

the **sensor** people

AS-Interface
Safety at Work



AS-Interface
Safety at Work.



Complete range – lots of industries.

Due to its simplicity and cost-effectiveness, AS-Interface Safety at Work has emerged as the market leader in safety-related networks at actuator/sensor automation level.

When compared with conventional point-to-point wiring, AS-Interface (AS-i) scores points with its low installation, wiring and connection costs. Suitable gateways set up connections to higher-level field bus systems.

We offer a complete range of opto-electronic safety sensors with integrated AS-i safety interfaces for direct bus connection. Safe ASKM Coupling Modules are used to connect Safety Switches, E-STOP devices or sensors without an integrated AS-i interface.

Typical Leuze electronic AS-i Safety product areas of application: Packaging systems, automotive, conveyor and storage systems, machine tools, processing centers and production lines.

Well-established safety technology – and for **good reason**.

- The highest standard of safety for communication up to SIL 3 / SILCL 3 (IEC 61508 and IEC/EN 62061), Performance Level PL e and Category 4 in acc. with EN ISO 13849
- Cost efficiency with easy safety circuit upgradeability and mixed safe and standard bus members operation on a bus line
- Less space requirement in the cabinet; no additional safety relays or safety PLCs required
- Easy start-up and maintenance: Automatic teach-in of safe bus members with PC for system start-up and rapid swap-out of defective safety components without PC
- Simple and flexible system expansion with safety sensors available as required, e.g. Multiple Light Beam Safety Devices, Safety Laser Scanners, Safety Switches, Enabling Switches, E-STOP devices, Two-Hand Switches



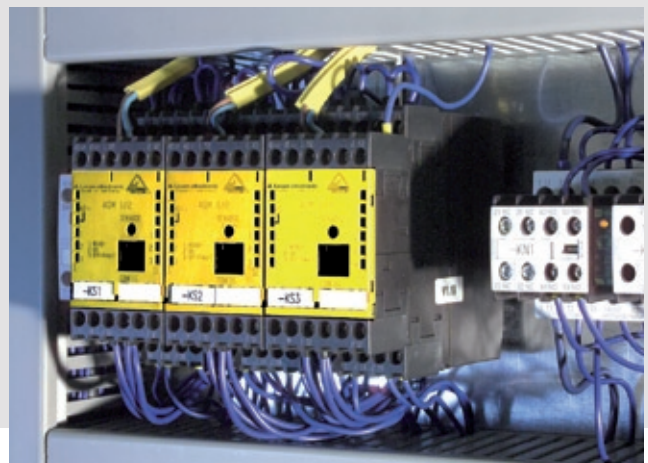
With large systems in particular, the AS-i system can visibly reduce the costs for integrated safety technology and significantly simplify safety-relevant expansions.

Save space in the cabinet with Leuze electronic's Safety Monitor.



The ASM AS-i Safety Monitor is a core component of the AS-Interface Safety at Work system for monitoring the safety-related bus members assigned per configuration software, e.g. Safety Light Curtains, Safety Switches and Motor Starters.

- Housing width 45 mm; height/installation depth 102/120 mm; protection type IP 20
- SIL 3 / SILCL 3 in acc. with IEC 61508 and IEC/EN 62061, Performance Level PL e and Category 4 in acc. with EN ISO 13849
- Connection of up to 31 safe AS-i slaves
- 48 configurable system modules (e.g. E-STOP monitoring modules, OR, AND, switch on/off delays)
- RS 232 interface for PC-supported system configuration and system diagnostics; configuration data transfer to swap-out device
- SERVICE button for automatic AS-i sensor system integration (teach-in) with a sensor swap-out and Safety Monitor reset after faults
- Immediate release circuit switch-off STOP 0 and delayed switch-off STOP 1 can be parameterized (STOP 0 / STOP 1 function in acc. with EN 60204-1)
- Several variants: ASM1 with one or two independent 2-channel safety relay outputs and ASM2 with one or two 2-channel safety relay outputs and a safe AS-i output



The **ASM family** – tooled-up for your **requirements**.

Preconfigure systems with ASM1E.

In addition to more logic and diagnostics functions, the extended ASM1E AS-i Safety Monitor also has an activation/deactivation mode for parameterized software modules.

Machine manufacturers can already prepare the safety monitor configuration in the preliminary stage for all safety sensors that might be used with an extension or upgrade.

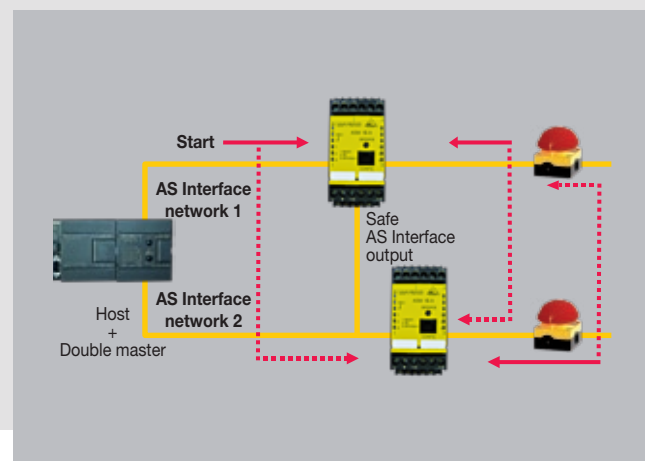
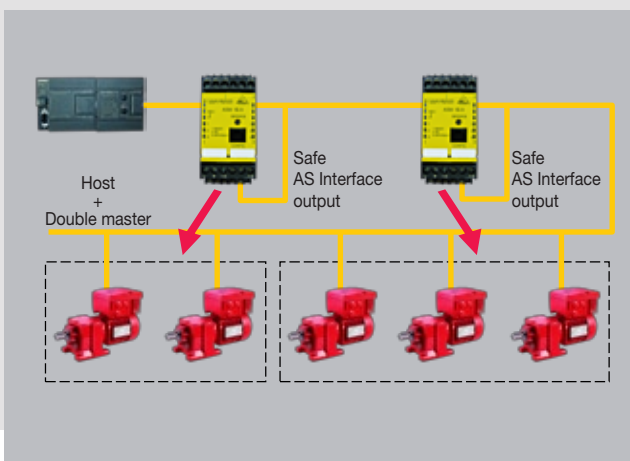
Service technicians can activate the additional safety circuit components later on as required with a mouse click, and without any expensive wiring changes or having to install more components.

Safety-related **actuator control** and AS-Interface network **coupling** with ASM2E.

The ASM2E AS-i Safety Monitor has all the functionalities and features of the ASM1E Safety Monitor. And more! Several safety-related actuators can be monitored and safely switched at the same time with just one ASM2E Safety Monitor.

The ASM2E can also be used to couple adjacent AS-i networks, which consequently also switch off immediately when an emergency STOP button is pressed in an AS-i network. Several adjacent networks can be released per restart in the same way.

Safety and signal output status information from the other network can be retrieved for diagnostic purposes.



Smart solutions for fast system setup.

Integrated **muting functions** with ASM1E-m and ASM2E-m.

Muting sensors are easy to integrate into the AS-i network via a standard AS-i input slave. The opto-electronic safety sensor with integrated AS-i interface can be connected directly to the AS-i cable, which significantly reduces wiring costs. All muting parameters are set quick and easy per drag & drop with the asimon configuration and diagnostics software.

Muting modes:

- 2-sensor parallel muting
- 4-sensor sequential muting
- Muting time extension
- Muting sensor signal filter
- Muting timeout control
- Muting override mode with button or key switch



The ASM muting functionality allows palettes, for example, to pass by the active opto-electronic protective device in a wrapping machine application.

ASM-SWC Safety Monitor Start-up Set

With the asimon configuration and diagnostics software, PC cable set consisting of programming cable and data exchange cable, and operating instructions and software user manual on CD.



Efficient sensor integration with mature AS-i accessories.



ASKM1 AS-i Safety Coupling Module

With 2 safe inputs for connecting safety sensors with contact-based outputs, e.g. emergency STOP Control Devices or Safety Switches.



ASKM2 AS-i Safety Coupling Module

With a safe electronic input for connecting Leuze electronic SOLID Safety Light Curtains, Type 2 or Type 4 in acc. with IEC/EN 61496.



AS-i M12-Adapter AC-PDA1/A

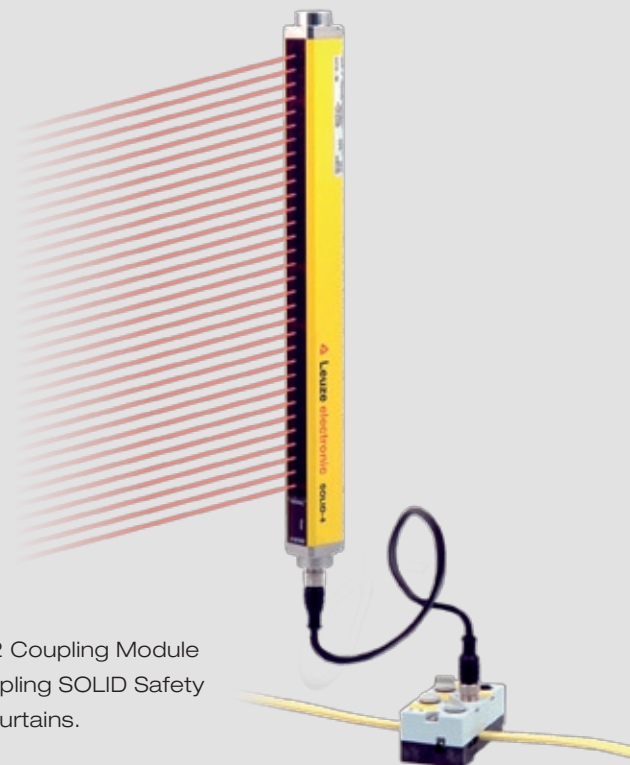
For bus connection and auxiliary power supply. Additional accessories: e.g. ASKM/PS - a power supply for 2 transmitters.



APG-02 Programming Device

For programming bus addresses for standard/A/B AS-i slaves.

Safety Hinge Switches can be easily connected to AS-Interface with the ASKM1 Coupling Module



ASKM2 Coupling Module for coupling SOLID Safety Light Curtains.

Convenient configuration –
efficient online diagnostics.

PC-supported configuration and diagnostics with asimon software.

ASM Safety Monitors are quickly and easily parameterized with asimon, the user-friendly Windows®-based configuration and diagnostics software.

asimon's innovative multi-window technology enables the user to easily configure Safety Monitors via an intuitive menu and perform efficient system diagnostics.

Logical links are easy to create with the graphic user interface, and safety configurations can be visualized as circuit diagram graphics. Image or text print-outs are also possible at all times.

The user can combine safety sensors and control devices with a mouse click and assign the safety relay outputs for switching off dangerous movements. Depending on the device type, two dependent or independent safety relay outputs are available with configurable contactor monitoring.

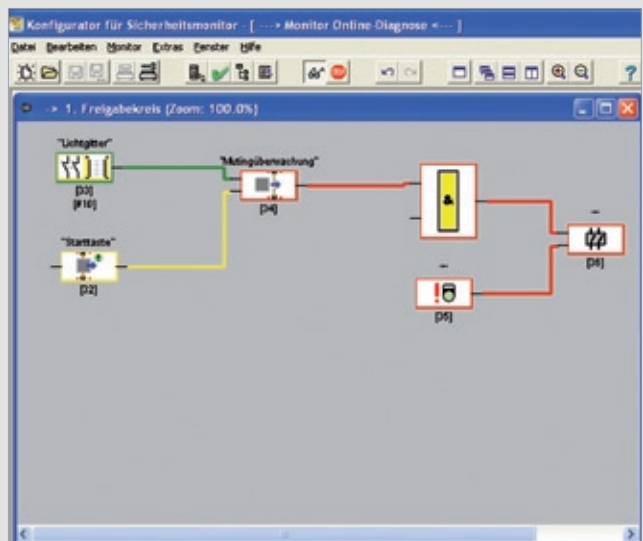
The AS-i Safety Monitor sends diagnostic information for every safety-related AS-i bus member, which can be transparently displayed via the asimon's diagnostics interface. Specific error signal analyses are consequently performed more efficiently.

Tree and circuit diagram graphics can be printed for documentation at all times – also as PDF files.

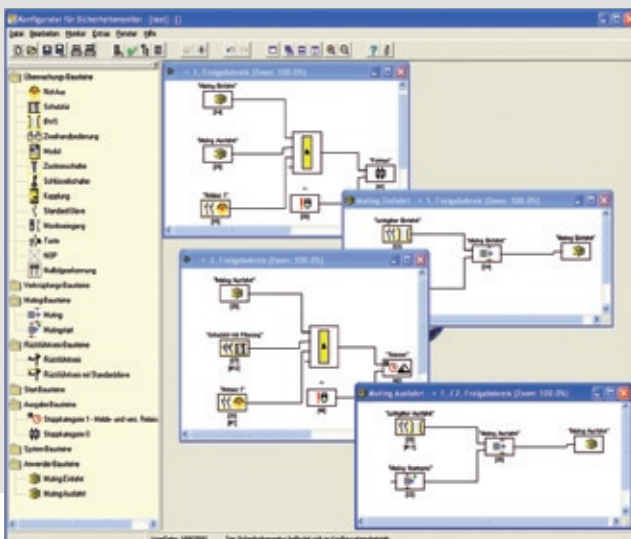


The circuit diagram graphic shows signal paths from left to right.

Colored marking allows the user to immediately see what caused the switch-off.



The asimon teach-in shows which slaves the Safety Monitor can already teach in.



Schrittweiser Teach

	CT	S1	S2		CT	S1	S2
1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	16	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
2	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	17	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	18	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	19	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	20	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	21	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	22	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	23	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	24	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	25	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	26	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	27	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
13	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	28	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
14	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	29	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
15	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	30	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
				31	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Codetabellen sind vollständig

Legende

Codetabelle (CT)

- kein sicherer Slave
- Codetabelle unbekannt
- Codetabelle mehrfach
- Codetabelle korrekt

Zustand S1 / S2

- keine Kommunikation
- Schalter offen
- Defekt oder Querschuss
- Schalter geschlossen

OK Abbrechen Hilfe

Lean safety technology with
integrated AS-i safety interfaces.

AS-i Safety inside.

Select between Type 4 Safety Light Curtains, Type 4 Multiple Light Beam Safety Devices or Safety Laser Scanners. All of these Leuze electronic AS-i safety sensors have an integrated interface for the direct AS interface connection. With the typical AS-i 2-wire cable and direct connection technology, you save the money you would spend on complex cable harnesses and external connection modules.

A typical robot application with 2 safety-set release circuits.





ROTOSCAN RS4/AS-i*

Safety Laser Scanner for people protection, Type 3 in acc. with IEC/EN 61496

- SIL 2 / SILCL 2 in acc. with IEC 61508 and IEC/EN 62061, PL d in acc. with EN ISO 13849-1
- 6,25 m protective field, 15 m warning field
- Eight programmable protective field pairs, can be switched over during operation
- Compact dimensions (140x155x135mm)
- Additional diagnostics information can be retrieved via AS-i (error signals, active protective field)



MLD 500/AS-i

Single Light Beam Safety Device, Type 4 in acc. with IEC/EN 61496

- SIL 3 / SILCL 3 in acc. with IEC 61508 and IEC/EN 62061, PL e in acc. with EN ISO 13849-1
- Range: 0.5–70 m and 20–100 m
- Functional up to -30 °C
- Integrated laser alignment aid (option), 7-segment display, muting indicator optionally included



COMPACTplus/AS-i*

Muting Transceiver, Type 4 in acc. with IEC/EN 61496

- SIL 3 / SILCL 3 in acc. with IEC 61508 and IEC/EN 62061, PL e in acc. with EN ISO 13849-1
- AS-i wiring only on one side of the protective field
- Range: 0–6.5 m (with CPM500 deflecting mirror)
- Muting sensors, indicators can be connected directly on the Transceiver
- Additional diagnostics information via AS-i (fault report, muting sensor status, etc.)



MLD 500/AS-i

Multiple Light Beam Safety Device, Type 4 in acc. with IEC/EN 614961

- SIL 3 / SILCL 3 in acc. with IEC 61508 and IEC/EN 62061, PL e in acc. with EN ISO 13849-1
- Range: 0.5–50 m and 20–70 m (transmitter-receiver systems)
0.5–8 m (transceiver systems)
- Functional up to -30 °C
- Integrated laser alignment aid (option), 7-segment display, optionally included muting indicator, connector for external muting indicator

* Only in combination with AS-i Adapter AC-PDA1/A for bus connection and power supply.

Optoelectronic Sensors

Cubic Series
Cylindrical Sensors, Mini Sensors, Fibre Optic Amplifiers
Measuring Sensors
Special Sensors
Light Curtains
Forked Sensors
Double Sheet Monitoring, Splice Detection
Inductive Switches
Accessories

Identification Systems

Data Transmission Systems

Distance Measurement

Barcode Readers
RF-IDent-System
Modular Interfacing Units
Industrial Image Processing Systems
Optical Data Transmission Systems
Optical Distance Measurement/Positioning
Mobile Code Readers

Safety Sensors

Safety Systems

Safety Services

Safety Laser Scanners
Safety Light Curtains
Transceivers and Multiple Light Beam Safety Devices
Single Light Beam Safety Devices
AS-i-Safety Product Range
Safety Sensor Technology for PROFIBUS DP
Safety Switches, Safety Locking Devices and Safety Command Devices
Safety Relays
Sensor Accessories and Signal Devices
Safety Engineering Software
Machine Safety Services

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