

# W 190 L Standard Series: Laser Technology at economical prices

	<b>BGS Photoelectric proximity switches</b>
	<b>Photoelectric reflex switches</b>
	<b>Through-beam photoelectric switches</b>



The sensors' fast response times make them ideal for most high-speed applications.

A standard feature is the light/dark selector switch, providing great flexibility and allowing the W 190 L to be adapted to a wide variety of applications.

The option of a rotating M8 connector or 2 m cable version is available as standard, and yellow and green LEDs provide practical and user friendly assistance with commissioning and calibration.

The compact, industry-standard plastic housing permits the use of the device even in harsh environments.

**D**o your customers require reliable, economical Laser Technology for standard applications? The photoelectric switches W 190 L series with laser technology are reliable, user friendly and economical.

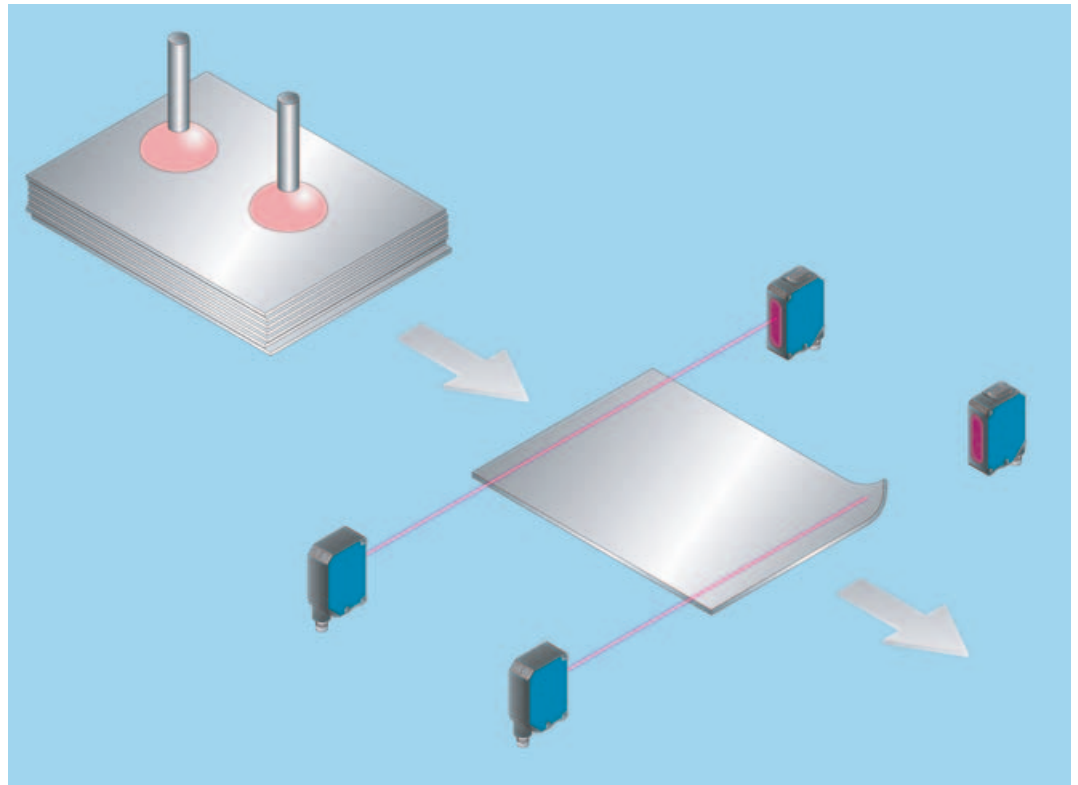
All sensors have red-light laser diodes, which conform to Protection Class 2. The precise visible light spot allows fast and accurate alignment of the sensors to the target. The small light spot allows the reliable detection of even the smallest objects.

WTB 190 L, with precise, adjustable background suppression (BGS), is available with two different scanning ranges.

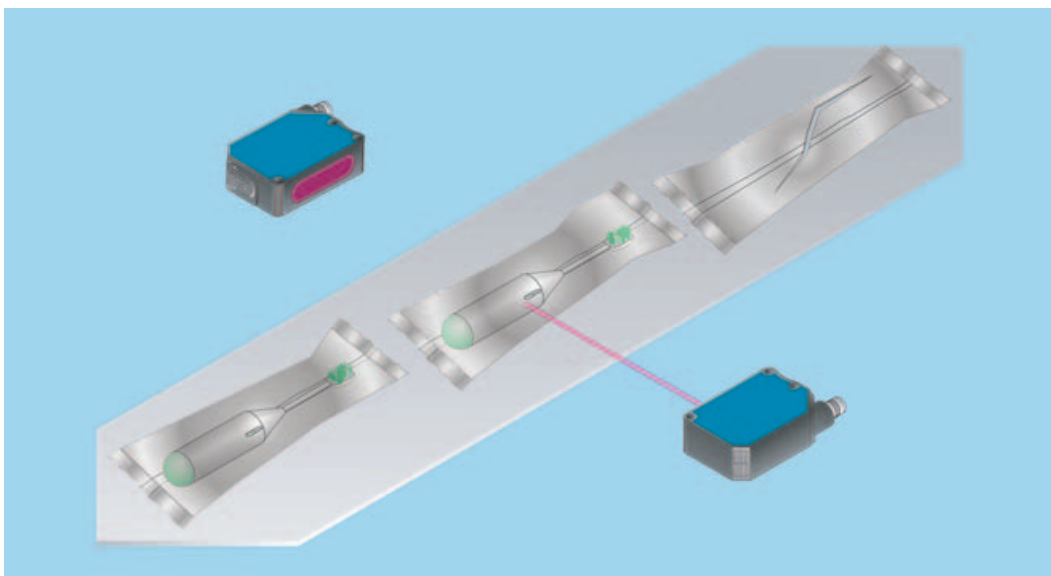
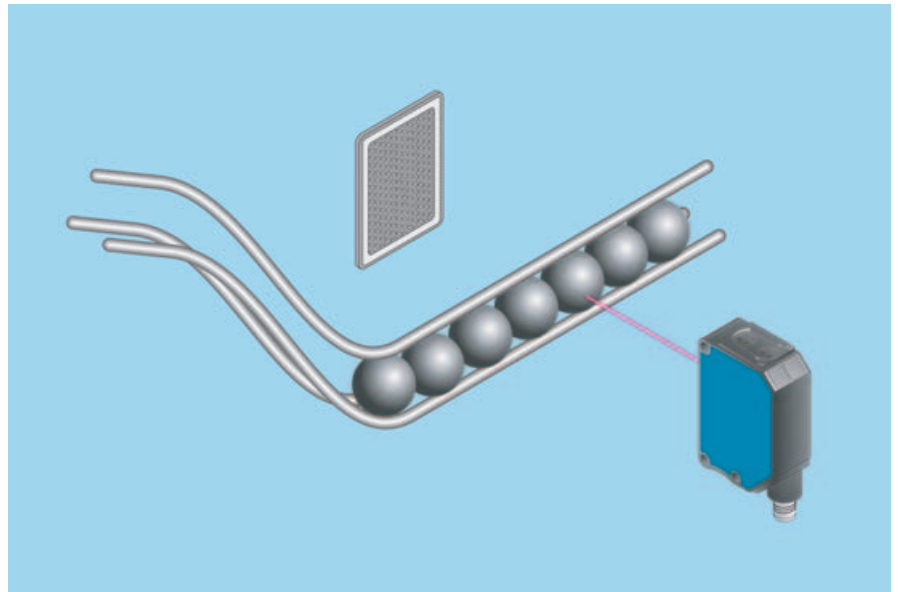
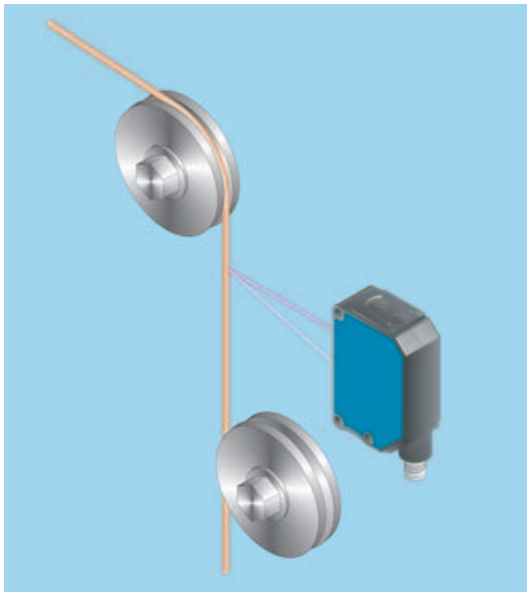
WL 190 L, with precision auto-collimated optics, enables the reliable detection of small objects, even at close range.

WS/WE 190 L, ideal for applications requiring a large system reserve.

► WS/WE 190 L: Detection of over-height sheet metal parts.  
Sector: Metal working.




▼ WTB 190 T: Wire break test.  
Sector: Assembly technology.



▲ WL 190 L: Component detection, e.g. components for bearings.  
Sector: Assembly technology.

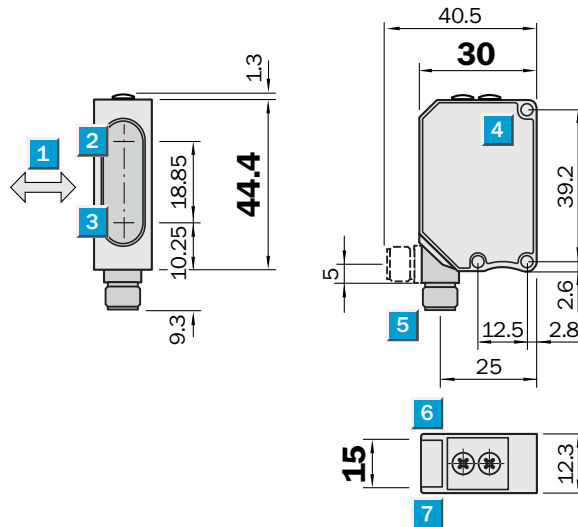
◄ WS/WE 190 L: Completeness check. In this example: Is the product in the outer packaging?  
Sector: Packaging industry.

 **Scanning distance**  
100 ... 300 mm

Photoelectric proximity switches

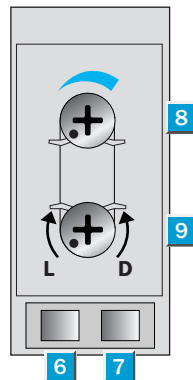
- Laser LED, visible red light, Class 2
- User friendly sensor, easily aligned and set up
- Precise background suppression
- Set via rotary switch
- Selectable output: Light/dark switching

**Dimension illustration**



**Setting options**

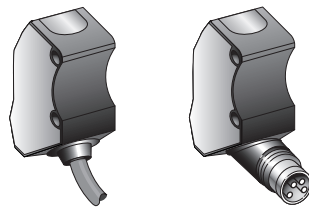
All types



- 1 Standard direction of the material being scanned
- 2 Centre of optical axis, sender
- 3 Centre of optical axis, receiver
- 4 Mounting holes, Ø approx. 3.1 mm
- 5 Plug 4-pin, M8, 90° rotatable or cable 2 m, 3-wire
- 6 Status indicator LED, yellow: Output active
- 7 Status indicator LED, green: Laser on
- 8 Scanning range adjustment
- 9 L.ON/D.ON selection switch

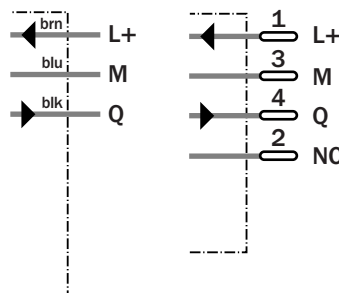
**Connection types**

WTB 190L-P 162	WTB 190L-P 460
WTB 190L-N 162	WTB 190L-N 460



3 x 0.18 mm<sup>2</sup>

4-pin, M8



CE  CDRH  
Accession Number  
0 31 22 45

 Laser class 2



**See chapter Accessories**

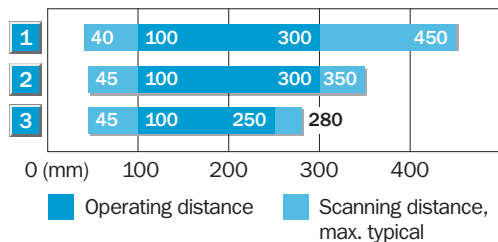
Cables and connectors

Mounting systems

Technical data		WTB 190 L-	P 162	P 460	N 162	N 460
<b>Scanning distance, adjustable</b>	100 ... 300 mm <sup>1)</sup>					
<b>Adjustment</b>	Potentiometer, 4 turns volume					
<b>Light source<sup>2)</sup></b>	Laser, red light; class 2					
Light spot diameter	2.5 mm at distance of 200 mm					
<b>Supply voltage V<sub>S</sub></b>	10 ... 30 V DC <sup>3)</sup>					
Ripple <sup>4)</sup>	± 10 %					
Current consumption <sup>5)</sup>	Max. 40 mA					
<b>Switching outputs</b>	PNP					
	NPN					
Output current I <sub>A</sub> max.	< 100 mA					
Switching mode	Light/dark mode <sup>6)</sup> , selectable					
Response time <sup>7)</sup>	0.7 ms					
Switching frequency max. <sup>8)</sup>	700/s					
<b>Connection types</b> Cable	3-wire <sup>9)</sup>					
Plug	4-pin, M8					
<b>VDE protection class<sup>10)</sup></b>	⊕					
<b>Circuit protection<sup>11)</sup></b>	A, B					
<b>Enclosure rating</b>	IP 67					
<b>Ambient temperature</b>	Operation -10 ... +40 °C					
	Storage -20 ... +60 °C					
<b>Weight</b>	With cable 2 m approx. 200 g					
	With plug approx. 120 g					
<b>Housing material</b>	Housing: ABS; optic: PMMA					

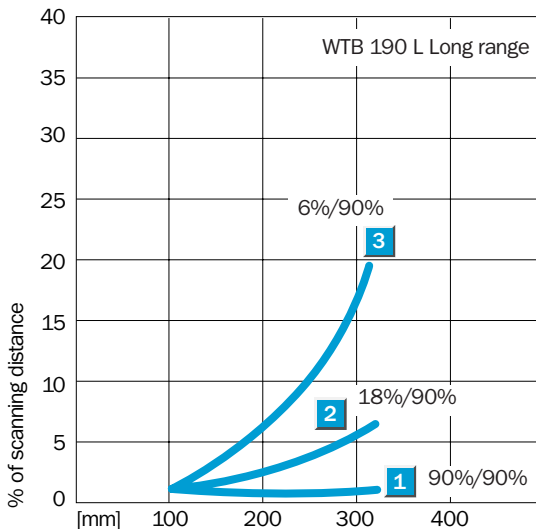
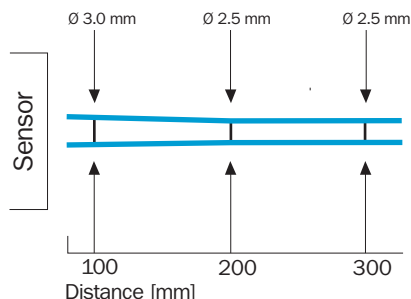
- 1) Object with 90 % reflectance (with reference to standard white according to DIN 5033)
- 2) Average service life 50,000 h at T<sub>A</sub> = + 25 °C
- 3) Limit values
- 4) Must be within V<sub>S</sub> tolerances
- 5) Without load
- 6) Via "select button"
- 7) With resistive load
- 8) With light/dark ratio 1:1
- 9) Do not bend below 0 °C
- 10) Reference voltage 50 V DC
- 11) A = V<sub>S</sub> connections reverse-polarity protected  
B = Output Q 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	Order no.
WTB 190L-P 162	6 026 553
WTB 190L-P 460	6 026 554
WTB 190L-N 162	6 026 551
WTB 190L-N 460	6 026 552

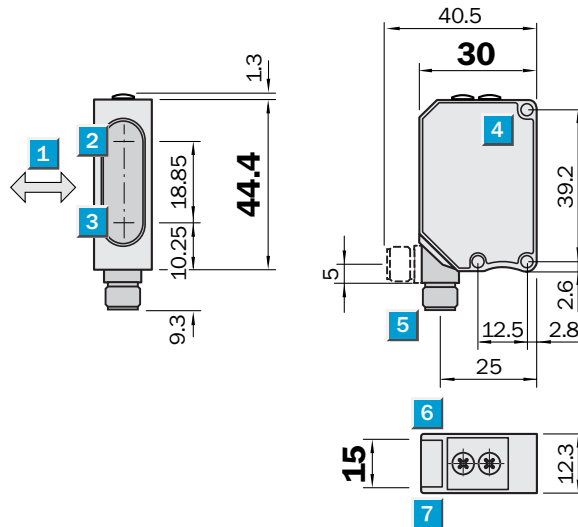
\*) Equipment model with 5 m PVC cable or M8 plug, 3-pin on request

**Scanning distance**  
40 ... 100 mm

Photoelectric proximity switch

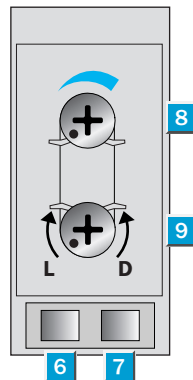
- Laser LED, visible red light, Class 2
- User friendly sensor, easily aligned and set up
- Precise background suppression
- Set via rotary switch
- Selectable output: Light/dark switching

**Dimension illustration**



**Setting options**

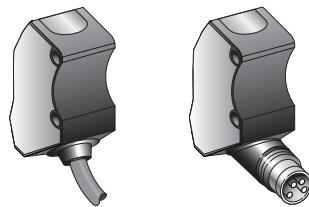
All types



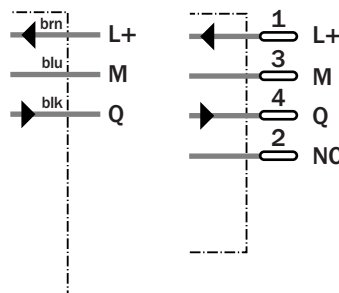
- 1 Standard direction of the material being scanned
- 2 Centre of optical axis, sender
- 3 Centre of optical axis, receiver
- 4 Mounting holes, Ø approx. 3.1 mm
- 5 Plug 4-pin, M8, 90° rotatable or cable 2 m, 3-wirer
- 6 Status indicator LED, yellow: Output active
- 7 Status indicator LED, green: Laser on
- 8 Scanning range adjustment
- 9 L.ON/D.ON selection switch

**Connection types**

WTB 190L-P 132	WTB 190L-P 430
WTB 190L-N 132	WTB 190L-N 430



3 x 0.18 mm <sup>2</sup>	4-pin, M8
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CE III CDRH  
Accession Number  
0 31 22 45

Laser class 2



**See chapter Accessories**

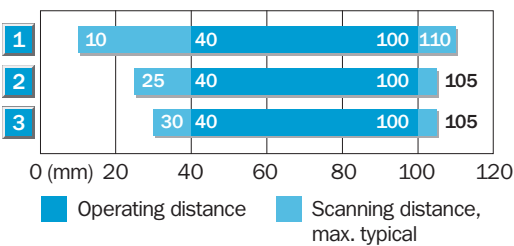
Cables and connectors

Mounting systems

Technical data		WTB 190 L-	P 132	P 430	N 132	N 430						
<b>Scanning distance, adjustable</b>	40 ... 100 mm <sup>1)</sup>											
<b>Adjustment</b>	Potentiometer, 4 turns volume											
<b>Light source<sup>2)</sup></b>	Laser, red light; class 2											
Light spot diameter	2 mm at distance of 80 mm											
<b>Supply voltage V<sub>S</sub></b>	10 ... 30 V DC <sup>3)</sup>											
Ripple <sup>4)</sup>	± 10 %											
Current consumption <sup>5)</sup>	Max. 40 mA											
<b>Switching outputs</b>	PNP											
	NPN											
Output current I <sub>A</sub> max.	< 100 mA											
Switching mode	Light/dark mode <sup>6)</sup> , selectable											
Response time <sup>7)</sup>	0.7 ms											
Switching frequency max. <sup>8)</sup>	700/s											
<b>Connection types</b> Cable	3-wire <sup>9)</sup>											
Plug	4-pin, M8											
<b>VDE protection class<sup>10)</sup></b>	⊕											
<b>Circuit protection<sup>11)</sup></b>	A, B											
<b>Enclosure rating</b>	IP 67											
<b>Ambient temperature</b>	Operation -10 ... +40 °C											
	Storage -20 ... +60 °C											
<b>Weight</b>	With cable 2 m approx. 200 g											
	With plug approx. 120 g											
<b>Housing material</b>	Housing: ABS; optic: PMMA											

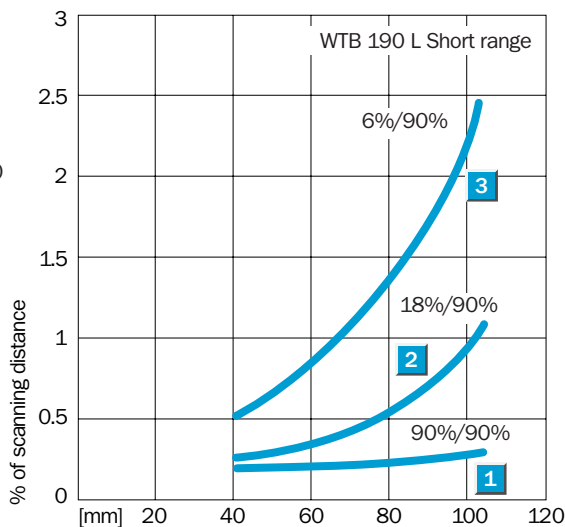
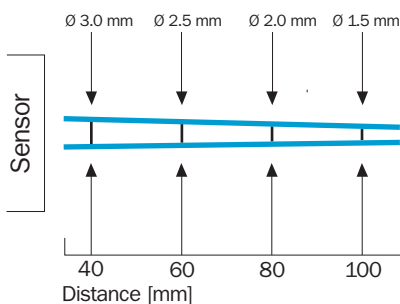
- 1) Object with 90 % reflectance (with reference to standard white according to DIN 5033)
- 2) Average service life 50,000 h at T<sub>A</sub> = + 25 °C
- 3) Limit values
- 4) Must be within V<sub>S</sub> tolerances
- 5) Without load
- 6) Via „select button“
- 7) With resistive load
- 8) With light/dark ratio 1:1
- 9) Do not bend below 0 °C
- 10) Reference voltage 50 V DC
- 11) A = V<sub>S</sub> connections reverse-polarity protected  
B = Output Q 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	Order no.
WTB 190L-P 132	6 026 549
WTB 190L-P 430	6 026 550
WTB 190L-N 132	6 026 547
WTB 190L-N 430	6 026 548

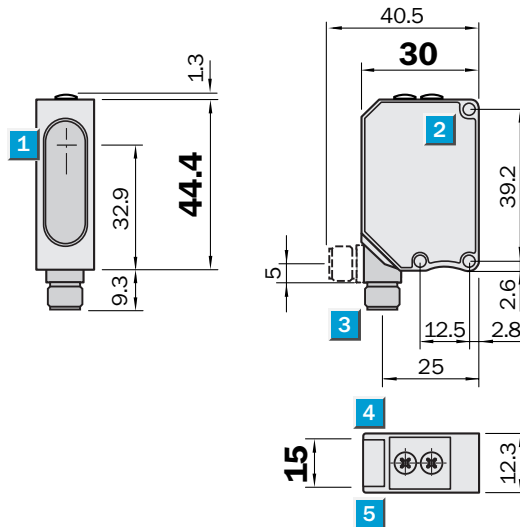
\*) Equipment model with 5 m PVC cable or M8 plug, 3-pin on request

**Scanning range**  
0.01 ... 5.5 m

Photoelectric reflex switches

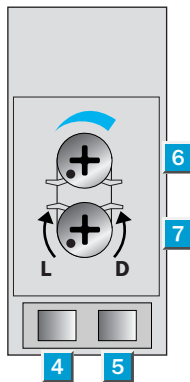
- Laser LED, visible red light, Class 2
- User friendly sensor, easily aligned and set up
- Sensitivity setting via rotary switch
- Precision auto-collimated optics
- Selectable output: Light/dark switching

### Dimension illustration



### Setting options

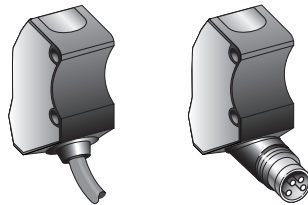
All types



- 1 Centre of optical axis
- 2 Mounting holes, Ø approx. 3.1 mm
- 3 Plug 4-pin, M8, 90° rotatable or cable 2 m, 3-wire
- 4 Status indicator LED, yellow: Output active
- 5 Status indicator LED, green: Laser on
- 6 Sensitivity control
- 7 L.ON/D.ON selection switch

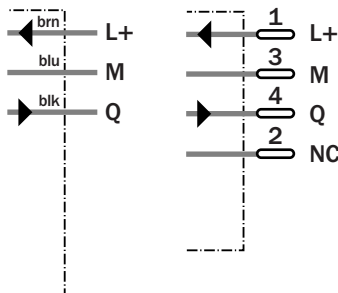
### Connection types

WL 190L-P 132	WL 190L-P 430
WL 190L-N 132	WL 190L-N 430



3 x 0.18 mm<sup>2</sup>

4-pin, M8



CE III CDRH  
Accession Number  
0 31 22 45

Laser class 2



### See chapter Accessories

- Cables and connectors
- Mounting systems
- Reflectors



Technical data		WL 190L-	P 132	P 430	N 132	N 430						
<b>Scanning range</b> , max. typical/on refl. <sup>1)</sup>	0.01 ... 5.5 m/P 250 F											
Sensitivity, adjustable	Potentiometer, 1 turn volume											
<b>Light source</b> <sup>2)</sup>	Laser, red light; class 2											
Light spot diameter	45 mm at distance of 5 m											
<b>Supply voltage</b> V <sub>S</sub>	10 ... 30 V DC <sup>3)</sup>											
Ripple <sup>4)</sup>	± 10 %											
Current consumption <sup>5)</sup>	Max. 40 mA											
<b>Switching outputs</b>	PNP											
	NPN											
Output current I <sub>A</sub> max.	< 100 mA											
Switching mode	Light/dark mode <sup>6)</sup> , selectable											
Response time <sup>7)</sup>	< 0.5 ms											
Switching frequency max. <sup>8)</sup>	1000/s											
<b>Connection types</b> Cable	3-wire <sup>9)</sup>											
	Plug	4-pin, M8										
<b>VDE protection class</b> <sup>10)</sup>	◊											
<b>Circuit protection</b> <sup>11)</sup>	A, B											
<b>Enclosure rating</b>	IP 67											
<b>Ambient temperature</b>	Operation -10 ... +40 °C											
	Storage -20 ... +60 °C											
<b>Weight</b>	With cable 2 m approx. 200 g											
	With plug approx. 120 g											
<b>Housing material</b>	Housing: ABS; optic: PMMA											

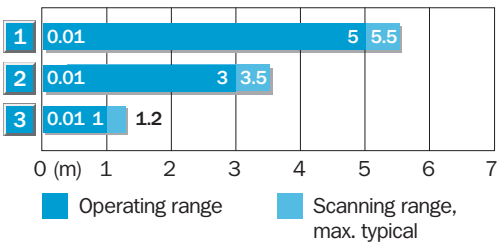
1) Reflector P 250 F included with delivery  
 2) Average service life 50,000 h at T<sub>A</sub> = +25 °C  
 3) Limit values

4) Must be within V<sub>S</sub> tolerances  
 5) Without load  
 6) 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

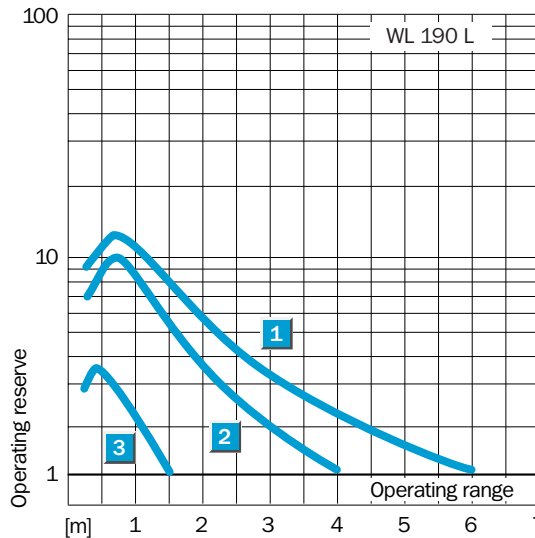
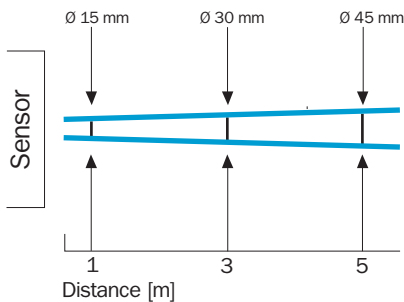
11) A = V<sub>S</sub> connections reverse-polarity protected  
 B = Output Q short-circuit protected

**Scanning range**



Reflector type	Operating range
1 P 250 F	0.01 ... 5 m
2 PL 20 F	0.01 ... 3 m
3 PL 10 F	0.01 ... 1 m

**Light spot diameter**



**Order information \*)**

Type	Order no.
WL 190L-P 132	6 026 557
WL 190L-P 430	6 026 558
WL 190L-N 132	6 026 555
WL 190L-N 430	6 026 556

\*) Equipment model with 5 m PVC cable or M8 plug, 3-pin on request

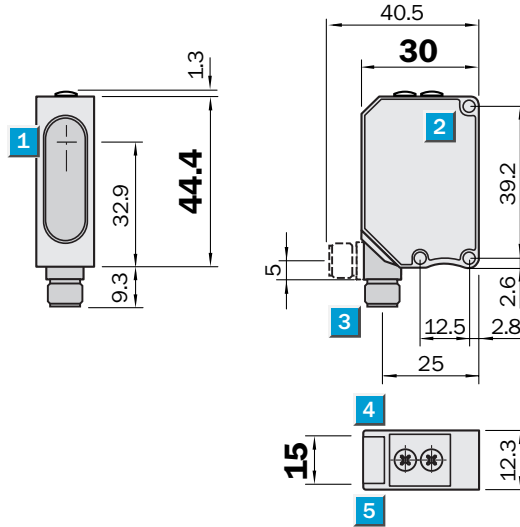


**Scanning range**  
0 ... 50 m

Through-beam photoelectric switches

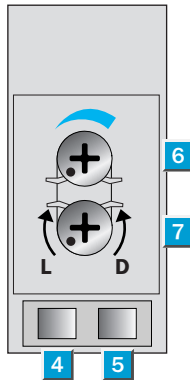
- Laser LED, visible red light, Class 2
- User friendly sensor, easily aligned and set up
- Sensitivity setting via rotary switch
- Precision auto-collimated optics
- Selectable output: Light/dark switching

Dimension illustration



Setting options

All types

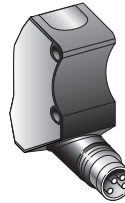


- 1 Centre of optical axis
- 2 Mounting holes, Ø approx. 3.1 mm
- 3 Plug 4-pin, M8, 90° rotatable or cable 2 m, 3-wire
- 4 Status indicator LED, yellow: Output active
- 5 Status indicator LED, green: Laser on
- 6 Sensitivity control
- 7 L.ON/D.ON selection switch

Connection types

WS/WE 190L-P 132  
WS/WE 190L-N 132

WS/WE 190L-P 430  
WS/WE 190L-N 430



2 x 0.18 mm<sup>2</sup>

3 x 0.18 mm<sup>2</sup>

4-pin, M8

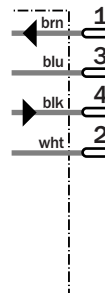
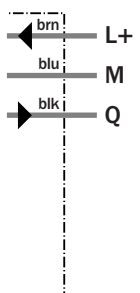
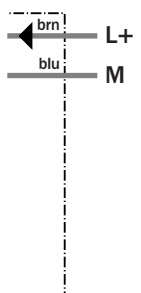
4-pin, M8

Sender

Receiver

Sender

Receiver



CE III CDRH  
Accession Number  
0 31 22 45

Laser class 2



See chapter Accessories

Cables and connectors

Mounting systems

Technical data		WS/WE 190L-	P 132	P 430	N 132	N 430						
<b>Scanning range</b> , max. typical	50 m, adjustable											
Sensitivity, adjustable	Potentiometer, 1 turn volume											
<b>Light source</b> <sup>1)</sup>	Laser, red light; class 2											
Light spot diameter	40 mm at distance of 10 m											
<b>Supply voltage</b> V <sub>S</sub>	10 ... 30 V DC <sup>2)</sup>											
Ripple <sup>3)</sup>	± 10 %											
Current consumption <sup>4)</sup>	Max. 40 mA											
<b>Switching outputs</b>	PNP											
	NPN											
Output current I <sub>A</sub> max.	< 100 mA											
Switching mode	Light/dark mode <sup>5)</sup> , selectable											
Response time <sup>6)</sup>	< 0.5 ms											
Switching frequency max. <sup>7)</sup>	1000/s											
<b>Connection types</b> Cable	3-wire <sup>8)</sup>											
	Plug	4-pin, M8										
<b>VDE protection class</b> <sup>9)</sup>	⊕											
<b>Circuit protection</b> <sup>10)</sup>	A, B											
<b>Enclosure rating</b>	IP 67											
<b>Ambient temperature</b>	Operation -10 ... +40 °C											
	Storage -20 ... +60 °C											
<b>Weight</b>	With cable 2 m approx. 200 g											
	With plug approx. 120 g											
<b>Housing material</b>	Housing: ABS; optic: PMMA											

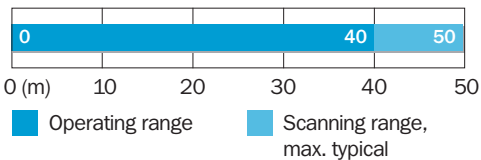
1) Average service life 50,000 h at T<sub>A</sub> = +25 °C  
 2) Limit values

3) Must be within V<sub>S</sub> tolerances  
 4) Without load  
 5) Via "select button"

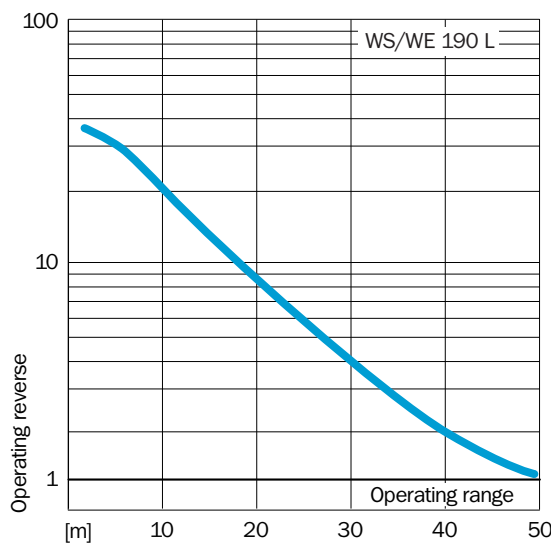
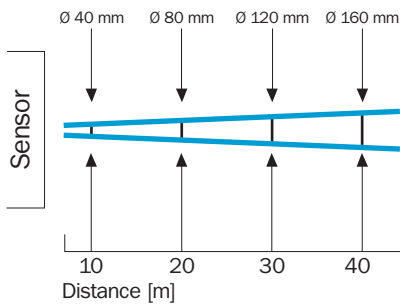
6) With resistive load  
 7) With light/dark ratio 1:1  
 8) Do not bend cable below 0 °C  
 9) Reference voltage 50 V DC

10) A = V<sub>S</sub> connections reverse-polarity protected  
 B = Output Q short-circuit protected

**Scanning range and operating reserve**



**Light spot diameter**



**Order information \*)**

Type	Order no.
WS/WE 190L-P132	6 026 561
WS/WE 190L-P430	6 026 562
WS/WE 190L-N132	6 026 559
WS/WE 190L-N430	6 026 560

\*) Equipment model with 5 m PVC cable or M8 plug, 3-pin on request