

the **sensor** people

## MSI

Safety Relays –  
compact and versatile



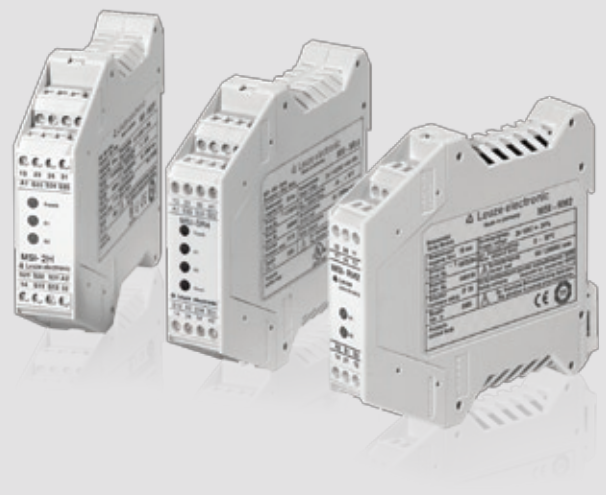
## MSI – the **Safety Relay family** from Leuze electronic.

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

Regardless of whether you need simpler electro-mechanical or "intelligent" configurable Safety Relays – you'll find what you need at Leuze electronic. Because, in addition to our compact electro-mechanical relays, functional extended series are also available. These intelligent, high-end relays are easy to configure and, thus, offer you convenient options for more demanding applications with Muting or 1-cycle / 2-cycle operation.

Our compact MSI relays serve as monitoring devices for your Safety Switches, E-STOP command devices and two-hand operating elements. Furthermore, they make possible the start/restart interlock (RES) and static contactor monitoring (EDM) functions for Safety Light Curtains as well as Single and Multiple Light Beam Safety Devices.

Depending on the upstream protective device, Compact MSI Safety Relays meet up to Category 4 acc. to EN ISO 13849 or EN 954-1. Devices of the MSI-SR4 series achieve a Performance Level PL e acc. to EN ISO 13849-1 and SIL 3 acc. to IEC 61508 or IEC/EN 62061.



## From **simple and compact** to configurable and intelligent.

### **Compact relays:** more space in the cabinet!

With a width of just 17.5 mm (MSI-RM2) and 22.5 mm (MSI-SR4, MSI-2H), these series are characterized by very narrow housings. The simple one- or two-channel connection of safety-oriented sensors via up to three de-energizing circuits enables the realization of numerous applications.

### **Configurable relays:** automatic sensor-type detection and convenient diagnostic interface!

Depending on the function range, the configurable devices of the MSI series have a width from 35 mm to 70 mm. Like a safety PLC, they are constructed with multichannel electronic switching systems. Unlike the PLC, however, the MSI

modules do not need to be programmed. Inside, clear switch assignments allow functions to be set without a PC. The connected safety sensors apply an AND logic operation to the shared safety-related switching outputs.

Whether Safety Switches up to Category 4, whether Safety Light Curtains of Type 4 or Type 2, whether with relay or semiconductor output – the automatic sensor-type detection of the configurable MSI models detects the connected sensors without complicated configuration and ensures simple start-up. And Type 4 sensors can easily be combined with Type 2 sensors.

Furthermore, the configurable relays are equipped with an RS 232 diagnostic interface for the PC-supported visualization of the system behavior. This allows wiring and cabling errors, insufficient input information and the system status to be quickly and easily detected.



Functional extended, intelligent  
Safety Relays, that can be  
configured.

## Compact

## MSI Safety Relays.



The Economical  
**MSI-RM2**

is an affordable relay module for converting electronic shut-off signals from safety sensors to potential-free, contact-based signals. If Optoelectronic Protective Devices (AOPDs) with integrated contactor monitoring (EDM) are used, this module can be used to achieve extremely economical protective measures.



The Universal  
**MSI-SR4**

is the standard link between machine control and Optoelectronic Protective Devices as well as Safety Switches. The device—only 22.5 mm wide, with three safety-related switching outputs and a signal output—can flexibly cover a broad spectrum of applications. It is characterized, in particular, by a monitored start-/restart button, automatic start-up/restart and a short reaction time of just 10 ms. All important state information is presented to the user via 4 LEDs on the front side of the housing. The device can be simply connected and quickly mounted.



The Two-hand  
**MSI-2H**

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 extended simultaneity monitoring for two-hand operational controls finds an increased level of acceptance of the safeguards by the users. The module can also be used as a protective door monitor acc. to EN 60204-1 STOP-0.



## Configurable MSI Safety Relays.



The Outgoing  
**MSI-s/R,**  
**MSI-sx/Rx\***

is an interface module between Optoelectronic Protective Devices and the machine control. Up to four AOPDs of Type 2 or up to two AOPDs of Type 4 can be connected.



The Tactful  
**MSI-i/R,**  
**MSI-ix/Rx\***

is an interface module for the one- or two-cycle control of machines with signal evaluation of Safety Light Curtains. This can be used, for example, to achieve a time-optimized production sequence on presses.



The Muting Specialist  
**MSI-m/R,**  
**MSI-mx/Rx\***

enables Muting for automated manufacturing cells, e.g. packaging machinery, palletizers etc. It offers up to 4 inputs for Type 4 and Type 2 AOPDs, switches as well as E-STOP command devices.



The Temperature-accomodating  
**MSI-mE/R,**  
**MSI-mxE/Rx\***

offers the same functions as the MSI-m/R and MSI-mx/Rx series and also fulfills the increased temperature requirements of UL 508.

### \*The x-models of the individual series

In addition to the mixed connection of Type 4 and Type 2 sensors, these models also enable the connection of Safety Switches or E-STOP command devices in accordance with safety regulations. This reduces wiring, as only a common safety output (forced relay) needs to be added to the shutdown path of the control.

All MSI x models feature a warning output that outputs a warning message when the output relay reaches the previously set number of switching cycles. Without interrupting Muting operation, the MSI-m and -mx Muting models signal a faulty Muting sequence or report the failure of one of the two external Muting indicators. The affected components can then be replaced in the next production phase.



## A **variety of applications** that are worth taking a look at.

### **MSI-RM2** – the compact and economical module.

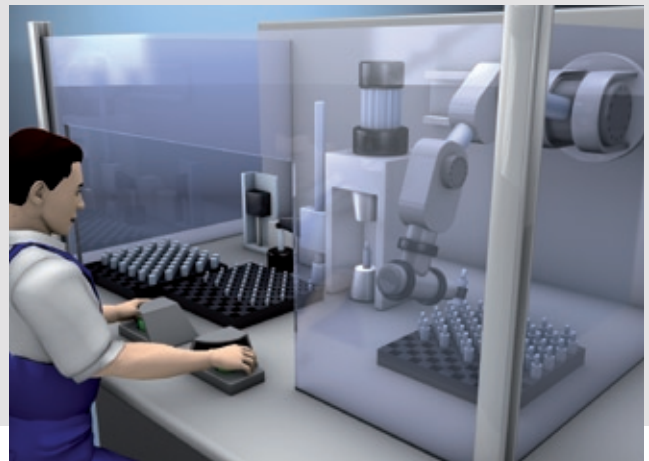
The switching behavior of this relay is monitored by the EDM function of the safety sensor for applications with AOPDs with integrated contactor monitoring. Thus, it is possible to forego additional monitoring electronics in the relay itself, resulting in extremely economical and compact safety solutions.

### **MSI-SR4** – the "all-in-one" relay.

Based on its three safety-related switching outputs (OSSDs), its signal output and a very short reaction time of just 10 ms, the device is a very good solution, also for machines with hand and finger protection. Thanks to the very short reaction time, it is possible, for example, to achieve shorter distances between the AOPDs and the danger area. This results in a very compact machine design and, as a rule, in cost savings.

### **MSI-2H** – for controlling two-hand operational controls.

The module is used everywhere that feeding-in is not automatic, but rather has to be performed manually by people. 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.





**MSI-sx** – Light Curtain interface and protective door monitor in one.

In addition to Type 4 or Type 2 AOPDs, Safety Switches or E-STOP command devices can likewise be connected to the MSI-sx. Thus, with just one module, a wide combination of safeguarding scenarios can be realized, e.g. access areas and service doors.

**MSI-ix** – cycle control plus rear-area monitoring at presses and punching machines.

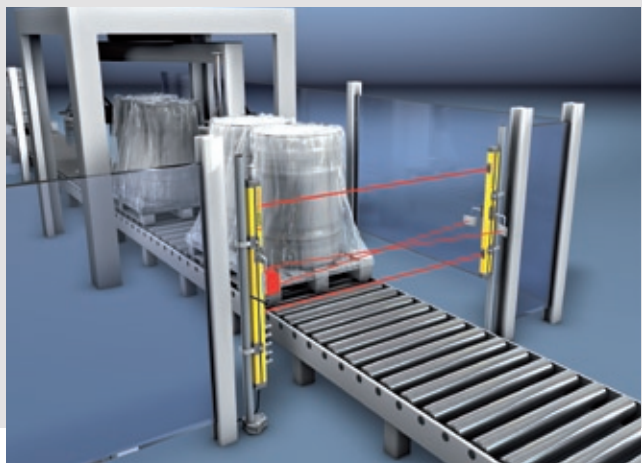
The MSI-ix enables the connection of two Type 4 or four Type 2 Safety Light Curtains. While the machine is controlled via the Light Curtain, e.g. of an insertion area in cycle operation, the second Light Curtain, e.g. at the material discharge point, constantly protects against unauthorised access. Either 1- or 2-cycle cycles can be evaluated. In the interaction of man and machine, this ensures time-optimized production processes. Instead of the second Light Curtain, a protective door switch can also be connected, e.g. for service doors.

**MSI-mx** – the Muting system solution for automated manufacturing cells.

The MSI-mx relay enables Muting at the material infeed and, if desired, the continuous monitoring of another access point at the same time. The independent Muting at an inlet and at a discharge of a manufacturing cell (parallel, sequential) is also possible. In addition to the Muting sensors, Safety Switches for monitoring up to 4 maintenance doors or hanging flaps can be connected.

**TNT 35** – Test Monitoring Unit for Optoelectronic Protective Devices.

Via a series connection, up to six testable Leuze electronic sensors of Type 2 can be connected to the TNT 35. With the TNT 35, they form an AOPD of Type 2 acc. to IEC/EN 61496. The start/restart interlock (RES) and contactor monitoring (EDM) can be selected as functions. LED displays inform the user of all important functions and operating states.



## **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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