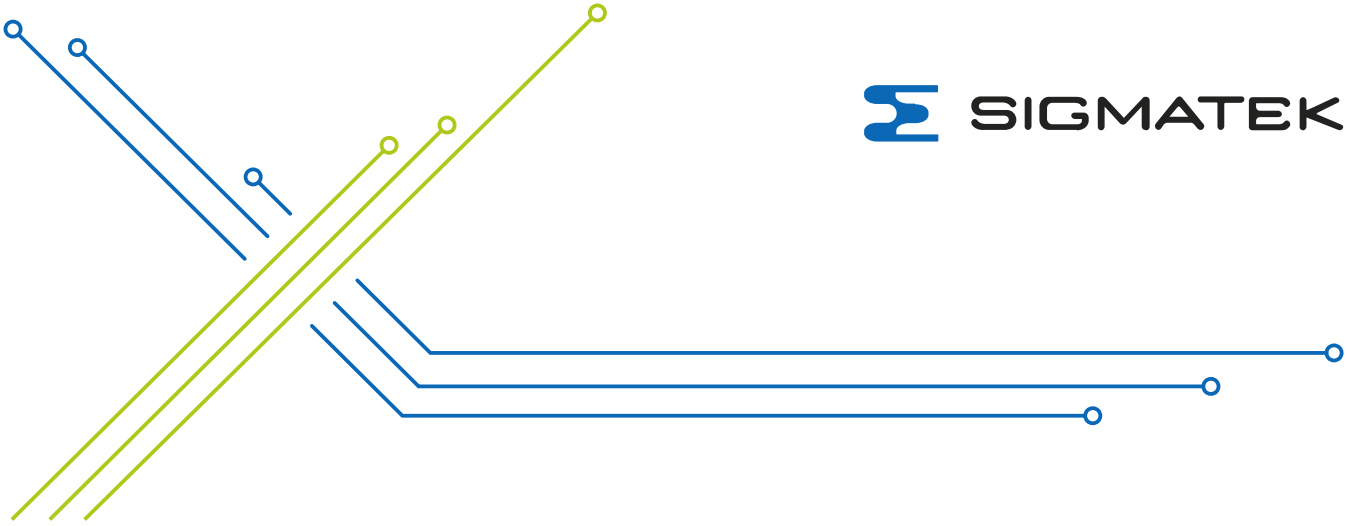


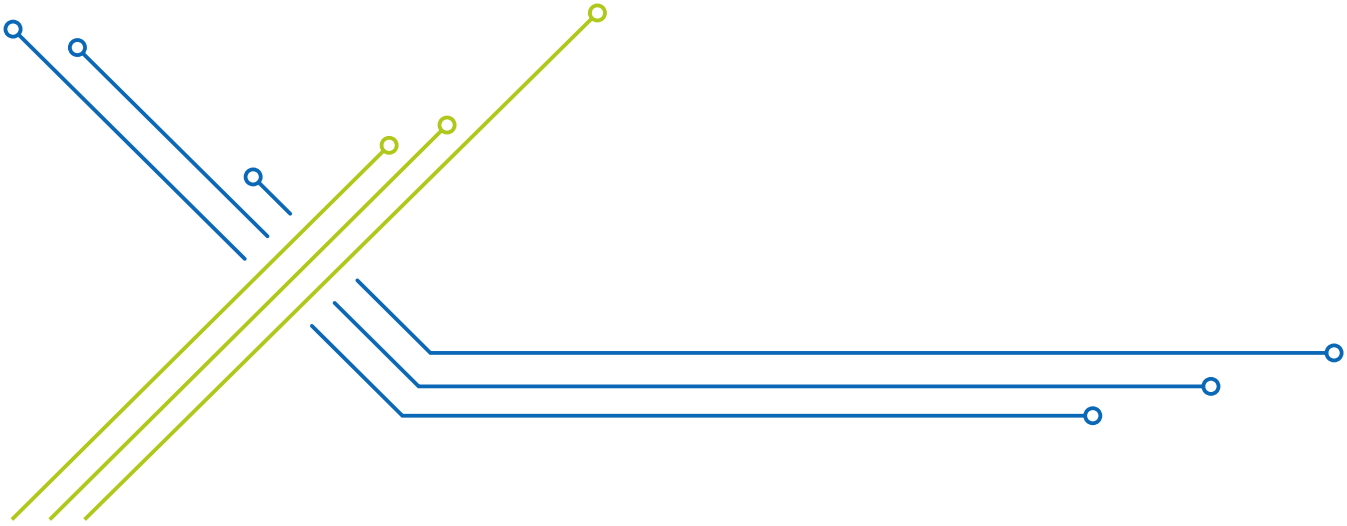
SIGMATEK

STO 081(-X)

S-DIAS Safety Digital Output Module

INSTRUCTION MANUAL

Article number:	20-892-081-E
Date of creation:	18.12.2013
Version date:	01.09.2026



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Translation of the Original Instructions

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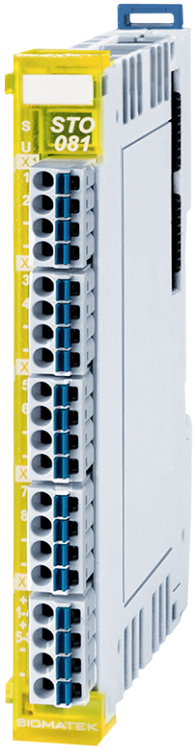
S-DIAS Safety Digital Output Module STO 081(-X)



The S-DIAS Safety digital output module STO 081(-X) has the safety integrity level SIL 3 (EN IEC 62061) or Performance level e (PL e) (EN ISO 13849).

The STO 081(-X) has:

- 8 safe outputs (EN 61131-2; EN IEC 62061 and EN ISO 13849)

The safe outputs are used for the safety-oriented output of eight actuator signals to, for example, control relays, valves, etc.

The safety-related STO 081(-X) is ideal for use in systems with optional modules and interface variables according to Safety System Handbook, see homepage.[1)]

To use the STO 081(-X) in an application, at least one Safety CPU module that regulates the synchronized communication with the safety modules using safe bus telegrams is also required. This also includes

- Processing the safe application and
- the distribution of configuration data to remote Safety modules.

This instruction manual also applies to the product STO 081-X (main board and S-DIAS connectors coated in Purocoat (Certonal), which is no longer explicitly mentioned in the following).

1) Using the search function with the keyword “Safety System Handbook“

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1 Introduction

1.1 Target Group/Purpose of this Operating Manual

This operating manual contains all information required for the operation of the product.

This operating manual is intended for:

- Project planners
- Technicians
- Commissioning engineers
- Machine operators
- Maintenance/test technicians

General knowledge of automation technology is required.

Further help and training information, as well as the appropriate accessories can be found on our website www.sigmatek-automation.com.

Our support team is happily available to answer your questions or assist you in case of any issues.
Please see our website for our hotline number and business hours.

1.2 Important Reference Documentation

- Safety System Handbook

This and additional documents can be downloaded from our website or obtained through support.

1.3 Contents of Delivery

1x STO 081(-X)

2 Basic Safety Directives

2.1 Symbols Used

The following symbols are used in the operator documentation for warning and danger messages, as well as informational notes.

DANGER

Danger indicates that death or serious injury **will occur**, if the specified measures are not taken.

→ To avoid death or serious injuries, observe all guidelines.

Danger indique une situation dangereuse qui, faute de prendre les mesures adéquates, **entraînera** des blessures graves, voire mortelles.

→ Respectez toutes les consignes pour éviter des blessures graves, voire mortelles.

WARNING

Warning indicates that death or serious injury **can** occur, if the specified measures are not taken.

→ To avoid death or serious injuries, observe all guidelines.

Avertissement d'une situation dangereuse qui, faute de prendre les mesures adéquates, **entraînera** des blessures graves, voire mortelles.

→ Respectez toutes les consignes pour éviter des blessures graves, voire mortelles.

CAUTION

Caution indicates that moderate to slight injury **can** occur, if the specified measures are not taken.

→ To avoid moderate to slight injuries, observe all guidelines.

Attention indique une situation dangereuse qui, faute de prendre les mesures adéquates, **peut** entraîner des blessures assez graves ou légères.

→ Respectez toutes les consignes pour éviter des blessures graves, voire mortelles.

CAUTION

Danger for ESD-sensitive components.

Les signes de danger pour les composants sensibles aux décharges électrostatiques.

INFORMATION

INFORMATION

→ Provides important information on the product, handling or relevant sections of the documentation, which require particular attention.

2.2 Disclaimer

The contents of this operating manual were prepared with the greatest care. However, deviations cannot be ruled out. This operating manual is regularly checked and required corrections are included in the subsequent versions. The machine manufacturer is responsible for the proper assembly, as well as device configuration. The machine operator is responsible for safe handling, as well as proper operation.

The current operating manual can be found on our website. If necessary, contact our support.

Subject to technical changes, which improve the performance of the devices. The following operating manual is purely a product description. It does not guarantee properties under the warranty.

Please thoroughly read the corresponding documents and this operating manual before handling a product.

SIGMATEK GmbH & Co KG is not liable for damages caused through, non-compliance with these instructions or applicable regulations.

2.3 General Safety Directives

The Safety Directives in the other sections of this operating manual must be observed. These instructions are visually emphasized by symbols.

According to EU Directives, the operating manual is a component of a product. This operating manual must therefore be accessible in the vicinity of the machine since it contains important instructions. This operating manual should be included in the sale, rental or transfer of the product, or its online availability indicated.

Regarding the requirements for Safety and health connected to the use of machines, the manufacturer must perform a risk assessment in accordance with machine directives 2006/42/EG before introducing a machine to the market.

INFORMATION

Operate the unit with devices and accessories approved by SIGMATEK only.

CAUTION

Handle the device with care and do not drop or let fall.
Prevent foreign bodies and fluids from entering the device.
The device must not be opened!

Manipulez l’appareil avec précaution et ne le laissez pas tomber.
Empêchez les corps étrangers et les liquides de pénétrer dans l’appareil.
L’appareil ne doit pas être ouvert!

If the device does not function as intended or has damage that could pose a danger, it must be replaced!

En cas de fonctionnement non conforme ou de dommages pouvant entraîner des risques, l'appareil doit être remplacé !

For your own safety and that of others, compliance with the environmental conditions is essential.

Pour votre propre sécurité et celle des autres, le respect des conditions environnementales est essential.

2.4 Designated Use

The Safety functions implemented in the product are designed for use with safety applications in a PLC control and meet the required conditions for safe operation.

CAUTION

The instructions contained in this operating manual must be followed. For error-free operation, proper transport and storage are essential.
Installation, mounting, programming, initial start-up, operation, maintenance and decommissioning can only be performed by qualified personnel.
Qualified personnel in this context are people, who have completed training or have trained under supervision of qualified personnel and have been authorized to operate and maintain safety-related equipment, systems and facilities in compliance with the strict directives and standards of safety technology (Functional Safety).

Les instructions contenues dans ce manuel technique doivent être suivies.
Pour un fonctionnement sans erreur, le transport et le stockage appropriés sont essentiels.
L'installation, le montage, la programmation, la mise en service initiale, l'exploitation, la maintenance et la mise hors service ne peuvent être effectués que par une personne qualifiée.
Dans ce contexte, on entend par personnel qualifié les personnes qui ont suivi une formation ou qui ont été formées sous la supervision d'un personnel qualifié et qui ont été autorisées à utiliser et à entretenir l'équipement, les systèmes et les installations de sécurité conformément aux directives et aux normes strictes de la technique de sécurité (Sécurité fonctionnelle).

For your own safety and that of others, the product should be used for their designated purpose only.
Correct EMC installation is also included under designated use.

Pour votre propre sécurité et celle des autres, le produit ne doivent être utilisés qu'à des fins prévues.
Une installation CEM correcte est également incluse dans l'utilisation prévue.

Non-designated use consists of:

- any changes made to the module or the use of damaged modules.
- use of the module inconsistent with the technical margins described in this operating manual or the specifications defined in the technical data.

L'utilisation non désignée consiste en:

- toute modification apportée au module ou l'utilisation des modules endommagés.
- utilisation du module non conforme aux marges techniques décrites dans ce manuel ou aux spécifications définies dans les données techniques.

2.5 Software/Training

The application is created with the software LASAL CLASS 2 and LASAL SCREEN Editor, the Safety application is created using the SAFETYDesigner. Basic information on Safety (Functional Safety) can be found in the Safety System Handbook.

Training for the LASAL development environment, with which the product can be configured, is provided. Information on our training schedule can be found on our website.

3 IT Security

S-DIAS safety modules were developed for integration into a network protected against unauthorized access.

For example, the following dangers can affect the network:

- Unauthorized access
- Data manipulation
- and many other IT security violations

It is the responsibility of the integrator or operator to carry out a risk analysis of the connections between S-DIAS modules and the integration into the overall infrastructure. The following measures, for example, may result from this (if necessary):

- Separation of IT/OT networks (VLANs or physical)
- Firewalls
- Password-protected user accounts
- Data encryption
- and much more

With regard to the functional safety objective, in this case the STO safety function, no direct effects on the function or its integrity are possible, since the function cannot be influenced via communication-based interfaces.

The availability of the overall system (as with all safety functions) can be compromised by external attacks, hence the above measures are necessary.

4 Standards and Directives

4.1 Residual Risks

CAUTION

The following residual risks for the product must be included in the system integrator's risk assessment:

- Release of non-environmentally safe substances, emissions and unusual temperatures
- Hazardous contact voltages
- Effects of operational electrical, magnetic and electromagnetic fields
- Possible effects of information technology devices

Les risques résiduels suivants pour le produit doivent être inclus dans l'évaluation des risques de l'intégrateur de système :

- Libération de substances non respectueuses de l'environnement, émissions et températures inhabituelles
- Tensions de contact dangereuses
- Effets des champs électriques, magnétiques et électromagnétiques opérationnels
- Effets possibles des dispositifs de technologie de l'information

4.2 Safety of the Machine or Equipment

Observe all on-site rules and regulations for accident prevention and occupational safety.

4.3 Directives

The product was constructed in compliance with the following European Union directives and tested for conformity.

4.3.1 Functional Safety Standards

EN IEC 62061	Safety of machinery - Functional safety of safety-related control systems
EN ISO 13849-1	Safety of machinery - Safety-related parts of control systems - Part 1: General principles for design
EN ISO 13849-2	Safety of machinery - Safety-related parts of control systems - Part 2: Validation
EN IEC 61508-1	Functional safety - Part 1: General requirements
EN IEC 61508-2	Functional safety - Part 2: Requirements for electrical / electronic / programmable electronic safety-related systems
EN IEC 61508-3	Functional safety - Part 3: Software requirements

The issue status of the applied standards can be found in the EU declaration of conformity.

4.3.2 EU Declaration of Conformity

EU Declaration of Conformity

The product STO 081(-X) conforms to the following European directives:

- → 2006/42/EG Machine Directive
- → 2014/30/EU Electromagnetic Compatibility (EMC Directive)
- → 2011/65/EU “Restricted use of certain hazardous substances in electrical and electronic equipment” (RoHS Directive)

The EU Conformity Declarations are provided on the SIGMATEK website. They can be found in the download area of the respective product.

4.4 Safety-Relevant Parameters

4.4.1 Mounting Position Horizontal 0-55 °C Ambient Temperature

INFORMATION

Please note that the safety parameters apply to the individual safe output. The machine or system manufacturer must configure the actuator’s wiring in such a way that the requirements of the intended category according to EN ISO 13849-1 or the required safety architecture according to EN IEC 62061 are met. In doing so, the electrical, mechanical, and functional characteristics of the actuator used must be taken into account.

CPU Module	Safety Parameters	Safety Levels
STO 081(-X) in combination with CPU module SCP 011/SCP 111		
up to HW version 2.20	PFH = 1.30E-09 (1/h) SFF = 99 % $MTTF_D$ = 1718 years DC = 99 %	SIL 3 according to EN IEC 62061 PL e / Cat. 4 according to EN ISO 13849
starting with HW version 3.00	PFH = 1.80E-09 (1/h) SFF = 99 % $MTTF_D$ = 1431 years DC = 99 %	SIL 3 according to EN IEC 62061 PL e / Cat. 4 according to EN ISO 13849

4.4.2 Mounting Position Horizontal 0-60 °C Ambient Temperature

Input Module	Safety Parameters	Safety Levels
STO 081(-X) in combination with CPU module SCP 011/SCP 111		
up to HW version 2.20	PFH = 1.60E-09 (1/h) SFF = 99 % $MTTF_D$ = 1432 years DC = 99 %	SIL 3 according to EN IEC 62061 PL e / Cat. 4 according to EN ISO 13849

Input Module	Safety Parameters	Safety Levels
starting with HW version 3.00	PFH = 2.10E-09 (1/h) SFF = 99 % $MTTF_D$ = 1175 years DC = 99 %	SIL 3 according to EN IEC 62061 PL e / Cat. 4 according to EN ISO 13849
STO 081(-X) in combination with CPU module SCP 211/SCP 111-S		
starting with HW version 3.00	PFH = 3.00E-09 (1/h) SFF = 99 % $MTTF_D$ = 795 years DC = 99 %	SIL 3 according to EN IEC 62061 PL e / Cat. 4 according to EN ISO 13849

4.5 Compatibility

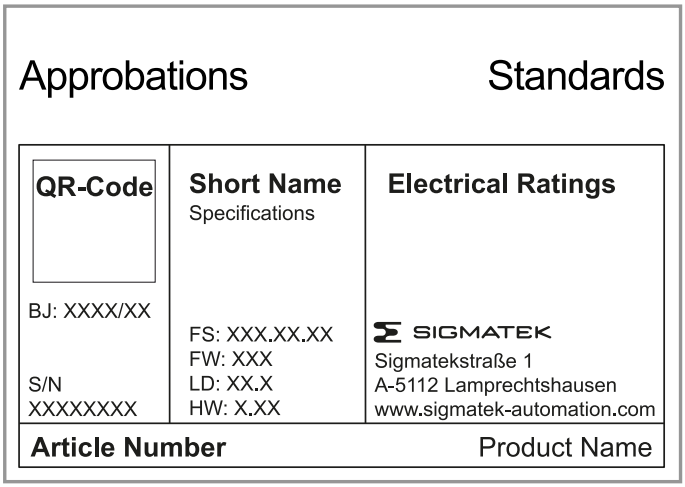
INFORMATION

Compatibility

For compatibility of the S-DIAS Safety modules, see section "Compatibility of S-DIAS Safety Modules" in the system handbook.

5 Type Plate

The type plate provides information about the product's features. The type plate shown here is only an example.



HW: Hardware version
FS: Safety version number
FW: Firmware version
LD: Logic device version
QR-Code: Serial number

6 Technical Data

6.1 Output Specifications

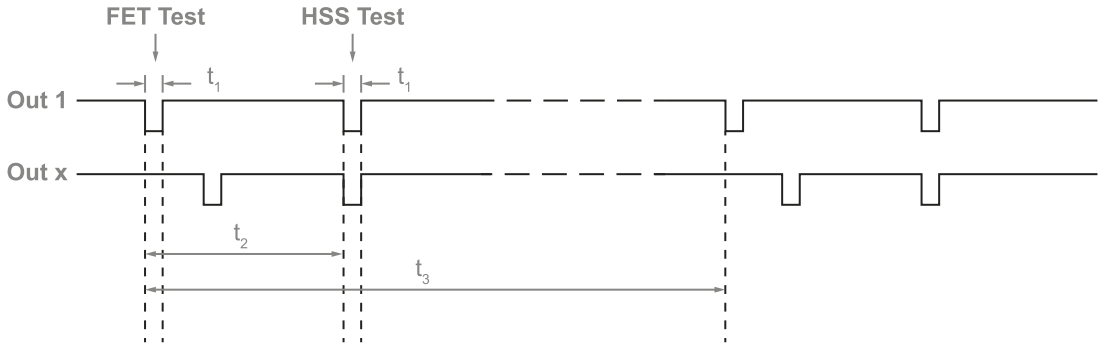
All safety outputs are short-circuit protected and specified in accordance with EN 61131-2. The outputs are compatible with input of type 1, 2 and 3.

Number	8		
Rated output voltage	+24 V DC SELV/PELV		
Output voltage range	minimum +18 V	maximum +30 V[1)]	
Maximum output current	2 A		
Maximum total current per output group (4 outputs)	5 A		
Maximum total current (entire module)	10 A up to max. 45 °C ambient temperature	8 A up to max. 55 °C ambient temperature	6 A up to max. 60 °C ambient temperature
Brake voltage with switching-off inductive loads	typically 0.85 V		
Maximum switch-off energy of the outputs (inductive load)	maximum 0.4 Joule per channel, maximum 1.2 Joule (entire module)		
Turn-on delay	< 200 µs		
Turn-off delay	< 1 ms		
Miscellaneous	short-circuit proof		
Cutoff test pulse width (t_1)	minimum 0.1 ms	maximum 1.5 ms maximum 1.0 ms[2)]	
Cutoff test pulse interval bet. FET Test and HSS Test (t_2)	minimum 112 ms	maximum 6450 ms	
Cutoff test pulse interval (t_3)	60 s		

1) With increased ambient temperature > 55 °C the maximum permissible supply voltage is reduced from +30 V to +28.8 V.

2) The maximum turn-off pulse width can be specified as ≤ 1 ms by implementing the following measures:
- +24 V DC ±20 % output supply voltage
- A minimum load of > 10 mA or < 2200 Ω per output is required when at least 2 outputs in an output group are active.
- A maximum connection capacitance of 10 nF (connection cable + remote end) per output in the output group must not be exceeded
- HW version ≥ 4.00

Cutoff Test Pulse Timing

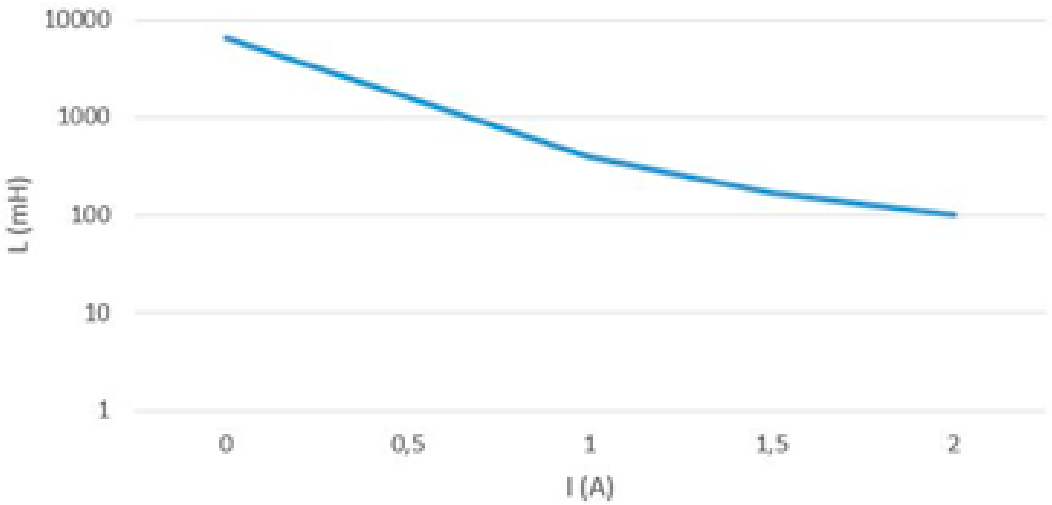


INFORMATION

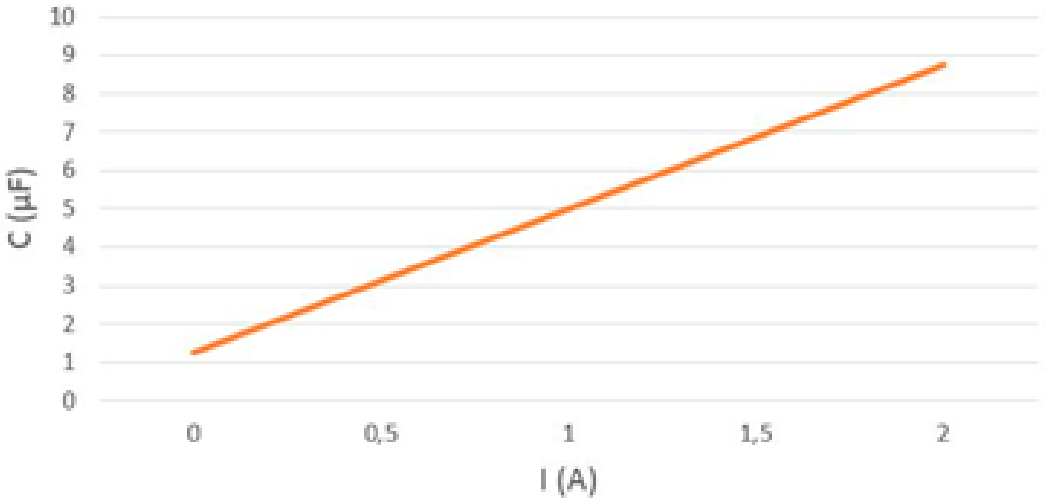
The module is designed to detect and safely manage electrical faults such as overvoltage or undervoltage of the +24 V supply voltage and short circuits at the safety-related output. The corresponding protective mechanisms are integrated into the module. Therefore, the module does not require any external protective measures for the supply voltage (e.g., a pre-fuse) in the event of the aforementioned electrical faults. The design of the 24 V power supply - including the power source, wire sizing, fusing, and selectivity - is the responsibility of the plant or machine manufacturer. According to EN 60204-1, overcurrent protection is part of the installation. Depending on the power supply unit used, the wiring, and other loads, additional fusing of the supply voltage may be required.

6.2 Maximum Inductive and Capacitive Load

6.2.1 Maximum Inductive Load L (mH) at Load Current I (A)

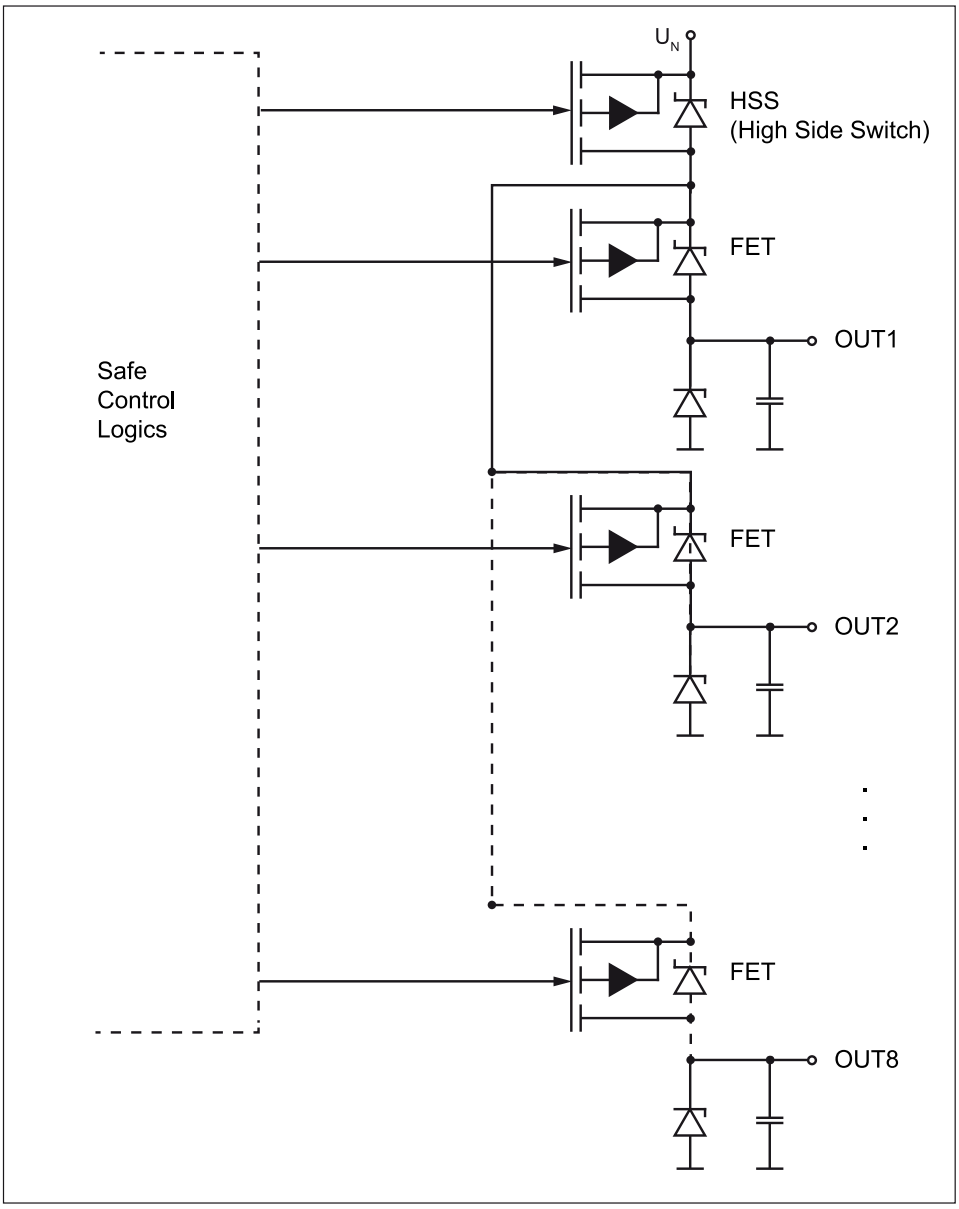


6.2.2 Maximum Capacitive Load L (mH) at Load Current I (A)



I (A)	L (mH)	C (µF)
0	6400	1.25
0.5	1600	3.13
1	400	5
2	100	8.75

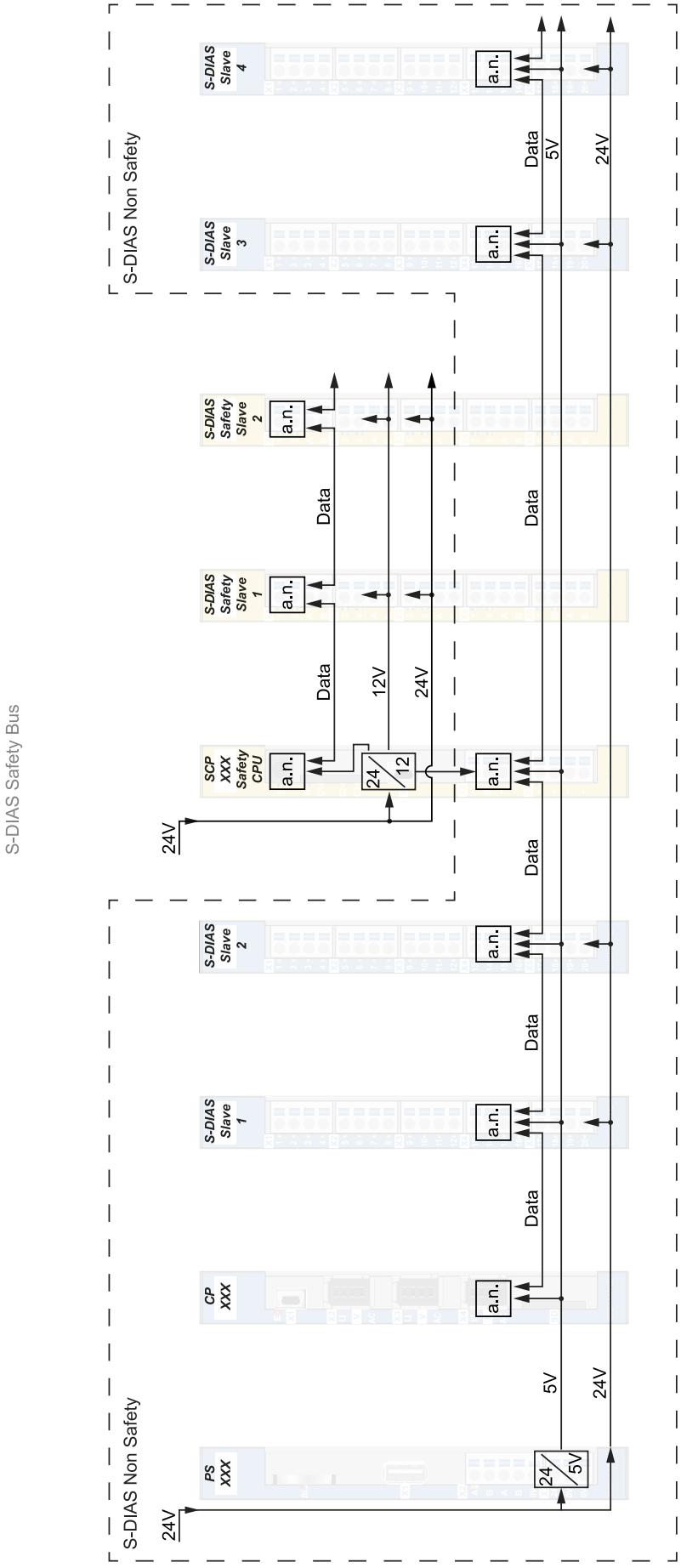
6.3 Output Circuit



The figure shows the internal output circuit of the STO 081(-X).

6.4 Electrical Requirements

Voltage supply from Safety bus	+12 V	
Current consumption on the Safety bus (+12 V supply)	typically 42 mA	maximum 50 mA
Voltage supply from S-DIAS bus	+24 V	
Current consumption on the S-DIAS bus (+24 V supply)	typically 36 mA	maximum 40 mA


S-DIAS Safety Bus
S-DIAS Non Safety
S-DIAS Non Safety
PS XXX
CP XXX
SCP XXX Safety CPU
S-DIAS Slave 1
S-DIAS Slave 2
S-DIAS Slave 3
S-DIAS Slave 4
S-DIAS Safety Slave 1
S-DIAS Safety Slave 2
a.n.
24V
5V
12V
Data
24/5V
24/12
a.n. = active node
Wiring S-DIAS Safety in S-DIAS System
- each S-DIAS module is an active module (active node)
- Safety CPU is connected to the S-DIAS bus (incl. +5 V supply)
- Safety bus is independent and separated from the S-DIAS bus

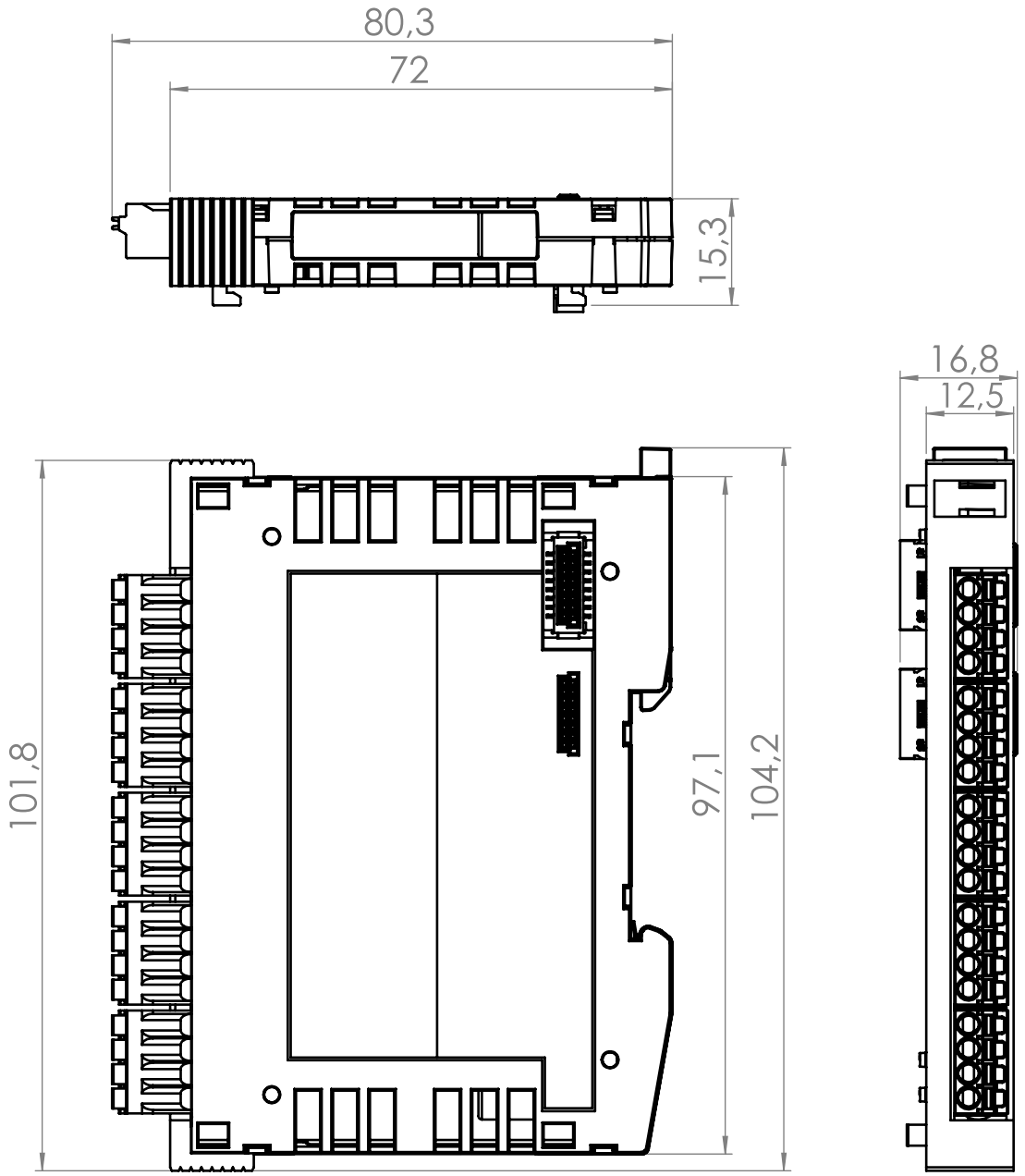
6.5 Miscellaneous

Article number	20-892-081	
Printed circuit board coating	20-892-081-X (polymer coated printed circuit board)	
Approvals	CE	yes
	UL	cULus (E247993)
	Functional Safety	yes, EG-type-examined
	UKCA	no
Mission time	20 years	

6.6 Environmental Conditions

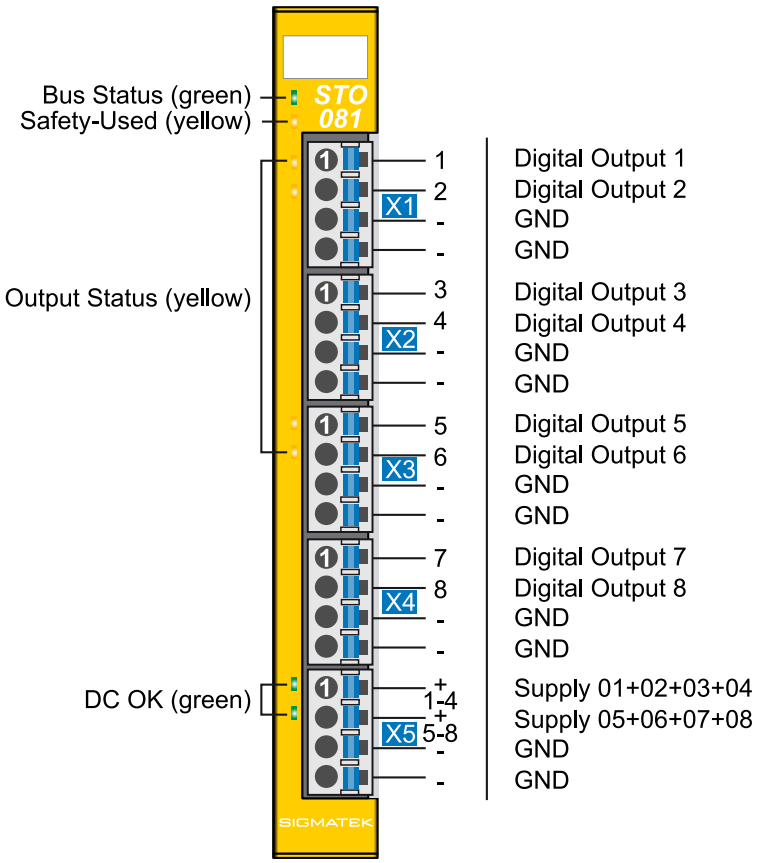
Storage temperature	-20 ... +85 °C	
Environmental temperature	0 ... +55 °C (UL) 0 … +60 °C (CE)	
Humidity	0-95 %, non-condensing	
Installation altitude above sea level	0-2000 m without derating > 2000 m up to a maximum of 5000 m with derating of the maximum environmental temperature by 0.5 °C per 100 m	
Operating conditions	pollution degree 2	
Noise emission	≤ 70 dB	
EMC resistance	EN 61000-6-2 (industrial area) EN 61000-6-7 (noise immunity industry functional safety) (increased requirements in accordance with EN IEC 62061)	
EMC noise generation	EN 61000-6-4 (industrial area)	
Vibration resistance	EN 60068-2-6	3.5 mm from 5-8.4 Hz 1 g from 8.4-150 Hz
Shock resistance	EN 60068-2-27	15 g (147.15 m/s²)
Protection type	EN 60529	IP20 (not evaluated by UL)

7 Mechanical Dimensions



Measurements	12.5 x 104 x 72 mm (W x H x D)

7.1 Connector Layout



INFORMATION

Both +24 V supply connections (X5: pin 1 and pin 2) must be supplied to power the module. The GND supply connections (X5: pin 3 and pin 4) are bridged internally and, depending on the total current (6 A per pin), must be supplied via at least one connection (for total currents up to 6 A) or via both connections (for total currents greater than 6 A). The bridged pins of the GND supply may also be used for further looping. However, it must be ensured that a total current of 6 A per connection is not exceeded.

7.2 Status LEDs

Bus status	green	ON	bus communication OK
		OFF	no supply available
		BLINKING (5 Hz)	no communication
Safety-used	yellow	ON	module is used and no error
		OFF	module is not used or not in operational mode
Output status	yellow	ON	output ON
		OFF	output OFF
DC OK	green	ON	The respective output group is powered

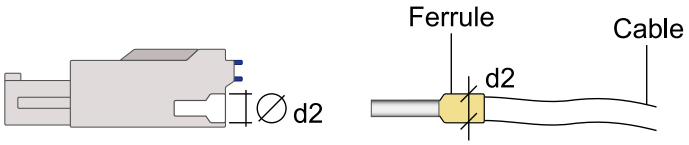
7.3 Applicable Connectors

X1-X5: Connectors with spring terminals (included in delivery)

The spring terminals are suited for the connection of ultrasonically compacted (ultrasonically welded) stranded wire.

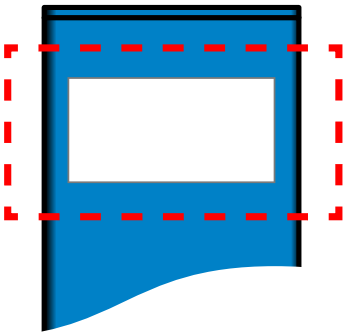
Connection capacity:

Stripping length/sleeve length	10 mm
Mating direction	parallel to the conductor axis or circuit board
Conductor cross section rigid	0.2-1.5 mm²
Conductor cross section flexible	0.2-1.5 mm²
Conductor cross section, ultrasonically compacted	0.2-1.5 mm²
Conductor cross section AWG/kcmil	24-16
Conductor cross section flexible with ferrule without plastic sleeve	0.25-1.5 mm²
Conductor cross section flexible with ferrule with plastic sleeve	0.25-0.75 mm² (reason for reduction d2 of the ferrule)



d2 = max. 2.8 mm

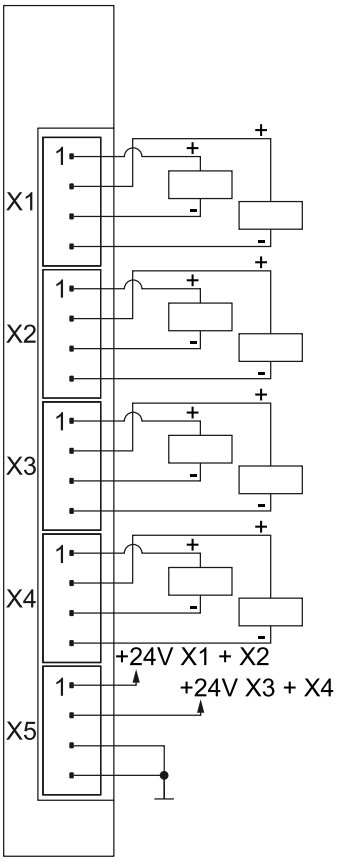
7.4 Label Field



The labeling field is printed directly on the module.

8 Wiring

8.1 Wiring Example



8.2 Note

The input filters, which suppress noise signals, allow operation in harsh environmental conditions. A careful wiring method is also recommended to ensure error-free function.

The following installation guidelines should be observed:

- Avoid parallel connections between input lines and load-bearing circuits.
- Protective circuits for all relays (RC networks or free-wheeling diodes)
- Correct wiring to ground

INFORMATION

The ground bus should be connected to the control cabinet when possible!

The wiring and assembly must be performed when no voltage is applied!

The S-DIAS module CANNOT be connected/disconnected while voltage is applied!

9 Assembly/Installation

9.1 Check Contents of Delivery

Ensure that the contents of the delivery are complete and intact. See chapter 1.3 Contents of Delivery.

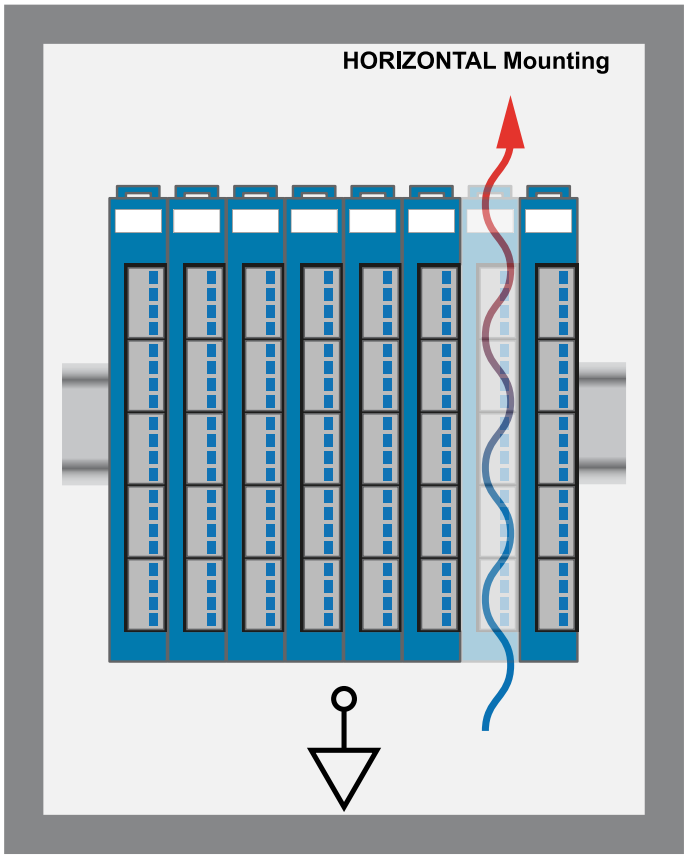
INFORMATION

On receipt and before initial use, check the device for damage. If the device is damaged, contact our customer service and do not install the device in your system.

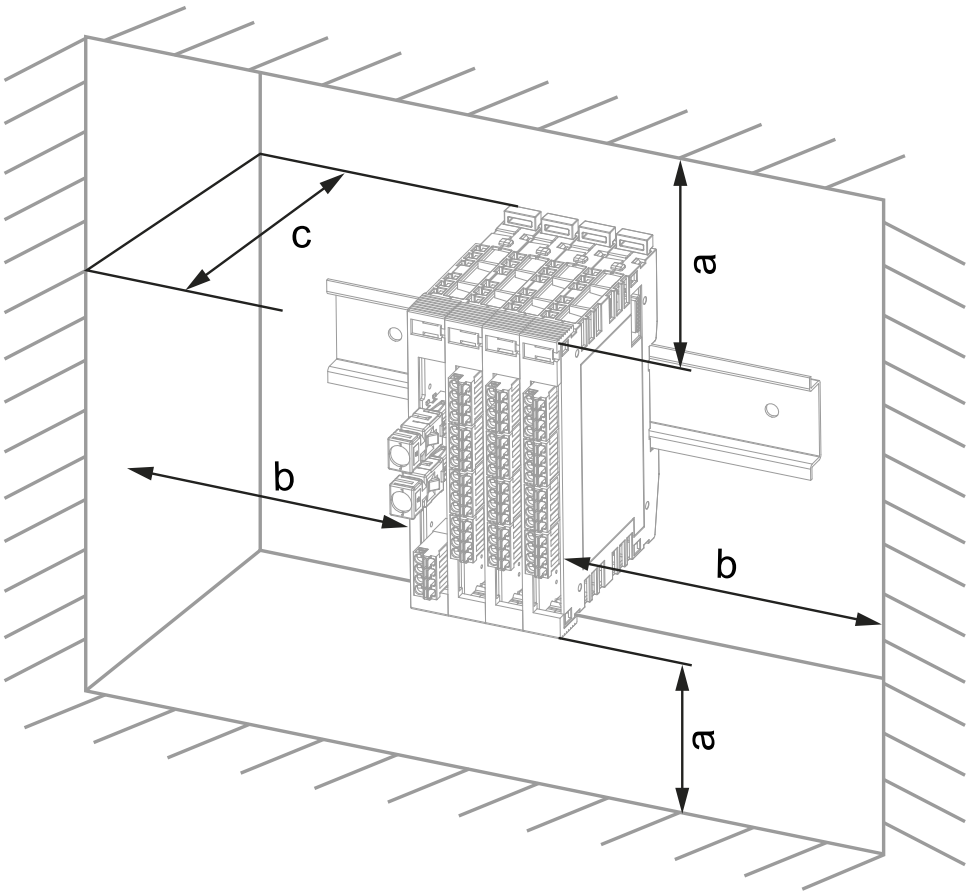
Damaged components can disrupt or damage the system.

9.2 Mounting

The S-DIAS modules are designed for installation into the control cabinet. To mount the modules, a DIN-rail is required. The DIN rail must establish a conductive connection with the back wall of the control cabinet. The individual S-DIAS modules are mounted on the DIN rail as a block and secured with latches. The functional ground connection from the module to the DIN rai is made via the grounding lug on the back of the S-DIAS modules. The modules must be mounted horizontally (module label up) with sufficient clearance between the ventilation slots of the S-DIAS module blocks and nearby components and/or the control cabinet wall. This is necessary for optimal cooling and air circulation to ensure proper function up to the maximum operating temperature.



Recommended minimum distances between the S-DIAS modules and the surrounding components or control cabinet wall:



a	b	c
30 mm (1.18″)	**30 mm** (1.18″)	**100 mm** (3.94″)

a, b, c … distances in mm (inches)

10 Transport/Storage

This device contains sensitive electronics. During transport and storage, high mechanical stress must therefore be avoided.

For storage and transport, the same values for humidity and vibration as for operation must be maintained!

Temperature and humidity fluctuations may occur during transport. Ensure that no moisture condenses in or on the device, by allowing the device to acclimate to the room temperature while turned off.

When sent, the device should be transported in the original packaging if possible. Otherwise, packaging should be selected that sufficiently protects the product from external mechanical influences. Such as cardboard filled with air cushioning.

11 Storage

When not in use, store the device according to the storage conditions. See chapter 10 Transport/Storage.

INFORMATION

During storage, ensure that all protective covers (if available) are placed correctly, so that no contamination, foreign bodies or fluids enter the device.

12 Maintenance

During maintenance as well as servicing, observe the safety instructions from chapter 2 Basic Safety Directives.

12.1 Service

This product was constructed for low-maintenance operation.

12.2 Repair

In the event of a defect/repair, send the device with a detailed error description to the address listed at the beginning of this document.
For transport conditions, see chapter 10 Transport/Storage.

13 Disposal

INFORMATION

Should you need to dispose of the device, the national regulations for disposal must be followed.

The device appliance must not be disposed of as household waste.

Changes Chart

Change date	Affected page(s)	Chapter	Note
11.02.2014	22	7.1 Connector Layout	Changed image
	23	7.3 Applicable Connectors	Connection capacity added
03.03.2014	22	7.1 Connector Layout	Changed image
	23	Status LEDs	Changed/expanded Status LEDs table
01.04.2014	26	9 Assembly/Installation	Text updated
23.05.2014	13	4.5 Compatibility	Chapter added
18.07.2014	22	7.1 Connector Layout	Added wiring notice
08.09.2014	20	6.5 Miscellaneous	Added UL standard
30.01.2015	25	8.2 Note	Added note concerning connecting the S-DIAS module while voltage is applied
23.03.2015	22	7.1 Connector Layout	Changed note
26.03.2015	23	7.3 Applicable Connectors	Added connections
07.05.2015			New writing: EN ISO 13849
18.05.2015	20	6.6 Environmental Conditions	Expanded vibration resistance
08.07.2015	15	6.1 Output Specifications	Added note
28.07.2015	11	4.3.1 Functional Safety Standards	Deleted footnote
04.08.2015			Info Cover Translation from German added
17.02.2016	15	6.1 Output Specifications	Switching-off inductive loads
28.04.2016	26	9 Assembly/Installation	Graphics distances
20.06.2016	12	4.4 Safety-Relevant Parameters	SCP 011/SCP 111 instead of SCP 011
	13	4.5 Compatibility	SCP 011/SCP 111 instead of SCP 011
15.05.2017	16	6.2 Maximum Inductive and Capacitive Load	Chapter added
17.08.2017	20	6.6 Environmental Conditions	Pollution degree
	23	7.3 Applicable Connectors	Sleeve length added Added info regarding ultrasonically welded strands
23.08.2017	15	6.1 Output Specifications	Table expanded, Cutoff Test Pulse Timing added
30.08.2017	15	6.1 Output Specifications	Cutoff Test Pulse Timing
18.10.2017	24	7.4 Label Field	Chapter added
	26	9 Assembly/Installation	Graphic replaced
20.09.2018	22	7.1 Connector Layout	Added note

Change date	Affected page(s)	Chapter	Note
02.04.2019	12	4.4 Safety-Relevant Parameters	Correction of the safety-relevant parameters
	20	6.6 Environmental Conditions	Corrections environmental conditions
	all		Corrections due to CE
14.11.2019	24	9 Supported Cycle Times	Chapter added
02.12.2019	12	4.4 Safety-Relevant Parameters	Values updated
28.02.2020	24	9 Supported Cycle Times	Text adapted
28.05.2020	24	9 Supported Cycle Times	Entire chapter removed
20.07.2020	all		Up to 60 °C ambient temperature
02.09.2020	8	2.4 Designated Use	Text correction of Designated Use
		6.1 Output Specifications	For Maximum total current (complete module) the text “in horizontal mounting position” removed + for the footnote the text "horizontal mounting position and" removed
	20	6.6 Environmental Conditions	At Environmental temperature 0 ... +55 °C removed
08.09.2020		10 Hardware Class STO 081(-X)	Chapter added
04.11.2020	26	9 Assembly/Installation	Expansion functional ground connection
05.03.2021	20	6.6 Environmental Conditions	Standards added
04.05.2021	20	6.5 Miscellaneous	Article number -X added
22.12.2021	12	4.4 Safety-Relevant Parameters	Parameters added for HW version 3.00
07.02.2022	12	4.4.2 Mounting Position Horizontal 0-60 °C Ambient Temperature	Parameters SCP 211/SCP 111-S added
22.03.2022	12	4.4 Safety-Relevant Parameters	Safety-relevant parameters changed
	12	4.4.2 Mounting Position Horizontal 0-60 °C Ambient Temperature	Safety-relevant parameters changed
		Ambient temperature	Safety-relevant parameters changed
12.09.2022	20	6.5 Miscellaneous	Hardware version removed
05.12.2023	20	6.5 Miscellaneous	Mission time added
	20	6.6 Environmental Conditions	Noise emissions added
	22	7.1 Connector Layout	Note changed
		10 Hardware Class STO 081(-X)	Chapter removed
01.02.2024	12	4.3.2 EU Declaration of Conformity	Note on download adjusted
	12	4.4 Safety-Relevant Parameters	The safety indicators (PFH, $MTTF_D$) were adjusted slightly with the recertification.

Change date	Affected page(s)	Chapter	Note
21.02.2024	10	3 IT Security	Chapter added
			Product names adjusted
08.04.2024	25	8.1 Wiring Example	Graphics corrected
18.03.2025		Document	Layout corrected
01.09.2026	12	4.4 Safety-Relevant Parameters	Information changed
01.09.2026	15	6.1 Output Specifications	Added SELV/PELV information and footnote