

SE 051

S-DIAS Splitter Ethernet

Instruction Manual

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Translation of the Original Instructions

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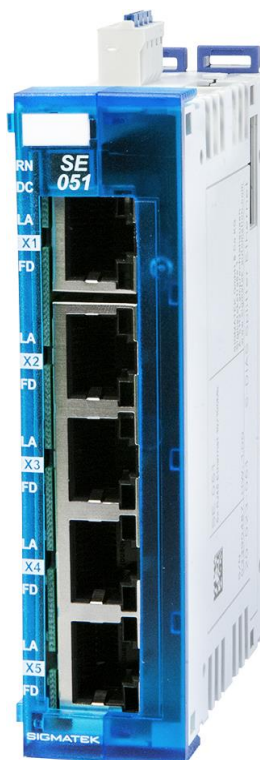
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S-DIAS Splitter Ethernet

SE 051

with 5 Ethernet interfaces

The S-DIAS SE 051 Ethernet splitter connects several network segments via 5 ports. Incoming data packets at one Ethernet port are distributed over the other ports. The splitter module is located in a double-wide S-DIAS housing. Power is applied from above through a 4-pin Phoenix plug.



Contents

1	Introduction	4
1.1	Target Group/Purpose of this Operating Manual	4
1.2	Important Reference Documentation	4
1.3	Contents of Delivery	4
2	Basic Safety Directives	5
2.1	Symbols Used	5
2.2	Disclaimer	7
2.3	General Safety Directives	8
2.4	Software/Training	9
3	Standards and Directives	10
3.1	Directives	10
3.1.1	EU Conformity Declaration	10
4	Type Plate	11
5	Technical Data	12
5.1	Performance Data	12
5.2	Standard Configuration	12
5.3	Electrical Requirements	13
5.4	Miscellaneous	15
5.5	Environmental Conditions	15
6	Mechanical Dimensions	16

7	Connector Layout.....	17
7.1	Front View.....	17
7.1.1	Status LEDs.....	17
7.1.2	Connectors.....	18
7.2	Module View from Top.....	18
7.3	Applicable Connectors.....	19
7.4	Label Field	20
8	Assembly/Installation	21
8.1	Check Contents of Delivery	21
8.2	Mounting.....	22
9	Transport/Storage	24
10	Storage.....	24
11	Maintenance.....	25
11.1	Service	25
11.2	Repair.....	25
12	Disposal	25

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

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

1.3 Contents of Delivery

1x SE 051

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.

INFORMATION**Information**

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

2.4 Software/Training

The application is created with the software LASAL CLASS 2 and LASAL SCREEN Editor.

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 Standards and Directives

3.1 Directives

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

3.1.1 EU Conformity Declaration



EU Declaration of Conformity

The product SE 051 conforms to the following European directives:

- **2014/35/EU** Low-voltage 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. 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 Mbits (RJ45)
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
Switch architecture	Store and Forward
MAC addresses	1000
Frame buffer size	64-kByte
Flow control	yes
Quality of service	yes

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 run on 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

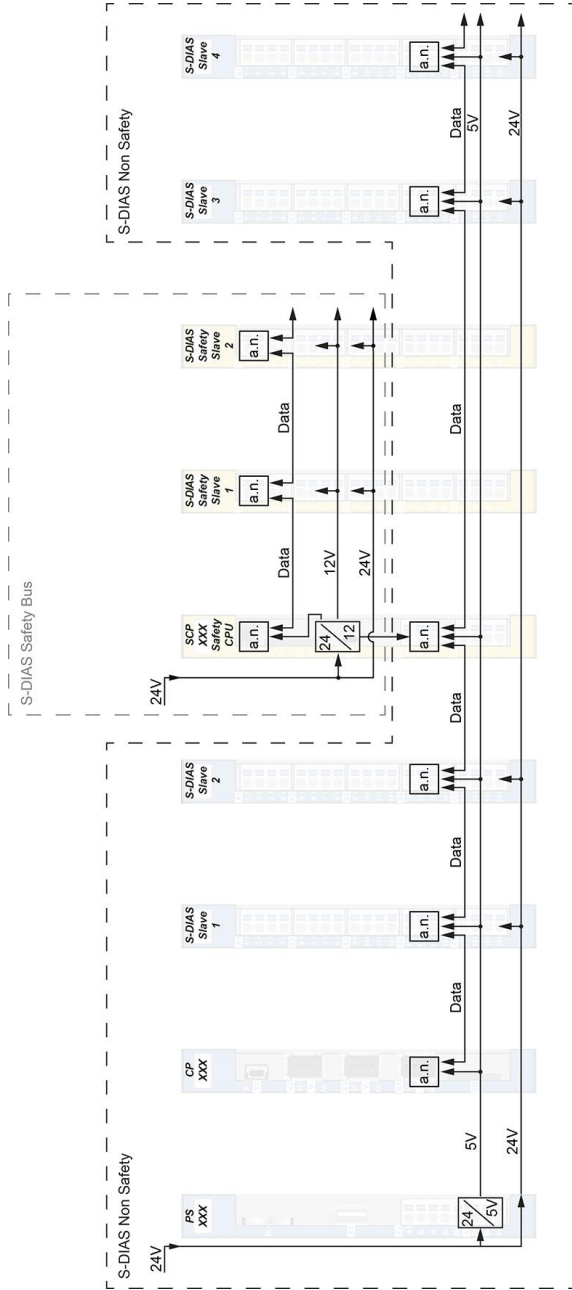
Supply voltage	18-30 V DC UL: Class 2 or LVLC ⁽¹⁾	
Supply voltage via X6	typically: 45 mA at 18 V	maximum: 50 mA at 18 V
	typically: 35 mA at 24 V	maximum: 40 mA at 24 V
	typically: 30 mA at 30 V	maximum: 35 mA at 30 V

⁽¹⁾ Limited Voltage/Limited Current

INFORMATION



⁽¹⁾ Device shall be supplied by a secondary isolated source rated 24 V DC. Fuse in accordance with UL 249, rated max. 4 A shall be provided between the supply and device terminal.



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

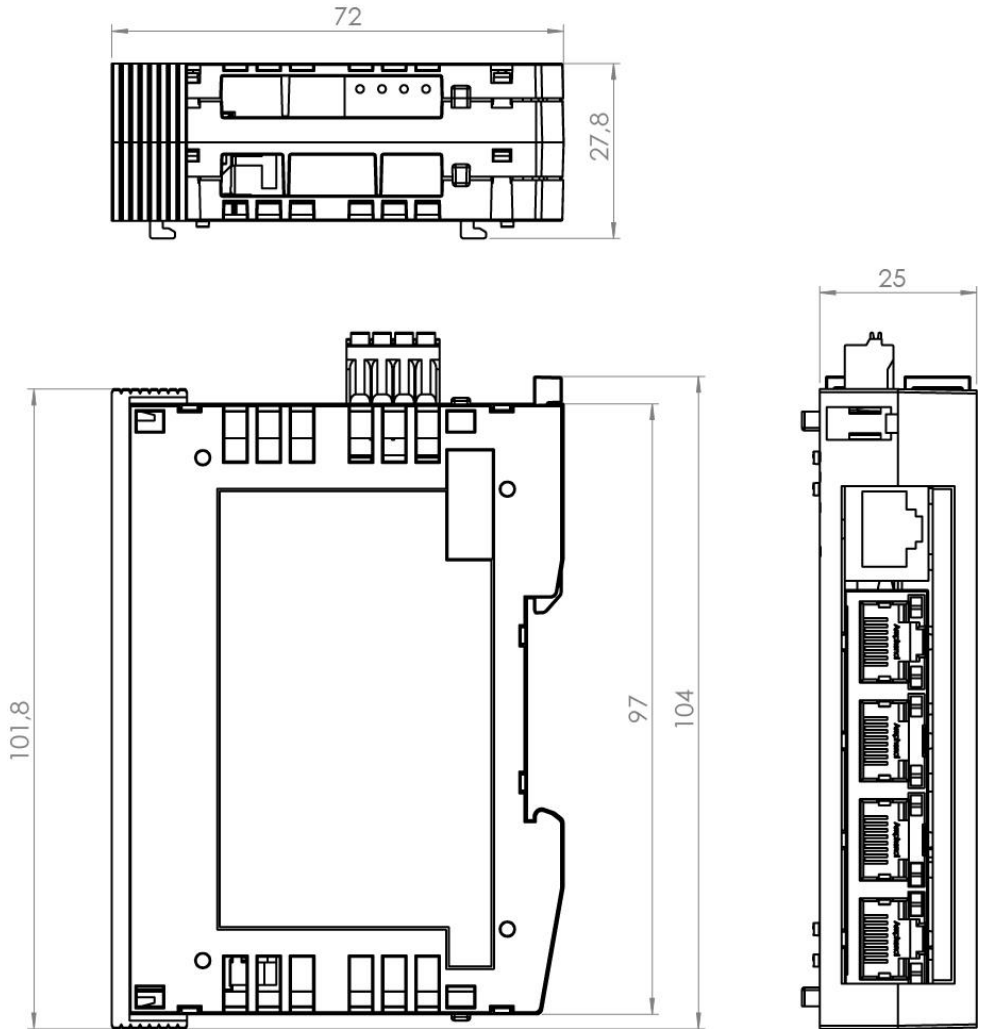
5.4 Miscellaneous

Article number	20-023-051
Standard	UL 508 (E247993)
Approbations	UL, cUL, CE, UKCA

5.5 Environmental Conditions

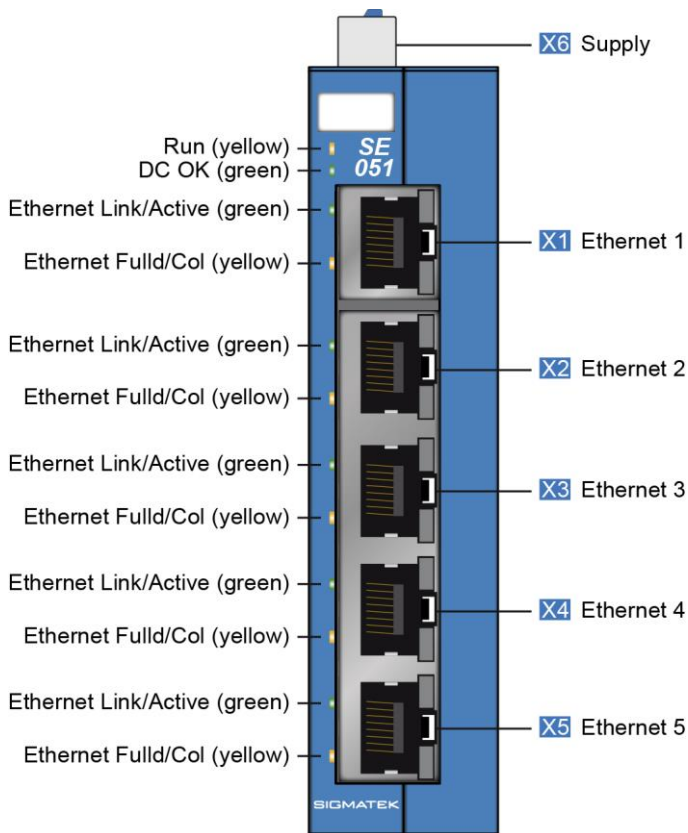
Storage temperature	-20 ... +85 °C	
Environmental temperature	0 ... +55 °C	
Humidity	0-95 %, non-condensing	
Installation altitude above sea level	0-2000 m without derating > 2000 m up to a maximum of 5000 m with derating of the maximum environmental temperature by 0.5 °C per 100 m	
Operating conditions	pollution degree 2	
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 Connector Layout

7.1 Front View



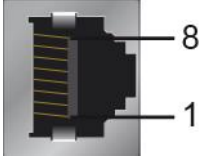
7.1.1 Status LEDs

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 Full/Duplex	yellow	LIGHTS	full duplex mode (LED off – half duplex)

7.1.2 Connectors

X1-X5:
8-pin RJ45

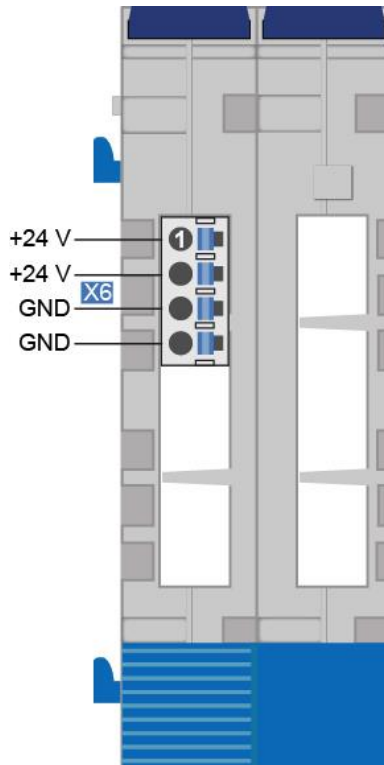
Ethernet



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

n.c. = do not use

7.2 Module View from Top



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!

7.3 Applicable Connectors

Connectors:

X6: Connectors with spring terminals (included in delivery)

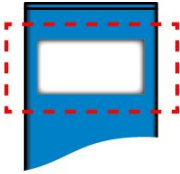
The spring terminals are suitable connecting ultrasonically compacted (ultrasonically welded) strands.

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)



7.4 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

8 Assembly/Installation

8.1 Check Contents of Delivery

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

INFORMATION

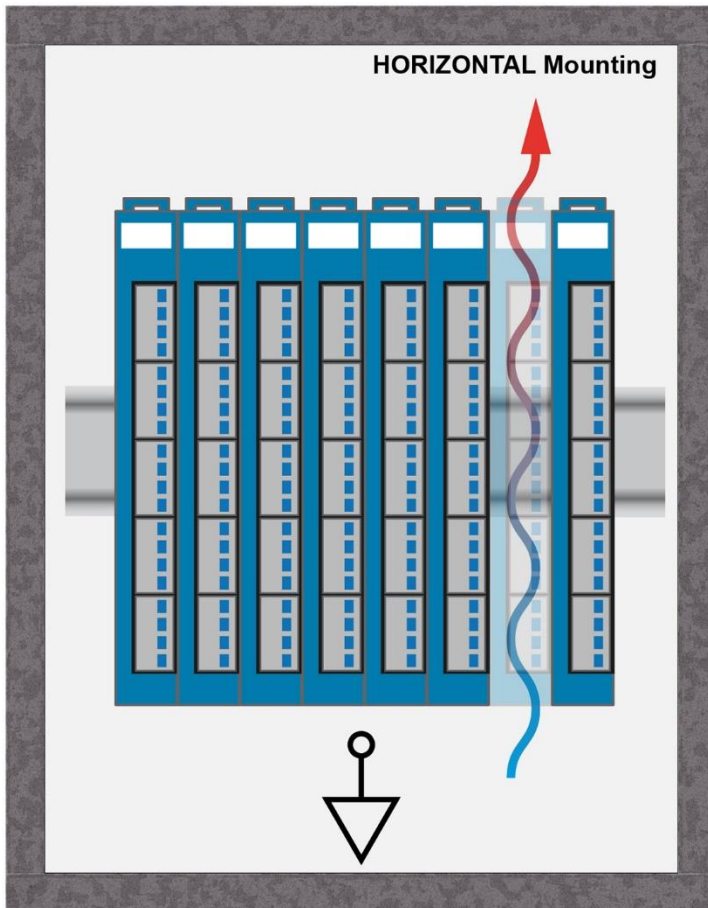


On receipt and before initial use, check the device for damage. If the device is damaged, contact our customer service and do not install the device in your system.

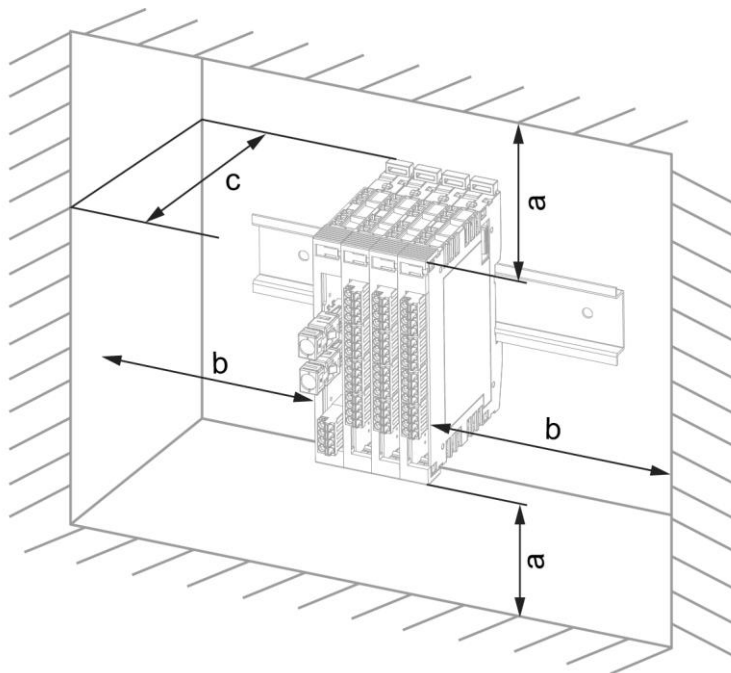
Damaged components can disrupt or damage the system.

8.2 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)

9 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.

10 Storage

INFORMATION



When not in use, store the operating panel according to the storage conditions. See chapter 9.

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

11 Maintenance

INFORMATION



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

11.1 Service

This product was constructed for low-maintenance operation.

11.2 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 9 Transport/Storage.

12 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
26.03.2015	8	3.3 Applicable Connectors	Added connections
21.01.2016	4	1.3 Electrical Requirements 1.4 Miscellaneous	Standard changed
26.01.2016	4	1.3 Electrical Requirements	Graphics added
28.04.2016	12	4 Mounting	Graphics distances
17.08.2017	6 10	1.5 Environmental Conditions 3.3 Applicable Connectors	Added operating conditions Added sleeve length Added info regarding ultrasonically welded strands
18.10.2017	11 13	3.4 Label Field 4 Mounting	Added chapter Graphic replaced
04.06.2020	4	1.3 Electrical Requirements	Table changed for Supply voltage via X6
01.09.2020	10	3.2 Module View from Top	Text block inserted on top
04.11.2020	12	4 Mounting	Expansion functional ground connection
26.11.2020	8	3.1.1 Status LEDs	Color LEDs
05.10.2021	3	1.1 Performance Data	Additional information
06.12.2022	6	1.4 Miscellaneous	UKCA conformity
13.03.2023	3	1.1 Performance Data	Additional information
26.07.2023		Document	General chapters added, design