

### At a glance:

- Smallest fully self-contained photoelectric proximity switch on the market
- Long operating distances
- Standardized sizes: Ø 4 mm smooth and M5 threaded
- Glass window, therefore scratch resistant and easy to clean
- Excellent resistance to environmental influences thanks to fully vacuum-potted electronics and optical parts
- High degree of protection: IP 67

### Construction

The devices are built into stainless-steel housings, and fully potted under vacuum. The optical part works with parabolic mirrors (no lenses), which allows for full potting without degradation of the optical characteristics, thus providing the best long-term reliability in difficult environments. The electronic module uses chip-on-board technology on a ceramic-free substrate, and is therefore insensitive to shock and deformation.

### Sensitivity setting

The sensitivity is factory adjusted, and cannot be modified by the user.

### 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 LED (yellow) lights up if a sufficient quantity of light falls on the receiver; at the same time, the light-ON output is switched. The LED flashes if the receiver does not receive enough light (excess light) for reliable operation.

### Connection

Switches with 2 m PVC cable 3 x 0.14 mm<sup>2</sup> (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.

### Test input

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

### Excess light control

If the switch is detecting an object, but not enough light (excess light) is available at the receiver's sensing face, the LED flashes. As a result, alignment is made much easier. Moreover, eventual dirt on the sensing face is indicated early. Cleaning is therefore possible before proper operation is impaired, thus increasing system viability.

### 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	100 mA
Output voltage drop	2.0 V max. at 100 mA
Max. switching frequency	250 Hz
Switching time ( $\uparrow$ and $\downarrow$ )	2.5 msec
Max. ambient light:	
halogen	5,000 Lux
sun	10,000 Lux
Ambient temperature range	0 ... +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 2

### 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](http://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.

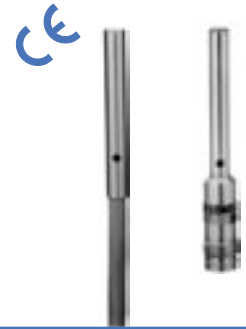
### Delivery package

Photoelectric proximity switch, 2 fixing nuts (for size M5), instructions.

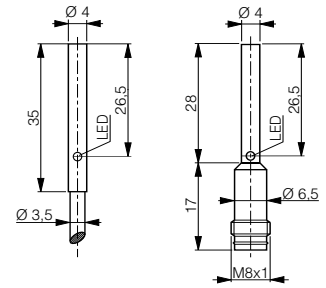
Ø 4

Diffuse sensor, energetic

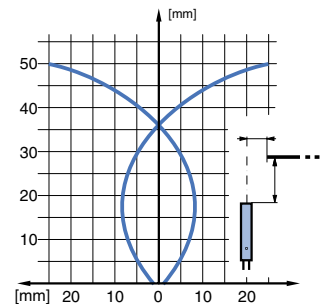
50 mm



Dimensions:

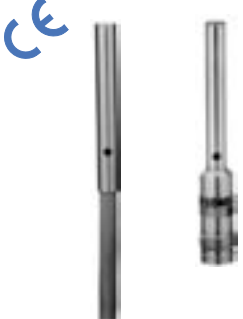
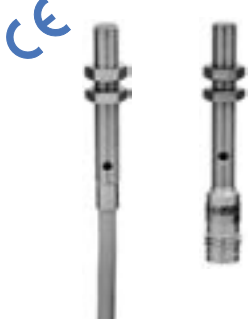
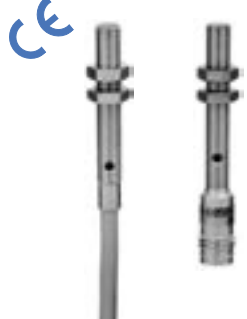
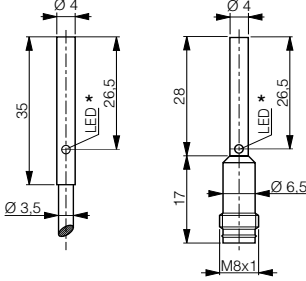
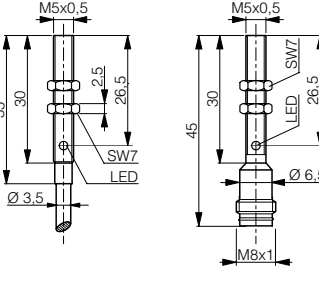
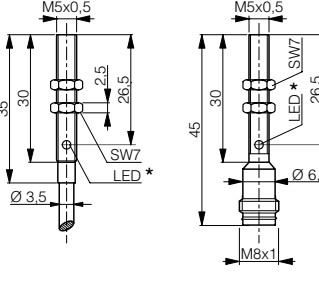
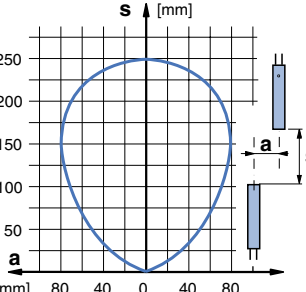
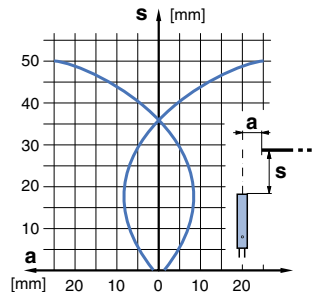
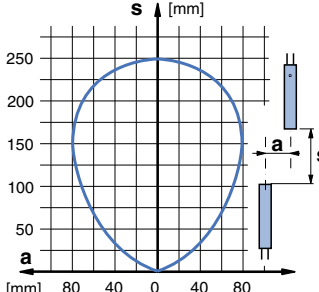


Response curve:



Operating distance	50 mm
Standard target	100 x 100 mm white
No-load supply current	15 mA typ.
Emitter	IR LED 880 nm
Weight (cable / connector model)	35 / 3 g
Part ref.: ( <b>bold:</b> preferred types)	
NPN light-ON / cable	<b>LTK-1040-301</b>
NPN dark-ON / cable	-
NPN light-ON / connector S8	<b>LTS-1040-301</b>
NPN dark-ON / connector S8	-
PNP light-ON / cable	<b>LTK-1040-303</b>
PNP dark-ON / cable	-
PNP light-ON / connector S8	<b>LTS-1040-303</b>
PNP dark-ON / connector S8	-
Suitable connecting cables (page 112)	A, B
Wiring (pages 100 - 101)	Diagram 1

# SERIES 1040 / 1050

<p style="text-align: center;"><b>Ø 4</b></p> <p style="text-align: center;"><b>Through-beam sensor</b></p> <p style="text-align: center;"><b>250 mm</b></p>	<p style="text-align: center;"><b>M5</b></p> <p style="text-align: center;"><b>Diffuse sensor, energetic</b></p> <p style="text-align: center;"><b>50 mm</b></p>	<p style="text-align: center;"><b>M5</b></p> <p style="text-align: center;"><b>Through-beam sensor</b></p> <p style="text-align: center;"><b>250 mm</b></p>	
			
 <p>*receiver only</p>		 <p>*receiver only</p>	
			
<p style="text-align: center;">250 mm</p>	<p style="text-align: center;">50 mm</p>	<p style="text-align: center;">250 mm</p>	
<p style="text-align: center;">-</p>	<p style="text-align: center;">100 x 100 mm white</p>	<p style="text-align: center;">-</p>	
<p style="text-align: center;">5 mA typ. (R) / 10 mA typ. (E)</p>	<p style="text-align: center;">15 mA typ.</p>	<p style="text-align: center;">5 mA typ. (R) / 10 mA typ. (E)</p>	
<p style="text-align: center;">IR LED 880 nm</p>	<p style="text-align: center;">IR LED 880 nm</p>	<p style="text-align: center;">IR LED 880 nm</p>	
<p style="text-align: center;">35 / 3 g (R and E)</p>	<p style="text-align: center;">35 / 4 g</p>	<p style="text-align: center;">35 / 4 g (R and E)</p>	
<p style="text-align: center;"><b>(R)</b> receiver / <b>(E)</b> emitter</p>	<p style="text-align: center;"><b>LTK-1050-301</b></p>	<p style="text-align: center;"><b>(R)</b> receiver / <b>(E)</b> emitter</p>	
<p style="text-align: center;">-</p>	<p style="text-align: center;">-</p>	<p style="text-align: center;">-</p>	
<p style="text-align: center;"><b>LLK-1040-202 (R) / LLK-1040-200 (E)</b></p>	<p style="text-align: center;"><b>LTS-1050-301</b></p>	<p style="text-align: center;"><b>LLK-1050-202 (R) / LLK-1050-200 (E)</b></p>	
<p style="text-align: center;">-</p>	<p style="text-align: center;">-</p>	<p style="text-align: center;">-</p>	
<p style="text-align: center;"><b>LLS-1040-202 (R) / LLS-1040-200 (E)</b></p>	<p style="text-align: center;"><b>LTK-1050-303</b></p>	<p style="text-align: center;"><b>LLS-1050-202 (R) / LLS-1050-200 (E)</b></p>	
<p style="text-align: center;">-</p>	<p style="text-align: center;">-</p>	<p style="text-align: center;">-</p>	
<p style="text-align: center;"><b>LLK-1040-204 (R) / LLK-1040-200 (E)</b></p>	<p style="text-align: center;"><b>LTS-1050-303</b></p>	<p style="text-align: center;"><b>LLK-1050-204 (R) / LLK-1050-200 (E)</b></p>	
<p style="text-align: center;">-</p>	<p style="text-align: center;">-</p>	<p style="text-align: center;">-</p>	
<p style="text-align: center;"><b>LLS-1040-204 (R) / LLS-1040-200 (E)</b></p>	<p style="text-align: center;">-</p>	<p style="text-align: center;"><b>LLS-1050-204 (R) / LLS-1050-200 (E)</b></p>	
<p style="text-align: center;">A, B</p>	<p style="text-align: center;">A, B</p>	<p style="text-align: center;">A, B</p>	
<p style="text-align: center;">Diagram 1 (R) / 4 (E)</p>	<p style="text-align: center;">Diagram 1</p>	<p style="text-align: center;">Diagram 1 (R) / 4 (E)</p>	

**1** Inductive proximity switches  
**2** Photoelectric proximity switches  
**3** Optical fibers  
**4** Connecting cables  
**5** Accessories  
**6** Glossary  
**7** Index

### At a glance:

- Smallest fully self-contained photoelectric proximity switches on the market
- Cylindrical light beam
- Well-defined operating range
- Standardized sizes: Ø 4 mm smooth and M5 threaded
- Sapphire window, therefore scratch resistant and easy to clean
- Excellent resistance to environmental influences thanks to fully vacuum-potted electronics and optical parts
- High degree of protection: IP 67

### Construction

The devices are built into stainless-steel housings, and fully potted under vacuum. The optical part combines reflectors with spherical lenses, which allows for full potting without degradation of the optical characteristics, thus providing the best long-term reliability in difficult environments. The electronic module uses chip-on-board technology on a ceramic-free substrate, and is therefore insensitive to shock and deformation.

### Sensitivity setting

The sensitivity is factory adjusted and cannot be modified by the user.

### Protection

The switches are protected against overloads, short-circuits and all possible wire reversals. Furthermore, protection against over-voltages 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 LED (yellow) lights up if a sufficient quantity of light falls on the receiver; at the same time, the light-ON output is switched. The LED flashes if the receiver does not receive enough light (excess light) for reliable operation.

### Connection

Switches with 2 m PVC cable 3 x 0.14 mm<sup>2</sup> (type 2) are standard. Other cable types or lengths are available on request.

### Excess light control

If the switch is detecting an object, but not enough light (excess light) is available at the receiver's sensing face, the LED flashes. As a result, alignment is made much easier. Moreover, eventual dirt on the sensing face is indicated early. Cleaning is therefore possible before proper operation is impaired, thus increasing system viability.

### 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.

### 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	100 mA
Output voltage drop	2.0 V max. at 100 mA
Max. switching frequency	250 Hz
Switching time (↑ and ↓)	2.5 msec
Max. ambient light:	
halogen	5,000 Lux
sun	10,000 Lux
Ambient temperature range	0 ... +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 2

### Data sheets

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### Delivery package

Photoelectric proximity switch, 2 fixing nuts (for size M5), instructions.

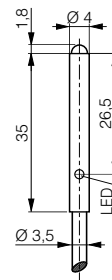
Ø 4

Diffuse sensor,  
energetic

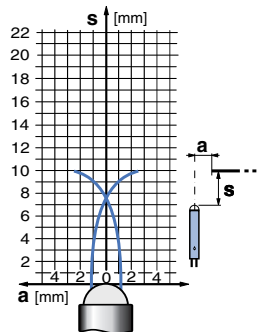
10 mm



Dimensions:







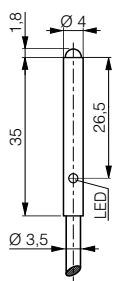
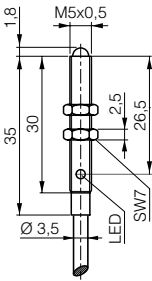
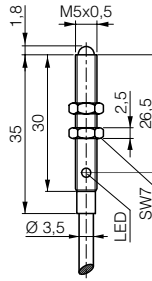
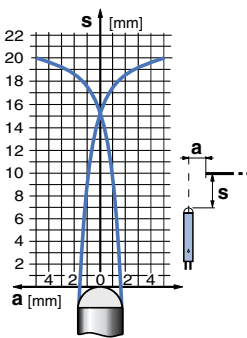
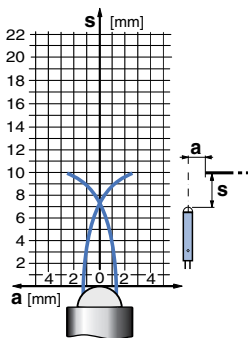
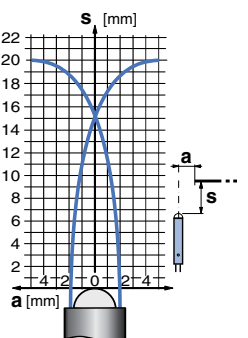


Response curve:



Operating distance	10 mm
Standard target	100 x 100 mm white
No-load supply current	15 mA typ.
Emitter	IR LED 880 nm
Weight	28 g
Part ref.: ( <b>bold:</b> preferred types)	
NPN light-ON / cable	<b>LTK-1040-301-505</b>
NPN dark-ON / cable	-
NPN light-ON / connector S8	-
NPN dark-ON / connector S8	-
PNP light-ON / cable	<b>LTK-1040-303-505</b>
PNP dark-ON / cable	-
PNP light-ON / connector S8	-
PNP dark-ON / connector S8	-
Suitable connecting cables (page 112)	-
Wiring (pages 100 - 101)	Diagram 1

# WITH CYLINDRICAL LIGHT BEAM

<p style="text-align: center;"><b>Ø 4</b></p> <p style="text-align: center;">Diffuse sensor, energetic</p> <p style="text-align: center;"><b>20 mm</b></p>	<p style="text-align: center;"><b>M5</b></p> <p style="text-align: center;">Diffuse sensor, energetic</p> <p style="text-align: center;"><b>10 mm</b></p>	<p style="text-align: center;"><b>M5</b></p> <p style="text-align: center;">Diffuse sensor, energetic</p> <p style="text-align: center;"><b>20 mm</b></p>	
 	 	 	
			
			
<p style="text-align: center;">20 mm</p>	<p style="text-align: center;">10 mm</p>	<p style="text-align: center;">20 mm</p>	
<p style="text-align: center;">100 x 100 mm white</p>	<p style="text-align: center;">100 x 100 mm white</p>	<p style="text-align: center;">100 x 100 mm white</p>	
<p style="text-align: center;">15 mA typ.</p>	<p style="text-align: center;">15 mA typ.</p>	<p style="text-align: center;">15 mA typ.</p>	
<p style="text-align: center;">IR LED 880 nm</p>	<p style="text-align: center;">IR LED 880 nm</p>	<p style="text-align: center;">IR LED 880 nm</p>	
<p style="text-align: center;">28 g</p>	<p style="text-align: center;">30 g</p>	<p style="text-align: center;">30 g</p>	
<p style="text-align: center;"><b>LTK-1040-301-506</b></p>	<p style="text-align: center;"><b>LTK-1050-301-505</b></p>	<p style="text-align: center;"><b>LTK-1050-301-506</b></p>	
<p style="text-align: center;">-</p>	<p style="text-align: center;">-</p>	<p style="text-align: center;">-</p>	
<p style="text-align: center;">-</p>	<p style="text-align: center;">-</p>	<p style="text-align: center;">-</p>	
<p style="text-align: center;">-</p>	<p style="text-align: center;">-</p>	<p style="text-align: center;">-</p>	
<p style="text-align: center;"><b>LTK-1040-303-506</b></p>	<p style="text-align: center;"><b>LTK-1050-303-505</b></p>	<p style="text-align: center;"><b>LTK-1050-303-506</b></p>	
<p style="text-align: center;">-</p>	<p style="text-align: center;">-</p>	<p style="text-align: center;">-</p>	
<p style="text-align: center;">-</p>	<p style="text-align: center;">-</p>	<p style="text-align: center;">-</p>	
<p style="text-align: center;">-</p>	<p style="text-align: center;">-</p>	<p style="text-align: center;">-</p>	
<p style="text-align: center;">-</p>	<p style="text-align: center;">-</p>	<p style="text-align: center;">-</p>	
<p style="text-align: center;">Diagram 1</p>	<p style="text-align: center;">Diagram 1</p>	<p style="text-align: center;">Diagram 1</p>	

<b>1</b>	Inductive proximity switches
<b>2</b>	Photoelectric proximity switches
<b>3</b>	Optical fibers
<b>4</b>	Connecting cables
<b>5</b>	Accessories
<b>6</b>	Glossary
<b>7</b>	Index

## At a glance:

- Short: housing length 50 mm (cable connection) / 60 mm (connector model)
- Long operating distances
- High switching frequency: 1000 Hz
- All devices with visible red light
- 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 sensor; optional for other models)
- High degree of protection: IP 67

## Construction

The devices are built into nickel-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 (diffuse sensor; 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	1000 Hz
Switching time ( $\uparrow$ and $\downarrow$ )	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. 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 0.34mm<sup>2</sup> (type 8) 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.

## 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](http://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

Photoelectric proximity switch, 2 fixing nuts, screwdriver, instructions.

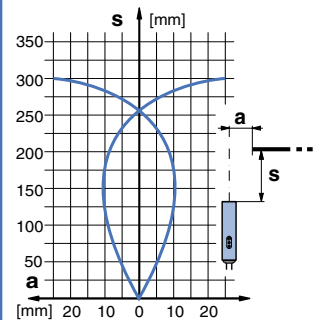
# M12

Diffuse sensor, energetic

300 mm



Response curve:



Operating distance	300 mm
Standard target	100 x 100 mm white
No-load supply current	15 mA typ.
Emitter	LED red 660 nm
Weight (cable / connector model)	100 / 20 g
Part ref.: ( <b>bold:</b> preferred types)	
NPN light-ON / cable	<b>LTK-1120-301</b>
NPN dark-ON / cable	-
NPN light-ON / connector S12	<b>LTS-1120-301</b>
NPN dark-ON / connector S12	-
PNP light-ON / cable	<b>LTK-1120-303</b>
PNP dark-ON / cable	-
PNP light-ON / connector S12	<b>LTS-1120-303</b>
PNP dark-ON / connector S12	-
Suitable connecting cables (page 112)	G, H, K, L
Wiring (pages 100 - 101)	Diagram 1