safeVisionary2

SAFETY IN THE THIRD DIMENSION

Safety camera sensors

Higher productivity through 3D safety

Thanks to safe 3D environment perception with performance level c, mobile robots detect more obstacles in the travel path, while collaborative robots react more dynamically to the environment. This enables you to avoid accidents and increase the efficiency of your application. You can also use the precise 3D measurement data, for example, for navigation of your vehicles or for object detection in robotics applications.

Reliable in harsh everyday industrial use

safeVisionary2 is designed for demanding everyday industrial use and offers a very high availability, even under exceptional mechanical loads. Thanks to solid-state technology, the camera has no moving parts. This makes it especially resistant to shocks and vibrations when used in mobile applications. The IP65 and IP67 enclosure ratings also ensure the device is protected against water and dust.

REACHING NEW DIMENSIONS

With the world's first 3D time-of-flight camera with performance level c safety certification, SICK is setting another milestone as one of the leading supplier of innovative sensor technologies.

safeVisionary2 makes safe three-dimensional environment perception for advanced safety concepts possible, thereby enabling you to take the productivity of your machines to a new level.

Thanks to the precise 3D measurement data it delivers, the safeVisionary2 can also reliably solve automation tasks at the same time. Let's move into new dimensions together and make safety even more productive.

more information:
➔ **www.sick.com/safeVisionary2**

Compact design

Despite the powerful camera technology, the safeVisionary2 is characterized by a very compact design. With dimensions of just 70 x 80 x 77 mm, it has a clear advantage over many sensors. This allows you to easily integrate the camera into your machine design, even when installation space is tight.

Fast commissioning and diagnostics

Thanks to simple installation using standardized connection technology and the intuitive Safety Designer configuration software, the safeVisionary2 is ready for use in no time. You can use software functions such as protective field evaluation to quickly engineer your safety application. Diagnostics and optimizations are also quick and easy – for lasting productivity.

NEW POSSIBILITIES FOR MOBILE ROBOTS

To enable mobile robots to navigate safely and efficiently through halls, they must be able to sense their surroundings. As a versatile solution, e.g., for collision protection and side protection, safeVisionary2 increases the availability of your vehicles. Furthermore, the camera delivers three-dimensional environment data so that mobile robots can autonomously find their way.

⊕ Avoid collisions above the scan plane of safety laser scanners, for example, and increase availability by implementing an automatic restart after unplanned stops

⊕ You can also use the precise measurement data for 3D contour-based navigation of your vehicles and for intelligent object detection.
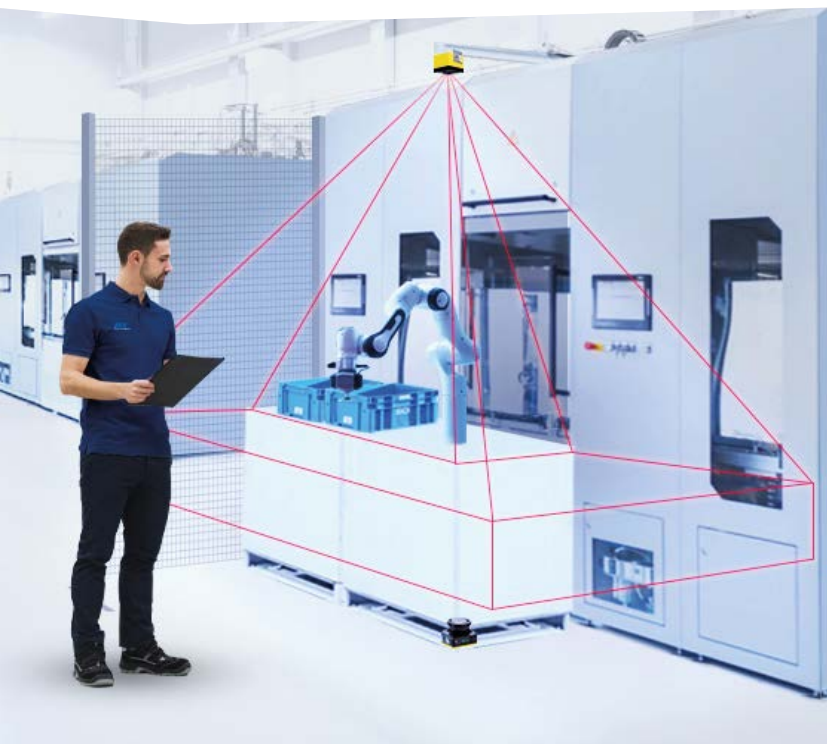
ACHIEVE MORE TOGETHER

Using safeVisionary2, collaborative robots "see" their environment with "new eyes" and act even more safely and dynamically. The camera detects, for example, residual risks such as people leaning over into the hazardous area. This reduces the required supplement to the protective field length of safety laser scanners and enables collaboration with fewer stops. You can also use the camera for presence detection to allow an automatic restart.

⊕ Reduce the residual risks and make human-robot collaboration more efficient

⊕ Use the sensor data for automation functions such as detecting empty pallets

MOBILE SERVICE ROBOTS DRIVE SAFELY

With the help of safeVisionary2, your service robots safely detect people and obstacles that are in the direction of travel. This avoids accidents. Even stairs or ramps are no longer a hazard thanks to the reliable detection of fall edges. Cleaning robots in shopping malls, for example, also stop safely in front of escalators. By combining two cameras, the PL d performance level required by the IEC 63227-2021 standard for fall protection can in many cases be achieved.

- ⊕ Your service robots safely detect stairs and other obstacles as well as people.

- ⊕ You can also use the precise measurement data for 3D contour-based navigation of your vehicles.

RELIABLY IN THE PICTURE

safeVisionary2 has a high robustness against ambient light and at the same time can be used in very dark environments. Furthermore, each pixel provides a precise distance and intensity value that depends on the distance and remission factor of the object.

With 30 frames per second and a resolution of 512 x 424 pixels, the camera delivers accurate measurement data even for moving objects.
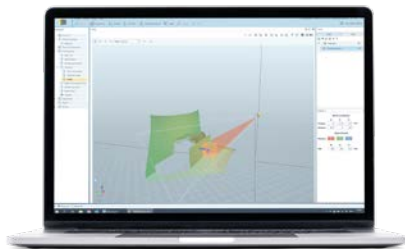
Easy configuration

Using the intuitive Safety Designer software, you can configure your safety application quickly and easily. You can also use the real time visualization of 3D measurement data for targeted diagnostics. The event history provides you with information about past safety-related events. This enables you to identify systematic errors and optimize processes.

➜ **www.sick.com/Safety_Designer**

LiDAR localization using LiDAR-LOC

LiDAR-LOC is a localization solution for mobile robots. It uses LiDAR sensor data and links them with information from other sensors as needed. This enables LiDAR-LOC to achieve precise and reliable localization results based on natural contours – with no adjustments to the environment required. Integrating the solution into an existing infrastructure and putting it into operation is easy.
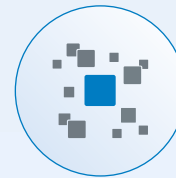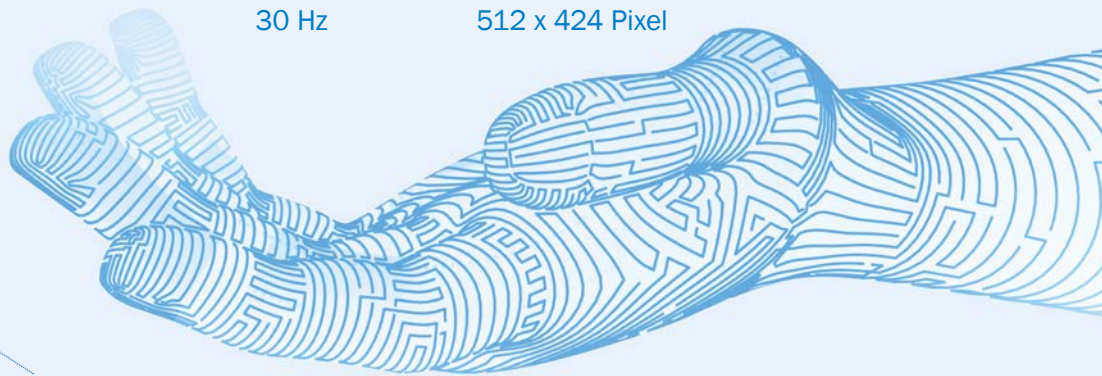
➜ **www.sick.com/LiDAR-LOC**
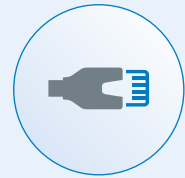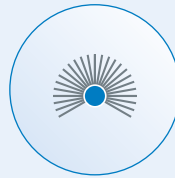
Field of view: 68° x 42°   Protective field range: ≤ 4 m*   Gigabit Ethernet
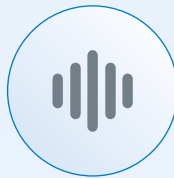
30 Hz   512 x 424 Pixel

* with reference background

Designing the future together

Become a visionary. The safeVisionary2 provides you with a fascinating tool that opens up a new dimension of functions. Create new safety applications that are characterized by greater productivity – with its expertise in functional safety technology, a comprehensive product portfolio, and numerous services to offer, SICK is your competent partner and reliable helper in this process. Get in touch now and let's shape the future together.

➜ **www.sick.com/safe-productivity**

CREATING
SAFE
PRODUCTIVITY

SAFE 3D ENVIRONMENT PERCEPTION OPENS UP NEW DIMENSIONS
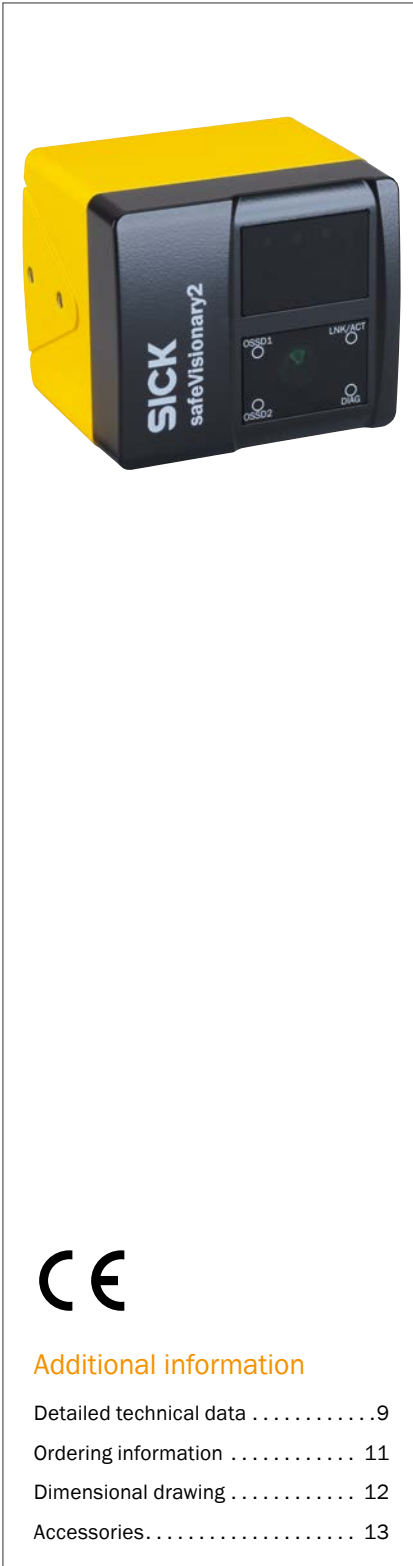
Product description

With the world's first 3D time-of-flight camera with performance level c safety certification, SICK opens up new dimensions in safety technology. safeVisionary2 allows a safe three-dimensional environment perception which you can use to increase the safety and efficiency of your applications.

Thanks to the precise measurement data, the camera also reliably solves automation tasks thus eliminating the need for you to purchase additional hardware components. safeVisionary2 has a compact, rugged design and can be versatilely and reliably employed for everyday industrial use.

At a glance

- 3D time-of-flight camera with performance level c
- Up to 4 m protective field range
- 2 simultaneous protective fields and 8 monitoring cases
- Measurement data output via Gigabit Ethernet
- Compact shock and vibration resistant design with enclosure rating IP65 and IP67
- Tried-and-proven Intuitive Safety Designer configuration software

Your benefits

- Solve your safety applications simply and efficiently – with the safe 3D environment perception
- Use the precise 3D measurement data for automation tasks, e.g., contour-based navigation for your mobile vehicles
- Benefit from the user-friendly configuration, commissioning and diagnostics
- Versatile in use and effortless to integrate, even when the installation space is limited
- High availability, even under mechanical loads and during continuous operation – no moving parts due to the measurement technology used

CE

Additional information

For more information, simply enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples, and much more.

Detailed technical data

More information can be found in the operating instructions. Download ➜ **www.sick.com/safeVisionary2**

Features

Technology	3D time-of-flight camera
Application	Indoor
Camera resolution	512 px x 424 px
Field of view (protective field)	68° x 42°
Field of view (other field types and measurement data acquisition)	68° x 58°
Frame rate	30 Hz
Object resolution	Configurable
Hand	20 mm
Arm	40 mm
Leg	50 mm
Body	200 mm
Protective field range	≤ 2 m [1]
Protective field range in Increased scanning range mode	4 m [2]
Warning field range	7.3 m
Number of fields	≤ 24
Number of simultaneously monitored protective fields	≤ 2
Number of simultaneously monitored fields	≤ 3
Number of monitoring cases	≤ 8
Number of regions of interest (ROIs)	≤ 40
Number of simultaneously monitored ROIs	≤ 5
Number of multiple samplings	1 ... 16
Response time	≥ 55 ms [3]
Protective field supplement	65 mm
Items supplied	Safety camera sensor Safety instruction Mounting instructions Operating instructions for download

[1] The effective protective field range depends on the application and the configured object resolution.

[2] Increased scanning range mode requires object resolution body.

[3] The response time depends on the configured multiple sampling.

Safety-related parameters

Type	Type 2 (IEC 61496-3)
Safety integrity level	SIL1 (IEC 61508)
Category	Category 2 (ISO 13849-1)
Performance level	PL c (ISO 13849-1)
PFH$_D$ (mean probability of a dangerous failure per hour)	3×10^{-7}
T$_M$ (mission time)	20 years (ISO 13849-1)
Safe state in the event of a fault	At least one OSSD is in the OFF state.

Functions

Restart interlock	✔
External device monitoring (EDM)	✔
Multiple sampling	✔
Monitoring case switching	✔
Simultaneous monitoring	✔
Static protective field switching	✔
Safe contour detection	✔
Integrated configuration memory	✔
Measured data output	✔, Ethernet

Interfaces

Connection type	Male connector, M12, 8 pin, A-coded (common male connector for power supply and inputs and outputs)
Permitted cable length	≤ 10 m [1]
Universal I/Os	≤ 4 [2]
OSSD pairs	1 ... 2 [2]
Static control inputs	≤ 4 [2]
Configuration method	Via software
Configuration and diagnostic software	Safety Designer (software for configuring and diagnosing safety solutions from SICK AG)
Configuration and diagnostics interface	Ethernet, 1000Base-T, IEEE 802.3ab
Connection type	Male connector, M12, 8-pin, X-coded
Permitted cable length	≤ 100 m
Cable category	CAT5e or higher
Display elements	LEDs

[1] With a wire cross-section of 0.25 mm^2.

[2] Universal I/O can be configured as universal input or as universal output. In addition, certain universal I/Os can be used in pairs as OSSD pairs.

Electrical data

Protection class	III (IEC 61140)
Supply voltage V$_s$	24 V DC (16.8 V ... 30 V) [1]
Power consumption typical	13 W (DC) (without output load)
Switch-on time	Typ. 30 s
Output signal switching devices (OSSDs)	2 PNP semiconductors, short-circuit protected, cross-circuit monitored [2]
ON state, switching voltage HIGH	U$_v$ - 2 V DC ... U$_v$
OFF state, switching voltage LOW	≤ 2 V DC
Current-carrying capacity per OSSD	≤ 250 mA

[1] SELV/PELV safety/protective extra-low voltage.

[2] Applies to the voltage range between −30 V and +30 V.

Mechanical data

Dimensions (W x H x D)	70 mm x 80 mm x 77 mm
Weight	520 g
Housing material	Aluminum
Housing color	RAL 9005 (black) RAL 1021 (yellow)
Window material	Polycarbonat (PC)

Ambient data

Enclosure rating	IP65 (IEC 60529) IP67 (IEC 60529)
Ambient light immunity according to IEC 61496-3	3,000 lx
Ambient light immunity typical	10,000 lx
Ambient operating temperature	–10 °C ... +50 °C [1]
Storage temperature	–25 °C ... +70 °C
Air humidity	≤ 95 %, Non-condensing [2]
Vibration resistance	1 g, 5 Hz ... 200 Hz (IEC 60068-2-6)
Shock resistance	15 g, 11 ms (IEC 60068-2-27)
EMC	IEC 61496-1 IEC 61000-6-2 IEC 61000-6-4

[1] Using heat sinks is necessary from temperatures ≥ 40 °C.

[2] IEC 61496-1, no. 4.3.1 and no. 5.4.2, IEC 61496-3, no. 4.3.1 and no. 5.4.2. Condensation has an influence on normal operation.
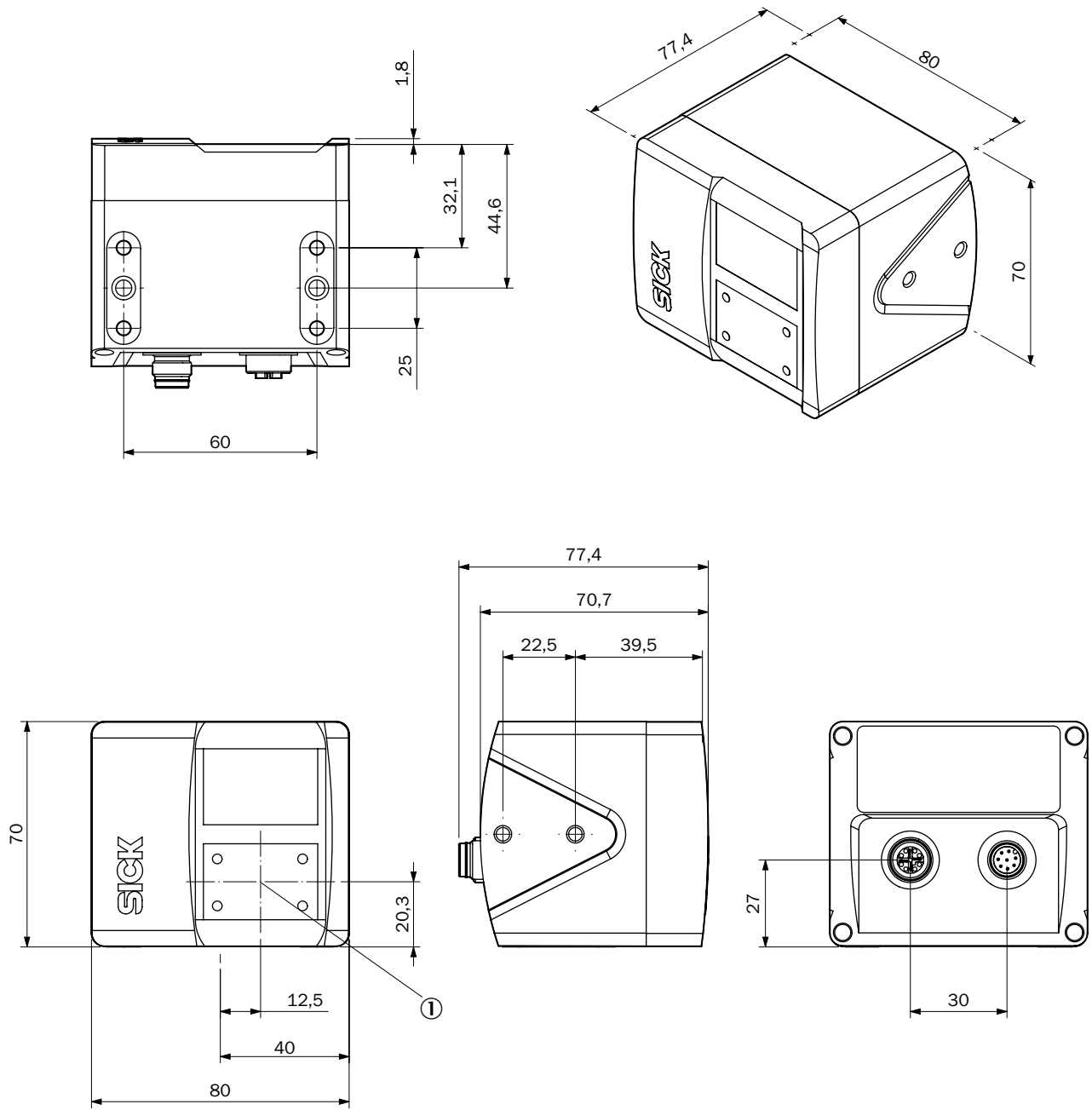
Other information

Light source	Pulsed laser
Type of light	Near-infrared (NIR), invisible
Wave length	855 nm
Detectable remission	4% ... several 1,000%
Laser class	1 (IEC 60825-1)

Ordering information

Description	Type	Part no.
3D time-of-flight camera	V3SA2-ABBABBAAN1	1116398

Dimensional drawing (Dimensions in mm)

① Camera module

Accessories

Mounting systems

Alignment brackets

	Description	Packing unit	Type	Part no.
	Alignment brackets, Mounting set (2-part) incl. screws, Aluminum	1 piece	Visionary mounting kit	2124497

Reflectors and optics

Optics cloths

	Description	Type	Part no.
	Cloth for cleaning optical surfaces	Lens cloth	4003353

Further accessories

Cleaning agent

	Description	Type	Part no.
	Plastic cleaner and care product, anti-static, 0.5 liter	Plastic cleaner	5600006

Heating and cooling devices

	Description	Type	Part no.
	Heat sink (2-part) including screws	Visionary heat sink	2127749

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SICK AT A GLANCE

SICK is a leading manufacturer of intelligent sensors and sensor solutions for industrial applications. With more than 11,000 employees and over 50 subsidiaries and equity investments as well as numerous agencies worldwide, SICK is always close to its customers. 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.

SICK has extensive experience in various industries and understands their processes and requirements. With intelligent sensors, SICK delivers exactly what the 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 SICK a reliable supplier and development partner.

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Detailed addresses and further locations ➜ **www.sick.com**

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