



Series 23

Rectangular Sensors

- Adjustable, sharp background suppression
- Sensing range display on housing
- Optional four-mode timer



Diffuse Mode with Background Suppression

Features:

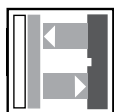
- Other quick disconnect versions available
- Cross-talk immune versions available

Sensing Range: 500 mm, 1 m, 2 m

Outputs: NPN, PNP, relay

Series 23 Rectangular Sensors

- Adjustable background suppression
- Sturdy plastic housing
- Optical surface made of scratch-resistant glass
- Timer function



Diffuse Mode with Background Suppression

Technical Specifications

| | RL23-8-H-500-RT/116/125 | RL23-8-H-1000-IR/116/125 | RL23-8-H-2000-IR/116/125 | RL23-8-H-500-RT/47/92 | RL23-8-H-500-RT/49/92 | RL23-8-H-1000-IR/47/92 | RL23-8-H-1000-IR/49/92 | RL23-8-H-2000-IR/47/92 | RL23-8-H-2000-IR/49/92 | RLK23-8-H-500-RT/31/116 | RLK23-8-H-1000-IR/31/116 | RLK23-8-H-2000-IR/31/104/116 |
|-----------------------------------|--|--------------------------|--------------------------|-----------------------|-----------------------|------------------------|------------------------|------------------------|------------------------|-------------------------|--------------------------|------------------------------|
| Background suppression | • | • | • | • | • | • | • | • | • | • | • | • |
| Sensing range adjustment | • | • | • | • | • | • | • | • | • | • | • | • |
| Light/dark switch | • | • | • | • | • | • | • | • | • | • | • | • |
| Detection range | 50 ... 500 mm | • | • | • | • | • | • | • | • | • | • | • |
| | 50 ... 1000 mm | • | • | • | • | • | • | • | • | • | • | • |
| | 50 ... 2000 mm | • | • | • | • | • | • | • | • | • | • | • |
| Black/White difference (6 %/90 %) | < 5 % | • | • | • | • | • | • | • | • | • | • | • |
| | < 10 % | • | • | • | • | • | • | • | • | • | • | • |
| | < 20 % | • | • | • | • | • | • | • | • | • | • | • |
| Light source | IRED | • | • | • | • | • | • | • | • | • | • | • |
| | LED | • | • | • | • | • | • | • | • | • | • | • |
| Light type | modulated infrared light | • | • | • | • | • | • | • | • | • | • | • |
| | modulated visible red light | • | • | • | • | • | • | • | • | • | • | • |
| Ambient light limit | 12000 Lux | • | • | • | • | • | • | • | • | • | • | • |
| | 5000 Lux | • | • | • | • | • | • | • | • | • | • | • |
| Function display | LED yellow, lights up with receiver lit | • | • | • | • | • | • | • | • | • | • | • |
| Controls | Programming switch for light/dark switching | • | • | • | • | • | • | • | • | • | • | • |
| Controls | sensing range adjuster | • | • | • | • | • | • | • | • | • | • | • |
| Controls | Time adjuster | • | • | • | • | • | • | • | • | • | • | • |
| Operating voltage | 10 ... 30 V DC | • | • | • | • | • | • | • | • | • | • | • |
| | 12 ... 240 V AC , 10 ... 30 V DC | • | • | • | • | • | • | • | • | • | • | • |
| No-load supply current | 100 mA | • | • | • | • | • | • | • | • | • | • | • |
| Test input | emitter deactivation at +U _B | • | • | • | • | • | • | • | • | • | • | • |
| Signal output | 1 PNP and 1 NPN short-circuit proof, reverse polarity protected | • | • | • | • | • | • | • | • | • | • | • |
| | 1 relay, 1 alternator | • | • | • | • | • | • | • | • | • | • | • |
| | 2 PNP, complementary, short-circuit proof, reverse polarity protected | • | • | • | • | • | • | • | • | • | • | • |
| | 2 pnp, antivalent, 1 npn short-circuit proof, protected against reverse polarity | • | • | • | • | • | • | • | • | • | • | • |
| Switching current | max. 2 A | • | • | • | • | • | • | • | • | • | • | • |
| | max. 200 mA | • | • | • | • | • | • | • | • | • | • | • |
| Switching frequency | 10 Hz | • | • | • | • | • | • | • | • | • | • | • |
| | 70 Hz | • | • | • | • | • | • | • | • | • | • | • |
| Timer function | GAN, GAB, IAB, programmable, adjustment range: 0.1 ...10 s | • | • | • | • | • | • | • | • | • | • | • |
| Ambient temperature | -20 ... 60 °C (-4 ... 140 °F) | • | • | • | • | • | • | • | • | • | • | • |
| Protection degree | IP65 | • | • | • | • | • | • | • | • | • | • | • |
| Connection | terminal compartment | • | • | • | • | • | • | • | • | • | • | • |
| | M12 connector, 4-pin | • | • | • | • | • | • | • | • | • | • | • |
| Housing | Terluran GV15 | • | • | • | • | • | • | • | • | • | • | • |
| Optical face | glass | • | • | • | • | • | • | • | • | • | • | • |
| Standards | EN 60947-5-2 | • | • | • | • | • | • | • | • | • | • | • |
| Approvals | CE | • | • | • | • | • | • | • | • | • | • | • |
| | cULus | • | • | • | • | • | • | • | • | • | • | • |
| | CCC | • | • | • | • | • | • | • | • | • | • | • |



Note: GAN=ON delay, GAB=OFF delay, IAB=one shot

Subject to modifications without notice

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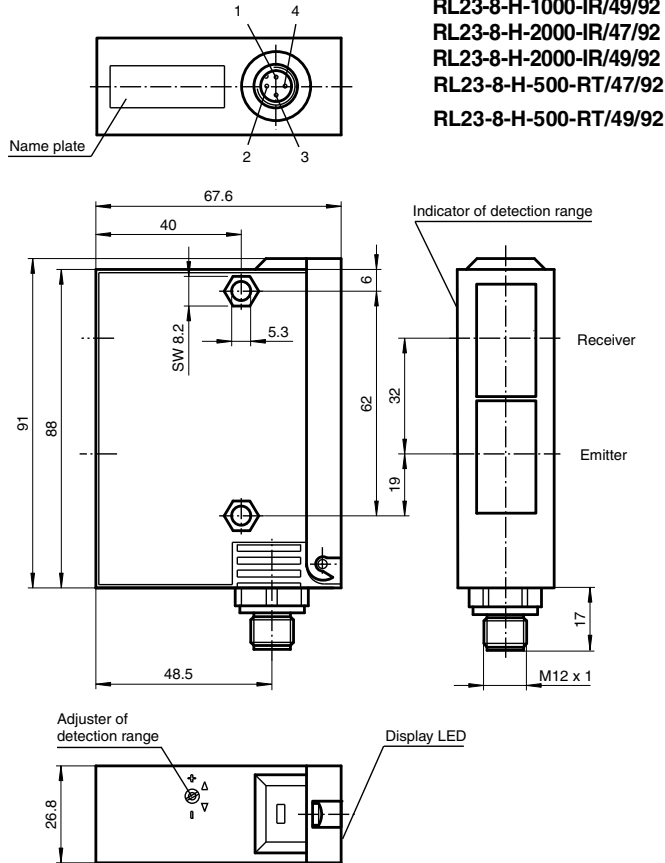
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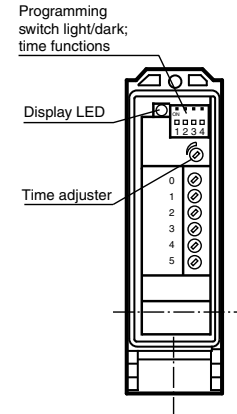
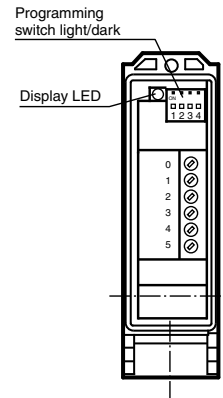
Dimensions (mm)



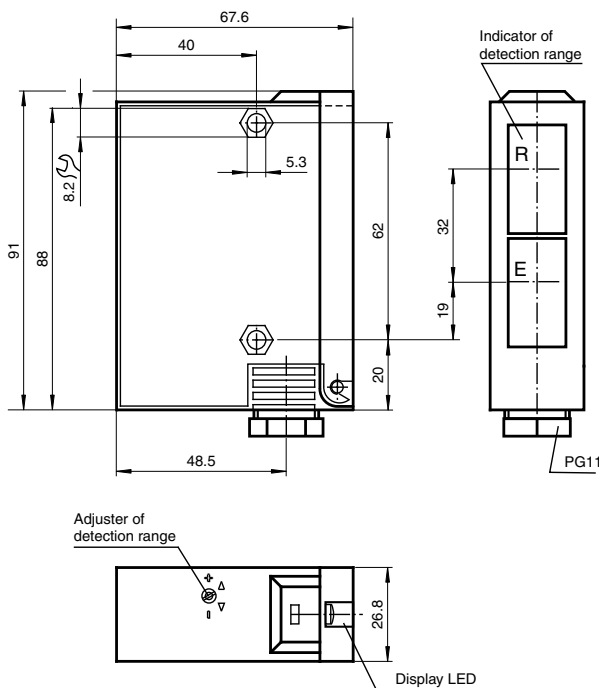
RL23-8-H-1000-IR/47/92
RL23-8-H-1000-IR/49/92
RL23-8-H-2000-IR/47/92
RL23-8-H-2000-IR/49/92
RL23-8-H-500-RT/47/92
RL23-8-H-500-RT/49/92

Terminal compartment
 RL23-8-H-1000
 RLK23-8-H-1000

Terminal compartment
 RL23-8-H-2000
 RLK23-8-H-2000

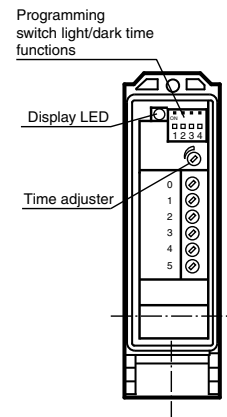
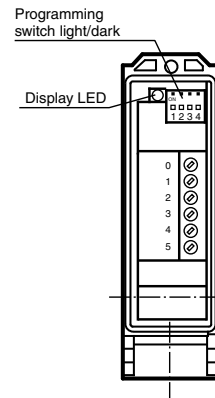


RL23-8-H-1000-IR/116/125
RL23-8-H-2000-IR/116/125
RLK23-8-H-1000-IR/31/116
RLK23-8-H-2000-IR/31/104/116
RL23-8-H-500-RT/116/125
RLK23-8-H-500-RT/31/116



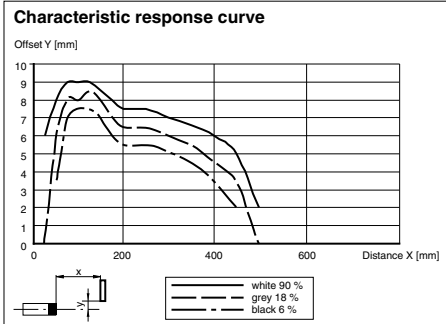
Terminal compartment
 RL23-8-H-1000
 RLK23-8-H-1000

Terminal compartment
 RL23-8-H-2000
 RLK23-8-H-2000

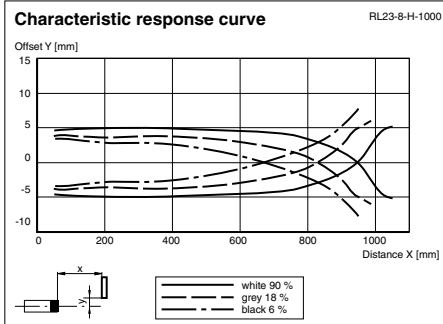


Sensing Characteristics

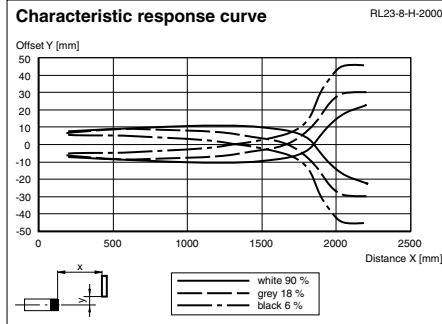
RL23-8-H-500-RT/116/125
 RL23-8-H-500-RT/49/92
 RL23-8-H-500-RT/47/92
 RLK23-8-H-500-RT/31/116



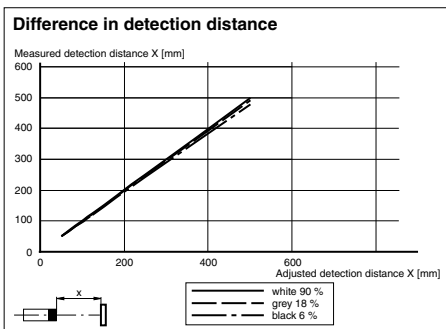
RL23-8-H-1000-IR/116/125
 RL23-8-H-1000-IR/47/92
 RL23-8-H-1000-IR/49/92
 RLK23-8-H-1000-IR/31/116



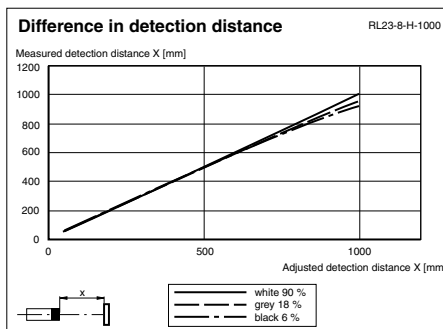
RL23-8-H-2000-IR/116/125
 RL23-8-H-2000-IR/47/92
 RL23-8-H-2000-IR/49/92
 RLK23-8-H-2000-IR/31/104/116



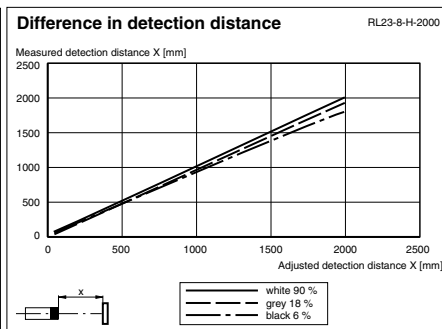
RL23-8-H-500-RT/116/125
 RL23-8-H-500-RT/47/92
 RL23-8-H-500-RT/49/92
 RLK23-8-H-500-RT/31/116



RL23-8-H-1000-IR/116/125
 RL23-8-H-1000-IR/47/92
 RL23-8-H-1000-IR/49/92
 RLK23-8-H-1000-IR/31/116



RL23-8-H-2000-IR/116/125
 RL23-8-H-2000-IR/47/92
 RL23-8-H-2000-IR/49/92
 RLK23-8-H-2000-IR/31/104/116



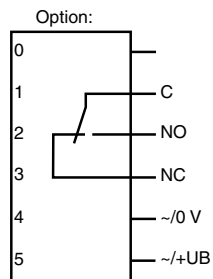
Wiring Diagrams

AC/DC



Terminal Connection

RLK23-8-H-500-RT/31/116
 RLK23-8-H-1000-IR/31/116
 RLK23-8-H-2000-IR/31/104/116

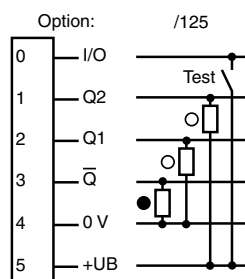


DC



Terminal Connection

RL23-8-H-500-RT/116/125
 RL23-8-H-1000-IR/116/125
 RL23-8-H-2000-IR/116/125

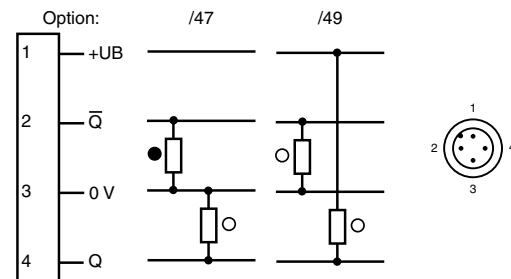


Quick Disconnect

Note: Wiring diagrams show quick disconnect pin numbers.

V1 Type

RL23-8-H-.../47/92 RL23-8-H-.../47/92 RL23-8-H-.../49/92
 RL23-8-H-.../49/92



○ = Light on
 ● = Dark on

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 SENSING YOUR NEEDS

Accessories

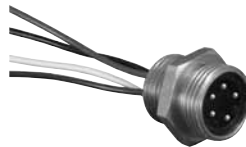
(Dimensions in mm)

Conduit Adapter Model PG11-1/2"NPT



Receptacle Model PG11-V95-G-S-3M

Male 5-pin Mini (7/8"-16) receptacle



See pages 1009-1076 for cordsets



See pages 1105-1128 for accessories

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Series 28

Rectangular Sensors

- Extreme low temperature operation (-40° C/F) available
- LEDs visible from 15 m (50 ft)
- Thru-hole or dovetail mounting options



4 output options from 1 sensor:
NPN normally open, NPN normally closed,
PNP normally open, or PNP normally closed



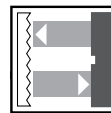
Thru-Beam Mode

Features:

- Alignment LED visible through lens for faster setup
- Laser versions for long-range sensing

Sensing Range: 30 m, 65 m, 300 m

Outputs: NPN, PNP, relay, AS-Interface



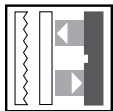
Retroreflective Mode

Features:

- Reliable detection of even the shiniest material
- Weak signal output available

Sensing Range: 17 m, 30 m

Outputs: NPN, PNP, 4-in-1, relay, AS-Interface



Retroreflective Mode with Foreground Suppression

Features:

- Glossy targets not erroneously identified as the reflector up to 200 mm away
- Reliable detection of shrink-wrapped pallets

Sensing Range: 13 m

Outputs: NPN, PNP



Retroreflective Mode for Clear Object Detection

Features:

- Reliably detects clear PET, plastic, glass, and film
- Can be taught by external input or automatically by potentiometer

Sensing Range: 5.6 m

Output: 4-in-1



Diffuse Mode with Background Suppression

Features:

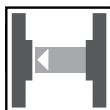
- Sharp sensing range cut-off
- Choice of infrared, visible red and laser light sources

Sensing Range: 400 mm, 700 mm, 1.5 m, 2 m

Outputs: NPN, PNP, 4-in-1, relay

Series 28 Rectangular Sensors

- Ultra bright LEDs for power on, weak signal strength indication and switching state
- Highly visible LED as alignment aid in receiver optics
- Not sensitive to ambient light, even with energy saving lighting
- Waterproof, protection degree IP67
- Various transmitter frequencies
- Emitter deactivation
- Programmable time function off delay, on delay, one shot as dual timer



Thru-Beam Mode

Technical Specifications

| | LD28-F2/76a/105 | LV28-F2/47/82b/105 | LD28-F1/76a/105 | LV28-F1/82b/105/110 | LD28-F1/76a/116 | LV28-Z-F1/82b/110/116 | LD28-F1-3057/35/115b | LV28-F1-3057/35/47/115b | LA28-F1/116 | LK28-Z-F1/31/116 | LA28-LAS-F1/116 | LK28-LAS-F1-Z/31/116 | LD28-LAS-F1-B3B/73c | LV28-LAS-F1-B3B/73c | LD28-LAS-F1/76a/105 | LV28-LAS-F1/82b/105/110 |
|------------------------------------|---|--------------------|---|---------------------|---|-----------------------|----------------------|---|-------------|---|-----------------|---|---------------------|---|---------------------|---|
| Emitter | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • |
| Receiver | | • | | • | | • | | • | | • | | • | | • | | • |
| Timer | | | | | | | | | | | | | | | | |
| Sensitivity adjustment | | • | | • | | • | | • | | • | | • | | • | | • |
| Light/dark switch | | • | | • | | • | | • | | • | | • | | • | | • |
| Effective detection range | 0 ... 30 m | • | 0 ... 65 m | • | 0 ... 300 m | • | | | | | | | | | | |
| Light source | laser diode , 650 nm | | LED, 660 nm | • | modulated visible red light | • | | | | | | | | | | |
| Light type | | • | | • | | • | | • | | • | | • | | • | | • |
| Laser class | 2 | • | 2 | • | 2 | • | | 2 | | 2 | | 2 | | 2 | | 2 |
| Ambient light limit | 50000 Lux | • | 50000 Lux | • | 50000 Lux | • | | 50000 Lux | | 50000 Lux | | 50000 Lux | | 50000 Lux | | 50000 Lux |
| Approvals | CE | • | CE | • | CE | • | | CE | | CE | | CE | | CE | | CE |
| | CCC | • | CCC | • | CCC | • | | CCC | | CCC | | CCC | | CCC | | CCC |
| | cULus | • | cULus | • | cULus | • | | cULus | | cULus | | cULus | | cULus | | cULus |
| Operating display | LED green, flashes in case of short-circuit | • | LED green, flashes in case of short-circuit | • | LED green, flashes in case of short-circuit | • | | LED green, flashes in case of short-circuit | | LED green, flashes in case of short-circuit | | LED green, flashes in case of short-circuit | | LED green, flashes in case of short-circuit | | LED green, flashes in case of short-circuit |
| Function display | LED yellow | • | LED yellow | • | LED yellow | • | | LED yellow | | LED yellow | | LED yellow | | LED yellow | | LED yellow |
| Operating voltage | 10 ... 30 V DC | • | 10 ... 30 V DC | • | 12 ... 240 V AC/DC | • | | 12 ... 240 V AC/DC | | 12 ... 240 V AC/DC | | 12 ... 240 V AC/DC | | 12 ... 240 V AC/DC | | 12 ... 240 V AC/DC |
| | 26.5 ... 31.6 V via AS-Interface network , min. 18.5 V | | 26.5 ... 31.6 V via AS-Interface network , min. 18.5 V | | 26.5 ... 31.6 V via AS-Interface network , min. 18.5 V | | | 26.5 ... 31.6 V via AS-Interface network , min. 18.5 V | | 26.5 ... 31.6 V via AS-Interface network , min. 18.5 V | | 26.5 ... 31.6 V via AS-Interface network , min. 18.5 V | | 26.5 ... 31.6 V via AS-Interface network , min. 18.5 V | | 26.5 ... 31.6 V via AS-Interface network , min. 18.5 V |
| No-load supply current | Emitter: ≤ 50 mA, Receiver: ≤ 35 mA | • | Emitter: ≤ 50 mA, Receiver: ≤ 35 mA | • | Emitter: ≤ 55 mA, Receiver: ≤ 35 mA | • | | Emitter: ≤ 55 mA, Receiver: ≤ 35 mA | | Emitter: ≤ 55 mA, Receiver: ≤ 35 mA | | Emitter: ≤ 55 mA, Receiver: ≤ 35 mA | | Emitter: ≤ 55 mA, Receiver: ≤ 35 mA | | Emitter: ≤ 55 mA, Receiver: ≤ 35 mA |
| | Emitter: ≤ 55 mA, Receiver: ≤ 45 mA | | Emitter: ≤ 55 mA, Receiver: ≤ 45 mA | | Emitter: ≤ 55 mA, Receiver: ≤ 45 mA | | | Emitter: ≤ 55 mA, Receiver: ≤ 45 mA | | Emitter: ≤ 55 mA, Receiver: ≤ 45 mA | | Emitter: ≤ 55 mA, Receiver: ≤ 45 mA | | Emitter: ≤ 55 mA, Receiver: ≤ 45 mA | | Emitter: ≤ 55 mA, Receiver: ≤ 45 mA |
| Test input | Data bit D2: emitter on / emitter off | | Data bit D2: emitter on / emitter off | | Data bit D2: emitter on / emitter off | | | Data bit D2: emitter on / emitter off | | Data bit D2: emitter on / emitter off | | Data bit D2: emitter on / emitter off | | Data bit D2: emitter on / emitter off | | Data bit D2: emitter on / emitter off |
| | emitter deactivation at +U _B (I _{max} < 3 mA at 30 V DC) | • | emitter deactivation at +U _B (I _{max} < 3 mA at 30 V DC) | • | emitter deactivation at +U _B (I _{max} < 3 mA at 30 V DC) | • | | emitter deactivation at +U _B (I _{max} < 3 mA at 30 V DC) | | emitter deactivation at +U _B (I _{max} < 3 mA at 30 V DC) | | emitter deactivation at +U _B (I _{max} < 3 mA at 30 V DC) | | emitter deactivation at +U _B (I _{max} < 3 mA at 30 V DC) | | emitter deactivation at +U _B (I _{max} < 3 mA at 30 V DC) |
| Signal output | AS-Interface | | AS-Interface | | AS-Interface | | | AS-Interface | | AS-Interface | | AS-Interface | | AS-Interface | | AS-Interface |
| | Relay, 1 alternator | | Relay, 1 alternator | | Relay, 1 alternator | | | Relay, 1 alternator | | Relay, 1 alternator | | Relay, 1 alternator | | Relay, 1 alternator | | Relay, 1 alternator |
| | 1 push-pull output, short-circuit protected, protected against reverse polarity | | 1 push-pull output, short-circuit protected, protected against reverse polarity | | 1 push-pull output, short-circuit protected, protected against reverse polarity | | | 1 push-pull output, short-circuit protected, protected against reverse polarity | | 1 push-pull output, short-circuit protected, protected against reverse polarity | | 1 push-pull output, short-circuit protected, protected against reverse polarity | | 1 push-pull output, short-circuit protected, protected against reverse polarity | | 1 push-pull output, short-circuit protected, protected against reverse polarity |
| | 2 PNP, complementary, short-circuit protected, reverse polarity protected, open collectors | • | 2 PNP, complementary, short-circuit protected, reverse polarity protected, open collectors | • | 2 PNP, complementary, short-circuit protected, reverse polarity protected, open collectors | • | | 2 PNP, complementary, short-circuit protected, reverse polarity protected, open collectors | | 2 PNP, complementary, short-circuit protected, reverse polarity protected, open collectors | | 2 PNP, complementary, short-circuit protected, reverse polarity protected, open collectors | | 2 PNP, complementary, short-circuit protected, reverse polarity protected, open collectors | | 2 PNP, complementary, short-circuit protected, reverse polarity protected, open collectors |
| Switching current | max. 100 mA | | max. 100 mA | | max. 200 mA | | | max. 200 mA | | max. 200 mA | | max. 200 mA | | max. 200 mA | | max. 200 mA |
| | max. 2 A | | max. 2 A | | max. 2 A | | | max. 2 A | | max. 2 A | | max. 2 A | | max. 2 A | | max. 2 A |
| Switching frequency | 1000 Hz | • | 1000 Hz | • | 1000 Hz | • | | 1000 Hz | | 1000 Hz | | 1000 Hz | | 1000 Hz | | 1000 Hz |
| | 25 Hz | | 25 Hz | | 25 Hz | | | 25 Hz | | 25 Hz | | 25 Hz | | 25 Hz | | 25 Hz |
| Timer function | On Delay, Off Delay, One Shot, On Delay-Off Delay, programmable, adjustment range 0.1 ... 10 s | | On Delay, Off Delay, One Shot, On Delay-Off Delay, programmable, adjustment range 0.1 ... 10 s | | On Delay, Off Delay, One Shot, On Delay-Off Delay, programmable, adjustment range 0.1 ... 10 s | | | On Delay, Off Delay, One Shot, On Delay-Off Delay, programmable, adjustment range 0.1 ... 10 s | | On Delay, Off Delay, One Shot, On Delay-Off Delay, programmable, adjustment range 0.1 ... 10 s | | On Delay, Off Delay, One Shot, On Delay-Off Delay, programmable, adjustment range 0.1 ... 10 s | | On Delay, Off Delay, One Shot, On Delay-Off Delay, programmable, adjustment range 0.1 ... 10 s | | On Delay, Off Delay, One Shot, On Delay-Off Delay, programmable, adjustment range 0.1 ... 10 s |
| | On Delay, Off Delay, One Shot, On Delay-Off Delay, programmable, adjustment interval 0.02 s ... 1 s | | On Delay, Off Delay, One Shot, On Delay-Off Delay, programmable, adjustment interval 0.02 s ... 1 s | | On Delay, Off Delay, One Shot, On Delay-Off Delay, programmable, adjustment interval 0.02 s ... 1 s | | | On Delay, Off Delay, One Shot, On Delay-Off Delay, programmable, adjustment interval 0.02 s ... 1 s | | On Delay, Off Delay, One Shot, On Delay-Off Delay, programmable, adjustment interval 0.02 s ... 1 s | | On Delay, Off Delay, One Shot, On Delay-Off Delay, programmable, adjustment interval 0.02 s ... 1 s | | On Delay, Off Delay, One Shot, On Delay-Off Delay, programmable, adjustment interval 0.02 s ... 1 s | | On Delay, Off Delay, One Shot, On Delay-Off Delay, programmable, adjustment interval 0.02 s ... 1 s |
| | Impulsed off-delay One Shot, 50 ms, switchable via AS-Interface | | Impulsed off-delay One Shot, 50 ms, switchable via AS-Interface | | Impulsed off-delay One Shot, 50 ms, switchable via AS-Interface | | | Impulsed off-delay One Shot, 50 ms, switchable via AS-Interface | | Impulsed off-delay One Shot, 50 ms, switchable via AS-Interface | | Impulsed off-delay One Shot, 50 ms, switchable via AS-Interface | | Impulsed off-delay One Shot, 50 ms, switchable via AS-Interface | | Impulsed off-delay One Shot, 50 ms, switchable via AS-Interface |
| Output of the pre-fault indication | data bit D1 | | data bit D1 | | data bit D1 | | | data bit D1 | | data bit D1 | | data bit D1 | | data bit D1 | | data bit D1 |
| | 1 PNP transistor, short-circuit protected, protected from reverse polarity, open collector | | 1 PNP transistor, short-circuit protected, protected from reverse polarity, open collector | | 1 PNP transistor, short-circuit protected, protected from reverse polarity, open collector | | | 1 PNP transistor, short-circuit protected, protected from reverse polarity, open collector | | 1 PNP transistor, short-circuit protected, protected from reverse polarity, open collector | | 1 PNP transistor, short-circuit protected, protected from reverse polarity, open collector | | 1 PNP transistor, short-circuit protected, protected from reverse polarity, open collector | | 1 PNP transistor, short-circuit protected, protected from reverse polarity, open collector |
| Standards | EN 60947-5-2 | • | EN 60947-5-2 | • | EN 50295 AS-i Complete Spec 2.11 | • | | EN 50295 AS-i Complete Spec 2.11 | | EN 50295 AS-i Complete Spec 2.11 | | EN 50295 AS-i Complete Spec 2.11 | | EN 50295 AS-i Complete Spec 2.11 | | EN 50295 AS-i Complete Spec 2.11 |
| Ambient temperature | -10 ... 50 °C (14 ... 122 °F) | | -10 ... 50 °C (14 ... 122 °F) | | -40 ... 60 °C (-40 ... 140 °F) | | | -40 ... 60 °C (-40 ... 140 °F) | | -40 ... 60 °C (-40 ... 140 °F) | | -40 ... 60 °C (-40 ... 140 °F) | | -40 ... 60 °C (-40 ... 140 °F) | | -40 ... 60 °C (-40 ... 140 °F) |
| Protection degree | IP67 | • | IP67 | • | IP67 | • | | IP67 | | IP67 | | IP67 | | IP67 | | IP67 |
| Connection | fixed cable 230 mm with M12 x 1 male connector, 4-pin terminal compartment with M16 x 1.5 cable gland | | fixed cable 230 mm with M12 x 1 male connector, 4-pin terminal compartment with M16 x 1.5 cable gland | | fixed cable 230 mm with M12 x 1 male connector, 4-pin terminal compartment with M16 x 1.5 cable gland | | | fixed cable 230 mm with M12 x 1 male connector, 4-pin terminal compartment with M16 x 1.5 cable gland | | fixed cable 230 mm with M12 x 1 male connector, 4-pin terminal compartment with M16 x 1.5 cable gland | | fixed cable 230 mm with M12 x 1 male connector, 4-pin terminal compartment with M16 x 1.5 cable gland | | fixed cable 230 mm with M12 x 1 male connector, 4-pin terminal compartment with M16 x 1.5 cable gland | | fixed cable 230 mm with M12 x 1 male connector, 4-pin terminal compartment with M16 x 1.5 cable gland |
| | Plastic connector M12 x 1 | • | Plastic connector M12 x 1 | • | Plastic connector M12 x 1 | • | | Plastic connector M12 x 1 | | Plastic connector M12 x 1 | | Plastic connector M12 x 1 | | Plastic connector M12 x 1 | | Plastic connector M12 x 1 |
| Housing | Plastic ABS | • | Plastic ABS | • | Plastic ABS | • | | Plastic ABS | | Plastic ABS | | Plastic ABS | | Plastic ABS | | Plastic ABS |
| Optical face | Plastic pane | • | Plastic pane | • | Plastic pane | • | | Plastic pane | | Plastic pane | | Plastic pane | | Plastic pane | | Plastic pane |



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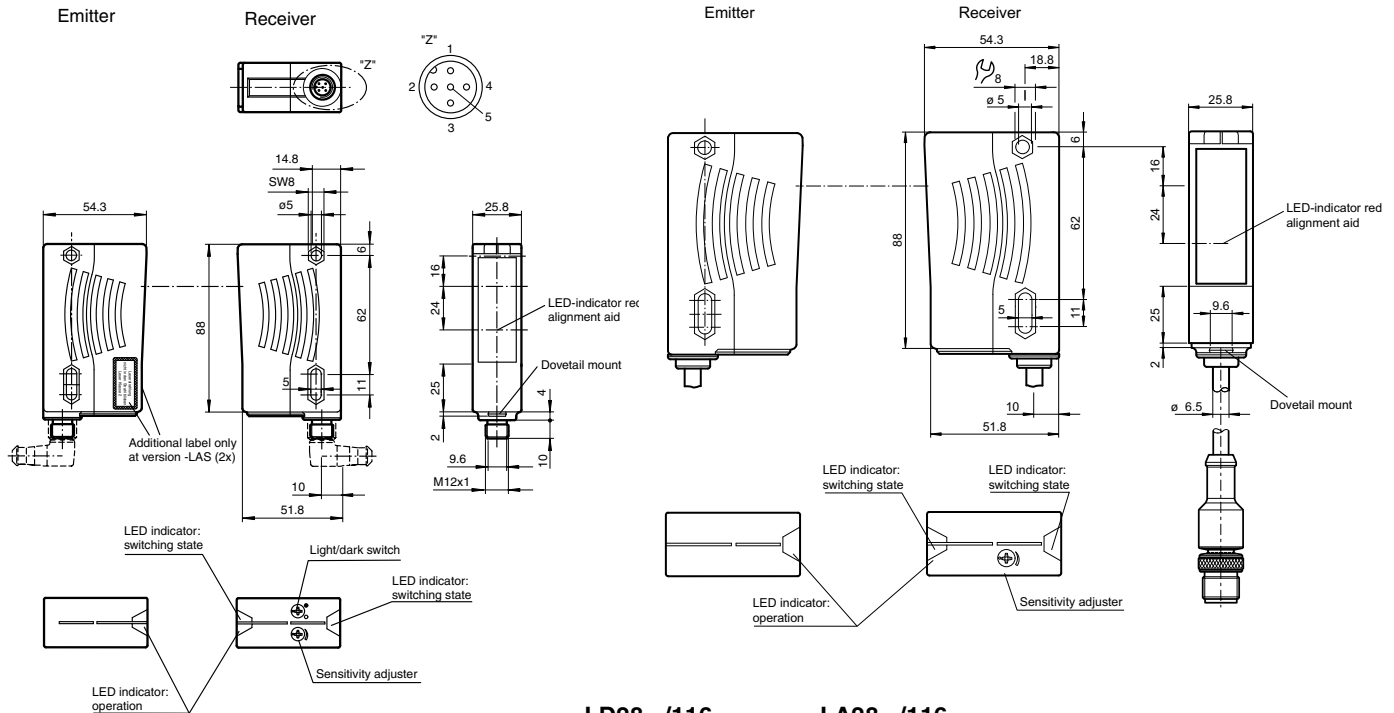


Dimensions (mm)

LD28.../105
LV28.../105

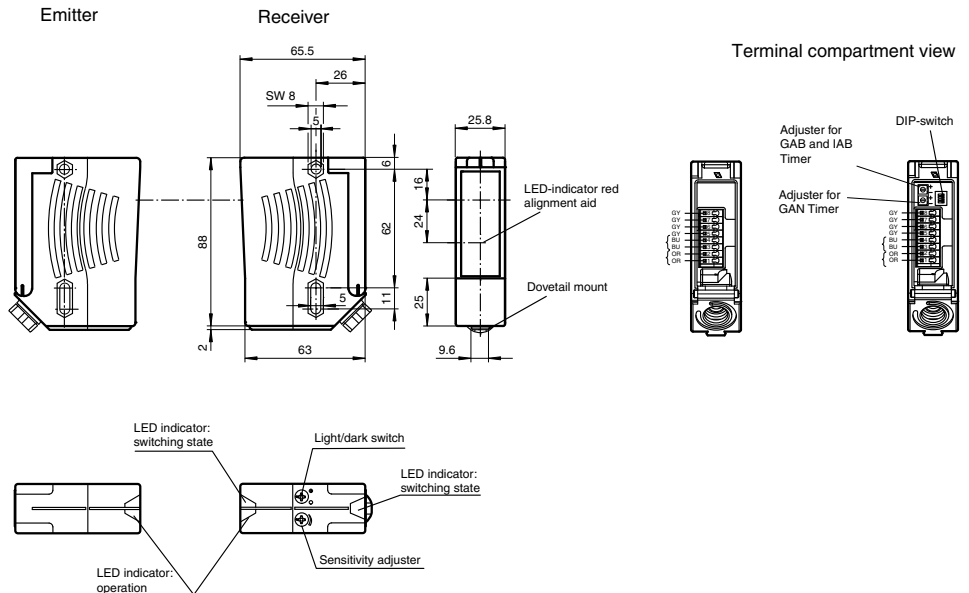
LD28.../73c
LV28.../73c

LD28.../115b
LV28.../115b



LD28.../116
LV28.../116

LA28.../116
LK28.../116



4 IN 1™ FOUR OUTPUTS™ ONE SENSOR™ 4-in-1 Output

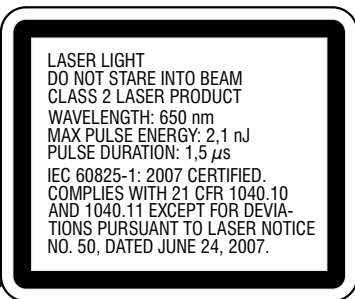
The 4-in-1 output offers light ON and/or dark ON output(s) in which each automatically detect the connected load, so the output either sources or sinks current depending on the load. A single sensor can operate as NPN light ON, NPN dark ON, PNP light ON, or PNP dark ON, reducing inventory costs and minimizing wiring time.

Note: GAN=ON delay, GAB=OFF delay, IAB=one shot

F1 emitters must be used with F1 receivers, and F2 emitters must be used with F2 receivers

Laser notice laser class 2

- The irradiation can lead to irritation especially in a dark environment. Do not point at people!
- Caution: Do not look into the beam!
- Maintenance and repairs should only be carried out by authorized service personnel!
- Attach the device so that the warning is clearly visible and readable.
- Caution – Use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.



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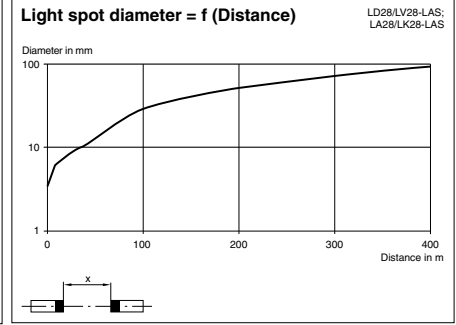
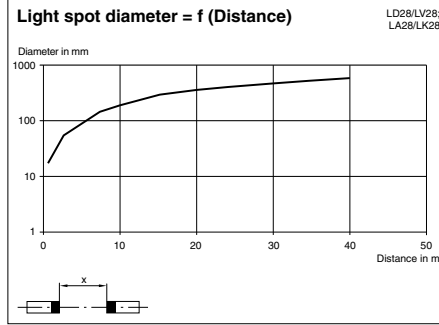
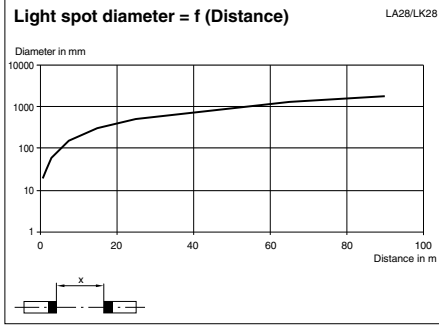
PEPPERL+FUCHS
SENSING YOUR NEEDS

Sensing Characteristics

LD28-F1-3057/35/115b
LV28-F1-3057/35/47/115b
LA28-F1/116
LK28-F1/31/116

LD28-F2/76a/105
LV28-F2/47/82b/105
LD28-F1/76a/105
LV28-F1/82b/105/110
LD28-F1/76a/116
LV28-Z-F1/82b/110/116

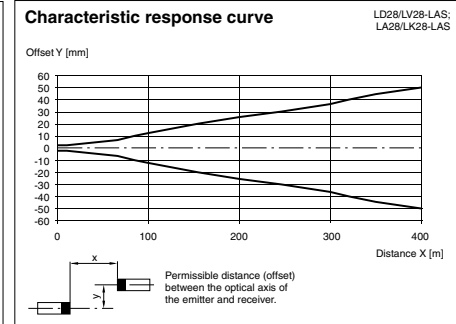
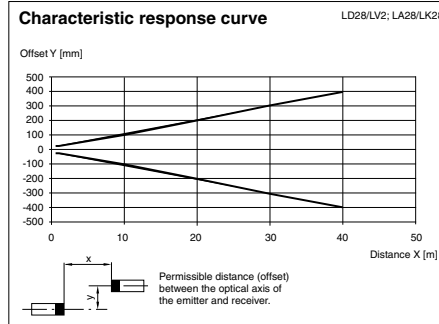
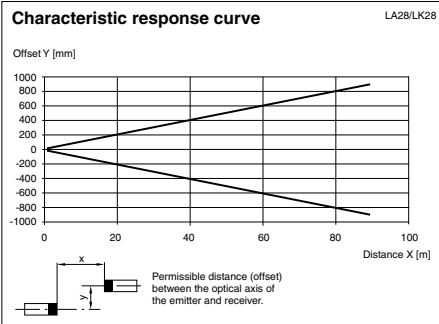
LD28-LAS-F1-B3B/73c
LV28-LAS-F1-B3B/73c
LA28-LAS-F1/116
LK28-LAS-F1-Z/31/116



LD28-F1-3057/35/115b
LV28-F1-3057/35/47/115b
LA28-F1/116
LK28-Z-F1/31/116

LD28-F2/76a/105
LV28-F2/47/82b/105
LD28-F1/76a/105
LV28-F1/82b/105/110
LD28-F1/76a/116
LV28-Z-F1/82b/110/116

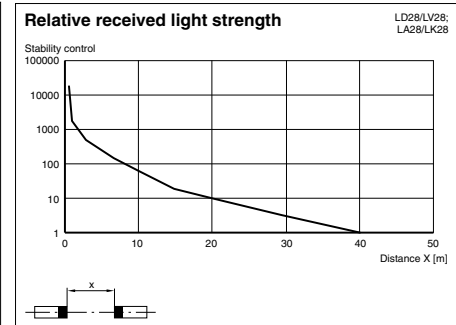
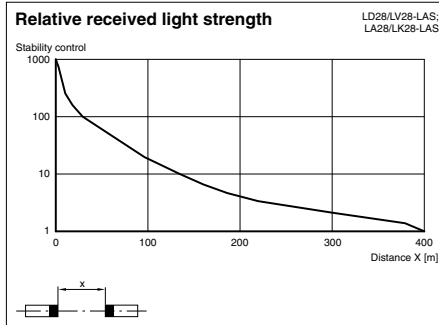
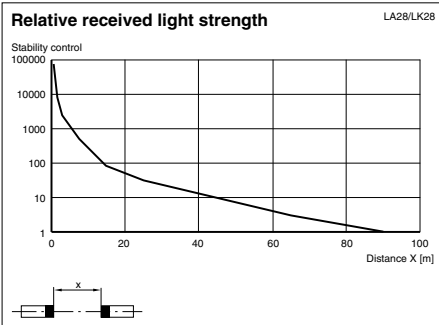
LD28-LAS-F1-B3B/73c
LV28-LAS-F1-B3B/73c
LA28-LAS-F1/116
LK28-LAS-F1-Z/31/116



LD28-F1-3057/35/115b
LV28-F1-3057/35/47/115b

LD28-LAS-F1-B3B/73c
LV28-LAS-F1-B3B/73c
LA28-LAS-F1/116
LK28-LAS-F1-Z/31/116

LD28-F2/76a/105
LV28-F2/47/82b/105
LD28-F1/76a/105
LV28-F1/82b/105/110
LD28-F1/76a/116
LV28-Z-F1/82b/110/116

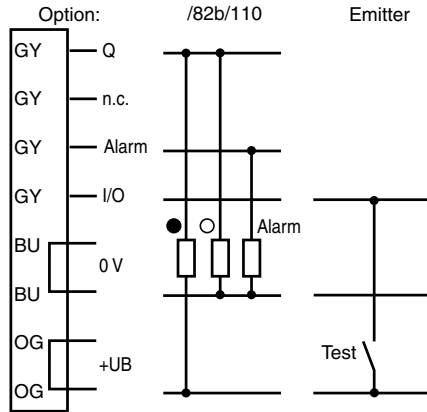


Wiring Diagrams

DC

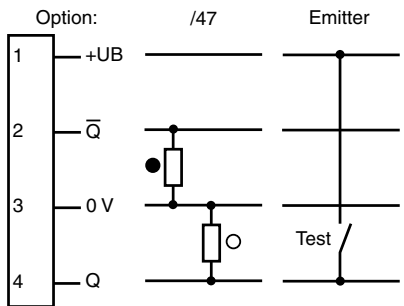
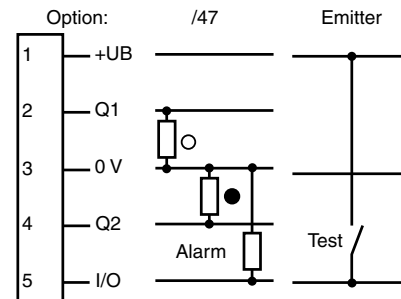
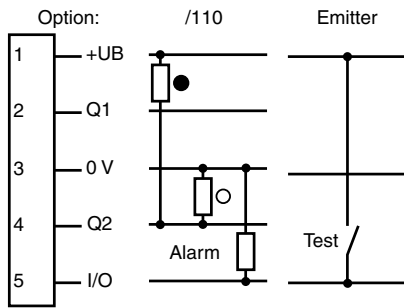


Terminal Connection

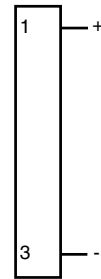


Quick Disconnect

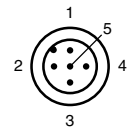
Note: Wiring diagrams show quick disconnect pin numbers.



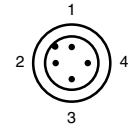
-B3B



V15 Type



V1 Type

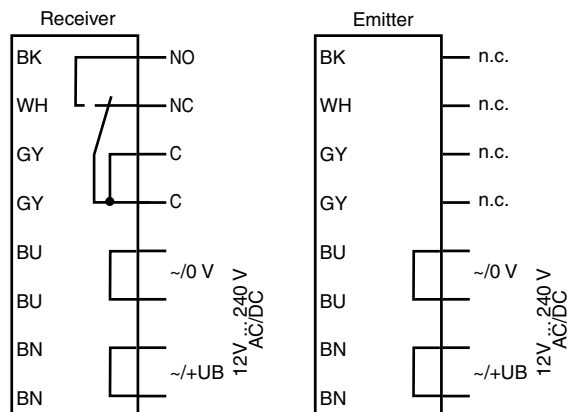


○ = Light on
● = Dark on

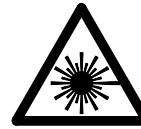
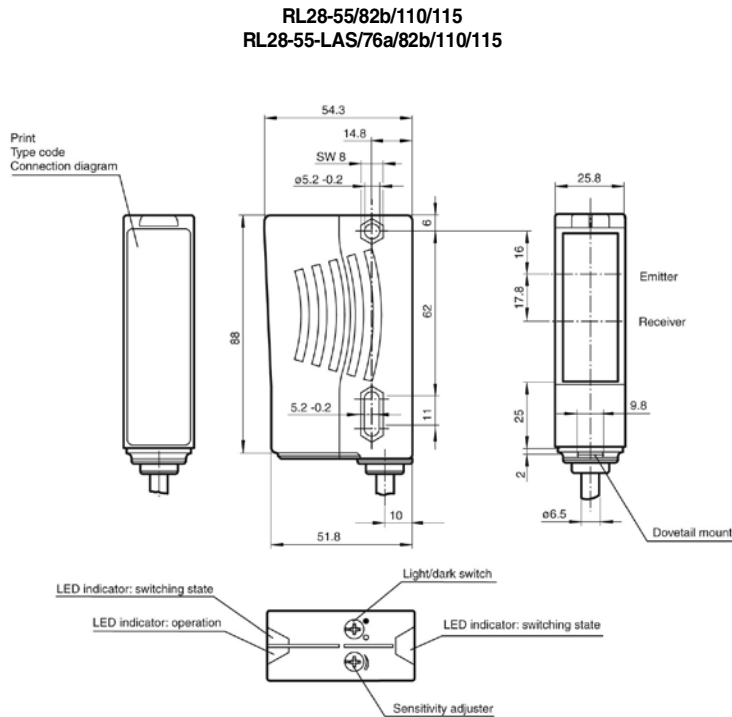
AC/DC



Terminal Connection



Dimensions (mm)



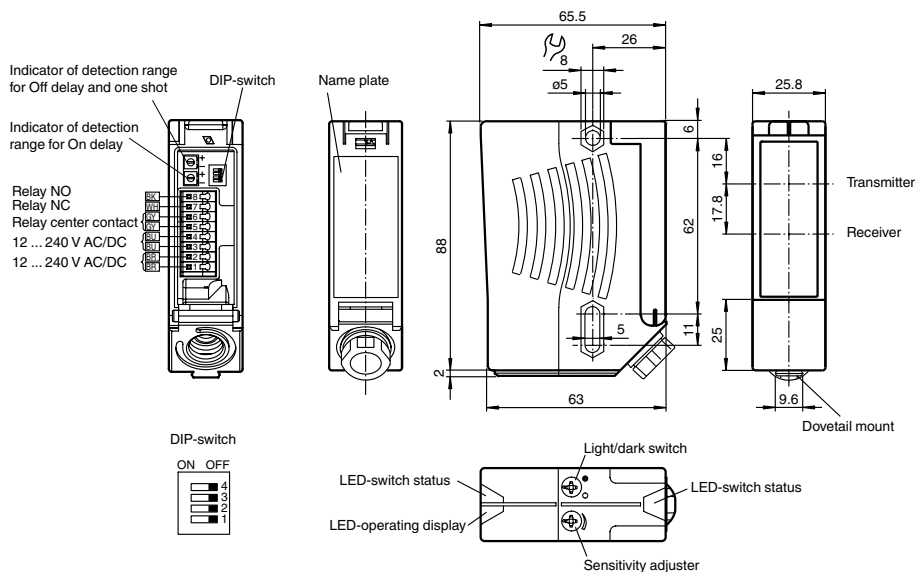
LASERLICHT
LASER LIGHT

LASER KLASSE 1
CLASS 1 LASER PRODUCT

Laser notice laser class 1

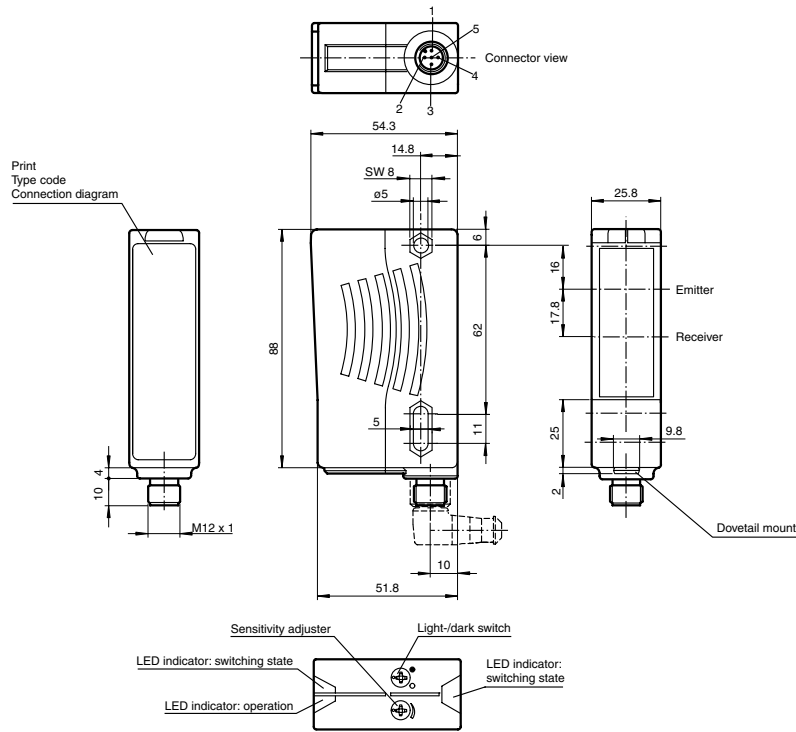
- The irradiation can lead to irritation even in a dark environment. Do not point at people!
- Maintenance and repairs should only be carried out by authorized service personnel!
- Attach the device so that the warning is clearly visible and readable.
- The warning accompanies the device and should be attached in immediate proximity to the device.
- Caution – Use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.

RLK28-55-Z/31/116
RLK28-55-LAS-Z/31/116

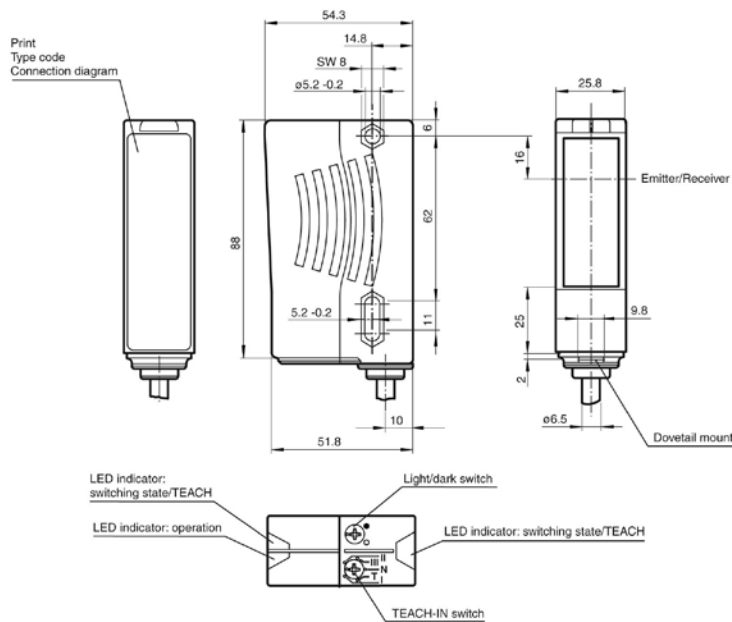


Dimensions (mm)

RL28-55/82b/105/110
 RL28-55-LAS/76a/82b/105/110
 RL28-55-V/82b/105/110



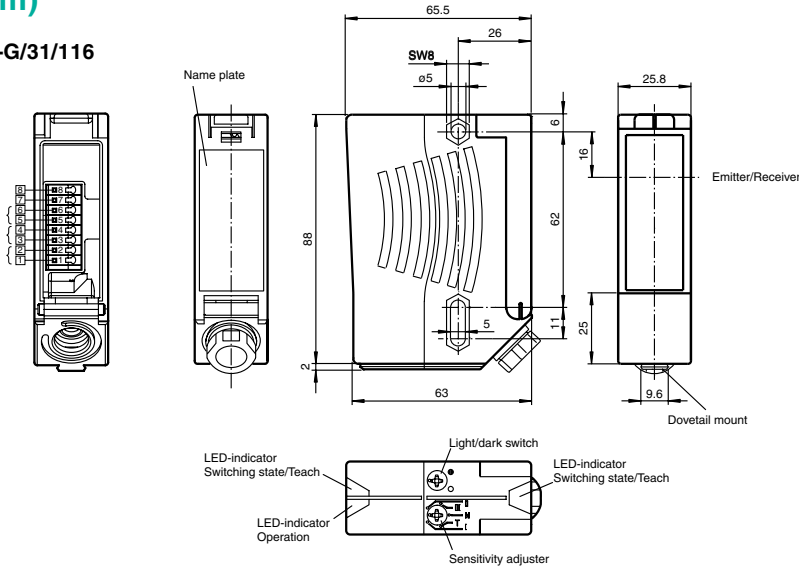
RL28-54-G/76a/110/115



Dimensions (mm)

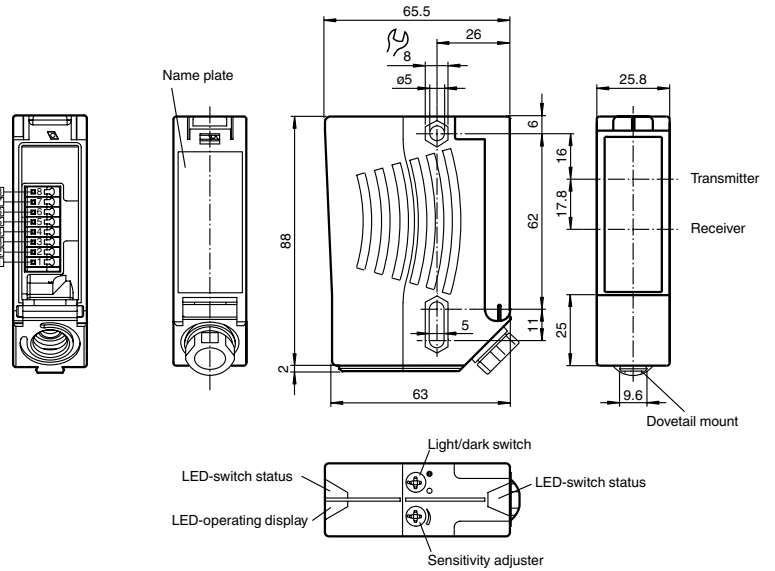
RLK28-54-G/31/116

Relay NO
Relay NC
Relay center contact
12 ... 240 V AC/DC
12 ... 240 V AC/DC



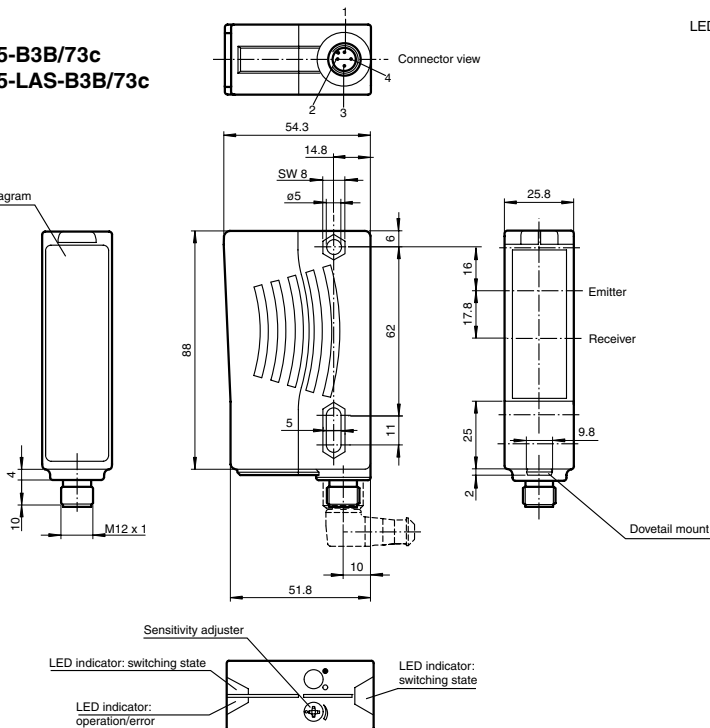
RLK28-55/31/116

Relay NO
Relay NC
Relay center contact
12 ... 240 V AC/DC
12 ... 240 V AC/DC



RL28-55-B3B/73c RL28-55-LAS-B3B/73c

Print
Type code
Connection diagram

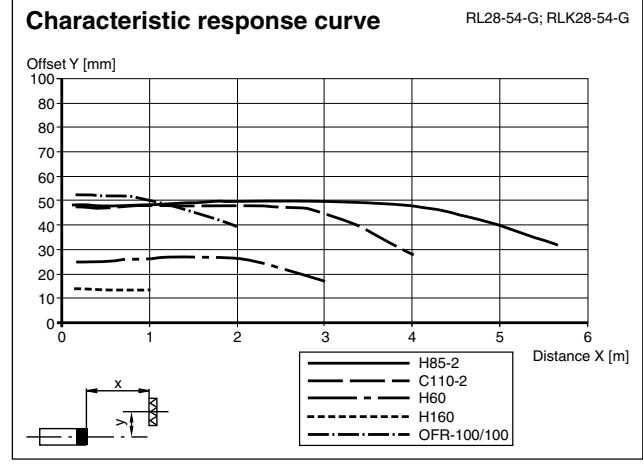
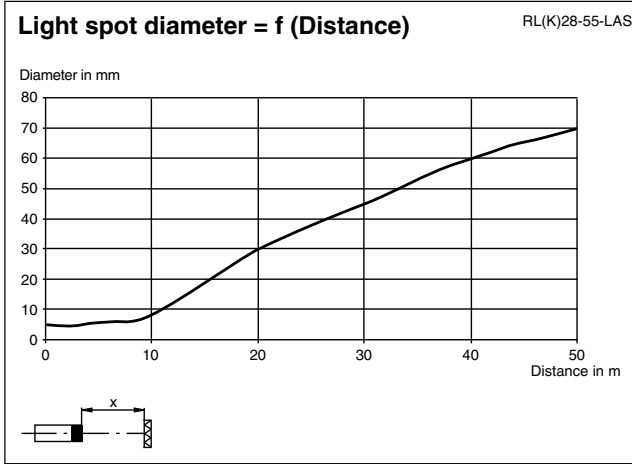


Sensing Characteristics

RL28-55-LAS-B3B/73c
 RL28-55-LAS/76a/82b/110/115
 RLK28-55-LAS-Z/31/116
 RL28-55-LAS/76a/82b/105/110

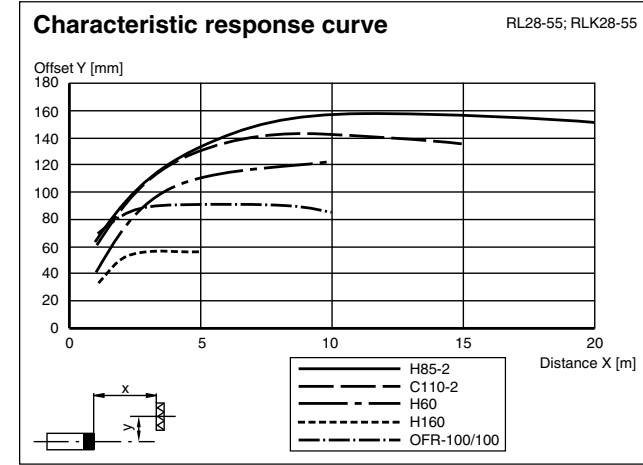
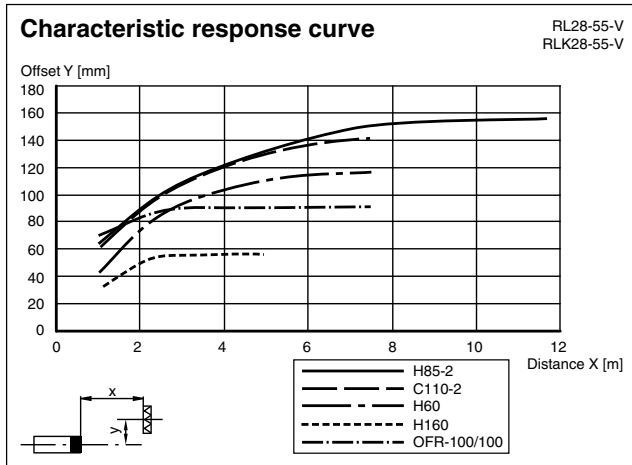
RL28-54-G/76a/110/115
 RLK28-54-G/31/116

Photoelectric Series 28 Rectangular



RL28-55-V/82b/105/110

RL28-55-B3B/73c
 RL28-55/82b/110/115
 RL28-55/82b/105/110
 RLK28-55/31/116
 RLK28-55-Z/31/116



4-in-1 Output

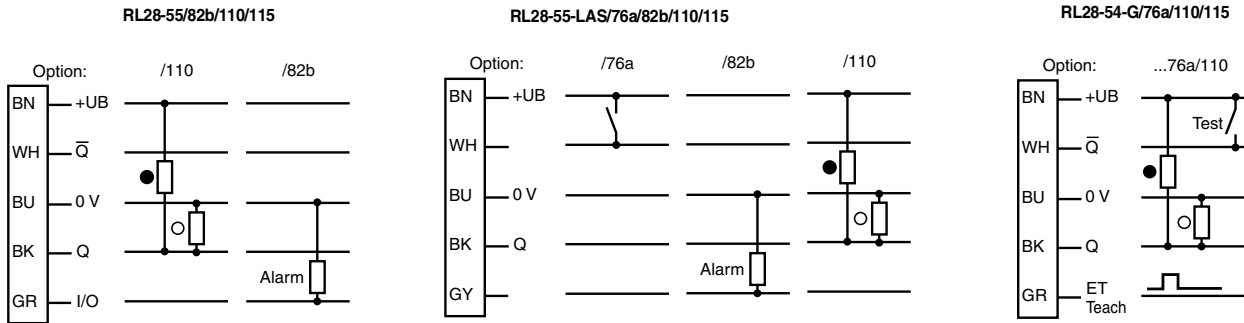
The 4-in-1 output offers light ON and/or dark ON output(s) in which each automatically detect the connected load, so the output either sources or sinks current depending on the load. A single sensor can operate as NPN light ON, NPN dark ON, PNP light ON, or PNP dark ON, reducing inventory costs and minimizing wiring time.

Wiring Diagrams

DC



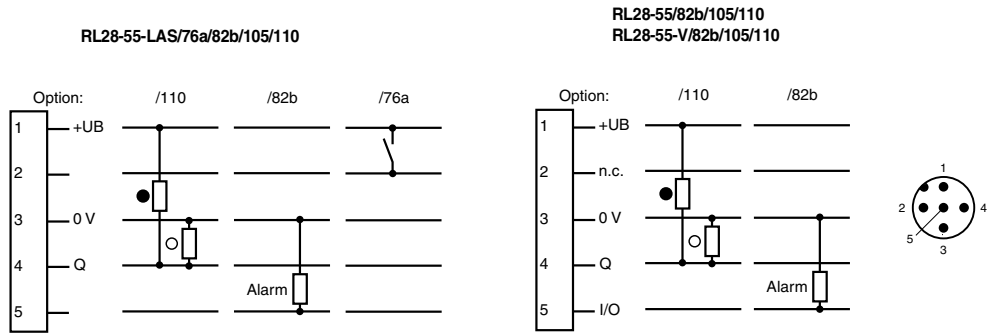
Cable Connection



Quick Disconnect

Note: Wiring diagrams show quick disconnect pin numbers.

V15 Type

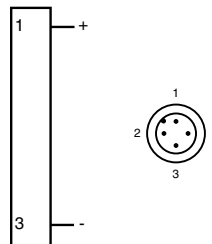


Quick Disconnect

Note: Wiring diagrams show quick disconnect pin numbers.

V1 Type

RL28-55-B3B/73c
RL28-55-LAS-B3B/73c

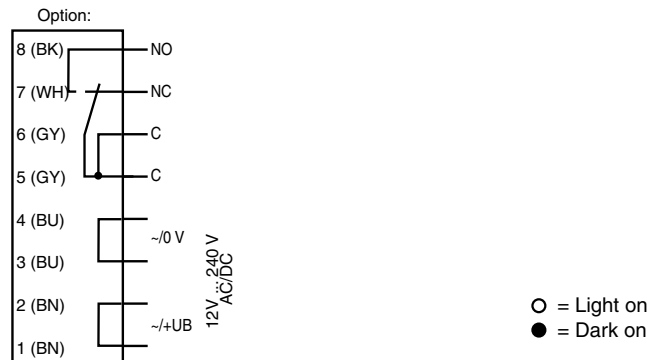


AC/DC



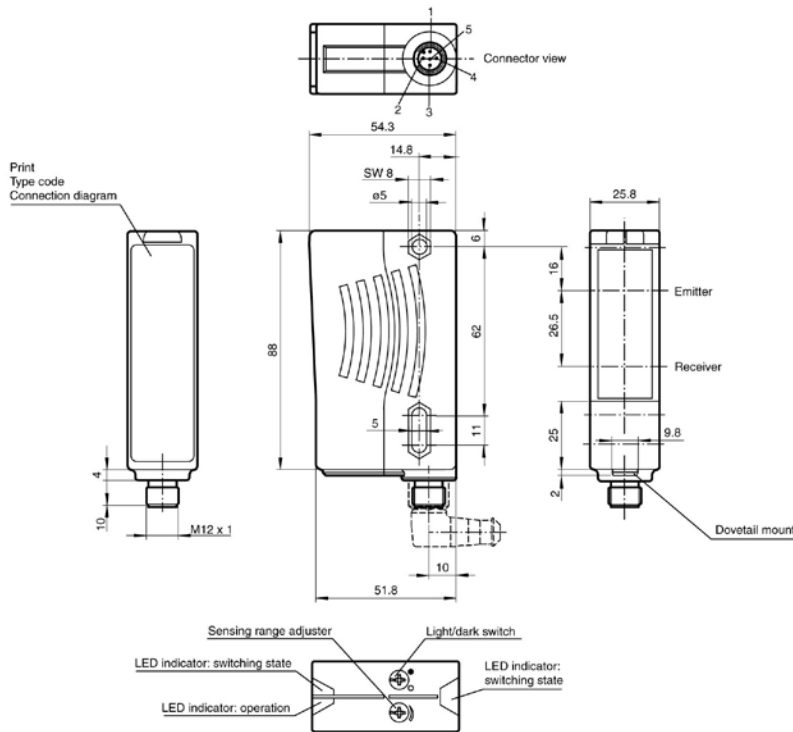
Terminal Connection

RLK28-55/31/116
RLK28-55-Z/31/116
RLK28-55-LAS-Z/31/116
RLK28-54-G/31/116

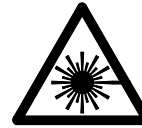
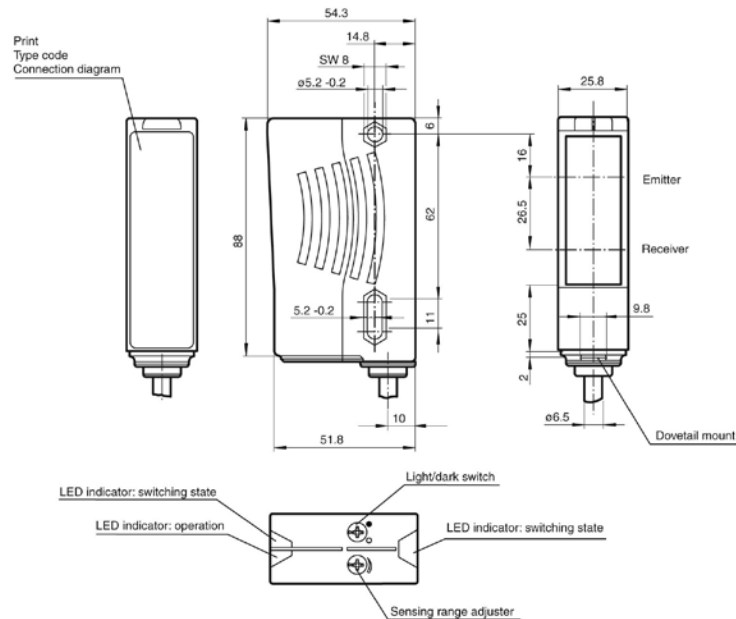


Dimensions (mm)

RL28-8-H-400-FFP-RT/47/105
 RL28-8-H-400-IR/105/110
 RL28-8-H-400-RT/105/110
 RL28-8-H-700-IR/105/110
 RL28-8-H-700-RT/105/110
 RL28-8-H-2000-IR/105/110



RL28-8-H-400-IR/49/115
 RL28-8-H-400-RT/49/115
 RL28-8-H-700-IR/49/115
 RL28-8-H-700-RT/49/115
 RL28-8-H-2000-IR/110/115



LASERLICHT
 LASER LIGHT

LASER KLASSE 1
 CLASS 1 LASER PRODUCT

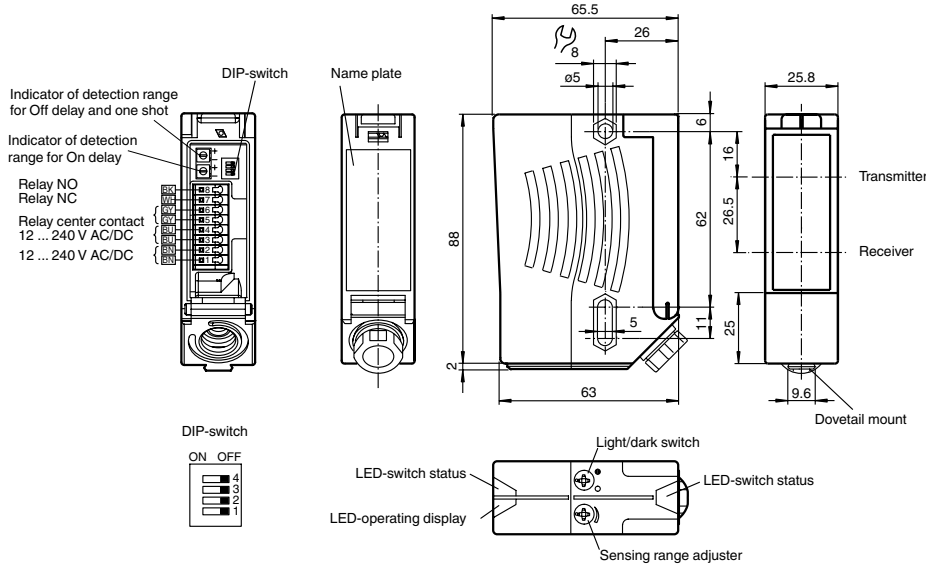
Laser notice laser class 1

- The irradiation can lead to irritation even in a dark environment. Do not point at people!
- Maintenance and repairs should only be carried out by authorized service personnel!
- Attach the device so that the warning is clearly visible and readable.
- The warning accompanies the device and should be attached in immediate proximity to the device.
- Caution – Use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.

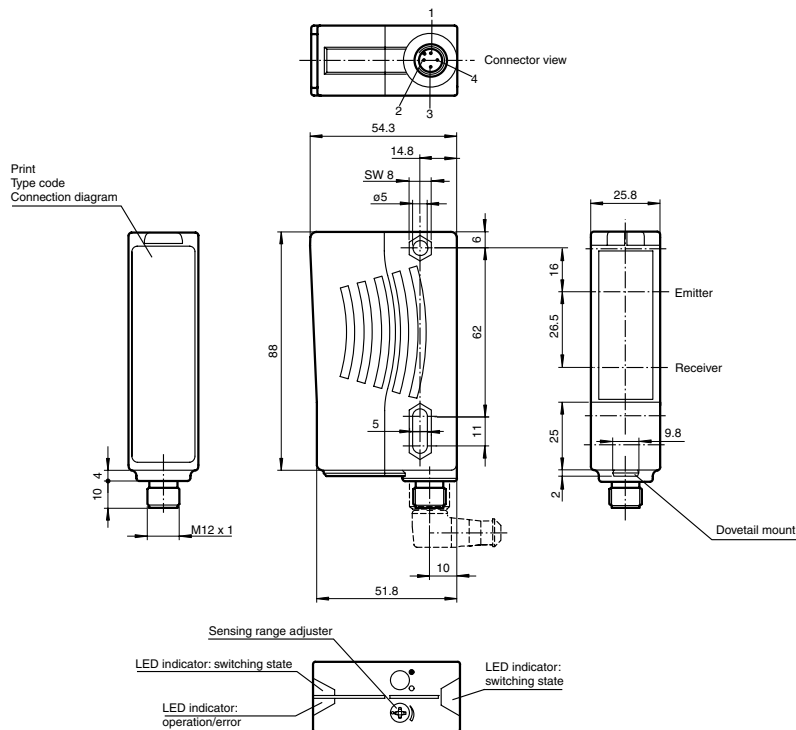
Dimensions (mm)

Photoelectric Series 28 Rectangular

RLK28-8-H-400-RT-Z/31/116
 RLK28-8-H-400-IR-Z/31/116
 RLK28-8-H-700-RT-Z/31/116
 RLK28-8-H-700-IR-Z/31/116
 RLK28-8-H-2000-IR-Z/31/116

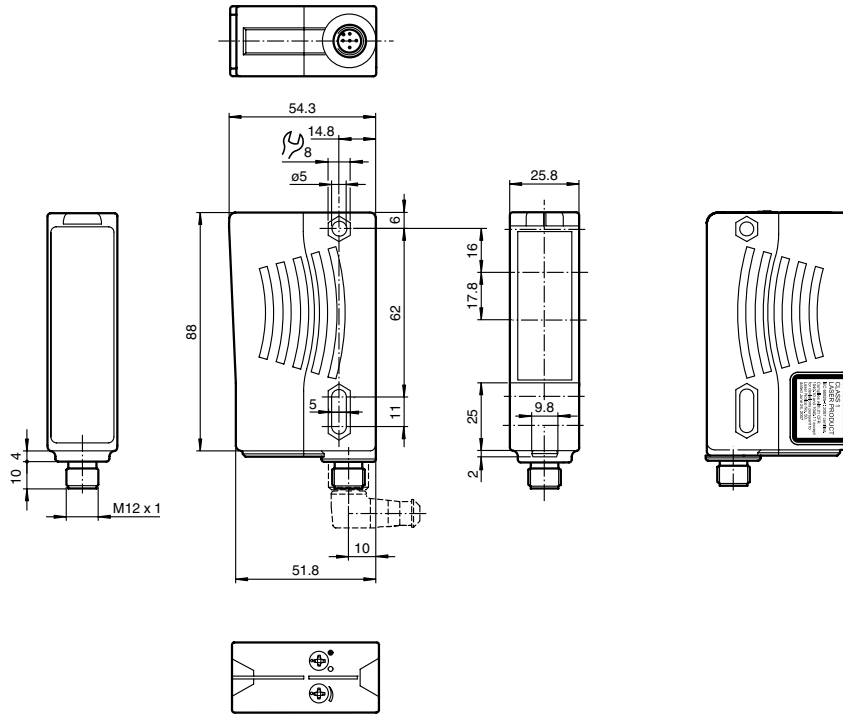


RL28-8-H-2000-IR-B3B/73c
 RL28-8-H-400-RT-B3B/73c
 RL28-8-H-700-RT-B3B/73c



Dimensions (mm)

RL28-8-H-1500-LAS/105/110



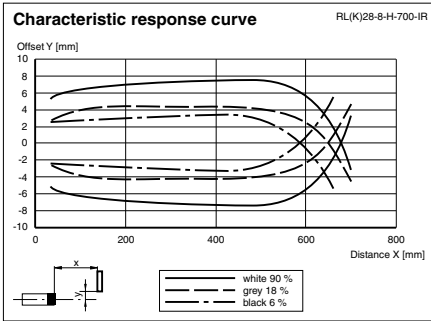
4-in-1 FOUR OUTPUTS™ ONE SENSOR **4-in-1 Output**

The 4-in-1 output offers light ON and/or dark ON output(s) in which each automatically detect the connected load, so the output either sources or sinks current depending on the load. A single sensor can operate as NPN light ON, NPN dark ON, PNP light ON, or PNP dark ON, reducing inventory costs and minimizing wiring time.

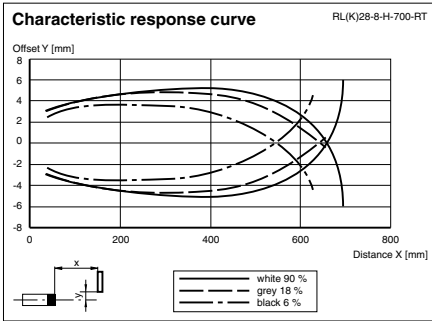


Sensing Characteristics

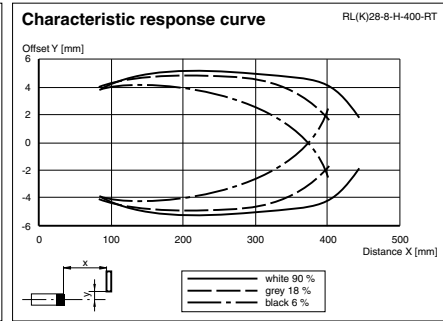
RL28-8-H-700-IR/105/110
RL28-8-H-700-IR/49/115
RLK28-8-H-700-IR-Z/31/116



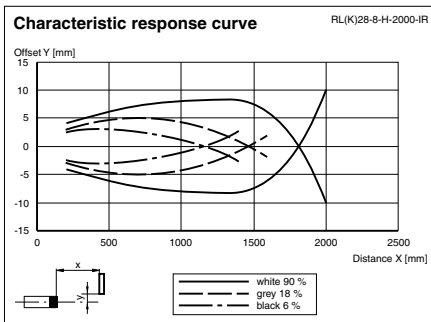
RL28-8-H-700-RT/105/110
RLK28-8-H-700-RT-Z/31/116
RL28-8-H-700-RT-B3B/73c
RL28-8-H-700-RT/49/115



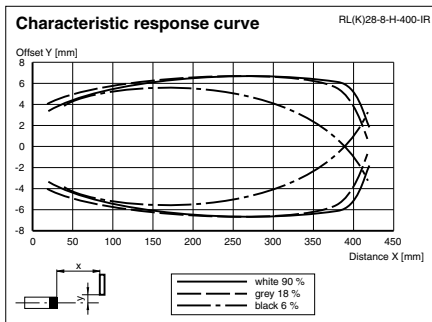
RL28-8-H-400-RT/49/115
RL28-8-H-400-FFP-RT/47/105
RL28-8-H-400-RT/105/110
RLK28-8-H-400-RT-Z/31/116
RL28-8-H-400-RT-B3B/73c



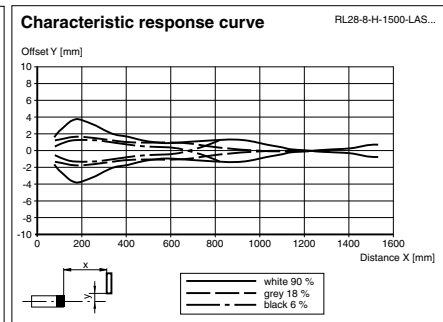
RL28-8-H-2000-IR/110/115
RL28-8-H-2000-IR/105/110
RLK28-8-H-2000-IR-Z/31/116
RL28-8-H-2000-IR-B3B/73c



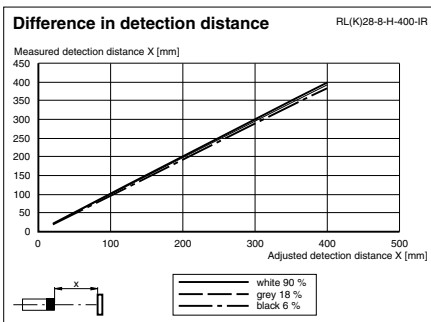
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RL28-8-H-400-IR/105/110
RLK28-8-H-400-IR-Z/31/116



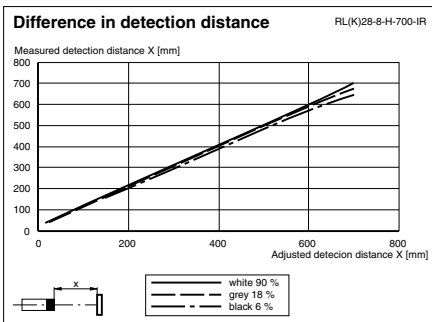
RL28-8-H-1500-LAS/105/110



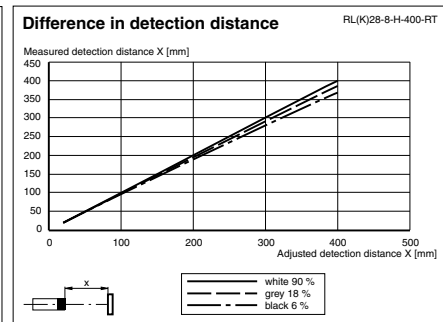
RL28-8-H-400-IR/49/115
RLK28-8-H-400-IR-Z/31/116
RL28-8-H-400-IR/105/110



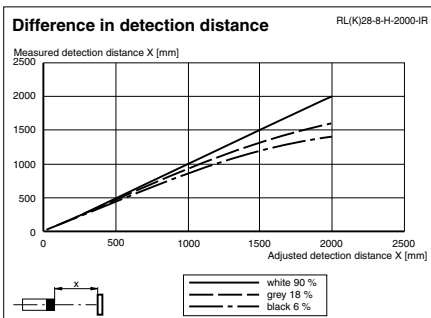
RL28-8-H-700-IR/105/110
RL28-8-H-700-IR/49/115
RLK28-8-H-700-IR-Z/31/116



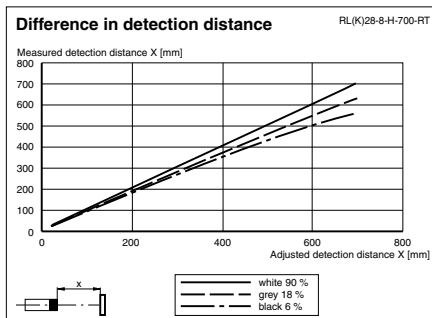
RL28-8-H-400-RT/49/115
RL28-8-H-400-FFP-RT/47/105
RL28-8-H-400-RT/105/110
RLK28-8-H-400-RT-Z/31/116
RL28-8-H-400-RT-B3B/73c



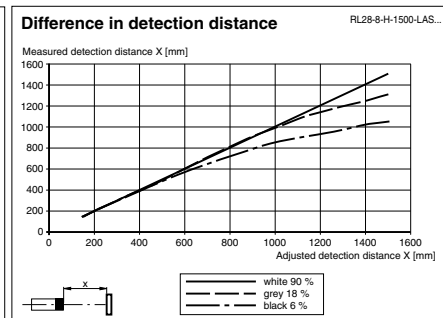
RL28-8-H-2000-IR/110/115
RL28-8-H-2000-IR/105/110
RLK28-8-H-2000-IR-Z/31/116
RL28-8-H-2000-IR-B3B/73c



RL28-8-H-700-RT/49/115
RL28-8-H-700-RT/105/110
RLK28-8-H-700-RT-Z/31/116
RL28-8-H-700-RT-B3B/73c



RL28-8-H-1500-LAS/105/110



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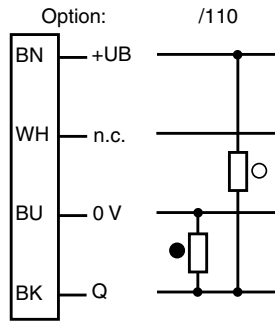
Wiring Diagrams

DC

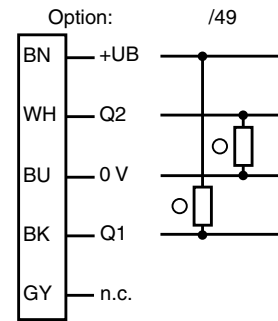


Cable Connection

RL28-8-H-2000-IR/110/115



RL28-8-H-400-IR/49/115
RL28-8-H-400-RT/49/115
RL28-8-H-700-IR/49/115
RL28-8-H-700-RT/49/115

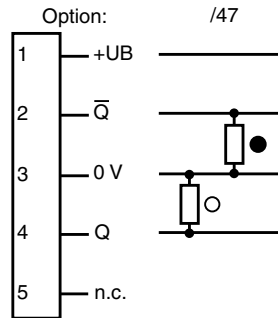


Quick Disconnect

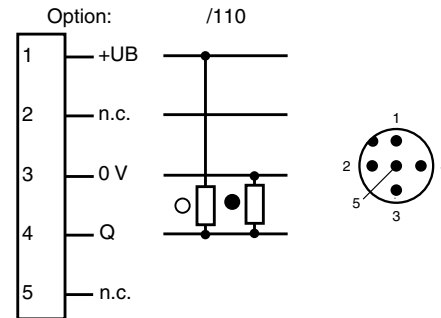
Note: Wiring diagrams show quick disconnect pin numbers.

V15 Type

RL28-8-H-400-FFP-RT/47/105



RL28-8-H-400-IR/105/110
RL28-8-H-400-RT/105/110
RL28-8-H-700-IR/105/110
RL28-8-H-700-RT/105/110
RL28-8-H-1500-LAS/105/110
RL28-8-H-2000-IR/105/110

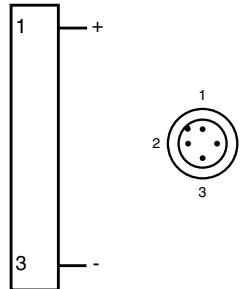


Quick Disconnect

Note: Wiring diagrams show quick disconnect pin numbers.

V1 Type

RL28-8-H-2000-IR-B3B/73c
RL28-8-H-400-RT-B3B/73c
RL28-8-H-700-RT-B3B/73c

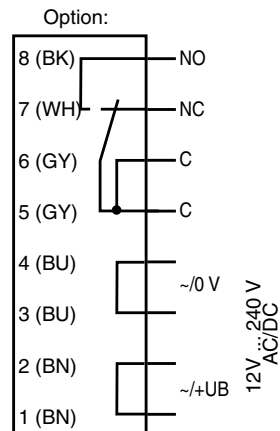


AC/DC



Terminal Connection

RLK28-8-H-400-RT-Z/31/116
RLK28-8-H-400-IR-Z/31/116
RLK28-8-H-700-RT-Z/31/116
RLK28-8-H-700-IR-Z/31/116
RLK28-8-H-2000-IR-Z/31/116



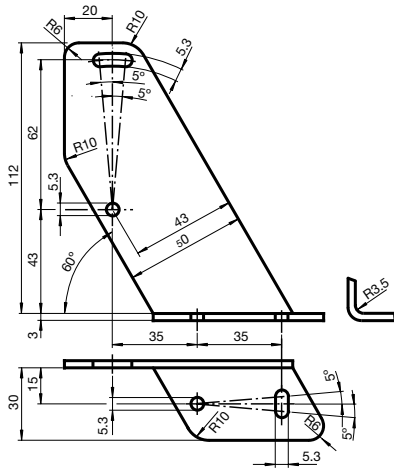
O = Light on
● = Dark on

Accessories

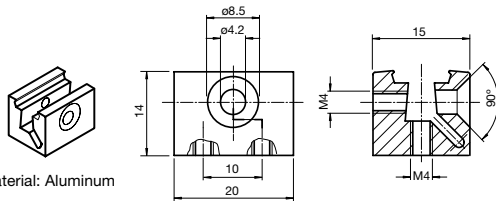
(Dimensions in mm)

Mounting Bracket Model OMH-21

Standard right angle mounting bracket



Dovetail Mounting Clamp Model OMH-MLV11-K



Material: Aluminum

Conduit Adapter Model M16-1/2" NPT



Receptacles for /116 option:

Receptacle Model M16-V124-G-S-076M

Male 4-pin Micro AC (1/2"-20) receptacle

Receptacle Model M16-V125-G-S-3M

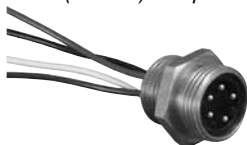
Male 5-pin Micro AC (1/2"-20) receptacle

Receptacle Model M16-V93-G-S-15M

Male 3-pin Mini (7/8"-16) receptacle

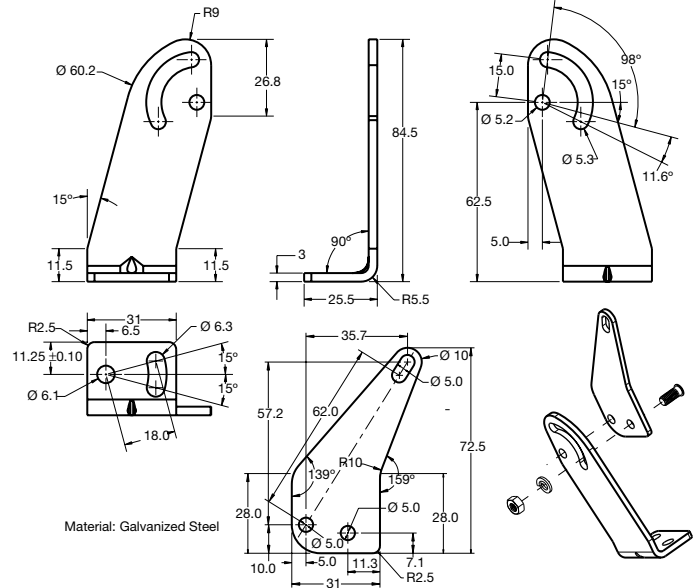
Receptacle Model M16-V95-G-S-15M

Male 5-pin Mini (7/8"-16) receptacle



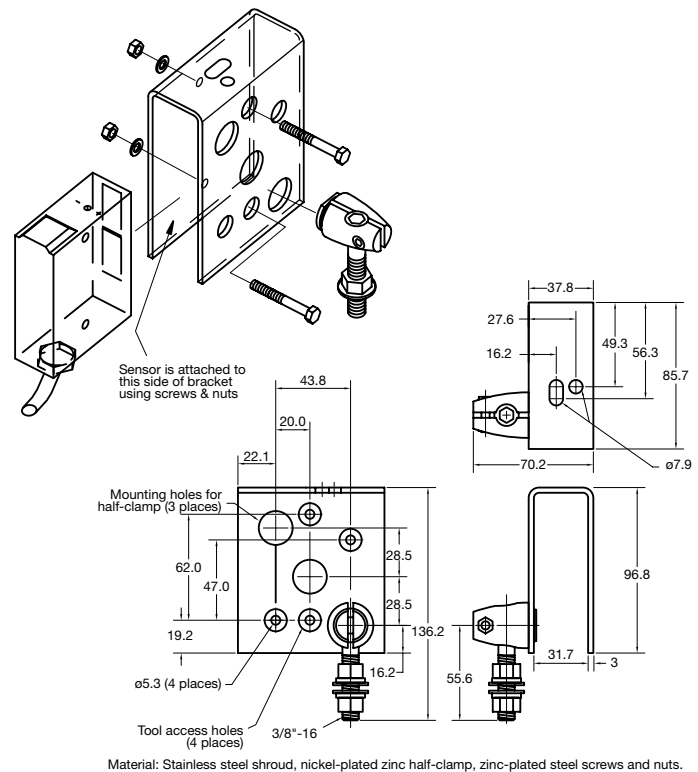
Mounting Bracket Model OMH-RL2-H

Hinged right angle mounting bracket



Mounting Bracket Model OMH-RL2-S

Protective shroud bracket with 360° rotatability half-clamp



Accessories

(Dimensions in mm)

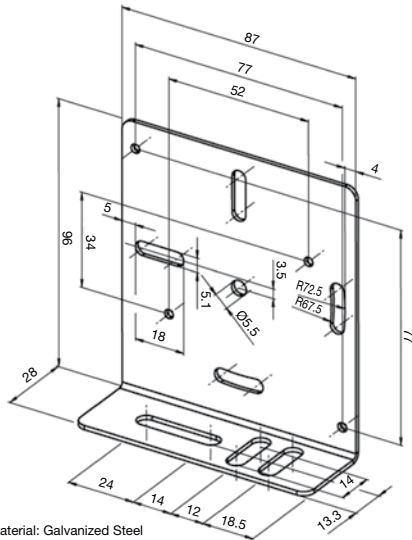
Photoelectric Series 28 Rectangular

Weld Slag Cover Model OMH-RL28-C



Replacement Glass Kit Model RL28-GLASS-C
for Weld Slag Cover Model OMH-RL28-C

Mounting Bracket Model OMH-RLK29-HW
Two-position right angle mounting bracket



Material: Galvanized Steel

Mounting Bracket Model OMH-05

Small flat mounting plate with 360° rotatability half-clamp.
Mounts to 0.5 inch (12 mm) diameter rod or bolt (not included)



Material: Steel, zinc-plated aluminium

Mounting Bracket Model OMH-07

Large flat mounting plate with 360° rotatability half-clamp.
Mounts to 0.5 inch (12 mm) diameter rod or bolt (not included)



Material: Steel, zinc-plated aluminium



See pages 1009-1076 for cordsets



See pages 915-932 for reflectors



See pages 1105-1128 for accessories



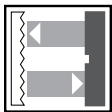
Series 29

Rectangular Sensors

- Cost-effective, long-range photoelectric sensors
- 4-in-1 outputs minimize selection and stocking requirements
- Highly visible status LEDs
- Thru-hole or dovetail mounting options



4 output options from 1 sensor:
NPN normally open, NPN normally closed,
PNP normally open, or PNP normally closed



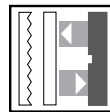
Retroreflective Mode

Features:

- Tamper-proof version with no adjustments
- Polarization filter reliably detects shiny objects

Sensing Range: 7 m, 12 m

Outputs: 4-in-1, relay



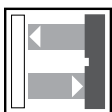
Retroreflective Mode with Foreground Suppression

Features:

- Glossy targets not seen as a reflector up to 400 mm away
- Reliable detection of shrink-wrapped pallets

Sensing Range: 6 m

Output: 4-in-1



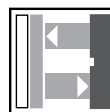
Diffuse Mode

Features:

- Long-range sensing with no reflector required
- Visible red light source for alignment ease

Sensing Range: 2 m

Output: 4-in-1



Diffuse Mode with Background Suppression

Features:

- Sharp adjustable sensing range cut-off
- Visible red light source for alignment ease

Sensing Range: 1.2 m

Output: 4-in-1

Series 29 Rectangular Sensors

- Highly visible LED
- Powerful 4-in-1 output
- Optimal price/power ratio
- Retroreflective sensor with increased range and seal housing for door and cabinet systems
- Not sensitive to ambient light, even with energy saving lamps
- Particularly insensitive to interference in the service radio and mobile phone ranges
- Foreground suppression, suited to recording of sheet-shrink-wrapped objects



Retroreflective Mode and Retroreflective Mode with Foreground Suppression

Technical Specifications

| | | RL29-55/73c/136 | RL29-55/25/73c/136 | RL29-55-V/25/73c/136 | RL29-55-V/73c/136 | RLK29-55/25/116 | RLK29-55/59/116 |
|----------------------------|--|-----------------|--------------------|----------------------|-------------------|-----------------|-----------------|
| Polarization filter | | • | • | • | • | | |
| Foreground suppression | | | | • | • | | |
| Effective detection range | 0.4 ... 6 m | | | • | • | | |
| | 0.1 ... 7 m | • | • | | | | |
| | 0 ... 12 m | | | | | • | • |
| Reference target | H85-2 reflector | • | • | • | • | • | • |
| Light source | red LED | • | • | • | • | • | • |
| Diameter of the light spot | approx. 130 mm at a distance of 6 m | | | • | • | | |
| | approx. 150 mm at a distance of 7 m | • | • | | | | |
| | approx. 35 mm at a distance of 12 m | | | | | • | • |
| Function display | LED yellow, light with free light beam , flashes when falling short of the stability control | • | • | • | • | | |
| | LED red illuminates: when beam is free | | | | | | |
| | flashes: when level falls below function reserve | | | | | • | • |
| | off: when beam is interrupted | | | | | | |
| Operating voltage | 10 ... 30 V DC | • | • | • | • | | |
| | 24 ... 230 V AC/DC | | | | | • | • |
| No-load supply current | ≤ 30 mA | • | • | • | • | | |
| | ≤ 8.5 mA | | | | | • | • |
| Signal output | Relay, 1 alternator | | | | | • | • |
| | 2 Push-pull outputs, short-circuit protected, reverse polarity protection | • | • | • | • | | |
| Switching current | max. 100 mA | • | • | • | • | | |
| | max. 2 A | | | | | • | • |
| Switching frequency | 500 Hz | • | • | • | • | | |
| | 7 Hz | | | | | • | • |
| Ambient temperature | -20 ... 60 °C (-4 ... 140 °F) | • | • | • | • | • | • |
| Protection degree | IP65 | • | • | • | • | | |
| | IP67 | | | | | • | • |
| Connection | terminal compartment | | | | | • | • |
| | Plastic connector M12 x 1, 4-pin | • | • | • | • | | |
| Housing | Plastic ABS, flame resistant | • | • | • | • | • | • |
| Optical face | plastic | • | • | • | • | • | • |
| Standards | EN 60947-5-2:2007 | • | • | • | • | • | • |
| | IEC 60947-5-2:2007 | • | • | • | • | • | • |
| Approvals | CE, cULus | • | • | • | • | | |

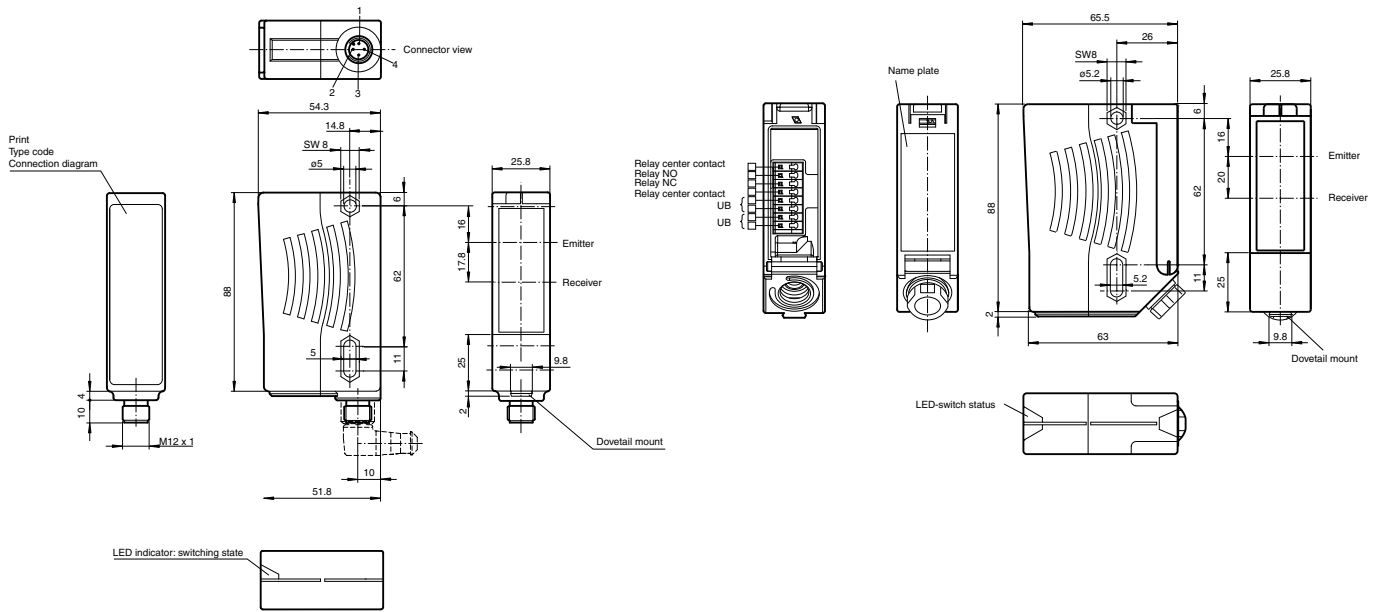


The 4-in-1 output offers light ON and/or dark ON output(s) in which each automatically detect the connected load, so the output either sources or sinks current depending on the load. A single sensor can operate as NPN light ON, NPN dark ON, PNP light ON, or PNP dark ON, reducing inventory costs and minimizing wiring time.

Dimensions (mm)

RL29-55/73c/136
 RL29-55/25/73c/136
 RL29-55-V/25/73c/136
 RL29-55-V/73c/136

RLK29-55/25/116
 RLK29-55/59/116

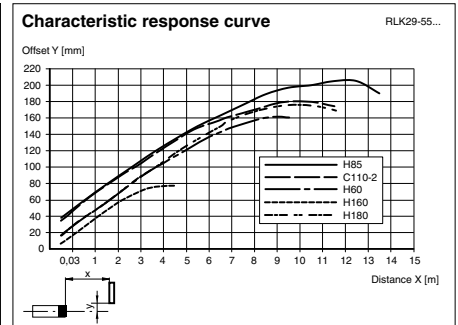
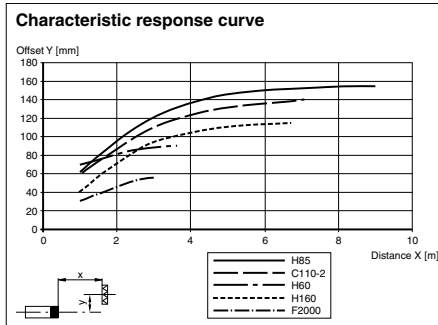
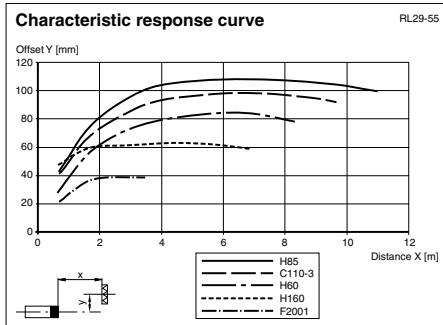


Sensing Characteristics

RL29-55/73c/136
 RL29-55/25/73c/136

RL29-55-V/25/73c/136
 RL29-55-V/73c/136

RLK29-55/25/116
 RLK29-55/59/116



Wiring Diagrams

DC

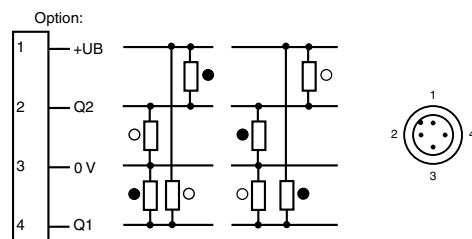


Quick Disconnect

Note: Wiring diagrams show quick disconnect pin numbers.

V1 Type

RL29-55/25/73c/136 RL29-55/73c/136
 RL29-55-V/25/73c/136 RL29-55-V/73c/136

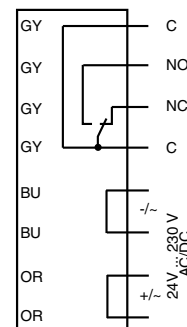


AC/DC



Terminal Connection

RLK29-55/25/116
 RLK29-55/59/116



Series 29 Rectangular Sensors

- Highly visible LED
- Easy alignment due to red transmission LED
- Powerful 4-in-1 output
- Optimal price/power ratio
- Minimal black/white difference



Diffuse Mode and Diffuse Mode with Background Suppression

Technical Specifications

| | | RL29-8-2000/115b/136 | RL29-8-2000/73c/136 | RL29-8-2000/59/73c/136 | RL29-8-H-1200-RT/115/136 | RL29-8-H-1200-RT/73c/136 | RL29-8-H-1200-RT/59/73c/136 |
|---------------------------------|---|----------------------|---------------------|------------------------|--------------------------|--------------------------|-----------------------------|
| Energetic | | • | • | • | | | |
| Background suppression | | | | | • | • | • |
| Sensing range adjustment | | • | • | • | | | |
| Detection range | 30 ... 1200 mm , adjustable | | | | • | • | • |
| | 20 ... 2000 mm , adjustable | • | • | • | | | |
| Black/White difference (6%/90%) | < 35 % at 1200 mm sensor range | | | | • | • | • |
| | < 40 % | • | • | • | | | |
| Light source | LED 660 nm | • | • | • | • | • | • |
| Light type | modulated visible red light | • | • | • | • | • | • |
| Diameter of the light spot | approx. 25 mm at a distance of 1200 mm | • | • | • | • | • | • |
| | approx. 25 mm at a distance of 2000 mm | • | • | • | • | • | • |
| Function display | LED yellow: switching state | • | • | • | • | • | • |
| Controls | sensing range adjuster | • | • | • | • | • | • |
| Operating voltage | 10 ... 30 V DC | • | • | • | • | • | • |
| No-load supply current | ≤ 40 mA | • | • | • | • | • | • |
| Signal output | 2 Push-pull outputs, short-circuit proof, reverse polarity protection | • | • | • | • | • | • |
| Switching current | max. 100 mA | • | • | • | • | • | • |
| Switching frequency | 125 Hz | • | • | • | • | • | • |
| Ambient temperature | -25 ... 60 °C (-13 ... 140 °F) | • | • | • | • | • | • |
| Protection degree | IP65 | • | • | • | • | • | • |
| Connection | 2500 mm fixed cable | | | | • | • | • |
| | Plastic connector M12 x 1, 4-pin | | • | • | | | |
| | with 0.2 m fixed cable and 4-pin, M12 connector | • | | | | | |
| Housing | Plastic ABS | • | • | • | • | • | • |
| Optical face | plastic | • | • | • | • | • | • |
| Standards | EN 60947-5-2 | • | • | • | • | • | • |
| Approvals | CE, cULus | • | • | • | • | • | • |

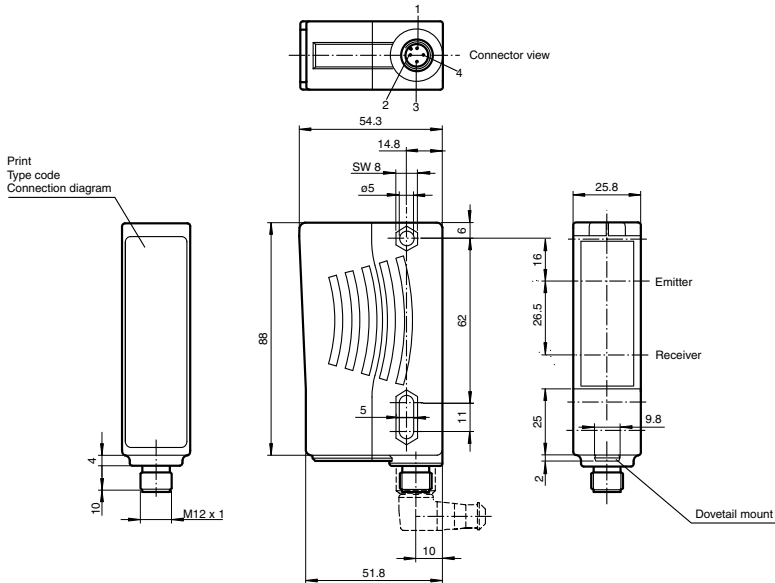


The 4-in-1 output offers light ON and/or dark ON output(s) in which each automatically detect the connected load, so the output either sources or sinks current depending on the load.

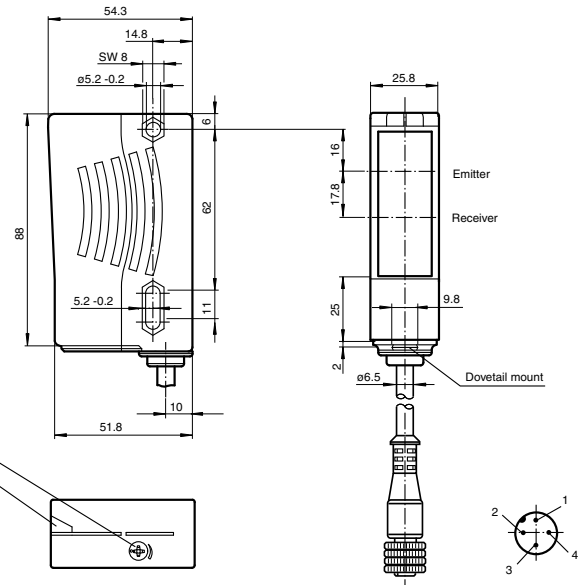
A single sensor can operate as NPN light ON, NPN dark ON, PNP light ON, or PNP dark ON, reducing inventory costs and minimizing wiring time.

Dimensions (mm)

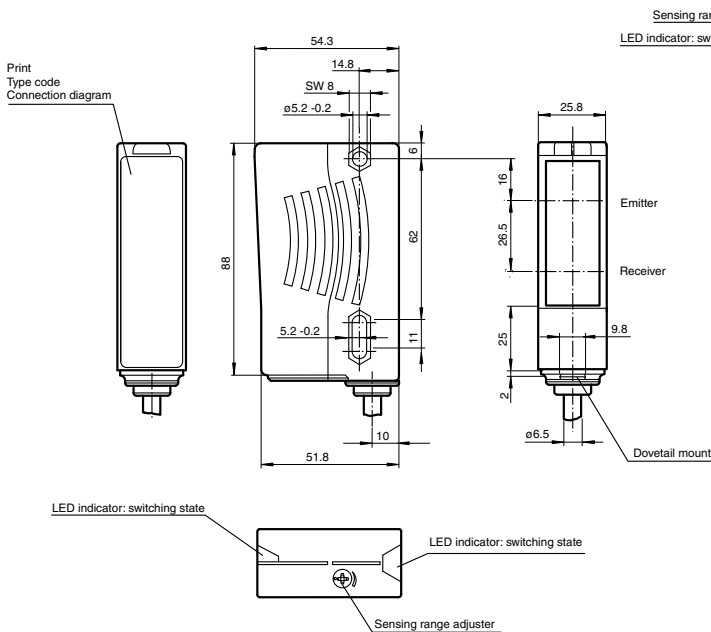
RL29-8-2000/73c/136
 RL29-8-2000/59/73c/136
 RL29-8-H-1200-RT/73c/136
 RL29-8-H-1200-RT/59/73c/136



RL29-8-2000/115b/136



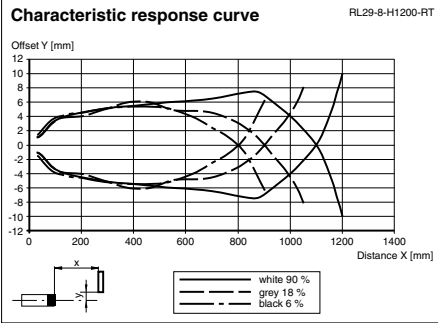
RL29-8-H-1200-RT/115/136



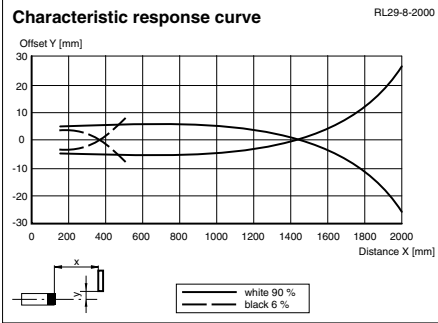
Sensing Characteristics

Photoelectric Series 29 Rectangular

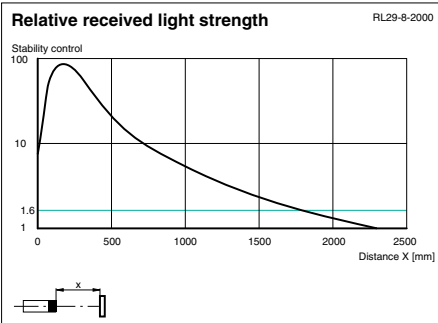
RL29-8-H-1200-RT/115/136
 RL29-8-H-1200-RT/73c/136
 RL29-8-H-1200-RT/59/73c/136



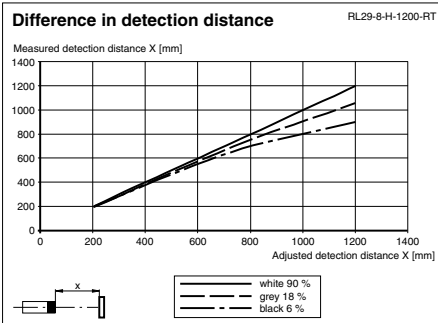
RL29-8-2000/115b/136
 RL29-8-2000/73c/136
 RL29-8-2000/59/73c/136



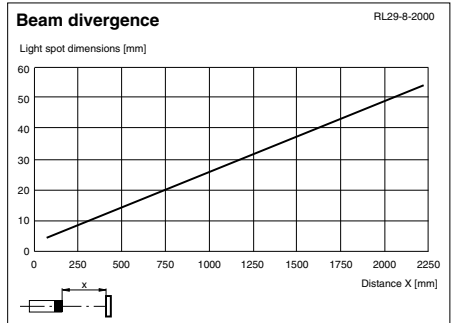
RL29-8-2000/115b/136
 RL29-8-2000/73c/136
 RL29-8-2000/59/73c/136



RL29-8-H-1200-RT/115/136
 RL29-8-H-1200-RT/73c/136
 RL29-8-H-1200-RT/59/73c/136



RL29-8-2000/115b/136
 RL29-8-2000/73c/136
 RL29-8-2000/59/73c/136



Wiring Diagrams

DC



Cable Connection

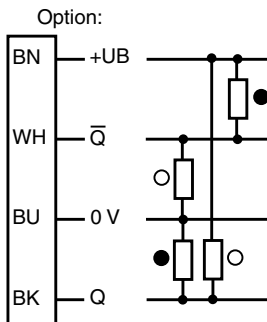


Quick Disconnect

Note: Wiring diagrams show quick disconnect pin numbers.

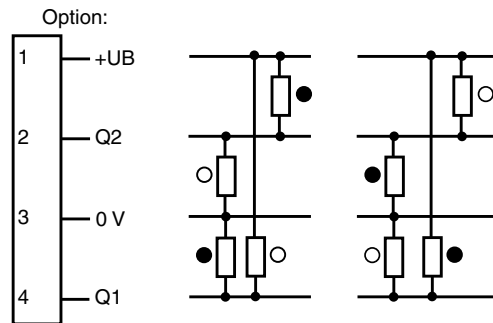
V1 Type

RL29-8-H-1200-RT/115/136



RL29-8-2000/115b/136
 RL29-8-2000/73c/136
 RL29-8-H-1200-RT/73c/136

RL29-8-2000/59/73c/136
 RL29-8-H-1200-RT/59/73c/136



○ = Light on
 ● = Dark on

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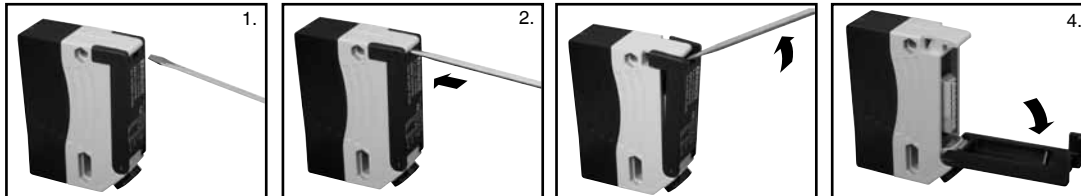
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Opening the Terminal Compartment (.../116 Models)

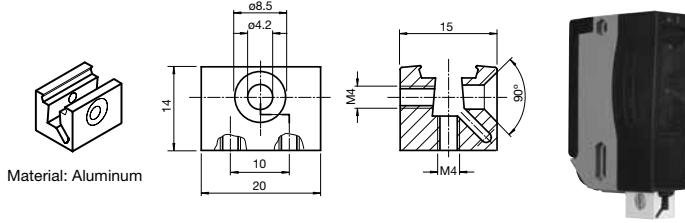
1. A flat-head screwdriver is needed to open the terminal compartment.
2. Insert the flat-head screwdriver into the center notch under the LED window next to the printed black door with the blade all the way to the back of this notch.
3. Push the screwdriver upward toward the direction of the LED.
4. The hinged door with printing will pivot outward, exposing the terminal compartment. To close, simply push the hinged door to its original position so that it snaps back into position.



Accessories

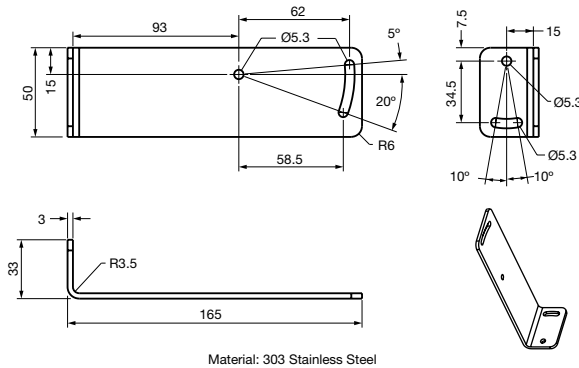
(Dimensions in mm)

Dovetail Mounting Clamp Model OMH-MLV11-K



Mounting Bracket Model OMH-21-T

High-profile right angle mounting bracket



Conduit Adapter Model M16-1/2"NPT



Receptacles for /116 option:

Receptacle Model M16-V124-G-S-.076M

Male 4-pin Micro AC (1/2"-20) receptacle

Receptacle Model M16-V125-G-S-.3M

Male 5-pin Micro AC (1/2"-20) receptacle

Receptacle Model M16-V93-G-S-.15M

Male 3-pin Mini (7/8"-16) receptacle

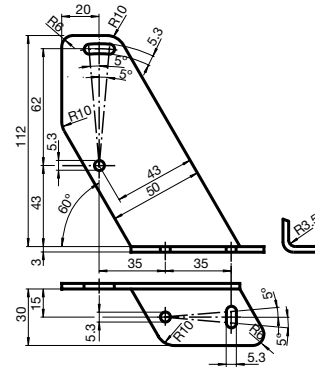
Receptacle Model M16-V95-G-S-.15M

Male 5-pin Mini (7/8"-16) receptacle



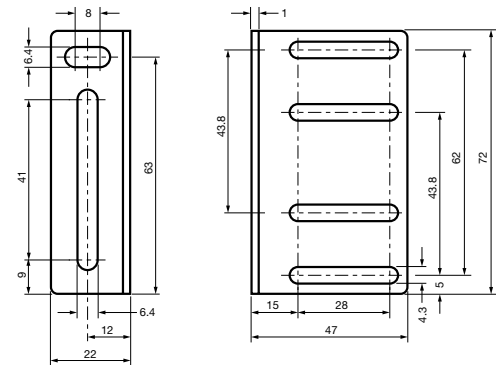
Mounting Bracket Model OMH-21

Standard right angle mounting bracket



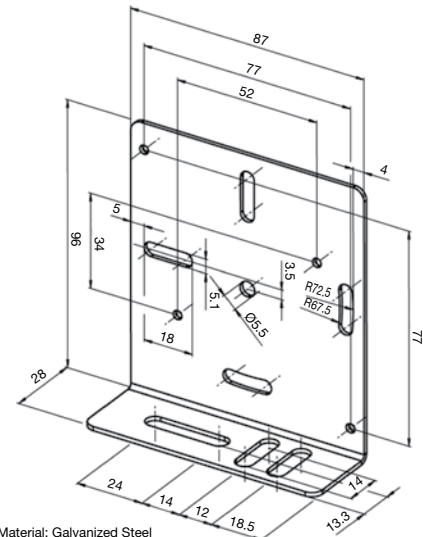
Mounting Bracket Model OMH-RL25

Low-profile right angle mounting bracket



Mounting Bracket Model OMH-RLK29-HW

Two-position right angle mounting bracket

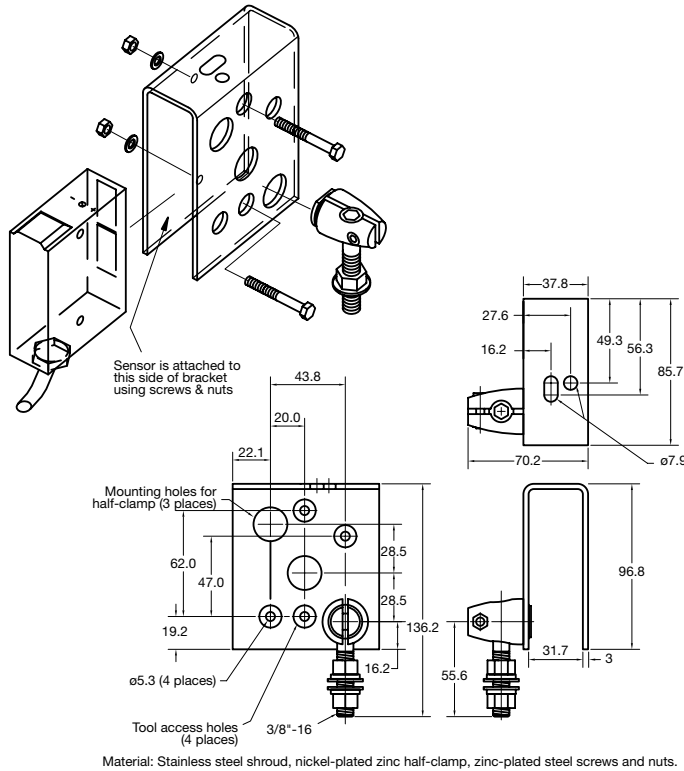


Accessories

(Dimensions in mm)

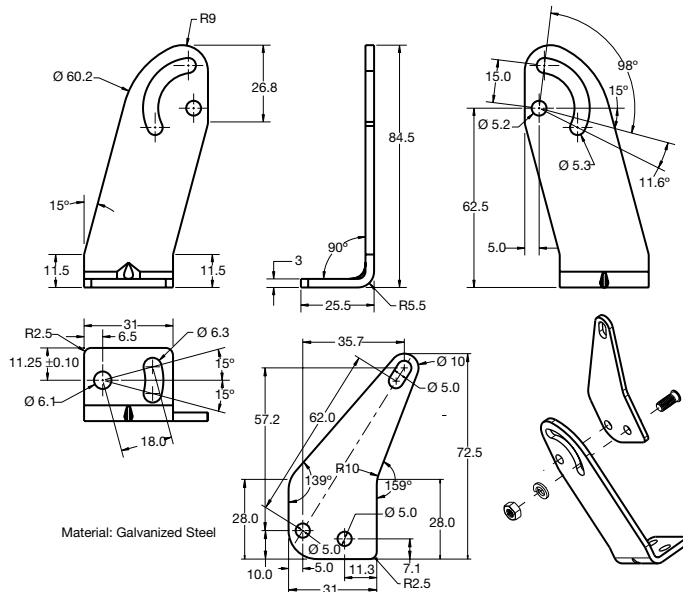
Mounting Bracket Model OMH-RL2-S

Protective shroud bracket with 360° rotatability half-clamp



Mounting Bracket Model OMH-RL2-H

Hinged right angle mounting bracket



Weld Slag Cover Model OMH-RL28-C



Replacement Glass Kit Model RL28-GLASS-C

for Weld Slag Cover Model OMH-RL28-C

Mounting Bracket Model OMH-05

Small flat mounting plate with 360° rotatability half-clamp. Mounts to 0.5 inch (12 mm) diameter rod or bolt (not included)



Material: Steel, zinc-plated aluminium

Mounting Bracket Model OMH-07

Large flat mounting plate with 360° rotatability half-clamp. Mounts to 0.5 inch (12 mm) diameter rod or bolt (not included)



Material: Steel, zinc-plated aluminium



See pages
1009-1076
for cordsets



See pages
915-932 for
reflectors



See pages
1105-1128 for
accessories

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PEPPERL+FUCHS
SENSING YOUR NEEDS

Notes



Series 61

Rectangular Sensors

- Ultra bright LED indication
- Integral timer function
- Quick disconnect and cabled versions
- IP67



4 output options from 1 sensor:
NPN normally open, NPN normally closed,
PNP normally open, or PNP normally closed



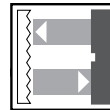
Thru-Beam Mode

Features:

- Sensitivity adjustment
- Selectable light on/dark on operating modes

Sensing Range: 60 m

Outputs: 4-in-1, relay



Retroreflective Mode

Features:

- Visible red LED for alignment
- Sensitivity adjustment

Sensing Range: 18 m

Outputs: 4-in-1, relay



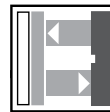
Diffuse Mode

Features:

- Fast response times
- Selectable light on/dark on operating modes

Sensing Range: 1m, 4m

Outputs: 4-in-1, relay



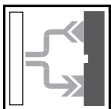
Diffuse Mode with Background Suppression

Features:

- Sharp sensing range cut-off
- High performance infrared light source

Sensing Range: 500 mm, 2m

Outputs: 4-in-1, relay



Fiber Optic Diffuse and Thru-Beam Mode

See Fiber Optic Sensors, pages 843-859

Series 61 Rectangular Sensors

- Ultra bright indicator LEDs
- Waterproof, protection degree IP67
- Programmable ON-delay, OFF-delay, and One-shot timers
- 4-in-1 output



Thru-Beam Mode

Technical Specifications

| | | LA61/115 | LK61-Z/31/115 | LA61/135 | LK61-Z/31/135 | LD61/115 | LV61-Z/15/136 | LD61/92 | LV61-Z/92/136 |
|---------------------------|---|----------|---------------|----------|---------------|----------|---------------|---------|---------------|
| Emitter | | • | | • | | • | | • | |
| Receiver | | | • | | • | | • | | • |
| Timer | | | • | | • | | • | | • |
| Sensitivity adjustment | | | • | | • | | • | | • |
| Light/dark switch | | | • | | • | | • | | • |
| Effective detection range | 0 ... 60 m | • | | • | | • | | • | |
| Light source | IREDD, 850 nm | • | | • | | • | | • | |
| Light type | modulated infrared light | • | | • | | • | | • | |
| Ambient light limit | 5000 Lux ; according EN 60947-5-2 | • | • | • | • | • | • | • | • |
| Approvals | CE, cULus | • | • | • | • | • | • | • | • |
| Operating display | 2 LEDs green | • | • | • | • | • | • | • | • |
| Function display | 2 LEDs yellow | | | | | | | | |
| | ON: object inside the sensing range | | • | | • | | • | | • |
| | OFF: object outside the sensing range | | | | | | | | |
| Operating voltage | 24 ... 240 V AC | • | • | • | • | | | | |
| | 12 ... 240 V DC | | | | | • | • | • | • |
| | 10 ... 30 V DC | | | | | | | | |
| No-load supply current | ≤ 35 mA | • | • | • | • | • | • | • | • |
| Signal output | 2 Push-pull outputs, short-circuit protected, reverse polarity protection | • | • | • | • | • | • | • | • |
| Switching current | max. 3 A | • | • | • | • | | | | |
| | max. 100 mA | | | | | • | • | • | • |
| Switching frequency | 20 Hz | • | • | • | • | | | | |
| | 500 Hz | | | | | • | • | • | • |
| Timer function | DIP-switch for selection of operating modes | | • | | • | | • | | • |
| Standards | EN 60947-5-2 | • | • | • | • | • | • | • | • |
| Ambient temperature | -40 ... 55 °C (-40 ... 131 °F) | • | • | • | • | • | • | • | • |
| Protection degree | IP67 | • | • | • | • | • | • | • | • |
| Connection | fixed cable | • | • | | | • | • | | |
| | 7/8"-16 UN connector | | | • | • | | | | |
| | M12 connector, 4-pin | | | | | | | • | • |
| Housing | PC (glass-fiber-reinforced Makrolon) | • | • | • | • | • | • | • | • |
| Optical face | PMMA | • | • | • | • | • | • | • | • |

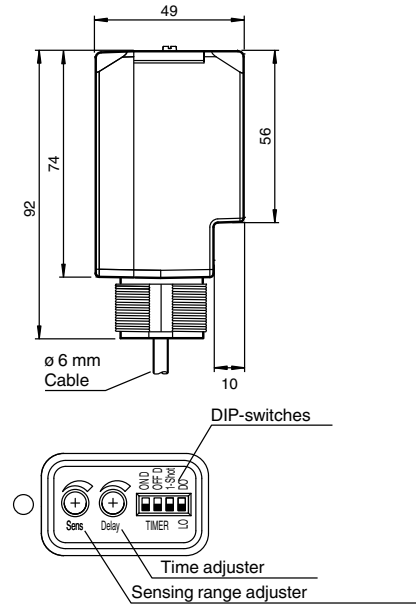
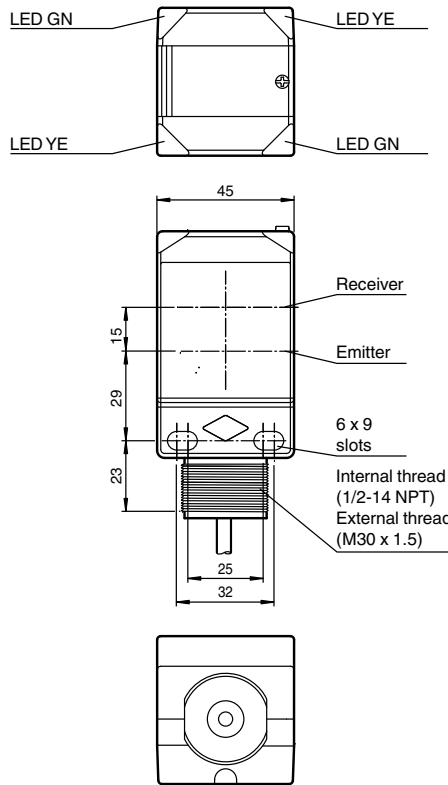


4 IN 1™ 4-in-1 Output

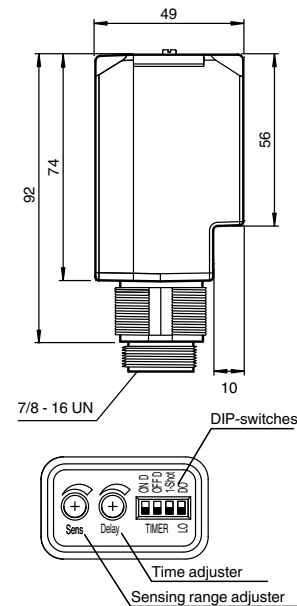
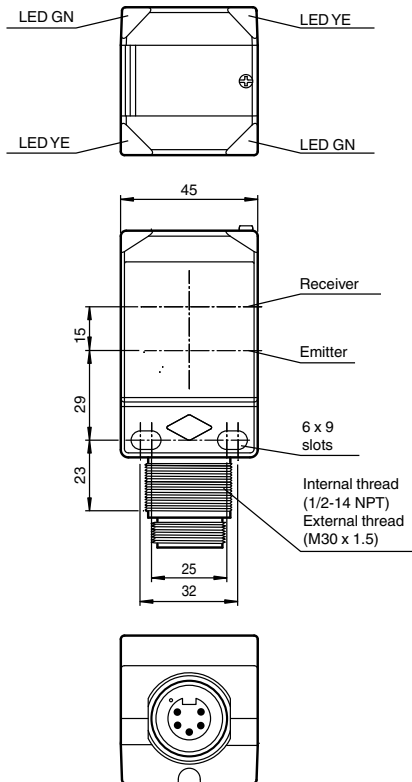
The 4-in-1 output offers light ON and/or dark ON output(s) in which each automatically detect the connected load, so the output either sources or sinks current depending on the load. A single sensor can operate as NPN light ON, NPN dark ON, PNP light ON, or PNP dark ON, reducing inventory costs and minimizing wiring time.

Dimensions (mm)

LA61/115
LK61-Z/31/115



LA61/135
LK61-Z/31/135



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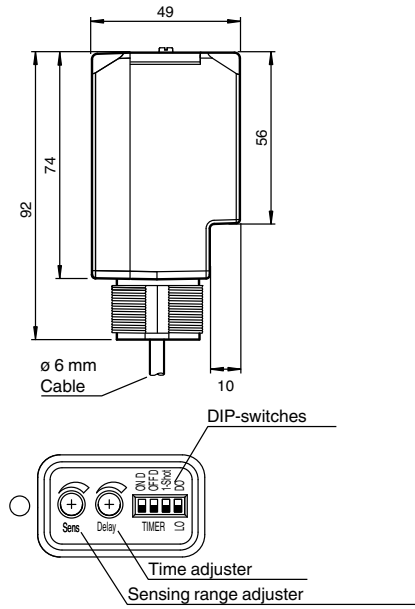
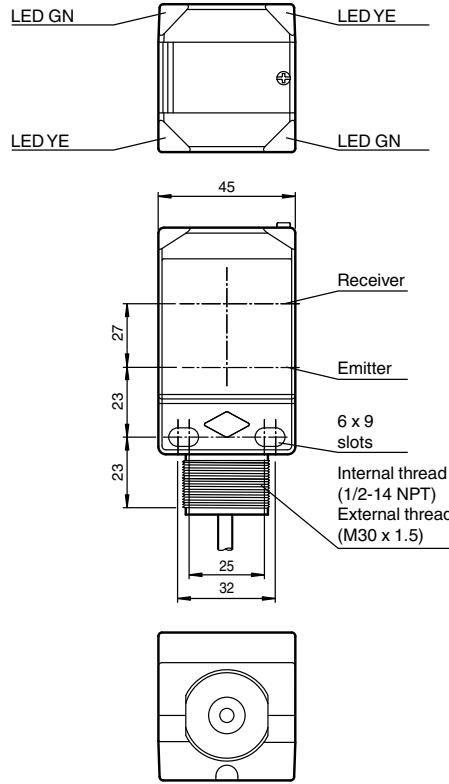
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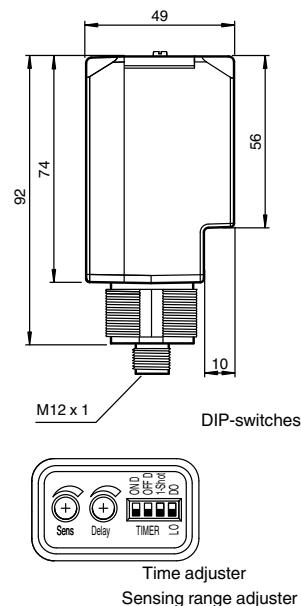
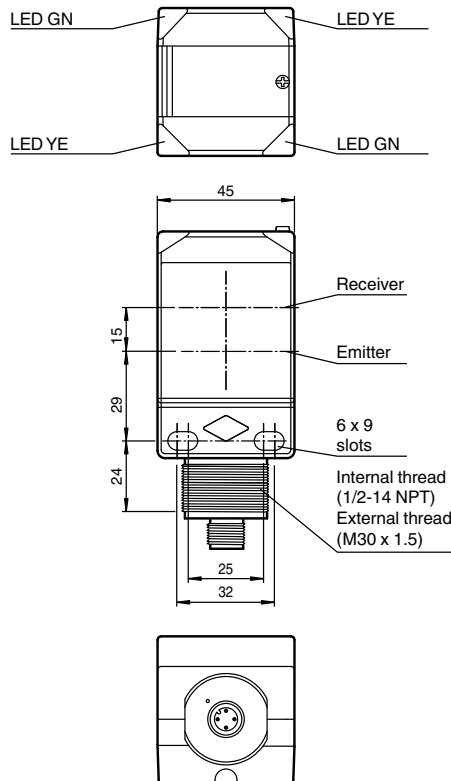
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SENSING YOUR NEEDS

Dimensions (mm)

LD61/115
LV61-Z/115/136



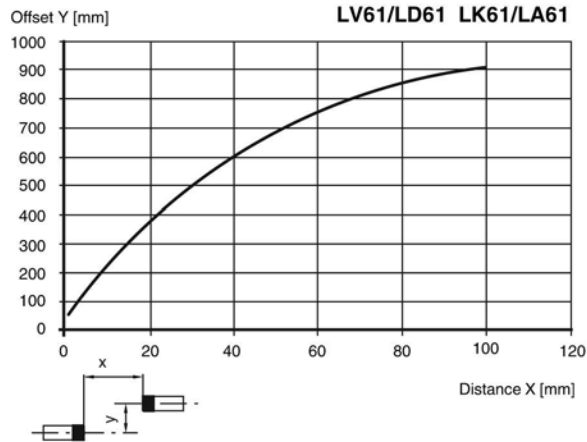
LD61/90
LV61-Z/92/136



Sensing Characteristics

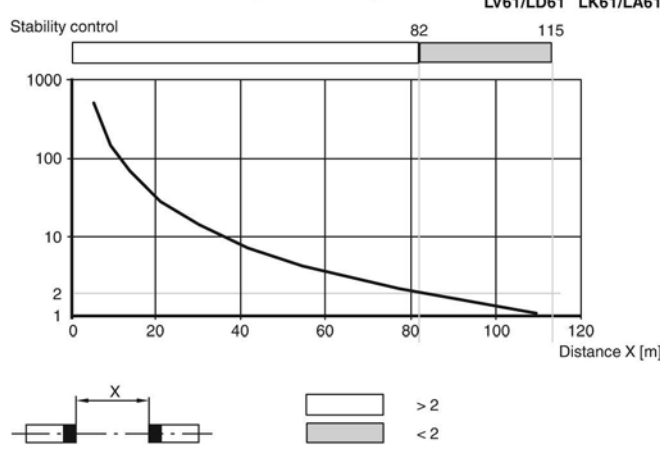
- LA61/115
- LK61-Z/31/115
- LA61/135
- LK61-Z/31/135
- LD61/115
- LV61-Z/115/136
- LD61/115
- LV61-Z/92/136

Characteristic response curve



- LA61/115
- LK61-Z/31/115
- LA61/135
- LK61-Z/31/135
- LD61/115
- LV61-Z/115/136
- LD61/115
- LV61-Z/92/136

Relative received light strength



Wiring Diagrams

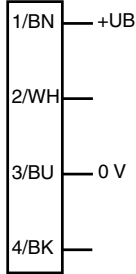
DC



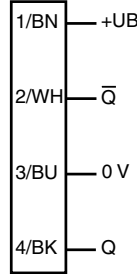
Quick Disconnect

Note: Wiring diagrams show quick disconnect pin numbers.

LD61/92



LV61-Z/92/136



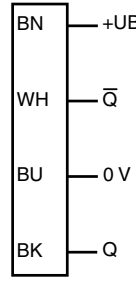
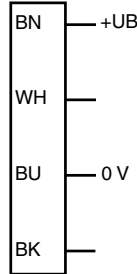
V1 Type



○ = Light on
● = Dark on



Cable Connection

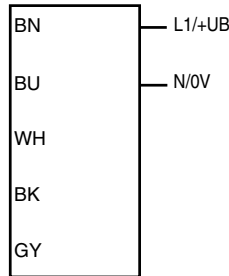


AC/DC

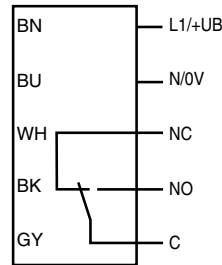


Cable Connection

LA61/115



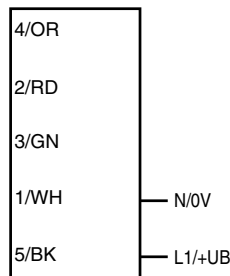
LK61-Z/31/115



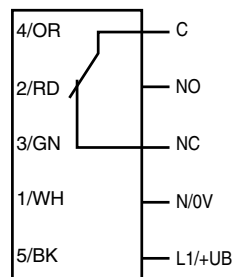
Quick Disconnect

Note: Wiring diagrams show quick disconnect pin numbers.

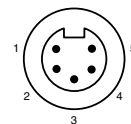
LA61/135



LK61-Z/31/135

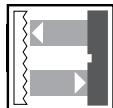


V95 Type



Series 61 Rectangular Sensors

- Ultra bright indicator LEDs
- Waterproof, protection degree IP67
- Programmable ON-delay, OFF-delay, and One-shot timers
- Relay output
- 4-in-1 output



Retroreflective Mode

Technical Specifications

| | | RL61-55-Z/115/136 | RL61-55-Z/92/136 | RLK61-55-Z/31/115 | RLK61-55-Z/31/135 |
|----------------------------|---|-------------------|------------------|-------------------|-------------------|
| Polarization filter | | • | • | • | • |
| Timer | | • | • | • | • |
| Sensing range adjustment | | • | • | • | • |
| Light/dark switch | | • | • | • | • |
| Effective detection range | 0 ... 18 m | • | • | • | • |
| Reference target | FE-RR1 reflector | • | • | • | • |
| Light source | Red 630 nm | • | • | • | • |
| Light type | modulated visible red light | • | • | • | • |
| Diameter of the light spot | approx. 350 mm at a distance of 18 m | • | • | • | • |
| Ambient light limit | 5000 Lux ; according EN 60947-5-2 | • | • | • | • |
| Operating display | 2 LEDs green | • | • | • | • |
| Function display | 2 LEDs yellow on: reflector inside the sensing range off: reflector outside the sensing range | • | • | • | • |
| Controls | Light/dark switch | • | • | • | • |
| Controls | sensing range adjuster | • | • | • | • |
| Controls | Time adjuster (0 ... 10 s) | • | • | • | • |
| | Time adjuster (0 ... 50 ms) | • | • | • | • |
| Operating voltage | 10 ... 30 V DC | • | • | • | • |
| | 24 ... 240 V AC | • | • | • | • |
| | 12 ... 240 V DC | • | • | • | • |
| No-load supply current | ≤ 35 mA | • | • | • | • |
| Signal output | Relay, Form C | • | • | • | • |
| | 2 Push-pull outputs, short-circuit proof, reverse polarity protection | • | • | • | • |
| Switching current | max. 100 mA | • | • | • | • |
| | max. 3 A | • | • | • | • |
| Voltage drop | ≤ 2.5 V | • | • | • | • |
| Switching frequency | 20 Hz | • | • | • | • |
| | 500 Hz | • | • | • | • |
| Timer function | DIP-switch for selection of operating modes | • | • | • | • |
| Ambient temperature | -40 ... 55 °C (-40 ... 131 °F) | • | • | • | • |
| Protection degree | IP67 | • | • | • | • |
| Connection | fixed cable | • | • | • | • |
| | connector M12 x 1, 4-pin | • | • | • | • |
| | V95 quick disconnect | • | • | • | • |
| Housing | PC (Polycarbonate) | • | • | • | • |
| Optical face | PMMA | • | • | • | • |
| Standards | EN 60947-5-2 | • | • | • | • |
| Approvals | CE, cULus | • | • | • | • |



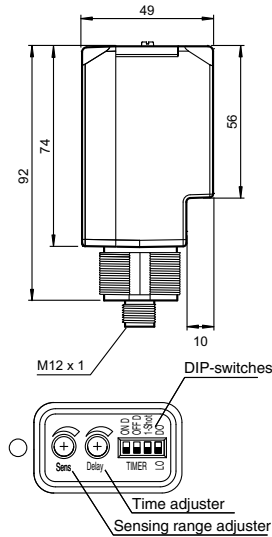
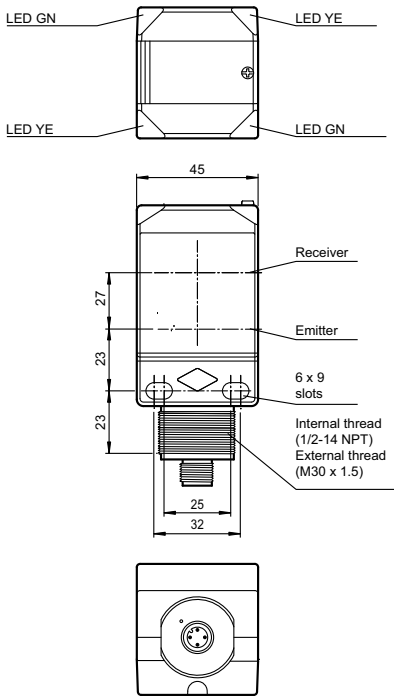
4 IN 1 ONE SENSOR™

4-in-1 Output

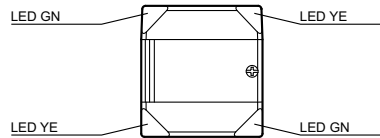
The 4-in-1 output offers light ON and/or dark ON output(s) in which each automatically detect the connected load, so the output either sources or sinks current depending on the load. A single sensor can operate as NPN light ON, NPN dark ON, PNP light ON, or PNP dark ON, reducing inventory costs and minimizing wiring time.

Dimensions (mm)

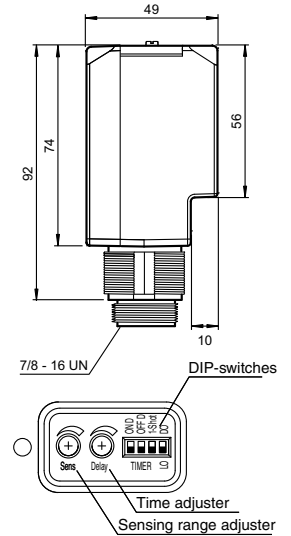
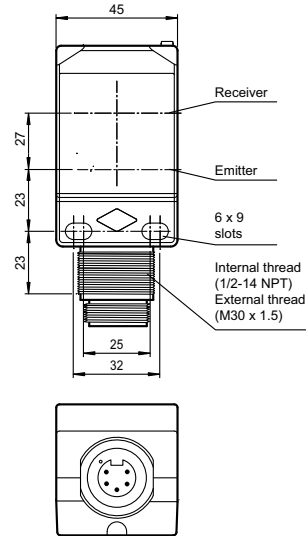
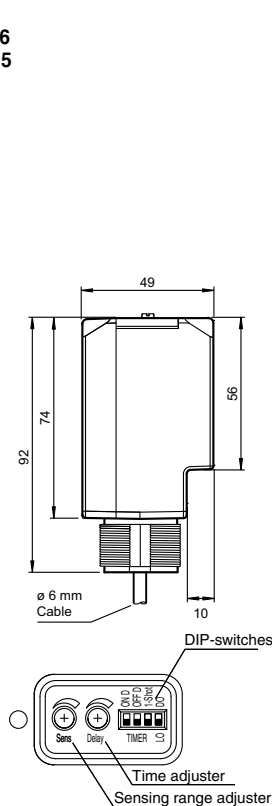
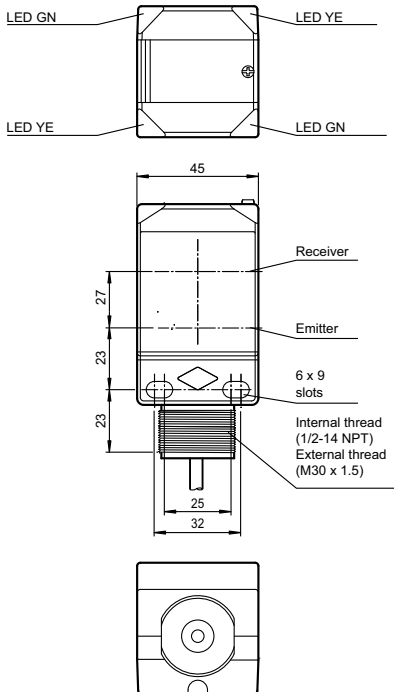
RL61-55-Z/92/136



RLK61-55-Z/31/135



RL61-55-Z/115/136
RLK61-55-Z/31/115



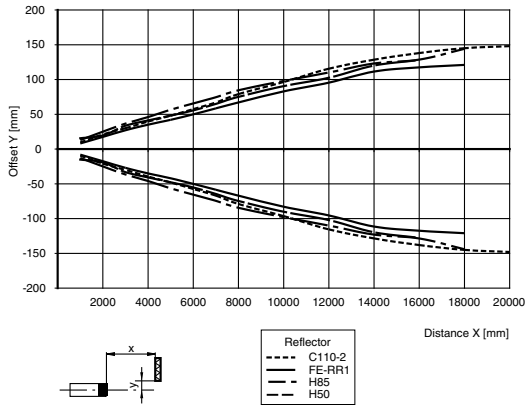
Sensing Characteristics

RL61-55-Z/115/136
 RL61-55-Z/92/136
 RLK61-55-Z/31/115
 RLK61-55-Z/31/135

RL61-55-Z/115/136
 RL61-55-Z/92/136
 RLK61-55-Z/31/115
 RLK61-55-Z/31/135

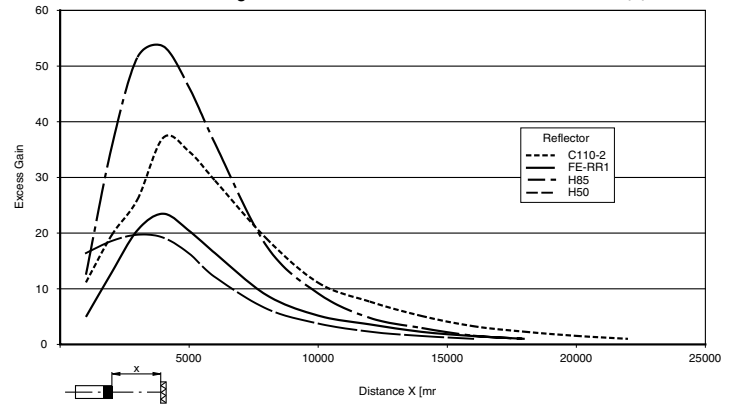
Movement Characteristic

RL(K)-61-55-Z



Excess Gain vs. Sensing Distance

RL(K)61-55-Z



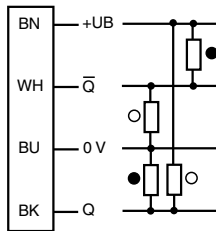
Wiring Diagrams

DC



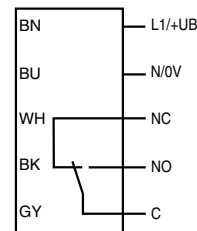
Cable Connection

RL61-55-Z/115/136



AC/DC

RLK61-55-Z/31/115



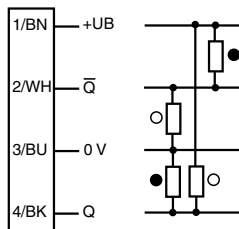
DC



Quick Disconnect

Note: Wiring diagrams show quick disconnect pin numbers.

RL61-55-Z/92/136

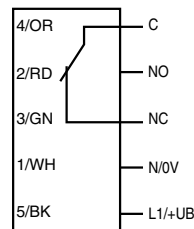


V1 Type

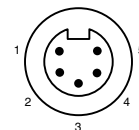


AC/DC

RLK61-55-Z/31/135



V95 Type



○ = Light on
 ● = Dark on

Series 61 Rectangular Sensors

- Ultra bright indicator LEDs
- Waterproof, protection degree IP67
- Programmable ON-delay, OFF-delay, and One-shot timers
- 4-in-1 output
- Relay output



Diffuse Mode and Diffuse Mode with Background Suppression

Technical Specifications

| | RL61-8-1000-Z/115/136 | RL61-8-1000-Z/92/136 | RL61-8-4000-Z/115/136 | RL61-8-4000-Z/92/136 | RLK61-8-1000-Z/31/115 | RLK61-8-1000-Z/31/135 | RLK61-8-4000-Z/31/115 | RLK61-8-4000-Z/31/135 | RL61-8-H-500-IR-Z/115/136 | RL61-8-H-500-IR-Z/92/136 | RL61-8-H-2000-IR-Z/115/136 | RL61-8-H-2000-IR-Z/92/136 | RLK61-8-H-500-IR-Z/31/115 | RLK61-8-H-500-IR-Z/31/135 | RLK61-8-H-2000-IR-Z/31/115 | RLK61-8-H-2000-IR-Z/31/135 |
|---------------------------------|---|----------------------|-----------------------|----------------------|-----------------------|-----------------------|-----------------------|-----------------------|---------------------------|--------------------------|----------------------------|---------------------------|---------------------------|---------------------------|----------------------------|----------------------------|
| Energetic | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • |
| Background suppression | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • |
| Timer | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • |
| Sensing range adjustment | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • |
| Light/dark switch | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • |
| Detection range | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • |
| | 0 ... 1000 mm adjustable | | | | | | | | | | | | | | | |
| | 0 ... 4000 mm adjustable | | | | | | | | | | | | | | | |
| | 20 ... 2000 mm | | • | • | | | | | | | | | | | | |
| | 20 ... 500 mm | | | | | | | | | | | | | | | |
| Reference target | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • |
| Black/White difference (6%/90%) | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • |
| | standard white 200 mm x 200 mm | | | | | | | | | | | | | | | |
| | < 10 % | | | | | | | | | | | | | | | |
| | < 40 % | | | | | | | | | | | | | | | |
| Light source | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • |
| Light type | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • |
| Ambient light limit | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • |
| | 30000 Lux | | | | | | | | | | | | | | | |
| | 5000 Lux ; according EN 60947-5-2 | | | | | | | | | | | | | | | |
| Operating display | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • |
| Function display | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • |
| | 2 LEDs green | | | | | | | | | | | | | | | |
| | 2 LEDs yellow | | | | | | | | | | | | | | | |
| | ON: object inside the scanning range | | | | | | | | | | | | | | | |
| | OFF: object outside the scanning range | | | | | | | | | | | | | | | |
| Controls | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • |
| | Light/dark switch | | | | | | | | | | | | | | | |
| | sensing range adjuster | | | | | | | | | | | | | | | |
| | Time adjuster | | | | | | | | | | | | | | | |
| Operating voltage | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • |
| | 10 ... 30 V DC | | | | | | | | | | | | | | | |
| | 24 ... 240 V AC / 12 ... 240 V DC | | | | | | | | | | | | | | | |
| No-load supply current | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • |
| Signal output | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • |
| | Relay, Form C | | | | | | | | | | | | | | | |
| | 2 Push-pull outputs, short-circuit proof, reverse polarity protection | | | | | | | | | | | | | | | |
| Switching current | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • |
| | max. 100 mA | | | | | | | | | | | | | | | |
| | max. 3 A | | | | | | | | | | | | | | | |
| Voltage drop | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • |
| Switching frequency | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • |
| | 20 Hz | | | | | | | | | | | | | | | |
| | 500 Hz | | | | | | | | | | | | | | | |
| Timer function | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • |
| | DIP-switch for selection of operating modes | | | | | | | | | | | | | | | |
| Ambient temperature | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • |
| | -40 ... 55 °C (-40 ... 131 °F) | | | | | | | | | | | | | | | |
| Protection degree | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • |
| | IP67 | | | | | | | | | | | | | | | |
| Connection | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • |
| | fixed cable | | | | | | | | | | | | | | | |
| | 7/8" - 16 UN, 5 pin quick disconnect | | | | | | | | | | | | | | | |
| | M12 connector, 4-pin | | | | | | | | | | | | | | | |
| Housing | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • |
| Optical face | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • |
| | PC (Polycarbonate) | | | | | | | | | | | | | | | |
| | PMMA | | | | | | | | | | | | | | | |
| Standards | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • |
| | EN 60947-5-2 | | | | | | | | | | | | | | | |
| | EN 50178, UL 508 | | | | | | | | | | | | | | | |
| Approvals | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • |
| | CE, cULus | | | | | | | | | | | | | | | |

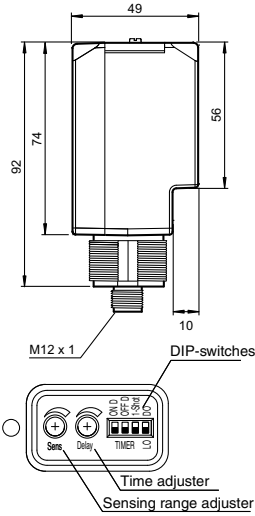
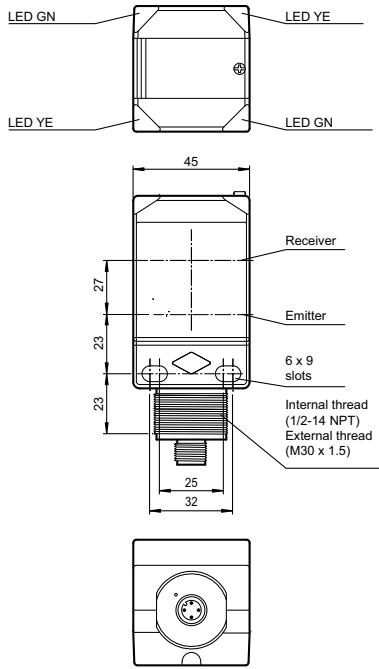


4-in-1 Output

The 4-in-1 output offers light ON and/or dark ON output(s) in which each automatically detect the connected load, so the output either sources or sinks current depending on the load. A single sensor can operate as NPN light ON, NPN dark ON, PNP light ON, or PNP dark ON, reducing inventory costs and minimizing wiring time.

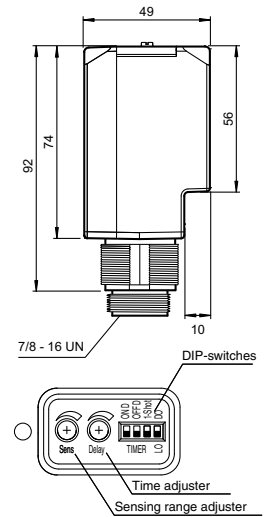
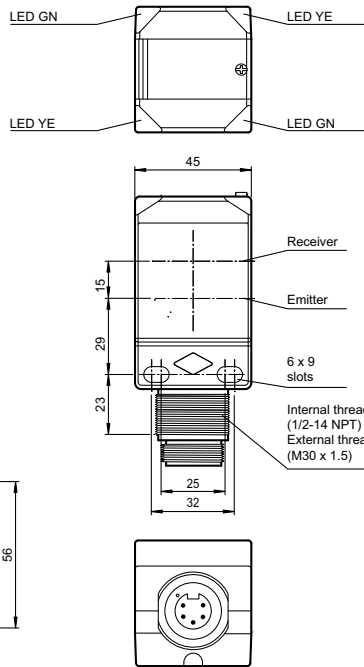
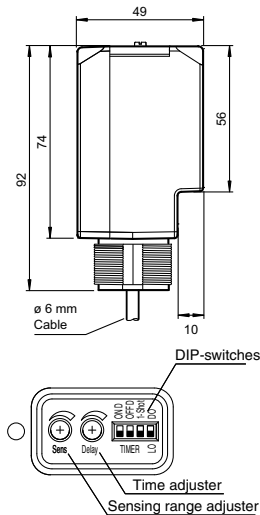
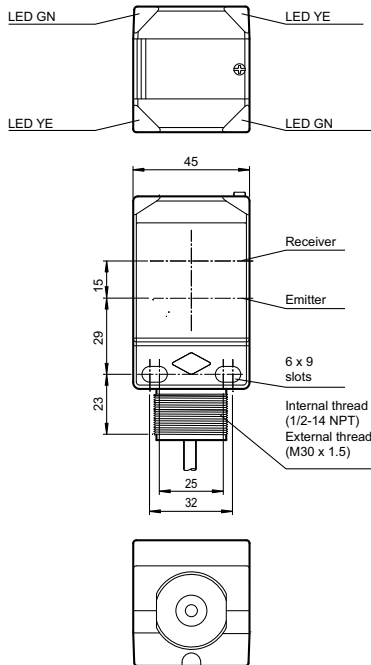
Dimensions (mm)

RL61-8-H-2000-IR-Z/92/136
 RL61-8-1000-IR-Z/92/136
 RL61-8-4000-Z/92/136
 RL61-8-H-500-IR-Z/92/136



RLK61-8-1000-Z/31/135
 RLK61-8-4000-Z/31/135
 RLK61-8-H-500-IR-Z/31/135
 RLK61-8-H-2000-IR-Z/31/135

RL61-8-1000-Z/115/136
 RL61-8-4000-Z/115/136
 RLK61-8-1000-Z/31/115
 RLK61-8-4000-Z/31/115
 RL61-8-H-500-IR-Z/115/136
 RLK61-8-H-500-IR-Z/31/115
 RL61-8-H-2000-IR-Z/115/136
 RLK61-8-H-2000-IR-Z/31/115



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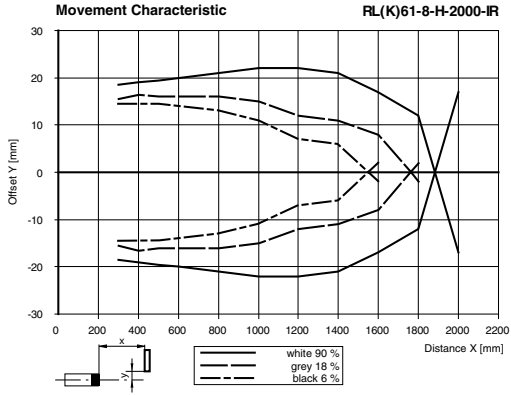
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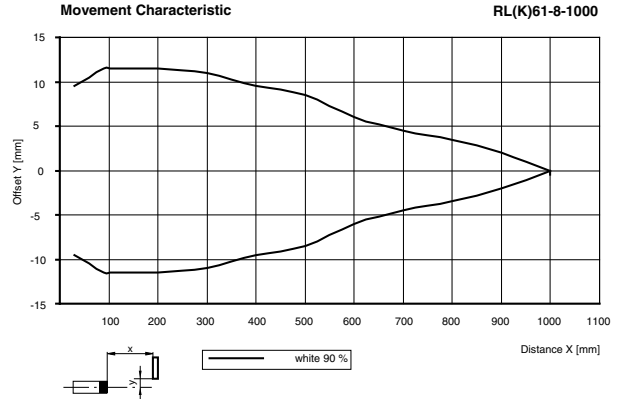
Sensing Characteristics

Photoelectric Series 61 Rectangular

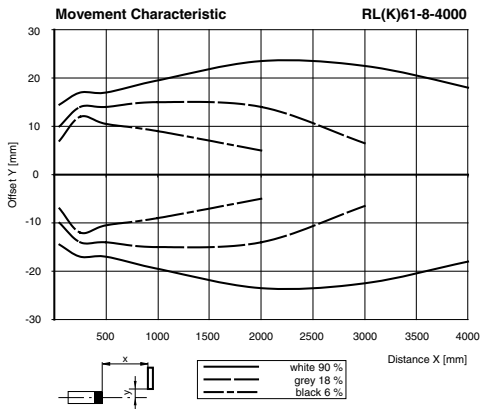
RL61-8-H-2000-IR-Z/115/136
 RL61-8-H-2000-IR-Z/92/136
 RLK61-8-H-2000-IR-Z/31/115
 RLK61-8-H-2000-IR-Z/31/135



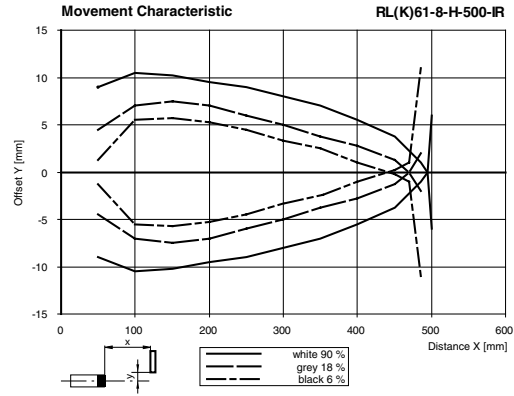
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 RLK61-8-1000-Z/31/135



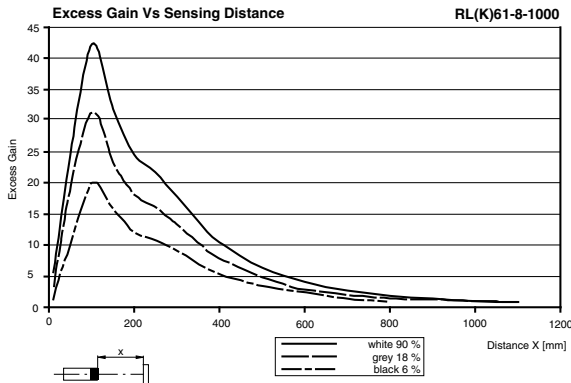
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 RLK61-8-4000-Z/31/135



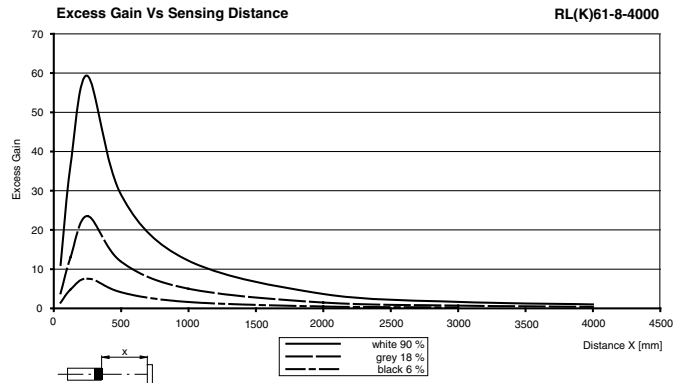
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 RLK61-8-H-500-IR-Z/31/115
 RLK61-8-H-500-IR-Z/31/135



RL61-8-1000-Z/115/136
 RL61-8-1000-Z/92/136
 RLK61-8-1000-Z/31/115
 RLK61-8-1000-Z/31/135



RL61-8-4000-Z/115/136
 RL61-8-4000-Z/92/136
 RLK61-8-4000-Z/31/115
 RLK61-8-4000-Z/31/135



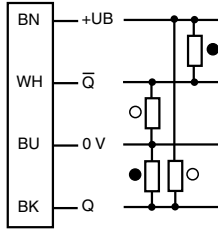
Wiring Diagrams

DC



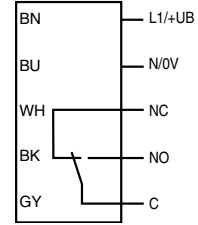
Cable Connection

RL61-8-1000-Z/115/136
 RL61-8-4000-Z/115/136
 RL61-8-H-500-Z/115/136
 RL61-8-H-2000-Z/115/136



AC/DC

RLK61-8-1000-Z/31/115
 RLK61-8-4000-Z/31/115
 RLK61-8-H-500-Z/31/115
 RLK61-8-H-2000-IR-Z/31/115



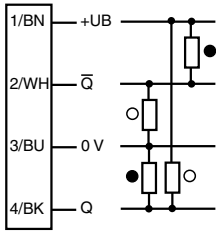
DC



Quick Disconnect

Note: Wiring diagrams show quick disconnect pin numbers.

RL61-8-1000-Z/92/136
 RL61-8-4000-Z/92/136
 RL61-8-H-500-Z/92/136
 RL61-8-H-2000-Z/92/136



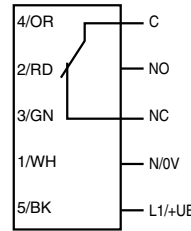
V1 Type



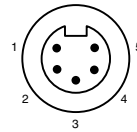
○ = Light on
 ● = Dark on

AC/DC

RLK61-8-1000-Z/31/135
 RLK61-8-4000-Z/31/135
 RLK61-8-H-500-Z/31/135
 RLK61-8-H-2000-Z/31/135



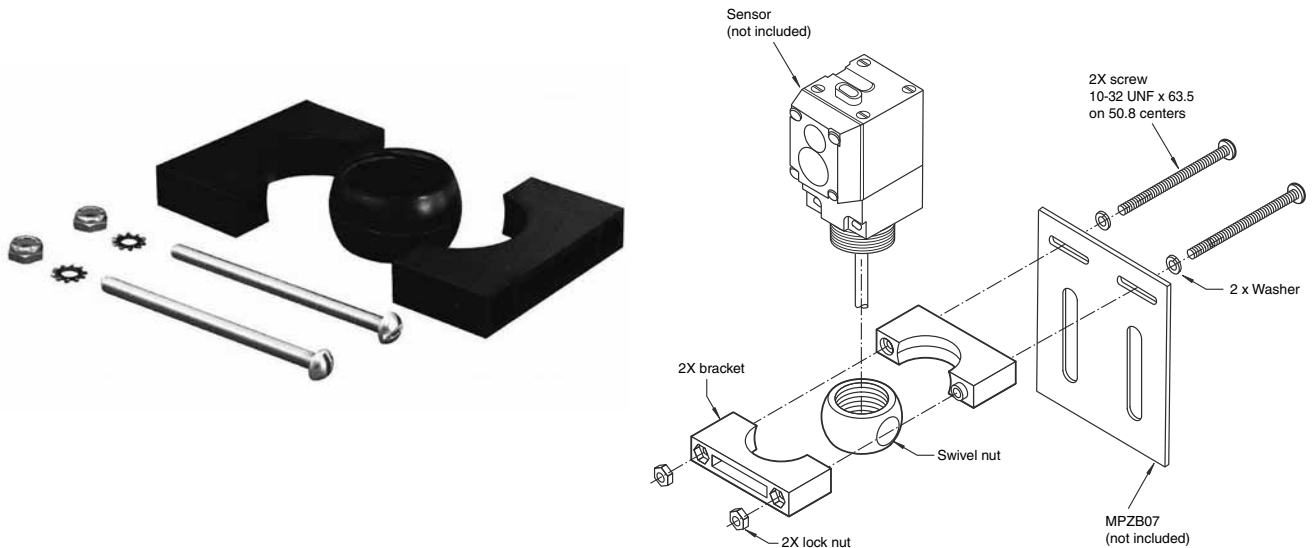
V95 Type



Accessories

(Dimensions in mm)

MPZB06



See pages 1009-1076 for cordsets



See pages 915-932 for reflectors



See pages 1105-1128 for accessories

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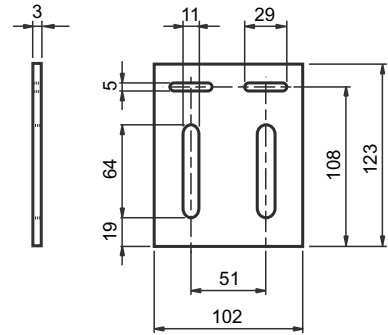
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Accessories

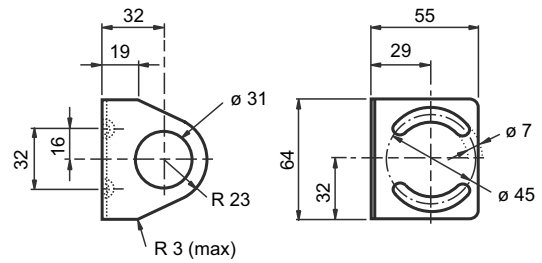
(Dimensions in mm)

Photoelectric Series 61 Rectangular

MPZB07



MPZB02



MPZB01

