At a glance:

- Short: housing length 50 mm (cable connection) / 63.5 mm (connector model)
- Long operating distances
- High switching frequency: 1000 Hz / 500 Hz*
- Glass window, therefore scratch resistant and easy to clean
- Excellent resistance to environmental influences thanks to polyurethane potting of the electronic module
- Convenient sensitivity adjustment by means of the built-in potentiometer (diffuse sensors; optional for other models)
- High degree of protection: IP 67

Construction

The devices are built into chromed-plated brass housings, and encapsulated in polyurethane. The electronic module is constructed using SMD technology on a ceramic-free epoxy substrate, and is therefore insensitive to shock.

Sensitivity setting

The sensitivity can be adjusted by means of the built-in potentiometer (energetic diffuse sensors; optional for other models). Turning clockwise increases the sensitivity.

Technical data:

(according to IEC 60947-5-2)

Hysteresis	10 % typ.
Supply voltage range U_B	10 ... 36 VDC
Max. ripple content	20 %
Output current	200 mA
Output voltage drop	2.0 V max. at 200 mA
Max. switching frequency	1,000 Hz / 500 Hz*
Switching time (↑ and ↓)	0.5 msec / 1 msec*
Max. ambient light:	
halogen	5,000 Lux
sun	10,000 Lux
Ambient temperature range	-25 ... +55 °C
Degree of protection	IP 67
EMC protection:	
IEC 60255-5	1 kV
IEC 61000-4-2	Level 2
IEC 61000-4-3	Level 3
IEC 61000-4-4	Level 3

* Diffuse sensor with background suppression

Operating distance adjustment

The operating distance can be adjusted by means of the built-in potentiometer (diffuse sensors with background suppression). Turning clockwise increases the operating distance.

Protection

The switches are protected against overloads, short-circuits and all possible wire reversals. Furthermore, protection against overvoltages caused by inductive loads on the output and against voltage spikes on the power supply lines are built in. Malfunctions or destruction caused by electrostatic discharges, fast transients, or HF fields, are prevented by appropriate technology.

LED

The yellow LED lights up when the output is switched on. The green LED lights up when sufficient light is available for reliable operation (approx. 80% of the maximum operating distance).

Connection

Switches with 2 m PVC cable 3 x 0.34mm² (type 8) or 4 x 0.25 mm² (type 12) for through-beam sensors, or 4-pole S12 connector are standard. Other cable types or lengths are available on request. Suitable connecting cables are listed on page 112.

Reflectors

A range of suitable reflectors for the reflex sensors is listed on page 99.

Test input

The additional test input built into the emitters of the through-beam models provides the possibility of an extra system control.

Excess light control

The built-in excess light circuit simplifies alignment and adjustment of the sensors. Any eventual dirt on the sensing faces is recognized in time, and can be removed easily.

Power-ON reset

Operation of the output is inhibited until the power supply requirements are met. This prevents unwanted switching of the output during power-ON.

Background suppression

The diffuse sensor with background suppression uses electronic distance setting. A PSD (**P**osition-**S**ensitive **D**evice) serves as the light receiver. Operating distance adjustment is carried out by means of a potentiometer, using visible red light as the source. The visible light spot (approx. 3 mm ∅) permits simple alignment. The device contains no moving optical parts, and is therefore insensitive to vibration.

Data sheets

Detailed data sheets with additional technical information are available for all models. These may be retrieved from the CONTRINEX website (www.contrinex.com), or ordered cost-free from our sales offices.

Drawings

The mechanical drawings may be downloaded as data files from the CONTRINEX website, and imported directly into construction drawings.

Delivery package

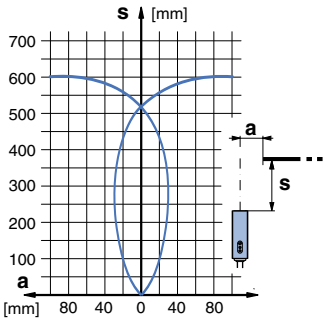
Proximity switch, 2 fixing nuts, instructions.

M18

Diffuse sensor, energetic

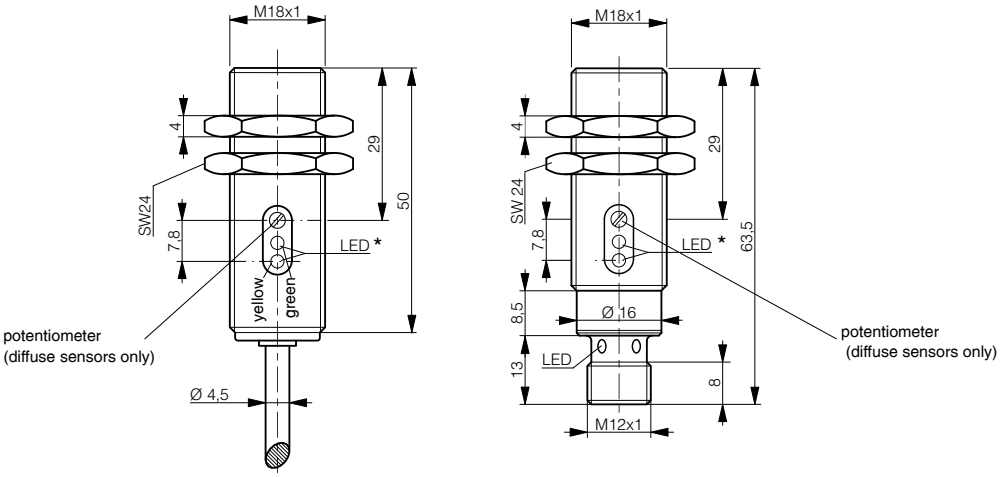
600 mm

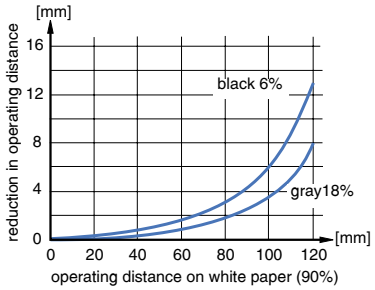
Response curve:

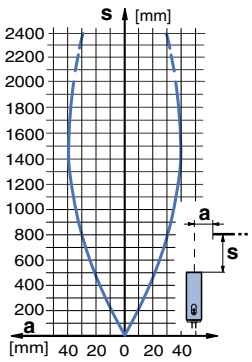


Operating distance	600 mm
Standard target	200 x 200 mm white
No-load supply current	15 mA typ.
Emitter	LED red 660 nm
Weight (cable / connector model)	115 / 40 g
Part ref.: (**bold:** preferred types)	
NPN light-ON / cable	**LTK-1180-301**
NPN dark-ON / cable	-
NPN light-ON / connector S12	**LTS-1180-301**
NPN dark-ON / connector S12	-
PNP light-ON / cable	**LTK-1180-303**
PNP dark-ON / cable	-
PNP light-ON / connector S12	**LTS-1180-303**
PNP dark-ON / connector S12	-
Suitable connecting cables (page 112)	G, H, K, L
Wiring (pages 100 - 101)	Diagram 1

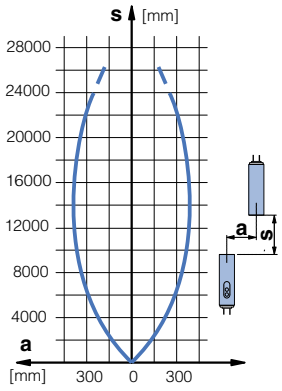
M18	M18		M18
Diffuse sensor with background suppression	**Reflex sensor**		**Through-beam sensor**
10 ... 120 mm	**2,000 mm**		**20,000 mm**







* receiver only



10 ... 120 mm	2,000 mm	Operating distance	20,000 mm
100 x 100 mm white	Reflector type 3	Standard target	-
25 mA typ.	15 mA typ.	No-load supply current	10 mA typ. (R) / 15 mA typ. (E)
LED red 660 nm	LED red polarized 660 nm	Emitter	LED red 660 nm
115 / 40 g	115 / 40 g	Weight (cable / connector model)	115 / 40 g (R and E)
		Part ref.: (**bold:** preferred types)	**(R)** receiver / **(E)** emitter
LHK-1180-301	-	NPN changeover outputs / cable	**LLK-1180-001 (R) / LLK-1180-000 (E)**
-	**LRK-1180-302**	NPN excess light output / cable	LLK-1180-002 (R) / **LLK-1180-000 (E)**
LHS-1180-301	-	NPN changeover outputs / conn. S12	**LLS-1180-001 (R) / LLS-1180-000 (E)**
-	**LRS-1180-302**	NPN excess light output / conn. S12	LLS-1180-002 (R) / **LLS-1180-000 (E)**
LHK-1180-303	-	PNP changeover outputs / cable	**LLK-1180-003 (R) / LLK-1180-000 (E)**
-	**LRK-1180-304**	PNP excess light output / cable	**LLK-1180-004 (R) / LLK-1180-000 (E)**
LHS-1180-303	-	PNP changeover outputs / conn. S12	**LLS-1180-003 (R) / LLS-1180-000 (E)**
-	**LRS-1180-304**	PNP excess light output / conn. S12	**LLS-1180-004 (R) / LLS-1180-000 (E)**
G, H, K, L	G, H, K, L	Suitable connecting cables (page 112)	M, N
Diagram 1	Diagram 1	Wiring (pages 100 - 101)	Diagram 2 (R) / Diagram 4 (E)

At a glance:

- Right-angle sensing
- Compact, robust and fully integrated sensing head
- Easy installation: Fixing nuts can be mounted from both ends
- Technical data identical to corresponding devices with axial light emission
- Excellent resistance to environmental influences thanks to polyurethane potting of the electronic module
- Glass window, therefore scratch resistant and easy to clean
- High degree of protection: IP 67

Construction

The devices are built into chromed-plated brass housings, and encapsulated in polyurethane. The electronic module is constructed using SMD technology on a ceramic-free epoxy substrate, and is therefore insensitive to shock.

Sensibility setting

The sensitivity can be adjusted by means of the built-in potentiometer (diffuse sensors; optional for other models). Turning clockwise increases the sensitivity.

Technical data:

(according to IEC 60947-5-2)

Hysteresis	10 % typ.
Supply voltage range U_B	10 ... 36 VDC
Max. ripple content	20 %
Output current	200 mA
Output voltage drop	2.0 V max. at 200 mA
Max. switching frequency	1,000 Hz / 500 Hz*
Switching time (↑ and ↓)	0.5 msec / 1 msec*
Max. ambient light:	
halogen	5,000 Lux
sun	10,000 Lux
Ambient temperature range	-25 ... +55 °C
Degree of protection	IP 67
EMC protection:	
IEC 60255-5	1 kV
IEC 61000-4-2	Level 2
IEC 61000-4-3	Level 3
IEC 61000-4-4	Level 3

* Diffuse sensor with background suppression

Operating distance adjustment

The operating distance can be adjusted by means of the built-in potentiometer (diffuse sensors with background suppression). Turning clockwise increases the operating distance.

Protection

The switches are protected against overloads, short-circuits and all possible wire reversals. Furthermore, protection against overvoltages caused by inductive loads on the output and against voltage spikes on the power supply lines are built in. Malfunctions or destruction caused by electrostatic discharges, fast transients, or HF fields, are prevented by appropriate technology.

LED

The yellow LED lights up when the output is switched on. The green LED lights up when sufficient light is available for reliable operation (approx. 80% of the maximum operating distance).

Connection

Switches with 2 m PVC cable 3 x 0.34mm² (type 8) or 4 x 0.25 mm² (type 12) for through-beam sensors, or 4-pole S12 connector are standard. Other cable types or lengths are available on request. Suitable connecting cables are listed on page 112.

Reflectors

A range of suitable reflectors for the reflex sensors is listed on page 99.

Test input

The additional test input built into the emitters of the through-beam models provides the possibility of an extra system control.

Excess light control

The built-in excess light circuit simplifies alignment and adjustment of the sensors. Any eventual dirt on the sensing faces is recognized in time, and can be removed easily.

Power-ON reset

Operation of the output is inhibited until the power supply requirements are met. This prevents unwanted switching of the output during power-ON.

Background suppression

The diffuse sensor with background suppression uses electronic distance setting. A PSD (**P**osition-**S**ensitive **D**evice) serves as the light receiver. Operating distance adjustment is carried out by means of a potentiometer, using visible red light as the source. The visible light spot (approx. 3 mm ∅) permits simple alignment. The device contains no moving optical parts, and is therefore insensitive to vibration.

Data sheets

Detailed data sheets with additional technical information are available for all models. These may be retrieved from the CONTRINEX website (www.contrinex.com), or ordered cost-free from our sales offices.

Drawings

The mechanical drawings may be downloaded as data files from the CONTRINEX website, and imported directly into construction drawings.

Delivery package

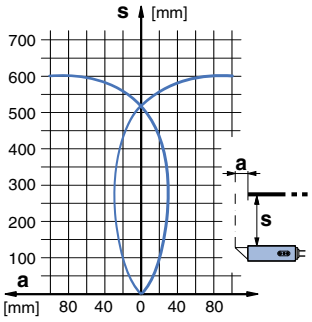
Proximity switch, 2 fixing nuts, instructions.

M18W

Diffuse sensor, energetic

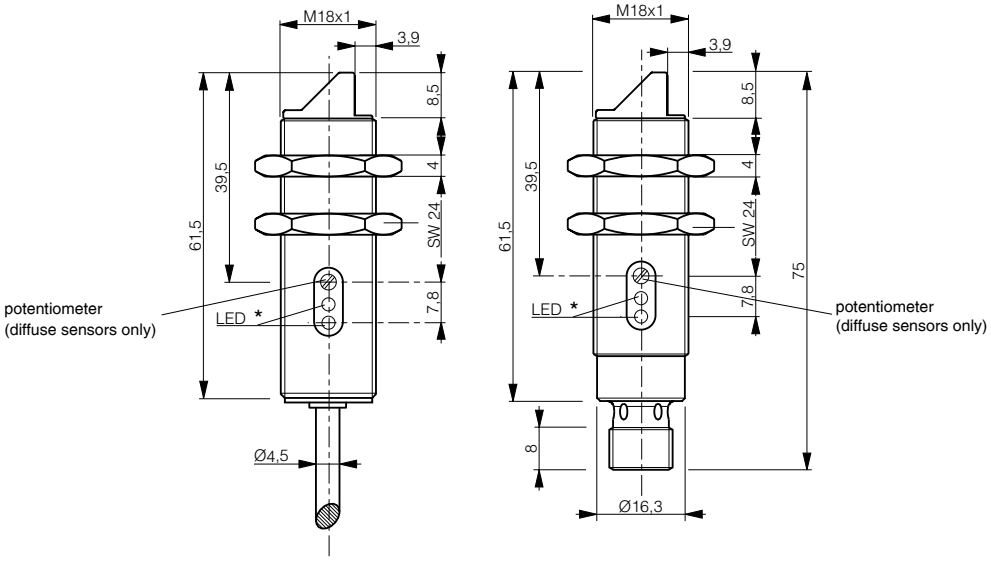
600 mm

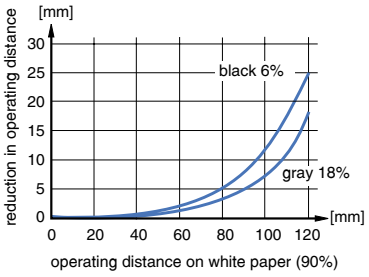
Response curve:

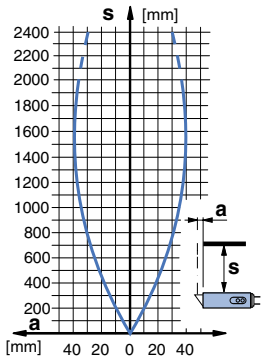


Operating distance	600 mm
Standard target	200 x 200 mm white
No-load supply current	15 mA typ.
Emitter	LED red 660 nm
Weight (cable / connector model)	123 / 56 g
Part ref.: (**bold:** preferred types)	
NPN light-ON / cable	**LTK-1180W-301**
NPN dark-ON / cable	-
NPN light-ON / connector S12	**LTS-1180W-301**
NPN dark-ON / connector S12	-
PNP light-ON / cable	**LTK-1180W-303**
PNP dark-ON / cable	-
PNP light-ON / connector S12	**LTS-1180W-303**
PNP dark-ON / connector S12	-
Suitable connecting cables (page 112)	G, H, K, L
Wiring (pages 100 - 101)	Diagram 1

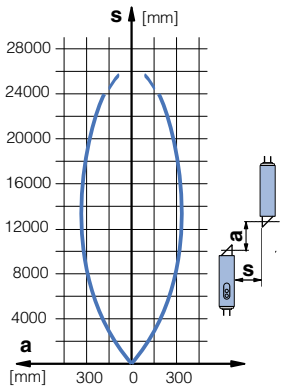
M18W	M18W		M18W
Diffuse sensor with background suppression	Reflex sensor		Through-beam sensor
10 ... 120 mm	2,000 mm		20,000 mm







* receiver only



10 ... 120 mm	2,000 mm	Operating distance	20,000 mm
100 x 100 mm white	Reflector type 3	Standard target	-
25 mA typ.	15 mA typ.	No-load supply current	10 mA typ. (R) / 15 mA typ. (E)
LED red 660 nm	LED red polarized 660 nm	Emitter	LED red 660 nm
124 / 57 g	125 / 56 g	Weight (cable / connector model)	124 / 57 g (R and E)
		Part ref.: (**bold:** preferred types)	**(R)** receiver / **(E)** emitter
LHK-1180W-301	-	NPN changeover outputs / cable	**LLK-1180W-001 (R)/LLK-1180W-000 (E)**
-	**LRK-1180W-302**	NPN excess light output / cable	LLK-1180W-002 (R)/**LLK-1180W-000 (E)**
LHS-1180W-301	-	NPN changeover outputs / conn. S12	**LLS-1180W-001 (R)/LLS-1180W-000 (E)**
-	**LRS-1180W-302**	NPN excess light output / conn. S12	LLS-1180W-002 (R)/**LLS-1180W-000 (E)**
LHK-1180W-303	-	PNP changeover outputs / cable	**LLK-1180W-003 (R)/LLK-1180W-000 (E)**
-	**LRK-1180W-304**	PNP excess light output / cable	**LLK-1180W-004 (R)/LLK-1180W-000 (E)**
LHS-1180W-303	-	PNP changeover outputs / conn. S12	**LLS-1180W-003 (R)/LLS-1180W-000 (E)**
-	**LRS-1180W-304**	PNP excess light output / conn. S12	**LLS-1180W-004 (R)/LLS-1180W-000 (E)**
G, H, K, L	G, H, K, L	Suitable connecting cables (page 112)	M, N
Diagram 1	Diagram 1	Wiring (pages 100 - 101)	Diagram 2 (R) / Diagram 4 (E)

At a glance:

- Small, but robust
- Long operating distances
- High switching frequency: 1000 Hz / 500 Hz*
- Glass window, therefore scratch resistant and easy to clean
- Excellent resistance to environmental influences thanks to polyurethane potting of the electronic module
- Convenient sensitivity adjustment by means of the built-in 12-turn potentiometer
- High degree of protection: IP 67

Construction

The devices are built into a housing of glass-fiber reinforced PBTP/polybutyleneterephthalate (Crastin), and fully potted with polyurethane resin. The covers are ultrasonically welded. Two mounting holes are provided for the use of M4 fastening screws. A universal mounting bracket as well as screws are included with every switch.

Sensitivity setting

The sensitivity can be very finely adjusted by means of the built-in 12-turn potentiometer. The potentiometer cannot be turned too far. Turning clockwise increases the sensitivity.

Technical data:

(according to IEC 60947-5-2)	
Hysteresis	10 % typ.
Supply voltage range U_B	10 ... 36 VDC
Max. ripple content	20 %
Output current (total of both outputs)	200 mA
Output voltage drop	2.0 V max. at 200 mA
Max. switching frequency	1000 Hz / 500 Hz*
Switching time (↑ and ↓)	0.5 msec / 1 msec*
Max. ambient light:	
halogen	5,000 Lux
sun	10,000 Lux
Ambient temperature range	-25 ... +55 °C
Degree of protection	IP 67
EMC protection:	
IEC 60255-5	1 kV
IEC 61000-4-2	Level 2
IEC 61000-4-3	Level 3
IEC 61000-4-4	Level 3

* Diffuse sensor with background suppression

Protection

The switches are protected against overloads, short-circuits and all possible wire reversals. Furthermore, protection against overvoltages caused by inductive loads on the output and against voltage spikes on the power supply lines are built in. Appropriate technology prevents malfunctions or destruction caused by electrostatic discharges, fast transients, or HF fields.

LED

The yellow LED lights up when the light-ON output is switched. The green LED lights up if the receiver gets enough light (excess light) for reliable operation. At the same time the corresponding output (types -102 and -104 only) is switched.

Connection

Switches with 3 m PVC cable 4 x 0.14 mm² (type 2) or 4-pole S8 connector are standard. Other cable types or lengths are available on request. Suitable connecting cables are listed on page 112.

Reflectors

A range of suitable reflectors for the reflex sensors is listed on page 99.

Test input

The additional test input built into the emitters of the through-beam models provides the possibility of an extra system control.

Excess light control

The built-in excess light circuit (separate output for types -102 and -104) simplifies alignment and adjustment of the sensors. Any dirt is recognized in time, and can be removed easily.

Power-ON reset

Operation of the output is inhibited until the power supply requirements are met. This prevents unwanted switching of the output during power-ON.

Background suppression

The diffuse sensor with background suppression uses electronic distance setting. A PSD (**P**osition-**S**ensitive **D**evice) serves as the light receiver. Operating distance adjustment is carried out by means of a potentiometer, using visible red light as the source. The visible light spot (approx. 3 mm ∅) permits simple alignment. The device contains no moving optical parts, and is therefore insensitive to vibration.

Data sheets

Detailed data sheets with additional technical information are available for all models. These may be retrieved from the CONTRINEX website (www.contrinex.com), or ordered cost-free from our sales offices.

Drawings

The mechanical drawings may be downloaded as data files from the CONTRINEX website, and imported directly into construction drawings.

Delivery package

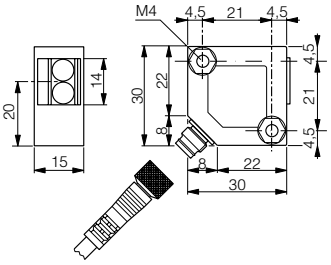
Proximity switch, mounting bracket, screws, washers and nuts, screwdriver, instructions.

☐ 30x30

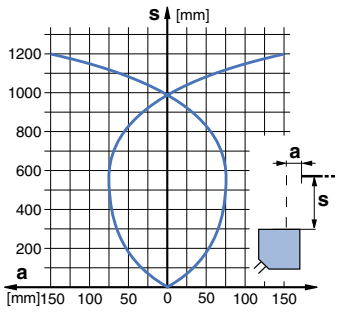
Diffuse sensor, energetic

1,200 mm

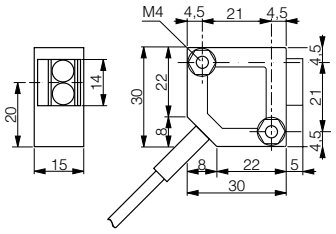
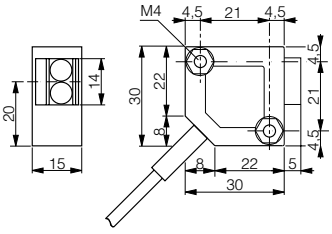
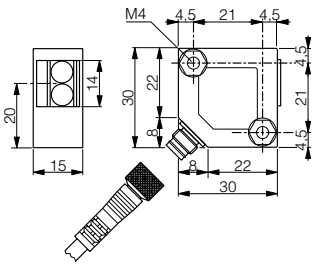
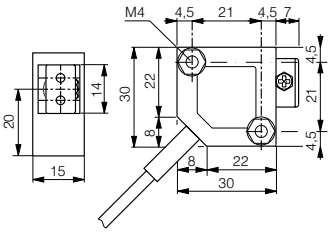
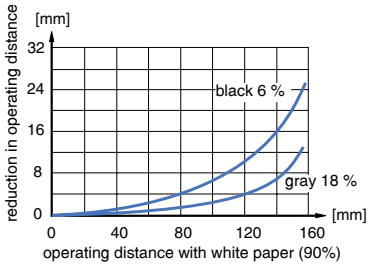
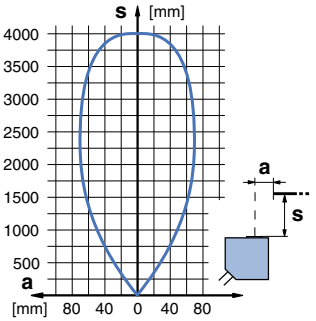
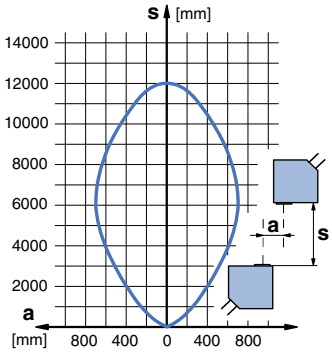
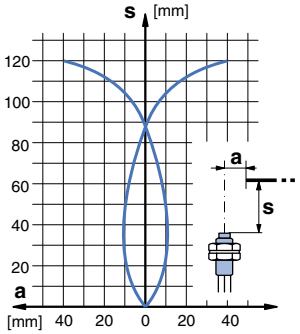
Dimensions:



Response curve:



Operating distance	1,200 mm
Standard target	200 x 200 mm
No-load supply current	15 mA typ.
Emitter	IR LED 880 nm
Weight (cable / connector model)	75 / 17 g
Part ref.: (**bold:** preferred types)	
NPN changeover outputs / cable	**LTK-3030-101**
NPN excess light output / cable	LTK-3030-102
NPN changeover outputs / conn. S8	**LTS-3030-101**
NPN excess light output / conn.S8	LTS-3030-102
PNP changeover outputs / cable	**LTK-3030-103**
PNP excess light output / cable	**LTK-3030-104**
PNP changeover outputs / conn. S8	**LTS-3030-103**
PNP excess light output / conn. S8	**LTS-3030-104**
Suitable connecting cables (page 112)	E, F
Wiring (pages 100 - 101)	Diagram 2

☐ 30x30	☐ 30x30	☐ 30x30	☐ 30x30
Diffuse sensor with background suppression	**Reflex sensor**	**Through-beam sensor**	**Fiber-optic amplifier**
15 ... 150 mm	**4,000 mm**	**12,000 mm**	**120 mm**
			
			
			
15 ... 150 mm	4,000 mm	12,000 mm	120 mm (with LFP-1002-020)
100 x 100 mm	Reflector type 3	-	100 x 100 mm
25 mA typ.	15 mA typ.	10 mA typ. (R) / 15 mA typ. (E)	15 mA typ.
LED red 660 nm	LED red polarized 660 nm	IR LED 880 nm	LED red 660 nm
75 / 17 g	80 / 18 g	75 / 17 g (R and E)	78 / 18 g
		(R) receiver / **(E)** emitter	
LHK-3030-101	**LRK-3030-101**	**LLK-3030-001 (R) / LLK-3030-000 (E)**	**LFK-3030-101**
LHK-3030-102	LRK-3030-102	LLK-3030-002 (R) / **LLK-3030-000 (E)**	LFK-3030-102
LHS-3030-101	**LRS-3030-101**	**LLS-3030-001 (R) / LLS-3030-000 (E)**	**LFS-3030-101**
LHS-3030-102	LRS-3030-102	LLS-3030-002 (R) / **LLS-3030-000 (E)**	LFS-3030-102
LHK-3030-103	**LRK-3030-103**	**LLK-3030-003 (R) / LLK-3030-000 (E)**	**LFK-3030-103**
LHK-3030-104	**LRK-3030-104**	**LLK-3030-004 (R) / LLK-3030-000 (E)**	LFK-3030-104
LHS-3030-103	**LRS-3030-103**	**LLS-3030-003 (R) / LLS-3030-000 (E)**	**LFS-3030-103**
LHS-3030-104	**LRS-3030-104**	**LLS-3030-004 (R) / LLS-3030-000 (E)**	LFS-3030-104
E, F	E, F	E, F	E, F
Diagram 2	Diagram 2	Diagram 2 (R) / Diagram 4 (E)	Diagram 2

At a glance:

- Small, but robust
- Low cost
- High switching frequency: 1000 Hz / 500 Hz*
- Glass window, therefore scratch resistant and easy to clean
- Excellent resistance to environmental influences thanks to polyurethane potting of the electronic module
- Convenient sensitivity adjustment by means of the built-in 12-turn potentiometer
- High degree of protection: IP 65

Construction

The devices are built into a housing of glass-fiber reinforced PBTP/polybutyleneterephthalate (Crastin), and fully potted with polyurethane resin. The covers are ultrasonically welded. Two mounting holes are provided for the use of M4 fastening screws.

Sensitivity setting

The sensitivity can be very finely adjusted by means of the built-in 12-turn potentiometer. The potentiometer cannot be turned too far. Turning clockwise increases the sensitivity.

Technical data:

(according to IEC 60947-5-2)

Hysteresis	10 % typ.
Supply voltage range U_B	10 ... 36 VDC
Max. ripple content	20 %
Output current	200 mA
Output voltage drop	2.0 V max. at 200 mA
Max. switching frequency:	1000 Hz / 500 Hz*
Switching time (↑ and ↓)	0.5 msec / 1 msec*
Max. ambient light:	
halogen	5,000 Lux
sun	10,000 Lux
Ambient temperature range	-25 ... +55 °C
Degree of protection	IP 65
EMC protection:	
IEC 60255-5	1 kV
IEC 61000-4-2	Level 3
IEC 61000-4-3	Level 3
IEC 61000-4-4	Level 3

* Diffuse sensor with background suppression

Protection

The switches are protected against overloads, short-circuits and all possible wire reversals. Furthermore, protection against overvoltages caused by inductive loads on the output and against voltage spikes on the power supply lines are built in. Appropriate technology prevents malfunctions or destruction caused by electrostatic discharges, fast transients, or HF fields.

LED

The yellow LED lights up when the output is switched. The green LED lights up when sufficient light (excess light) is available for reliable operation (approx. 80% of the maximum operating distance).

Connection

Switches with 2 m PVC cable 3 x 0.14 mm² (type 2) or 3-pole S8 connector are standard. Other cable types or lengths are available on request. Suitable connecting cables are listed on page 112.

Reflectors

A range of suitable reflectors for the reflex sensors is listed on page 99.

Test input

The additional test input built into the emitters of the through-beam models provides the possibility of an extra system control.

Excess light control

The built-in excess light circuit simplifies alignment and adjustment of the sensors. Any dirt is recognized in time, and can be removed easily.

Power-ON reset

Operation of the output is inhibited until the power supply requirements are met. This prevents unwanted switching of the output during power-ON.

Background suppression

The diffuse sensor with background suppression uses electronic distance setting. A PSD (**P**osition-**S**ensitive **D**evice) serves as the light receiver. Operating distance adjustment is carried out by means of a potentiometer, using visible red light as the source. The visible light spot (approx. 3 mm ∅) permits simple alignment. The device contains no moving optical parts, and is therefore insensitive to vibration.

Fixing

For fixation purposes, CONTRINEX offers a mounting set (order reference LXW-3030-003), consisting of a universal fixing bracket, screws, and a screwdriver suitable for adjusting the potentiometer.

Data sheets

Detailed data sheets with additional technical information are available for all models. These may be retrieved from the CONTRINEX website (www.contrinex.com), or ordered cost-free from our sales offices.

Drawings

The mechanical drawings may be downloaded as data files from the CONTRINEX website, and imported directly into construction drawings.

Delivery package

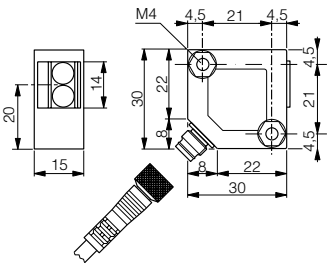
Proximity switch, instructions.

□ 30x30

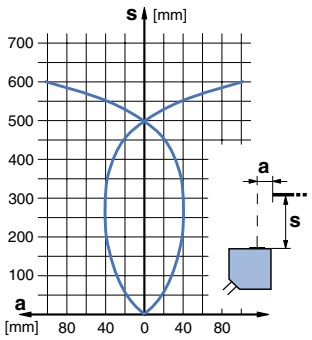
DIffuse sensor, energetic

600 mm

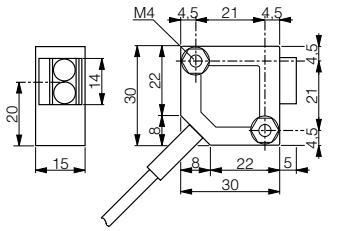
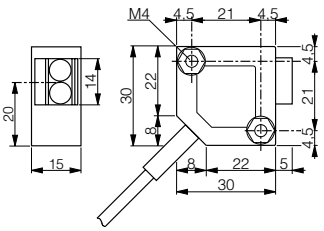
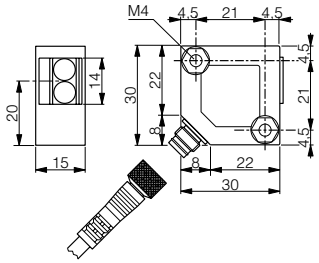
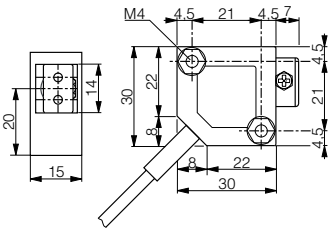
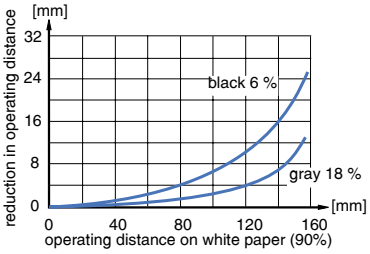
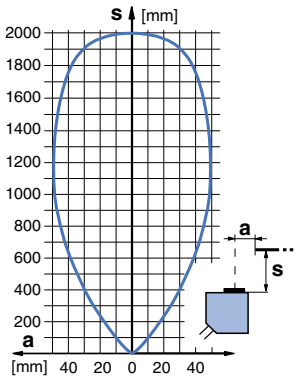
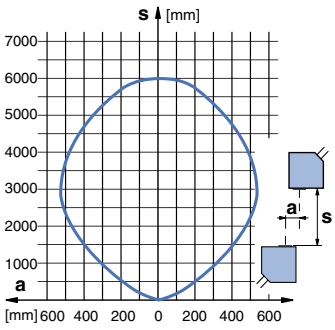
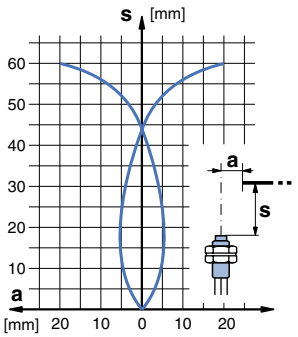
Dimensions:



Response curve:



Operating distance	600 mm
Standard target	200 x 200 mm
No-load supply current	15 mA typ.
Emitter	IR LED 880 nm
Weight (cable / connector model)	75 / 17 g
Part ref.: (**bold:** preferred types)	
NPN light-ON / cable	**LTK-3031-301**
NPN dark-ON / cable	**-**
NPN light-ON / connector S8	**LTS-3031-301**
NPN dark-ON / connector S8	**-**
PNP light-ON / cable	**LTK-3031-303**
PNP dark-ON / cable	**-**
PNP light-ON / connector S8	**LTS-3031-303**
PNP dark-ON / connector S8	-
Suitable connecting cables (page 112)	A, B
Wiring (pages 100 - 101)	Diagram 1

☐ 30x30	☐ 30x30	☐ 30x30	☐ 30x30
Diffuse sensor with background suppression	**Reflex sensor**	**Through-beam sensor**	**Fiber-optic amplifier**
15 ... 150 mm	**2,000 mm**	**6,000 mm**	**60 mm**
			
			
			
15 ... 150 mm	2,000 mm	6,000 mm	60 mm (with LFP-1002-020)
100 x 100 mm	Reflector type 3	-	100 x 100 mm
25 mA typ.	15 mA typ.	10 mA typ. (R) / 15 mA typ. (E)	15 mA typ.
LED red 660 nm	LED red polarized 660 nm	IR LED 880 nm	LED red 660 nm
75 / 17 g	80 / 18 g	75 / 17 g (R and E)	78 / 17 g
		(R) receiver / **(E)** emitter	
LHK-3031-301	-	-	**LFK-3031-301**
-	**LRK-3031-302**	**LLK-3031-202 (R) / LLK-3031-200 (E)**	**LFK-3031-302**
LHS-3031-301	-	-	**LFS-3031-301**
-	**LRS-3031-302**	**LLS-3031-202 (R) / LLS-3031-200 (E)**	**LFS-3031-302**
LHK-3031-303	-	-	**LFK-3031-303**
-	**LRK-3031-304**	**LLK-3031-204 (R) / LLK-3031-200 (E)**	**LFK-3031-304**
LHS-3031-303	-	-	**LFS-3031-303**
-	**LRS-3031-304**	**LLS-3031-204 (R) / LLS-3031-200 (E)**	**LFS-3031-304**
A, B	A, B	A, B	A, B
Diagram 1	Diagram 1	Diagram 1 (R) / Diagram 4 (E)	Diagram 1

At a glance:

- Small, but robust
- Very long operating distances
- High switching frequency: 1000 Hz
- Glass window, therefore scratch resistant and easy to clean
- Excellent resistance to environmental influences thanks to polyurethane potting of the electronic module
- Convenient sensitivity adjustment by means of the built-in 20-turn potentiometer
- High degree of protection: IP 67

Construction

The devices are built into a housing of glass-fiber reinforced PBTP/polybutylenterephthalate (Crastin), and fully potted with polyurethane resin. The covers are ultrasonically welded. Two mounting holes are provided for the use of M4 fastening screws. A universal mounting bracket as well as screws are delivered with every switch.

Sensitivity setting

The sensitivity can be very finely adjusted by means of the built-in 20-turn potentiometer. The potentiometer cannot be turned too far. Turning clockwise increases the sensitivity.

Technical data:

(according to IEC 60947-5-2)

Hysteresis	10 % typ.
Supply voltage range U_B	10 ... 36 VDC
Max. ripple content	20 %
Output current (total of both outputs)	200 mA
Output voltage drop	2.0 V max. at 200 mA
Max. switching frequency	1000 Hz
Switching time (↑ and ↓)	0.5 msec
Max. ambient light:	
halogen	5,000 Lux
sun	10,000 Lux
Ambient temperature range	-25 ... +55 °C
Degree of protection	IP 67
EMC protection:	
IEC 60255-5	1 kV
IEC 61000-4-2	Level 2
IEC 61000-4-3	Level 3
IEC 61000-4-4	Level 3

Protection

The switches are protected against overloads, short-circuits and all possible wire reversals. Furthermore, protection against overvoltages caused by inductive loads on the output and against voltage spikes on the power supply lines are built in. Appropriate technology prevents malfunctions or destruction caused by electrostatic discharges, fast transients, or HF fields.

LED

The yellow LED lights up when the light-ON output is switched. The green LED lights up if the receiver gets enough light (excess light) for reliable operation (approx. 80 % of the maximum operating distance). At the same time, the corresponding output (types -102 and -104 only) is switched.

Connection

Switches with 3 m PVC cable 4 x 0.14 mm² (type 2) or 4-pole S8 connector are standard. Other cable types or lengths are available on request. Suitable connecting cables are listed on page 112.

Reflectors

A range of suitable reflectors for the reflex sensors is listed on page 99.

Test input

The additional test input built into the emitters of the through-beam models provides the possibility of an extra system control.

Excess light control

The built-in excess light circuit simplifies alignment and adjustment of the sensors. Eventual dirt is recognized in time, and can be removed easily.

Power-ON reset

Operation of the output is inhibited until the power supply requirements are met. This prevents unwanted switching of the output during power-ON.

Data sheets

Detailed data sheets with additional technical information are available for all models. These may be retrieved from the CONTRINEX website (www.contrinex.com), or ordered cost-free from our sales offices.

Drawings

The mechanical drawings may be downloaded as data files from the CONTRINEX website, and imported directly into construction drawings.

Delivery package

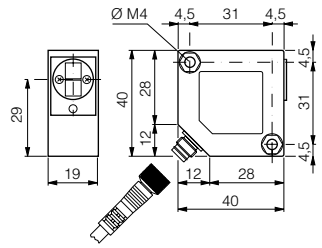
Proximity switch, mounting bracket, screws, washers and nuts, screwdriver, instructions.

□ 40x40

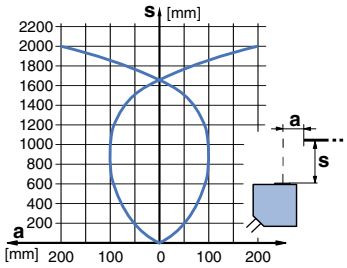
Diffuse sensor, energetic

2,000 mm

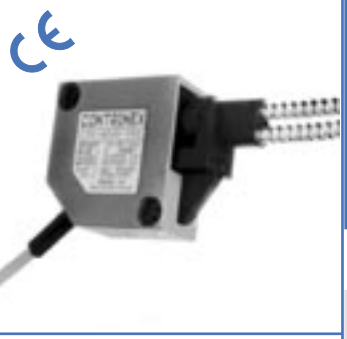
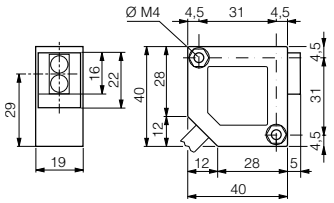
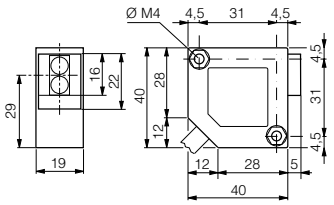
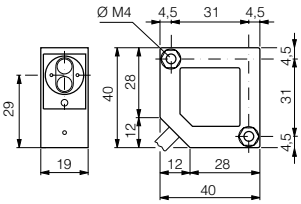
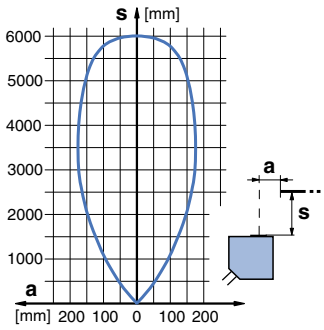
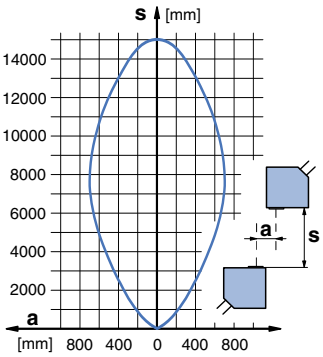
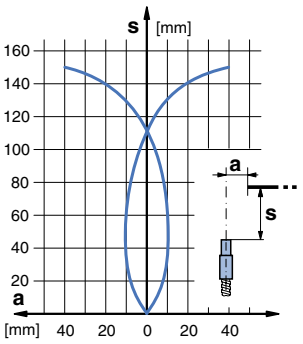
Dimensions:



Response curve:



Operating distance	2,000 mm
Standard target	400 x 400 mm
No-load supply current	15 mA typ.
Emitter	IR LED 880 nm
Weight (cable / connector model)	90 / 35 g
Part ref.: (**bold:** preferred types)	
NPN changeover outputs / cable	**LTK-4040-101**
NPN excess light output / cable	LTK-4040-102
NPN changeover outputs / conn. S8	**LTS-4040-101**
NPN excess light output / conn. S8	LTS-4040-102
PNP changeover outputs / cable	**LTK-4040-103**
PNP excess light output / cable	LTK-4040-104
PNP changeover outputs / conn. S8	**LTS-4040-103**
PNP excess light output / conn. S8	LTS-4040-104
Suitable connecting cables (page 112)	E, F
Wiring (pages 100 - 101)	Diagram 2

	☐ 40x40	☐ 40x40	☐ 40x40
	Reflex sensor	**Through-beam sensor**	**Fiber-optic amplifier**
	6,000 mm	**15,000 mm**	**150 mm**
			
			
			
	6,000 mm	15,000 mm	150 mm (with LFG-1030-050)
	Reflector type 3	-	100 x 100 mm
	15 mA typ.	10 mA typ. (R) / 15 mA typ. (E)	15 mA typ.
	LED red polarized 660 nm	IR LED 880 nm	IR LED 880 nm
	90 / 35 g	95 / 35 g (R and E)	95 / 35 g
		(R) receiver / **(E)** emitter	
	LRK-4040-101	**LLK-4040-001 (R) / LLK-4040-000 (E)**	**LFK-4040-101**
	LRK-4040-102	LLK-4040-002 (R) / **LLK-4040-000 (E)**	LFK-4040-102
	LRS-4040-101	**LLS-4040-001 (R) / LLS-4040-000 (E)**	**LFS-4040-101**
	LRS-4040-102	LLS-4040-002 (R) / **LLS-4040-000 (E)**	LFS-4040-102
	LRK-4040-103	**LLK-4040-003 (R) / LLK-4040-000 (E)**	**LFK-4040-103**
	LRK-4040-104	LLK-4040-004 (R) / **LLK-4040-000 (E)**	LFK-4040-104
	LRS-4040-103	**LLS-4040-003 (R) / LLS-4040-000 (E)**	**LFS-4040-103**
	LRS-4040-104	LLS-4040-004 (R) / **LLS-4040-000 (E)**	LFS-4040-104
	E, F	E, F	E, F
	Diagram 2	Diagram 2 (R) / Diagram 4 (E)	Diagram 2

At a glance:

- Fiber-optic amplifier for DIN-rail mounting (DIN/EN 50022)
- Excellent detection properties across a wide sensing range (20 ... 200 mm)
- No blind zone
- Regulated emitter light power
- Distance setting by means of teach-in with additional manual fine adjustment
- Signal strength and excess light indication by means of a bargraph
- 10 mm housing width

Construction

The devices are built into a housing of glass-fiber reinforced PBTP/polybutyleneterephthalate (Crastin). The housing width is only 10 mm, thus minimizing the space required for stacking. The optical fibers (Ø 2.2 mm) are connected by quick-locking, which protects them from detaching accidentally. The operating and display elements are protected by a clip-on transparent cover. The devices can be snapped onto DIN rails (DIN/EN 50022).

Technical data:

(according to IEC 60947-5-2)

Hysteresis	10 % typ.
Supply voltage range U_B	10 ... 30 VDC
Max. ripple content	20 %
Output current	200 mA
Output voltage drop	2.0 V max. at 200 mA
Max. switching frequency	1,500 Hz
Switching time (↑ and ↓)	330 µsec
Max. ambient light:	
halogen	5,000 Lux
sun	10,000 Lux
Ambient temperature range	-25 ... +55 °C
Degree of protection	IP 64
EMC protection:	
IEC 60255-5	5 kV
IEC 61000-4-2	Level 2
IEC 61000-4-3	Level 3
IEC 61000-4-4	Level 2

Operating distance adjustment

The operating distance is adjusted by means of teach-in (setting range 20 ... 200 mm). Depending on the application, either Teach 1 (only on background), or Teach 2 (on target and background) may be used. The additional manual fine adjustment allows for optimum regulation. The teach process can be triggered remotely.

Regulated light power

The emitter light power is regulated automatically, which results in a very small temperature and aging drift of the operating distance, as well as reducing the spread of the latter between individual devices.

Timers

If needed, the built-in timers for pulse delay and stretching can be activated. The factory-adjusted 10 msec setting can be increased by increments of 10 msec.

Light-ON / dark-ON

The output function can be selected directly on the device (default setting: light-ON).

Protection

The switches are protected against overloads, short-circuits and all possible wire reversals. Furthermore, protection against overvoltages caused by inductive loads on the output and against voltage spikes on the power supply lines are built in. Appropriate technology prevents malfunctions or destruction caused by electrostatic discharges, fast transients, or HF fields. Thanks to optimum sealing, the devices are resistant to environmental influences (degree of protection IP 64).

LED

A yellow LED indicates the switching state. Signal strength and excess light indication by means of a bargraph allow for optimum alignment of the optical fibers. The status LED shows the output state of the device during the teach process, and 8 green LEDs indicate the activated functions.

Connection

Devices with 2 m PVC cable 4 x 0.25 mm² (type 12) or 4-pole S8 connector are standard. Other cable types or lengths are available on request. Suitable connecting cables are listed on page 112.

Power-ON reset

Operation of the output is inhibited until the power supply requirements are met. This prevents unwanted switching of the output during power-ON.

Simple operation

The operating and display elements are clearly structured and largely self-explanatory. Additional operating information can be found on the device labels, and detailed operating instructions are delivered with every switch.

Data sheets

Detailed data sheets with additional technical information are available for all models. These may be retrieved from the CONTRINEX website (www.contrinex.com), or ordered cost-free from our sales offices.

Drawings

The mechanical drawings may be downloaded as data files from the CONTRINEX website, and imported directly into construction drawings.

Delivery package

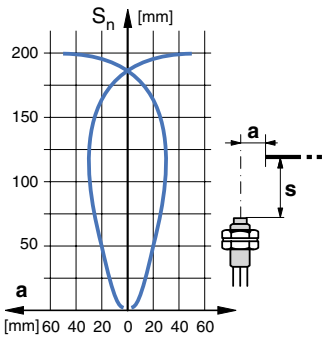
Device, instructions.

☐ 31x60

Fiber-optic amplifier with teach-in

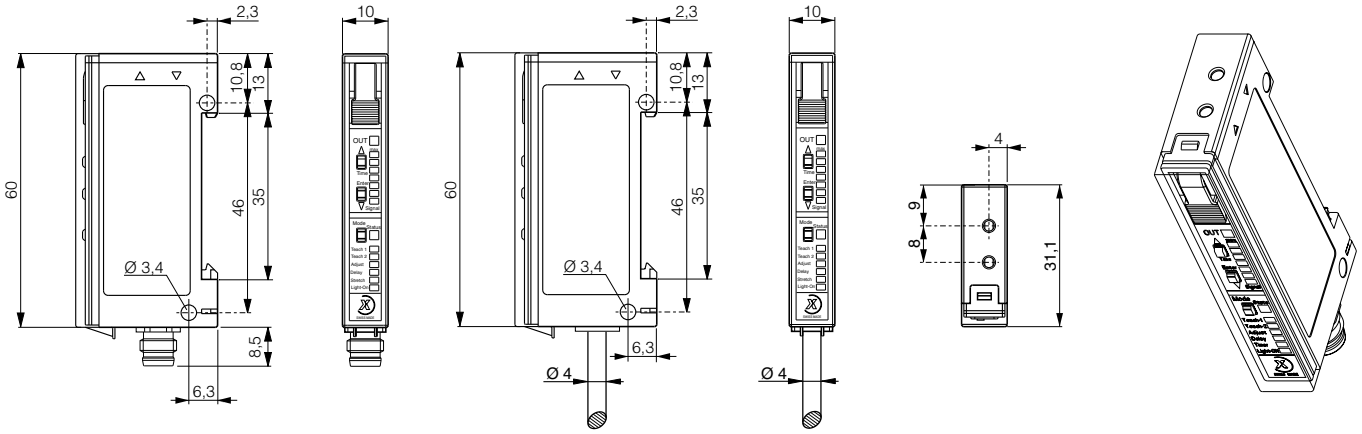
200 mm

Response curve:



Operating distance	200 mm (with LFP-1002-020)
Standard target	100 x 100 mm
No-load supply current (at U_B=24V)	25 mA typ.
Emitter	LED red 680 nm
Weight (cable / connector model)	68 g / 17 g
Part ref.: (**bold:** preferred types)	
NPN teach-in / cable	**LFK-3065-101**
NPN teach-in / connector S8	**LFS-3065-101**
PNP teach-in / cable	**LFK-3065-103**
PNP teach-in / connector S8	**LFS-3065-103**
Suitable connecting cables (page 112)	E, F
Wiring (pages 100 - 101)	Diagram 6

Dimensions:



At a glance:

- Robust universal devices
- Long operating distances
- High switching frequency: 1000 Hz / 250 Hz*
- Reflex sensors using autocollimation principle
- Glass window, therefore scratch resistant and easy to clean
- The PBTP (Crastin) housing provides exceptional resistance to environmental influences
- Sensitivity adjustment by means of a built-in potentiometer with calibration scale and reduction gearbox
- High degree of protection: IP 67

Construction

The devices are built into a housing of glass-fiber reinforced PBTP/polybutyleneterephthalate (Crastin). For fixing purposes, a number of through holes suitable for M5 screws are provided. The distance between the holes has been chosen for maximum compatibility with the most commonly available sensors on the market.

Sensitivity setting

The sensitivity can be very finely adjusted by means of the built-in potentiometer with calibration scale and reduction gearbox. The potentiometer cannot be turned too far. Turning clockwise increases the sensitivity.

Technical data:

(according to IEC 60947-5-2)

Hysteresis	10 % typ.
DC supply voltage range U_B	10 ... 36 VDC
UC supply voltage range U_B	20 ... 265 VAC 20 ... 320 VDC
Max. ripple content**	20 %
Output current**	200 mA
Output voltage drop**	2.0 V max. at 200 mA
Max. switching frequency**	1000 Hz / 250 Hz*
Switching time** (↑ and ↓)	0.5 msec / 1 msec*
Max. ambient light:	
halogen	5,000 Lux
sun	10,000 Lux
Ambient temperature range	-5 ... +55 °C
Degree of protection	IP 67
EMC protection:	
IEC 60255-5	1 kV
IEC 61000-4-2	Level 3
IEC 61000-4-3	Level 3
IEC 61000-4-4	Level 3

* Diffuse sensor with background suppression

** DC models (UC see data sheet)

Protection

The switches are protected against overloads, short-circuits and all possible wire reversals. Furthermore, protection against overvoltages caused by inductive loads on the output and against voltage spikes on the power supply lines are built in. Appropriate technology prevents malfunctions or destruction caused by electrostatic discharges, fast transients, or HF fields.

LED

The yellow LED lights up when the light-ON output is switched. The green LED indicates that sufficient light is available for reliable operation (approx. 80% of the maximum operating distance); at the same time, the corresponding output (if available) is switched.

Connection

As standard, the devices are delivered with 4-pole or 5-pole S12 connector, or screw terminal. Suitable connecting cables are listed on page 112.

Reflectors

A range of suitable reflectors for the reflex sensors is listed on page 99.

Test input

The built-in test input (optional for some models) provides the possibility of an extra system control.

Excess light control

The built-in excess light circuit simplifies alignment and adjustment of the sensors. Eventual dirt is recognized in time, and can be removed easily.

Power-ON reset

Operation of the output is inhibited until the power supply requirements are met. This prevents unwanted switching of the output during power-ON.

Background suppression

The diffuse sensor with background suppression uses electronic distance setting. A PSD (**P**osition-**S**ensitive **D**evice) serves as the light receiver. Operating distance adjustment is carried out by means of a potentiometer, using infra-red light as the source. At a distance of 1 m, the light spot has a diameter of approx. 30 mm.

Timer

The timer (optional) allows selection of switch-on delay, switch-off delay, or pulses; adjustable from 0.01 ... 1 s (UC models 0.1 ... 10 s).

Data sheets

Detailed data sheets with additional technical information are available for all models. These may be retrieved from the CONTRINEX website (www.contrinex.com), or ordered cost-free from our sales offices.

Drawings

The mechanical drawings may be downloaded as data files from the CONTRINEX website, and imported directly into construction drawings.

Delivery package

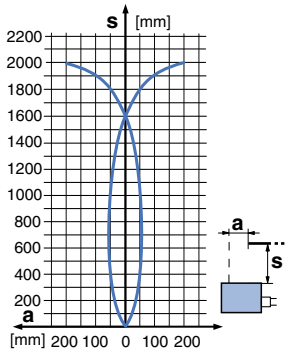
Proximity switch, instructions.

☐ 65x83

Diffuse sensor, energetic

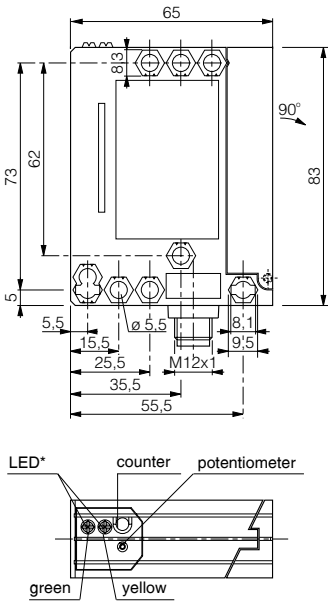
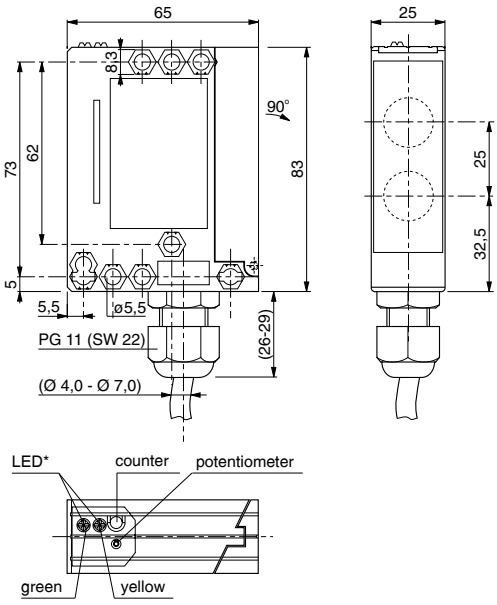
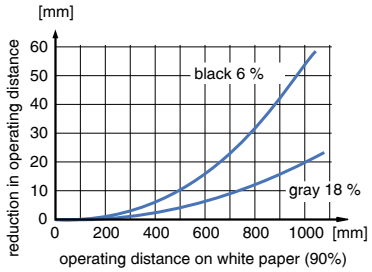
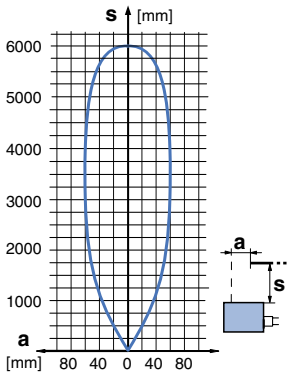
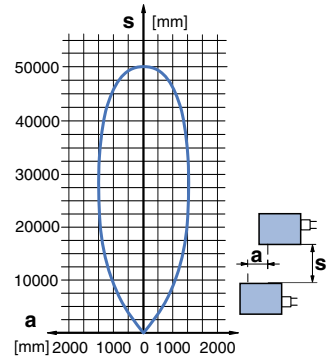
2,000 mm

Response curve:



Operating distance	2,000 mm
Standard target	400 x 400 mm white
No-load supply current DC / UC	20 mA / 2 VA typ.
Emitter	IR LED 880 nm
Weight	100 g
Part ref.: (**bold:** preferred types)	
DC NPN / connector S12	**LTS-6080-101***
DC NPN / screw terminal	**LTT-6080-101**
DC NPN timer*** / connector S12	**LTS-6080-151****
DC NPN timer*** / screw terminal	**LTT-6080-151**
DC PNP / connector S12	**LTS-6080-103***
DC PNP / screw terminal	**LTT-6080-103**
DC PNP timer*** / connector S12	**LTS-6080-153****
DC PNP timer*** / screw terminal	**LTT-6080-153**
UC relay / connector S12	**LTS-6080-115**
UC relay / screw terminal	**LTT-6080-115**
UC relay / timer***/ connector S12	LTS-6080-165
UC relay / timer***/ screw terminal	LTT-6080-165
Suitable connecting cables (page 112)	M, N (**with test input: O, P)
Wiring (pages 100 - 101)	2 (LTS-...*) / 3 (LTS/LTT-...) / 5 (UC)

*** light-ON/dark-ON switchable

☐ 65x83		☐ 65x83	☐ 65x83
Diffuse sensor with background suppression		**Reflex sensor**	**Through-beam sensor**
50 ... 1,000 mm		**6,000 mm**	**50,000 mm**
			
			* receiver only 
50 ... 1,000 mm		6,000 mm	50,000 mm
200 x 200 mm white		Reflector type 3	-
50 mA / 3 VA typ.		20 mA / 2 VA typ.	20 mA / 2 VA typ. (R and E)
IR LED 880 nm		LED red polarized 660 nm	IR LED 880 nm
100 g		100 g	100 g (R and E)
			(R) receiver / **(E)** emitter
LHS-6080-101*		LRS-6080-102*	**LLS-6080-002 (R) / LLS-6080-000 (E)**
LHT-6080-101		**LRT-6080-102**	**LLT-6080-002 (R) / LLT-6080-000 (E)**
LHS-6080-151**		**LRS-6080-152****	**LLS-6080-052 (R) / LLS-6080-000 (E)**
LHT-6080-151		**LRT-6080-152**	**LLT-6080-052 (R) / LLT-6080-000 (E)**
LHS-6080-103*		**LRS-6080-104***	**LLS-6080-004 (R) / LLS-6080-000 (E)**
LHT-6080-103		**LRT-6080-104**	**LLT-6080-004 (R) / LLT-6080-000 (E)**
LHS-6080-153**		**LRS-6080-154****	**LLS-6080-054 (R) / LLS-6080-000 (E)**
LHT-6080-153		**LRT-6080-154**	**LLT-6080-054 (R) / LLT-6080-000 (E)**
LHS-6080-115		**LRS-6080-115**	**LLS-6080-015 (R) / LLS-6080-010 (E)**
LHT-6080-115		**LRT-6080-115**	**LLT-6080-015 (R) / LLT-6080-010 (E)**
LHS-6080-165		LRS-6080-165	LLS-6080-065 (R) / **LLS-6080-010 (E)**
LHT-6080-165		LRT-6080-165	LLT-6080-065 (R) / **LLT-6080-010 (E)**
M, N (**with test input: O, P)		M, N (**with test input: O, P)	M, N
2 (LHS-...*) / 3 (LHS/LHT-...) / 5 (UC)		2 (LRS-...*) / 3 (LRS/LRT-...) / 5 (UC)	2 (LLS/LLT-...) / 4 (E) / 5 (UC)