



# NCV50B-11EC0101000

SPEETEC 1D

LASER SURFACE MOTION SENSORS

**SICK**  
Sensor Intelligence.



Illustration may differ

### Ordering information

Type	Part no.
NCV50B-11EC0101000	1115004

Other models and accessories → [www.sick.com/SPEETEC\\_1D](http://www.sick.com/SPEETEC_1D)



### Detailed technical data

#### Features

<b>Specialty</b>	Open up new fields of application in motion monitoring. SPEETEC closes the gap between tactile measuring wheel systems and complex laser Doppler sensors – and is suitable for almost all surfaces and objects thanks to the non-contact measurement. Non-contact measurement on moving objects without measuring elements. Class 1 laser
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#### Safety-related parameters

<b>MTTFd: mean time to dangerous failure</b>	33 years <sup>1)</sup>
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<sup>1)</sup> This product is a standard product and does not constitute a safety component as defined in the Machinery Directive. Calculation based on nominal load of components, average ambient temperature 40 °C, frequency of use 8760 h/a. All electronic failures are considered hazardous. For more information, see document no. 8015532.

#### System

<b>Light source</b>	2 continuous beam lasers <sup>1)</sup>
<b>Shaft length</b>	850 nm
<b>Laser class</b>	1 (IEC 60825-1:2014)
<b>Type of light</b>	Invisible infrared light
<b>Typ. measurement field size (distance)</b>	2 mm x 3 mm (at 50 mm) 8 mm x 3 mm (at 45 mm) 8 mm x 3 mm (at 55 mm)
<b>Laser power (per laser)</b>	0.78 mW <sup>2)</sup>

<sup>1)</sup> L10 ≥ 32,500 h (not temperature-dependent). The lasers are always on when the sensor is supplied with voltage. To increase the service life of the sensor, we recommend completely disconnecting the sensor from the voltage supply when it is not needed. No warranty claims relating to the reaching of the service life of the laser will be accepted.

<sup>2)</sup> , The device must not be operated if the screen is damaged or missing.

#### Performance

<b>Nominal measuring distance</b>	50 mm
<b>Static mounting tolerance</b>	Ca. ± 5 mm <sup>1)</sup>
<b>Direction of movement</b>	1D, x-direction
<b>Movement detection</b>	Bidirectional
<b>Measuring increment (resolution in µm/pulse)</b>	1,000

<sup>1)</sup> Mounting the device closer than the specified measuring distance will not affect the accuracy of the measurement for suitable materials.

<sup>2)</sup> No continuous operation < 0.1 m/s recommended.

<sup>3)</sup> Error limit for systematic measurement deviation in accordance with DIN 1319-1:1995. Valid between 0.2 m/s ... 10 m/s, regular adjustment required.

<sup>4)</sup> Maximum permissible measurement deviation in accordance with DIN 1319-1:1995 under constant conditions. Valid between 0.2 m/s ... 10 m/s, averaged over 0.25 m measuring length.

<b>Speed measuring range</b>	> 0 m/s ... 10 m/s <sup>2)</sup>
<b>Permissible acceleration</b>	≤ 30 m/s <sup>2</sup>
<b>Accuracy</b>	
Measurement accuracy	0.1 % <sup>3)</sup>
Repeatability	0.05 % <sup>4)</sup>
<b>Internal sampling rate</b>	330 μs
<b>Latency period</b>	2.9 ms

1) Mounting the device closer than the specified measuring distance will not affect the accuracy of the measurement for suitable materials.

2) No continuous operation < 0.1 m/s recommended.

3) Error limit for systematic measurement deviation in accordance with DIN 1319-1:1995. Valid between 0.2 m/s ... 10 m/s, regular adjustment required.

4) Maximum permissible measurement deviation in accordance with DIN 1319-1:1995 under constant conditions. Valid between 0.2 m/s ... 10 m/s, averaged over 0.25 m measuring length.

### Electrical data

<b>Supply voltage</b>	12 V ... 30 V
<b>Communication interface</b>	HTL / Push pull
<b>Output frequency</b>	≤ 625 kHz
<b>Connection type</b>	Male connector, M12, 8-pin, A-coded
<b>Power consumption</b>	< 8 W
<b>Load current</b>	≤ 30 mA, per channel
<b>Reverse polarity protection</b>	✓
<b>Protection class</b>	III according to DIN EN 61140
<b>Short-circuit resistant outputs</b>	✓ <sup>1)</sup>
<b>Initialization time</b>	Max. 3 s

1) Short-circuit to another channel, U<sub>s</sub> or GND for max. 30 s.

### Mechanical data

<b>Dimensions</b>	140 mm x 95 mm x 32.5 mm (without plug)
<b>Weight</b>	400 g
<b>Material</b>	
Housing	Aluminum
Screen	PMMA
Plug insert	PA66, copper-zinc alloy (CuZn)
<b>Permissible angle</b>	
Permissible pitch angle	≤ ± 1.5° <sup>1)</sup>
Permissible yaw angle	≤ ± 1.5° <sup>1)</sup>
Permissible roll angle	≤ ± 10° <sup>1)</sup>

1) Exceeding these values will result in lower accuracy (see: Permissible deviations from nominal alignment).

### Ambient data

<b>EMC</b>	EN 61000-6-2, EN 61000-6-3
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1) For suitable mating connector and correct mounting of the mating connector.

2) Condensation on laser modules and screen not permitted.

3) If the permissible temperature range is exceeded, the sensor switches off the laser to protect it against damage. No signal is outputted in this case.

<b>Enclosure rating</b>	IP65 (EN 60529) <sup>1)</sup> IP67 (EN 60529) <sup>1)</sup>
<b>Permissible relative humidity</b>	70 % <sup>2)</sup>
<b>Temperature</b>	
Operating temperature range	0 °C ... +45 °C <sup>3)</sup>
Storage temperature range	-32 °C ... +60 °C, without package
<b>Resistance</b>	
Resistance to shocks	30 g, 6 ms (EN 60068-2-27)
Resistance to vibration	20 g, 10 Hz ... 2,000 Hz (EN 60068-2-6)

<sup>1)</sup> For suitable mating connector and correct mounting of the mating connector.

<sup>2)</sup> Condensation on laser modules and screen not permitted.

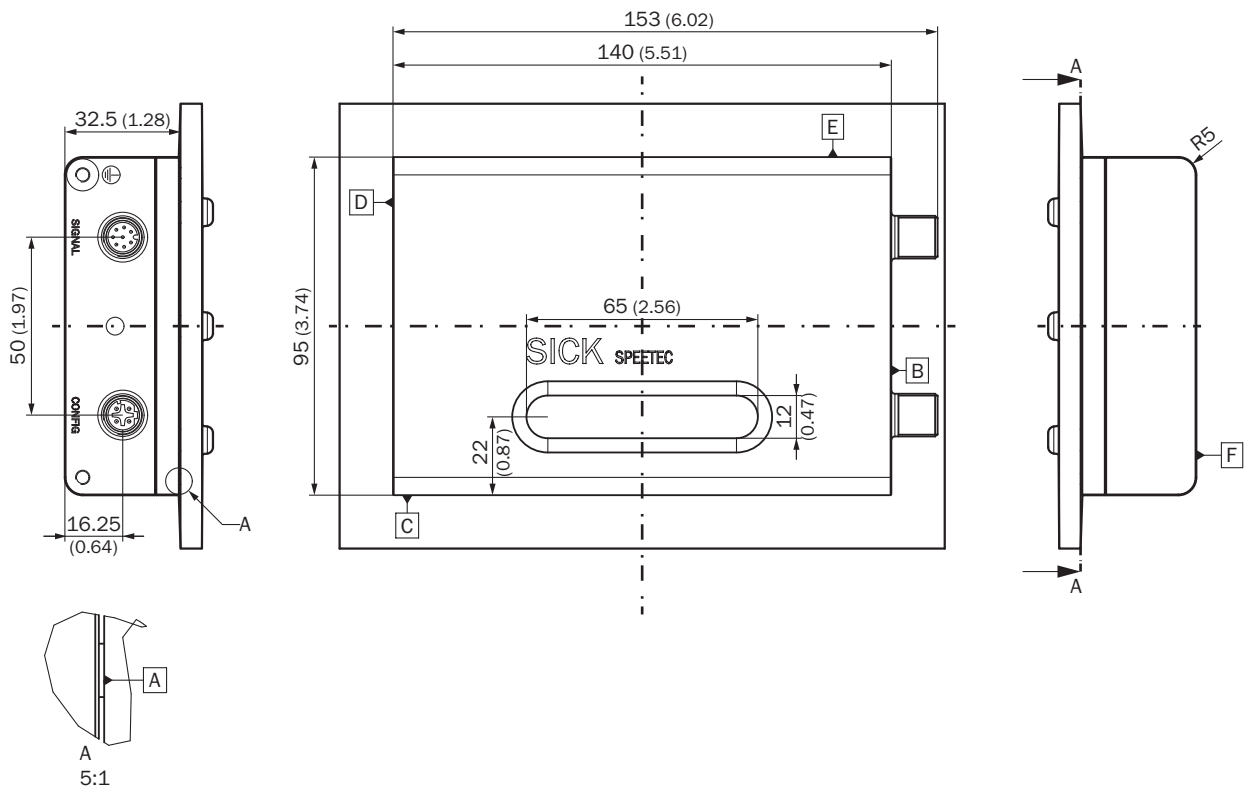
<sup>3)</sup> If the permissible temperature range is exceeded, the sensor switches off the laser to protect it against damage. No signal is outputted in this case.

### Classifications

<b>ECl@ss 11.0</b>	27270790
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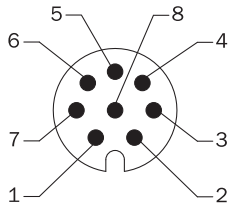
### Dimensional drawing (Dimensions in mm (inch))

SPEETEC



PIN assignment

M12 signal male connector, 8-pin and cable, 8-wire

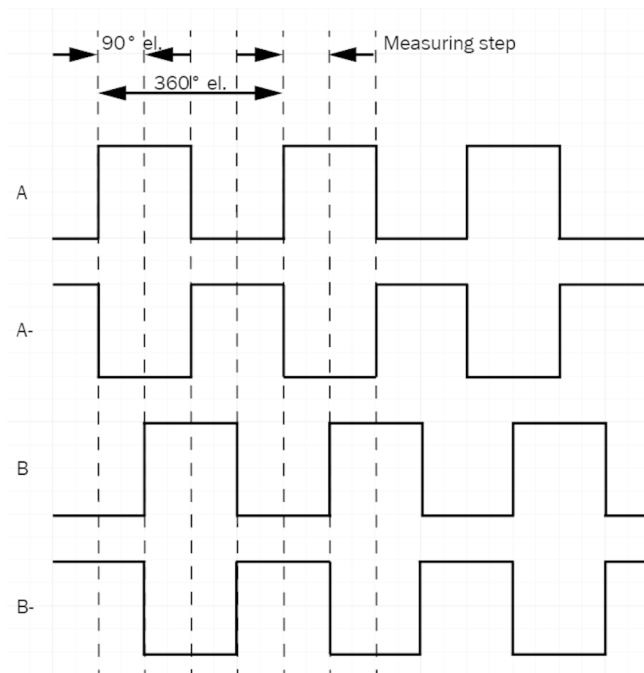


View of M12 male device connector

Male connector M12, 8-pin	Wire color	TTL/HTL signal	Explanation
1	Brown	A-	Signal cable
2	White	A	Signal cable
3	Black	B-	Signal cable
4	Pink	B	Signal cable
5	Yellow	Do not wire!	Warning: Do not wire!
6	Violet	Do not wire!	Warning: Do not wire!
7	Blue	GND	Ground connection
8	Red	+U <sub>S</sub>	Supply voltage
Screen	Screen	Screen	Connect screen to housing on sensor side, connect to earth on the control side
Ground	Earthing point on housing		The sensor must be earthed via the housing at the intended earthing point.





### Diagrams







Signal outputs for electrical interfaces TTL and HTL with forward material movement (see assembly specifications)



### Recommended accessories

Other models and accessories → [www.sick.com/SPEETEC\\_1D](http://www.sick.com/SPEETEC_1D)

	Brief description	Type	Part no.
<b>Mounting brackets and plates</b>			
	1 piece, The BEF-WN-NCV50 mounting bracket makes it possible to easily and correctly mount the sensors while complying with the specified tolerances for distance and angle., Mounting bracket, screws for mounting the NCV50	BEF-WN-NCV50 mounting bracket	2117456
<b>Terminal and alignment brackets</b>			
	1 piece, Bracket for mounting SICK photoelectric proximity sensors, W4, W9, G6 to the NCV50. SICK photoelectric proximity sensors from the W4, W9, G6 series can be easily mounted on the NCV50 using the BEF-MK-NCV50-W49G6. This makes it possible to better detect material edges and makes length measurement more exact. The position of the scanning point in the direction of movement is specified by the mounting position, the position in the y-direction can be adjusted using the bracket slots., Adjustment aid, screws for mounting the photoelectric proximity sensor	BEF-MK-NCV50-W49G6	2117457
	1 piece, Simplifies mounting of the SPEETEC at the right distance and angle to the surface., Adjustment aid, screws for mounting the NCV50	BEF-WN-NCV50-ADJUST	2117003
<b>Plug connectors and cables</b>			
	Head A: cable Head B: Flying leads Cable: SSI, Incremental, PUR, shielded	LTG-2411-MW	6027530

	Brief description	Type	Part no.
	Head A: cable Head B: Flying leads Cable: SSI, Incremental, PUR, halogen-free, shielded	LTG-2512-MW	6027531
	Head A: cable Head B: Flying leads Cable: SSI, TTL, HTL, Incremental, PUR, halogen-free, shielded	LTG-2612-MW	6028516
	Head A: female connector, M12, 8-pin, straight Head B: Flying leads Cable: Incremental, SSI, PUR, halogen-free, shielded, 2 m	DOL-1208-G02MAC1	6032866
	Head A: female connector, M12, 8-pin, straight Head B: Flying leads Cable: Incremental, SSI, PUR, halogen-free, shielded, 5 m	DOL-1208-G05MAC1	6032867
	Head A: female connector, M12, 8-pin, straight Head B: Flying leads Cable: Incremental, SSI, PUR, halogen-free, shielded, 10 m	DOL-1208-G10MAC1	6032868
	Head A: female connector, M12, 8-pin, straight Head B: Flying leads Cable: Incremental, SSI, PUR, halogen-free, shielded, 20 m	DOL-1208-G20MAC1	6032869
	Head A: female connector, M12, 8-pin, straight Head B: male connector, M12, 8-pin, straight Cable: PUR, halogen-free, shielded, 5 m	DSL-1208-G05MAC1	6032913
	Head A: female connector, M12, 8-pin, straight Head B: - Cable: shielded	DOS-1208-GA	6028369
	Head A: male connector, M12, 8-pin, straight Head B: - Cable: shielded	STE-1208-GA	6028370

## 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.”

## WORLDWIDE PRESENCE:

Contacts and other locations –[www.sick.com](http://www.sick.com)