

SSI 021

S-DIAS Safety SSI Absolute Value Encoder

Instruction Manual

Publisher: SIGMATEK GmbH & Co KG
A-5112 Lamprechtshausen
Tel.: +43/6274/4321
Fax: +43/6274/4321-18
Email: office@sigmatek.at
WWW.SIGMATEK-AUTOMATION.COM

Copyright © 2014
SIGMATEK GmbH & Co KG

Translation of the Original Instruction

All rights reserved. No part of this work may be reproduced, edited using an electronic system, duplicated or distributed in any form (print, photocopy, microfilm or in any other process) without the express permission.

We reserve the right to make changes in the content without notice. The SIGMATEK GmbH & Co KG is not responsible for technical or printing errors in the handbook and assumes no responsibility for damages that occur through use of this handbook.

S-DIAS Safety SSI Absolute Value Encoder

SSI 021

The S-DIAS Safety SSI absolute value encoder module SSI 021 provides the values of two absolute value encoders to the Safety CPU as well as the non-Safe CPU (standard PLC). Since hardware version 2.0 rotary encoders are supported.

The 2-channel Safety function is implemented by processing the position values in the so-called Safety core (two micro controllers with cross communication).

The connection to the Safety CPU (SCP 011 / SCP 111) is made via the internal Safety bus, which is completely independent of the S-DIAS bus.

The components supply the Safety CPU values, such as position, speed and absolute value limit violation. For a detailed listing of the function and settable parameters, see the module description in the SafetyDesigner.

The SSI 021 parameters are set via the program in the default PLC (bit length of the SSI signal, SSI frequency, ...) and therewith, participants in the S-DIAS bus of the standard PLC as well as on the internal Safety bus of the Safety CPU. Stand-alone mode with a Safety CPU (without standard PLC) is therefore not possible.

The safety-related component of the module meets the requirements for SIL3 in accordance with EN IEC 62061 and PL e, cat. 4 in accordance with EN ISO 13849 (with two-channel use).



Contents

- 1 Introduction 5**
 - 1.1 Target Group/Purpose of this Operating Manual 5**
 - 1.2 Important Reference Documentation 5**
 - 1.3 Contents of Delivery 5**
- 2 Basic Safety Guidelines 6**
 - 2.1 Symbols Used 6**
 - 2.2 Disclaimer 8**
 - 2.3 General Safety Directives 9**
 - 2.4 Designated Use 11**
 - 2.5 Software/Training 12**
- 3 IT Security13**
- 4 Standards and Directives14**
 - 4.1 Residual Risks 14**
 - 4.2 Safety of the Machine or Equipment 14**
 - 4.3 Directives 14**
 - 4.3.1 Functional Safety Standards 15
 - 4.3.2 EU Conformity Declaration 15
 - 4.4 Safety-Relevant Parameters 16**
 - 4.4.1 Mounting Position Horizontal 0-55 °C Ambient Temperature 16
 - 4.4.2 Mounting Position Horizontal 0-60 °C Ambient Temperature 16
 - 4.5 Compatibility 17**

5	Type Plate	18
6	Technical Data.....	19
6.1	SSI Encoder Specifications	19
6.2	Electrical Requirements.....	20
6.3	Miscellaneous	22
6.4	Environmental Conditions	22
7	Mechanical Dimensions.....	23
8	Connector Layout.....	24
8.1	Status LEDs.....	25
8.2	Applicable Connectors.....	25
8.3	Label Field	26
9	Wiring	27
9.1	Wiring Example	27
9.2	Note	28
10	RS422 Interface	28
11	Installing the Encoder	Fehler! Textmarke nicht definiert.
12	Important Notes for Two-channel Application.....	29
13	Assembly/Installation	31
13.1	Check Contents of Delivery	31
13.2	Mounting	32

14 Transport/Storage.....34

15 Storage34

16 Maintenance35

 16.1 Service 35

 16.2 Repair..... 35

17 Disposal.....35

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.sigmathek-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 SSI 021

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.

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 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 Designated Use

The Safety functions implemented in the product are designed for use with safety applications in a SIGMATEK control and meet the required conditions for safe operation according to SIL 3, HFT 1 n compliance with EN IEC 62061 and according to PL e, Kat. 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 doit être utilisé 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 operator to protect the safe connection between S-DIAS modules against unauthorized access. The following measures, for example, are suitable for this:

- Firewalls
- Password-protected user accounts
- Data encryption
- and much more

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
- 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
- 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



EU Declaration of Conformity

The product SSI 021 conforms to the following European directives:

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

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

4.4 Safety-Relevant Parameters

4.4.1 Mounting Position Horizontal 0-55 °C Ambient Temperature

Input Module	Safety Parameters	Safety Levels
SSI 021 including CPU module SCP 011/SCP 111	1-channel application: PFH = 3.00E-8 (1/h) MTTF _D = 566 years DC = 85 % SFF = 95 %	1-channel application: PL d ¹⁾ / Cat. 2 SIL 2
	2-channel application: PFH = 3.30E-09 (1/h) MTTF _D = 578 years DC = 99 % SFF = 99 %	2-channel application: PL e / Cat. 4 SIL 3

¹⁾ According to Table 5 and the corresponding notes EN ISO 13849 in the "medium" range. In combination with the high MTTF_D value and the good PFH value, DC is the performance level PLd according to table K.1.

4.4.2 Mounting Position Horizontal 0-60 °C Ambient Temperature

Input Module	Safety Parameters	Safety Levels
SSI 021 including CPU module SCP 011/SCP 111	1-channel application: PFH = 3.70E-8 (1/h) MTTF _D = 481 years DC = 84 % SFF = 95 %	1-channel application: PL d ¹⁾ / Cat. 2 SIL 2
	2-channel application: PFH = 3.90E-09 (1/h) MTTF _D = 490 years DC = 99 % SFF = 99 %	2-channel application: PL e / Cat. 4 SIL 3

Input Module	Safety Parameters	Safety Levels
SSI 021 including CPU module SCP 211/SCP 111-S	1-channel application: PFH = 3.70E-8 (1/h) MTTF _D = 408 years DC = 86 % SFF = 96 %	1-channel application: PL d ¹⁾ / Cat. 2 SIL 2
	2-channel application: PFH = 4.70E-09 (1/h) MTTF _D = 418 years DC = 99 % SFF = 99 %	2-channel application: PL e / Cat. 4 SIL 3

¹⁾ According to Table 5 and the corresponding notes EN ISO 13849 in the "medium" range. In combination with the high MTTF_D value and the good PFH value, DC is the performance level PLd according to table K.1.

4.5 Compatibility

INFORMATION



Compatibility

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

Compatibility SSI Encoder

When selecting the SSI encoder, it must be ensured that the absolute value range of the encoder covers the entire range of use.

For the support of rotary encoders, the absolute position of the encoder in the safety control is extended to 32bit. This 32bit extension is not saved and after a restart of the safety control the absolute position of the encoder is loaded again.

Position monitoring outside the absolute value range of the encoder is not permitted.

5 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

6 Technical Data

6.1 SSI Encoder Specifications

Number	2
Encoder	absolute encoder with RS422 interface
Data transfer speed	125 kHz, 250 kHz, 500 kHz, 1 MHz (configurable)
Encoder resolution	maximum 32 bits
Coding	binary / gray
Encoder power supply	+24 V supply, maximum 300 mA when installing the SSI 021 in ambient temperature up to 50 °C +24 V supply, maximum 200 mA in 60 °C ambient temperature internal voltage monitor +24 V (+20 % / -15 %)
Status LED	yes

INFORMATION



A fuse for the supply voltage must be installed, which can sufficiently limit voltage and current.

6.2 Electrical Requirements

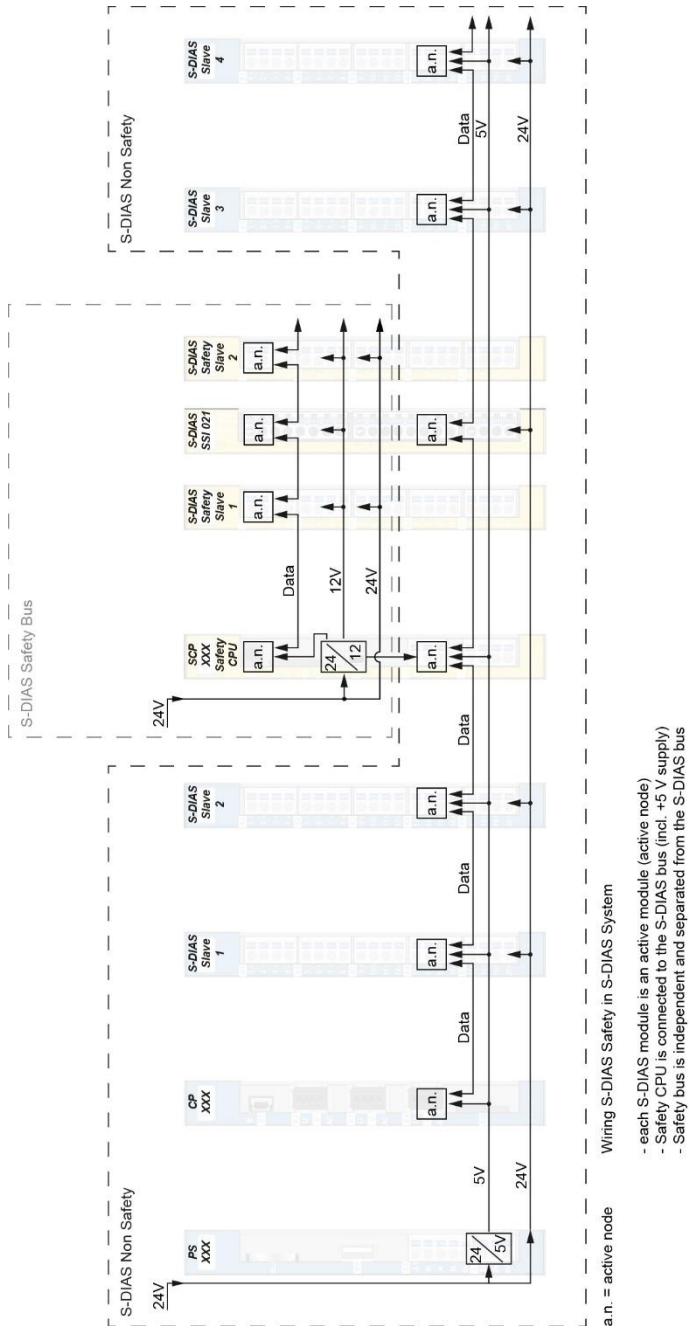
Voltage supply from Safety bus	+12 V	
Current consumption on the Safety bus (+12 V supply)	typically 70 mA	maximum 100 mA
Voltage supply from S-DIAS bus	+24 V	
Current consumption on the S-DIAS bus (+24 V supply)	typically 30 mA	maximum 50 mA

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 cannot exceed 800 mA.
 The total current of the +12 V supply cannot exceed 800 mA.



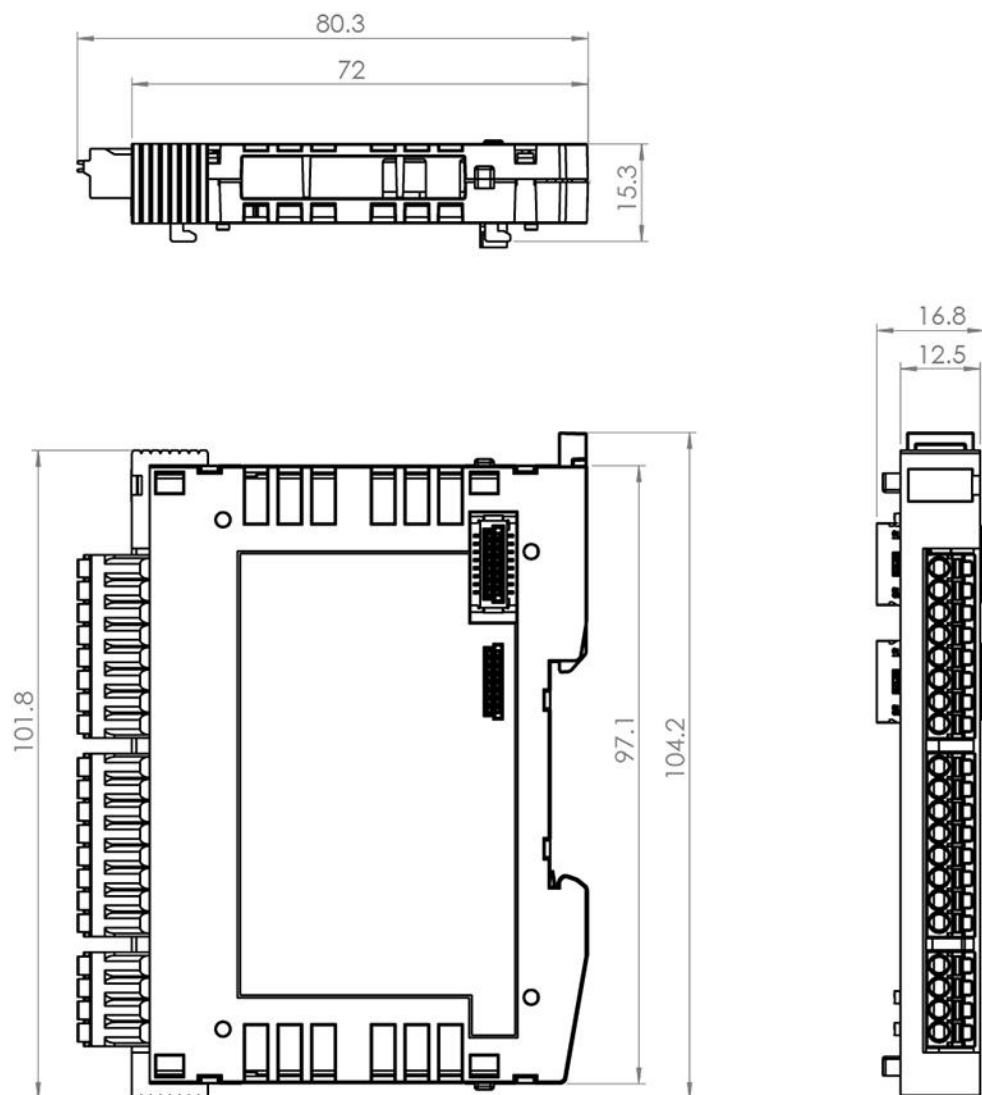
6.3 Miscellaneous

Article number	20-894-021	
Standard	2-channel application:	EN IEC 62061 SIL 3 EN ISO 13849-1 PL e/Cat. 4
	1-channel application:	EN IEC 62061 SIL 2 EN ISO 13849-1 PL d/Cat. 2
	UL 508 (E247993)	
Approbations	CE, cUL _{US} , TÜV Austria EG type-tested	
Mission time	20 years	
Reaction time	see chapter "Reaction and Turn-off Time" in the Safety System Handbook	

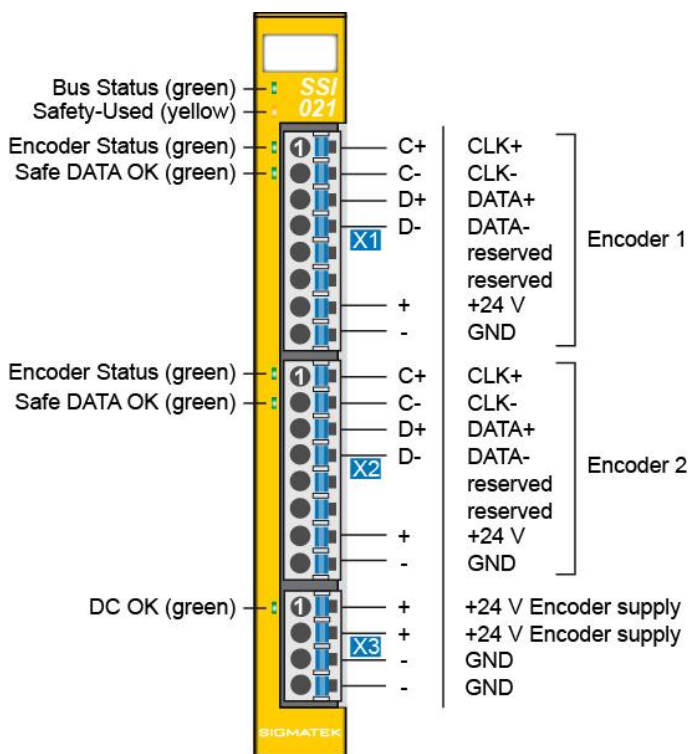
6.4 Environmental Conditions

Storage temperature	-20 ... +85 °C	
Environmental temperature	0 ... +55 °C (UL)	
	0 ... +60 °C starting with HW version 3.10 (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	
Noise emissions	≤ 70 dB	
EMV resistance	in accordance with EN 61000-6-7 (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 (industrial area) (increased requirements in accordance with EN IEC 62061)	
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

7 Mechanical Dimensions



8 Connector Layout



INFORMATION



The connections of the +24 V supply (X3: pin 1 and pin 2) or the GND supply (X3: pin 3 and pin 4) are internally bridged. To supply the module, only one connection to a +24 V pin (pin 1 or pin 2) and a GND pin (pin 3 or pin 4) is required. The bridged connections may be used for further looping of the +24 V supply and the GND supply. However, it must be taken into account that a total current of 6 A per connection is not exceeded by the forward looping!

8.1 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 errors exist
		OFF	module is not used or not in operational mode
Encoder Status	green	ON	communication with encoder OK
		OFF	communication with encoder not OK
Safe DATA OK	green	ON	if valid SSI data is available
		OFF	no valid SSI data available
DC OK	green	ON	+24 V encoder supply OK

8.2 Applicable Connectors

Connectors:

X1-X3: Connectors with spring terminals (included in delivery)

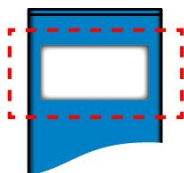
The spring terminals are suitable connecting ultrasonically compacted (ultrasonically welded) strands.

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)



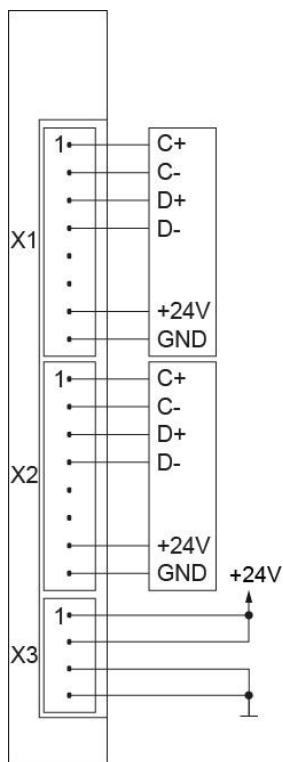
8.3 Label Field



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

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.
- 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 or disconnected while voltage is applied!

10 RS422 Interface

The RS422 interface is internally connected in the component.

11 Important Notes for Two-channel Application

When using the SSI 021 module in compliance with **SIL 3** according to EN IEC 62061 and **PL e, Cat. 4** according to EN ISO 13849-1, it must be taken into consideration that for 2-channel application, a part of the possible wiring errors can only be detected by comparing the measurement results of both encoders in the Safety application of the Safe CPU. The inversion of signal lines A+ with A- as well as B+ with B- are one of these errors. Mechanical errors, such as a detached coupling can also be detected only in the Safety application of the Safe CPU.

To meet the requirements of the diagnostic coverage ratio, both encoders must be synchronously monitored in the Safety application of the Safe CPU.

For synchronous monitoring, the functional Safety block SF_SkewMonitor (see chapter “Numerical Function Blocks” in the SafetyDesigner tool help) must be placed in the Safety project and used according to the documentation.

The inputs S_ChnValue1 and S_ChnValue2 of the functional Safety blocks must be wired with the input information _Chn1Value and S_Chn2Value (synchronous monitoring of the position) or alternatively, with S_Chn1Speed and S_Chn2Speed (synchronous monitoring of the speed) of the SNC 021 module.

The required tolerance must be defined by the user. During synchronous monitoring via the position, it must be taken into consideration that if there is the possibility of a position overflow, the scaling parameter can cause position jumps. In such a case, the scaling parameter for calculating the position should be left at the default settings (factor and divisor are 1), or synchronous monitoring performed using the speed.

INFORMATION



If the system is not in Safe mode, synchronous monitoring must be performed according to the previously mentioned criteria.

If all mechanical error sources can be excluded due to the coupling type and the type of encoder used (e.g. defective encoder mechanics), monitoring the direction of both encoders is then sufficient.

This can be run in the Safety application using the functional Safety block SF_DirectionMonitor (see chapter “Numeric Function Blocks” in the SafetyDesigner tools help) and in this case, performed for both encoders.

INFORMATION

If synchronous monitoring is not performed in the Safety application as described here, the machine manufacturer must then prove that the requirements of SIL 3 according to EN IEC 62061 and PL e, Cat. 4 according to EN ISO 13849 are met if required for the machine.

12 Assembly/Installation

12.1 Check Contents of Delivery

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

INFORMATION

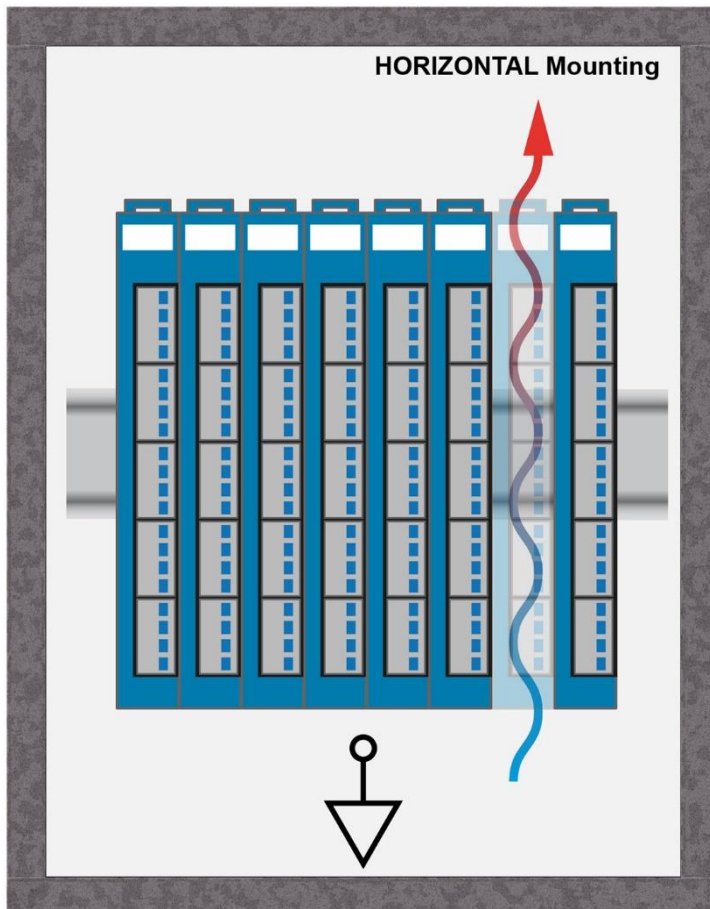


On receipt and before initial use, check the device for damage. If the device is damaged, contact our customer service and do not install the device in your system.

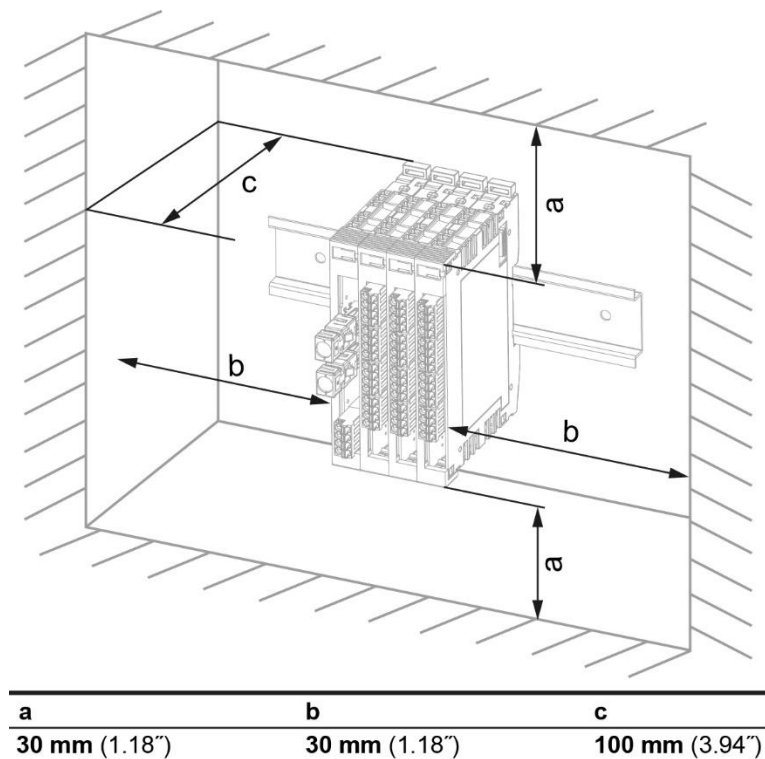
Damaged components can disrupt or damage the system.

12.2 Mounting

The S-DIAS modules are designed to be mounted in 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 vertically with sufficient clearance between the ventilation slots of the S-DIAS module blocks and nearby components and/or the control cabinet wall. This is required to provide optimal cooling and air circulation so that functionality is ensured up to the maximum operating temperature.



Recommended minimum distances of the S-DIAS modules to the surrounding components or control cabinet wall:



a, b, c ... distances in mm (inches)

13 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.

14 Storage

INFORMATION



When not in use, store the operating panel according to the storage conditions. See chapter 13.

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

15 Maintenance

INFORMATION



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

15.1 Service

This product was constructed for low-maintenance operation.

15.2 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 13 Transport/Storage.

16 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
22.04.2009	8	2.2 Safety-Relevant Parameters	Value changed
01.04.2014	16	8 Mounting	Text updated
23.05.2014	9	2.3 Compatibility	Added chapter
18.07.2014	13	5 Connector Layout	Added wiring notice
08.09.2014	11	3.3 Miscellaneous	Added Standard
30.01.2015	16	6.2 Note	Added note concerning connecting the S-DIAS module while voltage is applied
26.03.2015	14	5.2 Applicable Connectors	Added connections
07.05.2015			New writing: EN ISO 13849
18.05.2015	11	3.4 Environmental Conditions	Expanded vibration resistance
08.07.2015	10	3.1 SSI Encoder Specifications	Added mnemotechnic verse
04.08.2015			Info Cover Translation from German added
15.12.2015	1		Rotary encoder added
28.04.2016	18	8 Mounting	Graphics distances
01.06.2016	10	3.2 Electrical Requirements	Graphics added
17.08.2017	12	3.4 Environmental Conditions	Pollution Degree
	15	5.2 Applicable Connectors	Sleeve length added Added info regarding ultrasonically welded strands
18.10.2017	16	5.3 Label Field	Added chapter
	20	8 Mounting	Graphic replaced
20.09.2018		5 Connector Layout	Note added
02-04-2019	10	2.3 Safety-Relevant Parameters	Correction of the safety-relevant parameters
	14	3.4 Environmental Conditions	Corrections environmental conditions
	all		Corrections due to CE
14.11.2019		9 Supported Cycle Times	Chapter added

02.12.2019		2.3 Safety-Relevant Parameters	Values updated
28.02.2020	22	9 Supported Cycle Times	Text adapted
28.05.2020	22	9 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
	10	2.3.2 Mounting Position Horizontal 0-60 °C Ambient Temperature	Safety Parameters changed
	15	3.3 Miscellaneous	Standard changed
08.09.2020	25	10 Hardware Class SSI021	Chapter added
04.11.2020	22	8 Mounting	Expansion functional ground connection
05.03.2021		3.4 Environmental Conditions	Standards added
07.02.2022	11	2.3.2 Mounting Position Horizontal 0-60 °C Ambient Temperature	Parameters SCP 211/SCP 111-S added
25.04.2022		2.4 Compatibility	Compatibility SSI encoder added
05.12.2023	21	5.3 Miscellaneous	Mission time and Reaction time added
	21	5.4 Environmental Conditions	Noise emissions added
	28	10 Installing the Encoder	Chapter added
	29	11 Important Notes for Two-channel Application	Chapter added
		10 Hardware Class SSI021	Chapter removed
01.02.2024	14	3.3.2 EU Conformity Declaration	Note on download adjusted
	15	3.4 Safety-Relevant Parameters	The safety indicators (PFH, MTTF _D) were adjusted slightly with the recertification.
21.02.2024	13	3 IT Security	Chapter added
26.09.2024		Installing the Encoder	Chapter deleted