



Figure can vary

**Part no.: 50129384**  
**HT3C.XL/4P**  
**Diffuse sensor with background suppression**



## Contents

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

## Technical data

<b>Basic data</b>	
Series	3C
Operating principle	Scanning principle with background suppression
Application	Detection of transparent films Detection of highly transparent bottles Detection of objects with cutouts and openings
<b>Special design</b>	
Special design	Extra long light spot (XL)
<b>Optical data</b>	
Black-white error	< 10% up to 60 mm
Operating range	Guaranteed operating range
Operating range, white 90%	0.005 ... 0.05 m
Operating range, gray 18%	0.005 ... 0.045 m
Operating range, black 6%	0.005 ... 0.04 m
Operating range limit	Typical operating range
Operating range limit, white 90%	0.005 ... 0.1 m
Operating range limit, gray 18%	0.005 ... 0.09 m
Operating range limit, black 6%	0.005 ... 0.08 m
Adjustment range	20 ... 100 mm
Beam profile	Divergent
Light source	LED, Red
LED light wavelength	633 nm
Transmitted-signal shape	Pulsed
LED protection class	Exempt group (in acc. with EN 62471)
Light-spot size [at sensor distance]	3 mm x 40 mm [50 mm]
Type of light-spot geometry	Rectangular
<b>Electrical data</b>	
Protective circuit	Polarity reversal protection Short circuit protected
<b>Performance data</b>	
Supply voltage	10 ... 30 V, DC, Incl. residual ripple
Residual ripple	0 ... 15 %, From $U_B$
Open-circuit current	0 ... 15 mA

**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	Low: $\leq 2V$ High: $\geq (U_B - 2V)$

**Switching output 1**

Assignment	Connection 1, conductor 4
Switching element	Transistor, PNP
Switching principle	Light switching

**Switching output 2**

Assignment	Connection 1, conductor 2
Switching element	Transistor, PNP
Switching principle	Dark switching

**Timing**

Switching frequency	1,000 Hz
Response time	0.5 ms
Readiness delay	300 ms
Response jitter	166 $\mu$ s

**Connection**
**Connection 1**

Type of connection	Cable
Function	Signal OUT Voltage supply
Cable length	2,000 mm
Sheathing material	PUR
Cable color	Black
Number of conductors	4 -wire
Wire cross section	0.2 mm <sup>2</sup>

**Mechanical data**

Design	Cubic
Dimension (W x H x L)	11.4 mm x 34.2 mm x 18.3 mm
Housing material	Plastic, PC-ABS
Lens cover material	Plastic / PMMA
Net weight	50 g
Housing color	Red
Type of fastening	Through-hole mounting Via optional mounting device
Compatibility of materials	ECOLAB

**Operation and display**

Type of display	LED
Number of LEDs	2 Piece(s)
Operational controls	Multiturn potentiometer
Function of the operational control	Scanning range adjustment

Part no.: 50129384 – HT3C.XL/4P – Diffuse sensor with background suppression

#### **Environmental data**

Ambient temperature, operation	-40 ... 60 °C
Ambient temperature, storage	-40 ... 70 °C

#### **Certifications**

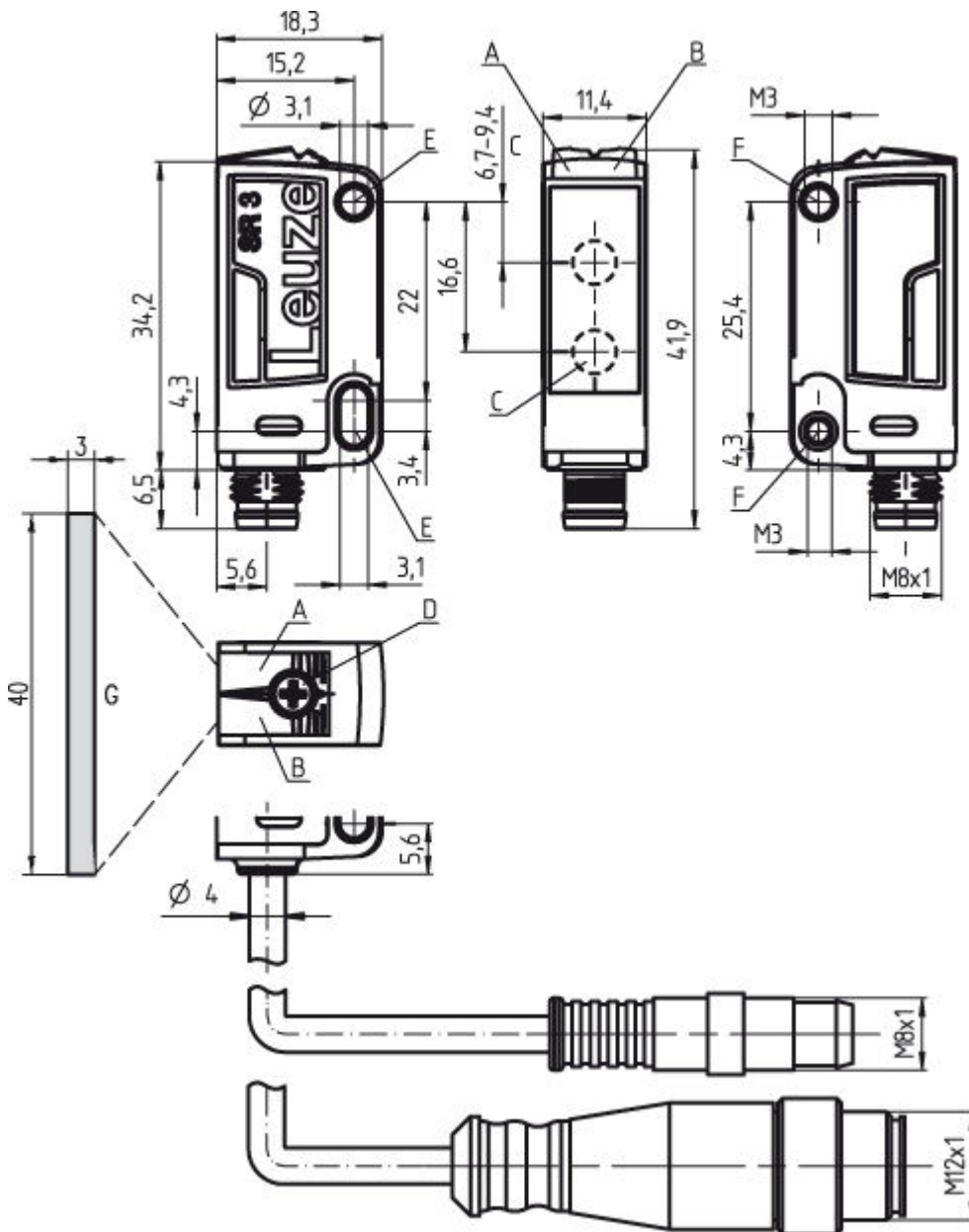
Degree of protection	IP 67 IP 69K
Protection class	III
Certifications	c UL US
Standards applied	IEC 60947-5-2

#### **Classification**

eCl@ss 8.0	27270904
eCl@ss 9.0	27270904
ETIM 5.0	EC002719

## **Dimensioned drawings**

All dimensions in millimeters



- A Green LED
- B Yellow LED
- C Optical axis
- D Multiturn potentiometer
- E Mounting sleeve (standard)
- F Threaded sleeve (3C.B series)
- G Light spot 3 mm x 40 mm at a scanning range of 70 mm

## Electrical connection

Connection 1	
Type of connection	Cable
Function	Signal OUT Voltage supply
Cable length	2,000 mm
Sheathing material	PUR
Cable color	Black

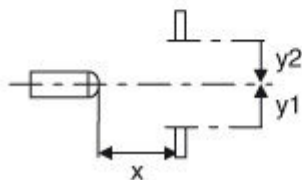
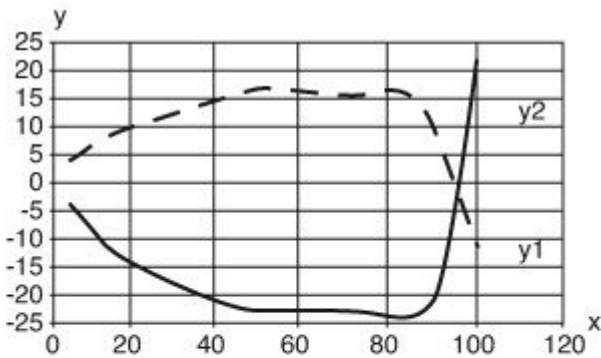
Part no.: 50129384 – HT3C.XL/4P – Diffuse sensor with background suppression

Connection 1	
Number of conductors	4 -wire
Wire cross section	0.2 mm <sup>2</sup>

Conductor color	Conductor assignment
Brown	V+
White	OUT 2
Blue	GND
Black	OUT 1

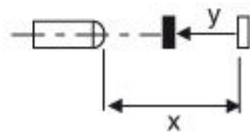
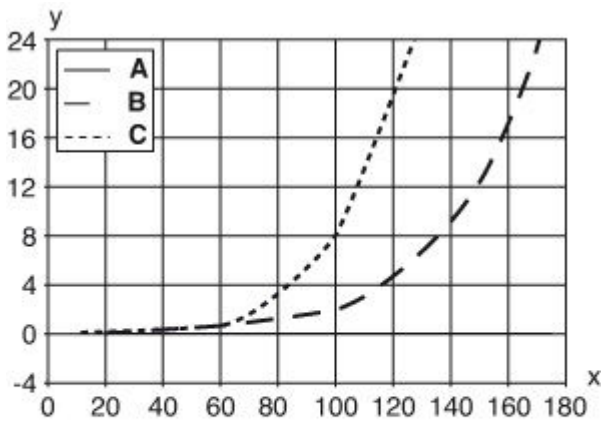
### Diagrams

Typ. response behavior (white 90 %)



x Distance [mm]  
y Misalignment [mm]

### Typ. black/white behavior



- x Range [mm]
- y Reduction of range [mm]
- A White 90%
- B Gray 18%
- C Black 6%

## Operation and display

### LEDs

LED	Display	Meaning
1	Green, continuous light	Operational readiness
2	Yellow, continuous light	Object detected

## Part number code

Part designation: **AAA 3C d EE-f.GG H/i J-K-L**




AAA3C	<b>Operating principle / construction:</b> HT3C: diffuse reflection sensor with background suppression LS3C: throughbeam photoelectric sensor transmitter LE3C: throughbeam photoelectric sensor receiver PRK3C: retro-reflective photoelectric sensor with polarization filter
d	<b>Light type:</b> n/a: red light l: infrared light
EE	<b>Light source:</b> n/a: LED L1: laser class 1 L2: laser class 2
f	<b>Pre-set scanning range (optional):</b> n/a: operating range acc. to data sheet XXXX: pre-set scanning range [mm]

**Part no.: 50129384 – HT3C.XL/4P – Diffuse sensor with background suppression**

GG	<b>Equipment:</b> n/a: standard A: autocollimation principle (single lens) for positioning tasks B: housing model with two M3 threaded sleeves, brass F: permanently set scanning range L: long light spot S: small light spot T: autocollimation principle (single lens) for highly transparent bottles without tracking TT: autocollimation principle (single lens) for highly transparent bottles with tracking V: V-optics XL: extra long light spot
H	<b>Operating range adjustment:</b> n/a with HT: scanning range adjustable via 8-turn potentiometer 1: 270° potentiometer 3: teach-in via button 6: auto-teach
i	<b>Switching output/function OUT 1/IN: Pin 4 or black conductor:</b> 2: NPN transistor output, light switching N: NPN transistor output, dark switching 4: PNP transistor output, light switching P: PNP transistor output, dark switching 6: push-pull switching output, PNP light switching, NPN dark switching G: push-pull switching output, PNP dark switching, NPN light switching L: IO-Link 8: activation input (activation with high signal) X: not connected (n. c.)
J	<b>Switching output / function OUT 2/IN: pin 2 or white conductor:</b> 2: NPN transistor output, light switching N: NPN transistor output, dark switching 4: PNP transistor output, light switching P: PNP transistor output, dark switching 6: push-pull switching output, PNP light switching, NPN dark switching G: push-pull switching output, PNP dark switching, NPN light switching W: warning output X: not connected (n. c.) 8: activation input (activation with high signal) 9: deactivation input (deactivation with high signal) T: teach-in via cable
K	<b>Electrical connection:</b> n/a: cable, PVC, standard length 2000 mm, 4-wire 5000: cable, PVC, standard length 5000 mm, 4-wire M8: M8 connector, 4-pin (plug) M8.3: M8 connector, 3-pin (plug) 200-M8: cable, PVC, length 200 mm with M8 connector, 4-pin, axial (plug) 200-M8.3: cable, PVC, length 200 mm with M8 connector, 3-pin, axial (plug) 200-M12: cable, PVC, length 200 mm with M12 connector, 4-pin, axial (plug)



## Accessories

### Mounting technology - Mounting brackets





	Part no.	Designation	Article	Description
	50118542	BT 200M.5	Mounting bracket	Design of mounting device: Angle, L-shape Mounting bracket, at system: Through-hole mounting Mounting bracket, at device: Screw type Type of mounting device: Adjustable Material: Stainless steel
	50124651	BT 205M	Mounting device set	Contains: 10x Design of mounting device: Angle, L-shape Mounting bracket, at system: Through-hole mounting Mounting bracket, at device: Screw type Type of mounting device: Rigid Material: Metal
	50060511	BT 3	Mounting device	Design of mounting device: Angle, L-shape Mounting bracket, at system: Through-hole mounting Mounting bracket, at device: Screw type Type of mounting device: Rigid Material: Metal



**Part no.: 50129384 – HT3C.XL/4P – Diffuse sensor with background suppression**

	Part no.	Designation	Article	Description
	50105585	BT 3.1	Mounting strap set	Contains: 10x Design of mounting device: Retaining clip Mounting bracket, at system: Through-hole mounting Mounting bracket, at device: Screw type Type of mounting device: Rigid Material: Metal
	50105546	BT 3B	Mounting device	Design of mounting device: Angle, L-shape Mounting bracket, at system: Through-hole mounting Mounting bracket, at device: Screw type Type of mounting device: Rigid Material: Metal

**Mounting technology - Rod mounts**

	Part no.	Designation	Article	Description
	50117256	BTU 200M-D10	Mounting system	Contains: 2x M3 x 18 screw, 2x position washers Design of mounting device: Mounting system Mounting bracket, at system: For 10 mm rod, Sheet-metal mounting Mounting bracket, at device: Screw type Type of mounting device: Clampable, Adjustable, Turning, 360° Material: Metal
	50117255	BTU 200M-D12	Mounting system	Contains: 2x M3 x 18 screw, 2x position washers Design of mounting device: Mounting system Mounting bracket, at system: For 12 mm rod, Sheet-metal mounting Mounting bracket, at device: Screw type Type of mounting device: Clampable, Adjustable, Turning, 360° Material: Metal
	50117254	BTU 200M-D14	Mounting system	Contains: 2x M3 x 18 screw, 2x position washers Design of mounting device: Mounting system Mounting bracket, at system: For 14 mm rod, Sheet-metal mounting Mounting bracket, at device: Screw type Type of mounting device: Clampable, Adjustable, Turning, 360° Material: Metal
	50120426	BTU 200M.5-D12	Mounting system	Contains: 2x M3 x 18 screw, 2x M3 mounting nut, 2x position washers Design of mounting device: Mounting system Mounting bracket, at system: For 12 mm rod Mounting bracket, at device: Screw type Type of mounting device: Turning, 360°, Clampable, Adjustable Material: Stainless steel

**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>

**For UL applications:**

- For UL applications, use is only permitted in Class 2 circuits in accordance with the NEC (National Electric Code).
- 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)

- Light source: Average life expectancy 100,000 h at an ambient temperature of 25 °C
- Response time: For short decay times, an ohmic load of approx. 5 kOhm is recommended
- Sum of the output currents for both outputs, 50 mA for ambient temperatures > 40 °C