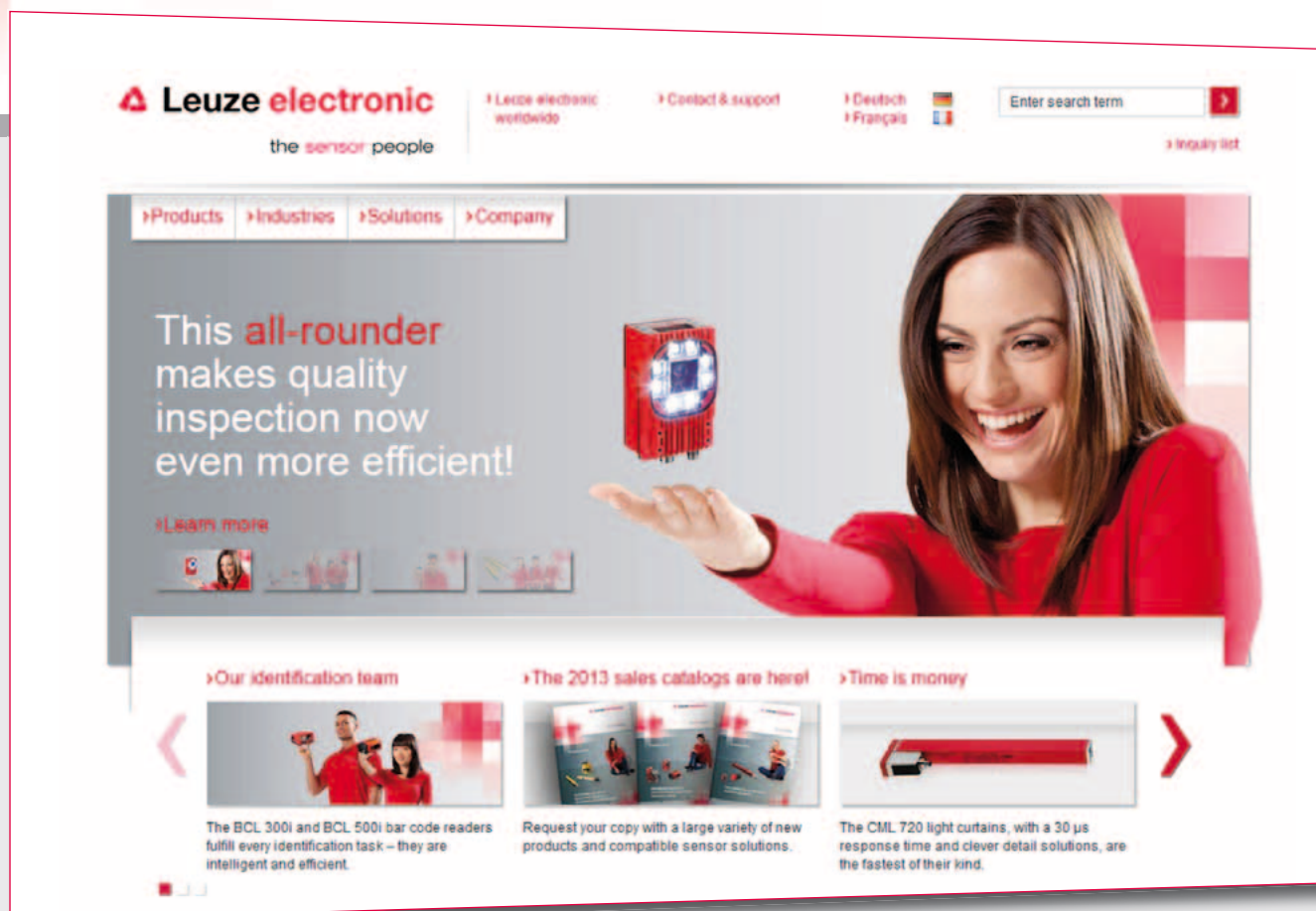


Product overview 2013 / 2014



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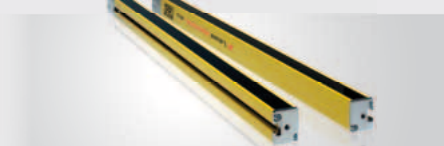
> Machine Safety Services

> Matching accessories

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Our range of products and services



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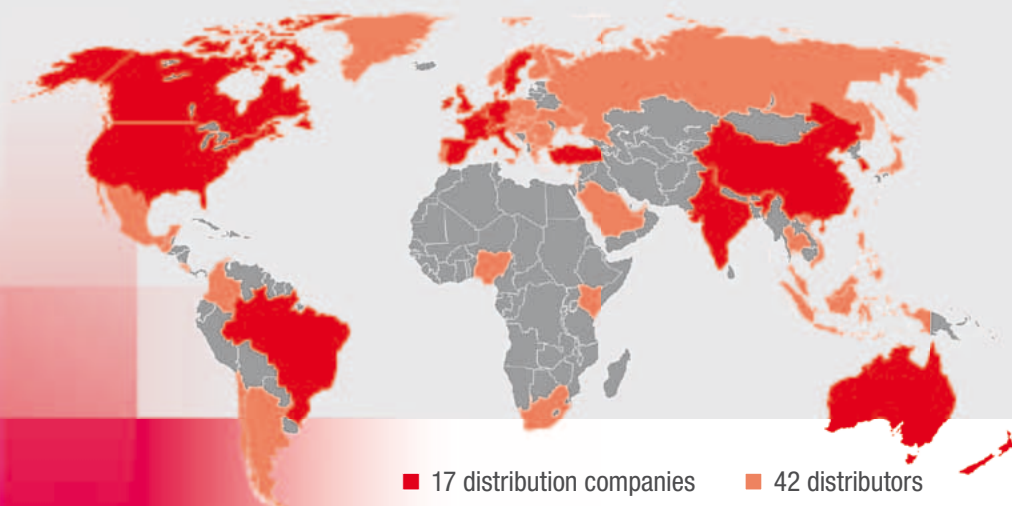
Accessories 70

Our Identity— We are the sensor people

Many good reasons for your success

- **We are the “sensor people”:** for 50 years we have been the specialists for innovative sensor solutions.
- **Customer orientation** is not just a simple claim for us, rather a living company philosophy that is confirmed regularly by our customers.
- **We live efficiency:** everything that we do contributes to making your processes more reliable and more efficient.
- **We supply solutions:** in addition to an extensive product portfolio, our application know-how enables us to provide a suitable sensor solution for nearly every application.
- **Service orientation is of fundamental importance to us.** For this reason, our specialists can be reached at nearly any time through various channels for your questions and needs.
- **Everything from a single source.** Our competence is due not least of all to the fact that we keep the entire value creation chain—from development to production—in-house.

International Representatives



■ 17 distribution companies

■ 42 distributors



Our **know-how** for your applications

Our products are optimized for meeting the specific requirements of each different industry. In this regard, our industry-specific knowledge and years of application know-how are a guarantee for efficient, reliable and practically oriented solutions.

As a result, we know what really matters to you when it comes to the use of sensor technology—reliability in daily use. We give special attention to ten focus industries:

Packaging systems



Conveyor / storage systems



Electronics



Solar



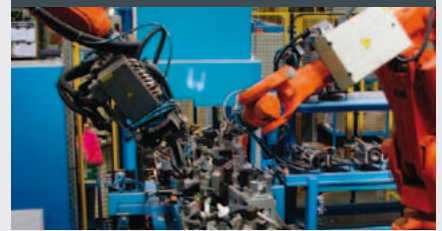
Automotive industry



Medical / analysis technology



Mounting / handling technology



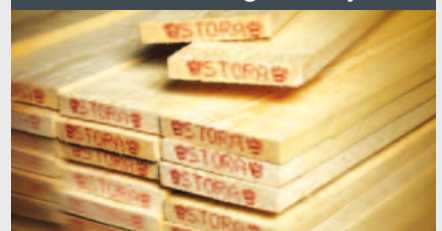
Machine tools



Graphics industry



Wood working industry



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

- **A²LS** (Active Ambient Light Suppression)—almost perfectly reduced susceptibility to ambient light
- **brightVision®**—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





Product highlight

Wide range of **fiber optic sensors**.

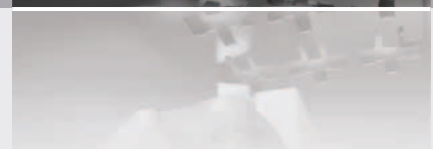
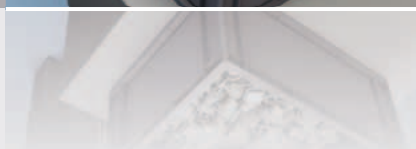
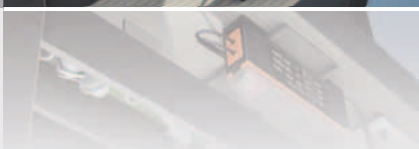
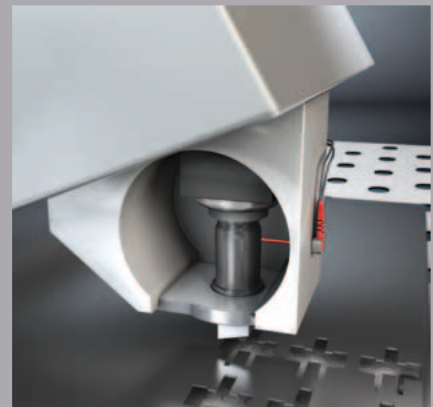
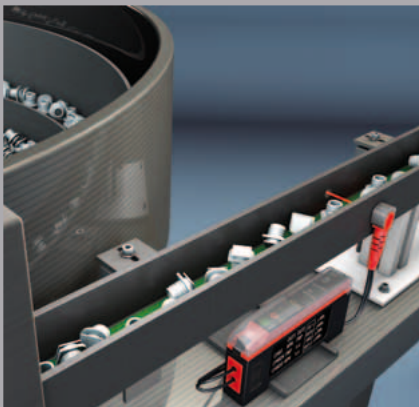
With the use of fiber optics and appropriate amplifiers, the area of application of optoelectronic sensors is considerably expanded. The flexible fiber optics with various head shapes can be integrated in nearly any system design. The detection range is dependent on the fiber optics and amplifiers used.

Plastic fiber optic cables **KF + KFX**

- Unique bending protection on the optical outlet side (KFX)
- All important special-head and standard shapes, e.g., V-scanners, lateral optical outlet, light-bands with detection widths of up to 50 mm

Fiber optic amplifier **LV 46x**

- 3-digit display for indicating and setting the switching threshold
- NEW: AutoSet function for easy sensor adjustment via display and +/- button
- Menu for adjusting ranges and time functions



Photoelectric Sensors/ Light Scanners, Cubic Housing

5 Series Standard



28 Series Standard, multimount



Specifications

Dimensions excl. plug, W×D×H

Operating voltage

Switching outputs

Connection type

Protection class

Certifications

Housing

Throughbeam photoelectric sensors

Operating range*

Light source

Switching

Switching frequency

Retro-reflective photoelectric sensors

Operating range*

Light source

Switching

Switching frequency

Diffuse reflection light scanners

Operating range*

Light source

Switching

Switching frequency

Diffuse reflection light scanners with background suppression

Operating range*

Light source

Switching

Switching frequency

Options

Transparent media

Protective photoelectric sensors category 2

Warning output

Activation input

A²LS

Features

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

X

X

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

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

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

X

X

X

X

Pin-point LED. Powerful interference suppression. 2 inlaid metal sleeves. Scanner with a laser-like light spot. Polarised 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



CDRH



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

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, push-pull

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

IP 66, IP 67



CDRH



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

5–550 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



CDRH



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

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.

Photoelectric Sensors/ Light Scanners, Cubic Housing

Specifications

Dimensions excl. plug, W×D×H

Operating voltage

Switching outputs

Connection type

Protection class

Certifications

Housing

Throughbeam photoelectric sensors

Operating range*

Light source

Switching

Switching frequency

Retro-reflective photoelectric sensors

Operating range*

Light source

Switching

Switching frequency

Diffuse reflection light scanners

Operating range*

Light source

Switching

Switching frequency

Diffuse reflection light scanners with background suppression

Operating range*

Light source

Switching

Switching frequency

Options

Transparent media

Protective photoelectric sensors category 2

Warning output

Activation input

A²LS

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)

Antivalent/light

1500/2800 Hz

0–8/0–21 m

Red light/laser (class 1)

Antivalent/light, dark

1500/2800 Hz

5–800 mm

Red light

Antivalent

1500 Hz

5–400 mm

Red light/infrared/laser (class 2)

Antivalent/light

1000/1000/2000 Hz

X

X

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

X

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

* Typical operating range limit

18 Series

Metal, clear glass



15 × 50 × 33 mm

10–30 V DC

PNP, NPN, 4–20 mA

M12

IP 67, IP 69 K



Metal

96 Series

Metal, long range



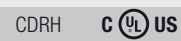
30 × 90 × 70 mm

10–30 V DC/20–230 V AC/DC

PNP, NPN, push-pull, relay

M12, terminals

IP 67, IP 69 K



Metal, plastic

53 Series

Stainless steel



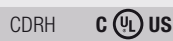
14 × 54 × 20 mm

10–30 V DC

Push-pull

M8, cable

IP 67, IP 69 K



Stainless steel 316L

55 Series

Stainless steel



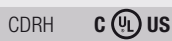
14 × 36 × 25 mm

10–30 V DC

Push-pull

M8, cable+M12, cable

IP 67, IP 69 K



Stainless steel 316L

0–5 m

Red light

Light/dark

1500 Hz

0–39/0–150 m

Red light/infrared

Light, dark, antivalent

500 Hz

0–10 m

Red light

Antivalent

1000 Hz

0–10 m

Red light

Antivalent

1000 Hz

0–28/0.1–18 m

Red light/infrared

Light, dark, antivalent

1000 Hz

0–5/0–3 m

Red light/laser (class 1)

Antivalent

1000/2000 Hz

0–6/0–3 m

Red light/laser (class 1)

Antivalent

1000/2000 Hz

30–700/20–1200 mm

Red light/infrared

Light, antivalent

1000 Hz/20 Hz

5–400 mm

Red light/laser (class 1)

Antivalent

1000/2000 Hz

5–400 mm

Red light/laser (class 1)

Antivalent

1000/2000 Hz

100–1200/10–2500/50–6500
(25000) mmRed light/infrared/red light laser
(class 2)/infrared laser (class 1)

Light, dark, antivalent

300/300/100/100 Hz

5–400 mm

Red light/laser (class 1)

Antivalent

1000/2000 Hz

5–400 mm

Red light/laser (class 1)

Antivalent

1000/2000 Hz

X

X

X

X

X

X

X

X

X

X

X

X

Tracking function. Teach-In. Foil detection < 20 µm. Bottle detection. ECOLAB.

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.

HYGIENE-Design. CleanProof+. ECOLAB. EHEDG. Foil detection < 20 µm. Bottle detection. Contrast scanner.

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

Cylindrical Sensors Fiber Optic Sensors Ultrasonic Sensors

Specifications

Dimensions excl. plug, W × D × H

Operating voltage

Switching outputs

Connection type

Protection class

Certifications

Housing

Throughbeam photoelectric sensors

Operating range*

Light source

Switching

Switching frequency

Retro-reflective photoelectric sensors

Operating range*

Light source

Switching

Switching frequency

Diffuse reflection light scanners

Operating range*

Light source

Switching

Switching frequency

Diffuse reflection light scanners with background suppression

Operating range*

Light source

Switching

Switching frequency

Options

Transparent media

Protective photoelectric sensors category 2

Warning output

Activation input

A²LS

Features

412 Series Cylindrical Sensors



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 and 618 Series Cylindrical Sensors



M18 × 46 mm, M18 × 60 mm

10–30 V DC

PNP, NPN, push-pull

M12, cable

IP 67



CDRH

Full metal, stainless steel, plastic

0–15/0–45/0–120 m

Red light/infrared/laser (class 1)

Antivalent / light/dark

500/1000/5000 Hz

0.02–6/0.1–15 m

Red light/laser (class 1)

Antivalent/light/dark

500/5000 Hz

0–250/0–700 mm

Infrared/laser

Antivalent / light/dark

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

**Mini
Sensors**



10–30 V DC
PNP, NPN, relay
M12, cable
IP 65
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
X

**LVS
Fiber Optic Amplifier**



10–30 V DC
PNP, NPN
M8, cable, cable+M8, cable+M12
IP 65
CE
Plastic
Red light
Light/dark
1500/1000/2500 Hz
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**



10–30 V DC/12–30 V DC/ 20–30 V DC
PNP, NPN
M8, M12
CE c UL US
Metal, plastic
0–650
Ultrasonics (400 kHz)
NO/NC (object detected)
100 Hz
10–200 (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.

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

Protection class

IP 67

IP 67

Certifications

CE cUL US

CE cUL 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

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 4,0 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

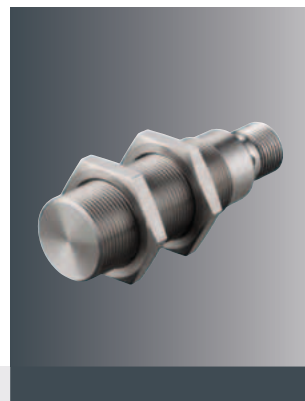
IP 67



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

Protection class

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, cable+M12

IP 62/IP 65



Metal

10–30 V DC/24 V DC

PNP, push-pull

M8, cable, cable+M12

IP 65



Metal, plastic

10–30 V DC

PNP, NPN

M8

IP 65



Metal

0.9–4 mm

Ultrasonics/Capacitive

Light/dark/antivalent

Up to 5000 Hz

2–8 mm

Infrared

Light/dark/antivalent

1000/10000 Hz

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

Red light/laser (class 1)

Light/dark

1500/5000 Hz

Teach

X

Detection of transparent + paper labels.
 Multichannel detection of labels with VSU 15.

Teach/potentiometer

X

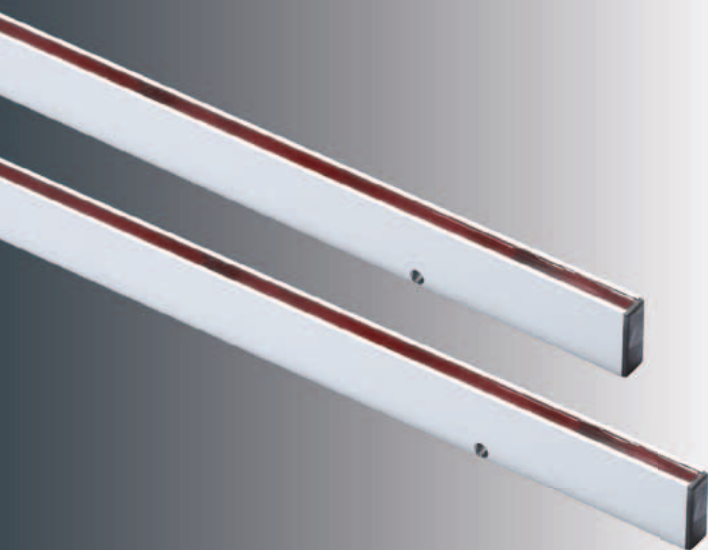
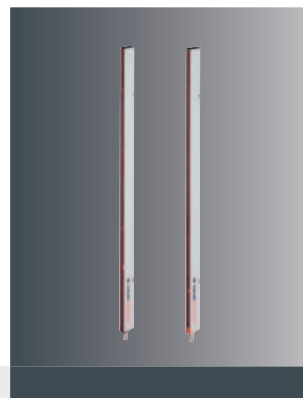
Detection of paper labels.
 ALC function.
 Storage of up to ten teach values in the sensor.
 Removable operating head on potentiometer version.

Potentiometer

Detection of small objects.
 Light/dark switching on device.
 Laser fork for transparent objects.

Light Curtains

VARIO B PRG 108 Switching



Specifications

Function

One-way principle
Reflection principle

Dimensions excl. plug, W × D × H

10 × 27 × 120 ... 3370 mm
12 × 58 × 120 ... 315 mm
22 × 80 × 25 mm

Operating voltage

24 V DC
10 – 30 V DC

Outputs

PNP, NPN

Connection type

M8, cable, cable+M12

Protection class

IP 54, IP 67

Certifications



Operating range*

5000 mm
3000 mm

Light source

Infrared/red light

Cycle time

1 ms per beam / 2 ms

Measurement field length

35 – 3100/60 mm

Resolution

5, 12.5, 25, 50, 100 mm
6 mm

No. of beams

Max. 64/max. 8

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(B) KRT 55 KRT 3B Contrast Scanners



CRT 20B CRT 442 CRT 448 Color Scanners



LRT 440 LRT 8 Luminescence Scanners



Specifications

Function
Dimensions excl. plug,
W × D × H

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

Operating voltage

10–30 V DC/18–30 V DC

Outputs

PNP, NPN, push-pull
Analog

Connection type

M12, M8, cable+M8, cable

Protection class

IP 67, IP 69 K

Certifications

CE cULUS

Operating range*

13–80 mm

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 cULUS

12 mm
60 mm
32 mm

Luminescence detection

23 × 70 × 43 mm
15 × 48 × 38 mm

10–30 V DC

PNP, NPN

M12

IP 67, IP 69 K

CE

0–500 mm

Light source

LED, laser (class 1)

Switching frequency

50000/6000/10000 Hz

Transmitter color

RGB/white/red laser

Light beam gate

Lateral or frontal

Light spot shape

Round/rectangular

Light spot position

Lengthwise, sideways

Operation

Teach-In, EasyTune, IO-Link

LED

6000/1500/500 Hz

RGB/white

Lateral or frontal

Round/rectangular

Lengthwise

Teach-in

LED

1500 Hz

UV/blue

Front

Round

Teach-In, potentiometer,
remote calibration

Features

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

Small construction.
Glass optics.
Turning connector.
ECOLAB.

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

* Typical operating range limit

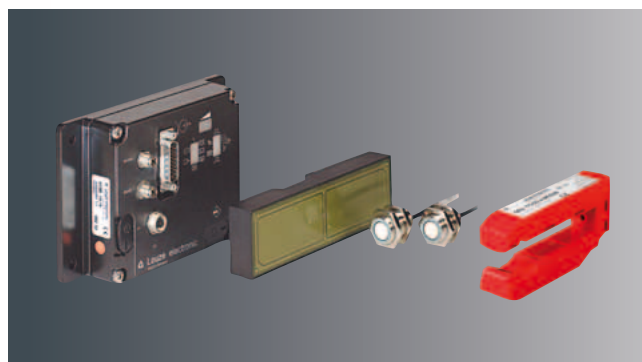
Double Sheet Monitoring Splice Detection

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

Double Sheet Monitoring

VSU 12, GSU 14C

Splice Detection



Description

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.

Typical applications

Double sheet detection of

- Paper sheets
- Cardboard sheets
- Films

Splice detection, e.g. on reels

Technical information

Physical principles:

- Capacitive
- Ultrasonics (Ø12 mm or 18 mm, short construction)

Working ranges:

- From 20 g/m² to 1200 g/m² (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 fieldbus connectivity**—our devices can be integrated problem-free in all common fieldbus systems
- **Perfect positioning with millimeter accuracy**—thanks to the innovative bar code positioning systems
- Laser distance measurement systems **which work with absolute values** and are accurate to the millimeter up to 300 m with PTB calibration standard



Product highlight

The new **benchmark** in **speed**.



Thanks to the display with its sturdy membrane keyboard, installation and configuration is child's play.

Speed equals money saved in industrial applications, whether in mounting, commissioning or the operation of devices. The new CML 720 measuring light curtain will completely win you over in these points. Its response time of only 30 μ s per beam allows even the fastest processes to be monitored. This, together with the integrated alignment aid with bar graph display, the integrated display for configuration and status display as well as intelligent mounting solutions, makes it the fastest measuring light curtain on the market.

This is what makes the CML 720 so fast.

■ Short cycle times

Response time of 30 μ s* per beam for the reliable detection even of fast processes.

* Assuming 50 beams are present, this corresponds to 1.5 ms per device!

■ Integrated system controller

Direct integration into your control environment.

■ Display with membrane keyboard

Large, easy-to-read display with robust membrane keyboard. Quick and easy operation via membrane keyboard.

■ Mounting

Standard profile for simple and permanent mounting. An optional swivel mount simplifies installation and alignment.

■ Fieldbus or IO-Link

Direct integration into PROFINET fieldbus via IO-Link master module.

■ Beam functions

Selectable beam functions for optimum adaptation to the application.



*available beginning in the fourth quarter of 2013



Discover the new CML on the web at www.leuze.com/en/CML

Distance Sensors

ODSL 8 ODSL 9 ODS 96B Optical Distance Sensors



USDS Ultrasonic Sensors



ODSL 30 Optical Distance Sensors



Specifications

Function	Distance measurement, optical	Distance measurement, ultrasonics	Distance measurement, optical
Dimensions excl. plug, W×D×H	15 × 48 × 38 mm 21 × 50 × 50 mm 30 × 90 × 70 mm	M18 × 104 mm M30 × 150 mm	79 × 69 × 149 mm
Operating voltage	10–30 V DC 18–30 V DC (analog), IO-Link	20–30 V DC	10–30 V DC 18–30 V DC (analog)
Outputs	4–20 mA 1–10 V, 0–10 V RS 232/RS 485 1 × PNP/2 × push-pull IO-Link	4–20 mA 0–10 V 1 × PNP	4–20 mA 1–10 V RS 232/RS 485 1 × PNP, 2 × PNP, 3 × PNP
Connection type	M12	M12	M12
Protection class	IP 67, IP 69 K	IP 67, IP 65	IP 67
Certifications	CDRH	US	CDRH US
Operating range*	20–200 mm 20–500 mm 50–650 mm 60–25000 mm	50–6000 mm	200–65000 mm
Measurement principle	Optical/LED/laser (class 1, 2)	Ultrasonics	Optical/laser (class 2)
Measurement time	1–100 ms	100 ms–1 s	30–100 ms
Measuring panel width/ angular range			
Resolution	0.01–3 mm	1–9 mm	0.1–1 mm
Mouth width			
Mouth depth			
Number of inspection tasks			
Operation	Teach-in Configuration software Display	Potentiometer, optional: Configuration software	Teach-in Display

Features

OLED display for measurement value display and configuration.

Temperature compensation.

LC display for measured value display and configuration.

* Typical operating range limit

Sensors for Positioning

AMS 300i Optical Laser Distance Sensors



BPS 8 Bar Code Positioning Systems



BPS 34/37 Bar Code Positioning Systems



Specifications

Range

40/120/200/300 m

Interfaces

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

Connectivity

PROFINET IO/RT
Ethernet TCP/IP, UDP

10,000 m

Integrated:
RS 232

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

**With connector unit
MA 200i**
EtherCAT
DeviceNet
EtherNet/IP
CANopen

10,000 m

Integrated:
PROFIBUS
SSI

Functional principle

Against reflector

Measurement value output

1.6 ms

Integration time

~8 ms

Reproducibility

0.3/0.5/0.7 mm, 1.0 mm
(1 sigma/1.5 ms)

Accuracy

±2/2/3/5 mm

Protection class

IP 65

Light source

Red light laser (class 2)

Supply voltage

18–30 V DC

Operating temperature

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

Options

Speed measurement and
monitoring

Certifications

CE CDRH C UL US

Features

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 Interbus and RS 232 interface.
Easy programming via extensive GSD file.
Optionally with heating.
Multiple language menu-driven display.

Against bar code tape

3.3 ms

~13 (~6) ms

± 1 (2) mm to taught points

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

CE CDRH C UL US

Compact housing and protection class IP 67.
Customer-specific configuration.
Extremely simple installation using special fastening unit.
Innovative positioning on corners, inclines and diverters.

Against bar code tape

2 ms

~8 (~4) ms

± 1 (2) mm to taught points

IP 65

Red light laser (class 2)

10–30 V DC

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

Speed measurement and
monitoring

CE CDRH C UL US

Integrated PROFIBUS or SSI interface.
Integrated speed measurement.
Innovative positioning on corners, inclines and diverters.
Optionally with heating.
Convenient programming of the PROFIBUS model via comprehensive GSD file.

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×D×H

56 × 74 × 160 mm

140 × 148 × 133 mm
141 × 167 × 168 mm

Operating voltage

18 – 30 V DC

24 V DC

Outputs

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

EtherNet/RS 232/RS 422
4 × PNP, 8 reversible detection
field pairs

Connection type

M12

Sub-D, M12, M16

Protection class

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

Measuring panel width/ angular range

Max. 600 mm

190°

Resolution

0.1 – 3 mm

5 mm

Mouth width

Number of inspection tasks

16

7

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.

Optional: heating.
Dust suppression.
Teach-In.

* Typical operating range limit

Light Curtains Forked Sensors



Specifications

Function	One-way principle
Dimensions excl. plug, W×D×H	29 × 35 × 2968 mm
Operating voltage	18 – 30 V DC
Outputs	Analog, CANopen, IO-Link, PROFIBUS**
Connection type	M12
Protection class	
Certifications	CE
Operating range*	6000 mm
Light source	Infrared
Measurement principle	
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

CML 720 Measuring



One-way principle
29 × 35 × 2968 mm
18 – 30 V DC
Analog, CANopen, IO-Link, PROFIBUS**
M12
CE
6000 mm
Infrared
10/30 µs per beam/1 ms
160 – 2960 mm
5, 10, 20, 40 mm
Max. 592
Display, Configuration software
Short cycle times of 30 µs per beam.
Display for diagnosis and alignment.
Standard profile for simple mounting.
Sturdy metal housing.

GS 754(B) CCD Forked Sensors



Edge detection
19.4 × 81.5 × 91 mm 20 × 155 × 91.5 mm
10 – 30 V DC (digital) 18 – 30 V DC (analog)
2 × 4 – 20 mA 2 × 0 – 10 V RS 232/RS 422/RS 485 1 × PNP, 2 × PNP
M12
IP 67
CE
Optical/LED
Min. 2.5 ms
25 mm
14 µm
27 mm/98 mm
42 mm
Terminal program
Detection of transparent media. Foil detection > 0.1 mm. Turning connector.

* Typical operating range limit
** available beginning in the
fourth quarter of 4/2013

Products for Safety at Work

Innovative solutions for personnel protection at your production systems

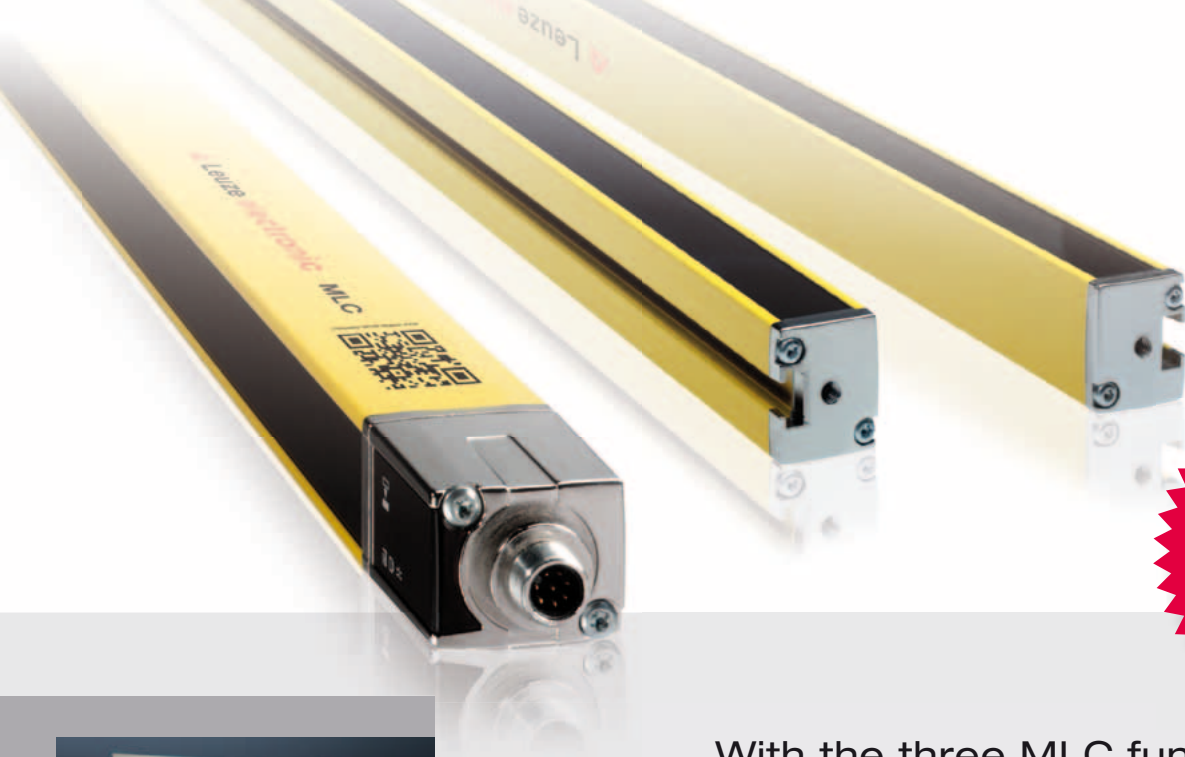


As one of the technology leaders in the area of optoelectronic safety sensors for industrial automation, we offer effective personnel protection devices in accordance with international safety standards.

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:

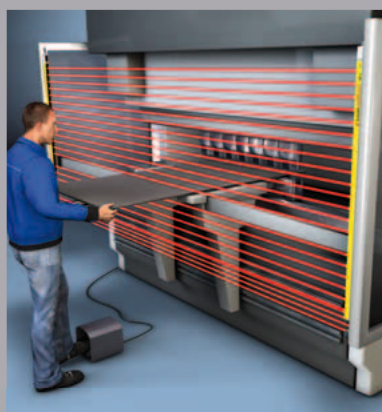
- **AS-i Safety at Work**—for economical, complete solutions including sensor and safety monitor
- **System Integration**—clever and simple with Light Beam Safety Device Sets
- **Machine Safety Services**—our “machine safety” service package





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. Even the Basic version can be used universally, due to metal end caps, a flexible fastening concept and the option of form-locking installation.



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.



Discover the new MLC on the web at www.leuze.com/en/MLC

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
AS-i Safety Interface
PROFIsafe interface

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
AS-i Safety Interface
PROFIsafe interface

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

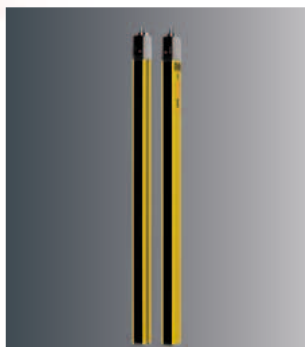
Function package Basic

Danger zone guarding on small systems

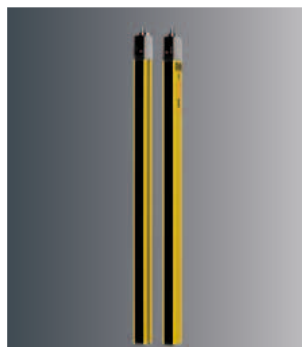
Horizontal danger zone guarding. Compatible with all other devices of the RS4 family. Automatic configuration on device exchange with intelligent ConfigPlug. Any type of detection/warning zone contours and configurations. Zone pair changeover possible during operation. Compact design and easy-to-use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

Safety Light Curtains

MLC 500 Type 4 Safety Light Curtains



MLC 300 Type 2 Safety Light Curtains



COMPACTplus Type 4 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

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



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 – auto-
matic 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.

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



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 – auto-
matic transfer to replacement
device after device exchange.
Range reduction and 2 optical
beam codings (transmission
channel) for operation which is
immune to interference.

Type 4

SIL 3

PL e

14/30/50/90 mm

6/18/18/18 m

150 ... 3000 mm

52 × 55 mm

2 PNP transistor outputs
2 relay outputs
AS-i Safety Interface
PROFIsafe interface

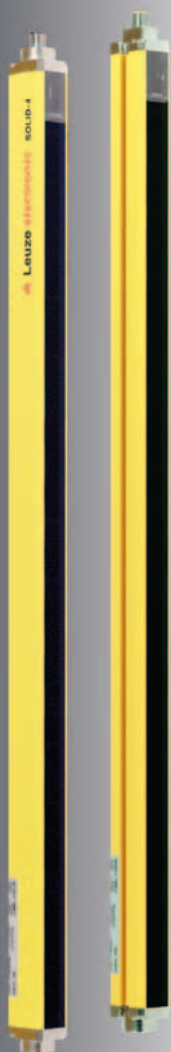
Cable gland
Hirschmann
Brad Harrison
M12



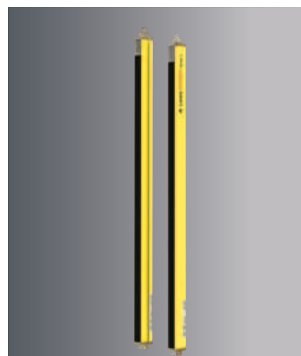
2 transmission channels,
selectable),
cascadable, start/restart interlock
(RES) selectable, dynamic
contactor monitoring (EDM)
selectable, fixed and floating
blanking, reduced resolution,
timing controlled 2- or 4-sensor
muting

Integrated control and monitoring
functions mean external control
devices not required.
Plug-in module with saved device
parameters for fast device
exchange.
M12 local connection socket for
connecting local sensors and
signal devices.
Optimum application adjustment
with SafetyLab configuration and
diagnosis software.

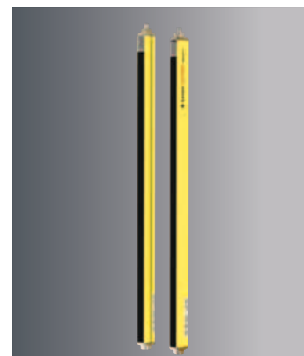
Safety Light Curtains



SOLID-4/SOLID-4E Type 4 Safety Light Curtains



SOLID-2/SOLID-2E Type 2 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

Type 4

SIL 3

PL e

14/20/30/40/90 mm

6/14/9/20/20 m

150 ... 1800 mm

30 × 34 mm

2 PNP transistor outputs

M12



2 transmission channels
(selectable),
start/restart interlock (RES)
selectable, dynamic contactor
monitoring (EDM) selectable,
7-segment display, cascable.

Fault-free operation of adjacent
devices with selection of different
transmission channels.
Slim and robust aluminum housing
(30 mm × 34 mm).
Easy function selection with
external wiring.
Function extension with MSI Safety
Relays.

Type 2

SIL 2

PL d

20/30/40/90 mm

15/10/20/20 m

150 ... 1800 mm

30 × 34 mm

2 PNP transistor outputs

M12



2 transmission channels,
selectable,
start/restart interlock (RES)
selectable, dynamic contactor
monitoring (EDM) selectable,
integrated cyclical testing
(100 ms), 7-segment display.

Fault-free operation of adjacent
devices with selection of different
transmission channels.
Slim and robust aluminum housing
(30 mm × 34 mm).
Easy function selection with
external wiring.
Function extension with MSI Safety
Relays.

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



Specifications	
Type in accordance with EN IEC 61496	Type 4 (self-monitoring)*
Operating range	0.5 ... 70 m 20 ... 100 m
Operating voltage U _B	+24 V DC ± 20 %
Operating temperature	−30 ... +55 °C
Dimensions, W × H × D	52 × 65 × 193 mm
Housing	
Switching outputs	2 PNP transistor outputs (OSSDs)
Connection type	M12 AS-i Safety Interface
Certifications	CE UL C UL US UL US
Functions	
	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).
Features	
	The use at ambient temperatures as low as −30°C is possible. Protection class 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 × 51.3 × 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 (A²LS).

Single beam safety device with
high performance reserve.
Compact plastic housing with
protection class 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 × 77 × 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 (A²LS).

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

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 × 90 × 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 × 1

Plastic
Metal housing on request

PNP transistor output

Cable 2 m
M12



LED indicator. Activation input for
test and series connection.

Protection class 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

RS4/AS-i Type 3 Safety Laser Scanners



Type 3

SIL 2

PL d

Safe slave

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

M12, IR interface for configuration

50 mA

85 ms (corresponds to 2 scans),
up to 16 scans can be set
(645 ms)

Min. 160 ms
(after detection zone release)



Start/restart interlock (RES)
selectable, dynamic contactor
monitoring (EDM) selectable,
diagnostic data transfer via
AS-interface.

Integrated AS-i interface for direct
M12 connection to the AS-inter-
face network.
Bus addressing with AS-interface
address programming device
directly via M12 device plug.
Diagnostic data transmission and
warning zone monitoring via
AS-interface bus.
Any type of detection/warning zone
contours and configurations.
Zone pair changeover possible
during operation.
3 function packages.

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-inter-
face 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.

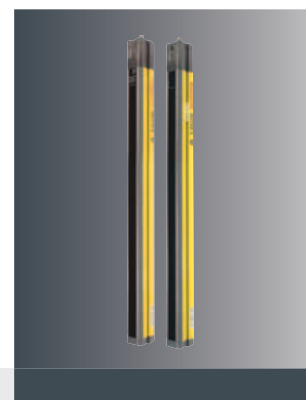
Safe data transfer of the OSSD signals via AS-Interface.

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

Direct control without unique AS-i address possible.

COMPACTplus/AS-i

Safety Light Curtains



Type 4

SIL 3

PL e

Safe slave

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

M12, IR interface for configuration

50 mA

10 ... 66 ms

20 ... 5,000 ms, can be set with
software, SafetyLab,
factory setting 100 ms
(after protective field release)

Start/restart interlock. Dynamic
contactor monitoring (EDM).
Diagnostic data transfer via
AS-interface.

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

Bus addressing with AS-interface address programming device directly via M12 device plug.

Diagnostics data transfer, muting sensors status, muting active, weak signal via AS-interface.

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

Direct connection of muting sensors, reset button or muting indicator on the receiver or via external connection module.

Muting restart function possible via AS-interface by calling up AS-i IC parameters.

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

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

Protection class

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.

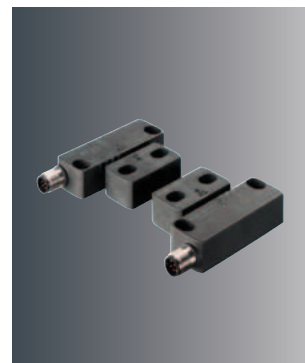
Safety Proximity Sensors



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)

4

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

Up to e (depending on the number of sensors)

e

Dimensions (housing)

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)

Assured switching distances (Sao, Sar)

< 6 mm, > 14 mm (MC 330)
< 3 mm, > 11 mm (MC 336)
< 6 mm, > 30 mm (MC 388)

12 mm, 10 mm

Switching tolerance

± 1 mm

–

Contact type

1NO/1NC, 2NO

–

Code type

–

Standard code, unique code

Connection type

M8, M12, cable, cable+M12

M12

Min. approach speed of actuator towards sensor

50 mm/s

–

Response time

3 ms

7 ms (typical), 12 ms (max.)

Certifications



Functions

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.

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

Features

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.

Compact housing with high protection class (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



S20, S200 Safety Switches



S300 Safety Position Switch



Specifications

Type

Locking device without guard interlocking in acc. with EN 1088

Locking device without guard interlocking in acc. with EN 1088

Housing / Protection class

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

Glass fiber reinforced plastic or metal, both IP 67

Actuators

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

Plunger, roller, lever, porcelain lever

Actuation

1 × above, 4 × side (90°)

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

Locking type, -force

10 N, 30 N

Connection type

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

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

Certifications

CE M C UL US

CE M C UL US

Functions

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

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

Features

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).

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



ERS200 E-Stop Rope Switch



ESB200 E-Stop Button



Specifications

Type

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

Housing / Protection class

Metal, IP 67

Actuators

Stainless steel bolt, steel rope with signal-red sheathing

Actuation

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

Mounting

Straight, angular

Connection type

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

Certifications

CE  c  US

Functions

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

Features

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.

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)

Mounting, installation

Cable entry M20 × 1.5
M16 × 1.5
M12

CE  c  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)

Designs for mounting or installation.
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



MSI-SR4 Electro-Mechanical Relays



Type 4

SIL 3

PL e

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

0

Relay output (NC)

10 ms

3 relay outputs (NO)

22.5 × 99 × 113.6 mm



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

Sequential circuit for type 4 protective sensors, two-channel E-STOP circuit, safety guard monitoring, automatic start/restart, start/restart interlock (RES) selectable, static contactor monitoring (EDM), cross circuit monitoring

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

MSI-SR5 Electro-Mechanical Relays



Type 4

SIL 3

PL e

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

0

—

10 ms

2 relay outputs (NO)

22.5 × 99 × 111.5 mm



Automatic start/restart, start/restart interlock (RES) selectable, static contactor monitoring (EDM), cross circuit monitoring, double sensor monitoring

Very short response time.
Monitored reset button.
Potential-free safety-related switching outputs.
LED displays: K1, K2, supply voltage, RES.

Safety Relays



MSI-RM2 Electro-Mechanical Relays



MSI-CM Contact Extension Module



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

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)

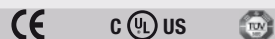
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Relay output (NC)

10 ms

2 relay outputs (changeover)

17.5 × 99 × 113.6 mm



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.

–

SIL 3

PL e

4

0

1

20 ms

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

22.5 × 99 × 114.5 mm



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 × 114.5 mm



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 × 113.6 mm



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), simultaneous 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.

MSI-T

Safety Monitoring Devices for Type 2 Sensors



Type 2

–

PL d

2

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

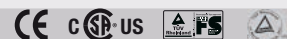
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2 transistor outputs

< 20 ms

2 relay outputs (NO)

22.5 × 99 × 113.6 mm



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.

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

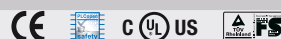
Shorter than 30 ms

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

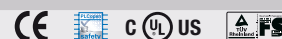
Shorter than 30 ms

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.

*available beginning in the fourth quarter of 2013

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



3

e

4

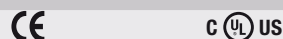
4 (not safety-oriented)

Shorter than 30 ms
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



3

e

4

4

4

4

4

4

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").

Light Beam Safety Device Sets and Accessories

MLD-UDC Light Beam Safety Device Sets



The MLD-UDC sets are sub-systems for all types of access guarding. The different set varieties are available as transmitter-receiver systems and also as transceiver versions in different installation heights.

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.



MLDSET

Light Beam Safety Device Sets



The **MLDSET** Light Beam Safety Device 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 Light Beam Safety Device 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 Light Beam Safety Devices 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 Light Beam Safety Devices and Safety Light Curtains.

Optimally matched to transceiver systems through the use of Reflection Light Beam Devices (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 Light Beam Safety Devices 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 Light Beam Safety Devices 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

Our “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 inspections before commissioning



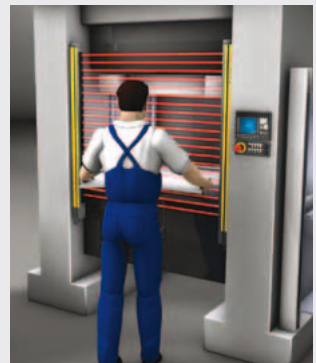
Regular safety inspections



Safety at work is the employer’s responsibility and therefore the “boss’s business”. In Germany the “Ordinance on Industrial Safety and Health” therefore legally requires that machinery be tested before being put into operation (initial commissioning), after long idle periods, after changes and modifications and at regular intervals. Our service staff check the correct installation, the safe interaction of machine and protective device and certify the test result in an electronic and standards-specific test report.

Regardless of the respective legal requirements, regular safety inspections guarantee compliance with safety and quality standards, serve as precautionary maintenance measures and consequently help to reduce undesirable machine downtimes to a minimum. Upon conclusion of a service contract, we will perform periodic scheduling, regulation-compliant safety inspections and QA relevant documentation of the inspection results for you.

“Safety Know-How” online adviser



Our online adviser, “Safety Know-how” at www.safety-at-work.leuze.de provides basic information on machine safety and offers assistance on the selection and application of protective devices.



Stopping time measurements, determining safety distances



Only with a safety 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 point of operation. Our service staff perform the stopping time measurements with the most modern measurement devices, calculate the required safety distances of the safety device, and document the measurement results.

On-site service, repairs and device replacement service



In the event of a functional fault, speedy response is the order of the day. Our replacement service enables a swift device exchange, and, if necessary, our technicians will assist with the search for and removal of faults on-site. Repairs at flat-rate prices are performed in our service center competently and quickly. Please contact the responsible sales partner.

Qualified product training and seminars



We want to help you get into or stay in top shape with regard to safety technology. Our tailor-made training program assists you in selecting the course you need. In addition to the various product training courses for specialists for the respective products, we also offer seminars on machinery directives, CE conformity assessment and practical safety systems.

Safexpert
Safety Engineering
Software



Specifications

Selectable software packets:
3 (Basic, Compact, Professional)

Standards packets:
2 (Standard, Standard Plus)

Licensing:
first license, subsequent licenses

Installation: Internet download of the setup program, release code

Networks: Network capability

Languages: German, English, French, Spanish

Documentation: User manual

Help: Online help, search function, filter function

Start-up support,
hotline



Our competent service hotline can answer a lot of questions at the early phone call stage.

At www.leuze.com we support you with free downloads of operating instructions, technical descriptions, configuration software, data sheets, configuration files and FAQs for quick troubleshooting.

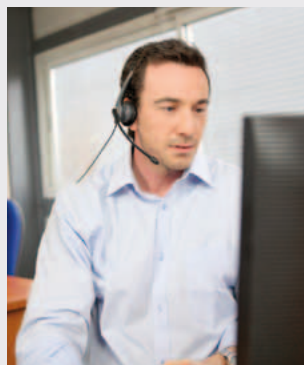
+49 8141 5350-111
service.schuetzen@leuze.de

Safety engineering,
application advice



For the designer, the important thing is to integrate the safety technology into the machine in such a way that optimum productivity and ergonomics are achieved while incorporating and considering the relevant standards and regulations. Make good use of our engineers' many years of application experience when designing the optimum system solution for your application.

24h standby service



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.

Features

Saves time and effort by reusing data from previous projects.

Increases legal certainty in issues of liability.

Directs the various construction divisions in the company towards uniform safety standards.

Helps to keep an overview of extensive projects.

Update service always keeps you up to date with the standards.

Maximum overview with the risk assessment with colored identifications.

Determination of the required SIL and Performance Level in accordance with EN 62061 and EN ISO 13849-1.

Interface to IFA software program "SISTEMA".

Automatic conversion of existing projects: Calculation of the PLR and required SIL according to available data.

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

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





Product highlight

The bar code readers of the BCL 300*i* 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).

■ Scanner

Oscillating mirror, deflection mirror, front mirror, line scanner, raster scanner.

■ Interfaces

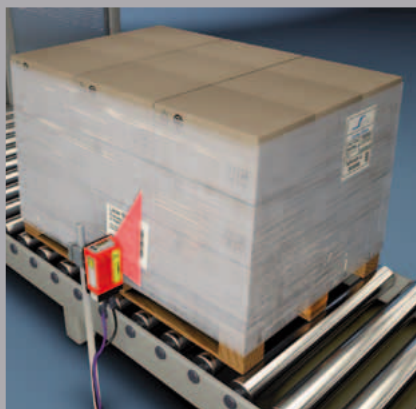
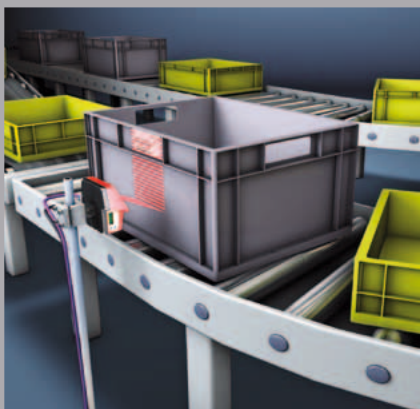
PROFIBUS, PROFINET, Ethernet TCP/ IP, multiNet, RS 232 / 422 / 485.

■ 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,
Ethernet TCP/IP, UDP, IP,
EtherCAT, DeviceNet, CANopen

Supply voltage

5 V DC
(10 – 30 V DC via MA)

Protection class

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

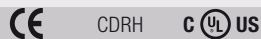
**With connector unit
MA 2/4**
multiNet

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

10 – 30 V DC

IP 65

MA 31



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

Single Line Scanner
Raster scanner
Deflection mirror
Oscillating mirror
Code fragment 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



BT 56, BT 59

Integrated fieldbus connectivity.
Code reconstruction technology
(CRT).
Available as a front scanner,
deflection 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 adjustable
(800 – 1200 scans/s)

N, M, F, L

Single Line Scanner
Oscillating mirror
Deflection mirror
Code fragment technology

2/2

Integrated:RS 232/485/422
multiNet
PROFIBUS
PROFINET IO/RT
Ethernet TCP/IP, UDP

**With connector unit
MA 200i**
EtherCAT, DeviceNet, EtherNet/IP,
CANopen

10 – 30 V DC

IP 65

integrated



BT 56, BT 59

Integrated field bus connectivity.
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 fragment 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, IP,
EtherCAT, DeviceNet, CANopen

18 – 30 V DC

IP 65

MA 31



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 Reader

Z-3110 Bar Code Hand-Held Readers



IT 1300g Bar Code Hand-Held Readers



IT 3820 Bar Code Hand-Held Readers



Specifications

Reading method

CCD Touchreader

Reading distance

0 – 20 mm

Interfaces

Integrated:
RS 232/USB
Keyboard Wedge PS 2

Connectivity

With MA 21 connector unit
multiNet

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

Line imager

10 – 660 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

Line imager with Bluetooth

25 – 1120 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

Accessories

Cable for: RS 232, USB,
Keyboard-Wedge; holder, 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

5 V DC $\pm$ 10%

4.5 – 5.5 V DC

9 V DC

Applications

Bar code reading by touch

Bar codes
Protection class IP 41

Bar codes
Protection class IP 41

Types of codes

Bar codes

Bar codes

Bar codes

Certifications



Features

Built-in decoder.
Display LED and acoustic signal
output for accomplished reading.
Lightweight and robust housing.

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.

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



Line imager with Bluetooth
16.5 – 2080 mm

Integrated:
RS 232/USB
Keyboard Wedge PS 2

With MA 21 connector unit
multiNet

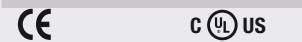
With MA 200i connector unit
PROFINET IO/RT
PROFIBUS
Ethernet TCP/IP, UDP
EtherCAT
DeviceNet
CANopen

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

4,5 – 14 V DC 9 V DC

Tough industrial use
Protection class IP 54

Bar codes



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

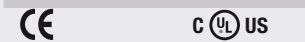
With MA 200i connector unit
PROFINET IO/RT
PROFIBUS
Ethernet TCP/IP, UDP
EtherCAT
DeviceNet
CANopen

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

4.5 – 5.5 V DC

High-contrast codes
Protection class 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.

FIS 6170
2D-Code Hand-Held
Readers



Surface imager
0 – 51 mm

Integrated:
RS 232/USB

With MA 21 connector unit
multiNet

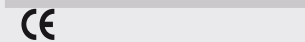
With MA 200i connector unit
PROFINET IO/RT
PROFIBUS
Ethernet TCP/IP, UDP
EtherCAT
DeviceNet
CANopen

Cable for: USB, RS 232;
Power supply unit

5 V DC

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

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

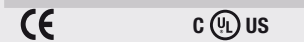
With MA 200i connector unit
PROFINET IO/RT
PROFIBUS
Ethernet TCP/IP, UDP
EtherCAT
DeviceNet
CANopen

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

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

Data Matrix Code, bar code, Pharmacode

Data Matrix Code, bar code, Pharmacode

Sensor/cameras

CMOS (Global Shutter)

CMOS (Global Shutter)

CMOS (Global Shutter)

Resolution (pixel)

838 × 640

752 × 480

752 × 480

Focal point

127 mm

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

Depending on lens

Interfaces

Integrated:
RS 232
USB

Integrated:
Ethernet
RS 232
TCP/IP, UDP

Integrated:
Ethernet
RS 232
TCP/IP, UDP

Connectivity

With MA 21 connector unit
multiNet

With MA 21 connector unit
multiNet

With MA 21 connector unit
multiNet

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

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

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

Digital inputs/outputs

1/1

8, configurable

8, configurable

Number of test routines

Memory capacity for
1 parameter set in the camera

Max. 100
in camera memory

Max. 100
in camera memory

Configuration/operating system

Configuration via bar code or
PC with setup program

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

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

Options

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.

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.

Dimensions, W × H × D

47 × 40 × 32 mm

75 × 113 × 55 mm

75 × 113 × 106 mm

Certifications

CE c UL US

CE c UL US

CE c UL US

Features

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

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.
Protection class IP 65/IP 67.
Flexible use through motor-driven
focus adjustment.

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

RFID Systems

RFI 32 Stationary RFID Readers



Specifications

Working frequency

125 kHz

Max. RFID reading distance

80 mm

Max. bar code reading distance

–

Max. speed

0.6 m/s

Interfaces

Integrated:
RS 232

Connectivity

**With connector unit
MA 21**
multiNet

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

Function

RFID reading

Possible transponder types

– Disc
– High temperature proof up to
200 °C

Supply voltage

10–30 V DC

Protection class

IP 65

Certifications



Features

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

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



13.56 MHz

400 mm

–

6.0 m/s

Integrated:
RS 232

With connector unit
MA 21
multiNet

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

RFID reading/writing

– Disc
– High temperature proof up to
220 °C
– Smartlabel

12–30 V DC

IP 65/IP 67



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

RFU 61/81
IM RFU 1
Stationary RFID
Read/Write Systems



868 MHz

2500 mm

–

Transponder-dependent

Integrated (IMRFU):
RS 232

With connector unit
MA 21
multiNet

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

RFID reading/writing

– Disc
– Smartlabel
– On metal

10–30 V DC

IP 65/IP 67



Compact RFID write/read unit.
High protection class for tough
industrial application.

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



13.56 MHz

30 mm

450 mm

–

Integrated:
RS 232/USB
Bluetooth

With connector unit
MA 21
multiNet

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

RFID reading/writing
Bar code reading

– Disc
– High temperature proof up to
200 °C
– Smartlabel

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

IP 54



CDRH

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.

HFU 4500D
HFU 4520D
Mobile RFID and
1D/2D-Code Readers



868 MHz

450 mm

350 mm

–

Integrated:
RS 232/USB
Bluetooth

With connector unit
MA 21
multiNet

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

RFID reading/writing
Bar code reading
2D-code reading

– Disc
– Smartlabel
– On metal

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

IP 54



FCC

Mobile combination device for
transponders, bar codes and
2D-codes; designed especially for
reading code information and
subsequently writing this
information to a transponder.
Cableless model with Bluetooth
available.

Data Transmission/ Control Components

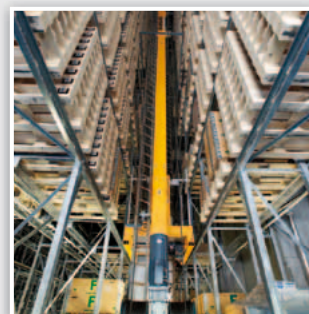
Access data quickly and simply



In addition to the actual device technology, the transmission of data or the connection of the devices to a wide range of different fieldbus environments is becoming increasingly important and plays a decisive role in your system's ease of use and flexibility. 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





Product highlight

intelligent, integrated and immensely helpful:
The modular MA 200*i* **fieldbus gateway**.

Not every sensor that you need in your system is supplied with the suitable fieldbus interface for your control when it leaves the factory. Until now, that problem could only be solved using a limited connector unit or highly-complex gateways. In addition to the correct parameters for sensors and wiring, this required two things—a lot of time and all sorts of cables. With the new, intelligent MA 200i fieldbus gateway, that is now a thing of the past.

The MA 200i gateways are preset so that the suitable configuration for Leuze electronic devices can be easily selected via a switch.

- | | | |
|--|--|--|
| <p>■ Independent of brand
Separate switch position for the connection of configurable foreign products.</p> | <p>■ Flexible mounting
M6 and slotted hole fastening for flexible mounting.</p> | <p>■ Configuration
For Leuze electronic devices can be easily selected via switch settings.</p> |
| <p>■ Compatible fastening
Bore pattern applies for MA4, MA21 and M40—this enables easy mechanical exchange.</p> | <p>■ Ethernet switch
Can be used as a switch for Ethernet-based fieldbuses. This saves time and materials (cables).</p> | <p>■ Protection class IP 65
For use in dusty or wet environments.</p> |
| <p>■ Easy function test
Due to bright status LEDs.</p> | <p>■ Connectivity
Available for all common fieldbuses.</p> | <p>■ Voltage supply
Integrated voltage supply for mobile devices.</p> |

One device - many possibilities

RS232

CANopen

PROFI[®]
NET

PROFI[®]
PROCESS FIELD BUS
BUS

DeviceNet™

EtherNet/IP™

EtherCAT®

Ethernet

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

Protection class

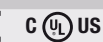
IP 67

IP 54

IP 54

IP 54

Certifications



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
Reader**

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



KB 090



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 coupling
module



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



KB JST-M12A-5P-3000
connection set



Direct



KB 301-3000-MA200

KB 500-3000-Y

KB M12-8P-
MA-3000



KB JST-M12A-8P-
Y-3000



Direct



KB-JST-3000



KB-JST-HS-300



KB-JST-M12-5P-3000



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



KB 008/direct



Data Transmission Systems



DDLS 78

Optical Data Transmission



DDLS 200

Optical Data Transmission



DLSP 160S

Optical Data Transmission



Specifications

Data transmission

Range

Light source

Max. transmission rate

Interfaces-Host

Supported protocols

Protection class

Supply voltage

Operating temperature

Certifications

Features

Serial

200 m

Red light/infrared LED

38.4 kbits/s

TTY
RS 232
RS 422
RS 485

PROFIBUS
SINEC L2
Transparent mode

IP 65

12–30 V DC

–20 °C to +60 °C
(–35 °C to +60 °C with optics
heating)



Full-duplex transmission in one
housing.
Galvanically isolated interfaces.
Usable with optics heating up to
–35 °C.

Serial

500 m

Infrared LED

2000 kbits/s

RS 422
RS 485
Fiber-optic cable

PROFIBUS (DP/FMS/MPI)
Interbus-S (copper/fiber optics),
Rockwell Automation (DH+;
Remote I/O), DeviceNet, CANopen,
EtherNet, PROFINET

IP 65

18–30 V DC

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



No-contact, wear-free data
transmission.
Not influenced by ambient light.
Integrated mounting and alignment
plate.
Optionally with heating.
All common internationally used
interfaces available.
PROFIBUS and EtherNet variants
with M12 connector.

Parallel

2.6 m

Infrared LED

≤ 400 µs

Parallel
2 × 8 I/Os / 24 V DC

IP 65

16–35 V DC

–20 °C to +60 °C



Transmitter and receiver in one
housing (same device).
Minimal space requirement.
Parallel data transmission.

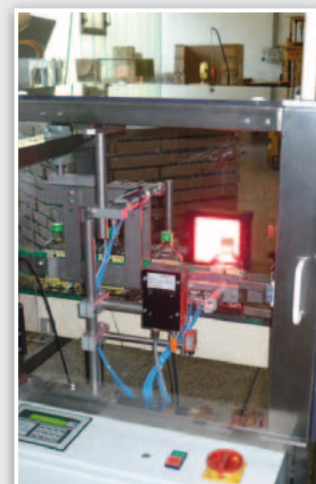
Industrial image processing

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



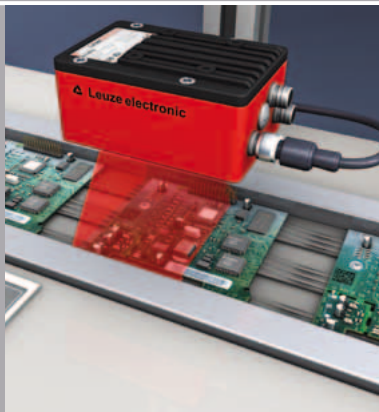


The new **measurement function** in the **LSIS 462i** makes possible minimal tolerances and thereby reduces, e.g., the scrapping of good parts!

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).



The LSIS 462i multitalent on the web at www.leuze.com/en/lsis462i

Smart Cameras



LSIS 412i Smart Camera



LSIS 462i Smart Camera



Typical applications

Presence/completeness monitoring

Dimension/position monitoring

Position and type detection

Character reading

Code reading

Measurement

Print quality monitoring

Color detection

Pattern detection

Sensor/cameras

Resolution (pixel)

Focal point

Interface

Connectivity

Digital inputs/outputs

Fast EtherNet

Optional

Number of test routines

Configuration/operating system

Options

Dimensions, W×H×D

Certifications

Features

X

X

X

CMOS (Global Shutter)

752 × 480

50 mm ... ∞ (focal length 8 mm)
75 mm ... ∞ (focal length 16 mm)
Depends on lens with C-mount models

Integrated:
EtherNet, RS 232

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

8, configurable

Yes

Cables, mounting devices,
external illumination

Max. 100

Configuration via PC using
standard Web browser
(webConfig tool)

75 × 113 × 55 mm

CE US

Very well suited for industrial use through glass or plastic window, metal housing and homogeneous integrated illumination (depends on type: white, IR or RGBW). Protection class IP 65/67. Flexible use through motor-driven focus adjustment.

X

X

X

Data Matrix, bar code,
Pharmacode

X

CMOS (Global Shutter)

752 × 480

50 mm ... ∞ (focal length 8 mm)
75 mm ... ∞ (focal length 16 mm)
Depends on lens with C-mount models

Integrated:
EtherNet, RS 232

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

8, configurable

Yes

Cables, mounting devices,
external illumination

Max. 100

Configuration via PC using
standard Web browser
(webConfig tool)

such as LSIS 422i (s. p. 59)

75 × 113 × 55 mm

CE US

Very well suited for industrial use through glass or plastic window, metal housing and homogeneous integrated illumination (depends on type: white, IR or RGBW). Protection class 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 system 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





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

■ **Deflection mirrors / deflection 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**

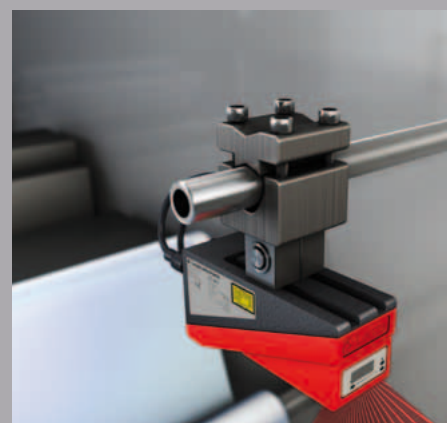
Mounting components for fast setup of muting systems

■ **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



Switching Sensors

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

Measuring Sensors

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

Products for Safety at Work

Optoelectronic Safety Sensors
Safe Locking Devices and Switches
Safe Control Components
Machine Safety Services

Identification

Bar Code Identification
2D-Code Identification
RF Identification

Data Transmission/ Control Components

MA Modular Interfacing Units
Data transmission
Safe Control Components

Industrial image processing

Light Section Sensors
Smart Camera

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