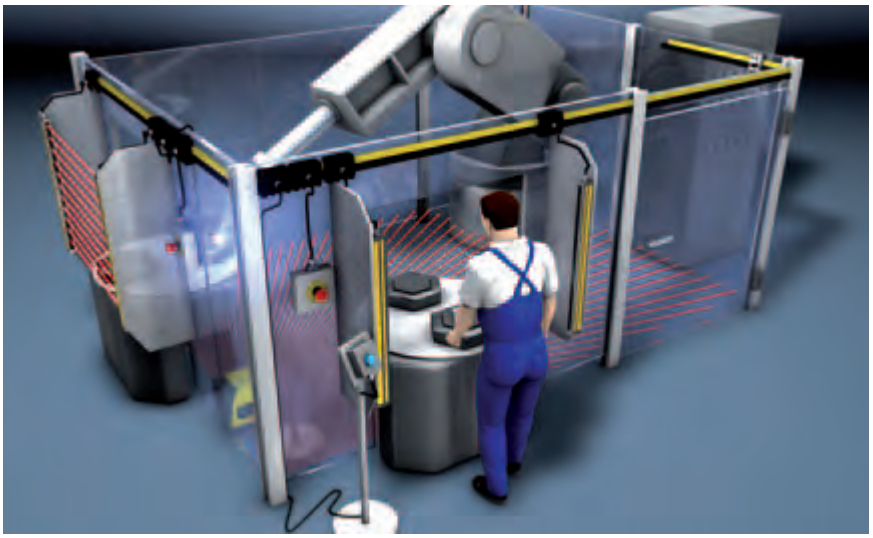
AS-Interface Safety at Work

Safety Monitors, ASM1, ASM1E



AS-Interface Safety at Work-*based robot application with 2 release circuits*

The ASM *Muting functionality enables palettes in a wrapping machine application, for example, to pass by the active opto-electronic protective device without any process interruption.*

The AS-i Safety Monitor, the ASM1, is a core component of the AS-Interface Safety at Work system. Using configuration software it monitors the safety-related bus participants that are assigned to it, e.g. control devices, Multiple Light Beam Safety Devices and Safety Switches.

The Safety Monitor has an RS 232 diagnostics interface for the PC-supported configuration and diagnostics. Logical links can be easily created with the graphic user interface of the Windows® based software. The user can combine safety sensors and control devices with a mouse click and assign different release circuits for switching off the dangerous movement. Depending on the device type, two dependent or independent release circuits with configurable contactor monitoring are available.

With an extended scope of functions, the ASM1E device type provides even more convenience with the configuration and diagnostics of a safety application monitored via an AS-Interface. Besides additional logic and diagnostics functions, ASM1E also has an activation/deactivation mode for parameterized software modules. The machine manufacturer can therefore already prepare the configuration of the Safety Monitor in the preliminary stage for all safety sensors that could be used with an extension.

The ASM1E-m variants are additionally equipped with an integrated Muting function package to enable a continuous material flow, e.g. for automated production cells or packaging stations, while maintaining the protective function. The Muting sensors required for this are easily integrated via standard AS-Interface input slaves; a separate Muting controller is no longer required.

Typical areas of application

- Automation networks based on AS-Interface Safety at Work in the lower field level
- Mixed operation of AS-i standard components and safety-related components
- Packaging systems, car manufacturing, conveyor and storage systems, machine tools, processing centers and production lines

SAFETY MONITORS, ASM1, ASM1E

Important technical data, overview

SIL in accordance with IEC 61508 and SILCL in accordance with IEC/EN 62061	SIL 3
Performance Level (PL) in accordance with EN ISO 13849-1	PL e
Category in accordance with EN ISO 13849	4
STOP category in accordance with IEC/EN 60204-1	0 and 1
Supply voltage	24 V DC, ±15%
System response time	Max. 40 ms
Protection rating	IP 20
Ambient temperature, operation	-20...+60°C
Dimensions (W x H x D)	45 mm x 105 mm x 120 mm
Number of Safety Monitors per AS-Interface network	4 (with maximum 31 integrated AS-i slaves)
Safety-related switching outputs (OSSDs)	Up to 2 potential-free safety-related switching outputs (1 A DC-13, 24 V DC / 3 A AC-15, 230 V AC)

Special features

- **Up to 31 safe AS-i slaves can be connected**
- **Freely selectable assignment (Drag & Drop) of the sensor to output-side release circuits with easy to operate asimon configuration and diagnostics software**
- **48 link modules (e.g. OR, AND, FLIPFLOP) and turn on/off delays can be configured**
- **RS 232 interface for PC-supported system configuration, system diagnostics as well as configuration data transfer to replacement device**
- **Immediate switch-off STOP 0 and delayed switch-off STOP 1 of the release circuits can be parametered**
- **SERVICE button for teach-in with sensor swap-out**
- **2-sensor Parallel Muting or 4-sensor Sequential Muting (ASM1E)**
- **Programmable Muting logic (programmable with ASM1E-m/1 and ASM1E-m/2: Muting time extension, Muting timeout, Muting sensor signal filter, close sequence, direction change, Muting enable, Muting override mode with buttons or key switches)**

Features

Further information

AS-Interface Safety at Work

Functions, ASM1, ASM1E

	ASM1/1	ASM1/2	ASM1E/1	ASM1E/2
Number of safety-related switching outputs (OSSDs)	1	2	1	2
Number of configurable function modules	32	32	48	48
PC configuration and diagnostics interface	RS 232	RS 232	RS 232	RS 232
Monitoring modules with contact bounce filter			●	●
Service button for manual error unlocking and automatic device swap-out of the safe AS-i slaves	●	●	●	●
Status LED display for AS-Interface communication, OSSD, start/restart interlock, protective mode, errors	●	●	●	●
System signal output	●	●	●	●
Further functions (can be configured with asimon configuration and diagnostics software)				
Programmable logic operators, OR (inputs)	2	2	6	6
Programmable logic operators, AND (inputs)			6	6
Programmable logic operators, FLIP-FLOP			●	●
Programmable logic operators, switch on/off delay			●	●
Programmable logic operators, system statuses	●	●	●	●
Programmable Muting logic			●	●
STOP 0 / STOP 1	●	●	●	●
Start/restart interlock (RES), selectable	●	●	●	●
Dynamic contactor monitoring (EDM), selectable	●	●	●	●
Monitoring modules with contact-simultaneity monitoring	●	●	●	●
Activation/deactivation of function modules	●	●	●	●
Support of AS-Interface A/B technology	●	●	●	●
Diagnostics data transfer via AS-Interface	●	●	●	●
Error unlocking via AS-Interface	●	●	●	●

SAFETY MONITORS, ASM1, ASM1E

Ordering information

ASM1 and ASM1E
Included in delivery: Device front screen for protection and sealing; connecting and operating instructions (short version)

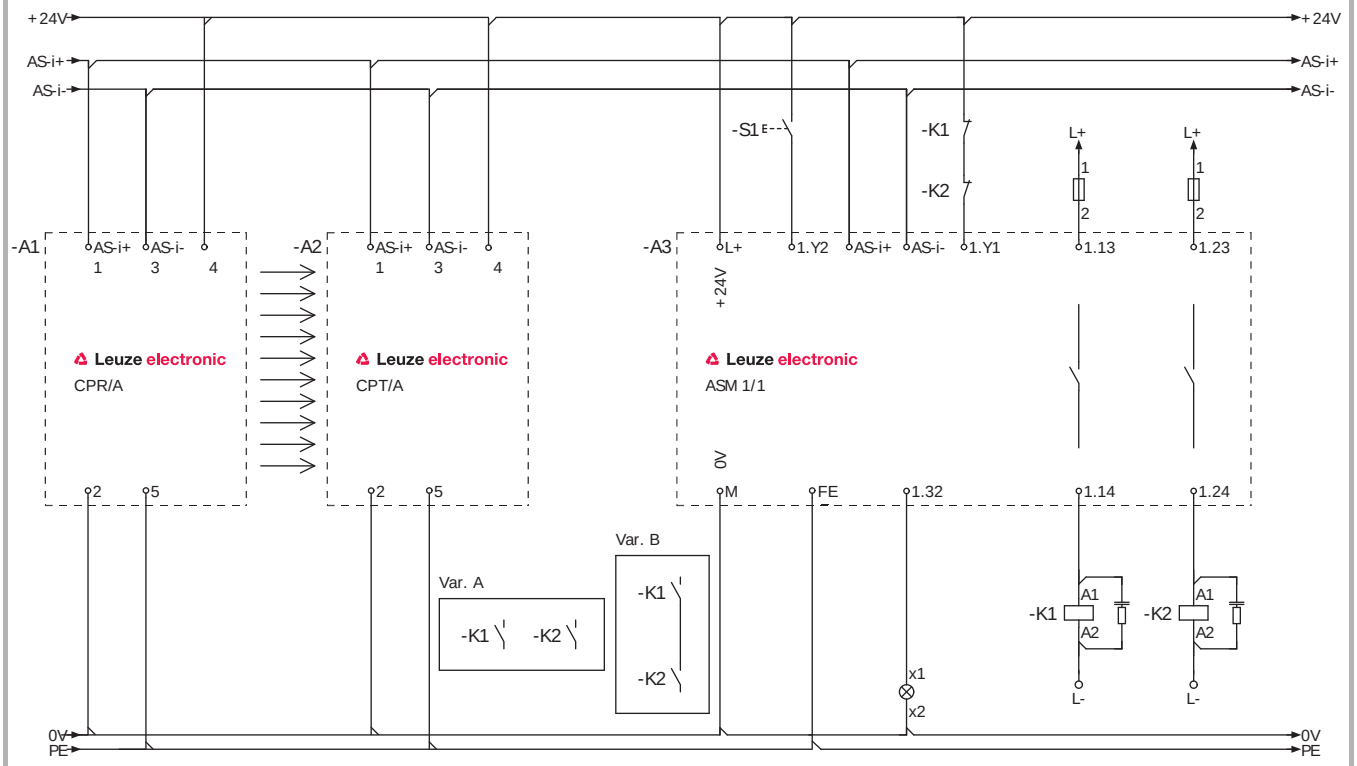
Functions: Monitoring the AS-Interface Safety at Work bus participants, with selectable start/restart interlock, contactor monitoring, STOP 0/STOP 1, PC diagnostics interface

Art. no.	Article	Description	Safety-related switching outputs (OSSDs)
580020	ASM1/1	AS-i Safety Monitor	1 release circuit
580024	ASM1E/1	AS-i Safety Monitor, extended	1 release circuit
580021	ASM1/2	AS-i Safety Monitor	2 release circuits
580025	ASM1E/2	AS-i Safety Monitor, extended	2 release circuits
580055	ASM1E-m/1	AS-i Safety Monitor, extended, Muting	1 release circuit
580056	ASM1E-m/2	AS-i Safety Monitor, extended, Muting	2 release circuits

AS-Interface Safety at Work

Electrical connection

ASM1 connection example



ASM1 *Safety Monitor with* COMPACT*plus Safety Light Curtain with integrated AS-Interface*

Please observe the operating instructions of the components!

Technical data

General system data		
SIL in accordance with IEC 61508 and SILCL in accordance with IEC/EN 62061	SIL 3	
Performance Level (PL) in accordance with EN ISO 13849-1	PL e	
Probability of a failure to danger per hour (PFH_d)	9.10×10^{-9} 1/h	
Service life (T_M) in accordance with EN ISO 13849-1	20 years	
Number of cycles until 10 % of the components have a failure to danger (B_{10d})	With DC1 (ohmic load)	On request
	With AC1 (ohmic load)	
	With DC13 (inductive load)	10,000,000 (I ≤ 2 A, 24 V)
	With AC15 (inductive load)	100,000 (2 A, 230 V) 250,000 (1 A, 230 V) 540,000 (0.5 A, 230 V)
	Low load (20% nominal load)	On request
Category in accordance with EN ISO 13849	4	
STOP category in accordance with IEC/EN 60204-1	0 and 1	
Supply voltage	24 V DC, ±15%	
System response time (exclusive sensor response time)	Max. 40 ms	
Readiness delay	Max. 10 s	
Protection rating	IP 20 (only suitable for use in electrical operating rooms/cabinets with IP 54 minimum protection rating)	
Ambient temperature, operation	-20...+60 °C	
Ambient temperature, storage	-30... +70 °C	
Dimensions (W x H x D)	45 mm x 105 mm x 120 mm	
Housing material	Polyamide PA 66	
Mounting	Snap-on fastening on DIN rails in accordance with EN 50022	
Connection system	1x 0.5 to 4.0 mm^2 and 2x 0.5 to 2.5 mm^2 (single-wired) 1x 0.5 to 2.5 mm^2 and 2x 0.5 to 1.5 mm^2 (multi-wire) 2x 20 to 14 (AWG)	
Current consumption	150 mA (ASM1/1, ASM1E/1), 200 mA (ASM1/2, ASM1E/2)	
Number of Safety Monitors per AS-Interface network	4 (with maximum 31 integrated AS-Interface slaves)	
AS-i data		
AS-i profile	Monitor 7.F	
AS-i voltage range	18.5...31.6 V	
AS-i current consumption	< 45 mA	
Configuration interface		
RS 232	9600 baud, no parity, 1 start bit, 1 stop bit, 8 data bits	

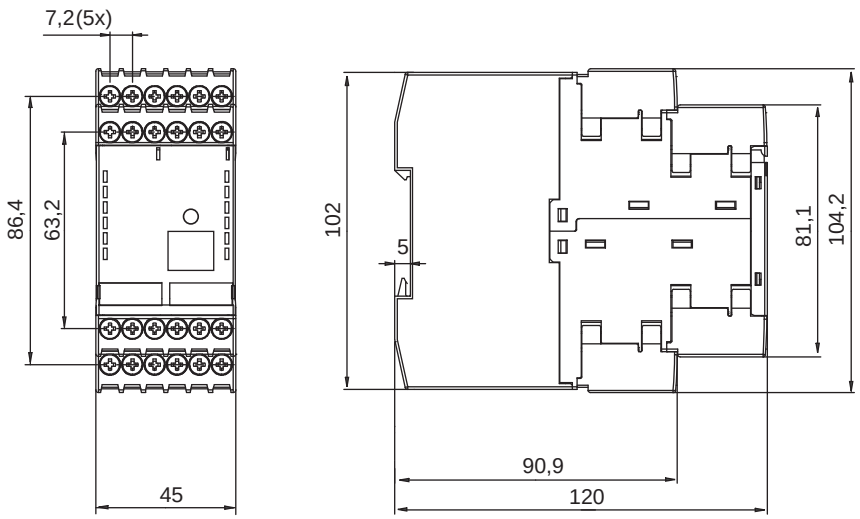
AS-Interface Safety at Work

Technical data

Inputs and outputs	
Input start	Opto-coupling input (high-active), input current approx. 10 mA with 24 V DC
Input feedback circuit	Opto-coupling input (high-active), input current approx. 10 mA with 24 V DC
Signal output ("Safety on" – OSSDs active)	pnp transistor output, 200 mA, short circuit and reverse-connect protection
Safety-related switching outputs (OSSDs)	Up to 2 potential-free safety-related switching outputs (max. contact load: 1 A with 24 V DC, 3 A with 230 V AC)
Fuse	External with max. 4 A MT
Overvoltage category	3 (for rated operating voltage, 300 V AC in accordance with VDE 0110 Part 1)

Please note the additional information in the connecting and operating instructions at www.leuze.com/asi.

Dimensional drawings



AS-Interface Safety at Work ASM1, ASM1E

Dimensions in mm

Our 3D CAD models can be found under: www.leuze.com/3d-cad-models.

Accessories ordering information

See page 328.