



Project name: 100530 (20230413-001)

File date: 09.09.2025 08:12:56 Report date: 09.09.2025 Checksum: bc23e43ce211a7c7d3b71a0cb8f40f74

PR Project name: 100530 (20230413-001)

Project file name: C:\Users\jkl\Documents\Projects\20230413-001 MS.-SV-E\100530 Sistema Project - Ver 3-0-2 - EN.ssm

Creation date: 14.12.2021 08:17:10

Project status:

Project number:

Project version:

Authors:

Project managers:

Inspectors:

Dangerous point/machine:

Documentation:

Document:

Version of software: 3.0.2 build 1

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

Checksum: bc23e43ce211a7c7d3b71a0cb8f40f74

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: SDE (nop = 8760)

Required: PLr e	Reached: PL e	PFH [1/h]: 5,19E-9	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: SDE(nop > 8760)

Required: PLr e	Reached: PL e	PFH [1/h]: 5,35E-9	Status: green
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List of documented messages:

- No messages known -



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

- No devices known -



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SF Safety function: SDE (nop = 8760)

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

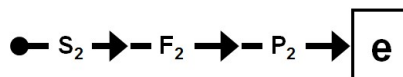
PLr (by risk graph): e

Severity of injury (S): Serious (normally irreversible) injury or death

Frequency / exposure times to hazard (F): Frequent to continuous / exposure time is long

Possibility of avoiding (P): Scarcely possible

Risk graph:



Documentation:

Document:

Performance Level Safety function

Reached PL: e PFH [1/h]: 5,19E-9

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: MS6-SV-E



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SF Safety function: SDE (nop = 8760)

Reference designator: Q1

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:

Enter PL/PFH directly (manufacturer ensures compliance with the
requirements of the Category and of the PL)

PL: e

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.

Reached PL: e

PFH [1/h]: 5,19E-9

Documentation:

Mission time [a]: 20

Shortest mission time [a]: 20

Category Subsystem

Cat.:

4

Category requirements:

fulfilled

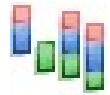
Requirements for the category

Since the category is given by the manufacturer he is responsible to
satisfy the requirements.

Documentation:

Source (e.g. standard) Category:

File:



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SF Safety function: SDE (nop = 8760)

Status / Messages Subsystem

Status: green



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SF Safety function: SDE(nop > 8760)

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:

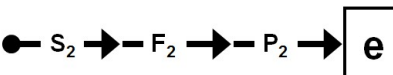
Required Performance Level Safety function

PLr (by risk graph): e

Severity of injury (S): Serious (normally irreversible) injury or death

Frequency / exposure times to hazard (F): Frequent to continuous / exposure time is long

Possibility of avoiding (P): Scarcely possible

Risk graph: 

Documentation:

Document:

Performance Level Safety function

Reached PL: e PFH [1/h]: 5,35E-9

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 / 2)

SB Name: MS6-SV-E (electronic part)



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SF Safety function: SDE(nop > 8760)

Reference designator: Q1

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:

Enter PL/PFH directly (manufacturer ensures compliance with the requirements of the Category and of the PL)

PL: e

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.

Reached PL: e

PFH [1/h]: 4,08E-9

Documentation:

Mission time [a]: 20

Shortest mission time [a]: 20

Category Subsystem

Cat.:

4

Category requirements:

fulfilled

Requirements for the category

Since the category is given by the manufacturer he is responsible to satisfy the requirements.

Documentation:

Source (e.g. standard) Category:

File:



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SF Safety function: SDE(nop > 8760)

Status / Messages Subsystem

Status: green

Subsystems (2 / 2)

SB Name: MS6-SV-E (pneumatic part)

Reference designator: Q1

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: e

PFH [1/h]: 1,27E-9

Documentation:



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SF Safety function: SDE(nop > 8760)*Category Subsystem*

Cat.: 4

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 safety principles are being used. [fulfilled]
- A single fault tolerance and reasonable fault detection are given. [fulfilled]
- Accumulation of faults does not lead to a loss of the safety function. [fulfilled]
- MTTFD is at least High. [fulfilled]
- Requirement fulfilled because of the assumed limit value accuracy of 5 percentage points. [fulfilled]
- The achieved score of the CCF-rating is at least 65. [fulfilled]

Documentation:

Source (e.g. standard) Category:

File:

MTTFD and Mission time Subsystem

MTTFD [a]: 1783 (High)

Mission time [a]: 20

Shortest mission time [a]: 20

Diagnostic coverage Subsystem

DCavg [%]: 99 (High)

Common cause failure Subsystem

CCF Points: 70 (fulfilled)

CCF Measures:

- 15 Points | Separation/segregation
- 15 Points | Protection against over-voltage, over-pressure, over-current, over-temperature
- 5 Points | Assessment/analysis
- 25 Points | Prevention of EMI or impurity of fluidic medium
- 10 Points | Other influences

Documentation:

Document:

Status / Messages Subsystem

Status: green

Channels / Test channels (1 / 2)**CH** Name: Channel 1

MTTFD [a]: 1783



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SF Safety function: SDE(nop > 8760)**Blocks (1 / 1)****BL** Name: 3/2-way function

Reference designator: Q1

Inventory number:

Device details Block

Device Manufacturer:

Device Identifier:

Device group:

Part number:

Revision:

Function:

☐ Input☐ Logic☒ Output☐ unknown

Technology:

unknown

Category:

-

Use case:

Description of the
use case:*Documentation Block*

Documentation:

Document:

MTTFD and Mission time Block

MTTFD [a]: 1783 (High)

Mission time [a]: 20

Shortest mission time [a]: 20

B10 [cycles]: 900000

RDF [%]: 50

B10D [cycles]: 1800000

nop [cycles/a]: 10095

Documentation:

Document:

Diagnostic coverage Block

DC [%]: 99 (High)

Measure:

Direct monitoring (e.g. electrical position monitoring of control valves, monitoring of electromechanical devices by mechanically linked contact elements)

Documentation:

Document:

Status / Messages Block

Status:

green



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SF Safety function: SDE(nop > 8760)**Channels / Test channels (2 / 2)****CH** Name: Channel 2

MTTFD [a]: 1783

Blocks (1 / 1)**BL** Name: 3/2-way function

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]: 1783 (High)

Mission time [a]: 20

Shortest mission time [a]: 20

B10 [cycles]: 900000

RDF [%]: 50

B10D [cycles]: 1800000

nop [cycles/a]: 10095

Documentation:

Document:

Diagnostic coverage Block

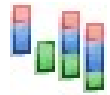
DC [%]: 99 (High)

Measure:

Direct monitoring (e.g. electrical position monitoring of control valves, monitoring of electromechanical devices by mechanically linked contact elements)

Documentation:

Document:



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Status / Messages Block

Status:	green
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SISTEMA - Safety Integrity Software Tool for the Evaluation of Machine Applications



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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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German Social Accident Insurance (DGUV)
Glinkastraße 40
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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