




## Visionary-S


3D SNAPSHOT – COLORFUL PERSPECTIVES FOR PRECISE  
FACTORY AUTOMATION




3D vision


**SICK**  
Sensor Intelligence.

# 3D SNAPSHOT – COLORFUL PERSPECTIVES FOR PRECISE FACTORY AUTOMATION







**Additional information**

Detailed technical data .....3

Ordering information .....4

Dimensional drawings .....5

Accessories.....7

## Product description

Thanks to the innovative 3D snapshot technology, Visionary-S 3D vision sensors from SICK offer maximum flexibility for countless applications in factory automation. Based on the stereo vision principle, with the Visionary-S, SICK is offering solutions for the highest demands on accuracy and speed, even for stationary applications. The Visionary-S combines structured illumination with

the proven technology of a color camera and delivers colorful depth images in real time. Powerful visualization tools, broad support of common programming languages and reliable 2D and 3D information make the Visionary-S the ideal solution for robotics, intralogistics and various quality assurance tasks in production, to name a few examples.

## At a glance

- Up to 30 color depth images per second
- Works in absolute darkness and in daylight of up to 40 klx
- Resolution: 640 px x 512 px; depth resolution down to the sub-millimeter
- Output of 3D color data via a Gigabit Ethernet interface
- Temperature range: 0 °C ... 50 °C (depending on the housing), enclosure rating: IP67
- HDR mode

## Your benefits

- Rugged cameras with a working range of 0.50 m to 6.50 m for industrial use
- More than 320,000 depth and color intensity values in a single recording
- High recording speed with very high resolution at the same time
- Flexibility: The camera can be integrated with the help of common programming languages
- High-efficiency illumination: Reliable depth data even with ambient light
- Visionary-S CX offers direct output of color and depth values via Ethernet
- Visionary-S AP is based on SICK AppSpace, which allows customers to create their own applications and load them onto the camera or use application-specific Key Apps

→ [www.sick.com/Visionary-S](http://www.sick.com/Visionary-S)

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

## Features

	Visionary-S CX	Visionary-S AP
<b>Task</b>	Measuring, 3D, robot guidance, positioning, Color inspection, Navigation	
<b>Technology</b>	3D snapshot, image analysis, color	
<b>Product category</b>	Configurable, programmable, Streaming, pre-calibrated	
<b>Working distance</b>	0.5 m ... 6.5 m 0.5 m ... 65 m <sup>1)</sup>	
<b>Example field of view</b>	1.6 m x 1.3 m <sup>2)</sup>	
<b>Detection angle</b>	60° x 50°	
<b>Angular resolution</b>	0.094° x 0.098°	
<b>Light source</b>	Internal lighting Laser, invisible, infrared, 808 nm	
<b>Laser class</b>	1 (EN/IEC 60825-1:2014; EN/IEC 60825-1:2007) <sup>23)</sup>	
<b>Factory calibrated</b>	✓	

<sup>1)</sup> only for API.

<sup>2)</sup> See "Detection zone and field of view" table for individual values.

<sup>3)</sup> Complies with 21 CFR 1040.10 except for conformances according to Laser Notice no. 50 from June 24, 2007 and the following versions.

## Performance

	Visionary-S CX	Visionary-S AP
<b>Pixel count</b>	640 px x 512 px	
<b>Processor</b>	–	1.2 GHz, 4 × ARM Cortex A72 <sup>1)</sup>
<b>Scan/frame rate</b>	30 fps, Up to 9,850,000 3D data points/s <sup>2)</sup>	
<b>Repeatability</b>	≤ 0.25 mm, at 0.5 m scanning range ≤ 4 mm, at 2.5 m scanning range	
<b>On delay</b>	< 20 s (typical)	
<b>Response time</b>	< 66 ms	
<b>Integrated application</b>	2D and 3D data flow with the option of filtering data in the device	Data stream with the option of accessing data within the device. Already-finished Key Apps can be loaded onto the device and independent applications can be created.

<sup>1)</sup> Part of the CPU is used for internal processing. The current CPU usage is displayed in the AppStudio CPU monitor.

<sup>2)</sup> 0.03 s per 3D image.

## Interfaces

	Visionary-S CX	Visionary-S AP
<b>Ethernet</b>	✓	
Function	Complete data stream combining distance and RGB values in one snapshot plus device control	Data is application-specific or can be defined in independently-developed applications.
Data transmission rate	700 Mbit/s, communication interface Gigabit Ethernet (TCP/IP)	Communication interface Gigabit Ethernet (TCP/IP)
<b>Configuration software</b>	SOPAS ET, Telegram interface	SICK AppManager, SICK AppStudio, Web-Interface, Telegram interface
<b>Digital input</b>	2	
<b>Digital output</b>	4	
<b>Optical indicators</b>	2 status LEDs	

Mechanics/electronics

<b>Connection type</b>	M12 8-pin Gigabit Ethernet, X-coded M12 17-pin (voltage supply/data), system plug, digital I/Os (24 V)
<b>Supply voltage</b>	24 V DC, ± 15 %
<b>Power consumption</b>	19 W, Typical (without digital I/Os)
<b>Peak current</b>	3 A
<b>Enclosure rating</b>	IP67
<b>Protection class</b>	III
<b>Housing color</b>	Blue, black
<b>Weight</b>	2.2 kg, with cooling fins 1.7 kg, without cooling fins (depending on type)
<b>Dimensions (L x W x H)</b>	162 mm x 116 mm x 104 mm <sup>1)</sup> 162 mm x 93 mm x 78 mm <sup>2)</sup> (depending on type)
<b>Mounting</b>	Any

<sup>1)</sup> With cooling fins.

<sup>2)</sup> Without cooling fins.

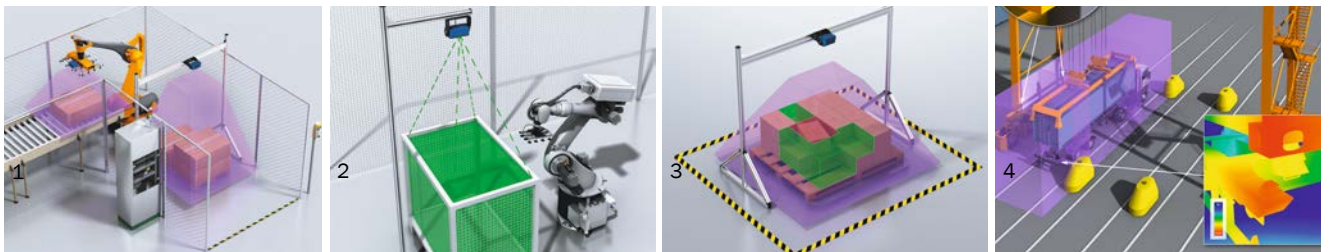
Ambient data

<b>Electromagnetic compatibility (EMC)</b>	EN 61000-6-2:2005-08, EN 61000-6-3:2007-01
<b>Shock load</b>	EN 60068-2-27:2009
<b>Vibration load</b>	EN 60068-2-6, EN 60068-2-64
<b>Ambient operating temperature</b>	0 °C ... +50 °C, with cooling fins, without cooling fins (depending on type)
<b>Storage temperature</b>	-20 °C ... +70 °C
<b>Light sensitivity</b>	< 40 klx, Sunlight

Ordering information

Sub product family	Integrated application	Dimensions (L x W x H)	Temperature	Type	Part number
Visionary-S CX	2D and 3D data flow with the option of filtering data in the device	162 mm x 116 mm x 104 mm	0 °C ... +50 °C	V3S102-1AAAAAA	1090184
		162 mm x 93 mm x 78 mm	0 °C ... +40 °C	V3S102-1AABAAB	1090185
Visionary-S AP	Data stream with the option of accessing data within the device. AI-ready-finished Key Apps can be loaded onto the device and independent applications can be created.	162 mm x 116 mm x 104 mm	0 °C ... +50 °C	V3S142-1AAAAAA	1114319
		162 mm x 93 mm x 78 mm	0 °C ... +40 °C	V3S142-1AABAAB	1114320

Application examples



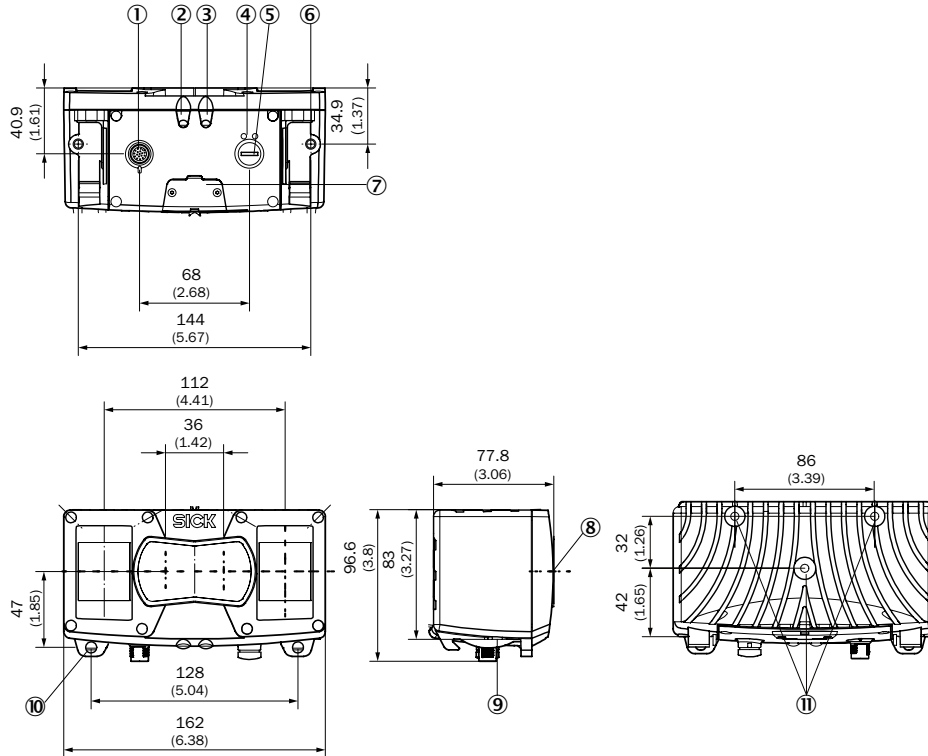
Picture 1: Dimensioning of goods. Goods can be statically measured with a 3D snapshot image.

Picture 2: Bin-Picking: 3D camera provides data for robot arm positioning

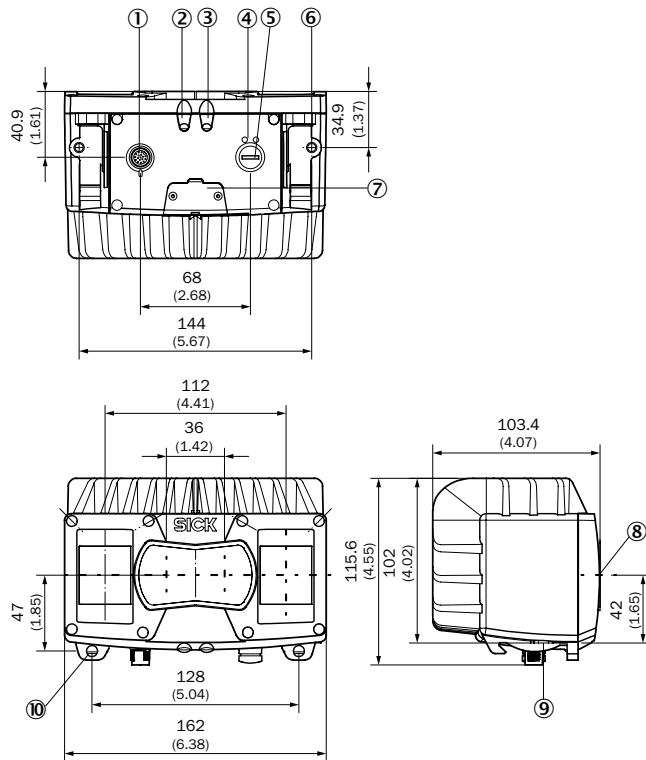
Picture 3: Palletizing and depalletizing

Picture 4: Port: Container positionin

## Dimensional drawings (Dimensions in mm (inch))

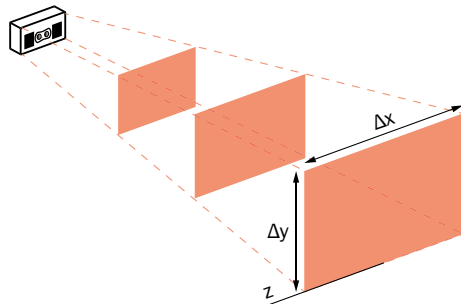


- ① Power connection/digital inputs and outputs/service
- ② Device display
- ③ Application display
- ④ Ethernet status displays
- ⑤ Ethernet connection
- ⑥ M6 threaded hole, 7 mm deep (2x), for mounting
- ⑦ Service interface
- ⑧ Optical axis
- ⑨ Bracket interface
- ⑩ Bracket attachment
- ⑪ M6 threaded hole, 10 mm deep (3x), for mounting



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- ② Device display
- ③ Application display
- ④ Ethernet status displays
- ⑤ Ethernet connection
- ⑥ M6 threaded hole, 7 mm deep (2x), for mounting
- ⑦ Service interface
- ⑧ Optical axis
- ⑨ Bracket interface
- ⑩ Bracket attachment

Detection zone and field of view ( $\Delta x \times \Delta y$ )



Working distance absolute (z)	Measuring range ( $\Delta x \times \Delta y$ )	Pixel size	Measurement accuracy $\Delta z$ (average value)	Repeatability $\sigma z$ (average value)
0.50 m	~ 45 cm x 45 cm	~ 1 mm x 1 mm	< 1.5 mm	± 0.25 mm
1.00 m	~ 100 cm x 90 cm	~ 2 mm x 2 mm	< 2.5 mm	± 0.60 mm
1.50 m	~ 160 cm x 130 cm	~ 3 mm x 3 mm	< 3.0 mm	± 1.50 mm
2.00 m	~ 220 cm x 180 cm	~ 4 mm x 4 mm	< 4.5 mm	± 2.00 mm
2.50 m	~ 280 cm x 230 cm	~ 5 mm x 5 mm	< 6.0 mm	± 4.00 mm

## Accessories

### Mounting systems

#### Terminal and alignment brackets

	Brief description	Type	Part no.
	2x clamps and 2x screws	2x clamps, 2x screws	2077709
	Bracket including clamps and screws	Mounting set (2-part) incl. clamps and screws	2077710


### Reflectors and optics

#### Optics cloths

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

### 4DproConnectivity



#### Modules

	Brief description	Type	Part no.
	Connection device basic for connecting one sensor with 2 A fuse, 5 cable glands and RS-232 interface to sensor via M12, 17-pin female connector, all outputs available on screw/spring-loaded terminals.	CDB650-204	1064114

### Plug connectors and cables


#### Plug connectors and cables



- **Signal type/application:** Gigabit Ethernet

	Connection type head A	Connection type head B	Cable	Length of cable	Type	Part no.
	Male connector, M12, 8-pin, angled, X-coded	Male connector, RJ45, 8-pin, straight	8-wire, AWG26	2 m	SSL-2J08-M02MACE	2094783
				5 m	SSL-2J08-M05MACE	2094784
				10 m	SSL-2J08-M10MACE	2094785
	Male connector, M12, 8-pin, straight, X-coded	Male connector, RJ45, 8-pin, straight	8-wire, twisted pair, AWG26	2 m	YM2X18-020EG2M-RJA8	6049728
				5 m	YM2X18-050EG2M-RJA8	6049729

#### Plug connectors and cables

- **Signal type/application:** Power, serial, CAN, digital I/Os

	Connection type head A	Connection type head B	Cable	Length of cable	Type	Part no.
	Female connector, M12, 17-pin, straight, A-coded	Flying leads	17-wire, suitable for 2 A, Changed color coding of the flying leads, stripped	2 m	YF2ASD-020XXXX-LECX	2081094
				3 m	YF2ASD-030XXXX-LECX	2070425
				5 m	YF2ASD-050XXXX-LECX	2070426
				10 m	YF2ASD-100XXXX-LECX	2070427

	Connection type head A	Connection type head B	Cable	Length of cable	Type	Part no.
	Female connector, M12, 17-pin, angled, A-coded	Flying leads	17-wire, 3-A suitable, Changed color coding of the flying leads, stripped, Max. permissible current strength at ambient temperature 50 °C: Contact 1 (blue) and contact 2 (brown): 3 A while the remaining contacts are operated with max. 100 mA; max. permissible current strength at ambient temperature 40 °C: 2 A for two and 1.5 A for 15 contacts.	3 m	YG2ASD-030XXXX-LECX	2102509
				5 m	YG2ASD-050XXXX-LECX	2102510
	Female connector, M12, 17-pin, straight, A-coded	Male connector, M12, 17-pin, straight, A-coded	To connection module CDB650, 17-wire, suitable for 2 A	3 m	YM2A8D-030XXXX-F2A8D	6051194

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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 10,000 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.

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

**That is “Sensor Intelligence.”**

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