Ranger-E50410

Ranger

3D MACHINE VISION

SICK
Sensor Intelligence.

Ranger-E50410 | Ranger

3D MACHINE VISION

Ordering information

Type	part no.
Ranger-E50410	1085082

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

Detailed technical data

Features

Task	Quality inspection, high-speed Measuring, 3D
Technology	3D line scanning, MultiScan
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	✓
Spectral range	400 nm ... 950 nm
Description	Ranger E50 - 3D and MultiScan camera with the lens mounted at a 90° angle. Max. 35 k profiles/second. Gigabit Ethernet interface, 1,536 x 512 pixels.
Lens	C-mount
Optical format	1″
Note	Angled 90°

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	425 g
Dimensions (L x W x H)	172.2 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
Sensor rows available for 3D	0 ... 511
3D profile resolution	1,536 px
Scatter resolution	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 pixels
Optical center (row, column)	(227, 768)
Gray-scale resolution	1,536 px
IR filter	No IR pass filter

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, Windows 10
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

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
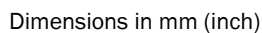
Dimensions in mm (inch)
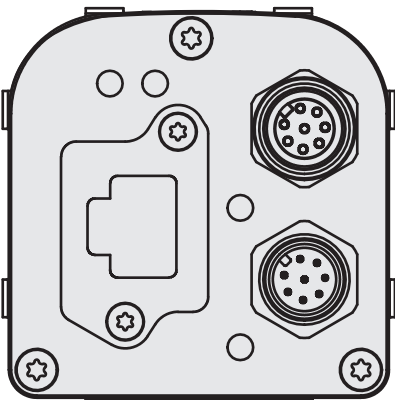① Power I/O connector (thread outside, M12)
② Encoder connector (thread inside M12)
③ Gigabit Ethernet port, RJ45
④ LED (4 x)
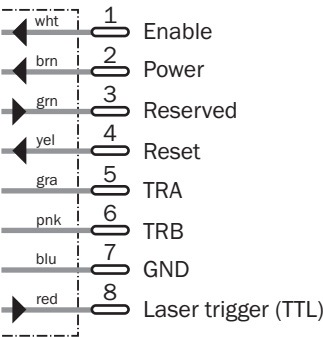⑤ axis of receiver
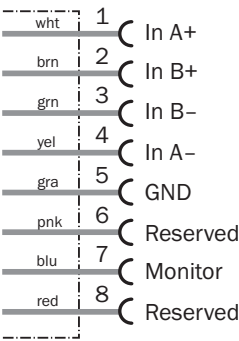⑥ Mounting holes M3, 3 mm (4 x per side)

Characteristic curve

3D measurement speed (kHz vs Sensor rows) — Ranger E

Hi3D speed (kHz vs Sensor rows) — Ranger E, Ranger D

4 multiscan components (3D, HiRes-gray, Gray, Scatter) (kHz vs 3D rows) — Ranger E
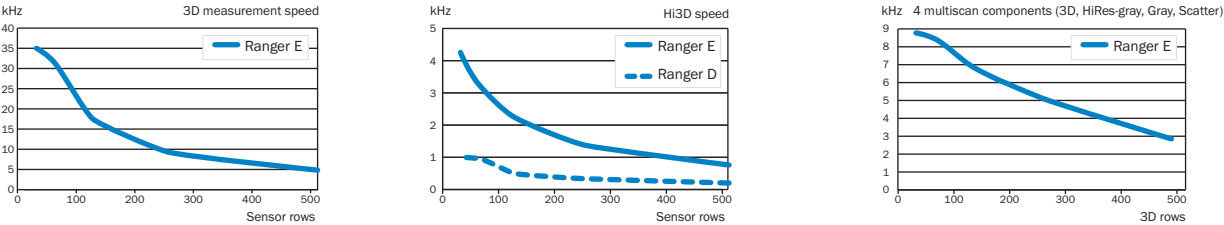
Connection type

Connection diagram, voltage I/O

Wire	Pin	Signal
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

Pin	Wire	Signal
1	wht	In A+
2	brn	In B+
3	grn	In B−
4	yel	In A−
5	gra	GND
6	pnk	Reserved
7	blu	Monitor
8	red	Reserved

Recommended accessories

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

	Brief description	Type	part no.
reflectors and optics			
	• **Description:** Laser module with line projecting lens (red, 35 mW, refocusable), with open wires • **Light source:** Laser, red • **Connection types:** Cable, 1,000 mm, open wires	Ranger accessories, laser	6033005
integration modules and adapters			
	• **Description:** 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	Ranger E/D accessories set	2040857

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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:

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