



2014 / 2015

# PRODUCT OVERVIEW



# OUR RANGE OF PRODUCTS A



## Switching Sensors 16

Photoel. Sensors / Light Scanners, Cubic Housing	18
Photoel. Sensors / Light Scanners, Cylindric Housing	22
Fiber Optic Sensors	22
Ultrasonic Sensors	22
Inductive Switches	24
Forked Sensors	26
Light Curtains	27
Special Sensors	28
Double Sheet Monitoring	29
Splice Detection	29



## Measuring Sensors 30

Distance Sensors	32
Sensors for Positioning	34
3D Sensors	36
Light Curtains	37
Forked Sensors	37



## Products for Safety at Work 38

Safety Laser Scanners	40
Safety Light Curtains	41
Transceivers and Multiple Light Beam	
Safety Devices	42
Single Light Beam Safety Devices	43
AS-i-Safety Product Range	45

# ND SERVICES

Safety Proximity Sensors	47
Safety Switches and Safety Locking Devices	48
Safety Command Devices	50
Safety Relays	51
Programmable Safety Controllers	54
Safety Sensor Sets and Accessories	56
Machine Safety Services	58



## Identification 60

Stationary Bar Code Readers	62
Mobile Code Readers	64
Stationary 2D-Code Readers	66
RFID Systems	67



## Data Transmission / Interfacing Units 68

Data Transmission	70
Modular Interfacing Units	72



## Industrial Image Processing 74

Smart Camera	76
--------------	----



## Accessories 78



# THE BEST FROM PRINTED ONLINE PRODUCT DATA

Many of our customers still use our printed product brochures to get an overview of our product range. But when it comes to comparing technical device details, finding suitable accessories or, for example, downloading 3D CAD models, [www.leuze.com](http://www.leuze.com) is the right address. There you will find all detailed product information at a glance, just as clearly arranged as in this overview.

With the product selector, you simply select the desired sensor and send a corresponding query directly to our experts. If you already know what you need, enter the part number at [www.leuze.com/en/search](http://www.leuze.com/en/search) to open the product detail page from which you can find the appropriate or required accessories.

## SIMPLY AND QUICKLY TO THE RIGHT SENSOR, SUITABLE ACCESSORIES AND PRODUCT INNOVATIONS

- Product selector with technical feature selection
- Simple product comparison by selecting feature differences
- Submit a product query with a click of the mouse
- Technical features at a glance
- Display of suitable/necessary accessories
- 3D CAD models, data sheets, technical descriptions, software, drivers and much more



Product selector



Product detail page

# OVERVIEW AND BASE

Alternatively, you have the option of finding the right product via an industry overview or our solution area. In all cases, our selectors guide you step-by-step to your sensor solution.

- Industry area with applications and suitable products
- Solution area with practical applications and suitable products



Industry and solution area

Ann-Kathrin Waldow,  
Employee in the Customer Care Center



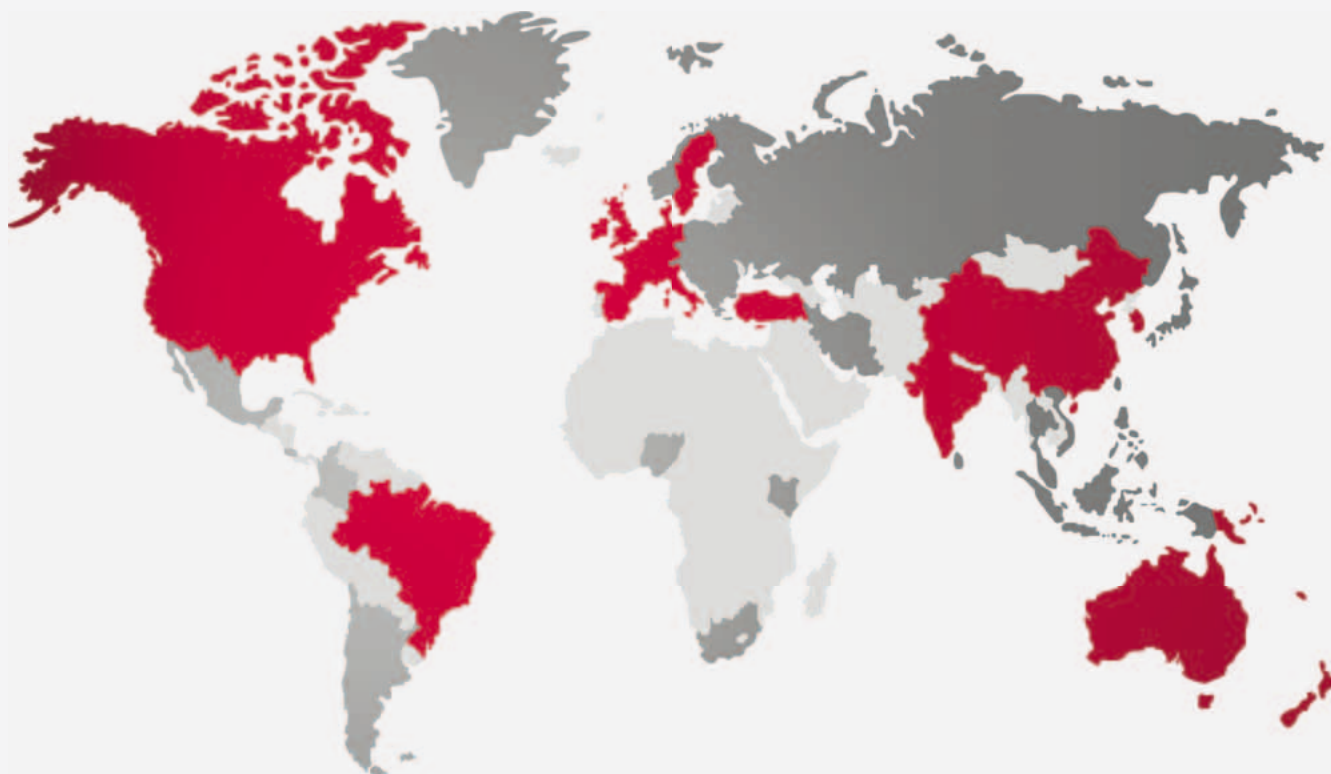
# WE ARE THE SENSOR PEOPLE

For more than 50 years, Leuze electronic has stood for innovative and efficient sensor solutions in the area of factory automation worldwide. Our range of products extends from switching and measuring sensors, identification and data transmission systems to intelligent image processing systems and solutions for safety at work. Our devices operate optically, inductively, with ultrasonics or via RFID, depending on which technology is appropriate for your application.

With 17 of our own subsidiaries and 42 sales partner around the world, our customers can reach us quickly and easily everywhere. To accomplish this, we produce our sensors on four continents and can thereby always guarantee product availability.

Regardless of when and where the competence of the sensor people happens to be needed at the moment. We are the right partner for both standard applications as well as for

17 subsidiaries and 42 sales partners ensure global availability.



custom, high-end solutions. Through an expanded sales and service network, our competent consultation and our reliable customer service, you can count on us to be at your side around the world.

#### Subsidiaries

- Australia / New Zealand
- Belgium
- Brazil
- China
- Denmark / Sweden
- France
- Germany
- Great Britain
- Hong Kong
- India
- Italy
- Netherlands
- South Korea
- Spain
- Switzerland
- Turkey
- USA / Canada

You can find other sales partners at  
[www.leuze.com/en/worldwide](http://www.leuze.com/en/worldwide)

Dr. Albrecht Pfeil,  
Head of Product Management



# OUR **PROMISE** TO YOU

## YOUR SENSOR BUSINESS—SIMPLER AND MORE EFFICIENT

Many pledge themselves to customer orientation—  
at Leuze electronic, we go a step further.

We offer specific and measurable added value in the areas  
of **USABILITY**, **APPLICATION KNOW-HOW** and **SERVICE**—  
to help make our customers more successful. These areas are  
our yardstick for new product developments, innovative service  
offerings and extensive market expertise.





## SMARTER **PRODUCT USABILITY**

With regard to our product developments, we systematically place emphasis on the especially good usability of all devices. To this end, simple mounting and alignment are taken into account — just as the uncomplicated integrability of the sensors in existing fieldbus systems and easy configuration, e.g. via a web browser, are.

## SMARTER **APPLICATION KNOW-HOW**

Whoever can do it all, can do nothing right. Which is why we concentrate on selected target sectors and applications. There, we are specialists and know all aspects inside out. For this purpose, we optimize our solutions and offer a comprehensive product range that makes it possible for our customers to obtain the absolute best solutions from a single source.

## SMARTER **CUSTOMER SERVICE**

The technical and personal closeness to our customers, and a skilled, straightforward handling of queries and problems, are among our strengths — and will remain so. Consequently, we will continue to expand our service offerings and, indeed, also forge ahead in new directions to persistently redefine the utmost in customer service. Whether on the phone, in the Internet or on-site with our customers — regardless of when and where the expertise of the sensor people is needed at any time.

Info at: [www.leuze.com](http://www.leuze.com)

Katrin Rieker,  
Employee in the Customer Care Center



## SMARTER **PRODUCT USABILITY**

# WE **FOCUS** ON THE **OPTIM** OF OUR PRODUCTS

## WORKING WITH SENSORS NEEDS TO BE THIS EASY

Regardless of the application or industry in which our sensors are used, a product's class is determined by—in addition to absolute reliability and top performance—its usability. Be it during mounting, alignment, configuration or while in operation—development focus is always on the simple integration of our products.

This results in solutions such as the **omnimount** integrated mounting and alignment concept, which needs no additional components. Or active ambient light suppression, **A<sup>2</sup>LS**, which enables reliable detection, even with interfering diffused light.



### **brightvision.**<sup>®</sup>

Clearly visible light spot as a convenient alignment aid



### **omnimount.**

Integrated mounting and alignment concept without additional components



### **integrated** laser alignment.

Convenient alignment function for large distances



### **availability** control.

Function which outputs a warning message even before contamination-related failure of a sensor occurs



### **integrated** connectivity.

Integrated interface diversity for simple integration in your fieldbus



### **abeam.**

Calibrated optics system makes elaborate sensor alignment unnecessary after mounting



# UM USABILITY

With us, optimized usability is also seen in the easy integration of the devices in your fieldbus environment. For this reason, many sensors are already equipped with the most common interfaces. This integrated connectivity saves time and money for wiring and additional connector units.



## **slim**line-design.

Extremely flat housing design  
ideal for installation in  
confined spaces



## **think**modular.

Freely selectable range  
of functions



## **teach**me.

Optimum sensitivity adjustment  
at the press of a button

Matthias Göhner,  
Product Marketing Manager

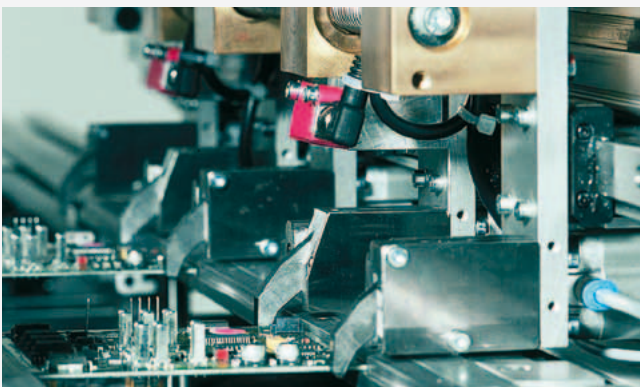


# WE CAN'T DO EVERYTHING. WE DO **RIGHT.**

## TAILOR MADE FOR OUR FOCUS INDUSTRIES

Sensors have become a fixed part of all areas of factory automation. Without these clever helpers, no robot can orient itself, no high-bay warehouse can transport goods and no bottle can be filled. The requirements of the individual applications and industries vary so widely, however, that a great deal of experience is needed in order to develop the most efficient solutions.

During product development, we therefore concentrate on finding solutions to specific tasks from our focus industries. We know the boundary conditions here exactly and, as a result, can develop devices specifically according to our customers' requirements.



# BUT WHAT WE DO,

- Conveyor/storage systems
- Automotive industry
- Packaging industry
- Robotics/handling
- Machine tools
- Laboratory analysis



Thomas Merk,  
Head of Application Support & Service



# OUR MOST IMPORTANT PROFESSIONAL CUSTO

## WE ARE YOUR SENSOR PEOPLE

It is for good reason that we are known in the industry as the sensor people. We have known for years that a technically demanding endeavor such as the sensor business can only function if we are reliable partners to our customers. Here, it is about much more than technical high performance in the products—it is about a high

level of knowledge about applications and technical interactions and the constant willingness to provide assistance to our customers whenever they need it. Technically competent support is another element, such as the global presence of competent contacts and the 24/7 availability of our customer help desk.



# PRODUCT IS MER SERVICE

## Training & support

- Product and standards training
- Application consulting
- Safety consulting
- Safety engineering

## After sales services

- 24h helpline (in selected countries)
- Inspection database
- Repairs and device replacement service
- On-site service

## Field services

- Technical field service
- Start-up support
- Safety inspection, stopping time measurement

## Online services

- Web product selector
- Download services



Simone Fischer,  
Customer Advisor in the Customer Care Center

# SWITCHING SENSORS



## EVERYTHING IN VIEW FOR PROPER SWITCHING

In this area, you will find sensor solutions that detect an object optoelectronically, ultrasonically or inductively and output a robust switching signal. Select here from a large number of different operating principles and designs. Our devices excel thanks to their hard-nosed practical suitability in combination with the following technical highlights:

- **A<sup>2</sup>LS.** (Active Ambient Light Suppression) — almost perfectly reduced susceptibility to ambient light
- **brightvision.**<sup>®</sup> — simplifies the handling and commissioning of sensors by means of a bright, highly visible light spot
- **IO-Link** — standardized interface for the lowest field level for quick and convenient configuration and inspection of sensors directly via the control



*“The topic of usability as a distinguishing feature of our devices is becoming increasingly important today. With regard to mounting, alignment, commissioning and exchangeability, we are the industry benchmark in many areas — convince yourself.”*

Dr. Marie-Theres Heine,  
Product Manager — Switching Sensors

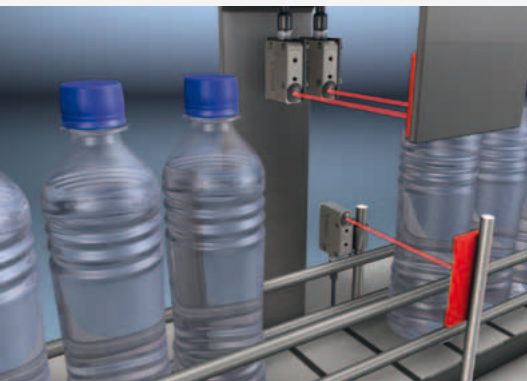




**A WORLD FIRST**

## WE'VE DONE **AWAY WITH ALIGNMENT!** THE NEW **PRK 18B**

The new, calibrated *abeam* optics of the PRK 18B retro-reflective photoelectric sensor are so accurate that time-consuming alignment is no longer necessary. This saves time and, above all, extensive mounting accessories. Do you want to learn how? Then note the details!



### Do you want to save time and costs during alignment?

*The calibrated *abeam* optics precisely strike even small reflectors without time-consuming alignment.*

### Does mounting need to be fast and easy?

*The threads integrated in the housing and the calibrated *abeam* optics save 80% additional material and make initial mounting and device changes fast and uncomplicated.*

### Are you convinced by the current PRK 18?

*You'll be thrilled by the new PRK 18B.*

### Do your devices suffer from exposure to aggressive cleaning agents?

*The chemically nickel-plated metal housing stands up to every challenge!*

### Are speed and precision important to you?

*Precise repeatability thanks to a jitter time of just 40  $\mu$ s.*



Discover the PRK 18B on the web at [www.leuze.com/en/prk18B](http://www.leuze.com/en/prk18B)

# Photoel. Sensors / Light Scanners, Cubic Housing

## Specifications

Dimensions excl. plug, W×D×H

Operating voltage

Switching outputs

Connection type

Degree of protection

Certifications

Housing

## Throughbeam photoelectric sensors

Operating range\*

Light source

Switching

Switching frequency

## Retro-reflective photoelectric sensors

Operating range\*

Light source

Switching

Switching frequency

## Energetic light scanners

Operating range\*

Light source

Switching

Switching frequency

## Light scanners with background suppression

Operating range\*

Light source

Switching

Switching frequency

## Options

Transparent media

Protective photoelectric sensors category 2

Warning output

Activation input

A<sup>2</sup>LS

## Features

## 5 Series Standard



14 × 33 × 20 mm

10–30 V DC

PNP, NPN

M8, cable+M12, cable

IP 67



Plastic

0–15 m

Red light

Antivalent

500 Hz

0.02–6 m

Red light

Antivalent

500 Hz

0–1 m

Red light

Antivalent

500 Hz

X

X

Simple mounting by means of integrated threaded sleeves. Flexible cable outlet to the rear or downward. Fast alignment through **brightvision**.

## 28 Series Standard, multimount



15 × 47 × 32 mm

10–30 V DC

PNP, NPN

M12, cable

IP 67



Plastic

0–15 m

Red light

Antivalent

500 Hz

0.02–6 m

Red light

Antivalent

500 Hz

0–0.85 m

Red light

Antivalent

500 Hz

X

X

Universal front- and plug-side M18-hole mounting option. Simple through-hole mounting with housing-side anti-rotation protection for mounting nuts. Fast alignment through **brightvision**.

\* Typical operating range limit

## 2 Series Universal, micro



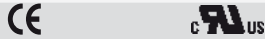
8 × 23 × 12 mm

10–30 V DC

PNP, NPN

Cable, cable+M8 / M12

IP 67



Thermoelastic elastomer

0–2 m

Red light

Light, dark

385 Hz

0.07–4 m

Red light

Light, dark

700 Hz

Permanently set to 15 mm, 30 mm, 50 mm

Red light

Light, dark

700 Hz

Pin-point LED. Powerful interference suppression. 2 inlaid metal sleeves. Scanner with a laser-like light spot. Polarized retro-reflective photoelectric sensor with glass optics.

## 3B Series Universal, mini



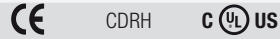
11 × 32 × 17 mm

10–30 V DC

PNP, NPN, push-pull

M8, cable, cable+M8 / M12

IP 67



Plastic

0–10 m

Red light

Light, antivalent

1000 Hz

0–7 / 0.02–5.5 / 0–3 m

Red light / infrared / laser (class 1)

Light, dark, antivalent

1000 / 1000 / 2000 Hz

0–750 mm

Red light

Light, dark, antivalent

1000 Hz

5–600 mm

Red light / laser (class 1)

Light, antivalent

1000 / 2000 Hz

X

X

X

X

X

Sturdy metal sleeves. Scanners with varied light-spot geometry and V-configuration, laser models, teach-in. Foil detection <20 µm. Bottle detection. ECOLAB. Contrast scanner.

## 25B Series Universal



15 × 39 × 29 mm

10–30 V DC

PNP, NPN, push-pull

M8 / M8+snap / M12, cable, cable+M8 / M12

IP 66, IP 67



Plastic

0–24 m

Red light

Light, antivalent

500 Hz

0–10 / 0.05–15 m

Red light / laser

Light, dark, antivalent

500 / 2000 Hz

0–650 mm

Red light

Light, dark, antivalent

500 Hz

0–1000 mm

Red light / infrared

Light, dark, antivalent

250 (1000) / 250 Hz

X

X

X

X

X

Mechanically adjustable scanning range. Sensitivity adjustment. Scanner for bay positioning / for the detection of broken containers / with focused light spot. Retro-reflective sensor with large performance reserve / for stretch-wrapped containers.

## 46B Series Universal, long range



18 × 75 × 43 mm

10–30 V DC

PNP, push-pull, relay

M12, cable+M12, cable

IP 67, IP 69 K



Plastic

0–60 m

Red light

Light, antivalent

100 / 500 Hz

0.05–18 m

Red light

Light, dark, antivalent

20 / 500 Hz

5–1800 / 0–2500 / 50–1200 mm

Red light / infrared / laser (class 1)

Light, dark, antivalent

200 (100) / 200 (20) / 1000 Hz

X

X

X

X

X

Scanner with optimized light spot for roller conveyors. Scanner with teach-in and special functions. Retro-reflective sensor for stretch-wrapped containers. Versions for Ex zone 2 and 22 ECOLAB. IO-Link.

# Photoel. Sensors / Light Scanners, Cubic Housing

## Specifications

Dimensions excl. plug, W×D×H

Operating voltage

Switching outputs

Connection type

Degree of protection

Certifications

Housing

## Throughbeam photoelectric sensors

Operating range\*

Light source

Switching

Switching frequency

## Retro-reflective photoelectric sensors

Operating range\*

Light source

Switching

Switching frequency

## Energetic light scanners

Operating range\*

Light source

Switching

Switching frequency

## Light scanners with background suppression

Operating range\*

Light source

Switching

Switching frequency

## Options

Transparent media

Protective photoelectric sensors category 2

Warning output

Activation input

A<sup>2</sup>LS

## Features

## 8 Series Metal



15 × 48 × 38 mm

10–30 V DC

PNP, NPN, push-pull

M12, cable

IP 67, IP 69 K

CE CDRH C UL US

Metal, glass

0–20 / 0–100 m

Red light / laser (class 2)

Light, antivalent

1500 / 2800 Hz

0–8 / 0–21 m

Red light / laser (class 1)

Light, dark, antivalent

1500 / 2800 Hz

5–800 mm

Red light

Antivalent

1500 Hz

5–400 mm

Red light / infrared / laser (class 2)

Light, antivalent

1000 / 1000 / 2000 Hz

X

X

X

Contrast scanner, luminescence scanner. Foreground suppression. Ultrasonic sensors. Turnable connector. Foil detection. Bottle detection. ECOLAB.

## 95 Series Metal



17 × 66 × 35 mm

10–30 V DC / 18–30 V DC

PNP, NPN

M12

IP 67, IP 69 K

CE C UL US

Metal

0–18 / 0–20 m

Red light / infrared

Antivalent

1000 Hz

0–9 m

Red light

Light, antivalent

1000 Hz

10–900 / 10–400 mm

Red light / infrared

Antivalent

1000 Hz

20–500 mm

Red light / infrared

Antivalent

1000 Hz

X

X

X

X

Operator guidance for transparent media. Bottle detection. Foil detection.

\* Typical operating range limit

**18(B) Series**  
Metal



15 × 47 × 32.5 mm  
10–30 V DC  
PNP, NPN, AS-interface, analog  
M12, cable  
IP 67, IP 69 K  
**CE** **C UL US**  
Metal

0–6 m  
Red light  
Light, dark, antivalent  
5000 Hz

0–28 / 0.1–18 m  
Red light / infrared  
Light, dark, antivalent  
1000 Hz

100–1200 / 10–2500 /  
50–6500 (25000) mm  
Red light / infrared / red light laser  
(class 2) / infrared laser (class 1)  
Light, dark, antivalent  
300 / 300 / 100 / 100 Hz

X  
X  
X  
Bottle detection, foil detection <20 µm, target mark detection, aligned optics, tracking, EasyTune, user guidance, trigger function with reduced signal jitter.

**96 Series**  
Metal, long range



30 × 90 × 70 mm  
10–30 V DC / 20–230 V AC/DC  
PNP, NPN, push-pull, relay  
M12, terminals  
IP 67, IP 69 K  
**CE** CDRH **C UL US**  
Metal, plastic

0–39 / 0–150 m  
Red light / infrared  
Light, dark, antivalent  
500 Hz

30–700 / 20–1200 mm  
Red light / infrared  
Light, antivalent  
1000 Hz / 20 Hz

100–1200 / 10–2500 /  
50–6500 (25000) mm  
Red light / infrared / red light laser  
(class 2) / infrared laser (class 1)  
Light, dark, antivalent  
300 / 300 / 100 / 100 Hz

X  
X  
X  
X  
Optics heating. Switching delay. Up to 3 switching points. Foreground suppression. Deactivation. L/D switching. Mechanically adjustable scanning range. Teach-in. Versions for Ex zones 2 and 22 / with window function / for collision protection / feed-through monitoring.

**53 Series**  
Stainless steel



14 × 54 × 20 mm  
10–30 V DC  
Push-pull  
M8, cable  
IP 67, IP 69 K  
**CE** CDRH **C UL US**  
Stainless steel 316L

0–10 m  
Red light  
Antivalent  
1000 Hz

0–5 / 0–3 m  
Red light / laser (class 1)  
Antivalent  
1000 / 2000 Hz

5–400 mm  
Red light / laser (class 1)  
Antivalent  
1000 / 2000 Hz

X  
X  
X  
HYGIENE design. CleanProof+. ECOLAB. EHEDG. Foil detection <20 µm. Bottle detection. Contrast scanner.

**55 Series**  
Stainless steel



14 × 36 × 25 mm  
10–30 V DC  
Push-pull  
M8, cable+M12, cable  
IP 67, IP 69 K  
**CE** CDRH **C UL US**  
Stainless steel 316L

0–10 m  
Red light  
Antivalent  
1000 Hz

0–6 / 0–3 m  
Red light / laser (class 1)  
Antivalent  
1000 / 2000 Hz

5–400 mm  
Red light / laser (class 1)  
Antivalent  
1000 / 2000 Hz

X  
X  
X  
WASH DOWN-Design. CleanProof+. ECOLAB. Foil detection <20 µm. Bottle detection. Contrast scanner. Versions for Ex zone 2 and 22.

**Photoel. sensors / Light Scanners, Cylindric Housing  
Fiber Optic Sensors  
Ultrasonic Sensors**

**Specifications**

Dimensions excl. plug, W×D×H

Operating voltage

Switching outputs

Connection type

Degree of protection

Certifications

Housing

**Throughbeam photoelectric sensors**

Operating range\*

Light source

Switching

Switching frequency

**Retro-reflective photoelectric sensors**

Operating range\*

Light source

Switching

Switching frequency

**Energetic light scanners**

Operating range\*

Light source

Switching

Switching frequency

**Light scanners with background suppression**

Operating range\*

Light source

Switching

Switching frequency

**Options**

Transparent media

Protective photoelectric sensors category 2

Warning output

Activation input

A<sup>2</sup>LS

**Features**

**412 Series**  
Cylindrical



M12 × 55 mm

10–30 V DC

PNP

M12, cable

IP 67



Metal

0–8 m

Red light

Light, dark

500 Hz

0.05–1.6 m

Red light

Light, dark

700 Hz

0–400 mm

Red light

Light, dark

700 Hz

**318(B) Series**  
**328 Series**  
**618 series**  
Cylindrical



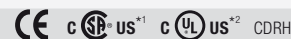
M18 × 46 mm, M18 × 60 mm

10–30 V DC

PNP, NPN, push-pull

M12, cable

IP 67



Full metal, stainless steel, plastic

0–15 / 0–45 / 0–120 m

Red light / infrared / laser (class 1)

Light, dark, antivalent

500 / 1000 / 5000 Hz

0–7 / 0.02–6 / 0.1–15 m

Red light / laser (class 1)

Light, dark, antivalent

500 / 5000 Hz

0.001–450 / 0–300 / 0–350 mm

Red light / infrared / laser

Light, dark, antivalent

500 / 1000 / 5000 Hz

1–140 mm

Red light

Antivalent

1000 Hz

X

X

X

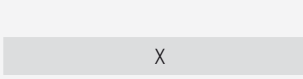
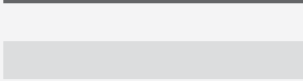
Bracket versions.  
Simple alignment with *omni*mount.  
Embedded mounting option.  
Variants with M18 stainless steel sleeve and full-metal version.

\* Typical operating range limit  
\*<sup>1</sup> 318B Series, 328 Series only  
\*<sup>2</sup> 318 Series only

### Mini Sensors



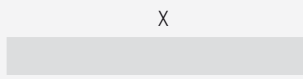
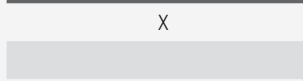
10-30V DC
PNP, NPN, relay
M12, cable
IP 65
<b>CE</b>
Metal, stainless steel, plastic
0-35 m
Infrared
Light, dark
70 / 1000 Hz
0-1.5 m
Infrared
Light, dark
70 / 1000 Hz
0-50 mm
Infrared
Light, dark
70 / 1000 Hz



### LVS Fiber Optic Amplifier



10-30V DC
PNP, NPN, IO-Link
M8, cable, cable+M8, cable+M12
IP 65
<b>CE</b>
Plastic
0-1050 mm
Red light
Light, dark
1500 / 1000 / 2500 Hz
0-270 mm
Red light
Light, dark
1500 / 1000 / 2500 Hz

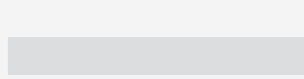
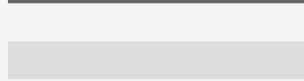


For glass fiber and plastic fiber optics.  
Teach-in.  
Sensitivity adjustment.  
Time functions.  
Activation input.

### GF / KF Fiber Optics



Glass	Plastic
Silicone, brass, stainless steel	Plastic
0-300 mm	0-1050 mm
0-80 mm	0-270 mm

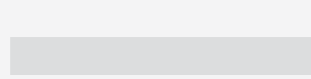
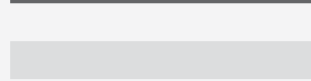
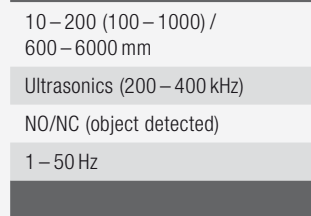


Angular or bendable end piece.

### USS Ultrasonic Sensors



10-30V DC / 12-30V DC / 20-30V DC
PNP, NPN
M8, M12
<b>CE</b>
Metal, plastic
0-650
Ultrasonics (400 kHz)
NO/NC (object detected)
100 Hz
0-200 (100-1000) / 600-6000 mm
Ultrasonics (200-400 kHz)
NO/NC (object detected)
1-50 Hz



Configurable via PC.  
Various opening angles and sound lobes.  
Design with angle head.  
1 or 2 switching outputs.  
IO-Link interface.

# Inductive Switches

**IS 255**  
**IS 288**  
Compact

**IS 240**  
Standard



## Specifications

Dimensions

5 × 5 × 25 mm  
8 × 8 × 35 mm

40 × 12 × 26 mm

Operating voltage

10–30 V DC

10–30 V DC

Range

Up to 1.5 mm  
Up to 3 mm

Up to 8 mm

Switching outputs

PNP, NPN  
NO (make-contact),  
NC (break-contact)

PNP, NPN  
NO (make-contact),  
NC (break-contact)

Switching frequency

Up to 3000 Hz  
Up to 5000 Hz

Up to 1400 Hz

Connection type

M8, cable, cable+M8

M8, cable

Degree of protection

IP 67

IP 67

Certifications

CE C(UL) US

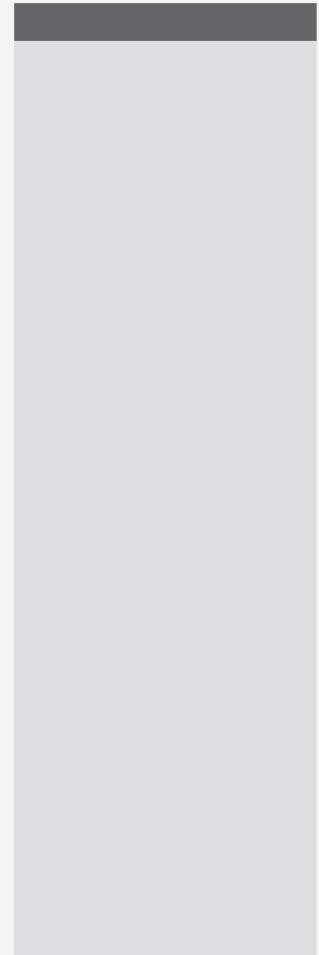
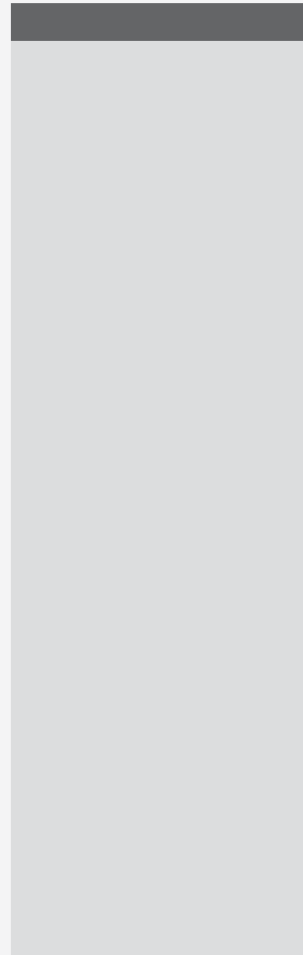
CE C(UL) US

Housing

Metal, plastic

Plastic

## Features





**IS 244**  
Standard, flexible



40 × 40 × 67 mm  
40 × 40 × 120 mm

10–30 V DC

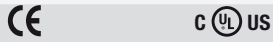
Up to 40 mm

PNP, NPN  
NO (make-contact),  
NC (break-contact)

Up to 150 Hz

M12, connection terminals

IP 67, IP 69 K



Plastic

Sensor heads can be oriented in 5 directions.

**IS 204**  
**IS 205**  
**IS 206**  
Cylindrical Sensor



Ø 4.0 × 25 mm  
M5 × 25 mm  
Ø 6.5 × 35 mm

10–30 V DC

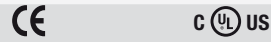
Up to 1.5 mm  
Up to 1.5 mm  
Up to 3.0 mm

PNP, NPN  
NO (make-contact),  
NC (break-contact)

Up to 3000 Hz  
Up to 3000 Hz  
Up to 5000 Hz

M8, cable+M8, cable

IP 67



Metal, plastic

**IS 208**  
**IS 212**  
**IS 218**  
**IS 230**  
Cylindrical Sensor



M8 × 45 mm  
M12 × 45 mm  
M18 × 64 mm  
M30 × 64 mm

10–30 V DC

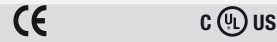
Up to 4 mm  
Up to 10 mm  
Up to 20 mm  
Up to 40 mm

PNP, NPN  
NO (make-contact),  
NC (break-contact)

Up to 5000 Hz  
Up to 3000 Hz  
Up to 2000 Hz  
Up to 1200 Hz

M8, M12, cable+M8, cable

IP 67



Metal, plastic

**IS 212**  
**IS 218**  
**IS 230**  
Stainless Steel  
Cylindrical Sensor



M12 × 60 mm  
M18 × 64 mm  
M30 × 64 mm

10–30 V DC

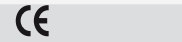
Up to 10 mm  
Up to 20 mm  
Up to 40 mm

PNP, NPN  
NO (make-contact),  
NC (break-contact)

Up to 600 Hz  
Up to 300 Hz  
Up to 100 Hz

M12

IP 67, IP 69 K



Stainless steel (V4A)

Full-metal housing.  
ECOLAB.

# Forked Sensors

**(I)GSU 14C  
GSU 06  
GK 14**  
Ultrasonics / Capacitive



**(I)GS 63  
GS 61  
GS 21**  
Optical



**GS (L) 04**  
Optical



## Specifications

Dimensions excl. plug,  
W×D×H

Operating voltage

Switching outputs

Connection type

Degree of protection

Certifications

Housing

## Throughbeam sensors

Mouth width

Light source

Switching

Switching frequency

## Options

Operation

Warning output

## Features

10–30 V DC / 12–30 V DC

PNP, NPN, push-pull

M8, M12, cable

IP 62 / IP 65

CE cUL US

Metal

0.9–4 mm

Ultrasonics / capacitive

Light, dark, antivalent

Up to 5000 Hz

Teach

X

Detection of transparent + paper labels.

Multichannel detection of labels with VSU 15.

10–30 V DC / 24 V DC

PNP, push-pull

M8, cable, cable+M12

IP 65

CE cUL US\*

Metal, plastic

3–8 mm

Infrared

Light, dark, antivalent

1000 / 10000 Hz

Teach / potentiometer

X

Detection of paper labels.

ALC function.

Storage of up to ten teach values in the sensor.

Removable operating head on potentiometer version.

10–30 V DC

PNP, NPN

M8

IP 65

CE CDRH cUL US

Metal

20 / 30 / 50 / 80 / 120 / 220 mm

Red light / laser (class 1)

Light, dark

1500 / 5000 Hz

Potentiometer

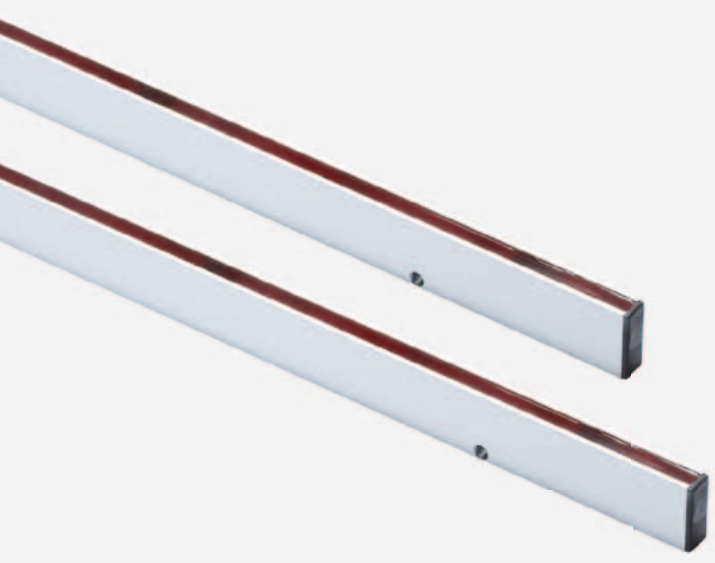
Detection of small objects.

Light/dark switching on device.

Laser fork for transparent objects.

\*1 (I)GS 63, GS 61 only

# Light Curtains



## VARIO B Switching



### Specifications

Function	One-way principle
Dimensions excl. plug, W×D×H	12 × 58 × 35 ... 3150 mm
Operating voltage	24 V DC
Outputs	PNP, NPN
Connection type	M8, cable
Degree of protection	IP 54
Certifications	<b>CE</b>
Operating range*	5000 mm
Light source	Infrared
Cycle time	1 ms per beam
Measurement field length	35–3100
Resolution	5, 12.5, 25, 50, 100 mm
No. of beams	Max. 64
Operation	Autocalibration, PC configuration, configuration of switching output

### Features

2 switching ranges.  
Suppression of 4 light axes.  
Through holes.  
Blind holes with thread.

\* Typical operating range limit

## Special Sensors

### KRT 20 KRT 55 KRT 3B Contrast Scanners



### CRT 20B CRT 442 CRT 448 Color Scanners



### LRT 8 Luminescence Scanners



#### Specifications

Function

Dimensions excl. plug,  
W×D×H

Operating voltage

Outputs

Connection type

Degree of protection

Certifications

Operating range\*

Light source

Switching frequency

Transmitter color

Light beam gate

Light spot shape

Light spot position

Operation

#### Features

Contrast distinction

30 × 82 × 53 mm  
14 × 36 × 25 mm  
11 × 32 × 17 mm

10–30 V DC / 12–30 V DC

PNP, NPN, push-pull  
Analog

M12, M8, cable+M8, cable,  
cable+M12

IP 67, IP 69 K

CE c UL US

13–80 mm

LED, laser (class 1)

50000 / 6000 / 10000 Hz

RGB / white / red laser

Lateral or frontal

Round / rectangular

Lengthwise, sideways

Teach-in, EasyTune, IO-Link

Temperature compensation.  
Large dynamic range.  
Pulse stretching.  
Light/dark switching.  
Reversible switching threshold.  
ECOLAB.  
IO-Link process data.  
IO-Link configuration.  
IO-Link diagnostics.

Color detection

30 × 82 × 53 mm  
12 × 40 × 22 mm  
17 × 46 × 50 mm

10–30 V DC / 24 V DC /  
12–28 V DC

1 × PNP / 4 × PNP or  
1 × NPN / 4 × NPN or  
3 × PNP / 3 × NPN

M12

IP 67

CE c UL US

12 mm  
60 mm  
32 mm

LED

6000 / 1500 / 500 Hz

RGB / white

Lateral or frontal

Round / rectangular

Lengthwise

Teach-in

Small construction.  
Glass optics.  
Turning connector.  
ECOLAB.

Luminescence detection

15 × 48 × 38 mm

10–30 V DC

PNP, NPN

M12

IP 67

CE

0–400 mm

LED

1500 Hz

UV / blue

Front

Round

Potentiometer

Small construction.  
Sensitivity adjustment.  
ECOLAB.  
Filter for the detection of paper,  
lyra chalk, yellow marks.

\* Typical operating range limit

**DB 12B / 112B / 14B, GSU 710 / 712**

Double Sheet Monitoring

**VSU 12, GSU 14C**

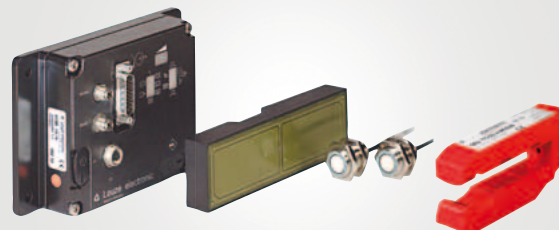
Splice Detection

## Double Sheet Monitoring Splice Detection

### Description

### Typical applications

### Technical information



The double-sheet monitoring systems from Leuze electronic reliably prevent the infeed of multiple sheets. This helps reliably prevent damage and the creation of scrap in machines that process paper and cardboard stacks. The systems operate on the basis of various physical principles and are thus able to cover nearly the entire range of applications.

Double sheet detection of

- Paper sheets
- Cardboard sheets
- Films

Splice detection, e.g. on reels

#### Physical principles:

- Capacitive
- Ultrasonics ( $\varnothing$ 12 mm or 18 mm, short construction)

#### Working ranges:

- From 20 g/m<sup>2</sup> to 1200 g/m<sup>2</sup> (cardboard thickness 2 mm)
- Detection of 1/2 or 2/3 plies
- Outputs for single or double sheets
- Configuration facility

#### Models:

- Individual components (M12, M18)
- Compact fork designs

# MEASURING SENSORS



## INTELLIGENT MONITORING AND CONTROL THROUGH MEASURING SENSORS

Measuring sensors can actively check distances, position system parts and monitor other parameters in order to intelligently and independently initiate actions and, e.g., intervene in processes for control purposes. Here, you will find a large selection of technologies and designs for as efficient and fault-free system operation as possible. Our self-perception as a driver of technology results from a number of competitive highlights, such as:

- **integrated** connectivity.—our devices can be integrated problem-free in all common fieldbus systems
- **Perfect positioning with millimeter accuracy** – through innovative bar code positioning systems and ranges of up to 10,000 m through the use of durable bar code tape
- **Laser distance measurement systems which work with absolute values** and are accurate to the millimeter up to 300 m with PTB calibration standard

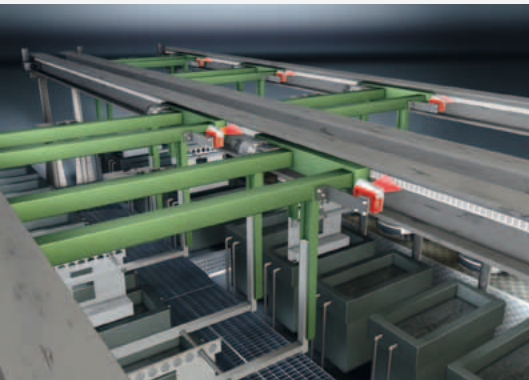


*“Our secret to success has always been the intelligent multiplication of solutions that were developed for specific applications. As a result, laser distance sensors can be used, e.g., in high-bay warehouses and with automatic transport solutions, and bar code positioning systems can be used in a wide range of industrial sectors. Our application know-how ensures that your application always runs reliably.”*

Markus Kirchner,  
Product Developer – Measuring Sensors



**A WORLD FIRST**



BAR CODE POSITIONING SYSTEM FOR  
**POSITIONING WITH MILLIMETER  
ACCURACY** OVER DISTANCES OF  
UP TO 10 KM — THE NEW **BPS 300i**

The new generation of the BPS 300i with a broad range of selectable equipment, integrated fieldbus interfaces and **availability** control for ensuring read quality. The simple usability with maximum possible performance reserves guarantees fault-free function of the devices. Highly resistant bar code tape, available in lengths of up to 10 km, facilitates precise and continuous position determination, even over extremely long paths.

**You place value on uncomplicated  
fieldbus integration?**

*The PROFINET fieldbus interface already integrated in the device makes start-up and configuration quick and easy. (PROFIBUS and SSI available beginning November 2014)*



**You want to avoid soiling-related  
failures?**

*With the integrated **availability** control functionality, the device constantly reports its performance reserves, thereby indicating, e.g., soiling in good time.*



**Your scanners need to function  
independent of mechanical  
fluctuations?**

*A wide working range of  $\pm 60$  mm offers sufficient performance reserves.*

**You know our bar code  
positioning systems?**

*The new BPS 300i generation will surprise you.*

**Simple mounting is  
important to you?**

*The sophisticated mounting system considerably simplifies mounting and replacement.*



Simply find the right BPS: [www.leuze.com/en/bps300i](http://www.leuze.com/en/bps300i)

# Distance Sensors

## ODSL 8 Optical Distance Sensors



Distance measurement, optical

15 × 48 × 38 mm

10–30 V DC  
18–30 V DC (analog)

4–20 mA  
1–10 V  
2 × push-pull

M12

IP 67, IP 69 K

**CE** CDRH

20–200 mm

Optical / LED / laser (class 2)

2–7 ms

0.03–0.5 mm

Teach-in  
Configuration software  
Display

Compact metal housing.  
Turnable M12 connector.

## ODSL 9 Optical Distance Sensors



Distance measurement, optical

21 × 50 × 50 mm

18–30 V DC (analog)

4–20 mA  
1–10 V, 0–10 V  
RS 232 / RS 485  
Push-pull  
IO-Link

M12

IP 67

**CE** CDRH **c UL US\*\***

50–650 mm

Optical / laser (class 1, 2)

2 ms

0.01–1 mm

Teach-in  
Configuration software  
Display

Display for measured value display and configuration.  
Turnable M12 connector.

## ODS 96B Optical Distance Sensors



Distance measurement, optical

30 × 90 × 70 mm

10–30 V DC  
18–30 V DC (analog)

4–20 mA  
1–10 V, 0–10 V  
RS 232 / RS 485  
Push-pull  
IO-Link

M12, cable

IP 67, IP 69 K

**CE** CDRH **c UL US\*\***

60–25000 mm

Optical / LED / laser (class 1, 2)

1–100 ms

0.01–3 mm

Teach-in  
Configuration software  
Display

Sturdy metal housing.  
Display for measured value display and configuration.  
M12 connector.  
Ex devices are also available.

### Specifications

Function

Dimensions excl. plug, W × D × H

Operating voltage

Outputs

Connection type

Degree of protection

Certifications

Measurement range

Measurement principle

Measurement time

Resolution

Operation

### Features

\*\* only selected models: products with laser class 1, which are declared with C1 in the part number code, do not have UL approval.



### ODSL 30 Optical Distance Sensors



### 418B Series Measuring Ultrasonic Sensors



### 430 series Measuring Ultrasonic Sensors



#### Specifications

Function	Distance measurement, optical
Dimensions excl. plug, W×D×H	79 × 69 × 149 mm
Operating voltage	10–30 V DC 18–30 V DC (analog)
Outputs	4–20 mA 1–10 V RS 232/RS 485 1 × PNP, 2 × PNP, 3 × PNP
Connection type	M12, cable
Degree of protection	IP 67
Certifications	CE CDRH c UL US
Operating range*	200–65000 mm
Measurement principle	Optical / laser (class 2)
Measurement time	30–100 ms
Ultrasonic frequency	
Resolution	1 mm
Operation	Teach-in Display

#### Features

Metal housing.  
Display for measured value display and configuration.  
M12 plug.  
Ex devices are also available.

Function	Distance measurement, ultrasonics
Dimensions excl. plug, W×D×H	M18 × 90 mm
Operating voltage	15–30 V DC
Outputs	1–10 V  PNP IO-Link
Connection type	M12
Degree of protection	IP 67, IP 65
Certifications	CE
Operating range*	25–1300 mm
Measurement principle	Ultrasonics
Measurement time	
Ultrasonic frequency	310 kHz
Resolution	1 mm
Operation	Potentiometer, optional: Configuration software

Both outputs can easily be taught using a button.  
  
Stable, all-metal design.  
Process data and configuration via IO-Link interface.  
Five operating modes: scanning, synchronous, multiplex, activation and throughbeam operation.  
Temperature-compensated scanning range and measurement range.  
Function largely independent of surface properties, ideal for detection of liquids, bulk materials, transparent media, etc.  
Small dead zone at long scanning range.

Function	Distance measurement, ultrasonics
Dimensions excl. plug, W×D×H	M30 × 142 mm
Operating voltage	20–30 V DC
Outputs	4–20 mA 0–10 V  1 × PNP
Connection type	M12
Degree of protection	IP 67, IP 65
Certifications	CE c UL US
Operating range*	50–6000 mm
Measurement principle	Ultrasonics
Measurement time	100 ms–1 s
Ultrasonic frequency	80 kHz
Resolution	1–9 mm
Operation	Potentiometer, optional: Configuration software

For detection of levels of liquids, bulk materials, transparent media, etc.  
Distance information largely independent of surface properties.  
PC-configuration software for configuring sensor and switching output.  
Up to 10 devices can be synchronized via the SYNC input.  
Separate adjustment of start and end of switching range (Q1) via potentiometer and PC.

\* Typical operating range limit

# Sensors for Positioning



## Specifications

Range

Working range

Interfaces

Connectivity

Functional principle

Measurement value output

Reproducibility

Accuracy

Degree of protection

Light source

Supply voltage

Operating temperature

Options

Certifications

Features

\*1 available beginning in the fourth quarter of 2014

\*2 available beginning in the first quarter of 2015

**AMS 300i**  
Optical Laser Distance  
Sensors



40 / 120 / 200 / 300 m

**Integrated:**  
PROFIBUS and SSI  
RS 232 and RS 422  
RS 485  
PROFINET  
PROFINET and SSI\*2  
DeviceNet  
EtherNet/IP  
CANopen  
EtherCAT

Ethernet TCP/IP, UDP  
Interbus-S

Against reflector

1.6 ms

0.3 / 0.5 / 0.7 / 1 mm

±2 / 2 / 3 / 5 mm

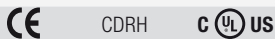
IP 65

Red light laser (class 2)

18–30 V DC

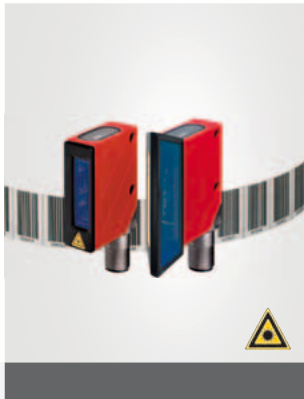
–5 °C to +50 °C  
(–30 °C to +50 °C  
with heating)

Speed measurement and  
monitoring



Absolute measurement system with very high accuracy, tested by the Physikalisch Technische Bundesanstalt (German Metrology Institute).  
Simultaneous use of the PROFIBUS and SSI.  
Device model with PROFINET and RS 232 interface.  
Easy programming via extensive configuration file.  
Optionally with heating.  
Multiple language menu-driven display.

**BPS 8**  
Bar Code Positioning  
Systems



10,000 m

60...120 mm, 80...140 mm

**Integrated:**  
RS 232

**With connector unit  
MA 8-01**  
RS 485

**With connector unit  
MA 200i**  
PROFINET IO/RT, PROFIBUS,  
Ethernet TCP/IP, UDP, IP,  
EtherCAT, DeviceNet, CANopen

Against bar code tape

3.3 ms

±1 mm (3 sigma)

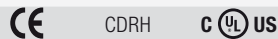
IP 67

Red light laser (class 2)

5 V DC  
(24 V DC via MA 8-01)

0 °C up to +40 °C

Customer-specific  
configuration facility



Distance measurements of up to 10,000 m, also for curves, gradients and track switches.  
Curve-going, horizontally and vertically.  
Compact metal housing with degree of protection IP 67.  
Turnable M12 connector.  
Various protocols on RS 232 and RS 485.

**BPS 300i**  
Bar Code Positioning  
Systems



10,000 m

50...170 mm

**Integrated:**  
PROFINET  
PROFIBUS\*1  
SSI\*1  
RS 422  
RS 232\*2  
RS 485\*2

Against bar code tape

1 ms

±0.15 mm (3 sigma)

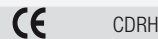
IP 65

Red light laser (class 2)

18–30 V DC

–5 °C to +50 °C  
(–35 °C to +50 °C  
with heating)

Speed measurement and  
monitoring



Innovative positioning on curves, gradients and track switches.  
Curve-going, horizontally and vertically.  
Metal housing with degree of protection IP 65.  
3 selectable connection technologies.  
Fast, secure and position-neutral installation using special mounting device.  
Extensive diagnostic options.  
Easy programming via GSD file.  
Optionally with heating or display.

**BPS 34/37**  
Bar Code Positioning  
Systems



10,000 m

90...170 mm

**Integrated:**  
PROFIBUS  
SSI

Against bar code tape

2 ms

±1 mm (3 sigma)

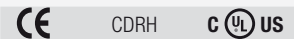
IP 65

Red light laser (class 2)

10–30 V DC

0 °C to +50 °C  
(–30 °C to +40 °C  
with heating)

Speed measurement and  
monitoring



Innovative positioning on curves, gradients and track switches.  
Curve-going, horizontally and vertically.  
Metal housing with degree of protection IP 65.  
Easy programming via GSD file.  
Optionally with heating.

# 3D Sensors

## LPS 36 / LPS 36 HI LES 36 LRS 36 Light Section Sensors

## ROD 4 (plus) Area Scanning Laser Distance Sensors



### Specifications

Function

Distance measurement, light section, optical

Distance measurement, scanner, optical

Dimensions excl. plug, W x D x H

56 x 74 x 160 mm

140 x 148 x 133 mm  
141 x 167 x 168 mm

Operating voltage

18 – 30 V DC

24 V DC

Outputs

4 – 20 mA  
1 – 10 V  
Ethernet  
4 x push-pull  
PROFIBUS

Ethernet / RS 232 / RS 422  
4 x PNP, 8  
reversible detection field pairs

Connection type

M12

Sub-D, M12, M16

Degree of protection

IP 67

IP 65

Certifications

CE CDRH C UL US

CE CDRH C UL US

Operating range\*

200 – 800 mm

0 – 65000 mm

Measurement principle

Optical / laser (class 2M)

Optical / laser (class 1)

Measurement time

10 ms

20 – 40 ms/scan

Measurement field width / Angular range

Max. 600 mm

190°

Resolution

0.1 – 6 mm

5 mm

Mouth width

16

7

Number of inspection tasks

Operation

Configuration software  
Display

Configuration software

### Features

LPS 36: light section sensor for 2D/3D object measurement.

LPS 36 HI: highly precise with a resolution of 0.1 mm.

LES 36: light section sensor for width/height and position measurement.

LRS 36: light section sensor for object detection in up to 16 detection fields.

Alignment aid with OLED display.

Inputs: activation, cascading, trigger.

Optional: encoder port.

ROD4: laser scanner for object detection.

ROD4 plus: laser scanner for 2D/3D object measurement.

Optional: heating.

Dust suppression.

\* Typical operating range limit


# Light Curtains Forked Sensors

## CML 700i Measuring

## GS 754(B) CCD Forked Sensors




### Specifications

Function	One-way principle
Dimensions excl. plug, W x D x H	29 x 35 x 2968 mm
Operating voltage	18 – 30 V DC
Outputs	Analog, CANopen, IO-Link, PROFIBUS RS 485
Connection type	M12
Degree of protection	IP 65
Certifications	CE 
Operating range*	Up to 10500 mm
Light source / Measurement principle	Infrared
Cycle time / Measurement time	10 / 30 µs per beam / 1 ms
Measurement field length / Angular range	160 – 2960 mm
Resolution	5, 10, 20, 40 mm
No. of beams	Max. 592
Mouth width	
Mouth depth	
Operation	Display, Configuration software

### Features

Short cycle times of 30 µs per beam.  
CML 730i: cycle times of 10 µs per beam, detection of transparent media.  
Display for diagnosis and alignment.  
Standard profile for simple mounting.  
Sturdy metal housing.

Edge detection	Edge detection
Dimensions excl. plug, W x D x H	19.4 x 81.5 x 91 mm 20 x 155 x 91.5 mm
Operating voltage	10 – 30 V DC (digital) 18 – 30 V DC (analog)
Outputs	2 x 4 – 20 mA 2 x 0 – 10 V RS 232 / RS 422 / RS 485 1 x PNP, 2 x PNP
Connection type	M12
Degree of protection	IP 67
Certifications	CE 

Light source / Measurement principle	Optical / LED
Cycle time / Measurement time	Min. 2.5 ms
Measurement field length / Angular range	25 mm
Resolution	14 µm
Mouth width	27 mm / 98 mm
Mouth depth	42 mm
Operation	Terminal program

Detection of transparent media.  
Foil detection > 0.1 mm.  
Turning connector.

\* Typical operating range limit

# PRODUCTS FOR SAFETY AT WORK



## INNOVATIVE SOLUTIONS FOR PERSONNEL PROTECTION AT YOUR PRODUCTION SYSTEMS

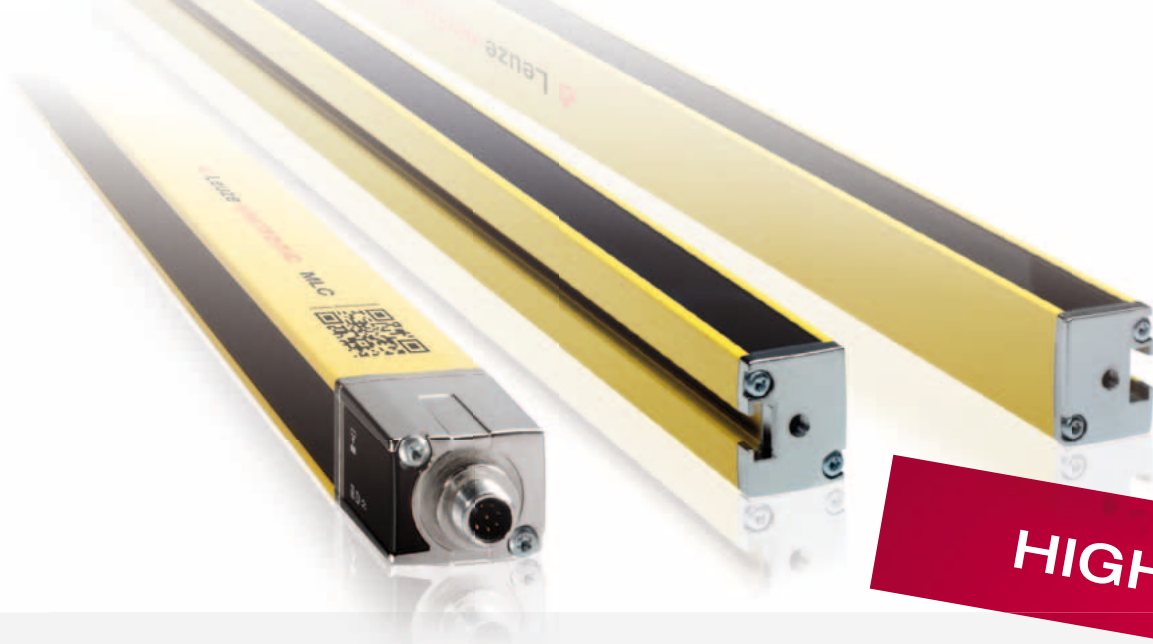
As one of the technology leaders in the area of optoelectronic safety sensors for industrial automation, we offer effective personnel protection devices in accordance with international safety standards. In addition to excellent application know-how, the knowledge of technical standards and specifications in automation and safety at work, we are characterized by the following points:

- **uni**global. — Global sourcing thanks to faster worldwide availability of products and service through production on four continents
- **connected**function. — Simplest integration with function selection by wiring: clever safety sensor sets
- **smart**fix. — Intelligent device design for mounting, aligning and adjusting in a very short time



*"In addition to reliability, the ideally fault-free integration of a solution in the processes is decisive for practical use. With our broad product range and extensive selection of services and consulting options, our offerings can be tailored to your needs."*

Joachim Koperski,  
Head of Product Center – Light Curtains



**HIGHLIGHT**

**WITH THE THREE MLC FUNCTION CLASSES, YOU'RE ON THE SAFE SIDE — NO MATTER WHEN OR WHERE!**

We have combined the newest generation of extremely sturdy safety light curtains under the MLC name. Three function classes—Basic, Standard and Extended—enable the most efficient use of devices from simple standard applications to complex controlled special safeguarding processes. With multi-sided guarding or if points of operation and danger zones are to be safeguarded in combination with one another, you can benefit from our MLC host/guest devices.



An abundance of benefits—the choice is yours.

- **Integrated blanking and muting**  
 In the MLC 530 (Extended), blanking and muting functions are already integrated and can be very easily called up via a corresponding pin assignment.
- **Simple start-up**  
 Thanks to the integrated 3-zone alignment aid and the integrated LED and 7-segment display, the MLC family is easy to align, set up and operate.
- **Flexible and easy mounting— and without dead space**  
 An optional swivel mount as well as removable mounting cylinders enable very simple assembly or flush mechanical fastening without dead space.
- **Global availability**  
 Due to our global sales network, the MLC safety light curtains can be delivered to your site anywhere in the world in a very short amount of time.



# Safety Laser Scanners

## RS4-6M Type 3 Safety Laser Scanners



## RS4-4E Type 3 Safety Laser Scanners



## RS4-2E Type 3 Safety Laser Scanners



### Specifications

Type in accordance with EN IEC 61496

SIL in accordance with IEC 61508 and EN IEC 62061 (SILCL)

Performance Level (PL) in accordance with EN ISO 13849-1

Resolution (adjustable)

Range

Number of detection zones

Dimensions, W x H x D

Safety-related switching outputs (OSSDs)

Connection type

Certifications

### Functions

### Features

Type 3

SIL 2

PL d

30/40/50/70/150 mm

1.6/2.2/2.8/6.25/6.25 m

8

140 x 148 x 135 mm

2 PNP transistor outputs

Sub-D15, Sub-D9 for configuration, safety bus systems: M12, IR interface for configuration



Start/restart interlock (RES), selectable. Monitored detection zone pair changeover. Warning zone monitoring. Additional alarm output

#### Function package MotionMonitoring

Movement monitoring of side-tracking skates

Safeguarding of expansive danger areas and broad access points. Automatic configuration on device exchange with intelligent ConfigPlug. Any type of detection/warning zone contours and configurations. Zone pair changeover possible during operation. Compact design and easy-to-use software.

Type 3

SIL 2

PL d

30/40/50/70/150 mm

1.6/2.2/2.8/4.0/4.0 m

8

140 x 148 x 135 mm

2 PNP transistor outputs

Sub-D15, Sub-D9 for configuration, safety bus systems: M12, IR interface for configuration



Start/restart interlock (RES), selectable. Monitored detection zone pair changeover. Warning zone monitoring. Additional alarm output

#### Function package Extended

Vertical access guarding with reference boundary monitoring

Danger zone guarding, point of operation guarding, access guarding. Automatic configuration on device exchange with intelligent ConfigPlug. Any type of detection/warning zone contours and configurations. Zone pair changeover possible during operation. Compact design and easy-to-use software.

Type 3

SIL 2

PL d

70/150 mm

2.15 /2.15 m

4

140 x 148 x 135 mm

2 PNP transistor outputs

Sub-D15, Sub-D9 for configuration



Start/restart interlock (RES), selectable. Monitored detection zone pair changeover. Warning zone monitoring. Additional alarm output

#### Function package Basic

Danger zone guarding on small systems

Horizontal danger zone guarding. Compatible with all other devices of the RS4 family. Automatic configuration on device exchange with intelligent ConfigPlug. Any type of detection/warning zone contours and configurations. Zone pair changeover possible during operation. Compact design and easy-to-use software.



# Safety Light Curtains



## Specifications

Type in accordance with EN IEC 61496

SIL in accordance with IEC 61508 and EN IEC 62061 (SILCL)

Performance Level (PL) in accordance with EN ISO 13849-1

Resolution

Range

Protective field height (type-dependent)

Profile cross-section

Safety-related switching outputs (OSSDs)

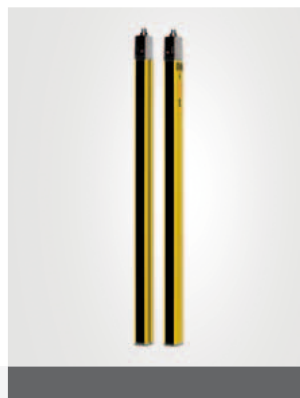
Connection type

Certifications

## Functions

## Features

### MLC 500 Type 4 Safety Light Curtains



Type 4

SIL 3

PL e

14 / 20 / 30 / 40 / 90 mm

6 / 15 / 10 / 20 / 20 m

150 ... 3000 mm

29 × 35 mm

2 PNP transistor outputs

M12, 5-pin  
M12, 4-pin (AIDA-compliant)



Transmission channel changeover, range reduction, start/restart interlock (RES), contactor monitoring (EDM), 7-segment display, linkage, fixed and floating blanking, reduced resolution, timing controlled 2-sensor muting

3 receiver versions (Basic, Standard, Extended), each with requirement-compliant equipment. Configuration by wiring — automatic transfer to replacement device after device exchange. Linkage with safety devices via contact or OSSD output saves effort in downstream evaluation circuit. Range reduction and 2 optical beam codings (transmission channel) as well as multiple scanning and reduced resolution for operation which is immune to interference. Integrated muting and blanking function can be activated during operation. Host /guest devices combine point of operation guarding with area protection.

### MLC 300 Type 2 Safety Light Curtains



Type 2

SIL 1

PL c

20 / 30 / 40 / 90 mm

15 / 10 / 20 / 20 m

150 ... 3000 mm

29 × 35 mm

2 PNP transistor outputs

M12, 5-pin  
M12, 4-pin (AIDA-compliant)



Transmission channel changeover, range reduction, start/restart interlock (RES), contactor monitoring (EDM), 7-segment display

2 receiver versions (Basic, Standard), both with requirement-compliant equipment. Configuration by wiring — automatic transfer to replacement device after device exchange. Range reduction and 2 optical beam codings (transmission channel) for operation which is immune to interference.

# Transceivers and Multiple Light Beam Safety Devices



## Specifications

Type in accordance with EN IEC 61496

SIL in accordance with IEC 61508 and EN IEC 62061 (SILCL)

Performance Level (PL) in accordance with EN ISO 13849-1

No. of beams

Beam distance

Range (type-dependent)

Profile cross-section

Safety-related switching outputs (OSSDs)

Connection type

Certifications

## Functions

## Features

## MLD 500 Type 4 Multiple Light Beam Safety Devices



Type 4

SIL 3

PL e

2/3/4

500/400/300 mm

0.5 ... 50 m (transmitter-receiver system)  
20 ... 70 m (transmitter-receiver system)  
0.5 ... 8 m (transceiver system)

52 × 65 mm

2 PNP transistor outputs  
AS-i Safety interface

M12



Automatic start/restart, start/restart interlock (RES) selectable, contactor monitoring (EDM) selectable, timing controlled 2- or 4-sensor muting, sequence controlled 2-sensor muting, muting-timeout extension, configurable operating modes, laser alignment aid (optional for transmitter-receiver systems).

Version available as 3-beam transceiver.

Integrated muting function, no additional muting module is necessary.

The configuration is simply performed by means of wiring, i. e. no software, PC or Dip switch are necessary.

The use at ambient temperatures as low as -30°C is possible.

Options: integrated laser alignment aid, integrated muting indicator, integrated status indicator, 7-segment display.

## MLD 300 Type 2 Multiple Light Beam Safety Devices



Type 2

SIL 2

PL d

2/3/4

500/400/300 mm

0.5 ... 50 m (transmitter-receiver system)  
20 ... 70 m (transmitter-receiver system)  
0.5 ... 8 m (transceiver system)

52 × 65 mm

2 PNP transistor outputs  
AS-i Safety interface

M12



Automatic start/restart, start/restart interlock (RES) selectable, contactor monitoring (EDM) selectable, timing controlled 2- or 4-sensor muting, sequence controlled 2-sensor muting, muting-timeout extension, configurable operating modes, laser alignment aid (optional for transmitter-receiver systems).

Version available as 3-beam transceiver.

Integrated muting function, no additional muting module is necessary.

The configuration is simply performed by means of wiring, i. e. no software, PC or Dip switch are necessary.

The use at ambient temperatures as low as -30°C is possible.

Options: integrated laser alignment aid, integrated muting indicator, integrated status indicator, 7-segment display.

# Single Light Beam Safety Devices

## MLD 500 Type 4 Single Light Beam Safety Devices



Type 4 (self-monitoring)\*

0.5 ... 70 m  
20 ... 100 m

+24 V DC  $\pm$  20 %

-30 ... +55 °C

52 x 65 x 193 mm

2 PNP transistor outputs (OSSDs)

M12  
AS-i Safety interface



Automatic start/restart, start/restart interlock (RES) selectable, contactor monitoring (EDM) selectable, timing controlled 2-sensor muting, sequence controlled 2-sensor muting, configurable operating modes, laser alignment aid (optional).

The use at ambient temperatures as low as -30°C is possible.  
Degree of protection IP 67.  
Integrated laser alignment aid as an option.  
The configuration is simply performed by means of wiring, i. e. no software, PC or Dip switch are necessary.

\* For safety classification see MLD 500 multiple light beam safety device

## SLSR 25B Type 2 Single Light Beam Safety Devices



Type 2 in combination with a safety monitoring device

0.5 ... 20 m

10 ... 30 V DC  
(incl. residual ripple)

-30 ... +55 °C

15 x 51.3 x 28.8 mm

Plastic

2 push-pull transistor outputs

Cable 2 m  
M8  
M12  
Cable+M12



LED indicator. Activation input for test and series connection. Active ambient light suppression (A<sup>2</sup>LS).

Single beam safety device with high performance reserve.  
Compact plastic housing with degree of protection IP 67.  
Wide voltage range 10 to 30 V.  
All common connection variants.

## SLSR 46B Type 2 Single Light Beam Safety Devices



Type 2 in combination with a safety monitoring device

0.5 ... 40 m

10 ... 30 V DC  
(incl. residual ripple)

-30 ... +55 °C

18.5 x 77 x 43 mm

Plastic

2 push-pull transistor outputs

Cable 2 m  
M12



LED indicator. Activation input for test and series connection. Active ambient light suppression (A<sup>2</sup>LS).

Single beam safety device with high performance reserve.  
Compact plastic housing with degree of protection IP 67.  
Wide voltage range 10 to 30 V.  
Clearly visible alignment indicator in the front screen.

### Specifications

Type in accordance with EN IEC 61496

Operating range

Operating voltage U<sub>B</sub>

Operating temperature

Dimensions, W x H x D

Housing

Switching outputs

Connection type

Certifications

### Functions

### Features

# Single Light Beam Safety Devices



## Specifications

Type in accordance with EN IEC 61496

Operating range

Operating voltage  $U_b$

Operating temperature

Dimensions, W x H x D

Housing

Switching outputs

Connection type

Certifications

## Functions

## Features

### SLS 96 Type 2 Single Light Beam Safety Devices



Type 2 in combination with a safety monitoring device

0 ... 50 m (infrared light)  
0 ... 30 m (red light)

10 ... 30 V DC  
(incl. residual ripple)

-20 ... +60 °C

30 x 90 x 70 mm

Metal  
Plastic

PNP transistor output

Terminal  
M12



LED indicator. Activation input for test and series connection.

High performance reserve in the visible red light and infrared light range.  
Wide voltage range from 10 to 30 V with PNP transistor output.  
Optics heating for use with low temperatures (SLS 96 M/P-1071).  
Variants for multiple axis operation (SLS 96 K/P-1207).

### SLS 318 Type 2 Single Light Beam Safety Devices



Type 2 in combination with a safety monitoring device

0 ... 10 m

10 ... 30 V DC

-25 ... +65 °C

Cylindrical construction, M18 x 1

Plastic  
Metal housing on request

PNP transistor output

Cable 2 m  
M12



LED indicator. Activation input for test and series connection.

Degree of protection IP 67.  
2 antivalent push-pull switching outputs for light/dark switching and as control function.  
Visible red light in straight optics.  
Switching frequency 1000 Hz.  
Adjustable sensitivity.

# AS-i-Safety Product Range



## Specifications

Type in accordance with EN IEC 61496

SIL in accordance with IEC 61508 and EN IEC 62061 (SILCL)

Performance Level (PL) in accordance with EN ISO 13849-1

AS-i profile

Slave address

Connection type

Current consumption from AS-i circuit

Sensor response time

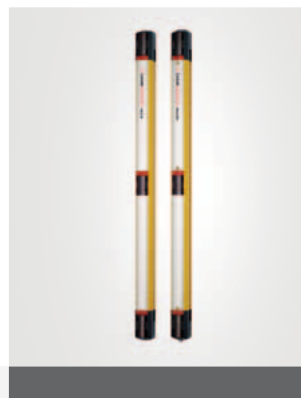
Restart delay time

Certifications

Function extension with ASM1/ASM1E safety monitor

## Features

### MLD 500 / AS-i Type 4 Multiple Light Beam Safety Devices



Type 4

SIL 3

PL e

Safe slave

1 ... 31, programmable (factory setting = 0)

M12

50 mA (transmitter)  
Max. 140 mA (receiver, type-dependent)

25 ms

100 ms or 500 ms



Start/restart interlock, contactor monitoring (EDM) selectable, timing controlled 2- or 4-sensor muting, sequence controlled 2-sensor muting, muting-timeout extension.

Integrated AS-i interface for direct M12 connection to the AS-interface network.

Safe data transfer of the OSSD signals via AS-interface.

Device swap-out without PC via SERVICE function of the AS-i safety monitor.

Integrated muting indicator, integrated status indicator, direct control without unique AS-i address possible.

### MLD 500 / AS-i Type 4 Single Light Beam Safety Devices



Type 4

SIL 3

PL e

Safe slave

1 ... 31, programmable (factory setting = 0)

M12

50 mA (transmitter)  
Max. 140 mA (receiver, type-dependent)

25 ms

100 ms or 500 ms



Start/restart interlock, contactor monitoring (EDM) selectable.

Integrated AS-i interface for direct M12 connection to the AS-interface network.

Safe data transfer of the OSSD signals via AS-interface.

Device swap-out without PC via SERVICE function of the AS-i safety monitor.

Direct control without unique AS-i address possible.

# AS-i-Safety Product Range



## Specifications

SIL in accordance with IEC 61508 and EN IEC 62061 (SILCL)

Performance Level (PL) in accordance with EN ISO 13849-1

Safety category in accordance with EN ISO 13849

Stop category in accordance with EN IEC 60204-1

Supply voltage

System reaction time

Degree of protection

Number of safety monitors per AS-interface network

Certifications

## Functions

## Features

## ASM1 / ASM1E AS-i Safety Monitors Category 4



SIL 3

PL e

4

0 and 1

24 V DC,  $\pm 15\%$

Max. 40 ms (monitor without sensor reaction time)

IP 20

4 (with maximum 31 integrated AS-i slaves)



E-Stop monitoring functions, start/restart interlock, dynamic contactor monitoring (EDM), muting, timing controlled 2-sensor muting, sequence controlled 4-sensor muting, 1- or 2-channel OSSD relay outputs, LED status indicator, system signal output

Up to 31 safe AS-i slaves can be connected.  
 Freely selectable assignment (Drag&Drop) of the sensors to OSSDs with "asimon" PC software.  
 48 logic devices (e.g. OR, AND, FLIPFLOP) and turn on/off delays can be configured for the monitoring devices.  
 RS 232 interface for PC-supported system configuration and system diagnostics as well as configuration data transfer to replacement device.  
 Immediate switch-off STOP 0 and delayed switch-off STOP 1 of the OSSDs can be configured.  
 Teach-in SERVICE button for automatic system integration of AS-i sensors on sensor exchange.

## ASM2 / ASM2E AS-i Safety Monitors Category 4



SIL 3

PL e

4

0 and 1

24 V DC,  $\pm 15\%$

Max. 40 ms (monitor without sensor reaction time)

IP 20

4 (with maximum 31 integrated AS-i slaves)



E-Stop monitoring functions, start/restart interlock, dynamic contactor monitoring (EDM), muting, timing controlled 2-sensor muting, sequence controlled 4-sensor muting, 1- or 2-channel OSSD relay outputs, LED status indicator, system signal output

Safe activation of safe AS-i actors with the same safe AS-i address.  
 Primary start and E-Stop functions via safe coupling of neighboring AS-i networks.  
 Auxiliary signals for start/restart interlock.  
 Error reset of the AS-i actor.  
 In addition, all functions and features of the ASM1E safety monitor are available.

# Safety Proximity Sensors



## MC 300 Magnetically Coded Sensors



## RD 800 Safety Transponders



### Specifications

Type	Locking device without guard interlocking in acc. with EN 1088
Category in accordance with EN IEC 13849-1	Up to 4 (depending on the number of sensors)
Performance Level (PL) in accordance with EN ISO 13849-1	Up to e (depending on the number of sensors)
Dimensions (housing)	M30 × 36 mm (MC 330) 36 × 26 × 13 mm (MC 336) 88 × 25 × 13 mm (MC 388)
Assured switching distances (Sao, Sar)	< 6 mm, > 14 mm (MC 330) < 3 mm, > 11 mm (MC 336) < 6 mm, > 30 mm (MC 388)
Switching tolerance	± 1 mm
Contact type	1NO / 1NC, 2NO
Code type	–
Connection type	M8, M12, cable, cable+M12
Min. approach speed of actuator towards sensor	50 mm/s
Response time	3 ms
Certifications	CE C UL US TÜV

### Functions

### Features

Safety system in combination with an evaluation unit such as the MSI-MC300 safety relay or the MSI 100 or MSI 200 safety controller. Integration in control circuits up to category 4 in accordance with EN ISO 13849.

Not sensitive to dust, humidity and the like (dirt level 3 in accordance with EN 60947-1).  
Highly tamperproof.  
Approach actuation directions lengthwise, high, deep.  
Flexible connection via M8 plug, PVC or PUR connection cable (2 m, 5 m, 10 m), each firmly integrated in the housing.  
Integrated compact design.  
Large switching hysteresis (tolerant in event of vibrations or warped doors).  
Delivery contents including actuator and screws / lock ring.

–	–
4	4
e	e
M30 × 36 mm (MC 330) 36 × 26 × 13 mm (MC 336) 88 × 25 × 13 mm (MC 388)	87.5 × 25 × 18 mm (sensor) 45 × 25 × 18 mm (actuator)
< 6 mm, > 14 mm (MC 330) < 3 mm, > 11 mm (MC 336) < 6 mm, > 30 mm (MC 388)	12 mm, 10 mm
± 1 mm	–
1NO / 1NC, 2NO	–
–	Standard code, unique code
M8, M12, cable, cable+M12	M12
50 mm/s	–
3 ms	7 ms (typical), 12 ms (max.)
CE C UL US TÜV	CE C UL US TÜV

Start/restart interlock, contactor monitoring (EDM) selectable, additional control output.

Compact housing with high degree of protection (IP 67, IP 69K).  
Pre-programmed or teach-in function.  
Individual or multiple application (series connection).  
Diagnosis via 4 multi-color LEDs.

# Safety Switches and Safety Locking Devices



## Specifications

Type

Housing / Degree of protection

Actuators

Actuation

Locking type, -force

Connection type

Certifications

## Functions

## Features

## S20, S200 Safety Switches



Locking device without guard interlocking in acc. with EN 1088

Glass fiber reinforced plastic (S20) or metal (S200) / both IP 67

Series (S20: AC-ANxx, S200: AC-AHxx), external: straight, angular, resilient, alignable

1 × above, 4 × side (90°)

10 N, 30 N

Cable entry M20 × 1.5 (S20: optional 3-way), M12

CE    M    C UL US

Integration in control circuits up to category 4 in accordance with EN ISO 13849

Easy mounting with standard construction.  
 Universal use with 5 actuator approach directions.  
 Various actuators for different installation conditions and applications from normal duty (S20) to heavy duty (S200).  
 Self-centering with funnel-shaped entry opening.  
 Large double-bridge contacts for long service life (S200).

## S300 Safety Position Switch



Locking device without guard interlocking in acc. with EN 1088

Glass fiber reinforced plastic or metal, both IP 67

Plunger, roller, lever, porcelain lever

1 × above, 4 × side (90°), 360°, switching direction left-right one side, both sides

Cable entry M20 × 1.5 (1- or 3-way), M12

CE    M    C UL US

Integration in control circuits up to category 4 in accordance with EN ISO 13849, stop command with automatic or manual forced actuation

Metal housing for "heavy duty" applications.  
 Switching direction selectable.  
 Universal use with individually set actuator approach directions and angles in 10° grid.  
 Actuator extremely durable / robust.



## S400, S410 Safety Hinge Switches



Locking device without guard interlocking in acc. with EN 1088

Metal, IP 67 / IP 69K

Safety switch in hinge, internal, encapsulated

Actuation angle 180°

Cable or M12, top, bottom, at wall side



Integration in control circuits up to category 4 in accordance with EN ISO 13849, mechanical hinge with integrated safety switch

Maximum protective device opening angle of 180°.  
Repeatable setting (switching angle alignment) with misaligned doors.  
Compact, rounded-off construction design in robust metal version.  
Encapsulated, internal actuator guarantees proper functioning, even under difficult environmental conditions.  
Extremely manipulation-safe with covered screws (unobtrusive sturdy design with rear-side mounting).  
S410 model with wider fork dimensions for special materials.

## L10 Safety Locking Devices



Locking device with guard interlocking according to EN 1088

Glass fiber reinforced plastic or metal / both IP 67

Series (AC-AHxx), external: straight, angular, resilient, adjustable

1 × above, 4 × side (90°)

Mechanical (manual, delayed actuator release approx. 15 or 20 s), or with key, max. 1000 N

Cable entry M20 × 1.5



Integration in control circuits up to category 4 in accordance with EN ISO 13849, mechanical guard interlocking with manual locking and unlocking

Universal use with 5 actuator approach directions.  
Multiple heavy-duty actuator series AC-AHxx for a wide range of installation conditions.  
Self-centering with funnel-shaped entry opening.  
Reduced wiring through manual locking and releasing, optionally with knurled nut or key.  
Economical locking device with compact construction.

## L100, L200 Safety Locking Devices



Locking device with guard interlocking according to EN 1088

Glass fiber reinforced plastic / IP 66 (L100), metal / IP 67 (L200)

Series ( L100: AC-AHxx, L200: AC-AHLxx), external: straight, angular, resilient, adjustable

1 × above, 4 × side (90°)

Mechanical (spring), electro-mechanical (magnet), max. 1100 N (L100), max. 2500 N (L200)

Cable entry M20 × 1.5 (3-way)



Integration in control circuits up to category 4 in accordance with EN ISO 13849, mechanical guard interlocking (spring-force), electro-magnetic guard interlocking (magnet-force), auxiliary release, emergency release (L200), illuminated displays for magnet activation (L200)

Universal use with 5 actuator approach directions.  
Multiple heavy-duty actuators for a wide range of installation conditions.  
Self-centering with funnel-shaped entry opening.  
Adjustable switch-on power reduction (L100).  
"Heavy duty" use, including under tough, harsh ambient conditions and external mechanical stresses (L200).  
Ergonomically optimized panic button, selectable position (L200).

## Series-Specific Accessories Actuators



Roller lever (also in porcelain), lever actuator, plug-in actuator, pulling rope, additional hinge, mounting plates, built-in plug, actuator locks, etc.

Easy to mount without special tools. Universal use.

High-quality materials (metal, plastic).  
Rubber-mounted.  
Resilient.  
Long, short, combined.  
Angular, straight.  
Adjustable, functional, universal.

# Safety Command Devices



## Specifications

Type

Housing / Degree of protection

Actuators

Actuation

Mounting

Connection type

Certifications

## Functions

## Features

### ERS200 E-Stop Rope Switch



E-Stop command device in accordance with EN ISO 13850, EN 60947-5-5

Metal, IP 67

Stainless steel bolt, steel rope with signal-red sheathing

Position-independent per rope (pull: 83 N / 235 N, slacken: 63 N / 147 N). Pull on forced separation: 90 N / 250 N.

Straight, angular

Cable entry M20 × 1.5 (1- or 3-way)  
M12

CE (Y) c UL US

Integration in control circuits up to category 4 in accordance with EN ISO 13849, position-independent E-STOP command input, reset function (reset button with indicator), rope head with alignment indicator

Machine is stopped by pulling the rope or on rope breakage.  
Simple rope adjustment by means of switching point indicator.  
Clicks in on both sides with friction-locking contacts.  
Compact metal housing.  
Use even under difficult conditions.  
Precise bolt guide.

### ESB200 E-Stop Button



E-Stop command device in accordance with EN 60947-5-5 and EN ISO 13850

UV-resistant, impact-resistant plastic, IP 67, IP 69K

Button, 40 mm diameter, red, self-locking

Position-dependent, manual, per button (25 N)

Structure

Cable entry M20 × 1.5  
M16 × 1.5  
M12

CE c UL US

Integration in control circuits up to category 4 in accordance with EN ISO 13849, position-dependent E-Stop command output, reset function (via rotary knob or key)

2 safety circuits, 1 signal circuit.  
Either screw terminals or M12 connection.  
Sturdy housing with "STOP" signal ring.  
Protected screw fitting.  
Ergonomically optimized.

# Safety Relays



## Specifications

- Type in accordance with EN IEC 61496-1 (Annex A)
- SIL in accordance with IEC 61508 and EN IEC 62061 (SILCL)
- Performance Level (PL) in accordance with EN ISO 13849-1
- Category in accordance with EN ISO 13849
- Stop category in accordance with EN IEC 60204-1
- Signal output
- Response time
- Safety-related switching outputs (OSSDs)
- Dimensions, W x H x D

## Certifications

## Functions

## Features

### MSI-SR4 Electro-Mechanical Relays



## Specifications

- Type in accordance with EN IEC 61496-1 (Annex A)
- SIL in accordance with IEC 61508 and EN IEC 62061 (SILCL)
- Performance Level (PL) in accordance with EN ISO 13849-1
- Category in accordance with EN ISO 13849
- Stop category in accordance with EN IEC 60204-1
- Signal output
- Response time
- Safety-related switching outputs (OSSDs)
- Dimensions, W x H x D

## Certifications

## Functions

## Features

### MSI-SR5 Electro-Mechanical Relays



## Specifications

- Type in accordance with EN IEC 61496-1 (Annex A)
- SIL in accordance with IEC 61508 and EN IEC 62061 (SILCL)
- Performance Level (PL) in accordance with EN ISO 13849-1
- Category in accordance with EN ISO 13849
- Stop category in accordance with EN IEC 60204-1
- Signal output
- Response time
- Safety-related switching outputs (OSSDs)
- Dimensions, W x H x D

## Certifications

## Functions

## Features

# Safety Relays



## Specifications

Type in accordance with EN IEC 61496-1 (Annex A)

SIL in accordance with IEC 61508 and EN IEC 62061 (SILCL)

Performance Level (PL) in accordance with EN ISO 13849-1

Category in accordance with EN ISO 13849

Stop category in accordance with EN IEC 60204-1

Signal output

Response time

Safety-related switching outputs (OSSDs)

Dimensions, W × H × D

Certifications

## Functions

## Features

## MSI-RM2 Electro-Mechanical Relays



Depending on the upstream AOPD

Depending on the upstream AOPD

Depending on the upstream AOPD

Up to 4 (depending on the category of the upstream protective device)

–

Relay output (NC)

20 ms

2 relay outputs (changeover)

17.5 × 99 × 114.1 mm

(screw terminal)

17.5 × 111 × 114.1 mm

(spring-cage terminal)



Signal conversion of electronic outputs of active optoelectronic protective devices on potential-free relay contacts.

Monitoring of external contactors in the signal circuit with the upstream protective device

2 release circuits, 1 break contact as signal circuit for contactor monitoring (EDM).

Cost-effective relay interface for safety-related sensors with RES and EDM.

LED displays: K1, K2.

Detachable connection terminals.

## MSI-CM Contact Extension Module



–

SIL 3

PL e

4

0

1

20 ms

5 relay outputs (NO)  
2 relay outputs (NC)

22.5 × 99 × 114.1 mm

(screw terminal)

22.5 × 111 × 114.1 mm

(spring-cage terminal)



Contact extension module with extension block in accordance with DIN EN 60204-1 / VDE 0113 part 1 for contact multiplication for E-Stop relays and two-hand control units

1- or 2-channel wiring.

Designs with screw terminals as well as with spring terminals.

Basic insulation.

5 release contacts, 1 signal contact, 1 feedback contact.

### MSI-DT Time Delay Module



–

SIL 3

PL e

4 (depending on external wiring)

0, 1 (depending on enabling current path)

–

150 ms

2 relay outputs (normal closed contact (NC), slow release)  
2 relay outputs (NC)

22.5 × 99 × 114.1 mm (screw terminal)  
22.5 × 111 × 114.1 mm (spring-cage terminal)



Safety relay for E-Stop and protective door/photoelectric sensor monitoring with adjustable delay time (can be steplessly preset from 0.1 to 30 s).

1- or 2-channel wiring with cross connection detection.  
Designs with screw terminals as well as with spring terminals.  
Two undelayed and two slow-release release contacts.  
Automatic or manual start circuit.

### MSI-MC300 Evaluation Unit for MC 300 Sensors



Depending on the number of connected sensors

–

Up to e (depending on the number of connected sensors)

Up to 4 (depending on the number of connected sensors)

STOP 0

–

20 ms

2 relay outputs (NO),  
1 relay output (NC)

22.5 × 99 × 113.6 mm



Evaluation unit for the construction of a safety system in combination with MC 300 magnetically coded sensors. Up to 30 sensors can be connected in series, stop function, start/restart interlock (RES), contactor monitoring (EDM) in start circuit.

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

### MSI-2H Electro-Mechanical Relays



III C, in accordance with EN 574

–

PL e

Up to 4 (depending on the category of the upstream protective device)

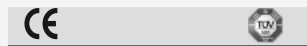
0

Relay output (NC)

20 ms

2 relay outputs (NO)

22.5 × 99 × 114.1 mm (screw terminal)  
22.5 × 111 × 114.1 mm (spring-cage terminal)



Two-hand control unit acc. to EN 574, type III C, controlled start by checking the feedback circuit and button contacts, automatic start/restart, static contactor monitoring (EDM), simultaneity monitoring of the two-hand buttons, cross circuit monitoring.

Two-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.  
Detachable connection terminals.

### MSI-T Safety Monitoring Devices for Type 2 Sensors



Type 2

–

PL d

2

0 (MSI-TR1, MSI-TR2)  
1 (MSI-TS)

2 transistor outputs

< 20 ms

2 relay outputs (NO)

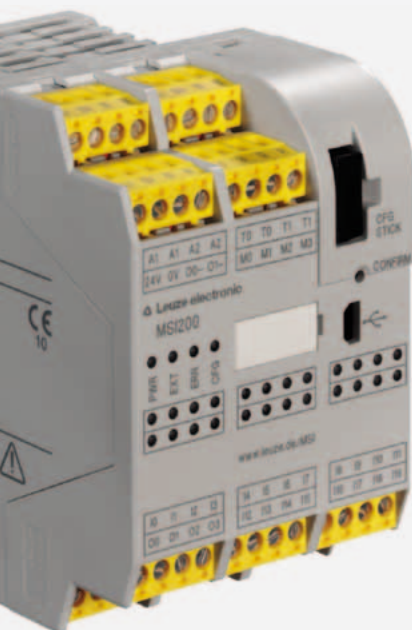
22.5 × 99 × 114.1 mm (screw terminal)  
22.5 × 111 × 114.1 mm (spring-cage terminal)



Safety monitoring device for periodic testing of type 2 sensors, multiple monitoring of type 2 sensors in daisy chain connection, start/restart interlock (RES) selectable, static contactor monitoring (EDM) selectable, signal outputs "Safety on" and "Error".

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.  
Detachable connection terminals.

# Programmable Safety Controllers



## MSI 100 Base Module

## MSI 200 Base Module



### Specifications

SIL in accordance with IEC 61508 and EN IEC 62061 (SILCL)

Performance Level (PL) in accordance with EN ISO 13849-1

Category in accordance with EN ISO 13849

Safe inputs

Signal outputs

Reaction time

Safety-related switching outputs (OSSDs)

Dimensions

Connection type

Interfaces

Certifications

### Functions

### Features

3

e

4

20 (up to SIL 3)

4

Shorter than 30 ms

4

67.5 mm × 114.5 mm × 112 mm

Plug in screw terminals, spring-cage terminals

USB, TBUS DIN rail for bus coupler



Freely configurable base module, monitoring of all safety-oriented functions in machines and systems, diagnostic data transfer via MSI-FB fieldbus module (option)

20 safe inputs, 4 safe switching outputs (OSSDs).  
4 message, 2 clock switching, 2 ground-switching outputs.  
Free configuration with MSIsafesoft software.  
Extensive device library with certified function blocks.  
Data stick with configuration storage.  
Designs with screw terminals as well as with spring terminals.

3

e

4

20 (up to SIL 3)

4

Shorter than 30 ms

4

67.5 mm × 114.5 mm × 112 mm

Plug in screw terminals, spring-cage terminals

USB, TBUS DIN rails for extension modules and bus couplers



Freely configurable base module, monitoring of all safety-oriented functions in machines and systems, safety-oriented expandability with additional input/output modules, diagnostic data transfer via MSI-FB fieldbus module (option)

20 safe inputs, 4 safe switching outputs (OSSDs).  
Extension modules with additional input/output modules.  
4 message, 2 clock switching, 2 ground-switching outputs.  
Free configuration with MSIsafesoft software.  
Extensive device library with certified function blocks.  
Data stick with configuration storage.  
Designs with screw terminals as well as with spring terminals.

**MSI-EM**  
Relay Extension Module



3

e

4

Shorter than 30 ms  
4 relay outputs

22.5 mm × 113.7 mm × 106.1 mm

Plug in screw terminals,  
spring-cage terminals

TBUS DIN rails for extension  
modules and bus coupler



Relay extension module for the  
MSI 200 programmable safety  
controller

Simple connection via DIN rail  
connector.  
Designs with screw terminals as  
well as with spring terminals.  
Compact housing width 22 mm.

**MSI-EM**  
I/O Extension Module



3

e

4

12, (4 of which are configurable as  
input or output)

Shorter than 30 ms

4 (if using the configurable  
inputs / outputs as outputs)

22.5 mm × 113.7 mm × 106.1 mm

Plug in screw terminals,  
spring-cage terminals

TBUS DIN rails for extension  
modules and bus coupler



Extension module for the MSI 200  
programmable safety controller,  
extension with 8 safe inputs and 4  
safe, freely configurable  
channels-either safe inputs or  
outputs (OSSDs)

Simple connection via DIN rail  
connector.  
Designs with screw terminals as  
well as with spring terminals.  
Compact housing width 22 mm.  
4 freely configurable safety outputs  
(OSSDs).

**MSI-FB**  
Fieldbus Modules



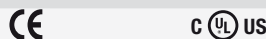
4 (not safety-oriented)

4 (not safety-oriented)

22.6 mm × 113.6 mm × 108.1 mm

Plug-in screw terminals

Interface 1: MSI interface, TBUS  
Interface 2: PROFIBUS-DP,  
D-SUB-9



Fieldbus modules for connecting  
the MSI 100 and MSI 200  
programmable safety controllers to  
PROFIBUS

Certified in accordance with DPV1  
specification (EN 50170).  
Simple connection via DIN rail  
connector.  
Compact housing width 22 mm.

**MSI-SWC-1**  
Start-Up Set



With the software, users easily  
configure the functions of  
MSI modules through drag & drop  
functionality.  
1. Select and configure safety  
function.  
2. Connect inputs and outputs of  
the module to the safety functions.  
3. Test the safety functions and  
save—finished.

MSIsafesoft configuration software.  
USB cable for connecting the  
safety controller to a PC  
(not included in delivery).  
Quick Start Guide for a quick  
introduction to the topic  
("First Steps").

# Safety Sensor Sets and Accessories

## Description

### MLD-UDC Safety Sensor Sets



In addition to the MLD 500 multiple light beam safety device as an optical protective device, these sets also include device columns in which the safety sensor is pre-mounted in such a manner that it can very easily be height-adjusted.

### MLC-UDC Safety Sensor Sets



In addition to the MLC 500 safety light curtain as an optical protective device, these sets also include device columns in which the safety sensor is pre-mounted in such a manner that it can very easily be height-adjusted.

## Features



2-beam complete Plug & Play solutions, optionally as transceiver or transmitter-receiver system.

Set for access guarding, i.e. pre-mounted transmitter / receiver or transceiver / deflecting mirror in device column.

Optimally matched mechanically; pre-mounted and pre-aligned.

Device column with complete mounting kit for exact floor alignment; automatic resetting after mechanical impacts thanks to special spring elements.

Innovative design for modern machine and system construction.

Transmitter-receiver system with safety light curtain MLC 500.

Set for access guarding with hand/finger detection.

Optimally matched mechanically; pre-mounted and pre-aligned.

Device column with complete mounting kit for exact floor alignment; automatic resetting after mechanical impacts thanks to special spring elements.

Innovative design for modern machine and system construction.





### MLDSET Safety Sensor Sets



The **MLDSET** safety sensor sets ensure efficient installation and quick and easy start-up of **complete solutions for guarding machine systems**. A variety of Plug & Play models offer application options ranging from access guarding to complex muting tasks.

Pre-mounted and aligned protective sensor systems in device columns for direct integration in machine and system controls.  
Models for access guarding with and without 2- and 4-sensor muting, parallel and sequential.  
Simple logistical handling through individual complete solutions in a single set.  
Fast start-up of the complete system through immediately ready-to-use, turnkey design with pluggable connections.

### Set-AC-M Muting Sensor Sets



The **Set-AC-M** muting sensor sets for protective sensors and safety light curtains simplify the setup and operation of muting solutions. The sets are **optimally tailored to modern machines and systems** both mechanically and electrically and through their innovative design.

Pre-mounted and aligned muting sensors with complete configuration for direct connection to the safety sensors.  
Variants for 2 and 4 sensor muting parallel and sequential.  
Simple lateral mounting on device columns as well as on protective sensors and safety light curtains.  
Optimally matched to transceiver systems through the use of retro-reflective photoelectric sensors (only one-sided wiring).  
Fast start-up through immediately ready-to-use, turnkey design.

### UDC / DC Device Columns



The **UDC / DC** device columns enable the stable, freestanding mounting of protective sensors and safety light curtains on the floor. The **robust profile construction in high-quality design** will win you over with simple device mounting and the quick vertical and axial alignment in just a few steps.

Simple, stepless mounting and height adjustment of the installed devices by means of supplied mounting brackets.  
Design with closed or open top by means of simple, snap-in column cover.  
Protection against device contamination and damage by means of easy-to-replace protective screens.  
Automatic resetting after mechanical impacts with special spring elements (UDC).  
Complete mounting set for floor fixing included with delivery (UDC).

### UMC Mirror Columns



By combining **UMC** mirror columns with protective sensors or safety light curtains, **cost-effective, multiple-side danger zone guarding** can be realized. Robust design and simple handling also increase the effectiveness of the safety device.

Individual mirror, adjustable separately in height and alignment, for beam deflection with multiple light beam safety devices.  
Axially adjustable continuous mirror surface for beam deflection with safety light curtains.  
Automatic resetting after mechanical impacts with special spring elements.  
Complete mounting set for floor fixing included with delivery.



## Machine Safety Services

### YOUR “MACHINE SAFETY” SERVICE PACKAGE

Whether planning and engineering or management of safety at work in the company, the use of industrial safety technology requires a high degree of responsibility awareness and well-established expertise. With the “Machine Safety Services” service package, we provide product-related services and support for everything

related to machine and plant system safety. The individual services are coordinated with the safety-related application during the machine’s lifecycle and can be applied individually or combined as requirements dictate. So what can we do for you?

### SAFETY IN THE FIELD

#### Safety Inspections



Safety at work is a management issue — this applies in principle around the world. In Germany, periodic testing of the machine is required by law. Safety inspections ensure compliance with safety and quality standards and serve as preventive maintenance measures.

#### Stopping Time Measurements

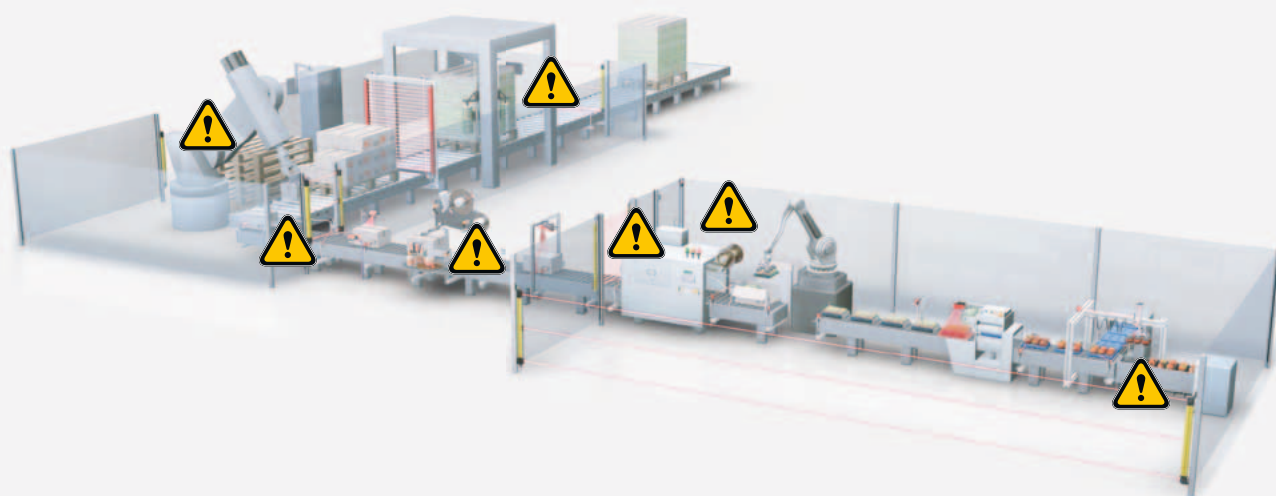


Only with a minimum distance that corresponds with the stopping time of the machine can it be guaranteed that the dangerous movement will stop before the person reaches the danger zone. Our service staff perform the stopping time measurements with the most modern measurement devices, calculate the required minimum distances of the safety device, and document the measurement results.

#### Application Advice, Start-Up Support



Make good use of our many years of application experience when designing the optimum system solution for your application. Our service helpline can answer many of your questions by telephone. +49 8141 5350-111. At [www.leuze.com](http://www.leuze.com), we assist you with a large amount of information that is helpful in quickly finding solutions to problems. For emergencies, the 24-hour telephone standby service of Leuze electronic is available for you around the clock and seven days a week at: +49 7021 573-0.



## SAFETY IN THEORY AND PRACTICE

### Safety Consulting



Safety consulting from Leuze electronic increases machine safety and gives the system operator legal certainty. The company specialists ensure that all requirements of the Machinery Directive and CE certification are upheld. They also check whether all documents are complete and fulfill the legal requirements. With Leuze electronic safety consulting, the customer minimizes the time and money needed for risk assessment and transfers its responsibility to the consultants.

### Seminars and Workshops



Our customized training program helps you keep your knowledge of safety technology current. In addition to the various product training courses, we also offer seminars on basics of the Machinery Directive, on CE conformity assessment and practice-related safety technology as well as on Safexpert, our PC tool for EC conformity assessment and risk assessment. For more information go to [www.leuze.com/en/seminars/](http://www.leuze.com/en/seminars/)

### Safety Engineering Software Safexpert



Safexpert is a PC software for the systematic safety engineering of machinery and systems. The network-enabled PC program takes you step-by-step through CE conformity assessment, culminating in the CE sign of approval. It supports the design engineer with risk assessment, in locating relevant standards within seconds, with the creation of the technical documentation and operating instructions, and ultimately guides them through to the standards-compliant CE conformity declaration and CE manufacturer declaration of conformity.

# IDENTIFICATION

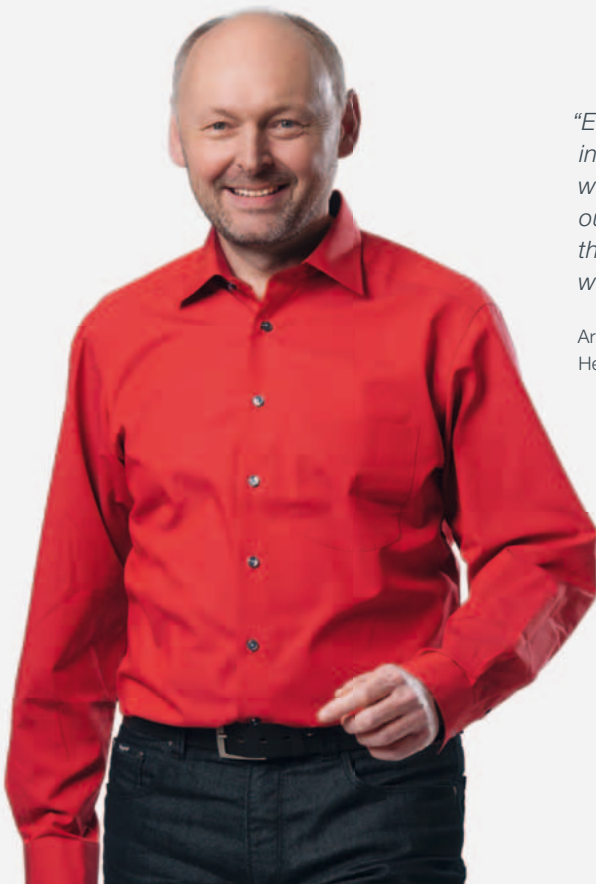


## CODES SIMPLIFY COMMUNICATION IN AUTOMATION

The identification of bar codes, 2D-codes and RFID transponders is among our core competencies. Complemented by other identification systems, it is our broad product range of IDENT technologies that opens up maximum flexibility to our customers. Our products ensure absolute reliability and maximum system availability. Discover our world of IDENT products.

All the components and systems are modularly designed for perfect integration—in compliance with specific requirements and needs.

- **integrated** connectivity.—our devices can be integrated problem-free in all common fieldbus systems
- **Code reconstruction technology**—enables reliable detection, even with soiled or damaged codes



*“Every sensor is only as good as the options for integration in a system control. With the term **integrated** connectivity, we therefore place great importance on directly equipping our devices with the most common fieldbus interfaces. In this way, we save our customers a great amount of wiring work and additional connector units.”*

Armin Claus,  
Head of Product Center — Ident and Vision Systems



**HIGHLIGHT**

THE BAR CODE READERS OF THE BCL 300i SERIES SET **NEW STANDARDS** IN **EQUIPMENT OPTIONS**.

The BCL 300i will win you over both with its modularity and its proven performance characteristics such as the high-performance code reconstruction technology, integrated fieldbus connectivity and unrivaled optical data at long operating ranges and wide opening angles.



Choose between these freely combinable equipment variants. You thereby obtain a bar code reader perfectly tailored to your needs with regard to function, connection, mounting, and operation and one that stands for reliability and system availability.

■ **Display elements**

Graphical display, LED display.

■ **Optics / reading field**

High density (N), medium density (M), low density (F), ultra low density (L), ink jet (J).

■ **Scanner**

Oscillating mirror, deflecting mirror, front beam exit, line scanner, raster scanner.

■ **Interfaces**

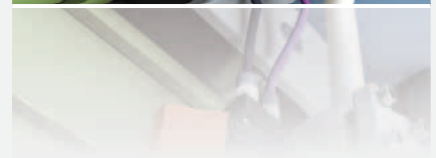
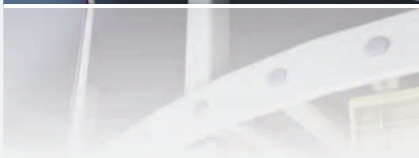
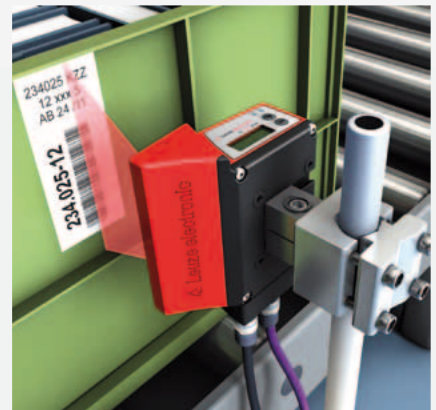
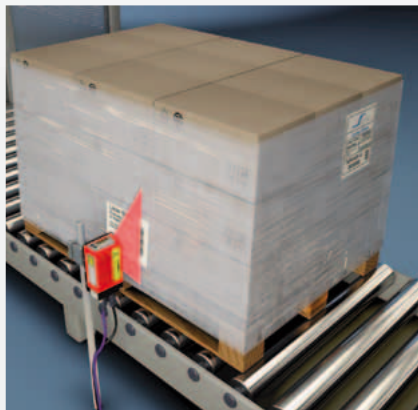
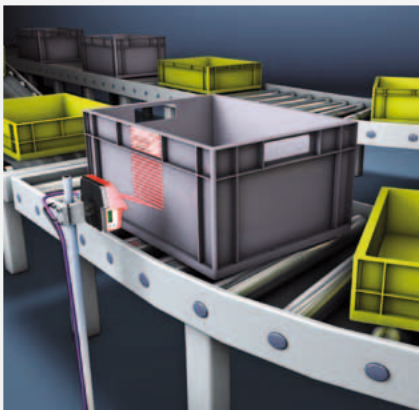
PROFIBUS, PROFINET, Ethernet TCP/IP, Ethernet/IP, multiNet, RS 232 / 422 / 485.

■ **Connection technology**

Modular connector hood, modular terminal hood, modular terminal box, connection cable.

■ **Additional options**

Heating, mounting systems.



## Stationary Bar Code Readers



## BCL 8 Bar Code Readers



### Specifications

Reading distance (dependent on version)	40 – 160 mm
Smallest resolution	0.125 mm
Scanning rate	600 / 500 scans/s
Lens variant	N, M
Reading method	Single line scanner

### Inputs/outputs

1 / 1

### Interfaces

**Integrated:**  
RS 232

### Connectivity

**With connector unit  
MA 8 (point to point)**  
RS 485

**With connector unit  
MA 200i**  
PROFINET IO/RT, PROFIBUS, Ether-  
net TCP/IP, UDP, Ethernet/IP  
EtherCAT, DeviceNet, CANopen

### Supply voltage

5 V DC  
(10 – 30 V DC via MA)

### Degree of protection

IP 67

### Network master

MA 31

### Certifications

CE CDRH C UL US

### Accessories

#### Optional

#### Mounting systems

BT 8

### Features

Reads all common 1D-codes  
including pharmaceutical codes.  
Robust industrial version in  
a metal housing – IP 67.  
M12 connection type or cable  
variant.  
Reference code comparison.

**BCL 20**  
Bar Code Readers



50 – 450 mm  
0.15 mm  
1000 / 800 scans/s  
N, B, M, F  
Single line scanner  
Raster scanner  
1 / 1 or 2 / 2  
**Integrated:**  
RS 232  
RS 485

**With connector unit MA 2 / 4**  
multiNet  
**With connector unit MA 200i**  
PROFINET IO/RT, PROFIBUS, Ethernet TCP/IP, UDP, Ethernet/IP, EtherCAT, DeviceNet, CANopen  
10 – 30 V DC

IP 65  
MA 31  
CE CDRH C UL US

BT 20, BT 21  
Automatic detection of code type and code quality.  
Failsafe storage of parameters.  
Integrated multiNet.  
12 optics models.

**BCL 300i**  
Bar Code Readers



20 – 700 mm  
0.127 mm  
1000 scans/s  
N, M, F, L, J  
Single line scanner  
Raster scanner  
Deflecting mirror  
Oscillating mirror  
Code reconstruction technology  
1 / 1  
**Integrated:**  
RS 232 / 485 / 422  
multiNet  
PROFIBUS  
PROFINET IO/RT  
Ethernet TCP/IP, UDP  
Ethernet IP

**With connector unit MA 200i**  
EtherCAT, DeviceNet, CANopen  
18 – 30 V DC

IP 65  
MA 31  
CE CDRH C UL US

BT 56, BT 59, BT 300 W, BT 300  
Integrated fieldbus connectivity.  
Code reconstruction technology (CRT).  
Available as a front scanner, deflecting mirror and oscillating mirror model.  
Simple configuration via USB interface without additional software.  
Modular connection type via M12 hood with integrated connectors, terminal hood or cable hood.  
Optional with display and as heating model.

**BCL 500i**  
Bar Code Readers



200 – 2400 mm  
0.2 mm  
1000 scans/s  
N, M, F, L  
Single line scanner  
Oscillating mirror  
Deflecting mirror  
Code reconstruction technology  
2 / 2  
**Integrated:**  
RS 232 / 485 / 422  
multiNet  
PROFIBUS  
PROFINET IO/RT  
Ethernet TCP/IP, UDP  
Ethernet IP

**With connector unit MA 200i**  
EtherCAT, DeviceNet, EtherNet/IP, CANopen  
10 – 30 V DC

IP 65  
integrated  
CE CDRH C UL US

BT 56, BT 59  
Code reconstruction technology (CRT).  
“WebConfig” software integrated in the device permits configuration via USB interface without additional software. Multiple language menu-driven display. M12 connection type. Integrated fieldbus connectivity for convenient fieldbus link and networking. Code reconstruction technology (CRT) for reliable identification of damaged codes. Optional heating models to –35 °C.

**BCL 90**  
Bar Code Readers



500 – 2100 mm  
0.2 mm  
800 scans/s adjustable (600 – 1200 scans/s)  
N, M, F  
Single line scanner  
Oscillating mirror  
Code reconstruction technology  
autoFocus  
6 / 4  
**Integrated:**  
RS 232 / 485 / 422

**With connector unit MA 90**  
multiNet  
**With connector unit MA 200i**  
PROFINET IO/RT, PROFIBUS, Ethernet TCP/IP, UDP, Ethernet/IP, EtherCAT, DeviceNet, CANopen  
18 – 30 V DC

IP 65  
MA 31  
CE CDRH

Ext. parameter memory  
BT 90  
Integrated autofocus.  
Code reconstruction technology (CRT).  
Available as “CAX” (compact omnidirectional scanner).  
Optionally as modular scanner portal (MSP) system.

# Mobile Code Readers

## IT 1300g Bar Code Hand-Held Readers



## IT 3820 Bar Code Hand-Held Readers



## IT 3800i IT 3820i Bar Code Hand-Held Readers



### Specifications

Reading method

Line imager

Line imager with Bluetooth

Line imager

Reading distance

10–660 mm

25–1120 mm

16.5–2080 mm

Interfaces

**Integrated:**  
RS 232 / USB  
Keyboard Wedge PS 2

**Integrated:**  
RS 232 / USB  
Keyboard Wedge PS 2

**Integrated:**  
RS 232 / USB  
Keyboard Wedge PS 2

Connectivity

**With MA 21 connector unit**  
multiNet

**With MA 21 connector unit**  
multiNet

**With MA 21 connector unit**  
multiNet

**With MA 200i connector unit**

**With MA 200i connector unit**

**With MA 200i connector unit**

PROFINET IO/RT  
PROFIBUS  
Ethernet TCP/IP, UDP  
EtherCAT  
DeviceNet  
CANopen

PROFINET IO/RT  
PROFIBUS  
Ethernet TCP/IP, UDP  
EtherCAT  
DeviceNet  
CANopen

PROFINET IO/RT  
PROFIBUS  
Ethernet TCP/IP, UDP  
EtherCAT  
DeviceNet  
CANopen

Accessories

Cable for: RS 232, USB,  
Keyboard-Wedge; desktop support,  
wall support, power supply unit

Cable for: RS 232, USB,  
Keyboard-Wedge; desktop support,  
wall support, power supply unit

Cable for: RS 232, USB,  
Keyboard-Wedge; desktop support,  
wall support, power supply unit

Supply voltage

4.5–5.5 V DC

9 V DC

4.5–14 V DC

Applications

Bar codes  
Degree of protection IP 41

Bar codes  
Degree of protection IP 41

Tough industrial use  
Degree of protection IP 54

Types of codes

Bar codes

Bar codes

Bar codes

Certifications

CE C UL US

CE C UL US

CE C UL US

Features

Large reading field for bar code detection.  
Ergonomic and robust housing.  
Operating temperature  
0 °C ... 50 °C.

Large reading field for bar code detection.  
Ergonomic and robust housing.  
Operating temperature  
0 °C ... 50 °C.

Large reading field for bar code detection.  
Ergonomic and robust housing.  
Operating temperature from  
–30 °C ... 50 °C (IT 3800i).  
0 °C ... 50 °C (IT 3820i).



**IT 1900**  
**IT 1902**  
2D-Code Hand-Held  
Readers



Surface imager with Bluetooth  
0–561 mm

**Integrated:**  
RS 232 / USB  
Keyboard Wedge PS 2

**With MA 21 connector unit**  
multiNet

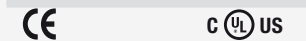
**With MA 200i connector unit**  
PROFINET IO/RT  
PROFIBUS  
Ethernet TCP/IP, UDP  
EtherCAT  
DeviceNet  
CANopen

Cable for: RS 232, USB,  
Keyboard-Wedge; holder, power  
supply unit, base station

4.5–5.5 V DC

High-contrast codes  
Degree of protection IP 41

Bar codes and 2D-codes



Large reading field for detection of  
high-contrast codes.  
Operating temperature  
0 °C ... 50 °C.  
Ergonomic and robust housing.

**IT 1910i**  
**IT 1911i**  
2D-Code Hand-Held  
Readers



Surface imager with Bluetooth  
25–596 mm

**Integrated:**  
RS 232 / USB  
Keyboard Wedge PS 2

**With MA 21 connector unit**  
multiNet

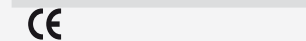
**With MA 200i connector unit**  
PROFINET IO/RT  
PROFIBUS  
Ethernet TCP/IP, UDP  
EtherCAT  
DeviceNet  
CANopen

Cable for: RS 232, USB,  
Keyboard-Wedge; holder, power  
supply unit, base station

4.5–5.5 V DC

High-contrast codes  
Degree of protection IP 65

Bar codes and 2D-codes



Large reading field for detection of  
high-contrast codes.  
Operating temperature  
-30 °C ... 50 °C.  
Ergonomic and very robust housing for  
rough applications.

**FIS 6170**  
2D-Code Hand-Held  
Readers



Surface imager  
0–51 mm

**Integrated:**  
RS 232 / USB

**With MA 21 connector unit**  
multiNet

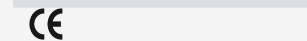
**With MA 200i connector unit**  
PROFINET IO/RT  
PROFIBUS  
Ethernet TCP/IP, UDP  
EtherCAT  
DeviceNet  
CANopen

Cable for: USB, RS 232;  
Power supply unit

5 V DC

Reading of directly marked codes  
(laser or matrix printed) with low  
contrast  
Degree of protection IP 41

Bar codes and directly marked  
2D-codes



High resolution for directly marked  
parts (laser or matrix printed)  
and labels.  
Operating temperature  
0 °C ... 50 °C.  
Ergonomic and robust housing.

**HS 6508**  
**HS 6578**  
2D-Code Hand-Held  
Readers



Surface imager with Bluetooth  
0–233 mm

**Integrated:**  
RS 232 / USB  
Keyboard Wedge PS 2

**With MA 21 connector unit**  
multiNet

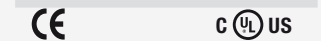
**With MA 200i connector unit**  
PROFINET IO/RT  
PROFIBUS  
Ethernet TCP/IP, UDP  
EtherCAT  
DeviceNet  
CANopen

Cable for: RS 232, USB,  
Keyboard-Wedge; holder, power  
supply unit, base station

4.5–5.5 V DC 9 V DC

Reading of directly marked codes  
(laser or matrix printed) with low  
contrast

Bar codes and directly marked  
2D-codes



High resolution for directly marked  
codes.  
Operating temperature  
-20 °C ... 50 °C.  
Ergonomic and robust housing.  
Display for successful reading with  
LED, signal tone and vibration.

# Stationary 2D-Code Readers

## LSIS 220 Stationary 2D-Code Readers



## LSIS 422i Stationary 2D-Code Readers



## LSIS 422i Stationary 2D-Code Readers (C-mount model)



### Typical applications

Code reading

### Sensor / cameras

Resolution (pixel)

Focal point

### Interfaces

### Connectivity

### Digital inputs/outputs

### Number of test routines

### Configuration / Operating system

### Options

### Dimensions, W x H x D

### Certifications

### Features

Data Matrix, bar code, QR Code, PDF 417, Aztec, GS1 Databar and others

CMOS (Global Shutter)

844 × 640

127 mm

**Integrated:**  
RS 232  
USB

**With MA 21 connector unit**  
multiNet

**With MA 200i connector unit**  
PROFINET IO/RT  
PROFIBUS  
Ethernet TCP/IP, UDP, IP  
EtherCAT  
DeviceNet  
CANopen

1 / 1

Memory capacity for 1 parameter set in the camera

Configuration via bar code or PC with setup program

47 × 40 × 32 mm

CE c UL US

Camera system for omnidirectional scanning of 2D-codes and bar codes (even in movement). Compact housing, integrated lighting and decoder. Degree of protection IP 65.

Data Matrix Code, bar code, Pharmacode

CMOS (Global Shutter)

752 × 480

50 mm ... ∞ (focal length 8 mm)  
75 mm ... ∞ (focal length 16 mm)

**Integrated:**  
Ethernet  
RS 232  
TCP/IP, UDP

**With MA 21 connector unit**  
multiNet

**With MA 200i connector unit**  
PROFINET IO/RT  
PROFIBUS  
EtherCAT  
DeviceNet  
CANopen

8, configurable

Max. 100 in camera memory

Configuration via PC using standard Web browser without software to be installed additionally (webConfig tool)

Reading of directly marked Data Matrix Codes. Multiple code reading (up to 99 codes), display of the code content, evaluation of the code quality of printed codes, reference code comparison, image memory.

75 × 113 × 55 mm

CE c UL US

Camera system for omnidirectional scanning of 2D-codes and bar codes (even in rapid movement). Compact housing, integrated illumination (depends on type: white, IR or RGBW) and decoder. Degree of protection IP 65 / IP 67. Flexible use through motor-driven focus adjustment.

Data Matrix Code, bar code, Pharmacode

CMOS (Global Shutter)

752 × 480

Depending on lens

**Integrated:**  
Ethernet  
RS 232  
TCP/IP, UDP

**With MA 21 connector unit**  
multiNet

**With MA 200i connector unit**  
PROFINET IO/RT  
PROFIBUS  
EtherCAT  
DeviceNet  
CANopen

8, configurable

Max. 100 in camera memory

Configuration via PC using standard Web browser without software to be installed additionally (webConfig tool)

Reading of directly marked Data Matrix Codes. Multiple code reading (up to 99 codes), display of the code content, evaluation of the code quality of printed codes, reference code comparison, image memory.

75 × 113 × 106 mm

CE c UL US

Camera system for omnidirectional scanning of 2D-codes and bar codes (even in rapid movement). Compact housing and decoder. Degree of protection IP 65/IP 67. Lens and external illumination required.

# RFID Systems

## RFI 32 Stationary RFID Readers



## RFM 12 / 32 / 62 Stationary RFID Read/Write Systems



## HFM 3500D HFM 3520D Mobile RFID and 1D-Code Readers



### Specifications

Working frequency

125 kHz

13.56 MHz

13.56 MHz

Max. RFID reading distance

80 mm

400 mm

30 mm

Max. bar code reading distance

–

–

450 mm

Max. speed

6.0 m/s

6.0 m/s

–

Interfaces

**Integrated:**  
RS 232

**Integrated:**  
RS 232

**Integrated:**  
RS 232 / USB  
Bluetooth

Connectivity

**With connector unit  
MA 21**  
multiNet

**With connector unit  
MA 21**  
multiNet

**With connector unit  
MA 21**  
multiNet

**With connector unit  
MA 200i**  
PROFINET IO/RT  
PROFIBUS  
Ethernet TCP/IP, UDP  
EtherCAT  
DeviceNet  
EtherNet/IP  
CANopen

**With connector unit  
MA 200i**  
PROFINET IO/RT  
PROFIBUS  
Ethernet TCP/IP, UDP  
EtherCAT  
DeviceNet  
EtherNet/IP  
CANopen

**With connector unit  
MA 200i**  
PROFINET IO/RT  
PROFIBUS  
Ethernet TCP/IP, UDP  
EtherCAT  
DeviceNet  
EtherNet/IP  
CANopen

Function

RFID reading

RFID reading / writing

RFID reading / writing  
Bar code reading

Possible transponder types

– Disc  
– High temperature proof up to 200 °C

– Disc  
– High temperature proof up to 220 °C  
– Smart label

– Disc  
– High temperature proof up to 200 °C  
– Smart label

Supply voltage

12–30 V DC

12–30 V DC

5 V DC / 230 V AC (3.7 V DC batt.)

Degree of protection

IP 65

IP 65 / IP 67

IP 54

Certifications



CDRH

### Features

Compact RFID reading unit.  
High degree of protection IP 67.  
Mounting also in between conveyor rollers.

Compact RFID write/read unit.  
High degree of protection for tough industrial application.  
Mounting also in between conveyor rollers.  
RFM 32 is also available as device with Ex certification.

Mobile combination device for transponders and bar codes; designed especially for reading bar code information and subsequently writing this information to a transponder.  
Cableless model with Bluetooth available.

# DATA TRANSMISSION / INTERFACING UNITS

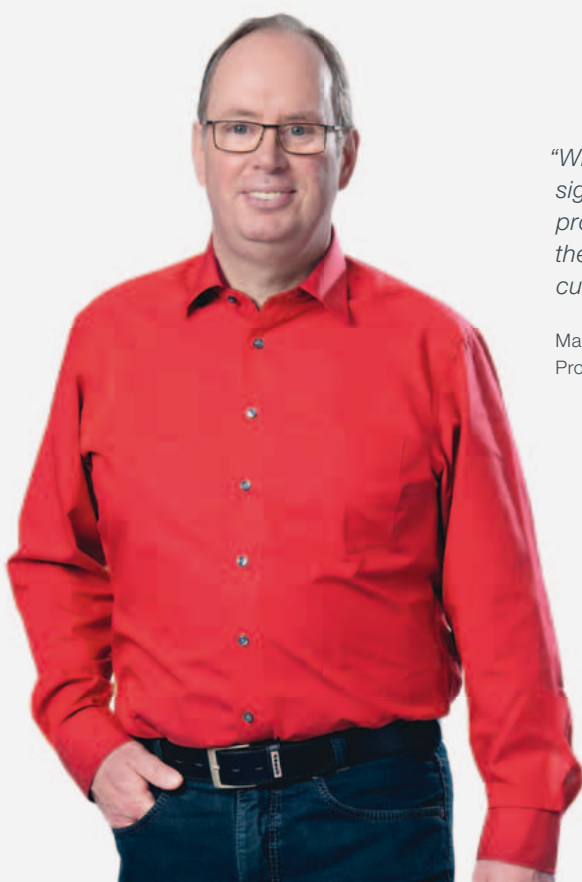


## ACCESS DATA QUICKLY AND SIMPLY

In addition to the actual device technology, the transfer of data and the connection of devices in a wide range of fieldbus environments are also given high priority and decisively influence the user friendliness and flexibility of your system. Discover innovative connection concepts and universal configuration solutions that also reveal unexpected efficiency potentials.

Our functional and practical solutions always hold water thanks to our outstanding application know-how which ranges over numerous business sectors:

- **Systems for the common industrial interfaces**—among others, PROFIBUS, PROFINET, Ethernet TCP/IP and Interbus
- **Fieldbus gateways**—for field use for connecting bar code readers and identification systems
- **Point-to-point multiNet slave**—for easy wiring and configuration



*“What good are the best sensors if the generated signals do not reliably reach the control. With our product developments, we therefore always consider the entire process. Everything in order to make our customers’ business a little bit easier every day.”*

Martin Tippmann,  
Product Manager – Optical Data Transmission



**A WORLD FIRST**



**THE NEW DDLS 500\* — DATA TRANSMISSION PHOTOELECTRIC SENSOR WITH 100 MBIT/S REAL-TIME TRANSMISSION**

To reliably transmit data without cables and interference, optical data transceivers are the right choice. They make possible contact- and wear-free optical communication, e. g., in environments with high potential for interference. In addition to their basic function — optical data transmission — the DDLS 500 offer additional functions that revolutionize and considerably simplify operation, commissioning and diagnostics — that is SMARTER PRODUCT USABILITY like only we offer.

\* available beginning in October 2014

Through the modular basic design, all functions can be flexibly arranged depending on requirements. Thus, the devices do exactly what is needed and thereby offer an optimum price/performance ratio. With real-time, 100 Mbit/s optical data transmission, all common Ethernet protocols can be transmitted without time delay over a distance of up to 200 m. The DDLS 500 thus supports, e.g., PROFINET, Ethernet IP, EtherCat, Ethernet TCP/IP, Ethernet UDP and many others.



**thinkmodular.**  
With the base module, you can modularly combine your functions as desired, e.g.: heating, distances, laser alignment aid

**availabilitycontrol.**  
Prefailure message through constant monitoring of the received signal level. Highly visible LED display (up to 200 m) for optical inspection. All relevant information is precisely depicted in the control panel

**easyhandling.**  
Patented, single-hand adjustment process for one-man alignment, laser alignment aid, integrated fastening plate and alignment, display of the reception level



Combine your DDLS 500 [www.leuze.com/en/ddls500](http://www.leuze.com/en/ddls500)

# Data Transmission



**DDL S 200**  
Optical Data  
Transmission



**DDL S 500\***  
Optical Data  
Transmission



**Specifications**

Range

120, 200, 300, 500 m

Light source

Infrared LED

Transmission rate

2 Mbit/s

Interfaces

PROFIBUS  
CAN  
DeviceNet  
Interbus  
Rockwell DH+ or RIO  
RS 422

40, 120, 200 m

Infrared laser (laser class 1M)

100 Mbit/s

PROFINET  
EtherNet IP  
EtherNet TCP/IP  
EtherCat  
UDP

Degree of protection

IP 65

IP 65

Supply voltage

18–30 V DC

18–30 V DC

Operating temperature

–5 °C to +50 °C  
(–30 °C to +50 °C with heating)

–5 °C to +50 °C  
(–35 °C to +50 °C with heating)

Certifications

CE c UL US

CE c UL US

**Features**

No-contact, wear-free data transmission.  
Integrated mounting and alignment plate.  
Optionally with heating.  
All common internationally used interfaces available.

Transparent, real-time transmission of all TCP/IP- and UDP-based protocols.  
Very simple diagnostics of the transmission technology.  
Pre-mounted and complete delivery of all mounting and alignment elements.  
Integrated laser pointer for simple mounting.

\* available beginning in October 2014

# Modular Interfacing Units

## MA 8 Point to Point



## MA 2 MA 100 Point to Point multiNet Slave



## MA 4 / MA 4D Point to Point multiNet Slave



### Specifications

Connection type

1 plug M12, 5 pin  
2 sockets M12, 5 pin

Spring terminals, 5 PGs

Spring terminals, 5 PGs

Interfaces

RS 232  
RS 485

RS 232  
RS 485  
  
multiNet Slave  
Service  
interface RS 232  
9 pin Sub-D

RS 232  
RS 422  
RS 485  
multiNet Slave

RS 232  
RS 485  
multiNet Slave  
Service interface RS 232  
9 pin Sub-D

Features

1 switching input  
and 1 switching output

2/1 switching  
input  
2/1 switching  
output  
Network address

1 switching input  
1 switching  
output  
Network address  
Termination

2/1 switching input  
2/1 switching output  
Network address  
Automatic  
parameter memory

Degree of protection

IP 67

IP 54

IP 54

IP 54

Certifications

CE C UL US

CE C UL US CE C UL US

CE

**BCL 8**

KB 008 / direct



**BCL 21**

Direct



Direct



**BCL 22**

Direct



Direct



**BCL 90**

**BCL 300i**

KB 301-3000  
(only MA 100)



**BCL 500i**

KB-500-3000-Y  
(only MA 100)



**LSIS 222**

KB M12A-8P-  
MA-3000



**LSIS 4x2i**

KB JST



**RFI / RFM**

Direct



**RFU**

**Mobile Code  
Readers**

**BPS 8**

KB 008 / direct



● The red dots denote assignment of the connector units to the relevant devices.  
For other combination possibilities, see catalog.

= multiNet



**MA 90**  
Point to Point  
multiNet Slave

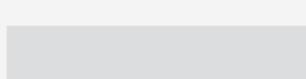
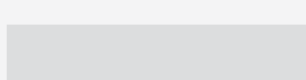
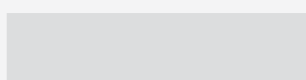
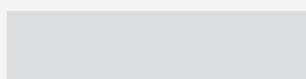
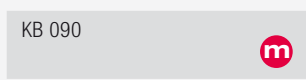
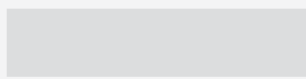


Spring terminals, 8 PGs

RS 232  
RS 422  
RS 485  
multiNet Slave  
Service interface RS 232  
9 pin Sub-D

6 switching inputs  
4 switching outputs  
Network address  
Optional external parameter  
memory

IP 54



**MA 31**  
multiNet Master

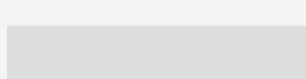
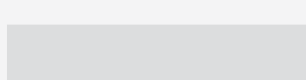
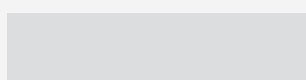
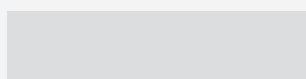
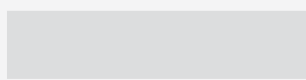
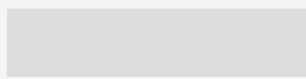


Spring terminals, 5 PGs,  
M12 connection sets available  
(optional)

RS 232 – or  
RS 422 –, TTY – Host  
multiNet master RS 485  
multiNet Slave  
Service interface RS 232  
9 pin Sub-D

2 switching inputs  
2 switching outputs  
Network address  
Automatic parameter memory

IP 65



**MA 200i**  
Fieldbus Gateway

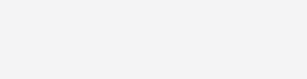
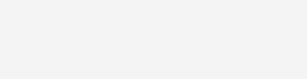
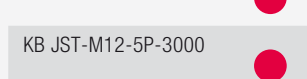
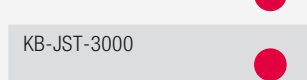
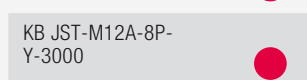
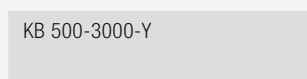
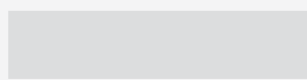
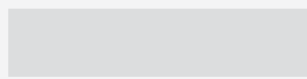


4x M12  
1 x connector  
RS 232

PROFIBUS  
PROFINET IO/RT  
Ethernet TCP/IP  
EtherCAT  
DeviceNet  
EtherNet/IP  
CANopen

Integrated SWITCH  
Volt. IN/OUT  
1 switching input  
1 switching output

IP 65



**MA 21**  
multiNet Slave  
Protocol Converter

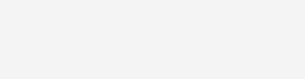
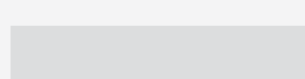
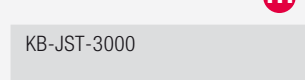
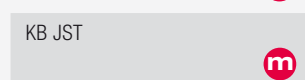
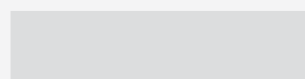
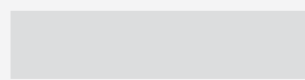
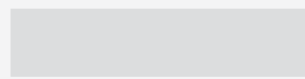


Spring terminals, 5 PGs,  
M12 connection sets available  
(optional)

RS 232,  
RS 422 –, TTY – Host  
RS 485  
multiNet Slave  
Service interface RS 232  
9 pin Sub-D

Network address

IP 65



# INDUSTRIAL IMAGE PROCESSING



## BECAUSE SEEING IS SOMETIMES BETTER

In our automated industrial landscape, the use of industrial image processing will increasingly become standard. Even today, modern systems allow camera systems to be used in many applications, thereby significantly increasing the reliability and availability of your plant systems. Take a look at our solutions. Our product line ranges from flexible smart cameras suitable for numerous industrial applications to a series of very powerful,

high-performance camera systems designed for complex requirements. For this purpose our devices offer, for example, the following parameters:

- **Fast integration with webConfig**—browser-based software solution for convenient, computer-independent sensor configuration via Ethernet
- **Integrated illumination**—for a homogeneous illumination of the field of view



*“Good products alone do not make a functioning automation system. In addition to hardware, a good deal of knowledge and experience in placement and mounting is needed. One must, for example, take into account possible sources of interference, such as light, reflections or dirt. With our extensive application know-how, we offer a variety of proven solutions.”*

Sven-Philipp Abraham,  
Product Manager – Industrial Image Processing



# HIGHLIGHT

## THE NEW **MEASUREMENT FUNCTION** IN THE **LSIS 462i** MAKES POSSIBLE MINIMAL TOLERANCES AND THEREBY REDUCES, E.G., THE SCRAPPING OF GOOD PARTS!

The further development of our LSIS 462i smart camera brings a long-desired addition to the already extensive range of functions. The new version of our top product can now also measure and is, thus, the best and—thanks to its attractive price—the most efficient solution for many applications.



Measure the label position



Detect with BLOB analysis



Identify by reading codes

- NEW measurement function**  
 facilitates efficient use in entirely new applications.
- WebConfig software**  
 accelerates and simplifies commissioning and error diagnostics.
- Eight inputs and outputs**  
 facilitate control without a PC via hardware inputs.
- Three functions**  
 in one device (BLOB analysis, code reading, measurement through edge scanning).
- Integrated illumination**  
 makes additional illumination unnecessary in most cases.
- M12 connection technology**  
 simplifies electrical connection and prevents errors.

### The new LSIS 462i—three solutions in one product!

**Label inspection:** detection of label presence as well as measurement of the distances and angles (e.g., quality assurance and scrap minimization).

**Contour inspection:** detection of a minimum or maximum deviation of a machined surface (e.g., inspect a tire tread).

**Edge counting:** count detectable edges and, thus, check for completeness (e.g., inspect packaging units).



## Smart Cameras



**LSIS 412i**  
Smart Camera



**LSIS 462i**  
Smart Camera



Typical applications		
Presence/ completeness monitoring	X	X
Dimension/ position monitoring	X	X
Position and type detection	X	X
Code reading		Data Matrix, bar code, Pharmacode
Measurement		X
Sensor / cameras	CMOS (Global Shutter)	CMOS (Global Shutter)
Resolution (pixel)	752 × 480	752 × 480
Focal point	50 mm ... ∞ (focal length 8 mm) 75 mm ... ∞ (focal length 16 mm) Depends on lens with C-mount models	50 mm ... ∞ (focal length 8 mm) 75 mm ... ∞ (focal length 16 mm) Depends on lens with C-mount models
Interface	<b>Integrated:</b> EtherNet, RS 232	<b>Integrated:</b> EtherNet, RS 232
Connectivity	<b>With MA 200i connector unit</b> PROFINET IO/RT PROFIBUS EtherCAT DeviceNet CANopen	<b>With MA 200i connector unit</b> PROFINET IO/RT PROFIBUS EtherCAT DeviceNet CANopen
Digital inputs/outputs	8, configurable	8, configurable
Fast EtherNet	Yes	Yes
Optional	Cables, mounting devices, external illumination	Cables, mounting devices, external illumination
Number of test routines	Max. 100	Max. 100
Configuration / Operating system	Configuration via PC using standard Web browser (webConfig tool)	Configuration via PC using standard Web browser (webConfig tool)
Options		such as LSIS 422i (s. p. 59)
Dimensions, W × H × D	75 × 113 × 55 mm	75 × 113 × 55 mm
Certifications	CE C UL US	CE C UL US
<b>Features</b>	Very well suited for industrial use through glass or plastic window, metal housing and homogeneous integrated illumination (depends on type: white, IR or RGBW). Degree of protection IP 65 / 67. Flexible use through motor-driven focus adjustment.	Very well suited for industrial use through glass or plastic window, metal housing and homogeneous integrated illumination (depends on type: white, IR or RGBW). Degree of protection IP 65 / 67. Flexible use through motor-driven focus adjustment.

# IT'S THE ACCESSORIES THAT MAKE OUR RANGE OF PRODUCTS COMPLETE



EFFICIENCY IS WHEN YOU FIND GOOD  
IDEAS AMONG THE ACCESSORIES AS WELL

Simple mounting and convenient handling are important factors when it comes to the efficient use of sensor technology. It is for this reason that we place great value on, e.g., flexible mounting solutions and simple integration through variable connection technology, alignment aids and innovative mounting systems.

Pre-configured and pre-mounted systems also facilitate fast and simple commissioning of, e.g., muting systems for applications in safety at work. Discover our extensive line of accessories directly on the web at

[www.leuze.com/en/accessories](http://www.leuze.com/en/accessories)



*"Find the right accessories for every product. Features that have already become standard when shopping on the Internet are still often missing on industry websites. With our product selector at [www.leuze.com](http://www.leuze.com), this is different. Here, you not only find exactly the right product but also all suitable accessories — the sensor business can be this smart."*

Gerd Eschenbacher,  
Product Manager — Accessories



We offer much more than just sensor technology. Here you can find, e.g.:

■ **Connection technology**

Extensive range of cables and connections for simple integration in your fieldbus network

■ **Mounting systems**

Intelligent solutions for simple and flexible mounting of sensors

■ **Device columns**

Robust design for reliable mounting of all types of sensors

■ **Deflecting mirrors / deflecting mirror columns**

For flexible positioning of sensors, even with complex applications

■ **Protective screens**

Protect costly sensors from external influences

■ **Fiber optics**

Guide the optical signal to the relevant location even in installation situations with extremely limited space

■ **Reflectors and reflective tapes**

High-quality surfaces for the reliable reflection of the light signals

■ **Alignment aids**

For simple and exact alignment of the sensors

■ **Bar code tapes**

With lengths of up to 200 m for exact positioning with the aid of a bar code reader

■ **Muting mounting systems**

Mounting components for fast setup of muting systems

■ **Muting indicators**

Optical indicators for connection to safety devices

■ **RFID transponders**

Broad range of various RFID transponders that differ in function range, working frequency and operating range



You can find our accessories on the web at [www.leuze.com/en/accessories](http://www.leuze.com/en/accessories)

### **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, Switches and Proximity Sensors  
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

Leuze electronic GmbH + Co. KG  
In der Braike 1  
D-73277 Owen/Germany  
Phone +49 7021 573-0  
Fax +49 7021 573-199  
info@leuze.de  
www.leuze.com