

SMART
SENSOR
BUSINESS



 **Leuze electronic**

the **sensor** people



Sensor solutions for

LABORATORY AUTOMATION

WE ARE YOUR **SENSOR SYSTEM PARTNER** FOR **LAB AUTOMATION**



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AUTOMATION MODULES

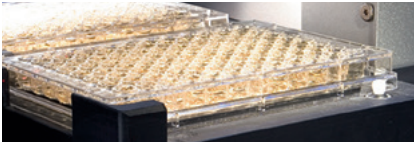
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SMART
SENSOR
BUSINESS

SMART IS
TO THINK **EASY**
TO SHARE **EXPERIENCE**
TO BE **CLOSE**
TO CREATE **FUTURE**

More than 50 years of experience made Leuze electronic a real expert in innovative and efficient sensor solutions for industrial automation. With our wide sales- and service-network, our knowledgeable consulting and our reliable customer service we are always close to you – worldwide.



www.smart-sensor-business.com



Felix Beintner,
Order Management
International



EASY

Technology must serve people. Complex and technically sophisticated products should be as **easy** and intuitive to use as possible by our customers. This is both an aspiration and a development maxim – to the benefit of our customers.



EXPERI- ENCE

More than 50 years of **experience** and a close relationship with our customers have made us true experts in specific industries. This is how we develop individual sensor solutions for and with our customers.



PROXIM- ITY

Think global, act local – this characterizes the sensor people. **Customer proximity** means not only being there for our customers 24/7, providing them with sound advice, and supporting them with an extensive range of services, but also responding to their individual desires and needs worldwide.



FUTURE

Sensors are the basis for all automation and for Industry 4.0 or IIoT. Together with our customers and strategic partners we are working on **future-oriented technologies** in order to make data and information available worldwide.

SMART IS TO CREATE **FUTURE**

Intelligent sensors provide the foundation for Industry 4.0 / IIoT. We have a very clear idea of what the future will look like, and we develop innovative sensor concepts for it.

Together with international technology partners such as Microsoft and the OPC Foundation, we design the technological standards of tomorrow and optimally prepare our products for the challenges of Industry 4.0 / IIoT. Our sensors already transmit their data via OPC UA to all levels of the automation pyramid or directly to the cloud, for example our BCL300i bar code readers.

There, the data can be used for further analysis and services provided by the Microsoft Azure Cloud services. Integrated interfaces such as IO-Link, PROFINET, EtherNet-IP, and EtherCAT are further driving forward the networking of sensors, and they make extensive machine data accessible and available globally through integration in the cloud.

Management level – ERP

Process control level – MES/SCADA

Control level – PLC

Field level



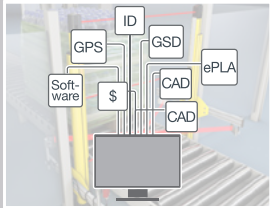
EtherNet/IP™
conformance tested

EtherCAT®

Sensor / Actuator

 **IO-Link**

 Microsoft Azure



Asset Management



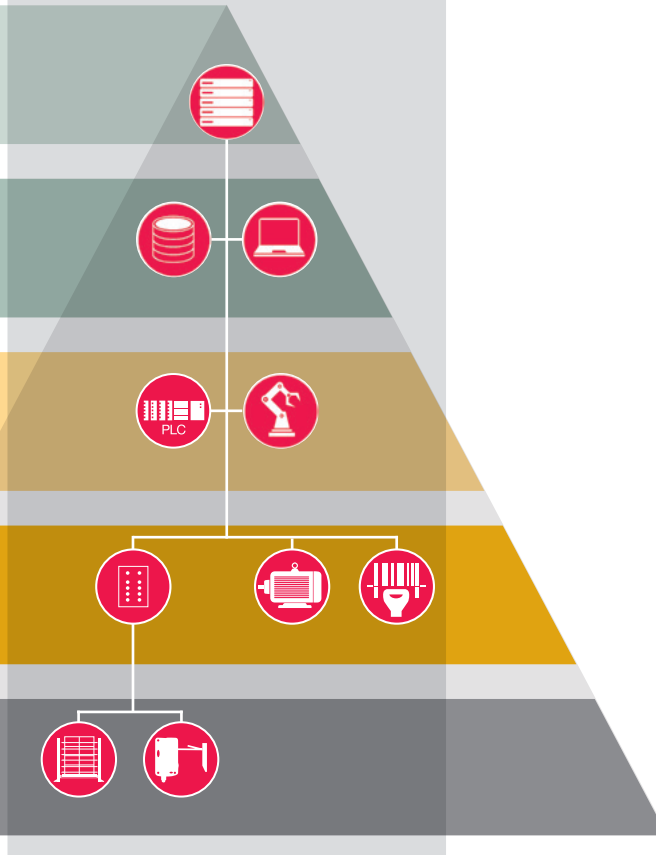
Condition Monitoring



Big Data



 **OPC UA**





STANDARDS ARE SET EXTREMELY HIGH IN THE LABORATORY

There are three things that are expected of sensor solutions in lab automation: reliability, safety and user-friendliness.

“In the lab, people's lives are often at stake – that's something we always need to be aware of!”

It is not without reason that the safety requirements for in-vitro diagnostics are especially high: this lab work involves human samples. Extremely strict specifications apply here and there is no tolerance for error. This also places high demands on the used camera-based 1D- and 2D-code readers of the DCR 50 and DCR 200i series, for example. With their sophisticated design and special optics they combine the factors of speed, reliability, safety and a user-friendliness that helps to pre-emptively minimize the risk of errors.

Dr. Lutz Werner,
Industry Manager Laboratory Automation



Reliable change management

For your safety, we will make no unannounced changes to either hardware or software. Our customer-specific model numbers make this possible.



Decades of experience

Thanks to our decades of experience, we are a reliable partner to our customers in all stages of development and provide advice even during the design phase of an instrument.



Extensive certifications

We are certified on the basis of ISO 13485:2016 and are, thus, the professional and reliable supplier for the demanding tasks in medical technology.



Intercontinental networking

Our experts for lab automation are represented as a team in 6 countries (CH/CN/D/USA/FR/IT) and, as a result, can directly address the local needs of our customers.



SENSOR SOLUTIONS FOR PRE-ANALYTIC INSTRUMENTS

Our sensor solutions increase process reliability even during the automated delivery and preparation and processing of the samples.

To ensure the sample integrity as well as for hygiene and safety reasons, automatic sample distributors are used increasingly in the preparation of the analyses. These ensure reliable and fast preparation and assignment of the chaotically delivered samples independent of the number of samples and, above all, avoid cross contamination.

Thanks to high function reserves, our sensor solutions guarantee maximum system availability during analysis preparation. High-performance bar code readers, for example, are used to identify the information on the sample tubes and prepare it for the automatic analyzers. Or, we use optical sensors within the machines to ensure that the seals were properly removed and that the samples are reliably prepared for the next steps.

**1 Presence control**

2/3 series

2 1D-code identification

BCL 8

3 Monitoring the closing state of the flap

MC 3x/RD 800

4 Cap detection

2/3 series

5 Identification of samples

CR 50/55

Tube Sorters

Presence control



**Optical sensors
2/3 series**

- Indicator LEDs with all-round visibility
- Integrated metal attachment sleeves
- Extensive teach functions
- Maximum function reserve

2 series

- Degree of protection IP 67
- Miniature construction for limited mounting spaces

3 series

- Protection against manipulation by means of a lockable button
- M8 metal connector

Tube Sorters

1D-code identification



**Bar code reader
BCL 8**

- Consistently high scanning rate (up to 600 scans/s) facilitates reliable reading, even with manual insertion
- Robust IP 67 design with metal housing and glass front
- Various optics models for codes from 127 – 500 µm

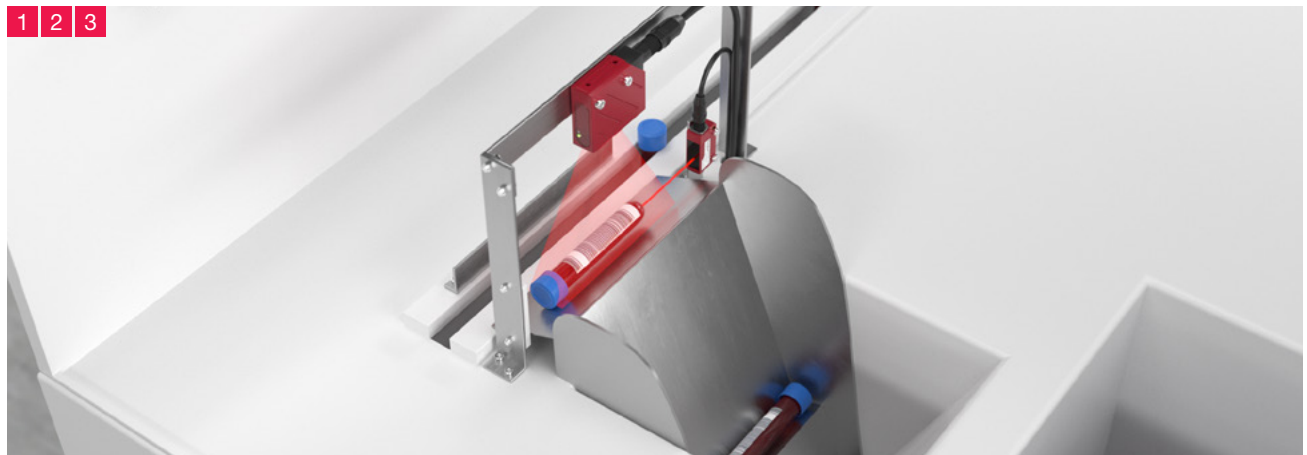
Tube Sorters

Monitoring the closing state of the flap



**Safety proximity sensors – magnetically coded / with transponder
MC 3x/RD 800**

- For integration in control circuits up to category 4 in accordance with EN ISO 13849-1
- Magnetically coded versions with extremely sturdy, high-strength plastic housing
- Versions with transponders offer a high level of protection against tampering
- Standard and teachable models available



De-Capper

Cap detection



Optical sensors

2/3 series

- Indicator LEDs with all-round visibility
- Integrated metal attachment sleeves
- Extensive teach functions
- Maximum function reserve

2 series

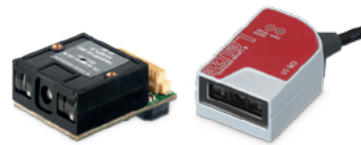
- Degree of protection IP 67
- Miniature construction for limited mounting spaces

3 series

- Protection against manipulation by means of a lockable button
- M8 metal connector

De-Capper

Identification of samples

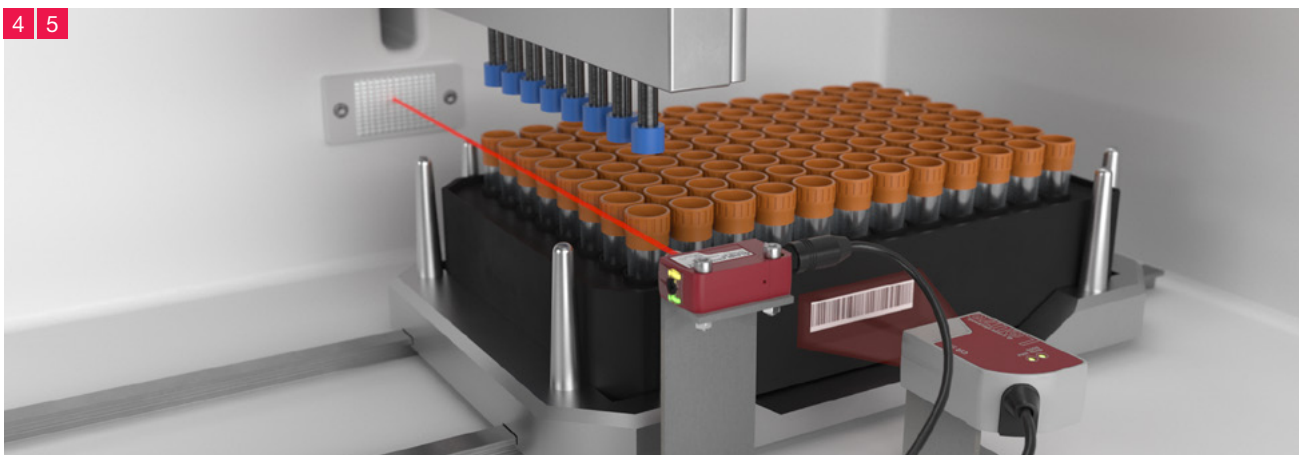


Bar code reader

CR 50 / 55

- Miniature scanner in two mounting variants:
 - As open module for integration in instrument parts, e.g., via the 12-pin connector directly on the circuit board
 - In metal housing with optics cover and cable connection for installation at any location
- Ready to read all common codes, especially in presentation mode
- Module size from 127 – 500 µm
- Integrated RS 232 and USB interface
- Simple configuration with the “Leuze Sensor Studio” PC software tool

4 | 5



SENSOR SOLUTIONS FOR IVD ANALYZERS

Within automatic analyzers, sensors safeguard processes and reliably detect important process information.

Modern analysis procedures for examining body fluids or tissue are now highly automated, thereby allowing processes to be performed very efficiently and safely. Zero tolerance is essential here both during the handling as well as during the assignment of samples to the patient. The sensors that are used must, therefore, reliably master high throughputs and be extremely compact so as to minimize space requirements in the systems. Our bar code readers for tubes, for example, can have a reading field height of 80 mm to be able to reliably detect at just a short distance. Depending on where the automatic machine is used and the volume of sample that is to be analyzed, carousel, single- or multi-lane, or point-of-care solutions are used.

Maximum reliability is the most important property of our sensor solutions for laboratory analysis. Our high-performance code readers for 1D- or 2D-codes DCR 50 and DCR 80 serve as, e.g., elementary function units for these automatic machines, as they must detect the samples with absolute certainty to allow the analysis results to be assigned error-free. Capacitive sensors are used in automatic analyzers as an early warning system to safeguard the processes and reliably report the unplanned release of sample liquids. Our CSL light curtain safeguards the interior of the analyzers, thereby preventing, e.g., tampering with samples.

**1 1D-code identification**

CR 50/55 or CR 100

2 Monitoring of doors and flaps

L 100/MC 3x

3 Fill level monitoringDMU or LCS or LS 55 H₂O**4 Stack-height monitoring**

ODSL 9

5 Presence control

2/3 series

**6 1D-code identification
of up to 15 rack rows**

BCL 148

**7 1D-code identification
of up to 6 rack rows**

BCL 300i

8 Safeguarding the process

CSL 505

9 Leak monitoring

LCS

10 Container fill level monitoring

K-L-50ML-20/LV 463 or RKU 420

11 1D- and 2D-identification

DCR 80/85

12 1D- and 2D-code identification

DCR 40

Single-Lane

1D-code identification



**Bar code reader
CR 50/55**

- Miniature scanner in two mounting variants:
 - As open module for integration in instrument parts, e.g., via the 12-pin connector directly on the circuit board
 - In metal housing with optics cover and cable connection for installation at any location
- Ready to read all common codes, especially in presentation mode
- Module size from 127 – 500 µm
- Integrated RS 232 and USB interface

Single-Lane

1D-code identification



**Bar code reader
CR 100**

- High-performance CCD scanner with front or lateral beam exit
- Compact design for simple integration, even in constrained spaces
- Scanning rate of 700 scans/s facilitates reliable reading, even while in motion
- Reading of all common codes of modulus sizes 150 – 500 µm at a reading field height of > 80 mm from very short distances
- Robust metal housing with cable connection

Single-Lane

Monitoring of doors and flaps



**Safety locking devices /
safety proximity sensors
L 100/MC 3x**

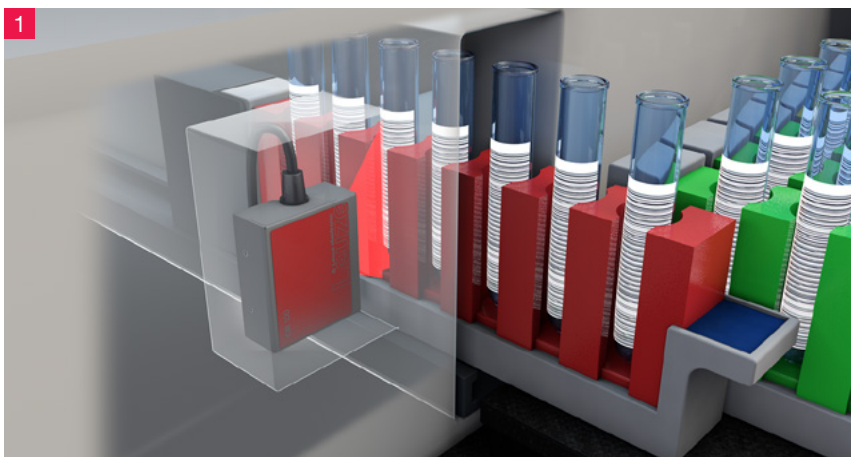
- For integration in control circuits up to category 4 in accordance with EN ISO 13849-1

Safety locking devices

- Standard construction in models with electromagnetic or spring force-actuated interlocking type and auxiliary release function

Safety proximity sensors

- Monitoring of the closing state of doors or hoods



Single-Lane

Fill level monitoring



Ultrasonic sensors
DMU

- Detection of samples
- Extensive portfolio with designs from Ø 4 mm to M30
- Compact cubic housing (5 × 5 mm, 8 × 8 mm) for space-saving installation
- Scanning ranges from 1.5 to 40 mm offer reliable detection on metal objects

Single-Lane

Fill level monitoring



Capacitive sensors /
Optical sensors
LCS/LS 55 H₂O

- Throughbeam principle for reliable detection and high function reserve
- Opaque containers and films are transilluminated
- Rugged WASH-DOWN stainless steel housing up to IP 67 / IP 69K

Single-Lane

Stack-height monitoring



Optical distance sensors
ODSL 9

- Continual distance information on stack measurement range 50 – 100 mm / 50 – 650 mm
- Resolution 0.01 to 0.1 mm
- Configuration and measurement value display via LC display and PC
- Integrated analog output (current / voltage), RS485, RS232 and dual-channel IO-Link interface
- Laser class 1 and 2



Multi-Lane

Presence control



**Optical sensors
2/3 series**

- Indicator LEDs with all-round visibility
- Integrated metal attachment sleeves
- Extensive teach functions
- Maximum function reserve

2 series

- Degree of protection IP 67
- Miniature construction for limited mounting spaces

3 series

- Protection against manipulation by means of a lockable button
- M8 metal connector

Multi-Lane

1D-code identification of up to 15 rack rows



**Bar code reader
BCL 20**

- High-performance laser scanner with different optics models
- High scanning rate of up to 1,000 scans/s for the fastest movements, such as manual insertion and in conveyor systems for samples
- N-optics for high-resolution codes with module size from 150 µm
- Simple configuration of the desired configuration via online commands or with permanent settings in the firmware

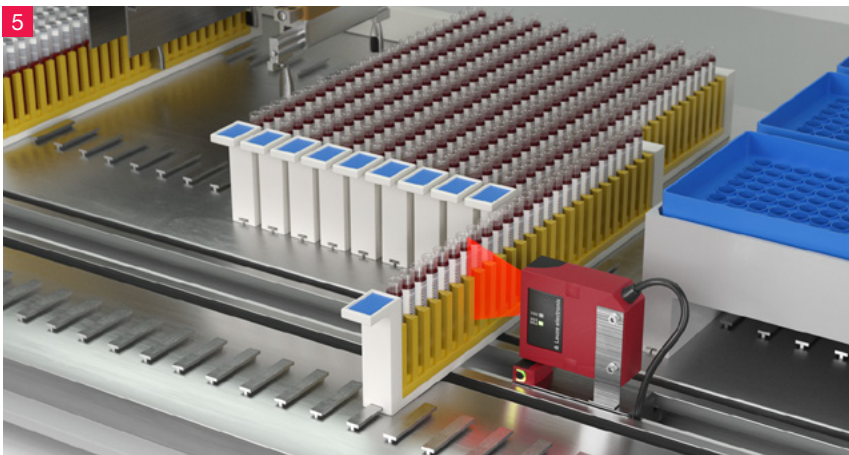
Multi-Lane

1D-code identification of up to 15 rack rows



**Bar code reader
BCL 148**

- Scanner with focus adjustment for sample codes and reagents
- Reading field depth of up to 250 mm
- Resolutions of 127 µm codes in a broad area over multiple rows of racks are possible
- Scanning rate of maximum 750 scans/s also enables fast manual or automated rack insertion
- Either front or lateral beam exit
- Thanks to focus adjustment, even the first scan can be used to read the code, thereby allowing decoding to be verified multiple times



Multi-Lane

1D-code identification of up to 6 rack rows



**Bar code reader
BCL 300i**

- Reading distances 80 – 450 mm
- Modular connection technology by means of pluggable connection hoods with M12 connector, clamp connection or fixed connection cable
- High scanning rate of up to 1,000 scans/s for the fastest movements, such as manual insertion and in conveyor systems for samples
- Models: line scanners and deflecting mirrors
- Code reconstruction technology (CRT) for reliable identification of damaged codes
- Optional: display, heating models



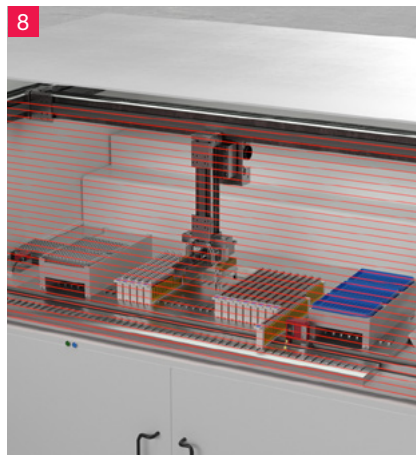
Multi-Lane

Safeguarding the process



**Measuring light curtain
CSL 505**

- Different measurement field lengths
- Selectable resolution
- M8 connector plug
- Slim housing
- Operating range up to 5 m
- Short cycle time
- Prefailure message (soiling)



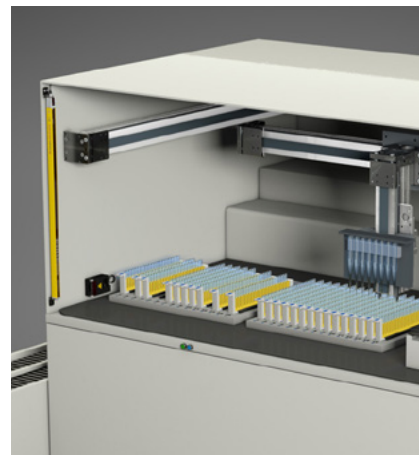
Multi-Lane

Point of operation guarding



**Safety light curtains
MLC 520S**

- Especially slim design with dimensions of 15 × 32 mm for installation in constrained spaces
- Can also be optimally adapted in height as there are no dead zones at the ends and thanks to finely graduated length selection in 30 mm grid
- Configuration by means of wiring for fast and easy installation as well as replacement should servicing be necessary



Multi-Lane

Leak monitoring



**Capacitive sensors
LCS**

- Measurement through non-metallic outer packaging / container walls possible (up to 4 mm thick)
- Wide product range available with M12, M18, M30 and different cubic versions
- Switching distances between 1 and 30 mm
- Optionally available with IO-Link

Multi-Lane

Container fill level monitoring



**Plastic fiber optics /
Amplifiers
KF-L-50ML-20 / LV 463**

- Fiber optics**
- Large selection, also with extruded bending protection or lateral optics
 - Cross-section converter
 - Attachment lens for greater ranges or higher precision
- Amplifiers**
- Double display to show signals and switching thresholds in parallel
 - 3 different teach modes for fast sensor setting
 - Internal multiplex operation of up to six units for preventing mutual interference

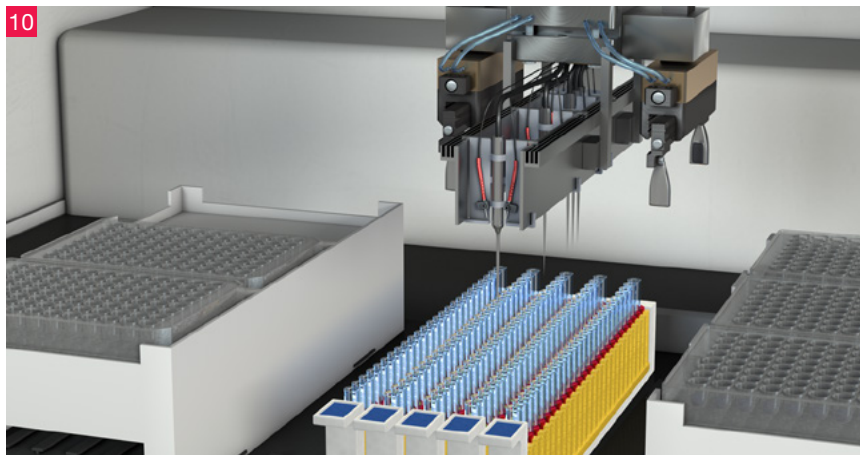
Multi-Lane

Container fill level monitoring



**Ultrasonic sensors
RKU 420**

- Small ultrasonic sensor in plastic housing
- Degree of protection IP 67
- Various opening angles and sound cone geometries
- Switching behavior largely independent of surface properties
- Precise switching point adjustment through teach-in on the device and via a cable
- Protection against erroneous operation by automatically locking teach button



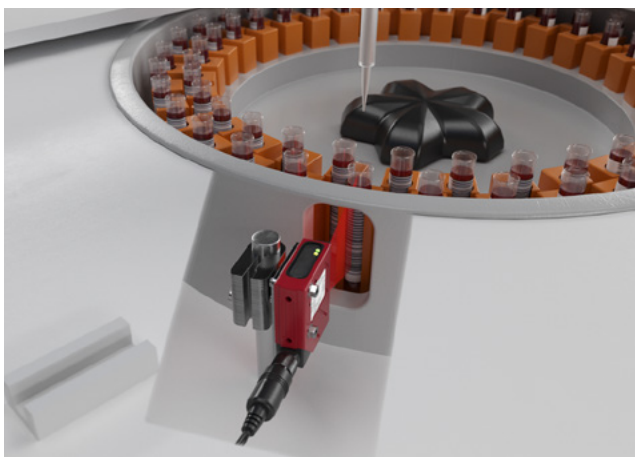
Carousels

1D-code identification



Bar code reader **BCL 8**

- Consistently high scanning rate (up to 600 scans/s) facilitates reliable reading, even with manual insertion
- Robust IP 67 design with metal housing and glass front
- Various optics models for codes from 127 – 500 μm
- Extensive and adaptable firmware leaves nothing to be desired in the application



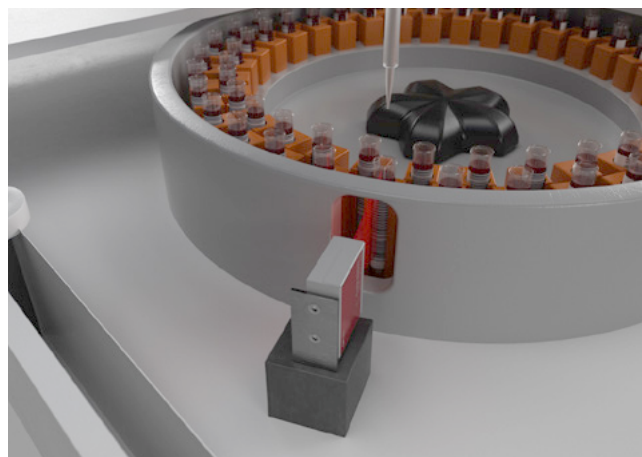
Carousels

1D-code identification



Bar code reader **CR 100**

- High-performance CCD scanner with front or lateral beam exit
- Compact design for simple integration, even in constrained spaces
- Scanning rate of 700 scans/s facilitates reliable reading, even while in motion
- Reading of all common codes of modulus sizes 150 – 500 μm at a reading field height of ≥ 80 mm
- Robust metal housing with cable connection
- Integrated RS232 interface, 1 input, 1 switching output
- Desired configuration can be easily configured via online commands
- Using adaptable firmware, customer-specific requirements can be quickly realized



Carousels

1D- and 2D-code identification

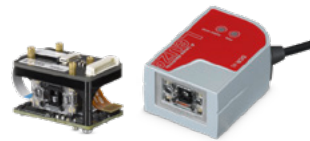


Code reader DCR 50

- CMOS Imager Scan Engine for
 - Integration in instruments
 - Direct mounting on the pipettor
- Special optics system for
 - Reading the smallest high-density codes
 - Detection of standard codes in a large reading field
- Excellent reading and decoding characteristics
- Ready to read all common 1D- and 2D-codes
- Configuration with the “Leuze Sensor Studio”

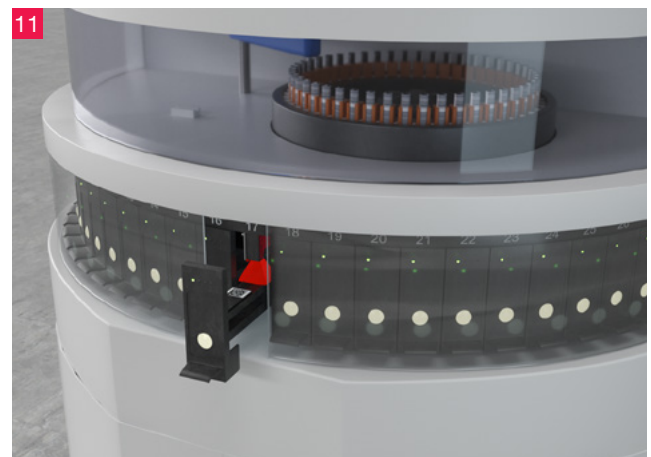
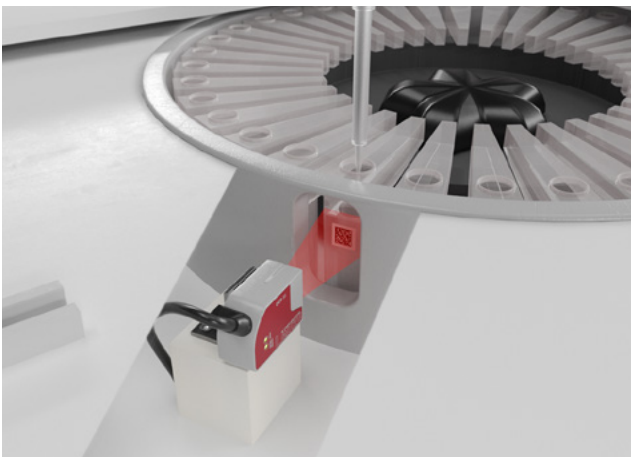
Carousels

1D- and 2D-code identification



Code reader DCR 80/85

- CMOS Imager Scan Engine or in the housing for
 - Integration in instruments
 - Direct mounting on the pipettor
 - Establishing contact on the circuit board via 12-pin connector
- Special optics system for
 - Reading the smallest high-density codes
 - Detection of standard codes over a large reading field
- Excellent reading and decoding characteristics
- Ready to read all common 1D- and 2D-codes
- Integrated RS232 interface
- Configuration with the “Leuze Sensor Studio”



Carousels

1D- and 2D-code identification



Code reader
DCR 200i

- Small camera-based code reader
- Decoding of 1D- and 2D-codes
- Maximum depth of field and reading distances from 40–360 mm
- High object speed and decoding performance of up to 6 m/s with 10 decodings
- Integrated RS232, RS422 and Ethernet interface

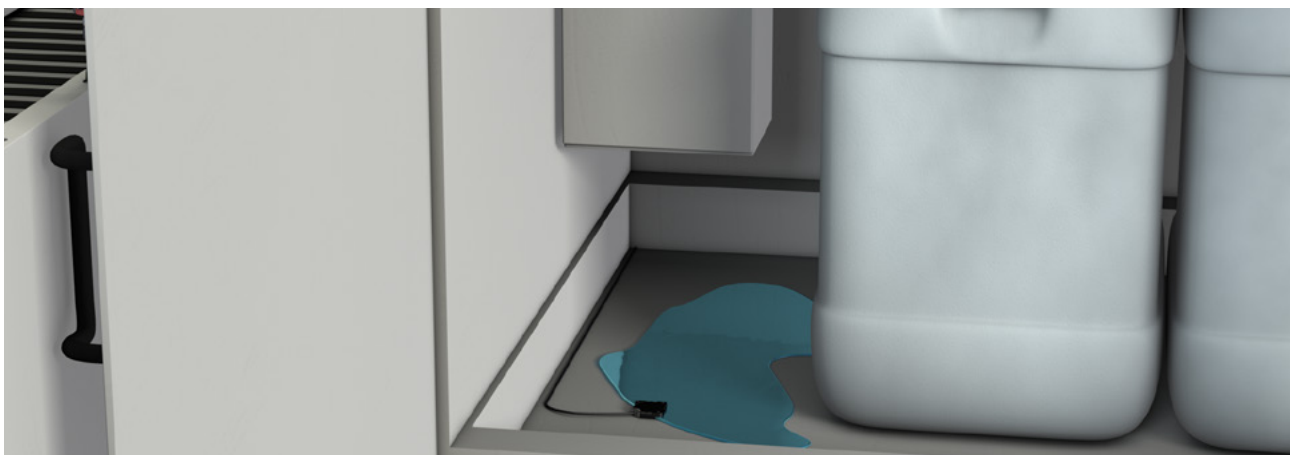
Carousels

Leak monitoring



Capacitive sensors
LCS

- Measurement through non-metallic outer packaging / container walls possible (up to 4 mm thick)
- Wide product range available with M12, M18, M30 and different cubic versions
- Switching distances between 1 and 30 mm
- Optional IO-Link interface



Point of Care Instruments
1D-code identification



Bar code reader
CR 50

- Miniature scanner in two mounting variants:
 - As open module for integration in instrument parts, e.g., via the 12-pin connector directly on the circuit board
 - In metal housing with optics cover and cable connection for installation at any location
- Ready to read all common codes
- Especially for reading in presentation mode
- Module size from 127 – 500 µm

Point of Care Instruments
1D- and 2D-code identification



Mobile code reader systems
IT 3820/IT 1452

- Built-in decoder
- LED display and acoustic signaler for successful reading
- Large read field for detecting linear bar codes and/or 2D-codes, even directly marked
- Ergonomic and robust housing
- Fast and reliable decoding, even of soiled codes
- Various optics are available for your applications

Point of Care Instruments
1D- and 2D-code identification



Code reader
DCR 40

- CMOS Imager Scan Engine for integration in instruments
- Special optics system for
 - Reading the smallest high-density codes
 - Detection of standard codes in a large reading field
- Excellent reading and decoding characteristics
- Ready to read all common 1D- and 2D-codes
- Configuration with the “Leuze Sensor Studio”
- Extremely small design



Point of Care Instruments

1D- and 2D-code identification



Code reader
DCR 50/55

- CMOS Imager Scan Engine or in the housing for
 - Integration in instruments
 - Direct mounting on the pipettor
 - For establishing contact on the circuit board via 12-pin connector
- Special optics system for
 - Reading the smallest high-density codes
 - Detection of standard codes in a large reading field
- Excellent reading and decoding characteristics
- Ready to read all common 1D- and 2D-codes
- Configuration with the “Leuze Sensor Studio”

Point of Care Instruments

1D- and 2D-code identification



Code reader
DCR 80

- CMOS Imager Scan Engine for integration in instruments
- Special optics system for
 - Reading the smallest high-density codes
 - Detection of standard codes over a large reading field
- Excellent reading and decoding characteristics
- Ready to read all common 1D- and 2D-codes
- Integrated RS232 interface
- Configuration with the “Leuze Sensor Studio”

12

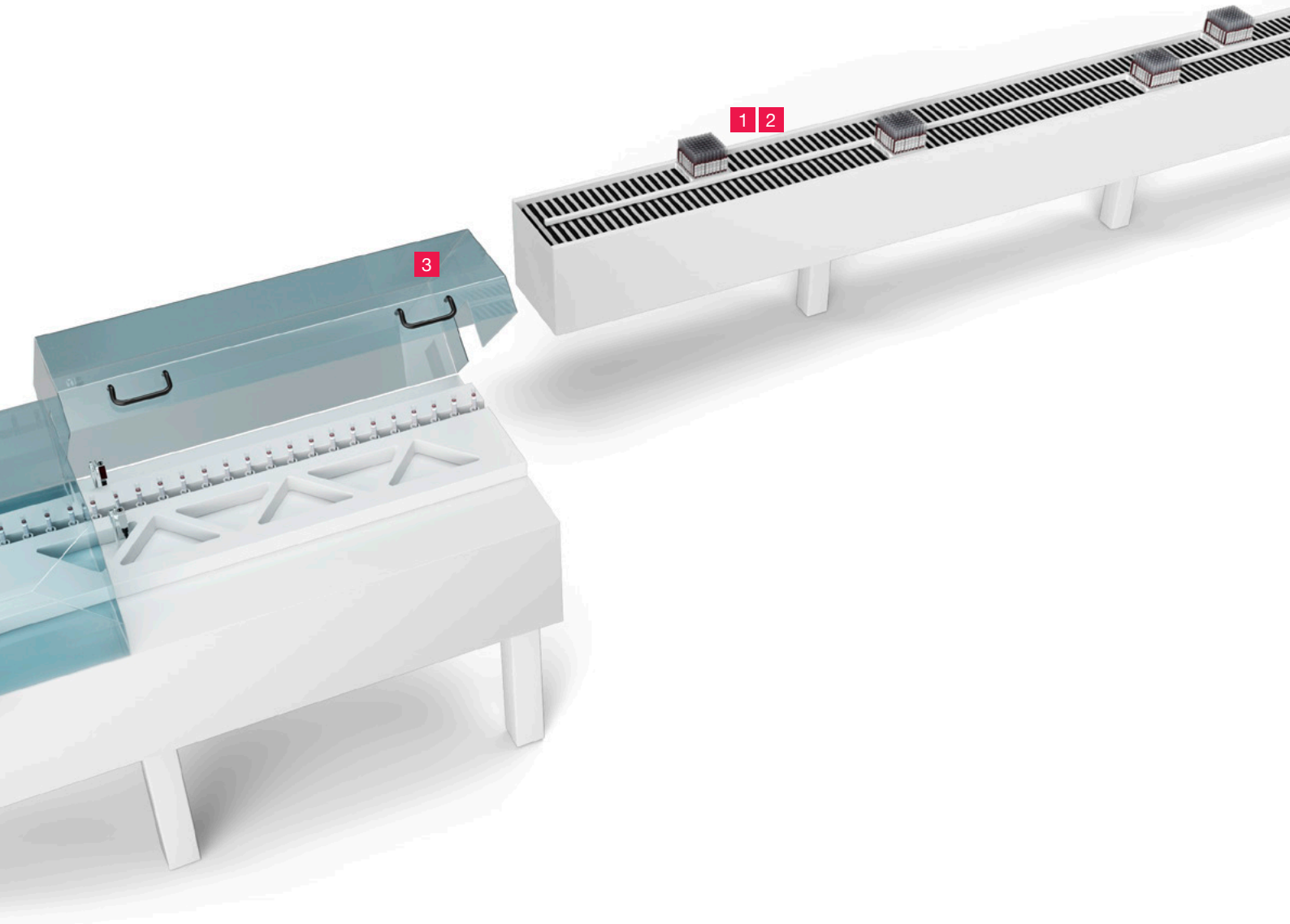


SENSOR SOLUTIONS FOR AUTOMATION MODULES

If samples are automatically transported between automatic analyzers, sensors safeguard the transport paths and reliably detect the sample codes.

For complex analyses, samples need to be transported between various machines. This networking of the analyzers is increasingly being performed with compact, mini conveying belts and handling robots. The individual parts must be moved quickly, safely and reliably here and, prior to the subsequent analysis steps, also be detected and assigned without error. Furthermore, gapless traceability of the sampling path must be ensured.

Sensors make sample transport more reliable and minimize the risk of standstills in the analyzers which could, among other things, jeopardize the sample integrity. Our compact, camera-based DCR 200i code reader enables, e.g., the fast detection of 1D- or 2D-codes even while in motion, guaranteeing fast sample transport. Along the transport route, safety proximity sensors such as the MC 300 or RD 800 monitor the closing state of the protection hoods and highly visible signal lamps indicate the process state.



1 Presence control
2 series

2 1D- and 2D-code identification
DCR 200i

3 Monitoring the closing state of the protection hood
MC 3x/RD 800

Transport and Distribution

Presence control



Optical sensor 2 series

- Indicator LEDs with all-round visibility
- Integrated metal attachment sleeves
- Extensive teach functions
- Maximum function reserve
- Degree of protection IP 67
- Miniature construction for limited mounting spaces

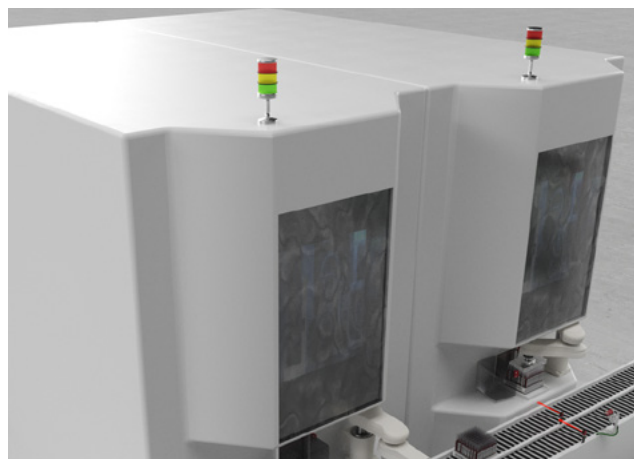
Transport and Distribution

Signaling of status information



Signaling columns A7/C3/D9

- Ready-made or individually configurable
- As signaling column or wall-mounted device
- Protection provided to ensure proper wiring



Transport and Distribution

1D-code identification



Bar code reader CR 100

- High-performance CCD scanner with front or lateral beam exit
- Compact design for simple integration, even in constrained spaces
- Scanning rate of 700 scans/s facilitates reliable reading, even while in motion
- Reading of all common codes of modulus sizes 150–500 µm at a reading field height of ≥ 80 mm

Transport and Distribution

1D- and 2D-code identification



Code reader DCR 200i

- Small camera-based code reader
- Decoding of 1D- and 2D-codes
- Maximum depth of field and reading distances from 40–360 mm
- High object speed and decoding performance of up to 6 m/s with 10 decodings
- Integrated RS232, RS422 and Ethernet interface

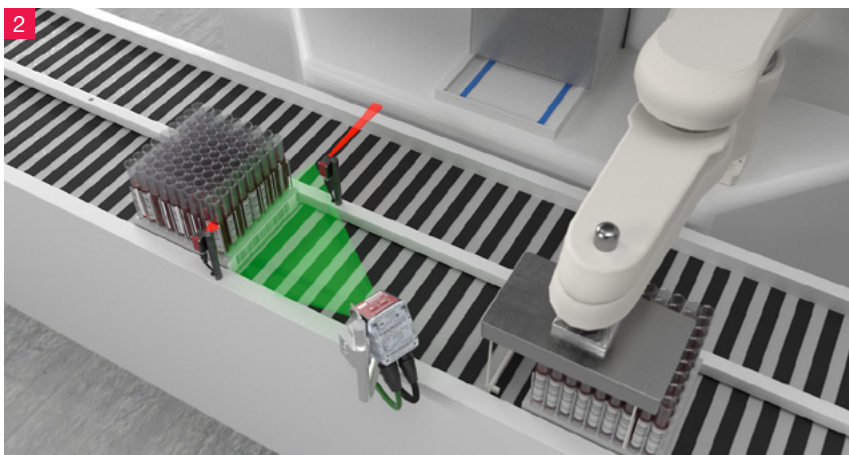
Transport and Distribution

Monitoring the closing state of the protection hood



Safety proximity sensors – magnetically coded / with transponder MC 3x/RD 800

- For integration in control circuits up to category 4 in accordance with EN ISO 13849-1
- Magnetically coded versions with extremely sturdy, high-strength plastic housing
- Versions with transponders offer a high level of protection against tampering
- Standard and teachable models available



SENSOR SOLUTIONS FOR POST-ANALYTIC INSTRUMENTS

Sensor technology simplifies and professionalizes the storage or disposal of samples after the analysis.

Particularly when storing samples, dependable closure is extremely important for eliminating the possibility of subsequent contamination. In some cases, the storage is performed in deep-freeze conditions at temperatures at -80°C , at which the sensor technology must continue to detect reliably. In addition, sensors ensure the traceability of the samples all the way to their storage location.

Even after the actual analysis, sensors continue to make the processes faster and more reliable. Sensors with high resolution, flexible fiber optics are used to check, e.g., the proper affixing of sealing films, ensuring that processes are completed professionally. During sample storage, sensors such as the 2 series monitor for presence, even at extremely low temperatures.



1 Presence control of sealing film

LV 46x Fibres

2 Presence control

2/3 series

3 1D- and 2D-code identification

DCR 200i

4 Monitoring of the closing state of doors or flaps

S 420/MC 300

5 Signaling of status information

A7/C3/D9

Re-Cappers

Presence control of sealing film



Amplifiers

LV 46x fibers

- Single- or multi-core fibers
- 4-digit display
- High dynamics
- Time functions configurable on the device
- Sensitivity levels configurable on the device
- Light/dark switching
- Easy sensitivity adjustment via AutoSet function

Storage

Presence control



Optical sensors

2/3 series

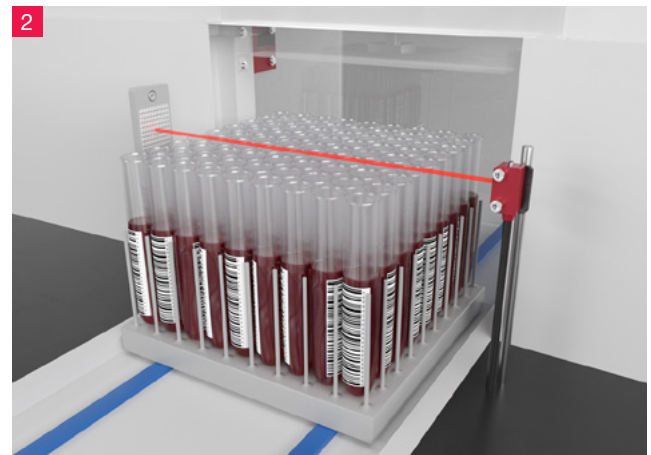
- Indicator LEDs with all-round visibility
- Integrated metal attachment sleeves
- Extensive teach functions
- Maximum function reserve

2 series

- Degree of protection IP 67
- Miniature construction for limited mounting spaces

3 series

- Protection against manipulation by means of a lockable button
- M8 metal connector



Storage

1D- and 2D-code identification



Code reader DCR 50

- CMOS Imager Scan Engine for
 - Integration in instruments
 - Direct mounting on the pipettor
 - For establishing contact on the circuit board via 12-pin connector
- Special optics system for
 - Reading the smallest high-density codes
 - Detection of standard codes in a large reading field
- Excellent reading and decoding characteristics
- Ready to read all common 1D- and 2D-codes
- Configuration with the “Leuze Sensor Studio”

Storage

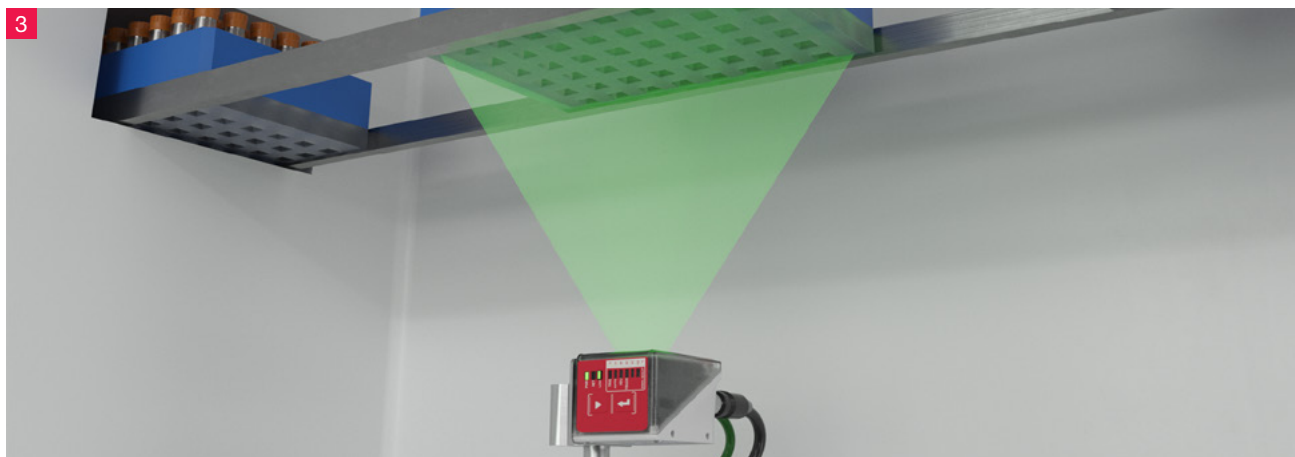
1D- and 2D-code identification



Code reader DCR 200i

- Small camera-based code reader
- Decoding of 1D- and 2D-codes
- Maximum depth of field and reading distances from 40–360 mm
- High object speed and decoding performance of up to 6 m/s with 10 decodings
- Integrated RS232, RS422 and Ethernet interface

3



Storage

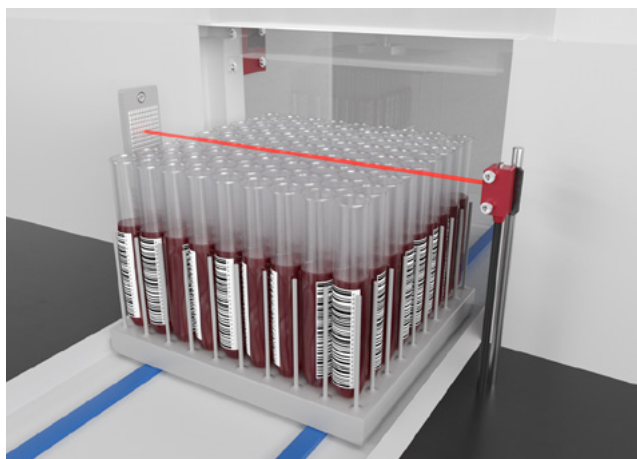
Stack-height monitoring



Fiber optic sensors

LV/KF

- A variety of fiber optics with various light-spot geometries for a wide range of applications
- Glass and plastic fiber optic cables available
- Fiber optic opening requires very little installation space on the punching head due to recessed evaluation unit
- Simple alignment with visible red light
- IO-Link and high-speed amplifier



Storage

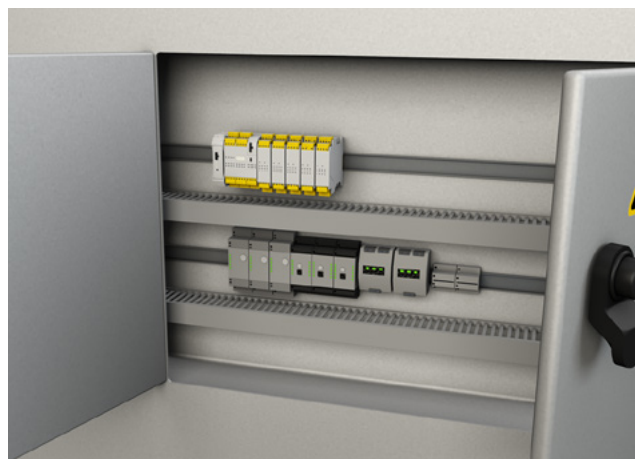
Integration of safety sensors



Safety relays

MSI

- For connecting E-Stop, safety light curtains and door switches
- Extensive product range for custom solutions, e.g., with 2 normally open contacts, 3 normally open contacts or 2 sensor inputs
- With either pluggable screw terminals or with spring-cage terminals



Storage

Monitoring of the closing state of the doors or flaps



Safety switches Safety proximity sensors **S 420 / MC 300**

- Not sensitive to dust, humidity and the like (degree of contamination 3 in accordance with EN60947-1)
- Highly tamperproof
- Compact design
- 180° maximum opening angle of the protective device
- Repeatable setting (switching angle alignment) with skewed or misaligned doors
- Robust metal design
- Degree of protection IP 67 and IP 69K

Storage

Signaling of status information



Signaling columns **A7 / C3 / D9**

- Ready-made or individually configurable
- As signaling column or wall-mounted device
- Protection provided to ensure proper wiring

4 5



ALL PRODUCTS FROM A SINGLE SOURCE

Full performance with the right accessories and attuned components.

In addition to device functionality and quality, optimally adapted accessories are necessary for the reliable and efficient use of sensors. No matter

if you need easy mounting and connecting or reliable signal provision – it takes the right accessories to unleash the full power.





Cables

To facilitate the integration of our sensors, we offer a large variety of connection and interconnection cables with M8, M12, and M23 connectors – straight or angled, and with or without LED.



Connection units

Today, sensors, safety switches and cameras are linked together via active or passive sensor distribution boxes with fieldbus interfaces from our product range to ensure more flexibility and transparency during installation.



Power supply

A reliable and machine-independent power supply with 1- and 3-phase power supply units is an elementary part of an optimum and efficient sensor system. For this reason, we also offer load circuit monitoring modules to ensure a higher level of safeguarding against failure.

Mounting accessories

We place great emphasis on our products being easy to mount and simple to align. For this reason, you will find specially-attuned mounting systems in our product range such as mounting brackets, rod holders or device columns.



Reflectors

Just how reliably retro-reflective photoelectric sensors can detect depends upon the selected reflector, among other things. That is why we offer various fitting solutions made of plastic, film, and glass for all conceivable conditions.



Signal elements

For signaling in automated systems, we offer an extensive product range of single- and multi-colored transducers in order to ensure productivity and efficiency.



SMART
SENSOR
BUSINESS

WE ARE THE **SENSOR PEOPLE**

For more than 50 years, we have been developing, producing, and marketing efficient sensor solutions for industrial automation.

Leuze electronic at a glance

Foundation	1963
Company structure	GmbH & Co. KG, wholly family-owned
Executive management	Ulrich Balbach
Headquarters	Owen, Germany
Distribution companies	18
Production locations	5
Technological competence centers	3
Distributors	42
Employees	> 1,000

Product range

Switching sensors
Measuring sensors
Products for safety at work
Identification
Data transmission systems
Industrial image processing
Accessories

Industry expertise

Intralogistics
Packaging industry
Machine tools
Automotive industry
Lab automation

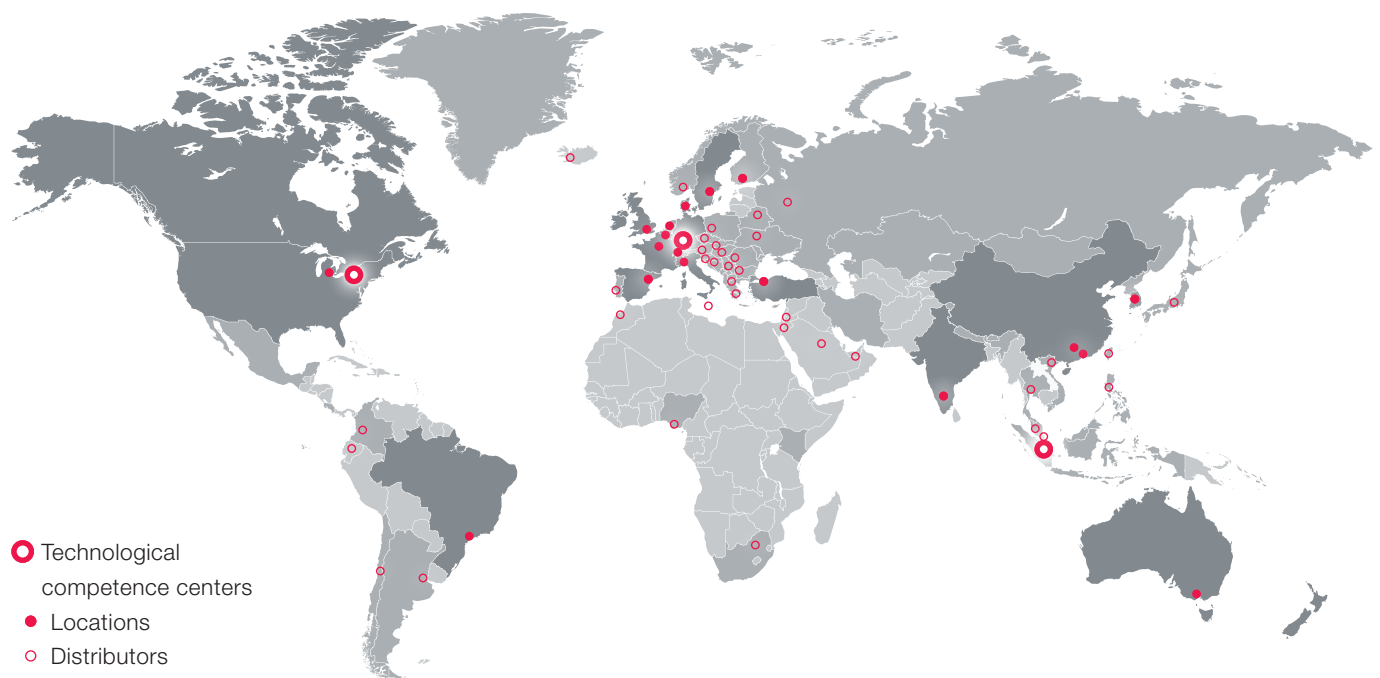


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ALWAYS CLOSE TO YOU

Short distances are important to us – both within and outside of our company. We therefore place great value on being personally, quickly, and easily accessible to you at our locations around the world. We produce our sensors on four continents, allowing us to offer you reliable product availability.



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

Switching Sensors

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

Measuring Sensors

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

Products for Safety at Work

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

Identification

Bar Code Identification
2D-Code Identification
RF Identification

Data Transmission / Control Components

MA Modular Connection Units
Data Transmission
Safe Control Components
Signaling Devices
Connection Technology and Passive Distribution Boxes

Industrial Image Processing

Light Section Sensors
Smart Camera

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