SIGMATEK

SRO 022(-X)

S-DIAS Safety Relay Output Module

Instruction Manual

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Translation of the Original Instructions

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S-DIAS Safety Relay Output Module SRO 022(-X)

The S-DIAS Safety relay output module SRO 022(-X) has the safety integrity level SIL 3 (EN IEC 62061) or Performance level e (PL e) (EN ISO 13849). The SRO 022(-X) has:

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

Both outputs are used for the Safety-related closing (NO) of an electric circuit with a permissible rated voltage of +24 V DC/230 V AC and a maximum continuous current of 6 A.

The SRO 022(-X) is used for example, for switching higher power loads or potential-isolated circuits – such as hydraulic valves or the relaying of emergency stop circuits.

The safety-related SRO 022(-X) is ideal for use in systems with optional modules and interface variables according to Safety System Handbook, see homepage[1)].

To use the module in an application, the SRO 022(-X) requires at least one Safety CPU module that regulates the synchronized communication with the Safety modules using safe bus telegrams. 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 SRO 022-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“

Table of Contents

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.
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 SRO 022(-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

INFORMATION

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.

INFORMATION

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.

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 !

The module complies with EN 61131-2.
In combination with a facility, the system integrator must comply with EN 60204-1 standards.
For your own safety and that of others, compliance with the environmental conditions is essential.

Le module est conforme à la norme EN 61131-2.
En combinaison avec une équipement, l’intégrateur de système doit respecter la norme EN 60204-1.
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 according to SIL 3 in compliance with EN IEC 62061 and according to PL e / Cat. 4 in compliance with EN ISO 13849-1.

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

INFORMATION

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

4.3.2 EU Conformity Declaration

CE

EU Declaration of Conformity

The product SRO 022(-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.

5 Safety-Relevant Parameters

5.1 Mounting Position Horizontal 0-55 °C Ambient Temperature

Relay Module	Safety Parameters	Safety Levels
SRO 022(-X) including CPU module **SCP 011/SCP 111**	PFH = 1.10E-08 (1/h) SFF = 99 % $MTTF_D$ = 232 years DC = 98 %	PL e / Cat. 4 SIL 3

The above failure probability (PFH, $MTTF_D$ and SFF) is based on the assumption that the output relay is operated with 25,000 switching cycles per year (nop). If more switching cycles per year are required, you can consult SIGMATEK's support regarding the Safety parameters.

5.2 Mounting Position Horizontal 0-60 °C Ambient Temperature

Relay Module	Safety Parameters	Safety Levels
SRO 022(-X) including CPU module **SCP 011/SCP 111**	PFH = 1.10E-08 (1/h) SFF = 99 % $MTTF_D$ = 223 years DC = 98 %	PL e / Cat. 4 SIL 3
SRO 022(-X) including CPU module **SCP 211/SCP 111-S)**	PFH = 1.20E-08 (1/h) SFF = 99 % $MTTF_D$ = 207 years DC = 98 %	PL e / Cat. 4 SIL 3

The above failure probability (PFH, $MTTF_D$ and SFF) is based on the assumption that the output relay is operated with 25.000 switching cycles per year (nop). If more switching cycles per year are required, you can consult SIGMATEK's support regarding the Safety parameters.

INFORMATION

Time of use of the relay output module depending on the number of switching cycles per year, see chapter 7.2 .

5.3 Compatibility

INFORMATION

Compatibility

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

6 Type Plate

Exemplary nameplate (symbol image)

HW: Hardware version
SW: Software version

7 Technical Data

7.1 Relay Outputs Specifications

Number	2	
Configuration	two-channel	
Contact	normally open	
Relay type	SIS212 21VDC SEN	
Nominal voltage	+24 V DC	+230 V AC
Switching voltage	maximum +30 V DC	maximum +250 V AC
Maximum continuous current /channel - General Use	maximum 6 A at 55 °C maximum 4 A at 60 °C	maximum 6 A at 55 °C maximum 4 A at 60 °C
Short-circuit and overload protection	external fuse category gG, maximum 6 A	
Concurrence of all outputs	100 %	
Response time	typically 10 ms[1)]	
Fall time	typically 3 ms[1)]	
Miscellaneous	no protective circuit	

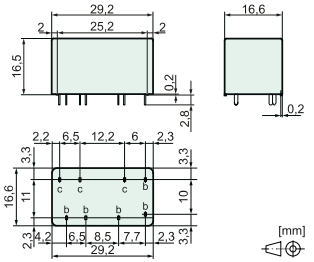
This module exceeds the intended current consumption for S-DIAS safety modules. This module should therefore be regarded as two S-DIAS safety modules.

[1)] Pure relay characteristics not considering the application cycle time of the SAFETYDesigner

Features

- Relay with forcibly guided contacts according to IEC 61810-3
- Application type A
- Protective separation (see insulation data)
- Suitable for print mounting
- Compact design
- Contact assignment
  SIS212: 2 NO + 1 NC

Dimensions



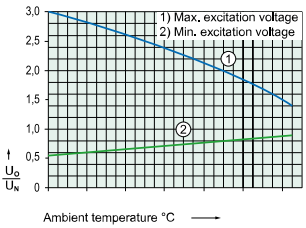
Pin dimension b	1,0 x 0,3 mm
Pin dimension c	1,0 x 0,4 mm
Recommended drilling on PCB	Ø 1,3 mm

Coil data at 20 °C

Nominal power (typ.)	0,4 W
Holding power (typ.)	0,14 W
Coil limit temperature	120 °C

Nominal voltage (VDC)	Min. Pick-up voltage (VDC)	Min. Drop-out voltage (VDC)	Nominal current (mA)	Resistance (Ohm)
21,0	15,7	2,1	19	1100 (1 ± 10 %)

Excitation voltage range



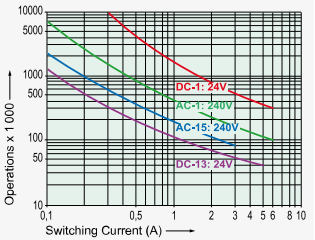
Test conditions:
- Graph 1: Contact current 4 A MAX
- Graph 2: without previous operation
- Free-standing relay on PCB
- Duty cycle 100%

Contact data

Contact material	AgCuNi + 0,2, ..., 0,4 µm Au
Type of contact	Single contact with notched crown
Rated switching power 250 V / 6 A / AC-1 (max.)	1500 VA
Electr. life time (0,1 Hz, rel. duty cycle 10%)	90000
Inrush current	30 A for 20 ms
Switching voltage range	5, ..., 250 V DC / AC
Switching current range*	3 mA, ..., 6 A
Switching power range*	40 mW, ..., 1500 W (VA)
Contact resistance as new (max.)	100 mΩ
Short circuit resistance of contacts** with pre-fuse	1000 A SCPD 6 A gG / gL (fuse)

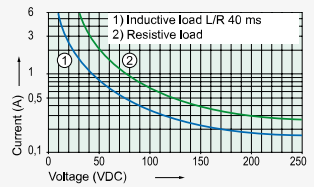
* Reference values ** Prospective short-circuit current

Electrical life (NO contacts)

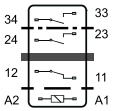


Switching capacity (IEC 61810-1)	
AC-1:	240 V / 6 A MAX
AC-15:	240 V / 3 A MAX
DC-1:	24 V / 6 A MAX
DC-13:	24 V / 5 A / 0,1 Hz MAX
Switching capacity (UL 508)	B300, R300
Continuous current per contact at load of: 1 or 2 contacts	6 A MAX

Contact load limit curve (DC)



Circuit diagram (top view)



SIS212 SEN

Insulation data

Rated insulation voltage (IEC 60664-1)	250 VAC
Basic insulation	
- Air and creepage distance (min.)	4 mm
- Test voltage	2500 V_{rms} / 1 min
Double or reinforced insulation	
- Air and creepage distance (min.)	5,5 mm
- Test voltage	4000 V_{rms} / 1 min
Double or reinforced insulation	
- Air and creepage distance (min.)	8 mm
- Test voltage	4000 V_{rms} / 1 min
Open contact: Test voltage*	1500 V_{rms} / 1 min
Creepage resistance	CTI 175
Pollution degree	2
Overvoltage category	III
Insulation resistance (min.)	100 MΩ
- Test voltage	500 VDC

* Initial value

Mechanical data

Mechanical lifetime (min.)	10 x 10^6 operations
Switching frequency (max.)	15 Hz
Response time (NO closed) (typ.)	10 ms
Drop-out time (NC closed) (typ.)*	3 ms
Bounce time (typ.)	NO: 2 ms / NC: 15 ms
Shock resistance (16 ms) (min.)	NO: 17g / NC: 10g
Vibration resistance (10-200 Hz) (min.)	NO: 7g / NC: 3g
Weight	approx. 20 g
Mounting position	any
Mounting distance (min.)	1 mm

* without coil wiring

Other data

Ambient temperature	-40 °C, ..., +85 °C
Thermal resistance	55 K / W
Protection class	RT III
Solder bath temperature	270 °C / 5 s
Test method (heating)	A (group assembly)
Approvals	cULus, TÜV
Flammability class	UL 94 V-0
UL File	E188953 Sec. 5

Options, Accessories

none available

Product key

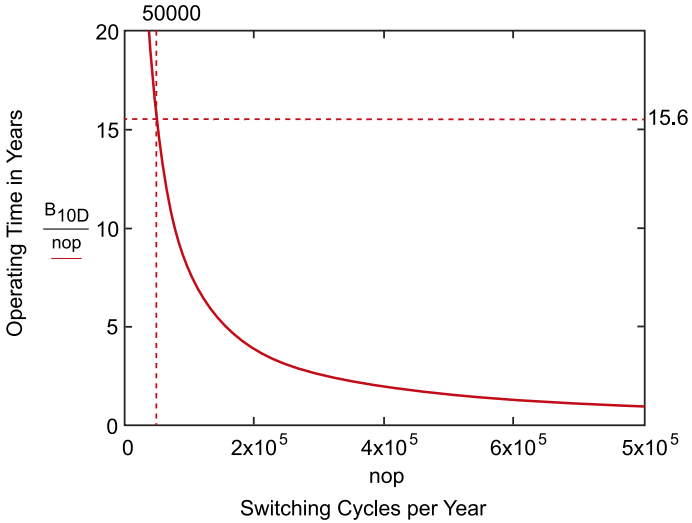
SIS 2 1 2 24VDC SEN

SIS	Type designation	
2	Number of contacts NO	
1	Number of contacts NC	
2	Connection technology	2 = Solder terminals
24VDC	Nominal coil voltage	
SEN	sensitive coil	

INFORMATION

The module SRO 022(-X) is only designed for a maximum voltage range of +250 V AC/+30 V DC.

7.2 Lifespan of the Relay Output Module Depending on the Number of Switching Cycles per Year



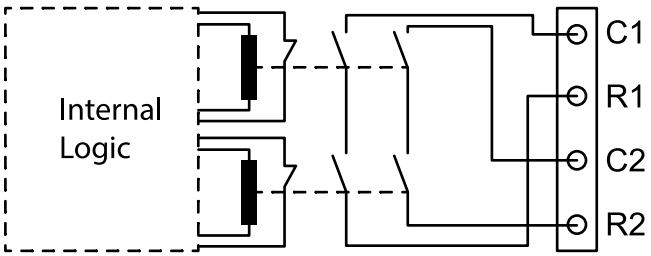
Duration of relay output module use	20a
B_{10D} value of the relay used	780000 switching cycles under rated load

Example calculation:

With 50000 switching cycles per year, the relay output module must be exchanged after 15.6 years.

$\frac{B_{10D}}{50000} = 15{,}6$; with 39000 switching cycles per year, the lifespan is 20 years.

7.3 Relay Circuit



The outputs are internally wired as a series circuit of to two relays.

7.4 Electrical Requirements

Voltage supply from Safety bus	+12 V	
Current consumption on the Safety bus (+12 V supply)	typically 30 mA	maximum 40 mA
Voltage supply from S-DIAS bus	+24 V	
Current consumption on the S-DIAS bus (+24 V supply)	typically 90 mA	maximum 110 mA

INFORMATION

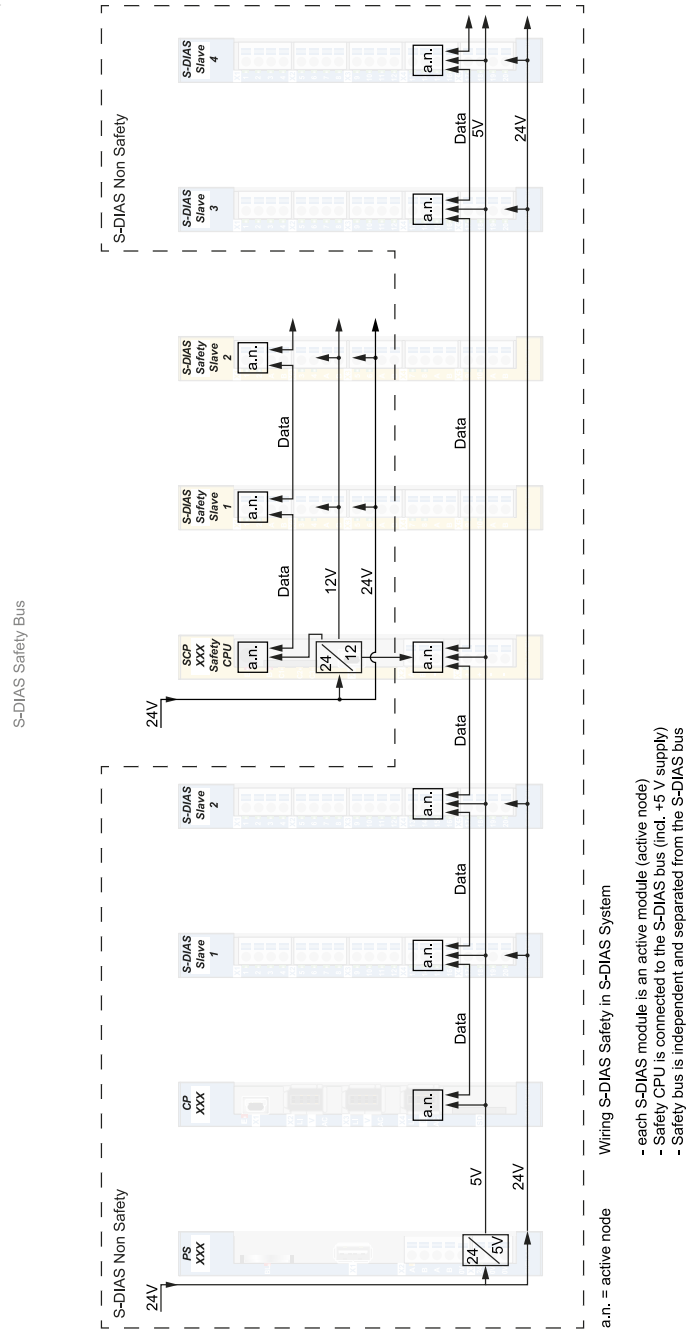
If this S-DIAS Safety module is connected to an SCP with several modules, the total current of the S-DIAS Safety modules used must be determined and checked.

The total current of the +24 V supply must not exceed 800 mA.
The total current of the +12 V supply must not exceed 800 mA.

From the S-DIAS Safety module, a maximum of 16 safe I/O modules are supported.

The S-DIAS Safety SRO 022(-X) relay module corresponds to two Safe I/O modules SCP 011/SCP 111.

The S-DIAS Safety module SRO 022(-X) is supported from the following firmware versions of the S-DIAS Safety CPU modules:
S-DIAS Safety CPU module SCP 011: starting with FW version V377
S-DIAS Safety CPU module SCP 111: starting with FW version V458



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

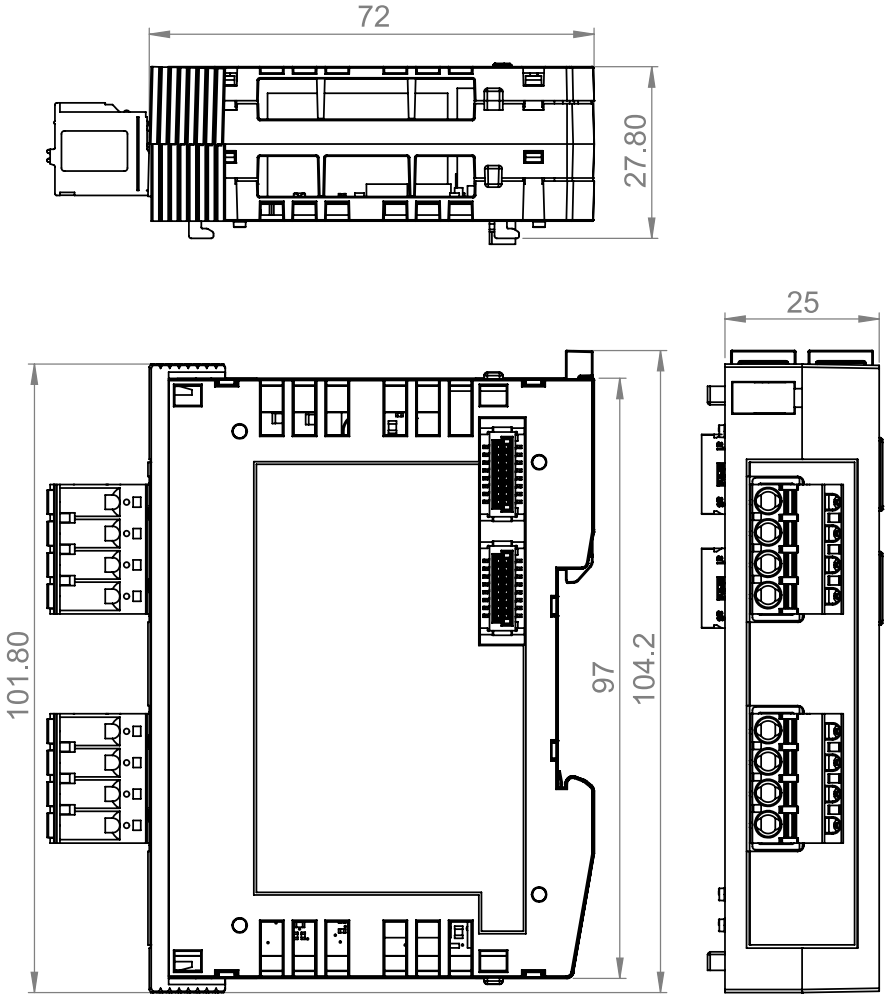
7.5 Miscellaneous

Article number	20-893-022
Printed circuit board coating	20-893-022-X (polymer coated printed circuit board)
Standard	EN IEC 62061 SIL 3, EN ISO 13849-1 PL e/Cat. 4, UL 61010 (E247993), cULus
Approvals	CE, TÜV-Austria EG type tested
Mission time	20 years

7.6 Environmental Conditions

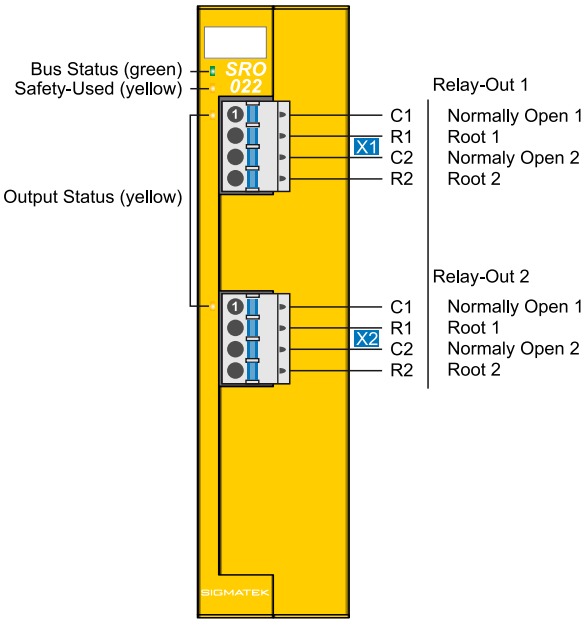
Storage temperature	-20 ... +85 °C	
Environmental temperature	0 ... +55 °C (UL) +55 … +60 °C with derating (CE)	
Humidity	0-95 %, non-condensing	
Installation altitude above sea level	0-2000 m without derating > 2000 m up to a maximum of 5000 m with derating of the maximum environmental temperature by 0.5 °C per 100 m over voltage category II (up to 5000 m) over voltage category III (only up to 2000 m)	
Operating conditions	pollution degree 2 over voltage category II (up to 5000 m) over voltage category III (only up to 2000 m)	
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/NEMA 250	IP20/Type1 (not evaluated by UL)

8 Mechanical Dimensions



Measurements	25 x 104 x 72 mm (W x H x D)

8.1 Connector Layout



8.2 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

8.3 Applicable Connectors

X1, X2: Connectors with spring terminals (included in delivery)

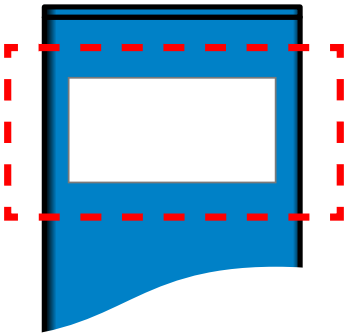
The spring terminals are suited for the connection of ultrasonically compacted (ultrasonically welded) stranded wire.

Connection capacity:

Stripping length/sleeve length	10 mm
Mating direction	parallel to the conductor axis or circuit board
Conductor cross section rigid	0.2-2.5 mm²
Conductor cross section flexible	0.2-2.5 mm²
Conductor cross section, ultrasonically compacted	0.2-2.5 mm²
Conductor cross section AWG/kcmil	24-16
Conductor cross section flexible with ferrule without plastic sleeve	0.25-2.5 mm²
Conductor cross section flexible with ferrule with plastic sleeve	0.25-2.5 mm²

d2 = max. 3.8 mm

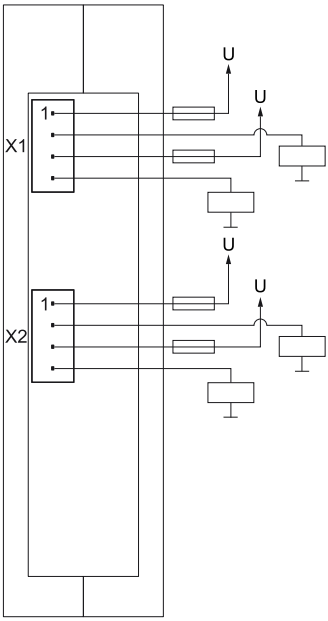
8.4 Label Field



Manufacturer	Weidmüller
Type	MF 10/5 CABUR MC NE WS
Article number Weidmüller	1854510000
Compatible printer	Weidmüller
Type	Printjet Advanced 230V
Article number Weidmüller	1324380000

9 Wiring

9.1 Wiring Example



9.2 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.
- Use copper cables (Cu) rated for at least 73 °C for wiring the module.
- 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!

10 Assembly/Installation

10.1 Check Contents of Delivery

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

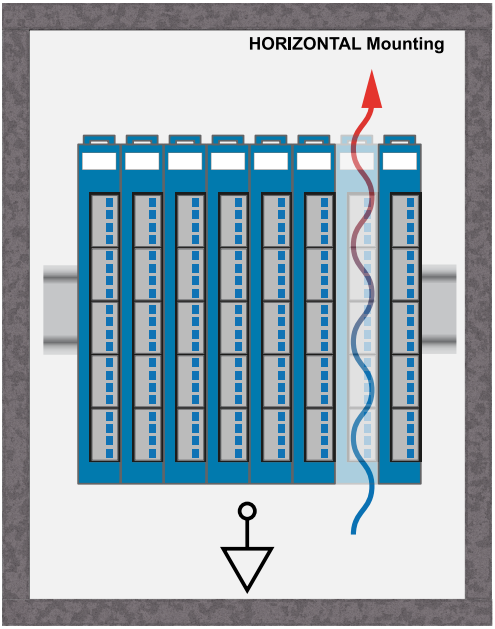
INFORMATION

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.

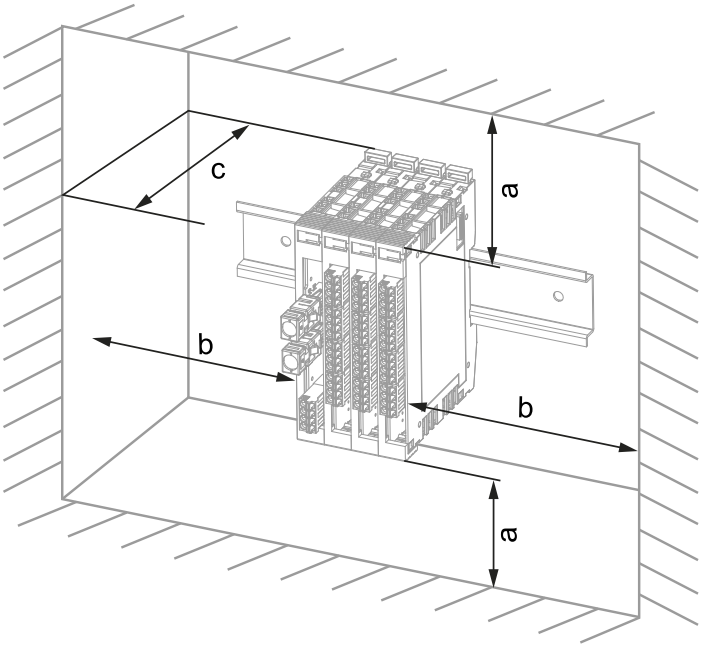
Damaged components can disrupt or damage the system.

10.2 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)

11 Transport/Storage

INFORMATION

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.

12 Storage

INFORMATION

When not in use, store the operating panel according to the storage conditions. See chapter 11 Transport/Storage.

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

13 Maintenance

INFORMATION

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

Lors de l'entretien et de la maintenance, respectez les consignes de sécurité du chapitre 2 Basic Safety Directives.

13.1 Service

This product was constructed for low-maintenance operation.

13.2 Repair

INFORMATION

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 11 Transport/Storage.

14 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.

15 Supported Cycle Times

15.1 Cycle Times below 1 ms (in µs)

50	100	125	200	250	500
x	x	x	x	x	x

x = supported

15.2 Cycle Times equal to or higher than 1 ms (in ms)

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x

x = supported

17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32
x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x

x = supported

Change History

Change date	Affected page(s)	Chapter	Note
23.07.2020	1		Introductory text changed
20.08.2020	1		SIL CL 3 removed
	14	4.3.2 EU Conformity Declaration	adapted
	15	5 Safety-Relevant Parameters	Sub-chapter added
	18	7.1 Relay Outputs Specifications	Table adapted
	18	7.1 Relay Outputs Specifications	Data sheet exchanged
	21	7.4 Electrical Requirements	Current consumption on the Safety bus (+24 V supply) changed
	23	7.5 Miscellaneous	Standard and Approvals adapted
	23	7.6 Environmental Conditions	Environmental temperature adapted
08.09.2020		9 Hardware Class SRO021	Chapter added
04.11.2020	30	10 Assembly/Installation	Expansion functional ground connection
05.03.2021	23	7.6 Environmental Conditions	Standards added
04.05.2021	23	7.5 Miscellaneous	Article number -X added
01.06.2021	21	7.4 Electrical Requirements	FW version SCPs added
07.02.2022	15	5.2 Mounting Position Horizontal 0-60 °C Ambient Temperature	Parameters SCP 211/SCP 111-S added
12.09.2022	23	7.5 Miscellaneous	Hardware version removed
05.12.2023	18	7.1 Relay Outputs Specifications	Chapter extended
	23	7.5 Miscellaneous	Mission time added
	23	7.6 Environmental Conditions	Noise emissions added
		9 Hardware Class SRO021	Chapter removed

Change date	Affected page(s)	Chapter	Note
01.02.2024	14	4.3.2 EU Conformity Declaration	Note on download adjusted
	15	5 Safety-Relevant Parameters	The safety indicators (PFH, $MTTF_D$) were adjusted slightly with the recertification.
21.02.2024	12	3 IT Security	Chapter added
		Document	Wording of standards corrected
			Product names adjusted
18.03.2025		Document	Layout corrected
19.03.2025	23	7.5 Miscellaneous	UL certified