



3D vision
RS-422 , Ranger, Ranger E, Ranger E40

Ranger-E40414



Model Name > [Ranger-E40414](#)
Part No. > [1040378](#)



At a glance

- 3D shape inspection at up to 35,000 profiles/s
- In-machine 3D calibration tool
- MultiScan technology to measure 3D, contrast, and scatter at the same time
- Sensor resolutions of up to 1,536 pixels in 3D and 3,072 pixels in gray scale
- Full flexibility in configuration, working distance, and field of view
- C and C++ APIs for integration
- Remote operation and easy integration with Gigabit Ethernet

Your benefits

- With speeds of up to 35,000 profiles/s and gray scale resolution up to 3,072 pixels, you can increase production throughput and still see the finest details, ensuring product quality
- Contrast-independent 3D provides more reliable size and position measurements, regardless of an object's color or height
- Contrast-independent 3D provides more reliable size and position measurements, regardless of an object's color or height
- Unique MultiScan technology lets one camera do the job of many, reducing costs for integration, maintenance, and accessories, creating cost-efficient solutions
- Ranger E's high level of flexibility makes it the best choice for the most challenging tasks
- Gigabit Ethernet for remote operation over long cable distances, allowing you to put your PCs in a safe and convenient place



Features

| | |
|--------------------------------|--|
| Task: | Inspection, Measuring, Positioning |
| Description: | Ranger E40 - 3D and MultiScan, up to 35 k profiles/second. Gigabit Ethernet interface, 512 x 512 pixels. |
| Technology: | 3D LineScan MultiScan |
| Example field of view (H x W): | Free of choice by lens selection |
| Data synchronization: | Encoder triggered External trigger Free running |
| Grayscale measurements: | ✓ |
| Scatter measurement: | ✓ |
| Spectral range: | 400 nm ... 950 nm |
| Factory calibrated: | - |

Performance

| | |
|-------------------------------|----------------------|
| Image sensor: | CMOS |
| Maximum performance: | 35,000 3D profiles/s |
| Sensor resolution: | 512 px x 512 px |
| 3D profile resolution: | 512 px |
| Gray line resolution: | 512 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, 256) |
| IR filter: | No IR pass filter |
| Scatter resolution: | 512 px |
| Sensor rows available for 3D: | 0 ... 511 |
| Bit depth: | 8 bit |

Interfaces

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

Mechanics/electronics

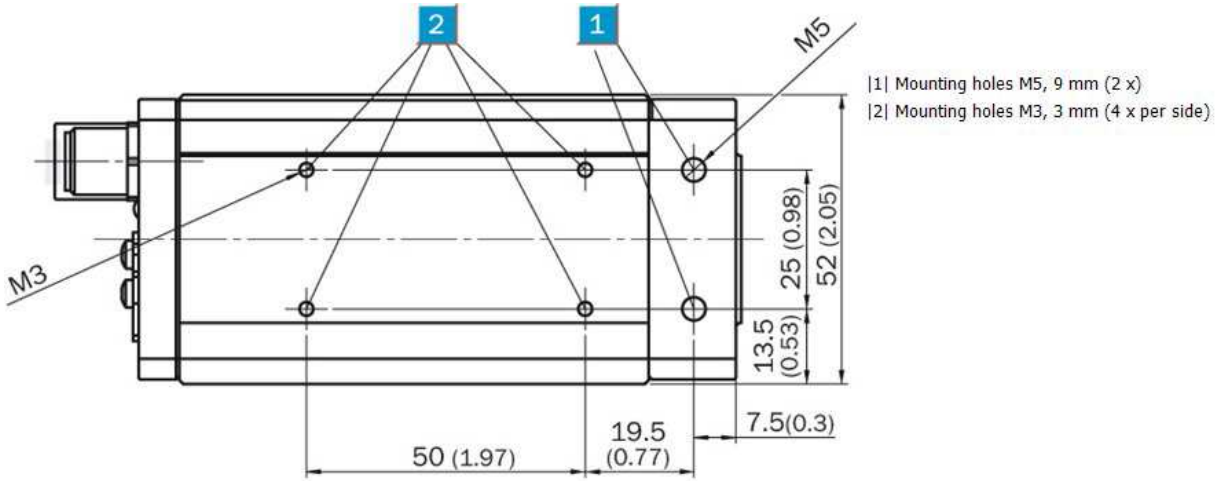
| | |
|-------------------------|--|
| Connectors: | M12, 8-pin female connector (encoder) RJ45 (Ethernet) Power I/O: M12, 8-pin male |
| Connector material: | M12: nickel-plated brass |
| Supply voltage: | 12 V DC ... 24 V DC |
| Power consumption: | 7 W |
| Power consumption: | 0.8 A |
| Ripple: | < 5 Vpp |
| Enclosure rating: | IP 20 |
| Housing material: | Aluminum |
| Housing color: | Gray, varnished |
| Weight: | 360 g |
| Dimensions (L x W x H): | 125 mm x 52 mm x 52 mm |
| Optics: | C-Mount, 1/2" |
| Standards (ROHS): | ✓ |

Ambient data

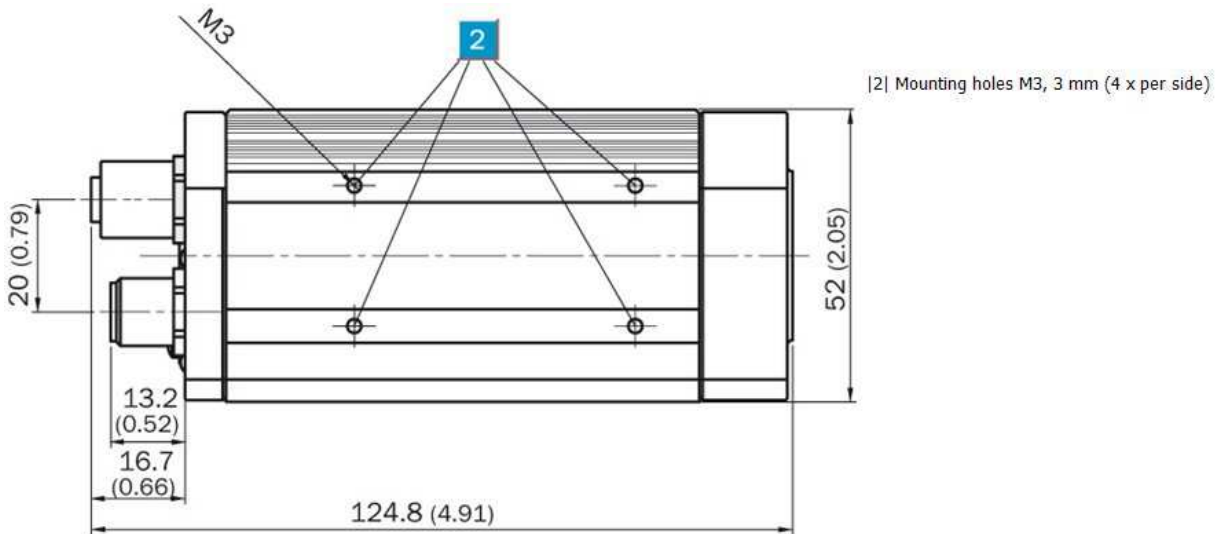
| | |
|--------------------------------|---------------------------------|
| Shock load: | 15 g, 3 x 6 directions |
| Vibration load: | 5 g, 58 Hz ... 150 Hz |
| Ambient operating temperature: | 0 °C ... +45 °C ¹⁾ |
| Ambient storage temperature: | -20 °C ... +70 °C ²⁾ |

1) 2)
Non-condensing

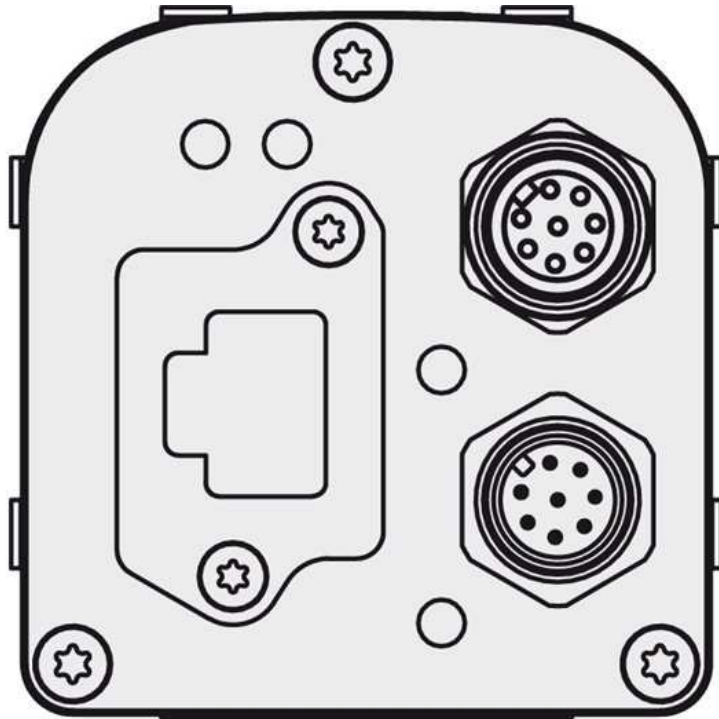
Dimensional drawing, bottom view



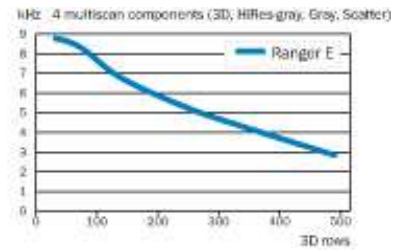
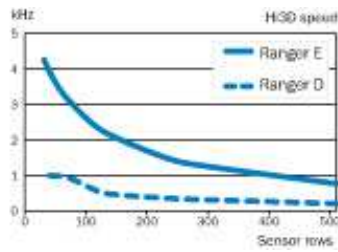
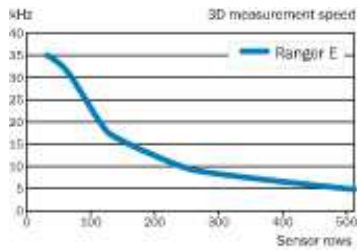
Dimensional drawing, side view



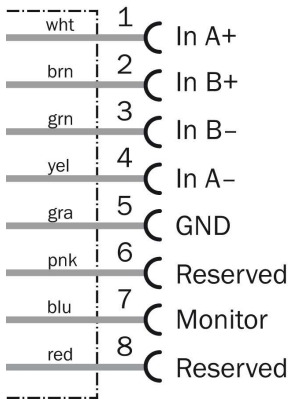
Connection type



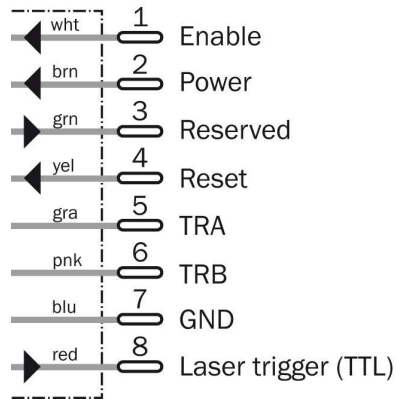
Characteristic curves



Connection diagram, Encoder connection



Connection diagram Power I/O



Australia

Phone +61 3 9457 0600
1800 33 48 02 – tollfree
E-Mail sales@sick.com.au

Belgium/Luxembourg

Phone +32 (0)2 466 55 66
E-Mail info@sick.be

Brasil

Phone +55 11 3215-4900
E-Mail marketing@sick.com.br

Canada

Phone +1 905 771 14 44
E-Mail information@sick.com

Česká republika

Phone +420 2 57 91 18 50
E-Mail sick@sick.cz

China

Phone +86 4000 121 000
E-Mail info.china@sick.net.cn
Phone +852-2153 6300
E-Mail ghk@sick.com.hk

Danmark

Phone +45 45 82 64 00
E-Mail sick@sick.dk

Deutschland

Phone +49 211 5301-301
E-Mail info@sick.de

España

Phone +34 93 480 31 00
E-Mail info@sick.es

France

Phone +33 1 64 62 35 00
E-Mail info@sick.fr

Great Britain

Phone +44 (0)1727 831121
E-Mail info@sick.co.uk

India

Phone +91-22-4033 8333
E-Mail info@sick-india.com

Israel

Phone +972-4-6881000
E-Mail info@sick-sensors.com

Italia

Phone +39 02 27 43 41
E-Mail info@sick.it

Japan

Phone +81 (0)3 5309 2112
E-Mail support@sick.jp

Magyarország

Phone +36 1 371 2680
E-Mail office@sick.hu

Nederland

Phone +31 (0)30 229 25 44
E-Mail info@sick.nl

Norge

Phone +47 67 81 50 00
E-Mail sick@sick.no

Österreich

Phone +43 (0)22 36 62 28 8-0
E-Mail office@sick.at

Polska

Phone +48 22 837 40 50
E-Mail info@sick.pl

România

Phone +40 356 171 120
E-Mail office@sick.ro

Russia

Phone +7-495-775-05-30
E-Mail info@sick.ru

Schweiz

Phone +41 41 619 29 39
E-Mail contact@sick.ch

Singapore

Phone +65 6744 3732
E-Mail sales.gsg@sick.com

Slovenija

Phone +386 (0)1-47 69 990
E-Mail office@sick.si

South Africa

Phone +27 11 472 3733
E-Mail info@sickautomation.co.za

South Korea

Phone +82 2 786 6321/4
E-Mail info@sickkorea.net

Suomi

Phone +358-9-25 15 800
E-Mail sick@sick.fi

Sverige

Phone +46 10 110 10 00
E-Mail info@sick.se

Taiwan

Phone +886 2 2375-6288
E-Mail sales@sick.com.tw

Türkiye

Phone +90 (216) 528 50 00
E-Mail info@sick.com.tr

United Arab Emirates

Phone +971 (0) 4 88 65 878
E-Mail info@sick.ae

USA/México

Phone +1(952) 941-6780
1 (800) 325-7425 – tollfree
E-Mail info@sickusa.com

More representatives and agencies
at www.sick.com