



Figure can vary

**Part no.: 50138204**  
**HT3C.BVXL/4P-200-M12**  
**Diffuse sensor with background suppression**



## Contents

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

## Technical data

<b>Basic data</b>	
Series	3C
Operating principle	Diffuse reflection principle with background suppression
Application	Detection of highly transparent bottles Detection of objects with openings Detection of transparent films
<b>Special design</b>	
Special design	Extra long light spot (XL) V-optics
<b>Optical data</b>	
Black-white error	< 20% up to 80 mm
Operating range	Guaranteed operating range
Operating range, white 90%	0.01 ... 0.08 m
Operating range, gray 18%	0.012 ... 0.07 m
Operating range, black 6%	0.012 ... 0.06 m
Operating range limit	Typical operating range
Operating range limit, white 90%	0.01 ... 0.09 m
Operating range limit, gray 18%	0.012 ... 0.075 m
Operating range limit, black 6%	0.012 ... 0.065 m
Adjustment range	20 ... 90 mm
Beam profile	Divergent
Light source	LED , Red
LED light wavelength	633 nm
Transmitted-signal shape	Pulsed
LED group	Exempt group (in acc. with EN 62471)
Light-spot size [at sensor distance]	5 mm x 40 mm [70 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 $U_B$	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	High: $\geq(U_B-2V)$ Low: $\leq 2V$

**Switching output 1**

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

**Switching output 2**

Assignment	Connection 1, pin 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 with connector
Function	Signal OUT Voltage supply
Cable length	200 mm
Sheathing material	PUR
Cable color	Black
Wire cross section	0.2 mm <sup>2</sup>
Thread size	M12
Type	Male
Material	Metal
No. of pins	4 -pin
Encoding	A-coded

**Mechanical data**

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	20 g
Housing color	Red
Type of fastening	Two M3 threaded sleeves Via optional mounting device
Compatibility of materials	ECOLAB

**Operation and display**

Type of display	LED
Number of LEDs	2 Piece(s)

**Part no.: 50138204 – HT3C.BVXL/4P-200-M12 – Diffuse sensor with background**

Operational controls	Multiturn potentiometer
Function of the operational control	Range adjustment

**Environmental data**

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

**Certifications**

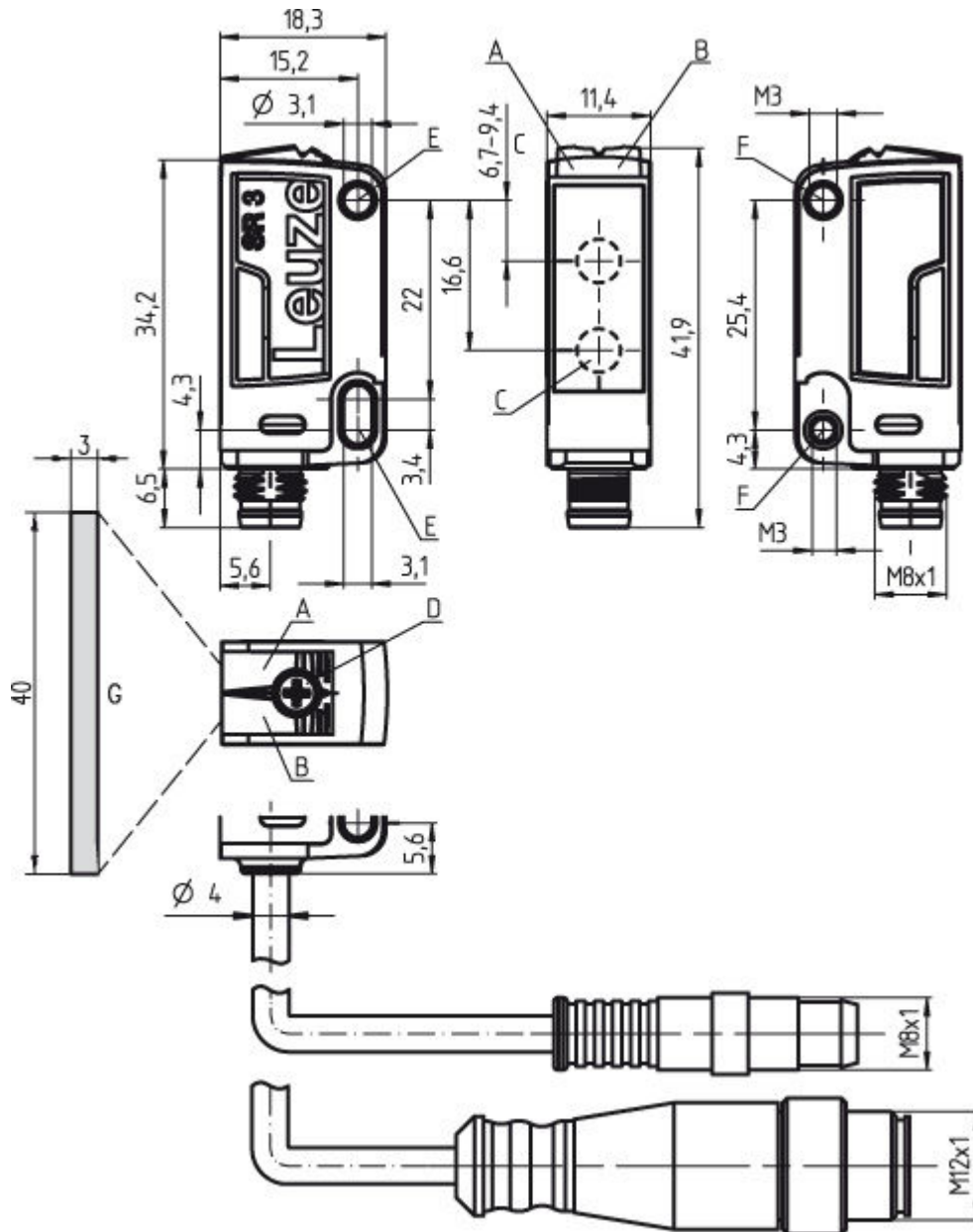
Degree of protection	IP 67 IP 69K
Protection class	III
Certifications	c UL US
Standards applied	IEC 60947-5-2

**Classification**

Customs tariff number	85365019
eCl@ss 8.0	27270904
eCl@ss 9.0	27270904
ETIM 5.0	EC002719
ETIM 6.0	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 range of 50 mm

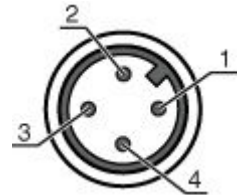
## Electrical connection

Connection 1	
Type of connection	Cable with connector
Function	Signal OUT Voltage supply
Cable length	200 mm
Sheathing material	PUR
Cable color	Black

Part no.: 50138204 – HT3C.BVXL/4P-200-M12 – Diffuse sensor with background

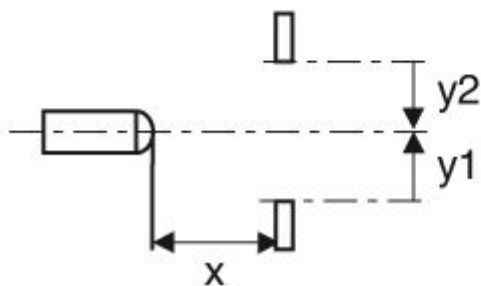
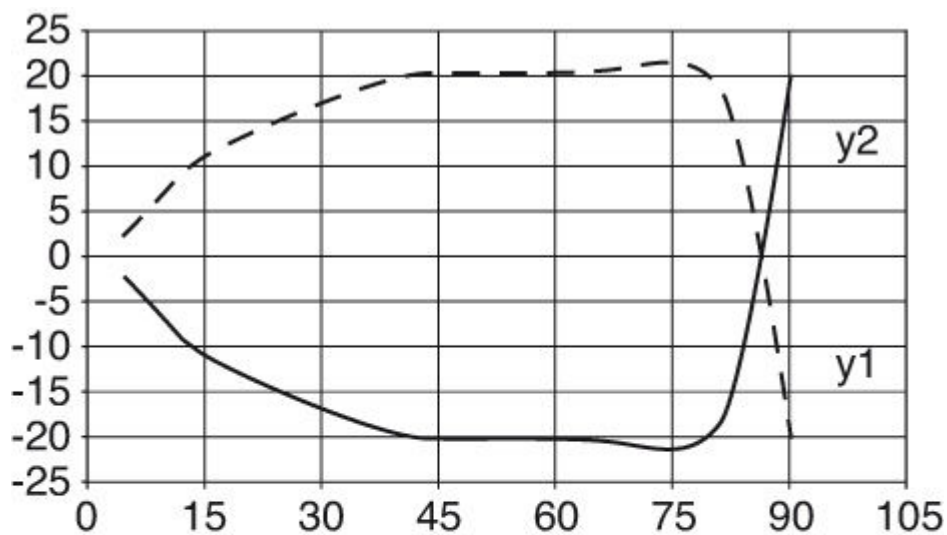
Connection 1	
Wire cross section	0.2 mm <sup>2</sup>
Thread size	M12
Type	Male
Material	Metal
No. of pins	4 -pin
Encoding	A-coded

Pin	Pin assignment
1	V+
2	OUT 2
3	GND
4	OUT 1



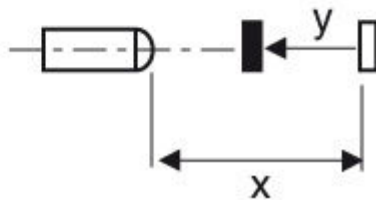
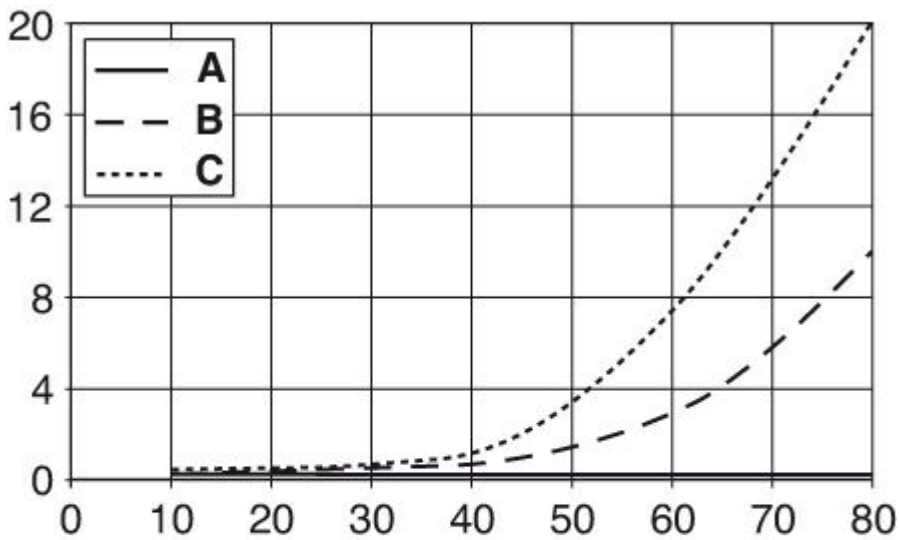
## Diagrams

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

AAA3C	<p><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</p>
d	<p><b>Light type:</b>                      n/a: red light                      I: infrared light</p>

**Part no.: 50138204 – HT3C.BVXL/4P-200-M12 – Diffuse sensor with background**

EE	<b>Light source:</b> n/a: LED L1: laser class 1 L2: laser class 2
f	<b>Pre-set range (optional):</b> n/a: operating range acc. to data sheet XXXX: pre-set range [mm]
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 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: range adjustable via 8-turn potentiometer n/a with retro-reflective photoelectric sensors (PRK): operating range not adjustable 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: pin not used
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: pin not used 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, standard length 2000 mm, 4-wire 5000: cable, standard length 5000 mm, 4-wire M8: M8 connector, 4-pin (plug) M8.3: M8 connector, 3-pin (plug) 200-M8: cable, length 200 mm with M8 connector, 4-pin, axial (plug) 200-M8.3: cable, length 200 mm with M8 connector, 3-pin, axial (plug) 200-M12: cable, length 200 mm with M12 connector, 4-pin, axial (plug)

**Note**

A list with all available device types can be found on the Leuze electronic website at [www.leuze.com](http://www.leuze.com).

**Notes**
**Observe 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 its intended use.

## Part no.: 50138204 – HT3C.BVXL/4P-200-M12 – Diffuse sensor with background



### 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

## Accessories


### Connection technology - Connection cables

	Part no.	Designation	Article	Description
	50130652	KD U-M12-4A-V1-050	Connection cable	Connection 1: Connector, M12, Axial, Female, A-coded, 4 -pin Connection 2: Open end Shielded: No Cable length: 5,000 mm Sheathing material: PVC
	50130690	KD U-M12-4W-V1-050	Connection cable	Connection 1: Connector, M12, Angled, Female, A-coded, 4 -pin Connection 2: Open end Shielded: No Cable length: 5,000 mm Sheathing material: PVC

### Mounting technology - Mounting brackets

	Part no.	Designation	Article	Description
	50060511	BT 3	Mounting device	Design of mounting device: Angle, L-shape Fastening, 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
	50117255	BTU 200M-D12	Mounting system	Contains: 2x M3 x 16 screw, 2x M3 x 20 screw, 2x position washers Design of mounting device: Mounting system Fastening, 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