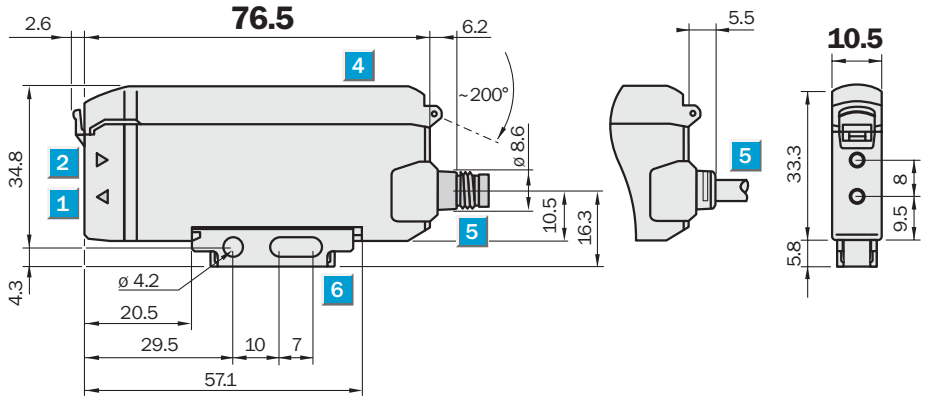


	Scanning distance 0 ... 480 mm
	Scanning range 0 ... 4,000 mm
Proximity switch with fibre-optic cables	

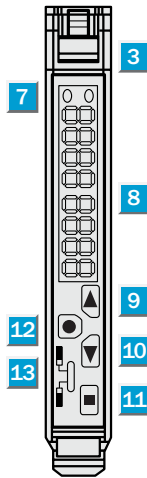
- Longest ranges
- Fast switching frequency
- Precise, stable switching point
- Dual display
- Interactive user prompting
- Appropriate for the LL3 fibre-optic cable series



Dimensional drawing



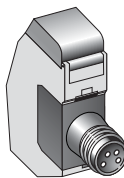
Adjustments possible



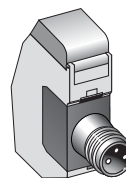
- 1 Sender LED, installation of LL3 fibre-optic cable (sender fibre)
- 2 Receiver LED, installation of LL 3 fibre-optic cable (receiver fibre)
- 3 Locking of fibre-optic cables
- 4 Protective hood: can be folded out approx. 180°
- 5 M8 plug fixed or 4-wire cable (cables not included with delivery)
- 6 Mounting bracket included (see Accessories)
- 7 Indicator LED, yellow: lights up when switching output is active
- 8 Numeric display: 2 x 4-digit
green: current reception value, operating mode
red: Teach-in and function parameter
- 9 Step button < (manual switching threshold: higher; or next function parameter)
- 10 Step button > (manual switching threshold: lower; or previous function parameter)
- 11 "Teach-in" pushbutton
- 12 Mode/Enter button (programming button)
- 13 Operating mode selector switch:
"SET": active Teach-in-switching threshold
"RUN": sensor mode and function parameter selection)

Connection type

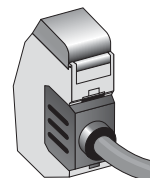
WLL190T-2N434	WLL190T-2N333	WLL190T-2N432
WLL190T-2P434	WLL190T-2P333	WLL190T-2P432



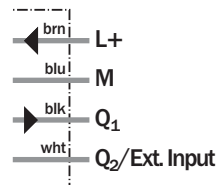
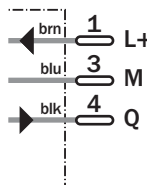
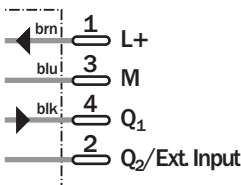
M8, 4-pin



M8, 3-pin



4 x 0.2 mm²



Accessories

Connector, M8, 3-pin
Connector, M8, 4-pin
Fibre-optic cables
Mounting systems
Tip adaptors

WLL190T-2		N333	N432	N434	P333	P432	P434				
Operating distance	0 ... 480 mm ¹⁾										
Fibre-optic cable (proximity system)	LL3-DB01										
Adjustment of operating distance	Teach-in: single-teach button										
	Teach-in: single-teach button & cable										
Scanning range typ. max.	0 ... 4,000 mm ²⁾										
Fibre-optic cable (through-beam system)	LL3-TB01 and tip adapter LL3-TA01										
Scanning range, recommended	0 ... 2,000 mm ²⁾										
Fibre-optic cable (through-beam system)	LL3-TB01										
Sensitivity adjustment	Teach-in: single-teach button										
	Teach-in: single-teach button & cable										
Precise correction	Step button +/- manual										
Light source, light type	LED, red light, 650 nm ³⁾										
Light spot diameter	Depending on scanning range										
Angle of dispersion	Ca. 65 ° (deviations see LL3 data)										
Supply voltage V_s	DC 10 ... 24 V ⁴⁾										
Ripple	≤ 10 % ⁵⁾										
Power consumption	≤ 50 mA ⁶⁾										
Switching outputs	NPN, Q										
	NPN, Q1, Q2 ⁷⁾										
	PNP, Q										
	PNP, Q1, Q2 ⁷⁾										
Switching mode	Light-/dark-switching, selectable										
Output current I _a max	≤ 100 mA										
Response time	Selectable: 60 µs / 250 µs / 2 ms										
Switching frequency	8333 Hz / 2000 Hz / 250 Hz										
Time delay	Programmable 0 ms ... 9000 ms										
Time type	Programmable OFF/T _{OFF} /T _{QV} /ONE-SHOT										
Connection type	Connector, M8, 3-pin										
	Cable, PVC, 2 m ⁸⁾										
	Connector, M8, 4-pin										
VDE protection class	⊕										
Circuit protection	V _s connections reverse-polarity protected / In-/outputs short-circuit protected / Interference suppression / Outputs overcurrent and short-circuit protected										
Enclosure rating	IP 66 ⁹⁾										
Ambient temperature operation	-25 °C ... +55 °C										
Ambient temperature storage	-40 °C ... +70 °C										
Weight	Ca. 25 g										
	Ca. 20 g										
Housing material	ABS, PC										

¹⁾ Object with 90 % remission (based on standard white to DIN 5033). Scanning distance at response time 2 ms. Distance reduction at shorter response time (see LL3/ WLL190T-2 table)

²⁾ Scanning range at response time 2 ms. Range reduction at shorter response time (see LL3/ WLL190T-2 table)
³⁾ Average service life 100,000 h at T_a = +25 °C

⁴⁾ ± 10 %
⁵⁾ May not exceed or fall short of V_s tolerances

⁶⁾ Without load
⁷⁾ Selectable Q2, ext. teach or counter reset

⁸⁾ Do not bend below 0 °C
⁹⁾ Only with correct adaptation of the LL3 fibre-optic cable

Sensitivity setting

The following optimization modes can be programmed

- a) Normal mode (default) - 4 alternatives
- b) Dynamic Teach-in
- c) Zone Teach-in (window technology)
- d) Glass Teach-in (detection of transparent objects)

Ordering information

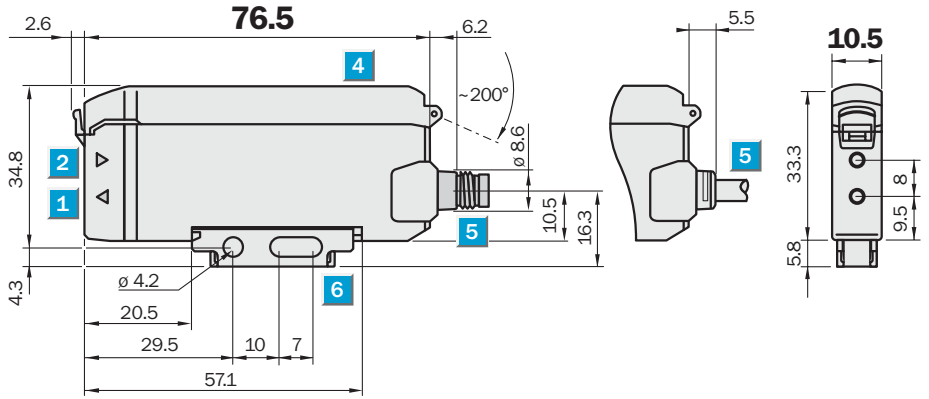
Type	Part Number
WLL190T-2N333	6 032 556
WLL190T-2N432	6 032 552
WLL190T-2N434	6 032 554
WLL190T-2P333	6 032 555
WLL190T-2P432	6 032 551
WLL190T-2P434	6 032 553

	Scanning distance 0 ... 160 mm
	Scanning range 0 ... 4,000 mm
Proximity switch with fibre-optic cables	

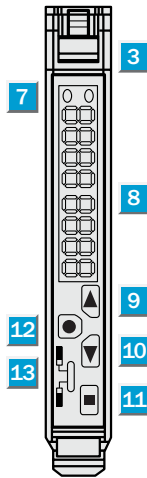
- For detection of marks
- Longest ranges
- Fast switching frequency
- Precise, stable switching point
- Dual display
- Interactive user prompting
- Appropriate for the LL3 fibre-optic cable series



Dimensional drawing



Adjustments possible

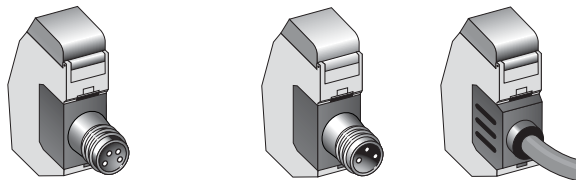


- 1 Sender LED, installation of LL3 fibre-optic cable (sender fibre)
- 2 Receiver LED, installation of LL 3 fibre-optic cable (receiver fibre)
- 3 Locking of fibre-optic cables
- 4 Protective hood: can be folded out approx. 180°
- 5 M8 plug fixed or 4-wire cable (cables not included with delivery)
- 6 Mounting bracket included (see Accessories)
- 7 Indicator LED, yellow: lights up when switching output is active
- 8 Numeric display: 2 x 4-digit
green: current reception value, operating mode
red: Teach-in and function parameter
- 9 Step button < (manual switching threshold: higher; or next function parameter)
- 10 Step button > (manual switching threshold: lower; or previous function parameter)
- 11 "Teach-in" pushbutton
- 12 Mode/Enter button (programming button)
- 13 Operating mode selector switch:
"SET": active Teach-in-switching threshold
"RUN": sensor mode and function parameter selection)



Connection type

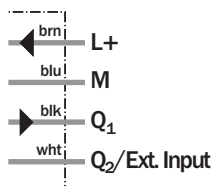
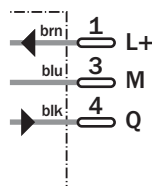
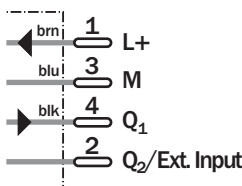
WLL190T-2N494	WLL190T-2N393	WLL190T-2N492
WLL190T-2P494	WLL190T-2P393	WLL190T-2P492



M8, 4-pin

M8, 3-pin

4 x 0.2 mm²



Accessories
Connector, M8, 3-pin
Connector, M8, 4-pin
Fibre-optic cables
Mounting systems
Tip adaptors

WLL190T-2		N393	N492	N494	P393	P492	P494				
Operating distance	0 ... 160 mm ¹⁾										
Fibre-optic cable (proximity system)	LL3-DMO1										
Adjustment of operating distance	Teach-in: single-teach button										
	Teach-in: single-teach button & cable										
Scanning range typ. max.	0 ... 4,000 mm ²⁾										
Fibre-optic cable (through-beam system)	LL3-TB02 and tip adapter LL3-TA01										
Scanning range, recommended	0 ... 900 mm ²⁾										
Fibre-optic cable (through-beam system)	LL3-TB01										
Sensitivity adjustment	Teach-in: single-teach button										
	Teach-in: single-teach button & cable										
Precise correction	Step button +/- manual										
Light source, light type	LED, green light, 525 nm ³⁾										
Light spot diameter	Depending on scanning range										
Angle of dispersion	Ca. 65 ° (deviations see LL3 data)										
Supply voltage V_s	DC 10 ... 24 V ⁴⁾										
Ripple	≤ 10 % ⁵⁾										
Power consumption	≤ 50 mA ⁶⁾										
Switching outputs	NPN, Q										
	NPN, Q1, Q2 ⁷⁾										
	PNP, Q										
	PNP, Q1, Q2 ⁷⁾										
Switching mode	Light-/dark-switching, selectable										
Output current I _a max	≤ 100 mA										
Response time	Selectable: 60 μs / 250 μs / 2 ms										
Switching frequency	8333 Hz / 2000 Hz / 250 Hz										
Time delay	Programmable 0 ms ... 9000 ms										
Time type	Programmable OFF/T _{OFF} /T _{QV} /ONE-SHOT										
Connection type	Connector, M8, 3-pin										
	Cable, PVC, 2 m ⁸⁾										
	Connector, M8, 4-pin										
VDE protection class	⊕										
Circuit protection	V _s connections reverse-polarity protected / In-/outputs short-circuit protected / Interference suppression / Outputs overcurrent and short-circuit protected										
Enclosure rating	IP 66 ⁹⁾										
Ambient temperature operation	-25 °C ... +55 °C										
Ambient temperature storage	-40 °C ... +70 °C										
Weight	Ca. 25 g										
	Ca. 20 g										
Housing material	ABS, PC										

¹⁾ Object with 90 % remission (based on standard white to DIN 5033). Scanning distance at response time 2 ms. Distance reduction at shorter response time (see LL3/ WLL190T-2 table)

²⁾ Scanning range at response time 2 ms. Range reduction at shorter response time (see LL3/ WLL190T-2 table)
³⁾ Average service life 100,000 h at T_a = +25 °C

⁴⁾ ± 10 %
⁵⁾ May not exceed or fall short of V_s tolerances

⁶⁾ Without load

⁷⁾ Selectable Q2, ext. teach or counter reset

⁸⁾ Do not bend below 0 °C
⁹⁾ Only with correct adaptation of the LL3 fibre-optic cable

Sensitivity setting

The following optimization modes can be programmed

- Normal mode (default) - 4 alternatives
- Dynamic Teach-in
- Zone Teach-in (window technology)
- Glass Teach-in (detection of transparent objects)

Ordering information

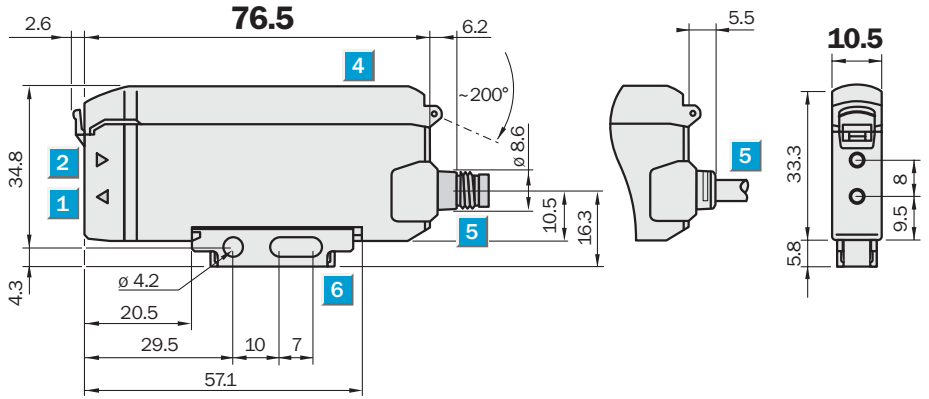
Type	Part Number
WLL190T-2N393	6 032 564
WLL190T-2N492	6 032 560
WLL190T-2N494	6 032 562
WLL190T-2P393	6 032 563
WLL190T-2P492	6 032 559
WLL190T-2P494	6 032 561

	Scanning distance 0 ... 480 mm
	Scanning range 0 ... 4,000 mm
Proximity switch with fibre-optic cables	

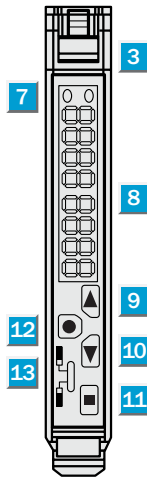
- Analogue output
- Longest ranges
- Fast switching frequency
- Precise, stable switching point
- Dual display
- Interactive user prompting
- Appropriate for the LL3 fibre-optic cable series



Dimensional drawing



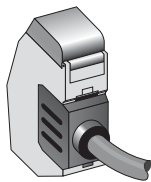
Adjustments possible



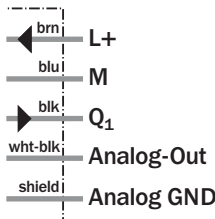
- 1 Sender LED, installation of LL3 fibre-optic cable (sender fibre)
- 2 Receiver LED, installation of LL 3 fibre-optic cable (receiver fibre)
- 3 Locking of fibre-optic cables
- 4 Protective hood: can be folded out approx. 180°
- 5 M8 plug fixed or 4-wire cable (cables not included with delivery)
- 6 Mounting bracket included (see Accessories)
- 7 Indicator LED, yellow: lights up when switching output is active
- 8 Numeric display: 2 x 4-digit
green: current reception value, operating mode
red: Teach-in and function parameter
- 9 Step button < (manual switching threshold: higher; or next function parameter)
- 10 Step button > (manual switching threshold: lower; or previous function parameter)
- 11 "Teach-in" pushbutton
- 12 Mode/Enter button (programming button)
- 13 Operating mode selector switch:
"SET": active Teach-in-switching threshold
"RUN": sensor mode and function parameter selection)

Connection type

- WLL190T-2N532
- WLL190T-2P532



4 x 0.2 mm²



Accessories
Fibre-optic cables
Mounting systems
Tip adaptors

WLL190T-2		N532	P532										
Operating distance	0 ... 480 mm ¹⁾												
Fibre-optic cable (proximity system)	LL3-DB01												
Adjustment of operating distance	Teach-in: single-teach button												
Scanning range typ. max.	0 ... 4,000 mm ²⁾												
Fibre-optic cable (through-beam system)	LL3-TB01 and tip adapter LL3-TA01												
Scanning range, recommended	0 ... 2,000 mm ²⁾												
Fibre-optic cable (through-beam system)	LL3-TB01												
Sensitivity adjustment	Teach-in: single-teach button												
Precise correction	Step button +/- manual												
Light source, light type	LED, red light, 650 nm ³⁾												
Light spot diameter	Depending on scanning range												
Angle of dispersion	Ca. 65 ° (deviations see LL3 data)												
Supply voltage V_s	DC 10 ... 24 V ⁴⁾												
Ripple	≤ 10 % ⁵⁾												
Power consumption	≤ 50 mA ⁶⁾												
Switching outputs	NPN, Q												
	PNP, Q												
Analogue output	4 ... 20 mA												
Switching mode	Light/dark-switching, selectable												
Output current I _a max	≤ 100 mA												
Response time	Selectable: 60 µs / 250 µs / 2 ms												
Switching frequency	8333 Hz / 2000 Hz / 250 Hz												
Time delay	Programmable 0 ms ... 9000 ms												
Time type	Programmable OFF/T _{OFF} /T _{ON} /ONE-SHOT												
Connection type	Cable, PVC, 2 m ⁷⁾												
VDE protection class	⊠												
Circuit protection	V _s connections reverse-polarity protected / In-/outputs short-circuit protected / Interference suppression / Outputs overcurrent and short-circuit protected												
Enclosure rating	IP 66 ⁸⁾												
Ambient temperature operation	-25 °C ... +55 °C												
Ambient temperature storage	-40 °C ... +70 °C												
Weight	Ca. 20 g												
Housing material	ABS, PC												

¹⁾ Object with 90 % remission (based on standard white to DIN 5033). Scanning distance at response time 2 ms. Distance reduction at shorter response time (see

LL3/ WLL190T-2 table)
²⁾ Scanning range at response time 2 ms. Range reduction at shorter response time (see LL3/ WLL190T-2 table)

³⁾ Average service life 100,000 h at T_a = +25 °C
⁴⁾ ± 1.0 %
⁵⁾ May not exceed or fall short of

V_s tolerances
⁶⁾ Without load
⁷⁾ Do not bend below 0 °C
⁸⁾ Only with correct adaptation of the LL3 fibre-optic cable

Sensitivity setting

The following optimization modes can be programmed

- Normal mode (default) - 4 alternatives
- Dynamic Teach-in
- Zone Teach-in (window technology)
- Glass Teach-in (detection of transparent objects)

Ordering information

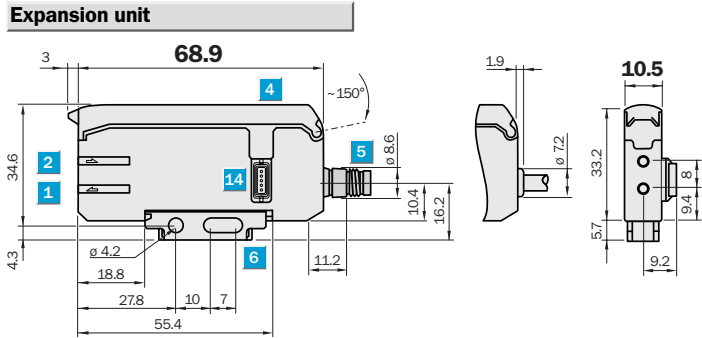
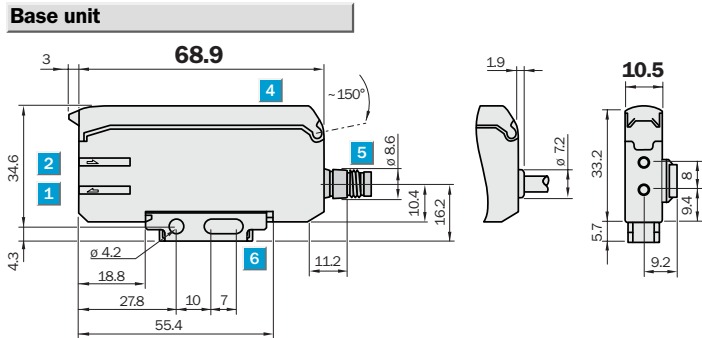
Type	Part Number
WLL190T-2N532	6 032 558
WLL190T-2P532	6 032 557

	Scanning distance 0 ... 480 mm
	Scanning range 0 ... 4,000 mm
Proximity switch with fibre-optic cables	

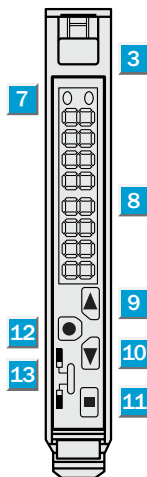
- Cable saving bus mode
- Automatic anti-interference
- Longest ranges
- Fast switching frequency
- Dual display



Dimensional drawing



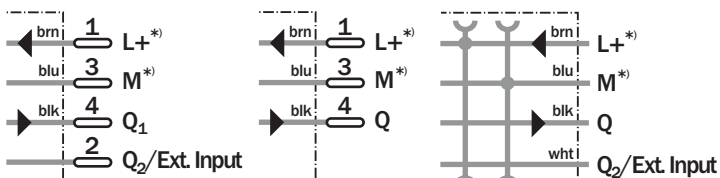
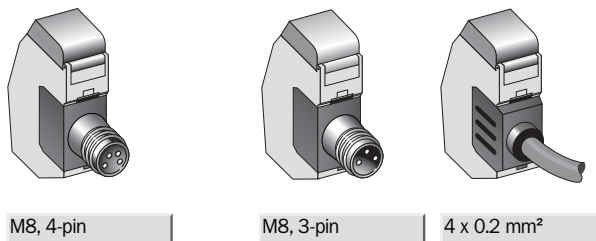
Adjustments possible



- 1 Sender LED, installation of LL3 fibre-optic cable (sender fibre)
- 2 Receiver LED, installation of LL 3 fibre-optic cable (receiver fibre)
- 3 Locking of fibre-optic cables
- 4 Protective hood: can be folded out approx. 180°
- 5 M8 plug fixed or 4-wire cable (cables not included with delivery)
- 6 Mounting bracket included (see Accessories)
- 7 Indicator LED, yellow: lights up when switching output is active
- 8 Numeric display: 2 x 4-digit
green: current reception value, operating mode
red: Teach-in and function parameter
- 9 Step button < (manual switching threshold: higher; or next function parameter)
- 10 Step button > (manual switching threshold: lower; or previous function parameter)
- 11 "Teach-in" pushbutton
- 12 Mode/Enter button (programming button)
- 13 Operating mode selector switch:
"SET": active Teach-in-switching threshold
"RUN": sensor mode and function parameter selection
- 14 Bus connector

Connection type

WLL190T-2F434	WLL190T-2F333	WLL190T-2F132
WLL190T-2M434	WLL190T-2M333	WLL190T-2M432



*) Only base unit

Accessories

Connector, M8, 3-pin
Connector, M8, 4-pin
Fibre-optic cables
Mounting systems
Tip adaptors

WLL190T-2		F132	F333	F434	M333	M432	M434				
Device type	Expansion unit										
	Base unit ¹⁾										
Operating distance	0 ... 480 mm ²⁾										
Fibre-optic cable (proximity system)	LL3-DB01										
Adjustment of operating distance	Teach-in: single-teach button & cable										
	Teach-in: single-teach button										
Scanning range typ. max.	0 ... 4,000 mm ³⁾										
Fibre-optic cable (through-beam system)	LL3-TB01 and tip adapter LL3-TA01										
Scanning range, recommended	0 ... 2,000 mm ³⁾										
Fibre-optic cable (through-beam system)	LL3-TB01										
Sensitivity adjustment	Teach-in: single-teach button & cable										
	Teach-in: single-teach button										
Precise correction	Step button +/- manual										
Light source, light type	LED, red light, 650 nm ⁴⁾										
Light spot diameter	Depending on scanning range										
Angle of dispersion	Ca. 65 ° (deviations see LL3 data)										
Supply voltage V_s	DC 10 ... 24 V ⁵⁾										
Ripple	≤ 10 % ⁶⁾										
Power consumption	≤ 50 mA ⁷⁾										
Switching outputs	PNP, Q1, Q2 ⁸⁾										
	PNP, Q										
Switching mode	Light-/dark-switching, selectable										
Output current I _a max	≤ 100 mA										
Response time	Selectable: 60 μs / 250 μs / 2 ms										
Switching frequency	8333 Hz / 2000 Hz / 250 Hz										
Time delay	Programmable 0 ms ... 9000 ms										
Time type	Programmable OFF/T _{OFF} /T _{ON} /ONE-SHOT										
Connection type	Cable, PVC, 2 m ⁹⁾										
	Connector, M8, 3-pin										
	Connector, M8, 4-pin										
VDE protection class	⊕										
Circuit protection	V _s connections reverse-polarity protected / In-/outputs short-circuit protected / Interference suppression / Outputs overcurrent and short-circuit protected										
Enclosure rating	IP 54 ¹⁰⁾										
Ambient temperature operation	-25 °C ... +55 °C ¹¹⁾										
	-25 °C ... +55 °C										
Ambient temperature storage	-40 °C ... +70 °C										
Weight	Ca. 20 g										
	Ca. 25 g										
Housing material	ABS, PC										

¹⁾ Up to 15 expansion units can be connected

²⁾ Object with 90 % remission (based on standard white to DIN 5033). Scanning distance at response time 2 ms. Distance reduction at shorter response time (see LL3/ WLL190T-2 table)

³⁾ Scanning range at response time 2 ms. Range reduction at shorter response time (see LL3/ WLL190T-2 table)

⁴⁾ Average service life 100,000 h at T_a = +25 °C

⁵⁾ ± 10 %

⁶⁾ May not exceed or fall short of

V_s tolerances

⁷⁾ Without load

⁸⁾ Selectable Q2, ext. teach or counter reset

⁹⁾ Do not bend below 0 °C

¹⁰⁾ Only with correct adaptation of the LL3 fibre-optic cable

¹¹⁾ Operating temperature may vary depending on number of connected units:
4 - 8 units: -25 ... +50 °C (output current 50 mA),
9 - 16 units: -25 ... +45 °C (output current 20 mA)

Sensitivity setting

The following optimization modes can be programmed

- Normal mode (default) - 4 alternatives
- Dynamic Teach-in
- Zone Teach-in (window technology)
- Glass Teach-in (detection of transparent objects)

Ordering information

Type	Part Number
WLL190T-2F132	6 032 571
WLL190T-2F333	6 032 569
WLL190T-2F434	6 032 567
WLL190T-2M333	6 033 294
WLL190T-2M432	6 033 290
WLL190T-2M434	6 033 292

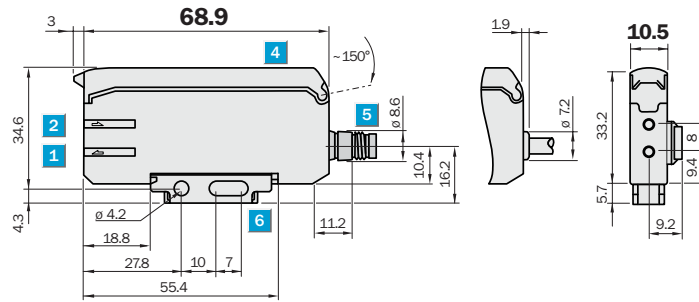
	Scanning distance 0 ... 480 mm
	Scanning range 0 ... 4,000 mm
Proximity switch with fibre-optic cables	

- Cable saving bus mode
- Automatic anti-interference
- Longest ranges
- Fast switching frequency
- Dual display

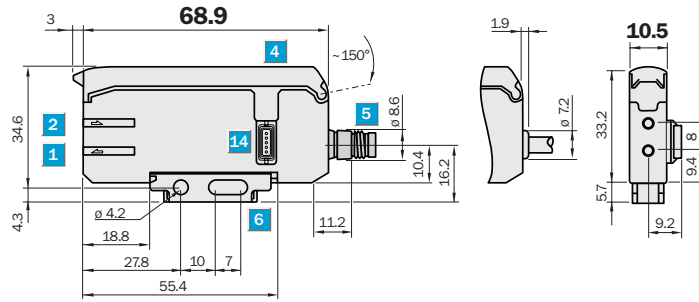


Dimensional drawing

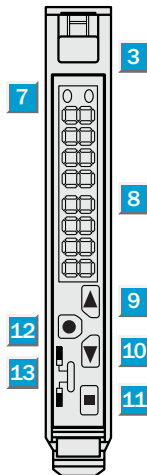
Base unit



Expansion unit



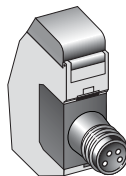
Adjustments possible



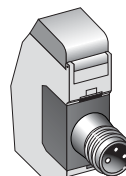
- 1 Sender LED, installation of LL3 fibre-optic cable (sender fibre)
- 2 Receiver LED, installation of LL 3 fibre-optic cable (receiver fibre)
- 3 Locking of fibre-optic cables
- 4 Protective hood: can be folded out approx. 180°
- 5 M8 plug fixed or 4-wire cable (cables not included with delivery)
- 6 Mounting bracket included (see Accessories)
- 7 Indicator LED, yellow: lights up when switching output is active
- 8 Numeric display: 2 x 4-digit
green: current reception value, operating mode
red: Teach-in and function parameter
- 9 Step button < (manual switching threshold: higher; or next function parameter)
- 10 Step button > (manual switching threshold: lower; or previous function parameter)
- 11 "Teach-in" pushbutton
- 12 Mode/Enter button (programming button)
- 13 Operating mode selector switch:
"SET": active Teach-in-switching threshold
"RUN": sensor mode and function parameter selection
- 14 Bus connector

Connection type

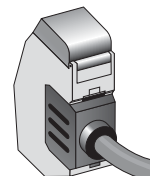
WLL190T-2E434	WLL190T-2E333	WLL190T-2E132
WLL190T-2L434	WLL190T-2L333	WLL190T-2L432



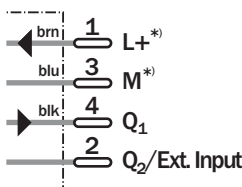
M8, 4-pin



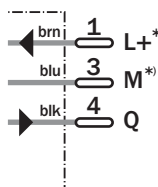
M8, 3-pin



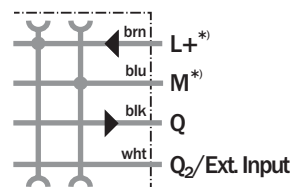
4 x 0.2 mm²



*) Only base unit



*) Only base unit



*) Only base unit

Accessories

Connector, M8, 3-pin
Connector, M8, 4-pin
Fibre-optic cables
Mounting systems
Tip adaptors

WLL190T-2		E132	E333	E434	L333	L432	L434				
Device type	Expansion unit										
	Base unit ¹⁾										
Operating distance	0 ... 480 mm ²⁾										
Fibre-optic cable (proximity system)	LL3-DB01										
Adjustment of operating distance	Teach-in: single-teach button & cable										
	Teach-in: single-teach button										
Scanning range typ. max.	0 ... 4,000 mm ³⁾										
Fibre-optic cable (through-beam system)	LL3-TB01 and tip adapter LL3-TA01										
Scanning range, recommended	0 ... 2,000 mm ³⁾										
Fibre-optic cable (through-beam system)	LL3-TB01										
Sensitivity adjustment	Teach-in: single-teach button & cable										
	Teach-in: single-teach button										
Precise correction	Step button +/- manual										
Light source, light type	LED, red light, 650 nm ⁴⁾										
Light spot diameter	Depending on scanning range										
Angle of dispersion	Ca. 65 ° (deviations see LL3 data)										
Supply voltage V_s	DC 10 ... 24 V ⁵⁾										
Ripple	≤ 10 % ⁶⁾										
Power consumption	≤ 50 mA ⁷⁾										
Switching outputs	NPN, Q1, Q2 ⁸⁾										
	NPN, Q										
Switching mode	Light-/dark-switching, selectable										
Output current I _a max	≤ 100 mA										
Response time	Selectable: 60 µs / 250 µs / 2 ms										
Switching frequency	8333 Hz / 2000 Hz / 250 Hz										
Time delay	Programmable 0 ms ... 9000 ms										
Time type	Programmable										
	OFF/T _{OFF} /T _{ON} /ONE-SHOT										
Connection type	Cable, PVC, 2 m ⁹⁾										
	Connector, M8, 3-pin										
	Connector, M8, 4-pin										
VDE protection class	⊕										
Circuit protection	V _s connections reverse-polarity protected / In-/outputs short-circuit protected / Interference suppression / Outputs overcurrent and short-circuit protected										
Enclosure rating	IP 54 ¹⁰⁾										
Ambient temperature operation	-25 °C ... +55 °C ¹¹⁾										
	-25 °C ... +55 °C										
Ambient temperature storage	-40 °C ... +70 °C										
Weight	Ca. 20 g										
	Ca. 25 g										
Housing material	ABS, PC										

¹⁾ Up to 15 expansion units can be connected
²⁾ Object with 90 % remission (based on standard white to DIN 5033). Scanning distance at response time 2 ms. Distance reduction at shorter response time (see LL3/ WLL190T-2 table)
³⁾ Scanning range at response time 2 ms. Range reduction at shorter response time (see LL3/ WLL190T-2 table)
⁴⁾ Average service life 100,000 h at T_a = +25 °C
⁵⁾ ± 10 %
⁶⁾ May not exceed or fall short of
⁷⁾ Without load
⁸⁾ Selectable Q2, ext. teach or counter reset
⁹⁾ Do not bend below 0 °C
¹⁰⁾ Only with correct adaptation of the LL3 fibre-optic cable
¹¹⁾ Operating temperature may vary depending on number of connected units: 4 - 8 units: -25 ... +50 °C (output current 50 mA), 9 - 16 units : -25 ... +45 °C (output current 20 mA)

Sensitivity setting

The following optimization modes can be programmed

- a) Normal mode (default) - 4 alternatives
- b) Dynamic Teach-in
- c) Zone Teach-in (window technology)
- d) Glass Teach-in (detection of transparent objects)

Ordering information

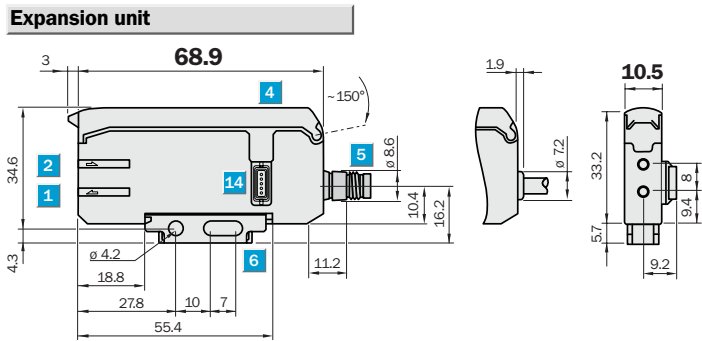
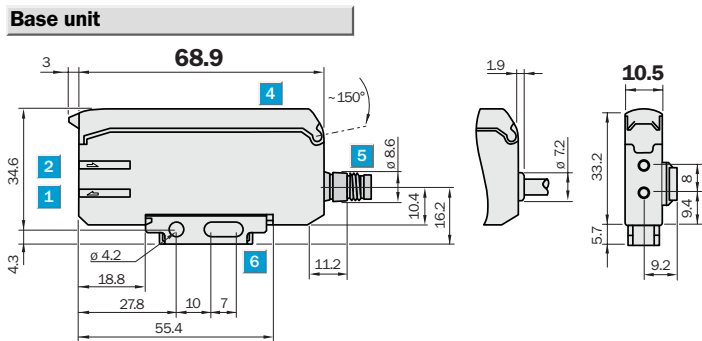
Type	Part Number
WLL190T-2E132	6 032 572
WLL190T-2E333	6 032 570
WLL190T-2E434	6 032 568
WLL190T-2L333	6 033 295
WLL190T-2L432	6 033 291
WLL190T-2L434	6 033 293

	Scanning distance 0 ... 160 mm
	Scanning range 0 ... 4,000 mm
Proximity switch with fibre-optic cables	

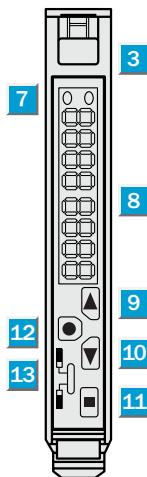
- For detection of marks
- Cable saving bus mode
- Automatic anti-interference
- Longest ranges
- Fast switching frequency
- Dual display



Dimensional drawing



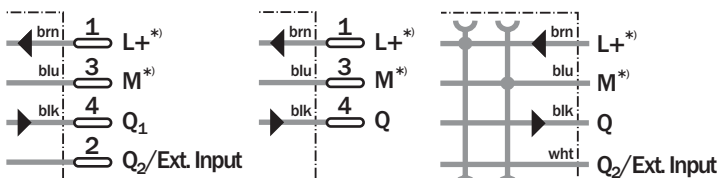
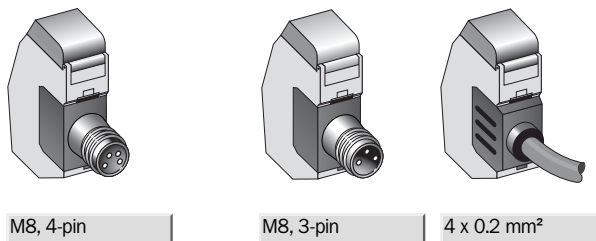
Adjustments possible



- 1 Sender LED, installation of LL3 fibre-optic cable (sender fibre)
- 2 Receiver LED, installation of LL 3 fibre-optic cable (receiver fibre)
- 3 Locking of fibre-optic cables
- 4 Protective hood: can be folded out approx. 180°
- 5 M8 plug fixed or 4-wire cable (cables not included with delivery)
- 6 Mounting bracket included (see Accessories)
- 7 Indicator LED, yellow: lights up when switching output is active
- 8 Numeric display: 2 x 4-digit
green: current reception value, operating mode
red: Teach-in and function parameter
- 9 Step button < (manual switching threshold: higher; or next function parameter)
- 10 Step button > (manual switching threshold: lower; or previous function parameter)
- 11 "Teach-in" pushbutton
- 12 Mode/Enter button (programming button)
- 13 Operating mode selector switch:
"SET": active Teach-in-switching threshold
"RUN": sensor mode and function parameter selection
- 14 Bus connector

Connection type

WLL190T-2F494	WLL190T-2F393	WLL190T-2F192
WLL190T-2M494	WLL190T-2M393	WLL190T-2M492



*) Only base unit

*) Only base unit

*) Only base unit

Accessories

Connector, M8, 3-pin
Connector, M8, 4-pin
Fibre-optic cables
Mounting systems
Tip adaptors



WLL190T-2		F192	F393	F494	M393	M492	M494				
Device type	Expansion unit										
	Base unit ¹⁾										
Operating distance	0 ... 160 mm ²⁾										
Fibre-optic cable (proximity system)	LL3-DMO1										
Adjustment of operating distance	Teach-in: single-teach button & cable										
	Teach-in: single-teach button										
Scanning range typ. max.	0 ... 4,000 mm ³⁾										
Fibre-optic cable (through-beam system)	LL3-TB02 and tip adapter LL3-TA01										
Scanning range, recommended	0 ... 900 mm ³⁾										
Fibre-optic cable (through-beam system)	LL3-TB01										
Sensitivity adjustment	Teach-in: single-teach button & cable										
	Teach-in: single-teach button										
Precise correction	Step button +/- manual										
Light source, light type	LED, green light, 525 nm ⁴⁾										
Light spot diameter	Depending on scanning range										
Angle of dispersion	Ca. 65 ° (deviations see LL3 data)										
Supply voltage V_s	DC 10 ... 24 V ⁵⁾										
Ripple	≤ 10 % ⁶⁾										
Power consumption	≤ 50 mA ⁷⁾										
Switching outputs	PNP, Q1, Q2 ⁸⁾										
	PNP, Q										
Switching mode	Light-/dark-switching, selectable										
Output current I _a max	≤ 100 mA										
Response time	Selectable: 60 µs / 250 µs / 2 ms										
Switching frequency	8333 Hz / 2000 Hz / 250 Hz										
Time delay	Programmable 0 ms ... 9000 ms										
Time type	Programmable OFF/T _{OFF} /T _{ON} /ONE-SHOT										
Connection type	Cable, PVC, 2 m ⁹⁾										
	Connector, M8, 3-pin										
	Connector, M8, 4-pin										
VDE protection class	⊕										
Circuit protection	V _s connections reverse-polarity protected / In-/outputs short-circuit protected / Interference suppression / Outputs over-current and short-circuit protected										
Enclosure rating	IP 54 ¹⁰⁾										
Ambient temperature operation	-25 °C ... +55 °C ¹¹⁾										
	-25 °C ... +55 °C										
Ambient temperature storage	-40 °C ... +70 °C										
Weight	Ca. 20 g										
	Ca. 25 g										
Housing material	ABS, PC										

¹⁾ Up to 15 expansion units can be connected
²⁾ Object with 90 % remission (based on standard white to DIN 5033). Scanning distance at response time 2 ms. Distance reduction at shorter response time (see LL3/ WLL190T-2 table)
³⁾ Scanning range at response time 2 ms. Range reduction at shorter response time (see LL3/ WLL190T-2 table)
⁴⁾ Average service life 100,000 h at T_a = +25 °C
⁵⁾ ± 10 %
⁶⁾ May not exceed or fall short of
V_s tolerances
⁷⁾ Without load
⁸⁾ Selectable Q2, ext. teach or counter reset
⁹⁾ Do not bend below 0 °C
¹⁰⁾ Only with correct adaptation of the LL3 fibre-optic cable
¹¹⁾ Operating temperature may vary depending on number of connected units:
4 - 8 units: -25 ... +50 °C (output current 50 mA),
9 - 16 units : -25 ... +45 °C (output current 20 mA)

Sensitivity setting

The following optimization modes can be programmed

- a) Normal mode (default) - 4 alternatives
- b) Dynamic Teach-in
- c) Zone Teach-in (window technology)
- d) Glass Teach-in (detection of transparent objects)

Ordering information

Type	Part Number
WLL190T-2F192	6 032 579
WLL190T-2F393	6 032 577
WLL190T-2F494	6 032 575
WLL190T-2M393	6 033 300
WLL190T-2M492	6 033 296
WLL190T-2M494	6 033 298

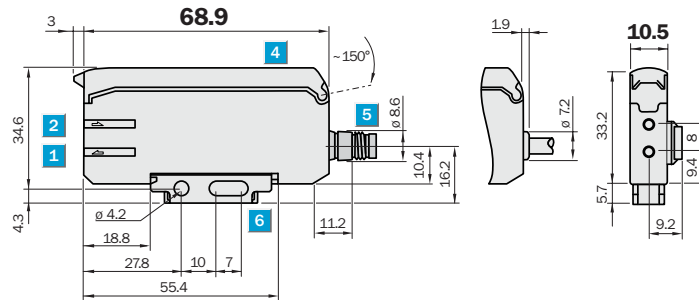
	Scanning distance 0 ... 160 mm
	Scanning range 0 ... 4,000 mm
Proximity switch with fibre-optic cables	

- For detection of marks
- Cable saving bus mode
- Automatic anti-interference
- Longest ranges
- Fast switching frequency
- Dual display

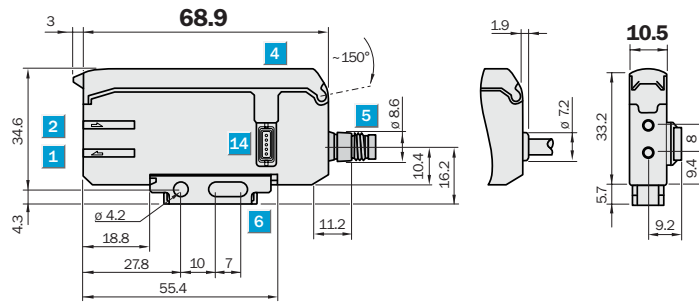


Dimensional drawing

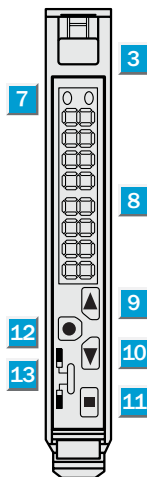
Base unit



Expansion unit



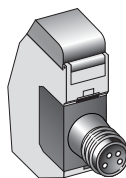
Adjustments possible



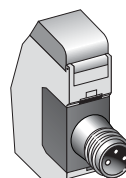
- 1 Sender LED, installation of LL3 fibre-optic cable (sender fibre)
- 2 Receiver LED, installation of LL 3 fibre-optic cable (receiver fibre)
- 3 Locking of fibre-optic cables
- 4 Protective hood: can be folded out approx. 180°
- 5 M8 plug fixed or 4-wire cable (cables not included with delivery)
- 6 Mounting bracket included (see Accessories)
- 7 Indicator LED, yellow: lights up when switching output is active
- 8 Numeric display: 2 x 4-digit
green: current reception value, operating mode
red: Teach-in and function parameter
- 9 Step button < (manual switching threshold: higher; or next function parameter)
- 10 Step button > (manual switching threshold: lower; or previous function parameter)
- 11 "Teach-in" pushbutton
- 12 Mode/Enter button (programming button)
- 13 Operating mode selector switch:
"SET": active Teach-in-switching threshold
"RUN": sensor mode and function parameter selection
- 14 Bus connector

Connection type

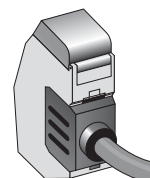
WLL190T-2E494	WLL190T-2E393	WLL190T-2E192
WLL190T-2L494	WLL190T-2L393	WLL190T-2L492



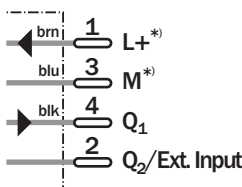
M8, 4-pin



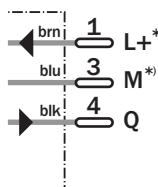
M8, 3-pin



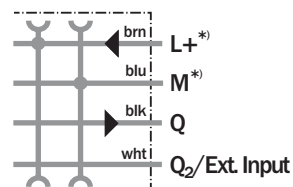
4 x 0.2 mm²



*) Only base unit



*) Only base unit



*) Only base unit

Accessories

Connector, M8, 3-pin
Connector, M8, 4-pin
Fibre-optic cables
Mounting systems
Tip adaptors



WLL190T-2		E192	E393	E494	L393	L492	L494				
Device type	Expansion unit										
	Base unit ¹⁾										
Operating distance	0 ... 160 mm ²⁾										
Fibre-optic cable (proximity system)	LL3-DMO1										
Adjustment of operating distance	Teach-in: single-teach button & cable										
	Teach-in: single-teach button										
Scanning range typ. max.	0 ... 4,000 mm ³⁾										
Fibre-optic cable (through-beam system)	LL3-TB02 and tip adapter LL3-TA01										
Scanning range, recommended	0 ... 900 mm ³⁾										
Fibre-optic cable (through-beam system)	LL3-TB01										
Sensitivity adjustment	Teach-in: single-teach button & cable										
	Teach-in: single-teach button										
Precise correction	Step button +/- manual										
Light source, light type	LED, green light, 525 nm ⁴⁾										
Light spot diameter	Depending on scanning range										
Angle of dispersion	Ca. 65 ° (deviations see LL3 data)										
Supply voltage V_s	DC 10 ... 24 V ⁵⁾										
Ripple	≤ 10 % ⁶⁾										
Power consumption	≤ 50 mA ⁷⁾										
Switching outputs	NPN, Q1, Q2 ⁸⁾										
	NPN, Q										
Switching mode	Light-/dark-switching, selectable										
Output current I _a max	≤ 100 mA										
Response time	Selectable: 60 µs/250 µs/2 ms										
Switching frequency	8333 Hz / 2000 Hz / 250 Hz										
Time delay	Programmable 0 ms ... 9000 ms										
Time type	Programmable										
	OFF/T _{OFF} /T _{ON} /ONE-SHOT										
Connection type	Cable, PVC, 2 m ⁹⁾										
	Connector, M8, 3-pin										
	Connector, M8, 4-pin										
VDE protection class	⊕										
Circuit protection	V _s connections reverse-polarity protected / In-/outputs short-circuit protected / Interference suppression / Outputs overcurrent and short-circuit protected										
Enclosure rating	IP 54 ¹⁰⁾										
Ambient temperature operation	-25 °C ... +55 °C ¹¹⁾										
	-25 °C ... +55 °C										
Ambient temperature storage	-40 °C ... +70 °C										
Weight	Ca. 20 g										
	Ca. 25 g										
Housing material	ABS, PC										

¹⁾ Up to 15 expansion units can be connected
²⁾ Object with 90 % remission (based on standard white to DIN 5033). Scanning distance at response time 2 ms. Distance reduction at shorter response time (see LL3/ WLL190T-2 table)
³⁾ Scanning range at response time 2 ms. Range reduction at shorter response time (see LL3/ WLL190T-2 table)
⁴⁾ Average service life 100,000 h at T_a = +25 °C
⁵⁾ ± 10 %
⁶⁾ May not exceed or fall short of
V_s tolerances
⁷⁾ Without load
⁸⁾ Selectable Q2, ext. teach or counter reset
⁹⁾ Do not bend below 0 °C
¹⁰⁾ Only with correct adaptation of the LL3 fibre-optic cable
¹¹⁾ Operating temperature may vary depending on number of connected units: 4 - 8 units: -25 ... +50 °C (output current 50 mA), 9 - 16 units : -25 ... +45 °C (output current 20 mA)

Sensitivity setting

The following optimization modes can be programmed

- a) Normal mode (default) - 4 alternatives
- b) Dynamic Teach-in
- c) Zone Teach-in (window technology)
- d) Glass Teach-in (detection of transparent objects)

Ordering information

Type	Part Number
WLL190T-2E192	6 032 580
WLL190T-2E393	6 032 578
WLL190T-2E494	6 032 576
WLL190T-2L393	6 033 301
WLL190T-2L492	6 033 297
WLL190T-2L494	6 033 299