Leuze electronic

HVS
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the sensor people

MSI
Safety Devices

PRODUCT INFORMATION

A top system –
from the relay to the controller.

MSI safety devices from Leuze electronic.

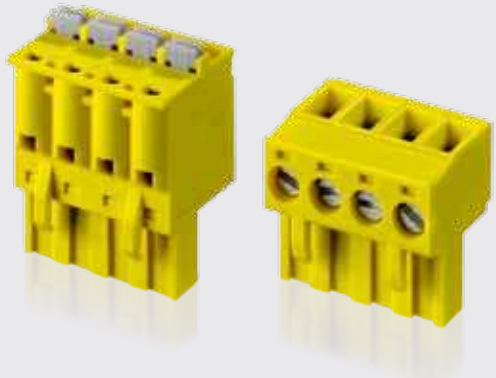
With the MSI safety relays and safety controllers, optoelectronic safety sensors, safety proximity sensors, safety switches and safety command devices can be optimally integrated in the safety circuit of the machine control.

The devices ideally accommodate demands for compact sizes, high reliability and long life expectancy through their mechanical and electrical design. They thereby facilitate economical integration in your machines and systems.

With all relays, the combination of innovative connection technologies (choose from either screw terminal or spring-cage terminal), compact and space-saving construction as well as well-structured housing design leads to a simple implementation of safety applications.

Our compact MSI relays function as monitoring and integration devices for your safety switches, E-Stop command devices, two-hand operational controls, safety light curtains as well as single and multiple light beam safety devices. In addition, they make possible the start/restart interlock (RES) and contactor monitoring (EDM) functions.

For small to medium-size machines, compact safety controls are used increasingly for monitoring the safety circuit. With their simple start-up, flexible configuration options and broad, on-board functionality, the MSI 100 and MSI 200 programmable safety controllers offer an optimum system solution.



Fully programmed for safety.

An overview of the programmable safety controllers.

Based on MSI*safesoft* programming software, the MSI 100 and MSI 200 safety controllers facilitate the efficient integration, communication and coordination of a machine's safety sensors through the use of function modules and logic blocks. Advantageous for all applications is the simple extensibility through safe I/O modules and through communication modules for integrating in the fieldbus level.

Typical areas of application

- Robot cells
- Automatic processing centers
- Packaging machines
- Tool manufacturing
- Automated transfer stations

- Logical connection of up to 20 safe inputs and 4 safe switching outputs (OSSDs) for monitoring all safe functions in a compact device (just 67.5 mm wide)
- 4 signal outputs, 2 test-pulse outputs, 2 ground-switching outputs. Additional inputs/outputs with optional safe extension modules
- Additional MSI-FB fieldbus modules for transferring diagnostic data to the PLC
- Simple device configuration via the convenient MSI*safesoft* software tool with extensive device library (PLCopen-certified function blocks)

MSI 100

The stand-alone base module.

In automated systems, sensors and actuators must interact with one another functionally and safely.
The necessary coordination is performed by the MSI 100 programmable safety controller as a stand-alone base module.

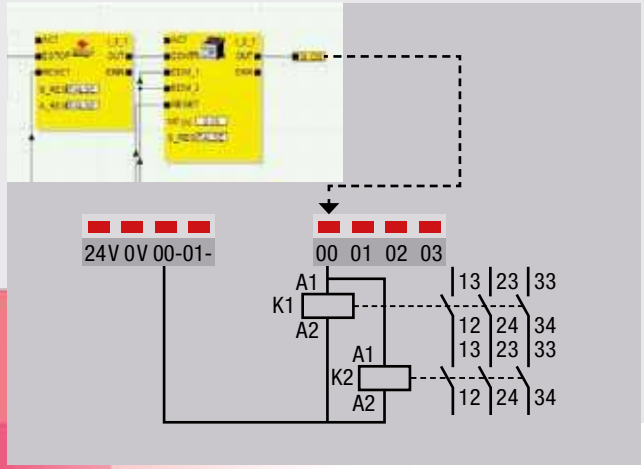
The controller monitors all safety functions, e.g. of E-Stop buttons, two-hand controls, protective doors as well as of safety light curtains and protective photoelectric sensors in machines and systems. A striking feature is the extremely compact, space-saving design: with an overall width of just 67.5 mm, the device makes available 20 safe inputs and 4 safe outputs.

Additional test-pulse and ground-switching outputs increase the safety of the monitoring circuits. All diagnostic data can be accessed via the signal outputs of the device.

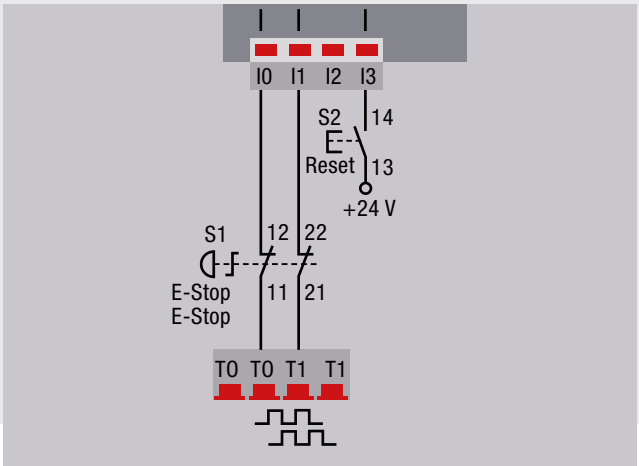
Functions

- Freely configurable safety base module
- Monitoring of all safe functions in machines and systems
- Transfer of diagnostic data to the PLC via MSI-FB fieldbus modules (optional)
- Free choice of connection system: screw terminal blocks or spring-cage terminal blocks; both can be pulled off and interchanged as desired

Ground-switching output



Test-pulse switching output



MSI 200

The modularly expandable base module.

Unlike the MSI 100 stand-alone base module, the MSI 200 safety controller facilitates the coupling of extension modules.

With the MSI 200 safety controller, the number of inputs and outputs can be significantly increased through the use of the MSI-EM extension modules. As with the MSI 100, the MSI-FB fieldbus module can be connected for transferring diagnostic data to the PLC.

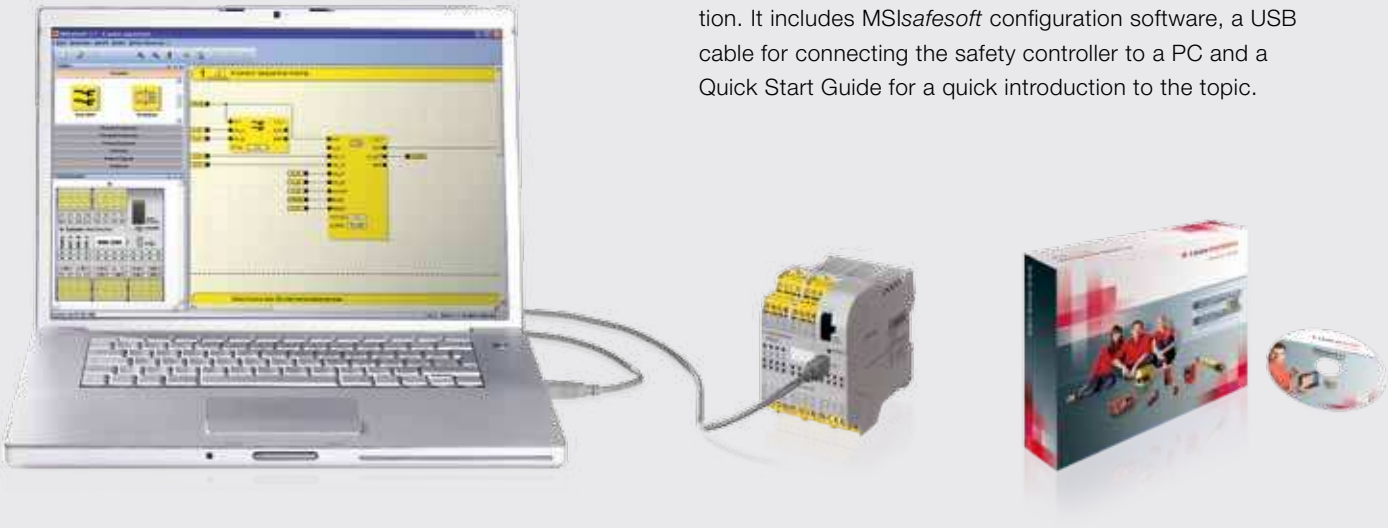
Functions

Like the MSI 100, but also:

- Up to 10 MSI-EM-IO safe I/O extension modules can be connected, i.e. a maximum of 140 inputs or 100 inputs and 44 outputs can be realized
- Comfortable and fast extension or modular exchange of components via the TBUS DIN rail connection system

Start-up set for quickly getting up to speed.

The start-up set for the MSI 100 and MSI 200 base modules offers everything needed for rapid realization of the application. It includes MSI*safesoft* configuration software, a USB cable for connecting the safety controller to a PC and a Quick Start Guide for a quick introduction to the topic.



Profit from MSI accessories – extension modules and fieldbus modules.

MSI-EM-IO extension module

The MSI-EM extension module expands the MSI 200 programmable safety controller with 8 safe inputs and 4 freely configurable channels. These may be either safe inputs or outputs (OSSDs).

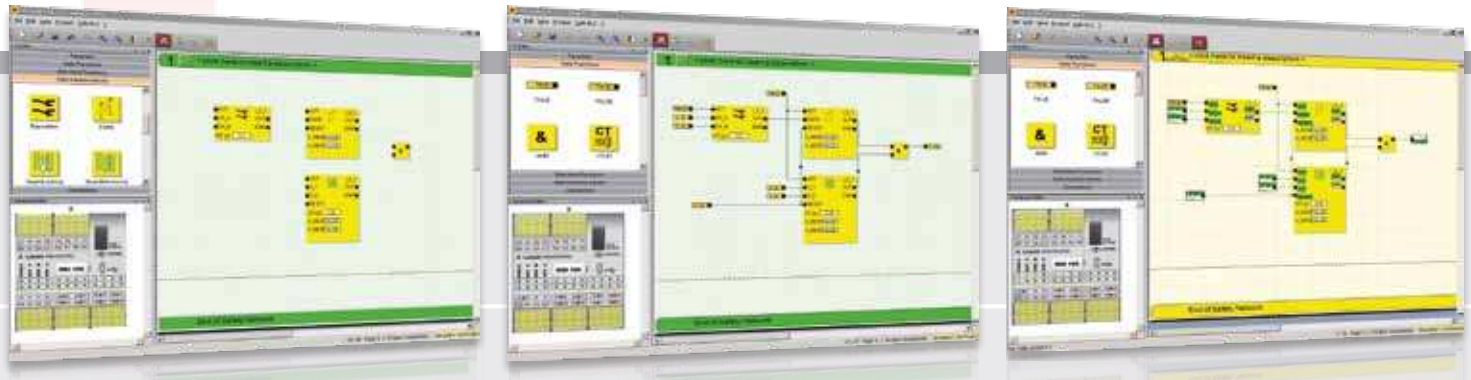
- 4 freely configurable channels-either safety outputs (OSSDs) of safe inputs
- Connect up to 10 MSI-EM-IO and realize up to 140 inputs or 100 inputs and 44 outputs
- Designs with screw terminals as well as with spring-cage terminals – both types of terminal blocks can be freely interchanged
- Simple connection via TBUS DIN rail connector
- Compact housing width 22 mm

MSI-FB-PB fieldbus module

The MSI-FB-PB fieldbus module for the MSI 100 and MSI 200 programmable safety controller facilitates the connection to PROFIBUS.

- Transfers diagnostic data (not safety-oriented)
- 4 additional inputs and 4 additional outputs for communication of the PLC with field devices (sensor /actuator systems)
- Certified according to DPV1 specification (EN 50170)
- Simple connection via TBUS DIN rail connector
- Compact housing width 22 mm

MSI*safesoft* – the simple **drag & drop** programming solution.



Select, configure, connect, test and save–finished!

The programming for defining the device function can be quickly and easily performed with MSI*safesoft* software. PLCopen-certified function blocks, which can be integrated using drag & drop functionality, facilitate menu-driven and trouble-free configuration of every safety-circuit application.

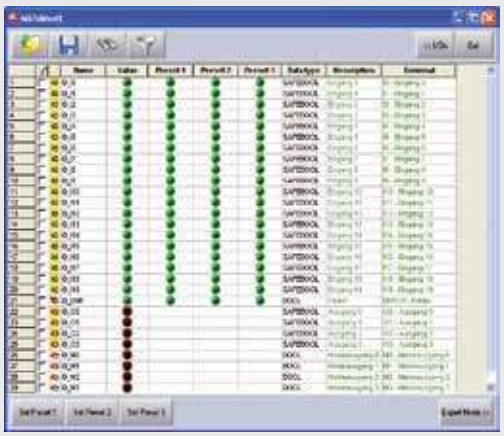
1. Select and configure safety functions.
2. Connect inputs/outputs of the module with the safety functions.
3. Test the safety functions and save–finished.

Configuration at the click of a mouse reduces wiring expenditure and minimizes sources of faults. New protective equipment can be integrated quickly and reliably at any time.

- Extensive library with certified function modules
- Automatic logic testing
- Practical wiring inspection

Extensive simulation with the MSI*simsoft* software module

Furthermore, MSI*safesoft* configuration software helps the user avoid systematic faults. The integrated simulation mode and the automatic logic test make possible a complete check of the safety of the total system even before start-up.



PLCopen safety

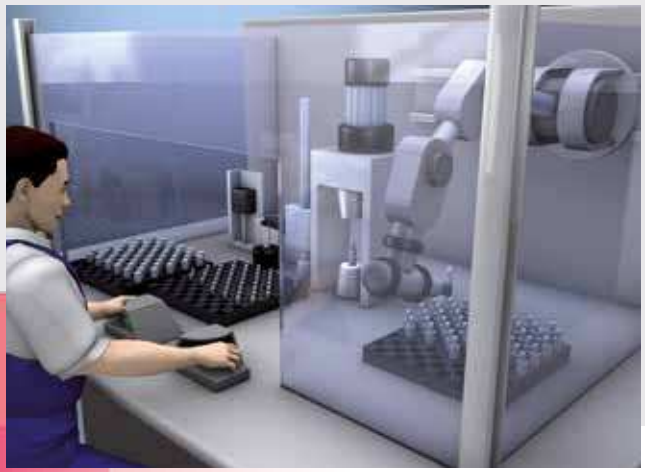
Always the **right link** between safety sensor and machine.

Safety relays for sensor integration – simple and compact.

Regardless of whether you need simpler electro-mechanical or "intelligent" configurable safety relays — you'll find what you need at Leuze electronic. With a width of just 17.5 mm and 22.5 mm, these safety relays are characterized by very narrow housings. As a result, you can realize the one- or two-channel connection of safety-related sensors in a space-saving and simple manner over up to three switch-off circuits for many applications.

Typical areas of application

- E-Stop wiring, also with combined sensor system
- Monitoring of protective doors, photoelectric sensors, two-hand control units (simultaneity monitoring)
- Periodic testing and multiple monitoring with series connection
- Signal conversion on potential-free relay contacts



MSI-SR4, MSI-SR5

Extremely fast for E-Stops.

The universal MSI-SR4

With up to 3 safety-related switching outputs (OSSDs), their signal output and the very short reaction time of just 10 ms, they provide a very good solution for hand and finger protection. Due to their very short reaction time, they can realize smaller distances between the optical safety sensors (AOPDs) and the point of operation. This results in a very compact machine design and, as a rule, a reduction in cost. All important status information is displayed for the user via 4 LEDs located on the front side of the housing. The device can be simply connected and quickly mounted.

- Very short response time
- Monitored reset button
- 3 release circuits, 1 NC contact as signal circuit
- Potential-free safety-related switching outputs
- LED displays: K1, K2, supply voltage, start/restart interlock

The two-circuit MSI-SR5

Also just 22.5 mm wide, just as fast and suitable for two optoelectronic protective devices or safety switches, the MSI-SR5 relay ensures optimum integration in the machine control. All important status information is displayed for the user via 4 LEDs located on the front side of the housing. The device can be simply connected and quickly mounted.

- Two safety input circuits
- Very short response time
- Monitored reset button
- Potential-free safety-related switching outputs
- LED displays: K1, K2, supply voltage, start/restart interlock

MSI-RM, MSI-CM

Add as many relay outputs as desired.

The economical MSI-RM2

The MSI-RM2 relay is an affordable relay module for converting electronic shut-off signals from safety sensors to potential-free, contact-based signals. When using optical safety sensors (AOPDs) with integrated contactor monitoring, its switching behavior is monitored by the EDM function of the safety sensor. Thus, it is possible to forego additional monitoring electronics in the relay itself, resulting in extremely economical and compact safety solutions.

- 2 release circuits, 1 NC contact as signal circuit for device monitoring (EDM)
- Cost-effective relay interface for safety-related sensors with EDM
- LED displays: K1, K2

The outgoing MSI-CM

If you need contact extensions, e.g., for E-Stop relays or two-hand control units, the MSI-CM relay is the right choice. It has five release current paths, one signaling current path and one feedback path. The contacts release undelayed in accordance with stop category 0. Depending on the wiring and with correct integration of the feedback path, a Performance Level PL e in accordance with EN ISO 13849-1 is achieved.

- 1- or 2-channel wiring
- Basic insulation
- 5 release contacts, 1 signal contact, 1 feedback contact

MSI-DT, MSI-2H

When time is of the essence.

The adjustable
MSI-DT

The MSI-DT safety relay with adjustable delay time can be used for E-Stop and protective door monitoring as well as for sensor (AOPD) monitoring and in safety circuits in accordance with DIN EN 60204-1/VDE 0113-1. The safety relay is equipped with two release current paths that release undelayed in accordance with stop category 0. Two additional current release paths release with a delay in accordance with stop category 1. A connected reset button is monitored.

- 1- or 2-channel wiring with cross connection recognition
- Two undelayed and two slow-release contacts
- Automatic and manual start circuit

The two-hand
MSI-2H

The MSI-2H safety relay acts as a two-hand control unit acc. to EN 574, type III C for presses, punching machines and other machines that are manually loaded. The device checks for the simultaneous actuation of the buttons and ensures a controlled process start, for example in electronics production or in sheet metal forming. The module can also be used as a protective door monitor acc. to EN 60204-1 STOP 0.

- 2-channel control with cross circuit monitoring
- Simultaneity monitoring, 0.5 s
- 2 release circuits, 1 NC contact as signal circuit
- Potential-free safety-related switching outputs
- LED displays: K1, K2, supply voltage

MSI-T, MSI-MC300

The monitoring professionals for the highest level of safety.

The tester
MSI-T

MSI-T is a safety monitoring device for the periodic testing of "testable" optoelectronic protective devices. Up to 6 type 2 sensors can be connected to the MSI-T via a series connection. In addition to testable Leuze electronic type 2 single light beam safety devices, type 2 multiple light beam safety devices can also be connected to the relay.

- Constant, cyclical testing every 2 s without process interruption of the machine function during the test
- 2 safety relay outputs with internal monitoring
- Up to 6 Leuze type 2 sensors can be connected in daisy chain
- LED indicators for all important functions and operating states
- With STOP 1 function (MSI-TS)

The magnetic
MSI-MC300

The MSI-MC300 safety relays are used for the evaluation of magnetically coded sensors and their integration in control circuits up to category 4 and Performance Level PL e in accordance with EN ISO 13849-1. Opening the protective devices triggers an E-Stop command. For protective devices that are accessible from behind, a reset button can be connected to the MSI-MC3x safety relays for manual starting.

- Compact housing
- All magnetically coded sensors (1NC / 1NO and 2NO) from Leuze electronic are connectable.
- Automatic mode or start/restart interlock

An overview of the MSI safety device product range.

Relay	Application	SIL / PL / Cat.	Number of safe inputs	Count OSSDs	Signal output	Response time (ms)	Screw terminal / spring-cage connection	Certifications
MSI-100	Safety control	3/e/4	20	4	4	< 30	yes/yes	
MSI-200	Safety control	3/e/4	20	4	4	< 30	yes/yes	
MSI-EM-IO	Extension module *	3/e/4	8	4	–	< 30	yes/yes	
MSI-FB-PB	Fieldbus module *	–	–	–	4	–	yes/yes	
MSI-SR4	Safety relay	4/e/4	–	3	1	10	yes/yes	
MSI-SR5	Safety relay	4/e/4	–	2	–	10	yes/yes	
MSI-RM2	Safety relay	**	–	2	1	10	yes/yes	
MSI-CM	Safety relay	3/e/4	–	5/2	–	20	yes/yes	
MSI-DT	Safety relay	3/e/4	–	2	–	150	yes/yes	
MSI-2H	Safety relay	–/e/4	–	2	1	20	yes/yes	
MSI-T	Safety relay	–/d/2	–	2	2	< 20	yes/yes	
MSI-MC300	Safety relay	–/e/4	–	3	–	20	yes/no	

* for programmable safety control
** depending on the upstream protective device (AOPD)

Switching Sensors
Optical Sensors
Ultrasonic Sensors
Fiber Optic Sensors
Inductive Switches
Forked Sensors
Light Curtains
Special Sensors

Measuring Sensors
Distance Sensors
Sensors for Positioning
3D Sensors
Light Curtains
Forked Sensors

Products for Safety at Work
Optoelectronic Safety Sensors
Safe Locking Devices and Switches
Safe Control Components
Machine Safety Services

Identification
Bar Code Identification
2D-Code Identification
RF Identification

Data Transmission/ Control Components
MA Modular Interfacing Units
Data Transmission
Safe Control Components

Industrial image processing
Light-Section Sensors
Smart Camera

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