

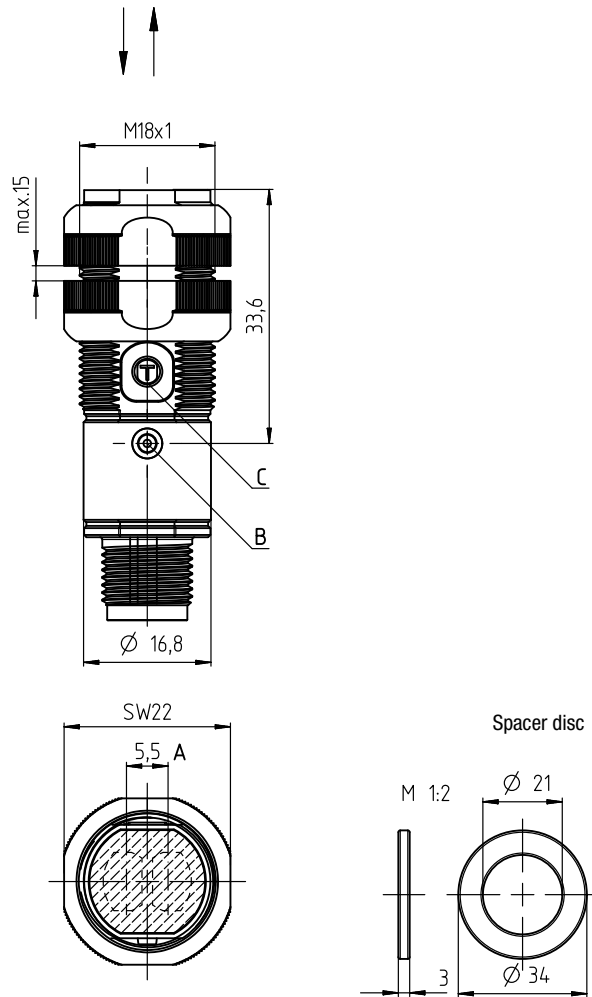
FT318BI X3

Diffuse reflection light scanners with intensified fading

en 01-2016/06 50134387

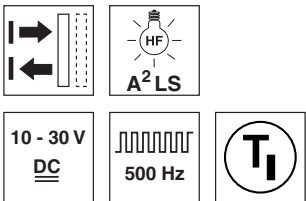


Dimensioned drawing



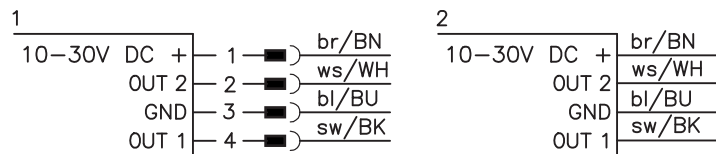
- A** Optical axes
- B** Indicator diode
- C** Teach button

1 ... 130mm



- Reflection light scanner with intensified fading
- V-optics allow for reliable detection of dark objects in the short range
- Scanning range adjustment via teach-in
- Infrared light for universal use
- Active suppression of extraneous light A²LS
- Simple fine adjustment via *omni-mount*
- Embedded mounting option
- Full control through green and yellow indicator LEDs
- Robust plastic housing acc. to IP 67 for industrial application

Electrical connection



**Zubehör:
Accessories:**

(available separately)

- Mounting systems (BT D18M.5, BT D21M, BT 318...)
- M12 connectors (KD ...)
- Ready-made cables (K-D ...)

We reserve the right to make changes • DS_FT318BI_X3_en_50134387.fm



Specifications

Optical data

Scanning range limit ¹⁾	1 ... 130mm
Scanning range ²⁾	1 ... 110mm
Light source	LED (modulated light)
Wavelength	850nm (infrared light)

Timing

Switching frequency	500Hz
Response time	1ms
Delay before start-up	≤ 300ms

Electrical data

Operating voltage U_B ³⁾	10 ... 30VDC (incl. residual ripple)
Residual ripple	≤ 15% of U_B
Open-circuit current	≤ 20mA
Switching output	.../4P... 2 PNP transistor outputs pin 2: PNP dark switching, pin 4: PNP light switching .../2N... 2 NPN transistor outputs pin 2: NPN dark switching, pin 4: NPN light switching
Signal voltage high/low	≥ ($U_B - 2.5V$) / ≤ 2.5V
Output current	max. 100mA ⁴⁾

Indicators

Green LED	ready
Yellow LED	reflection (object detected)

Mechanical data

Housing	plastic
Optics cover	plastic
Weight	20g with M12 connector 70g with 2m cable
Connection type	M12 connector, 4-pin cable 2m, 4x0.20mm ²

Environmental data

Ambient temp. (operation/storage)	-40°C ... +60°C / -40°C ... +70°C
Protective circuit ⁵⁾	2, 3
VDE safety class	III
Protection class	IP 67
Light source	exempt group (in acc. with EN 62471)
Standards applied	IEC 60947-5-2
Certifications	UL 508, C22.2 No.14-13 ³⁾ 6)

- 1) Scanning range limit: typical scanning range
- 2) Scanning range: ensured scanning range
- 3) For UL applications: for use in class 2 circuits according to NEC only
- 4) Sum of the output currents for both outputs, 50mA when ambient temperatures > 40°C
- 5) 2=polarity reversal protection, 3=short circuit protection for all outputs
- 6) 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)



Fading: black/white error < 50%

The black/white error is calculated from the scanning range against white and the reduction of the scanning range against black:

$$\text{black/white-error} = \frac{\text{Reduction of the scanning range against black}}{\text{Scanning range against white}} \times 100\%$$

Example:

Setting: "teach on object" at 100mm on white 90%

- Detection:

Black object, 6%, is detected at approx. 65mm, the black/white error here is:
35mm / 100mm x 100% = 35%

Setting: "teach on object" at 50mm on black 6%

- Situation in background:

White object, 90%, is no longer detected at distance > 80mm, the black/white error here is:
30mm / 80mm x 100% = 37.5%

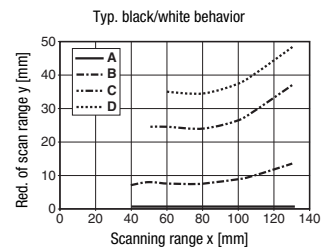
Tables

1	1	110	130
2	1	100	120
3	3	80	100
4	5	70	85

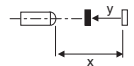
1	white 90%
2	gray 50%
3	gray 18%
4	black 6%

□	Scanning range [mm]
■	Typ. scanning range limit [mm]

Diagrams



- A white 90%
- B gray 50%
- C gray 18%
- D black 6%



Remarks

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.

- With the set scanning range, a tolerance of the scanning range limits is possible depending on the reflection properties of the material surface.

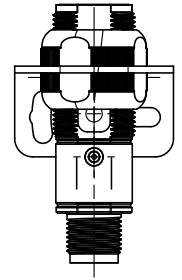
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Mounting options

Standard mounting

Alignment of the supplied mounting nuts with flat side towards the mounting sheet.
Mounting bracket BT D18M.5 is recommended for standard mounting.

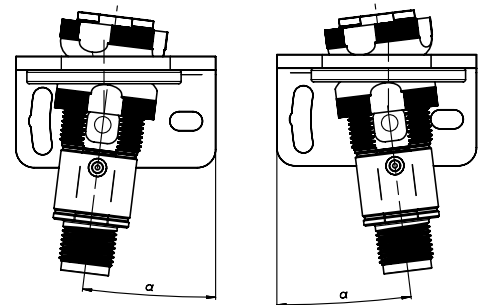


Omni-mount

Omni-mount makes fine adjustment of the sensors possible in a very simple and economical manner. For this type of mounting, the mounting nuts are used with the round side towards the mounting device. The mounting sheet must have a bore hole of approx. 21 mm in diameter. The special molding of the mounting nuts together with the spacer disc included in the delivery contents allows form-locking fastening of the sensors at different adjustment angles. The maximum possible tilt angle depends on the thickness of the mounting sheet. Mounting bracket BT D21M is recommended for *omni-mount*.

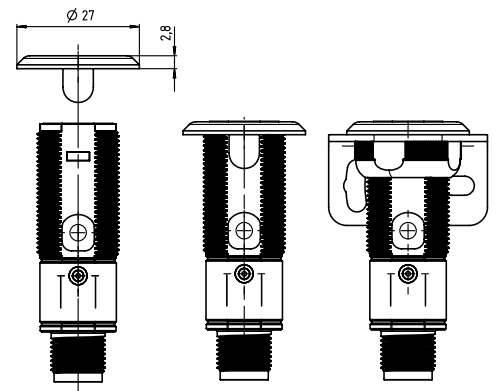
Mounting sheet thickness	Max. adjustment angle
2 mm	+/- 5°
4 mm ^{*)}	+/- 8°

^{*)} Corresponds to the thickness of the BT D21M mounting bracket



Embedded mounting

Embedded mounting, e.g. into a materials handling belt, is possible via the BT 318P-LS mounting support. The supports can be used either for fastening the axial sensors or for sensors with 90° optics.



Order guide

The sensors listed here are preferred types; current information at www.leuze.com.

		Designation	Part no.
Sensors with axial optics			
With M12 connector	Pin 4: PNP light switching, pin 2: PNP dark switching	FT318BI.X3/4P-M12	50133945
	Pin 4: NPN light switching, pin 2: NPN dark switching	FT318BI.X3/2N-M12	50133944
With cable, 2m	Pin 4: PNP light switching, pin 2: PNP dark switching	FT318BI.X3/4P	50133943
	Pin 4: NPN light switching, pin 2: NPN dark switching	FT318BI.X3/2N	50133270
Accessories for optimum fastening			
Support for embedded mounting	Collective packaging with 10 supports	BT 318P-LS	50117258
Mounting bracket for standard mounting		BT D18M.5	50113548
Mounting bracket for <i>omni-mount</i>		BT D21M	50117257

Part number code

		F	T	3	1	8	B	I	.	X	3	/	4	P	-	M	1	2
Operating principle																		
FT	Diffuse reflection light scanners with fading																	
Series																		
318BI	Series 318B wit infrared light																	
Equipment																		
X	Intensified fading																	
3	Axial optics, teach-in via teach button																	
Switching output/function /OUT1OUT2 (OUT1 = Pin 4, OUT2 = Pin 2)																		
4	PNP, light switching																	
P	PNP, dark switching																	
2	NPN, light switching																	
N	NPN, dark switching																	
Electrical connection																		
-M12	M12 connector, 4-pin																	
N/A	Cable, standard length 2m																	