

## Technical data sheet

### Diffuse sensor with background

Part no.: 50138062

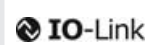
HT110L1.3/L6T-M12

#### Contents

- Technical data
- Dimensioned drawings
- Electrical connection
- Diagrams
- Operation and display
- Part number code
- Notes
- Further information
- Accessories



Figure can vary



## Technical data

### Basic data

Series	110
Operating principle	Diffuse reflection principle with background suppression
Application	Compartment fine positioning Danger zone guarding Push-through protection in pallet warehouse

### Optical data

Black-white error	Black/white shift 6%/90% and gray/white shift 18%/90%: $\pm 40$ mm
Operating range	Guaranteed operating range
Operating range, white 90%	0 ... 5 m
Operating range, black 6%	0.05 ... 3 m
Operating range limit	Typical operating range
Operating range limit	0 ... 5 m
Adjustment range	60 ... 5,000 mm
Beam path	Collimated
Light source	Laser, Red
Laser light wavelength	655 nm
Laser class	1, IEC/EN 60825-1:2007
Max. laser power	0.391 W
Transmitted-signal shape	Pulsed
Pulse duration	0.006 $\mu$ s
Light spot size [at sensor distance]	4 mm x 5 mm [3,000 mm]
Type of light spot geometry	Oval

### Electrical data

Protective circuit	Polarity reversal protection Short circuit protected
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#### Performance data

Supply voltage $U_B$	18 ... 30 V, DC
Residual ripple	15 %, From $U_B$
Open-circuit current	60 mA
Switching hysteresis	20 mm

#### Inputs

Number of teach inputs	1 Piece(s)
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#### Teach inputs

Voltage type	DC
Switching voltage	high: $+U_B$

#### Teach input 1

Assignment	Connection 1, pin 5
Active switching state	High

#### Outputs

Number of digital switching outputs	2 Piece(s)
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#### Switching outputs

Voltage type	DC
Switching current, max.	100 mA
Switching voltage	high: $\geq(U_B-2V)$

#### Switching output 1

Assignment	Connection 1, pin 4
Switching element	Transistor, Push-pull
Switching principle	IO-Link / light switching (PNP)/dark switching (NPN)

#### Switching output 2

Assignment	Connection 1, pin 2
Switching element	Transistor, Push-pull
Switching principle	Light switching (PNP)/dark switching (NPN)

### Timing

Switching frequency	500 Hz
Response time	1 ms
Readiness delay	5,000 ms

### Interface

Type	IO-Link
<b>IO-Link</b>	
COM mode	COM2
Profile	Common Profile
Frame type	2.2
Port type	A
Specification	V1.1
Device ID	0x00087E
SIO-mode support	Yes
Process data IN	2 bytes
Process data OUT	2 bytes
Dual-core operating mode	No
Min. cycle time	COM2 = 2.3 ms

### Connection

#### Connection 1

Function	Signal IN Signal OUT Voltage supply
Type of connection	Connector, Turning, 90°
Thread size	M12
Type	Male
Material	Plastic
No. of pins	5 -pin
Encoding	A-coded

### Mechanical data

Dimension (W x H x L)	23 mm x 50 mm x 50 mm
Housing material	Plastic
Plastic housing	ABS
Lens cover material	Plastic / PMMA
Net weight	42 g
Housing color	Red
Type of fastening	Through-hole mounting Via optional mounting device

### Operation and display

Type of display	LED
Number of LEDs	2 Piece(s)
Operational controls	Control buttons PC software
Function of the operational control	Range adjustment

### Environmental data

Ambient temperature, operation	-40 ... 60 °C
Ambient temperature, storage	-40 ... 80 °C

## Technical data

### Certifications

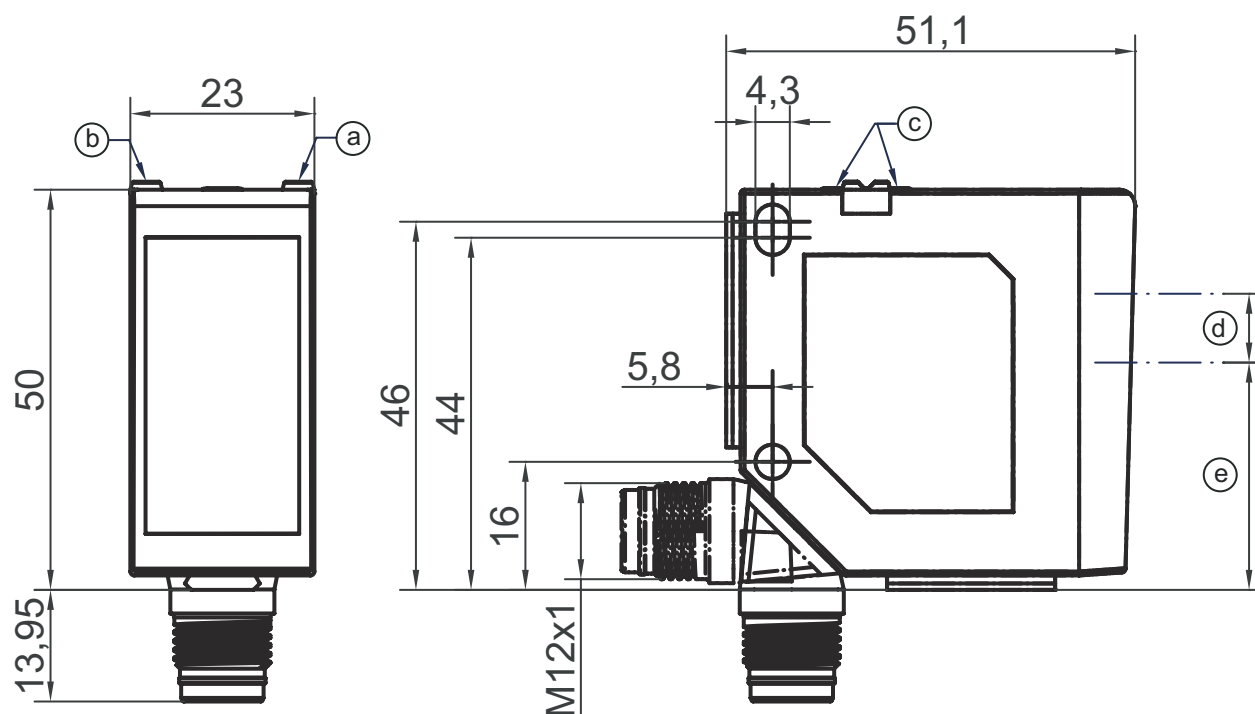
Degree of protection	IP 67
	IP 69K
Protection class	II
Certifications	c UL US
Standards applied	IEC/EN 60947-5-2

### Classification

Customs tariff number	90318080
eCl@ss 5.1.4	27270904
eCl@ss 8.0	27270904
eCl@ss 9.0	27270904
eCl@ss 10.0	27270904
eCl@ss 11.0	27270904
ETIM 5.0	EC002719
ETIM 6.0	EC002719
ETIM 7.0	EC002719

## Dimensioned drawings

All dimensions in millimeters



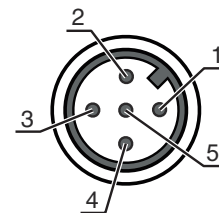
- a Yellow LED
- b Green LED
- c Control buttons
- d Transmitter
- e Receiver

# Electrical connection

## Connection 1

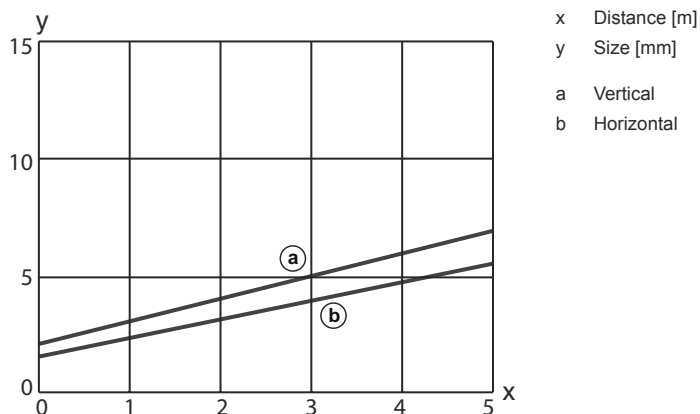
Function	Signal IN
	Signal OUT
	Voltage supply
Type of connection	Connector
Thread size	M12
Type	Male
Material	Plastic
No. of pins	5 -pin
Encoding	A-coded

Pin	Pin assignment
1	V+
2	OUT 2
3	GND
4	IO-Link / OUT 1
5	Teach-in



## Diagrams

### Light spot size



## Operation and display

LED	Display	Meaning
1	Yellow, continuous light	Switching output/switching state
2	Green, continuous light	Operating voltage applied
	Yellow, continuous light	Switching output/switching state

## Part number code


Part designation: XXX110YY.Z/ABC-DDD

XXX110	<b>Operating principle</b> ODS110: Optical distance sensor HT110: diffuse reflection sensor with background suppression
YY	<b>Light source</b> L1: laser class 1
Z	<b>Equipment</b> 3: Control buttons for configuration

## Part number code


<b>A</b>	<b>Switching output/function OUT 1/IN: Pin 4 or black conductor</b> L: IO-Link interface (SIO mode: PNP light switching, NPN dark switching)
<b>B</b>	<b>Switching output / function OUT 2/IN: pin 2 or white conductor</b> 6: push-pull switching output, PNP light switching, NPN dark switching C: Current output T: teach-in V: Voltage output
<b>C</b>	<b>Switching output / function OUT 3/IN: Pin 5</b> X: pin not used T: teach-in
<b>DDD</b>	<b>Electrical connection</b> M12: M12 connector

### Note


	↪ A list with all available device types can be found on the Leuze website at <a href="http://www.leuze.com">www.leuze.com</a> .
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## Notes


### Observe intended use!

	<ul style="list-style-type: none"> <li>↪ This product is not a safety sensor and is not intended as personnel protection.</li> <li>↪ The product may only be put into operation by competent persons.</li> <li>↪ Only use the product in accordance with its intended use.</li> </ul>
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### WARNING! LASER RADIATION – CLASS 1 LASER PRODUCT

	↪ Observe the applicable statutory and local laser protection regulations.
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### WARNING! LASER RADIATION – CLASS 1 LASER PRODUCT

	<p>The device satisfies the requirements of IEC 60825-1:2007 (EN 60825-1:2007) safety regulations for a product of <b>laser class 1</b> as well as the <b>U.S. 21 CFR 1040.10 regulations with deviations corresponding to "Laser Notice No. 50" from June 24, 2007.</b></p> <ul style="list-style-type: none"> <li>↪ Observe the applicable statutory and local laser protection regulations.</li> <li>↪ 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.</li> </ul>
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### Configuration via IO-Link (see operating instructions)

	↪ Object teach, average value teach for output 1 and 2, dynamic teach
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## Notes

### Configuration via external teach















See operating instructions

## Further information

- Ambient temperature, operation: UL: max. +45°
- Warmup time: minimum 20 min at +24 VDC and an ambient temperature of 20 °C

## Accessories

### Connection technology - Connection cables

	Part no.	Designation	Article	Description
  	50133855	KD S-M12-5A-V1-020	Connection cable	Connection 1: Connector, M12, Axial, Female, A-coded, 5 -pin Connection 2: Open end Shielded: Yes Cable length: 2,000 mm Sheathing material: PVC
  	50133856	KD S-M12-5A-V1-050	Connection cable	Connection 1: Connector, M12, Axial, Female, A-coded, 5 -pin Connection 2: Open end Shielded: Yes Cable length: 5,000 mm Sheathing material: PVC
  	50132077	KD U-M12-5A-V1-020	Connection cable	Connection 1: Connector, M12, Axial, Female, A-coded, 5 -pin Connection 2: Open end Shielded: No Cable length: 2,000 mm Sheathing material: PVC
  	50132079	KD U-M12-5A-V1-050	Connection cable	Connection 1: Connector, M12, Axial, Female, A-coded, 5 -pin Connection 2: Open end Shielded: No Cable length: 5,000 mm Sheathing material: PVC

## Accessories

### Mounting technology - Rod mounts

	Part no.	Designation	Article	Description
	50117252	BTU 300M-D12	Mounting system	Design of mounting device: Mounting system Fastening, at system: For 12 mm rod, Sheet-metal mounting Mounting bracket, at device: Screw type, Suited for M4 screws Type of mounting device: Clampable, Adjustable, Turning, 360° Material: Metal

#### Note



A list with all available accessories can be found on the Leuze website in the Download tab of the article detailed page.