# Photoelectric Sensor

RoHS Compliant



## Description

These series comprises compact, long-range photoelectric sensors for industrial object detection. The range includes through-beam, retro-reflective and polarised retro-reflective versions, with relay or NPN transistor outputs and dedicated light-on or dark-on model variants. The manufacturer specifies IP67 protection, high noise immunity and high ambient-light immunity.

## Features

- 10 to 30V DC supply
- Through-beam sensing up to 80m
- Retro-reflective sensing up to 12m
- Polarised retro-reflective sensing up to 10m
- Relay or NPN transistor output
- Light-on and dark-on versions
- IP67 housing
- Reverse-polarity protection
- NPN output short-circuit protection

## Specifications

| | |
|---|---|
| Power supply | : 10 to 30V DC |
| Minimum detectable object | : Opaque object, 50 mm diameter |
| Ambient-light immunity | : Sunlight: >30,000 lx; lamp light: >10,000 lx |
| Noise immunity | : 2 kV / 1 us |
| EMC immunity | : ESD: 8 kV air discharge (Level 3), EN 61000-4-2; RF interference: 10 V/m, ENV 50140; burst test: 2 kV, EN 61000-4-4 |
| Dielectric strength | : 2.5 kV for 1 minute minimum |
| Insulation resistance | : 100 megohms at 500V DC |
| Vibration resistance | : 10 to 55 Hz, 1.5 mm; 2 hours in X, Y and Z directions |
| Housing / lens | : ABS, 94V-0 stated / PMMA |
| Degree of protection | : IP67 |
| Cable | : 5mm diameter; 0.5 m or 2 m |
| Operating temperature / humidity | : -25C to +80C; 35% to 85% RH |

## Product range overview

| Sensing principle | K3 series | P3 series |
|---|---|---|
| Through-beam | 10 m, 30 m, 40 m, 60 m and 80 m | 10 m, 30 m, 40 m, 60 m and 80 m |
| Retro-reflective | 10 m with MR-1 | 12 m with MR-3 |
| Polarised retro-reflective | 8 m with MR-1 | 10 m with MR-3 |
| Output options | Relay or NPN | Relay or NPN |
| Operating function | Light-on or dark-on model variants | Light-on or dark-on model variants |

## Output Specifications

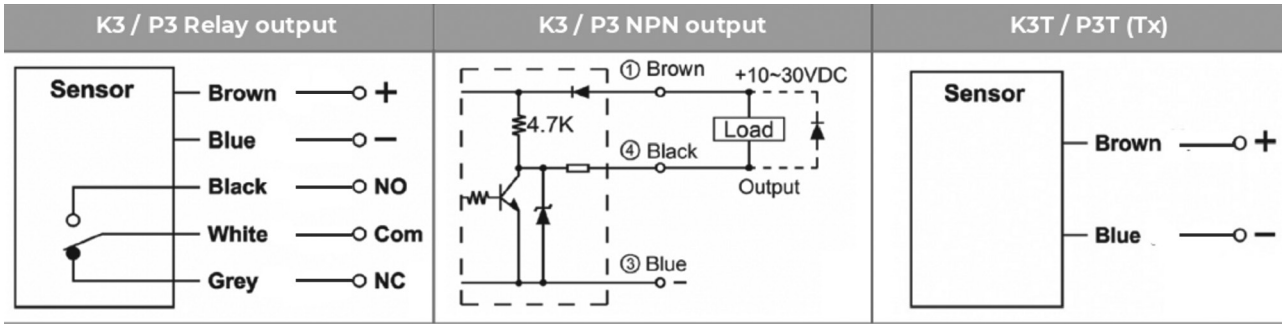
| Specification | Relay output | NPN transistor output |
|---|---|---|
| Current consumption | Transmitter: 10mA max.; receiver: 40mA max. | Transmitter: 10 mA max.; receiver: 30 mA max. |
| Response time | 15ms max. | 5ms max. |
| Output rating | Contact rating: 2 A at 30V DC max. | 100mA max. |
| Relay life | Mechanical: 1 x 10^8 operations min.; electrical: $5 \times 10^5$ operations min. at 1A, 30V DC | Not applicable |
| Protection circuit | Reverse-polarity protection | Reverse-polarity and output short-circuit protection |

## Connection identification

| Version | Wire identification |
|---|---|
| Through-beam transmitter | Brown: +V; Blue: 0 V |
| NPN output | Brown: +V; Blue: 0 V; Black: NPN output |
| Relay output | Brown: +V; Blue: 0 V; White: COM; Black: NO; Grey: NC |

| Series / type | Model | Function | Output | Rating | Range / reflector |
|---|---|---|---|---|---|
| K3 polarised retro-reflective | MP-K3G-8MRE | Dark-on | Relay | 2 A / 30 V DC | 8 m with MR-1 |
| | MP-K3G-8MRBE | Light-on | Relay | 2 A / 30 V DC | 8 m with MR-1 |
| P3 polarised retro-reflective | MP-P3G-10MNE | Dark-on | NPN | 100 mA | 10 m with MR-3 |
| | MP-P3G-10MNBE | Light-on | NPN | 100 mA | 10 m with MR-3 |

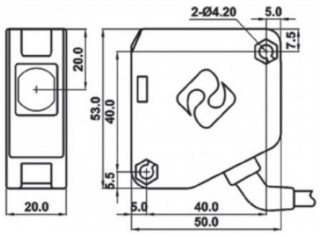
## Connection diagrams



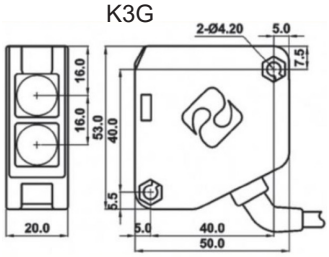

Dimensions : Millimetres

## Diagram

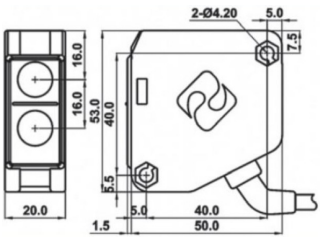
K3T



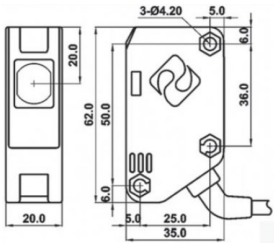

K3G



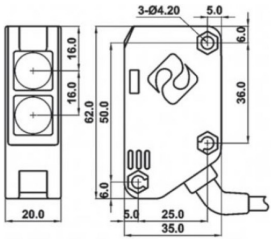

K3G-E



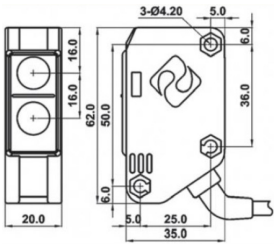

P3T



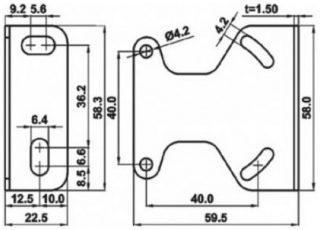

P3G



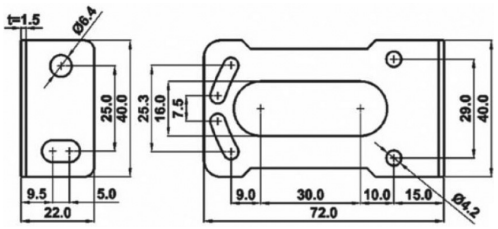

P3G-E



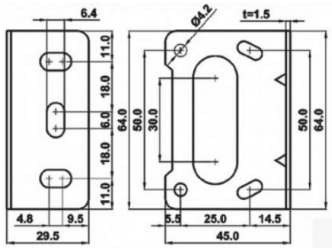

K3-BR-1 (Standard)



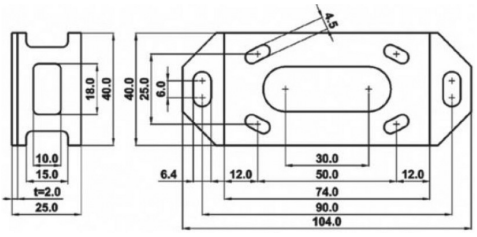

P3-BR-1 (Standard)




P3-BR-2 (Optiioned)




P3-BR-3 (Optioned)




Dimensions : Millimetres

## Installation and safety

- Confirm the correct supply voltage before energising the sensor.
- Avoid direct exposure to fluorescent lamps or sunlight where this could cause malfunction.
- Do not use the sensor in oil-rich or chemically aggressive environments unless suitability has been confirmed.
- Do not clean the sensor with organic solvents, thinners, strong alkalis or acids.
- These products are not designed for personnel-safety protection and must not be used as safety devices.

## Part Number Table

| Description | Part Number |
|---|---|
| Photoelectric Sensor, Dark On, 2A, 30V DC, 8m | MP-K3G-8MRE |
| Photoelectric Sensor, Light On, 2A, 30V DC, 8m | MP-K3G-8MRBE |
| Photoelectric Sensor, Dark On, 100mA, 10m | MP-P3G-10MNE |
| Photoelectric Sensor, Light On, 100mA, 10m | MP-P3G-10MNBE |

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