V3S105-1AAAAAA

Visionary-T Mini

3D MACHINE VISION

SICK
Sensor Intelligence.

V3S105-1AAAAAA | Visionary-T Mini
3D MACHINE VISION

Illustration may differ

Ordering information

Type	Part no.
V3S105-1AAAAAA	1112649

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

Detailed technical data

Features

Task	Position determination Collision awareness Navigation Presence inspection Robot guidance Measuring, 2D Measuring, 3D
Technology	3D snapshot time-of-flight
Product category	Configurable, Streaming, pre-calibrated
Working distance	≤ 16 m [1]
Detection angle	70° x 60°
Angular resolution	0.14° x 0.14°
Illumination	Integrated
Illumination color	Infrared, laser, invisible, 855 nm, ± 5 nm
Laser class	1, P0 < 17 mW, t < 25 ns (EN/IEC 60825-1:2007, IEC 60825-1:2014, EN 60825-1:2014+A11:2021) [2]
Grayscale measurements	✓

[1] Depends on the infrared remission properties of the target object.

[2] Complies with 21 CFR 1040.10 except for conformances according to Laser Notice no. 50 from June 24, 2007 and the following versions.

Mechanics/electronics

Connection type	Power/I/O: M12 8-pin, A-coded Gigabit Ethernet: M12, 8-pin, X-coded
Supply voltage	24 V DC [1]
Power consumption	< 12 W, Typical (without digital I/Os)
Peak current	2 A
Enclosure rating	IP65 IP67

[1] -30% ... +25%.

Protection class	III
Housing color	Blue, black
Weight	520 g
Dimensions (L x W x H)	80 mm x 70 mm x 77 mm

[1] -30% ... +25%.

Performance

Pixel count	512 px x 424 px
Scan/frame rate	≤ 30 fps
Exposure time	≤ 10 ms
Repeatability	Approx. 0.8 mm, at 1 m working distance [1] Approx. 5 mm, at 7 m working distance [1]
On delay	Approx. 20 s The switch-on delay can increase considerably at ambient temperatures of 0 °C.
Response time	Approx. 50 ms
Integrated application	2D and 3D data flow with the option of filtering data in the device
Camera coexistence mode	Automatic

[1] See table for individual values.

Interfaces

Ethernet	✓, TCP/IP, UDP/IP
Remark	Gigabit-Ethernet (100/1000 Mbit/s)
Data transmission rate	≤ 310 Mbit/s
Configuration software	SOPAS Engineering Tool, Telegram interface, API (C++)
Digital inputs/outputs	6 Maximum current per digital output: 100 mA. Maximum total current for all digital outputs: < 500 mA. Voltage drop at output for 100 mA: < 2 V. Short-circuit protected.
Optical indicators	4 status LEDs

Ambient data

Electromagnetic compatibility (EMC)	IEC 61000-6-4:2018 / EN IEC 61000-6-4:2019, IEC 61000-6-2:2005 / EN 61000-6-2:2005 / IEC 61000-6-2:2016 / EN IEC 61000-6-2:2019
Vibration resistance	5 g 10 Hz 500 Hz (IEC 60068-2-6:2008, IEC 60068-2-64:2008)
Shock resistance	30 g, 11 ms (IEC 60068-2-27:2008)
Ambient operating temperature	−10 °C ... +50 °C [1]
Storage temperature	−20 °C ... +80 °C
Camera housing temperature	−10 °C ... +65 °C, If no adequate heat dissipation (mechanical connection, ventilation etc.) is present, heat sinks (see accessories) can keep the housing temperature below the maximum of 65 °C.
Ambient light immunity	≥ 50 klx [2]
Depth precision	Approx. 0.8 mm, at 1 m working distance [3] Approx. 5 mm, at 7 m working distance [3]

[1] After a warm-up time of 45 minutes (at ≥ −10 °C) and a frame rate of > 25 fps, the camera can also be operated at ambient temperatures from −20 °C. A frame rate of < 25 fps is also possible with lower heat dissipation.

[2] Sunlight at a measuring distance of 2.0 m.

[3] See table for individual values.

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

Dimensional drawing (Dimensions in mm (inch))
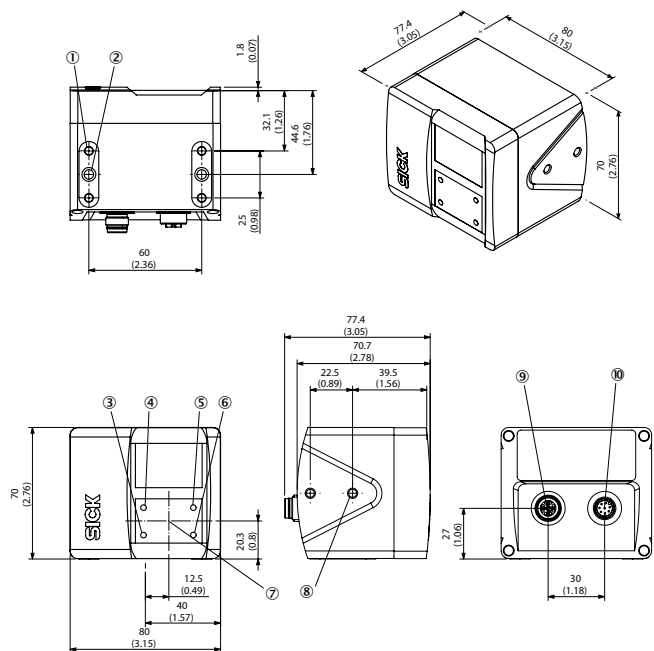
① Threaded mounting hole, M5, 7.5 mm depth (4x)
② Fit ø 5H7, 7 mm depth (2x)
③ Device status display
④ Application status display
⑤ Ethernet status display
⑥ Application status display
⑦ Sensor coordinate origin
⑧ Threaded mounting hole M5, 5.5 mm depth (4x)
⑨ "Ethernet" connection, 8-pin M12 female connector, X-coded
⑩ "Power/I/O" connection, 8-pin M12 male connector, A-coded

Field of view

Detection volume and field of view
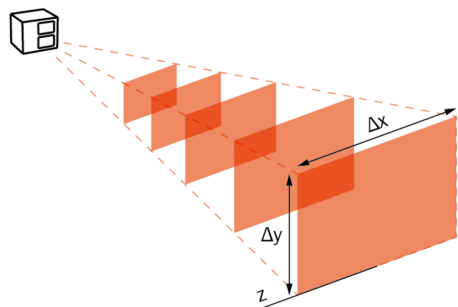
Axial working distance (z)	Range (Δx)	Range (Δy)
0.2 m	0.3 m	0.2 m
0.5 m	0.7 m	0.6 m
1.0 m	1.4 m	1.2 m
1.5 m	2.1 m	1.7 m
2.0 m	2.8 m	2.3 m
3.0 m	4.2 m	3.5 m

Axial working distance (z)	Range (Δx)	Range (Δy)
4.0 m	5.6 m	4.6 m
5.0 m	7.0 m	5.8 m
6.0 m	8.4 m	6.9 m
8.0 m	11.2 m	9.2 m
10.0 m	14.0 m	11.5 m
13.0 m	18.2 m	15.0 m

Absolute measurement accuracy and repeatability, working distance: radial
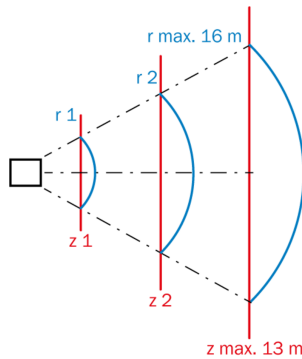
The specified numerical values are typical values and apply in the central 80% of the detection area, at room temperature, without ambient light, and at a frame rate of 25 fps. At distances > 9 m, the reliability of the measured values will be lower and individual pixels or pixel groups may exhibit defective measured values. The measurement accuracy may degrade by up to +-10 mm (typically +-5 mm) over the entire ambient operating temperature.

| Working distance radial (r)	Measurement accuracy (90% remission)	Repeatability (1σ - 90% remission)	Measurement accuracy (10% remission)	Repeatability (1σ - 10% remission)
0.2 m			± 3 mm	± 0.8 mm
0.5 m	± 3 mm	± 0.8 mm	± 3 mm	± 0.8 mm
1.0 m	± 3 mm	± 0.8 mm	± 3 mm	± 1.5 mm
2.0 m	± 3 mm	± 1 mm	± 3 mm	± 4 mm
4.0 m	± 7 mm	± 2 mm	± 10 mm	± 12 mm
7.0 m	± 10 mm	± 5 mm	± 20 mm	± 50 mm
8.0 m	± 13 mm	± 7 mm	-	-
10.0 m	± 20 mm	± 15 mm	-	-
13.0 m	± 50 mm	± 48 mm	-	-

Connection type

Gigabit Ethernet
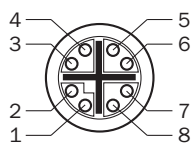
Gigabit Ethernet: M12, 8-pin, X-coded

① TRD0_P
② TRD0_N
③ TRD1_P
④ TRD1_N
⑤ TRD3_P
⑥ TRD3_N
⑦ TRD2_P
⑧ TRD2_N

Voltage / digital I/O / service
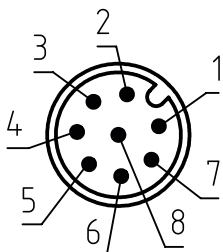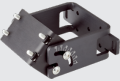
Power/I/O: M12 8-pin, A-coded
① Supply voltage
② INOUT 3 - Programmable digital I/O
③ GND – reference mass
④ INOUT 4 - Programmable digital I/O
⑤ INOUT 1 - Programmable digital I/O
⑥ INOUT 5 - Programmable digital I/O
⑦ INOUT 6 - Programmable digital I/O
⑧ INOUT 2 - Programmable digital I/O

Recommended accessories

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

	Brief description	Type	Part no.
Heating and cooling devices			
	Heat sink (2-part) including screws	Visionary heat sink	2127749
Plug connectors and cables			
	• **Connection type head A:** Female connector, M12, 8-pin, straight • **Connection type head B:** Flying leads • **Signal type:** Sensor/actuator cable • **Cable:** 2 m, 8-wire, PVC • **Description:** Sensor/actuator cable, special color code, shielded • **Connection systems:** Flying leads	DOL-1208-G02MF	6020663
	• **Connection type head A:** Female connector, M12, 8-pin, straight • **Connection type head B:** Flying leads • **Signal type:** Sensor/actuator cable • **Cable:** 5 m, 8-wire, PVC • **Description:** Sensor/actuator cable, special color code, shielded • **Connection systems:** Flying leads	DOL-1208-G05MF	6020664
	• **Connection type head A:** Female connector, M12, 8-pin, straight • **Connection type head B:** Flying leads • **Signal type:** Sensor/actuator cable • **Cable:** 10 m, 8-wire, PVC • **Description:** Sensor/actuator cable, special color code, shielded • **Connection systems:** Flying leads	DOL-1208-G10MF	6048434

	Brief description	Type	Part no.
	• **Connection type head A:** Male connector, M12, 8-pin, straight, X-coded • **Connection type head B:** Male connector, RJ45, 8-pin, straight • **Signal type:** Ethernet, Gigabit Ethernet • **Cable:** 2 m, 8-wire, PUR, halogen-free • **Description:** Ethernet, Gigabit Ethernet, shielded • **Application:** Zones with oils and lubricants	YM2X18-020EG1MRJA8	2106258
	• **Connection type head A:** Male connector, M12, 8-pin, straight, X-coded • **Connection type head B:** Male connector, RJ45, 8-pin, straight • **Signal type:** Ethernet, Gigabit Ethernet • **Cable:** 5 m, 8-wire, PUR, halogen-free • **Description:** Ethernet, Gigabit Ethernet, shielded • **Application:** Zones with oils and lubricants	YM2X18-050EG1MRJA8	2106259
	• **Connection type head A:** Male connector, M12, 8-pin, straight, X-coded • **Connection type head B:** Male connector, RJ45, 8-pin, straight • **Signal type:** Ethernet, Gigabit Ethernet • **Cable:** 10 m, 8-wire, PUR, halogen-free • **Description:** Ethernet, Gigabit Ethernet, shielded • **Application:** Zones with oils and lubricants	YM2X18-100EG1MRJA8	2106260
Terminal and alignment brackets			
	1 piece, Alignment brackets, Mounting set (2-part) incl. screws, Aluminum	Visionary mounting kit	2124497

Recommended services

Additional services ➜ www.sick.com/Visionary-T_Mini

	Type	Part no.
Extended warranty		
• **Product area:** Identification solutions, machine vision, Detection and ranging solutions, safety camera sensors, Safety laser scanners, Safety radar sensors • **Range of services:** The services correspond to the scope of the statutory manufacturer warranty (SICK general terms of delivery). • **Duration:** Five-year warranty from delivery date.	Extended warranty for a total of five years from delivery date	1680671

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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