



## 3D cameras ColorRanger E50 IR, Ranger, ColorRanger E

Ranger-E50444

**Model Name** > [Ranger-E50444](#)  
**Part No.** > [1050269](#)

#### At a glance

- High-speed 3D with color up to 11kHz
- Up to 3,072 pixels resolution in color and 1,536 pixels in 3D
- Multi-linear: RGB + Monochrome (w / + w/o IR)
- On-chip color channel white balancing
- Spatially corrected color output
- Easy in-machine 3D calibration tool
- High flexibility in configuration, including MultiScan, data triggering, and field-of-view
- Gigabit Ethernet interface

#### Your benefits

- Using 3D and color imaging in part inspection allows for more reliable results and will improve your system's up-time and quality
- ColorRanger with MultiScan technology replaces the need for several different cameras, which reduces the solution cost and complexity
- Getting all the measurements you need from one camera allows for concise solutions to reduce system size and allow for retrofit
- Contrast-independent 3D and high quality color gives you reliable measurements to ensure product quality
- Full flexibility in the field-of-view in combination with an easy in-machine 3D calibration tool gives you dimensions in millimeters wherever you need it
- Gigabit Ethernet for remote sensing over long cable distances allows you to put your PCs in a safe and convenient place



#### Features

Example field of view:	Free of choice by lens selection
Data synchronisation:	Encoder triggered External enable Free running
Technology:	3D Color MultiScan Line scan
Grayscale measurements:	✓
Scatter measurement:	✓
Description:	ColorRanger E50 IR - 3D- and RGB-color with MultiScan at up to 11 kHz (3D and color data). Gigabit Ethernet interface, 1,536 px 3D resolution, 3 px x 1,536 px RGB-color resolution. 3D sensor with IR high-pass filter.

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## Performance

Bit depth:	8 bit
Spectral response:	Approx. 400 ... 950
Image sensor:	CMOS
Maximum performance:	35,000 fps 3D profiles/second
Sensor resolution:	1,536 px x 512 px
3D profile resolution:	1,536 px
Gray line resolution:	1,536 px
Scatter resolution:	1,536 px
Standard color resolution:	3 px x 1,536 px
Pixel size:	9.5 µm x 9.5 µm
Pixel matrix fill factor:	60 %
Maximum 3D height resolution:	13 bits 1/16 pixel
Optical center (row, column):	(227, 768)
IR filter:	IR high pass <sup>1)</sup>

<sup>1)</sup> High-pass filter, cutoff at 730 nm; on rows 100-511 and one high-resolution row.

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## Interfaces

Maximum encoder frequency:	2 MHz
Operating system:	Windows 7/XP Pro
Development environment:	C++ (VS .NET 2005/2008/2010) or C
Programming interface:	iCon API
User interface:	Ranger Studio
Communication interface:	Gigabit Ethernet
Encoder interface:	RS-422
Digital inputs:	4 x HIGH = 10 V... 28.8 V
Digital outputs:	1 x TTL level 2 x B-type, < 100 mA in total
Control of external illumination:	5 V TTL

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## Mechanics/electronics

Dimensions (L x W x H):	125 mm x 52 mm x 52 mm
Enclosure rating:	IP 20
Weight:	360 g
Supply voltage:	24 V DC ± 20 %
Residual ripple:	< 5 Vpp
Power consumption:	0.8 A
Housing material:	Aluminum
Housing color:	gray, varnished
Connectors:	Encoder: M12, 8 pin female Ethernet: RJ45 Power I/O: M12, 8 pin male
Connector material:	M12: nickel-plated brass
Optics:	C-Mount, 1"
Standards (ROHS):	✓
Current consumption::	7 W

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## Ambient data

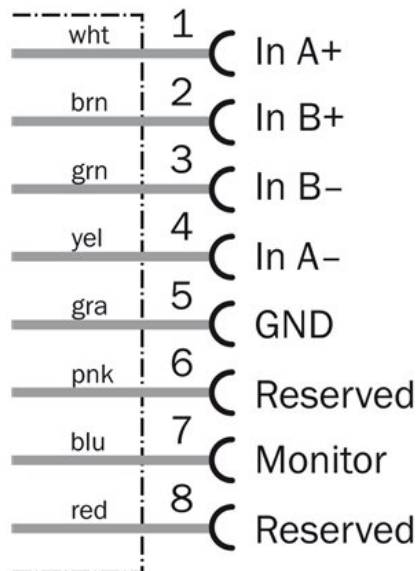
Shock load:	15 g, 3 x 6 directions
Vibration load:	5 g, 58 Hz ... 150 Hz
Ambient temperature, operation:	0 °C ... 45 °C <sup>1)</sup>

Ambient temperature, storage:

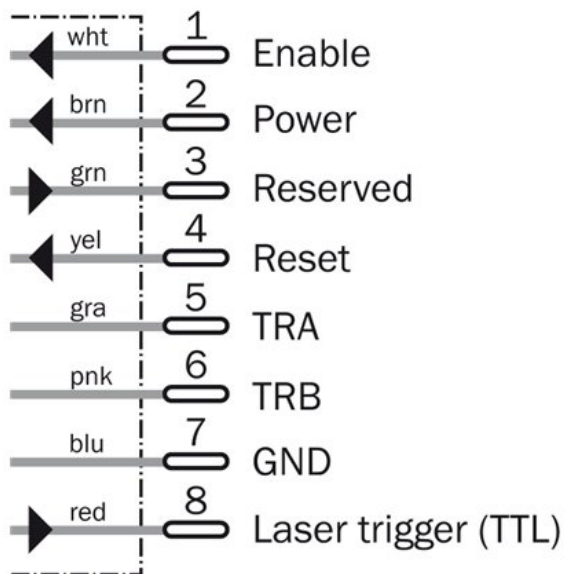
-20 °C ... 70 °C <sup>2)</sup>

1) 2)  
Non-condensing

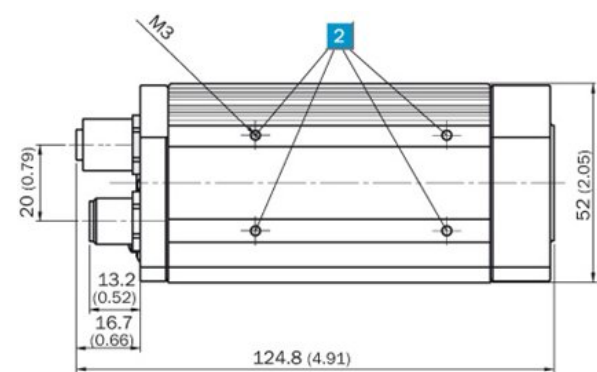
#### Connection diagram, Encoder connection



#### Connection diagram, Power I/O connection



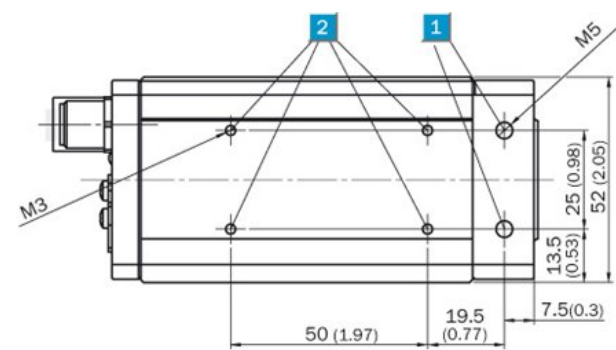
Dimensional drawing, side view



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

All dimensions in mm (inch)

Dimensional drawing, bottom view

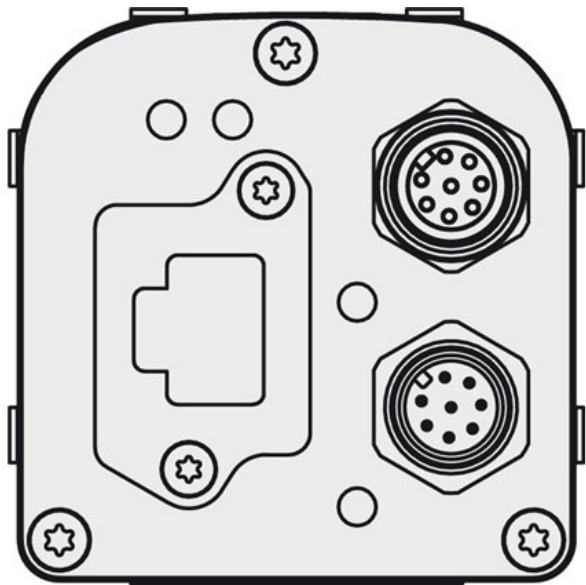


[1] Mounting holes M5, 9 mm (2 x)

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

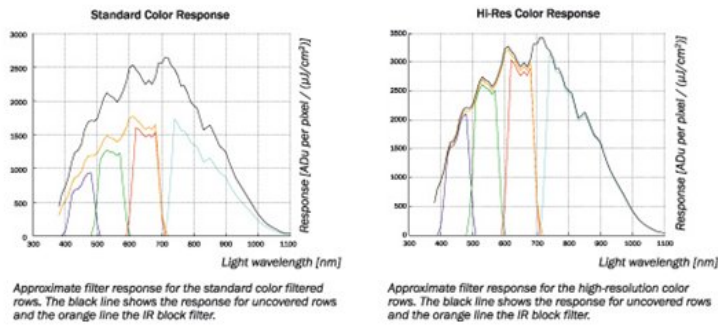
All dimensions in mm (inch)

Connection type



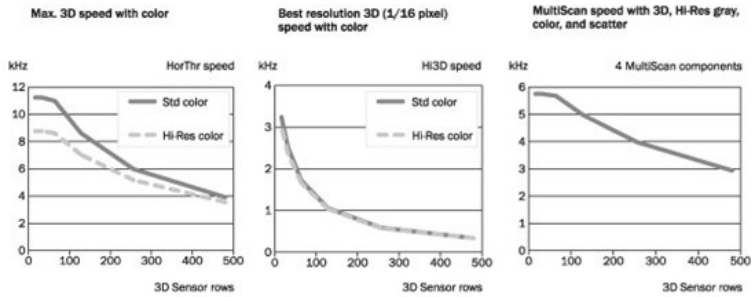
Characteristic curves, sensor characteristics

Image sensor spectral response



# Characteristic curves, speed characteristics

Measurement speed diagrams



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