SENSOPART

VISOR® Product Overview

VISOR® vision sensors for factory automation

VISOR® vision sensors for factory automation

Image processing made easy.

In industrial automation, reliable decisions often require combining sensor data for accurate results. SensoPart's VISOR® machine vision sensors simplify complex tasks like detection, inspection, identification, measurement, positioning, and color detection. Powerful yet easy to use, they handle advanced image processing without needing a PC during operation – delivering the right solution for every application.

The foundation for this is a powerful smart vision sensor, encased in a compact and lightweight housing.

Perfectly in tune:
- A combination of sophisticated hardware and easily configurable software

Flexibility:
- One of the most extensive vision sensor families on the market to solve your applications

Scalability:
- With the VISOR® **XE**, SensoPart offers a high-performance variant with full compatibility with the existing VISOR® series

Connectivity:
- Comprehensive protocols (e.g. PROFINET, Ethernet/IP) for seamless integration into your environment

Ease-of-Use:
- Modern AI-based solutions solve applications more easily than ever

In many industries and applications, VISOR® can help to achieve the requirements of varied automation tasks:

Automotive

Assembly & Handling

Robotics

Electronics

Food & Beverages

Plastics

Lab Automation

Pharmaceuticals & Cosmetics

Solar

Packaging

The VISOR® helps to ensure quality, increase plant efficiency, and reduce scrap and costs, while offering multiple options of integrated detectors and functionalities to meet the needs of varying tasks:

Standard: Solves simple image processing tasks

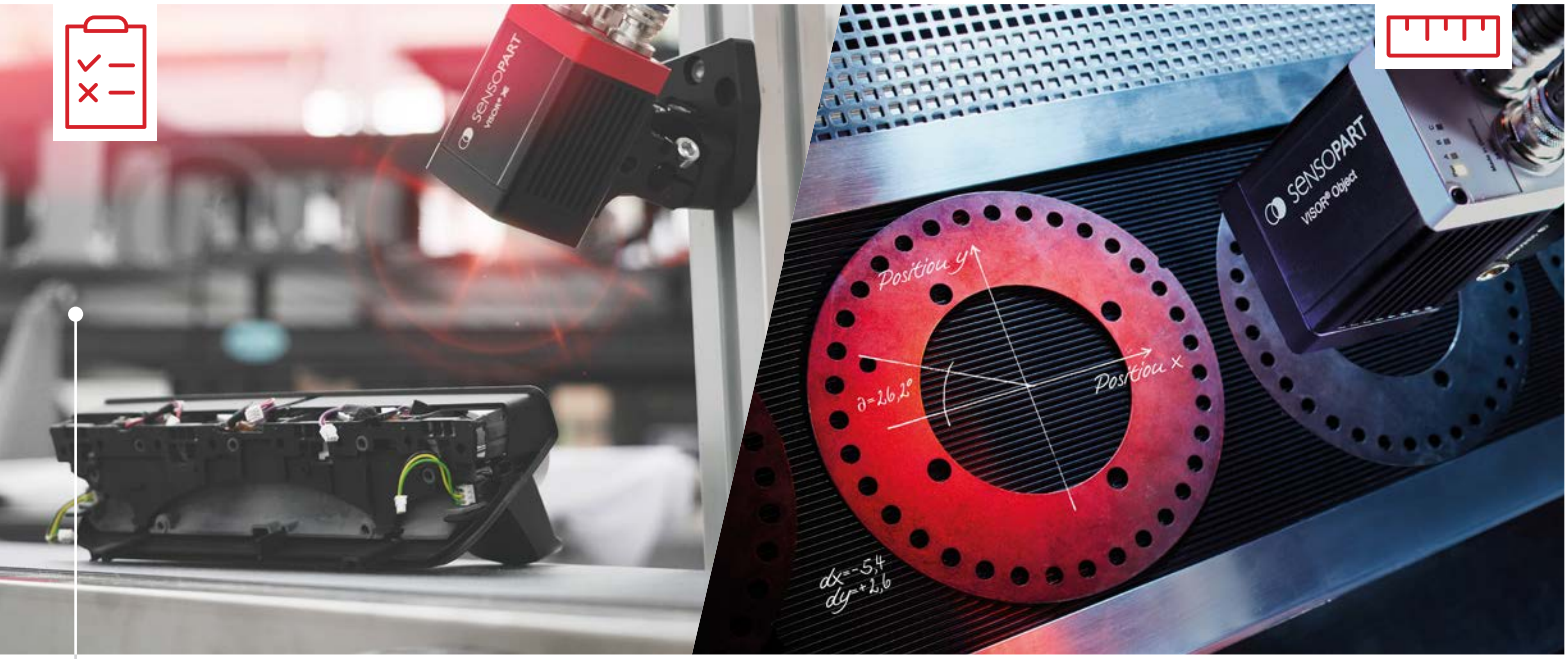
Advanced: An extended scope of functions for more challenging applications

Professional: The complete detector package suited to the most complex tasks

VISOR® vision sensors

Unified hardware and software for any application, anytime

Detection, Inspection & Measurement



Reliable detection in any situation

Most production lines require assembly and quality control checks. The VISOR® Object AI, available in both monochrome and color models, delivers solutions to the most critical production questions:

- Is the object present and correct?
- Is it the correct type / object?
- Is the object in the right place?
- Is the number of objects correct?
- Is the object dimensionally accurate?
- Is it free of errors?
- Does it have the right color?

- **VISOR® Object Standard**
  - The standard for reliable object detection
  - 7 detectors for presence check, completeness check or simple position check
  - Simple compensation of position variations even with components that are not precisely guided

- **VISOR® Object Advanced**
  - Effortlessly solves complex inspection tasks
  - Variants with resolutions up to 5 megapixels
  - All software functions of VISOR® Object Standard
  - Further alignment and detectors for counting and evaluating objects
  - Easy integration into the system by calculating results directly in the VISOR®
  - Accurate measurement results in the entire field of view through calibration with just a few mouse clicks
- **VISOR® Object AI Advanced**
  - Classification of objects made even easier with artificial intelligence
  - All functions of VISOR® Object Advanced

Identification

Consistent object differentiation and tracking

Parts are generally labelled with one-dimensional barcodes or two-dimensional data matrix codes, which are either printed or applied using dot-peen or laser marking technology (direct marking). Our VISOR® Code Readers reliably read all industry standard code types.

- VISOR® Code Reader
  - Accurately reads all industry standard code types
  - Reliable interpretation of extremely small printed codes or codes marked on difficult surfaces thanks to various optics and illumination variants
- VISOR® Allround
  - Reading of engraved or raised lettering
  - Multishot technology to make height changes visible

Positioning

Reliable detection at any position

The precise positioning of parts is a key process in industrial production. Our vision sensors always have an eye on the exact position and supply the values in robot coordinates in a few simple steps.

- VISOR® Robotic
  - Using special functions, such as gripper space check and point offset, enables a precise gripping of parts
  - Sensor data is directly transferred into the robot coordinates, avoiding the need for additional complex programming work in the robot's control system
  - Integration is simplified with function blocks compatible with many robot types
- VISOR® Object
  - Fine positioning without calibration in real-world coordinates

VISOR® vision sensors

Sophisticated design and extensive features

VISOR® ready-to-use:

- VISOR® Allround
- VISOR® Object
- VISOR® Robotic
- VISOR® Code Reader

High-resolution monochrome or color imaging chip

- 800 x 600 pixels
- 1440 x 1080 pixels
- 2560 x 1936 pixels

- User-friendly configuration software (also available offline)
- SensoView and SensoWeb

- Integrated lens (wide, medium, narrow)
- Motorized focus adjustment

- Target Laser

- High-performance, integrated LED lighting (white, red, infrared, ultraviolet)
- Can be combined with external illumination

- C-Mount lens (various focal lengths)

- Integrated processing unit with high-performance processor
- Robust and vibration-resistant metal housing, IP 65 / IP 67
- Compact dimensions: 71 x 45 x 45 mm

- Status LEDs

- Simple and flexible installation using dovetail mount
- Extensive range of mounting accessories and holders

Power supply and I/O, M12, 12-pin

- Power supply
- I/Os
- Encoder
- External lighting

Configuration and data output, Ethernet, M12, 4-pin

- Ethernet
- EtherNet/IP
- PROFINET
- sFTP/SMB archiving
- SensoWeb

VISOR® **XE** vision sensors

XE-tra fast. XE-tra easy. XE-tra smart.

VISOR® ready-to-use:

- VISOR® **XE** Allround
- VISOR® **XE** Object
- VISOR® **XE** Robotic
- VISOR® **XE** Code Reader

- User-friendly configuration software (also available offline)
- SensoView and SensoWeb

High-resolution monochrome or color imaging chip

- 1600 x 1200 pixels
- 2560 x 1936 pixels

- Integrated lens (wide, medium, narrow)
- Motorized focus adjustment
- Target Laser
- High-performance, integrated LED lighting (white, red, infrared, ultraviolet)
- Can be combined with external illumination
- C-Mount lens (various focal lengths)

- Integrated processing unit with high-performance processor and additional AI optimization
- Robust and vibration-resistant metal housing, IP 65 / IP 67
- Compact dimensions: 71 x 45 x 45 mm

- Status LEDs

Power supply and I/O, M12, 12-pin

- Power supply
- I/Os
- External lighting

Configuration and data output, Ethernet, M12, 4-pin

- 2x Ethernet
- EtherNet/IP
- PROFINET
- sFTP/SMB archiving
- SensoWeb

- Simple and flexible installation using dovetail mount
- Extensive range of mounting accessories and holders

Setup requires just a few simple steps

Complex tasks made easy - with VISOR® software packages

The VISOR® **XE** delivers XE-tra power

With VISOR® **XE**, SensoPart provides a high-performance sensor that is fully compatible with our existing product line. All VISOR® models and variants utilize the same software, allowing for the seamless transfer of existing application solutions between them.

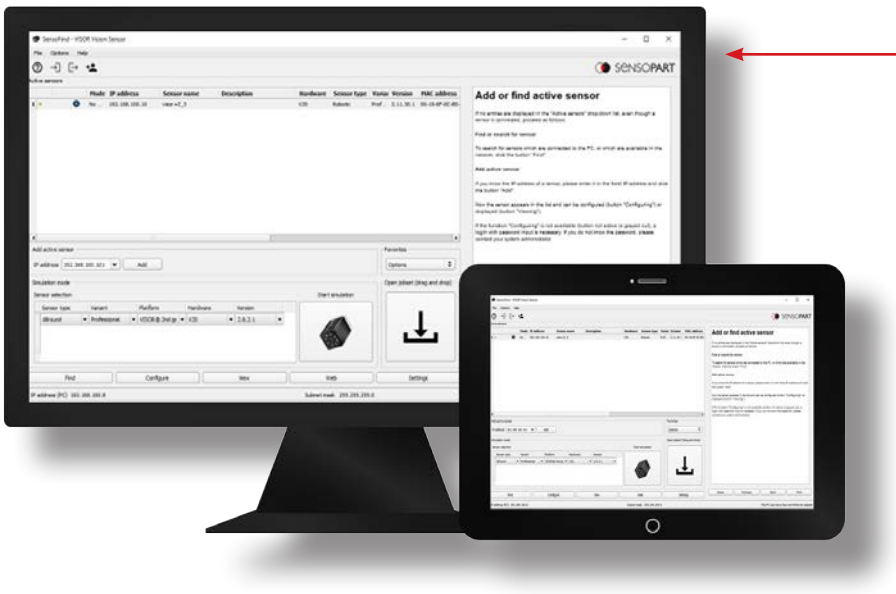
Unpack, set up, go

Vision sensors have never been as easy and intuitive to use, even with unprecedented levels of performance. SensoPart VISOR® vision sensors are the perfect solution for both beginners and experts alike and are ready to operate in just a few clicks. With VISOR® technology, complex vision tasks become simple and efficient. Whether it's handling complex object shapes, color detection, data matrix codes, or fluorescent display elements,our application-specific vision sensors reliably detect all key object features.

Step-by-Step to Success

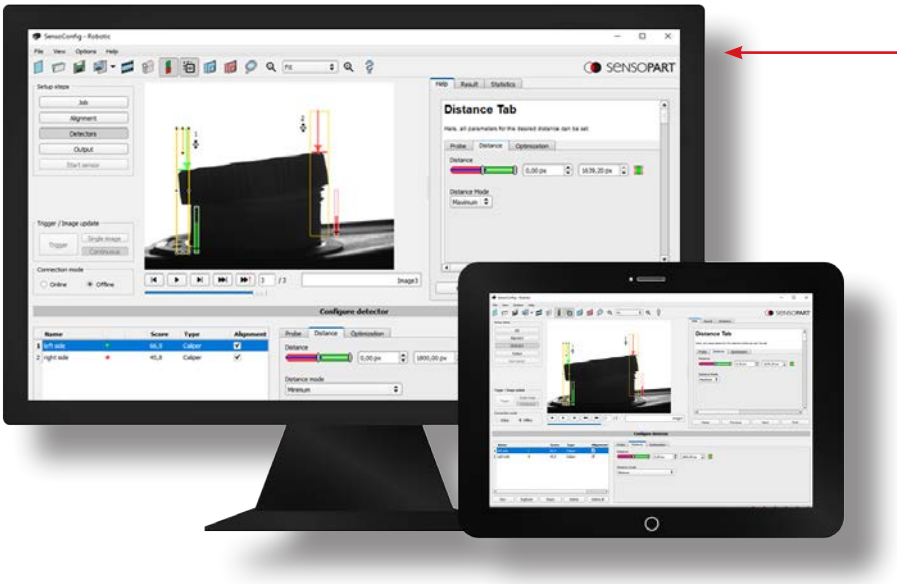
1. Set up the job and image
2. Configure image tracking and detectors
3. Activate result output/communication

Once the sensor has been started, no PC is required.



SensoFind

Lists all the VISOR® vision sensors available in the network. Configuration or Viewer mode can be accessed directly from here and offline simulation can also be started. The SensoFind app for iOS and Android extends the availability of SensoFind to non-PC platforms.

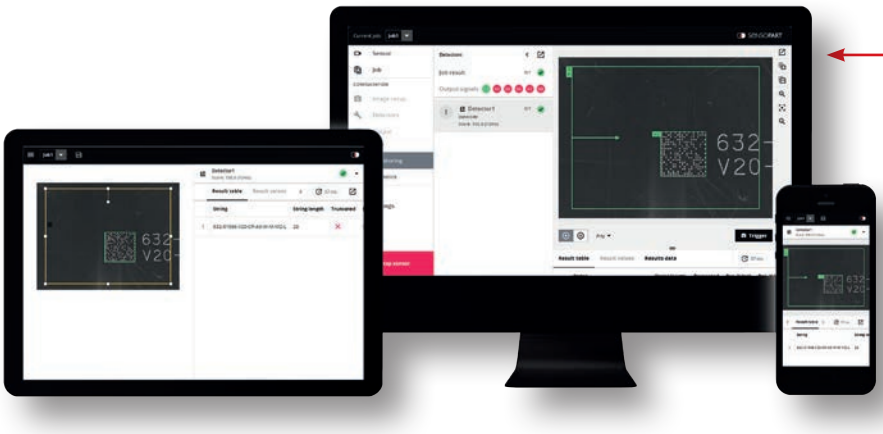


SensoConfig

Complex inspection tasks can be easily set up in a step-by-step process. The effect of each setting is immediately visible on the screen. Comprehensive logic functions enable the direct assignment of complex inspection results to one of six digital result outputs. The integrated image recorder, which enables error analysis and simulations, is also highly beneficial.

SensoView & SensoWeb

Once configured, the vision sensor operates as a stand-alone unit—without the need for a PC connection. However, data can be accessed at any time while the sensor is running. For this, the unique „SensoView" viewer software with restricted user rights is available, ensuring that configuration settings cannot be unintentionally altered. Additionally, SensoWeb allows simple connection to system visualization through a web browser.



SensoConfig Web

The web-based configuration of the VISOR® Code Reader provides broader access. No software installation is required to use the web tool. The tool is platform-independent, supporting various hardware (PC, tablet, mobile) and software (Windows, Linux, iOS, and Android) platforms. The intuitive wizard makes configuration easier and guarantees faster setup and commissioning.

VISOR® Object Standard

The standard for reliable object detection

The right color in the right place?
The Color variant detects different colors faster and more reliably than the human eye.
This enables tasks such as sorting parts by color, verifying the correct wiring of connectors, or ensuring the proper function of LED components.

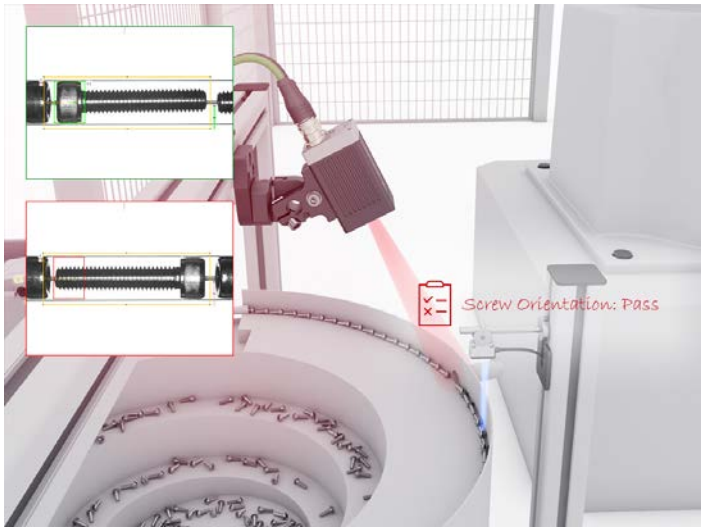
HIGHLIGHTS: VISOR® OBJECT STANDARD

- Seven detectors for solving presence inspection, completeness inspection or part differentiation tasks
- Robust contour alignment for the compensation of position deviations even with imprecisely guided components
- Extensive logic functions, flexible result delay of the switching outputs for easy integration into the system
- All models available as color variants for reliable color inspection

The right package for your individual application:

VISOR® Object Standard: Presence and completeness check, sorting of parts

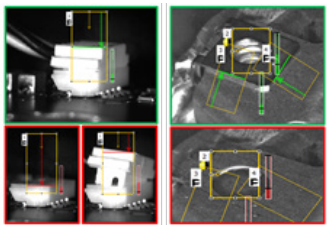
- Easy-to-use configuration and viewer software
- Easy integration with three field-of-view options and an electrical focus
- Trigger signal input delay, output signal delay, and 300mA output control can eliminate the need for a PLC in conveyor and vibratory bowl feeder applications
- Reduces setup and maintenance requirements



VISOR® Object Advanced

Solving challenging inspection tasks with ease

Precise Detection with BLOB Technology:
Using the BLOB detector (Binary Large Object), the VISOR® identifies small object differences, counts parts, and determines part orientation (face up or down).



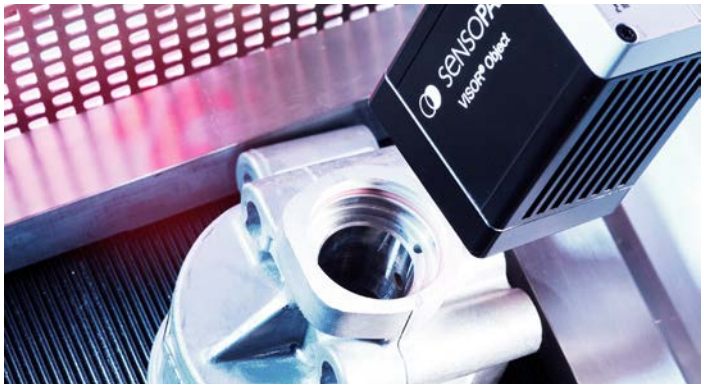
Check the fit, ensure stability, and confirm airflow
Not only the presence, but also the correct fit of the connector or mounting clip can be easily checked with the VISOR® Object.

HIGHLIGHTS: VISOR® OBJECT ADVANCED

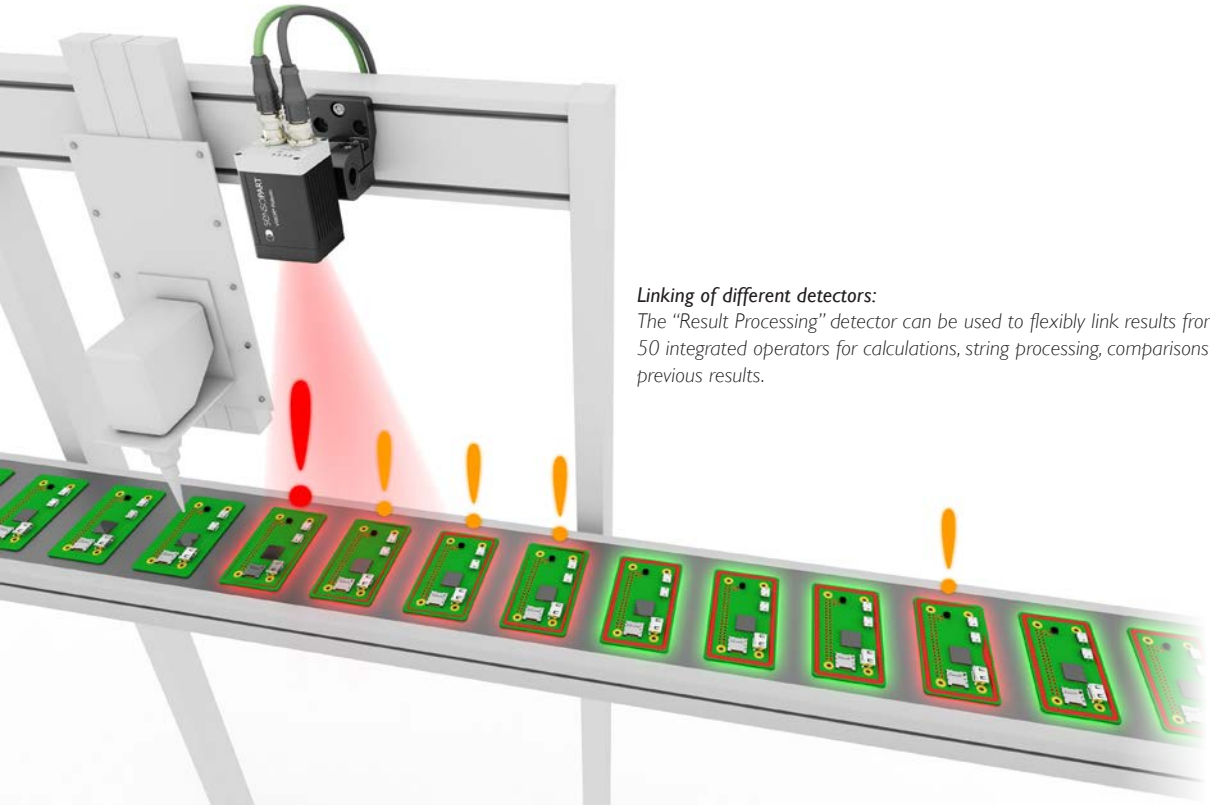
- All functions of the VISOR® Object Standard
- Hardware variants up to 5 megapixels for highest accuracy or largest fields of view
- Additional detectors for counting and evaluating objects, as well as for solving measuring and positioning tasks
- Three position alignment systems for compensation of position variations even with non-precisely guided components
- Correction of distortion, conversion to millimeters thanks to easy calibration
- Extensive logic and calculation functions for maximum flexibility, memory for access to previous results
- Flexible definition of output data for easy communication with PLC or PC

The right package for your individual application:

VISOR® Object Advanced: Presence and completeness check, position control, counting of objects, sorting of parts, part recognition and differentiation, simple measuring and quality control tasks.

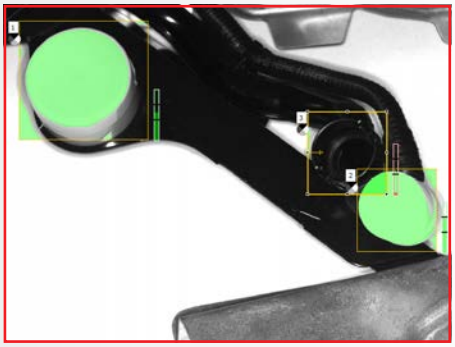


- Reliable detection and evaluation via 12 flexible detectors
- Simple compensation of position variations even with components that are not precisely guided
- Differentiation of color nuances and compensation of variances via image pre-processing
- Seamless integration in any installation situation thanks to various resolution levels from 0.5 to 5 megapixels, internal optics with three field-of-view variants and electrical focus, as well as a C-Mount variant and a large portfolio of illumination and accessories
- 255 jobs with up to 255 detectors, so that even diverse tasks can easily be solved



Linking of different detectors:
The "Result Processing" detector can be used to flexibly link results from different detectors. It offers more than 50 integrated operators for calculations, string processing, comparisons and decisions, as well as access to previous results.

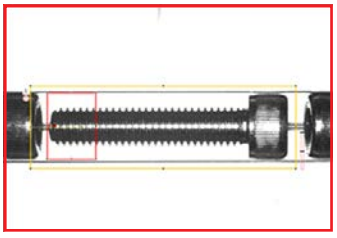
Presence check of protective caps

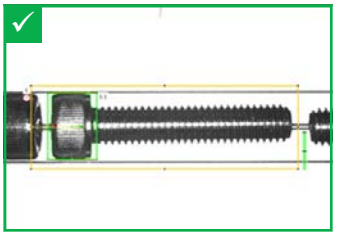


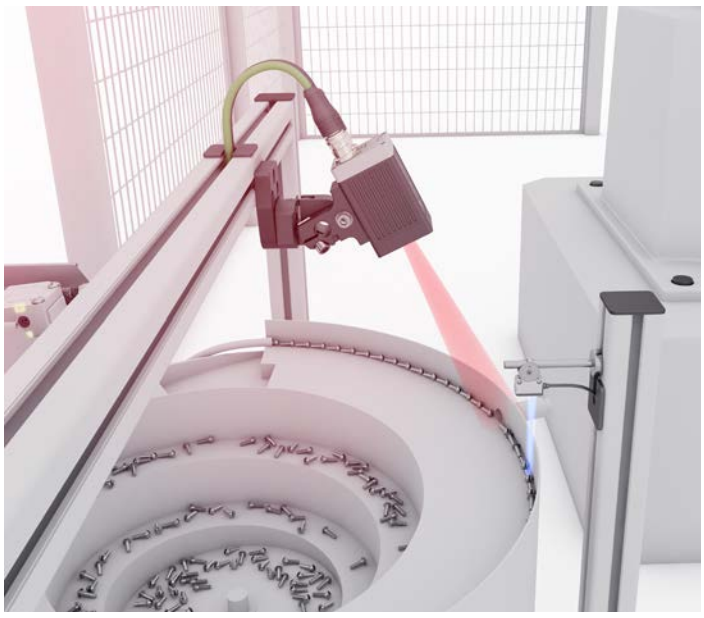
The VISOR® Object, when paired with a robot, provides the flexibility needed to inspect hard-to-see protective caps. This ensures reliable image capture for accurate inspections. The software can determine cap presence using a unique grayscale value and, if needed, verify their position. To inspect different types of caps with the same hardware, the vision sensor allows job switching. With image evaluation taking only a few milliseconds, protective cap inspections can be performed seamlessly as they pass.

Verification of proper screw feeding and correct positioning

The VISOR® Object can be time-configured to begin evaluating the fed screws at the right moment, even if the trigger is delayed. Additionally, a specially designed output, capable of handling up to 100mA, can be set as an ejector. This ensures the signal is delivered at the correct time and within the proper interval. With integrated autofocus and illumination, image capture can be easily adjusted through the VISOR® software. To verify screw alignment, a simple contour detector can be configured in just a few steps.

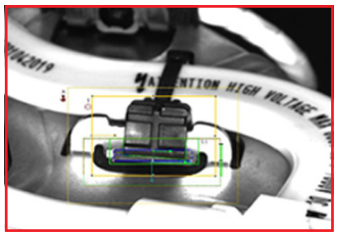


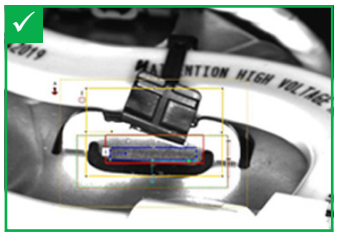


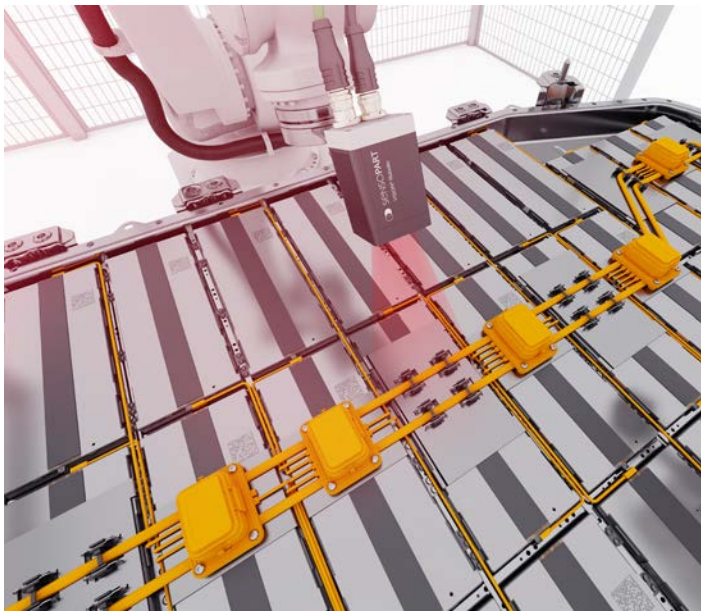


Position control of cable harness fastening clips

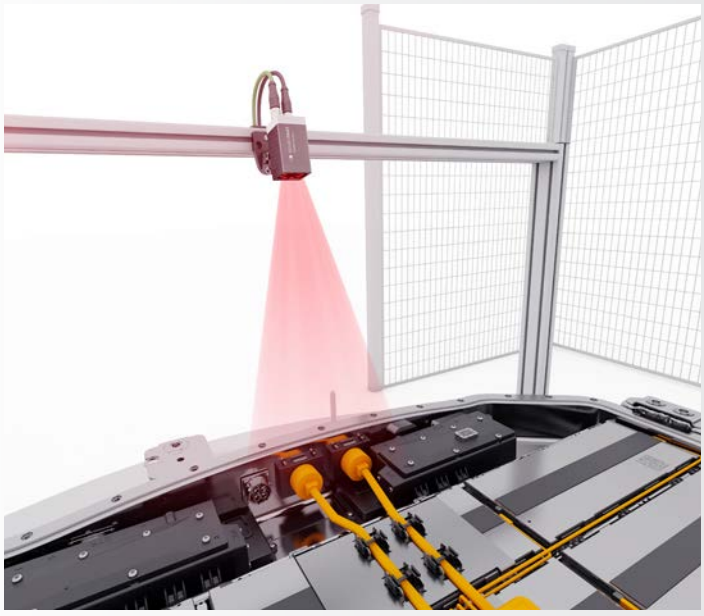
The VISOR® Object, when combined with a robot, provides the flexibility needed to inspect hard-to-see fastening clips, ensuring reliable image capture for accurate inspections. The software allows you to teach a unique contour, which can then be searched and checked for proper positioning. Additionally, different clamp types can be stored as identification jobs within the software and inspected using the same hardware. With image evaluation taking just milliseconds, clamp inspections can be performed on the fly, significantly reducing inspection time.



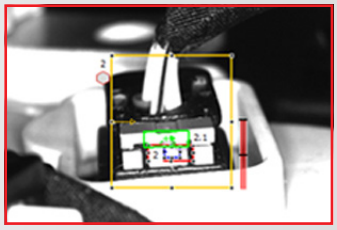


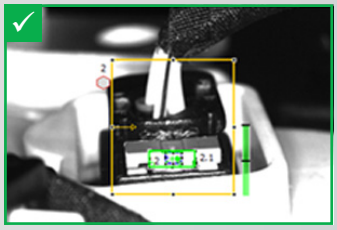


Locking Check of Connections



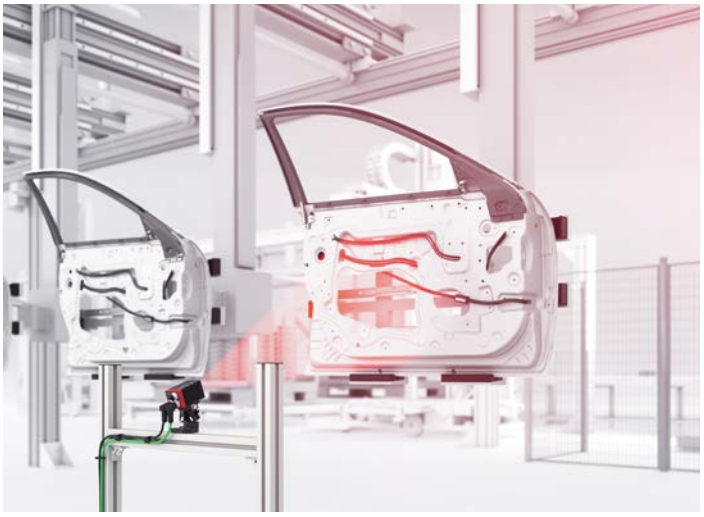
The VISOR® Object, whether mounted stationary or combined with a robot, provides the flexibility needed for inspecting hard-to-see connectors, ensuring reliable image capture for accurate inspections. The VISOR® software allows you to teach a unique contour, which can then be searched and verified in its position. Job switching enables the inspection of different fasteners with the same hardware. With image evaluation completed in only a few milliseconds, connector inspections can be performed in passing, significantly reducing the time required.





VISOR® Object AI

Artificial intelligence. Real results.



Presence check of additional parts on car doors:
*The VISOR® **XE** V50 Object AI, equipped with advanced artificial intelligence, performs a reliable presence check of numerous small components during the assembly of car doors.*

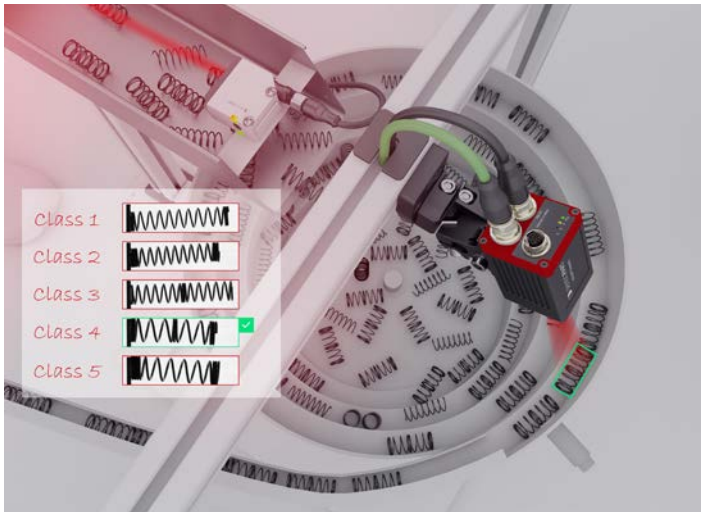
HIGHLIGHTS: VISOR® OBJECT AI

- Easy setup without needing image processing knowledge
- AI technology in a robust vision sensor, designed for industrial automation
- Train the detector with just a few images on your PC
- Reliable results with strong varying processes and products
- The VISOR® **XE** Object AI features AI-optimized hardware for superior results

The right solution package for your individual application:

VISOR® Object AI: Advanced capabilities for presence and completeness checks, position verification, object counting, part identification, and basic measurement and quality control tasks.

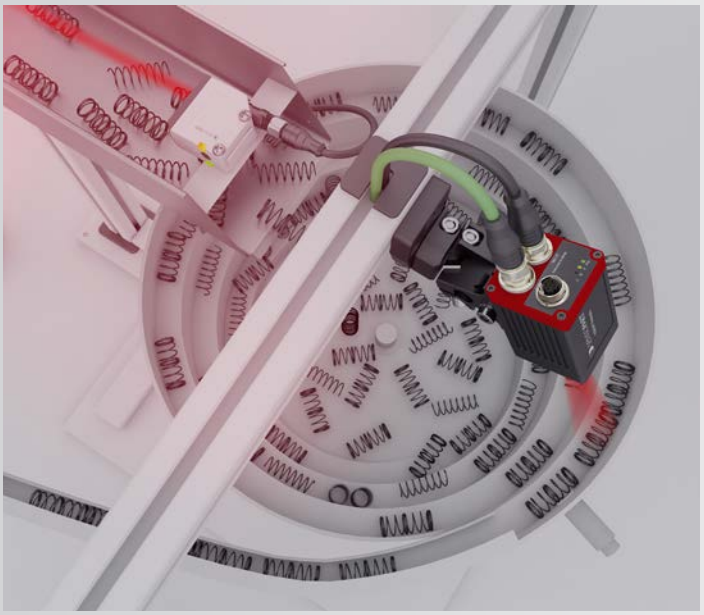
- The "Classification (AI)" detector facilitates object classification and ensures reliable assignment of up to 200 classes
- Automatic evaluation of objects as "good" or "bad" for the presence check
- Artificial intelligence (AI) enables learning of distinguishing features based on a few sample images; no expert knowledge required
- Easy adaptation to process variations such as lot variations, stains or strong reflections with just a few clicks
- Thanks to the AI-optimized hardware of the VISOR® **XE** Object AI, up to 40 rapid inspections are possible for every image.



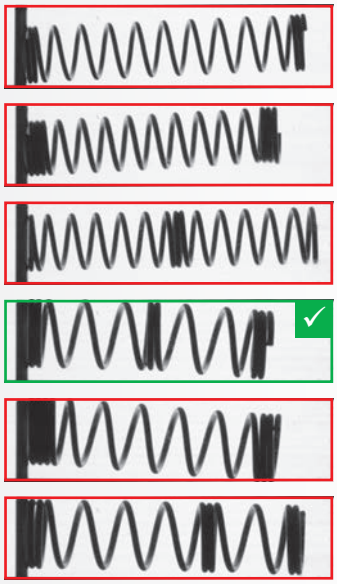
Verifying the correct spring type:
The classification detector reliably distinguishes even very similar-looking springs, ensuring they are correctly fed into the machine.

Ensure accurate selection of fuel hoses and clips:
The VISOR® Object AI identifies various fuel hoses and corresponding clips across different car models, ensuring the correct ones are properly installed.

Classification of springs

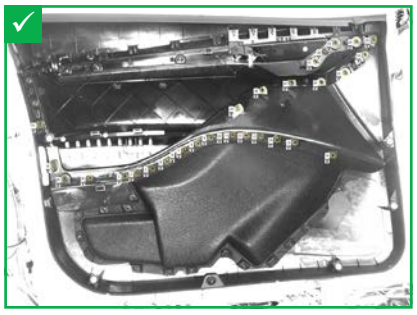


With the classification detector of the VISOR® **XE** Object AI, even very similar-looking springs are reliably distinguished and correctly fed into the machine.
By providing just a few examples for each class, the classifier automatically learns to differentiate between the various types.



Precise Presence Detection of Car Door Components

The VISOR® **XE** V50 Object AI, equipped with advanced artificial intelligence, performs a reliable presence check of the numerous small components during the assembly of car doors.
The "Classification (AI)" detector enables the vision sensor to perform over 40 AI-based checks in the shortest possible time. The detector showcases its ease of use by eliminating the need for time-consuming selection of the optimum image processing method. Users only need to teach in sample images of components with and without the desired element, which considerably simplifies and speeds up the process.



Ensure correct fuel filler neck installation

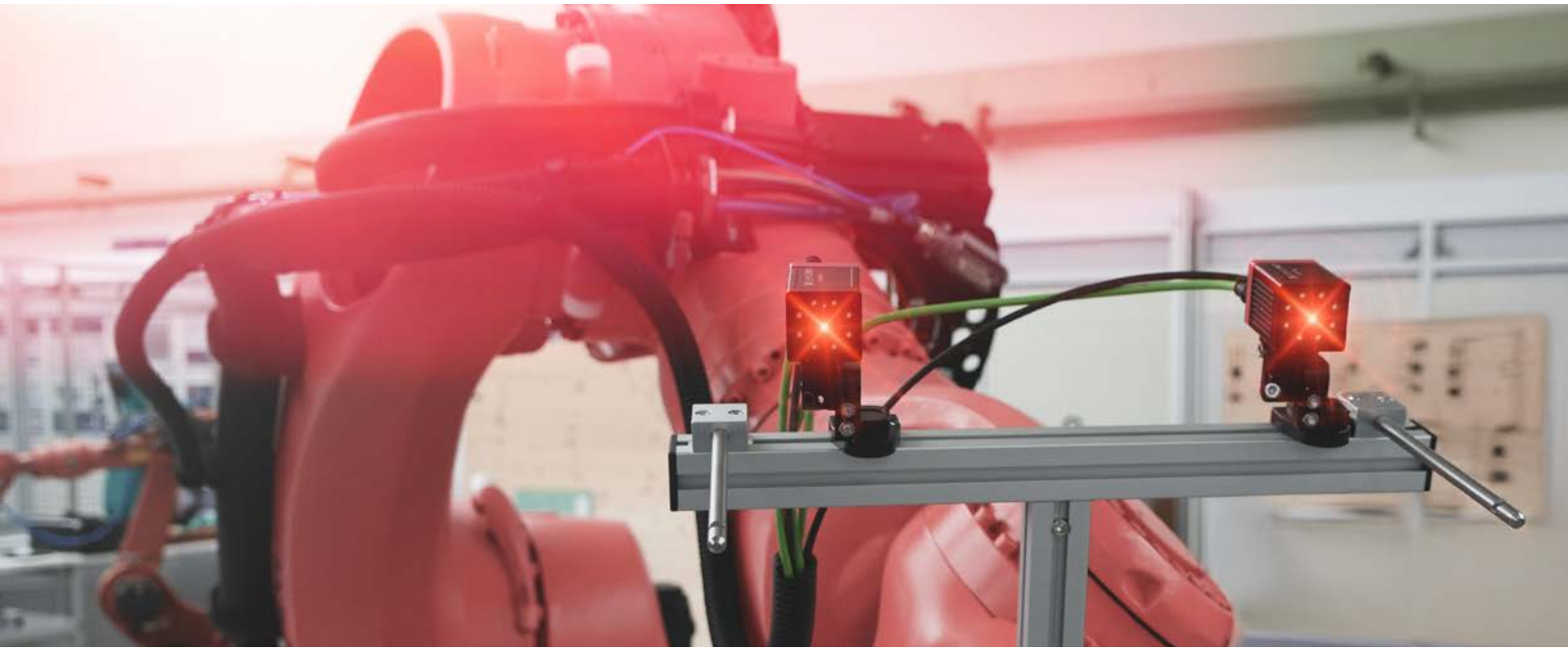
The VISOR® Object AI quickly and reliably verifies that the correct fuel filler necks are installed on different cars along the production line. By providing just a few examples for each class, the classifier automatically learns to differentiate between types. It can also adapt to variations in position and reflections by analyzing these features during setup.

Verify proper fuel hoses and clips

The VISOR® Object AI identifies different fuel hoses and their corresponding clips across various car models, reliably ensuring the correct ones are installed. By providing just a few examples for each class, the classifier automatically learns to distinguish between types. It can also adapt to position variations by analyzing these features during setup.

VISOR® Robotic

An eye on everything – the vision sensor for Robot guidance



The VISOR® Robotic detects the position of the component in a load carrier and transmits the gripping position directly to the robot.

HIGHLIGHTS: VISOR® ROBOTIC

- Reliable 2D or 3D localization in robot coordinates
- Accurate picking of parts made possible by special functions such as gripper clearance check and gripper offset
- Compact and lightweight housing for mobile or stationary use
- Simplified commissioning enabled by application-specific calibration methods
- Simple integration thanks to multiple robot function modules and apps

The VISOR® Robotic determines the exact position of the sensor housing. Offset data is used to correct the robot's trajectory.

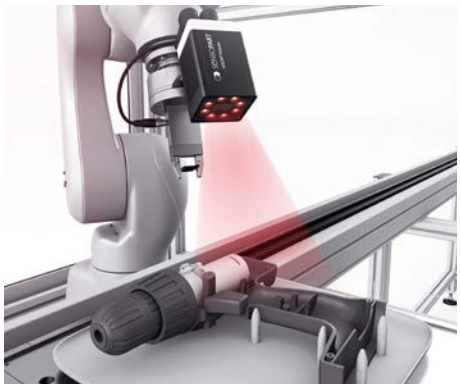
*With the additional LAN connection on the VISOR® **XE** Robotic, cabling on the robot arm is simplified, reducing cable runs.*

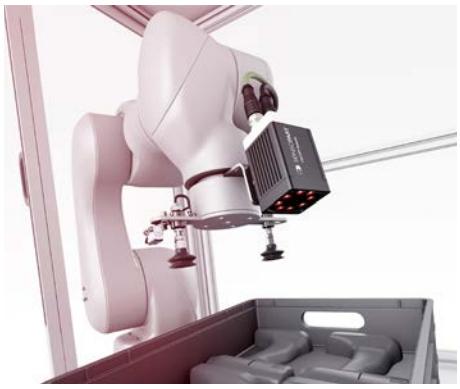
The right package for your individual application:

VISOR® Robotic Advanced: Designed to solve common image-based robotics applications

- Simple calibration methods for robotics applications
- 3D result offset for direct transmission of gripper positions to the robot
- Easy adjustment of the work plane
- Target Mark 3D technology quickly provides 3D object poses

VISOR® Robotic Professional: Extended functionality for identification, extended calibration methods and localization in 3D

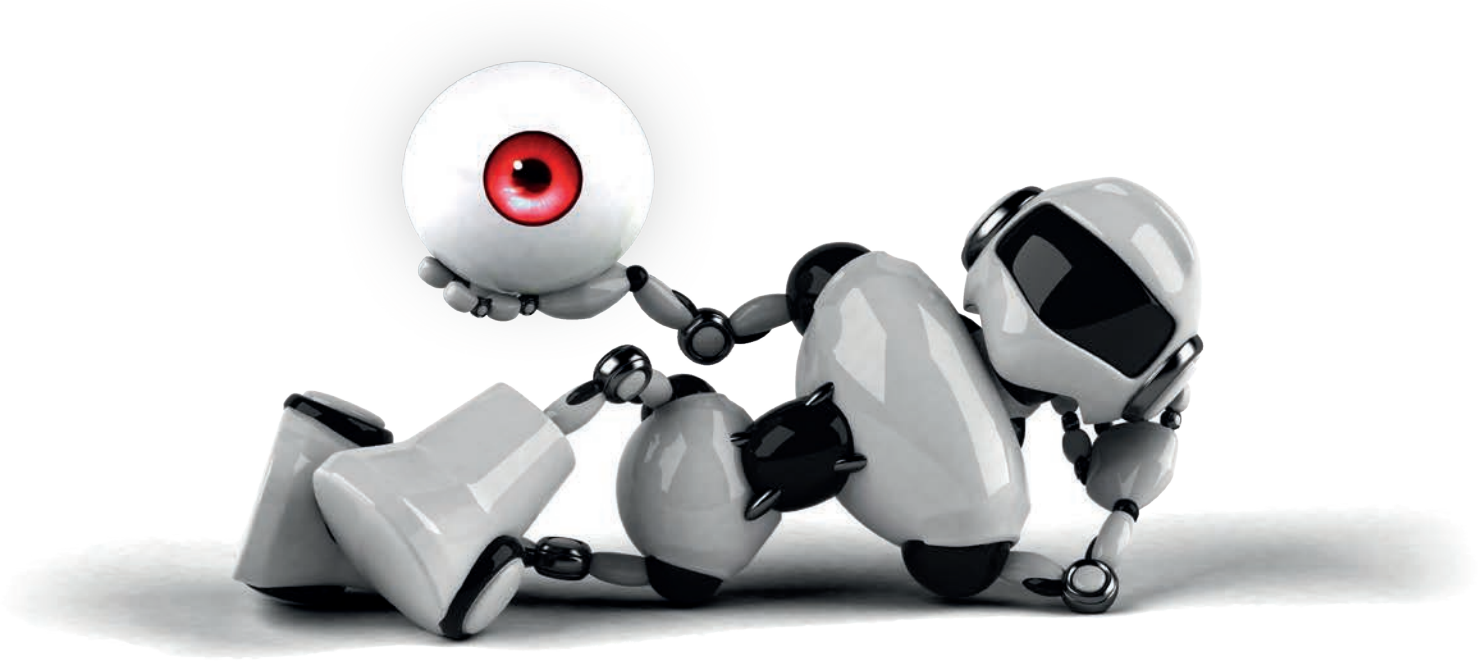




- Calibration methods tailored to the application
- Can be used for all common 2D codes, common 1D barcodes and OCR

VISOR® Robotic

Easy.Robot.Vision.



Simple connection to robot systems from leading manufacturers

The VISOR® Robotic vision sensor was specifically developed for the challenges in robotics applications. With its integrated, standarized interfaces, it can be easily incorporated into existing installations and robot systems from leading manufacturers.

Custom-developed apps and function modules enable seamless communication between the vision sensor and robot, and simplifying setup, operation and data exchange. This ensures fast and efficient integration into a wide range of applications.

Seamless connection to solutions from leading manufacturers:

In addition to the apps and function modules we've developed, the setup of robotics applications is further simplified by offerings from other solution providers.

Our VISOR® Robotic integrates seamlessly with these programs, ensuring effortless compatibility. Their additional tools enhance communication with robots, making setup and operation more convenient, while greatly expanding your application capabilities and efficiency.

ABB, KUKA, UNIVERSAL ROBOTS, ARTIMINDS, wandelbots, DENSO, MITSUBISHI ELECTRIC, YASKAWA, drag&bot, FANUC, DOOSAN, STÄUBLI, READY ROBOTICS

VISOR® Robotic Starter Kits

- Everything you need to get started with one single part number
- 3 different hardware levels ranging from basic to advanced
- Kits suited for stationary or end-of-arm configurations
- Compatible with different robot manufacturers
- For more information, visit **www.EasyRobotVision.com**

VISOR® Robotic +Z

Enhanced robot approach using depth sensing

VISOR® V20 Robotic +Z Advanced
Vision sensor with distance measurement for precise robot guidance. It also enables object inspections, including presence and completeness checks, as well as measurement tasks.

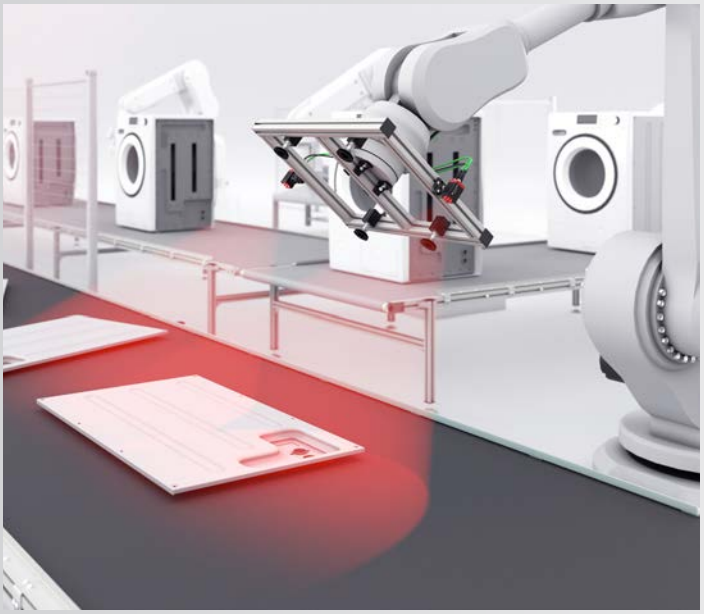
Applications
- Robot approach using depth information
- Positioning
- Object detection
- Measurement
- Identification

255 jobs with 255 detectors each
- **Distance:** Determines the VISOR®'s distance to the target object
- **Position tracking X/Y and orientation of the target**
- **Pattern matching, contour, Target Mark 3D:** Teach-in and recognition of patterns, contours and 3D poses
- **Caliper:** Distance between edges
- **BLOB, gray threshold, brightness:** Evaluation of brightness
- **Contrast:** Evaluation of contrast
- **Result Processing – Robotics, Text, Math:** Checking and Calculating Detector Results

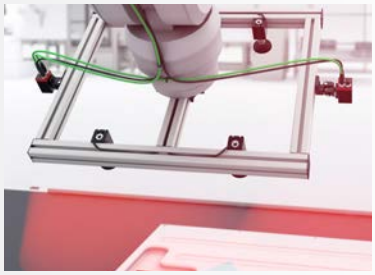
Product highlights

Resolution	V20: 1440 x 1080
Series	Robotic
Variant	Advanced/Professional
Image chip	Monochrome
Lens type	Medium (integrated)
Integrated illumination	LED, red
Distance measurement	yes
Working distance min. [mm]	150
Working distance max. [mm]	2500
Speed [Hz]	100
Light source	Laser, red (class 2)

Precise robotic handling of large components

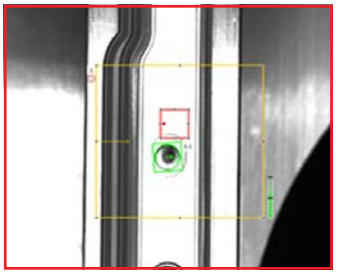


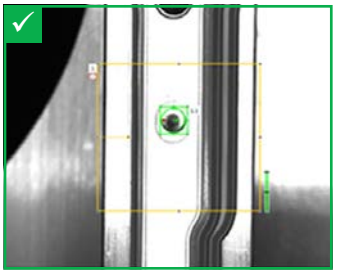
With the VISOR® **XE** Robotic, the exact position of the large components is determined and transferred to the controller in robot coordinates.
The VISOR® **XE** series enables fast, cost-effective installation and connection of multiple vision sensors thanks to the additional LAN connector, which reduces cabling and installation time.
This solution facilitates the reliable detection of large components and simplifies their integration into existing systems.

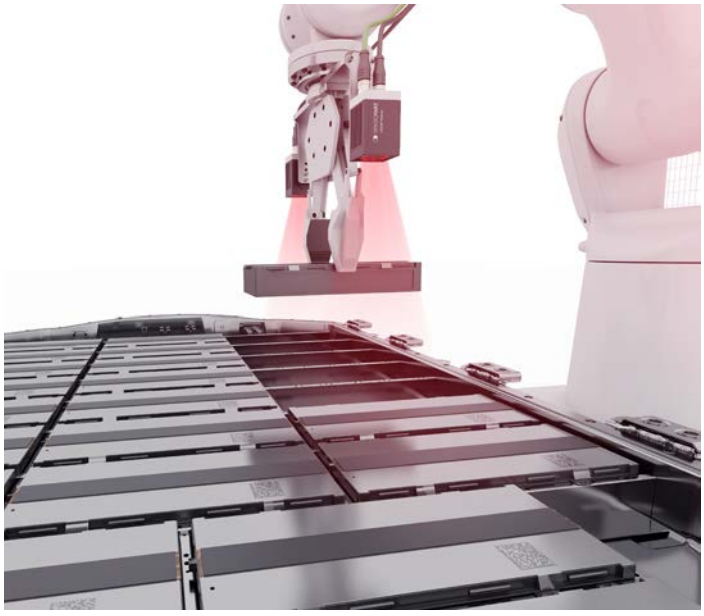


Inserting battery modules into the housing bottom

With the VISOR® Robotic, the exact position of the housing bottom is determined and transferred to the controller in robot coordinates. Its compact and durable design allows easy integration directly into the robot gripper. Using standardized calibration plates, the image coordinates are seamlessly converted into world coordinates.

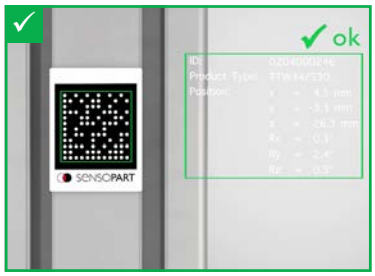




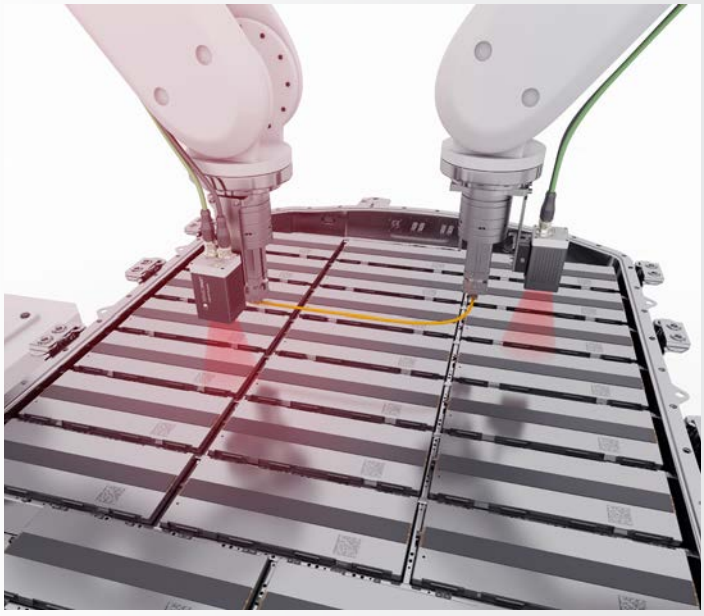


Transfer to test station

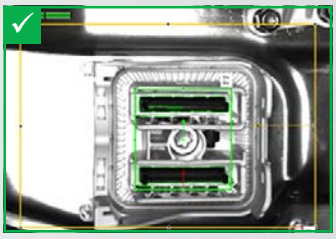
Target Mark 3D technology addresses this challenge by placing a coded mark on the machine. The robot program is written to reference this mark. If the robot is repositioned, such as onto a mobile platform, Target Mark technology identifies the machine requiring attention and measures the offset, automatically adjusting the robot program as needed.

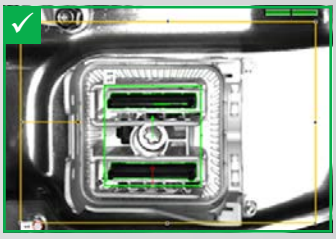


Automated assembly of electrical plug connections



Robot automation helps eliminate assembly errors that could have serious consequences. Cooperative robots each grip one end of the cable and perform the plugging process simultaneously, with movements coordinated for timing and geometry. Each robot, equipped with a VISOR® Robotic, detects the precise position of the plug-in slots. The vision sensor's compact and durable design allows seamless integration into the robot gripper. The VISOR® variant with a narrow field of view ensures there is adequate distance between the gripper and the object.





VISOR® Code Reader

Reads printed, dot-peened, and lasered codes with ease

The VISOR® Code Reader from SensoPart effortlessly reads a wide variety of barcodes, as well as printed and directly marked data matrix codes in accordance with the ECC200 standard, regardless of the material (metal, plastic, paper, glass). The sensor easily decodes skewed, distorted, or even codes on convex, reflective, or transparent surfaces.
Equipped with a built-in early warning system, the VISOR® Code Reader evaluates the quality of your printed and directly marked data matrix codes based on standardized quality parameters according to ISO and AIM standards.

HIGHLIGHTS: VISOR® CODE READER

- With the most powerful processor in the VISOR® product family, the VISOR® **XE** Code Reader enables high-speed code reading, even at high resolutions
- Reading of Barcodes / Datamatrix codes and plain text recognition (OCR - robust reading of difficult codes including low-contrast, dirty, and damaged)
- Reading of directly marked codes
- Support for all marking methods including printed, needled, and lasered
- Reading on a wide range of surfaces (including metal, plastic, and paper)
- Evaluation of quality parameters according to ISO/IEC 15415, ISO 15416, ISO/IEC 29158 and SEMI-T10

The right package for your individual application:

VISOR® Code Reader Standard: Reliable reading of printed codes and labels

- Can be used for all common 2D codes and common 1D barcodes
- Comprehensive tools for flexible and easy connection to PC and PLC environments

VISOR® Code Reader Advanced: Reading of printed and directly marked codes on all surfaces

- Reliable detection of even poorly readable codes under difficult ambient conditions
- Reading of several similar or differing types of codes in one reading pass
- Combination of two functions in one device: code reading and object detection (only VISOR® V10 Code Reader Advanced, C-Mount)

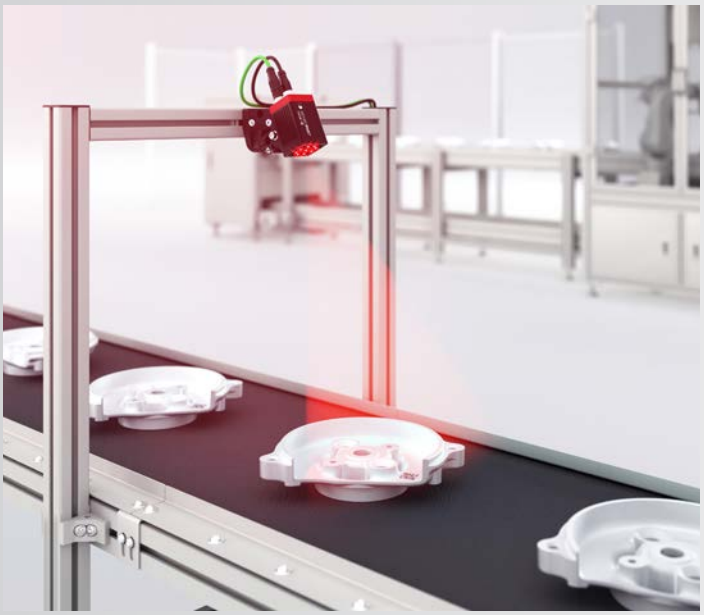
VISOR® Code Reader Professional: The comprehensive package of detectors (including optical character reading with OCR) even for very complex tasks

- Combines two functions in one device: code reading and select object detection features
- Plain text recognition with OCR

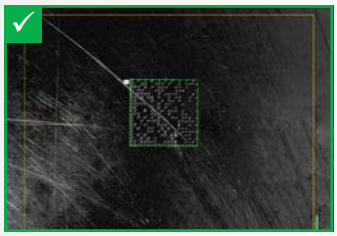
VISOR® Code Reader

Application examples

High-Speed, High-Resolution Code Reading

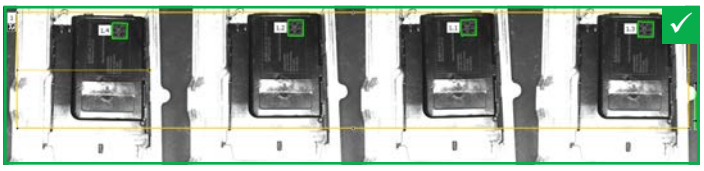


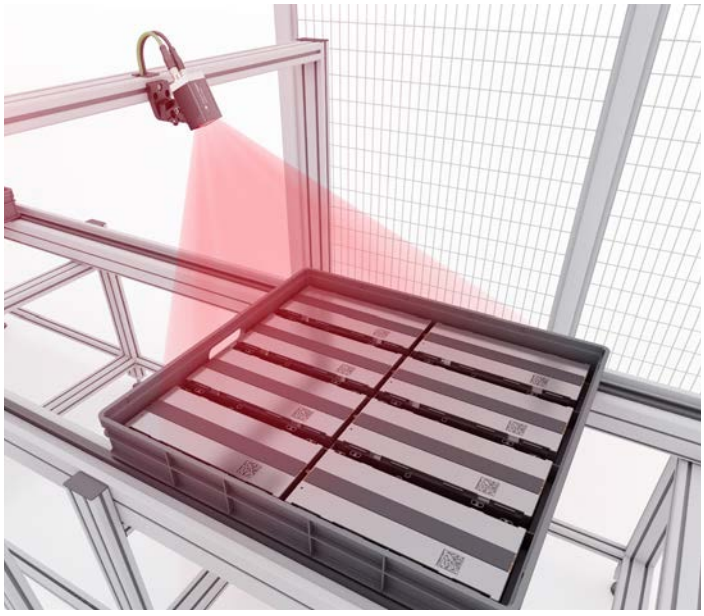
The VISOR® **XE** Code Reader easily reads barcodes along with printed and directly marked data matrix codes – even when scanning multiple 1D and 2D codes simultaneously. Reliable code detection is ensured, even in challenging conditions like long distances, moving objects, low contrast, or damaged codes.
The VISOR® **XE** series Code Reader combines high resolution with fast processing speeds. It is available with a range of optics and illumination options. The V50 (5 megapixel) variant reads codes in large fields of view in under 40 milliseconds and eliminates the need for multiple devices.



Robust Code Reading for Direct Part Mark Applications

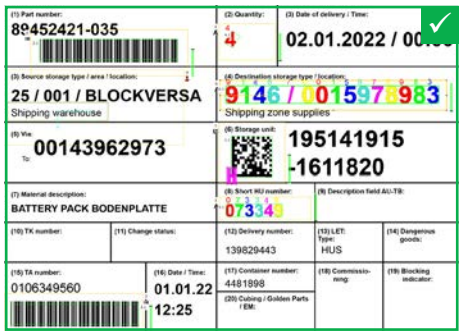
The VISOR® Code Reader excels at decoding directly marked codes with precision and efficiency. Whether the target is in motion, at a distance, or has low contrast, our solution ensures reliable results. With adjustable working distances, the vision sensor can be tailored to suit your specific application needs – offering unmatched flexibility and performance.





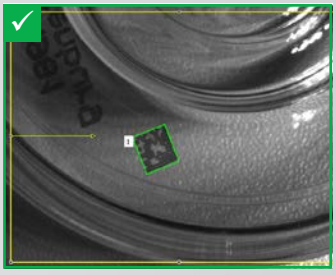
Effortless Reading of Delivery Notes

The 5-megapixel VISOR® Code Reader ensures precise and dependable reading of delivery notes, even when in motion. Optional accessories, such as spotlights, provide optimal illumination from long distances, enabling reliable performance even in varying ambient light conditions.
With intuitive software, you can easily store different label types as identification jobs, allowing flexible selection between barcode, data matrix, and OCR for each job. This combination of advanced hardware and user-friendly software makes delivery note reading seamless and efficient.



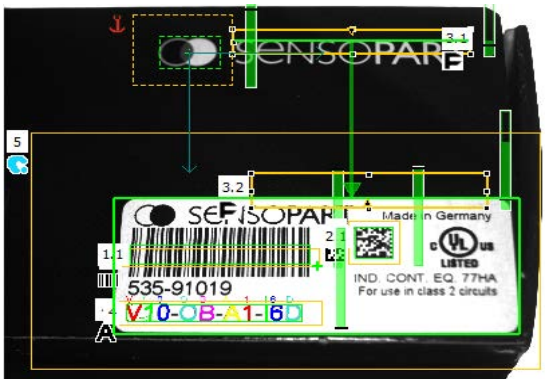
Decoding Challenging Codes with Precision

The VISOR® Code Reader effortlessly deciphers lasered codes on rough die-cast surfaces, ensuring accurate results even when codes are skewed, distorted, or applied to convex, reflective, or transparent materials.
It excels at capturing codes printed on transparent materials with varying backgrounds, delivering reliable performance in the most demanding conditions.



VISOR® Allround

The advanced all-in-one vision sensor designed for tackling complex inspection tasks

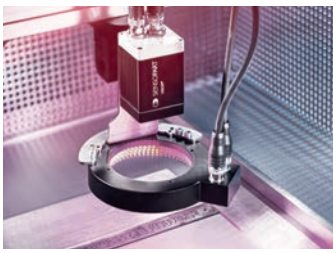


VISOR® Allround – Object AI, Code Reader, and Robotic in One Device

The VISOR® Allround integrates advanced functions for object detection, identification, and positioning into a single, versatile device. It offers capabilities for color recognition, calibration, pattern matching, contour, caliper, and BLOB analysis. The sensor can reliably read barcodes, data matrix codes, and plain text, while also providing precise positioning through features like 3D Target Mark technology.

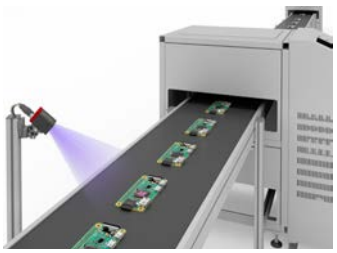
HIGHLIGHTS: VISOR® ALLROUND

- **Equipped with a 5-megapixel chip for highly precise evaluations**
- Combines all evaluation tools („detectors“) from VISOR® Object and VISOR® Code Reader in a single device
- Available with a powerful color chip for precise color differentiation
- Supports EtherNet/IP, PROFINET (Conformance Class B), and TCP/IP for versatile integration
- Multishot functionality detects minimal height differences while suppressing printed markings for enhanced performance
- Features robust calibration for measurement tasks and robotics applications
- The only vision sensor on the market with integrated UV lighting



VISOR® Mulitshot:

Detecting raised or recessed object details – such as embossed digits and characters on a credit card – can be challenging for standard image processing methods. The VISOR® Multishot function offers a solution by capturing multiple images to reveal these subtle features, ensuring precise detection and enhancing the performance of the VISOR® vision sensor range from SensoPart.



UV illumination:

The VISOR® Allround, equipped with integrated UV illumination, can detect markings, inscriptions, and codes invisible to the human eye. Its extensive functionality makes it unique in the market, enabling a wide range of application solutions.

The right package for your individual application:

VISOR® Allround Advanced: Multishot and integrated UV lighting

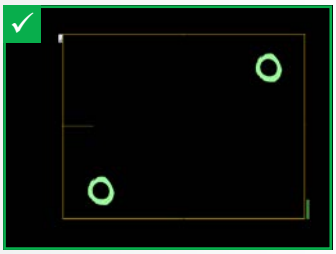
- Combines all analysis tools (detectors) of VISOR® Object and VISOR® Code Reader into a single device
- Integrated UV lighting to easily identify invisible markings
- Detection of height differences with multishot technology

VISOR® Allround Professional: All VISOR® features and capabilities in a single device

- Includes all functions of the VISOR® Allround Advanced.
- Additionally, incorporates all evaluations from the VISOR® Object AI and VISOR® Robotic.

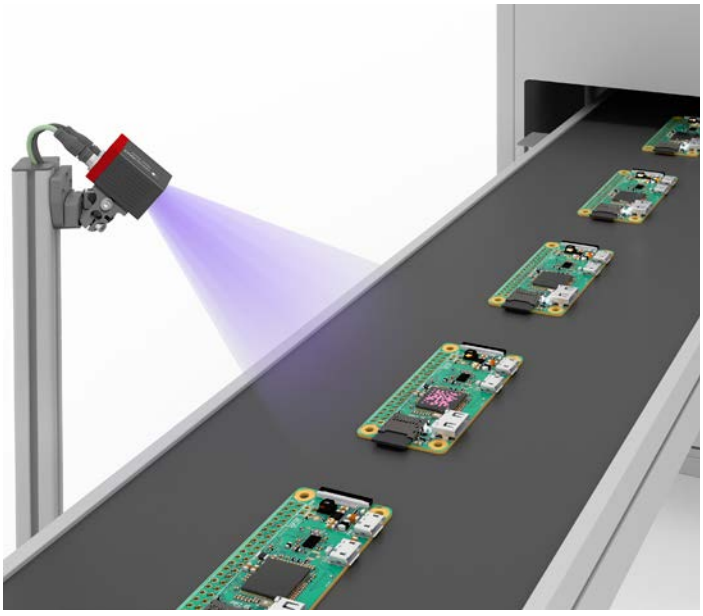
Detecting Invisible Product Safety Features

Some products, like screws, are sealed with fluorescent ink to indicate whether they've been opened, but the ink remains invisible to the end customer. The VISOR® Allround UV can detect the presence of this fluorescent ink, offering the same extensive detection tools as the standard VISOR® Allround series (white, red, infrared). This ensures accurate evaluation of luminescent markings, providing a reliable way to verify product integrity.



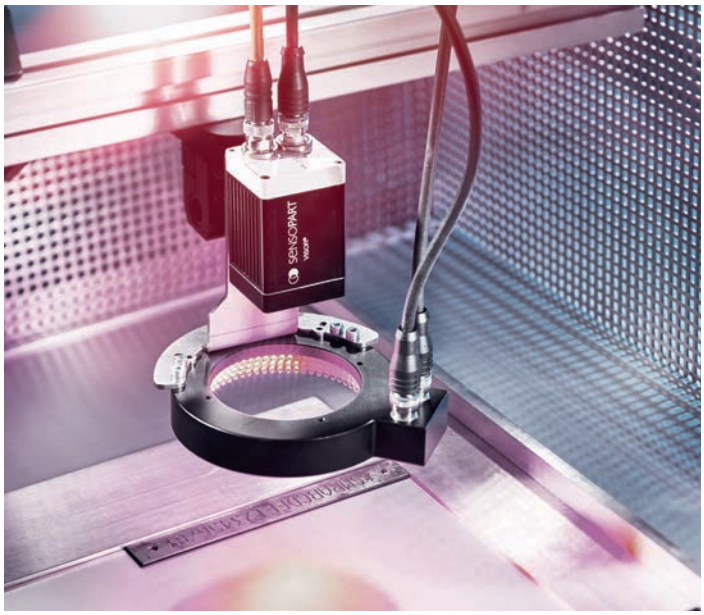
Invisible ink code identification

PCB boards are frequently marked with data matrix codes using invisible ink for traceability without visible markings for the end customer. The VISOR® Allround with integrated UV illumination can reliably detect the presence of this luminescent ink, ensuring accurate tracking during the production process. For evaluating these markings, the user has access to the same extensive detection tools available in the standard VISOR® Allround series, including white, red, and infrared illumination options.



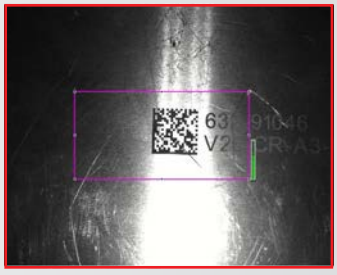
Detecting Characters on Shiny Metal Surfaces

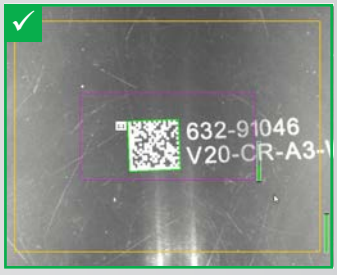
Markings on rough or shiny metal surfaces can be challenging to detect using standard algorithms. The VISOR® Allround with its multishot feature makes these characters clearly visible, simplifying the process and ensuring reliable detection for these complex applications.



Reliable Code Detection on Reflective Surfaces

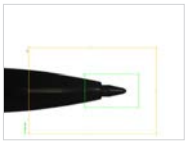
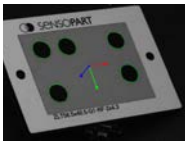
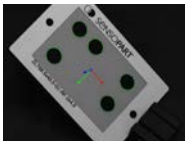
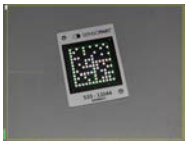
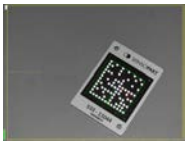
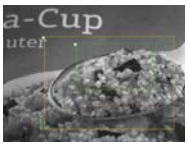
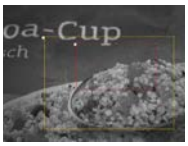
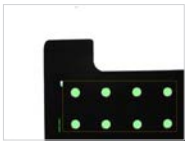
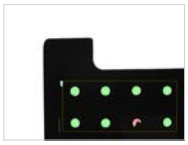
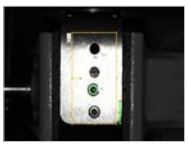
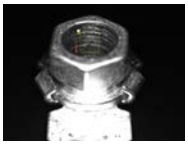
Shiny surfaces, which can pose detection challenges, are no longer an issue with the polarizing filter accessory. It ensures accurate results regardless of surface reflectivity. The switchable version, with 50% LED coverage, reliably identifies objects even on varying textures, all without needing to adjust the filter. Installation is quick and easy—simply "click" it onto the VISOR® for seamless integration.



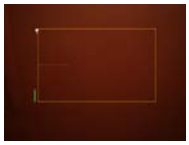
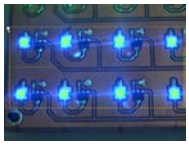
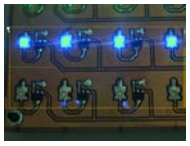
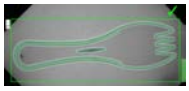
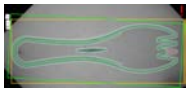


VISOR® vision sensor

Detectors and application examples

Positioning / Inspection			
	Contour	Object search based on contour comparison: once a contour has been taught, images are then scanned for the same contour. The degree of similarity can be defined by switching thresholds. Function for teaching random shapes. Orientation and scaling variations are configurable.	 
	Contour 3D	3D localization of individual or multiple objects. Inclination of up to ± 15° and height offset are precisely detected. No CAD models are required.	 
	Target Mark 3D	Reading highly specific 3D information and position data and transmitting it to the robot. The position of the target mark is referenced only once during the initial setup of the smart vision sensor. The smallest deviations in the working position and even large angular deviations are detected with precision.	 
	Pattern matching	Object search based on pattern matching: once a pattern has been taught, consecutive images are then scanned for the same pattern. The degree of similarity can be defined by switching thresholds. Free form function for teaching random shapes with random orientation.	 
	BLOB	Counting and evaluation of objects: Analysis and sorting of objects based on user-defined criteria (area, height, width, circumference, position face up/face down and more).	 
	Shape find	Fast and robust detection of geometric shapes such as rectangles, squares, and circles. Reference free operation, Processing measurements directly in millimeters, automatic recognition of shapes in just a few clicks.	 
Inspection			
	Brightness	Brightness analysis in search zone. Definition of result output via switching threshold.	 
	Contrast	Contrast analysis in search zone. Definition of result output via switching threshold.	 

Inspection (continued)

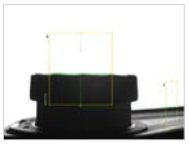
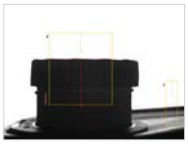
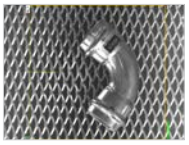
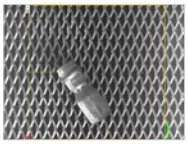
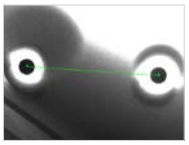
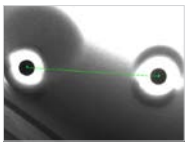
	Gray	Analysis of grey threshold in search zone. Definition of result output via switching threshold.		
	Color value	Output of color values via interfaces, setting options for color space: RGB, HSV, LAB.		–
	Color area	Color evaluation via area: evaluation of interrelated color area according to size and color. Innovative configuration via histogram for color spaces RGB, HSV and LAB.		
	Contour check	Detection of deviations from a reference contour. The number of permitted deviations determines the result.		

Identification

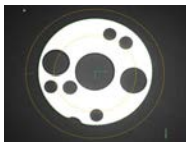
	Data code	Reading and quality assessment of 2D codes, such as ECC200, QR code, ECC200 (GS1), QR code (GS1), PDF 417. High-performance decoder algorithm for directly marked, low-contrast and damaged codes.		–
	Barcode	Reading and quality assessment of most barcode types, such as EAN, UPC, RSS, 2/5 Interleaved, 2/5 Industrial, Code 32, Code 39, Code 93, Code 128, GS1, Pharmacode, Codabar.		–
ABC	OCR	Optical character reading of printed, laser-etched or dotpeened characters. High reading rate with difficult characters or fluctuating marking quality through use of neural networks. Easy to use. Fast segmentation mode for high reading rates.		–

VISOR® vision sensor

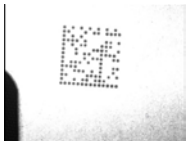
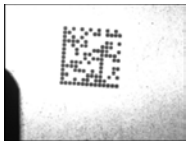
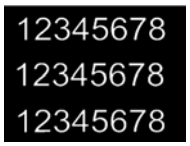
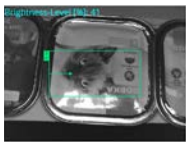
Detectors and application examples

Measurement				
	Caliper	Measurement of the distance between edges. Diverse detection options. Measurement of minimum, maximum or averaged distance values. Innovative visualization of detected edges. Definition of measurement sensitivity by dividing the measurement field into search beams.		
	Caliper Circle	This detector can be used to determine the diameter and center point of circular objects and circular sectors.		
Classification				
	Classification (AI)	Assign objects into different classes. This detector assigns a class to an object or feature within the region of interest. These classes are defined using sample images. Pass/Fail judgments can be made or up to 200 different classes can be defined.		
	Color list	Color evaluation via list: find a color from a list of taught colors, evaluation of colors according to color deviation (delta e) in the color spaces RGB, HSV and LAB.		
Result processing				
	Result processing: Text	Comparison of character strings; formatting, adding and cutting of character strings; sorting, simple calculations. Output of a digital (good/bad) result.		–
	Result processing: Math	Offset of numerical results; calculation of distances and angles; comparison of results. Output of a digital (good/bad) result.		
	Result processing: Robotic	Processing of results for the type Pose 3D (X, Y, Z, Angle X, Y, Z).		–
Position alignment				
	Edge detection	High-performance edge finder for position tracking. Combination of different search strategies possible. Innovative visualization of edges found. Definition of measurement sensitivity by dividing the measurement field into search beams.		

Position alignment (continued)

Pattern matching	Object search based on pattern matching: once a pattern has been taught, consecutive images are then scanned for the same pattern. The degree of similarity can be defined by switching thresholds. Free form function for teaching random shapes. Detection of rotated patterns.	 
Contour	Object search based on contour comparison: once a contour has been taught, images are scanned for the same contour. The degree of similarity can be defined by switching thresholds. Free form function for teaching random shapes. Orientation and scaling variations are configurable.	 
Caliper Circle	This function is used for alignment at the center point of a circle or sector of a circle. The circle is detected on the basis of edge detection.	 

Functions & preprocessing filters

Freeform tool	Innovative freeform tool for creating user-defined teach-in areas for pattern matching and contour, as well as for creating user-defined search areas for contrast, grey threshold, brightness and BLOB.	
Filter	Large number of preprocessing filters to improve the picture before actual image processing.	 
Color filters	Definition of any color as software color filter to enable OCR on multi-colored backgrounds or the highlighting of edges during object detection tasks (e.g. for parts on colored conveyor belts).	 
Individual overlays	Display of detector results and text elements in the image. Automatic positioning in the image, in the search area or at the result position. Automatic or fixed coloring of the text.	 
Automatic Brightness Control	With the automatic brightness control, the shutter speed and gain are automatically adjusted so that the average brightness in a defined search region corresponds to the set target brightness before the image is evaluated.	 

VISOR® vision sensor

Interfaces

Interfaces	
Ethernet TCP/IP	Ethernet interface with user-configurable protocol. VISOR® control options via TCP/IP commands.
PROFINET	Industrial Ethernet in compliance with PROFINET standard (Conformance Class B) through integrated Ethernet interface. VISOR® control options via PROFINET commands.
EtherNet/IP	Industrial Ethernet in compliance with EtherNet/IP standard through integrated Ethernet interface. VISOR® control options via EtherNet/IP commands.

SensoWeb

Versatile Monitoring for VISOR® Vision Sensors

Modern design:
SensoPart VISOR® vision sensors come with pre-installed SensoWeb monitoring software, enabling easy sensor monitoring via common web browsers. Along with current status updates, the software now displays detailed statistical evaluations. When combined with an external WLAN router, results can also be viewed on mobile devices like smartphones and tablets, as well as on standard machine operating panels.

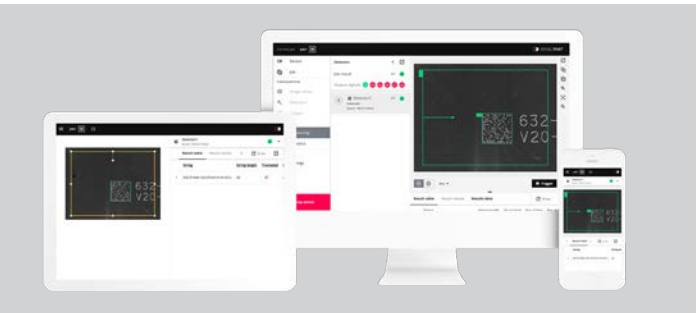
- Modern design
- More efficient process monitoring
- Statistics function
- Personalized display possible
- Platform-independent visualization solution

SensoConfig Web

Browser-based configuration tool for VISOR® Code Reader

Additional functions:
SensoConfig Web is the browser-based configuration tool for VISOR® Code Readers. With no installation required, users can configure devices easily on a PC, tablet, or smartphone.
An intuitive wizard with automatic code detection guides users step-by-step, offering a convenient and platform-independent setup experience.

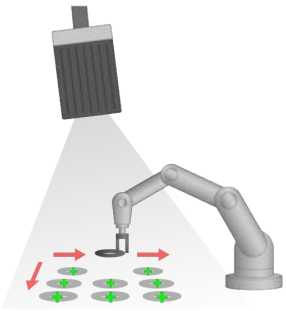
- Modern design
- Easier user guidance by reduced parameters and intuitive wizard
- No software installation required
- Platform-independent configuration



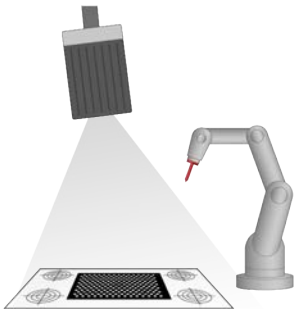
Calibration	
Calibration (scaling/ perspective) 	Output of results in customized units (mm, cm, m, inch). Effects of perspective corrected according to the calibration method.
Robotic calibration 	Output of results in customized units (mm, cm, m, inch) in a world coordinates system. A variety of methods are available for maximum flexibility.

Calibration methods

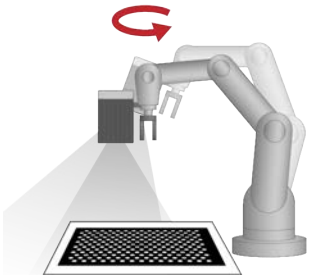
For a wide range of applications



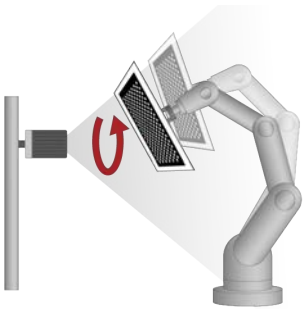
Point pair list



Calibration plate



Hand-Eye



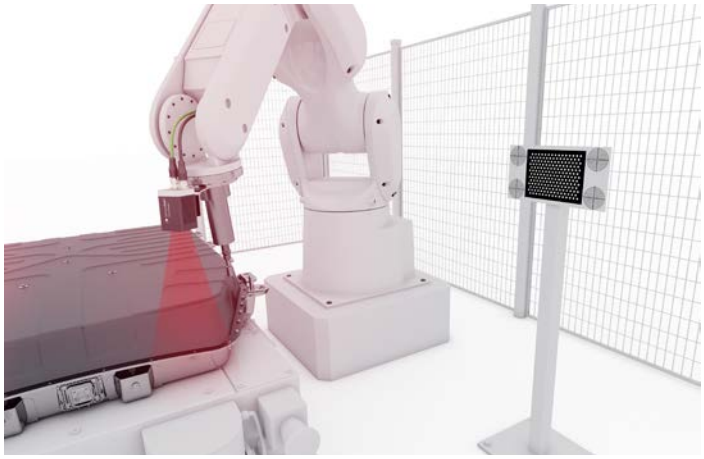
Base-Eye

Hand-Eye-Calibration

Minimize downtime

True non-contact calibration for minimal downtime that gets your system back up and running in minutes:

- No worker in the workspace required
- Fully automated process
- Independent of mechanical TCP
- Flexible calibration area placement
- Workspace can be located anywhere



Product overview - Hardware

VISOR® Vision Sensors

	VISOR® Object	VISOR® Object AI
		
	Presence, completeness, measurement, position check, color	Presence, completeness, measurement, position check, color, artificial intelligence

Variant	Standard	Advanced	Advanced
Availability as VISOR® Robotic +Z	–	–	–
Resolution			
VISOR® V10 (800 x 600): Mono | Color	✓		✓
Images per second: Mono | Color	75 | 50		75 | 50
VISOR® V20 (1440 x 1080): Mono | Color	–	✓	✓
Images per second: Mono | Color	–	40 | 20	40 | 20
VISOR® V50 (2560 x 1936): Mono | Color	–	✓	✓
Images per second: Mono | Color	–	22 | 8	22 | 8
Lighting	white, red[1], infrared[1]		
Multishot (Mono)	–		–
Target laser	–	✓	✓
Integrated UV lighting	–		–
Lenses			
V10 wide | medium | narrow | C-Mount	✓| ✓| ✓| –	✓| ✓| ✓| ✓	✓| ✓| ✓| ✓
V20 wide | medium | narrow | C-Mount	– | – | – | –	✓| ✓| ✓| ✓	✓| ✓| ✓| ✓
V50 wide | medium | narrow | C-Mount	– | – | – | –	✓| ✓| – | ✓	✓| ✓| – | ✓
Interfaces			
Inputs | outputs | selectable	2 | 2 | 4	2 | 2 | 6	2 | 2 | 6
Encoder input	–	✓	✓
Ethernet | EtherNet/IP | PROFINET	✓ | ✓| ✓		✓ | ✓| ✓
Service Port	–	✓	✓
Job / Detectors			
Number of jobs (max.) | Detectors per job (max.)	32 | 32	255 | 255	255 | 255
Number of classification (AI) detectors per job (max.)	–		10
Job checksum	–	✓	✓

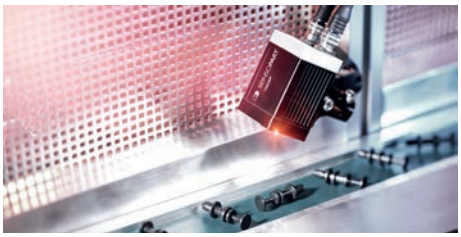
VISOR® Robotic

Robotics, presence, completeness, measurement, positioning

VISOR® Code Reader

Reading of barcodes, 2D codes, text

VISOR® Allround



Presence, completeness, measurement, position check, color, reading of barcodes, data codes, text, multi-shot

Advanced	Professional	Standard	Advanced	Professional	Advanced	Professional
✓	✓	–	–	–	–	–
✓	–	✓ | –			✓	–
75	–	75 | –			75 | 50	–
✓		✓ | –			✓	
40 | 20		40 | –			40 | 20	
–	✓	–	✓ | –		–	✓
–	22 | 8	–	22 | –		–	22 | 8
white, red[1], infrared[1]						
–		–			✓	
✓		only V20	✓		✓	
–		–			only V20	only V50
✓ | ✓| ✓| ✓	–	✓| ✓| ✓| –	✓| ✓| ✓| ✓		✓ | ✓| ✓| ✓	–
✓ | ✓| ✓| ✓		✓| ✓| ✓| –	✓| ✓| ✓| ✓		✓ | ✓| ✓| ✓	
–	✓| ✓| – | ✓	–	✓| ✓| – | ✓		–	✓| ✓| – | ✓
2 | 2 | 6		2 | 2 | 4	2 | 2 | 6		2 | 2 | 6	
✓		–	✓		✓	
✓ | ✓| ✓		✓| ✓| ✓			✓ | ✓| ✓	
✓		–	✓		✓	
255 | 255		8 | 2	255 | 255		255 | 255	
–		–			–	
✓		–	✓		✓	

[1] not with color hardware

Product overview - Hardware

VISOR® **XE** Vision Sensors

VISOR® Object

Presence, completeness, measurement, position check, color

VISOR® Object AI

Presence, completeness, measurement, position check, color, artificial intelligence

Variante	Standard	Advanced	Advanced
Availability as VISOR® XE	–	–	XE
Resolution	–		
VISOR® **XE** V20 (1600 x 1200): Mono | Color	–		✓
Images per second: Mono | Color	–		80 | 40
VISOR® **XE** V50 (2560 x 1936): Mono | Color	–		✓
Images per second: Mono | Color	–		44 | 16
Lighting	–		white, red[1], infrared[1]
Multishot (Mono)	–		–
Target laser	–		✓
Integrated UV lighting	–		–
Lenses	–		
V20 wide | medium | narrow | C-Mount	–		✓| ✓| ✓| ✓
V50 wide | medium | narrow | C-Mount	–		✓| ✓| – | ✓
Interfaces	–		
Inputs | outputs | selectable	–		2 | 2 | 6
Ethernet | EtherNet/IP | PROFINET	–		✓ | ✓| ✓
Service Port	–		✓
Job / Detectors	–		
Number of jobs (max.) | Detectors per job (max.)	–		255 | 255
Number of classification (AI) detectors per job (max.)	–		40
Job checksum	–		✓

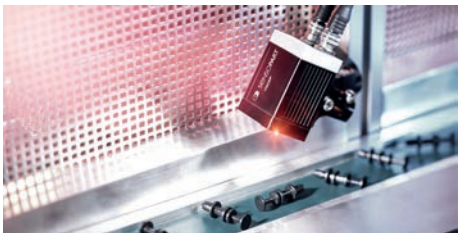
VISOR® Robotic

Robotics, presence, completeness, measurement, positioning

VISOR® Code Reader

Reading of barcodes, 2D codes, text

VISOR® Allround



Presence, completeness, measurement, position check, color, reading of barcodes, data codes, text, multi-shot

Advanced	Professional	Standard	Advanced	Professional	Advanced	Professional
–	XE	–	XE	XE	–	XE
–		–			–	
–	✓	–	✓ | –		–	✓
–	80 | 40	–	80 | –		–	80 | 40
–	✓	–	✓ | –		–	✓
–	44 | 16	–	44 | –		–	44 | 16
	white, red[1], infrared[1]	–	white, red[1], infrared[1]		–	white, red[1], infrared[1]
–	–	–	–		–	✓
–	✓	–	✓		–	✓
–	–	–	–		–	only V50
–		–			–	
–	✓ | ✓ | ✓ | ✓	–	✓ | ✓ | ✓ | ✓		–	✓ | ✓ | ✓ | ✓
–	✓ | ✓ | – | ✓	–	✓ | ✓ | – | ✓		–	✓ | ✓ | – | ✓
–		–			–	
–	2 | 2 | 6	–	2 | 2 | 6		–	2 | 2 | 6
–	✓ | ✓ | ✓	–	✓ | ✓ | ✓		–	✓ | ✓ | ✓
–	✓	–	✓		–	✓
–		–			–	
–	255 | 255	–	255 | 255		–	255 | 255
–		–			–	
–	✓	–	✓		–	255 | 255

[1] not with color hardware

Product overview - Software

VISOR® & VISOR® **XE** Vision Sensors

	VISOR® Object Presence, completeness, measurement, position check, color		VISOR® Object AI Presence, completeness, measurement, position check, color, artificial intelligence
Variant	Standard	Advanced	Advanced
Availability as VISOR® XE	–	–	XE
Availability as VISOR® Robotic +Z	–	–	–
Calibration			
Scaling | Perspective	✓ | –	✓ | ✓	✓ | ✓
Point-pair list | Calibration plate (robot)	–	– | –	– | –
Hand-eye | Base-eye calibration (robot)	–		–
Preprocessing			
Preprocessing filter	–	✓	✓
Multiple image capture | Shutter variation	–	✓	✓
Freeform search area	✓		✓
Position Alignment			
Contour comparison (translation, rotation 360°)	✓		✓
Pattern matching (translation, rotation 360°)	–	✓	✓
Edge detection (translation, rotation)	–	✓	✓
Caliper | Caliper Circle	✓ | –	✓ | ✓	✓ | ✓
Object detection			
Contour | Multiple detection	✓ | –	✓ | ✓	✓ | ✓
Pattern comparison | Multiple detection	✓ | –	✓ | ✓	✓ | ✓
Grey level | Contrast | Brightness	✓		✓
Caliper | Caliper Circle	✓ | –	✓ | ✓	✓ | ✓
Shape find	–	✓	✓
BLOB	–	✓	✓
3D contour	–	–	–
Target Mark 3D	–	–	–
Classification (AI)	–	–	✓
Contour check	–	✓	✓
Identification			
Barcodes | Datacode	–		–
Clear text (OCR)	–		–
Robotics functions			
Result offset image | 2D | 3D	– | – | –	– | – | –	– | – | –
Checking space around gripper	–		–
Color detectors for Color variants			
Color field | Color value | Color list	✓ | – | –	✓ | ✓ | ✓	✓ | ✓ | ✓
Color distance | Binarisation	– | –	✓ | ✓	✓ | ✓
Result processing / Output			
Result processing - Text | Math	– | –	– | ✓	– | ✓
Result processing - Robotics	–	–	–
Individual Overlays	–	✓	✓
VISOR® to VISOR® Communication	–	✓	✓
Webinterface			
SensoWeb	✓		✓
SensoConfig Web	–		–

VISOR® Robotic

Robotics, presence, completeness, measurement, positioning

VISOR® Code Reader

Reading of barcodes, 2D codes, text

VISOR® Allround

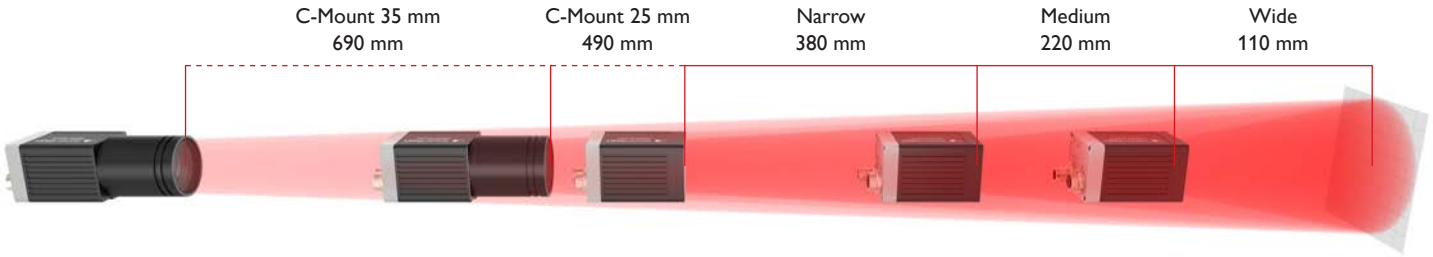
Presence, completeness, measurement, position check, color, reading of barcodes, data codes, text, Multishot

Advanced	Professional	Standard	Advanced	Professional	Advanced	Professional
–		–			–	
✓	✓	–	–	–	–	–
✓ | ✓		–			✓ | ✓	
✓ | ✓		–			–	✓
–	✓	–			–	✓
✓		–	✓	✓	✓	
✓		–	✓	✓	✓	
✓		–	–	✓	✓	
✓		–		✓	✓	
✓		–		✓	✓	
✓		–		✓	✓	
✓ | ✓		– | –			✓ | ✓	
✓ | ✓		– | –			✓	
✓ | ✓		– | –		✓ | ✓	✓	
✓		–		✓	✓	
✓ | ✓		– | –			✓ | ✓	
✓		–			✓	
✓		–			✓	
–	✓	–			–	✓
✓		–			✓	
–		–			–	✓
–		–			✓	
–	✓ | ✓	✓			✓	
–	✓ | ✓	–		✓	✓	
✓ | ✓ | ✓		– | – | –			–	✓
✓		–			–	✓
✓ | ✓ | ✓		– | – | –			✓ | ✓ | ✓	
✓ | ✓		– | –			✓ | ✓	
– | ✓	✓| ✓	– | –	✓ | –		✓ | ✓	
✓	✓	–	–		–	✓
✓	✓	–	✓	✓	✓	✓
✓		✓			✓	
✓		✓			✓	
–		✓			–	

C-mount

Full flexibility in distance and field of view

With the VISOR® c-mount variants, the optics can be easily adapted to meet the user's specific needs. By selecting different c-mount lenses based on the desired working distance, users can match the vision sensor to their application. A narrow field of view enables detection of small details from a long distance, while a wide field of view allows simultaneous detection of multiple features or components. If the application requires a different working distance, simply swapping the lens is all that's needed. Lenses are available in 8, 12, 16, 25, 35, 50, and 75 mm options.



Fields of view and depths of field

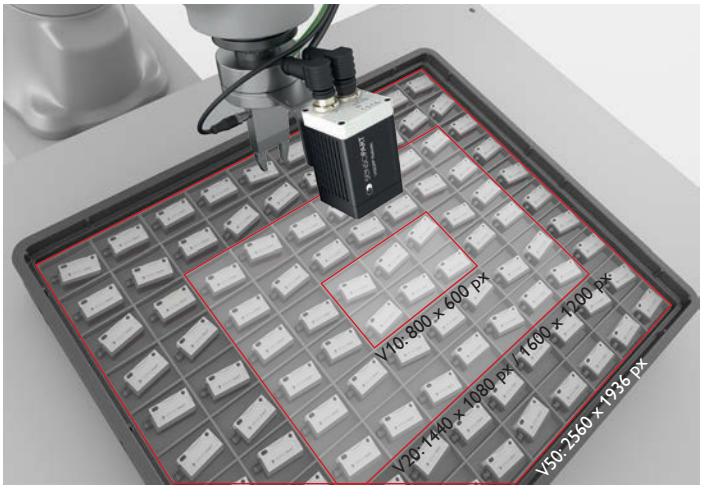
The right VISOR® for every application

VISOR® vision sensors are available in 3 resolution variants:
- V10: 800 x 600 pixels
- V20: 1440 x 1080 pixels
- V50: 2560 x 1936 pixels

VISOR® **XE** vision sensors are available in 2 resolution variants:
- V20: 1600 x 1200 pixels
- V50: 2560 x 1936 pixels

Depending on the resolution variant, up to 3 different fields of view are available:
- wide
- medium
- narrow

This means that the ideal VISOR® variant can be selected for each application, precisely tailored meet specific requirements.



SensoCalc

Wizard for optical calculations

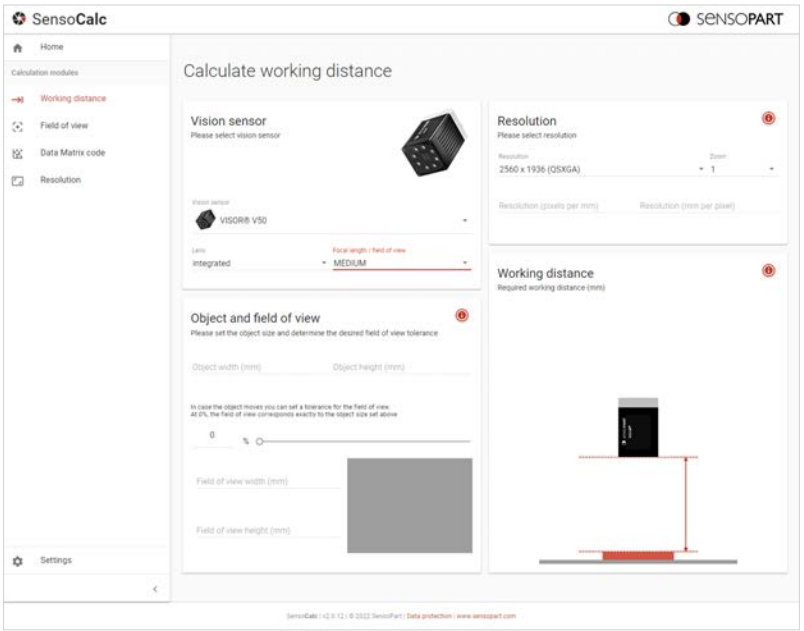
SensoCalc is a tool that assists with basic calculations for vision sensor applications. The calculations are specifically designed for SensoPart components. This means that the appropriate VISOR® can be selected based on working distance, the required field of view, the type of code to be read or the desired resolution.

WORKING DISTANCE

FIELD OF VIEW

DATA MATRIX CODE

RESOLUTION



Go to SensoCalc

Accessories

VISOR®-Types and Power I/O cables

1:VISOR®:

VISOR® Object

VISOR® Object AI

VISOR® Robotic

VISOR® Code Reader

VISOR® Allround

QR-Code for more information

2. Power I/O cables:

M12 socket, 3-pin (24V, GND, Trigger), Straight Connector:

Part number / Length / Article number

- C L12/3FG-S-2M-PUR / 2m (6'6") / 902-51833
- C L12/3FG-S-5M-PUR / 5m (16'4") / 902-51834
- C L12/3FG-S-10M-PUR / 10m (32'9") / 902-51835
- C L12/3FG-S-20M-PUR / 20m (65'7") / 902-51839

M12 socket, 3-pin (24V, GND, Trigger), Angled Connector:

- C L12/3FW-S-2M-PUR / 2m (6'6") / 902-51833
- C L12/3FW-S-5M-PUR / 5m (16'4") / 902-51834
- C L12/3FW-S-10M-PUR / 10m (32'9") / 902-51835
- C L12/3FW-S-20M-PUR / 20m (65'7") / 902-51839

M12 socket, 12-pin (24V, GND, Trigger, Ready, 8 additional I/O), Straight Connector:

- C L12FG-S-2M-PUR / 2m (6'6") / 902-51801
- C L12FG-S-5M-PUR / 5m (16'4") / 902-51796
- C L12FG-S-10M-PUR / 10m (32'9") / 902-51797
- C L12FG-S-20M-PUR / 20m (65'7") / 902-51805

M12 socket, 12-pin (24V, GND, Trigger, Ready, 8 additional I/O), Angled Connector:

- C L12FW-S-2M-PUR / 2m (6'6") / 902-51798
- C L12FW-S-5M-PUR / 5m (16'4") / 902-51799
- C L12FW-S-10M-PUR / 10m (32'9") / 902-51800
- C L12FW-S-20M-PUR / 20m (65'7") / 902-51821

QR-Code for more information

3. Ethernet cables:

Part number / Length / Article number

Straight Connector:		Angled Connector:	
CI L4MG/RJ45G-GS-1.5M-PUR / 1.5m (4'11") / 902-51887	CI L4MG/RJ45G-GS-10M-PUR / 10m (32'9") / 902-51784	CI L4MW/RJ45G-GS-1.5M-PUR / 1.5m (4'11") / 902-51888	CI L4MW/RJ45G-GS-10M-PUR / 10m (32'9") / 902-51790
CI L4MG/RJ45G-GS-3M-PUR / 3m (9'10") / 902-51754	CI L4MG/RJ45G-GS-20M-PUR / 20m (65'7") / 902-51820	CI L4MW/RJ45G-GS-3M-PUR / 3m (9'10") / 902-51786	CI L4MW/RJ45G-GS-20M-PUR / 20m (65'7") / 902-51822
CI L4MG/RJ45G-GS-5M-PUR / 5m (16'4") / 902-51782	CI L4MG/RJ45G-GS-30M-PUR / 30m (98'5") / 902-51843	CI L4MW/RJ45G-GS-5M-PUR / 5m (16'4") / 902-51788	CI L4MW/RJ45G-GS-30M-PUR / 30m (98'5") / 902-51844

QR-Code for more information

4. Brackets for V10, V20, V50:

Part number / Description / Article number

Mounting hinge with 3 axes:
MG 3A / Standard type / 543-11024
MG 3A-MST12 / For fixing to 12mm rod / 543-11034

QR-Code for more information

5. Optical accessories:

Part number / Description / Article number

Removable protective casing:	Polarising filter panels:
LPC Vxx / Standard type / 651-01001	LPF Vxx S1 / 100% coverage / 651-01003
LPC Vxx-ESD / Anti-static coating / 651-01010	LPF Vxx S2 / 50% coverage / 651-01004

QR-Code for more information

Accessories

Illumination, illumination cables and robotics

6. Illumination:

Part number / Light color - Description / Article number

Ring light:		Spot illumination:
LFR 115 WD-24-2L12 / white diffuse light / 525-51150	LFR 115 WK-24-2L12 / white clear light / 525-51153	LS 55 x 46 WK-24-A13 2L12 / white light / 532-51101
LFR 115 RD-24-2L12 / red diffuse light / 525-51151	LFR 115 RK-24-2L12 / red clear light / 525-51154	LS 55 x 46 RK-24-A13 2L12 / red light / 532-51102
LFR 115 ID-24-2L12 / infrared diffuse light / 525-51152	LFR 115 IK-24-2L12 / infrared clear light / 525-51155	LS 55 x 46 IRK-24-A13 2L12 / infrared light / 532-51103

QR-Code for more information

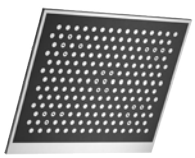
7. Illumination:

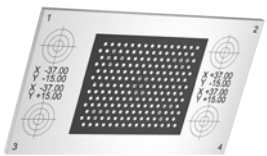
Part number / Length / Article number

Straight Connector:		Angled Connector:
CB L12FS/L12FS-0.35M-GG-PUR / 0.35m (1'15") / 902-51841	CB L12FS/L12FS-10M-GG-PUR / 10m (32'8") / 902-51854	CB L12FS/L12FS-0.35M-WW-PUR / 0.35m (16'4") / 902-51842
CB L12FS/L12FS-0.5M-GG-PUR / 0.5m (1'64") / 902-51806	CB L12FS/L12FS-15M-GG-PUR / 15m (49'21") / 902-51855	CB L12FS/L12FS-0.5M-WW-PUR / 0.5m (1'64") / 902-51808
CB L12FS/L12FS-2M-GG-PUR / 2m (6'56") / 902-51807	CB L4MG-10M-PUR / 10m (32'8") / 902-51756	CB L12FS/L12FS-2M-WW-PUR / 2m (6'56") / 902-51809

QR-Code for more information

8. Robotics:





Part number / Article number

Standard calibration plates:	Calibration plates with reference marks:	Calibration plates with reflective marks:	TargetMark:
ZCP 50-13x15 / 533-11030	ZCP 50-13x15-X01 / 533-11037	ZCP 100-13x15-X02 / 533-11035	ZTM 50-D2-2x3.3 / 533-11046
ZCP 100-13x15 / 533-11031	ZCP 100-13x15-X01 / 533-11038		ZTM 100-D2-4x3.3 / 533-11047
ZCP 200-13x15 / 533-11032	ZCP 200-13x15-X01 / 533-11039		
ZCP 500-13x15 / 533-11033	ZCP 500-13x15-X01 / 533-11040		

QR-Code for more information

9. Optical accessories:

Part number / Description / Article number

C-Mount lenses:

- LOC-08-HD-30.5x0,5 / 8 mm lens / 526-51535
- LOC-12-HD-27x0,5 / 12 mm lens / 526-51536
- LOC-16-HD-27x0,5 / 16 mm lens / 526-51537
- LOC-25-HD-27x0,5 / 25 mm lens / 526-51538
- LOC-35-HD-27x0,5 / 35 mm lens / 526-51539
- LOC-50-HD-27x0,5 / 50 mm lens / 526-51540
- LOC-75-HD-34x0,5 / 75 mm lens / 526-51541

Intermediate ring:

- LR 5 / 5mm ring / 543-11011
- ETS / Ring set / 527-51143

Filter:

- LOF-PF-30,5 x 0,5 / Polarizing filter / 526-51531

QR-Code for more information

10. Optical accessories:

Part number / Description / Article number

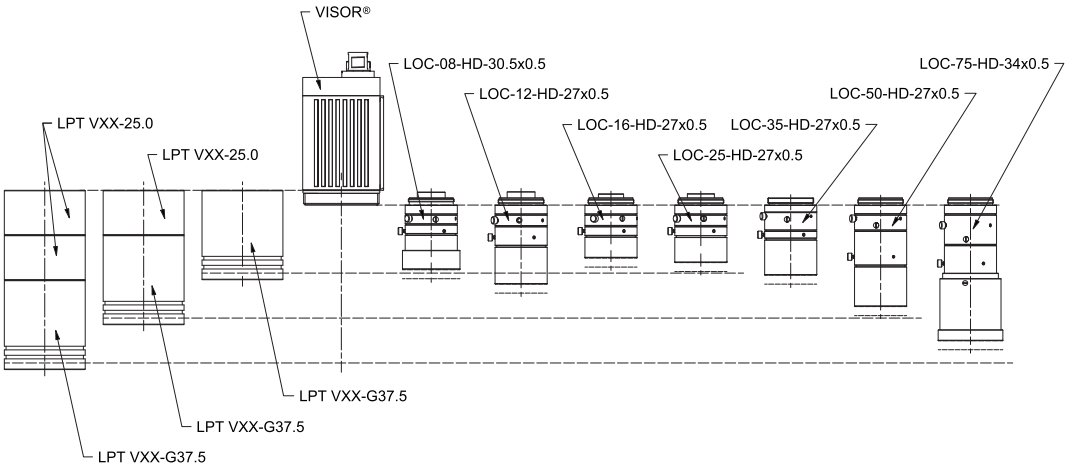
C-Mount protective casing:

- LPT Vxx-G37.5 / Clear / 651-01006
- LPT Vxx-G37.5-BP-R630 / Cover with Red BP filter / 651-01008
- LPT Vxx-G37.5-BP-I860 / Cover with Infrared BP filter / 651-01009

Protective tube extension:

- LPT Vxx-25.0 / 651-01007

QR-Code for more information



Technical data

Optical data	VISOR®	VISOR® **XE**
Number of pixels, chip size	VISOR® V10 ...: 800 (H) x 600 (V) VISOR® V20 ...: 1440 (H) x 1080 (V) VISOR® V50...:2560 (H) x 1936 (V)	VISOR® **XE** V20...: 1600 (H) x 1200 (V) VISOR® **XE** V50...:2560 (H) x 1936 (V)
Technology	CMOS (mono / color)	CMOS (mono / color)
Lighting (integrated)	8 LEDs (except C-Mount) (white, red, infrared, ultraviolet)	8 LEDs (except C-Mount) (white, red, infrared, ultraviolet)
Fields of view	wide, medium, narrow	wide, medium, narrow

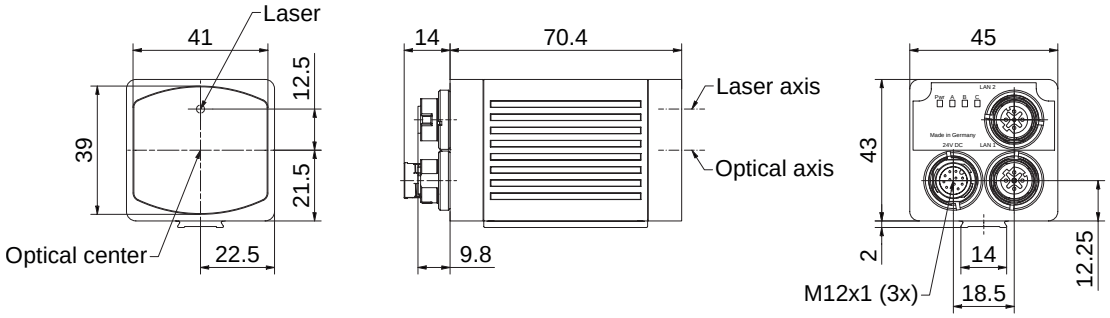
Electrical data	VISOR®	VISOR® **XE**
Operating voltage $+U_B$	18 … 30 V DC[1]	18 … 30 V DC[1]
Power consumption (without I/O)	≤ 350 mA	≤ 350 mA
Protection circuits	Reverse-polarity protection, U_B / short-circuit protection of all outputs	Reverse-polarity protection, U_B / short-circuit protection of all outputs
Rise-time delay	Approx. 16 s after Power on	Approx. 16 s after Power on
Outputs	PNP/NPN (switchable)	PNP/NPN (switchable)
Max. output current (per output)	50 mA, 100 mA (pin 12)	50 mA, 100 mA (pin 12)
Inputs	PNP/NPN High > U_B-1 V, Low < 3 V	PNP/NPN High > U_B-1 V, Low < 3 V
Input resistance	> 20 kΩ	> 20 kΩ
Encoder input	40 kHz	
Interfaces	Ethernet (LAN), EtherNet/IP, PROFINET, SensoWeb	Ethernet (LAN), EtherNet/IP, PROFINET, SensoWeb
Inputs / Outputs	2 inputs / 2 outputs, Selectable inputs/outputs: Standard variant 4; Advanced/ Professional variant 6	2 inputs / 2 outputs, Selectable inputs/outputs: Standard variant 4; Advanced/ Professional variant 6

[1] Max. ripple < 5 V_{SS} [3] dependent on model

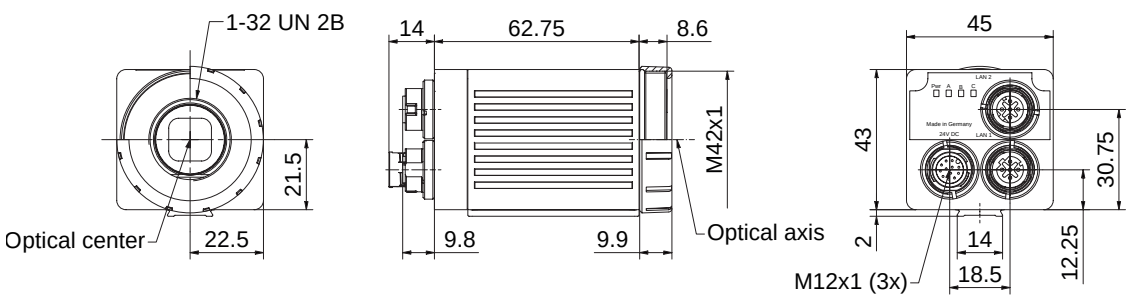
Mechanical data	VISOR®	VISOR® **XE**
Dimensions	71 x 45 x 45 mm (without connector)	71 x 45 x 45 mm (without connector)
Enclosure rating	IP65/IP67	IP65/IP67
Material housing	Aluminium, die-cast, RoHS compliant	Aluminium, die-cast, RoHS compliant
Material, front screen	Plastic	Plastic
Ambient temperature: operating	0 … +50° C[2]	0 … +50° C[2]
Ambient temperature: Storage	-20 … +60° C[2]	-20 … +60° C[2]
Weight	ca. 220 g	ca. 220 g
Plug Connections	Supply and I/O M12, 12-pin, Ethernet M12, 4-pin	Supply and I/O M12, 12-pin, 2x Ethernet M12, 4-pin
Vibration / shock resistance	EN 60947-5-2	EN 60947-5-2
c UL us LISTED CE		

[2] 95 % air humidity, non-condensing

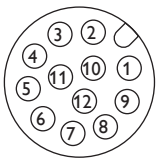
VISOR® Vision sensor with integrated optics & lighting



VISOR® Vision Sensor c-mount



I/O Mapping 24 V DC connection



PIN	Color [3]	Signal
1	BN	+ U_B (24VD C)
2	BU	GND
3	WH	IN (external trigger)
4	GN	READY (ready for next external trigger)
5 [1]	PK	IN/OUT (encoder B+)
6	YE	IN/OUT, (external illumination south) [4]
7	BK	IN/OUT, (external illumination west) [4], LED B [2]
8	GY	IN/OUT, (external illumination north) [4], LED C [2]
9	RD	IN/OUT, (external illumination, external illumination east) [4]
10 [1]	VT	IN (encoder A+)
11	GY/PK	VALID (indicator for valid results)
12	RD/BU	IN/OUT (ejector), LED A [2]

[1] Not available on all Standard models
[2] All indicator LEDs are set without accounting for any delay times used
[3] Colors match SensoPart power cables; using different cables may result in discrepancies
[4] Only active when Multishot is enabled

We are SensoPart

www.sensopart.com

SensoPart is a leading manufacturer of photoelectric sensors and machine vision sensors for factory automation. We also offer inductive and ultrasonic sensors, covering a wide spectrum of industrial automation tasks. Our products are used in a variety of industries, including automotive assembly, mechanical engineering, electronics manufacturing, solar, food, and pharmaceuticals. We take great pride in our renowned, German-made quality products, developed and manufactured at our two facilities in Germany and shipped worldwide.

made in Germany

SensoPart worldwide

With our global network and worldwide subsidiaries, we are always ready to support you.

You can find your local team at:
www.sensopart.com/contact

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