

SE 052

S-DIAS Splitter Ethernet

Operating Manual

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Translation of the Original Instructions

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S-DIAS Splitter Ethernet

SE 052

with 5 Ethernet interfaces (Tyco Mini I/O)

The S-DIAS SE 052 Ethernet splitter connects multiple network segments via 5 ports. Incoming data packets to an Ethernet port are distributed to the other ports. The splitter module is installed in a double-wide S-DIAS housing. The current is supplied from the top over a 4-pin Phoenix connector.



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1 Introduction

1.1 Target Group/Purpose of this Manual

This manual contains all information required for operating the SE 052.

This 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 Contents of Delivery

1x SE 052

1x opposing connector

This document can be downloaded from our website.
Additional documents may be included with delivery.

2 Basic Safety Guidelines

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.

INFORMATION**Information**

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

CAUTION

Danger for ESD-sensitive components.

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

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 data sheets, operating instructions and this system handbook before handling a product.

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

The general and special safety instructions described in the following sections, as well as technical regulations, must therefore be observed.

2.3 General Safety Guidelines

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 Guidelines, the operating instructions are a component of a product.

This manual must therefore be accessible in the vicinity of the machine since it contains important instructions.

This technical documentation should be included in the sale, rental or transfer of the product, or its online availability indicated.

Maintain this manual in readable condition and keep it accessible for reference.

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 essentiel.

3 Residual Risks

3.1 Guidelines

The panel was constructed in compliance with European Union guidelines.

3.1.1 EU Declaration of Conformity



EU Declaration of Conformity

The SE 052 conforms to the following European guidelines:

- **2014/35/EU** Low-voltage 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. See Products/Downloads or use the search function and the keyword “EU Declaration of Conformity”.

4 Type Plate

	HW: X.XX
	SW: XX.XX.XXX
	Safety Version: SXX.XX.XX
Serial No.	SIGMATEK GMBH & CO KG Sigmatekstrasse 1 A-5112 LAMPRECHTSHAUSEN
Article Number	Product Name Short Name

Exemplary nameplate (symbol image)

	HW: 1.00
	SW: 01.00.000
	Safety Version: S01.00.00
12345678	SIGMATEK GMBH & CO KG Sigmatekstrasse 1 A-5112 LAMPRECHTSHAUSEN
12-246-133-3	Handbediengerät Wireless HGW 1033-3

HW: Hardware version

SW: Software version

5 Technical Data

5.1 Performance Data

Interfaces	5x Ethernet 10/100 Mbit (Tyco Mini I/O)
Network coupling type	Layer 2 Switch
Supported functionalities	Auto MDI/MDIX, Autonegotiation with 100Base-TX, full-duplex, 100Base-TX, half-duplex, 10Base-T, full-duplex, 10Base-T, half-duplex

5.2 Standard Configuration

Ethernet 1	X1
Ethernet 2	X2
Ethernet 3	X3
Ethernet 4	X4
Ethernet 5	X5

INFORMATION



Problems can arise if a control is connected to an IP network, which contains modules that do not contain a SIGMATEK operating system. With such devices, Ethernet packets could be sent to the control with such a high frequency (i.e. broadcasts), that the high interrupt load could cause a real-time runtime error or runtime error. By configuring the packet filter (Firewall or Router) accordingly however, it is possible to connect a network with SIGMATEK hardware to a third-party network without triggering the error mentioned above.

5.3 Electrical Requirements

Supply voltage	18-30 V DC UL: Class 2 or LVLC ⁽¹⁾	
Supply current over X6	typically: 45 mA at 18 V typically: 35 mA at 24 V typically: 30 mA at 30 V	maximum: 50 mA at 18 V maximum: 40 mA at 24 V maximum: 35 mA at 30 V

⁽¹⁾ Limited Voltage/Limited Current

INFORMATION



⁽¹⁾The device must be connected to a secondary galvanically separated supply with a rated voltage of 24 V DC. In compliance with UL 249, max 4 A, the fuse must be connected in the area between the supply source and the end device.

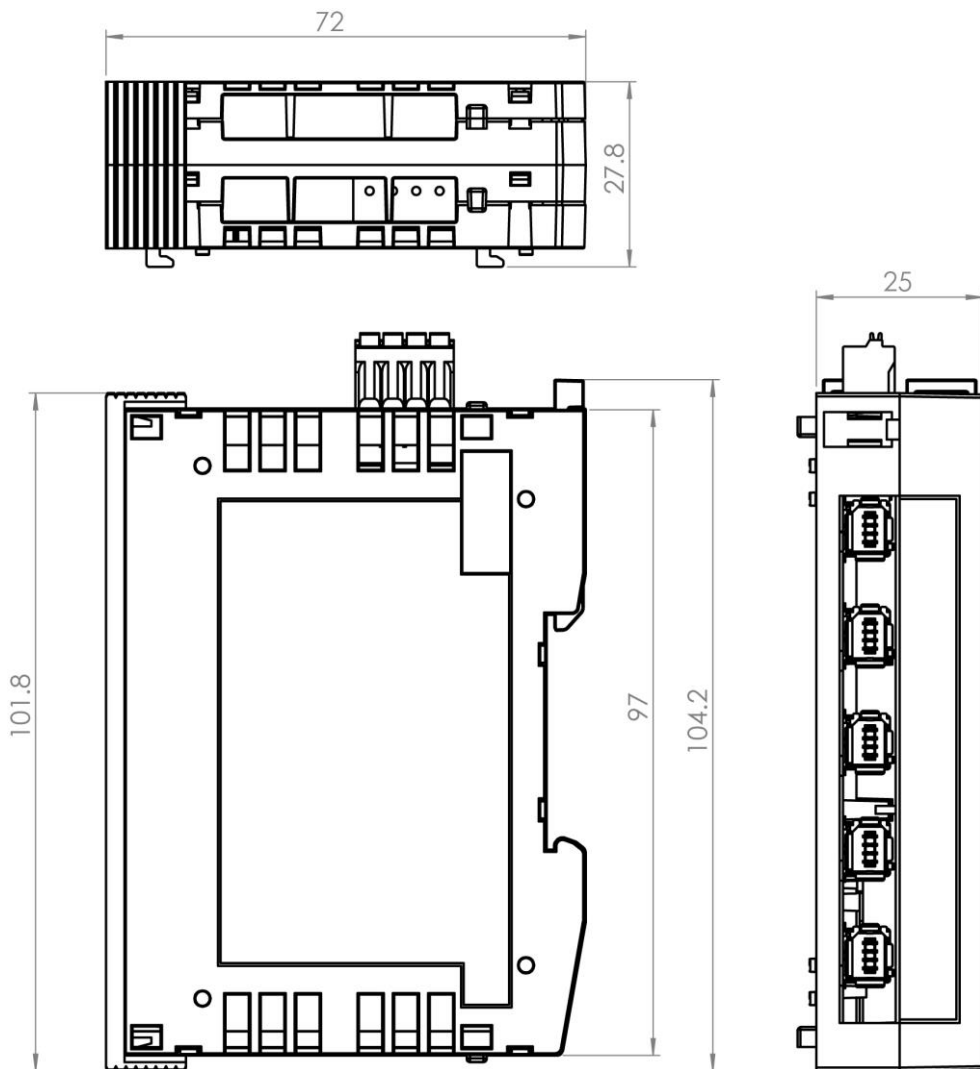
5.4 Miscellaneous

Article number	20-023-052
Standard	UL 508 (E247993)
Approvals	CE

5.5 Environmental Conditions

Storage temperature	-20 ... +85 °C	
Ambient temperature	0 ... +55 °C	
Humidity	0-95 %, non-condensing	
Installation altitude above sea level	0-2000 m without derating > 2000 m with derating of the maximum environment temperature by 0.5 °C per 100 m	
Operating conditions	pollution degree 2	
EMC resistance	in accordance with EN 61000-6-2 (industrial area)	
EMC noise generation	in accordance with 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
Protection type	EN 60529	IP20

6 Mechanical Dimensions



7 ESD Protection

CAUTION

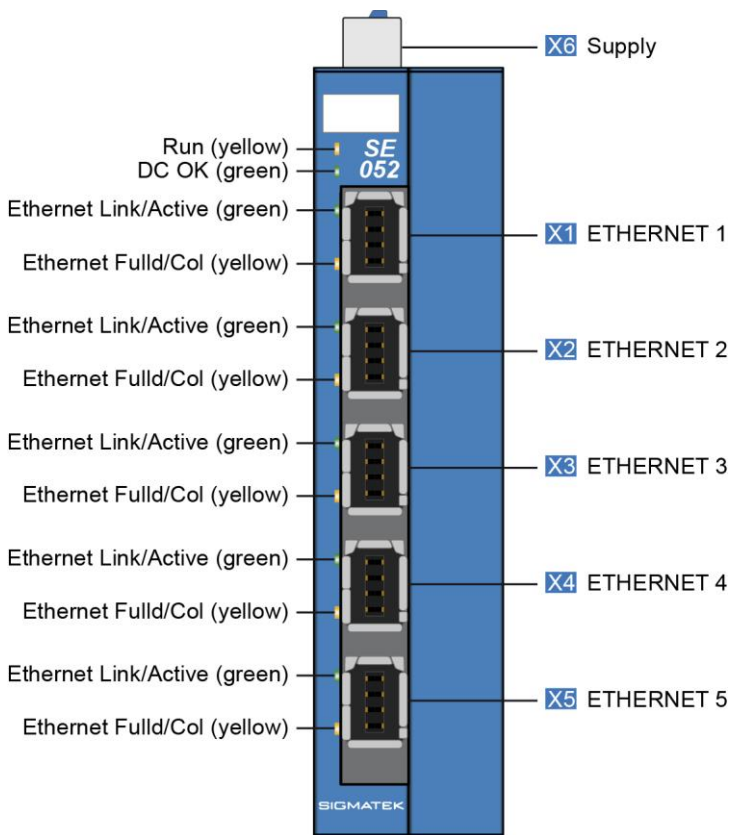


Before any device is connected to or disconnected from the SE 052, the potential with ground should be equalized (by touching the control cabinet or ground terminal). Electrostatic loads (through clothing and shoes) can thereby be dissipated.

Avant de connecter ou de déconnecter un appareil au SE 052, le potentiel avec masse doit être égalisé (en touchant l'armoire électrique ou la borne de terre). Les charges électrostatiques (à travers les vêtements et les chaussures) peuvent ainsi être dissipées.

8 Connector Layout

8.1 Front View

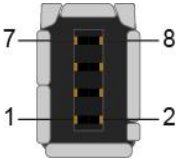


8.1.1 Status LEDs

Run	yellow	LIGHTS	switch-IC running
DC OK	green	LIGHTS	module is supplied with a voltage > 18 V
Ethernet Link/Active	green	LIGHTS	connection between the two PHYs made
		BLINKS	data is exchanged over the Ethernet bus
Ethernet FullD/Col	yellow	LIGHTS	full duplex mode (LED does not light – half duplex)

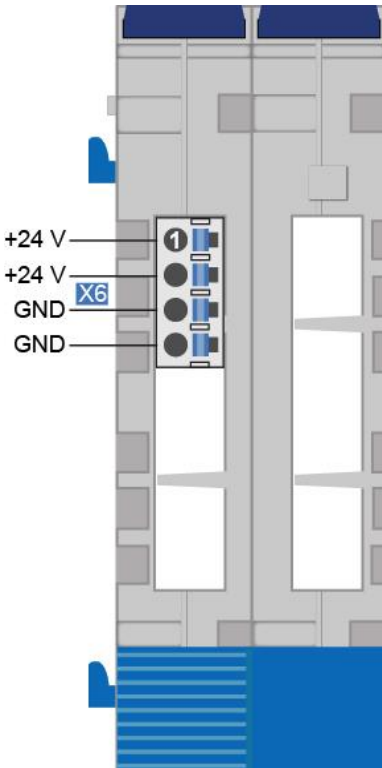
8.1.2 Connectors

1.1.1.1 X1-X5: Ethernet (Industrial Mini I/O)



Pin	Function
1	Tx+/Rx+
2	Tx-/Rx-
3	Rx+/Tx+
4-5	n.c.
6	Rx-/Tx-
7-8	n.c.

8.2 Top View



INFORMATION



The connections of the +24 V supply (X6: Pin 1 and Pin 2) or the GND supply (X6: Pin 3 and Pin 4) are internally bridged. To supply the module, only one +24 V pin (pin 1 or pin 2) and one GND pin (pin 3 or pin 4) must be connected. The bridged connections may be used to loop the +24 V supply and the GND supply. However, it must be ensured that the total current of 4 A per connection is not exceeded by the looping on!

8.3 Applicable Connectors

Connectors:

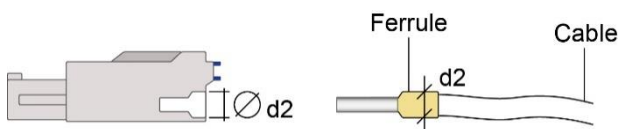
X1-X5: Industrial Mini I/O Plug Type 1 Lock Extend Version (not included in delivery)

X6: Connectors with spring terminals (included in delivery)

The spring terminals are suitable for the connection of ultrasonically compressed (ultrasonically welded) strands.

Connections:

Stripping length/sleeve length:	10 mm
Mating direction:	parallel to the conductor axis or circuit board
Conductor cross section rigid:	0.2-1.5 mm ²
Conductor cross section flexible:	0.2-1.5 mm ²
Conductor cross-section strands 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 (reason for reduction d2 of the ferrule)



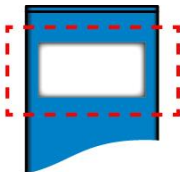
$d2 = \text{max. } 2.8 \text{ mm}$

8.4 Applicable Connector Cables

Ethernet:

Cable type	Length	Article number
RJ45 on industrial Mini I/O Type 1, drag chain capable	0.5 m	16-911-005
	1 m	16-911-010
	1.5 m	16-911-015
	2 m	16-911-020
	3 m	16-911-030
	5 m	16-911-050
	10 m	16-911-100
	20 m	16-911-200
	50 m	16-911-500
Industrial Mini I/O Type 1 on industrial Mini I/O Type 1, drag chain capable	0.5 m	16-912-005
	1 m	16-912-010
	1.5 m	16-912-015
	2 m	16-912-020
	3 m	16-912-030
	5 m	16-912-050
	10 m	16-912-100
	20 m	16-912-200

8.5 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

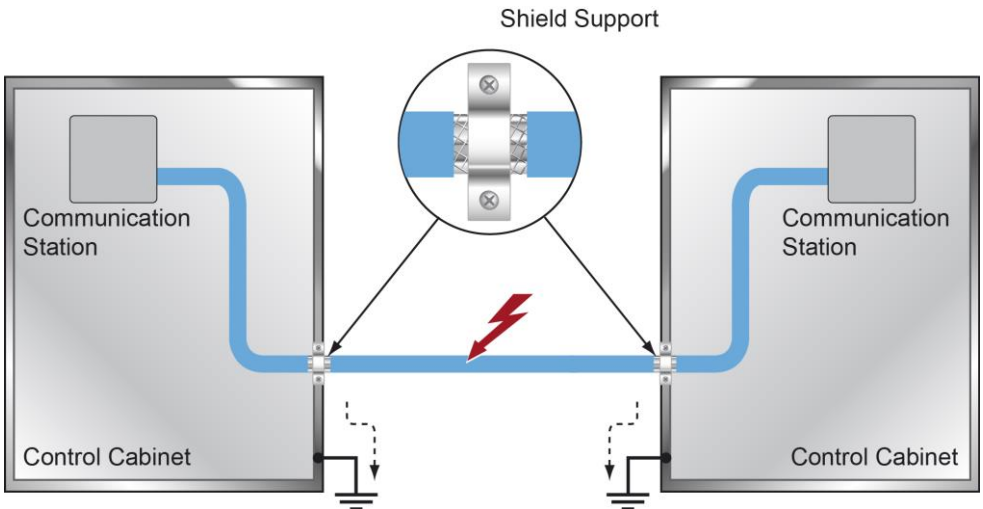
9 Shielding

The Ethernet wiring must be shielded.

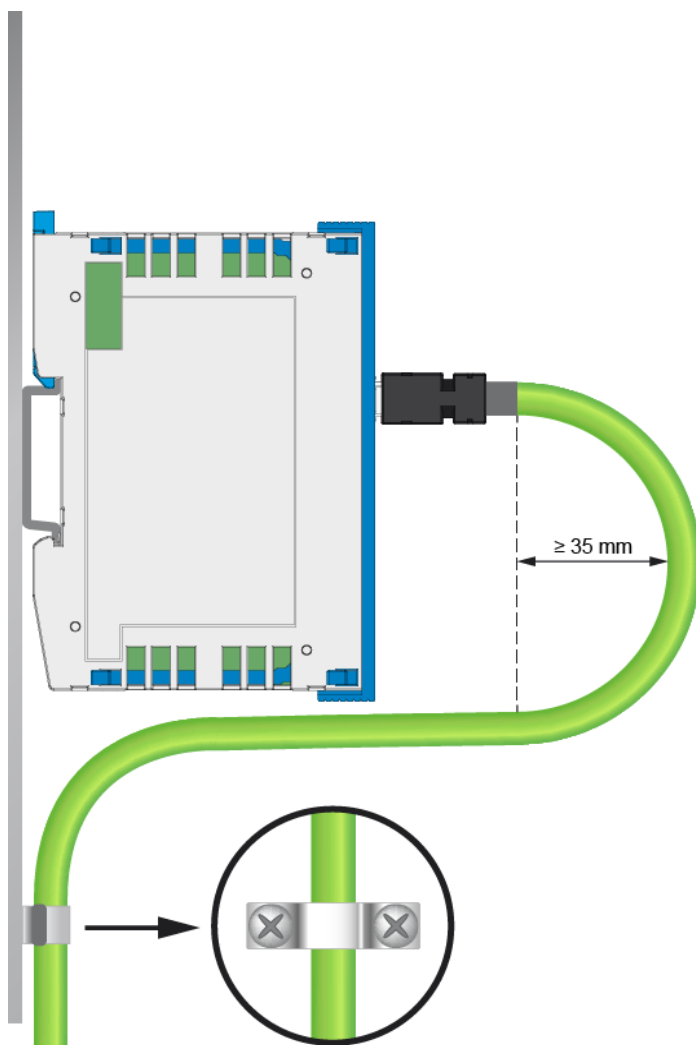
The low-ohm shielding is either connected at the entry to the control cabinet or directly before the SE 052 over a large surface (cable grommets, grounding clamps)!

Noise signals can therefore be prohibited from reaching the electronics and affecting the function.

To avoid compensating currents from the PE, which flow over the shielding the conductors, it is recommended that the system components have low Ohm and low impedance connections to one another.



10 Strain Relief



INFORMATION



The cable must be mounted close to the module (e.g. using a clamp)!
No mechanical stress can be applied to the connection!

11 Assembly/Installation

11.1 Check Contents of Delivery

Ensure that the contents of the delivery are complete and intact. See chapter 1.2 Contents of Delivery.

INFORMATION

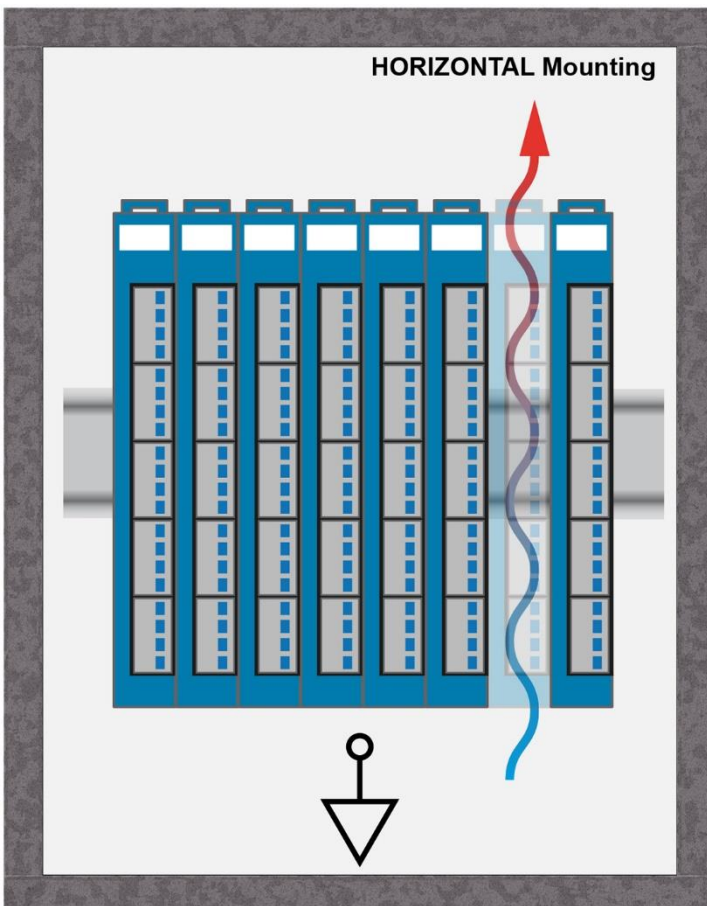


On receipt and before initial use, check the device for damage. If the device is damaged, contact our customer service and do not install the device in your system.

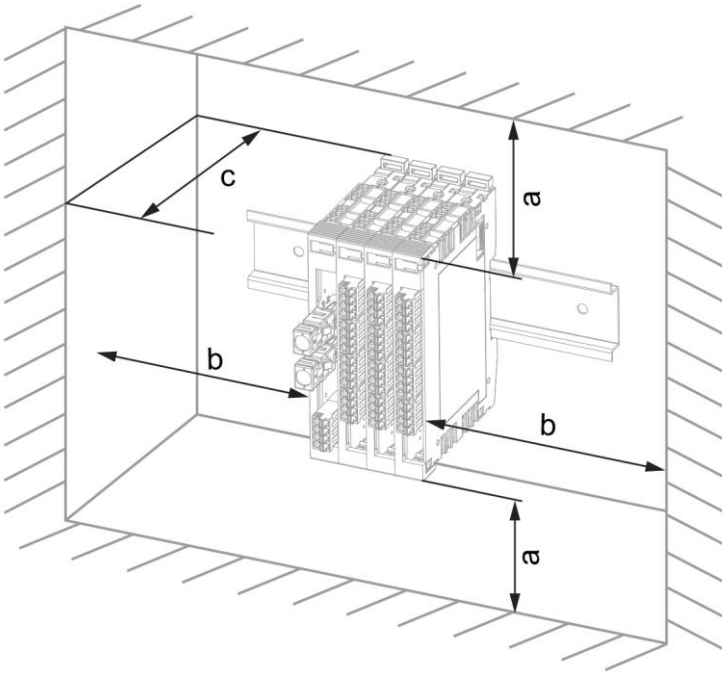
Damaged components can disrupt or damage the system.

11.2 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 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)

12 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.

13 Storage

INFORMATION



When not in use, store the operating panel according to the storage conditions. See chapter 12.

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

14 Maintenance

INFORMATION



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

14.1 Service

This product was constructed for low-maintenance operation.

14.2 Repair

INFORMATION



When sent for repair, the panel 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.

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 12 Transport/Storage.

15 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.



Documentation Changes

Change date	Affected page(s)	Chapter	Note
04.06.2020	9	4.3 Electrical Requirements	Table changed for Supply current over X6
02.07.2020	10	4.4 Miscellaneous	UL in preparation changed to UL 508 (E247993)
01.09.2020	15	7.2 Top View	Text block inserted on top
04.11.2020	21	11 Mounting	Expansion functional ground connection
26.11.2020	13	7.1.1 Status LEDs	Color LEDs
05.10.2021	9	4.1 Performance Data	Additional informations
26.07.2023		Document	General chapters added, design