

SICK.COM



DATA SHEET

V3DR3-80CT31111

Ranger3
3D machine vision

SICK Sensor Intelligence



3D MACHINE VISION

V3DR3-80CT31111

ORDERING INFORMATION

Type	part no.
V3DR3-80CT31111	1141150

Further device versions and accessories at www.sick.com/Ranger3



DETAILED TECHNICAL DATA

FEATURES

Technology	3D laser triangulation, 2D line scanning, color
Streaming	✓
Shutter technology	Global-Shutter
Example field of view	Free of choice by lens selection
Exposure mode	Linear HDR
Illumination	To be ordered separately as accessories
Data synchronization	Free running, encoder triggered, external triggering
3D measurement	✓
Scatter measurement	✓
Reflectance measurement	✓
Spectral range	400 nm ... 950 nm
Lens	C-mount
Optical format	1"
Note	To be ordered separately as accessories
Task	Detecting - Standard objects Measuring - Dimension, contour and volume Monitoring and controlling - Quality Determining position - 3D position determination

MECHANICS/ELECTRONICS

Connector material	M12: Nickel-coated brass
Supply voltage	24 V DC, ± 20 %
Power consumption	12 W
Enclosure rating	IP20 IP65, by ProFlex protection hood IP67, by ProFlex protection hood
Housing material	Aluminum

Housing color	Blue, powder-coated
Weight	330 g
Dimensions (L x W x H)	77 mm x 55 mm x 55 mm

PERFORMANCE

Sensor properties	
Sensor resolution	2,560 px x 832 px
Pixel size	6 µm x 6 µm (3D) 3 µm x 6.4 µm (High Resolution)
Image sensor	CMOS sensor from SICK with ROCC technology, M30
Scan/frame rate	69,000 3D profiles/s, in AOI 7,000 3D profiles/s, full format
Maximum Hi-Res color rate	15,000 RGB lines/s
Maximum Hi-Res grayscale rate	≤ 30,000 Lines/s
Sensor resolution	2,560 px x 832 px
Color resolution	5,120 px
Maximum 3D height resolution	16 bits, 1/16 subpixel
Grayscale resolution	5,120 px

INTERFACES

Ethernet	✓, UDP/IP
Remark	GigE Vision Standard
Data transmission rate	2.5 Gbit/s
Configuration software	Stream Setup
Operating system	Windows 7, Windows 10
Application programming interface (API)	Proprietary SICK GenIStream
Digital input	4 x HIGH = 10 V ... 28.8 V
Digital output	2 x TTL
Encoder interface	RS-422

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) 2)}
Storage temperature	-20 °C ... +70 °C ¹⁾

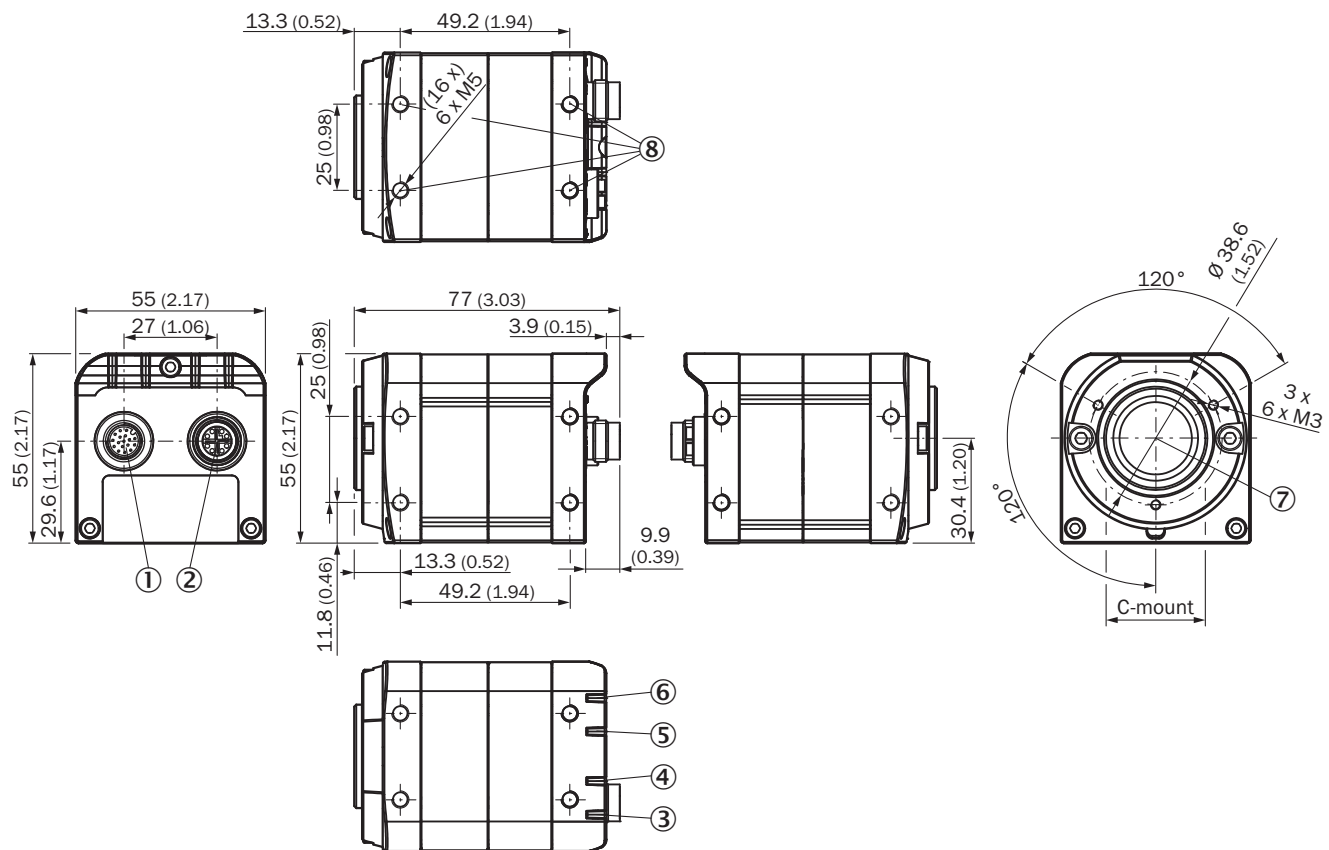
¹⁾ Non-condensing.

²⁾ If the ambient operating temperature will be ≥ 35 °C, ensure adequate heat dissipation when mounting the device.

CERTIFICATES

EU declaration of conformity	✓
UK declaration of conformity	✓
ACMA declaration of conformity	✓
China RoHS	✓
cTUVus certificate	✓
Information according to Art. 3 of Data Act (Regulation EU 2023/2854)	✓
GigE Vision	✓
GenICam	✓

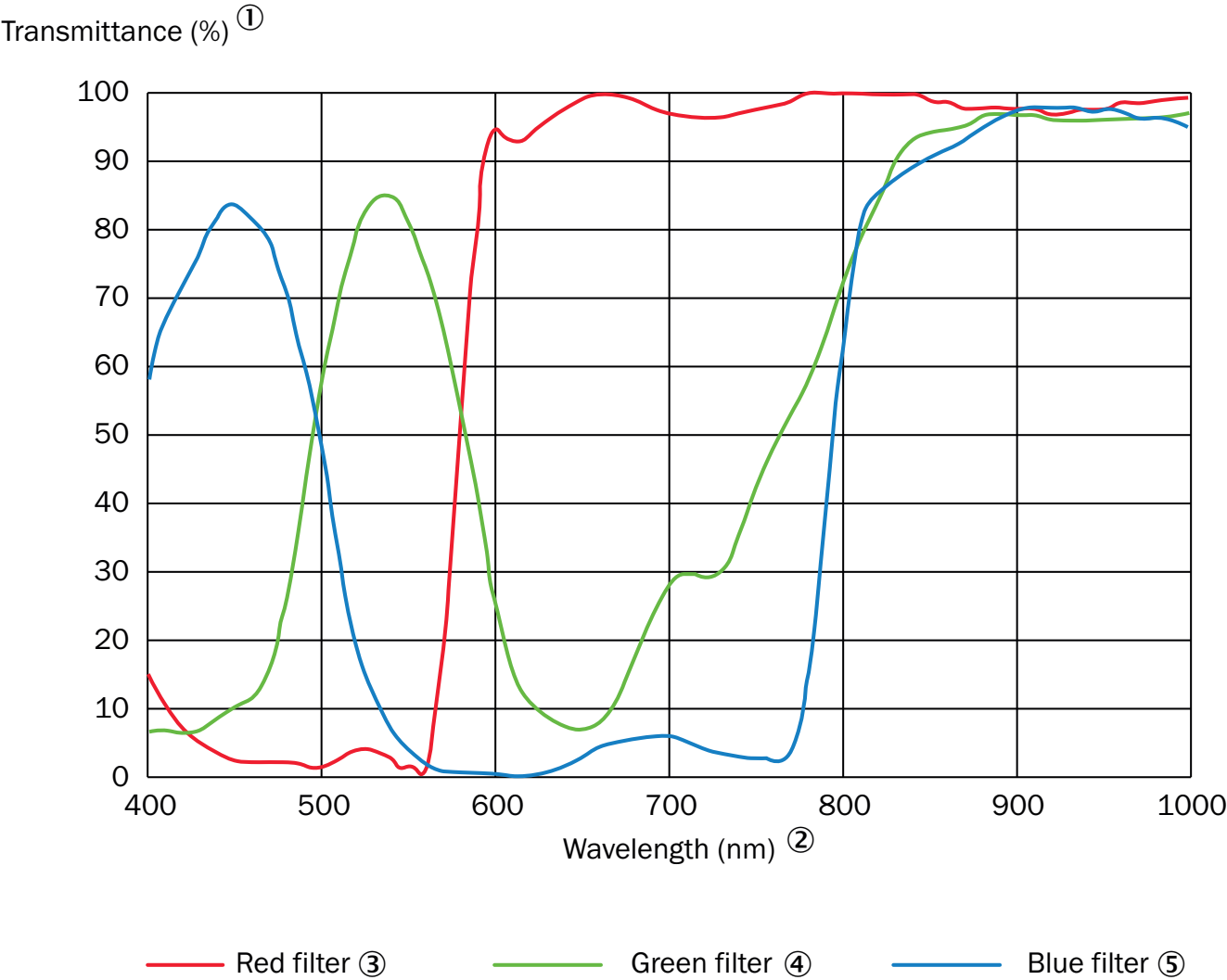
DIMENSIONAL DRAWING



Dimensions in mm (inch)

- ① Power I/O connector
- ② Gigabit Ethernet connection (GbE)
- ③ LED; On
- ④ LED; State
- ⑤ LED; Link/Data
- ⑥ LED; Laser
- ⑦ optical axis, receiver
- ⑧ mounting holes, 4 x M5

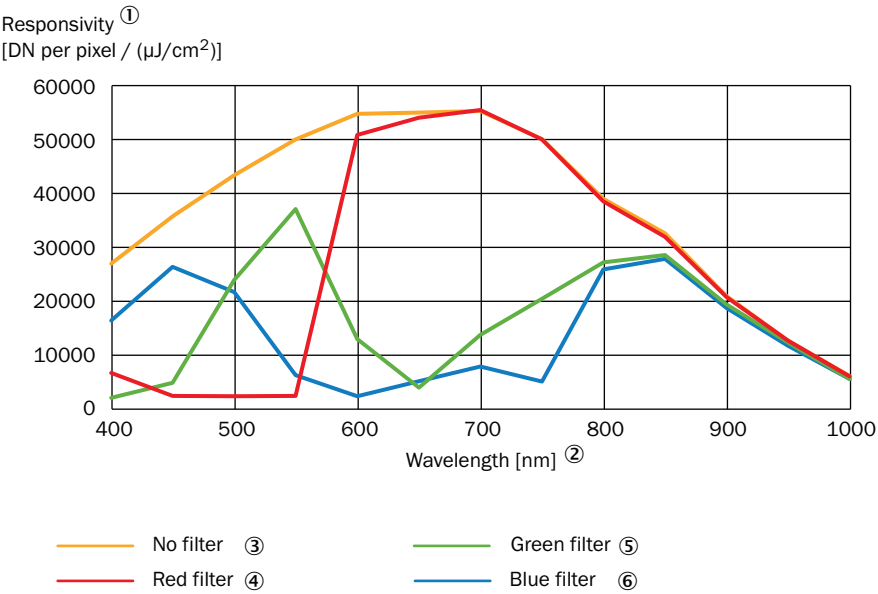
CHARACTERISTIC CURVE



Approximate spectral transmittance for the M30 high-resolution color rows

- ① Transmission
- ② wave length
- ③ Red filter
- ④ Green filter
- ⑤ Blue filter

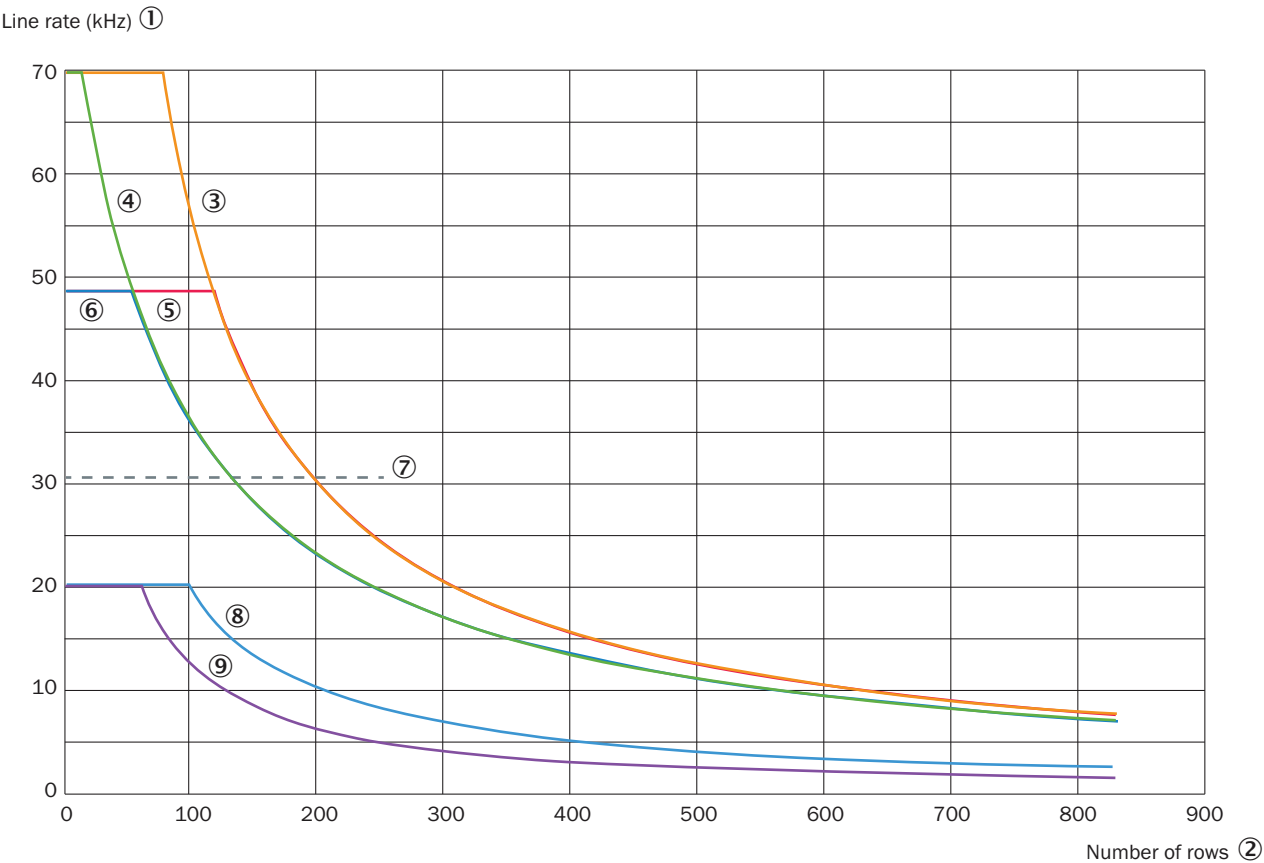
CHARACTERISTIC CURVE



Approximate filter response for the M30 high-resolution color rows

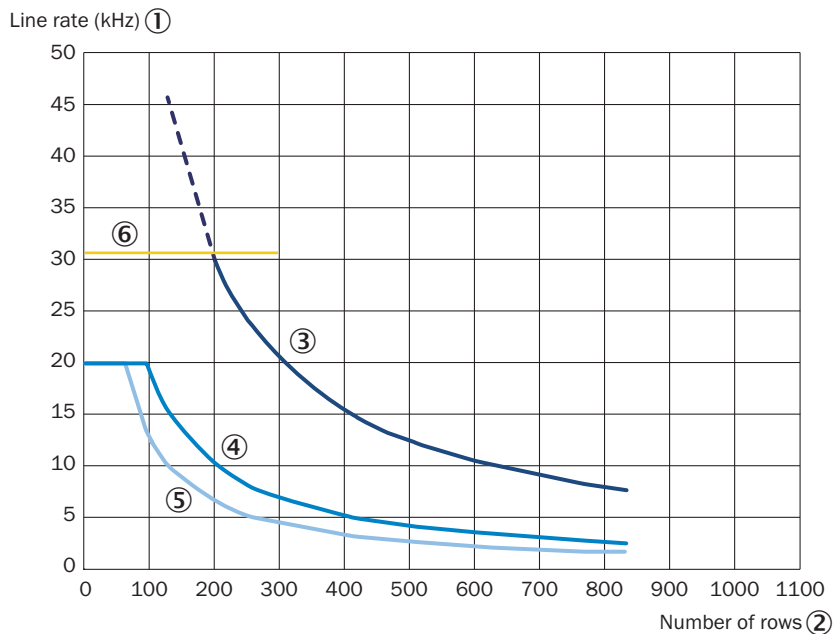
- ① Sensitivity
- ② wave length
- ③ No filter
- ④ Red filter
- ⑤ Green filter
- ⑥ Blue filter

CHARACTERISTIC CURVE



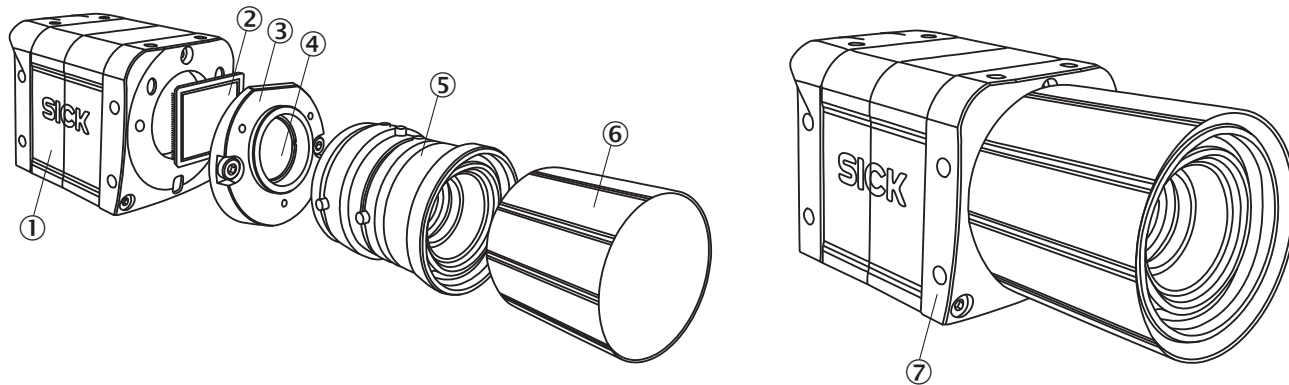
The maximum line rate is based on the number of sensor lines used

- ① Line rate (kHz)
- ② Number of lines
- ③ Ranger3-80, Linear
- ④ Ranger3-80, HDR
- ⑤ Ranger3-60, Linear
- ⑥ Ranger3-60, HDR
- ⑦ Bandwidth limitation for Ranger3-60, 2,560 columns
- ⑧ Ranger3-40
- ⑨ Ranger3-30

CHARACTERISTIC CURVE

The maximum line rate is based on the number of sensor lines used

- ① Line rate (kHz)
- ② Number of lines
- ③ Ranger3-60, 2,560 columns
- ④ Ranger3-40, 2,560 columns
- ⑤ Ranger3-30, 1,536 columns
- ⑥ Bandwidth limitation for 2,560 columns

EXPLODED VIEW

- ① Ranger3 (housing)
- ② CMOS sensor M30
- ③ scheimpflug adapter, replaceable
- ④ optical filter, replaceable
- ⑤ C-mount lens, replaceable
- ⑥ protective hood, replaceable
- ⑦ installed device with all listed parts

Further information as well as suitable accessories, example applications and downloads such as CAD dimensional models, operating instructions and software can be found at www.sick.com/1141150



SICK AG
WALDKIRCH
GERMANY
SICK.COM

SICK AT A GLANCE

SICK is a leading global technology company for intelligent sensors and integrated solutions in industrial automation. Our technologies set benchmarks, making your industrial processes more efficient, safer and more sustainable – both in logistics and manufacturing operations.

SICK combines sensor intelligence with industry expertise and certified consulting services. We provide the ideal foundation for scalable as well as tailor-made automation solutions and create added value along the entire value chain. Our close partnerships with our customers are more than just a promise: Together, we optimize productivity, improve quality, protect health and safety, and help build a sustainable future. All with empathy and trust.

Since 1946, we have been developing innovative technologies with passion and a pioneering spirit. With a global network in around 40 countries, SICK has a global presence and is always close by. The company's headquarters are located in Waldkirch near Freiburg, Germany. Our customers benefit from our understanding of both local and global requirements, which enables us to deliver tailor-made solutions

SICK
Sensor Intelligence