PRODUCT INFORMATION

ICR880/ICR890
High-end Camera Systems

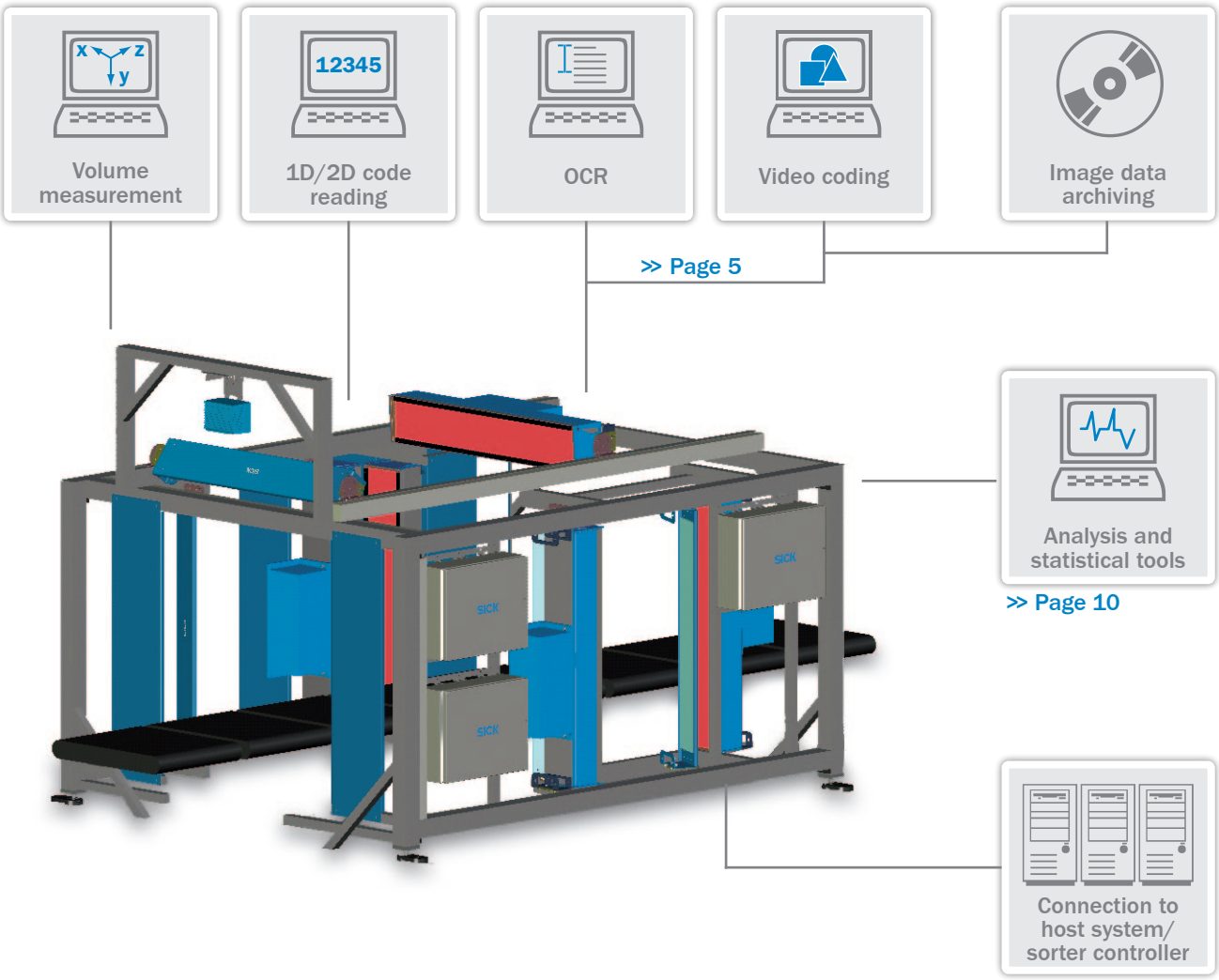
Camera systems for reading 1D and 2D codes and capturing images for OCR and video coding applications

SICK
Sensor Intelligence.

Customer-specific solutions from a single source feature ...

From simple bar code reading to complex identification solutions with data archiving: SICK is your professional partner for automating logistics processes.

- Development and production of all sensors
- Ultra high-performance and reliability of products
- Unique system flexibility thanks to complete product portfolio
- End-to-end, professional project management
- Easy installation and fast-response service with global network of branch offices
- Everything from a single source – one contact for your entire identification solution



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... components that are designed to work together.

Using the MSC800 embedded controller, each component is networked for optimal and reliable communication to create a comprehensive identification solution.

- Connection of all external sensors (photoelectric sensors, encoders, digital I/Os)
- From simple one-side reading to a complex six-side camera tunnel
- Additional volume measurement for cubical and non-cubical objects with calibration (optional)
- Integration of laser-based bar code scanners
- Integration of scale data to create a complete DWS system (DWS = Dimensioning Weighing Scanning System)
- Connection to host systems via multiple interfaces
- Basic configurations for identification solutions
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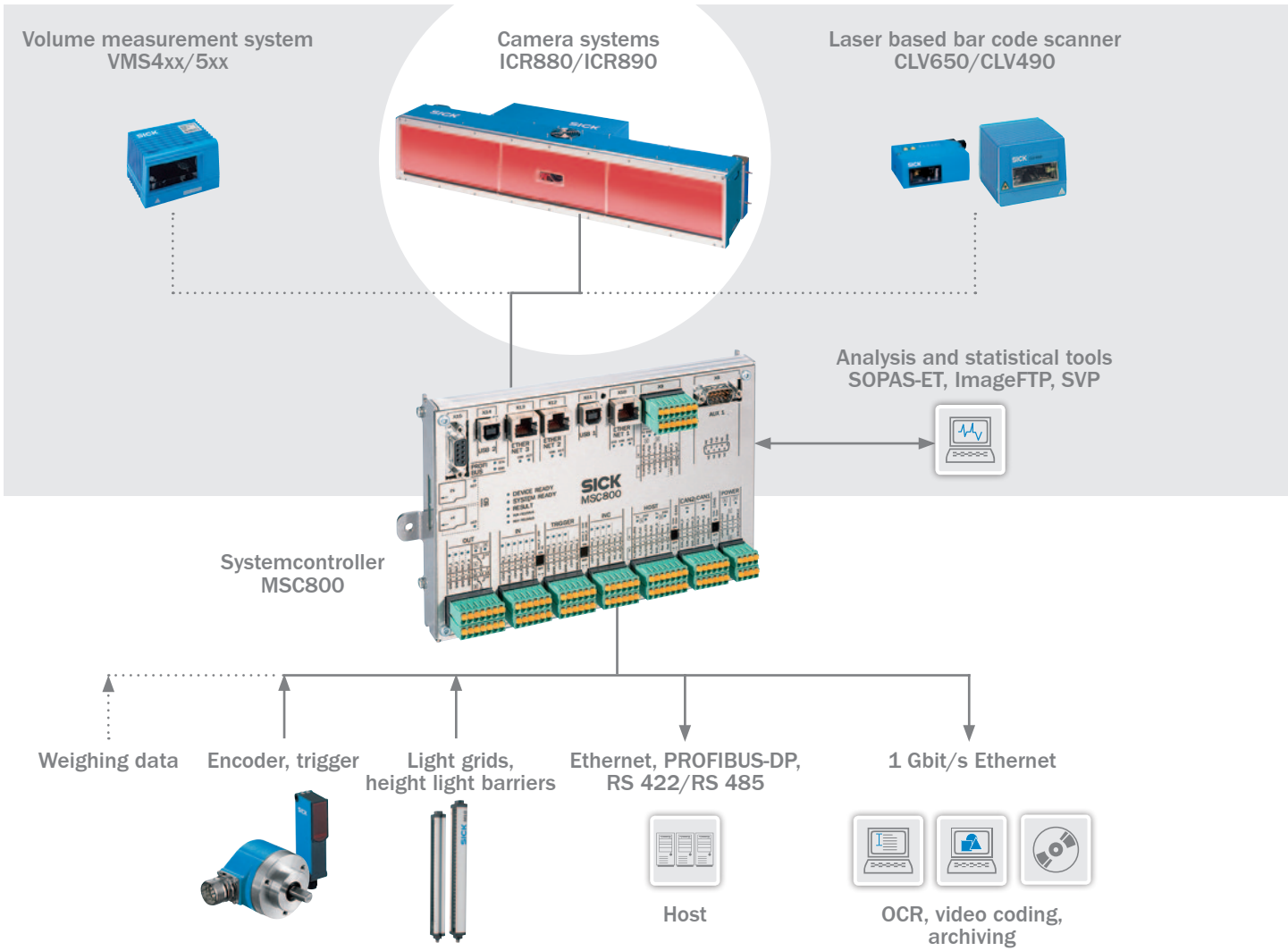
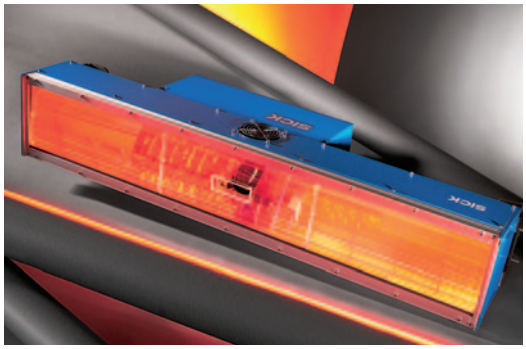
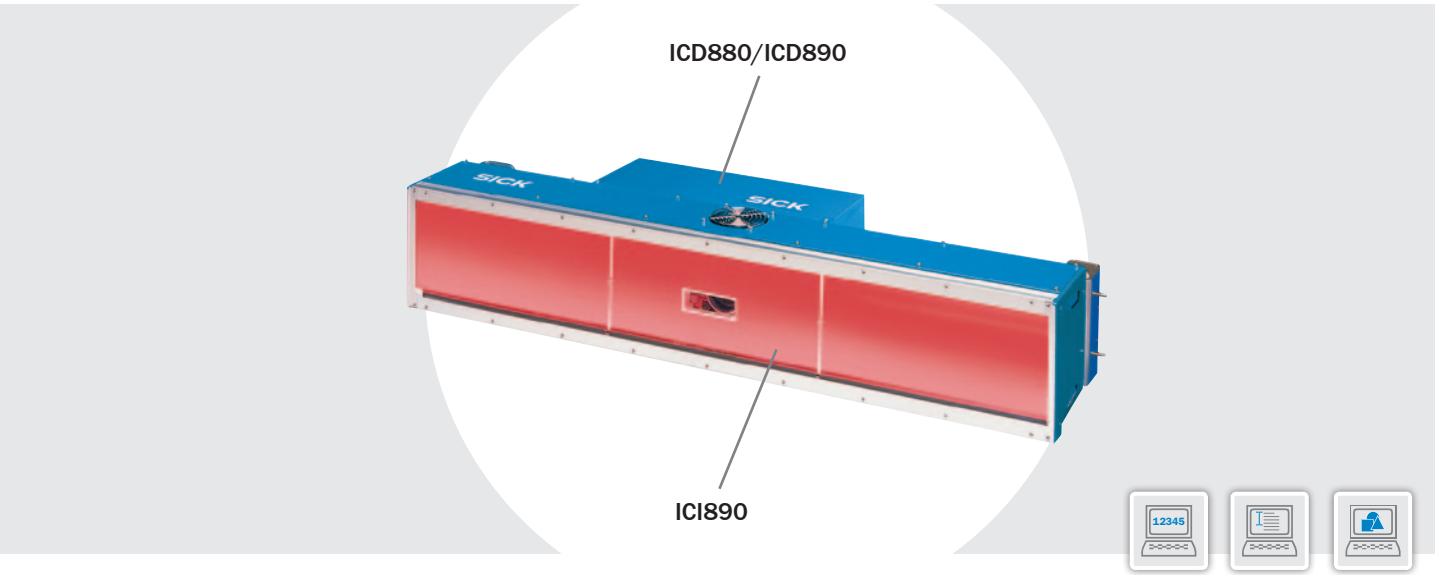


The ICR880/ICR890 camera systems



The ICR880/ICR890 camera systems offer maximum resolution and top image quality. They consist of two independently interchangeable individual components: the high-end CCD camera ICD880 or ICD890 with integrated high-performance decoder, and an ICI890 LED lighting system. This modularity makes installation simple, thus guaranteeing the shortest possible MTTR times.



The ICD880/ICD890 high-end CCD cameras and ICI890 LED illumination

The high-end cameras ICD880/ICD890 are built into a robust, industry-standard housing, and can be easily replaced thanks to the quick-action lock systems. The camera type and design are the same for all reading situations. This means that components can be swapped around within the system if there is a failure.

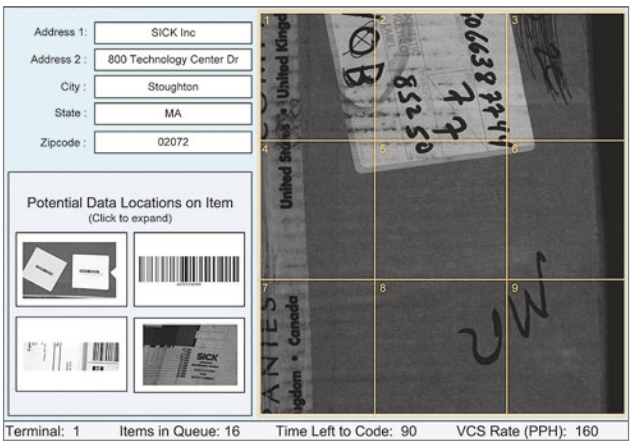
Likewise, each camera features an integrated parameter cloning module that stores all parameters to avoid the need for reconfiguration.

Several versions of the ICI890 lighting system are available, for a wide range of different applications. With up to 140 power LEDs, it ensures homogenous, powerful lighting for the entire field of view.

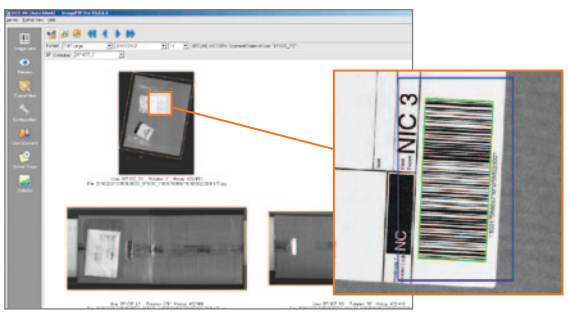
SICK has developed a patented hardware JPEG compressor for transmitting and post-processing data, which can be used to compress file size to a fraction of the original. This makes it possible to further process the images centrally for OCR and video coding or archive them on a server using a standard Gbit/s network.

Capturing images with real-time processing for OCR, video coding, and archiving

Comparison of image quality with different settings (from left to right): original bitmap image, JPEG at 50 % quality, JPEG at 25 % quality



Customer-specific video coding solutions for address data entry



Detailed analysis of individual images using XML overlay information:
Blue boxes = regions of interest
Green boxes = decoding successful (“good read”)

JPEG compressor

The JPEG compressor can change the quality of the image to suit the application. Settings range from very high quality for OCR scanning to very high compression for image archiving. This resource-intensive processing of raw data takes place directly on the integrated hardware of the ICR880/ICR890 camera systems so that decoding performance is not compromised.

OCR and video coding

If the system cannot read a code, or if there is no routing information stored in the database for a particular ID code, video coding can be used to read the address information from the image generated by the ICR880/ICR890 camera systems. With the ICR890, OCR (optical character recognition) is also available. Thanks to the ROI (region of interest) data generated in the camera system, the image can be process in a minimum of time. The package can remain on the sorter during this time. This greatly reduces the number of packages that must be processed subsequently by hand.

Archiving image data

Archived image data allows all shipments captured by the camera to be tracked in full. All images and additional package data, such as volume and bar codes, are displayed on a customized interface. “No reads” can also be analyzed offline. This makes the system highly transparent, since systematic errors (defective printers, etc.) can be identified and corrected based on the images.

Multiple Image Output Channel

The ICR880/ICR890 supports multiple image output channels, allowing the user to send different resolution images and file formats to multiple external sources simultaneously.

Technical data and reading field diagrams

Technical data camera and decoding systems

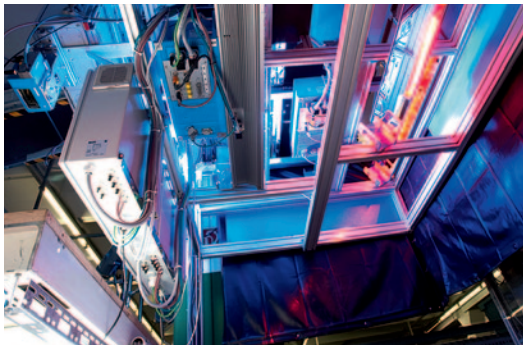
Type	ICD880	ICD890
MTBF / MTTR [1) 2)]	> 80,000 h / < 10 min.	
CCD line sensor	8,192 pixels / max. 19.1 kHz line frequency	
Image resolution / web width	See reading field diagrams	
Max. conveyor speed [2)]	2.4 m/s at 200 dpi resolution; 4.8 m/s at 100 dpi resolution	
Supported lenses	80 mm focal length	135 mm focal length
Image data output	JPEG compressed via Gbit/s FTP	
Immunity to ambient light [2)]	Max. 2,000 lx (on 1D / 2D bar codes)	
Code types	All major code types supported	
Data interfaces	1 x 100 Mbit/s Ethernet; 2 x CAN bus 1 Mbit/s; 2 x 1 Gbit/s Ethernet image output	
Power consumption	Typ. 75 W	
Housing	Aluminium die-cast	
Dimensions	496 mm x 208 mm x 214 mm [3)]	
Weight	13.5 kg	
Enclosure rating/protection class [2)]	IP 64 (to DIN 40050) / Class 3 (to IEC 1010-1)	
Operating temperature [2)]	0 °C ... +50 °C	
Max. relative humidity [2)]	95 %, non-condensing	
EMC/vibration/shock testing [2)]	To EN 61000-6-2, EN 61000-6-4 / IEC 68-2-6 / IEC 68-2-27, IEC 68-2-29	
Color [2)]	Blue (RAL 5012)	

[1)] Camera/decoder systems and LED lighting systems are independently interchangeable; [2)] Value applicable for camera system incl. LED lighting;
[3)] Including decoder

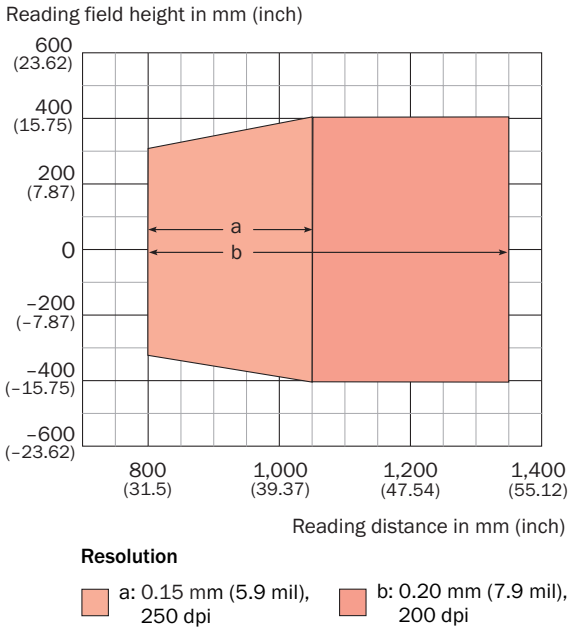
Technical data LED illumination

Type	ICI890 (750 mm)	ICI890 (900 mm)	ICI890 (1,100 mm)
Suitable camera and decoder systems			
ICD880	●	●	–
ICD890	–	●	●
LED class	Class 1M (EN 60825-1) [5)]		
Wavelength	Red light (λ = 620 nm)		
Max. reading distance	1,400 mm	2,500 mm	3,300 mm
Path width	≤ 600 mm	≤ 800 mm	≤ 1,300 mm
Power consumption	Typ. 80 W	Typ. 130 W	Typ. 160 W
Housing	Aluminium extrusion		
Dimensions	874 mm x 255 mm x 212 mm	1,024 mm x 255 mm x 212 mm	1,224 mm x 255 mm x 212 mm
Weight	15 kg	19 kg	23.5 kg

[5)] Not a CDRH classifiable illumination

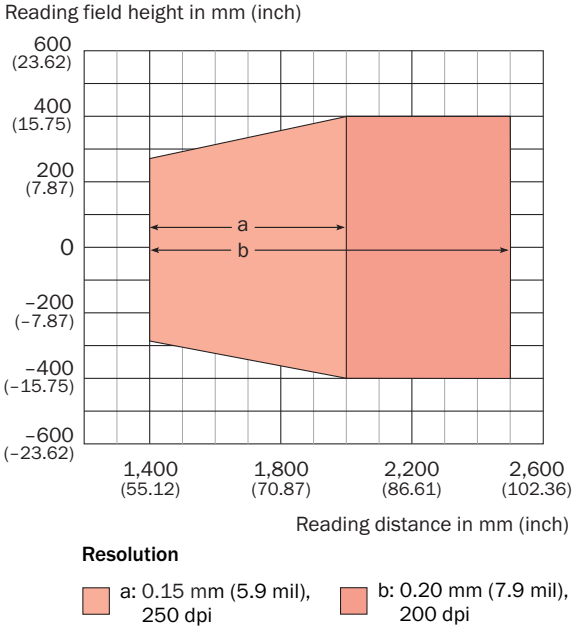


Reading field diagram ICR880 ICD880 with ICI890 (900 mm)

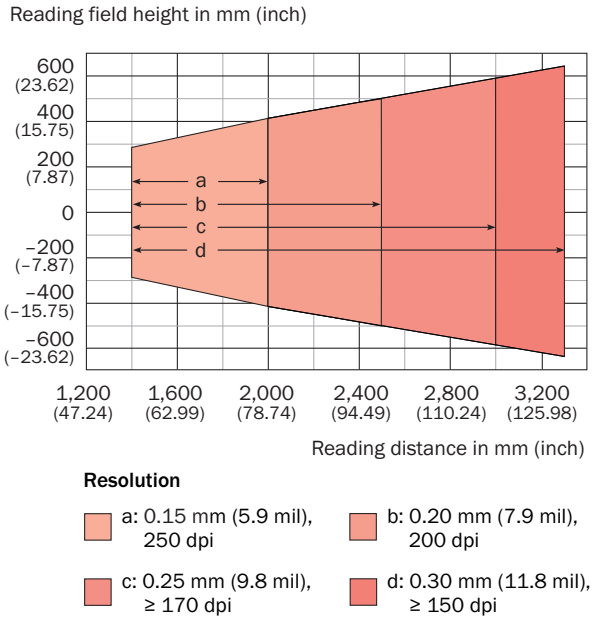


a, b, c, d = Minimum module width for 1D codes;
dpi = image resolution.

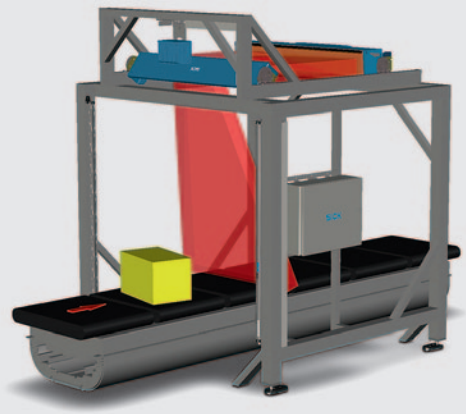
Reading field diagram ICR890 ICD890 with ICI890 (900 mm)



ICD890 with ICI890 (1,100 mm)



Basic configurations and sample applications

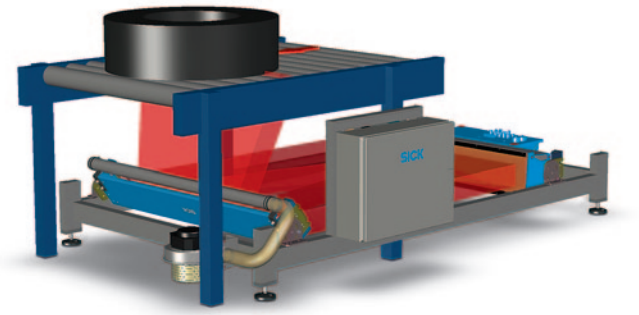


Top reading

- Single-side reading on all common conveyor systems (belt sorters, cross-belt conveyors, tray sorters, roller conveyors)
- Camera system focuses in conjunction with the VMS4xx/5xx volume measurement system or MLG light grid
- Maximum read rate (even for small codes and at high conveying speeds)
- CEP (courier, express, and parcel services)
- Retail (distribution, mail order, inbound/outbound)
- Automotive (tire reading)
- Food and beverage (inbound/outbound, integrated with weigh scale for complete DWS system)

Bottom reading

- Omnidirectional code reading on belt sorters and roller conveyors
- Maximum read rate (even for small and partially destroyed codes)
- CEP (parcel services)
- Retail (distribution)
- Automotive (tire reading)

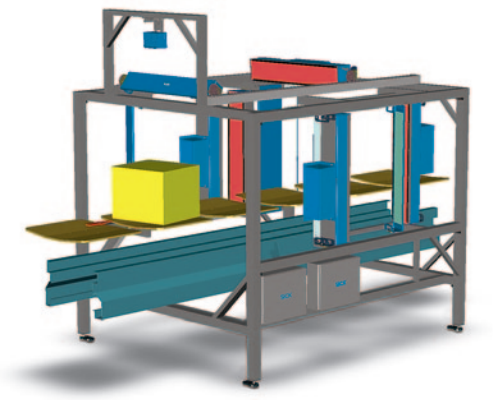


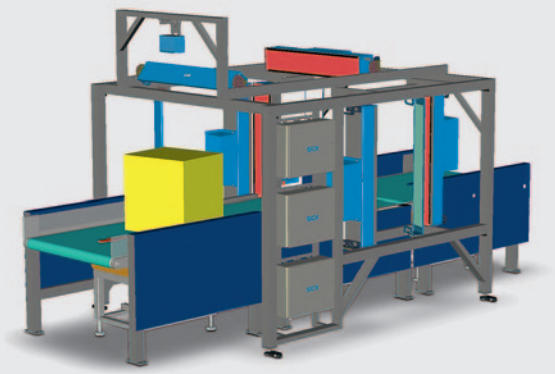
5-side reading with 3 cameras

- Omnidirectional code reading on all conventional conveyor systems
- Five-side coverage with three cameras thanks to 45° angle side reading
- Objects must be aligned ± 15° on conveyor
- Camera system focuses in conjunction with the VMS4xx/5xx volume measurement system
- CEP (courier, express, and parcel services)
- Food and beverage (inbound/outbound, integrated with weigh scale for complete DWS system)
- Retail (distribution, inbound/outbound)
- Postal (distribution, revenue recovery)

5-side reading with 5 cameras

- Omnidirectional code reading independent of object position
- Maximum read rate (even when space between objects is minimal) through redundant coverage of package sides
- Camera system focuses in conjunction with the VMS4xx/5xx volume measurement system
- CEP (courier, express, and parcel services)
- Food and beverage (inbound/outbound gross weight, inbound/outbound)
- Retail (distribution, inbound/outbound)
- Postal (distribution, revenue recovery)



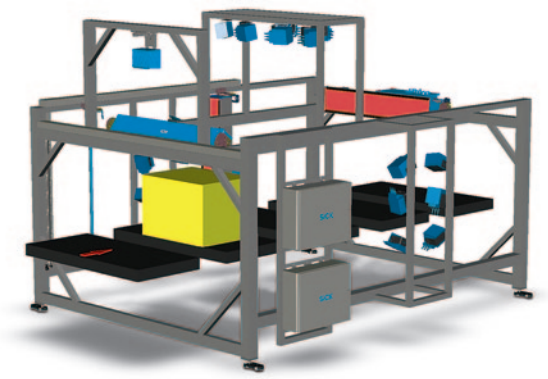


DWS system

- Combined identification system for bar code reading, image capturing, volume and weight measurement
- All data is captured centrally
- Certified systems including alibi memory and MID display
- CEP (courier, express, and parcel services, revenue recovery)
- Food and beverage (inbound/outbound, integrated with weigh scale for complete DWS system)
- Retail (distribution, inbound/outbound)
- Postal (distribution, revenue recovery)

Laser/camera hybrid system

- Omnidirectional code reading of up to six sides
- Redundant coverage of different sides for improved read rate of subsurface codes (→ counter skew)
- Top camera system can be expanded inexpensively for multi-side reading
- Package imaging for tracking purposes, etc. (optional)
- CEP (parcel services)
- Retail (inbound/outbound, distribution)
- Automotive (tire reading)
- Food and beverage (inbound/outbound, integrated with weigh scale for complete DWS system)
- Postal (distribution)
- Airport (baggage tracking)



Software solutions from SICK: SOPAS-ET, ImageFTP and SVP

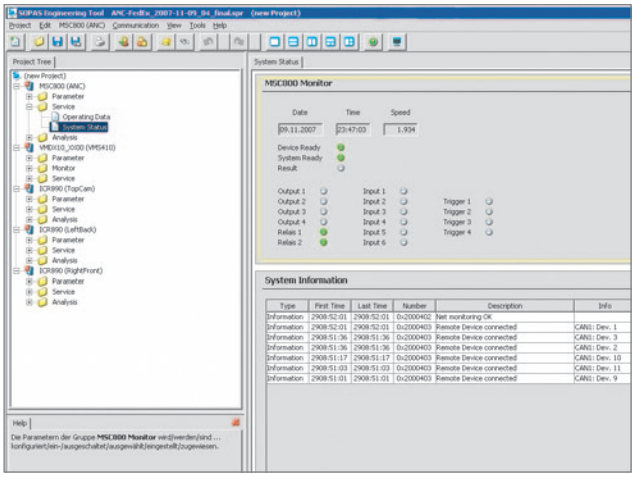
Configure your SICK components using the core SOPAS-ET engineering tool to diagnose an error quickly and easily, access online help, and perform preventive diagnostics for maintenance purposes. Image data is saved, visualized and analyzed using ImageFTP.

SOPAS-ET

This configuration software was developed as an engineering tool with all SICK devices in mind. SOPAS-ET allows you to group all of your configured components and manage them as a project.

Thanks to real-time control, you are always aware of the status of all functions and are notified of changes immediately. This uniform environment results in optimum system efficiency: Any situation can be responded to without delay by means of a quick and easy diagnosis.

Comprehensive online help provides assistance if needed.

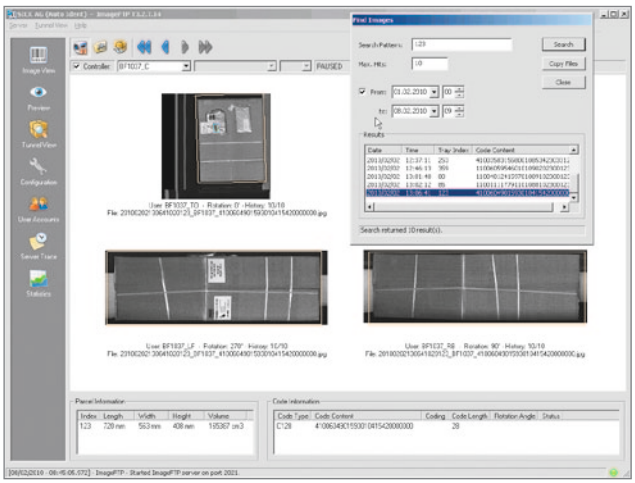


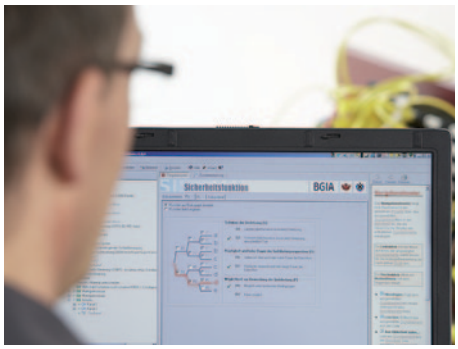
ImageFTP

This tool is a combination of an FTP server and an image viewing program. ImageFTP is used to save, visualize and analyze image data from the ICR880/ICR890.

Different image views can be used to display both the images from individual cameras and a multi-side reading. An XML overlay can be used to show the user further information (volume data, decoded bar codes, package dimensions).

An object search can be carried out offline using the index number, bar codes or other package properties.





And wherever you are, with the SICK Visualization Platform (SVP), you can analyze your reading statistics from anywhere in the world.

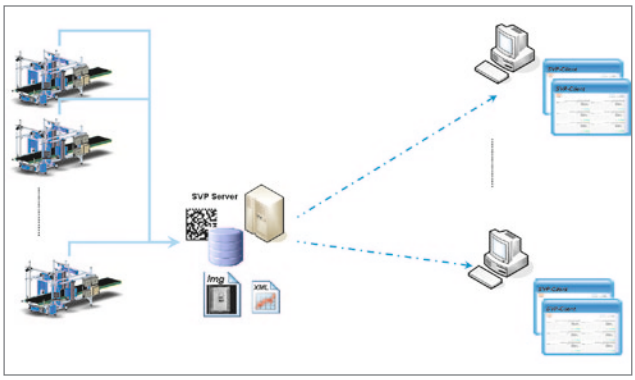
SVP

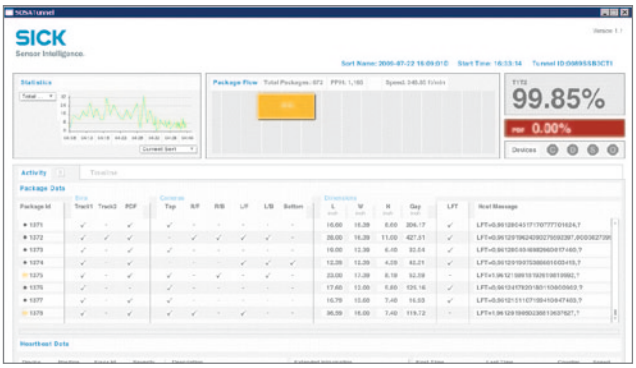
The SICK Visualization Platform is a client/server application which provides a wide range of statistics for monitoring your SICK identification systems.

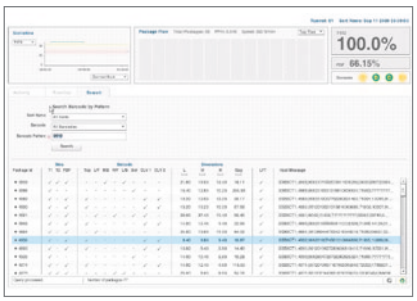
SVP provides the following functions:

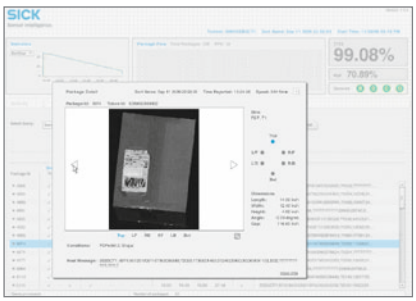
- Dashboard for displaying the current system activities and the system performance
- Search function for analyzing objects and bar codes from the archive
- Diagrams & reports for detailed assessment of reading and recognition rates
- Image monitor for quick and easy object viewing

For you, permanent monitoring of the system performance means full process transparency in your system, at all times.









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Handed over by:

Our Business Segment Expertise

Factory automation

With its intelligent sensors, safety systems, and automatic identification applications, SICK provides comprehensive solutions for factory automation.

- Non-contact detecting, counting, classifying, and positioning of any type of object
- Accident protection and personal safety using sensors, as well as safety software and services

Logistics automation

Sensors made by SICK form the basis for automating material flows and the optimization of sorting and warehousing processes.

- Automated identification with barcode and RFID reading devices for the purpose of sorting and target control in industrial material flow
- Detecting volume, position, and contours of objects and surroundings with laser measurement systems

Process automation

Optimized system solutions from SICK ensure efficient acquisition of environmental and process data in many industrial processes.

- Precise measurement of gases, liquids and dust concentrations for continuous monitoring of emissions and the acquisition of process data in production processes
- Gas flow measurements with maximum accuracy thanks to compact gas meters

SICK
Sensor Intelligence.