



# Ranger-D50213

Ranger

3D MACHINE VISION

**SICK**  
Sensor Intelligence.



### Ordering information

Type	part no.
Ranger-D50213	1040384

Other models and accessories → [www.sick.com/Ranger](http://www.sick.com/Ranger)



### Detailed technical data

#### Features

<b>Task</b>	Quality inspection, high-speed Measuring, 3D
<b>Technology</b>	3D line scanning, MultiScan
<b>Product category</b>	Streaming, flexible
<b>Example field of view</b>	Free of choice by lens selection
<b>Illumination</b>	To be ordered separately as accessories
<b>Data synchronization</b>	Free running, encoder triggered, external triggering
<b>Spectral range</b>	400 nm ... 950 nm
<b>Description</b>	Ranger D50 - 3D, up to 1 k profiles/second. Gigabit Ethernet interface, 1,536 x 512 pixels.
<b>Lens</b>	C-mount
<b>Optical format</b>	1"

#### Mechanics/electronics

<b>Connection type</b>	Power I/O: M12, 8-pin male M12, 8-pin female connector (encoder) RJ45 (Ethernet)
<b>Connector material</b>	M12: nickel-plated brass
<b>Supply voltage</b>	24 V DC, ± 20 %
<b>Ripple</b>	< 5 V <sub>pp</sub>
<b>Power consumption</b>	7 W
<b>Current consumption</b>	0.8 A
<b>Standards (ROHS)</b>	✓
<b>Enclosure rating</b>	IP20
<b>Housing material</b>	Aluminum
<b>Housing color</b>	Gray, varnished
<b>Weight</b>	360 g
<b>Dimensions (L x W x H)</b>	125 mm x 52 mm x 52 mm

#### Performance

<b>Bit depth</b>	8 bit
<b>Image sensor</b>	CMOS
<b>Sensor resolution</b>	1,536 px x 512 px

<b>Scan/frame rate</b>	1,000 3D profiles/s
<b>Sensor rows available for 3D</b>	0 ... 511
<b>3D profile resolution</b>	1,536 px
<b>Pixel size</b>	9.5 µm x 9.5 µm
<b>Pixel matrix fill factor</b>	60 %
<b>Maximum 3D height resolution</b>	13 bits 1/16 pixels
<b>Optical center (row, column)</b>	(227, 768)
<b>Gray-scale resolution</b>	1,536 px
<b>IR filter</b>	No IR pass filter

## Interfaces

<b>Ethernet</b>	✓ , UDP/IP
Data transmission rate	1,000 Mbit/s
<b>Serial</b>	✓ , RS-422
Function	Encoder
Data transmission rate	Maximum encoder frequency: 2 MHz
<b>Configuration software</b>	Ranger Studio
<b>Operating system</b>	Windows XP Pro, Windows 7, Windows 10
<b>Development environment</b>	C++ (VS 2005/2008/2010) / C
<b>Programming interface</b>	iCon API
<b>Digital input</b>	4 x HIGH = 10 V ... 28.8 V
<b>Digital output</b>	1 x TTL level, 2 x B-type, < 100 mA in total
<b>Encoder interface</b>	RS-422
<b>Maximum encoder frequency</b>	2 MHz
<b>External illumination</b>	5 V TTL

## Ambient data

<b>Shock load</b>	15 g, 3 x 6 directions
<b>Vibration load</b>	5 g, 58 Hz ... 150 Hz
<b>Ambient operating temperature</b>	0 °C ... +45 °C <sup>1)</sup>
<b>Storage temperature</b>	-20 °C ... +70 °C <sup>1)</sup>

<sup>1)</sup> Non-condensing.

## Certificates

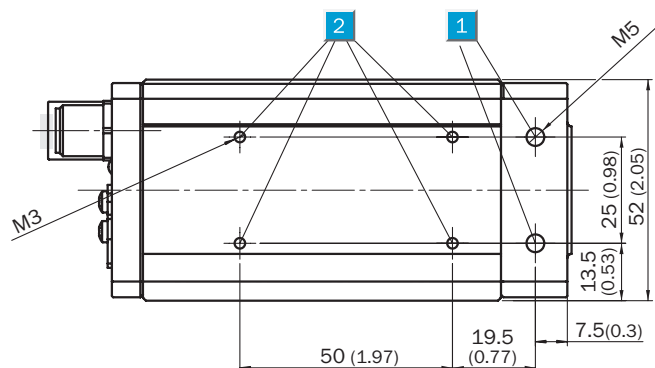
<b>EU declaration of conformity</b>	✓
<b>ACMA declaration of conformity</b>	✓
<b>China RoHS</b>	✓

## 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
<b>UNSPSC 16.0901</b>	43211731

dimensional drawing, view from below

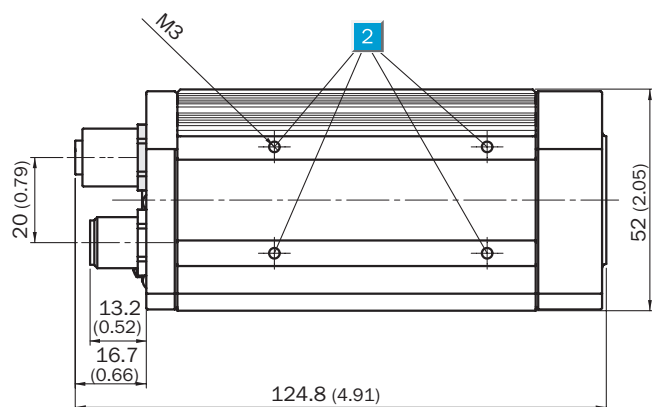


Dimensions in mm (inch)

① Mounting holes M5, 9 mm (2 x)

② Mounting holes M3, 3 mm (4 x per side)

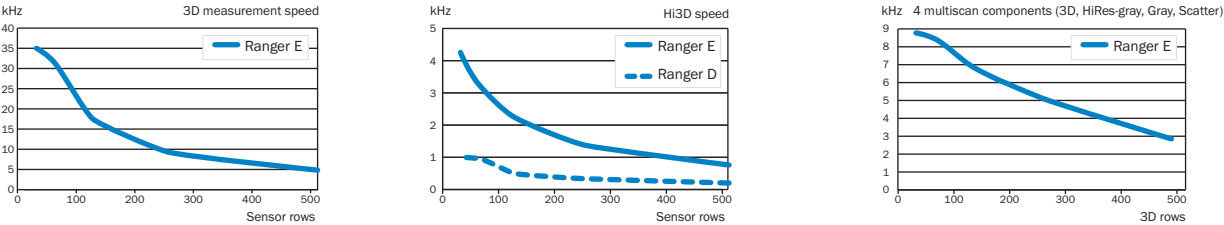
dimensional drawing, view from the side



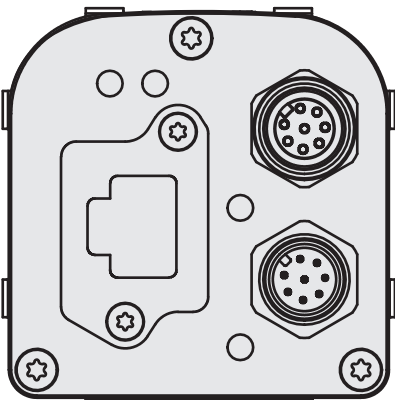
Dimensions in mm (inch)

② Mounting holes M3, 3 mm (4 x per side)

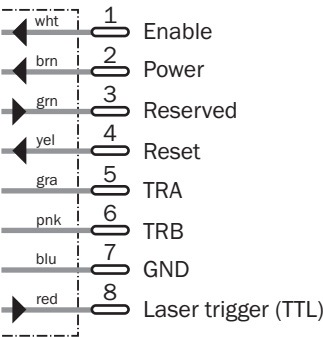
Characteristic curve



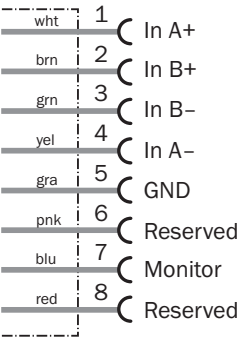
Connection type



Connection diagram, voltage I/O



Connection diagram, encoder connection



Recommended accessories

Other models and accessories → [www.sick.com/Ranger](http://www.sick.com/Ranger)

	Brief description	Type	part no.
reflectors and optics			
	<ul style="list-style-type: none"><li>• <b>Description:</b> Laser module with line projecting lens (red, 35 mW, refocusable), with open wires</li><li>• <b>Light source:</b> Laser, red</li><li>• <b>Connection types:</b> Cable, 1,000 mm, open wires</li></ul>	Ranger accessories, laser	6033005
integration modules and adapters			
	<ul style="list-style-type: none"><li>• <b>Description:</b> Ranger E/D accessory kit with 24 V power supply, power I/O terminal, Y-cable (2 m), Gigabit Ethernet cable (5 m), lens and camera mounting parts</li></ul>	Ranger E/D accessories set	2040857

## 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)