

SDI 101

S-DIAS Safety Digital Input Module

Operating Manual

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S-DIAS Safety Digital Input Module

SDI 101

The S-DIAS SDI 101 Safety digital input module has the safety integrity level **SIL3** (EN / IEC 62061) or **Performance level e** (PL e) (EN ISO 13849-1/-2).

The SDI 101 has:

- 10 Safe inputs (EN 61131-2; EN/IEC 62061 and EN ISO 13849-1/-2)
- Doubled clock output signal (short-circuit proof)

The safety inputs are used for reading 10 actuator signals (Emergency Stop, confirmation button etc.).

To test inputs and detect cross circuits (e.g. Emergency Stop), the SDI 101 has two non-safe signal outputs, TA and TB.

The safety-related SDI 101 is ideal for use in systems with optional modules and interface variables according to Safety System Handbook, see homepage¹.

To use the SDI 101 in an application, a 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.



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

Contents

1	Basic Safety Guidelines	4
1.1	General Information on Safety	4
1.2	Further Safety Guidelines	5
1.3	General Requirements	6
2	Safety Conformity	10
2.1	Functional Safety Standards	10
2.2	EU Conformity Declaration	10
2.3	Safety-Relevant Parameters	11
2.3.1	Mounting Position Horizontal 0-55 °C Ambient Temperature	11
2.3.2	Mounting Position Horizontal 0-60 °C Ambient Temperature	11
2.4	Compatibility	13
3	Technical Data	15
3.1	Input Specifications.....	15
3.2	Signal Output Specifications for Cross-Circuit Detection	15
3.3	Electrical Requirements.....	16
3.4	Input Circuit.....	18
3.5	Miscellaneous	18
3.6	Environmental Conditions	19
4	Mechanical Dimensions	20
5	Connector Layout	21
5.1	Status LEDs.....	22

5.2	Applicable Connectors.....	22
5.3	Label Field	23
6	Wiring	24
6.1	Wiring Example	24
6.2	Note	25
7	Mounting	26
8	Disposal	28
9	Hardware Class SDI101	29
9.1	Interfaces	30
9.1.1	Clients.....	30
9.1.2	Servers.....	30
9.1.3	Communication Interfaces	31
9.2	Example	32

1 Basic Safety Guidelines

1.1 General Information on Safety

If the safety guidelines are not followed, dangers to personnel can arise that could lead to serious injury or in worst cases, death. In less serious cases, systems and equipment can be damaged.

The following symbols identify the individual risks as well as the degree of seriousness; their respective meanings are briefly explained. You should therefore familiarize yourself with the safety symbols and their meanings to prevent dangers and risks.

DANGER!



DANGER!

Identifies an immediate danger with high risk, which can lead to immediate death or serious injury if not avoided.

Indique un danger direct à haut risque d'un décès immédiat ou des blessures graves si les consignes de sécurité ne sont pas respectées.

WARNING



WARNING

Identifies a possible danger with a mid-level risk, which can lead to death or (serious) injury if not avoided.

Indique un danger possible d'un risque moyen de décès ou de (graves) blessures si les consignes de sécurité ne sont pas respectées.

CAUTION!



CAUTION!

Identifies a low risk danger, which can lead to injury or property damage if not avoided.

Indique un danger avec un niveau de risque faible des blessures légères ou des dommages matériels si les consignes de sécurité ne sont pas respectées.

1.2 Further Safety Guidelines



Warning, dangerous electrical voltage

Avertissement d'une tension électrique dangereuse



Hot surface warning

Avertissement d'une surface chaude



Danger for ESD-sensitive components

Les signes de danger pour les composants sensibles aux décharges électrostatiques



This symbol identifies important or additional information regarding the operation of the safety modules.

Ce symbole indique des informations importantes ou supplémentaires concernant le fonctionnement des modules de sécurité particuliers.

1.3 General Requirements

Technical Documentation



This technical documentation is a component of this product.

- this document must be accessible in the vicinity of the machine, since it contains important instructions.
 - the technical documentation should be included in the sale, rental or transfer of the product.
 -
-

Documentation technique



Cette documentation technique fait partie intégrale du produit.

- Gardez la toujours à portée de main et à la proximité de la machine, car elle contient des informations importantes.
 - Distribuez la documentation technique aux secteurs de la vente et/ou de la location du produit.
-

Acceptance of the Safety Guidelines



Before handling the product belonging to this documentation, the operating instructions and safety guidelines must be read. SIGMATEK GmbH & Co KG accepts no liability for damages resulting from non-compliance with the safety guidelines or the relevant regulations.

Acceptance of the safety guidelines and the explanations in this document, as well as the Safety System handbook are a basic requirement for proper use. Therefore, read this operating manual thoroughly and familiarize yourself with each of them. More information on standards and regulations etc. can be found in the system handbook.

Prendre connaissance de consignes de sécurité



Avant toute manipulation on doit impérativement prendre connaissance de consignes de sécurité et du mode d'emploi. SIGMATEK GmbH & Co KG n'assume aucune responsabilité pour les dommages causés par le non-respect des consignes de sécurité ou du mode d'emploi respectif.

La connaissance de consignes de sécurité et le contenu de cette documentation ainsi que le mode d'emploi du système de sécurité constitue une condition préalable à l'utilisation prévue. Lisez ce mode d'emploi et assurez-vous de le comprendre jusqu'aux détails. Pour plus d'informations sur les normes et les lignes directrices, etc., reportez-vous au mode d'emploi.

Qualified Personnel

Installation, assembly, programming and initial start-up, operation, maintenance and decommissioning of control and automation technology products in general, as well as safety-related products especially, 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 guidelines and standards of safety technology.

Personnel qualifié

Installation, montage, programmation, mise en service, l'exploitation, l'entretien et mise hors service de produits de commande et d'automatisation en général, et de produits liés à la sécurité, en particulier, ne peut être effectuée que par le personnel qualifié.

On entend sous terme personnel qualifié les personnes ayant acquis une formation professionnelle dispensé par un spécialiste sur l'utilisation et surveillance des composants et des systèmes de sécurité, ceci conformément aux lignes directrices et les normes en vigueur.

Designated Use



The Safety modules are designed for use in safety-oriented applications and meet the required conditions for safety operation in compliance with Performance level e (PL e), in accordance with EN ISO 13849-1/-2 and SIL3 in accordance with EN 62061.

For your own safety and the safety of others, use safety modules for their designated purpose. Correct EMC installation as well as proper transport and storage are also included in designated use.

Non-designated use consists of

- Any change made to the safety modules of any kind.
- The use of damaged safety modules.
- The use of the safety module outside of the instructions described in this handbook.
- The use of the safety module outside of the technical data described in this handbook.

Utilisation prévue



Les modules de sécurité sont conçus pour une utilisation dans les applications sollicitant un niveau de sécurité et répondent à toutes les conditions nécessaires pour un fonctionnement sûr conformément au niveau de performance e (PL e) selon la norme EN ISO 13849-1/-2 et SIL3 de la norme EN 62061.

Utilisez le module de sécurité conformément à son mode d'emploi pour votre propre sécurité et celle d'autres personnes. L'utilisation conforme comprend également une installation conforme CEM ainsi que le transport et le stockage conforme.

L'utilisation abusive comprend entre autres:

- Les modifications quelconques apportées aux modules de sécurité.
- Utilisation de modules de sécurité endommagés.
- Utilisation de modules de sécurité en dehors du cadre décrit dans ce mode d'emploi.
- Utilisation de modules de sécurité en dehors des spécifications décrites dans ce mode d'emploi.

Operator Due Diligence The operator must ensure that



- The Safety modules are to be used for their designated purpose only.
- The Safety modules are to be operated in error-free, fully functional condition only.
- Only sufficiently qualified and authorized personnel may operate the Safety modules.

The documentation is complete and in readable condition and available at the site of operation.

Obligation de diligence L'utilisateur doit s'assurer que



- les modules de sécurité ne sont utilisés que selon les spécifications.
- uniquement les modules de sécurité en parfait état de fonctionnement peuvent être utilisés.
- seulement le personnel qualifié et autorisé puisse manipuler les modules de sécurité.

la documentation dans son intégralité et dans un état lisible est mise à disposition à l'endroit où les modules de sécurité sont utilisés.

2 Safety Conformity

2.1 Functional Safety Standards

- EN / IEC 62061:2005/A2:2015
- EN ISO 13849-1:2015
- EN ISO 13849-2:2012

2.2 EU Conformity Declaration



CE Declaration of Conformity

The SDI 101 complies with the following European directives:

- 2006/42/EG “Directive of the European Parliament and of the Council of 17 May 2006 on Machinery and Change to the Directive 95/16/EC” (machine guideline)
- 2014/30/EU “Electromagnetic Compatibility” (EMC guideline)
- 2011/65/EU Restricted use of certain hazardous substances in electrical and electronic equipment (RoHS Guideline)

The EU Conformity Declarations are provided on the SIGMATEK website. Using the search function with the keyword “EU Declaration of Conformity”.

2.3 Safety-Relevant Parameters

2.3.1 Mounting Position Horizontal 0-55 °C Ambient Temperature

Input Module	Safety Parameters	Safety Level
SDI 101 including CPU module SCP 011/SCP 111	Single channel use: $PFH_D = 1.7E-09$ (1/h) $MTTF_D = 1843$ years DC = 97 % SFF = 99 %	PL d ⁽¹⁾ /Cat. 2 SIL 3
	Two channel use: $PFH_D = 1.5E-09$ (1/h) $MTTF_D = 2318$ years DC = 97 % SFF = 99 %	PL e/Cat. 4 SIL 3

2.3.2 Mounting Position Horizontal 0-60 °C Ambient Temperature

Input Module	Safety Parameters	Safety Level
SDI 101 including CPU module SCP 011/SCP 111	Single channel use: $PFH_D = 2.1E-09$ (1/h) $MTTF_D = 1552$ years DC = 97 % SFF = 99 %	PL d ⁽¹⁾ /Cat. 2 SIL 3
	Two channel use: $PFH_D = 1.9E-09$ (1/h) $MTTF_D = 1928$ years DC = 97 % SFF = 99 %	PL e/Cat. 4 SIL 3

Input Module	Safety Parameters	Safety Level
SDI 101 including CPU module SCP 211/SCP 111-S	Single channel use: $PFH_D = 2.3E-09$ (1/h) $MTTF_D = 1162$ years DC = 97 % SFF = 99 %	PL d ⁽¹⁾ /Cat. 2 SIL 3
	Two channel use: $PFH_D = 2.6E-09$ (1/h) $MTTF_D = 1171$ years DC = 98 % SFF = 99 %	PL e/Cat. 4 SIL 3

⁽¹⁾ DC is "high" according to table 5 and the corresponding note EN / ISO 13849. In combination with the high $MTTF_D$ value and the good PFH_D value, the performance level according to table K.1 is PLd.

Reason for SIL 3 with single-channel use:

Because the high SFF value is greater than 99 %, SIL 3 can be accepted with a hardware tolerance (HFT) of 0 according to EN 62061.

2.4 Compatibility

Compatibility



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



Test Signals for Cross-Circuit Detection

The module sends pulses in cyclic time intervals to detect a crossed circuit in the outputs. When selecting the actuators, keep in mind that these pulses do not activate the actuators or trigger any diagnostic messages. The pulse signals cannot be deactivated or configured.



Les tests pour la détection de courts-circuits

Le module envoie cycliquement des impulsions afin de détecter un court-circuit sur les sorties. En choisissant les actionneurs assurez-vous que ces impulsions ne provoquent ni une commutation d'un actionneur ni l'apparition d'un message de diagnostic. Les impulsions ne peuvent être ni désactivées ni configurées.



Cross-Circuit Detection

It is important to keep in mind that the cross-circuit detection only functions correctly when it is configured and wired correctly. It must also be considered that the cross-circuit detection only works between adjacent inputs. Cross circuits between adjacent inputs must be prevented via constructive measures (e.g. separate wiring, insulated cables).



Détection de courts-circuits

Il est important de noter que la détection de courts-circuits dans le contexte des fonctionnalités de sécurité ne fonctionne que si elle a été correctement câblée et configurée.

Il faut également tenir compte du fait que la détection de circuits croisés ne fonctionne qu'entre des entrées adjacentes. Les circuits croisés entre des entrées adjacentes doivent être empêchés par des mesures constructives (par exemple, câblage séparé, câbles isolés).

3 Technical Data

3.1 Input Specifications

The inputs are Type 1 in accordance with EN 61131-2

Number	10	
Input voltage	+24 V DC	
Input voltage range	minimum +18 V	maximum +30 V ⁽¹⁾
Signal level	low: $\leq +5$ V	high: $\geq +15$ V
Switching threshold	typically +11 V	
Input current	3 mA at +24 V	
Input delay	0.5 ms	

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

3.2 Signal Output Specifications for Cross-Circuit Detection

Number	5x signal A	5x signal B
Rated output voltage	+24 V DC	
Output voltage range	minimum +18 V	maximum +30 V ⁽²⁾
Output current	100 mA at +24 V	
Miscellaneous	short-circuit proof	

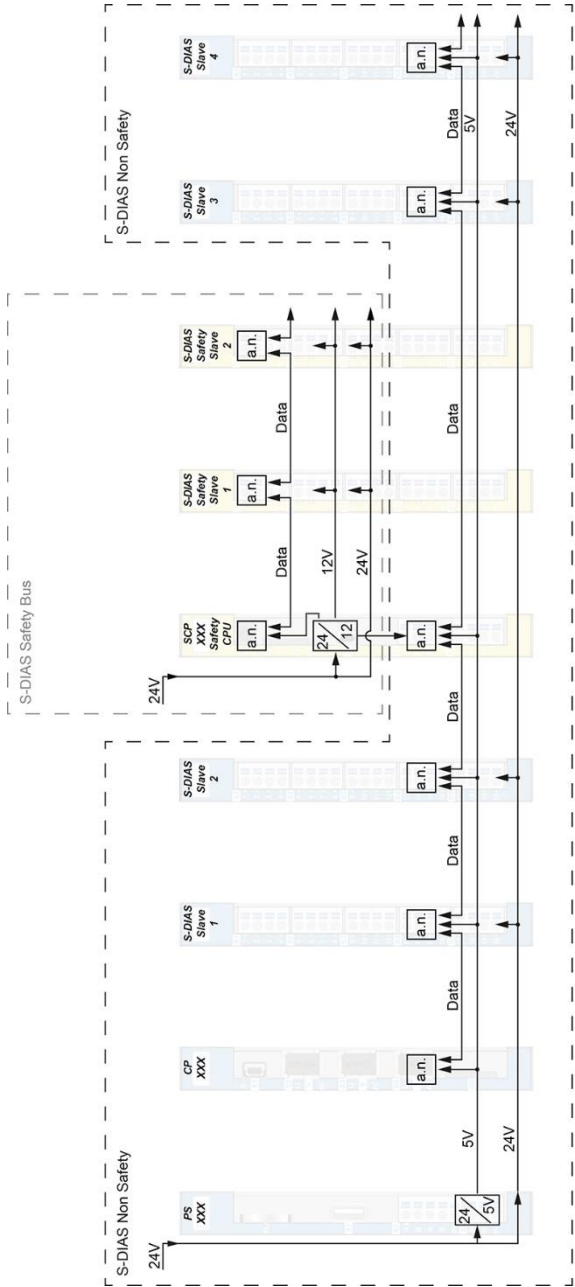
⁽²⁾ With increased ambient temperature >55 °C the maximum permissible supply voltage is reduced from 30 V to 28.8 V.

The clock outputs A and B are generated once internally and are wired in parallel to the connectors. A direct cross-circuit of Clock A and/or B of a connector therefore results in cross-circuit detection in all channels.

When using the digital inputs with the clock outputs for cross-fault detection for long cable lengths, make sure that the cable capacitance from the clock output to the digital input does not exceed a value of 100 nF and that the cable resistance does not exceed a value of 250 Ω , so that the cross-fault detection does not detect a wiring error with proper wiring.

3.3 Electrical Requirements

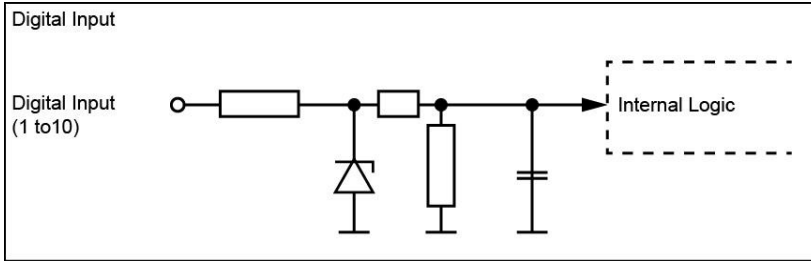
Voltage supply from Safety bus	+12 V	
Current consumption on the Safety bus (+12 V supply)	typically 12 mA	maximum 15 mA
Voltage supply from Safety bus	+24 V	
Current consumption on the Safety bus (+24 V supply)	typically 44 mA	maximum 50 mA



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

3.4 Input Circuit



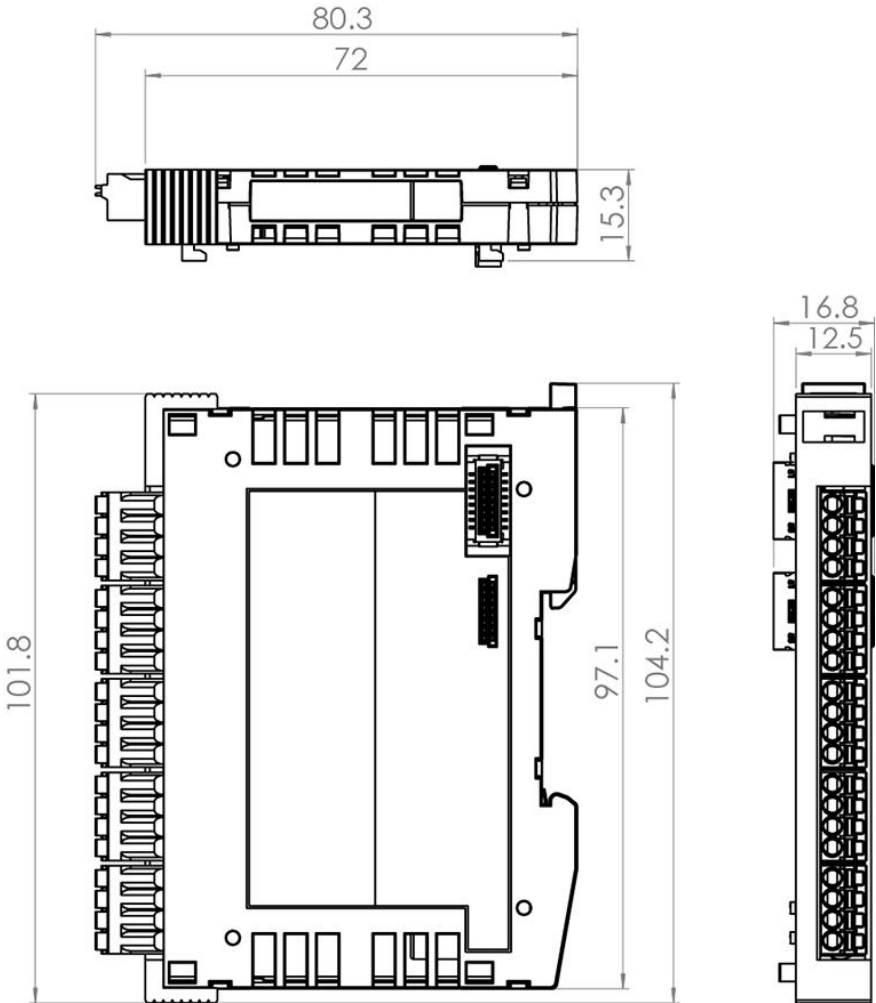
3.5 Miscellaneous

Article number	20-891-101 20-891-101-X (polymer coated printed circuit board)
Hardware version	1.00 / 2.00 / 3.00
Standard	UL 508 (E247993)
Approbations	cULus, CE, TÜV Austria EG type-tested

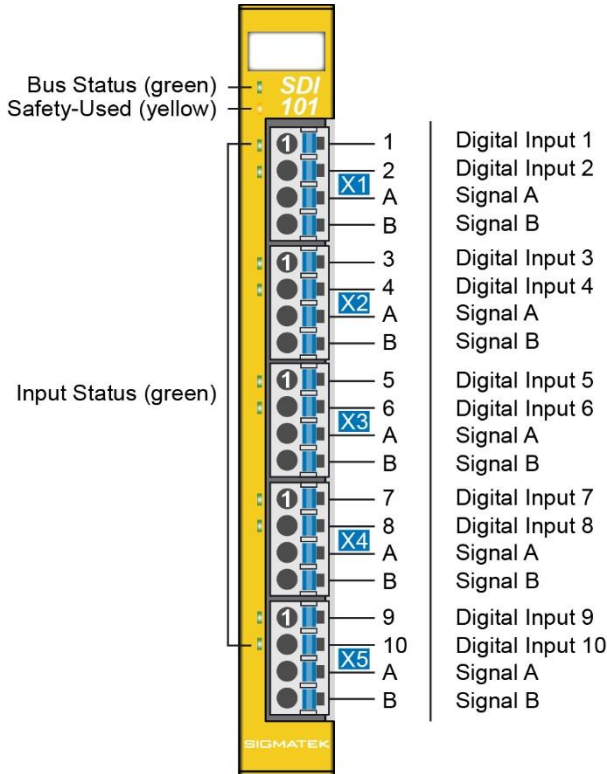
3.6 Environmental Conditions

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 with derating of the maximum environmental temperature by 0.5 °C per 100 m	
Operating conditions	Pollution degree 2	
EMC resistance	in accordance with 61000-6-7:2015 (Generic standards - Immunity requirements for equipment intended to perform functions in safety-related systems (functional safety) at industrial locations) in accordance with EN 61000-6-2:2007 (industrial area) (increased requirements in accordance with IEC 62061)	
EMC noise generation	in accordance with EN 61000-6-4:2007 (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
Protection type	EN 60529	IP20

4 Mechanical Dimensions



5 Connector Layout



5.1 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
Input Status	green	ON	input ON
		OFF	input OFF

5.2 Applicable Connectors

Connectors:

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

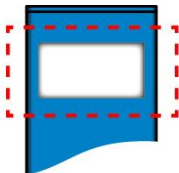
The spring terminals are suitable connecting ultrasonically compacted (ultrasonically welded) strands.

Connections:

Stripping length/Sleeve length:	10 mm
Plug-in direction:	parallel to conductor axis or to PCB
Conductor cross section, rigid:	0.2-1.5 mm ²
Conductor cross section, flexible:	0.2-1.5 mm ²
Conductor cross section, ultrasonically compacted:	0.2-1.5 mm ²
Conductor cross section AWG/kcmil:	24-16
Conductor cross section flexible, with ferrule without plastic sleeve:	0.25-1.5 mm ²
Conductor cross section flexible, with ferrule with plastic sleeve:	0.25-0.75 mm ² (ground for reducing d2 of the ferrule)



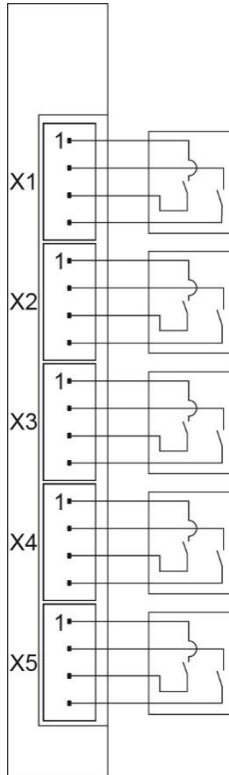
5.3 Label Field



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

6 Wiring

6.1 Wiring Example



6.2 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

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

Si possible la terre doit être connectée à l'armoire de commande!



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

Le câblage et l'installation ne doivent être effectués que sur un système hors tension !

IMPORTANT:

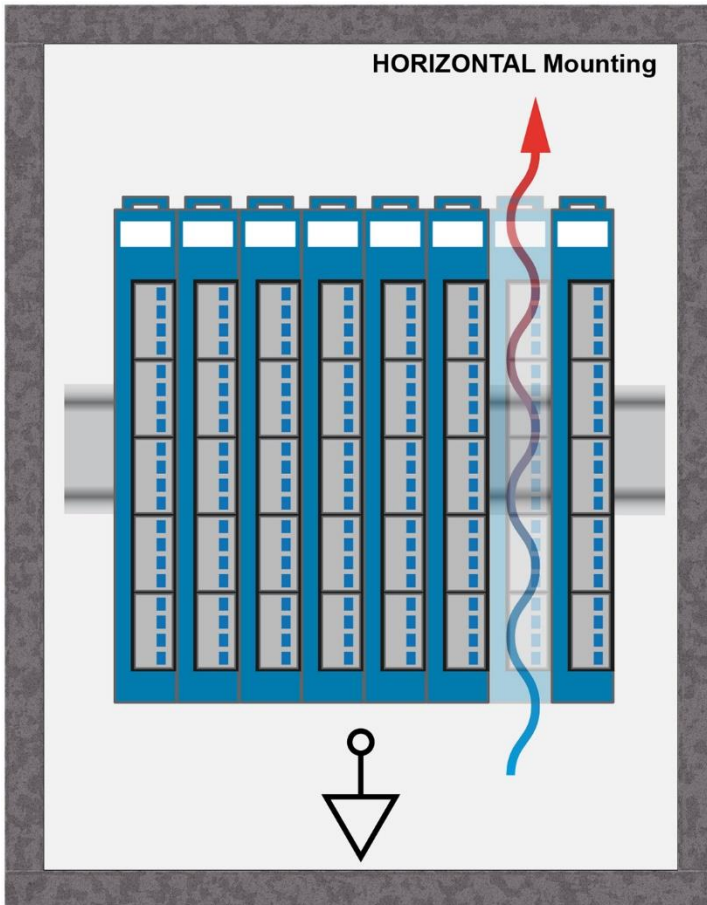
The S-DIAS module CANNOT be connected or disconnected while voltage is applied!

IMPORTANT:

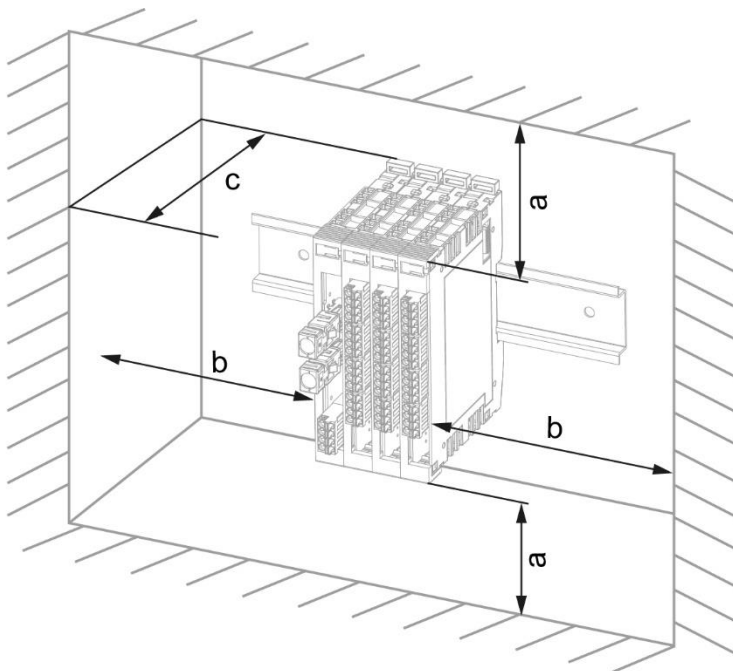
Le module S-Dias NE PEUT PAS être inséré ou retiré sous tension.

7 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 rail is made via the grounding clamp 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, so that proper function up to the maximum operating temperature is ensured.



Recommended minimum distances of the S-DIAS modules to 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)

8 Disposal

For the disposal of the product, the respective guidelines, possibly country-specific, must be observed and followed.

9 Hardware Class SDI101

Hardware Class SDI101 for the S-DIAS SDI101 Safety digital input module

```
SAFE_SDIAS:00, SDI101 (SDI1012)
[S] Class State (ClassState) <-[]->
[S] Device ID (DeviceID) <-[]->
[S] Hardware Version (HwVersion) <-[]->
[S] Serial Number (SerialNo) <-[]->
[S] Safety number (SafetyNumber) <-[]->
[S] RetryCounter uC1 (RetryCounteruC1) <-[]->
[S] RetryCounter uC2 (RetryCounteruC2) <-[]->
[S] QuitComError (QuitComError) <-[]->
[I] Safe Input 1 (Safe_Input1) <-[]->
[I] Safe Input 2 (Safe_Input2) <-[]->
[I] Safe Input 3 (Safe_Input3) <-[]->
[I] Safe Input 4 (Safe_Input4) <-[]->
[I] Safe Input 5 (Safe_Input5) <-[]->
[I] Safe Input 6 (Safe_Input6) <-[]->
[I] Safe Input 7 (Safe_Input7) <-[]->
[I] Safe Input 8 (Safe_Input8) <-[]->
[I] Safe Input 9 (Safe_Input9) <-[]->
[I] Safe Input 10 (Safe_Input10) <-[]->
[S] SafeIOError (SafeIOError) <-[]->
[ ] ALARM:00, Empty
```

This hardware class is used to control the SDI 101 hardware module with 10 digital outputs. More information on the hardware can be found in the module documentation.

9.1 Interfaces

9.1.1 Clients

SdiasSafetyIn	The client must be connected to a save S-DIAS port, an "SdiasSafetyOut_[x]" server.
Place	The physical location of the hardware module is entered in this client. Up to 16 modules, 0 to 15, can be assigned.
Required	This client is active by default, which means that the S-DIAS hardware module at this position is mandatory for the system and can under no circumstances be disconnected or return an error. Otherwise, the entire hardware deactivated. If the hardware module is missing or removed, an S-DIAS error is triggered. If his client is initialized with 0, the hardware module located in this position is not mandatory. This means that it doesn't have to be available or error-free. However, which components identified as "not required" should be selected with regard to the safety of the system.

9.1.2 Servers

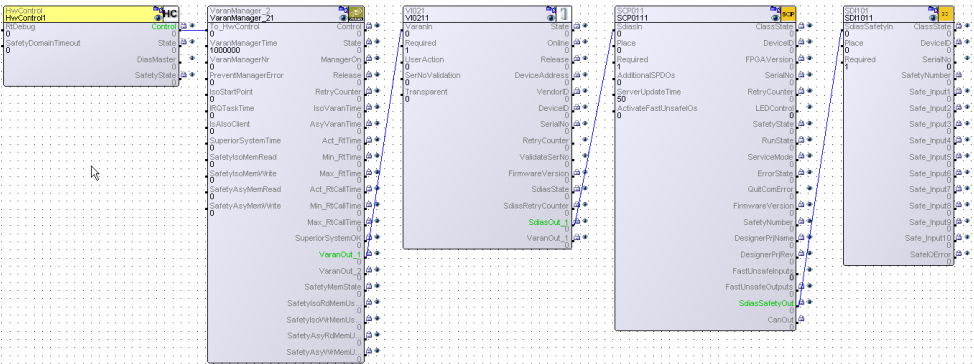
ClassState	This server shows the actual status of the hardware class.
DeviceID	The device ID of the hardware module is shown in this server.
Hardware Version	Hardware version of the module in the format 16#XXYY (e.g. 16#0120 = version 1.20) If 0 is shown here, the display of the hardware version is not supported by the used firmware.
SerialNo	The serial number of the hardware module is shown in this server.
SafetyNumber	Shows the unique Safety number of the module.
RetryCounteruC1	Shows the current number of retries by microprocessor 1. -1 The operating system does not yet support reading the retry counter.
RetryCounteruC2	Shows the current number of retries by microprocessor 2. -1 The operating system does not yet support reading the retry counter.

QuitComError	A communication error is canceled by writing to this server. If the safety.dlm is used, the dlm can also cancel other errors starting with version 6. The canceling of errors is forwarded to the Safety CPU and canceled with all other errors in the Safety CPU.																		
	<p>Caution! Canceling can activate safety outputs and thereby lead to unexpected responses from machine elements.</p> <p>If this function is provided through the visualization, a corresponding warning should be displayed. The server shows the status of the cancellation:</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr><td style="text-align: center;">2</td><td>Busy canceling error</td></tr> <tr><td style="text-align: center;">1</td><td>Busy canceling communication error</td></tr> <tr><td style="text-align: center;">0</td><td>Ready</td></tr> <tr><td style="text-align: center;">-1</td><td>Error creating Safety statement via dlm</td></tr> <tr><td style="text-align: center;">-2</td><td>Deactivation of user input request failed.</td></tr> <tr><td style="text-align: center;">-3</td><td>Selection of module via Safety number failed</td></tr> <tr><td style="text-align: center;">-4</td><td>Error during connection set-up with module via dlm (the SafetyDesigner cannot be online while canceling errors!)</td></tr> <tr><td style="text-align: center;">-5</td><td>Error canceling in the module failed</td></tr> <tr><td style="text-align: center;">-6</td><td>Remove the Safety statement via dlm failed</td></tr> </table>	2	Busy canceling error	1	Busy canceling communication error	0	Ready	-1	Error creating Safety statement via dlm	-2	Deactivation of user input request failed.	-3	Selection of module via Safety number failed	-4	Error during connection set-up with module via dlm (the SafetyDesigner cannot be online while canceling errors!)	-5	Error canceling in the module failed	-6	Remove the Safety statement via dlm failed
	2	Busy canceling error																	
1	Busy canceling communication error																		
0	Ready																		
-1	Error creating Safety statement via dlm																		
-2	Deactivation of user input request failed.																		
-3	Selection of module via Safety number failed																		
-4	Error during connection set-up with module via dlm (the SafetyDesigner cannot be online while canceling errors!)																		
-5	Error canceling in the module failed																		
-6	Remove the Safety statement via dlm failed																		
Safe_Input[1-10]	Status of safe digital inputs 1 to 10.																		
SafeIOError	Shows which safe inputs are in error mode with a bit code E.g.: Bit0 = input 1, Bit1 = input 2,...																		

9.1.3 Communication Interfaces

ALARM	Downlink	With this downlink the corresponding alarm class can be placed via the hardware editor.
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9.2 Example



Documentation Changes

Change date	Affected page(s)	Chapter	Note
11.02.2014	14 15	5 Connector Layout 5.2 Applicable Connectors	Changed image Connection capacity added French notes added
03.03.2014	16 17	5 Connector Layout 5.1 Status LEDs	Changed image Changed/expanded Status LEDs table
01.04.2014	20	7 Mounting	Text updated
23.05.2014	10	2.3 Compatibility	Added chapter
08.09.2014	14	3.5 Miscellaneous	Added Standard
30.01.2015	19	6.2 Note	Added note concerning connecting the S-DIAS module while voltage is applied
26.03.2015	17	5.2 Applicable Connectors	Added connections
07.05.2015			New writing: EN ISO 13849-1/-2
18.05.2015	14	3.6 Environmental Conditions	Expanded vibration resistance
04.08.2015			Info Cover Translation from German added
17.12.2015	10	2.2 Safety-Relevant Parameters	Safety level added
28.04.2016	21	7 Mounting	Graphics distances
13.03.2017	12	3.2 Signal Output Specifications for Cross-Circuit Detection	Note added
17.08.2017	14 17	3.6 Environmental Conditions 5.2 Applicable Connectors	Pollution Degree Sleeve length added Added info regarding ultrasonically welded strands
18.10.2017	18 22	5.3 Label Field 7 Mounting	Added chapter Graphic replaced
05.10.2018		3.2 Specifications for Cross-Circuit Detection Signal Outputs	Note for cable capacitance and for cable resistance added

02.04.2019	11	2.3 Safety-Relevant Parameters	Correction of the safety-relevant parameters
	16	3.6 Environmental Conditions	Corrections environmental conditions
	all		Corrections due to CE
20.09.2019	11	2.3 Safety-Relevant Parameters	Values adjusted
14.11.2019		8 Supported Cycle Times	Chapter added
02.12.2019		2.3 Safety-Relevant Parameters	Values updated
28.02.2020	26	8 Supported Cycle Times	Text adapted
28.05.2020	26	8 Supported Cycle Times	Chapter removed
20.07.2020	all		Up to 60 °C ambient temperature
02.09.2020	1		Text correction
	8	1.3 General Requirements	Text correction of Designated Use
	11	2.3.1 Mounting Position Horizontal 0-55 °C Ambient Temperature	Safety Parameters changed
		2.3.2 Mounting Position Horizontal 0-60 °C Ambient Temperature	Safety Parameters changed
	12	2.4 Compatibility	Text correction of Cross-Circuit Detection
	14	Technical Data	Text "horizontal mounting position and" removed from footnotes
18	3.6 Environmental Conditions	At Environmental temperature 0 ... +55 °C deleted	
08.09.2020	28	9 Hardware Class SDI101	Chapter added
04.11.2020	25	7 Mounting	Expansion functional ground connection
05.03.2021		3.6 Environmental Conditions	Standards added
26.04.2021	20	5 Connector Layout	Graphic changed
04.05.2021	17	3.4 Miscellaneous	Article number -X added
07.02.2022	12	2.3.2 Mounting Position Horizontal 0-60 °C Ambient Temperature	Parameters SCP 211/SCP 111-S added