

ET 28

Energetic diffuse reflection light scanners

en 01-2013/06 50123661



1 ... 850 mm



- Energetic diffuse reflection light scanner
- Scanning range adjustment via teach-in
- Visible red light
- Active suppression of extraneous light A²LS
- Fast alignment through *brightVision*®
- Universal option for M18 hole mounting at the front and connector side
- Easy through-hole assembly with anti-rotation protection for mounting nuts on the housing
- Full control through green and yellow indicator LEDs
- Robust plastic housing acc. to IP 67 for industrial application

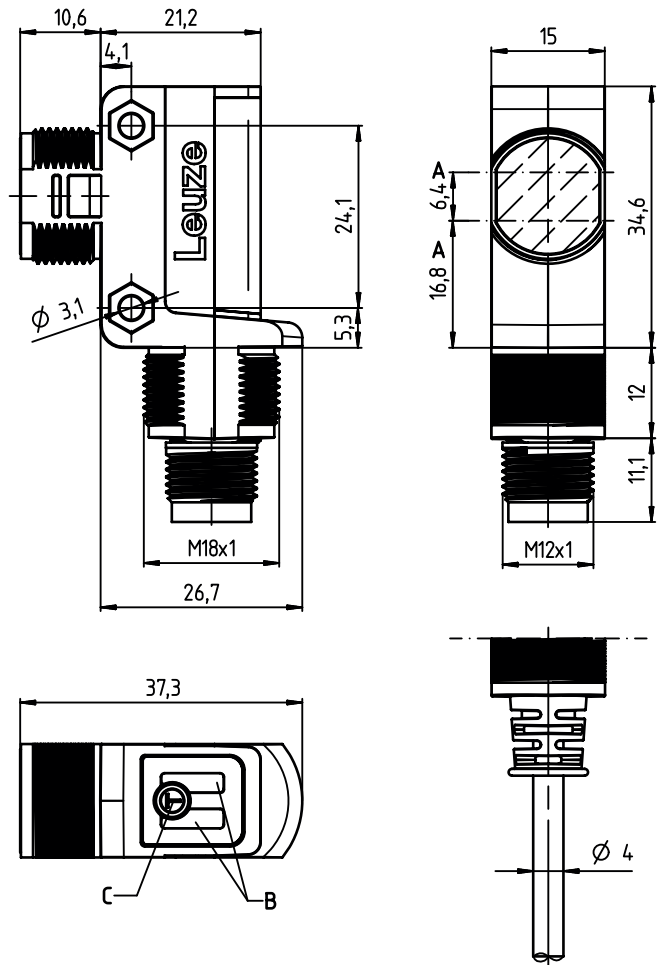


Accessories:

(available separately)

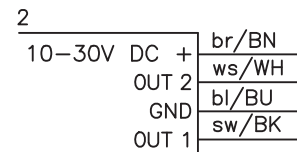
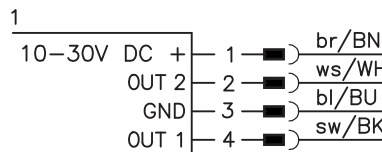
- Mounting systems (BTU 200 ..., BT 200...)
- M12 connectors (KD ...)
- Ready-made cables (K-D ...)

Dimensioned drawing



- A** Optical axis
- B** Indicator diodes
- C** Teach button

Electrical connection



We reserve the right to make changes • DS_ET28_en_50123661.fm

Specifications

Optical data

Scanning range limit ¹⁾	1 ... 850mm
Scanning range ²⁾	see tables
Light source	LED (modulated light)
Wavelength	620nm (visible red light)

Timing

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

Electrical data

Operating voltage U_B	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 ³⁾

Indicators

Green LED	ready
Yellow LED	reflection (object detected)

Mechanical data

Housing	plastic
Optics cover	plastic
Weight	25g with M12 connector 45g with 200mm cable and M12 connector 75g with 2m cable
Connection type	M12 connector, 4-pin cable 200mm with 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 ⁴⁾	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

- 1) Scanning range limit: typical scanning range
 2) Scanning range: ensured scanning range
 3) Sum of the output currents for both outputs, 50mA when ambient temperatures > 40°C
 4) 2=polarity reversal protection, 3=short circuit protection for all outputs

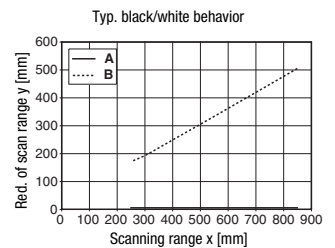
Tables

1	1	650	850
2	15	250	350

1	white 90%
2	black 6%

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

Diagrams



Remarks

- **Approved purpose:**
 This product may only be used by qualified personnel and must only be used for the approved purpose. This sensor is not a safety sensor and is not to be used for the protection of persons.
- 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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Reflection light scanners

Order guide

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

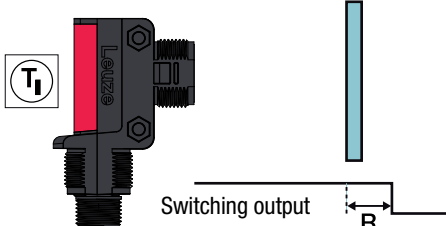
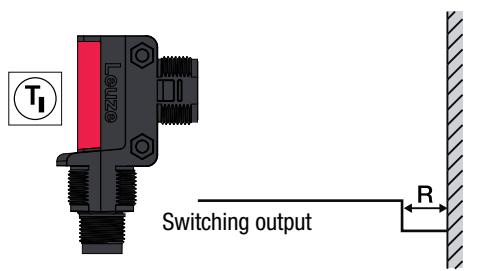
		Designation	Part no.
With 4-pin M12 connector	Pin 4: PNP light switching, pin 2: PNP dark switching	ET28.3/4P-M12	50122596
	Pin 4: NPN light switching, pin 2: NPN dark switching	ET28.3/2N-M12	50122599
With 200mm cable and M12 connector	Pin 4: PNP light switching, pin 2: PNP dark switching	ET28.3/4P-200-M12	50122597
	Pin 4: NPN light switching, pin 2: NPN dark switching	ET28.3/2N-200-M12	50122600
With cable, cable length 2m	Pin 4: PNP light switching, pin 2: PNP dark switching	ET28.3/4P	50122598
	Pin 4: NPN light switching, pin 2: NPN dark switching	ET28.3/2N	50122601

Part number code

E T 2 8 . 3 / 4 P - 2 0 0 - M 1 2

Operating principle	
ET	Energetic diffuse reflection light scanners
Series	
28	28 Series
Equipment	
.3	Teach-in via teach button
Switching output/function /OUT1/OUT2 (OUT1 = Pin 4, OUT2 = Pin 2)	
4	PNP, light switching
P	PNP, dark switching
2	NPN, light switching
N	NPN, dark switching
X	Pin not used
Electrical connection	
-M12	M12 connector, 4-pin
N/A	Cable, standard length 2 m
-200-M8	200mm cable with M8 connector
-200-M12	200mm cable with M12 connector

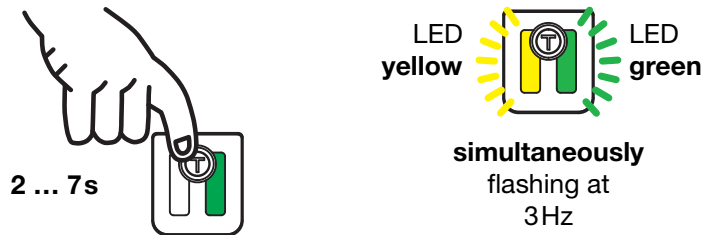
Teach-in method

Teach	Operating level 1	Operating level 2
Standard Teach	<p>Teach on object:</p> <p>In this teach version, the switching distance is set so that the object that is in the beam path during the teach is detected with a tight reserve. The additional distance by which the scanning range is increased in relation to the distance to the teach object is designated as reserve R. All objects up to a bit above the distance of the object used in the teach are thus detected.</p> 	<p>Teach on background:</p> <p>This teach is only suitable for applications with a fixed background. The teach is carried out without an object. The scanning range is placed in front of the teach object with reserve R. The scanning range is set by the teach so that detection stops just short of the background.</p> 

Operation via teach button

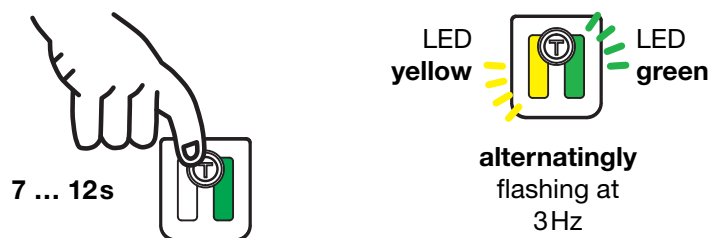
Teach in operating level 1

- Press teach button until both LEDs flash **simultaneously**.
- Release teach button.
- Ready.



Teach in operating level 2

- Press teach button until both LEDs flash **alternatingly**.
- Release teach button.
- Ready.

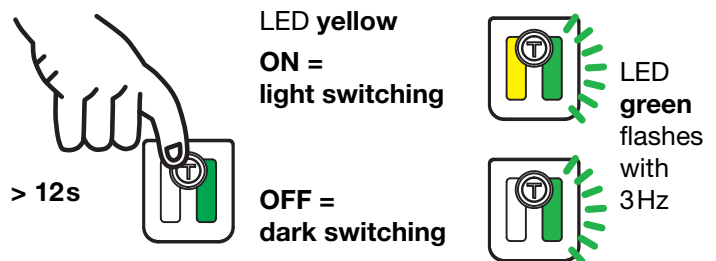


Adjusting the switching behavior of the switching output – light/dark switching

This function permits inversion of the sensors' switching logic.

- Press the teach button until only the green LED flashes. The yellow LED then shows the inverted switching logic:

- ON** = switching outputs light switching (in the case of complementary sensors, Q1 (pin 4) light switching, Q2 (pin 2) dark switching), this means output active when object is detected.
- OFF** = switching outputs dark switching (in the case of complementary sensors, Q1 (pin 4) dark switching, Q2 (pin 2) light switching), this means output inactive when object is detected.



- Release teach button.
- Ready.