



DATA SHEET

V3S146-1ABBBCA

Visionary AI-Assist
3D machine vision

SICK

Sensor Intelligence



3D MACHINE VISION

V3S146-1ABBBCA

ORDERING INFORMATION

Type	part no.
V3S146-1ABBBCA	1144257

Further device versions and accessories at www.sick.com/Visionary_AI-Assist



DETAILED TECHNICAL DATA

FEATURES

Technology	3D snapshot stereoscopy
Configurable	✓
Pre-calibrated	✓
Application software	AI-Assist, for detecting people and objects ¹⁾
Working range	0.28 m ... 16 m ²⁾ 0.65 m ... 37 m ³⁾
Field of view	wide130° x 105° (configurable) ⁴⁾ narrow90° x 60° (configurable) ⁴⁾
Exposure mode	Automatic Single or multiple (HDR)
Detectable objects	All objects (incl. people) ⁵⁾
Classified objects	Persons ⁶⁾
Neural network	Customized network
Task	Detecting - Standard objects Protecting objects - Vehicles Protecting people - Warning in outdoor areas Processing data - Visualizing Determining position - 3D position determination

¹⁾ The SICK SensorApp can, if necessary, be deinstalled again.

²⁾ Valid for the 130° x 105° field of view.

³⁾ Valid for the 90° x 60° field of view.

⁴⁾ 2D and 3D data is available over the entire field of view.

⁵⁾ Detection based on 3D data. The performance depends on the scene and the ambient conditions.

⁶⁾ Based on AI classification.

MECHANICS/ELECTRONICS

Supply voltage	10 V DC ... 57 V DC ¹⁾
Power consumption	Typ. 19.5 W ²⁾
Peak current	2 A ³⁾
Input voltage	5 V ... 60 V
Output voltage	9 V ... 57 V
Output current	≤ 100 mA
Enclosure rating	IP67, IP69, IPX9K
Protection class	III
Housing color	Anthracite
Weight	1.5 kg
Base distance	112 mm
Dimensions (L x W x H)	162 mm x 96.6 mm x 79.3 mm

¹⁾ These values apply to the voltage applied to the device. When selecting the voltage source, please consider the voltage drop across the cable.

²⁾ Applies to operation with 24 V supply voltage.

³⁾ At 12 V, 5 m cable.

SAFETY-RELATED PARAMETERS

MTTF _D	GB, 50% stress 25 °C	84 years ¹⁾
	GB, 50% stress 40 °C	38 years ¹⁾
	GB, 50% stress 55 °C	17 years ¹⁾
	GM, 50% stress 25 °C	21 years ²⁾
	GM, 50% stress 40 °C	9.5 years ²⁾
	GM, 50% stress 55 °C	4.2 years ²⁾

¹⁾ GB: Controlled, fixed environment with low operational stress according to the T332.2 standard.

²⁾ GM: Mobile, highly fluctuating environment with high loads according to the T332.2 standard.

FUNCTIONS

Integrated application	The installed "AI-Assist" software enables the detection of people and/or objects in flexibly adaptable 3D fields. The data is processed within the device.
Filter	Ground filter Sensitivity of people detection Minimum object size
Language	English, German

PERFORMANCE

Sensor properties	Sensor resolution	1,024 px x 576 px ¹⁾
AI accelerator	Hailo-8 ²⁾	

¹⁾ The specified sensor resolution corresponds to the usable resolution. Due to the stereo technology, the physical resolution of the individual camera sensors cannot be fully utilized.

²⁾ Up to 26 Tera Operations Per Second (TOPS).

³⁾ The performance depends on the scene and the ambient conditions.

⁴⁾ Valid for the 90° x 60° field of view. Individual values can be found in the graphs "Field of view "narrow" (90° x 60°) absolute measurement accuracy and repeatability" and "Field of view "wide" (130° x 105°) absolute measurement accuracy and repeatability". The tables can be found under "Technical drawings".

⁵⁾ The response time is affected by the exposure time.

⁶⁾ With a default setting of one 3D field.

Number of fields	≤ 16
Number of simultaneously monitored fields	≤ 16
Object resolution	The minimum object size is individually configurable for each field.
Person recognition	In various poses such as: Standing, sitting, squatting, partially concealed, lying down ³⁾
Scan/frame rate	≤ 18 fps
Measurement accuracy (typical)	± 2 mm, up to 5 m ⁴⁾ ± 35 mm, up to 4 m ⁴⁾ ± 850 mm, up to 20 m ⁴⁾
Repeatability	± 0.6 mm, up to 5 m ⁴⁾ ± 6 mm, up to 4 m ⁴⁾ ± 260 mm, up to 20 m ⁴⁾
Switch-on delay	Approx. 20 s
Response time	Typ. 200 ms ^{5) 4)}

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⁴⁾ Valid for the 90° x 60° field of view. Individual values can be found in the graphs "Field of view "narrow" (90° x 60°) absolute measurement accuracy and repeatability" and "Field of view "wide" (130° x 105°) absolute measurement accuracy and repeatability". The tables can be found under "Technical drawings".

⁵⁾ The response time is affected by the exposure time.

⁶⁾ With a default setting of one 3D field.

INTERFACES

Ethernet		✓ , TCP/IP, UDP/IP
	Remark	Gigabit-Ethernet (100/1000 Mbit/s)
	Function	Data interface, Communication interface, Configuration interface
	Data transmission rate	≤ 1,000 Mbit/s
REST API		✓
	Function	Communication interface, Configuration interface
CAN		✓
	Remark	J1939
	Function	Data interface, Communication interface
	Data transmission rate	250 kBaud
Digital inputs/outputs	Number	4
	Remark	Configurable
	Function	Data interface, Communication interface, Configuration interface
	Logic	HIGH active, LOW active
	Detail	Invert, debouncing (0 ms ... 1,000 ms)
	Operator	AND, OR, XOR
	Output mode	PNP, NPN, Push-Pull
	Restart	Immediate, Time, Input
Digital inputs	Number	2
	Remark	Are available in addition to the 4 digital inputs/outputs
	Function	Configuration interface
	Logic	HIGH active, LOW active
	Detail	Debouncing (0 ms ... 1,000 ms)
Configuration software		SOPASair browser-based user interface, SICK AppManager
Operating system		Windows, Linux
Optical indicators		2 status LEDs
Data output		2D video stream (RGB)
		Field evaluation

		System diagnostics
Video live stream	Frame rate	≤ 30 fps
	Resolution	1,024 px x 576 px
	Protocol	RTSP
	Compression	MJPEG
Ignition plus		✓

AMBIENT DATA

Electromagnetic compatibility (EMC)	Agricultural and forestry machinery / EN ISO 14982 Earth-moving and building construction machinery / EN ISO 13766-1 Industrial trucks / EN 12895+A1
Vibration resistance	5 g, 10 Hz ... 500 Hz (IEC 60068-2-6) 4.24 g RMS, 10 Hz ... 250 Hz (IEC 60068-2-64)
Shock resistance	100 g, 6 ms (IEC 60068-2-27)
Ambient operating temperature	-40 °C ... +55 °C
Storage temperature	-40 °C ... +85 °C
Ambient light immunity	5 lx ... 300 klx ¹⁾

¹⁾ Detection of a person (standing front on) at a distance of 5 meters for the "wide" field of view (130° x 105°).

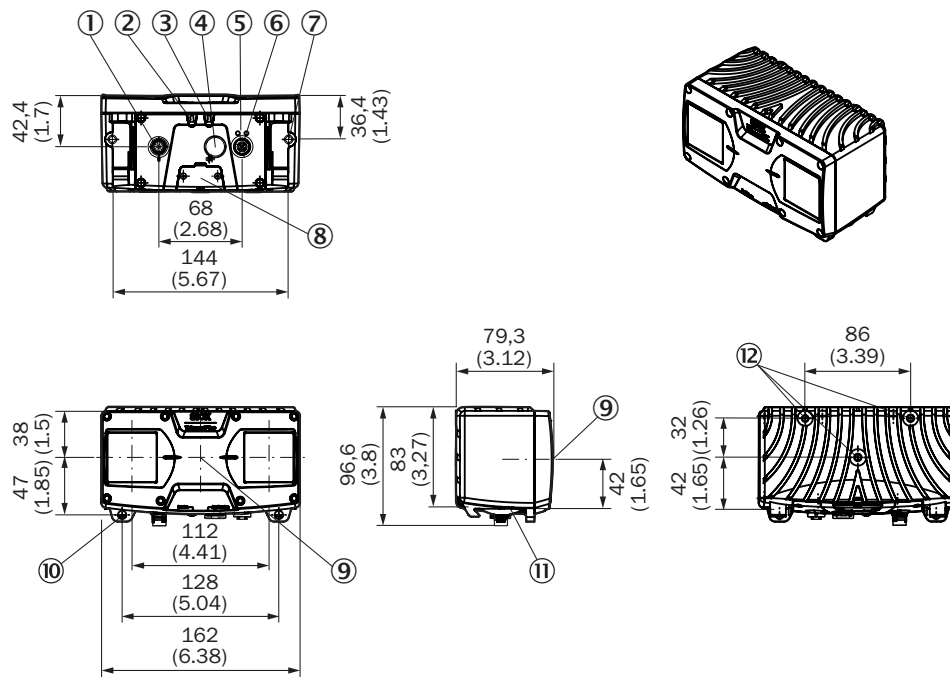
LICENSES

Product type	Software
License type	Device license
License description	The software is provided as a device license. A license is bound to a specific hardware ID. It is possible to move the license to another device, if necessary, if it has been properly removed from the original device. The license costs are included in the price.
License period	The license is issued without a time limit.
No. of licenses	1
Number of usage units	Full version

CERTIFICATES

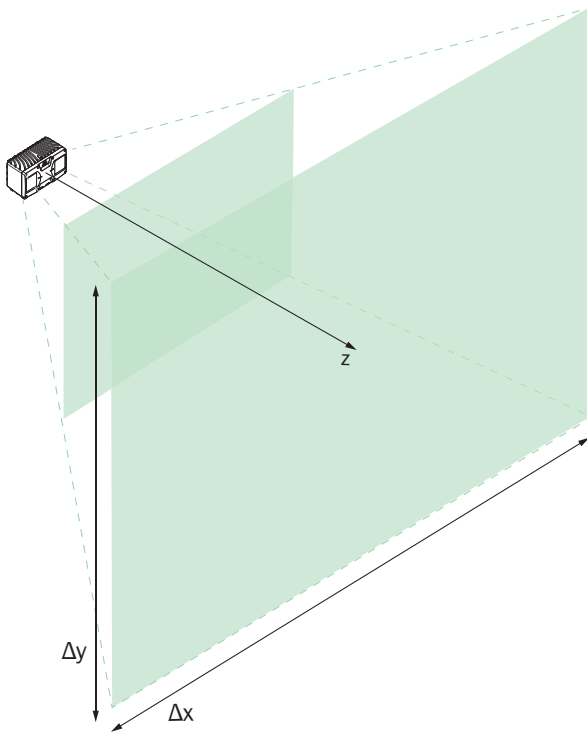
EU declaration of conformity	✓
UK declaration of conformity	✓
ACMA declaration of conformity	✓
China RoHS	✓
Information according to Art. 3 of Data Act (Regulation EU 2023/2854)	✓

DIMENSIONAL DRAWING



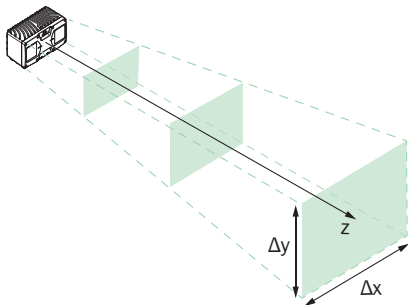
Dimensions in mm (inch)

- ① Connection: Power/I/O
- ② "Device" status LED
- ③ "Application" status LED
- ④ Pressure compensation element
- ⑤ Ethernet status LED
- ⑥ Ethernet connection
- ⑦ M6 threaded hole, 7 mm deep (2x), for mounting
- ⑧ service interface
- ⑨ Sensor coordinate origin
- ⑩ Interface bracket
- ⑪ Mounting bracket (accessories)
- ⑫ M6 threaded hole, 10 mm deep (3x), for mounting

FIELD OF VIEW 130° X 105° (WIDE) ABSOLUTE MEASUREMENT ACCURACY AND REPEATABILITY

The values are typical values and apply in the central image area for a well-lit scene and high-contrast objects.

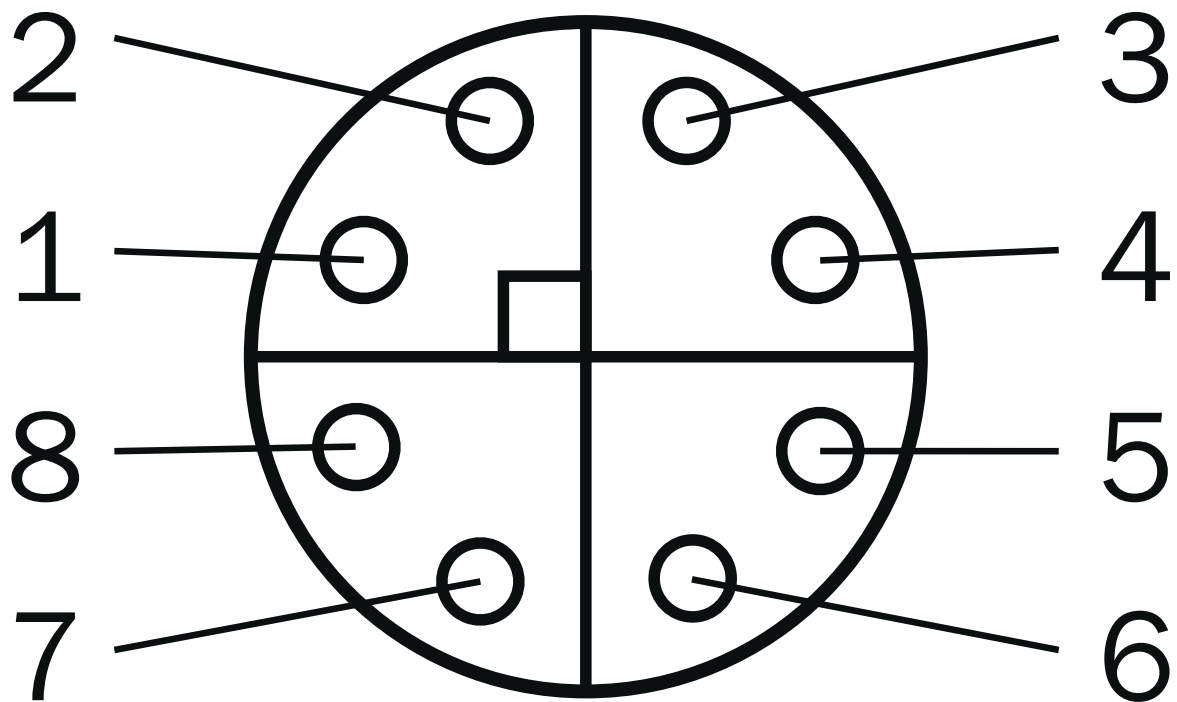
Absolute working distance (z)	Measuring range ($\Delta x \times \Delta y$)	Area per pixel	Measurement accuracy Δz (average value)	Repeatability σz (average value)
1.0 m	~ 4.3 m x 2.6 m	~ 4 mm x 4 mm	± 5 mm	± 0.5 mm
4.0 m	~ 17.2 m x 10.4 m	~ 17 mm x 17 mm	± 80 mm	± 12 mm
8.0 m	~ 34.3 m x 20.8 m	~ 35 mm x 35 mm	± 300 mm	± 50 mm
12.0 m	~ 51.5 m x 31.3 m	~ 52 mm x 52 mm	± 700 mm	± 100 mm
16.0 m	~ 68.6 m x 41.7 m	~ 70 mm x 70 mm	± 1,200 mm	-

FIELD OF VIEW 90° X 60° (NARROW) ABSOLUTE MEASUREMENT ACCURACY AND REPEATABILITY

The values are typical values and apply in the central image area for a well-lit scene and high-contrast objects.

Absolute working distance (z)	Measuring range ($\Delta x \times \Delta y$)	Area per pixel	Measurement accuracy Δz (average value)	Repeatability σz (average value)
1.0 m	~ 2.0 m x 1.2 m	~ 2 mm x 2 mm	± 2 mm	± 0.6 mm
4.0 m	~ 8.0 m x 4.6 m	~ 8 mm x 8 mm	± 35 mm	± 6 mm
8.0 m	~ 16.0 m x 9.2 m	~ 16 mm x 16 mm	± 140 mm	± 30 mm
12.0 m	~ 24.0 m x 13.9 m	~ 24 mm x 24 mm	± 300 mm	± 60 mm
20.0 m	~ 40.0 m x 23.1 m	~ 40 mm x 40 mm	± 850 mm	± 260 mm
25.0 m	~ 50.0 m x 28.9 m	~ 50 mm x 50 mm	± 1,300 mm	-

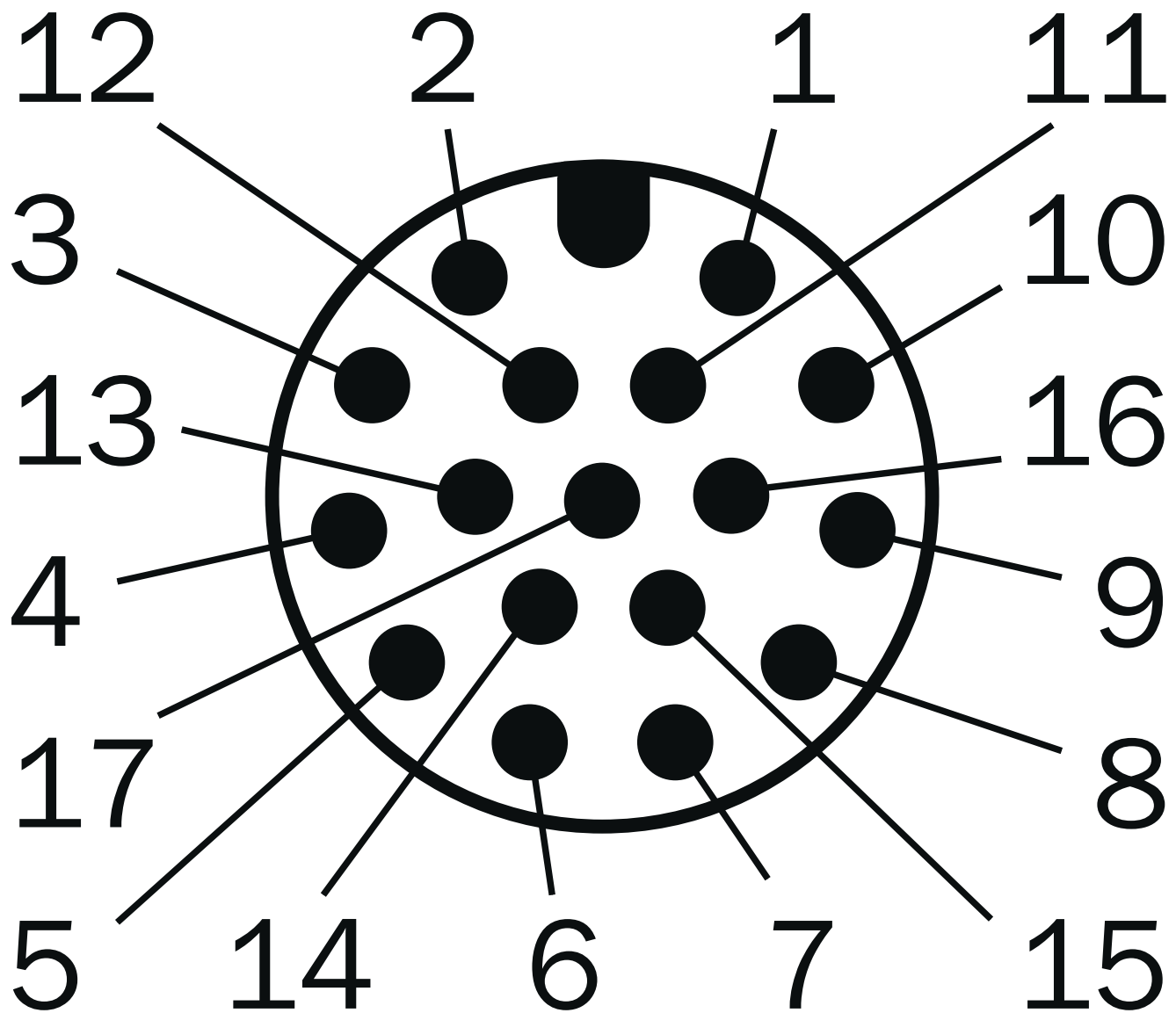
CONNECTION TYPE GIGABIT ETHERNET



socket: M12, 8-pin, X-coded

- ① DA+ (data A +)
- ② DA- (data A -)
- ③ DB+ (data B +)
- ④ DB- (data B -)
- ⑤ DD+ (data D +)
- ⑥ DD- (data D -)
- ⑦ DC- (data C -)
- ⑧ DC+ (data C +)

CONNECTION TYPE



- ① GND
- ② UV
- ③ CAN L
- ④ CAN H
- ⑤ IGN_EN
- ⑥ IGN_PLUS
- ⑦ TxD
- ⑧ RxD
- ⑨ SensGND
- ⑩ SENS in 1
- ⑪ GND
- ⑫ UV
- ⑬ DIO 1
- ⑭ DIO 2
- ⑮ SENS in 2
- ⑯ DIO 3
- ⑰ DIO 4

Further information as well as suitable accessories, example applications and downloads such as CAD dimensional models, operating instructions and software can be found at www.sick.com/1144257



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SICK AT A GLANCE

SICK is a leading global technology company for intelligent sensors and integrated solutions in industrial automation. Our technologies set benchmarks, making your industrial processes more efficient, safer and more sustainable – both in logistics and manufacturing operations.

SICK combines sensor intelligence with industry expertise and certified consulting services. We provide the ideal foundation for scalable as well as tailor-made automation solutions and create added value along the entire value chain. Our close partnerships with our customers are more than just a promise: Together, we optimize productivity, improve quality, protect health and safety, and help build a sustainable future. All with empathy and trust.

Since 1946, we have been developing innovative technologies with passion and a pioneering spirit. With a global network in around 40 countries, SICK has a global presence and is always close by. The company's headquarters are located in Waldkirch near Freiburg, Germany. Our customers benefit from our understanding of both local and global requirements, which enables us to deliver tailor-made solutions

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