


Photoelectric sensors usually detect the target or the desired target features themselves. When this isn't possible, markings are applied to the object and these are detected by the sensor. But what do you do when you can't apply visible markings to the object? Very simple: apply invisible markings!

How does that work? You use so-called fluorescent materials (contained in special chinks, inks, paints, etc.), which are only visible in ultraviolet (UV) light. The fluorescent materials change the invisible UV light into visible light. This effect is called photoluminescence. The visible light can then be detected as normal by the receiver portion of the sensor.

Applications

- Logistics (marking, selecting)
- Assembly (guiding, monitoring, sorting)
- Packaging machines (to monitor cutting, folding)
- Ceramics (e.g., parts positioning)
- Wood industry (e.g., controlling the glue bead)
- Pharmaceuticals (control tasks in the manufacturing process)
- Textiles (e.g., cut guiding)
- Food industry



Type	Sensing distance	Light type		Output			Output function		Switching frequency	U _B	Connection		Page
		UV light		PNP-Transistor	NPN-Transistor	Analog output	Light-on	Dark-on			M12 connector, 4-pin	Cable	
 Luminescence Sensor													
BLT 18KF-001-P-S4	8...20 mm	■		■			■	■	1 kHz	■	■		2.2.69
BLT 18KF-001-N-S4	8...20 mm	■			■		■	■	1 kHz	■	■		2.2.69
BLT 18KF-001-P-02	8...20 mm	■		■			■	■	1 kHz	■		■	2.2.69
BLT 18KF-001-N-02	8...20 mm	■			■		■	■	1 kHz	■		■	2.2.69
BLT 21M-001-P-S4	0...40 mm	■		■			■	■	2 kHz	■	■		2.2.71
BLT 21M-001-N-S4	0...40 mm	■			■		■	■	2 kHz	■	■		2.2.71
BLT M-15-U-S4	9...18 mm	■		■	■	■	■	■	1 kHz	■	■		2.2.73
BLT M-11-U-03	9...18 mm	■		■	■	■	■	■	1 kHz	■		■	2.2.73
BLT M-55-U-S4	20...40 mm	■		■	■	■	■	■	2 kHz	■	■		2.2.75

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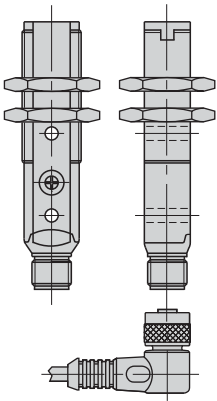
Connectors ... page 5.2 ...

The **BLT 18KF** luminescence sensor detects any type of luminescent markings on any surface and automatically adjusts to ambient conditions. Setting is accomplished by pressing a key (markings with greater luminescence are detected as the background).

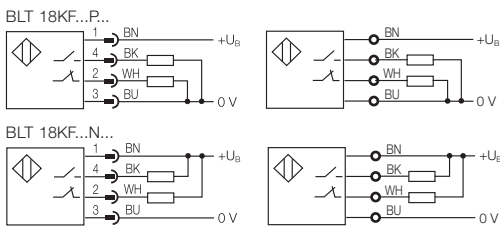
A precise setting is available for weakly luminescent markings. In this setting the output function can also be selected.



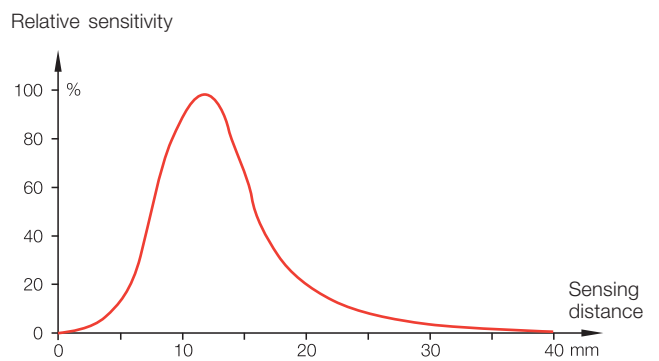
Connector orientation



Wiring diagrams



Function diagram



Recommended accessories
please order separately



Mounting clamp
BOS 18,0-KB-1

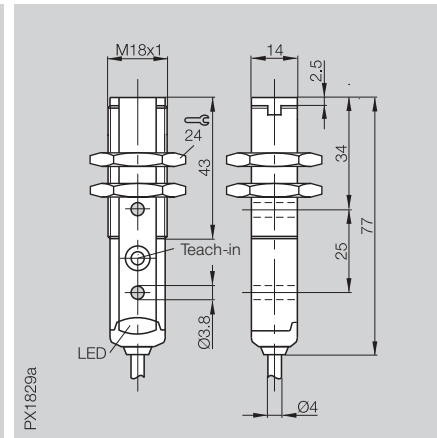
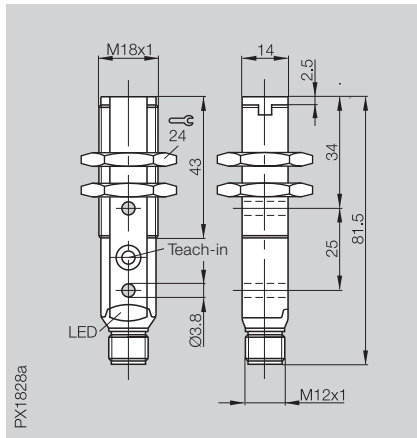


Mounting bracket
BES 18-HW-1



Connector
Straight BKS-_ 19
Right-angle BKS-_ 20

Series	BLT	BLT
Working range	8...20 mm	8...20 mm



Luminescence Sensor

PNP	BLT 18KF-001-P-S4	BLT 18KF-001-P-02
NPN	BLT 18KF-001-N-S4	BLT 18KF-001-N-02
Electrical data		
Supply voltage U_B	10...30 V DC	10...30 V DC
Ripple	≤ 2 V	≤ 2 V
No-load supply current I_0 max.	≤ 25 mA	≤ 25 mA
Switching output	PNP- or NPN-Transistor	PNP- or NPN-Transistor
Switching type	Light- and dark-on	Light- and dark-on
Output current	100 mA	100 mA
Voltage drop U_d at I_e	≤ 2 V	≤ 2 V
Settings	Teach-in	Teach-in
Optical data		
Emitter, light type	LED, UV	LED, UV
Wavelength	370 nm	370 nm
Light spot diameter	approx. 3 mm at 20 mm	approx. 3 mm at 20 mm
Time data		
Response time	0.5 ms	0.5 ms
Switching frequency f	1 kHz	1 kHz
Indicators		
Output function indicator	LED yellow	LED yellow
Operating/Error indicator	LED green/red	LED green/red
Mechanical data		
Dimensions	M18x81.5 mm	M18x77 mm
Connection	M12 connector, 4-pin	2 m cable, PVC
No. of wires x cross-section		4x0.14 mm ²
Housing material	PBT	PBT
Lens material	PMMA	PMMA
Weight	25 g	75 g
Ambient data		
Degree of protection per IEC 60529	IP 67	IP 67
Polarity reversal protected	yes	yes
Short circuit protected	yes	yes
Ambient light rejection	EN 60947-5-2	EN 60947-5-2
Ambient temperature range T_a	-25...+55 °C	-25...+55 °C

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Photoelectric sensors accessories page 2.3.2 ...

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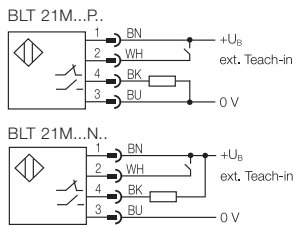
Connectors ... page 5.2 ...

BLT 21M luminescence sensors detect all kinds of luminescent markings on any background. The sensor is calibrated with the simple push of a button. In the standard setting the sensor is light-switching (markings with greater luminescence are recognized as the background).

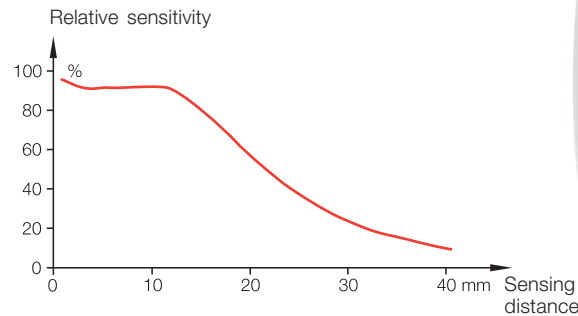
A precise setting is available for weakly luminescent markings. In this setting the output function can also be selected.



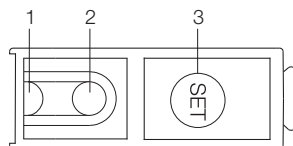
Wiring diagrams



Function diagram



Indicators and operating elements



- 1 Output function indicator (yellow)
- 2 Operating/Error indicator (green/red)
- 3 SET key

Recommended accessories

please order separately



Mounting clamp
BOS 21-KH-1



Mounting clamp
BOS 21-KH-2



Mounting bracket
BOS 21-HW-1

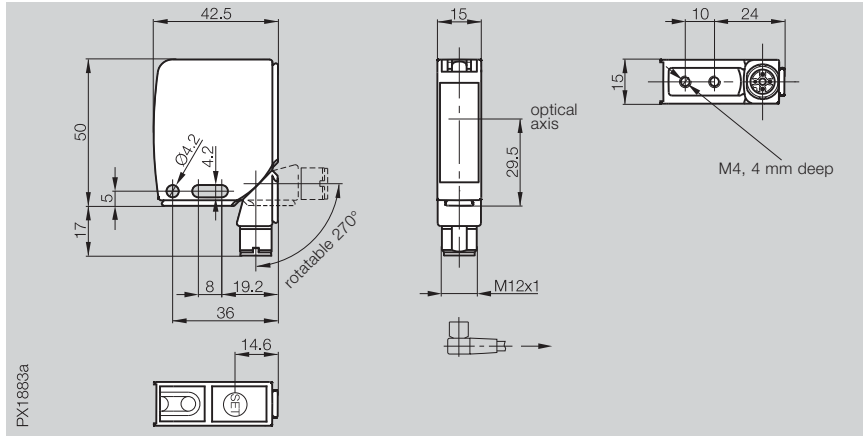


Mounting bracket
BOS 21-HW-2



Connector
Straight BKS- 19
Right-angle BKS- 20

Series	BLT
Working range	0...40 mm



Luminescence Sensor

PNP	BLT 21M-001-P-S4
NPN	BLT 21M-001-N-S4
Electrical data	
Supply voltage U_B	10...30 V DC
Ripple	≤ 2 V DC
No-load supply current I_0 max.	≤ 30 mA
Switching output	PNP- or NPN-Transistor
Output current	100 mA
Switching type	Light-/dark-on (settable in precise mode)
Voltage drop U_d at I_e	≤ 2 V
Settings	Teach-in
Additional functions	Key disabling possible
Optical data	
Emitter, light type	LED, UV
Wavelength	370 nm
Light spot diameter	ca. 1.5 mm at 10 mm
Time data	
Response time	250 μ s
Switching frequency f	2 kHz
Time functions	20 ms off-delay
Indicators	
Output function indicator	LED yellow
Operating/error indicator	LED green/red
Mechanical data	
Dimensions	42.5x50x15 mm
Connection	M12 connector, 4-pin
Housing material	GD-Zn/Al
Optical surface	Glass
Weight	80 g
Ambient data	
Degree of protection per IEC 60529	IP 67
Polarity reversal protected	yes
Short circuit protected	yes
Ambient light rejection per	EN 60947-5-2
Ambient temperature range T_a	-10...+55 °C

Connector orientation

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Connectors ... page 5.2 ...

The Balluff luminescence sensor is equipped with a modern UV source so that no external UV lamp is needed. A microcontroller handles the evaluation using a teach-in procedure. By simply pressing a key the BLT learns the difference between the fluorescent marking and the background. If the difference is too slight and can not be reliably discriminated, this is indicated by an error message (flashing LED). The sensing distance is typically 9 to 18 mm. Additional lenses are available to increase the sensing distance.

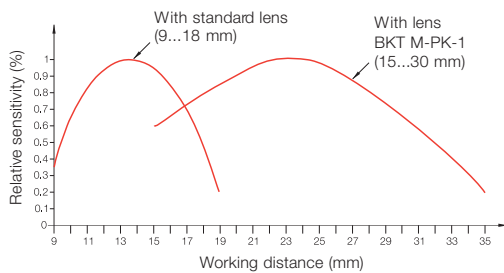
Configuring two internal DIP switches allows you to set a turn-off delay of 20 ms or disable the keys. The PNP/NPN output is also adjustable. An analog signal proportional to the light reflected by the marking rounds out the functionality of the BLT.

Features

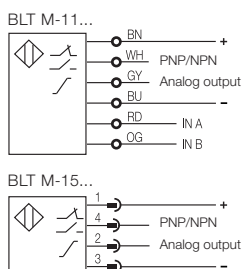
- UV source: LED, 100,000 hour life
- Push-button setting
- Automatic setting of light-on/dark-on
- Time delay selectable
- Analog output 0...7 V DC standard
- M12 connector rotatable (3 positions)
- Key disabling possible



Function diagram



Wiring diagrams



Recommended accessories

please order separately

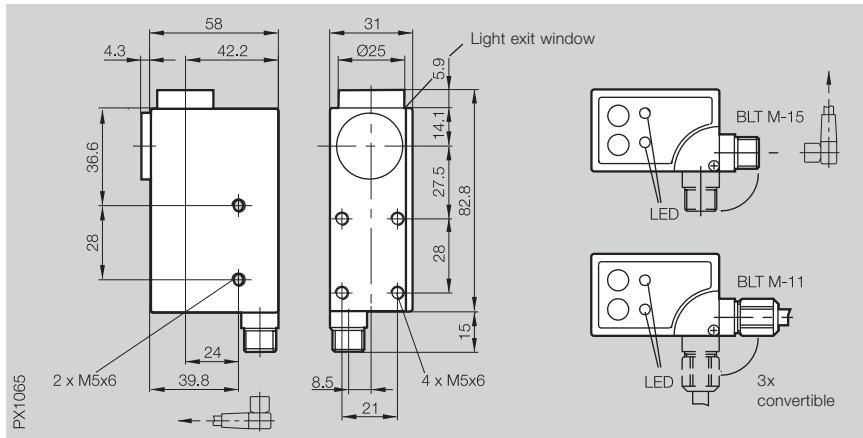


Lens
BKT M-PK-1



Connector
Straight BKS-S 19-3
Right-angle BKS-S 20-3

Series	BLT	BLT
Working range	9...18 mm	9...18 mm
Working range with lens PK-1	15...30 mm	15...30 mm
Working range with fiber optic cable	0...30 mm	0...30 mm



Luminescence Sensor

PNP/NPN	BLT M-15-U-S4	BLT M-11-U-03
Electrical data		
Supply voltage U_B	10...30 V DC	10...30 V DC
Ripple	2 V DC	2 V DC
No-load supply current I_0 max.	≤ 80 mA	≤ 80 mA
Switching output	PNP- and NPN-Transistor (selectable)	PNP- and NPN-Transistor (selectable)
Switching type	Light-/dark-on (selectable)	Light-/dark-on (selectable)
Output current	200 mA	200 mA
Voltage drop U_d at I_o	≤ 2 V	≤ 2 V
Analog output	0...7 V DC	0...7 V DC
Settings	Teach-in	Teach-in
Additional functions	Key disabling possible	Key disabling possible
Optical data		
Emitter, light type	LED, UV	LED, UV
Wavelength	380 nm	380 nm
Light spot diameter	5 mm at focal point	5 mm at focal point
Time data		
Response time	0.5 ms	0.5 ms
Switching frequency f	1 kHz	1 kHz
Time functions	20 ms off-delay selectable	20 ms off-delay selectable
Indicators		
Ready indicator	LED green	LED green
Output function indicator	LED red	LED red
Mechanical data		
Connection	M12 connector, 4-pin	3 m cable, PVC
No. of wires \times cross-section		6 \times 0.34 mm ² with shield
Housing material	GD-Zn	GD-Zn
Optical surface	Glass	Glass
Weight	310 g	450 g
Ambient data		
Degree of protection per IEC 60529	IP 67	IP 67
Polarity reversal protected	yes	yes
Short circuit protected	yes	yes
Ambient light rejection	EN 60947-5-2	EN 60947-5-2
Ambient temperature range T_a	-10...+55 °C	-10...+55 °C



Please note! Lenses not interchangeable for BLT M.

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Connectors ... page 5.2 ...

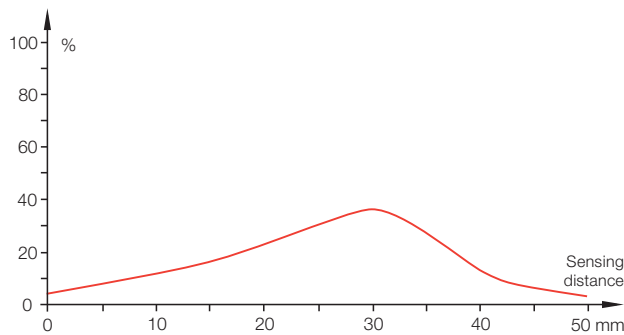
The Balluff **BLT M-55-...** luminescence sensor is equipped with a high-power UV LED, so that long sensing distances are possible using the appropriate lenses. For tight mounting conditions an adaptable fiber optic cable provides additional solution options.

Features

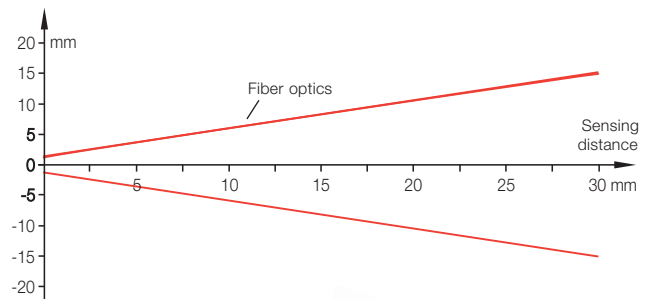
- High-Power UV LED
- High switching frequency of 2 kHz
- Fiber optic cable compatibility
- Push-button setting
- Analog output 0...7 V DC standard

Function diagrams

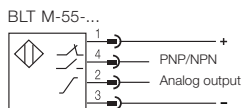
Relative sensitivity



Detection range



Wiring diagram



Recommended accessories
please order separately

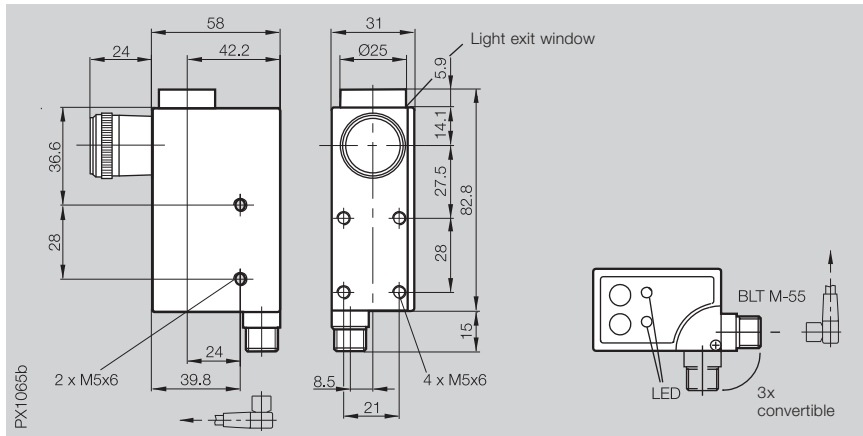


Fiber optic cable
BFO LTS-...-TAF-00-__



Connector
Straight BKS-S 19-3
Right-angle BKS-S 20-3

Series	BLT
Working range	20...40 mm
Working range with fiber optic cable	0...30 mm



Luminescence Sensor

PNP/NPN	BLT M-55-U-S4
Electrical data	
Supply voltage U_B	10...30 V DC
Ripple	2 V DC
No-load supply current I_0 max.	≤ 80 mA
Switching output	PNP- and NPN-Transistor (selectable)
Switching type	Light-/dark-on (selectable)
Output current	200 mA
Voltage drop U_d at I_o	≤ 2 V
Analog output	0...7 V DC
Settings	Teach-in
Additional functions	Key disabling possible
Optical data	
Emitter, light type	LED, HP-UV
Wavelength	370 nm
Light spot diameter	3 mm at focal point
Time data	
Response time	250 μ s
Switching frequency f	2 kHz
Time functions	20 ms off-delay selectable
Indicators	
Ready indicator	LED green
Output function indicator	LED red
Mechanical data	
Connection	M12 connector, 4-pin
Housing material	GD-Zn
Optical surface	Glass
Weight	310 g
Ambient data	
Degree of protection per IEC 60529	IP 67
Polarity reversal protected	yes
Short circuit protected	yes
Ambient light rejection	EN 60947-5-2
Ambient temperature range T_a	-10...+55 °C



Connector orientation

Please note! Lenses not interchangeable for BLT M.

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