PR Project name: 100569

Project file name:	C:\Users\jkhl\Documents\Projects\20240626-001 SPM Cat 1 PL c\100569 Sistema Project - V3.0.4 - EN.ssm
Creation date:	26.06.2024 07:57:45
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:	44e411f16a7fa9520b57de6c390f5f07
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 documentations on SF, SB, BL and EL
- ☐ Show CCF and DC measures in detail
- ☑ Show requirements on PL and Category
- ☑ Show parameter documentations on PLr, PL, Category, CCF, MTTFD and DC
- ☑ Show messages

Contained safety functions

SF Name: SPM-l - Safe pressure monitor, lower limit (electromechanical)

Required: PLr c **Reached: PL c** **PFH [1/h]: 1,15E-6** **Status: green**

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: SPM-u - Safe pressure monitor, upper limit (electromechanical)

Required: PLr c **Reached: PL c** **PFH [1/h]: 1,15E-6** **Status: green**

PR **Project name: 100569**

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: SPR - Safe pressure range (electromechanical)

Required: PLr c **Reached: PL c** **PFH [1/h]: 1,15E-6** **Status: green**

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: SPM-l - Safe pressure monitor, lower limit (metal thin-film pressure sensor)

Required: PLr c **Reached: PL c** **PFH [1/h]: 1,15E-6** **Status: green**

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: SPM-u - Safe pressure monitor, upper limit (metal thin-film pressure sensor)

Required: PLr c **Reached: PL c** **PFH [1/h]: 1,15E-6** **Status: green**

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: SPR - Safe pressure range (metal thin-film pressure sensor)

Required: PLr c **Reached: PL c** **PFH [1/h]: 1,16E-6** **Status: green**

List of documented messages:

- No messages known -

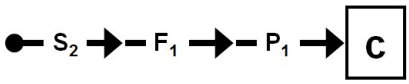
List of devices with a permissible operation time (T10D) of less than 20 years:

- No devices known -

SF Safety function: SPM-I - Safe pressure monitor, lower limit (electromechanical)

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):	c
Severity of injury (S):	Serious (normally irreversible) injury or death
Frequency / exposure times to hazard (F):	Seldom to less often / exposure time is short
Possibility of avoiding (P):	Possible under specific conditions
Risk graph:	
Documentation:	
Document:	

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:

SF Safety function: SPM-I - Safe pressure monitor, lower limit (electromechanical)

Status / Messages Safety function

Status: green

Subsystems (1 / 1)

SB Name: Input

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

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]

SF Safety function: SPM-I - Safe pressure monitor, lower limit (electromechanical)

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

Documentation:

Category Subsystem

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: Pressure switch (electromechanical)

Reference designator: B1

Inventory number:

Device details Block

Device Manufacturer:

Device Identifier:

Device group:

Part number:
Revision:

Function: ☑ Input ☐ Output ☐ Logic ☐ unknown

SF Safety function: SPM-l - Safe pressure monitor, lower limit (electromechanical)

Technology:	unknown
Category:	-
Use case:	
Description of the use case:	

Documentation Block

Documentation:	
Document:	

MTTFD and Mission time Block

MTTFD [a]:	18264,8 (High)		
Mission time [a]:	20	**Shortest mission time [a]:**	20
B10 [cycles]:	1000000	**RDF [%]:**	50
B10D [cycles]:	2000000	**nop [cycles/a]:**	1095
Documentation:			
Document:			

Status / Messages Block

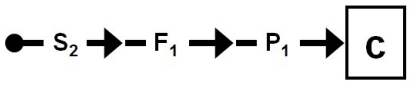
Status:	green

SF Safety function: SPM-u - Safe pressure monitor, upper limit (electromechanical)

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:	

SF Safety function: SPM-u - Safe pressure monitor, upper limit (electromechanical)

Required Performance Level Safety function

PLr (by risk graph):	c
Severity of injury (S):	Serious (normally irreversible) injury or death
Frequency / exposure times to hazard (F):	Seldom to less often / exposure time is short
Possibility of avoiding (P):	Possible under specific conditions
Risk graph:	

Documentation:

Document:

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: Eingang

Reference designator:

Inventory number:

Device details Subsystem

Device Manufacturer:

Device Identifier:

Device group:

Part number:
Revision:

Function: ☑ Input ☐ Output ☐ Logic ☐ unknown

SF Safety function: SPM-u - Safe pressure monitor, upper limit (electromechanical)

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

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:

SF Safety function: SPM-u - Safe pressure monitor, upper limit (electromechanical)

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: Pressure switch (electromechanical)

Reference designator:	B2		
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]:	18264,8 (High)		
Mission time [a]:	20	**Shortest mission time [a]:**	20
B10 [cycles]:	1000000	**RDF [%]:**	50

SF Safety function: SPM-u - Safe pressure monitor, upper limit (electromechanical)

B10D [cycles]:	2000000	**nop [cycles/a]:**	1095

Documentation:

Document:

Status / Messages Block

Status: green

SF Safety function: SPR - Safe pressure range (electromechanical)

Identifier of the Safety function:

Safety function type:

Triggering event:

Reaction and Behaviour on power failure:

Safe state:

Operation mode:

Interfaces:

Demand rate:

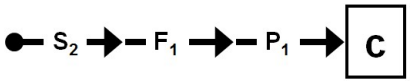
Running-on time:

Priority:

Documentation:

Document:

Required Performance Level Safety function

PLr (by risk graph):	c
Severity of injury (S):	Serious (normally irreversible) injury or death
Frequency / exposure times to hazard (F):	Seldom to less often / exposure time is short
Possibility of avoiding (P):	Possible under specific conditions
Risk graph:	

Documentation:

Document:

Performance Level Safety function

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

SF Safety function: SPR - Safe pressure range (electromechanical)

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: Input

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:

SF Safety function: SPR - Safe pressure range (electromechanical)

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

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 / 2)

BL Name: Pressure switch (electromechanical)

Reference designator: B1

SF Safety function: SPR - Safe pressure range (electromechanical)

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]:	18264,8 (High)		
Mission time [a]:	20	**Shortest mission time [a]:**	20
B10 [cycles]:	1000000	**RDF [%]:**	50
B10D [cycles]:	2000000	**nop [cycles/a]:**	1095

Documentation:

Document:

Status / Messages Block

Status: green

Blocks (2 / 2)

BL Name: Pressure switch (electromechanical)

Reference designator: B2

Inventory number:

Device details Block

Device Manufacturer:

Device Identifier:

Safety function: SPR - Safe pressure range (electromechanical)

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]:	18264,8 (High)		
Mission time [a]:	20	**Shortest mission time [a]:**	20
B10 [cycles]:	1000000	**RDF [%]:**	50
B10D [cycles]:	2000000	**nop [cycles/a]:**	1095
Documentation:			
Document:			

Status / Messages Block

Status:	green

Safety function: SPM-I - Safe pressure monitor, lower limit (metal thin-film pressure sensor)

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:	

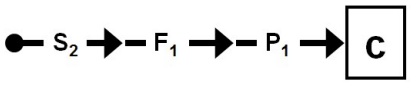
SF Safety function: SPM-I - Safe pressure monitor, lower limit (metal thin-film pressure sensor)

Priority:

Documentation:

Document:

Required Performance Level Safety function

PLr (by risk graph):	c
Severity of injury (S):	Serious (normally irreversible) injury or death
Frequency / exposure times to hazard (F):	Seldom to less often / exposure time is short
Possibility of avoiding (P):	Possible under specific conditions
Risk graph:	

Documentation:

Document:

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: Input

Reference designator:

Inventory number:

Device details Subsystem

Device Manufacturer:

Device Identifier:

SF Safety function: SPM-I - Safe pressure monitor, lower limit (metal thin-film pressure sensor)

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

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

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]

SF Safety function: SPM-I - Safe pressure monitor, lower limit (metal thin-film pressure sensor)

- 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 / 2)

BL Name: Pressure switch (metal thin-film pressure sensor), B10

Reference designator: B1

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:

SF Safety function: SPM-I - Safe pressure monitor, lower limit (metal thin-film pressure sensor)

MTTFD and Mission time Block

MTTFD [a]:	18264,8 (High)		
Mission time [a]:	20	**Shortest mission time [a]:**	20
B10 [cycles]:	1000000	**RDF [%]:**	50
B10D [cycles]:	2000000	**nop [cycles/a]:**	1095
Documentation:			
Document:			

Status / Messages Block

Status:	green

Blocks (2 / 2)

BL Name: Pressure switch (metal thin-film pressure sensor), MTTF

Reference designator:	B1		
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]:	200 (High)		
Mission time [a]:	20	**Shortest mission time [a]:**	20

SF Safety function: SPM-l - Safe pressure monitor, lower limit (metal thin-film pressure sensor)

MTTF [a]:	100	**RDF [%]:**	50

Documentation:

Document:

Status / Messages Block

Status: green

SF Safety function: SPM-u - Safe pressure monitor, upper limit (metal thin-film pressure sensor)

Identifier of the Safety function:

Safety function type:

Triggering event:

Reaction and Behaviour on power failure:

Safe state:

Operation mode:

Interfaces:

Demand rate:

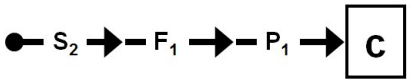
Running-on time:

Priority:

Documentation:

Document:

Required Performance Level Safety function

PLr (by risk graph):	c
Severity of injury (S):	Serious (normally irreversible) injury or death
Frequency / exposure times to hazard (F):	Seldom to less often / exposure time is short
Possibility of avoiding (P):	Possible under specific conditions
Risk graph:	

Documentation:

Document:

Performance Level Safety function

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

SF Safety function: SPM-u - Safe pressure monitor, upper limit (metal thin-film pressure sensor)

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: Eingang

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:

SF Safety function: SPM-u - Safe pressure monitor, upper limit (metal thin-film pressure sensor)

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

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 / 2)

BL Name: Pressure switch (metal thin-film pressure sensor), B10

Reference designator: B2

SF Safety function: SPM-u - Safe pressure monitor, upper limit (metal thin-film pressure sensor)

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]:	18264,8 (High)		
Mission time [a]:	20	**Shortest mission time [a]:**	20
B10 [cycles]:	1000000	**RDF [%]:**	50
B10D [cycles]:	2000000	**nop [cycles/a]:**	1095
Documentation:			
Document:			

Status / Messages Block

Status:	green

Blocks (2 / 2)

BL Name: Pressure switch (metal thin-film pressure sensor), MTTF

Reference designator:	B2
Inventory number:	

Device details Block

Device Manufacturer:	
Device Identifier:	

SF Safety function: SPM-u - Safe pressure monitor, upper limit (metal thin-film pressure sensor)

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]:	200 (High)		
Mission time [a]:	20	**Shortest mission time [a]:**	20
MTTF [a]:	100	**RDF [%]:**	50
Documentation:			
Document:			

Status / Messages Block

Status:	green

SF Safety function: SPR - Safe pressure range (metal thin-film pressure sensor)

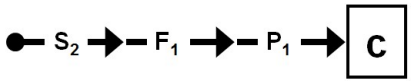
Identifier of the Safety function:	
Safety function type:	
Triggering event:	
Reaction and Behaviour on power failure:	
Safe state:	
Operation mode:	
Interfaces:	
Demand rate:	
Running-on time:	
Priority:	

SF Safety function: SPR - Safe pressure range (metal thin-film pressure sensor)

Documentation:

Document:

Required Performance Level Safety function

PLr (by risk graph):	c
Severity of injury (S):	Serious (normally irreversible) injury or death
Frequency / exposure times to hazard (F):	Seldom to less often / exposure time is short
Possibility of avoiding (P):	Possible under specific conditions
Risk graph:	

Documentation:

Document:

Performance Level Safety function

Reached PL:	c	**PFH [1/h]:**	1,16E-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: Input

Reference designator:

Inventory number:

Device details Subsystem

Device Manufacturer:

Device Identifier:

Device group:

SF Safety function: SPR - Safe pressure range (metal thin-film pressure sensor)

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

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]:** 1,16E-6

Documentation:

Category Subsystem

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]

SF Safety function: SPR - Safe pressure range (metal thin-film pressure sensor)

Documentation:

Source (e.g. standard) Category:

File:

MTTFD and Mission time Subsystem

MTTFD [a]:	98,9 (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]: 98,9

Blocks (1 / 4)

BL Name: Pressure switch (metal thin-film pressure sensor), B10

Reference designator: B1

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

SF Safety function: SPR - Safe pressure range (metal thin-film pressure sensor)

MTTFD [a]:	18264,8 (High)		
Mission time [a]:	20	**Shortest mission time [a]:**	20
B10 [cycles]:	1000000	**RDF [%]:**	50
B10D [cycles]:	2000000	**nop [cycles/a]:**	1095
Documentation:			
Document:			

Status / Messages Block

Status:	green

Blocks (2 / 4)

BL Name: Pressure switch (metal thin-film pressure sensor), MTTF

Reference designator:	B1		
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]:	200 (High)		
Mission time [a]:	20	**Shortest mission time [a]:**	20
MTTF [a]:	100	**RDF [%]:**	50

SF Safety function: SPR - Safe pressure range (metal thin-film pressure sensor)

Documentation:

Document:

Status / Messages Block

Status:	green

Blocks (3 / 4)

BL Name: Pressure switch (metal thin-film pressure sensor), B10

Reference designator:	B2		
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]:	18264,8 (High)		
Mission time [a]:	20	**Shortest mission time [a]:**	20
B10 [cycles]:	1000000	**RDF [%]:**	50
B10D [cycles]:	2000000	**nop [cycles/a]:**	1095

Documentation:

Document:

Status / Messages Block

SF Safety function: SPR - Safe pressure range (metal thin-film pressure sensor)

Status:	green

Blocks (4 / 4)

BL Name: Pressure switch (metal thin-film pressure sensor), MTTF

Reference designator:	B2
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]:	200 (High)		
Mission time [a]:	20	**Shortest mission time [a]:**	20
MTTF [a]:	100	**RDF [%]:**	50
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).

The Institute for Occupational Safety and Health of the German Social Accident Insurance undertakes to keep its website free of viruses; nevertheless, no guarantee can be given that the software and information provided are virus-free. The user is therefore advised to take appropriate security precautions and to use a virus scanner prior to downloading software, documentation or information.

German Social Accident Insurance (DGUV)
Glinkastraße 40
D-10117 Berlin

E-mail: info@dguv.de
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