Leuze electronic

the sensor people

Product Overview 2011/2012

PRODUCT LINE

The sensor people – a tradition of excellence

Our people make the difference.

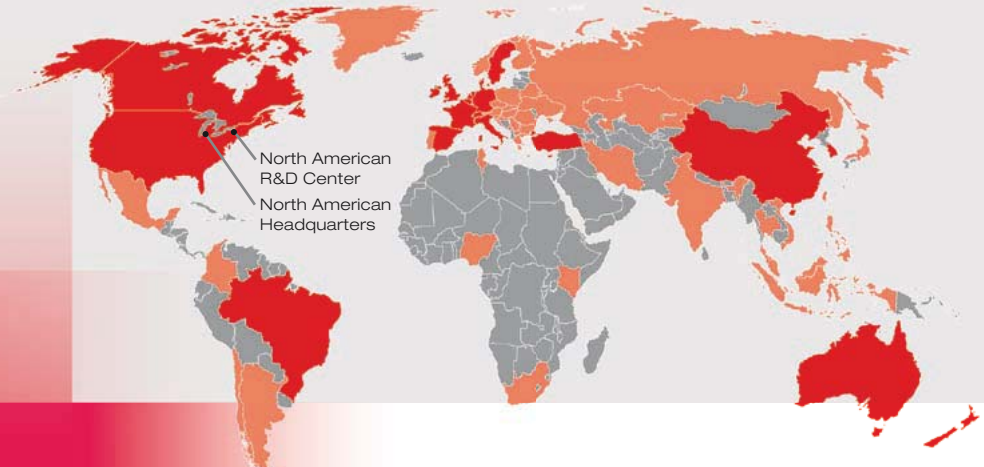
Founded in southern Germany in 1861 ...

From a textile mill in southern Germany in 1861 to being one of the leading optoelectronic sensor manufacturers today, Leuze is continuously striving to provide innovative products that improve our customer's efficiency and productivity.

Today, with over $164 million in sales, 16 wholly owned subsidiaries and more than 40 sales representatives worldwide, Leuze electronic offers unparalleled product selection, integration support, training, trouble-shooting assistance and production enhancement. Also, with over 12,000 products and our global service network, we have earned a superior reputation for providing high technology, value added products and outstanding customer support.

42 sales representatives

16 wholly owned subsidiaries



USA+Canada
France
Great Britain+ Ireland
Italy
Netherlands
Denmark+ Sweden
Switzerland
Spain
Brazil
Hong Kong
China
South Korea
Belgium
Turkey
Australia
New Zealand

Increasing productivity and efficiency

For more than 45 years.

Headquarters, New Hudson (greater Detroit), MI

Our people are eager to learn every detail about your application, your unique needs and your business. We are committed to the success of your business. Increasing your productivity, efficiency and profitability is our goal. Using the most cutting edge technology, our highly qualified specialists will provide you with solutions that are optimal for your applications. Our commitment to you along with a wide selection of sensors, sensor systems and individually tailored custom solution will make the difference for you.

USA Headquarters – New Hudson, MI

Research & Development Center, Rochester, NY

Custom design leads us to our R& D Center, which is located in Rochester NY, the world leader in optics and imaging. Our highly experienced engineering team is specialized in imaging based technology for industrial and pharmaceutical applications (focus on IVD). Typical custom design applications are: machine vision, customer specific algorithms, OEM-developments (general and IVD-market), quality control in production environments, etc.

Research & Development Center – Rochester, NY

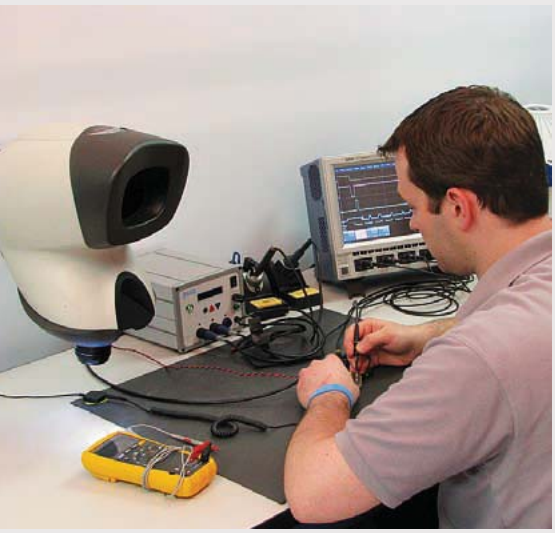
Leuze USA – Manufacturing – Lightcurtains “Made in USA”

Leuze electronic proudly presents the fastest delivery of made-to-order safety light curtains in North America. Our production facility in New Hudson, MI is highly flexible, we understand the meaning of URGENT. Our same day shipment (available on request) of custom length/configuration safety lightcurtains “Made in USA” is unique in the marketplace. Furthermore, we carry a large inventory of standard Leuze electronic products to assure timely delivery to our customers.

Manufacturing Facility – New Hudson, MI

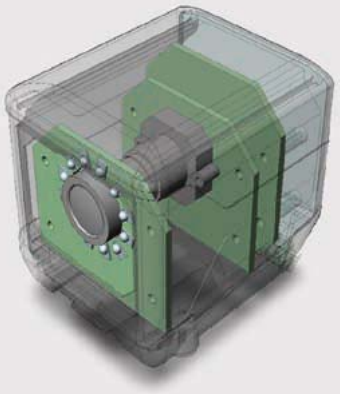
North American
Research & Development Center

Technological Innovations



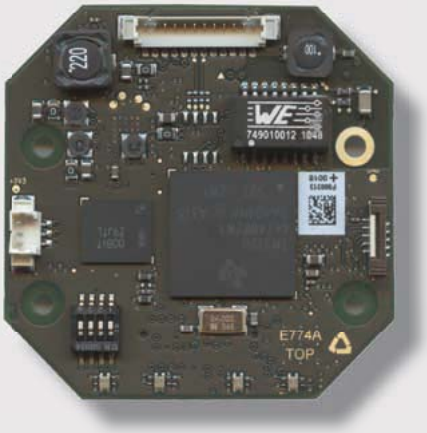
OEM-applications quite often require a custom development to have the sensor / bar code-reader / vision sensor-system perfectly fit the application.

In 2007, Leuze established its North American R&D Center in Rochester NY, a region known as the world leader in optics and imaging.
Our highly experienced engineering team is specialized in imaging based technology for industrial and pharmaceutical (focus on IVD) applications.



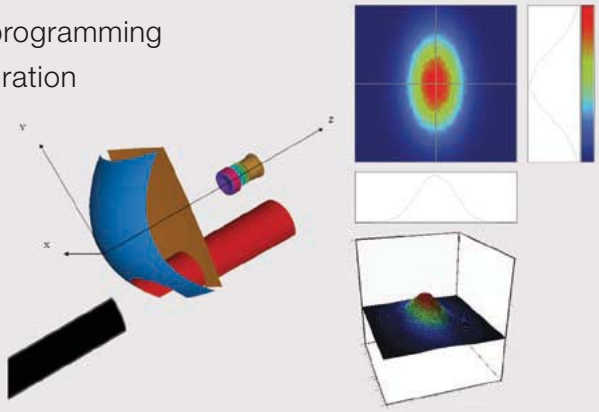
Pharmaceutical (IVD) and Industrial Applications

in Optics and Image Processing.



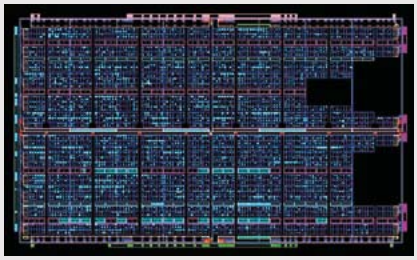
Software development

- Image processing algorithms
- Image compression algorithms
- Bar code decoding algorithms
- Real time operating systems
- Firmware for Microcontrollers and Digital Signal Processors
- Fieldbus protocols
- Network programming
- Graphical user interfaces
- Application programming
- System integration



Mechanical and optical engineering

- 3D-CAD, FEM-Simulation
- 3D-optics calculation, Ray Tracing
- Lens design
- Illumination design
- Plastic and metal housing



Electronics / circuit-design

- System architecture design
- ASIC and FPGA design (application specific integrated circuits)
- Microcontrollers, Digital Signal Processors
- Fieldbus interfaces
- Printed circuit board design incl. 3D-CAD

Safety increases productivity – Productivity increases profitability

For every $1 invested in workplace safety and health, Employers see a $4 to $6 return*.

Top Ten Bottom Line Benefits:

Decreased accident absenteeism
Decreased employee health care costs
Greater efficiency
Higher Productivity
Increased employee morale
Decreased workers compensation costs
Decreased scrap/waste
Increased quality
Positive brand image
Increased employee retention rates

**MIOSHA-Michigan Occupational Safety and Health Administration*

Common Safety Questions

Who is Responsible for Safety?

- Plant owner, management, machine builder, integrator and operator. We all are.

Isn't the machine manufacturer responsible to supply a safe product?

- Not currently. After a machine has been installed on a factory floor and the plant owner / plant management have signed off, the responsibility is transferred to them.

Safety, Productivity, Efficiency, how does it work together?

- Appropriate safety measures won't affect productivity & efficiency negatively.
- To the contrary. They should improve it!
- Consultation with the operators, engineering and maintenance is a must.
- Proper assessment of the hazards associated with the equipment is needed.

If management becomes aware of an unguarded danger point, what should be done?

- Call a safety professional like Leuze electronic who will clearly identifying the hazard, and provide a safety solution.
- This way, you will get a safety solution that meets your and the legislative requirements.

What are the legal implications?

- In case of an accident, there will be an investigation, which could result in serious legal consequences, if negligence can be proven.

Up time is the key, not down time!

Leuze Safety Competency and Services.

- Our experienced personnel are participating members of the US, Canadian and European Safety Standards / Regulations.
- Our engineers have more than 50 years of hands-on experience in safety and control systems design for capital equipment including installation, start up and training.
- Our trained personnel want to understand your business, and your day to day needs. This will help us to design a safety system that meets the standards and fulfills your requirements.
- Our audit and installation teams are strategically located throughout the country to allow for a timely response to your inquiry.
- Our installation services group has access to a wide variety of products allowing us to meet your plant specification needs when required.
- High productivity and efficiency is our focus. “Up time, not down time”.

Partnership with Lovegreen Risk Management

To further our scope of supply concerning machine safety products and services, Leuze electronic has formed a partnership with Lovegreen Risk Management. Lovegreen’s services include: design fabrication and installation of custom guards and shields, turn-key safety systems, machine safety assessments, and safety training.

LOVEGREEN RISK MANAGEMENT, LLC.

The Leuze “Step by Step” Process to Safety

Step 1: Determine, which standard(s) should be applied

- US, Canadian, European, other
- Examples are: OSHA, ANSI, RIA, CSA, EN, EN-ISO, etc.

Manufacturing / Facilities:

- Do you have one or more manufacturing locations, in one or different countries?
- Is there the possibility that you are going to move the equipment?
- Would you like to create a safety standard that applies to all locations?

OEM:

- Your customer’s location will determine, which safety standards need to be applied.
- Are you servicing the local market or do you intend to sell internationally?
- Do your local customers have international facilities and intend to move equipment to these locations?

Step 2: Define project scope

- Visual review of the equipment, its location and existing safety and control system.
- If the machine is still in the design phase: Review of design specifications summary, sketches, drawings if available, similar existing equipment, etc.

This is for quoting purposes only

Step 3: Hazard Assessment

- Review all current documentation of your machine: take pictures, dimensions, and stop time measurements for safe distance calculation (if applicable).
- If the machine is still in the design phase: Review of drawings, functional specification, URS (user requirement specification), future place of installation, etc.
- Interview production, maintenance and engineering personnel concerning the operation of the machine including material flow, tool changeover, maintenance, ergonomics, any known or potential hazards not addressed before the audit and any previous accidents, etc.
- Review of existing risk / hazard assessment if any.

Deliverable: Formal Report with hazard points including the classification of risk associated with them. It also includes recommendations for required and possible improvements.

Step 4: Safety Circuit Analysis

- Review existing controls functionality with regard to the new safety circuit and function.
- Prepare inspection report for individual safety components.
- Stop time measurements for safe distance calculation (if applicable).
- If the machine is still in the design phase: Review of schematics and control system.

Deliverable: Formal Report about the safety performance of your system, deficiencies if there are any, required and possible improvements.

Step 5: Proposal and Quotation

- Preparation of a safety proposal that allows for the highest efficiency and production. possible while meeting the local legislative safety requirements.
- Presentation of this proposal for discussion and modification if required.
- Preparation of a quotation based on the proposal including timeline and installation.

Deliverable: Quotation

Step 6: Upon Approval from the Client

- Design & build, installation, start-up and validation of safety system.
- Optional system certification by a certified safety engineer (independent, third party).

Deliverable: A safety solution that meets the legislative requirements and your needs.

Machine Safety Services – At A Glance...

Whether it is a new machine in the planning stages or an existing installation that needs to be updated, our safety specialists are here to help you!

Available Services Include:

- Safety Engineering, Safety system design
- Safety Inspection Pre-Startup
- Prestart, Health and Safety Review (Canada)
- Stop time measurement, safety distances
- Safety assessments
- Integration, installation
- Turn-key safety systems
- Safety training

NEW in 2011

MSI 100/200 Safety Controller

NEW!

BASIC FEATURES:

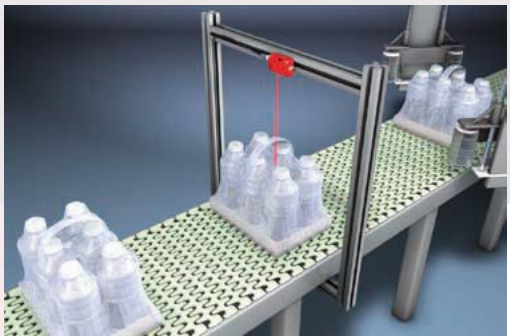
- Fixed & Modular Units (programmable)
- 20 Safe Inputs (up to SIL3/IEC 62061)
- 4 OSSD Outputs (Cat 4 EN954/EN 13849-1)
- 4 Message Outputs
- 2 Clock & 2 Ground-Switching Outputs
- Data Stick for Config Storage
- MSIsafesoft Included
- Up to 10 Safe Expansion Modules

HRTR 46B Teach

NEW!

BASIC FEATURES:

- Electronic adjustment via teach in and IO-Link
- Adjustment directly from system control
- Advanced detection of glossy or extremely dark objects
- More evaluation signals available
- 2 individual scanning ranges
- 2 switching outputs



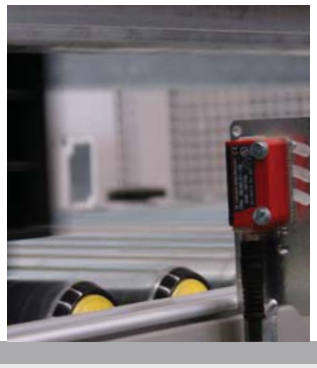
Best in class products

Optoelectronic Sensors

Automation solutions for reliable detection.

Optoelectronic sensors used in industrial production and automation must function reliably even under the toughest environmental conditions. The automation of production processes constantly places new demands on the quality and efficiency of switching and measuring sensors. The miniaturization of products, faster and more precise detection, interference from external light sources, reflective packages or tough environmental conditions involving a high degree of soiling, extreme temperature ranges or intensive cleaning cycles are just some of the challenges faced. As the complexity of applications increases, features such as simple commissioning, easy handling and connectivity are of increasing importance.

We offer a range of solutions to address these requirements. **A²LS** (Active Ambient Light Suppression) is one example of this. This technology largely eliminates susceptibility to interference from pulsed light sources, for example energy saving lamps. **brightVision®** substantially simplifies the handling and commissioning of sensors. An extremely bright, easily visible light spot and bright display diodes provide all-round visibility facilitate the simple alignment and operation of sensors. **IO-Link** is just one example of enhanced connectivity. With seamless technology throughout the system, each individual automation component with IO-Link capability can be addressed quasi top-down through the control system. Taken to a final stage of expansion, this technology can facilitates the initialization of the configurable components used in a system entirely from the control system.




Leuze
Leuze electronic

Cubic Series

	2 Series Standard	3B Series Standard
		
Specifications		
Dimens. excl. plug, W × H × D	8 × 23 × 12 mm	11 × 32 × 17 mm
Operating voltage	10 – 30 V DC	10 – 30 V DC
Switching outputs	PNP, NPN	PNP, NPN, push-pull
Connection type	Cable, cable+M8/M12	M8, cable, cable+M8/M12
Protection class	IP 67	IP 67
Certifications	CE c UL us	CE CDRH c UL us
Housing	Thermoelastic elastomer	Plastic
Throughbeam photoelectric sensors		
Operating range*	0 – 2 m	0 – 10 m
Light source	Red light	Red light
Switching	Light, dark	Light, antivalent
Switching frequency	385 Hz	1000 Hz
Retro-reflective photoelectric sensors		
Operating range*	0.07 – 4 m	0 – 7/0.02 – 5.5/0 – 3 m
Light source	Red light	Red light/infrared/laser (class 1)
Switching	Light, dark	Light/dark, antivalent
Switching frequency	700 Hz	1000/1000/2000 Hz
Diffuse reflection light scanners		
Operating range*		0 – 550 mm
Light source		Red light
Switching		Light, dark, antivalent
Switching frequency		1000 Hz
Diffuse reflection light scanners with background suppression		
Operating range*	Perm. set to 15 mm, 30 mm, 50 mm	5 – 500 mm
Light source	Red light	Red light/laser (class 1)
Switching	Light, dark	Light, antivalent
Switching frequency	700 Hz	1000/2000 Hz
Options		
Transparent media	X	X
Protective photoelectric sensors category 2		
Warning output	X	X
Activation input	X	X
A²LS	X	X
Features		
	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.	Sturdy metal sleeves. Scanner with a wide light spot. Teach-In. Foil detection < 20 µm. Bottle detection. ECOLAB. Contrast scanner.

* Typical operating range limit

53 Series
Standard

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

0 – 10 m
Red light
Antivalent
1000 Hz

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

5 – 500 mm
Red light/laser (class 1)
Antivalent
1000/2000 Hz

X

X

HYGIENE-Design. Clean*Proof*+. ECOLAB. EHEDG.
Foil detection < 20 µm.
Bottle detection. Contrast scanner.

55 Series
Standard

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

0 – 10 m
Red light
Antivalent
1000 Hz

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

5 – 500 mm
Red light/laser (class 1)
Antivalent
1000/2000 Hz

X

X

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

25 Series
Standard

15 × 39 × 29 mm
10 – 30 V DC
PNP, push-pull
M8, M12, cable, cable+M8/M12
IP 66, IP 67
CE CDRH c UL us
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 – 800 mm
Red light
Antivalent
500 Hz

5 – 500/5 – 800
Red light/infrared
Light, dark, antivalent
500 (1000)/500 Hz

X
X
X
X
X

Mechanically adjustable scanning range. Sensitivity adjustment. Sensor for vertical positioning. Retro-reflective sensor with large performance reserve / for stretch-wrapped containers. Scanner for detecting broken containers. Scanner with a focussed light spot.

18 Series
Standard

15 × 50 × 33 mm
10 – 30 V DC
PNP, NPN, 4 – 20 mA
M8, M12, cable
IP 67, IP 69 K
CE c UL us
Metal, stainless steel VA

0 – 5 m
Red light
Light/dark
1500 Hz

X

X

X

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

Cubic Series

8 Series
Standard

Specifications	
Dimens. excl. plug, W × H × D	15 × 48 × 38 mm
Operating voltage	10 – 30 V DC
Switching outputs	PNP, NPN, push-pull
Connection type	M12, cable
Protection class	IP 67, IP 69 K
Certifications	CE CDRH c UL US
Housing	Metal, glass
Throughbeam photoelectric sensors	
Operating range*	0 – 20/0 – 100 m
Light source	Red light/laser
Switching	Antivalent/light
Switching frequency	1500/2800 Hz
Retro-reflective photoelectric sensors	
Operating range*	0 – 8/0 – 20 m
Light source	Red light/laser (class 1)
Switching	Antivalent/light, dark
Switching frequency	1500/2800 Hz
Diffuse reflection light scanners	
Operating range*	5 – 800 mm
Light source	Red light
Switching	Antivalent
Switching frequency	1500 Hz
Diffuse reflection light scanners with background suppression	
Operating range*	5 – 400 mm
Light source	Red light/infrared/laser
Switching	Antivalent/light
Switching frequency	1000/1000/2000 Hz
Options	
Transparent media	X
Protective photoelectric sensors category 2	X
Warning output	X
Activation input	
A^2LS	X
Features	
	Contrast scanner, luminescence scanner. Foreground suppression. Ultrasonic sensors. Turnable connector. Foil detection. Bottle detection. ECOLAB.

* Typical operating range limit

95 Series
Standard

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.

46B Series
Standard

18 × 75 × 43 mm
10 – 30 V DC
PNP, push-pull, relay
M12, cable+M12, cable
IP 67, IP 69 K
CE CDRH c UL us
Plastic

0 – 60 m
Red light
Light, antivalent
500 Hz

0.05 – 18 m
Red light
Light, dark, antivalent
500 Hz

30 – 900 mm
Red light
Antivalent
500 Hz

5 – 1800/0 – 2500/50 – 1200 mm
Red light/infrared/laser (class 1)
Light, dark, antivalent
200/200/1000 Hz

X
X
X
X
X

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

93 Series
Standard

20 × 60 × 44 mm
10 – 30 V DC
PNP
M12, cable
IP 65
CE
Metal

0 – 220 mm
Infrared
Light
250 Hz

X
X

Foreground and background suppression. Maximum detection reliability through V-optics.

96 Series
Standard

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

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

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

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

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

X
X
X
X
X

Optics heating. Switching delay. Wide angle. Up to 3 switching points. Diagnosis. Analog output (current/ voltage). Foreground suppression. Deactivation. L/D switching. Mech. adjustable scanning range. Teach-In. ECOLAB. Versions f. Ex zone 2 and 22.

Cylindrical Sensors
Mini Sensors
Fiber Optic Amplifiers

412 Series
Cylindrical Sensors

Specifications	
Dimens. excl. plug, W × H × D	M12 × 55 mm
Operating voltage	10 – 30 V DC
Switching outputs	PNP
Connection type	M12, cable
Protection class	IP 67
Certifications	CE
Housing	Metal
Throughbeam photoelectric sensors	
Operating range*	0 – 8 m
Light source	Red light
Switching	Light/dark
Switching frequency	500 Hz
Retro-reflective photoelectric sensors	
Operating range*	0.05 – 1.6 m
Light source	Red light
Switching	Light/dark
Switching frequency	700 Hz
Diffuse reflection light scanners	
Operating range*	0 – 400 mm
Light source	Red light
Switching	Light/dark
Switching frequency	700 Hz
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	
A^2LS	
Features	

* Typical operating range limit

318 Series
Cylindrical Sensors

M18 × 50 mm

10 – 30 V DC

PNP, NPN, push-pull

M12, cable

IP 67

CE CDRH c UL us

Stainless steel, plastic

0 – 45/0 – 120 m

Infrared/laser (class 1)

Antivalent

1000/5000 Hz

0.02 – 6/0.02 – 6/0.1 – 15 m

Red light/infrared/laser (class 1)

Antivalent

1000/1000/5000 Hz

0 – 700/0 – 350 mm

Infrared/laser

Antivalent

1000/5000 Hz

1 – 140 mm

Red light

Antivalent

1000 Hz

X

X

X

Bracket versions.

618 Series
Cylindrical Sensors

M18 × 60 mm

10 – 30 V DC

PNP

M12

IP 67

CE

Metal

0 – 12 m

Infrared

Light/dark

500 Hz

0 – 7 m

Red light

Light/dark

500 Hz

0 – 300 mm

Infrared

Light/dark

500 Hz

Metal connector.

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, terminals

IP 65

CE

Metal, plastic

0 – 1 m

Red light/infrared

Light/dark

1500/1000 Hz

0 – 100 mm

Red light/infrared

Light/dark

1500/1000 Hz

Glass fiber and plastic fiber optics.
Teach-In.
Sensitivity adjustment.
Time functions.
Activation input.

Inductive Switches

Specifications	IS 255 IS 288 Standard	IS 240 Standard
		
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	M8, cable
Protection class	IP 67	IP 67
Certifications	CE c UL us	CE c UL us
Housing	Metal, plastic	Plastic
Features		

IS 244
Standard

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

CE c UL us

Plastic

Sensor heads can be oriented in 5 directions.

IS 204
IS 205
IS 206
Standard

Ø 4.0 × 25 mm
Ø 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 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

CE c UL us

Metal, plastic

IS 208
IS 212
IS 218
IS 230
Standard

M8 × 45 mm
M12 × 45 mm
M18 × 60 mm
M30 × 60 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 1500 Hz

M8, M12, cable

IP 67

CE c UL us

Metal, plastic

IS 212
IS 218
IS 230
Food & Beverage

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 400 Hz
Up to 200 Hz
Up to 100 Hz

M12

IP 68, IP 69 K

CE

Stainless steel (V4A)

Full-metal housing.
ECOLAB.

Measuring Sensors

Specifications	LPS 36 LRS 36 LES 36 Light section sensors	ROD 4 (plus) Surface laser distance sensors
		
Function	Distance measurement, optical	Distance measurement, scanner, optical
Dimens. excl. plug, W × H × D	56 × 74 × 160 mm	140 × 148 × 133 mm 141 × 167 × 168 mm
Operating voltage	18 – 30 V DC	24 V DC
Outputs	EtherNet 4 × push-pull PROFIBUS DP	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 1)	Optical/laser (class 1)
Measurement time	10 ms	20 – 40 ms/scan
Measuring panel width/ angular range	Max. 600 mm	190°
Resolution	1 mm	5 mm
Mouth width		
Mouth depth		
Number of inspection tasks	16	7
Operation	Configuration software	Configuration software
Features		
	Optional: encoder port.	Optional: heating. Dust suppression. Teach-In.

* Typical operating range limit

ODS 25
ODSL 8
ODSL 9
ODS 96B
Optical distance sensors

Distance measurement, optical

15 × 36 × 27 mm
15 × 48 × 38 mm
21 × 50 × 50 mm
30 × 90 × 70 mm

10 – 30 V DC
18 – 30 V DC (analogue)

4 – 20 mA
1 – 10 V
RS 232/RS 485
1 × PNP/2 × push-pull

M12

IP 67, IP 69 K

CE CDRH C UL US

25 – 200 mm
20 – 500 mm
50 – 450 mm
60 – 25,000 mm

Optical/LED/laser (class 1)

1 – 5 ms

0.01 – 3 mm

Teach-in
Configuration software
OLED display

OLED display for measurement value display and configuration.

ODSL 30
Optical distance sensors

Distance measurement, optical

79 × 69 × 149 mm

10 – 30 V DC
18 – 30 V DC (analogue)

4 – 20 mA
1 – 10 V
RS 232/RS 485
1 × PNP, 2 × PNP

M12

IP 67

CE CDRH C UL US

200 – 65.000 mm

Optical/laser (class 1)

30 – 100 ms

0.1 – 1 mm

LC display

LC display for measured value display and configuration.

GS 754
CCD forked sensors

Edge detection

19 × 81.5 × 91.5 mm
20 × 155 × 91.5 mm

18 – 30 V DC

2 × 4 – 20 mA
2 × 0 – 10 V
RS 232/RS 422/RS 485
1 x PNP, 2 x PNP

M12

IP 54

CE

Optical/LED

Min. 20 ms

25 mm

14 µm

29 mm/100 mm

42 mm

Terminal program

USDS
Ultrasonic sensors

Distance measurement, ultrasonics

M18 × 104 mm
M30 × 150 mm

20 – 30 V DC

4 – 20 mA
0 – 10 V

1 × PNP, 2 × PNP

M12

IP 67, IP 65

CE C UL US

0 – 6000 mm

Ultrasonics

100 ms – 1 s

1 – 9 mm

Potentiometer, optional:
Configuration software

Temperature compensation.

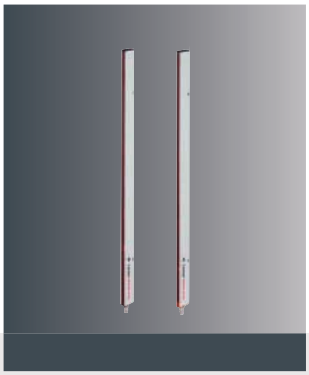
Special Sensors

	KRT 20(B) KRT 55 KRT 3B Contrast scanner	CRT 20B CRT 442 Color Scanners	LRT 440 LRT 8 Luminescence Scanners
			
Specifications			
Function	Contrast distinction	Color detection	Luminescence detection
Dimensions excl. plug, W × H × D	30 × 82 × 53 mm 14 × 36 × 25 mm 11 × 32 × 17 mm	30 × 82 × 53 mm 12 × 40 × 22 mm	23 × 70 × 43 mm 15 × 48 × 38 mm
Operating voltage	12 – 30 V DC	12 – 30 V DC	10 – 30 V DC
Outputs	PNP, NPN, push-pull Analogue	1 × PNP/4 × PNP or 1 × NPN/4 × NPN Analogue	PNP, NPN
Connection type	M12, M8, cable	M12	M12, cable
Protection class	IP 67, IP 69 K	IP 67	IP 67, IP 69 K
Certifications	CE c UL us	CE c UL us	CE c UL us
Operating range*	10 – 80 mm	12 mm 60 mm	0 – 150 mm
Light source	LED, laser (class 1)	LED	LED
Switching frequency	50.000/6000/10.000 Hz	6000/1500 Hz	600/2000/1500 Hz
Transmitter color	RGB/white/red laser	RGB	UV/blue
Light beam gate	Lateral or frontal	Lateral or frontal	Front
Light spot shape	Rectangular/round	Square	Round
Light spot position	Lengthwise, sideways	Lengthwise	
Operation	Teach-In, EasyTune, IO-Link	Teach-in	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.

 * Typical operating range limit

Light Curtains

VARIO B
PRG 108
Switching



KONTUR*flex*
Measuring

Specifications		
Function	One-way principle Reflection principle	One-way principle
Dimensions excl. plug, W × D × H	10 × 27 × 120 … 3370 mm 12 × 58 × 120 … 315 mm 22 × 80 × 25 mm	40 × 40 × 82 … 3202 mm
Operating voltage	24 V DC 10 – 30 V DC	24 V DC
Outputs	PNP, NPN	PNP, RS 232, RS 485 MODBUS, PROFIBUS CANopen
Connection type	M8, cable, cable+M12	M12
Protection class	IP 54, IP 67	IP 65
Certifications	CE	CE c UL us
Operating range*	5000 mm 3000 mm	4000 mm
Light source	Infrared/red light	Infrared
Cycle time	1 ms per beam / 2 ms	Max. 25 ms
Measurement field length	35 – 3100/60 mm	80 – 3200 mm
Resolution	5, 12.5, 25, 50, 100 mm 6 mm	5, 10, 20 mm
No. of beams	Max. 64/max. 8	Max. 512
Operation	Autocalibration, PC configuration, configuration of switching output	Configuration via PC or system controller, inloop diagnostic facility
Features		
	2 switching ranges. Suppression of 4 light axes. Through holes. Blind holes with thread.	Max. 4 systems with up to 512 beams per controller.

* Typical operating range limit

Forked Sensors

	(I)GSU 14B GSU 06 GK 14 Ultrasonics / capacitive	(I)GS 63 GS 61 GS 21 Optical	GS (L) 04 Optical
			
Specifications			
Dimensions excl. plug, W × H × D			
Operating voltage	10 – 30 V DC/12 – 30 V DC	10 – 30 V DC/24 V DC	10 – 30 V DC
Switching outputs	PNP, NPN, push-pull	PNP, push-pull	PNP, NPN
Connection type	M8, M12, cable, cable+M12	M8, cable, cable+M12	M8
Protection class	IP 62/IP 65	IP 65	IP 65
Certifications	CE c UL us	CE c UL us	CE
Housing	Metal	Metal, plastic	Metal
Throughbeam sensors			
Mouth width	0.9 – 4 mm	2 – 8 mm	20/30/50/80/120/220 mm
Light source	Ultrasonics/capacitive	Infrared	Red light/laser
Switching	Light/dark/antivalent	Light/dark/antivalent	Light/dark
Switching frequency	Up to 5000 Hz	1000/8000/10.000 Hz	1500/3000 Hz
Options			
Operation	Teach	Teach/potentiometer	Potentiometer
Warning output	X	X	
Features	Detection of transparent + paper labels. Multichannel detection of labels with VSU 15.	Detection of paper labels ALC function. Storage of up to ten teach values in the sensor. Removable operating head on potentiometer version.	Detection of small objects. Light/dark switching on device. Laser fork for transparent objects.

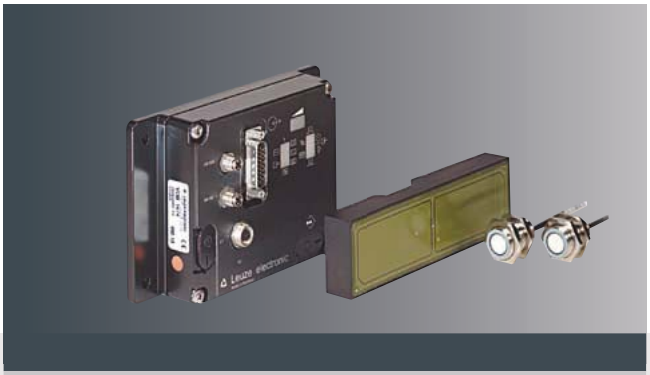
Accessories

Mounting systems

Plugs and connection cables

DB 12B, DB 112B, DB 14B
Double Sheet Monitoring
VSU 12
Splice detection

Double Sheet Monitoring 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 (∅ 12 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

Reflectors

Identification Systems
Data Transmission Systems
Distance Measurement

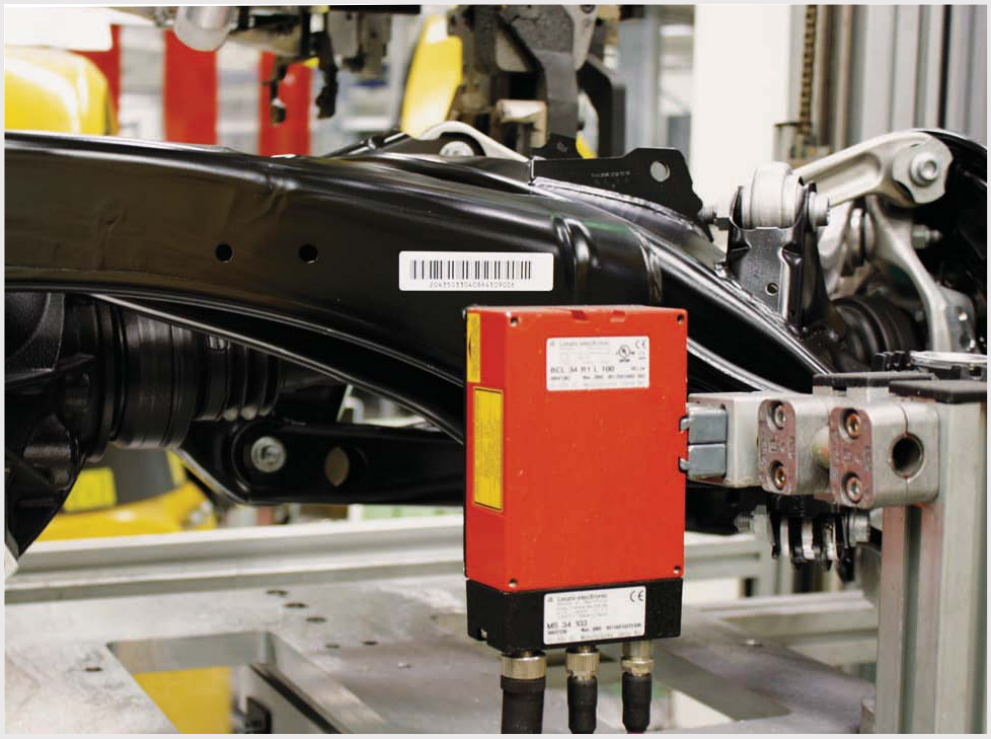
State-of-the-art products through top application expertise.

One of Leuze electronic's leading areas of competence in identification technology lies in **field bus networking**. With the BCL 34 bar code reader, Leuze has integrated the PROFIBUS field bus interface into a bar code reader for the very first time. This development has permitted the implementation of functions such as direct configuration via the control system and extreme high-speed data communication. Developed to an outstanding degree of innovation, the BCL 500i heralds the next generation of bar code readers, featuring integrated field bus interfaces and second-generation code reconstruction technology (CRT). The **"webConfig"** software integrated in the reader also facilitates configuration without additional software.

It is the broad product spectrum of IDENT technologies which opens up maximum flexibility to our customers. The identification of bar codes, 2D codes and RFID transponders is just as integral to our core competence as optical distance measurement, data transmission, positioning and industrial image processing. Another innovation is the bar code positioning system, a globally unique system for the positioning of automatic systems such as overhead conveyors. Its capabilities include not only accuracy to the millimeter over distances of up to 10,000 meters , but also precise positioning on corners and diverters. These are just a few examples from the extensive R&D achievements and application expertise of our engineers. Every new and further development is aimed at offering our customers not only greater efficiency and performance, but also easy installation. Needless to say, we place great emphasis on achieving optimum cost effectiveness.




GIUSEN LOGISTICS GROUP








13002458

DEMAG
4,8t

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/MA 40** PROFINET IO/RT PROFIBUS DP INTERBUS ETHERNET TCP/IP,UDP
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 technology or cable variant. Reference code comparison.

BCL 20
Bar Code Readers

50 – 450 mm

0.15 mm

1000/800 scans/s

N, 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/MA 40
PROFINET IO/RT
PROFIBUS DP
INTERBUS
ETHERNET TCP/IP,UDP

10 – 30 V DC

IP 65

MA 31

CE CDRH c UL us

BT 20, BT 21

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

BCL 30
Bar Code Readers

10 – 750 mm

0.2 mm

1000/800 scans/s

M, F, L, J for Ink-Jet application

Single Line Scanner
Raster Scanner

2/2 or 1/1

Integrated:
RS 232
RS 485
PROFIBUS DP

With connector unit MA 2/4
multiNet

With connector unit MA 200i/MA 41
PROFINET IO/RT
PROFIBUS DP
INTERBUS
ETHERNET TCP/IP,UDP

10 – 30 V DC

IP 65

MA 31

CE CDRH c UL us

Service display MSD 101 for BCL 34

BT 56, BT 59

BCL 34 with integrated PROFIBUS interface.
Optionally with heating.
Special inkjet optics for codes applied directly to cardboard.
Compact size, permitting mounting between two conveyor lines.

BCL 500*i*
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 DP
PROFINET IO/RT
ETHERNET TCP/IP,UDP

10 – 30 V DC

IP 65

integrated

CE CDRH c UL us

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 technology. 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/MA 40
PROFINET IO/RT
PROFIBUS DP
INTERBUS
ETHERNET TCP/IP,UDP

18 – 30 V DC

IP 65

MA 31

CE

Ext. parameter memory

BT 90

Integrated autofocus
Code reconstruction technology (CRT).
Available as "CAX" (compact omnidirectional scanner).
Optionally as modular scanner portal (MSP) system.

Modular Interfacing Units

Specifications	MA 8 Point to point	MA 2/2L Point to point multiNet slave	MA 4L/MA 4DL Point to point multiNet slave
			
Connection wiring	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 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	2/1 switching input 2/1 switching output Network address Automatic parameter memory
Protection class	IP 67	IP 54	IP 54/IP 65
Certifications	CE, c UL us	CE, c UL us	CE
BCL 8	Cable 008/direct ●		
BCL 21		Direct m	Direct m
BCL 22		Direct ●	Direct m
BCL 31		Cable 031/ cable 040/direct m	Cable 031 m
BCL 32		Cable 031/ cable 040/direct ●	Cable 031/ cable 040/direct m
BCL 90			
BCL 500i			
LSIS 122		KB M12A-8P- MA-3000 ●	
LSIS 4x2i		KB JST ●	
RFI/RFM		Direct ●	
RFU			
Mobile Code Reader			
BPS 8			

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

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

CE

Cable 090 m

MA 30/31
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

CE

MA 200*i*

4 x M12
1 x RS 232 connector

PROFIBUS DP
PROFINET IO/RT
ETHERNET TCP/IP
ETHERCAT*
DEVICENET*
ETHERNET I/P*
CANOPEN*

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

IP 65

CE

KB JST-M12A-5P-3000 connection set

Direct

KB 031

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

CE

Cable 008/direct m

KB M12A-8P-MA-3000 m

KB JST m

Direct m

KB-JST-3000

* available starting in mid-2011

Stationary 2D-Code Reader

Typical applications	LSIS 120 Stationary 2D-Code Readers	LSIS 422*i* Stationary 2D-Code Readers
		
Character reading		
Code reading	Data Matrix, bar code, QR Code, PDF 417, Aztec, RSS and others	Data Matrix Code, bar code, Pharmacode
Print quality monitoring		
Color detection		
Pattern detection		
Other applications		
Sensor/cameras	CMOS (Rolling Shutter)	CMOS (Global Shutter)
Resolution (pixel)	1280 × 960	752 × 480
Focal point	100 mm	50 mm … ∞ (focal length 8 mm) 75 mm … ∞ (focal length 16 mm)
Interfaces	**Integrated:** RS 232 USB	**Integrated:** EtherNet RS 232
Connectivity	**With connector unit MA 21** multiNet **With connector unit MA 200i/MA 40** PROFINET IO/RT PROFIBUS DP INTERBUS ETHERNET TCP/IP,UDP	**With connector unit MA 21** multiNet **With connector unit MA 200i/MA 40** PROFINET IO/RT PROFIBUS DP INTERBUS
Digital inputs/outputs	1/1	8, configurable
Number of test routines	Memory capacity for 1 parameter set in the camera	Max. 300 in camera memory
Configuration/ operating system	Configuration via PC with setup program or bar code	Configuration via PC using standard Web browser (webConfig tool)
Options		Reading of directly marked Data Matrix Codes. Multiple codes can be read (up to 99), display of the code content, evaluation of the code quality (ISO/IEC 15416, 15415 and 16022), reference code comparison, image memory.
Dimensions, W × H × D	47 × 40 × 32 mm	75 × 113 × 55 mm
Certifications	CE c UL us	CE c UL us
Features		
	Camera system for omnidirectional scanning of 2D codes and bar codes (static). 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 and decoder. Protection class IP 65/67. Flexible use through motor-driven focus adjustment.

Industrial image processing – Smart cameras

Typical applications	LSIS 412*i* Smart camera	LSIS 462*i* Smart camera
		
Presence/ completeness monitoring	X	X
Dimension/ position monitoring	X	X
Character reading		
Code reading		X
Print quality monitoring		
Color detection		
Pattern detection		
Other applications	Position and type detection	Position and type detection
Sensor/cameras	CMOS (Global Shutter)	CMOS (Global Shutter)
Resolution (pixel)	752 × 480	752 × 480
Focal point	50 mm … ∞ (focal length 8 mm) 75 mm … ∞ (focal length 16 mm)	50 mm … ∞ (focal length 8 mm) 75 mm … ∞ (focal length 16 mm)
Interface	**Integrated:** RS 232 EtherNet	**Integrated:** RS 232 EtherNet
Connectivity	**With connector unit MA 200i** PROFINET IO/RT PROFIBUS DP INTERBUS	**With connector unit MA 200i** PROFINET IO/RT PROFIBUS DP INTERBUS
Digital inputs/outputs	8, configurable	8, configurable
Fast EtherNet	Yes	Yes
Optional	Cable, mounting devices, external illumination	Cable, mounting devices, external illumination
Number of test routines	Max. 300	Max. 300
Configuration/ operating system	Configuration via PC using standard Web browser (webConfig tool)	Configuration via PC using standard Web browser (webConfig tool)
Options		Reading of directly marked Data Matrix Codes. Multiple codes can be read (up to 99), display of the code content, evaluation of the code quality (ISO/IEC 15416, 15415 and 16022), reference code comparison, image memory.
Dimensions, W × H × D	75 × 113 × 55 mm	75 × 113 × 55 mm
Certifications	CE c UL us	CE c UL us
Features		
	Very well suited for industrial use through glass or plastic window, metal housing and homogeneous integrated illumination. Protection class IP 65/67. Flexible use through motor-driven focus adjustment.	Very well suited for industrial use through glass or plastic window, metal housing and homogeneous integrated illumination. Protection class IP 65/67. Flexible use through motor-driven focus adjustment.

Optical Data Transmission Systems

	DDLS 78 Optical data transmission	DDLS 200 Optical data transmission	DLSP 160S Optical data transmission
			
Specifications			
Data transmission	Serial	Serial	Parallel
Range	200 m	500 m	2.6 m
Light source	Red light/infrared LED	Infrared LED	Infrared LED
Max. transmission rate	38.4 kbits/s	2000 kbits/s	≤ 400 µs
Interfaces–Host	TTY RS 232 RS 422 RS 485	RS 422 RS 485 Fiber-optic cable	Parallel 2 × 8 I/Os / 24 V DC
Supported protocols	PROFIBUS SINEC L2 Transparent mode	PROFIBUS (DP/FMS/MPI) Interbus-S (copper/fiber optics), Rockwell Automation (DH+; Remote I/O), DeviceNet, CANopen, EtherNet, PROFINET	
Protection class	IP 65	IP 65	IP 65
Supply voltage	12 – 30 V DC	18 – 30 V DC	16 – 35 V DC
Operating temperature	–10 °C to +50 °C (–35 °C to +60 °C with optics heating)	–5 °C to +50 °C (–30 °C to +50 °C with optics heating)	–20 °C to +60 °C
Certifications	CE	CE c UL us	CE
Features			
	Full-duplex transmission in one housing. Galvanically isolated interfaces. Usable with optics heating up to –35 °C.	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.	Transmitter and receiver in one housing (same device). Minimal space requirement. Parallel data transmission.

Optical Distance Measurement/ Positioning

	AMS 300*i* Optical Distance Measurement	**BPS 8** Optical Positioning	**BPS 34/37** Optical Positioning
			
Specifications			
Range	40/120/200/300 m	10.000 m	10.000 m
Interfaces	**Integrated:** PROFIBUS and SSI RS 232 and RS 422 RS 485 PROFINET DEVICENET ETHERNET I/P CANOPEN ETHERCAT ETHERNET	**Integrated:** RS 232	**Integrated:** PROFIBUS SSI
Connectivity	PROFINET IO/RT ETHERNET TCP/IP,UDP	**With connector unit MA 8-01** RS 485 **With connector unit MA 200i** PROFINET IO/RT PROFIBUS DP ETHERNET TCP/IP,UDP	
Functional principle	Against reflector	Against bar code tape	Against bar code tape
Measurement value output	1.6 ms	3.3 ms	2 ms
Integration time	~8 ms	~13 (~6) ms	~8 (~4) ms
Reproducibility	0.3/0.5/0.7 mm, (1 sigma/1.5 ms)	± 1 (2) mm to taught points	± 1 (2) mm to taught points
Accuracy	± 2/2/3/5 mm		
Protection class	IP 65	IP 67	IP 65
Light source	Red light laser	Red light laser	Red light laser
Supply voltage	18 – 30 V DC	5 V DC (24 V DC via MA 8-01)	10 – 30 V DC
Operating temperature	–5 °C to +50 °C (–30 °C to +50 °C with optics heating)	0 °C up to +40 °C	0 °C to +50 °C (–30 °C to +40 °C with optics heating)
Options	Speed measurement and monitoring	Customer-specific configuration facility	Speed measurement and monitoring
Certifications	CE CDRH c UL us	CE CDRH c UL us	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.	Compact housing and protection class IP 67. Customer-specific configuration. Extremely simple installation using special fastening unit. Innovative positioning on corners, inclines and diverters.	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.

Mobile Code Reader

	Z-3010 Bar code hand-held readers	IT 3800g IT 3820 Bar code hand-held readers	IT 3800i IT 3820i Bar code hand-held readers
			
Specifications			
Reading method	CCD Touchreader	Line imager with Bluetooth	Line imager with Bluetooth
Reading distance	0 – 20 mm	10 – 660 mm	16.5 – 2080 mm
Interfaces	**Integrated:** RS 232/USB Keyboard Wedge PS 2	**Integrated:** RS 232/USB Keyboard Wedge PS 2	**Integrated:** RS 232/USB Keyboard Wedge PS 2
Connectivity	**With connector unit MA 21** multiNet **With connector unit MA 200i/MA 40** PROFINET IO/RT PROFIBUS DP INTERBUS ETHERNET TCP/IP,UDP	**With connector unit MA 21** multiNet **With connector unit MA 200i/MA 40** PROFINET IO/RT PROFIBUS DP INTERBUS ETHERNET TCP/IP,UDP	**With connector unit MA 21** multiNet **With connector unit MA 200i/MA 40** PROFINET IO/RT PROFIBUS DP INTERBUS ETHERNET TCP/IP,UDP
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 ± 10 %	4.5 – 12 V DC 9 V DC	4.5 – 14 V DC 9 V DC
Applications	For bar code reading on contact	Bar codes Protection class IP 41	Tough industrial use Protection class IP 54
Types of codes	Bar codes	Bar codes	Bar codes
Certifications	CE	CE c UL us	CE c UL us
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 from –30 °C … 50 °C (IT 3800i). 0 °C … 50 °C (IT 3820i).

IT 1900
IT 1902
2D-code hand-held readers

Area-imager with Bluetooth

0 – 561 mm

Integrated:
RS 232/USB
Keyboard Wedge PS 2

With connector unit MA 21
multiNet

With connector unit MA 200i/MA 40
PROFINET IO/RT
PROFIBUS DP
INTERBUS
ETHERNET TCP/IP,UDP

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

4.5 – 5.5 V DC

For high-contrast codes
Protection class IP 41

Bar codes and 2D codes

CE c UL us

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

IT 4800
IT 4820i
2D-code hand-held readers

Area-imager + ST 2020 with Bluetooth

53 – 333 mm

Integrated:
RS 232/USB
Keyboard Wedge PS 2

With connector unit MA 21
multiNet

With connector unit MA 200i/MA 40
PROFINET IO/RT
PROFIBUS DP
INTERBUS
ETHERNET TCP/IP,UDP

Cable for: RS 232, USB, Keyboard-Wedge; holder, power supply unit, base station ST 2020

4.5 – 14 V DC 9 V DC

Tough industrial use
High-contrast codes
Protection class IP 54

Bar codes and 2D codes

CE c UL us

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

IT 6300
IT 6320
2D-code hand-held readers

Imager Imager + ST 2020 with Bluetooth

0 – 160 mm

Integrated:
RS 232/USB
Keyboard Wedge PS 2

With connector unit MA 21
multiNet

With connector unit MA 200i/MA 40
PROFINET IO/RT
PROFIBUS DP
INTERBUS
ETHERNET TCP/IP,UDP

Cable for: RS 232, USB, Keyboard-Wedge; holder, power supply unit, base station ST 2020

5 V DC 9 V DC

Reading of directly marked codes (laser or matrix printed) with low contrast, protection class IP 54

Bar codes and directly marked 2D codes

CE c UL us

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

FIS 6170
2D-code hand-held readers

Imager

0 – 51 mm

Integrated:
RS 232/USB

With connector unit MA 21
multiNet

With connector unit MA 200i/MA 40
PROFINET IO/RT
PROFIBUS DP
INTERBUS
ETHERNET TCP/IP,UDP

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

CE

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

Safety Sensors
Safety Systems
Safety Services

Innovative solutions for the protection of people at your production systems

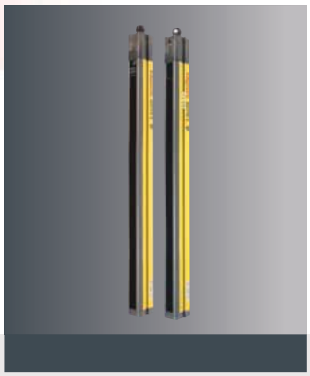
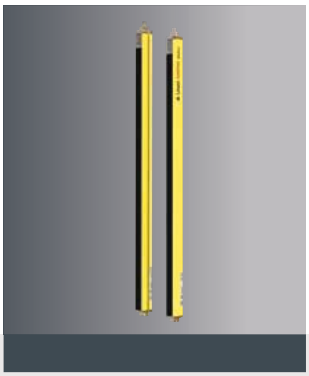
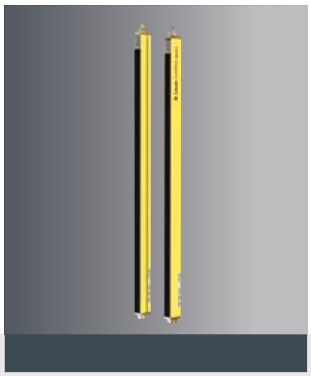
The core requirements of modern production systems are productivity, a high level of automation and product flexibility. Safety technology meets this challenge as an integral component of these systems. As one of the technological leaders in the area of optoelectronic safety systems, our sensors and control devices provide effective protection of people in accordance with international safety standards without obstructing workflows in the process, and thereby enable economical integration into various machine and system concepts. Our product development processes and our safety management methods are certified in accordance with IEC 61508-1.


18
powered by
SEW

Safety Laser Scanners

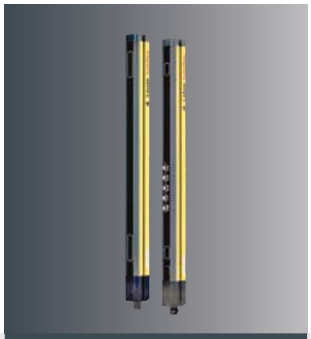
	RS4-6M Type 3 Safety Laser Scanners	RS4-4E Type 3 Safety Laser Scanners	RS4-2E Type 3 Safety Laser Scanners
			
Specifications			
Type in accordance with IEC/EN 61496	Type 3	Type 3	Type 3
SIL in accordance with IEC 61508 and IEC/EN 62061 (SILCL)	SIL 2	SIL 2	SIL 2
Performance Level (PL) in accordance with EN ISO 13849-1	PL d	PL d	PL d
Resolution (adjustable)	30/40/50/70/150 mm	30/40/50/70/150 mm	70/150 mm
Range	1.6/2.2/2.8/6.25 m	1.6/2.2/2.8/4.00 m	2.15 m
Number of detection zones	8	8	4
Dimensions, W × H × D	140 × 155 × 135 mm	140 × 155 × 135 mm	140 × 155 × 135 mm
Safety-related switching outputs (OSSD)	2 PNP transistor outputs AS-i Safety Interface, PROFIsafe Interface	2 PNP transistor outputs AS-i Safety Interface, PROFIsafe Interface	2 PNP transistor outputs
Connection technology	Sub-D15, Sub-D9 for configuration, safety bus systems: M12 plug, IR interface for parametering	Sub-D15, Sub-D9 for configuration, safety bus systems: M12 plug, IR interface for parametering	Sub-D15, Sub-D9 for configuration
Certifications	CE cULus TÜV	CE cULus TÜV	CE cULus TÜV
Functions			
	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	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	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
Features			
	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.	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.	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

	COMPACT*plus* Type 4 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 IEC/EN 61496	Type 4	Type 4	Type 2
SIL in accordance with IEC 61508 and IEC/EN 62061 (SILCL)	SIL 3	SIL 3	SIL 2
Performance Level (PL) in accordance with EN ISO 13849-1	PL e	PL e	PL d
Resolution	14/30/50/90 mm	14/20/30/40/90 mm	20/30/40/90 mm
Range	6/18/18/18 m	6/14/9/20/20 m	15/10/20/20 m
Protective field height (type-dependent)	150 … 3000 mm	150 … 1800 mm	150 … 1800 mm
Profile cross-section	52 × 55 mm	30 × 34 mm	30 × 34 mm
Safety-related switching outputs (OSSD)	2 PNP transistor outputs, 2 relay outputs AS-i Safety Interface PROFIsafe Interface	2 PNP transistor outputs	2 PNP transistor outputs
Connection technology	Cable gland Hirschmann plug Brad Harrison plug M12 plug	M12 plug	M12 plug
Certifications	CE, TÜV, cULus	CE, CSA, TÜV	CE, CSA, TÜV
Functions			
	2 transmission channels, selectable. Cascadable. Start/restart interlock. Dynamic contactor monitoring (EDM). Parallel/sequential muting with override. Blanking (with teach-in), reduced resolution. Operating mode, 1-cycle or 2-cycle control.	2 transmission channels, selectable. Start/restart interlock. Dynamic contactor monitoring (EDM). 7-segment display. Cascadable.	2 transmission channels, selectable. Start/restart interlock. Dynamic contactor monitoring (EDM). Integrated cyclical testing (100 ms). 7-segment display.
Features			
	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. Models with integrated AS-i Safety or PROFIsafe interface.	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.	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	MLD 300 Multiple Light Beam Safety Type 2 photoelectric sensors	MLD 500 Multiple Light Beam Safety Type 4 photoelectric sensors
		
Type in accordance with IEC/EN 61496	Type 2	Type 4
SIL in accordance with IEC 61508 and IEC/EN 62061 (SILCL)	SIL 2	SIL 3
Performance Level (PL) in accordance with EN ISO 13849-1	PL d	PL e
No. of beams	2/3/4	2/3/4
Beam distance	500/400/300 mm	500/400/300 mm
Range (type-dependent)	0.5 … 50 m (transmitter-receiver system) 20 … 70 m (transmitter-receiver system) 0.5 … 6 m (transceiver system, 3 beam) 0.5 … 8 m (transceiver system, 2 beam)	0.5 … 50 m (transmitter-receiver system) 20 … 70 m (transmitter-receiver system) 0.5 … 6 m (transceiver system, 3 beam) 0.5 … 8 m (transceiver system, 2 beam)
Profile cross-section	52 × 65 mm	52 × 65 mm
Safety-related switching outputs (OSSD)	2 PNP transistor outputs	2 PNP transistor outputs
Connection technology	M12 plug	M12 plug
Certifications	CE cULus TÜV	CE cULus TÜV
Functions		
	Automatic start/restart, start/restart interlock (RES) selectable, contactor monitoring (EDM) selectable, 2-sensor muting, (parallel, sequential), configurable operating modes, laser alignment aid (optional for transmitter-receiver systems)	Automatic start/restart, start/restart interlock (RES) selectable, contactor monitoring (EDM) selectable, 2-sensor muting, (parallel, sequential), configurable operating modes, laser alignment aid (optional for transmitter-receiver systems)
Features		
	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, 7-segment display, integrated AS-i Safety interface.	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, 7-segment display, integrated AS-i Safety interface.

	COMPACT*plus* CPRT-m Type 4 Transceivers with Muting and Override	**COMPACT*plus*** Type 4 Multiple Light Beam Safety Devices
		
Specifications		
Type in accordance with IEC/EN 61496	Type 4	Type 4
SIL in accordance with IEC 61508 and IEC/EN 62061 (SILCL)	SIL 3	SIL 3
Performance Level (PL) in accordance with EN ISO 13849-1	PL e	PL e
No. of beams	2	2/3/4
Beam distance	500 / 600 mm	500/400/300 mm
Range (type-dependent)	0 … 6.5 m	0 … 18 m
Profile cross-section	52 × 55 mm	52 × 55 mm
Safety-related switching outputs (OSSD)	2 PNP transistor outputs 2 relay outputs AS-i Safety Interface PROFIsafe Interface	2 PNP transistor outputs 2 relay outputs AS-i Safety Interface PROFIsafe Interface
Connection technology	Cable gland Hirschmann plug Brad Harrison plug M12 plug	Cable gland Hirschmann plug Brad Harrison plug M12 plug
Certifications	CE TÜV C UL US	CE TÜV C UL US
Functions		
	2 transmission channels, selectable. Start/restart interlock. Dynamic contactor monitoring (EDM). 2 or 4-sensor parallel muting. Muting restart override function. Optional integrated muting indicator. 7-segment display.	2 transmission channels, selectable. Start/restart interlock. Dynamic contactor monitoring (EDM). 2 or 4-sensor parallel muting. Muting restart override function. Output for muting indicator. 7-segment display.
Features		
	Muting sensors, reset button, indicator can be connected directly on the device via integrated or external sensor connection module. Further muting operating modes can be selected via switch, no PC required, plug-in parameter module. Muting override function for safe removal of the object after switch-offs. Integrated evaluation unit; no external control devices required. Connection option of E-STOP command device or Safety Switch. Models with integrated AS-i Safety or PROFIsafe interface.	Muting sensors, reset button, indicator can be connected directly on the device via integrated or external sensor connection module. Further muting operating modes can be selected via switch, no PC required, plug-in parameter module. Muting override function for safe removal of the object after switch-offs. Integrated evaluation unit; no external control devices required. Connection option of E-STOP command device or Safety Switch. Models with integrated AS-i Safety or PROFIsafe interface.

Single Light Beam Safety Devices

	MLD 500 Type 4 Single Light Beam Safety Devices	SLS 78/R Type 4 Single Light Beam Safety Devices	SLSR 25B Type 2 Single Light Beam Safety Devices
			
Specifications			
Type in accordance with IEC/EN 61496	Type 4*	Type 4	Type 2 in combination with a Safety Monitoring Device
Operating range	0.5 … 70 m 20 … 100 m	0 … 60 m	0.5 … 20 m
Operating voltage U_B	+24 V DC ± 20 %	24 V DC ± 15 %	10 … 30 V DC (incl. residual ripple)
Operating temperature	–30 … +55 °C	–25 … +60 °C	–30 … +55 °C
Dimensions, W × H × D	52 × 65 × 193 mm	38 × 127 × 99 mm	15 × 51.3 × 28.8 mm
Housing		Metal	Plastic
Switching outputs	2 PNP transistor outputs (OSSDs)	2 relay outputs (OSSDs)	2 push-pull switching outputs
Connector technology	M12 plug	Cable gland (PG11) Spring terminals Plug connection, DIN 43651	2 m cable M8 plug M12 plug
Certifications	CE, cULus, TÜV	CE	CE, c UL us
Functions			
	Automatic start/restart, start/restart interlock (RES) selectable, contactor monitoring (EDM) selectable, 2-sensor muting, (parallel, sequential), configurable operating modes, laser alignment aid (optional).	Operating mode “Protective operation without restart interlock”. Ambient light suppression (A²LS). Integrated optics heating. LED indicator.	LED indicator. Activation input for test and series connection. Active ambient light suppression (A²LS).
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.	Integrated optics heating enables use under extreme environmental conditions. Operating temperature –25 °C to +60 °C. High mechanical and chemical resistance. Rapid connection with screwless spring terminals.	Single beam safety device with high performance reserve. Compact plastic housing with protection class IP 67. Wide voltage range from 10 to 30 V with PNP transistor output. All common connection variants.

* For safety classification see MLD 500 Multiple Light Beam Safety Device

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

Cable 2 m
M12 plug

CE c UL us

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 from 10 to 30 V with PNP transistor output.
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

Cable gland
M12 plug

CE c UL us

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 plug

CE c UL us

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.

LS 763
Type 2 Single Light Beam Safety Devices

Type 2 in combination with a Safety Monitoring Device

0 … 6 m

24 V DC ± 15 %

–20 … +60 °C

27 × 14.6 × 52 mm

Metal

PNP transistor output

Cable 2.5 m
M8 plug

CE

LED indicator. Activation input for test and series connection.

Compact construction with shock-resistant metal housing and glass optics.
Infrared single beam safety device with high performance reserve.
Flexible PUR connection cable for industrial application or connection via M8 connector.

AS-i-Safety Product Range

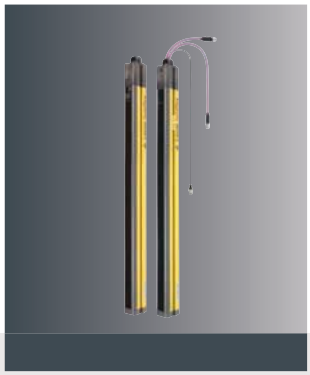
	RS4/AS-i Type 3 Safety Laser Scanners	**MLD 500/AS-i** Type 4 Multiple Light Beam Safety Devices	**MLD 500/AS-i** Type 4 Single Light Beam Safety Devices
			
Specifications			
Type in accordance with IEC/EN 61496	Type 3	Type 4	Type 4
SIL in accordance with IEC 61508 and IEC/EN 62061 (SILCL)	SIL 2	SIL 3	SIL 3
Performance Level (PL) in accordance with EN ISO 13849-1	PL d	PL e	PL e
AS-i profile	Safe slave	Safe slave	Safe slave
Slave address	1 … 31, programmable (factory setting = 0)		
Connection technology	M12 plug, IR interface for parametering	M12 plug	M12 plug
Current consumption from AS-i circuit	50 mA	50 mA (transmitter) Max. 140 mA (receiver, type-dependent)	50 mA (transmitter) Max. 140 mA (receiver, type-dependent)
Sensor response time	85 ms (corresponds to 2 scans), up to 16 scans can be set (645 ms)	25 ms	25 ms
Restart delay time	Min. 160 ms (after detection zone release)	100 ms or 500 ms	100 ms or 500 ms
Certifications	CE, cULus, TÜV	CE, TÜV	CE, TÜV
Function extension with ASM1/ASM1E Safety Monitor	Start/restart interlock. Dynamic contactor monitoring (EDM). Diagnostic data transfer via AS-interface.	Start/restart interlock, contactor monitoring selectable (EDM), 2-sensor parallel muting, 2-sensor sequential muting, muting-timeout extension	Start/restart interlock, contactor monitoring selectable (EDM)
Features			
	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. 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.	Integrated AS-i interface for direct M12 connection to the AS-interface network. Safe data transfer of the OSSD signals via AS-Interface. Device swap-out without PC via SERVICE function of the AS-i safety monitor. Integrated muting indicator, direct control without unique AS-i address possible.	Integrated AS-i interface for direct M12 connection to the AS-interface network. Safe data transfer of the OSSD signals via AS-Interface. Device swap-out without PC via SERVICE function of the AS-i safety monitor. Integrated muting indicator, direct control without unique AS-i address possible.

	COMPACT*plus*/AS-i Type 4 Safety Light Curtains and Multiple Light Beam Safety Devices	**ASKM1** AS-i Coupling Modules for Safety Sensors	**ASKM2** AS-i Coupling Module for Safety Light Curtains SOLID-2 and SOLID-4E
			
Specifications			
Type in accordance with IEC/EN 61496	Type 4		Type 4
SIL in accordance with IEC 61508 and IEC/EN 62061 (SILCL)	SIL 3		SIL 3
Performance Level (PL) in accordance with EN ISO 13849-1	PL e	Cat. 4 (in accordance with EN ISO 13849 and EN 954-1)	Cat. 4 (in accordance with EN ISO 13849 and EN 954-1)
AS-i profile	Safe slave	Safe slave	Safe slave
Slave address	1 … 31, programmable (factory setting = 0)	1 … 31, programmable (factory setting = 0)	1 … 31, programmable (factory setting = 0)
Connector technology	M12 plug, IR interface for parametering	M12 plug for sensors, clamping technology for AS-i flat cable	M12 plug for sensors, clamping technology for AS-i flat cable
Current consumption from AS-i circuit	40 mA	≤ 45 mA	≤ 270 mA
Sensor response time	10 … 66 ms		
Restart delay time	20 … 5,000 ms, can be set with software, SafetyLab, factory setting 100 ms (after protective field release)		
Certifications	CE, TÜV, c UL us	CE	CE, CSA, SP, UL
Function extension with ASM1/ASM1E Safety Monitor			
	Start/restart interlock. Dynamic contactor monitoring (EDM). Diagnostic data transfer via AS-interface.	Connectable sensors, control devices with contact-based outputs. Safety Switch, 1 and 2-channel. E-STOP command devices, 1 and 2-channel. Safety sensors with relay outputs, 1 and 2-channel.	Connectable protective sensors: Safety Light Curtain SOLID-2, Safety Light Curtain SOLID-4E
Features			
	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.	Safe AS-interface network device for connecting 1 or 2 safety sensors with contact-based outputs. LED indicators: AS-i status, inputs. AS-interface addressing via integrated addressing port. Simple bus connection with AS-i clamping technology. Protection class IP 67, mounting plate for DIN rail and screw-on mounting.	Safe AS-interface network device for the connection of 1 Leuze electronic Safety Light Curtain SOLID-2 or SOLID-4E. LED indicators: AS-i status, inputs. Fault message retrievable via AS-interface. AS-interface addressing via integrated addressing port. Simple bus connection with AS-i clamping technology. Mounting plate for DIN rail and screw-on mounting.

AS-i-Safety Product Range

Specifications	ASM1/ASM1E AS-i Safety Monitors Category 4	ASM2/ASM2E AS-i Safety Monitors Category 4
		
SIL in accordance with IEC 61508 and IEC/EN 62061 (SILCL)	SIL 3	SIL 3
Performance Level (PL) in accordance with EN ISO 13849-1	PL e	PL e
Safety category in accordance with EN ISO 13849 and EN 954-1	4	4
STOP category in accordance with IEC/EN 60204-1	0 and 1	0 and 1
Supply voltage	24 V DC, ±15 %	24 V DC, ±15 %
System reaction time	Max. 40 ms (monitor without sensor reaction time)	Max. 40 ms (monitor without sensor reaction time)
Protection class	IP 20	IP 20
Number of safety monitors per AS-interface network	4 (with maximum 31 integrated AS-i slaves)	4 (with maximum 31 integrated AS-i slaves)
Certifications	CE, TÜV, CSA, UL	CE, TÜV, CSA, UL
Functions		
	Emergency STOP monitoring functions. Start/restart interlock. Dynamic contactor monitoring (EDM). Muting (2-sensor parallel, 4-sensor sequential), 1- or 2-channel OSSD relay outputs, LED status indicator. System signal output.	Emergency STOP monitoring functions. Start/restart interlock. Dynamic contactor monitoring (EDM). Muting (2-sensor parallel, 4-sensor sequential), 1- or 2-channel OSSD relay outputs, LED status indicator. System signal output.
Features		
	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.	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 Sensor Technology for PROFIBUS DP

Specifications	**RS4/PROFIsafe** Type 3 Safety Laser Scanners	**COMPACT*plus*/ PROFIsafe** Type 4 Safety Light Curtains and Multiple Light Beam Safety Devices
		
Type in accordance with IEC/EN 61496	Type 3	Type 4
SIL in accordance with IEC 61508 and IEC/EN 62061 (SILCL)	SIL 2	SIL 3
Performance Level (PL) in accordance with EN ISO 13849-1	PL d	PL e
Safety-related switching output (OSSD)	PROFIsafe interface	PROFIsafe interface
Connector technology	M12 plug (b-coded for PROFIBUS DP), IR interface for parametering	M12 plug (b-coded for PROFIBUS DP), IR interface for parametering
PROFIsafe driver version	V2	V2
PROFIBUS DP data rate	9.6 kBd … 12 MBd	9.6 kBd … 12 MBd
Configuration/ parameter setting	With software	With software, teach-in, switch
Configuration interface	Infrared	Infrared
Inputs and outputs	Input for reset button	5 inputs, 2 outputs for reset button, muting sensors, muting indicators, etc.
Cyclic safe data	1 byte	4 byte
Acyclic data	Measured values, error data, warnings	Protective field individual beam data, error data, warnings
Certifications	CE, cULus, TÜV	CE, TÜV
Functions		
	Diagnostic data transfer via PROFIBUS DP. Start/restart interlock (RES), selectable. Plus all functions and modules of the used safety PLC.	Diagnostic data transfer via PROFIBUS DP. Plus all functions and modules of the used safety PLC.
Features		
	Integrated PROFIsafe connection unit with PROFIsafe version V2. Fast real-time transfer of safe cyclical data. Acyclic DP-V1 services for online diagnostics and measurement value logging. Automatic parameter download and verification when replacing a device with proxy function block. Direct access via PROFIBUS DP or infrared interface for on-site configuration and diagnostics. Tool Calling Interface (TCI) support.	Integrated PROFIsafe connection unit with PROFIsafe version V2. Fast real-time transfer of safe cyclical data. Acyclic DP-V1 services for online diagnostics and measurement value logging. Automatic parameter download and verification when replacing a device with proxy function block. Integrated interface for local control and status signals saves on additional bus nodes. Tool Calling Interface (TCI) support.

Safety Switches, Safety Locking Devices and Safety Command 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	Metal / IP 67
Actuator	Series (S20: AC-ANxx, S200: AC-AHxx), external: straight, angular, resilient, alignable	Plunger or roller with lever, mounted
Actuation	1 × above, 4 × side (90°)	1 × above, 4 × side (90°), 360°, switching direction left-right one side, both sides
Locking type, -force		
Connection technology	M20 × 1.5 cable entry (S20: optional 3-way)	M20 × 1.5 cable entry (3-way)
Certifications	CE, cULus	CE, cULus
Functions		
	Integration in control circuits up to category 4 in accordance with EN ISO 13849 and EN 954-1	Integration in control circuits up to category 4 in accordance with EN ISO 13849 and EN 954-1, 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. Roll actuator extremely long-life/ robust due to special treatment.

S400
Safety Hinge Switches

Locking device without guard interlocking in acc. with EN 1088

Metal / IP 67

Safety Switch in hinge, internal, encapsulated

Actuation angle 180°

Cable or M12 plug

CE TÜV cULus

Integration in control circuits up to category 4 in accordance with EN ISO 13849 and EN 954-1, 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 conditions.

Extremely manipulation-safe with covered screws (unobtrusive sturdy design with rear-side mounting).

S410 model with wider fork dimensions for special materials and greater profile thicknesses.

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 to 20 s), max. 1000 N

Cable entry M20 × 1.5

CE TÜV cULus

Integration in control circuits up to category 4 in accordance with EN ISO 13849 and EN 954-1, 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.

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)

M20 × 1.5 cable entry (3-way)

CE TÜV cULus

Integration in control circuits up to category 4 in accordance with EN ISO 13849 and EN 954-1, 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).

ERS200
Safety Command Device

E-STOP control device in accordance with EN 60947-5-5

Metal, IP 67

E-STOP Rope Switch, internal

Via rope (pull: 83 N, slacken: 63 N, pull on forced separation: 90 N)

M20 × 1.5 cable entry (3-way)

CE TÜV cULus

Integration in control circuits up to category 4 in accordance with EN ISO 13849 and EN 954-1, position-independent E-STOP command input, reset function (reset button with indicator), rope head with alignment indicator

Machine is stopped by pulling the rope or on rope breakage.

Simple setup through switching point indicator.

Easy integration with 3 cable approach directions.

Clicks in on both sides with friction-locking contacts.

Compact metal housing.

Safety Relays

Specifications	MSI-T Safety monitoring devices for type 2 sensors	MSI-RM2 Electro-mechanical relays
		
Type in accordance with IEC/EN 61496-1 (Annex A)	Type 2	Depending on the upstream AOPD
SIL in accordance with IEC 61508 and IEC/EN 62061 (SILCL)		Depending on the upstream AOPD
Performance Level (PL) in accordance with EN ISO 13849-1	PL d	Depending on the upstream AOPD
Category in accordance with EN ISO 13849 and EN 954-1	2	Up to 4 (depending on the category of the upstream protective device)
Stop category in accordance with IEC/EN 60204-1	0 (MSI-TR1, MSI-TR2) 1 (MSI-TS)	0
Signal output	2 transistor outputs	Relay output (n.c.)
Response time	< 20 ms	10 ms
Safety-related switching outputs (OSSD)	2 relay outputs (n.o.)	2 relay outputs (changeover)
Secondary switching device (SSD)		
Dimensions, W × H × D	22.5 × 99 × 113.6 mm	17.5 × 99 × 113.6 mm
Certifications	CE	CE c UL us
Functions		
	Safety monitoring device for periodic testing of type 2 sensors. Multiple monitoring of type 2 sensors in daisy chain connection. Start/restart interlock (RES), optionally with/without. Static contactor monitoring (EDM), with/without optional. Signal outputs “Safety on” and “Error”.	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
Features		
	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.	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.

* only MSI-m(x)E/R(x)

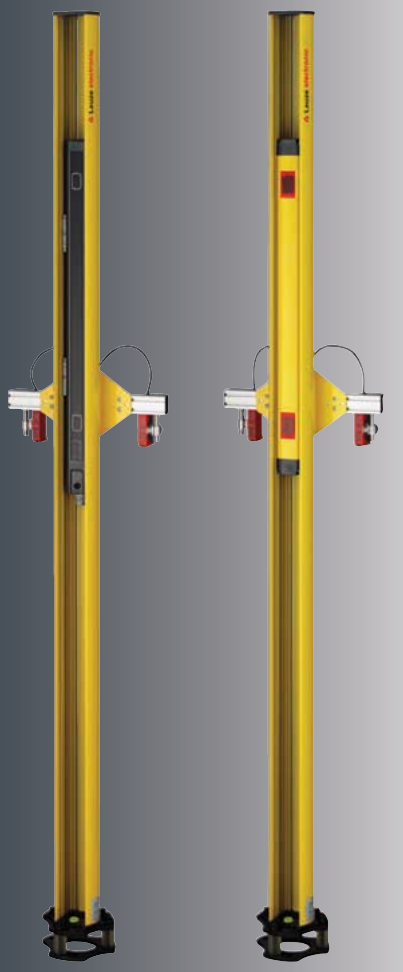
MSI-2H Electro-mechanical relays	MSI-SR4 Electro-mechanical relays	MSI-SR5 Electro-mechanical relays	MSI-s(x), MSI-i(x), MSI-m(x), MSI-m(x)E/R(x) Configurable relays
			
III C, in accordance with EN 574	Type 4	Type 4	Type 4
–	SIL 3	SIL 3	SIL 3
PL e	PL e	PL e	PL e
Up to 4 (depending on the category of the upstream protective device)	Up to 4 (depending on the category of the upstream protective device)	Up to 4 (depending on the category of the upstream protective device)	Up to 4 (depending on the category of the upstream protective device)
0	0	0	0
Relay output (n.c.)	Relay output (n.c.)	Relay output (n.c.)	2 or 4 transistor outputs
20 ms	10 ms	10 ms	22 to 64 ms depending on safety sensor
2 relay outputs (n.o.)	3 relay outputs (n.o.)	2 relay outputs (n.o.)	2 or 3 relay outputs (2 make-contacts, 1 break-contact for x-variants) Relay output (n.o.)
22.5 × 99 × 113.6 mm	22.5 × 99 × 113.6 mm	22.5 × 99 × 113.6 mm	35/52.5/70 × 99 × 113.6 mm
CE	CE UL TÜV	CE	CE SP* UL*
Two-hand control unit acc. to EN 574, type III C. Controlled start by checking the feedback circuit and button contacts. Automatic start/restart, optionally with/ without start/restart interlock (RES). Static contactor monitoring (EDM). Simultaneous monitoring of the two-hand buttons. Cross circuit monitoring	Sequential circuit for type 4 protective sensors. Two-channel E-STOP circuit. Safety guard monitoring. Automatic start/restart, optionally with/without start/restart interlock (RES). Static contactor monitoring (EDM). Cross circuit monitoring	Sequential circuit for type 4 protective sensors. Two-channel E-STOP circuit. Safety guard monitoring. Evaluation of 2 different sensors, optionally with/without start/restart interlock (RES). Static contactor monitoring (EDM). Cross circuit monitoring	Safety interface for connecting 1 or 2 type 4/type 3 AOPDs or 2 or 4 type 2 AOPDs and/or safety switches, light curtain cycle control and rear area monitoring e.g. on press brakes (x-variants) as well as muting system solution for 2 AOPDs with E-STOP or moveable guard monitoring (x-variants). Optionally with/without start/restart interlock (RES). Static or dynamic contactor monitoring (EDM). Inputs with cross circuit monitoring
Two-channel control with cross circuit monitoring. Simultaneity monitoring, 0.5 s. 2 release circuits, 1 NC contact as signal circuit. Contact multiplication. Potential-free safety-related switching outputs. LED displays: K1, K2, supply voltage.	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.	Very short response time. Monitored reset button. Potential-free safety-related switching outputs. LED displays: K1, K2, supply voltage, RES.	Easy function selection via DIP switch. PC diagnostics interface. Relay switching cycle counting for preventive maintenance. Additional signal outputs. LED indicators for all important functions and operating states.

Safety Relays, programmable

Specifications	MSI 100 Base module	MSI 200 Base module
		
SIL in accordance with IEC 61508 and IEC/EN 62061 (SILCL)	3	3
Performance Level (PL) in accordance with EN ISO 13849-1	e	e
Category in accordance with EN ISO 13849	4	4
Safe inputs	20 (up to SIL 3)	20 (up to SIL 3)
Signal outputs	4	4
Reaction time	Shorter than 30 ms	Shorter than 30 ms
Safety-related switching outputs (OSSDs)	4	4
Dimensions	67.8 mm × 114.3 mm × 106.1 mm	67.8 mm × 114.3 mm × 106.1 mm
Connection technology	Plug in screw terminals, spring-cage terminals	Plug in screw terminals, spring-cage terminals
Interfaces	USB, TBUS DIN rail for bus coupler	USB, TBUS DIN rails for extension modules and bus couplers
Certifications	CE c UL us	CE c UL us
Functions		
	Freely configurable base module, monitoring of all safety-oriented functions in machines and systems, diagnostic data transfer via MSI-FB fieldbus module (option)	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)
Features		
	20 safe inputs, 4 safe switching outputs (OSSDs). 4 signal outputs, 2 clock switching outputs, 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-cage terminals. Commissioning set for quickly getting up to speed.	20 safe inputs, 4 safe switching outputs (OSSDs). Extension modules with additional input/output modules. 4 signal outputs, 2 clock switching outputs, 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-cage terminals. Commissioning set for quickly getting up to speed.

	MSI-EM Extension module	**MSI-FB-PB** Fieldbus module	**MSI-SWC-1** Start-up set
			
Specifications			
SIL in accordance with IEC 61508 and IEC/EN 62061 (SILCL)			
Performance Level (PL) in accordance with EN ISO 13849-1			
Category in accordance with EN ISO 13849	4		
Safe inputs	12, (4 of which are configurable as input or output)	4 (not safety-oriented)	
Signal outputs			
Reaction time			
Safety-related switching outputs (OSSDs)	4 (if using the configurable inputs/ outputs as outputs)	4 (not safety-oriented)	
Dimensions	22.5 mm × 113.7 mm × 106.1 mm	22.6 mm × 113.6 mm × 108.1 mm	
Connection technology	Plug in screw terminals, spring-cage terminals	Plug-in screw terminals	
Interfaces	TBUS DIN rails for extension modules and bus coupler	Interface 1: MSI interface, TBUS Interface 2: PROFUBUS-DP, D-SUB-9	
Certifications	CE c UL us	CE c UL us	
Functions			
	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)	Fieldbus module for connecting the MSI 100 and MSI 200 program-mable Safety Controllers to PROFIBUS	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.
Features			
	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).	Certified in accordance with DPV1 specification (EN 50170). Simple connection via DIN rail connector. Compact housing width 22 mm.	MSIsafesoft configuration software. USB cable for connecting the Safety Controller to a PC (not included in delivery). Quick Start Guide for a quick introduction to the topic (“First Steps”).

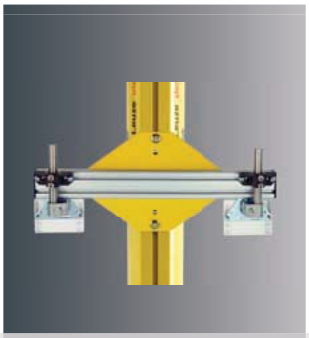
Safety Sensor Sets and Accessories



CPSET
Safety Sensor Sets

CPSET is a Safety Sensor Set with integrated muting and various muting modes. All necessary components are already pre-assembled and are mechanically and electrically harmonized with one another. The sets can be anchored permanently as freestanding devices using special foot elements. The factory-set parametering is already adjusted to the respective application instance and reduces input at the setup site to a minimum. For sensor specifications, see COMPACT*plus* Multiple Light Beam Safety Devices or CPRT-m.

MMS
Muting Mounting Systems



Installation and initial operation times can be significantly reduced with the correct accessories. The MMS muting mounting systems are ex-works fully preassembled mounting brackets for light barriers and reflectors in 2- and 4-sensor muting applications. In combination with the DC or UDC device columns and the Multiple Light Beam Safety Devices of the MLD and COMPACT*plus* series, complete muting solutions can be implemented which are optimally matched to one another.

Features

- Integrated muting function enables muting with optical sensors or induction loops.
- Plug & Play muting complete solutions with plug-in connections
- Efficient setup – quick start-up.
- Various sets with Multiple Light Beam Safety Devices or Muting Transceivers (premounted in the device column).
- Premounted muting components and display and control unit with start button for unlocking start/restart interlock.

- Mounting system for muting sensors suitable for DC/UDC device columns.
- Sensor support is available in various standard geometries for 2- and 4-sensor muting.
- Flexible horizontal and vertical positioning of the sensors and reflectors is possible.
- 12 mm V2A rod mounting system for fixing muting sensors.
- Ex-works mounted reflectors included in delivery.

Set-AC
Muting Sensor Sets

Muting sensor sets for MLD multiple light beam safety devices facilitate the construction of muting solutions. The sets with pre-mounted and aligned muting sensors including wiring are simply screwed onto the sides of the MLD sensors and the cables are connected to the local connection box. The wiring in the switch cabinet makes six possible muting modes available (parallel, sequential, partial).

Set variants for 2 and 4 sensor muting (parallel, sequential).

Pre-mounted and aligned muting sensors with complete configuration.

Ready-to-use design facilitates mounting.

Immediately ready for operation through optimal mechanical and electrical calibration.

Innovative design for modern machine and system construction.

UDC, DC
Device columns

UMC, MC
Deflecting mirror columns

The UDC/DC device columns enable the freestanding mounting of Leuze electronic Multiple Light Beam Safety Devices and Safety Light Curtains on the floor.

The UMC/MC-1000, -1300, -1600 and -1900 deflecting mirror columns have a continuous mirror for beam deflection. The UMC/MC-1002, -1303 and -1304 deflection mirror columns are equipped with 2, 3 or 4 individually adjustable mirrors that deflect the light beams of Multiple Light Beam Safety Devices.

Easy mounting, quick vertical and axial alignment in just a few steps.

Robust profile construction in high quality design.

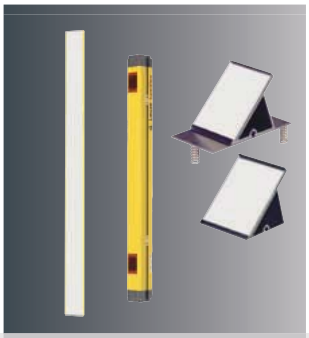
Complete mounting kit for floor fixing included with delivery (UDC, UMC).

Automatic resetting after mechanical impacts with special spring elements (UDC, UMC).

Simple vertical height adjustment of the built-in devices by means of 2 supplied mounting brackets (UDC, DC).

UMC, MC: Continuous mirror surface for beam deflecting of Safety Light Curtains. Or replacement and separately alignable individual mirrors, light beam distance preset in acc. with EN 999.

UM60, US, CPM
Deflection mirror



The combination of Safety Light Curtains and UM60 deflection mirrors enables cost-effective, multiple-side danger area guarding, e.g. at manual feed-in areas on machinery.

The US series individual deflection mirrors are specially designed for 90° beam deflections of single beam safety devices. The CPM deflection mirror systems are used for the 2 × 90° beam deflection of 2- and 4-beam Leuze transceivers.

UM

Continuous mirror surface for beam deflecting of Safety Light Curtains.

Robust aluminum profile housing.

Slim and flat construction, 60 mm wide.

Easy mounting, fast alignment with mounting angles (in the preferred angles, 0°, 45° and 90°, as well as swiveling).

US

Glass mirror with precise alignment option in all 3 axes.

Mirror can rotate by 90° on mounting plate.

CPM

Easy alignment with integrated, optically aligned mirror system.

Closed profile housing prevents soiling and damage to the mirror.

General Information Accessories

LA laser alignment aids are mounted directly on the sensor housing or on the device column with no additional wiring. They use a red-light laser (battery operated, laser class 2) to visibly mark the point of incidence of the sensor beams, thereby ensuring simple and convenient alignment.

PS protective screens, which can be mounted directly on the device, prevent damage to the front screen of the device, e.g by welding sparks.

The **display and control units AC** are used with access guarding with or without muting. As a fixed component of some CPSET Safety Sensor Sets, they make a significant contribution to being able to quickly set up muting solutions.

PS

Protective window material: PMMA, clear.

Effective protection, easy to install, robust.

Various window lengths of 300 mm to 1800 mm.

AC

Plastic box with reset button for start/restart interlock and for muting restart/override.

All devices with additional LED indicator (except AC-BB-RES).

Simple mounting on hard guard.

Connection to COMPACT*plus* sensors as well as to MSI-m Safety Relays (model AC-ABF-SL1).

Optoelectronic Sensors

Cubic Series
Cylindrical Sensors, Mini Sensors, Fiber Optic Amplifiers
Measuring Sensors
Special Sensors
Light Curtains
Forked Sensors
Double Sheet Monitoring, Splice Detection
Inductive Switches
Accessories

Identification Systems
Data Transmission Systems
Distance Measurement

Bar Code Readers
RF-IDent-Systems
Modular Interfacing Units
Industrial Image Processing Systems
Optical Data Transmission Systems
Optical Distance Measurement/Positioning
Mobile Code Readers

Safety Sensors
Safety Systems
Safety Services

Safety Laser Scanners
Safety Light Curtains
Transceivers and Multiple Light Beam Safety Devices
Single Light Beam Safety Devices
AS-i-Safety Product Range
Safety Sensor Technology for PROFIBUS DP
Safety Switches, Safety Locking Devices, Safety Command Devices
Safety Relays
Sensor Accessories and Signal Devices
Safety Engineering Software
Machine Safety Services

MSI 100/200
Safety Controller

North American Headquarters

Leuze electronic, Inc.
55395 Lyon Industrial Drive
New Hudson, MI 48165
Phone +1 248 486-4466
Fax +1 248 486-6699
info@leuzeusa.com
www.leuzeusa.com

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