Data sheet

V3S146-1AAAAAA

Visionary-B Two

3D MACHINE VISION

SICK
Sensor Intelligence.

Ordering information

Type	part no.
V3S146-1AAAAAA	1133032

Other models and accessories ➜ www.sick.com/Visionary-B_Two

Detailed technical data

Features

Technology	3D snapshot stereoscopy
Programmable	✓
Streaming	✓
Configurable	✓
Pre-calibrated	✓
Application software	GigE Vision Basic
Shutter technology	Global-Shutter
Working range	0.28 m ... 16 m [1] 0.65 m ... 37 m [2]
Field of view	
wide	130° x 105° (configurable) [3]
narrow	90° x 60° (configurable) [3]
Exposure mode	Automatic or manual Single or multiple (HDR)
Task	Detecting - Standard objects Measuring - Dimension, contour and volume Protecting objects - Vehicles Identifying - Classifying Determining position - 3D position determination

[1] Valid for the 130° x 105° field of view.
[2] Valid for the 90° x 60° field of view.
[3] 2D and 3D data is available over the entire field of view.

Mechanics/electronics

Connection type	Power/I/O: M12 17-pin, A-coded Gigabit Ethernet: M12, 8-pin, X-coded
Supply voltage	10 V DC ... 57 V DC [1]
Power consumption	≤ 13 W

[1] The values are valid for the voltage applied to the device. Take cable losses into account.
[2] At 12 V, 5 m cable.

Peak current	1.6 A [2]
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] The values are valid for the voltage applied to the device. Take cable losses into account.
[2] At 12 V, 5 m cable.

Safety-related parameters

$MTTF_D$	33.2 years

Performance

Sensor properties	
Sensor resolution	1,024 px x 576 px [1]
Processor	1.2 GHz, 4 × ARM Cortex A72 [2]
Scan/frame rate	≤ 30 fps
Measurement accuracy (typical)	Approx. 5 mm, at 1 m working distance [3] Approx. 80 mm, at 4 m working distance [3] Approx. 300 mm, at 8 m working distance [3] Approx. 700 mm, at 12 m working distance [3] Approx. 1,200 mm, at 16 m working distance [3] Approx. 2 mm, at 1 m working distance [4] Approx. 35 mm, at 4 m working distance [4] Approx. 140 mm, at 8 m working distance [4] Approx. 300 mm, at 12 m working distance [4] Approx. 850 mm, at 20 m working distance [4] Approx. 1,300 mm, at 25 m working distance [4] Approx. 2,800 mm, At 37 m working distance [4]
Repeatability	Approx. 0.5 mm, at 1 m working distance [3] Approx. 12 mm, at 4 m working distance [3] Approx. 50 mm, at 8 m working distance [3] Approx. 100 mm, at 12 m working distance [3] Approx. 0.6 mm, at 1 m working distance [4] Approx. 6 mm, at 4 m working distance [4] Approx. 30 mm, at 8 m working distance [4] Approx. 60 mm, at 12 m working distance [4] Approx. 260 mm, at 20 m working distance [4]

[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] Part of the processor resources are required for internal processing. The current processor load is displayed in the CPU monitor in SICK AppStudio.
[3] Valid for the 130° x 105° field of view.
[4] Valid for the 90° x 60° field of view.
[5] The response time is affected by the exposure time.

Switch-on delay	Approx. 20 s
Response time	≥ 70 ms [5)]

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Interfaces

Ethernet	✓ , TCP/IP, UDP/IP
Remark	Gigabit-Ethernet (100/1,000 Mbit/s), GigE Vision Standard
Function	Communication interface
Data transmission rate	≤ 1,000 Mbit/s
Configuration software	SICK AppStudio, SICK AppManager, SOPASair
Operating system	Windows, Linux
Application programming interface (API)	Python, C++ GenIStream, GenICam GenTL
Digital input	2 (Voltage range 5 V ... 60 V)
Digital inputs/outputs	4 Voltage range 9 V ... 57 V
Optical indicators	2 status LEDs
Data output	Depth map 2D image (RGB) IMU (Inertial Measurement Unit) Intrinsic camera parameters

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 ... +60 °C
Storage temperature	–40 °C ... +85 °C
Ambient light immunity	40 lx ... 300 klx

Classifications

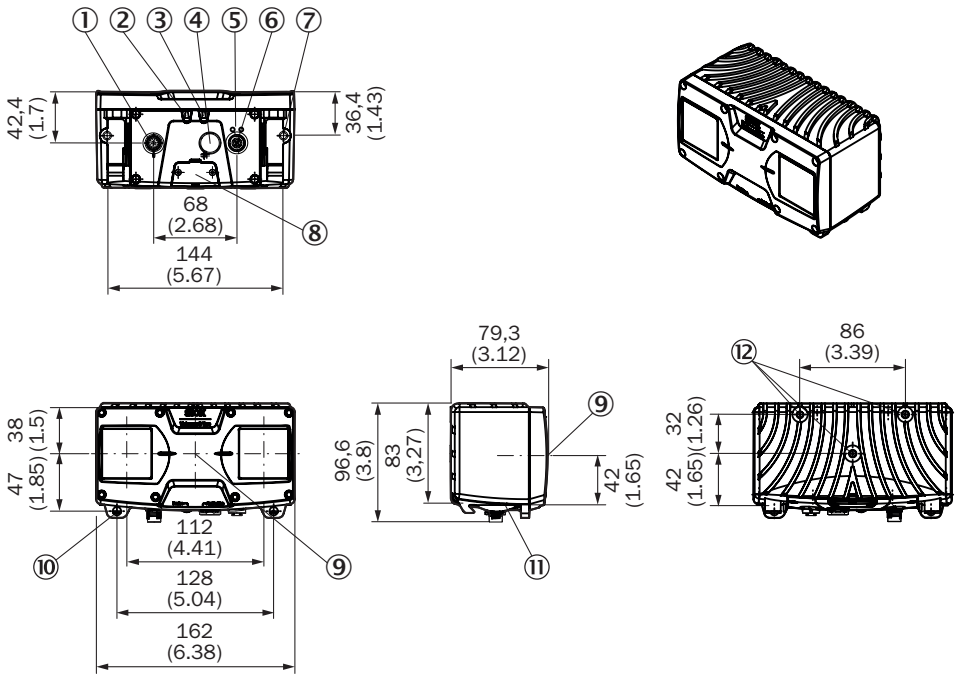
ECLASS 5.0	27310205
ECLASS 5.1.4	27310205
ECLASS 6.0	27310205
ECLASS 6.2	27310205
ECLASS 7.0	27310205
ECLASS 8.0	27310205
ECLASS 8.1	27310205
ECLASS 9.0	27310205
ECLASS 10.0	27310205
ECLASS 11.0	27310205
ECLASS 12.0	27310205

ETIM 5.0	EC001820
ETIM 6.0	EC001820
ETIM 7.0	EC001820
ETIM 8.0	EC001820
UNSPSC 16.0901	43211731

Certificates

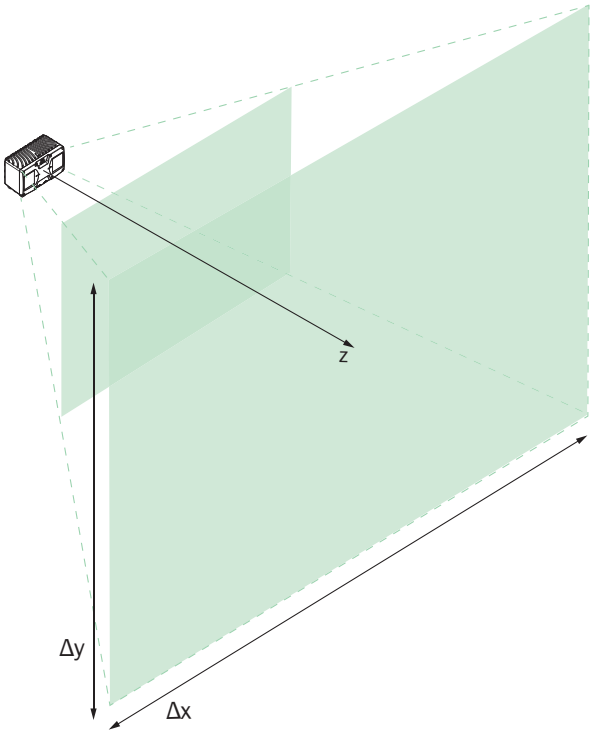
EU declaration of conformity	✓
UK declaration of conformity	✓
ACMA declaration of conformity	✓
China RoHS	✓
Information according to Art. 3 of Data Act (Regulation EU 2023/2854)	✓
GigE Vision	✓

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

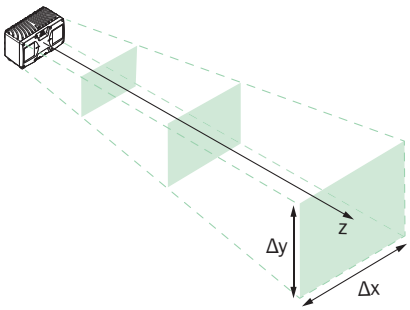
Field of view 130° x 105° (wide) absolute measurement accuracy and repeatability



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 (Δx x Δy)	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

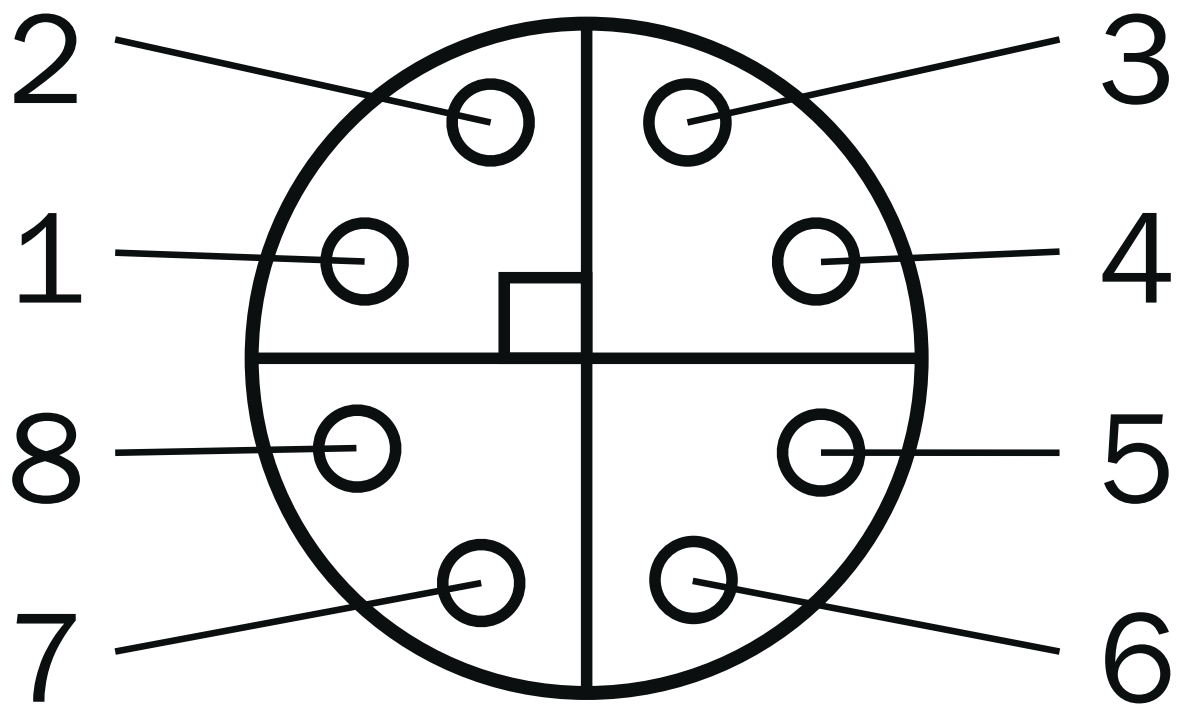


The values are typical values and apply in the central image area for a well-lit scene and high-contrast objects.

Absolute working distance (z)	Measuring range (Δx x Δy)	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

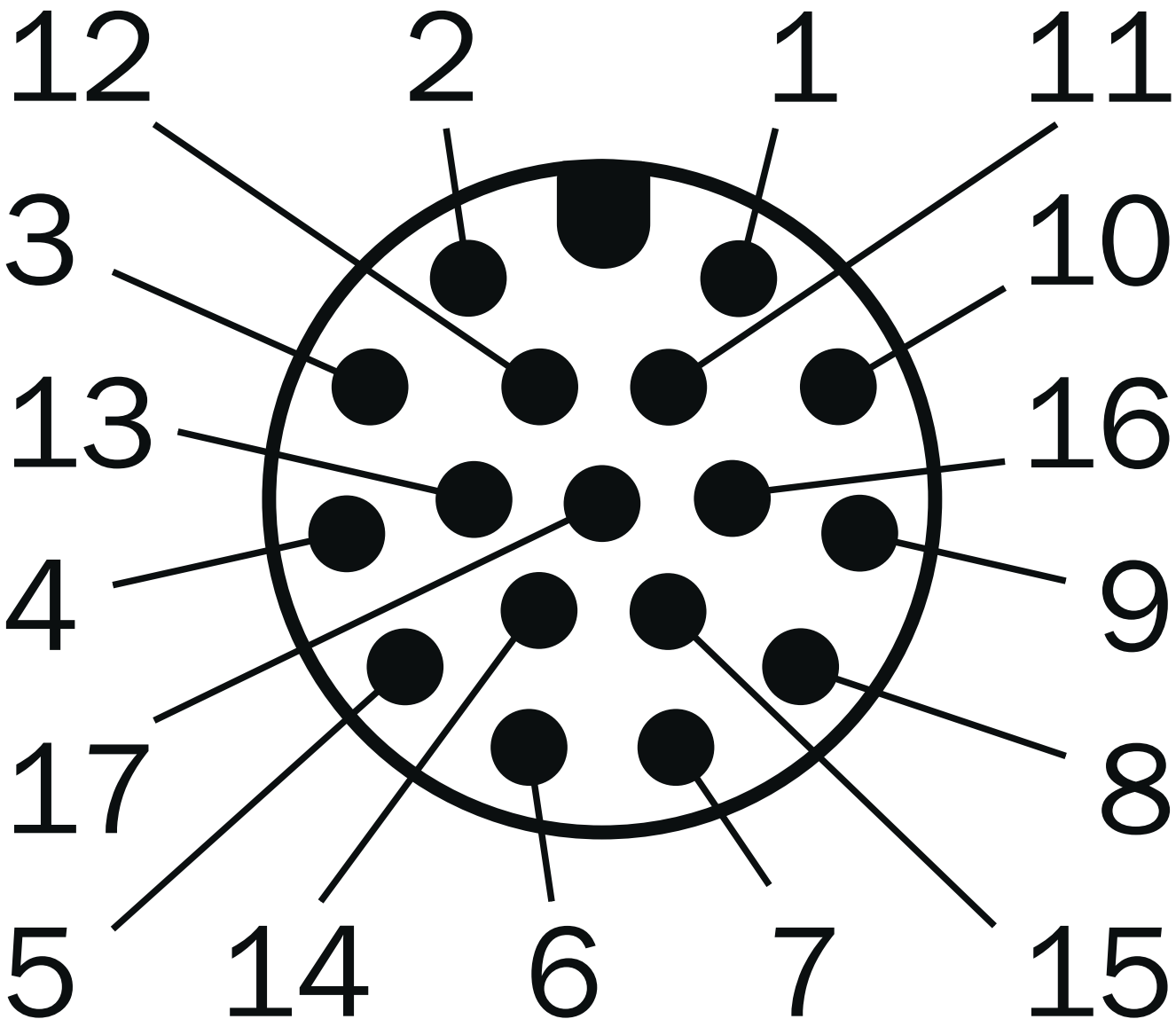
Absolute working distance (z)	Measuring range (Δx x Δy)	Area per pixel	Measurement accuracy Δz (average value)	Repeatability σz (average value)
8.0 m	~ 16.0 m x 9.2 m	~ 16 mm x 16 mm	± 140 mm	± 30 mm
12.0 m	~ 24.0 m x 13.9 m	~ 24 mm x 24 mm	± 300 mm	± 60 mm
20.0 m	~ 40.0 m x 23.1 m	~ 40 mm x 40 mm	± 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

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.”

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