

HT10

Laser light scanner with background suppression

en 02-2016/08 50130293-01

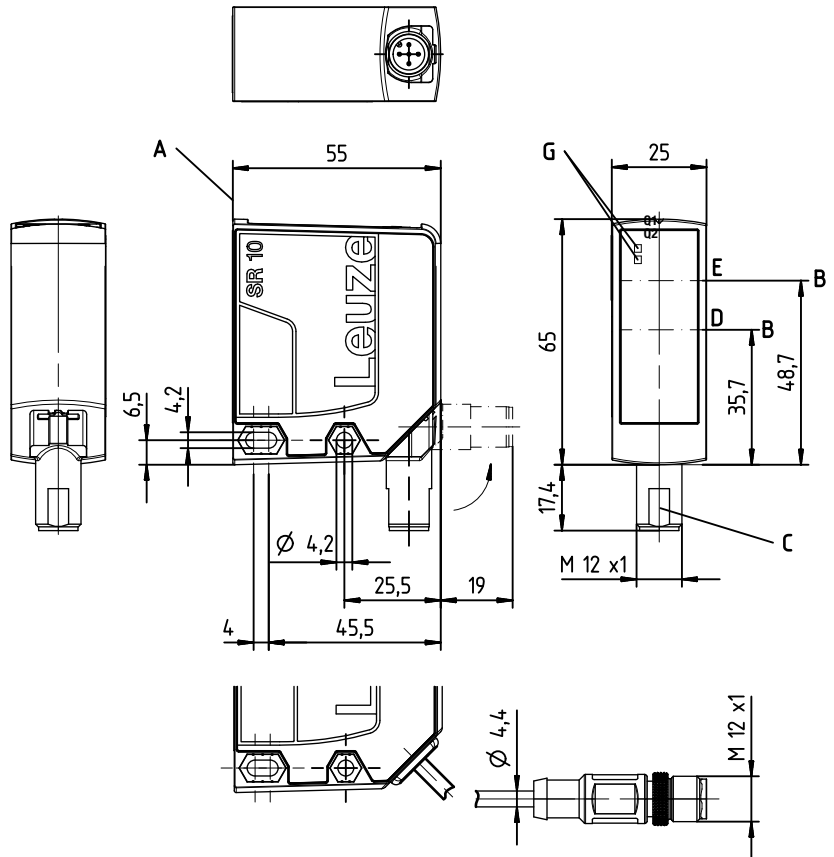


50 ... 25000mm



- The laser light scanner, based on the principle of light propagation time measurement, makes a large detection range and universal application possible
- Optimized for use with reflective tape
- Preset hysteresis and reserve ensure reliable switching behavior
- Extremely simple operation, teachable switching points
- Input for deactivation of the laser
- Minimum teach duration prevents unintentional changing of the switching points

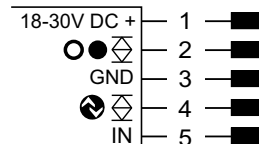
Dimensioned drawing



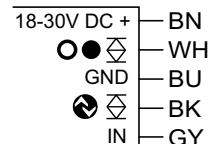
- A Reference edge for the measurement
- B Optical axis
- C Turning M12 connector, 90°
- D Receiver
- E Transmitter
- G Indicator diodes green/red (control panel)
2 x yellow (control panel and lens cover)
- H Key pad

Electrical connection

HT10L1-25M.3/L69-M12
HT10L1-25M.3/L69,200-M12



HT10L1-25M.3/L69



Accessories:

(available separately)

- HighGain reflective tape REF 7-A-100x100 (part no. 50111527)
- Mounting systems
- Cable with M12 connector (K-D ...)
- IO-Link master set
SET MD12-US2-IL1.1 + accessories - diagnostics set (part no. 50121098)

We reserve the right to make changes • DS_HT10_25M_en_50130293_01.fm

Specifications

Optical data

Typ. scanning range limit ^{1) 2)}	50 ... 25000 mm (HighGain reflective tape)
Scanning range ³⁾	50 ... 25000 mm (HighGain reflective tape)
Adjustment range (teach-in range)	50 ... 25000 mm (HighGain reflective tape)
Light source	laser
Laser class	1 (acc. to IEC 60825-1:2007)
Wavelength	658nm (visible red light)
Impulse duration	6ns
Max. output power (peak)	391mW
Light spot	approx. 25x25mm ² at 25m

Error limits

Accuracy ⁴⁾	± 50mm
Reproducibility ⁵⁾	16mm
Temperature drift	± 2 mm/K

Timing

Switching frequency	40Hz
Response time	< 50ms
Delay before start-up	≤ 300ms

Electrical data

Operating voltage U_B ⁶⁾	18 ... 30VDC (incl. residual ripple)
Residual ripple	≤ 15% of U_B
Open-circuit current	≤ 150mA
Switching output	.../...6... push-pull switching output ⁷⁾ , PNP light switching, NPN dark switching
Signal voltage high/low	≥ ($U_B - 2$ V) ≤ 2V
IO-Link	COM2 (38.4kBaud), vers. 1.1, min. cycle time 2.3ms, SIO is supported

Indicators

Green/red LED	green continuous light	ready
	red	no signal
	orange	warning, weak signal
	off	no voltage
Yellow LEDs Q1/Q2	on	object detected
	off	object not detected

Mechanical data

Housing	plastic
Optics cover	glass
Weight	70g (M 12 connector) 133g (2m cable) 90g (cable with M 12 connector)
Connection type	turning M 12 connector, 90° 2m cable, core cross section 5 x 0.14mm ² (5 x 26 AWG) 0.2m cable with M12 connector

Environmental data

Ambient temp. (operation/storage)	-40 °C ... +50 °C/-40 °C ... +70 °C
Protective circuit ⁸⁾	1, 2, 3
VDE safety class	III
Degree of protection	IP 67
Standards applied	IEC 60947-5-2
Certifications	UL 508, CSA C22.2 No.14-13 ^{6) 9)}

Options

Deactivation input

Transmitter inactive/active	≥ 8V/≤ 2V ¹⁰⁾
Activation/disable delay	≥ 20ms
Input resistance	approx. 10kΩ

- 1) Typ. scanning range limit: guaranteed scanning range against 90% at maximum setting
- 2) Sensor is optimized for reflective tape
- 3) Scanning range: recommended range with function reserve
- 4) Measurement on HighGain tape REF 7-A-100x100 (part no. 50111527), identical environmental conditions, "Speed" operating mode, after 20min warmup time.
- 5) Same object, identical environmental conditions, "Speed" operating mode, measuring value noise 1 sigma, after 20 min. warmup time, measurement object ≥ 50x50mm²
- 6) For UL applications: use is permitted exclusively in Class 2 circuits according to NEC
- 7) The push-pull switching outputs must not be connected in parallel
- 8) 1=transient protection, 2=polarity reversal protection, 3=short circuit protection for all outputs
- 9) These proximity switches shall be used with UL Listed Cable assemblies rated 30V, 0.5A min, in the field installation, or equivalent (categories: CYJV/CYJV7 or PVVA/PVVA7)
- 10) Upon deactivation of the laser, the outputs become inactive

Remarks

- You can download the IO Device Description (IODD file) and the *Sensor Studio* configuration software (requires IO-Link USB master) from the Internet at www.leuze.com.

Tables

Switching points ¹⁾	no reflection	object detected
Yellow LED Q 1	off	on
Yellow LED Q 2	off	on

1) applies for object teach

Remarks

Adjusting the switching points

- Object teach:**
Align sensor with object.
Q1: Press teach button 1 for approx. 2s.
Q2: Press teach button 2 for approx. 2s.
Switching point is taught.
Object is detected if the respective Q1/Q2 indicator illuminates.
- Teach against background:**
Point sensor at background.
Q1: Press teach button 1 for approx. 7s.
Q2: Press teach button 2 for approx. 7s.
Switching point is taught.
Reflective tape between sensor and background is detected. After teaching, indicators Q1/Q2 are off. If object/reflective tape is detected, the corresponding indicator illuminates.
- Hysteresis:**
To ensure continuous object detection in the switching point, the sensor has a switch hysteresis.
Object is no longer detected if: distance to sensor > teach point + hysteresis + reserve.
- Factory setting:**
Hysteresis: approx. 150mm,
Reserve: approx. 150mm.
Both values can be changed on request.

Operate in accordance with intended use!

- ⚠ This product is not a safety sensor and is not intended as personnel protection.
- ⚠ The product may only be put into operation by competent persons.
- ⚠ Only use the product in accordance with the intended use.

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Laser safety notices



ATTENTION, LASER RADIATION – LASER CLASS 1

The device satisfies the requirements of IEC 60825-1:2007 (EN 60825-1:2007) safety regulations for a product in **laser class 1** as well as the U.S. 21 CFR 1040.10 regulations with deviations corresponding to "Laser Notice No. 50" from June 24th, 2007.

⚠ Adhere to the applicable legal and local regulations regarding protection from laser beams.

⚠ The device must not be tampered with and must not be changed in any way.

There are no user-serviceable parts inside the device.

Repairs must only be performed by Leuze electronic GmbH + Co. KG.

IO-Link process data format

(IO-Link 1.1, M-sequence TYPE_2_1)

Output data device (8 bit)

Data bit								Assignment	Meaning
7	6	5	4	3	2	1	0		
								Switching output Q1	0 = inactive, 1 = active
								Switching output Q2	0 = inactive, 1 = active
								Switching output Q3	0 = inactive, 1 = active (if Q3 not present = 0)
								Measurement	0 = initialization/teach/deactivation, 1 = running measurement
								Signal	0 = no signal or signal too weak, 1 = signal ok
								Warning	0 = no warning, 1 = warning, e.g., weak signal
								0	not assigned (initial state = 0)
								0	not assigned (initial state = 0)

Input data device

None

Part number code

H	T	1	0	L	1	-	2	5	M	.	3	/	L	6	9	,	2	0	0	-	M	1	2
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Operating principle

HT Laser light scanner with background suppression

Series

10 Series 10

Laser class

L1 Laser class 1 (acc. to IEC 60825-1:2007)

Measurement range

25M Extended detection range 50 ... 25000mm, measurement on HighGain tape REF 7-A-100x100

Equipment

3 Membrane keyboard for teach-in

Assignment pin 4

L IO-Link (with dual channel, also push/pull switching output)

Assignment pin 2

6 Push/pull switching output

Assignment pin 5

9 Deactivation input (factory setting) or teach input (> 8VDC, configurable)

6 Push/pull switching output

X Do not connect

Electrical connection

-M12 M12 connector, 5-pin

,YYYY Cable, length YYYYmm with wire-end sleeves, 5-wire (not specified = standard length 2000mm)

,200-M12 Cable, length 200mm with M12 connector, 5-pin

Order guide

Connection: M12 connector, 5-pin

IO-Link 1.1/switching output, 1 push/pull switching output, deactivation input

Designation

HT10L1-25M.3/L69-M12

Part no.

50129541

Connection: cable, length 2000mm with wire-end sleeves, 5-wire

IO-Link 1.1/switching output, 1 push/pull switching output, deactivation input

HT10L1-25M.3/L69

50129547

Connection: cable, length 200mm with M12 connector, 5-pin

IO-Link 1.1/switching output, 1 push/pull switching output, deactivation input

HT10L1-25M.3/L69,200-M12

50129552

Accessories

HighGain reflective tape, 100mm x 100mm, self-adhesive

REF 7-A-100x100

50111527

Mounting system for mounting on rods Ø 10mm

BTU 460M-D10

50128379

Mounting system for mounting on rods Ø 12mm

BTU 460M-D12

50128380

Connection cable with M12 connector, angled, 5-pin, length 2m, PVC sheathing (many other connection cables are available)

K-D M12W-5P-2m-PVC

50104556

IO-Link master set

SET MD12-US2-IL1.1 + accessories - diagnostics set

50121098