



WT 190T: The convenient, reliable proximity switch – precisely the right one for demanding applications



	BGS Photoelectric proximity switches
	FGS Photoelectric proximity switches

DThe most important market requirements for photoelectric proximity switches in demanding applications are economic efficiency, reliability and easy operation. The WT 190T series composed of the photoelectric proximity switch WTB 190T with background suppression and the WTV 190T with foreground suppression fulfill these requirements. The WT 190T stands for innovative technologies for solving multifaceted tasks. Standard system features:

Red light: The sensors can be aligned optimally and quickly on

the object using the visible light spot.

Teach-in procedure at the push of a button or externally: This enables simplified and very effective alignment of equipment.

Equipment parameterization at the push of a button: The scanners can be programmed conveniently via the selection mode and consequently aligned ideally for the application. When the situation requires it, a timer function can be activated with a time delay up to 10 seconds.

Display: Menu prompting is via the easily readable display.

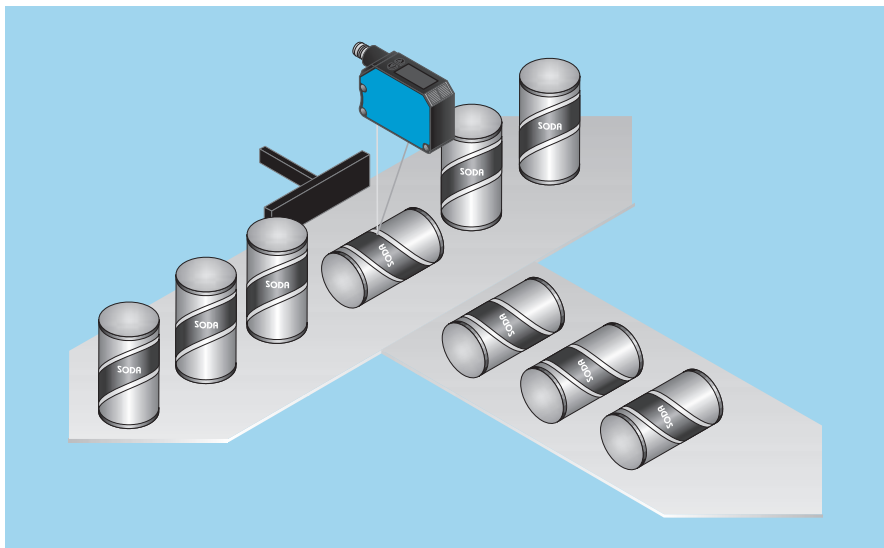
The compact, industrial standard ABS plastic housing makes it possible to use the equipment even in difficult environmental conditions.

The 4-pin M 8 equipment plug or the 2 m cable are standard equipment in the same way as the 200 Hz switching frequency.

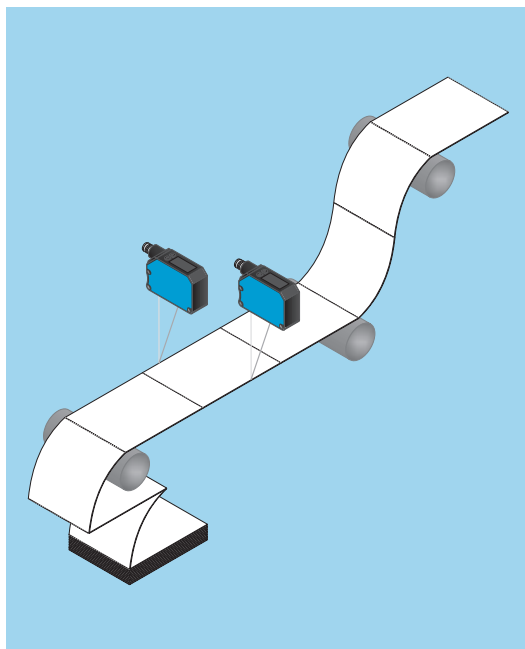
The performance range of the WT 190T can be used meaningfully in the following fields:

- Packaging industry,
- Electronics industry,
- Handling/robotic systems,
- Distribution technology.

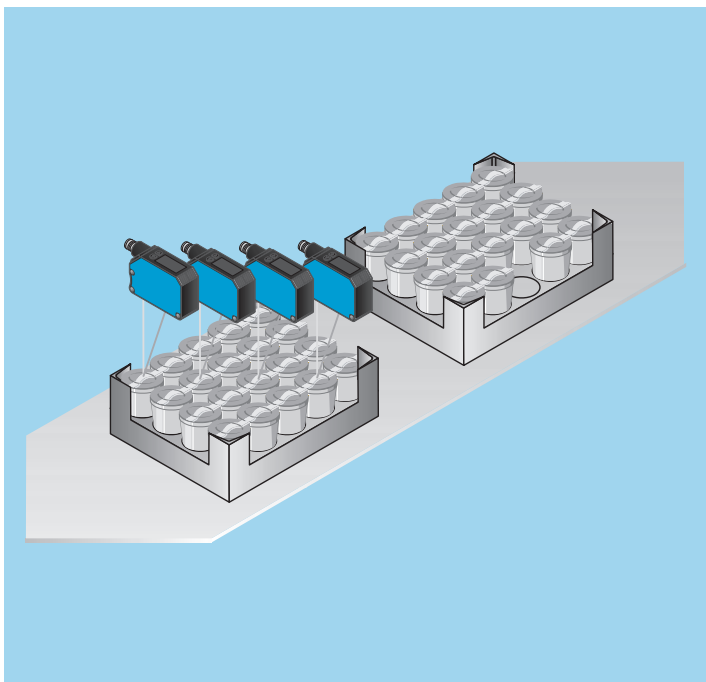




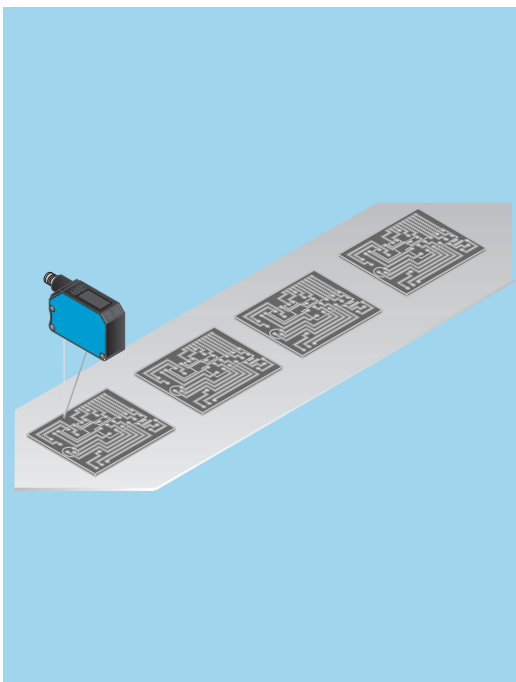
▲ WTV 190T: 2-point Teach-in, position monitoring of cans. Cans lying on their side are detected and selected. Industry: Packaging Technology



▲ WTB 190T: Positioning Teach-in, edge control of paper webs. Industry: Printing/Paper

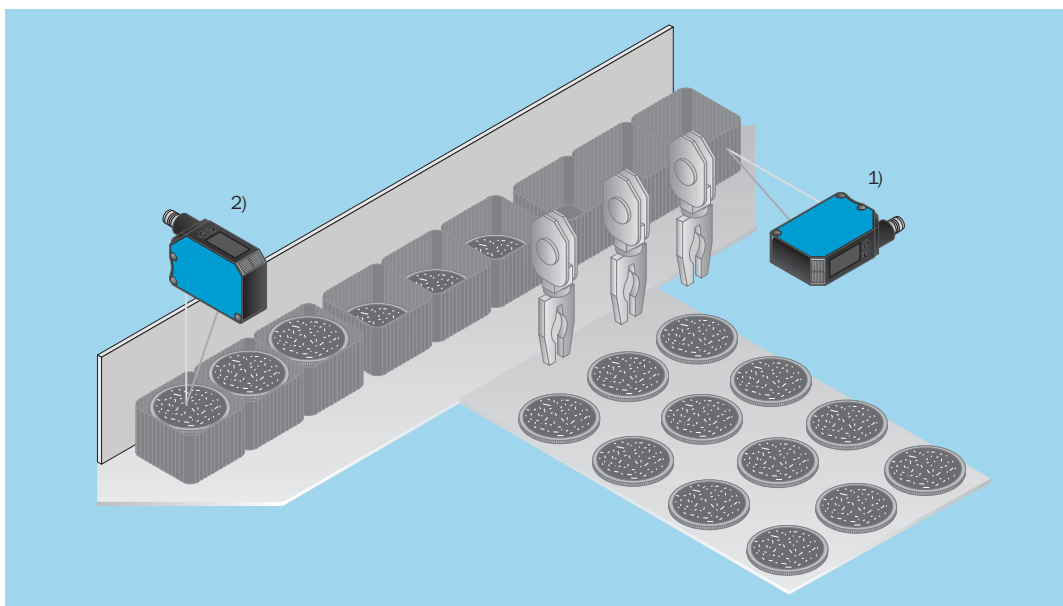


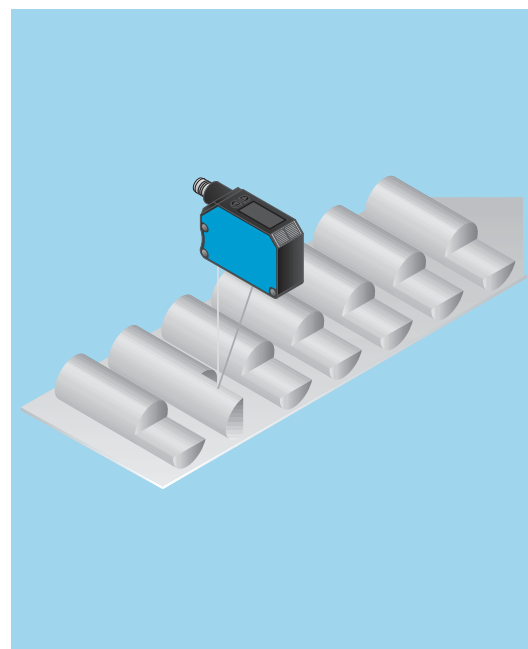
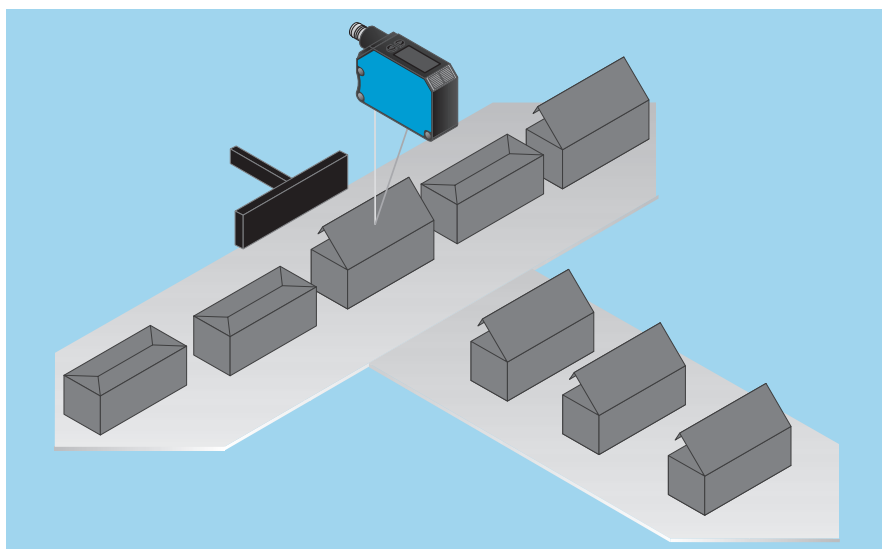
▲ WTB 190T: Positioning Teach-in checks the completeness of containers. Industry: Packaging Technology



◀ WTB 190T: Positioning E-card detection. Holes are suppressed by a timer function. Industry: Electronics

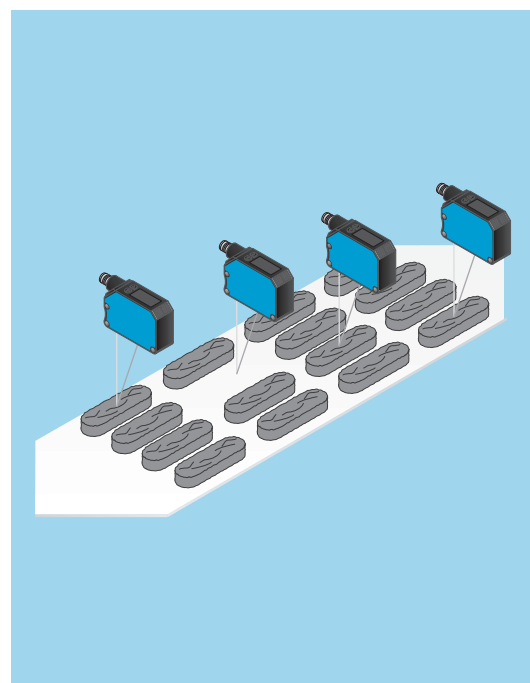
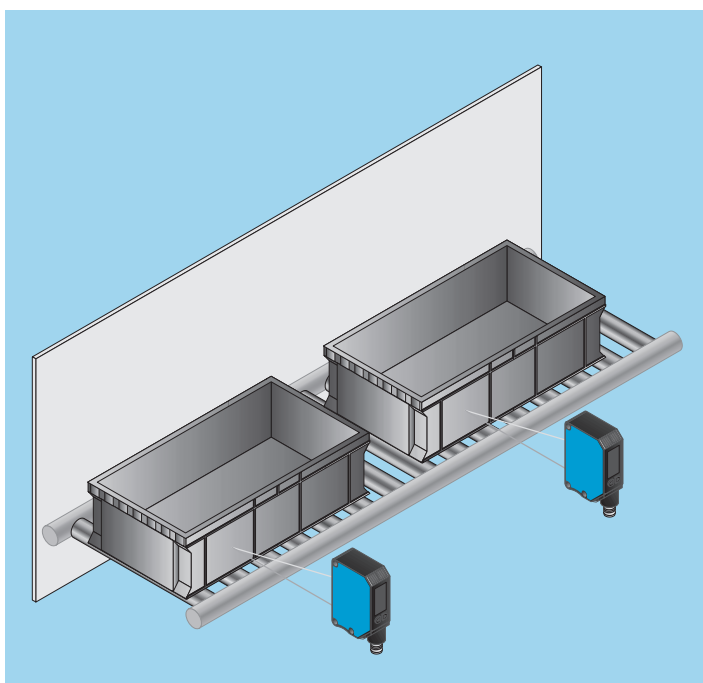
► WTB 190T: 2-point Teach-in. Presence monitoring of cookie packages in front of filling station¹. Positioning checks correct filling of packaging². Industry: Packaging Technology





▲ WTV 190T: 2-point Teach-in checks proper condition of packaging; lid closed = OK.
Industry: Packaging Technology

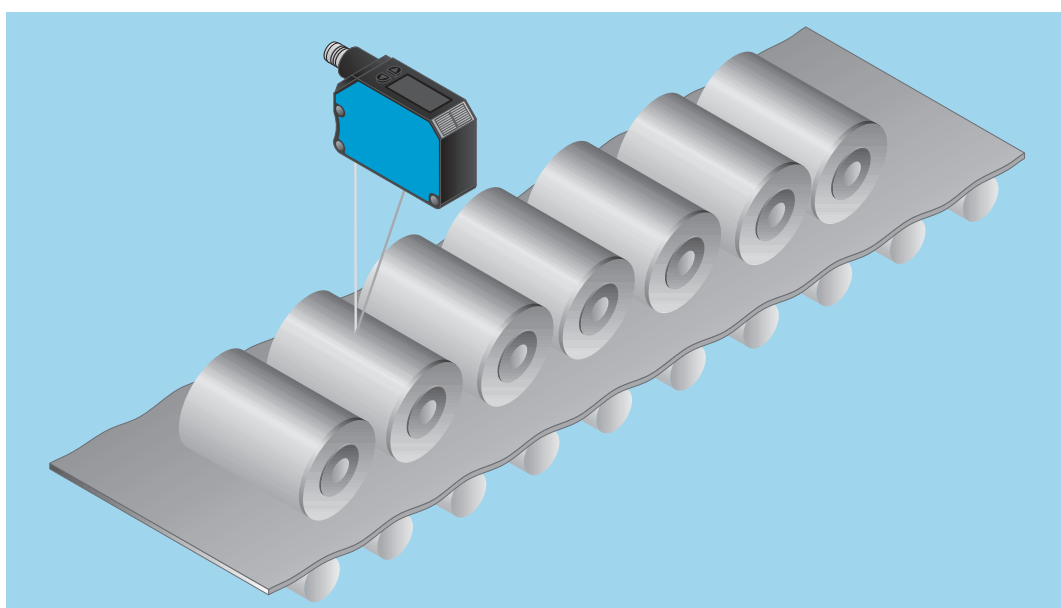
▲ WTB 190T: Positioning mode. Workpiece position detection. Industry: Assembly/Handling






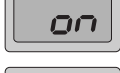
◀ WTV 190T: 1-point Teach-in. Detection of chocolate bars on a conveyor belt. Industry: Packaging Technology

▲ WTB 190T: 1-point Teach-in. Positioning of goods containers. Industry: Storage and handling engineering


► WTB 190T: 2-point Teach-in. Workpiece detection on feeder: height fluctuations on conveyor are compensated for by "averaged" scanning distance. Industry: Assembly/Handling



Description of operating panel and functions

-  dLY
Delay
-  Ld
light on/dark on
-  dPY
Display on/off
-  nor
no Delay
-  ond
on Delay
-  oFd
off Delay
-  Lon
Light on
-  don
Dark on
-  on
Display on

 oFF
Display off


 1Pt
1-point Teach-in


 2Pt
2-point Teach-in

 PoS
Positioning


 SEL
Selection Mode

 Adj
Adjust Mode


 Off

 On (LED orange)

 On (LED green)

 Blinking (LED orange)

 Blinking (LED green)

 Teach-in button

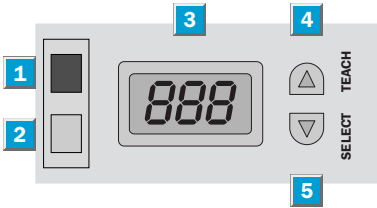
 Select-Mode button

 Off

 On

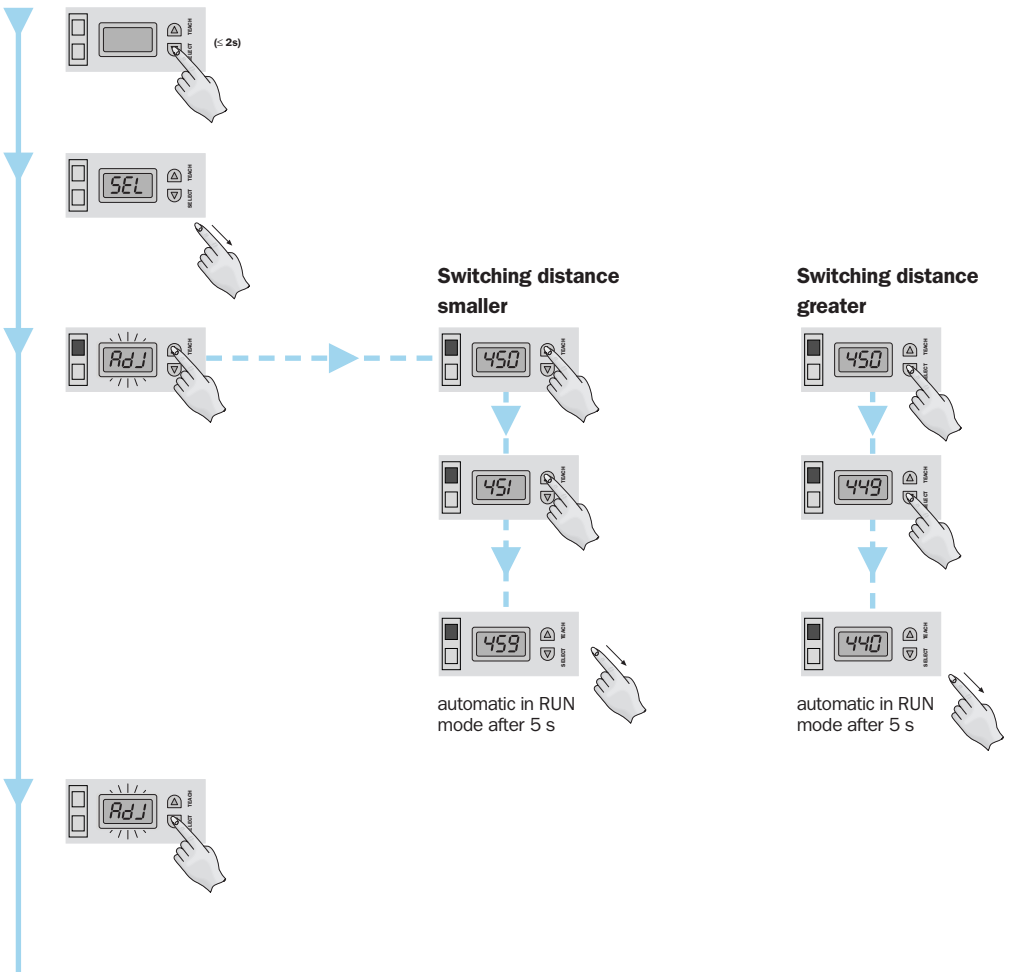
 Blinking

Display



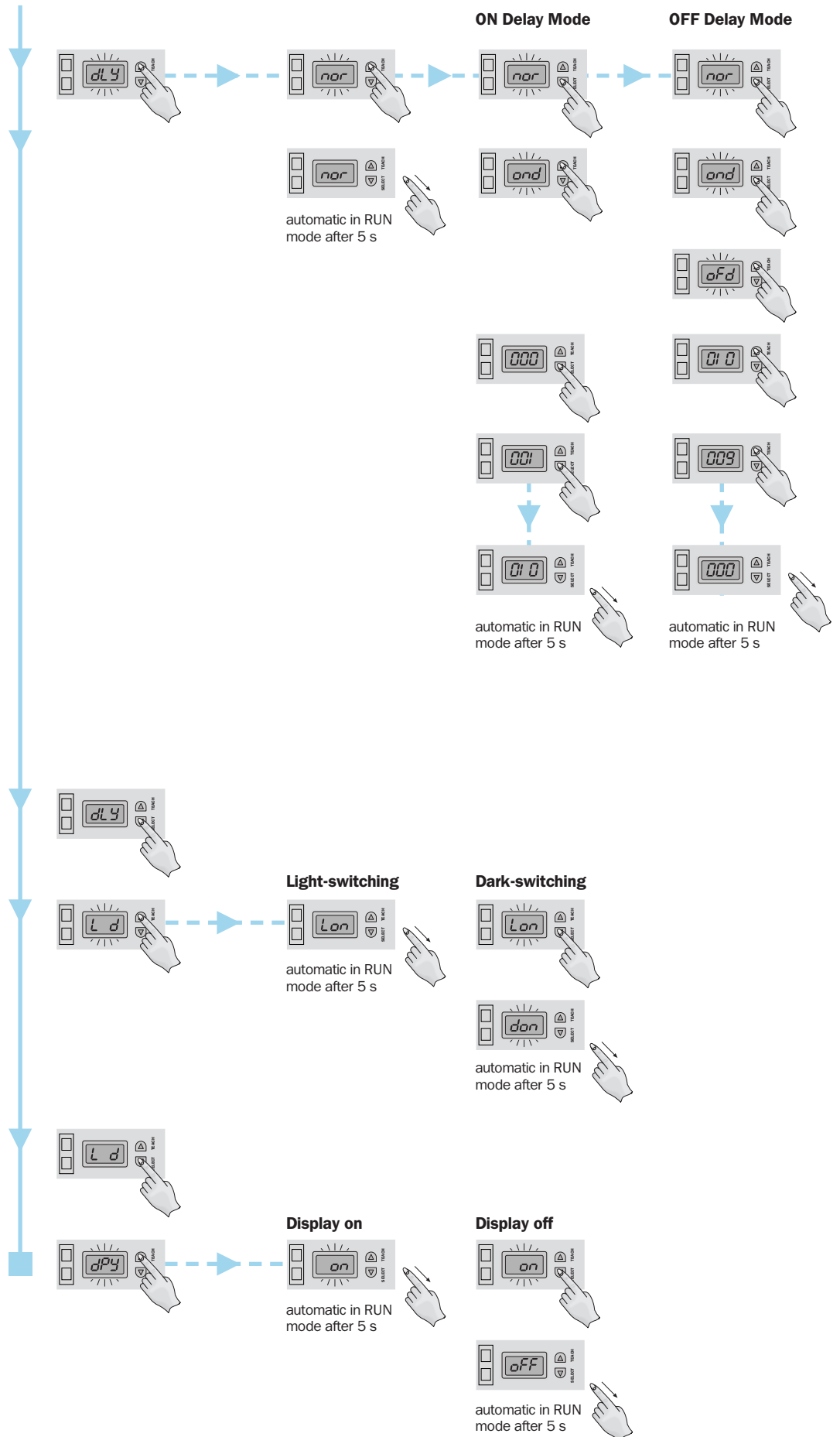
- 1** Switching indicator (orange LED)
In RUN Mode: The LED indicator shows the “Open collector” status: orange – output ON; off: does not light – output OFF.
- 2** Reflectance indicator (green LED)
The LED indicator lights green when there is light reception with reserve. It does not light if there is insufficient reception or lights red when there is weak/strong reflection.
- 3** Display
- 4** Teach-in button
Switching level: The LED lights green 1 x when the first distance is set and 2 x when the second distance is set. It lights red when there is faulty operation.
- 5** Select mode button
For parameterizing the sensor, e.g., switching type/time delay.

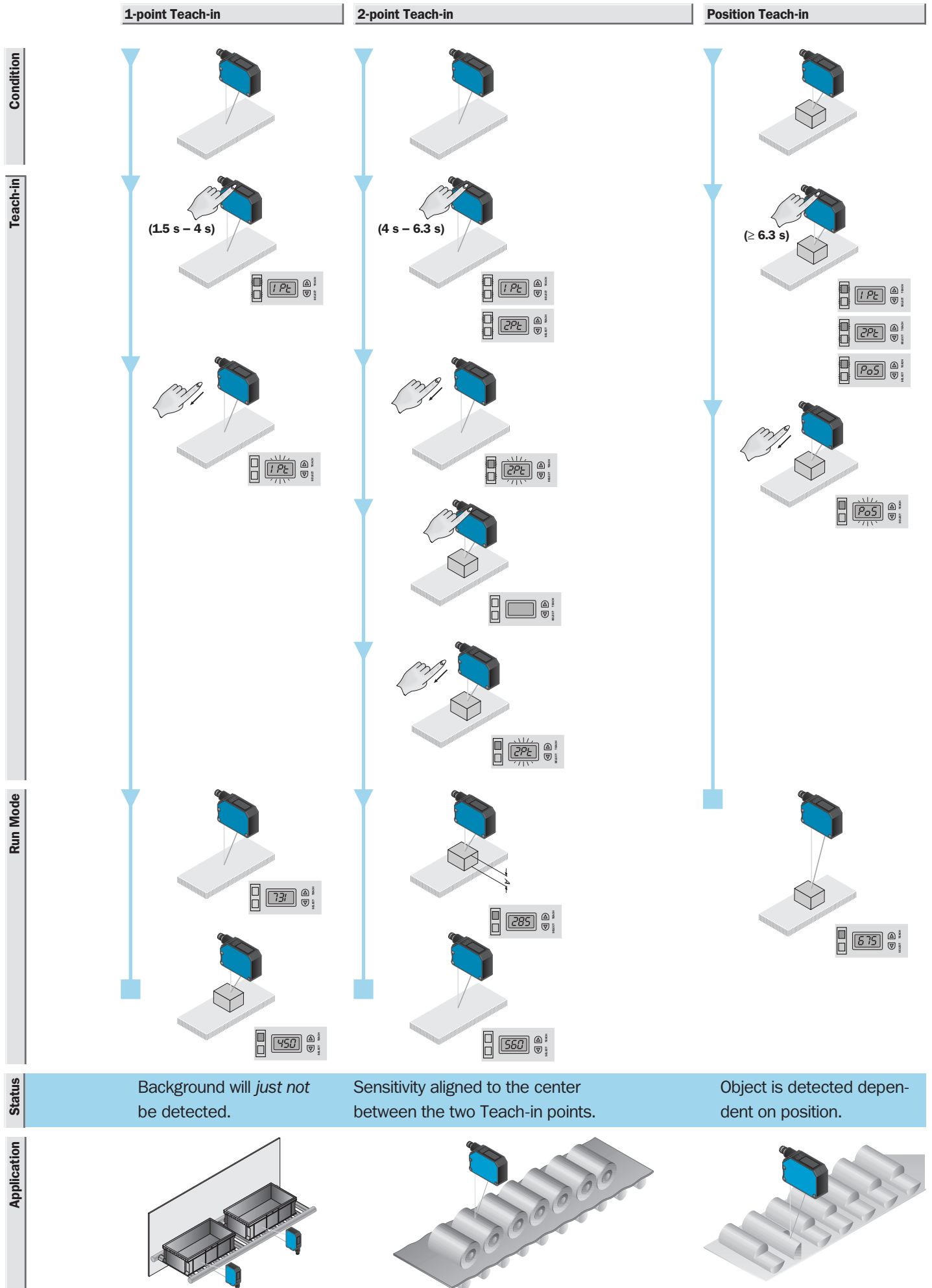
Setting: Mode, Timer, L/D, Display

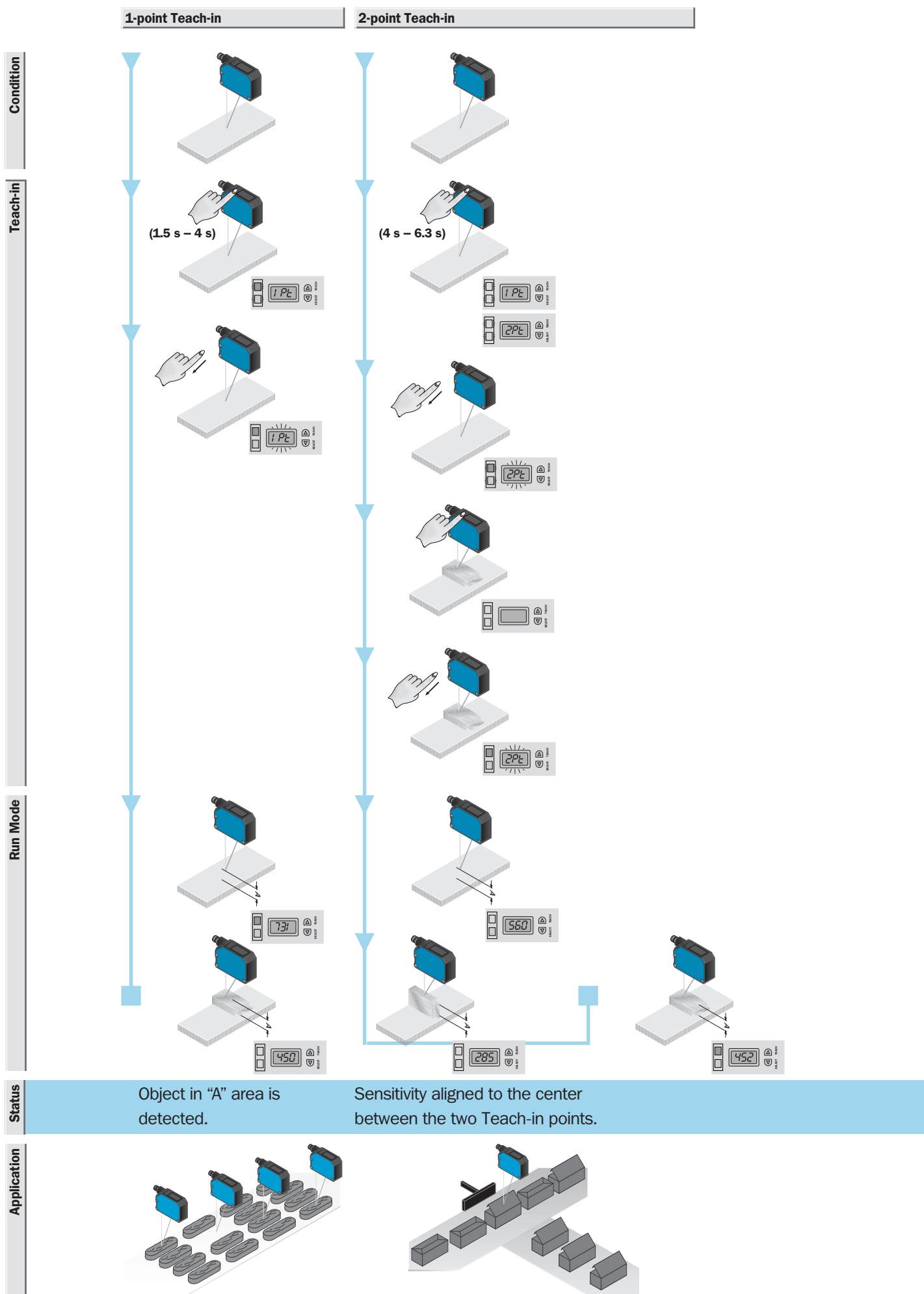



Description of operating panel and functions

Setting: Mode, Timer, L/D, Display



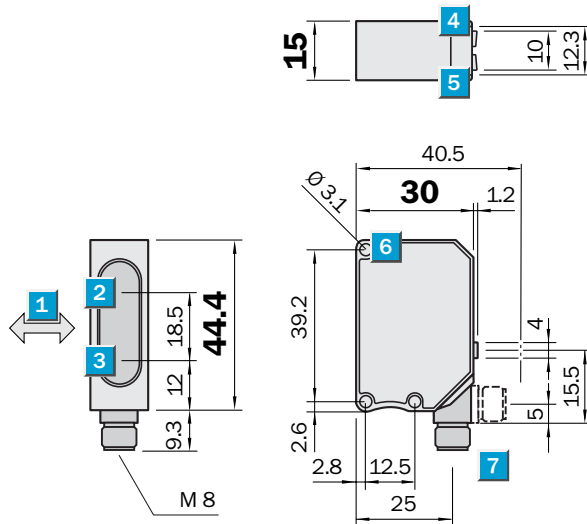





Scanning distance
100 ... 300 mm
 Photoelectric proximity switch

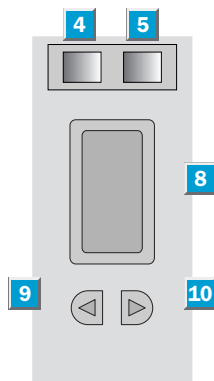
- Precise background suppression
- Small, precise red light spot, enabling optimum and fast equipment alignment
- Equipment setting via Teach-in procedure at the push of a button
- Equipment parameterization via selection mode at the push of a button
- Easily readable display with menu prompting enables convenient programming and parameterization

Dimension illustration



Setting options

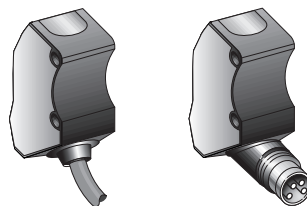
All types



- 1 Standard direction of the material being scanned
- 2 Centre of optical axis, receiver
- 3 Centre of optical axis, sender
- 4 Orange LED indicator: output active
- 5 Green LED indicator: light reception with operating reserve > 1.1
- 6 Mounting holes, \varnothing approx. 3.1 mm
- 7 Plug 4-pin, M 8 or cable 2 m
- 8 Numerical display
- 9 Select mode button
- 10 Teach-in button

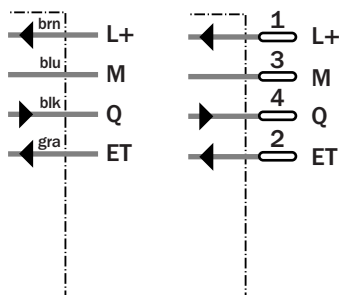
Connection types

WTB 190T-P 162	WTB 190T-P 460
WTB 190T-N 162	WTB 190T-N 460



4 x 0.2 mm²

4-pin, M8



Accessories

- Connectors
- Mounting systems

Technical data		WTB 190T-	P 162	P 460	N 162	N 460
Scanning distance, adjustable	100...300 mm ¹⁾					
Sensitivity control	Teach-in, External Teach (ET)					
	Teach-in via button, menu guided					
Light source²⁾	LED, red light					
Light spot diameter	11 mm at distance of 300 mm					
Supply voltage V_S	10 ... 30 V DC ³⁾					
Ripple ⁴⁾	10 %					
Current consumption ⁵⁾	40 mA					
Switching outputs	PNP, Q, open collector					
	NPN, Q, open collector					
Output current I _A max.	100 mA					
Switching type	Light/dark-switching ⁶⁾ , programmable					
Response time ⁷⁾	2.5 ms					
Switching frequency max. ⁸⁾	200/s					
Timer mode (dLY)	0...10 s ⁶⁾ , programmable					
Timer function	Nor: normal Mode					
	OnD: On Delay Mode, on delay					
	OFd: Off Delay Mode, off delay					
Connection types: Cable	PVC, 2 m ⁹⁾ ; 4 x 0.2 mm ² , ø 4.2 mm					
Plug	4-pin, M8					
VDE protection class¹⁰⁾	⚡					
Circuit protection¹¹⁾	A, B, C, D					
Enclosure rating	IP 67					
Ambient temperature	Operation -25...+55 °C					
	Storage -40...+70 °C					
Weight	With cable 2 m approx. 120 g					
	With plug approx. 200 g					
Housing material	Housing: ABS; optic: PMMA					

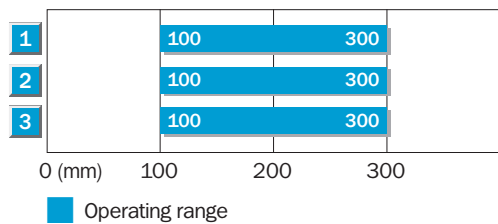
1) Object with 90 % reflectance (with reference to standard white according to DIN 5033)
 2) Average service life 100,000 h at T_A = +25 °C

3) Limit values
 4) May not exceed or fall short of V_S tolerances
 5) Without load
 6) Menu guided display via "Select button"

7) With resistive load
 8) With light/dark ratio 1:1
 9) Do not bend below 0 °C
 10) Reference voltage 50 V DC

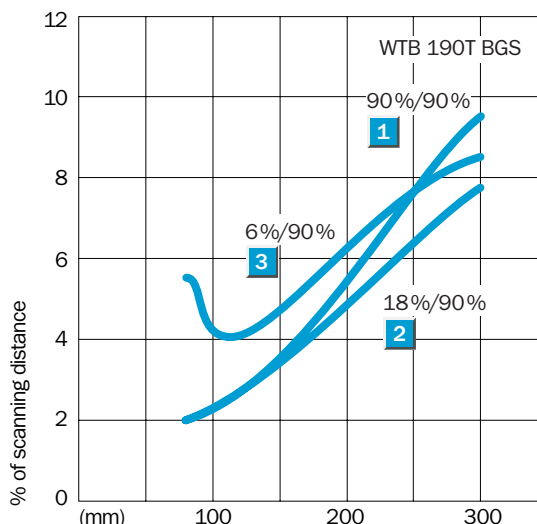
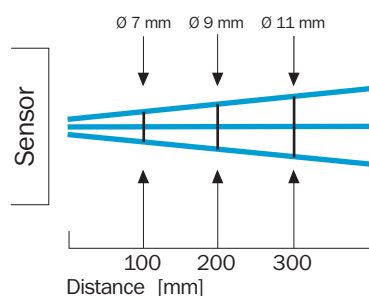
11) A = V_S connections reverse-polarity protected
 B = Output Q and Q̄ short-circuit protected
 C = Interference pulse suppression
 D = Outputs overcurrent and short-circuit protected

Scanning distance



- 1 Scanning range on white, 90 % remission
- 2 Scanning range on grey, 18 % remission
- 3 Scanning range on black, 6 % remission

Light spot diameter



Order information*)

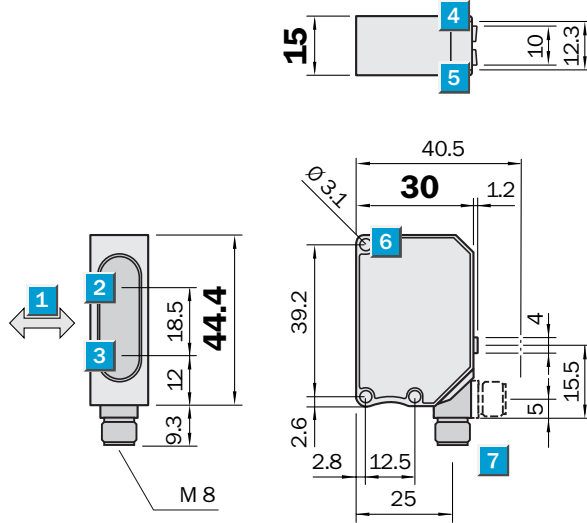
Type	Part no.
WTB 190T-P 162	6 022 843
WTB 190T-P 460	6 022 846
WTB 190T-N 162	6 022 839
WTB 190T-N 460	6 022 842

*) Equipment model with 5 m PVC cable or M 8 plug, 3-pin on request

	Scanning distance 50 ... 100 mm
Photoelectric proximity switch	

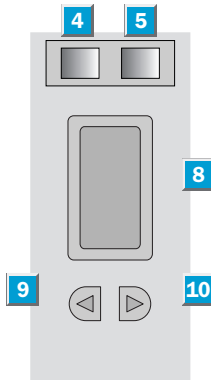
- Precise background suppression
- Small, precise red light spot, enabling optimum and fast equipment alignment
- Equipment setting via Teach-in procedure at the push of a button
- Equipment parameterization via selection mode at the push of a button
- Easily readable display with menu prompting enables convenient programming and parameterization

Dimension illustration



Setting options

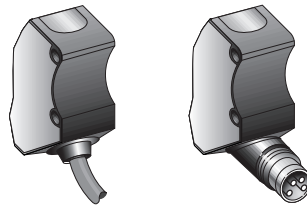
All types



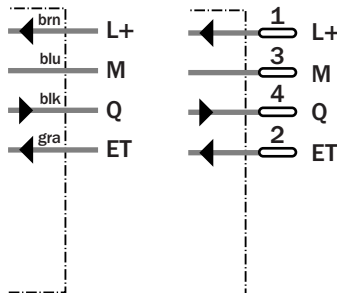
- Standard direction of the material being scanned
- Centre of optical axis, receiver
- Centre of optical axis, sender
- Orange LED indicator: output active
- Green LED indicator: light reception with operating reserve > 1.1
- Mounting holes, Ø approx. 3.1 mm
- Plug 4-pin, M 8 or cable 2 m
- Numerical display
- Select mode button
- Teach-in button

Connection types

WTB 190T-P 132	WTB 190T-P 430
WTB 190T-N 132	WTB 190T-N 430



4 x 0.2 mm² 4-pin, M8



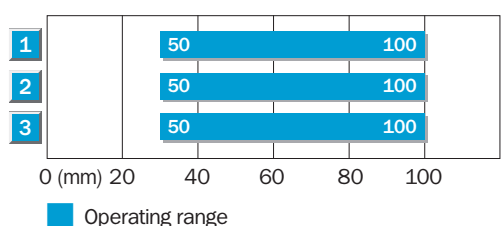
Accessories
Connectors
Mounting systems

Technical data	WTB 190T-	P 132	P 430	N 132	N 430						
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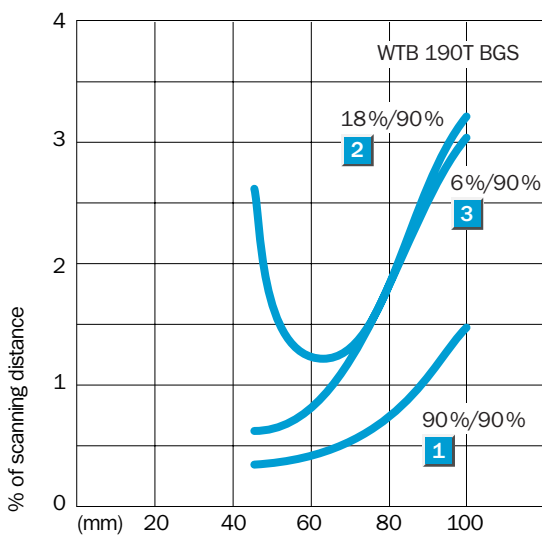
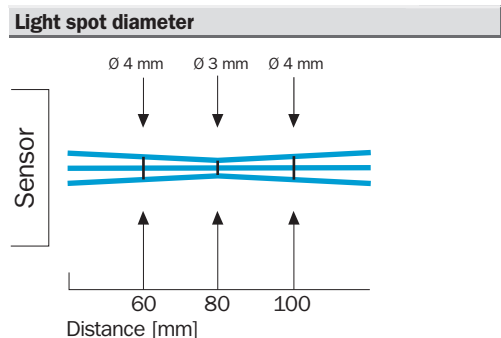
Scanning distance, adjustable	50... 100 mm ¹⁾				
Sensitivity control	Teach-in, External Teach (ET)				
	Teach-in via button, menu guided				
Light source²⁾	LED, red light				
Light spot diameter	4 mm at distance of 100 mm				
Supply voltage V_S	10 ... 30 V DC ³⁾				
Ripple ⁴⁾	10 %				
Current consumption ⁵⁾	40 mA				
Switching outputs	PNP, Q, open collector				
	NPN, Q, open collector				
Output current I _A max.	100 mA				
Switching type	Light/dark-switching ⁶⁾ , programmable				
Response time ⁷⁾	2.5 ms				
Switching frequency max. ⁸⁾	200/s				
Timer mode (dLY)	0... 10 s ⁹⁾ , programmable				
Timer function	Nor: normal Mode				
	OnD: On Delay Mode, on delay				
	OFd: Off Delay Mode, off delay				
Connection types: Cable	PVC, 2 m ⁹⁾ ; 4 x 0.2 mm ² , ø 4.2 mm				
Plug	4-pin, M8				
VDE protection class¹⁰⁾	⚡				
Circuit protection¹¹⁾	A, B, C, D				
Enclosure rating	IP 67				
Ambient temperature	Operation -25...+55 °C				
	Storage -40...+70 °C				
Weight	With cable 2 m approx. 120 g				
	With plug approx. 200 g				
Housing material	Housing: ABS; optic: PMMA				

- 1) Object with 90 % reflectance (with reference to standard white according to DIN 5033)
- 2) Average service life 100,000 h at T_A = +25 °C
- 3) Limit values
- 4) May not exceed or fall short of V_S tolerances
- 5) Without load
- 6) Menu guided display via "Select button"
- 7) With resistive load
- 8) With light/dark ratio 1:1
- 9) Do not bend below 0 °C
- 10) Reference voltage 50 V DC
- 11) A = V_S connections reverse-polarity protected
 B = Output Q and Q̄ short-circuit protected
 C = Interference pulse suppression
 D = Outputs overcurrent and short-circuit protected

Scanning distance **Order information^{*)}**




- 1 Scanning range on white, 90 % remission
- 2 Scanning range on grey, 18 % remission
- 3 Scanning range on black, 6 % remission



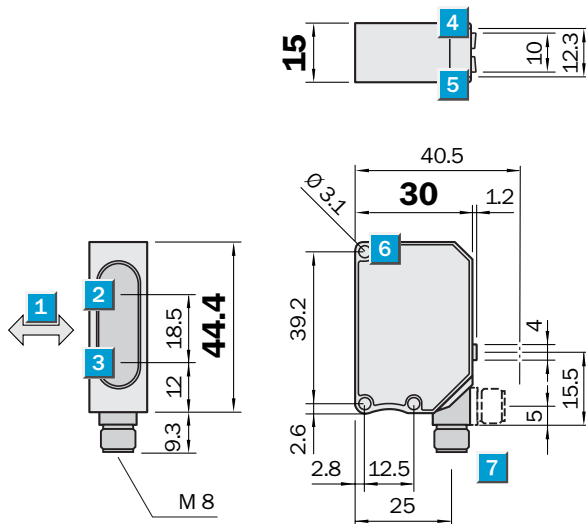
Type	Part no.
WTB 190T-P 132	6 022 835
WTB 190T-P 430	6 022 838
WTB 190T-N 132	6 022 831
WTB 190T-N 430	6 022 834

*) Equipment model with 5 m PVC cable or M 8 plug, 3-pin on request


Scanning distance
100 ... 300 mm
 Photoelectric proximity switch

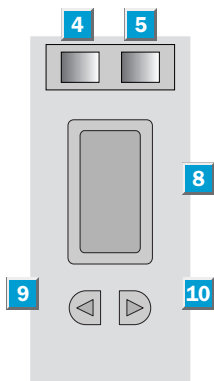
- Precise foreground suppression
- Small, precise red light spot, enabling optimum and fast equipment alignment
- Equipment setting via Teach-in procedure at the push of a button
- Equipment parameterization via selection mode at the push of a button
- Easily readable display with menu prompting enables convenient programming and parameterization

Dimension illustration



Setting options

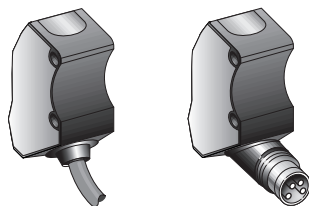
All types



- 1 Standard direction of the material being scanned
- 2 Centre of optical axis, receiver
- 3 Centre of optical axis, sender
- 4 Orange LED indicator: output active
- 5 Green LED indicator: light reception with operating reserve > 1.1
- 6 Mounting holes, \varnothing approx. 3.1 mm
- 7 Plug 4-pin, M 8 or cable 2 m
- 8 Numerical display
- 9 Select mode button
- 10 Teach-in button

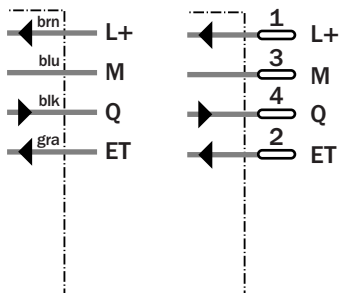
Connection types

WTV 190T-P 162	WTV 190T-P 460
WTV 190T-N 162	WTV 190T-N 460



4 x 0.2 mm²

4-pin, M8



Accessories

- Connectors
- Mounting systems

Technical data		WTV 190T-	P 162	P 460	N 162	N 460
Scanning distance, adjustable	100...300 mm ¹⁾					
Sensitivity control	Teach-in, External Teach (ET) Teach-in via button, menu guided					
Light source²⁾, Lichtart	LED, red light					
Light spot diameter	11 mm at distance of 300 mm					
Supply voltage V_S	10 ... 30 V DC ³⁾					
Ripple ⁴⁾	10 %					
Current consumption ⁵⁾	40 mA					
Switching outputs	PNP, Q, open collector NPN, Q, open collector					
Output current I _A max.	100 mA					
Switching type	Light/dark-switching ⁶⁾ , programmable					
Response time ⁷⁾	2.5 ms					
Switching frequency max. ⁸⁾	200/s					
Timer mode (dLY)	0... 10 s ⁶⁾ , programmable					
Timer function	Nor: normal Mode Ond: On Delay Mode, on delay OFd: Off Delay Mode, off delay					
Connection types: Cable	PVC, 2 m ⁹⁾ ; 4 x 0.2 mm ² , ø 4.2 mm					
Plug	4-pin, M8					
VDE protection class¹⁰⁾	⚡					
Circuit protection¹¹⁾	A, B, C, D					
Enclosure rating	IP 67					
Ambient temperature	Operation -25...+55 °C Storage -40...+70 °C					
Weight	With cable 2 m approx. 120 g With plug approx. 200 g					
Housing material	Housing: ABS; optic: PMMA					

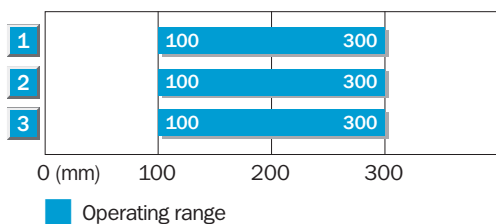
1) Object with 90 % reflectance (with reference to standard white according to DIN 5033)
2) Average service life 100,000 h at T_A = +25 °C

3) Limit values
4) May not exceed or fall short of V_S tolerances
5) Without load
6) Menu guided display via "Select button"

7) With resistive load
8) With light/dark ratio 1:1
9) Do not bend below 0 °C
10) Reference voltage 50 V DC

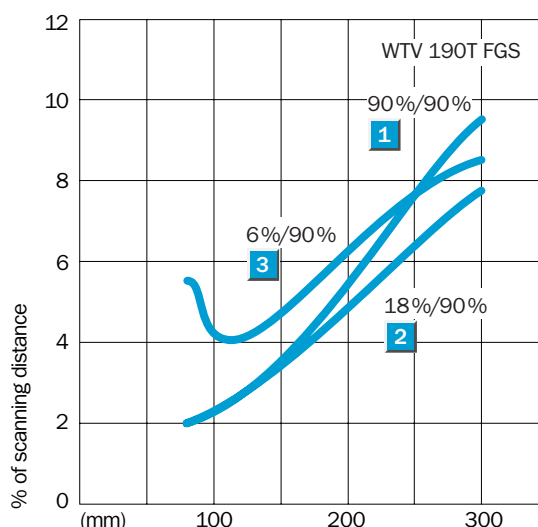
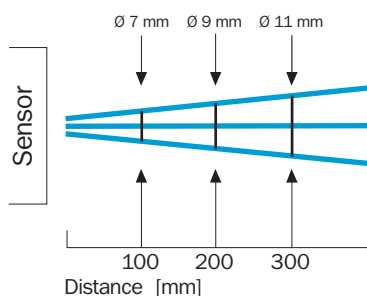
11) A = V_S connections reverse-polarity protected
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C = Interference pulse suppression
D = Outputs overcurrent and short-circuit protected

Scanning distance



- 1 Scanning range on white, 90 % remission
- 2 Scanning range on grey, 18 % remission
- 3 Scanning range on black, 6 % remission


Light spot diameter



Order information*)

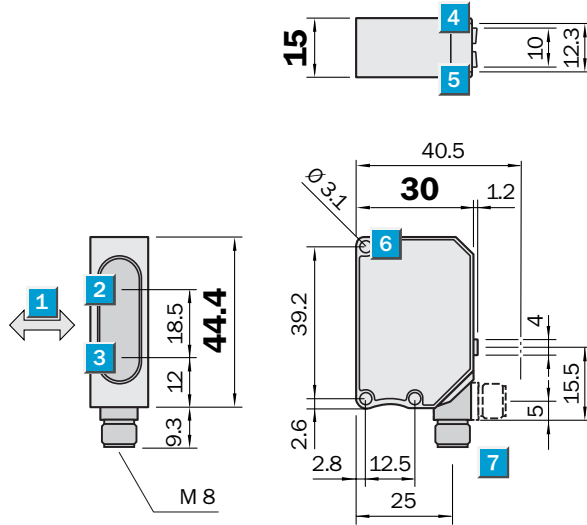
Type	Part no.
WTV 190T-P 162	6 022 859
WTV 190T-P 460	6 022 862
WTV 190T-N 162	6 022 855
WTV 190T-N 460	6 022 858

*) Equipment model with 5 m PVC cable or M 8 plug, 3-pin on request


Scanning distance
 50 ... 100 mm
 Photoelectric proximity switch

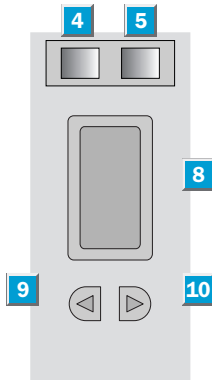
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Dimension illustration



Setting options

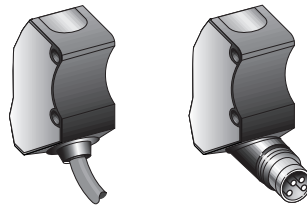
All types



- 1** Standard direction of the material being scanned
- 2** Centre of optical axis, receiver
- 3** Centre of optical axis, sender
- 4** Orange LED indicator: output active
- 5** Green LED indicator: light reception with operating reserve > 1.1
- 6** Mounting holes, Ø approx. 3.1 mm
- 7** Plug 4-pin, M 8 or cable 2 m
- 8** Numerical display
- 9** Select mode button
- 10** Teach-in button

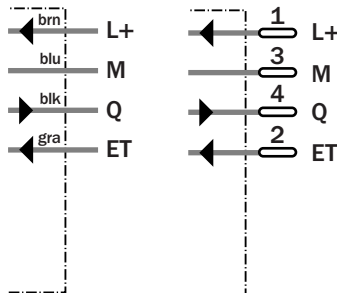
Connection types

WTV 190T-P 132	WTV 190T-P 430
WTV 190T-N 132	WTV 190T-N 430



4 x 0.2 mm²

4-pin, M8



Accessories

- Connectors
- Mounting systems

Technical data		WTB 190T-	P 132	P 430	N 132	N 430
Scanning distance, adjustable	50... 100 mm ¹⁾					
Sensitivity control	Teach-in, External Teach (ET) Teach-in via button, menu guided					
Light source²⁾	LED, red light					
Light spot diameter	4 mm at distance of 100 mm					
Supply voltage U_V	10 ... 30 V DC ³⁾					
Ripple ⁴⁾	10 %					
Current consumption ⁵⁾	40 mA					
Switching outputs	PNP, Q, open collector NPN, Q, open collector					
Output current I _A max.	100 mA					
Switching type	Light/dark-switching ⁶⁾ , programmable					
Response time ⁷⁾	2.5 ms					
Switching frequency max. ⁸⁾	200/s					
Timer mode (dLY)	0... 10 s ⁶⁾ , programmable					
Timer function	Nor: normal Mode Ond: On Delay Mode, on delay OFd: Off Delay Mode, off delay					
Connection types: Cable	PVC, 2 m ⁹⁾ ; 4 x 0.2 mm ² , ø 4.2 mm					
Plug	4-pin, M8					
VDE protection class¹⁰⁾	⚡					
Circuit protection¹¹⁾	A, B, C, D					
Enclosure rating	IP 67					
Ambient temperature	Operation -25...+55 °C Storage -40...+70 °C					
Weight	With cable 2 m approx. 120 g With plug approx. 200 g					
Housing material	Housing: ABS; optic: PMMA					

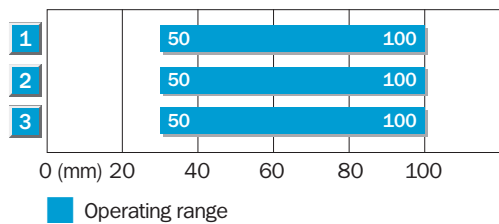
1) Object with 90 % reflectance (with reference to standard white according to DIN 5033)
2) Average service life 100,000 h at T_A = +25 °C

3) Limit values
4) May not exceed or fall short of V_S tolerances
5) Without load
6) Menu guided display via "Select button"

7) With resistive load
8) With light/dark ratio 1:1
9) Do not bend below 0 °C
10) Reference voltage 50 V DC

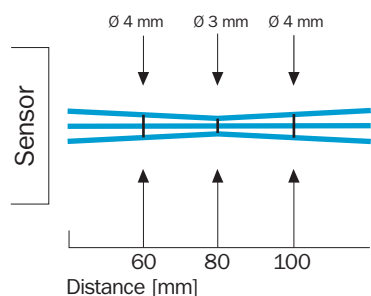
11) A = V_S connections reverse-polarity protected
B = Output Q and Q̄ short-circuit protected
C = Interference pulse suppression
D = Outputs overcurrent and short-circuit protected

Scanning distance



- 1 Scanning range on white, 90 % remission
- 2 Scanning range on grey, 18 % remission
- 3 Scanning range on black, 6 % remission

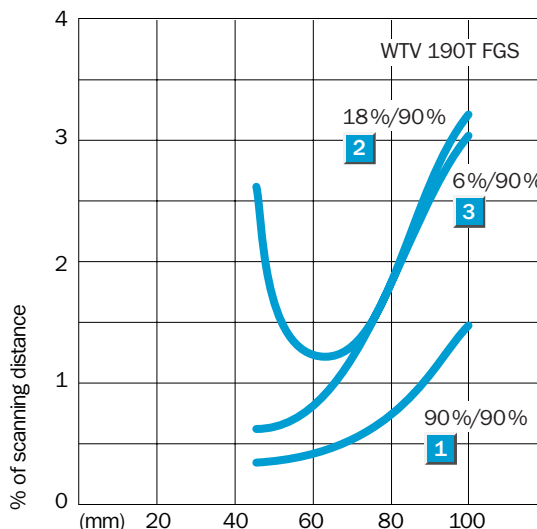
Light spot diameter



Order information^{*)}

Type	Part no.
WTV 190T-P 132	6 022 851
WTV 190T-P 430	6 022 854
WTV 190T-N 132	6 022 847
WTV 190T-N 430	6 022 850

*) Equipment model with 5 m PVC cable or M 8 plug, 3-pin on request



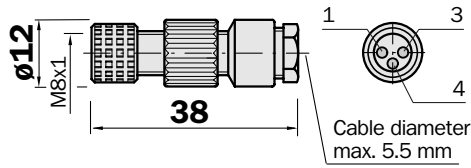
Dimensional drawings and order information

■ Contact assignment according to EN 50044

SENSICK screw-in system M 8, 3- or 4-pin, enclosure rating IP 67

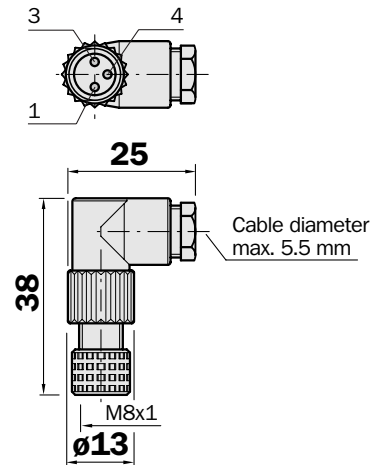
Female connector M 8, 3-pin, straight

Type	Part no.
DOS-0803-G	7 902 077



Female connector M 8, 3-pin, right angle

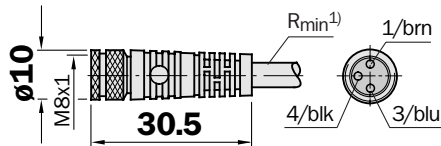
Type	Part no.
DOS-0803-W	7 902 078



Female connector M 8, 3-pin, straight

Light spot diameter 5 mm, 3 x 0.34 mm², sheath PVC

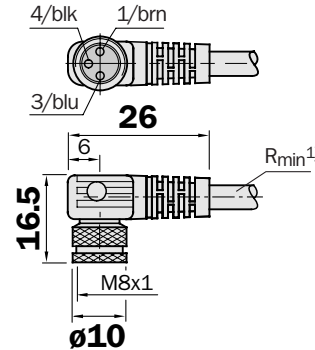
Type	Part no.	Cable length
DOL-0803-G02M	6 010 785	2 m
DOL-0803-G05M	6 022 009	5 m
DOL-0803-G10M	6 022 011	10 m



Female connector M 8, 3-pin, right angle

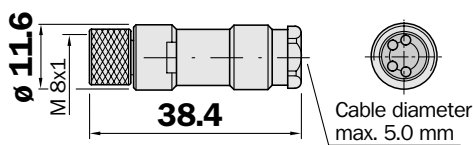
Light spot diameter 5 mm, 3 x 0.34 mm², sheath PVC

Type	Part no.	Cable length
DOL-0803-W02M	6 008 489	2 m
DOL-0803-W05M	6 022 010	5 m
DOL-0803-W10M	6 022 012	10 m



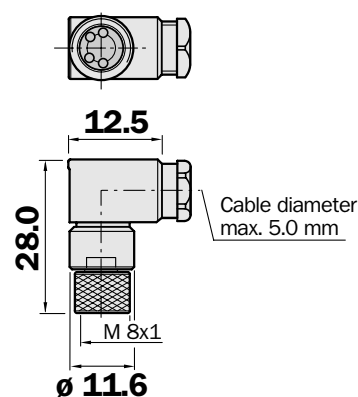
Female connector M 8, 4-pin, straight

Type	Part no.
DOS-0804-G	6 009 974



Female connector M 8, 4-pin, right angle

Type	Part no.
DOS-0804-W	6 009 975

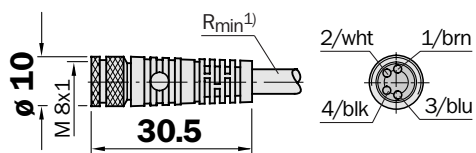


Dimensional drawings and order information

Female connector M 8, 4-pin, straight

Light spot diameter 5 mm, 4 x 0.25 mm², sheath PVC

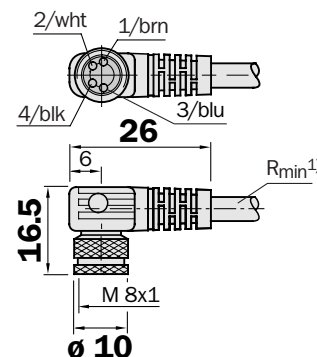
Type	Part no.	Cable length
DOL-0804-G02M	6 009 870	2 m
DOL-0804-G05M	6 009 872	5 m
DOL-0804-G10M	6 010 754	10 m



Female connector M 8, 4-pin, right angle

Light spot diameter 5 mm, 4 x 0.25 mm², sheath PVC

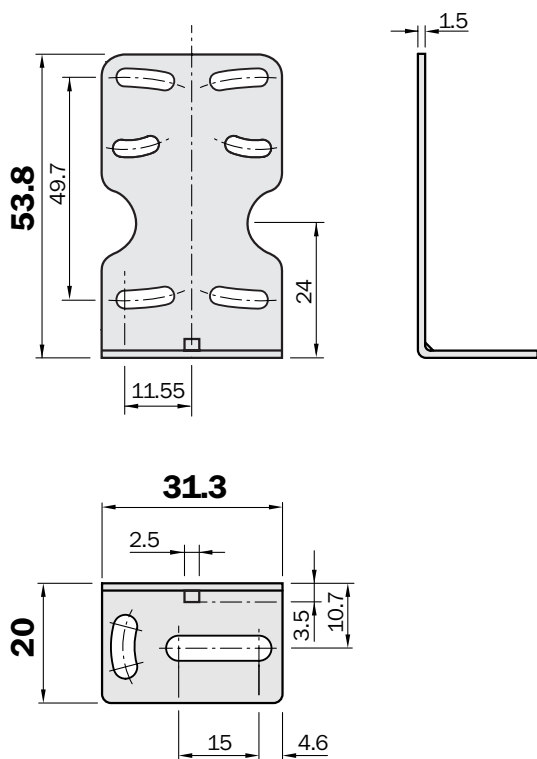
Type	Part no.	Cable length
DOL-0804-W02M	6 009 871	2 m
DOL-0804-W05M	6 009 873	5 m
DOL-0804-W10M	6 010 755	10 m



¹⁾ Minimum bend radius in dynamic use
 $R_{min} = 20 \times \text{cable diameter}$

Mounting bracket for W 190T

Type	Part no.
BEF-W190	5 311 362



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