Product data sheet

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

Detailed technical data

Features

Specialty	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

Safety-related parameters

MTTFd: mean time to dangerous failure	33 years [1]

[1] 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

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

[1] 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.

[2] , The device must not be operated if the screen is damaged or missing.

Performance

Nominal measuring distance	50 mm
Static mounting tolerance	Ca. ± 5 mm [1]
Direction of movement	1D, x-direction

[1] Mounting the device closer than the specified measuring distance will not affect the accuracy of the measurement for suitable materials. Operation outside of the tolerance is possible with restrictions.

[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.

[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.

Movement detection	Bidirectional
Measuring increment (resolution in µm/pulse)	1,000
Speed measuring range	> 0 m/s ... 10 m/s [2]
Permissible acceleration	≤ 30 m/s²
Accuracy	
Measurement accuracy	0.1 % [3]
Repeatability	0.05 % [4]
Internal sampling rate	330 µs
Latency period	2.9 ms

[1] Mounting the device closer than the specified measuring distance will not affect the accuracy of the measurement for suitable materials. Operation outside of the tolerance is possible with restrictions.
[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.
[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

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

[1] Short-circuit to another channel, U_S or GND for max. 30 s.

Mechanical data

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

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

Ambient data

EMC	EN 61000-6-2, EN 61000-6-3
Enclosure rating	IP65 (EN 60529) [1] IP67 (EN 60529) [1]
Permissible relative humidity	70 % [2]
Temperature	
Operating temperature range	0 °C ... +45 °C [3]
Storage temperature range	–32 °C ... +60 °C, without package
Resistance	
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)

[1] For suitable mating connector and correct mounting of the mating connector.

[2] Condensation on laser modules and screen not permitted.

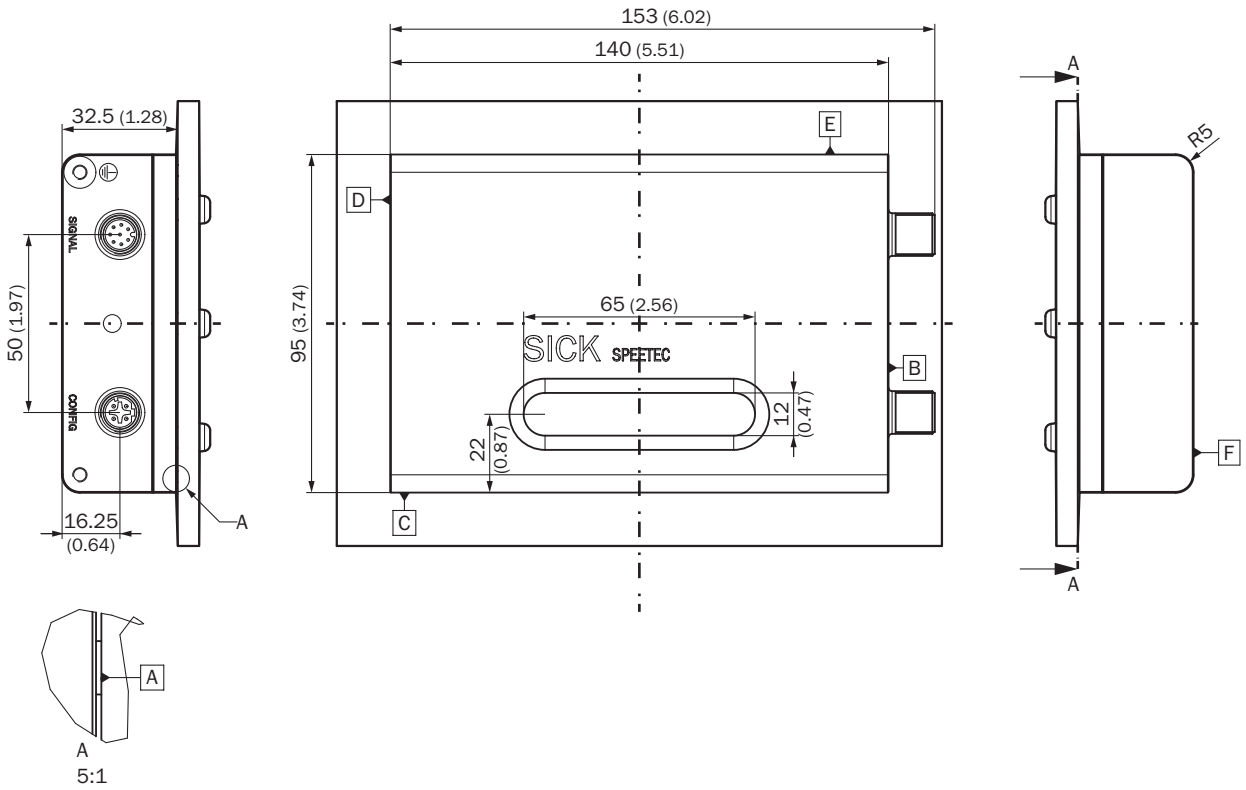
[3] If the permissible temperature range is exceeded, the sensor switches off the laser to protect it against damage. No signal is outputted in this case. The variant with parameterization and diagnostic functions offers the option of monitoring the internal temperature and therefore the reserves up until the point of switching off.

Classifications

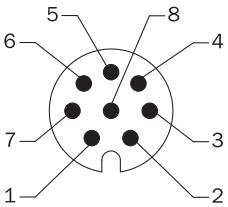
ECl@ss 5.0	27270790
ECl@ss 5.1.4	27270790
ECl@ss 6.0	27270790
ECl@ss 6.2	27270790
ECl@ss 7.0	27270790
ECl@ss 8.0	27270790
ECl@ss 8.1	27270790
ECl@ss 9.0	27270790
ECl@ss 10.0	27270790
ECl@ss 11.0	27270790

Dimensional drawing (Dimensions in mm (inch))

SPEETEC 1D



PIN assignment



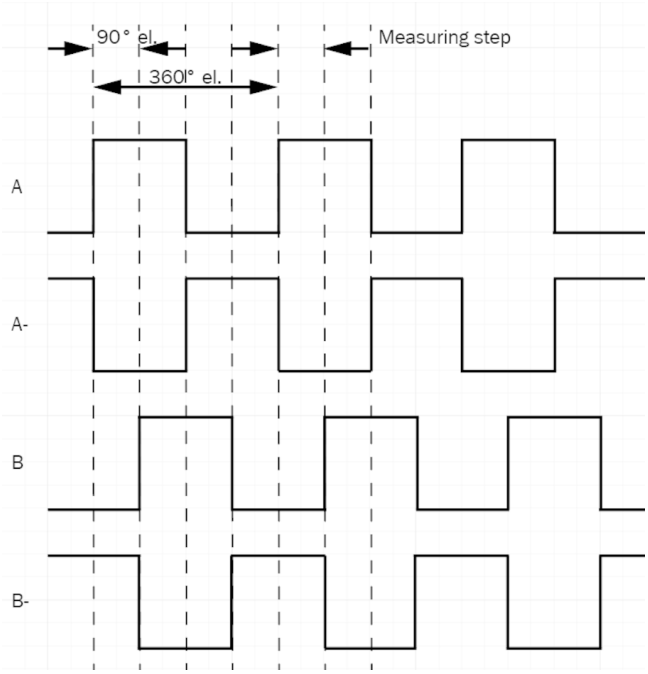
M12 signal male connector, 8-pin and cable, 8-wire

Male connector M12, 8-pin	Wire color	TTL, HTL standard signal	TTL, HTL signal can be programmed	Explanation
1	Brown	A-	A-	Signal cable
2	White	A	A	Signal cable
3	Black	B-	B-	Signal cable
4	Pink	B	B	Signal cable
5	Yellow	Do not wire!	Digital output	Warning: Observe signal variant!
6	Violet	Do not wire!	Digital input	Warning: Observe signal variant!
7	Blue	GND	GND	Ground connection of the sensor
8	Red	$+U_S$	$+U_S$	Supply voltage

Male connector M12, 8-pin	Wire color	TTL, HTL standard signal	TTL, HTL signal can be programmed	Explanation
Screen	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.
Technical data of digital input				
Type	Current Sink Type 1/3			
Input voltage HIGH	15 V ... 30 V			
Input voltage LOW	-3 V ... 5 V			
Input current HIGH	2 mA ... 2.6 mA			
Input current LOW	0 mA ... 2.6 mA			
Technical data of digital output				
Type	Push-Pull Output			
Output voltage HIGH	(U_S –2 V) ... U_S			
Output voltage LOW	0 V ... 2 V			
Output current HIGH	0.5 mA ... 30 mA			

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

	Brief description	Type	Part no.
Alignment aids			
	Laser spot detector map to visualize the SPEETEC NCV50 laser spot for the eye and to determine the correct operating point.	BEF-SPEETEC-LSD	2120614
Optics cloths			
	Cloth for cleaning optical surfaces	Lens cloth	4003353
Terminal and alignment brackets			
	Suitable for NCV50 / SPEETEC. Simplifies mounting of the SPEETEC at the right distance and angle to the surface. Packaging unit: 1 unit, Adjustment aid, screws for mounting the NCV50	BEF-WN-NCV50-ADJST	2117003
Mounting brackets and plates			
	Mounting bracket for MWS120 measuring wheel system and SPEETEC 1D laser surface motion sensors	BEF-WF-MWS-NCV	2113284
	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. The BEF-WN-NCV50 mounting bracket can be combined with the BEF-WF-MWS120 mounting bracket. This makes it possible to mount on the machine frame., Mounting bracket, screws for mounting the NCV50	BEF-WN-NCV50 mounting bracket	2117456
Plug connectors and cables			
	Head A: cable Head B: Flying leads Cable: SSI, Incremental, PUR, shielded	LTG-2411-MW	6027530
	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 DOL-1208-G05MAD3	6032867 2121359
	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 Cable: shielded	DOS-1208-GA	6028369

	Brief description	Type	Part no.
	Head A: male connector, M12, 8-pin, straight Cable: shielded	STE-1208-GA	6028370
	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
Photoelectric sensors			
	WTB4SL-3P3261	WTB4SL-3P3261	1058238

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

SICK
Sensor Intelligence.