Product overview

Inspector83x

AI-powered quality control made stress-free

SICK
Sensor Intelligence.

Advantages

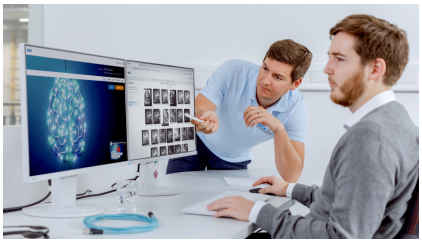
Unleash the capabilities of AI-assisted quality control

AI functionality makes machine vision tasks easier than ever. By teaching the vision sensor using examples instead of manually setting up rules, users can solve applications quickly while gaining new levels of inspection capabilities. Combining the benefits of AI tools and rule-based tools opens up extensive possibilities for solutions, regardless of how experienced the user is with machine vision.

Find out more about the AI solutions from SICK

Quad-core CPU and AI accelerator
The high-speed CPU and on-board AI Accelerator provide impressively rapid analysis. This way, every single part can be thoroughly inspected, even at a high speed.

Training the AI on the device
Inspector83x and SICK Nova provide easy-to-use AI tools that can be taught using examples. Collect, train, and execute directly on the Inspector83x. Combine with rule-based tools to easily verify known specifications.



AI training using SICK dStudio
SICK dStudio Cloud Service trains AI at scale with optimized inspection accuracy and speed on the sensor. Convenient data management and collaborative annotation make handling large data sets a breeze and makes it possible to take on big projects with confidence.

AI Blob Finder (dStudio)

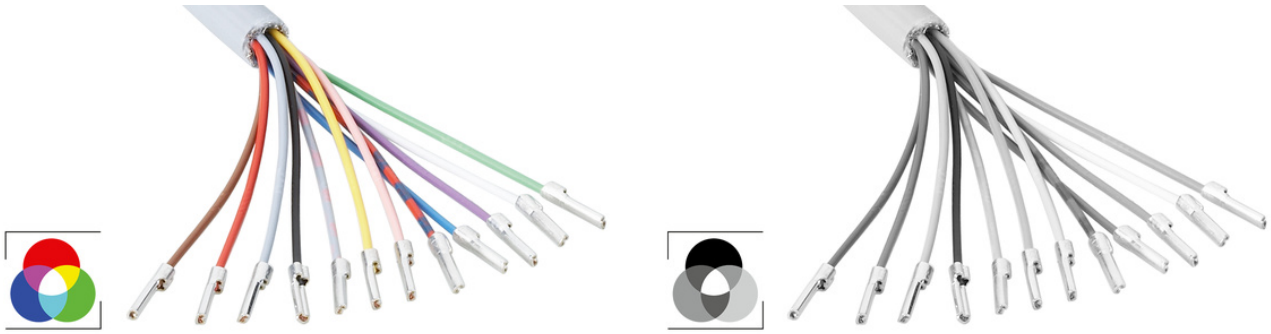
The AI Blob Finder (dStudio) uses instance segmentation technology to detect, count, and measure objects within a defined region using a trained neural network. It identifies and separates each object in an image, pixel by pixel—even when multiple objects of the same type overlap—providing precise masks rather than bounding boxes.

This capability enables accurate measurement of length, width, and area, making it ideal for quality control tasks such as counting, sorting, positioning, and defect analysis. It can also deliver high-precision size data for cracks or surface anomalies and determine material quantities with exceptional accuracy.

Find out more about all SICK Nova AI tools

Color imaging

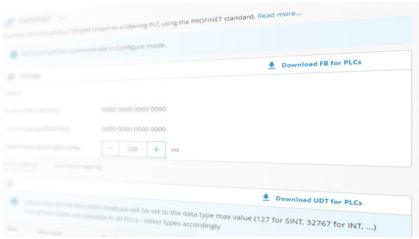
Inspector83x has color imaging options that enable color characteristics to be inspected for color sorting, defect detection and quality assurance applications. Adding color imaging capabilities brings benefits for a variety of tasks, such as identifying components, recognizing materials, detecting color markings, assessing imprints, confirming correct labeling, or determining food quality. Color information for teach-in and analysis is directly supported by AI tools in SICK Nova. This makes the forecasts even better.



Well connected

Put an end to complicated integration or data trapped on the shop floor. Industrial integration becomes a breeze with dual-port fieldbus capabilities and built-in export of customized PLC configurations for market-leading brands.

The network professional
Dual-port Ethernet fieldbus ports make integration into EtherNet/IP™or PROFINET a breeze. Meanwhile, a dedicated high-speed gigabit Ethernet port provides bandwidth for high-resolution image data, data logging, or TCP/IP integration. An additional USB-C network interface provides a convenient service interface without having to use the operational network.



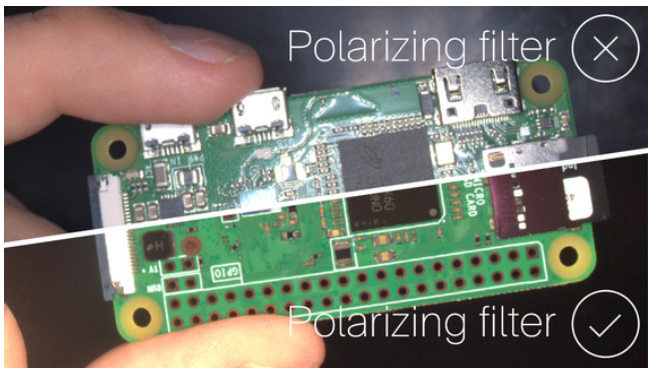
Easy export of PLC configurations
The built-in export functionality makes it possible to export customized PLC configurations for market-leading brands – with just the push of a button.

Flexible I/O
The up to seven inputs (and up to five outputs) are equipped with queued delay of signals. These can be based on time, or on built-in conveyer tracking using an encoder. This lets the sensor precisely calibrate its image timing and output signals to trigger at the right time as well as to control the ejectors. All of this is possible without the need for additional complex hardware such as a PLC.

Accessories for demanding tasks

The vast accessory portfolio from SICK grants extensive options for varying needs. The broad range of optics, illumination, filters, cables, and integration accessories suitable for the Inspector83x provide solutions even for challenging applications.

Lenses as key components
Using a standard C-mount threading, the sensor can be ordered with high-quality optics from SICK. Alternatively, it can be equipped with specialized industrial lenses to fit complex inspection needs afforded by third-party lenses.

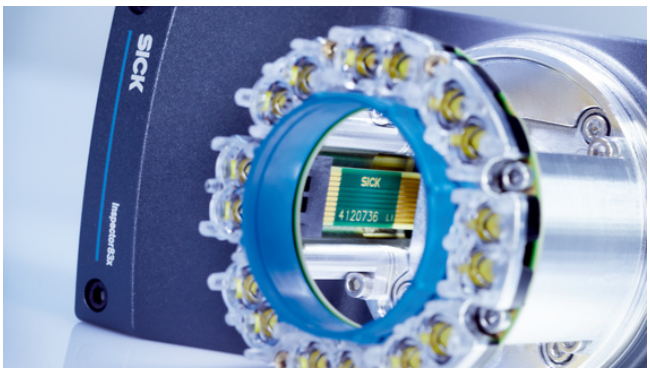


Filter
By adding a polarizing filter, reflections can be reduced, e.g., when inspecting objects with glossy surfaces or through glossy, transparent materials. This can make inspections more reliable or easier.

Illumination for many situations

The 16 powerful LEDs of the optional internal ring lights reach dark corners and increase the inspection accuracy and image illumination with a great depth of field.

Near infrared (NIR)
The Inspector83x near infrared (NIR) variant does not disturb the surroundings with flashing lights, and it can shield against ambient light when using a NIR-pass filter. For some applications, it even provides a more suitable contrast.



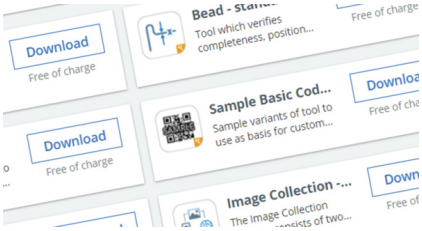
Application-appropriate illumination
Adding to the flexible system of integrated ring lights, the sensor offers a dedicated port for external illumination. This port can be used to trigger or drive specialized illumination such as backlights or bar lights from the SICK portfolio or from third-party suppliers.

Inspector8xx, the next generation 2D vision sensor

The Inspector8xx-series is designed to make quality control easy and efficient. The cutting-edge AI technology enables non-expert users to rapidly solve vision applications such as quality assurance, defect detection, and sorting. They can do so directly on the device by simply teaching it using examples. The user-friendly web interface eliminates the need for additional software. It also allows for combinations of AI and rule-based tools for optimal solutions in a broad range of applications. This powerful vision sensor enables high-precision inspections at full production speed without the need for external hardware. With variants for compact size or exceptional field of view, versatile connectivity makes integration into existing systems easy. The Inspector8xx-series comes preinstalled with SICK Nova, allowing users to conveniently extend the software's functionality. This also provides a scalability that makes it a safe choice for a cost-effective ownership.

Go one step further with SICK Nova

Machine vision applications are easily handled in a web browser using point-and-click configuration, giving users the freedom to combine tools for image processing and integration as they need. But the functionality does not end there: With SICK Nova, users can download additional Nova tools or develop their own, allowing them to quickly and conveniently extend functionality to fit the application — without limitations.



Quickly solve tasks with just the right tools at your fingertips, check out these Tutorials for how! Link to playlist

Choose the right sensor for the application and use the same familiar software.

Rapidly create customized solutions with AppPool downloads or custom development.

Rapidly handle your applications like never before. Add, combine, and customize tools with ease.

Technical data overview

Sensor	CMOS monochrome / CMOS Color (depends on variant)
Sensor resolution	1,232 px x 1,024 px (1.3 MP) 2,464 px x 2,048 px (5.1 MP)
Optical focus	Adjustable focus (manual)
Lens	C-mount
Optical format	1/1.8"
Operator interfaces	Web server
Ethernet	✓, TCP/IP, UDP, FTP, HTTP, HTTPS, NTP
EtherNet/IP™	✓, EtherNet/IP™ Dual Port
PROFINET	✓, PROFINET Dual Port
Serial	✓, RS-232, RS-422
Configuration software	Web GUI (SensorApp configuration), SICK AppManager (IP determination and configuration, SensorApp installation), SICK AppStudio (programming)
Dimensions	108 mm x 63.1 mm x 84.5 mm 108 mm x 63.1 mm x 55.4 mm [1)]

[1)] Housing only, without lens and optics protection hood.

Product description

Put an end to wasted material or faulty products. Put an end to long setup times or expensive reconfiguration when the product is changed. Put an end to complicated integration or data trapped on the shop floor.
The Inspector83x is designed to make quality control easy and efficient. The cutting-edge AI technology enables non-expert users to rapidly solve vision applications such as quality assurance, defect detection, and sorting directly on the device by simply teaching it by examples.
The high-speed vision sensor provides an easy way to inspect every single part, every detail, every time. Connected, reliable, intelligent – stress-free.

At a glance

- AI-powered Intelligent Inspection toolset
- Quality inspection toolset
- Quad-core CPU and AI accelerator
- Monochrome or color imaging option
- Up to 5 megapixels and strong illumination
- Intuitive Web UI
- Dual-port fieldbus and high-speed IOs
- SICK Nova, SICK AppSpace, and HALCON support

Your benefits

- Teach by example with the AI-powered Intelligent Inspection toolset to simplify common machine vision tasks such as classification of parts and anomaly detection
- Easy validation of known specifications with rule-based tools from the Quality Inspection toolset
- Solution for demanding inspection tasks, even at very high process speeds
- Excellent resolution for inspection of medium to large areas in great detail
- Easy and flexible to operate and configure
- Flexible integration into industrial network or PLC
- SICK Nova tool plug-ins for convenient customization of inspections in Lua script

Fields of application

- Complex and unpredictable defect detection
- Sorting of parts, products or packages
- Inline, high-speed quality control in the production of parts, assembly or finalized products
- Manufacturing and assembly verification
- Track and trace by OCR and code reading
- OCR/OCV and quality inspection in packaging lines

Ordering information

Other models and accessories ➜ www.sick.com/Inspector83x

- **SensorApp:** Nova Inspector
- **Products by tasks:** Classification, Identifying, Position determination, 1D code, 2D code, presence inspection, Quality check, measuring, 2D, OCR
- **Illumination:** integrated
- **Illumination color:** White
- **Working distance:** 200 mm ... 2,500 mm
- **Optical focus:** adjustable focus

Lens	Sensor resolution	Sensor	Type	Part no.
12 mm, C-mount	1,232 px x 1,024 px (1.3 MP)	CMOS Color	V2D8301P-1CCICXAF1SXXXX	1148471
				1148472
		CMOS monochrome	V2D8301P-1MCICXAF1SXXXX	1146732
				1144810
	2,464 px x 2,048 px (5.1 MP)	CMOS Color	V2D8305P-1CCICXAF1SXXXX	1144165
		CMOS monochrome	V2D8305P-1MCICXAF1SXXXX	1140202
				1140569
16 mm, C-mount	1,232 px x 1,024 px (1.3 MP)	CMOS Color	V2D8301P-1CCKDXAF1SXXXX	1148473
				1148474
		CMOS monochrome	V2D8301P-1MCKDXAF1SXXXX	1146733
				1146729
	2,464 px x 2,048 px (5.1 MP)	CMOS Color	V2D8305P-1CCKDXAF1SXXXX	1144166
				1144167
		CMOS monochrome	V2D8305P-1MCKDXAF1SXXXX	1143350
				1141793
25 mm, C-mount	1,232 px x 1,024 px (1.3 MP)	CMOS Color	V2D8301P-1CCKEXAF1SXXXX	1148475
				1148476
		CMOS monochrome	V2D8301P-1MCKEXAF1SXXXX	1146734
				1146730
	2,464 px x 2,048 px (5.1 MP)	CMOS Color	V2D8305P-1CCKEXAF1SXXXX	1144168
				1144169
		CMOS monochrome	V2D8305P-1MCKEXAF1SXXXX	1143351
				1142249

Lens	Sensor resolution	Sensor	Type	Part no.
8 mm, C-mount	1,232 px x 1,024 px (1.3 MP)	CMOS Color	V2D8301P-1CCIBXAF1SXXXX	1148468
				1148470
		CMOS monochrome	V2D8301P-1MCIBXAF1SXXXX	1146731
				1146690
	2,464 px x 2,048 px (5.1 MP)	CMOS Color	V2D8305P-1CCIBXAF1SXXXX	1144163
				1144164
		CMOS monochrome	V2D8305P-1MCIBXAF1SXXXX	1143348
				1143349

- **SensorApp:** Nova Inspector
- **Products by tasks:** Classification, Identifying, Position determination, 1D code, 2D code, presence inspection, Quality check, measuring, 2D, OCR
- **Illumination color:** To be ordered separately as accessories
- **Lens:** To be ordered separately as accessories, C-mount
- **Working distance:** 200 mm ... 2,500 mm
- **Optical focus:** adjustable focus

Sensor resolution	Sensor	Type	Part no.
1,232 px x 1,024 px (1.3 MP)	CMOS Color	V2D8301P-1CCXXXAF0SXXXX	1148477
			1148478
	CMOS monochrome	V2D8301P-1MCXXXAF0SXXXX	1147721
			1147720
2,464 px x 2,048 px (5.1 MP)	CMOS Color	V2D8305P-1CCXXXAF0SXXXX	1144161
			1144162
	CMOS monochrome	V2D8305P-1MCXXXAF0SXXXX	1140203
			1140638

- **SensorApp:** Nova Inspector
- **Products by tasks:** Classification, Identifying, Position determination, 1D code, 2D code, presence inspection, Quality check, measuring, 2D, OCR
- **Illumination:** integrated
- **Illumination color:** infrared (NIR)
- **Lens:** 12 mm, C-mount
- **Working distance:** 200 mm ... 2,500 mm

Sensor resolution	Sensor	Optical focus	Optical filter	Type	Part no.
2,464 px x 2,048 px (5.1 MP)	CMOS monochrome	Adjustable focus	Infrared pass filter (NIR)	V2D8305P-1MCCCDAF2SXXXX	1155019

- **SensorApp:** Nova Inspector
- **Products by tasks:** Classification, Identifying, Position determination, 1D code, 2D code, presence inspection, Quality check, measuring, 2D, OCR, Color inspection, Color recognition
- **Illumination:** integrated
- **Illumination color:** White

Lens	Working distance	Sensor resolution	Sensor	Optical focus	Type	Part no.
12 mm, C-mount	200 mm ... 2,500 mm	2,464 px x 2,048 px (5.1 MP)	CMOS Color	Adjustable focus	V2D8305P-1CCICXAF1SXXXX	1142976

- **SensorApp:** Nova Inspector
- **Products by tasks:** Classification, Identifying, Position determination, 1D code, 2D code, presence inspection, Quality check, measuring, 2D, OCR
- **Illumination:** integrated
- **Illumination color:** Infrared
- **Lens:** 25 mm, C-mount
- **Working distance:** 200 mm ... 2,500 mm

Sensor resolution	Sensor	Optical focus	Optical filter	Type	Part no.
2,464 px x 2,048 px (5.1 MP)	CMOS monochrome	Adjustable focus	Infrared pass filter (NIR)	V2D8305P-1MCDEDAF2SXXXX	1151786

SICK AT A GLANCE

SICK is one of the leading manufacturers of intelligent sensors and sensor solutions for industrial applications. A unique range of products and services creates the perfect basis for controlling processes securely and efficiently, protecting individuals from accidents and preventing damage to the environment.

We have extensive experience in a wide range of industries and understand their processes and requirements. With intelligent sensors, we can deliver exactly what our customers need. In application centers in Europe, Asia and North America, system solutions are tested and optimized in accordance with customer specifications. All this makes us a reliable supplier and development partner.

Comprehensive services complete our offering: SICK LifeTime Services provide support throughout the machine life cycle and ensure safety and productivity.

For us, that is “Sensor Intelligence.”

WORLDWIDE PRESENCE:

Contacts and other locations –www.sick.com

SICK
Sensor Intelligence.