

## Simple Vision sensors

Easy to use with high performance  
comparable to a camera system



# Simple Vision sensors

## IVS 108 and IVS 1048i / DCR 1048i



As easy to use as an optical sensor with high performance comparable to a camera system – the unique Simple Vision concept from Leuze. The Simple Vision product range offers quick and easy entry into image processing used in industrial automation. Whether presence or absence detection, part detection or inspection, measuring or counting – we will always have the right solution for your specific applications. Image capture, processing and communication functions are all integrated in just one image processing sensor. This results in a multifunctional, modular, extremely reliable and easy-to-implement image processing solution. Powerful, embedded software tools work either independently or together in a job pipeline without the need for an external control. Simple Vision makes things easy.

## Keep it simple



### Applications

Simple Vision sensors are ideal for a wide range of inspection and quality processes. These include part differentiation, shape checking, contour analysis, pattern detection, sorting, counting, measuring and code reading. They can be used to perform a single function or a combination of different functions.



### Performance

Offers added value compared to an optical standard sensor, but is far less complex than an image processing system and does not require any specialist knowledge. The Simple Vision sensors are small, intelligent and equipped with everything needed for the task concerned.



### Usability

Configuration and parameterization without specialist knowledge: The software tools of a Simple Vision sensor need only a few parameters and can be set up quickly and easily. Various interfaces enable complete solutions to be created and integrated into the control environment.

**Product IVS 108**

Page 4 – 6

**Applications**

Page 7

**Technical data**

Page 8 – 9

**Product IVS 1048i / DCR 1048i**

Page 10 – 13

**Applications**

Page 14 – 15

**Leuze Vision Studio**

Page 16 – 23

**Technical data /Accessories**

Page 24 – 25

**Company / Locations**


Page 26 – 27

**Our product range: With exactly the right performance for your tasks**



**IVS 108**


For detecting the presence and absence of objects such as caps, labels or prints on all types of bottles and flacons processed in filling systems. Furthermore: check of the alignment of objects irrespective of their shape, material, color and dimensions.

 Presence detection



**DCR 1048i**


The high-performance code reading algorithm ensures extremely high reading rates. As an option, this model has an improved algorithm specially conceived for DPM codes.

 1D-/2D-code reading  
DPM code reading



**IVS 1048i**

All-rounder model for detection, inspection and identification tasks. Several models with low or higher resolution are also available.

 Presence detection  
Measuring + counting  
1D-/2D-code reading  
DPM code reading



# Extremely easy to use. Ideal for presence detection. The IVS 108 Simple Vision sensor.

The IVS 108 is an innovative Vision sensor that can detect the presence or absence of objects in a simple way. It offers outstanding performance for a wide variety of detection tasks. The IVS 108 is intuitive, can be adjusted quickly and is as easy to use as an optical sensor.



1	M3 threaded holes (2x)
2	Power LED (blue)
3	Ethernet LED (yellow)
4	Terminal strip (turnable by 90°)
5	Control panel (HMI)
6	Ethernet connection, M12, X-coded, female
7	Connection for power supply and I/O, M12, A-coded, 17-pin, male
8	Lens
9	Aimer (red target LEDs)
10	Not Good indicator (red LED)
11	Good indicator (green LED)
12	Integrated illumination (white, polarized LEDs)

## Advantages for you

- For all applications that require low-cost object presence/absence detection and in cases where sole use of the switching signal of an optical standard sensor is no longer enough
- Time and cost saving thanks to a simple teach process, including auto-focus adjustment
- User-friendly graphical user interface via web browser for easy configuration and real-time statistics
- A single device can save up to 32 different tasks and jobs
- Irrespective of the object, the sensor always delivers a consistent response time, even after a job change. This simplifies system integration, the time required for setting up an application is reduced.
- Integrated, polarized light to avoid unwanted reflections on glossy surfaces and to ensure reliable operation
- Flexible installation with matching mounting brackets

## Highlights

### Outstanding performance for presence control

The IVS 108 is an outstanding Vision sensor for all applications where the presence or absence of objects is to be checked, e.g. caps, labels or prints on bottles or flacons in filling systems. It can also be used to check whether objects are aligned correctly, regardless of their shape, material, color or dimensions.



### Fast sensor set-up

The IVS 108 can be taught intuitively and quickly using a simple teach process and requires neither programming by specialists nor time-consuming configuration.

#### Option 1: Set-up using teach button

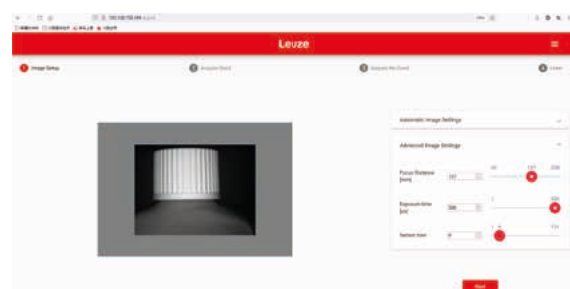


**Step 1:** Place the “GOOD” object in front of the sensor and press the teach button.



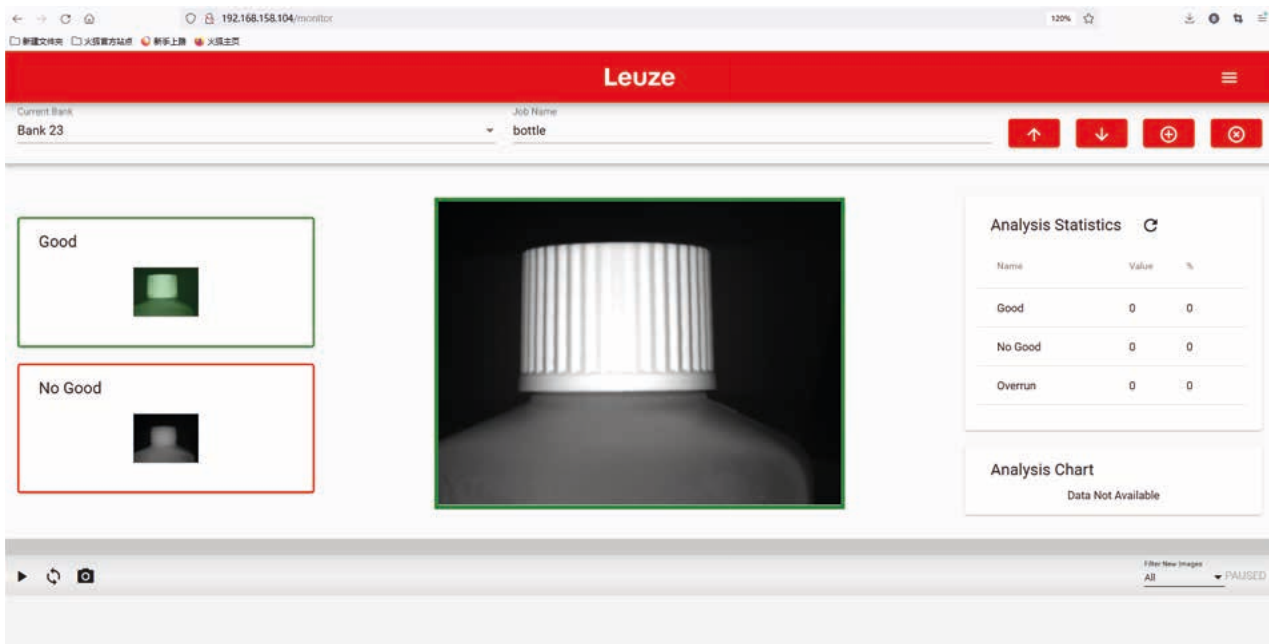
**Step 2:** Place the “NOT GOOD” object in front of the sensor and press the teach button.

#### Option 2: Set-up using the web-based, graphical user interface. The user is visually guided through a set-up menu with four input masks



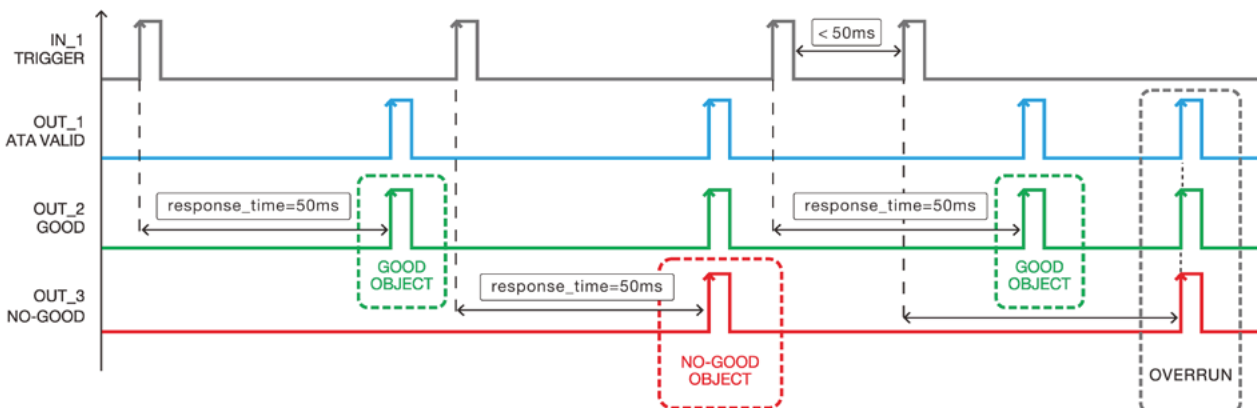
### Easy control using web-based GUI

The device can also be configured and remotely controlled via Ethernet using a user-friendly, web-based graphical user interface. This user interface provides image processing functions and real-time statistics for the measurement results of the production line. It requires neither programming by specialists nor adaptation of the imaging processing software, thereby saving costs and time for commissioning and maintenance.



### Consistent response times for high efficiency

Once set up and in operation, the IVS 108 Simple Vision sensor has a reliably consistent response time of 50 milliseconds, even with changing objects and ambient and application conditions. This makes it extremely easy to calculate whether the sensor meets the requirements of a production process.

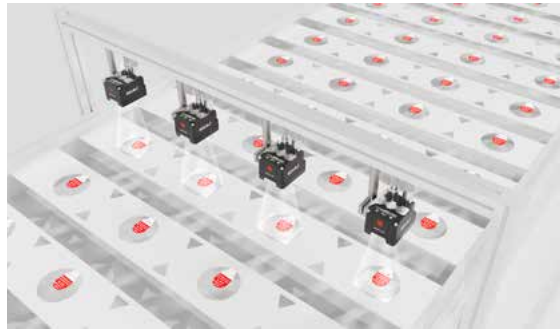


# Applications

The IVS 108 Simple Vision sensor for detecting the presence of objects can be easily set up and put into operation. Typical areas of application are food and beverages, pharmaceuticals and cosmetics, processing and packaging machines, filling systems and intralogistics. Owing to its versatility and flexibility, the sensor is also suitable for transport, sorting and handling systems, the automotive industry, quality control and the automatic mounting of mechanical or electronic parts.

## Presence detection of information printed on packaging

**Requirement:** On packaging, printed information is required to ensure traceability in the production process, e.g. the use-by date or the batch number of the product. This makes it necessary to detect the information printed on the packaging.



**Solution:** The IVS 108 is suitable for detecting information printed on packaging and, if required, supplies an image of the object. It is easy to set up and put into operation and also offers an outstanding price/performance ratio.

## Presence detection of labels on bottles

**Requirement:** It must be ensured that a label is affixed to a bottle or container. Difficult-to-detect, highly transparent labels too must be reliably detected.



**Solution:** The IVS 108 can reliably detect the presence of highly transparent labels on any surface. Furthermore, the images from this Simple Vision sensor can be transferred for fault analysis or for future optimization.

## Presence detection of printed information on cans

**Requirement:** Printed information, either printed on labels or printed directly on cans for the purpose of traceability during the production process, is to be reliably detected. Furthermore, it must also be possible to analyze fault images to enable optimization of production performance.



**Solution:** The IVS 108 is ideal for the visual post-control of labels or of markings that are directly printed on cans. At the same time, the images can be transferred for subsequent analysis, should this be necessary.

## Presence detection of accessory parts on packaging cartons

**Requirement:** With drink cartons, it must be checked whether a drinking straw is attached to the packaging. In addition, it must be possible to use the fault images for optimization of the production processes.



**Solution:** The IVS 108 is a user-friendly and low-cost device both for detecting accessory parts and for image transfer. It is easy to set up and delivers reliable inspection results.

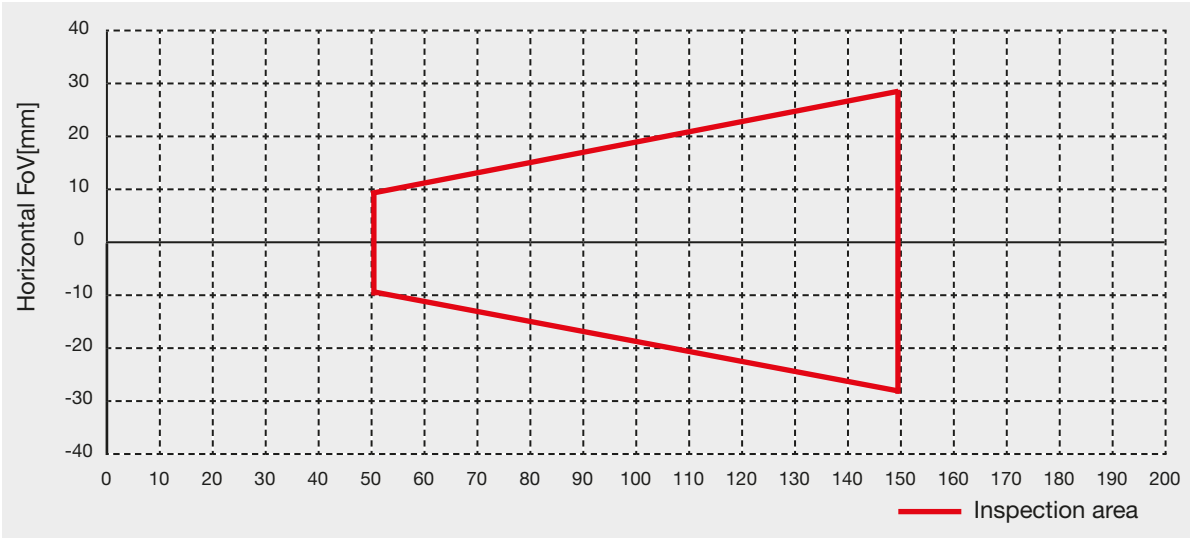
# Specifications

## IVS 108 M1-102-W0 50146024

<b>Electrical data</b>	
Power supply	10 ... 30 VDC
Power consumption	4.2 W
Integrated illumination	4 high power LEDs, white, polarized
Alignment aid	2 x LED, red
Interfaces and protocols	Digital I/O, Ethernet 100 Mbit/s with TCP/IP
Digital switching inputs	2 x optical couplers (teach and trigger)
Digital switching outputs	3 x PNP/NPN/push-pull (selectable for GOOD, NOT GOOD and data valid)
Response time	50 ms fixed
<b>Optical data</b>	
Camera type	Monochromatic black/white
Resolution (H x V)	320 x 240 pixels
Working distance WD	50 ... 150 mm
Field of vision FoV	WD = 50 mm: 22 mm x 16 mm; WD = 150 mm: 55 mm x 41 mm
Opening angle, horizontal	19°
Opening angle, vertical	14.5°
Focus adjustment	Motorized adjustment of focal position with autofocus
Camera shutter	Global shutter
<b>Mechanical data</b>	
Dimensions, height x width x depth	58 x 47 x 38 mm (without connections)
Fastening	2 x M3 thread, spacing 37.6 mm
<b>Adjustment and indicators</b>	
Teach button	Teach GOOD / NOT GOOD (alternatively via webConfig)
Indicator on top of sensor	HMI with 5 LEDs
On rear of sensor	Status LED for voltage (blue) and Ethernet connection (yellow)
On front of sensor	Green LED: GOOD; red LED: NOT GOOD
GUI (optional alternative to teach button)	webConfig via Ethernet
<b>Other</b>	
Image memory	6 internal
Number of jobs	32 (job 0-31)



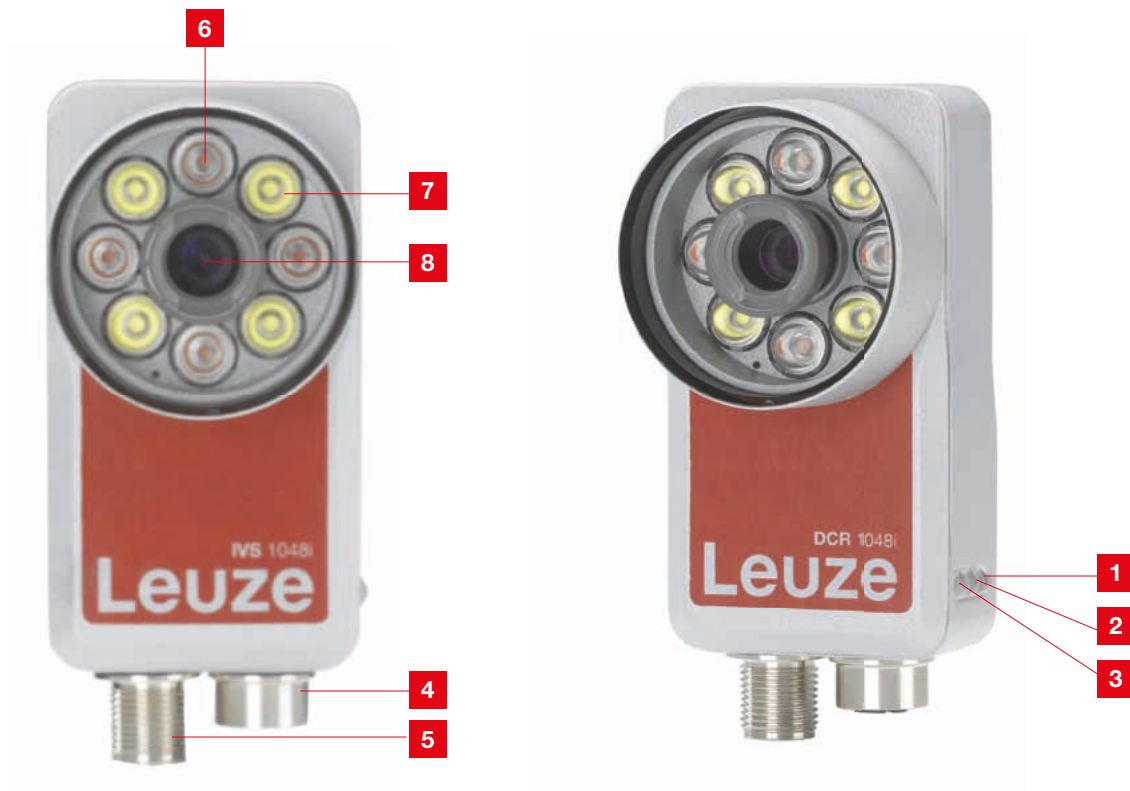
### Field of view



Reading distance (in mm) from sensor surface to object surface

# Allrounder for detection, identification and inspection. The Simple Vision sensors of the IVS 1048i / DCR 1048i series.

The Simple Vision sensors of the IVS 1048i and DCR 1048i series are compact, versatile and high-performance devices with image processing functions for detection, identification and inspection. A wide variety of models with two different resolutions ensures maximum flexibility. With powerful image processing tools, easy-to-configure software, interchangeable lenses and integrated high-performance LED illumination, the Simple Vision sensors from Leuze offer outstanding performance and a high level of efficiency.



1	Power LED (green)
2	LAN LED (Ethernet, yellow)
3	Trigger LED (yellow)
4	Ethernet connection, M12, X-coded, female
5	Connection for power supply and I/O, M12, A-coded, 12-pin, male
6	Integrated illumination (red)
7	Integrated illumination (white)
8	Lens

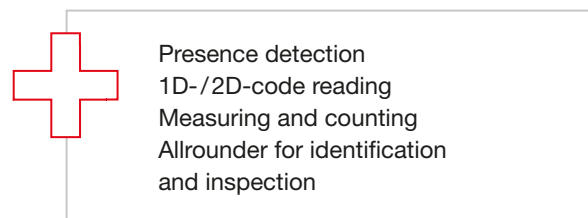
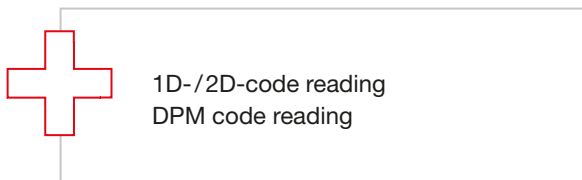
## Advantages for you

- Outstanding product performance for detection, identification and inspection tasks
- Different models with two different resolutions available
- High-performance image processing tools and a user-friendly, graphical interface for fast setup and smooth operation
- Integrated digital interfaces: TCP/IP, PROFINET, FTP or SFTP
- Exchangeable lenses for flexibility in terms of distance, field of vision and resolution
- Integrated, switchable high-performance LED illumination in white and red for an optimum, high-contrast image
- Filter caps for challenging tasks, e.g. quality checks, involving highly reflective objects or under changing ambient light conditions
- Compact housing enables integration into almost all system concepts, even in confined installation situations
- Protected by an IP67 housing, the Vision sensor also works reliably in harsh production environments

## Overview

Our flexible selection of models provides various device options for different tasks and budgets:

- **DCR 1048i:** The high-performance code reading algorithm ensures extremely high reading rates. As an option, this model has an improved algorithm specially conceived for DPM codes.
- **IVS 1048i:** The allrounder model makes detection, inspection and identification possible with just one device.



# Highlights

## Fast commissioning and versatile applications

The “Leuze Vision Studio” software offers powerful tools and statistics for image processing and inspection that can also be used offline. To reduce costs and save time, the sensors can be set up by the user without special training or specialist knowledge.

The Simple Vision sensors can be used for a wide variety of industrial tasks:

- Position checking for controlling handling systems or a tool to correct the travel position
- Identification of a part using markings, its shape or other characteristics
- Checking a part for correct production or correct mounting
- Measurement and counting of parts
- Checking of parts for defects

The graphical user interface shows measurement values, test results, status displays and statistical data.

The graphical user interface shows measurement values, test results, status displays and statistical data.

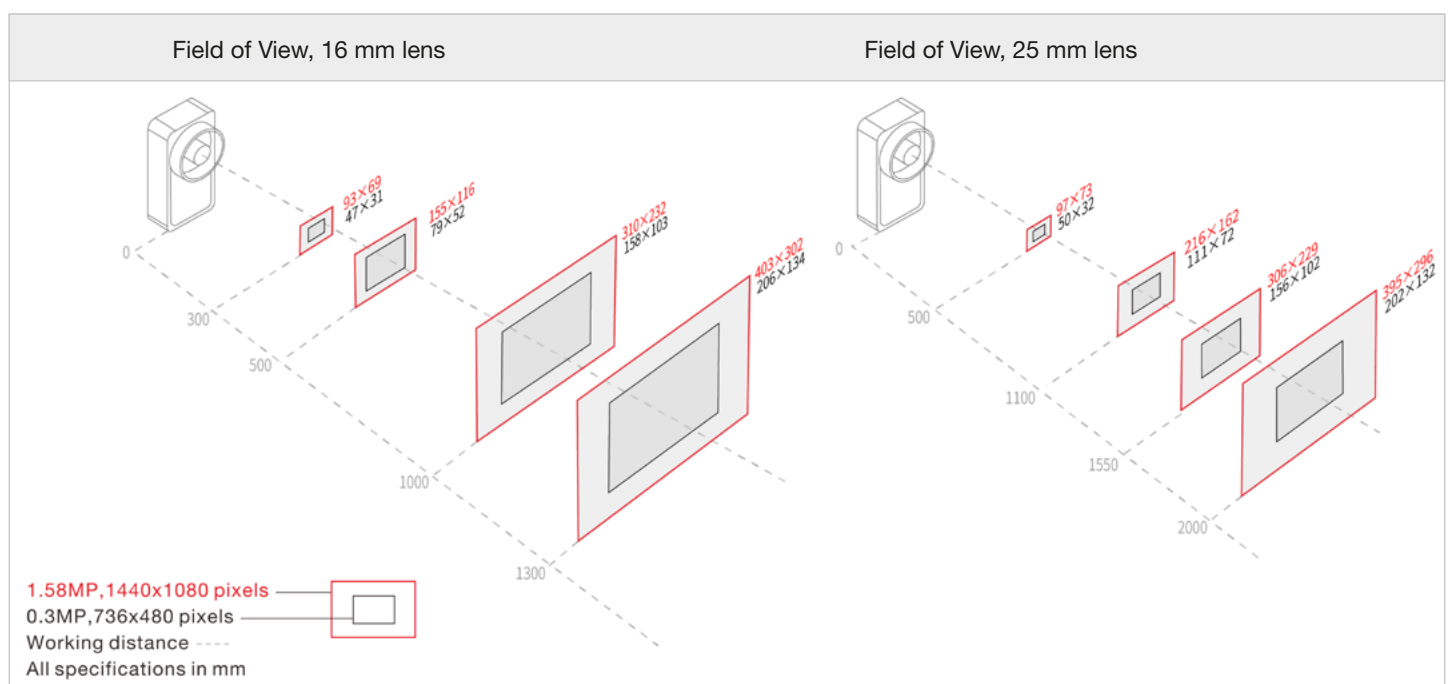
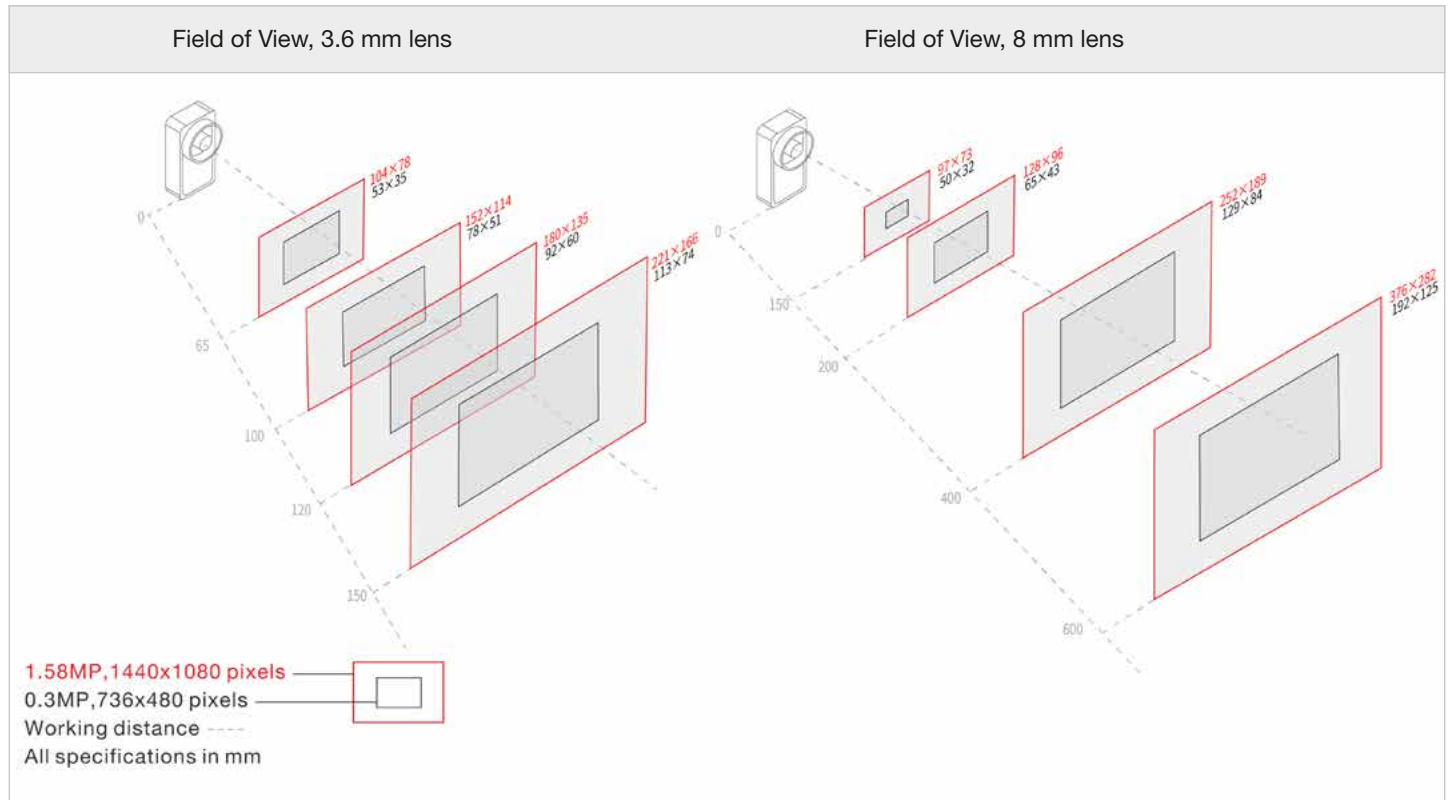
## Support of common industrial protocols

Common interface protocols such as TCP/IP, PROFINET, FTP and also SFTP (Secure File Transfer Protocol) are supported. This makes communication and data acquisition easy. Digital inputs and outputs are also provided to allow simple processes to be controlled directly or to enable connection to a PLC.



### Exchangeable lenses for flexibility

Thanks to four interchangeable S-Mount lenses with variable focus adjustment and two different apertures, the IVS 1048i / DCR 1048i image processing sensors provide a high degree of flexibility in terms of reading distance, field of vision, resolution and depth of field.



# Applications

## IVS 1048i

### Quality check after labeling process

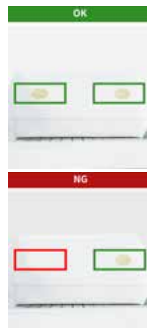
**Requirement:** On a packaging line, a label is to be affixed to the primary packaging. The label must be attached correctly before the product is inserted into the secondary packaging.



**Solution:** With its variable field of vision and large operating range, the new IVS 1048i can easily locate and measure the label and check whether or not it has been attached correctly.

### Adhesive detection during the sealing of secondary packaging

**Requirement:** If adhesive is used for sealing secondary packaging, it must be ensured that the adhesive has been applied correctly before the carton is sealed.



**Solution:** The IVS 1048i can detect and count the adhesive beads or measure their length and is therefore ideally suited for such applications.

### Quality check after capping process in beverage filling

**Requirement:** In a beverage filling system, it must be checked whether the bottle caps are seated correctly.



**Solution:** With its extensive tool set, the new IVS 1048i Simple Vision sensor can determine whether the bottle cap is seated correctly.

# DCR 1048i

## Simultaneous reading of multiple 1D and 2D-codes

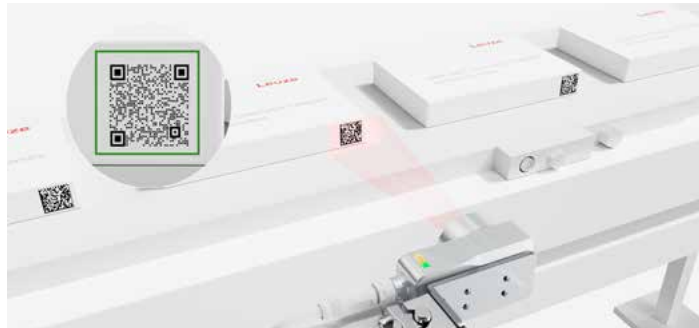
**Requirement:** A secondary packaging has both a 1D-code and a 2D-code. For quality assurance purposes, the codes are to be scanned before insertion as a pack of 5 into a carton. During the process, the codes are to be identified simultaneously with a single scan irrespective of the code type.



**Solution:** The new DCR 1048i can read either single 1D and 2D-codes or any number of 1D and 2D-codes simultaneously without problem by means of multicode decoding.

## Reading of codes printed directly on packaging material

**Requirement:** A 2D-code is printed directly on secondary packaging. The decoding of these so-called DPM codes is essential for the traceability of the products.



**Solution:** The DCR 1048i DPM Simple Vision sensor has an optimized reading algorithm which is specially designed for decoding codes that are printed directly on packaging.

## Code reading for detecting the alignment of bags on conveyor lines

**Requirement:** On bagged products, a code is printed on the rear side of the packaging. This code is to be used to check that all bagged products are aligned correctly before they are automatically packed into a carton.



**Solution:** The DCR 1048i can identify the codes to check whether or not the bagged product is aligned correctly. Alternatively, pattern detection can also be used to detect the correct alignment of the bagged products.

# Leuze Vision Studio

## Leuze Vision Studio consists of the following two key components:

- Vision Studio Designer, a graphical user interface and a graphical programming system for creating application programs.
- Vision Studio Runtime with functions for image processing and for running graphical programs. It runs either directly on a Vision sensor or can be operated offline as an emulator without sensor.

## Save time

Vision Studio is a PC-based configuration software from Leuze for the Simple Vision sensors IVS 1048i / DCR 1048i. It provides valuable and powerful tools as well as statistical functions for image processing and inspection tasks, and supports the user in a wide variety of industrial tasks based on Vision sensors. During development, great importance was placed on clarity, intuitive use and high flexibility. As a result, applications can be processed quickly and development time reduced.

### Pipeline and status checks

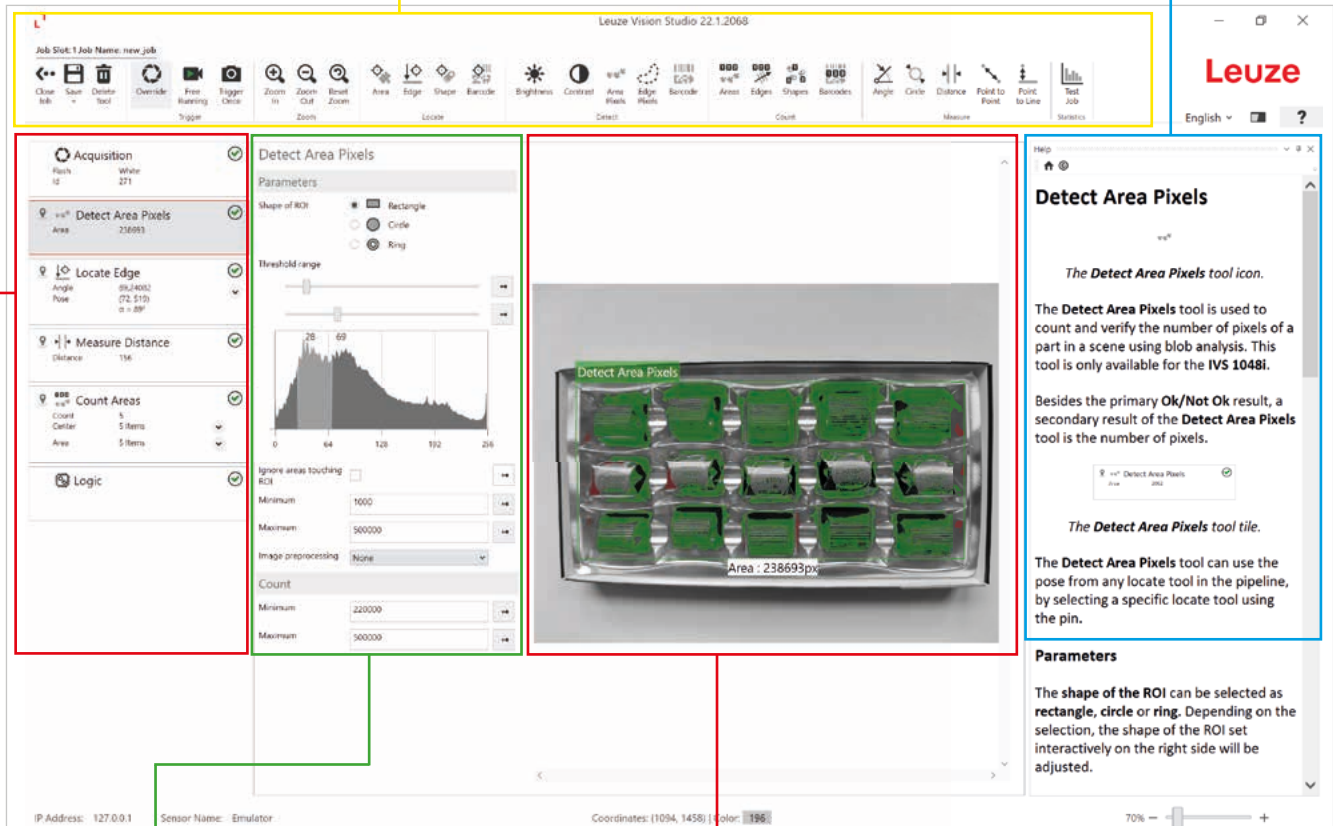
- Inspection tools can be added here and moved by drag&drop
- Measurement values and inspection results / status messages appear here

### Navigation bar and inspection tools

- Intuitive and user-friendly navigation menu
- Context-sensitive help can be displayed if required
- Menu navigation available in 4 languages (German, English, French, Chinese)

### Help information

- The Help menu is opened at the side
- It provides detailed information on every tool and function
- The documentation can also be viewed online (HTML) in a web browser or downloaded as a complete PDF document.



### Configuration

- Parameters for search criteria can be set simply and directly
- Threshold values for the evaluation criteria can be entered simply

### Display and drawing tools

- Picture view for control and analysis during operation
- Context-sensitive description of the tools on the right side
- Ensures optimum usage of the tools with their full functionality



### Fast and simple image processing tools

- Extensive image processing tools are used for checking the quality and completeness of parts or their localization as well as for transferring position data on various communication interfaces.
- Even challenging tasks such as quality inspections of heavily reflective objects, and applications under varying ambient light conditions or at high speeds are performed reliably.

### Localization tools

- The “Area”, “Edge” and “Shape” localization tools are used for locating parts in a presence or absence task. They additionally deliver a pose (position and rotation of a surface) whereby the position and rotation of a part are combined, and can optionally forward this data to downstream tools for position tracking.
- A BLOB analysis is carried out for the “Area” and “Edge” tools, whereas pattern matching techniques are applied in the case of the “Shape” tool.

OK

NOK

#### Surface area



The “Locate area” tool is used to locate a part in a scene by means of BLOB analysis.

**Decision criterion:**  
e.g. min./max. threshold value range of the pixels

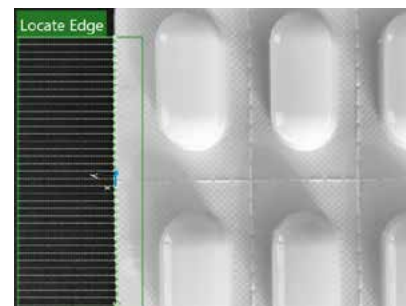
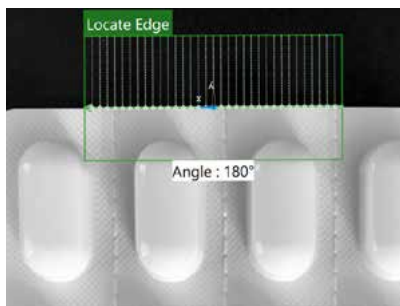


#### Edge



Searches for an edge within the defined search field and is used as an orientation aid for downstream tools.

**Decision criterion:**  
–



#### Form










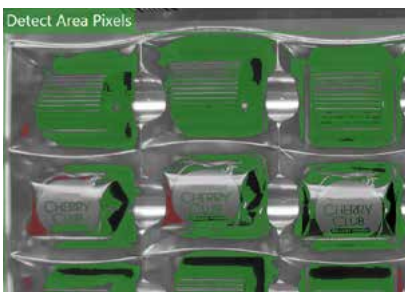


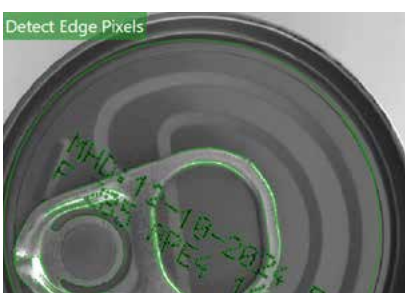
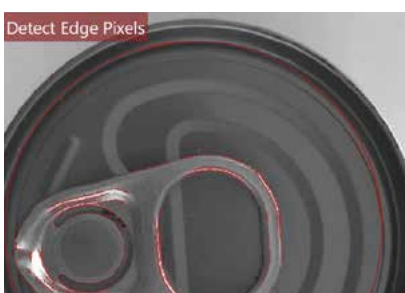
Compares taughted patterns within the defined region of interest and is also used as position correction for downstream tools.

**Decision criterion:**  
e.g. match with the taughted pattern





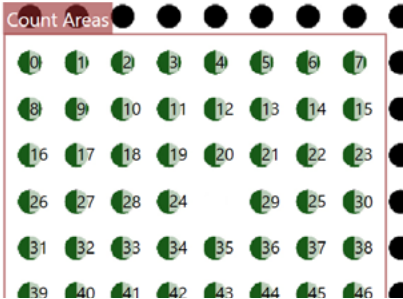




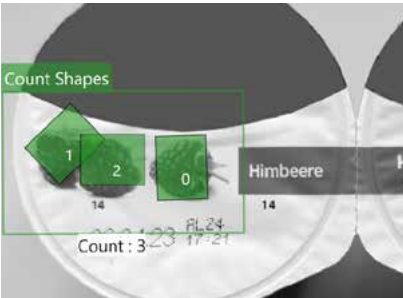
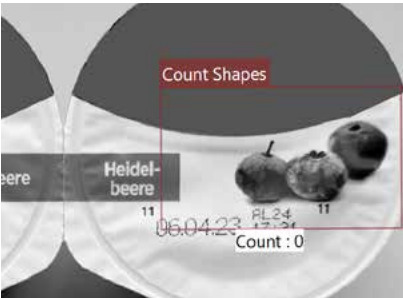
## Detection tools

- The “Brightness”, “Contrast”, “Area pixels” and “Edge pixels” detection tools are particularly suitable for locating parts in a presence and absence task. The detection tools can use the pose of any localization tool in the pipeline.
- The BLOB analysis is performed in the case of the “Area pixels” and “Edge pixels” tools.

		OK	NOK
<p><b>Brightness</b></p> 	<p>Detects the mean brightness depending on the threshold value range within a defined area in the image.</p> <p><b>Decision criterion:</b> e.g. threshold value of the min./max. brightness</p>		
<p><b>Contrast</b></p> 	<p>Detects the contrast depending on the threshold value range within a defined area in the image.</p> <p><b>Decision criterion:</b> e.g. threshold value of the min./max. contrast</p>		
<p><b>Area pixels</b></p> 	<p>Detects the number of pixels depending on the threshold value range within a defined area in the image.</p> <p><b>Decision criterion:</b> e.g. min./max. threshold value of the area pixels</p>		
<p><b>Edge pixels</b></p> 	<p>Detects the number of edge pixels depending on the threshold value range within a defined area in the image.</p> <p><b>Decision criterion:</b> e.g. min./max. threshold value of the edge pixels</p>		

### Counting tools

- The "Areas", "Edges" and "Shapes" counting tools are ideal for counting and checking the number of parts, objects or features in an inspection task.
- The counting tools can use the pose (position and rotation of a surface) of any localization tool in the pipeline.
- A BLOB analysis is carried out for the "Areas" and "Edges" tools, whereas pattern matching techniques are applied in the case of the "Shapes" tool.


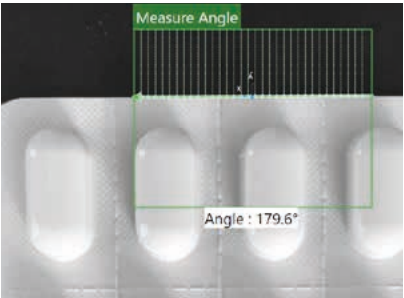
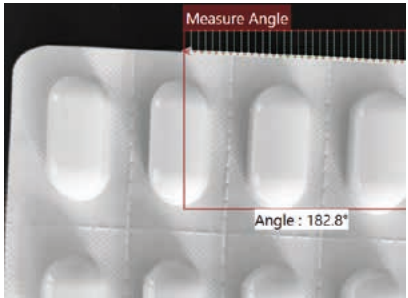

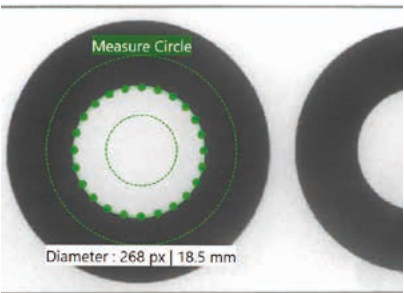
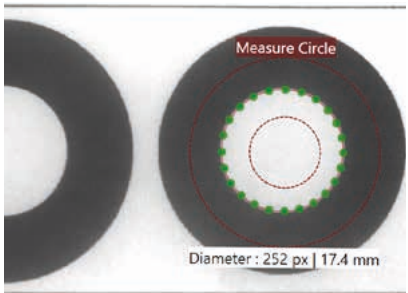

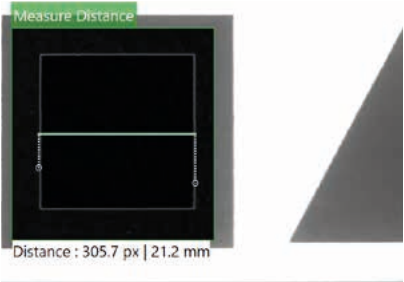
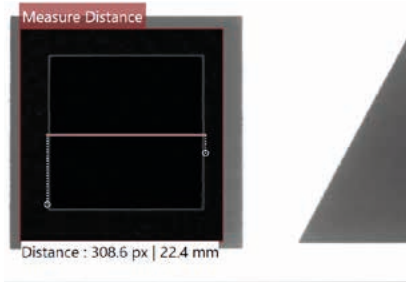
		OK	NOK
<b>Areas</b> 	<p>Determines the number of contiguous dark and light regions.</p> <p><b>Decision criterion:</b> e.g. min./max. threshold value of the minimum area for pixel size</p>		
<b>Edges</b> 	<p>Determines the number of edges along a line or search beam.</p> <p><b>Decision criterion:</b> e.g. number of counted edges</p>		
<b>Forms</b> 	<p>Identifies and counts objects whose contour matches the taught contour.</p> <p><b>Decision criterion:</b> e.g. match with the taught pattern</p>		

### Measurement tools

- The "Angle", "Circle", "Distance", "Point to point" and "Point to line" measurement tools are recommended whenever an object or feature needs to be measured.
- The measurement tools can use the pose of any localization tool in the pipeline.

Example 1

Example 2

<p><b>Angle</b></p> 	<p>Determines the angle of 1 edge.</p> <p><b>Decision criterion:</b> e.g. <math>\pm</math> angle tolerance</p>		
<p><b>Circle</b></p> 	<p>Determines the diameter and roundness.</p> <p><b>Decision criterion:</b> e.g. min./max. diameter tolerance</p>		
<p><b>Distance</b></p> 	<p>The slider determines the distance between 2 edges.</p> <p><b>Decision criterion:</b> e.g. min./max. distance tolerance</p>		

Example 1

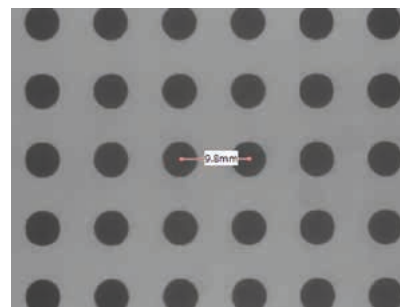
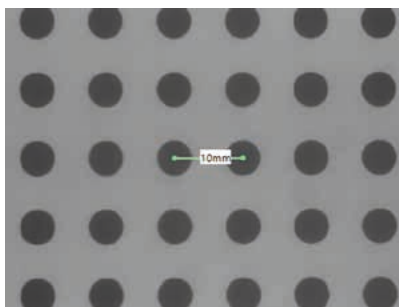
Example 2

**Point to Point**



Measures the distance e.g. between 2 circles.

**Decision criterion:**  
e.g. min./max. tolerance of distance limits

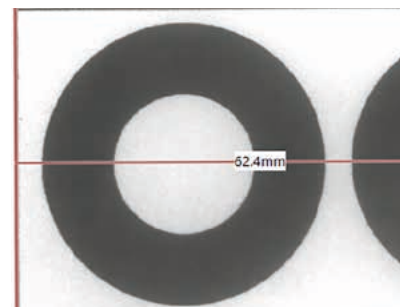
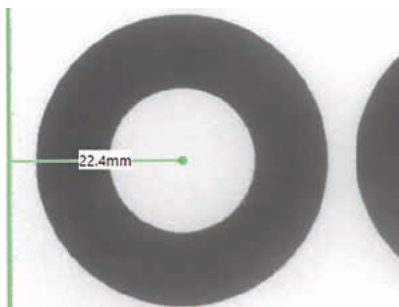


**Point to Line**



Measures the distance between a point (from BLOB, contour pattern, #circle or edge) and 1 line / edge.

**Decision criterion:**  
e.g. min./max. tolerance of distance limits



## Code reading tools

- The “Locate bar code”, “Detect bar code” and “Count bar code” tools can read all common 1D and 2D-codes thanks to the powerful decoding algorithm.
- The “Locate bar code” tool can locate a code, determine the position and, optionally, the rotation of the bar code and forward this data to downstream tools. The “Locate bar code” and “Count bar code” tools can use the pose (position and rotation of a surface) of any localization tool in the pipeline.

### Task 1

### Task 2

#### Locate bar codes



Detects a code within the defined search area and additionally returns the pose with the combined position and rotation.

**Decision criterion:**  
N/A



#### Detect bar codes



Decodes a specific code in a scene with multiple codes; it makes no difference whether the symbology of the code to be detected is 1D or 2D.

**Decision criterion:**  
N/A



#### Count bar codes



Enables multiple codes, even with different symbologies, to be read.

**Decision criterion:**  
e.g. min./max. number of counted codes



## Job test tool

The Vision Studio software provides a powerful function for measuring the execution time of tools that are used in the pipeline of a job. It is irrelevant whether a sensor is connected or whether offline mode has been selected.

Tool	Ø Cycle (ms)	Passed	Failed
Acquisition	4.6	124	0
Locate Edge	24.1	63	61
Locate Area	8.9	107	17
Detect Area Pixels	19.9	92	32
Detect Edge Pixels	39.7	2	122
Logic	0.1	0	124

## Logic tool – linking results to outputs

The output of a tool can be linked directly to one of the four digital outputs, or the results of multiple tools are linked to each other using logical or arithmetic operators. The desired output configuration is set up directly on the Vision sensor. This enables the load on the PLC to be reduced. For PROFINET communication, measurement values or results at any point of the fieldbus interface can be addressed.

The logic configuration shows the following connections:

- Out 0:** Triggered by the 'Locate Edge' tool.
- Out 1:** Triggered by an 'And' operator that requires both 'Locate Area' and 'Detect Edge Pixels' to be successful.
- Out 2:** Triggered by a 'Subtract' operator. The input is 'Calculate angle' (from 'Detect Edge Pixels') minus a constant value of 275502. The result is compared against a range from 100 to 300000.
- Out 3:** Triggered by the 'All OK' status of the logic tool.

# Technical data

	DCR 1048i ADJ-8F4-102-M4 50147803	DCR 1048i ADJ-8F4-102-M4-TDPM 50147801	IVS 1048i ADJ-8F4-102-M4-TPRD 50147796	IVS 1048i ADJ-8F4-102-M4-TMEC 50147798	IVS 1048i ADJ-8F4-102-M4-TALL 50147800	IVS 1048i ADJ-8F4-102-M1-TPRD 50147795	IVS 1048i ADJ-8F4-102-M1-TMEC 50147797	IVS 1048i ADJ-8F4-102-M1-TALL 50147799
<b>Standard tools</b>								
Detection (brightness, contrast, surface pixels, edge pixels)			X	X	X	X	X	X
Localization (area, edge, shape)			X	X	X	X	X	X
Counting (surface, edge, forms)				X	X		X	X
Measure (angle, circle, distance, point-to-point, point-to-line)				X	X		X	X
Detect bar codes	X							X
Locate bar codes	X							X
Count bar codes	X							X
Detect bar codes with DPM marking		X			X			
Locate bar codes with DPM marking		X			X			
Count bar codes with DPM marking		X			X			
<b>Optical data</b>								
Type	high resolution -M4					low resolution -M1		
Imager	Sony Global Shutter							
Optical format	1/2.9"					1/2.9"		
Resolution (H × V)	1,440 × 1,080 pixels					736 × 480 pixels		
Pixel size (µm)	3.45 × 3.45					3.45 × 3.45		
Max. frame rate (fps)	30							
Region of interest	50 – 2,000 mm, depending on optics							
Lens	S-Mount, 4 focal lengths: 3, 6, 8, 16, 25 mm							
Diaphragm	All lenses with f/4 and f/8 aperture							
<b>Electrical data</b>								
Power supply	18 ... 30 VDC							
Open-circuit current (max.)	1,000 mA at 24 V							
Internal illumination	Switchable internal illumination: "high-power" red or "high-power" white							
Flash memory / number of jobs	16 GB / up to 255 jobs							
Interfaces	Digital I/O, Ethernet 100 Mbit/s							
Protocols	TCP/IP, FTP/SFTP, PROFINET							
Digital input / output	2 + 1 external trigger / 4 + 1 ready signal; all push-pull; max. 150 mA load current							
Image memory	Via FTP, SFTP / manually in Vision Studio software							
<b>Mechanical data</b>								
Dimensions (H × W × D)	85 × 45 × 34 mm							
Optics connection	S-mount							
Optics cover	PMMA							
Fastening	4 x M3 thread							



# Accessories

## Lenses

Lenses with various focal lengths and aperture openings.



Focal length: 3.6 mm, 8 mm, 16 mm, 25 mm  
Aperture opening (F): 8.0, 4.0

50148541	Lens S-M12-3F4
50148542	Lens S-M12-3F8
50148543	Lens S-M12-8F4
50148544	Lens S-M12-8F8
50148545	Lens S-M12-16F4
50148546	Lens S-M12-16F8
50148547	Lens S-M12-25F4
50148548	Lens S-M12-25F8

## Mounting bracket

High-quality ball-joint mounting brackets, suitable for IL BA barlights, IL AL barlights and IL SP spotlights.



50148125	BTK IL BA 012
50148129	BTK IL BA 023
50148132	BTK IL SP 021

## Illumination

Illumination for image processing applications, e.g. barlights and spotlights.

### Barlights



Illuminated area:  
65 × 12 mm, 130 × 12 mm,  
240 × 12 mm, 23 × 96 mm

50148122	IL BA 012/065 RD 301 L D
50148123	IL BA 012/130 RD 301 L D
50148124	IL BA 012/240 RD 301 L D
50148126	IL AL 023/096 RD 301
50148130	IL SP 021/007 300
50148131	IL SP 021/014 300

### Spotlights



Opening angle  
FWHM: 7°, 14°

## Cables and connectors

12 to 4-pin Y-cables and connection cables.



50148539	KY IVS 1048-IL
50148540	KDS S-12-CA-M12-5A-P1-004-78X

# Our company

## Everything at a glance

In a constantly changing industrial world, we work together with our customers to find the best solution for their sensor applications: innovatively, precisely and efficiently.

### Key figures

Foundation	1963
Company structure	GmbH + Co. KG, wholly family-owned
Executive management	Xavier Hamers, Dr. Henning Grönzin, Helge Held
Headquarters	Owen, Germany
Subsidiaries	21
Production locations	6
Technological competence centers	3
Distributors	40
Employees	1,600

### Product range

- Switching sensors
- Measuring sensors
- Safety
- Identification
- Data transmission
- Network and connection technology
- Industrial image processing
- Accessories and supplementary products

### Focus industries

- Intralogistics
- Packaging industry
- Machine tools
- Automotive industry
- Laboratory automation



### Leuze electronic GmbH + Co. KG

In der Braike 1  
73277 Owen  
Phone: +49 7021 573-0  
Fax: +49 7021 573-199  
E-mail: [info@leuze.com](mailto:info@leuze.com)  
[www.leuze.com](http://www.leuze.com)

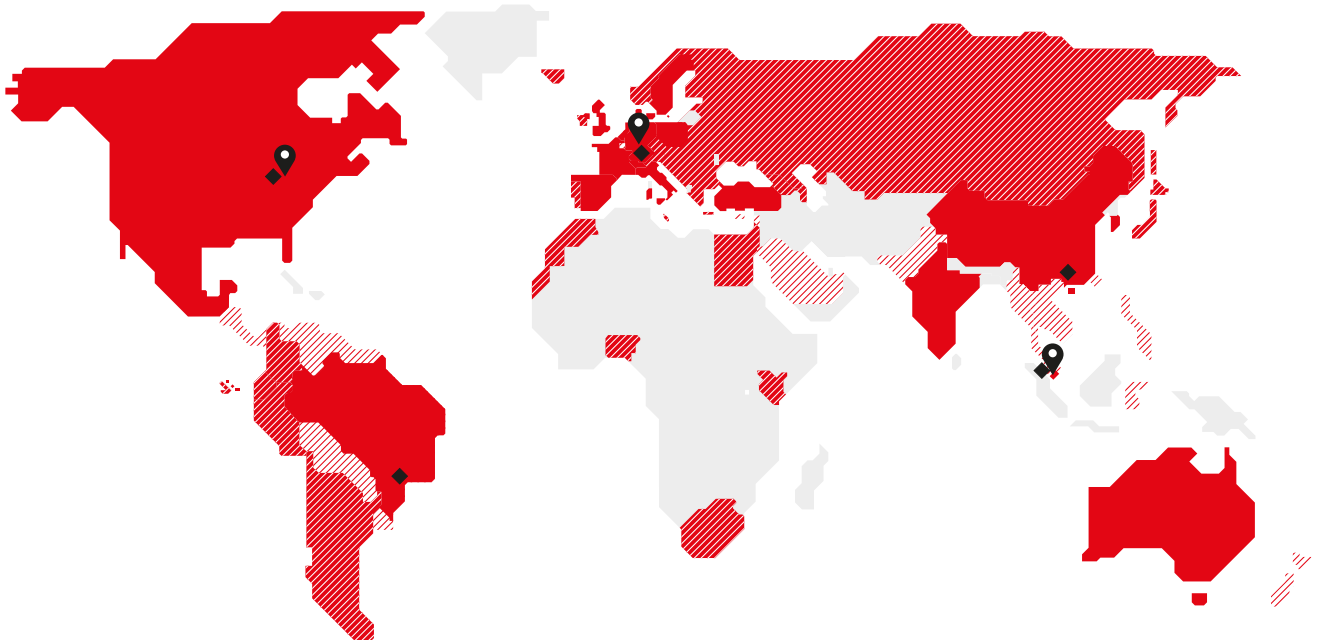




# Our Locations

## At work for you around the world

Your success is our motivation. We therefore place great value on always being personally, quickly, and easily accessible to you. We produce on four continents, allowing us to offer you reliable product availability.



- 📍 Technological competence centers
- ◆ Production locations
- Subsidiaries
- ▨ Distributors
- ▩ Distribution through neighboring country

### Technological competence centers

Owen, Germany  
New Hudson/Detroit, USA  
Singapore

### Production locations

Owen, Germany  
Unterstadion, Germany  
New Hudson/Detroit, USA  
Shenzhen, China  
São Paulo, Brazil  
Malacca, Malaysia

### Subsidiaries

Australia/New Zealand  
Belgium  
Brazil  
China  
Denmark/Sweden  
France  
Germany – headquarters  
Germany – distribution company  
Great Britain  
Hong Kong  
India  
Italy  
Mexico  
Poland  
Singapore  
South Korea  
Spain  
Switzerland  
Turkey  
USA/Canada  
The Netherlands

## Our product range at a glance

### Switching Sensors

- Optical Sensors
- Inductive Switches
- Capacitive Sensors
- Ultrasonic Sensors
- Fiber Optic Sensors
- Fork Sensors
- Light Curtains
- Special Sensors

### Measuring Sensors

- Distance Sensors
- Sensors for Positioning
- 3D Sensors
- Light Curtains
- Bar Code Positioning Systems
- Fork Sensors

### Safety

- Safety Solutions
- Safety Laser Scanners
- Safety Light Curtains
- Single and Multiple Light Beam Safety Devices
- Safety Radar Sensors
- Safe Locking Devices, Switches and Proximity Sensors
- Safety PLCs and Relays
- Machine Safety Services

### Identification

- Bar Code Identification
- 2D-Code Identification
- RF Identification

### Data Transmission

- Optical Data Transmission Systems

### Network and Connection Technology

- Connection Technology
- Modular Connection Units

### Industrial Image Processing

- Light Section Sensors
- Industrial IP Cameras
- Vision Sensors

### Accessories and Supplementary Products

- Signaling Devices
- Mounting Systems
- Reflectors

## Your contact with us

### Leuze electronic GmbH + Co. KG

In der Braike 1, 73277 Owen

Phone +49 7021 573-0

Fax +49 7021 573-199

info@leuze.com

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