



Baumer

Passion for Sensors

# VeriSens® vision sensors

Image-based quality control – easy and intuitive.



Eyeing  
your  
quality.

# Simply focused on the essentials.

Baumer is a globally leading company for sensor solutions designed for factory and process automation. More than 2,300 employees in 37 subsidiaries in 19 countries are at your service around the world.

Baumer ranks with its powerful vision sensors among the world's most successful suppliers in this product category. Our customers profit from a structured product portfolio with high functionality and innovative features.

Everything we do is governed by our mission to continuously improve our products and shape technological developments. At the same time we focus on high performance, outstanding quality and convenience – giving you more time for solving your application needs.

Where standard products come to their limits, we develop market-oriented, customised components in close cooperation with our customers. The result: Your decisive competitive edge.



## The right vision sensor for your application.

Are you looking for a sensor where maximum functional and operational flexibility go together with easy process integration? *VeriSens*® vision sensors offer all these benefits – and still many more.

### What exactly is a *VeriSens*® vision sensor?

*VeriSens*® is a compact image processing system in the shape of a sensor. An image sensor, illumination (or illumination connection), optics (also changeable lenses), hardware/software, as well as Ethernet and digital interfaces, e.g. for PLC connection, are integrated in a compact, industry-suited housing. After typical one-time configuration on PC, a vision sensor is ready to perform a specific task like a conventional sensor.

*VeriSens*® vision sensors solve inspection tasks and can perform up to 32 feature checks simultaneously.

### How does a *VeriSens*® vision sensor work?

*VeriSens*® acquires images, evaluates them and communicates the results to the system control or to individual components in your system. Initial configuration on PC allows you entry of image acquisition parameters, selecting tools for feature checks and setup of the required interfaces.

### Where does *VeriSens*® make the most sense?

*VeriSens*® vision sensors tap their full potential of efficiency whenever various features must be checked in parallel or part locations vary, tasks which usually are only mastered by sophisticated sensor technology. This also includes applications where a visual inspection is advisable and/or contactless checks are required. An intelligent sensor like *VeriSens*® is also the optimum component for checking (even different) batches in the line or communicating collected data.

### *VeriSens*® vision sensors at a glance

- Wide variety of feature checks with one single sensor:
  - Presence and completeness checks
  - Determination or inspection of object position and location
  - Reading and verifying human-readable imprints (OCR / OCV)
  - Reading and checking matrix codes and barcodes including GS1 codes
- Easy configuration within a few minutes
- Compact, industry-suited IP 67 or IP 69K metal housing
- Wide range of connection options via digital I/Os and Ethernet

# VeriSens® – tried and tested in many industries.

We have earned a reputation supplying the automotive, food and beverage as well as packaging industry where we have acquired many years of expertise. We are also close to the medical and pharmaceutical sector by supplying sensor technology to perform inspection tasks and to provide vital findings.

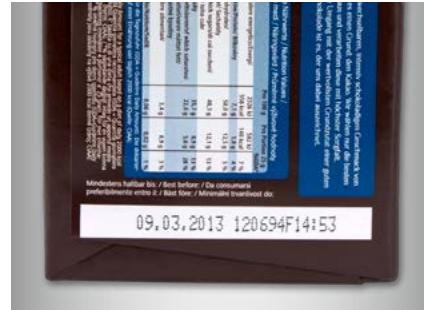
Every industry has its particular needs. We would like to give you a brief overview of how and where our detection and inspection technology is applied.



## Food and beverage industry

- Checking best-before dates
- Presence and position of straws on primary packaging
- Position of safety closures
- and much more

Example: Inspection of best-before dates



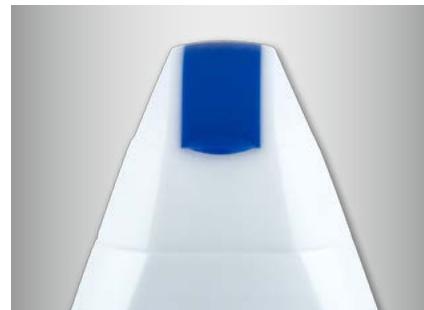
OK  
NOK



## Packaging industry

- Cap monitoring
- Foil wrapping seams
- Label inspection (logo, text, code, product content, etc.)
- and much more

Example: Inspection of forward cap alignment



OK  
NOK



## Automotive industry

- Assembly monitoring
- Code reading with quality rating
- Detection of overmolding, injection molding errors, scratches, chippings, etc.
- and much more

Example: Reading directly marked matrix codes (DPM)



OK  
NOK



## Assembly / handling

- Position detection for pick & place
- Presence check and position monitoring of components
- Position of protective caps or plugs
- and much more

Example: Position detection of blanked parts for pick & place



OK  
NOK

# Inspired by nature.

## Flexibility

We recognize objects in their entirety and this way can easily determine their position.

## Object recognition

We can identify objects even in weak light – namely, by their contour.

## Clearly focused

We can focus on specific details.

## Robust

Our sensitive eye lense is protected by the flexible eyelid.



## A clever mind on top

The eye requires intelligence.

## Communicative

Our eyes are linked to the high-speed network of our nervous system.

## Light conditions

Using artificial illuminations we can see even in weak light.

# Our technology as evolution.

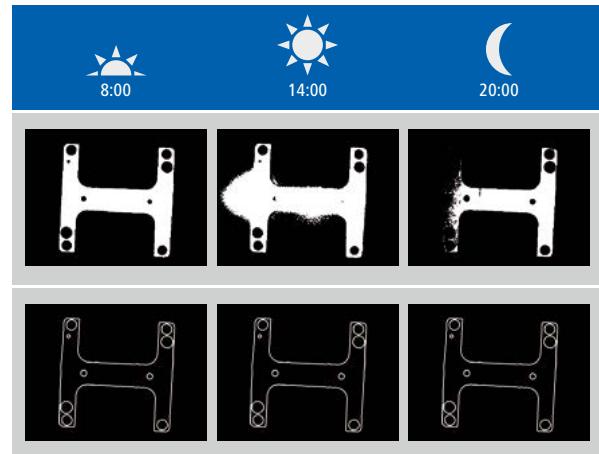


## VeriSens® – even faster and more objective than nature.

Do you want to benefit from the flexibility and versatility of image-based product verification as well? As a compact image processing system in the shape of a sensor, VeriSens® is an ideal component which comes with all the necessary hardware and software and is also intuitively configurable using a PC.

# What makes VeriSens® so special for our customers?

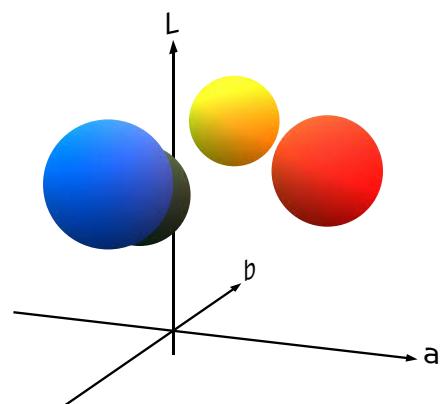
- Patented Baumer FEX® image processor – inspired by nature  
Process deviations caused by varying light conditions, irregularities in surface smoothness or background effects might impair image processing. VeriSens® acts like human beings who can still recognize trees and houses clearly by their contours even in dismal weather: The patented FEX® image processor calculates contours in real time where others discern only shades of gray. Contour-based image processing works reliably and quickly – even in difficult ambient light conditions.



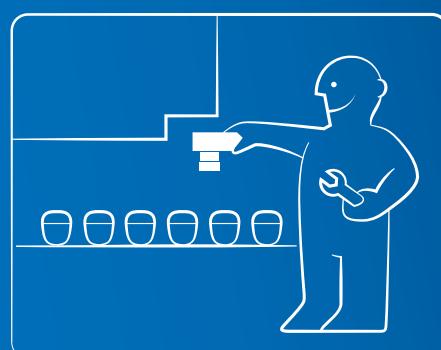
Object identification with conventional image processing (top)  
Contour processing with Baumer FEX® image processor (bottom)

- C-Mount with fully integrated flash controller – flexibility plus simplicity  
Particularly in complex applications, vision sensors require maximum flexibility in the selection of lens and illumination. And besides standard C-mount interface for modular tube systems, capabilities of powering external illumination are a must. VeriSens® XC provides some more decisive added value: It is the first vision sensor platform with self-generated 48 V / 4 A flash pulse. Hence, expensive external flash controllers and the entailed programming effort belong to the past.

- See the right colors even faster – with Color FEX® in 3D  
Color FEX® is the unique, intelligent assistant for quick and intuitive setup of 3D color identification and definition. Object colors and shades are automatically identified and visualized in 3D. This allows for extremely intuitive and self-explaining setup of quick and reliable color inspection.



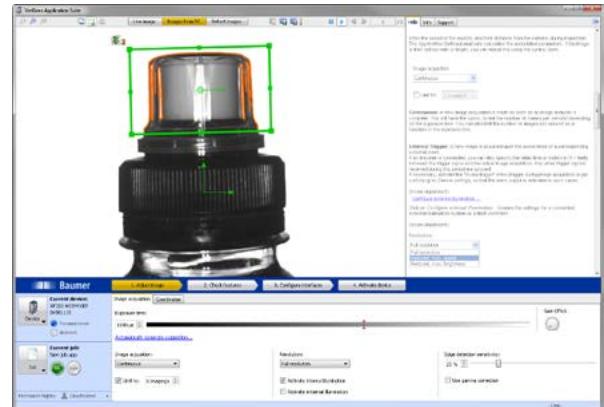
Easy  
to use.



## ■ Clarity – in everything you do

Vision sensor operation never can be too easy. All series can be fully configured in four clear steps with the user-friendly software *VeriSens® Application Suite*. Even first-time users often need just a few minutes to configure their first job, so they gain time for other tasks.

*VeriSens®* optical character recognition (OCR) offers another special feature: it works without prior font training and can be set up with just a few clicks.



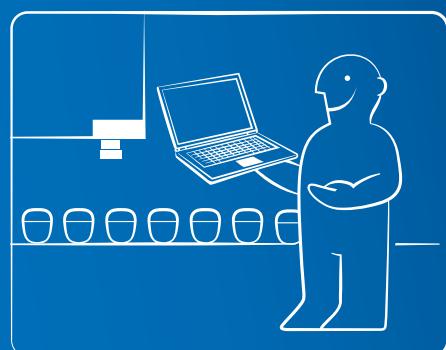
## ■ *VeriSens®* web interface – configurable user interface for operation

A configurable human-machine interface is already integrated for customers who want to configure *VeriSens®* also during the production process. It is the first user interface of a vision sensor that can be adapted regarding functional range, user groups and design with just a few clicks, saving users standard programming work.

The *VeriSens®* web interface runs in any current browser without needing plug-ins.



# Easy to configure.



# One of the most powerful vision sensors in its class.

## ■ **FEXLoc® part location** – to simplify the machine design

The location of parts during feeding does not matter to *VeriSens*®. Reliable 360° part recognition enables virtual object alignment to check the correct positions. This means that mechanical part alignment is no longer necessary. All XF, XC, and CS series models are equipped with integrated *FEXLoc®* part location.

## ■ **19 different tools for up to 32 feature checks per inspection task**

Purchasing a *VeriSens*® vision sensor includes a broad selection of product-specific tools for feature checks that can be immediately accessed. Up to 32 different feature checks can be combined with up to 19 different tools in one inspection task.

## ■ **Up to 2 megapixel image resolution**

Application requirements may call for higher image resolution, for example where having to catch very fine details throughout an extended area. Experience has shown that VGA resolution is sufficient for the majority of applications. Changing to a *VeriSens*® with a resolution of 1.2 MP or 2 MP is possible at any time and does not require additional training.

## ■ **Productivity through parallelism**

*VeriSens*® vision sensors operate extremely efficient thanks to image analysis in parallel to image acquisition. Depending on the scope of feature checking, up to 6,000 inspections per minute can be performed – enabling integration of *VeriSens*® into the line even in fast production processes so that defective parts are removed as early as possible.

## ■ **On stand-by for test – Product simulators provide clarity before purchasing**

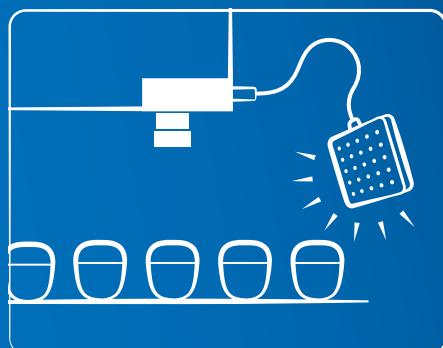
Have we raised your interest? You can start immediately without purchasing a device first. If a software CD is not enclosed in this brochure, the software can also be downloaded at [www.baumer.com/verisens/appsuite](http://www.baumer.com/verisens/appsuite).

The software contains product simulators for every device – a standard digital camera is also adequate as an image source. You can test all feature checks (principally without image focusing or hardware adjustment) – software installation is not required.

## At a glance

In one single inspection *VeriSens*® can check e.g. the position of an object, the distance between two edges, the diameter of a bore hole, the content as well as printing quality of labeling, the content of a matrix code and optionally 27 additional features.

# Absolutely powerful.



# Intelligent features which support you in solving your application.

## ■ Easy verification of inspection tasks

VeriSens® vision sensors offer an integrated test function which enables you to have images collected during a test run sorted according to good and reject parts in order to evaluate the reliability of the inspection task you created. The test function includes further useful features – ranging from statistical data processing including histogram representation to data export (CSV format).

## ■ Open system

With VeriSens® the choice is yours: You can select touch screens, lenses and illuminations from our extensive range of accessories or you can take these components from your own stock.

## ■ Industry-suited design with IP 67 resp. IP 69K protection

VeriSens® vision sensors come in robust aluminium respectively stainless steel housing that is up to harsh industrial environments. VeriSens® XC even provides modular lens protection for changeable lenses – since it can be appropriately configured to match the particular lens length.

## ■ Clear access rights for user groups

VeriSens® vision sensors feature an integrated user management with password protection, for example, to prevent modification of device settings by machine operators.

## ■ Wide range of interfaces

Up to 5 digital inputs and outputs, process interface (depending on model) for result output and/or device control or encoder interface for path-based triggering and ejection – VeriSens® is prepared for almost any integration method. Prefabricated function blocks are available for the Siemens SIMATIC® S7.

## ■ Remote access under control

The Ethernet interface integrated in all models allows remote access (including gateway and NAT support) via the VeriSens® Application Suite to enable worldwide product access.

## ■ Integrated FTP client

To store live and defect images for tracking or later analysis and / or visualization as easily as possible, all VeriSens® vision sensors support FTP servers.

## ■ Data backup

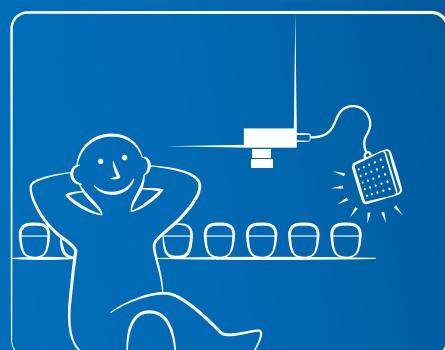
All VeriSens® vision sensors support service and commissioning through a backup & restore function for the device software settings and inspection tasks stored in the device, to enable easy backup or transmission of this data to other devices.

## The support of PROFINET® with additional benefits

The VeriSens® PROFINET® gateway with integrated PROFINET® switch allows for PROFINET® networking of up to four VeriSens® vision sensors with serial communication interface (RS485). The sensor's Ethernet port remains free for parallel VeriSens® visualization via the integrated web interface or for saving defect images on FTP server.



# Absolutely ingenious.



# VeriSens® vision sensors

Compact image processing systems in the shape of a sensor.

## XF series

- Image evaluation: monochrome
- Includes all VeriSens® feature checks (up to 19)
- Integrated optics, 10 mm or 16 mm
- Integrated illumination, white or infrared
- Housing: aluminum (IP 67) or stainless steel (IP 69K)

## XC series

- Image evaluation: monochrome or color
- Includes all VeriSens® feature checks (up to 19)
- C-mount and free choice of lenses
- Fully integrated flash controller
- Industry-suited aluminium housing (IP 67)

## CS / ID series

- Image evaluation: monochrome
- Selected VeriSens® feature checks (up to 7)
- Integrated optics, 10 mm or 16 mm
- Integrated illumination, white or infrared
- Industry-suited aluminium housing (IP 67)



# VeriSens® Application Suite

One configuration software to fit all.

## Tutorials, Videos

- Commissioning tutorials
- Tutorials to get started
- Useful information

## Latest software

- Installation files
- Software version without installation package
- Test images

## Documentation

- Quick Start Guide
- Technical documentation
- PROFINET® GSD file

 **Baumer**  
Passion for Sensors

Test it!

VeriSens® Application Suite  
[www.baumer.com/verisens/appsuite](http://www.baumer.com/verisens/appsuite)



Software Download  
VeriSens®  
Application Suite



## XF series – the vision sensors with everything inside.

*VeriSens*® of the XF series offer the entire functionality range of up to 19 monochrome feature checks.

Furthermore, *VeriSens*® XF-200 / 205 models can also read and verify characters and numbers as well as matrix and barcodes.

All models communicate the inspection outcome not only by digital I/Os, but results and default values also via the process interface.

Alternatively to integrated white illumination, infrared with integrated daylight filter eliminates potential daylight impact. The not visible flashing will not bother any staff in the operating range.

*VeriSens*® in stainless steel design with IP 69K protection

The XF-105 / 205 vision sensors meet the very stringent hygiene requirements by washdown design in high-quality stainless steel.

*VeriSens*® PROFINET® gateway

The *VeriSens*® PROFINET® gateway available as an accessory allows for parallel interfacing of up to four *VeriSens*® on PROFINET®. Furthermore, it integrates a switch to ease implementation of linear network topologies. The *VeriSens*® Ethernet port remains available for image processing visualization on the web interface or for image saving on FTP server.

### Your benefits at a glance

- Full range of *VeriSens*® tools for monochrome feature checks
- High-speed mode with up to 100 checks per second
- 360° part recognition using *FEXLoc*® for part location
- Coordinate conversion, process interface, user level, and test mode, etc.

# XF-100/200 (IP 67) XF-105/205 (IP 69K)

**Wide range of functions for complex inspection tasks**

- High-performance 360° part recognition powered by *FEXLoc<sup>®</sup>* technology
- Coordinate conversion with correction for perspective and lens distortion
- Configurable process interface and flexible result conjunction
- User levels and password protection against unauthorized changes
- With integrated illumination (white / infrared) and optics (10 mm / 16 mm)

**Additionally in XF-200/205:**

Identification functions for optical characters (OCR / OCV) and 1D / 2D codes (incl. GS1)

**Additionally in XF-105 / 205:**

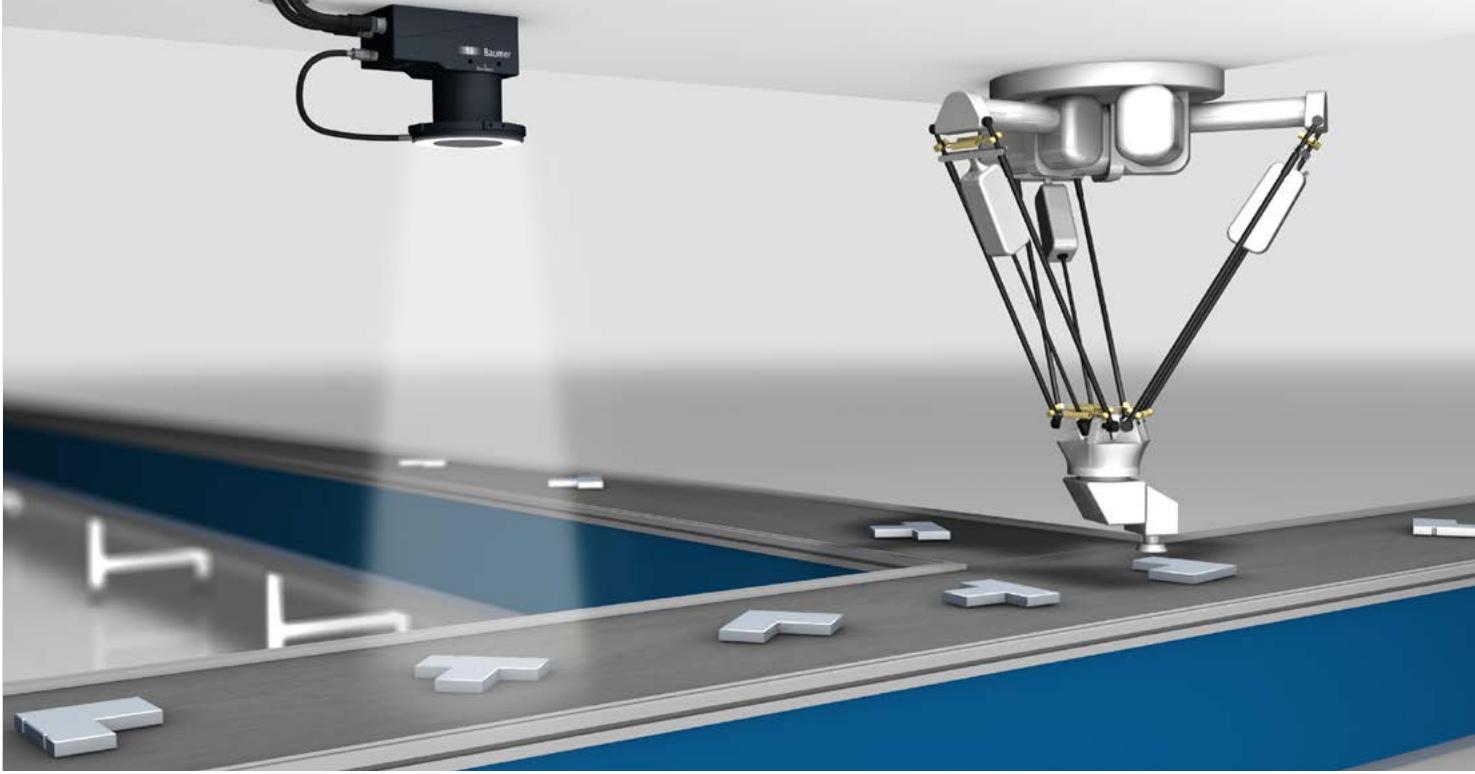
Housing with high IP 69K protection  
(stainless steel 1.4404)



Product <sup>1)</sup>	Article number	Type name	Optics/Illumination (integrated)	Process interface
XF series	11039658	VS XF100M03W10EP	10 mm / White	TCP   UDP (Ethernet)
	11039659	VS XF100M03W16EP	16 mm / White	TCP   UDP (Ethernet)
	11128420	VS XF100M03W10RP	10 mm / White	TCP   UDP (Ethernet), RS485 <sup>2)</sup>
	11128422	VS XF100M03W16RP	16 mm / White	TCP   UDP (Ethernet), RS485 <sup>2)</sup>
	11102229	VS XF100M03I10EP	10 mm / Infrared	TCP   UDP (Ethernet)
	11112924	VS XF100M03I16EP	16 mm / Infrared	TCP   UDP (Ethernet)
	11128424	VS XF100M03I10RP	10 mm / Infrared	TCP   UDP (Ethernet), RS485 <sup>2)</sup>
	11039656	VS XF200M03W10EP	10 mm / White	TCP   UDP (Ethernet)
	11039657	VS XF200M03W16EP	16 mm / White	TCP   UDP (Ethernet)
	11128423	VS XF200M03W10RP	10 mm / White	TCP   UDP (Ethernet), RS485 <sup>2)</sup>
XF series	11089899	VS XF200M03I10EP	10 mm / Infrared	TCP   UDP (Ethernet)
	11127070	VS XF105M03W10EP	10 mm / White	TCP   UDP (Ethernet)
	11127048	VS XF105M03I10EP	10 mm / Infrared	TCP   UDP (Ethernet)
	11127047	VS XF105M03I16EP	16 mm / Infrared	TCP   UDP (Ethernet)
	11127049	VS XF205M03W10EP	10 mm / White	TCP   UDP (Ethernet)
	11128398	VS XF205M03W16EP	16 mm / White	TCP   UDP (Ethernet)
	11128399	VS XF205M03I10EP	10 mm / Infrared	TCP   UDP (Ethernet)

<sup>1)</sup> all models with 752 × 480 px resolution and 1/3" CMOS sensors (monochrome)

<sup>2)</sup> supporting *VeriSens<sup>®</sup>* PROFINET<sup>®</sup> gateway (Article No. 11135780)



## XC series – everything included.

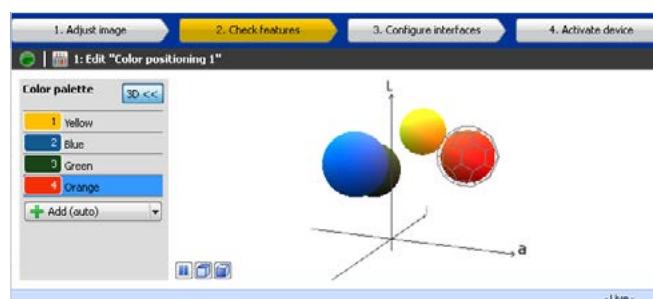
The *VeriSens®* XC series opens up the universal XF functionalities for applications with user-specific lenses and illumination or where color is an additional feature check.

Besides mandatory C-mount for modular tube systems, *VeriSens®* XC is the first vision sensor platform with fully integrated flash controller to enable quick and efficient solutions even in complex applications. By powering external illumination it eliminates the need for additional hardware and furthermore even flashes with the required pulse of up to 48 V and 4 A. High-performance CCD sensors with resolutions up to 2 megapixel meet even advanced application requirements. The *VeriSens®* XC series is also available with color sensors and *Color FEX®* functionality.

### Your benefits at a glance

- Full range of *VeriSens®* feature checks (monochrome, color)
- Fully integrated flash controller (48 V / 4 A)
- Innovative color setup by *Color FEX®* 3D color assistant
- C-mount interface, free choice of lenses
- IR or daylight filter, independent of lens (as an accessory)

### Color setup with *Color FEX®*



Baumer makes color verification an easy thing. With *Color FEX®* incorporating the idea of an intelligent assistant, *VeriSens®* offers a unique functionality. After teaching the relevant object colors within the sensor-defined color range, color tolerances are visualized by the radius of 3D spheres which are verified upon collisions with each other. The color defined in the sphere center is assigned a name by the system – which means, a yellow area is also named yellow.

# XC-100/200

C-mount for enhanced flexibility and similar XF functionality

- A free choice of lenses (C-mount) and matching lens protection thanks to modular tube system
- Fully integrated flash controller for external illumination systems
- Configuration of illumination and flash in parallel to parameterization
- Resolutions:  
CCD sensor (monochrome) with 0.3 MP / 1.2 MP / 2 MP  
CCD color sensor with 0.3 MP / 1.2 MP

Additionally in XC-200:

Identification functions for optical characters (OCR / OCV)  
and 1D / 2D codes (incl. GS1)



## Modular system design



Product <sup>1)</sup>	Article number	Type name	Resolution [px]	Sensor type	Process interface
XC series	11086398	VS XC100M03X00EP	640 × 480	1/4" CCD	TCP   UDP (Ethernet)
	11086399	VS XC100M12X00EP	1280 × 960	1/3" CCD	TCP   UDP (Ethernet)
	11086410	VS XC100M20X00EP	1600 × 1200	1/1.8" CCD	TCP   UDP (Ethernet)
	11128425	VS XC100M03X00RP	640 × 480	1/4" CCD	TCP   UDP (Ethernet), RS485 <sup>2)</sup>
	11128426	VS XC100M12X00RP	1280 × 960	1/3" CCD	TCP   UDP (Ethernet), RS485 <sup>2)</sup>
	11128429	VS XC100M20X00RP	1600 × 1200	1/1.8" CCD	TCP   UDP (Ethernet), RS485 <sup>2)</sup>
	11086175	VS XC200M03X00EP	640 × 480	1/4" CCD	TCP   UDP (Ethernet)
	11086176	VS XC200M12X00EP	1280 × 960	1/3" CCD	TCP   UDP (Ethernet)
	11086177	VS XC200M20X00EP	1600 × 1200	1/1.8" CCD	TCP   UDP (Ethernet)
XC series	11116656	VS XC100C03X00EP	640 × 480	1/4" CCD	TCP   UDP (Ethernet)
	11116724	VS XC100C12X00EP	1280 × 960	1/3" CCD	TCP   UDP (Ethernet)
	11128427	VS XC100C03X00RP	640 × 480	1/4" CCD	TCP   UDP (Ethernet), RS485 <sup>2)</sup>
	11128428	VS XC100C12X00RP	1280 × 960	1/3" CCD	TCP   UDP (Ethernet), RS485 <sup>2)</sup>

<sup>1)</sup> all models with C-mount and fully integrated flash controller

<sup>2)</sup> supporting VeriSens® PROFINET® gateway (Article No. 11135780)



## CS/ID series – specialists for special tasks.

VeriSens® of the CS and ID series offer a powerful range of functions focused on the main task: The CS series is equipped with all the tools needed for checking and sorting products, while the ID series includes reliable text and code readers for identification tasks. Both series are especially suited for the first steps in image-based object checking.

The unified user interface featured in all series enables switching to the more powerful XF and XC series models without additional training.

### VeriSens® with integrated infrared illumination

Infrared (IR) illumination adds two more benefits to VeriSens®: Flash operation beyond human eyesight capabilities will not bother any staff within the VeriSens® operating range. Secondly, the integrated daylight cut filter eliminates ambient light impact in the image processing task.

### Your benefits at a glance

- Particularly conceived for tasks in checking and sorting or for reading plain text and 1D / 2D codes
- 360° part recognition using FEXLoc® for part location at changing positions
- Part sorting using 5 freely definable outputs
- Optical character recognition and verification (OCR / OCV) without font training

# CS-100

# ID-100 / 110

- Presence and completeness checks,  
position and location control
- 360° part recognition using *FEXLoc*® for  
part location at changing positions
  - Up to 32 features can be checked simultaneously
  - Part sorting using 5 freely definable outputs
  - Encoder interface for path-based triggering  
and ejection

## ID-100 – Code Reader:

Reading matrix codes and barcodes

- Reading 1D and 2D codes (incl. GS1 codes)
- Code quality rating according to  
ISO / IEC 15415 / 15416 and AIM DPM-1-2006
- RS485 interface for optional use

## ID-110 – Text and Code Reader:

Reading human-readable characters with quality rating

- Reading different fonts without time-consuming font train-  
ing (also Dot Matrix)
- Checking correctness and quality of plain text (OCR / OCV)
- Reading 1D / 2D codes (functionality like ID-100)
- Checking fixed and variable data

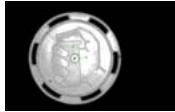
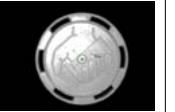
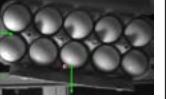
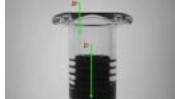
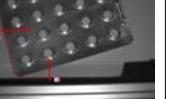
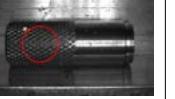
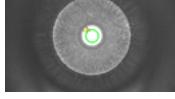
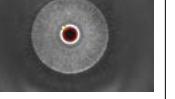
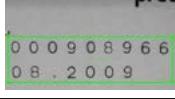
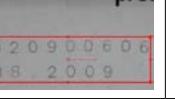


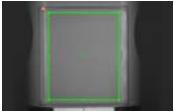
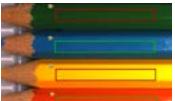
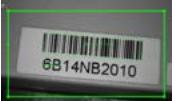
Product <sup>1)</sup>	Article number	Type name	Lens / Illumination (integrated)	Process interface
CS series	11048500	VS CS100M03W10EP	10 mm / Weiss	
	11076261	VS CS100M03W16EP	16 mm / Weiss	
	11089900	VS CS100M03I10EP	10 mm / Infrarot	
	11093026	VS CS100M03I16EP	16 mm / Infrarot	
ID series	11048489	VS ID100M03W10RP	10 mm / Weiss	TCP   UDP (Ethernet), RS485 <sup>2)</sup>
	11076263	VS ID100M03W16RP	16 mm / Weiss	TCP   UDP (Ethernet), RS485 <sup>2)</sup>
	11048484	VS ID110M03W10EP	10 mm / Weiss	TCP   UDP (Ethernet)
	11089896	VS ID110M03I10EP	10 mm / Infrarot	TCP   UDP (Ethernet)
	11138199	VS ID110M03I10RP	10 mm / Infrarot	TCP   UDP (Ethernet), RS485 <sup>2)</sup>

<sup>1)</sup> all models with 752 × 480 px resolution and 1/3" CMOS sensors (monochrome)

<sup>2)</sup> supporting *VeriSens*® PROFINET® gateway (Article No. 11135780)

# VeriSens® product features

Part location		XC-100	XC-200	XF-105 XF-100	XF-205 XF-200	CS-100	ID-110	ID-100
 Part location on contours (FEXLoc) Determines the location and rotational position of a part based on its contours. All subsequent feature checks are aligned according to the determined position. 50 ms <sup>1)</sup>			360°	360°	360°	360°		
 Part location on edges (FEXLoc) Determines the location and rotational position of a part from a single edge or two edges at right angles to each other. All subsequent feature checks are aligned according to the determined position. 0,4 ms			•	•	•	•		
 Part location on circle (FEXLoc) Determines the location and rotational position of circular parts. All subsequent feature checks are aligned according to the determined position. 1 ms			•	•	•	•		
 Part location on text line Determines the location and rotational position of text within a working area. The text may change during this task. All subsequent feature checks are aligned according to the determined position. 15 ms			•	•	•	•	•	
Geometry		XC-100	XC-200	XF-105 XF-100	XF-205 XF-200	CS-100	ID-110	ID-100
 Distance Determines the distance between two edges. 0,2 ms			•	•	•	•	•	
 Circle Determines the diameter, location and roundness in comparison to a reference circle. 0,5 ms			•	•	•	•	•	
 Angle Determines the angle between two edges. 0,4 ms			•	•	•	•		
 Count edges Determines the number of edges along a tracing ray. 0,4 ms			•	•	•	•		
 Point position Determines the coordinates of one point. 0,1 ms			•	•	•	•		
Feature comparison (monochrome / color)		XC-100 <sup>2)</sup>	XC-200	XF-105 XF-100	XF-205 XF-200	CS-100	ID-110	ID-100
 Count contour points Determines the number of contour points within a working area. 1 ms			• •	•	•	•	•	
 Contour comparison Compares the contour of a taught-in part with the contour of the current part. 1 ms			• •	•	•	•	•	•
 Brightness Determines the average brightness in a working area. 0,1 ms			• -	•	•	•	•	
 Contrast Calculates the contrast in a working area. 0,1 ms			• -	•	•	•		
 Color identification Identifies color within the operating range and its deviation from the reference color.			- •					

Feature comparison (monochrome / color)		XC-100 <sup>1)</sup>	XC-200	XF-105 XF-100	XF-205 XF-200	CS-100	ID-110	ID-100
 Area size 1 ms	Identifies light or dark respectively color-defined areas in the image. Determines the total area or the largest continuous area.			● ●	●	●	●	
 Count areas 5 ms	Counts the visible continuous light or dark respectively color-defined areas in the image.			● ●	●	●	●	
 Pattern comparison 0,4 ms	Compares the working area with a taught-in pattern.			● ●	●	●	●	
 Color positioning 1 ms	Verifies presence of defined colors within defined image sections.			- ●				
Identification		XC-100	XC-200	XF-105 XF-100	XF-205 XF-200	CS-100	ID-110	ID-100
 Barcode 20 ms	Reads barcodes. Determines quality according to ISO / IEC 15416, result is output via process interface, can be compared to a set value.				●	●	●	●
 Matrix code 35 ms	Reads matrix codes (ECC 200, GS1, QR, PDF417). at any angle of rotation. Determines quality according to ISO / IEC 15415 or AIM DPM-1-2006, result is output via process interface, can be compared to a set value.				●	●	●	●
 Text 50 ms	Reads numbers and characters. Characters read are output via process interface, can be compared to a set value.				●	●	●	●

<sup>1)</sup> Typical calculation time with default parameters at 752 × 480 px resolution (might be extended by properties of the inspected object and sensor resolution)

<sup>2)</sup> Feature checks of «Feature comparison» available with XC-100: «●|●» corresponds to sensor type «monochrome | color»

Features VeriSens®		XC-100	XC-200	XF-105 XF-100	XF-205 XF-200	CS-100	ID-110	ID-100
Image acquisition	Optics: 10 mm   16 mm   C-mount	- - ●	- - ●	● ● -	● ● -	● -	● ● -	
	Illumination: White   Infrared   Fully integrated flash controller for external illumination (Infrared: Integrated daylight filter 780 nm)	- - ●	- - ●	● ● -	● ● -	● ● -	● ● -	
	Configurable web interface (live image, job switching, retrieving defect images)	●	●	●	●	●	●	●
	Save images via FTP	●	●	●	●	●	●	●
	Configuration via Ethernet	●	●	●	●	●	●	●
Functionalities	Process linkage: Digital I/Os	5/3-5	5/3-5	5/3-5	5/3-5	5/5	5/3-5	5/3
	Providing partial results via digital I/Os at different times	●	●	●	●			
	Process interface: Ethernet   RS485 (model-specific) (PROFINET® via RS485 gateway)	● ●	● ●	● ●	● ●	- -	● ●	● ●
	Baumer FEX® image processor	●	●	●	●	●	●	●
	Color FEX® intelligent 3D color assistant (model-specific)	●						
	User administration / Password protection	●	●	●	●		●	●
	Coordinate conversion	●	●	●	●			
Process integration	Flexible result conjunction	●	●	●	●			
	Result conjunction with integrated digital inputs	●	●	●	●			
	Identification functions: Code   Text	- -	● ●	- -	● ●	- -	● ●	● -
	Test functionality	●	●	●	●	●	●	●
	High-speed mode (monochrome only)	●	●	●	●			
	Gamma correction	●	●	●	●			

# Technical data

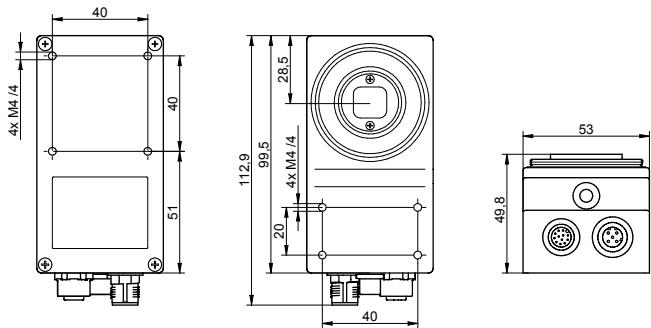
General data	XC series			XF series   CS series   ID series		
Resolution	640 × 480 px	1280 × 960 px	1600 × 1200 px	752 × 480 px		
Sensor	1/4" CCD (monochrome, color)	1/3" CCD (monochrome, color)	1/1.8" CCD (monochrome)	1/3" CMOS (monochrome)		
LED illumination	Fully integrated flash controller for external illumination			White (LED class: Risk group 1 low risk, EN 62471:2008) Infrared (LED class: free group (860 nm) risk-free, EN 62471:2008)		
Lens	Changeable lens (C-mount)			f = 10 mm (integrated)   f = 16 mm (integrated)		
Min. object distance	Depending on changeable lens			50 mm   70 mm		
Max. object distance	Depending on changeable lens			∞   300 mm		
Speed						
High-resolution mode	Max. 50 insp./sec.	Max. 12 insp./sec.	Max. 7 insp./sec.	Max. 50 insp./sec.		
High-speed mode (limited resolution, monochrome)	Max. 100 insp./sec.	Max. 25 insp./sec.	Max. 15 insp./sec.	Max. 100 insp./sec. (XF series only)		
Defect image memory	32	8	4	32		
Number of jobs	Up to 255 on the device (can be exchanged via process interface)					
Features per job	32					
Electrical data	XC series			XF series   CS series   ID series		
Power supply	--- 18 ... 30 VDC					
Power consumption	Typical 5 W (I <sub>max</sub> = 1.5 A at 24 V)			Typ. 5 W (I <sub>max</sub> = 1 A at 24 V)		
Inputs	8 ... 30 VDC					
Outputs	PNP 100 mA					
Digital input	Trigger, Job selection, External teach-in, Encoders (CH-A, CH-B) 500 kHz					
Digital output	Pass/Fail 1-5 <sup>1)</sup> , Flash Sync, Alarm, Camera Ready, Output Enable			<sup>1)</sup> VSxxxxxxxxxxRP: 1-3		
Communication						
Initial setup	Ethernet (10BASE-T / 100BASE-TX)					
Process interface	TCP   UDP (Ethernet) <sup>2)</sup> , RS485 <sup>3)</sup> , PROFINET® via gateway <sup>3)</sup>			<sup>2)</sup> except CS-100 <sup>3)</sup> VSxxxxxxxxxxRP only		
Integr. flash controller	XC series			XF series   CS series   ID series		
Voltage (permanent)	--- 12 VDC or --- 24 VDC			---		
Voltage (pulsed)	JL 24 VDC or JL 48 VDC			---		
Current (permanent)	I <sub>max</sub> = 800 mA at --- 24 VDC	( +/- 10 %, at least +/- 100 mA, at 25 °C)		---		
Current (pulsed)	I <sub>max</sub> = 4 A at JL 48 VDC	( +/- 20 %, at least +/- 100 mA, at 25 °C)		---		
Flash time	Max. 1 ms (Duty Cycle max. 1:10)			---		
Operating conditions	XC series			XF series   CS series   ID series		
Temperature	Housing temperature: max. +50 °C / Operating temperature: +5 ... +50 °C / Storage temperature: -20 ... +70 °C					
Humidity	0 ... 90 % (non-condensing)					
Protection class	IP 67 (XC series: with tube)			IP 67 or IP 69K (model-specific)		
Vibration load	IEC 60068-2-6, IEC 60068-2-64					
Mech. shock resistance	EN 60068-2-27					
Mechanical data	XC series			XF series (XF series in IP 69K)   CS series   ID series		
Width × Height × Depth	53 mm × 99.5 mm × 49.8 mm (without lens / tube)			53 mm × 99.5 mm (107.5 mm) × 38 mm		
Material	Housing: aluminum Cover glass tube: PMMA			Housing: aluminum (IP 69K: stainless steel 1.4404) Cover glass: PMMA <sup>4)</sup>		
Weight	300 g (without lens / tube)			250 g		
Code types / OCR	Model: XC-200			Models: XF-200 / 205   ID-110   ID-100		
Barcode <sup>5)</sup>	2/5 Industrial, 2/5 Interleaved, Codabar, Code 39, Code 128, PharmaCode EAN 8, EAN 13, UPC-A, UPC-E: Base code + variants Add-On 2, Add-On 5 GS1 DataBar (RSS): Limited, Expanded, Expanded Stacked GS1 DataBar (RSS-14): Base code + variants Truncated, Stacked, Stacked Omnidir GS1 128					
Matrix code <sup>5)</sup>	DataMatrix (ECC 200), GS1-DataMatrix, QR, PDF417					
Font <sup>6)</sup>	Many font styles (recommended: sans serif, proportional), Dot Matrix, Characters: A-Z a-z 0-9 + - . : / ( )					

<sup>4)</sup> for XF-100 / 105, XF-200 / 205, CS-100, ID-110 with infrared illumination: daylight filter 780 nm integrated

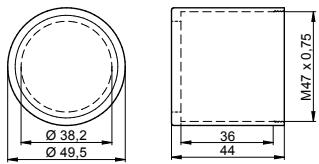
<sup>5)</sup> incl. quality rating of all barcodes according to ISO/IEC 15416 as well as all matrix codes according to ISO/IEC 15415 or AIM DPM-1-2006

<sup>6)</sup> XF-200 / 205, XC-200, ID-110 only

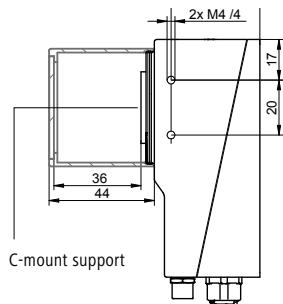
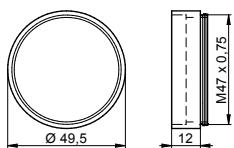
### Scale drawing (XC series)



XC Tube

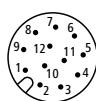


XC Tube Module



Dimensions in mm

### Electrical connection <sup>1)</sup> M12 / 12-pin



1: Power (+18-30 V DC)	7: OUT3
2: Ground	8: IN3
3: IN1 (Trigger)	9: OUT4   RS485+ <sup>2)</sup>
4: OUT1	10: IN4
5: IN2	11: IN5
6: OUT2	12: OUT5   RS485- <sup>2)</sup>

### Electrical connection illumination <sup>1) 3)</sup> M8 / 4-pin <sup>4)</sup>



1: +24 V or +48 V Flash
2: +12 V or +24 V Flash
3: Ground
4: Flash Sync <sup>5)</sup> PNP 100 mA

### Ethernet connection <sup>1)</sup> M12 / 4-pin



1: TD+
2: RD+
3: TD-
4: RD-

<sup>1)</sup> on device

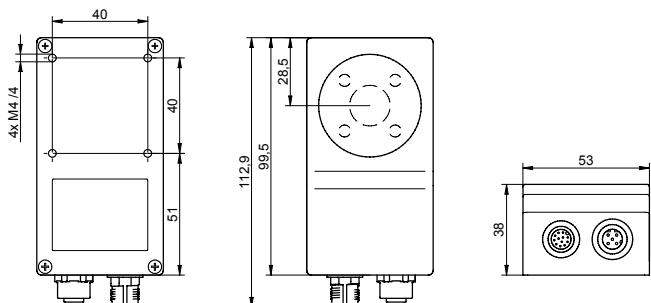
<sup>2)</sup> RS485: VSxxxxxxxxxxRP only

<sup>3)</sup> XC series only

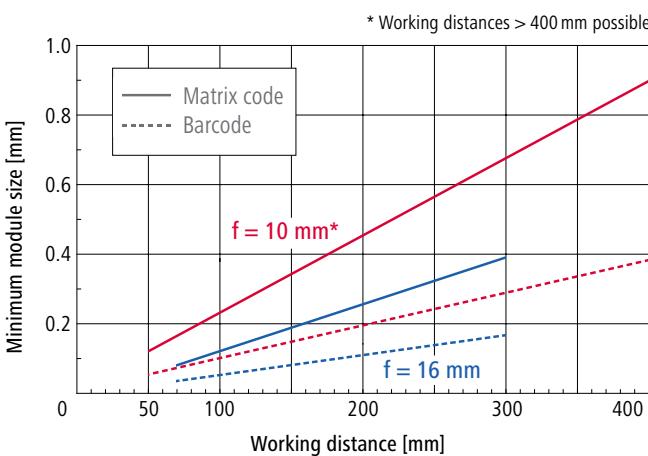
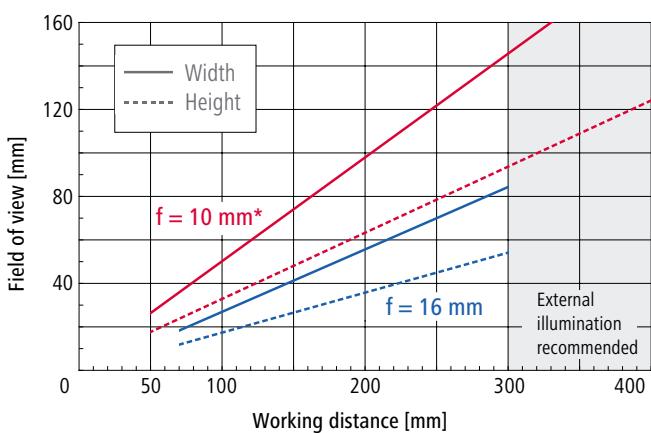
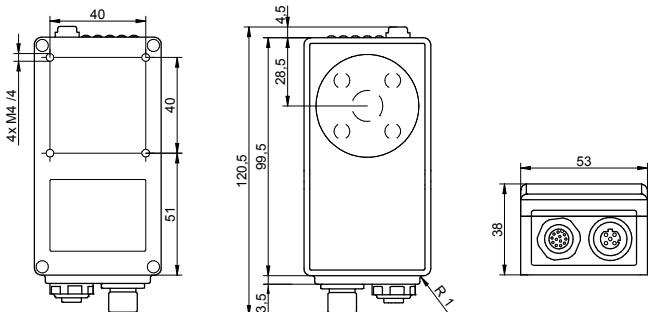
<sup>4)</sup> voltage outputs configurable by software

<sup>5)</sup> voltage according to power supply

### Scale drawing (XF | CS | ID series)



### Scale drawing (XF series in IP 69K)



# System design

## Lab setup accessories (optional)

11048083	Connecting cables VeriSens®, 2 m, ready-for-use DC socket
11079750	Power supply 24 V / 1 A, plugs for EU, US, UK, AU, KR
11051407	Laboratory stand, hinged bracket, mounting material

## Mounting accessories (optional)

10159905	Straight mounting	
10159906	90° mounting angle	

## Connecting cables<sup>2)</sup> shielded, to free cable end

11048452	2 m	 
11043780	5 m	 
11048455	10 m	 
11048456	2 m	 
11043785	5 m	 
11048458	10 m	 

<sup>2)</sup> suitable for drag chains

## PROFINET® gateway (optional)

11135780	VeriSens® PROFINET® gateway with integrated switch	
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## Illumination cables (VeriSens® XC series only)

11088882	1.5 m	Extension cable shielded, male conn. straight M8, to female conn. straight M8	 
11136134	0.3 m	Extension cable shielded, male conn. straight M8, to female conn. straight M8	 
11089179	0.3 m	Adapter cable, male connector straight M8, to JST SMP-03V (3-pin)	 
11089178	0.3 m	Adapter cable, male connector straight M8, to JST SMP-02V (2-pin)	 
10163693	2 m	Adapter cable, free cable end, to female connector straight M8	 

## Set of mounting brackets (VeriSens® XC series only)

11092203	VB Fix Kit FLDR-i90B, small (57 mm)
11092204	VB Fix Kit FLDR-i90B, large (93 mm) for LED ring light FLDR-i90B-W to VeriSens® XC series

11136136	VB Fix Kit RONDO-LX, small (57 mm)
11136139	VB Fix Kit RONDO-LX, large (93 mm) for LED ring light ZVI-RONDOLX_24VDC_x to VeriSens® XC series

## External illumination modules

See on reverse

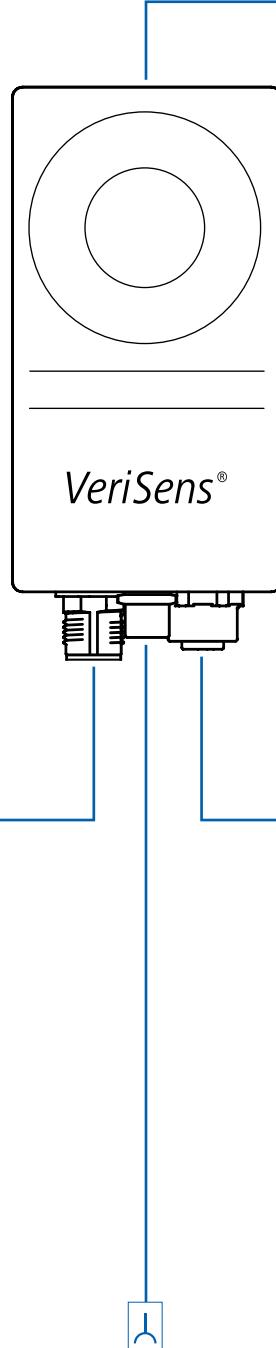
## Changeable lenses (VeriSens® XC series only)

See on reverse

## Lens accessories (optional)

11088325	XC Tube, M47, length 44 mm (scope of delivery VeriSens® XC)
11089149	XC Tube Module, M47, tube extension 12 mm
11010529	Close-up ring set 6-part, 0.5/1/5/10/20/40 mm
11092000	Pentax® polarization filter <sup>1)</sup> , linear, filter thread 27 mm
11006551	Pentax® color filter <sup>1)</sup> (red), filter thread 27 mm
11097573	IR cut filter, C-mount, height 2,5 mm, screw-in tool
11097576	Daylight filter, C-mount, height 2,5 mm, screw-in tool

<sup>1)</sup> Compatible to lenses with Article No. 11002840 / 11002877 / 11004362 / 10170039 / 11002222 / 11003417 / 11012785



## Monitor (All-in-one PC, optional)

11122988	
ZVP-ALL_IN_ONE_PC.DE	(10,4", 1024 x 768 px, Stylus)
11093293	
ZVP-ALL_IN_ONE_PC.EN	(10,4", 1024 x 768 px, Stylus)



## VB Fix Kit (VeriSens® XC series only)



### Changeable lenses (C-mount)

Article No.	Type name	Focal distance	Aperture speed range	Minimum distance	Maximum lens length <sup>1)</sup>	XC Tube Module (Article No. 11089149)
11037579	ZVL-FL-HC0416X-VG <sup>2)</sup>	4,2 mm	F1,6 - C	0,20 m	44 mm	1 piece
11002840	ZVL-FL-HC0612A-VG <sup>2)</sup>	6 mm	F1,2 - C	0,20 m	46 mm	1 piece
11002877	ZVL-FL-CC0815B-VG	8,5 mm	F1,5 - C	0,20 m	40 mm	1 piece
11004362	ZVL-FL-HC1214-2M <sup>2)</sup>	12 mm	F1,4 - 16	0,25 m	29 mm	–
10170039	ZVL-FL-CC1614-2M	16 mm	F1,4 - 16	0,25 m	34 mm	–
11002222	ZVL-FL-CC2514-2M	25 mm	F1,4 - 16	0,25 m	33 mm	–
11003417	ZVL-FL-CC3516-2M	35 mm	F1,6 - 16	0,45 m	36 mm	–
11012785	ZVL-FL-CC5028-2M	50 mm	F2,8 - 22	0,90 m	34 mm	–
11003041	ZVL-FL-CC7528-2M	75 mm	F2,8 - 32	0,70 m	70 mm	3 pcs

<sup>1)</sup> Measured from C-mount support (see XC series scale drawing)

<sup>2)</sup> Incompatible to VeriSens® with sensor format 1/1.8" (VS XC100M20X00EP, VS XC200M20X00EP)

### External illumination modules (assembled for VeriSens® XC series)

Article No.	Type name	Product description	Cable [cm]	Illuminated area [mm]	Outer dimensions [mm]	Height [mm]
<b>Cable with M8/4-pin connector<sup>3)</sup></b>						
11085869	FLDR-i90B-W	LED ring light, white	30	Ø 87	Ø 93,5	24,6
11090900	FLDR-i90B-IR24	LED ring light, IR 875 nm	30	Ø 87	Ø 93,5	24,6
11086539	FLDL-i150x15-W	LED bar light, white, diffuse	100	148 × 15	158 × 17,5	20
11086540	FFPR-i100-W	LED dark field light, white, diffuse	30	Ø 94,6	Ø 100	40
11086541	FLDM-i100-W	LED dome light, white	30	Ø 80	Ø 130	61
11086535	FLDM-i250-W	LED dome light, white	30	Ø 220	Ø 280	134
11086536	FLDL-TP-Si36-W	LED back light, white, diffuse	100	36 × 36	47 × 47	15
11086538	FLDL-TP-Si85x77-W	LED back light, white, diffuse	100	85 × 77	95 × 95	15
11086537	FLDL-TP-Si200x100-W	LED back light, white, diffuse	100	200 × 100	228 × 116	23,5
11095910	FLFL-Si60-IR24	LED back light, IR 850 nm, diffuse	100	60 × 60	94 × 94	10
<b>With M8/4-pin connector<sup>4)</sup></b>						
11130179	ZVI-RONDOLX_24VDC_weiss_120°	LED ring light, white, 120°	–	Ø 67	Ø 101	24
11130176	ZVI-RONDOLX_24VDC_IR850nm_50°	LED ring light, IR 850 nm, 50°	–	Ø 67	Ø 101	24
11130150	ZVI-RONDOLX_24VDC_IR850nm_120°	LED ring light, IR 850 nm, 120°	–	Ø 67	Ø 101	24
11130185	ZVI-TOPLINED1_24VDC_weiss_120°	LED bar light, white, 120°	–	78 × 25	78 × 25	23
11130186	ZVI-TOPLINED1_24VDC_SHweiss_120°	LED bar light, SH white, 120°	–	78 × 25	78 × 25	23
11130187	ZVI-TOPLINED1_24VDC_rot617nm_30°	LED bar light, red 617 nm, 30°	–	78 × 25	78 × 25	23
11135012	ZVI-TOPLIGHT80_24VDC_rot617nm_30°	LED bar light, red 617 nm, 30°	–	87 × 87	87 × 87	20
11130183	ZVI-ARCUSM_24VDC_weiss_120°	LED dark field light, white, diffuse	–	Ø 68	Ø 120	9,5
11130181	ZVI-HILIGHT80_24VDC_weiss	LED back light, white, diffuse	–	78 × 78	87 × 87	20
11130182	ZVI-HILIGHT120_24VDC_weiss	LED back light, white, diffuse	–	118 × 118	127 × 127	20



<sup>3)</sup> supplier: Falcon Illumination MV GmbH & Co. KG

<sup>4)</sup> supplier: Büchner Lichtsysteme GmbH

<sup>5)</sup> connector directly on the device

# Worldwide presence.



## Africa

Algeria  
Cameroon  
Côte d'Ivoire  
Egypt  
Morocco  
Reunion  
South Africa

## America

Brazil  
Canada  
Colombia  
Mexico  
United States  
Venezuela

## Asia

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China  
India  
Indonesia  
Israel  
Japan  
Kuwait  
Malaysia  
Oman  
Philippines  
Qatar  
Saudi Arabia  
Singapore  
South Korea  
Taiwan  
Thailand  
UAE

## Europe

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Belgium  
Bulgaria  
Croatia  
Czech Republic  
Denmark  
Finland  
France  
Germany  
Greece  
Hungary  
Italy  
Malta  
Martinique  
Netherlands  
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International Sales  
P.O. Box · Hummelstrasse 17 · CH-8501 Frauenfeld  
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[sales@baumer.com](mailto:sales@baumer.com) · [www.baumer.com](http://www.baumer.com)

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