Leuze electronic

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the sensor people

# MLD 500, MLD 300

## Multiple Light Beam Safety Devices and transceiver with integrated muting

PRODUCT INFORMATION

# MLD – the cost-effective alternative.

## The new Multiple Light Beam Safety Devices with integrated cost savings potential.

The Multiple Light Beam Safety Devices of the MLD 300 and MLD 500 series are active opto-electronic protective devices for persons at access points or at hazard locations of machines and plants. They are available as 2-, 3- and 4-beam transmitter-receiver systems as well as 2- and, for the first time, 3-beam transceiver systems.

The user can select from the several function classes of the MLD series to get the optimal model for the application and respective requirements.

In addition to the start/restart interlock and contactor monitoring functions, various muting modes can be selected. No PC is necessary for configuration, as the functions are set via the pin assignments at the connection of the devices. Thus, no additional modules are required and, should it be necessary to exchange a device, the sensor does not need to be reconfigured.

| Standards conformity | MLD 300 | MLD 500 |
|---|---|---|
| Type in accordance with EN/IEC 61496 | Type 2 | Type 4 |
| SIL in accordance with IEC 61508 and EN/IEC 62061 | SIL 2 | SIL 3 |
| Performance Level (PL) in accordance with EN ISO 13849-1 | PL d | PL e |

# Access guarding, perimeter guarding, muting – your requirements are decisive.


- **Transceiver innovation**
  The 3-beam transceiver can replace more complex systems.

- **Suitable for low temperature environment**
  Completely functional up to -30 °C.

- **Simple start-up**
  All settings, e.g. configuration of the muting modes, are made without the use of a PC; a device can be replaced by means of Plug & Play via M12 connection technology without any programming.

- **Device versions with integrated AS-i Safety interface**
  Direct connection to the AS-i bus without additional coupling modules.

- **Muting without additional devices**
  Integrated muting functions, configurable via pin assignments. Status indicators optionally included in the receiver. Pre-mounted Muting Sensor Sets for L- and T-designs enable sequential and parallel muting.

- **Fast and precise laser alignment**
  Integrated laser alignment aid (option) for easy and fast alignment for long distances.

- **7-segment display**
  Easy determination of the sensor behavior and appropriate countermeasures.

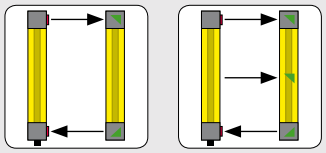
# Whether transceiver or transmitter-receiver system – the MLD advantages are always included.

The respective equipment (function class) of the MLD series can be selected depending on the application. This applies not only to integrated muting functions, but also to other optional performance characteristics. The MLD 330 and MLD 530 series has, for example, a 7-segment display, which you can use to immediately determine the cause of sensor behavior and initiate the proper countermeasures.

## Transceiver system

This system consists of an active transceiver (transmitter/receiver in one housing) and a passive Deflecting Mirror without electrical connection.

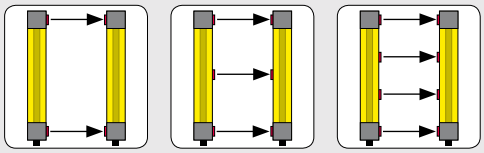
- 2- and 3-beam systems available
- Operating range from 0.5 to 8 m
- M12 connection technology, also with integrated AS-i Safety interface
- High robustness against interference through multiple scanning



## Transmitter-receiver system

Systems consisting of transmitter and receiver are well-suited for high operating ranges.

- 2-, 3- and 4-beam systems available
- Operating range type 1 (MLD…-R /-T): 0.5 to 50 m
- Operating range type 2 (MLD…-xR /-xT): 20 to 70 m
- M12 connection technology, also with integrated AS-i Safety interface
- High robustness against interference through multiple scanning



| Function | MLD 310<br>MLD 312 *<br>MLD 510 | MLD 320<br>MLD 520 | MLD 330<br>MLD 530 | MLD 335<br>MLD 535 |
|---|---|---|---|---|
| Automatic start/restart | X | X | | |
| Start/restart interlock (RES) | | X | X | X |
| Contactor monitoring (EDM) | | X | X | X |
| Configurable operating modes | | X | X | X |
| 2-sensor muting (timing controlled, sequence controlled) | | | X | |
| 4-sensor muting (timing controlled) | | | | X |
| Laser alignment aid (optional for transmitter-receiver systems) | X | X | | |

*) MLD 312 with external test

# Alignment and mounting – a child's play.

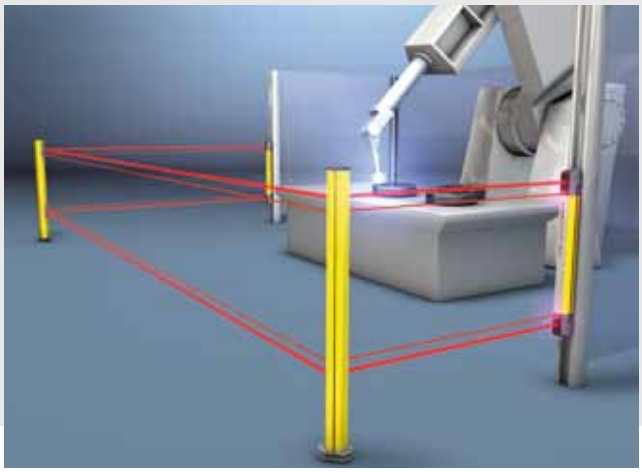
## Easy alignment
with integrated laser alignment aid.

The series is predestined for wide-area perimeter guarding, which is realized with Deflecting Mirrors. With the integrated laser alignment aid, adjustment of such safeguards is noticeably simplified. A reflective element integrated in the cap on the receiver side of the system ensures clear visibility of the alignment laser spot, even over long distances. The Deflecting Mirror columns necessary for perimeter guarding are simply and quickly aligned, step-by-step. The setup time is considerably reduced.

**BT-240 swivel mount (optional)**
With the swivel mount, the safety sensor can be flexibly turned 240° on its own axis, easily aligned and reliably mounted – an extremely practical solution for further simplifying use of the devices and for accelerating the installation.

**BT-P40 clamp bracket (optional)**
With the clamp brackets, the safety sensor can, when used in device columns, be flexibly adjusted in height and easily aligned in its vertical position.

**Multicolored status indicator**
The practical aid for daily operation: the colored indicator displays the respective sensor operating state, even over large distances - and during muting, of course.

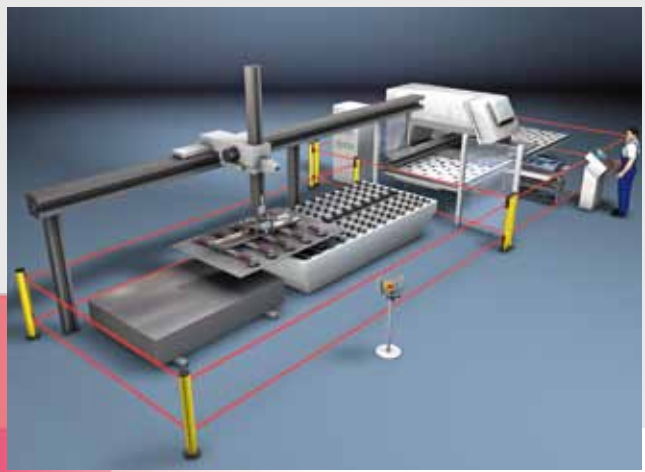


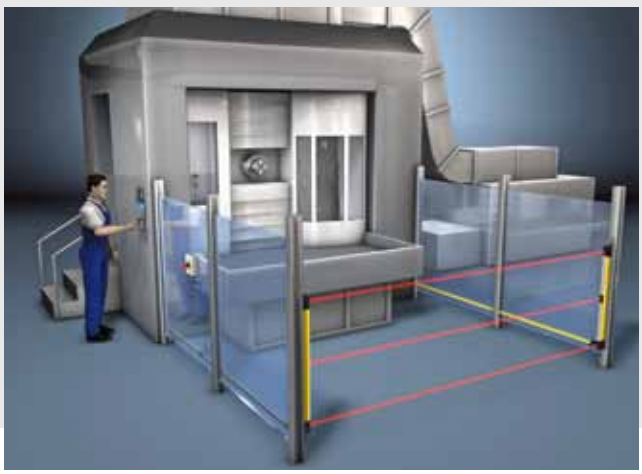
Easy alignment with integrated laser alignment aid when setting up access guarding.

# Integrated **AS-i interface.**


The Multiple Light Beam Safety Devices of the MLD series are available with an integrated AS-i Safety interface.

The MLD/AS-i safety sensors can be integrated immediately into the AS-interface network, i.e., without additional safety-oriented coupling modules and hence cost-effectively.





# Configure **muting modes** without a PC.

With the Multiple Light Beam Safety Devices of the MLD series, a total of 6 different muting operating modes can easily be set. Configuration is performed by means of wiring or pin assignments at the plug and socket. Further auxiliary equipment, such as a PC, software etc., is no longer required and additional muting devices are not required. When setting up the muting application, this considerably simplifies the overall construction.

## Freely **configurable muting!**

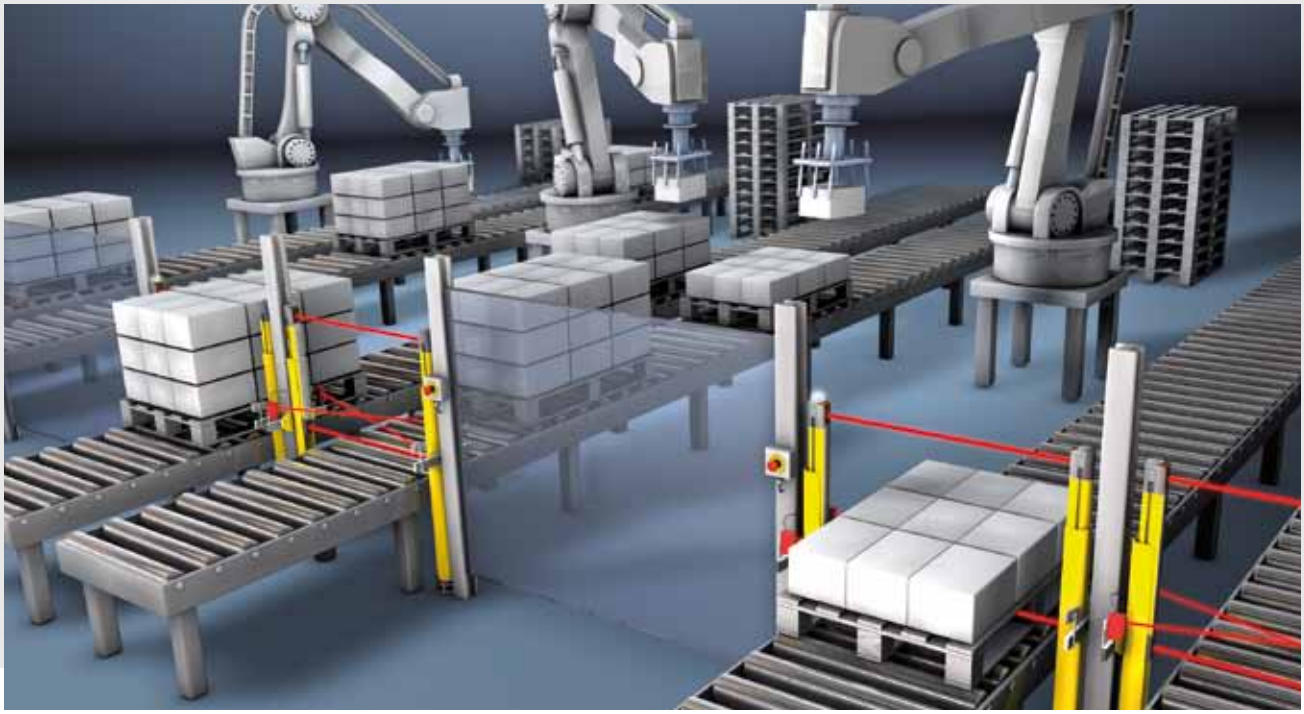
With the individual operating modes, the sensor is well equipped for a wide range of muting applications. In addition to 2- and 4-sensor muting (timing controlled, sequence controlled), partial muting is, for example, also possible.

In this case, the lower beams can be muted while the upper beam remains active.
As a result, a safeguard that would otherwise be necessary, e.g. by means of guards or other protective sensors, can be eliminated.

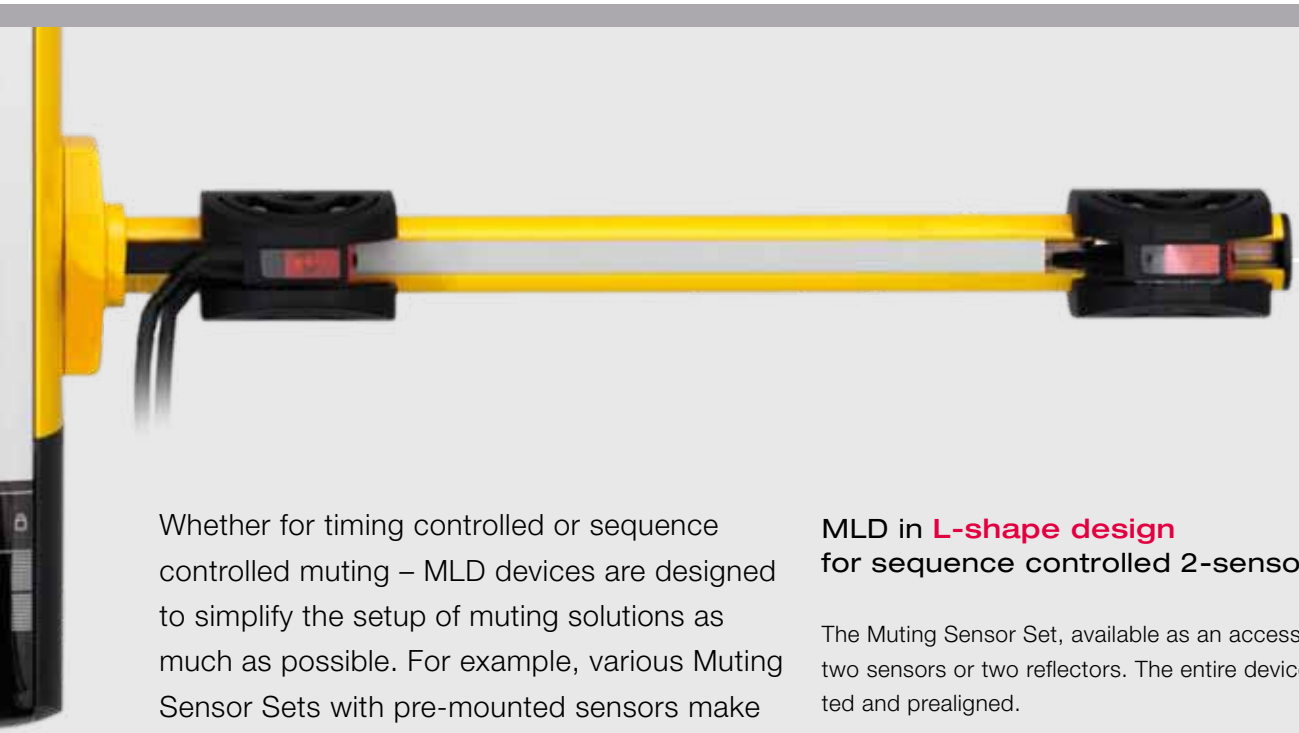
## Helps **reduce** cabling!

If a muting signal comes from a system control, the user can use the 8-pin plug (machine interface) directly on the sensor for this signal. This reduces cabling requirements.

Further-more, the muting enable function can be used to enable or disable the muting sequence via an external signal. This increases security against tampering.



# Muting accessories
# for **automated transfer stations**.

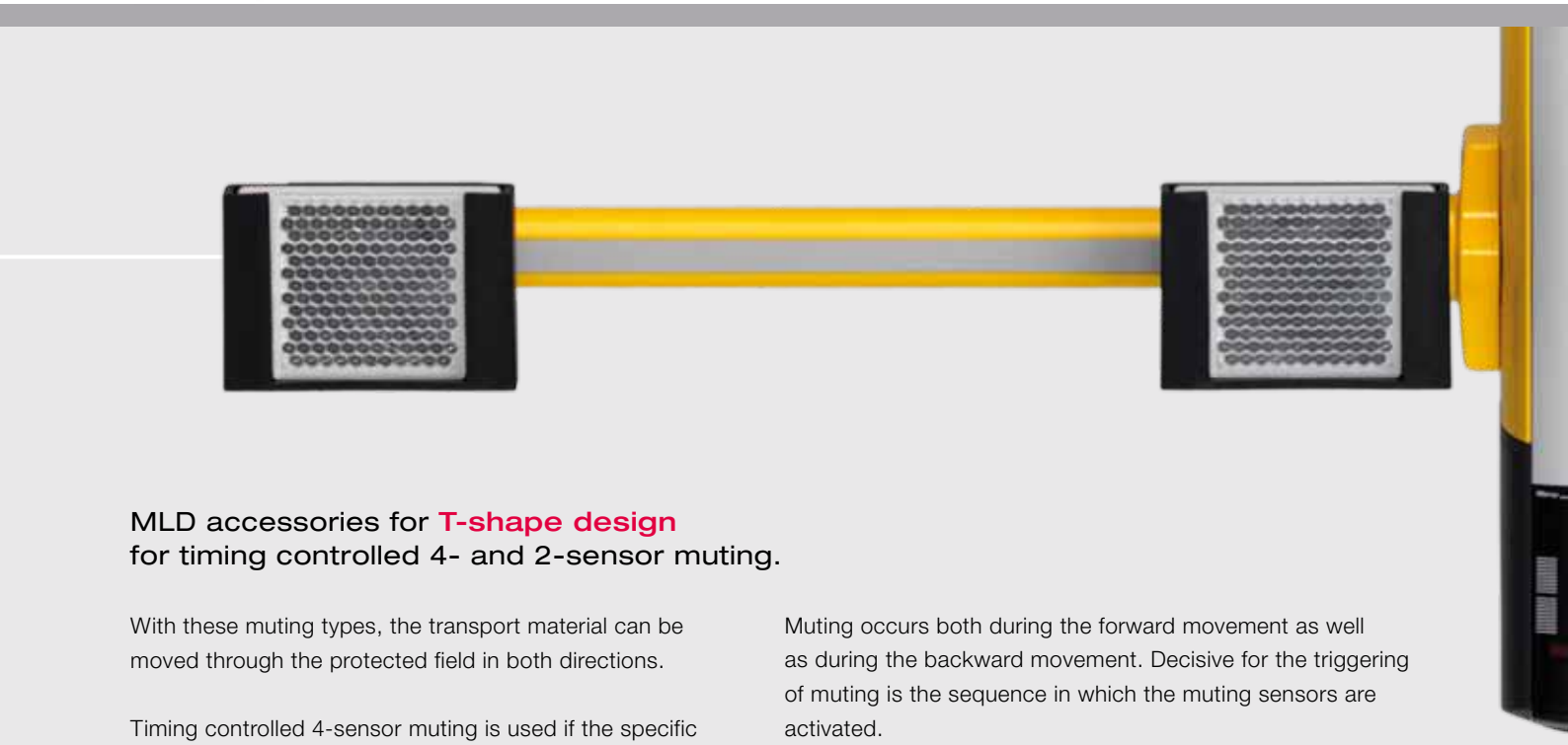


Whether for timing controlled or sequence controlled muting – MLD devices are designed to simplify the setup of muting solutions as much as possible. For example, various Muting Sensor Sets with pre-mounted sensors make installation fast and easy.

## MLD in **L-shape design** for sequence controlled 2-sensor muting.

The Muting Sensor Set, available as an accessory, includes two sensors or two reflectors. The entire device is premounted and prealigned.

L-shape designs are used in situations where pallets exit danger zones, particularly if little space is available outside of the danger zone.



## MLD accessories for T-shape design for timing controlled 4- and 2-sensor muting.

With these muting types, the transport material can be moved through the protected field in both directions.

Timing controlled 4-sensor muting is used if the specific application situation requires that the muting sensor light beams do not cross, but must instead be parallel, e.g. due to reflective materials or interfering environmental conditions.

Muting occurs both during the forward movement as well as during the backward movement. Decisive for the triggering of muting is the sequence in which the muting sensors are activated.

With the Muting Sensor Set, the user no longer needs to worry about how the muting sensors are configured.

# Safeguarding **with** and **without muting** – simply innovative!

The series can be used with standard access guarding as well as for applications where muting is required. Here, too: just connect and the device is immediately ready.

Access guarding with MLD 500 Multiple Light Beam Safety Devices in a robotics application.

Access guarding with 3-beam transceiver of the MLD 300 series for conveyor and storage systems.

The operating range changeover of the MLD sensors prevents mutual interference when several systems are close to each other.

MLD 500 Multiple Light Beam Safety Device with integrated muting indicator in an AS-i Safety application with sequence controlled muting.

# AS-i-based muting – simple, efficient, economical.

## MLD with ASM – a very good team.

In cooperation with the Leuze electronic Safety Monitor ASM-m, the MLD Multiple Light Beam Safety Devices permit the easy construction of access guarding with muting based on AS-i Safety at Work.

### Fewer addresses – more slaves.

The ASM-m Safety Monitor takes care of controlling the muting process, including driving the muting indicator integrated into the MLD via AS-interface. It is now no longer necessary to assign an AS-i slave address specifically for the muting indicator. This also applies to an external muting indicator connected to the local socket of the safety sensor.

This saving allows even more AS-i slaves, such as safety sensors, to be connected to an AS-i network for each AS-i Safety Monitor.

**Optoelectronic Sensors**

Cubic Series
Cylindrical Sensors, Mini Sensors, Fiber 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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en 03-2013/01 601021