SCHMERSAL
Elan

EN Operating instructions..... pages 1 to 4
Translation of the original operating instructions

FR Vous trouverez la version actuelle du mode d'emploi dans votre langue nationale officielle sur l'Internet, www.schmersal.net.

ES Encontrará el manual de instrucciones actual en su idioma oficial de la UE en nuestra página de Internet www.schmersal.net.

NL U vindt de huidige versie van de gebruikshandleiding in uw officiële landstaal op het Internet, www.schmersal.net.

IT Il manuale d'istruzioni aggiornato nella vostra lingua (lingua ufficiale UE) è scaricabile in Internet all'indirizzo, www.schmersal.net.

JP EU公用語で書かれた最新の取扱説明書は、インターネッ(www.schmersal.net)からダウンロードできます。

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1 About this document

1.1 Function

This operating instructions manual provides all the information you need for the mounting, set-up and commissioning to ensure the safe operation and disassembly of the safety-monitoring module. The operating instructions must be available in a legible condition and a complete version in the vicinity of the device.

1.2 Target group: authorised qualified personnel

All operations described in this operating instructions manual must be carried out by trained specialist personnel, authorised by the plant operator only.

Please make sure that you have read and understood these operating instructions and that you know all applicable legislations regarding occupational safety and accident prevention prior to installation and putting the component into operation.

The machine builder must carefully select the harmonised standards to be complied with as well as other technical specifications for the selection, mounting and integration of the components.

1.3 Explanation of the symbols used

Information, hint, note:
This symbol is used for identifying useful additional information.

Caution: Failure to comply with this warning notice could lead to failures or malfunctions.
Warning: Failure to comply with this warning notice could lead to physical injury and/or damage to the machine.

1.4 Appropriate use

The products described in these operating instructions are developed to execute safety-related functions as part of an entire plant or machine. It is the responsibility of the manufacturer of a machine or plant to ensure the proper functionality of the entire machinery or plant.

The safety-monitoring module must be exclusively used in accordance with the versions listed below or for the applications authorised by the manufacturer. Detailed information regarding the range of applications can be found in the chapter "Product description".

1.5 General safety instructions

The user must observe the safety instructions in this operating instructions manual, the country-specific installation standards as well as all prevailing safety regulations and accident prevention rules.

Further technical information can be found in the Schmersal catalogues or in the online catalogue on the Internet: www.schmersal.net.

The information contained in this operating instructions manual is provided without liability and is subject to technical modifications.

The entire concept of the control system, in which the safety component is integrated, must be validated to EN ISO 13849-2.

There are no residual risks, provided that the safety instructions as well as the instructions regarding mounting, commissioning, operation and maintenance are observed.

1.6 Warning about misuse

In case of inadequate or improper use or manipulations of the safety-monitoring module, personal hazards or damage to machinery or plant components cannot be excluded. The relevant requirements of the standard EN 1088 must be observed.

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1.7 Exclusion of liability

We shall accept no liability for damages and malfunctions resulting from defective mounting or failure to comply with this operating instructions manual. The manufacturer shall accept no liability for damages resulting from the use of unauthorised spare parts or accessories.

For safety reasons, invasive work on the device as well as arbitrary repairs, conversions and modifications to the device are strictly forbidden; the manufacturer shall accept no liability for damages resulting from such invasive work, arbitrary repairs, conversions and/or modifications to the device.

2 Product description

2.1 Ordering code

This operating instructions manual applies to the following types:

SRB 301AN

⚠ Only if the information described in this operating instructions manual are realised correctly, the safety function and therefore the compliance with the Machinery Directive is maintained.

2.2 Special versions

For special versions, which are not listed in the order code below 2.1, these specifications apply accordingly, provided that they correspond to the standard version.

2.3 Destination and use

The safety-monitoring modules for integration in safety circuits are designed for fitting in control cabinets. They are used for the safe evaluation of the signals of positive break position switches for safety functions or magnetic safety sensors on sliding, hinged and removable safety guards.

Design

The safety-monitoring module has a multichannel structure. It includes two safety relays with monitored positive action contacts. The NO contacts of the relays, which are wired in series, build the enabling contacts.

2.4 Technical data

Standards:	IEC/EN 60204-1, IEC 60947-5-3, EN IS0 13849-1, IEC 61508, BG-GS-ET-14
Start conditions	automatic or start button (optionally monitored)
Feedback circuit available:	yes
Pull-in delay for automatic start:	typ. 120 ms
Pull-in delay with reset button:	typ. 30 ms
Drop-out delay:	≤ 20 ms
Rated operating voltage U_e:	24 VDC -10% / +20% residual ripple max. 10% 24 VAC –-15% / +10%
Rated operating current I_e:	0.09 A
Rated insulation voltage U_i:	250 V
Rated impulse withstand voltage U_{imp}:	4 kV
Thermal test current I_{the}:	6 A
Internal electronic fuse:	yes
Max. fuse rating of the operating voltage:	internal electronic fuse, tripping current > 0.5 A, reset after approx. 1 sec.
Power consumption:	2.1 W; 3.5 VA
Input monitoring:	
Cross-wire short detection:	yes
Wire breakage detection:	yes
Earth leakage detection:	yes
Number of NC contacts:	1
Number of NO contacts:	1
Outputs:	
Stop category 0:	3
Stop category 1:	0
Number of safety contacts:	3
Number of auxiliary contacts:	0
Number of signalling outputs:	1
Switching capacity of the safety contacts:	250 VAC: 6 A ohmic
Switching capacity of the signalling outputs:	Y1: 24 VDC / 100 mA
Utilisation category to EN 60947-5-1:	AC-15: 230 V / 6 A DC-13: 24 V / 6 A
Max. fuse rating:	6 A gG D-fuse
Mechanical life:	10 million operations
LED indication:	yes
Ambient conditions:	
Operating temperature:	-25°C…+45°C
Storage and transport temperature:	-25°C…+70°C
Protection class:	Enclosure: IP 40 Terminals: IP 20 Wiring compartment: IP 54
Degree of pollution:	2
Fixing:	Snaps onto standard DIN rails to DIN EN 60715
Connection type:	Plug-in screw connection
Connecting cable:	rigid or flexible
Min. cable section:	0.25 mm^2
Max. cable section:	2.5 mm^2, solid strand or multi-strand lead (including conductor ferrules)
Weight:	235 g
Dimensions (H/W/D):	120 x 22.5 x 121 mm
The data specified in this manual is applicable when the component is operated with rated operating voltage U_e ±0%.	

2.5 Safety classification

Standards:	EN ISO 13849-1; IEC 61508
PL:	up to e
Control category:	up to 4
PFH value:	5.0 x 10^{-9} / h; applicable for applications with up to max. 36,500 switching cycles / year and max. 60 % contact load. Diverging applications upon request.
SIL:	up to 3
Service life:	20 years

3 Mounting

3.1 General mounting instructions
Mounting: snaps onto standard DIN rails to EN 60715.

3.2 Dimensions
Device dimensions (H/W/D): 120 x 22.5 x 121 mm

4 Electrical connection

4.1 General information for electrical connection

⚠ The electrical connection may only be carried out by authorised personnel in a de-energised condition.

Wiring examples: see appendix

5 Operating principle and settings

Operating principle after the operating voltage is switched on
With the guard door closed, the enabling paths are closed as soon as the start button is pushed. During the start command, the falling edge is detected, when the contacts of the downstream relays acting on the feedback circuit are closed.
If the safety guard is opened, the enabling paths of the safety-monitoring module will open.The machine is stopped and the LED K1 and K2 will go out.

Inputs S13-S14; S21-S22
Safety sensor with one NC and one NO contact must be connected to the inputs.

Start button/Feedback loop: X1/X2
Connect start button/feedback circuit to the inputs X1 and X2 according to the wiring diagram

Automatic start X1-X3
The automatic start is programmed by connecting the feedback circuit to the terminals X1-X3.
If no start button and no feedback circuit is used, a bridge must be established between X1 and X3.

Outputs
Enabling paths 13-14; 23-24; 33-34:
NO contacts for safety functions

Signalling output Y1
0 V safety guard closed / enabling signal
24 V safety guard open / no enabling signal

The signalling output Y1 must not be integrated in the safety circuit.

6 Set-up and maintenance

6.1 Functional testing
The safety function of the safety-monitoring module must be tested.
The following conditions must be previously checked and met:
1. Correct fixing
2. Fitting and integrity of the power cable

6.2 Maintenance
In the case of correct installation and adequate use, the safety-monitoring module features maintenance-free functionality.
A regular visual inspection and functional test, including the following steps, is recommended:
• Check the correct fixing of the safety-monitoring module
• Check the cable for damage.

Damaged or defective components must be replaced.

7 Disassembly and disposal

7.1 Disassembly
The safety-monitoring module must be disassembled in a de-energised condition only.

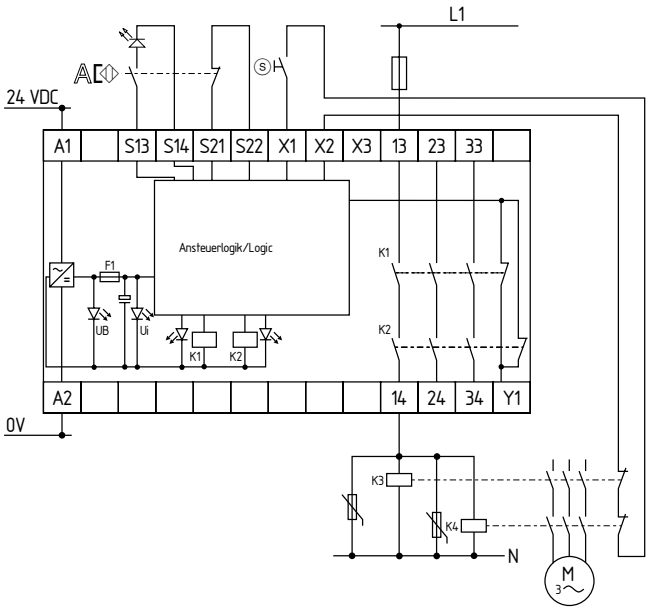
7.2 Disposal
The safety-monitoring module must be disposed of in an appropriate manner in accordance with the national prescriptions and legislations.

8 Appendix

8.1 Wiring examples
The application examples shown are suggestions. They however do not release the user from carefully checking whether the switchgear and its set-up are suitable for the individual application.

The wiring diagram is shown with guard doors closed and in a de-energised condition. Inductive loads (e.g. contactors, relays, etc.) are to be provided with suitable interference suppression circuitry.

SRB 301AN
Guard door monitoring by means of a magnetic safety sensor (BNS)



Legend

A Non-contact safety sensor

Ⓢ Start button

8.2 Declaration of conformity

EC Declaration of conformity

Translation of the original declaration of conformity
valid as of December 29, 2009

Elan Schaltelemente GmbH & Co. KG
Im Ostpark 2 · 35435 Wettenberg
Germany
Internet: www.elan.de

We hereby certify that the hereafter described safety components both in its basic design and construction conform to the applicable European Directives.

Name of the safety component / type:	SRB 301AN
Description of the safety component:	Safety-monitoring module for non-contact safety switches and safety relay combination in connection with the BNS series magnetic safety switches
Harmonised EC-Directives:	2006/42/EC EC-Machinery Directive 2004/108/EC EMC-Directive
Person authorized for the compilation of the technical documentation:	Ulrich Loss Möddinghofe 30 42279 Wuppertal
Notified body, which approved the full quality assurance system, referred to in Appendix X, 2006/42/EC:	TÜV Rheinland Industrie Service GmbH Alboinstrasse 56 12103 Berlin ID n°: 0035
Place and date of issue:	Wuppertal, October 7, 2009

Authorised signature
Heinz Schmersal
Managing Director

SRB301AN-B-EN

Note
The currently valid declaration of conformity can be downloaded from the internet at www.schmersal.net.

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