Ranger-E55444

Ranger

3D MACHINE VISION

SICK
Sensor Intelligence.

Ranger-E55444 | Ranger
3D MACHINE VISION

Ordering information

Type	Part no.
Ranger-E55444	1050270

Other models and accessories ➜ www.sick.com/Ranger

Detailed technical data

Features

Task	Color inspection Quality inspection, high-speed Measuring, 3D
Technology	3D line scanning, MultiScan, color
Product category	Streaming, flexible
Example field of view	Free of choice by lens selection
Illumination	To be ordered separately as accessories
Data synchronization	Free running, encoder triggered, external triggering
Grayscale measurements	✓
Scatter measurement	✓
Color measurements	Red, Green, blue, monochrome (without IR content), near infrared (approx. 750 nm ... 950 nm)
Spectral range	400 nm ... 950 nm
Description	ColorRanger E55 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 3,072 px RGB color resolution. 3D sensor with IR pass filter.
Lens	C-mount
Optical format	1″

Mechanics/electronics

Connection type	Power I/O: M12, 8-pin male M12, 8-pin female connector (encoder) RJ45 (Ethernet)
Connector material	M12: nickel-plated brass
Supply voltage	12 V DC ... 24 V DC
Ripple	< 5 V_{pp}
Power consumption	7 W
Current consumption	0.8 A
Standards (ROHS)	✓
Enclosure rating	IP20
Housing material	Aluminum
Housing color	Gray, varnished
Weight	360 g
Dimensions (L x W x H)	125 mm x 52 mm x 52 mm

Performance

Bit depth	8 bit
Image sensor	CMOS
Sensor resolution	1,536 px x 512 px
Scan/frame rate	35,000 3D profiles/s
Maximum color performance	13,000 RGB lines/second
Maximum 3D and color rate	11,000 Scans/second
Maximum Hi-Res color rate	10,000 RGB lines/second
Sensor rows available for 3D	100 … 511
3D profile resolution	1,536 px
Scatter resolution	1,536 px
Color resolution	3 x 3,072 px
Pixel size	9.5 µm x 9.5 µm
Standard color row pitch	38 µm
Pixel matrix fill factor	60 %
Maximum 3D height resolution	13 bits 1/16 pixels
Optical center (row, column)	(227, 768)
Gray-scale resolution	3,072 px
IR filter	IR pass filter [1]
Hi-res pixel size (H x V)	4.75 µm x 9.5 µm
Hi-res pixel fill factor	80 %
Hi-res color pixel size (H x V)	4.75 µm x 20 µm
Hi-res color line spacing	42 µm

[1] Pass filter, limit at 740 nm.

Interfaces

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

Ambient data

Shock load	15 g, 3 x 6 directions
Vibration load	5 g, 58 Hz … 150 Hz
Ambient operating temperature	0 °C … +45 °C [1]
Storage temperature	–20 °C … +70 °C [1]

[1] Non-condensing.

Classifications

eCl@ss 5.0	27310205
eCl@ss 5.1.4	27310205
eCl@ss 6.0	27310205
eCl@ss 6.2	27310205
eCl@ss 7.0	27310205
eCl@ss 8.0	27310205
eCl@ss 8.1	27310205
eCl@ss 9.0	27310205
eCl@ss 10.0	27310205
eCl@ss 11.0	27310205
eCl@ss 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))

Dimensional drawing, view from below
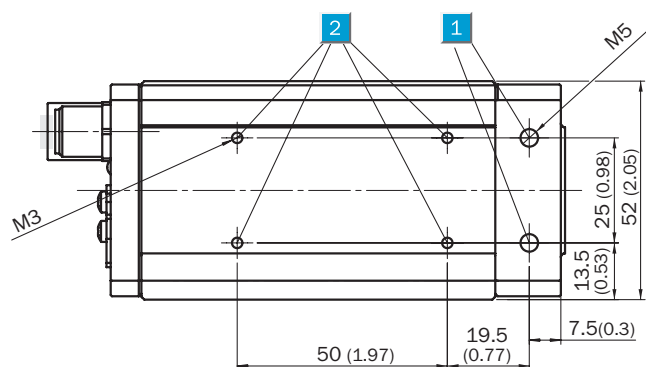
① Mounting holes M5, 9 mm (2 x)
② Mounting holes M3, 3 mm (4 x per side)
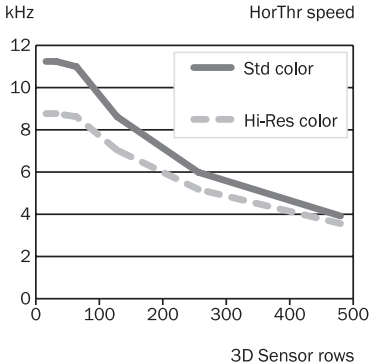
Dimensional drawing, view from the side
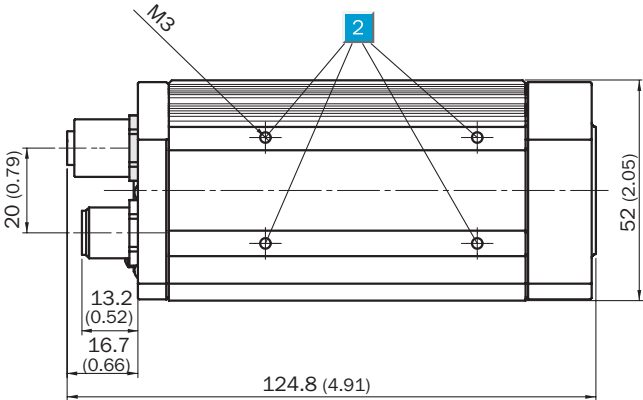
② Mounting holes M3, 3 mm (4 x per side)
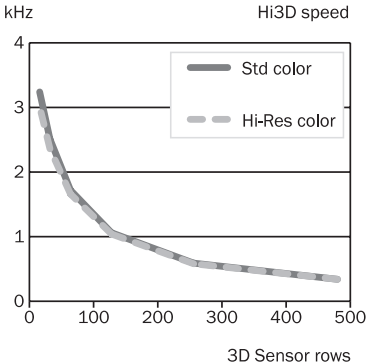
Characteristic curve

Characteristic curves, speed characteristics
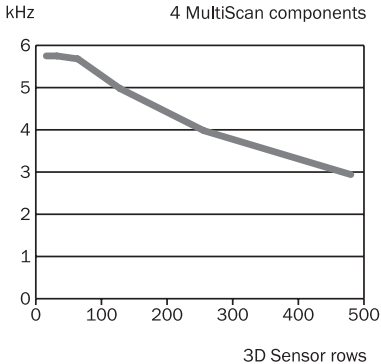
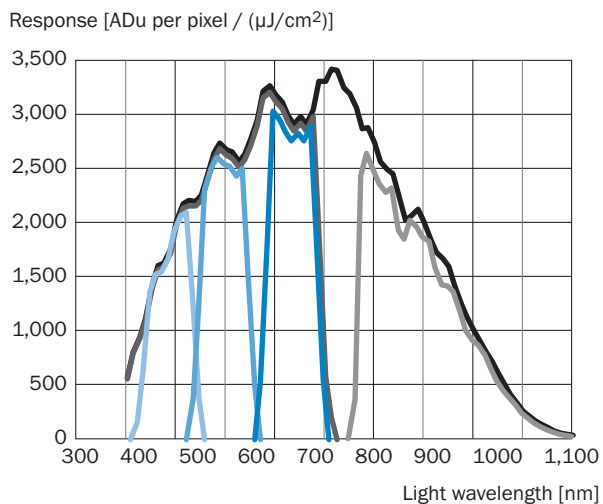**Measurement speed diagrams**

Max. 3D speed with color

Best resolution 3D (1/16 pixel) speed with color
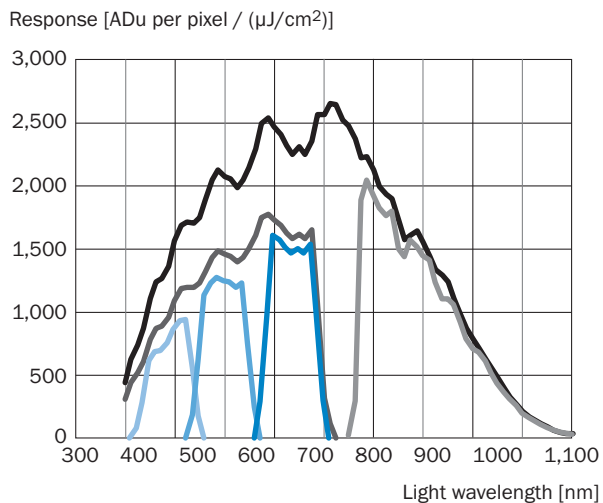

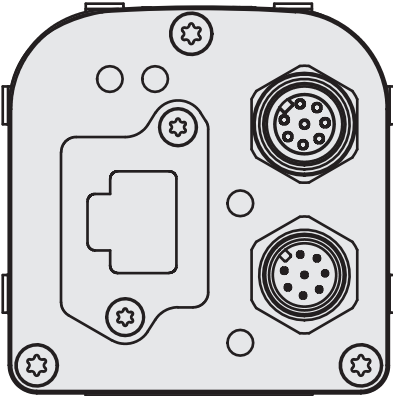**MultiScan speed with 3D, Hi-Res gray, color, and scatter**

Hi-res color sensitivity

Response [ADu per pixel / (µJ/cm^2)]

——	Red filter
——	Green filter
——	Blue filter
——	IR pass filter
——	IR block filter
——	No filter

Standard color response

Response [ADu per pixel / (µJ/cm^2)]

——	Red filter
——	Green filter
——	Blue filter
——	IR pass filter
——	IR block filter
——	No filter

Connection type

Connection diagram

Connection diagram, voltage I/O

wht	1	Enable
brn	2	Power
grn	3	Reserved
yel	4	Reset
gra	5	TRA
pnk	6	TRB
blu	7	GND
red	8	Laser trigger (TTL)
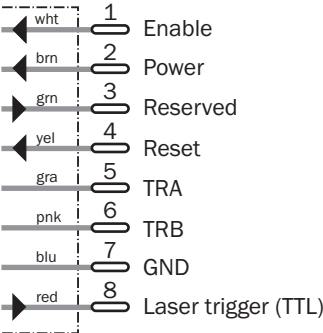
Connection diagram, encoder connection

wht	1	In A+
brn	2	In B+
grn	3	In B–
yel	4	In A–
gra	5	GND
pnk	6	Reserved
blu	7	Monitor
red	8	Reserved
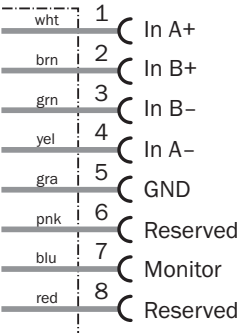
Recommended accessories

Other models and accessories ➜ www.sick.com/Ranger

Brief description	Type	Part no.
Illuminations		
Laser module with line projecting lens (red, 35 mW, refocusable), with open wires	Ranger accessories, laser	6033005

Recommended services

Additional services ➜ www.sick.com/Ranger

	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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