIL3.
Safety Controller	G9SP-N10S		SIL3	9.4E-11	e	4	-	-	-	As a subsystem, it conforms to IEC61508 SIL3.
Safety Controller	G9SP-N20S		SIL3	1.1E-10	e	4	-	-	-	As a subsystem, it conforms to IEC61508 SIL3.
Flexible Safety Unit	G9SX-AD		SIL3	5.7E-9	e	4	-	-	-	As a subsystem, it conforms to IEC61508 SIL3.
Flexible Safety Unit	G9SX-ADA		SIL3	5.7E-9	e	4	-	-	-	As a subsystem, it conforms to IEC61508 SIL3.
Flexible Safety Unit	G9SX-BC		SIL3	4.1E-9	e	4	-	-	-	As a subsystem, it conforms to IEC61508 SIL3.
Flexible Safety Unit	G9SX-EX		SIL3	5.8E-11	e	4	-	-	-	As a subsystem, it conforms to IEC61508 SIL3.
Flexible Safety Unit	G9SX-GS		SIL3	9.0E-9	e	4	-	-	-	As a subsystem, it conforms to IEC61508 SIL3.
Low-speed Monitoring Unit	G9SX-LM	Integrated system of G9SX-LM and E2E proximity	-	-	d	3	50	86	-	As a subsystem integrated with the E2E (E2E-X1R5F1, -X2MF1, -X2F1, -X5MF1, -X5F1, -X10MF1), it conforms to ISO13849-1 PLd.
Low-speed Monitoring Unit	G9SX-LM	Without proximity sensor	SIL3	1.2E-8	d	3	-	-	-	As a subsystem, the G9SX-LM alone conforms to ISO13849-1 PLd. The DC of the proximity sensor to be connected to the rotation detection input is 90%.
Flexible Safety Unit	G9SX-NS	Noncontact switch input (D40A or D40Z)	SIL3	4.2E-9	e	4	-	-	-	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 (D40Z or D40A).
Flexible Safety Unit	G9SX-NSA	Noncontact switch input (D40A or D40Z)	SIL3	5.5E-9	e	4	-	-	-	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 (D40Z or D40A).
Standstill Monitoring Unit	G9SX-SM		SIL3	4.8E-9	e	4	-	-	-	As a subsystem, it conforms to IEC61508 SIL3.
Safety Light Curtain	MS4800 series		SIL3	5.9E-8	e	4	-	-	-	It comforms to IEC61508 SIL3 and IEC 61496-1 TYPE4
Safety Network Controller	NE1A-SCPU01-V1		SIL3	5.1E-10	e	4	-	-	-	As a subsystem, it conforms to IEC61508 SIL3.
Safety Network Controller	NE1A-SCPU02		SIL3	6.5E-10	e	4	-	-	-	As a subsystem, it conforms to IEC61508 SIL3.
NX-series Safety Control Unit	NX-SID800		SIL3	4.3E-10	e	4	-	-	-	As a subsystem, it conforms to IEC61508 SIL3.
NX-series Safety Control Unit	NX-SIH400		SIL3	3.1E-10	e	4	-	-	-	As a subsystem, it conforms to IEC61508 SIL3.
NX-series Safety Control Unit	NX-SL3300		SIL3	3.1E-10	e	4	-	-	-	As a subsystem, it conforms to IEC61508 SIL3.
NX-series Safety Control Unit	NX-SL3500		SIL3	3.0E-10	e	4	-	-	-	As a subsystem, it conforms to IEC61508 SIL3.
NX-series Safety Control Unit	NX-SOD400		SIL3	5.5E-10	e	4	-	-	-	As a subsystem, it conforms to IEC61508 SIL3.
NX-series Safety Control Unit	NX-SOH200		SIL3	3.6E-10	e	4	-	-	-	As a subsystem, it conforms to IEC61508 SIL3.
Safety Laser Scanner	OS32C		SIL2	8.3E-8	d	3	-	-	-	It comforms to IEC 61496-1 TYPE3. As subsystem, it conforms to IEC61508 SIL2 and ISO13849-1 PLd.
AC Servo Driver G5 Series	R88D-KT/KN	STO function (STO input and EDM output)	SIL2	2.8E-8	d	3	-	-	-	It has a structure that conforms to IEC61800-5-2 STO function. As a subsystem, it conforms to IEC61508 SIL2.
Safety Edge and Edge Controller	SGE / SCC	Integrated system of edge sensor and controller	-	-	e	3	100	97	-	When combined with a connected dedicated controller, it conforms to both ISO 13849-1 PLe and EN1760-2.
Safety Mat System	UM / MC3	Integrated system of mats and controller	SIL2	4.8E-8	d	3	-	-	-	When combined with a connected dedicated controller, it conforms to both ISO 13849-1 PLd and EN1760-1.

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