



Project name: 100382 (20211204-002)

File date: 19.06.2026 08:15:58 Report date: 19.06.2026 Checksum: 30ed4613eef9cdc0064a8aea522b555a

PR Project name: 100382 (20211204-002)

Project file name: C:\Users\jklh\OneDrive - Festo\Dokumente\Know-how\SPN\20211204-002 STO Cat1 PLc 5-3 way\100382 Sistema Project - V3.0.4 - EN.ssm

Creation date: 11.12.2021 03:50:33

Project status:

Project number:

Project version:

Authors:

Project managers:

Inspectors:

Dangerous point/machine:

Documentation:

Document:

Version of software: 3.0.4 build 3

Version of standard: ISO 13849-1:2023, ISO 13849-2:2012

Checksum: 30ed4613eef9cdc0064a8aea522b555a

Options: ☒ Use DC intermediate levels for calculation of PFH (more precise)
☐ MTTFD capping for category 4 lower from 2500 to 100 years.

Status: green

Note: There are no warnings listed for this project (or it's subordinate basic elements).

Print options

- | | |
|--|---|
| ☒ Show device details | ☒ Show requirements on PL and Category |
| ☒ Show documentations on SF, SB, BL and EL | ☒ Show parameter documentations on PLr, PL, Category, CCF, MTTFD and DC |
| ☐ Show CCF and DC measures in detail | ☒ Show messages |

Contained safety functions**SF** Name: STO

Required: PLr c	Reached: PL c	PFH [1/h]: 1,15E-6	Status: green
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List of documented messages:

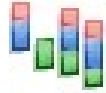
- No messages known -

List of devices with a permissible operation time (T10D) of less than 20 years:

- No devices known -

SF Name: PUS

Required: PLr c	Reached: PL c	PFH [1/h]: 1,15E-6	Status: green
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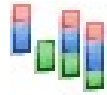
PR Project name: 100382 (20211204-002)

List of documented messages:

- No messages known -
-

List of devices with a permissible operation time (T10D) of less than 20 years:

- No devices known -
-



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SF Safety function: STO

Identifier of the Safety function:

Safety function type:

Triggering event:

Reaction and
Behaviour on power failure:

Safe state:

Operation mode:

Interfaces:

Demand rate:

Running-on time:

Priority:

Documentation:

Document:

Required Performance Level Safety function

PLr (by direct input): c

Documentation:

Document:

Source (e.g. standard):

File:

Performance Level Safety function

Reached PL:	c	PFH [1/h]:	1,15E-6
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Electromagnetic immunity, EMI (Annex L) Safety function

Route for fulfilment
of EMI measures: n/a

Documentation:

Document:

List of devices with a permissible operation time (T10D) of less than 20 years:

Device list:

Status / Messages Safety function

Status: green

Subsystems (1 / 1)

SB Name: Output



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SF Safety function: STO

Reference designator:

Inventory number:

Device details Subsystem

Device Manufacturer:

Device Identifier:

Device group:

Part number:

Revision:

Function:

☐ Input
☒ Output☐ Logic
☐ unknown

Use case:

Description of the use case:

Documentation Subsystem

Documentation:

Document:

Performance Level Subsystem

PL determination: Determine PL/PFH from Category, MTTFD and DCavg

Qualitative aspects (e.g. software, see sections 7, 10.3) Subsystem

Qualitative aspects suitable up to PL: n/a

Documentation:

Document:

Electromagnetic immunity, EMI (Annex L) Subsystem

Route for fulfilment of EMI measures: The fulfilment of the measures for electromagnetic immunity (EMI) was documented in the associated safety function.

PL requirements: fulfilled

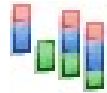
The PL shall be determined by the estimation of the following aspects (section 6.1.1):

- Behaviour of the safety function under fault conditions [fulfilled]
- Safety-related software according to clause 7 and Annex J or no software included [fulfilled]
- Systematic failure (see clause 6.1.7 and Annex G) [fulfilled]
- Ability to perform a safety function under expected environmental conditions [fulfilled]

Reached PL: c PFH [1/h]: 1,15E-6

Documentation:

Category Subsystem



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SF Safety function: STO**Cat.:** 1**Category requirements:** fulfilled**Requirements for the category:**

- Accordance with relevant standards to withstand the expected influences. [fulfilled]
- Basic safety principles are being used. [fulfilled]
- Well-tried components (clause 6.1.11) are being used. [fulfilled]
- Well-tried safety principles are being used. [fulfilled]
- MTTFD is at least High. [fulfilled]

Documentation:**Source (e.g. standard) Category:****File:***MTTFD and Mission time Subsystem***MTTFD [a]:** 100 (High)**Mission time [a]:** 20**Shortest mission time [a]:** 20*Status / Messages Subsystem***Status:** green**Channels / Test channels (1 / 1)****CH** Name: Channel 1

MTTFD [a]: 100

Blocks (1 / 1)**BL** Name: 5/3 Directional control valve**Reference designator:** Q1**Inventory number:***Device details Block***Device Manufacturer:****Device Identifier:****Device group:****Part number:****Revision:****Function:**☐ Input
☒ Output☐ Logic
☐ unknown**Technology:** unknown**Category:** -**Use case:****Description of the use case:**



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SF Safety function: STO

Documentation Block

Documentation:

Document:

MTTFD and Mission time Block

MTTFD [a]: 380,5 (High)

Mission time [a]:	20	Shortest mission time [a]:	20
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B10 [cycles]:	10000000	RDF [%]:	50
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B10D [cycles]:	20000000	nop [cycles/a]:	525600
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Documentation:

Document:

Status / Messages Block

Status: green

SF Safety function: PUS

Identifier of the Safety function:

Safety function type:

Triggering event:

Reaction and Behaviour on power failure:

Safe state:

Operation mode:

Interfaces:

Demand rate:

Running-on time:

Priority:

Documentation:

Document:

Required Performance Level Safety function

PLr (by direct input): c

Documentation:

Document:

Source (e.g. standard):



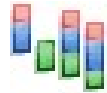
Project name: 100382 (20211204-002)

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SF Safety function: PUS

File:

*Performance Level Safety function***Reached PL:** c **PFH [1/h]:** 1,15E-6*Electromagnetic immunity, EMI (Annex L) Safety function***Route for fulfilment of EMI measures:** n/a**Documentation:****Document:***List of devices with a permissible operation time (T10D) of less than 20 years:***Device list:***Status / Messages Safety function***Status:** green**Subsystems (1 / 1)****SB Name:** Output**Reference designator:****Inventory number:***Device details Subsystem***Device Manufacturer:****Device Identifier:****Device group:****Part number:****Revision:****Function:** ☐ Input ☐ Logic ☒ Output ☐ unknown**Use case:****Description of the use case:***Documentation Subsystem***Documentation:****Document:***Performance Level Subsystem***PL determination:** Determine PL/PFH from Category, MTTFD and DCavg



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SF Safety function: PUS*Qualitative aspects (e.g. software, see sections 7, 10.3) Subsystem***Qualitative aspects suitable up to PL:** n/a**Documentation:****Document:***Electromagnetic immunity, EMI (Annex L) Subsystem*

Route for fulfilment of EMI measures:	The fulfilment of the measures for electromagnetic immunity (EMI) was documented in the associated safety function.
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PL requirements:	fulfilled
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The PL shall be determined by the estimation of the following aspects (section 6.1.1):

- Behaviour of the safety function under fault conditions [fulfilled]
- Safety-related software according to clause 7 and Annex J or no software included [fulfilled]
- Systematic failure (see clause 6.1.7 and Annex G) [fulfilled]
- Ability to perform a safety function under expected environmental conditions [fulfilled]

Reached PL:	c	PFH [1/h]:	1,15E-6
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Documentation:*Category Subsystem*

Cat.:	1
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Category requirements:	fulfilled
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Requirements for the category:

- Accordance with relevant standards to withstand the expected influences. [fulfilled]
- Basic safety principles are being used. [fulfilled]
- Well-tried components (clause 6.1.11) are being used. [fulfilled]
- Well-tried safety principles are being used. [fulfilled]
- MTTFD is at least High. [fulfilled]

Documentation:**Source (e.g. standard) Category:****File:***MTTFD and Mission time Subsystem*

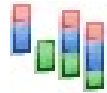
MTTFD [a]:	100 (High)
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Mission time [a]:	20	Shortest mission time [a]:	20
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Status / Messages Subsystem

Status:	green
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Channels / Test channels (1 / 1)**CH** Name: Channel 1



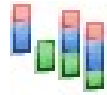
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SF Safety function: PUS

MTTFD [a]: 100

Blocks (1 / 1)**BL** Name: 5/3 Directional control valve**Reference designator:** Q1**Inventory number:***Device details Block***Device Manufacturer:****Device Identifier:****Device group:****Part number:****Revision:****Function:**☐ Input
☒ Output☐ Logic
☐ unknown**Technology:** unknown**Category:** -**Use case:****Description of the use case:***Documentation Block***Documentation:****Document:***MTTFD and Mission time Block***MTTFD [a]:** 380,5 (High)**Mission time [a]:** 20**Shortest mission time [a]:** 20**B10 [cycles]:** 10000000**RDF [%]:** 50**B10D [cycles]:** 20000000**nop [cycles/a]:** 525600**Documentation:****Document:***Status / Messages Block***Status:** green



EXCLUSION OF LIABILITY

Care has been taken in production of the software SISTEMA, which corresponds to the state of the art. It is made available to users free of charge.

Die Haftung des Institut für Arbeitsschutz der DGUV (IFA) ist damit auf Vorsatz und grobe Fahrlässigkeit (§ 521 BGB) bzw. bei Sach- und Rechtsmängel auf arglistig verschwiegene Fehler beschränkt (523, 524 BGB).

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D-10117 Berlin

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Internet: www.dguv.de

NOTE

This document is not a complete technical documentation according to EN ISO 13849-1:2023, clause 12.

CONTACT

Company contact details unknown

Name in block letters

Date, signature

Authors

Authors

Inspectors

Inspectors