Leuze electronic

the sensor people

ASM1, ASM1E, ASM2E

AS-i Safety Monitor

50101229 - 2009/02
Technische Änderungen vorbehalten
Subject to change without prior notice

Information on the use of the connecting and operating instructions

These connecting and operating instructions contain information on the proper and effective use of the AS-i safety monitor.

Safety and warning notices are labelled with the  symbol.

Leuze electronic GmbH + Co. KG is not liable for damages caused by improper use. Knowledge of these instructions is an element of proper use.

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This short version of the connecting and operating instructions is part of the delivery contents.

The AS-i safety monitor is only suitable for use in electrical operating rooms / switch cabinets with minimum protection class IP54.

The connection, commissioning and replacement of the AS-i safety monitor requires knowledge of the connecting and operating instructions as well as of the user manual for the asimon configuration and diagnostics software (see accessories order guide).

Warning:

Dangerous electrical voltage!
May result in electrical shock and burns.
Before beginning work, disconnect the system and device from voltage.

Depending on the safety components selected for use, the complete safety system may be classified as belonging to a lower safety category!

1 Range of application

Monitoring of safe AS-i slaves (e.g. emergency-shutdown switches) within an AS-i system as assigned with the ASiMon configuration software.

Depending on the device variant, the second OSSD is available as safe AS-i output with or without relay.

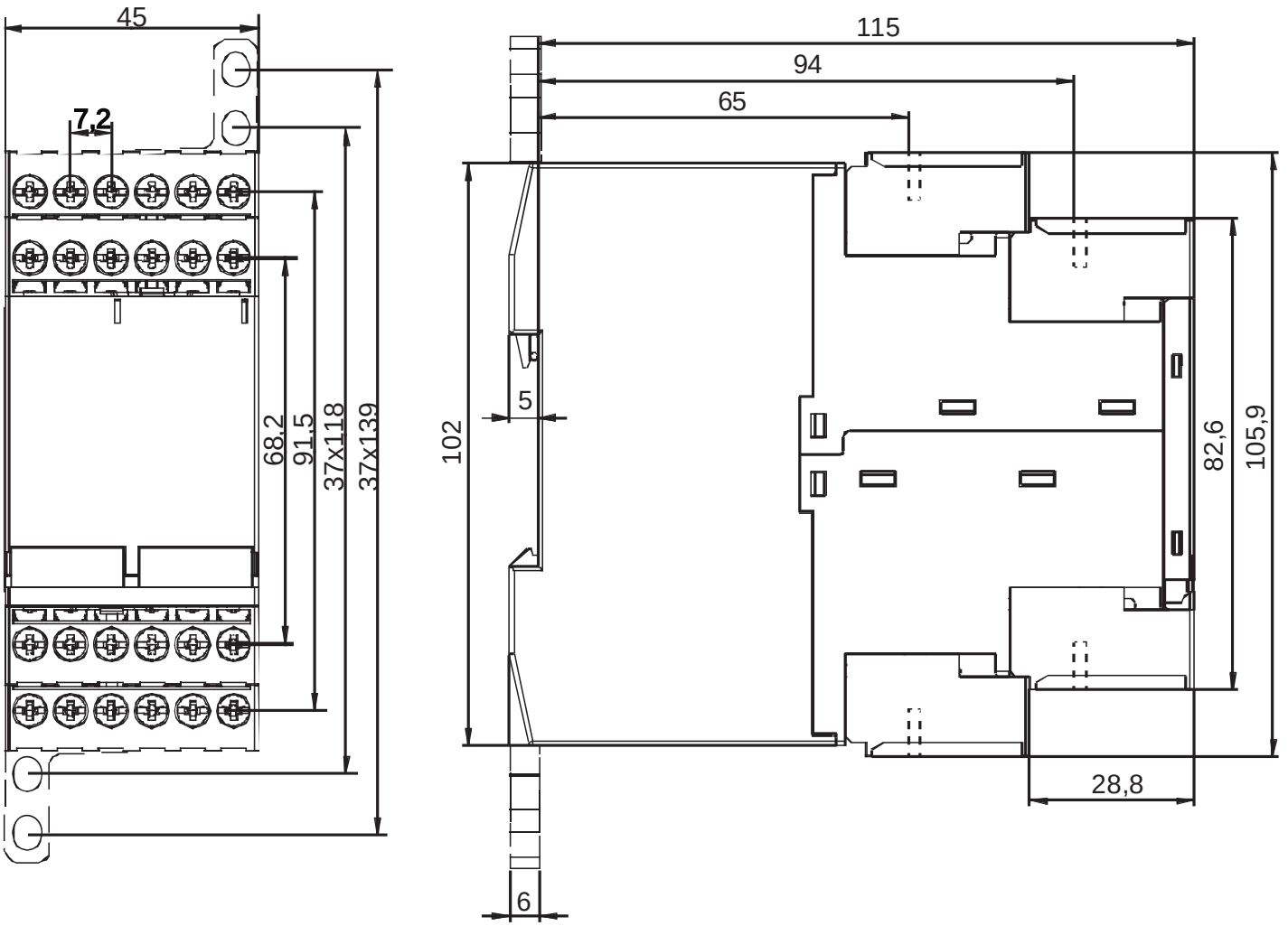
For full system expansion in protective operation, safe shutdown with a response time of maximum 40 ms. It is possible here to integrate up to 31 safe AS-i slaves.

Mixed operation of standard and safe AS-i components is possible.

Multiple AS-i safety monitors can be used within an AS-i system; if necessary, they can together monitor a safe AS-i slave.

Approved for safety applications up to Category 4 acc. to ISO 13849-1 PLe.

2 Dimensioned drawing



3 Specifications

Electrical data

Operating voltage U_b	24V DC +/- 15%	
Residual ripple	< 15%	
Rated operating current	ASM1/1 and ASM1E/1:	150mA
	ASM1/2, ASM1E/2 and ASM2/1:	200mA
	ASM2E/2:	250mA
Peak switch-on current	All types: 600mA	
Reaction time (safety-relevant)	< 40ms	
Delay before start-up	< 10s	

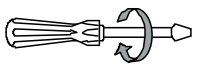
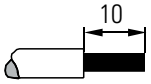
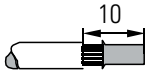
AS-interface data

AS-i profile	Monitor 7.F
AS-i voltage range	18.5 … 31.6V
AS-i current consumption	< 45mA

Mechanical data

Dimensions (WxHxD)	45mm x 105mm x 120mm	
Housing material	Polyamide PA 66	
Weight	ASM1/1 and ASM1E/1:	approx. 350g
	ASM2E/1:	approx. 420g
	ASM1/2, ASM1E/2 and ASM2E/2:	approx. 450g
Mounting	Snap-on mounting on top-hat rail acc. to EN 50022	

Connection

 ∅ 5 ... 6 mm / PZ2	0,8 ... 1,2 Nm 7 ... 10.3 LB.IN
	1 x (0,5 ... 4,0) mm² 2 x (0,5 ... 2,5) mm²
	1 x (0,5 ... 2,5) mm² 2 x (0,5 ... 1,5) mm²
AWG	2 x 20 ... 14

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Configuration interface

RS 232	9600 baud, no parity, 1 start bit, 1 stop bit, 8 data bits
Inputs and outputs	
"Start" input	Optical coupling input (high active), input current approx. 10 mA at 24 V DC
Input of "external device monitoring circuit" (EDM)	Optical coupling input (high active), input current approx. 10 mA at 24 V DC
Message output "safety on"	PNP transistor output, 200 mA, short-circuit and polarity-reversal protection
Safety output	Potential-free make contact, max. contact load: 1 A DC-13 at 24 V DC 3 A AC-15 at 230 V AC
Continuous thermal current (max.)	<u>ASM/1, ASM1E/1 and ASM2E/1:</u> max. total current for all output switching elements: 6 A i.e. output circuit 1: 3 A per output switching element <u>ASM/2, ASM1E/2 and ASM2E/2:</u> max. total current for all output switching elements: 8 A i.e. output circuit 1: 3 A per output switching element output circuit 2: 1 A per output switching element or output circuit 1: 2 A per output switching element output circuit 2: 2 A per output switching element
Safeguarding	External with max. 4 A slow blow
Overvoltage category	3, for rated operating voltage 300 V AC acc. to VDE 0110 part 1

Environmental data

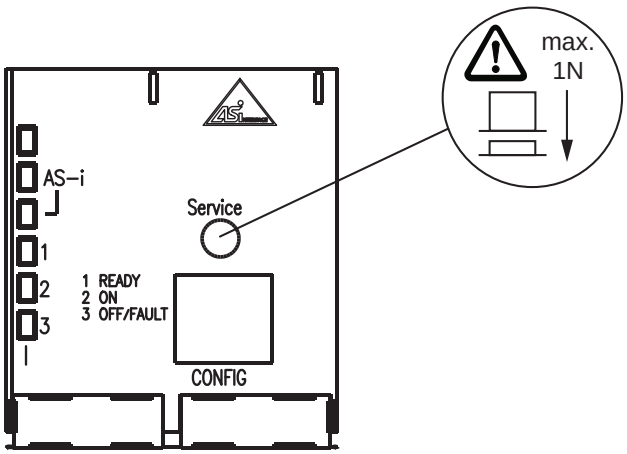
Operating temperature	-20 … +60 °C
Storage temperature	-30 … +70 °C
Protection class	IP 20

Attention!

Be certain to maintain the specified safeguards; only in this way is safe shutdown ensured in the case of failure.

Attention!

- In addition to the system reaction time of max. 40 ms, the reaction times of the safe AS-interface sensor slave, of the sensor being used for monitoring, of the safe AS-interface actuator slave and of the actuator used for this purpose must still be added.
  Please note that additional reaction times may likewise arise through the configuration of the safety monitor.
- The system reaction times of the daisy-chained AS-interface components are added up when coupling AS-interface networks.



4 Electrical installation

Attention!

Electrical installation may only be performed by trained specialist technicians.

Attention!
Each safe AS-interface slave is to be activated at least once per year and the switching behaviour of the output circuits of the AS-interface safety monitor visually inspected.
After replacing a safe AS-i slave, the new slave must be checked for proper function; after replacing an AS-i safety monitor, the new AS-i safety monitor must be checked for proper function.

Supply lines, signal lines and the AS-i bus line are to be laid separately from power supply lines.

Suitable spark extinction must be used with contactors in the switch cabinet.

For drive motors and brakes, observe the installation notices in the corresponding operating instructions.

Maximum line length for the AS-i bus line is 100 m. For longer line lengths, use AS-i repeaters.

Attention!
The AS-interface power supply unit for supplying the AS-interface components must demonstrate safe mains separation acc. to IEC 60742 and the ability to bridge brief mains failures of up to 20 ms. The power supply unit for 24 V supply must also demonstrate safe mains separation acc. to IEC 60742 and the ability to bridge brief mains failures of up to 20 ms.

LED indicators ASM

LED	Colour	Meaning
AS-i 1	off	no supply
	green, continuous	AS-interface supply present
AS-i 2	off	normal operation
	red, continuous	communication error
AS-iS 1	off	no supply
	green, continuous	AS-interface supply present
AS-iS 2	off	normal operation
	red, continuous	communication error
1 READY (per output circuit)	off	–
	yellow, continuous	start-up/restart-disable active
	yellow, flashing	external test necessary / acknowledgement / delay before start-up active
2 ON (per output circuit)	off	contacts of the output switching element open
	green, continuous	contacts of the output switching element closed
	green, flashing	delay time runs in event of Stop Category 1
3 OFF/ FAULT (per output circuit)	off	contacts of the output switching element closed
	red, continuous	contacts of the output switching element open
	red, flashing	error on level of the monitored AS-interface components
1 READY 2 ON 3 OFF/ FAULT (per output circuit)	simultaneously flashing rapidly	internal device error, error message can be queried by means of **asimon** software

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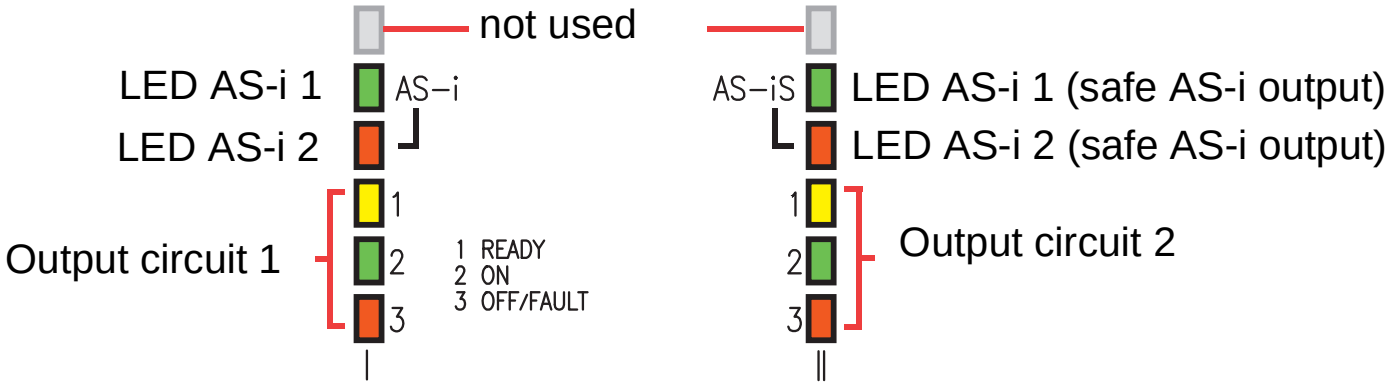
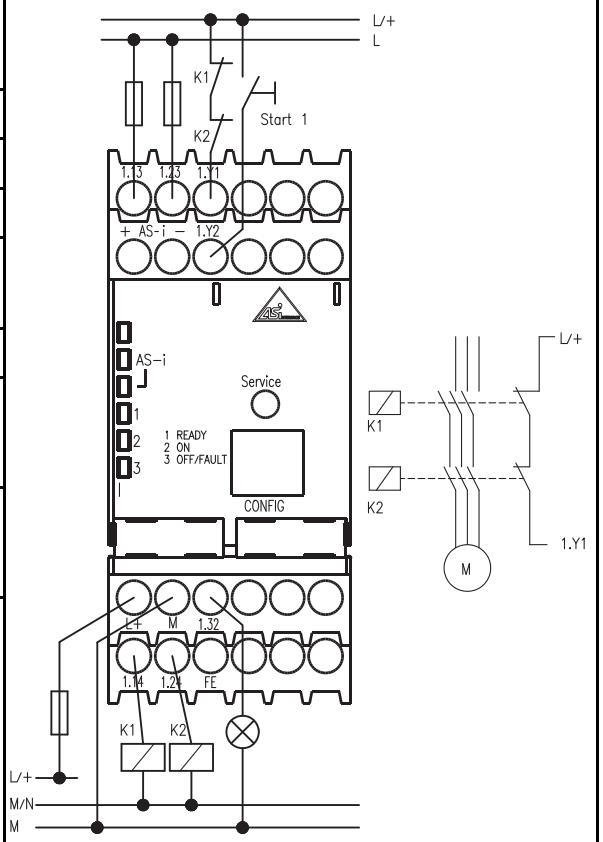


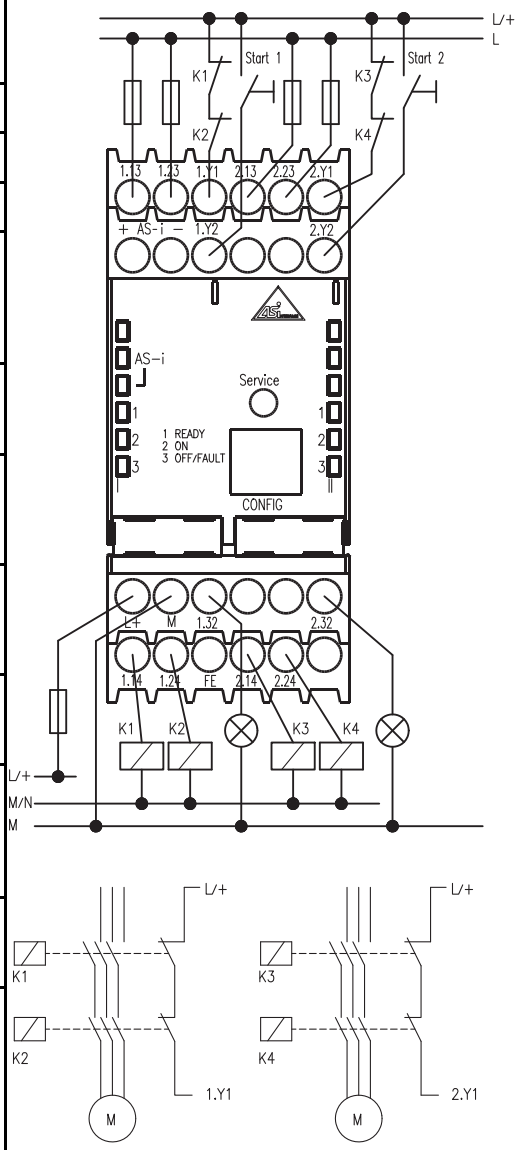
Fig. 4.0-1: LED indicators in the device

Terminal assignments of AS-i safety monitors ASM1/1 and ASM1E/1

Terminal	Signal / description	Electrical connection
AS-i+	Connection to the AS-interface bus	
AS-i–		
L+	+24V DC / supply voltage	
M	GND / reference ground	
FE	Functional earth	
1.Y1	EDM 1 / input of external device monitoring circuit	
1.Y2	Start 1 / start input	
1.13 [1)]	Output switching element 1	
1.14		
1.23 [1)]	Output switching element 2	
1.24		
1.32	Message output "safety on"	

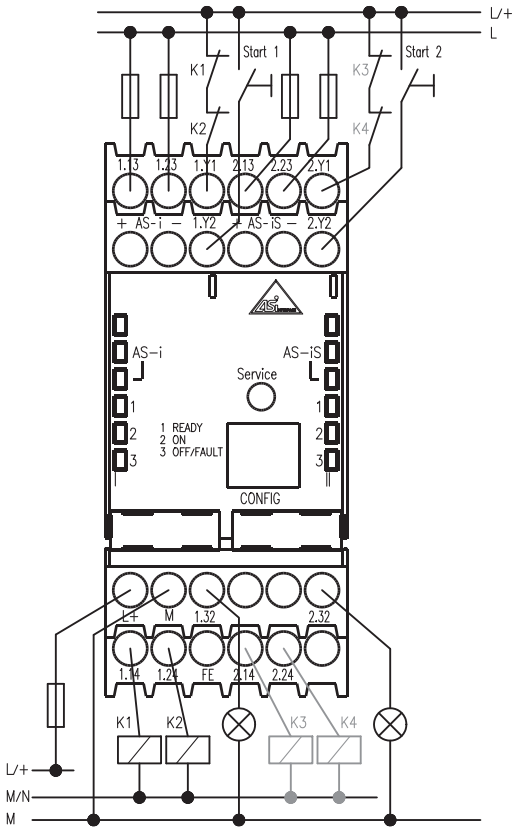
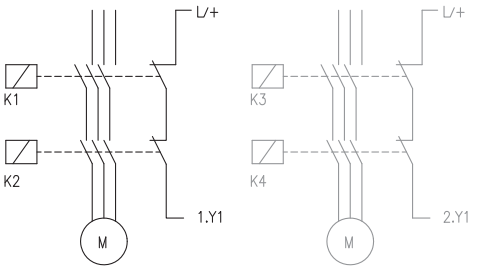
1) Safeguard according to technical data

Terminal assignments of AS-i safety monitors ASM1/2 and ASM1E/2

Terminal	Signal / description	Electrical connection
AS-i+	Connection to the AS-interface bus	
AS-i–		
L+	+24V DC / supply voltage	
M	GND / reference ground	
FE	Functional earth	
1.Y1	EDM 1 / input of external device monitoring circuit, output circuit 1	
1.Y2	Start 1 / start input, output circuit 1	
1.13 [1)]	Output switching element 1, output circuit 1	
1.14		
1.23 [1)]	Output switching element 2, output circuit 1	
1.24		
1.32	Message output 1 "Safety on", output circuit 1	
2.Y1	EDM 2 / input of external device monitoring circuit, output circuit 2	
2.Y2	Start 2 / start input, output circuit 2	
2.13 [1)]	Output switching element 1, output circuit 2	
2.14		
2.23 [1)]	Output switching element 2, output circuit 2	
2.24		
2.32	Message output 2 "Safety on", output circuit 2	

1) Safeguard according to technical data

Terminal assignments of AS-i safety monitors ASM2E/1 and ASM2E/2

Terminal	Signal / description	Electrical connection
AS-i+	Connection to the AS-interface bus	
AS-i–		
AS-iS+	Safe AS-interface output for actuator monitoring or coupling of another AS-interface network	
AS-iS–		
L+	+24V DC / supply voltage	
M	GND / reference ground	
FE	Functional earth	
1.Y1	EDM 1 / input of external device monitoring circuit, output circuit 1	
1.Y2	Start 1 / start input, output circuit 1	
1.13 [1)]	Output switching element 1, output circuit 1	
1.14		
1.23 [1)]	Output switching element 2, output circuit 1	
1.24		
1.32	Message output 1 "Safety on", output circuit 1	
2.Y1	EDM 2 / input of external device monitoring circuit, output circuit 2	**ONLY ASM2E/2:** 
2.Y2	Start 2 / start input, output circuit 2	
2.13 [1)]	Output switching element 1, output circuit 2 (**only ASM2E/2!**)	
2.14		
2.23 [1)]	Output switching element 2, output circuit 2 (**ASM2E/2 only!**)	
2.24		
2.32	Message output 2 "Safety on", output circuit 2	

1) Safeguard according to technical data

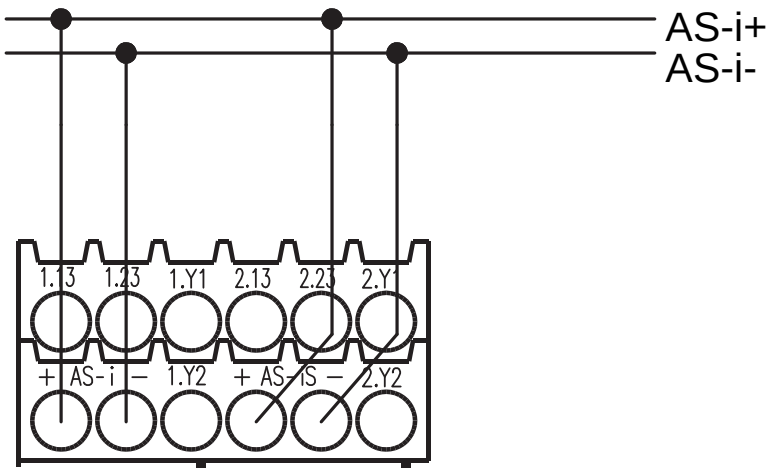


Fig. 4.0-2: Connection for actuator monitoring

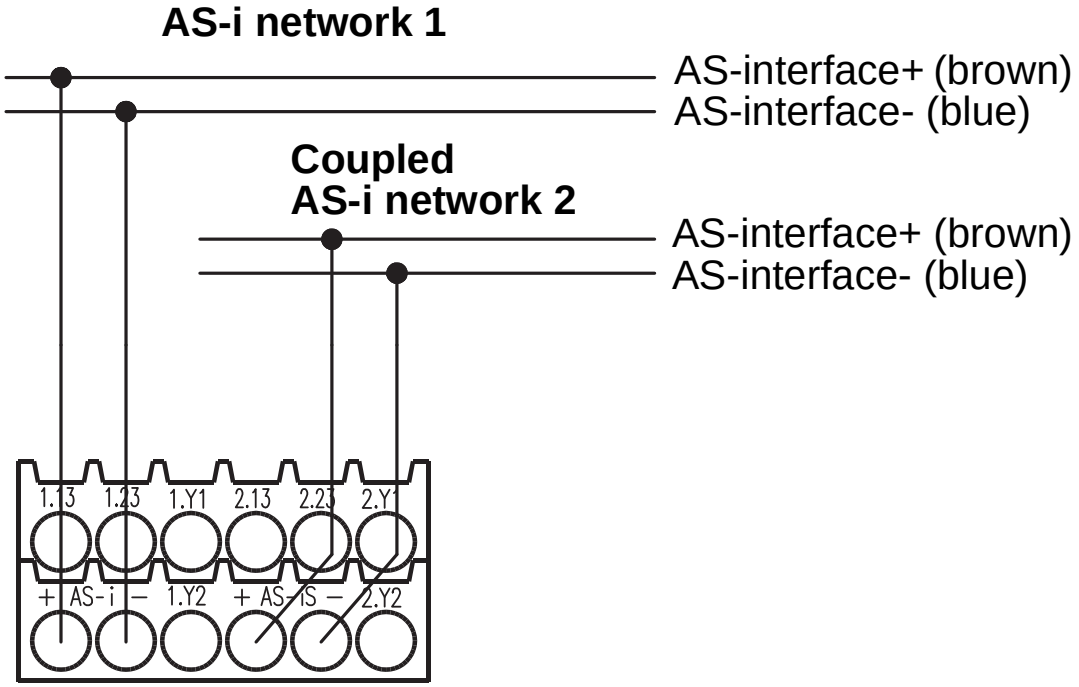


Fig. 4.0-3: Coupling for AS-i networks

5 Mounting

The safety monitor is mounted by clipping onto a standard 35 mm rail acc. to EN 50022.

➢ To remove, firmly press the monitor against the upper rail guide and lift out.

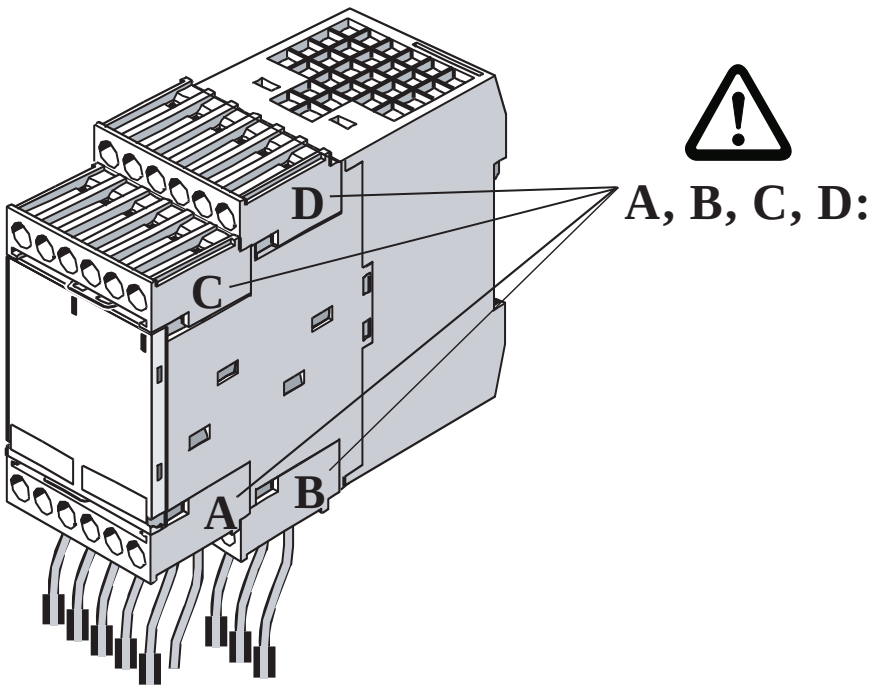


Fig. 5.0-1: Mounting the safety monitor

➢ To remove the encoded connection terminals, push back the safety spring **a** and pull the terminal away towards the front.

➢ When mounting, the connection terminal must audibly lock into place.

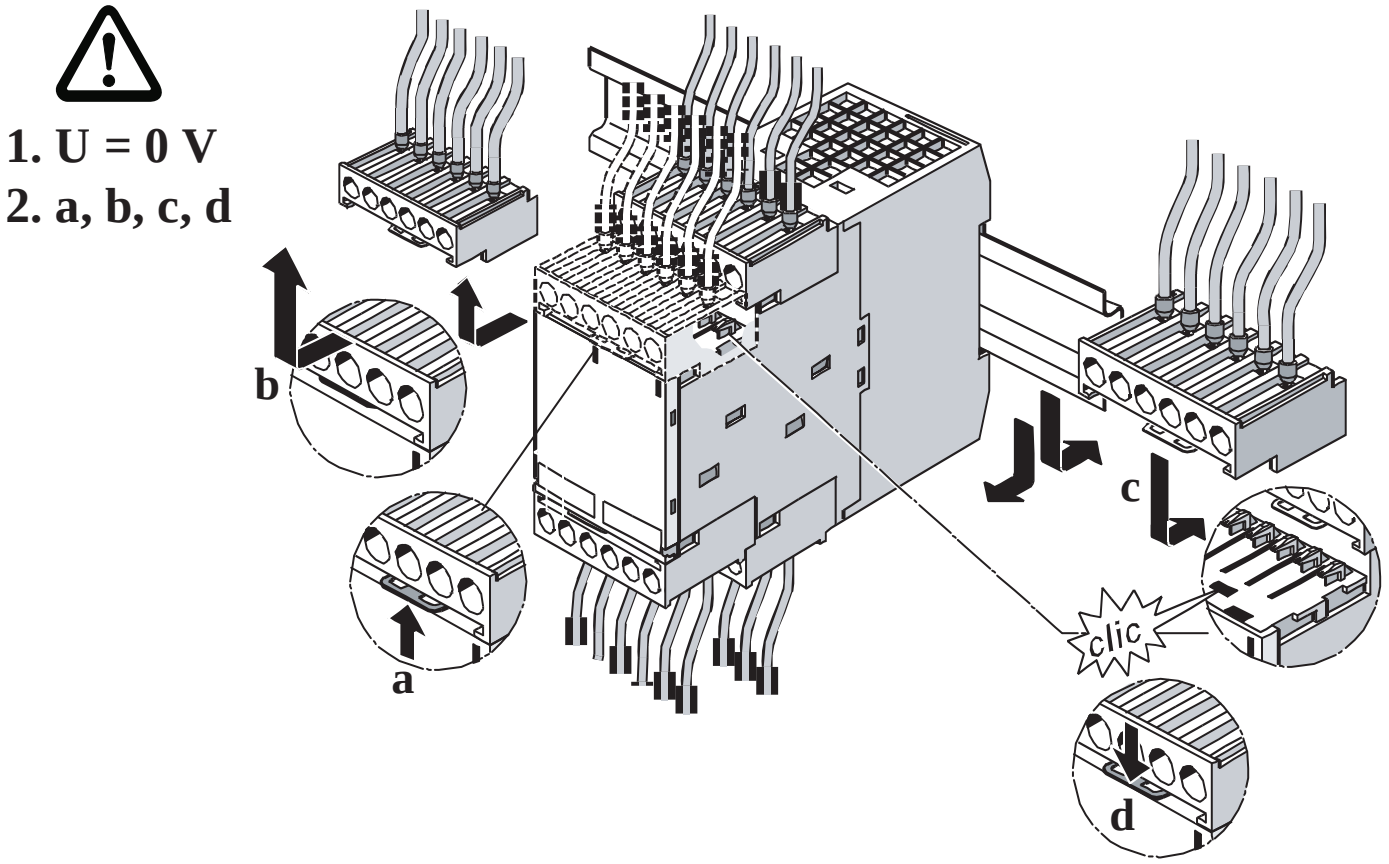
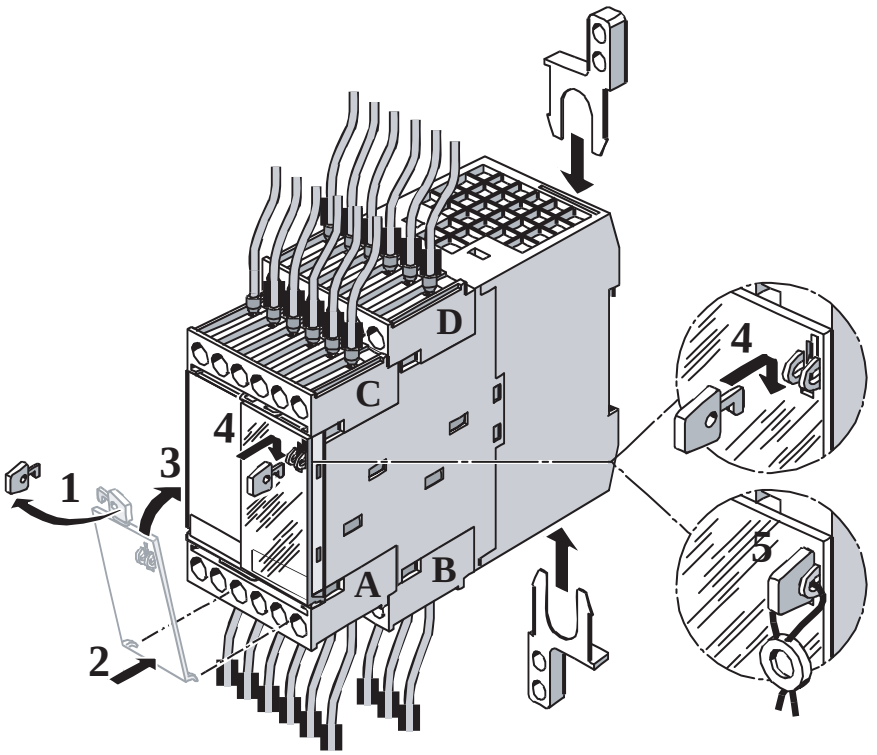


Fig. 5.0-2: Removing and mounting encoded connection terminals

➢ Mount cap and seal in steps 1-5.

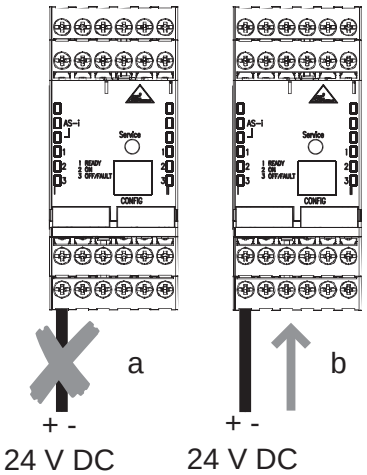


a = Sealable cap for safeguarding against unauthorised adjustment and for ESD protection (part of the delivery contents).

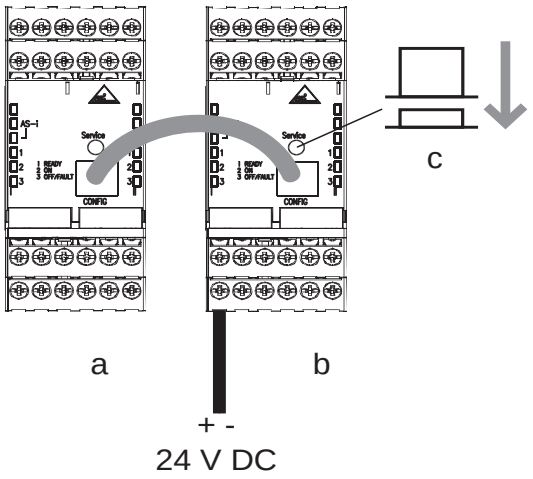
Fig. 5.0-3: Mounting and sealing the cap

For further information, see the connecting and operating instructions for the AS-i safety monitor.

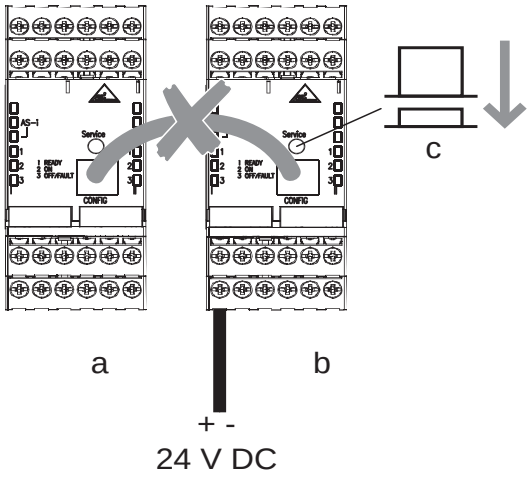
6 Replacing an AS-i safety monitor



1 Disconnect the defective (a) AS-i safety monitor from the supply and connect the new monitor (b).



2 Connect the defective (a) and the new (b) AS-i safety monitor via the RJ45/RJ45 cable and press the service button (c) on the new (b) AS-i safety monitor.



2 Disconnect the two AS-i safety monitors from one another and press the service button again.

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7 Order guides

Part No.	Article	Description
580020	ASM1/1	AS-i safety monitor, 1 OSSD
580021	ASM1/2	AS-i safety monitor, 2 OSSDs
580024	ASM1E/1	AS-i safety monitor, 1 OSSD; expanded functionality
580025	ASM1E/2	AS-i safety monitor, 2 OSSDs; expanded functionality
580028	ASM2E/1	AS-i safety monitor, 1 OSSD, 1 safe AS-i output, expanded functionality
580029	ASM2E/2	AS-i safety monitor, 2 OSSDs, 1 safe AS-i output, expanded functionality
580055	ASM1E-m/1	AS-i safety monitor, 1 OSSD expanded functionality, Muting
580056	ASM1E-m/2	AS-i safety monitor, 2 OSSDs, expanded functionality, Muting
580057	ASM2E-m/1	AS-i safety monitor, 1 OSSD, 1 safe AS-i output, expanded functionality, Muting
580058	ASM2E-m/2	AS-i safety monitor, 2 OSSDs, 1 safe AS-i output, expanded functionality, Muting

8 Order guides Accessories

Part No.	Article	Description
580032	ASM-SWC	ASM commissioning set for ASM1, ASM1E and ASM2E Contains: asimon configuration and diagnostics software, connecting and operating instructions, user manual for the software on CD, configuration cable, device-replacement data cable
50104078	ASM1-PK	ASM1 configuration cable
50104079	ASM1-DK	ASM1 device-replacement data cable