



# V3S145-1AAAAPA NOVA PI

Visionary-T Mini

3D MACHINE VISION

**SICK**  
Sensor Intelligence.



### Ordering information

Type	part no.
V3S145-1AAAAPA NOVA PI	1138469

Other models and accessories → [www.sick.com/Visionary-T\\_Mini](http://www.sick.com/Visionary-T_Mini)

Illustration may differ



### Detailed technical data

#### Features

<b>Technology</b>	3D snapshot time-of-flight
<b>Programmable</b>	✓
<b>Configurable</b>	✓
<b>Pre-calibrated</b>	✓
<b>Application software</b>	Nova Visionary-T Mini, With Presence Inspection License, for presence inspection. <sup>1)</sup>
<b>License included</b>	Presence Inspection License Optional upgrade with the Quality Inspection Upgrade License for expanding the toolset.
<b>License type</b>	The software is provided as a device license. A license is bound to a specific hardware ID.
<b>License period</b>	The license is issued without a time limit.
<b>Working range</b>	≤ 16 m <sup>2)</sup>
<b>Field of view</b>	70° x 60°
<b>Angular resolution</b>	0.14° x 0.14°
<b>Illumination</b>	Integrated
<b>Illumination color</b>	Infrared, laser, invisible, 855 nm, ± 5 nm
<b>Laser class</b>	1, P0 < 17 mW, t < 25 ns (IEC 60825-1:2014) <sup>3)</sup> EN 60825-1:2014+A11:2021
<b>Task</b>	Detecting - Standard objects Measuring - Dimension, contour and volume Measuring - Level Measuring - Number Monitoring and controlling - Quality Determining position - 3D position determination

<sup>1)</sup> The SICK SensorApp can, if necessary, be deinstalled again.

<sup>2)</sup> Depends on the infrared remission properties of the target object. At distances of 9 m to 16 m, the reliability of the measured values will be lower and individual pixels or pixel groups may exhibit incorrect measured values.

<sup>3)</sup> Complies with 21 CFR 1040.10 and 1040.11 except for deviations pursuant to IEC 60825-1 Ed. 3. according to Laser Notice No. 56 dated May 08, 2019.

#### Mechanics/electronics

<b>Connection type</b>	Plug, M12, 8-pin, A-coded Gigabit Ethernet: M12, 8-pin, X-coded
------------------------	--

<sup>1)</sup> -30% ... +25%.

<b>Supply voltage</b>	24 V DC <sup>1)</sup>
<b>Power consumption</b>	Typ. 12 W, without digital I/Os < 8 W, In energy saving mode
<b>Peak current</b>	2 A
<b>Enclosure rating</b>	IP65 IP67 IP69
<b>Protection class</b>	III
<b>Housing color</b>	Blue, black
<b>Window material</b>	PMMA
<b>Weight</b>	520 g
<b>Dimensions (L x W x H)</b>	80 mm x 70 mm x 77 mm

<sup>1)</sup> -30% ... +25%.

## Functions

<b>Integrated application</b>	The installed SICK Nova Visionary-T Mini SensorApp with Presence Inspection license allows easy presence checks using 3D machine vision. The data is processed within the device. The SICK SensorApp can be deinstalled.
-------------------------------	--

## Performance

<b>Sensor properties</b>	
Sensor resolution	512 px x 424 px
<b>Processor</b>	1.8 GHz, 4 × ARM Cortex <sup>1)</sup>
<b>Scan/frame rate</b>	≤ 30 fps
<b>Exposure time</b>	≤ 10 ms
<b>Repeatability</b>	Approx. 0.8 mm, at 1 m working distance <sup>2)</sup> Approx. 5 mm, at 7 m working distance <sup>2)</sup>
<b>Switch-on delay</b>	Approx. 20 s The switch-on delay can increase considerably at ambient temperatures below 0 °C.
<b>Response time</b>	Approx. 50 ms
<b>Camera coexistence mode</b>	Automatic

<sup>1)</sup> Part of the processor resources are required for internal processing. The current processor load is displayed in the CPU monitor in SICK AppStudio.

<sup>2)</sup> Individual values in the "Field of view absolute measurement accuracy and repeatability, working distance: radial" graphic. (can be found under "Technical drawings").

## Interfaces

<b>Ethernet</b>	✓ , TCP/IP, UDP/IP
Remark	Data is application-specific or can be defined in independently-developed applications.
<b>Configuration software</b>	Nova Visionary-T Mini, SICK AppManager, SICK AppStudio, Web-Interface, Telegram interface
<b>Digital inputs/outputs</b>	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.
<b>Optical indicators</b>	4 status LEDs

### Ambient data

<b>Electromagnetic compatibility (EMC)</b>	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
<b>Vibration resistance</b>	5 g, 10 Hz ... 500 Hz (IEC 60068-2-6:2008, IEC 60068-2-64:2008)
<b>Shock resistance</b>	30 g, 11 ms (IEC 60068-2-27:2008)
<b>Ambient operating temperature</b>	-10 °C ... +50 °C <sup>1)</sup>
<b>Storage temperature</b>	-20 °C ... +80 °C
<b>Camera housing temperature</b>	-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.
<b>Damp heat</b>	+25 °C ... +55 °C, 95 % RH, (EN 60068-2-30:2005)
<b>Relative humidity</b>	≤ 95 % RH, Non-condensing
<b>Ambient light immunity</b>	≤ 50 klx <sup>2)</sup>

<sup>1)</sup> 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.

<sup>2)</sup> Sunlight at a measuring distance of 2.0 m.

### Licenses

<b>License included</b>	Presence Inspection License Optional upgrade with the Quality Inspection Upgrade License for expanding the toolset.
-------------------------	--

### Certificates

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

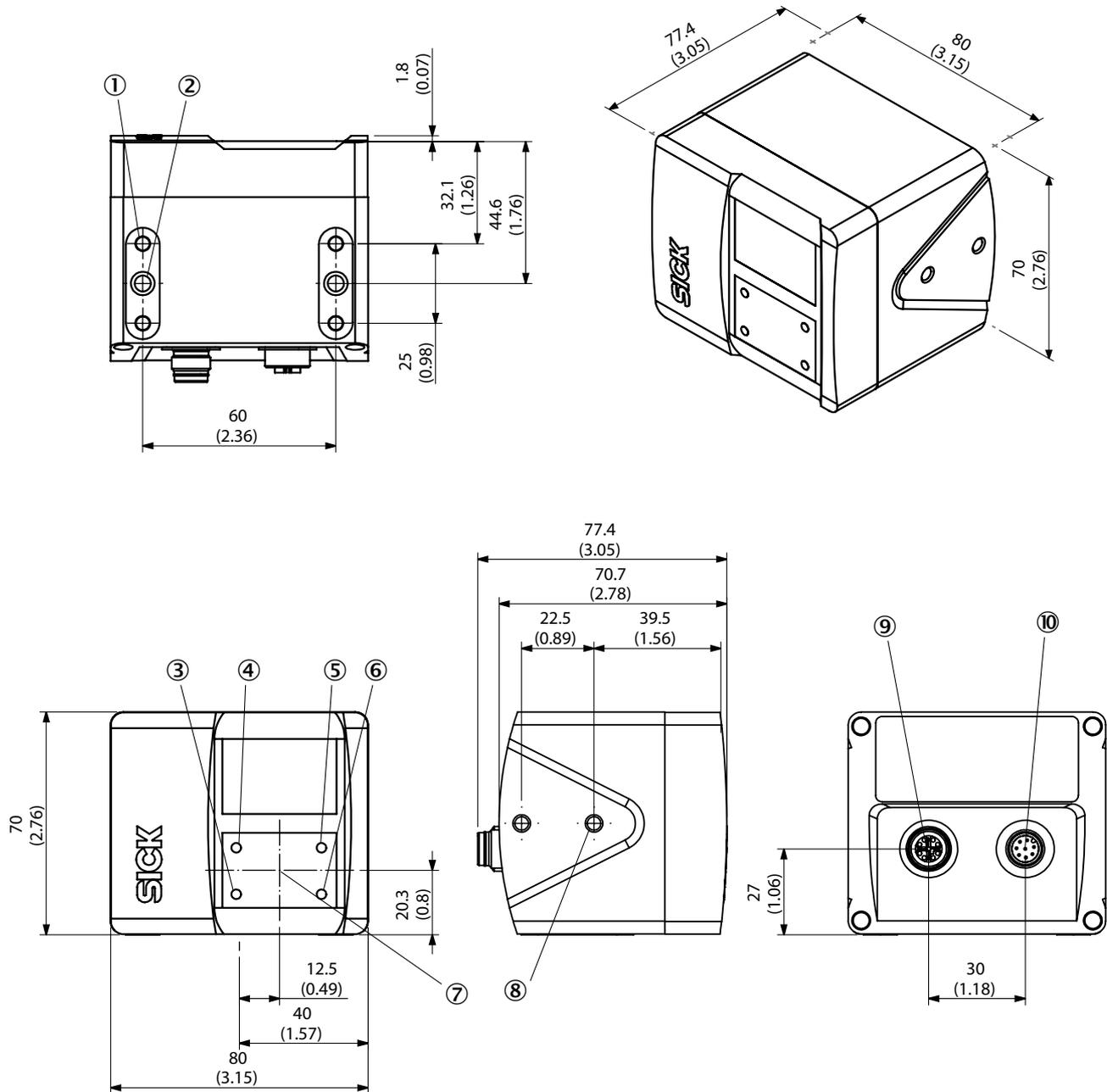
### Classifications

<b>ECLASS 5.0</b>	27310205
<b>ECLASS 5.1.4</b>	27310205
<b>ECLASS 6.0</b>	27310205
<b>ECLASS 6.2</b>	27310205
<b>ECLASS 7.0</b>	27310205
<b>ECLASS 8.0</b>	27310205
<b>ECLASS 8.1</b>	27310205
<b>ECLASS 9.0</b>	27310205
<b>ECLASS 10.0</b>	27310205
<b>ECLASS 11.0</b>	27310205
<b>ECLASS 12.0</b>	27310205
<b>ETIM 5.0</b>	EC001820
<b>ETIM 6.0</b>	EC001820
<b>ETIM 7.0</b>	EC001820
<b>ETIM 8.0</b>	EC001820

UNSPSC 16.0901

43211731

Dimensional drawing

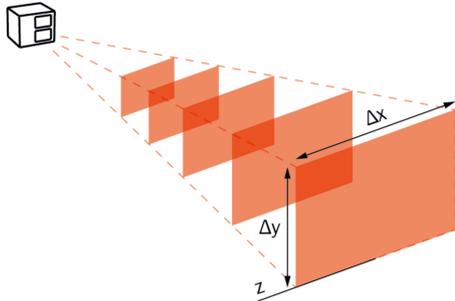


Dimensions in mm (inch)

- ① M5 threaded mounting hole, 7.5 mm deep (4x)
- ② Fit  $\varnothing$  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)

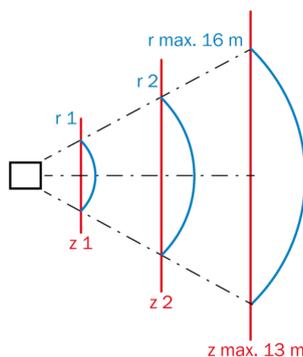
- ⑨ “Ethernet” connection, 8-pin M12 female connector, X-coded
- ⑩ “Power/I/O” connection, 8-pin M12 male connector, A-coded

### 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
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

### Field of view Absolute measurement accuracy and repeatability working distance: radial



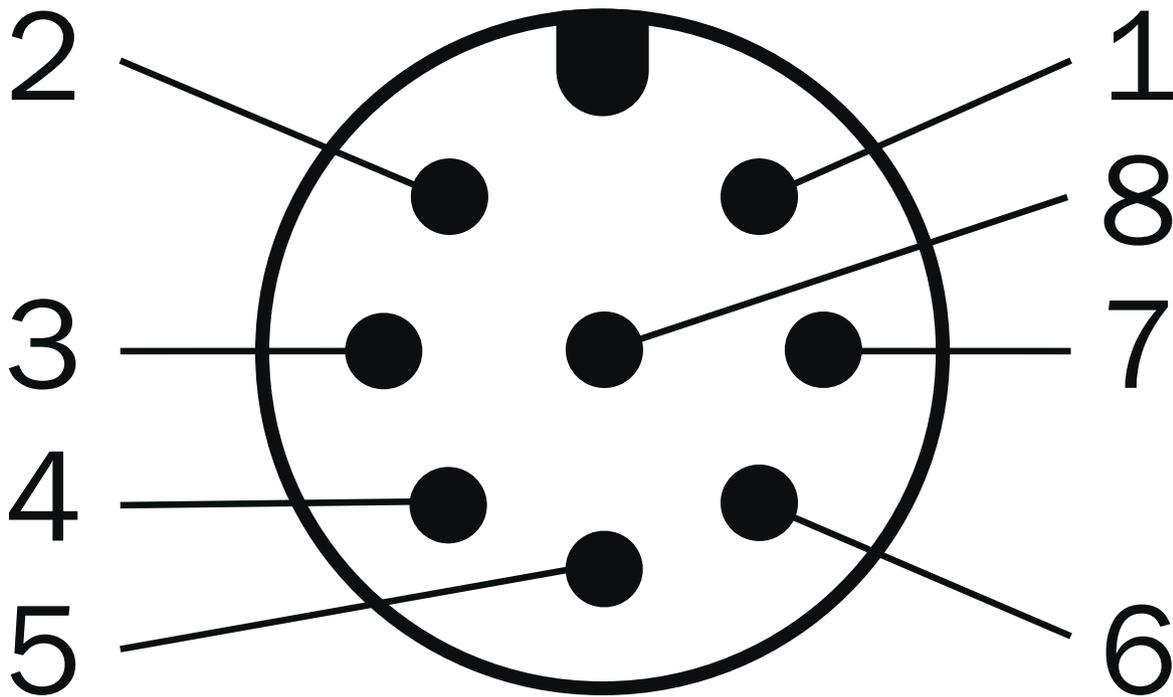
The specified numerical values are typical values and apply in the central 80% of the detection area, at room temperature, without ambient light, and at a frame rate of 25 fps.

At distances > 9 m, the reliability of the measured values will be lower and individual pixels or pixel groups may exhibit erroneous measured values.

The measurement accuracy may degrade by up to  $\pm 10$  mm (typically  $\pm 5$  mm) over the entire ambient operating temperature.

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

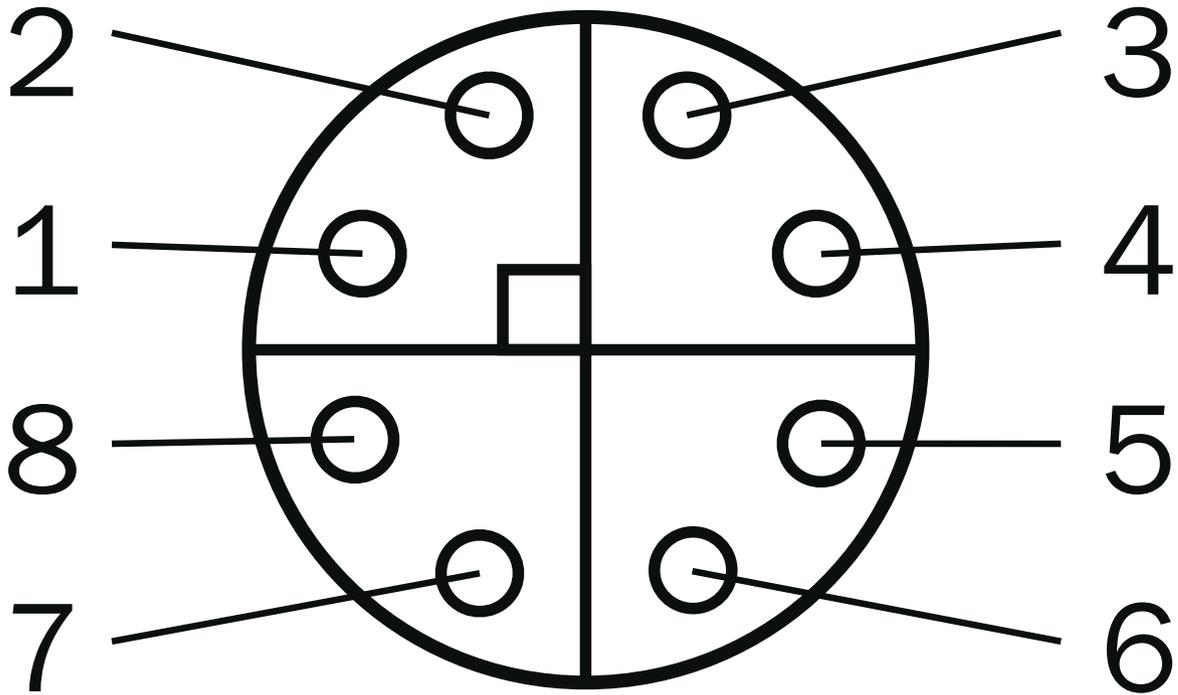
### Connection type Voltage/digital I/O



plug, M12, 8-pin, A-coded

- ① UV (supply voltage: 24 V DC -30 % ... +25 %)
- ② DIO 3 (configurable digital input and output 3, short-circuit protected)
- ③ GND (zero potential)
- ④ DIO 4 (configurable digital input and output 4, short-circuit protected)
- ⑤ DIO 1 (configurable digital input and output 1, short-circuit protected)
- ⑥ DIO 5 (configurable digital input and output 5, short-circuit protected)
- ⑦ DIO 6 (configurable digital input and output 6, short-circuit protected)
- ⑧ DIO 2 (configurable digital input and output 2, short-circuit protected)

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 +)

## Recommended accessories

Other models and accessories → [www.sick.com/Visionary-T\\_Mini](http://www.sick.com/Visionary-T_Mini)

	Brief description	Type	part no.
connectors and cables			
	<ul style="list-style-type: none"> <li>• <b>Connection type head A:</b> Female connector, M12, 8-pin, straight</li> <li>• <b>Connection type head B:</b> Flying leads</li> <li>• <b>Signal type:</b> Sensor/actuator cable</li> <li>• <b>Cable:</b> 2 m, 8-wire, PVC</li> <li>• <b>Description:</b> Sensor/actuator cable, special color code, shielded</li> <li>• <b>Connection systems:</b> Flying leads</li> <li>• <b>Application:</b> Uncontaminated zones, Zones with chemicals</li> </ul>	DOL-1208-G02MF	6020663
	<ul style="list-style-type: none"> <li>• <b>Connection type head A:</b> Female connector, M12, 8-pin, straight</li> <li>• <b>Connection type head B:</b> Flying leads</li> <li>• <b>Signal type:</b> Sensor/actuator cable</li> <li>• <b>Cable:</b> 5 m, 8-wire, PVC</li> <li>• <b>Description:</b> Sensor/actuator cable, special color code, shielded</li> <li>• <b>Connection systems:</b> Flying leads</li> <li>• <b>Application:</b> Uncontaminated zones, Zones with chemicals</li> </ul>	DOL-1208-G05MF	6020664
	<ul style="list-style-type: none"> <li>• <b>Connection type head A:</b> Female connector, M12, 8-pin, straight</li> <li>• <b>Connection type head B:</b> Flying leads</li> <li>• <b>Signal type:</b> Sensor/actuator cable</li> <li>• <b>Cable:</b> 10 m, 8-wire, PVC</li> <li>• <b>Description:</b> Sensor/actuator cable, special color code, shielded</li> <li>• <b>Connection systems:</b> Flying leads</li> <li>• <b>Application:</b> Uncontaminated zones, Zones with chemicals</li> </ul>	DOL-1208-G10MF	6048434
	<ul style="list-style-type: none"> <li>• <b>Connection type head A:</b> Male connector, M12, 8-pin, straight, X-coded</li> <li>• <b>Connection type head B:</b> Male connector, RJ45, 8-pin, straight</li> <li>• <b>Signal type:</b> Ethernet, Gigabit Ethernet</li> <li>• <b>Cable:</b> 2 m, 8-wire, PUR, halogen-free</li> <li>• <b>Description:</b> Ethernet, shielded, Gigabit Ethernet</li> <li>• <b>Application:</b> Zones with oils and lubricants</li> </ul>	YM2X18-020EG1M-RJA8	2106258
	<ul style="list-style-type: none"> <li>• <b>Connection type head A:</b> Male connector, M12, 8-pin, straight, X-coded</li> <li>• <b>Connection type head B:</b> Male connector, RJ45, 8-pin, straight</li> <li>• <b>Signal type:</b> Ethernet, Gigabit Ethernet</li> <li>• <b>Cable:</b> 5 m, 8-wire, PUR, halogen-free</li> <li>• <b>Description:</b> Ethernet, shielded, Gigabit Ethernet</li> <li>• <b>Application:</b> Zones with oils and lubricants</li> </ul>	YM2X18-050EG1M-RJA8	2106259
	<ul style="list-style-type: none"> <li>• <b>Connection type head A:</b> Male connector, M12, 8-pin, straight, X-coded</li> <li>• <b>Connection type head B:</b> Male connector, RJ45, 8-pin, straight</li> <li>• <b>Signal type:</b> Ethernet, Gigabit Ethernet</li> <li>• <b>Cable:</b> 10 m, 8-wire, PUR, halogen-free</li> <li>• <b>Description:</b> Ethernet, shielded, Gigabit Ethernet</li> <li>• <b>Application:</b> Zones with oils and lubricants</li> </ul>	YM2X18-100EG1M-RJA8	2106260
	<ul style="list-style-type: none"> <li>• <b>Connection type head A:</b> Male connector, M12, 8-pin, straight, X-coded</li> <li>• <b>Connection type head B:</b> Male connector, RJ45, 8-pin, straight</li> <li>• <b>Signal type:</b> Ethernet, Gigabit Ethernet</li> <li>• <b>Cable:</b> 3 m, 8-wire, PUR, halogen-free</li> <li>• <b>Description:</b> Ethernet, shielded, Gigabit Ethernet</li> <li>• <b>Application:</b> Zones with oils and lubricants</li> </ul>	YM2X18-030EG1M-RJA8	2145693
Mounting systems			
	<ul style="list-style-type: none"> <li>• <b>Description:</b> Alignment brackets, Mounting set (2-part) incl. screws</li> <li>• <b>Dimensions (W x H x L):</b> 100 mm x 120 mm x 45 mm</li> <li>• <b>Material:</b> Aluminum</li> <li>• <b>Details:</b> Aluminum</li> <li>• <b>Color:</b> Black</li> <li>• <b>Packing unit:</b> 1 piece</li> <li>• <b>Suitable for:</b> Visionary-T Mini, safeVisionary2, Visionary-T Mini, safeVisionary2</li> </ul>	Visionary mounting kit	2124497
device protection and care			
	<ul style="list-style-type: none"> <li>• <b>Description:</b> Heat sink (2-part) including screws</li> </ul>	Visionary heat sink	2127749

## 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.”

## WORLDWIDE PRESENCE:

Contacts and other locations –[www.sick.com](http://www.sick.com)