## IPRK 18      Retro-reflective photoelectric sensors with polarization filter
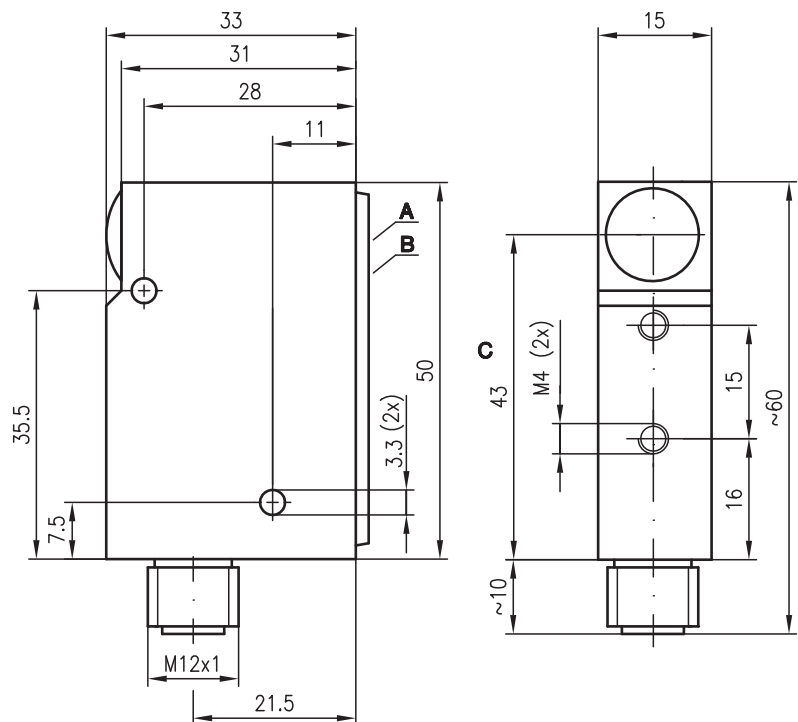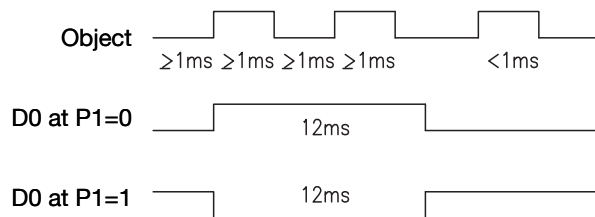
**0 … 3m**

- Polarized retro-reflective photoelectric sensor for reliable detection of transparent media (e.g. clear glass, PET, foil). The sensor uses visible red light and comes with integrated AS-i slave.
- Detection range changeover via AS-i (e. g. from clear glass to colored glass or non-transparent media) without further user intervention
- Gap detection ≥ 5mm (see table)
- autoControl warning function for increased availability and for checking the correct basic setting
- Extended switching pulse for reliable transmission via AS-interface

CE | ISO 9001 | c UL us LISTED
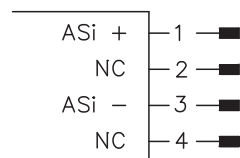
IEC 60947... | IEC 60947... | IP 69K IP 67

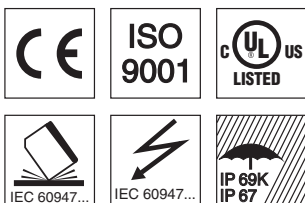### Accessories:

**(available separately)**

- Mounting system (BT 95)
- M12 connectors (KD …)
- M8 connectors (KD …)
- Reflectors
- Reflective tapes

### Dimensioned drawing



**Minimal switching pulse for IPRK 18/A.1 L.4**



A   Indicator diode
B   Sensitivity adjustment
C   Optical axis

### Electrical connection



| ASi + | 1 |
| NC | 2 |
| ASi − | 3 |
| NC | 4 |

# Specifications

### Optical data

| | |
|---|---|
| Typ. operating range limit (TK(S) 100x100) [1] | 0 … 3m |
| Operating range [2] | see tables |
| Recommended reflector | MTKS 50x50.1 |
| Light source | LED (modulated light) |
| Wavelength | 660nm (visible red light, polarized) |

### Timing

| | |
|---|---|
| Switching frequency (sensor) | according to AS-i specifications: 1000Hz internally |
| Response time (sensor) | according to AS-i specifications: 0.5ms internally |
| Delay before start-up | ≤ 300ms |

### Electrical data

| | |
|---|---|
| Operating voltage $U_B$ | 26.5V … 31.6V (according to AS-i specification) |
| Open-circuit current | ≤ 35mA |
| Sensitivity | **basic setting**: clear glass via 12-turn potentiometer<br>**changeover**: clear/colored glass/non-transparent via AS-i (D2, D3 data bits) |

### Indicators

| | |
|---|---|
| Yellow LED | **continuous light, switching output**<br>**flashing slowly, sensor identification**<br>- activation via AS-i (D2, D3 data bits) |
| Green LED | **flashing slowly, operating point 1, clear glass**<br>- manual adjustment (see remarks)<br>- activation via AS-i (D2, D3 data bits)<br>**flashing fast, operating point 2, colored glass**<br>- activation via AS-i (D2, D3 data bits)<br>**continuous light, op. point 3, opaque media**<br>- activation via AS-i (D2, D3 data bits) |

### Mechanical data

| | |
|---|---|
| Housing | diecast zinc |
| Optics cover | glass |
| Weight | 150g |
| Connection type | M12 connector, 4-pin, stainless steel |

### Environmental data

| | |
|---|---|
| Ambient temp. (operation/storage) | -20°C … +60°C/-30°C … +70°C |
| Protective circuit [3] | 2, 3 |
| VDE safety class | III |
| Protection class | IP 67, IP 69K [4] |
| LED class | 1 (acc. to EN 60825-1) |
| Standards applied | IEC 60947-5-2 |

### AS-i data

| | |
|---|---|
| I/O code | 3 |
| ID code | F |
| Address | programmed by the user in the range of 1 to 31 (default=0) |
| Cycle time acc. to AS-i specification | max. 5ms |
| AS-i standard according to profile | S-3.F |

1) Typ. operating range limit: max. attainable range without performance reserve
2) Operating range: recommended range with performance reserve
3) 2=polarity reversal protection, 3=short circuit protection for all outputs
4) IP 69K test acc. to DIN 40050 part 9 simulated, high pressure cleaning conditions without the use of additives, acids and bases are not part of the test

| Assignment: data bits | | | |
|---|---|---|---|
| **Programming (host level)** | | | |
| $D_0$ | **Switching output** | Ø no reflection | System input |
| | | 1 reflection | |
| $D_1$ | **Warning output autoControl** | Ø active | System input |
| | | 1 not active | |
| $D_2$ | **Adjusting the performance reserve** | see table | System output |
| $D_3$ | | | System output |

\* default = 1

| Assignment: parameter bits | | | |
|---|---|---|---|
| **Programming (host level)** | | | |
| $P_0$ | **NC** | Ø | System parameter |
| $P_1$ | **Light/dark switching** | Ø dark switching | System parameter |
| | | *1 light switching | |
| $P_2$ | **NC** | Ø | System parameter |
| $P_3$ | **NC** | Ø | System parameter |

## Approved purpose:

This product may only be used by qualified personnel and must only be used for the approved purpose. This sensor is not a safety sensor and is not to be used for the protection of persons.

# Order guide

| | Designation | Part no. |
|---|---|---|
| | IPRK 18/A L.4 | 50030077 |
| With 12ms pulse stretching | IPRK 18/A.1 L.4 | 50034119 |

# Tables

| | Reflectors | | Operating range |
|---|---|---|---|
| 1 | TK(S) | 100x100 | 0 … 2.4 m |
| 2 | MTKS | 50x50.1 | 0 … 2.0 m |
| 3 | TK(S) | 30x50 | 0 … 0.8 m |
| 4 | TK(S) | 20x40 | 0 … 0.8 m |
| 5 | Tape 6 | 50x50 | 0 … 1.8 m |

| | | | | |
|---|---|---|---|---|
| 1 | 0 | | 2.4 | 3.0 |
| 2 | 0 | | 2.0 | 2.5 |
| 3 | 0 | 0.8 | 1.0 | |
| 4 | 0 | 0.8 | 1.0 | |
| 5 | 0 | | 1.8 | 2.0 |

☐ Operating range [m] *)
▨ Typ. operating range limit [m] *)

*) For sensitivity set to operating point 3

| $D_2$ | $D_3$ | Performance reserve |
|---|---|---|
| #0 | #0 | Sensor identification |
| 1 | 0 | Parameter for clear glass |
| 0 | 1 | Parameter for colored glass |
| 1 | 1 | Parameter for opaque objects |

# Basic setting (see remarks)

| $D_2$ | $D_3$ | autoControl ($D_1$=0) |
|---|---|---|
| 0 | 0 | Incorrect basic setting |
| 1 | 0 | System misaligned |
| 0 | 1 | System misaligned |
| 1 | 1 | System misaligned |

# Diagrams



Typ. object gap (MTKS 50x50.1 at 400mm)
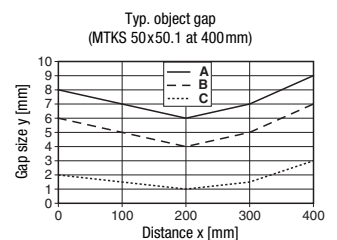
**A** Operating pt. 1
**B** Operating pt. 2
**C** Operating pt. 3
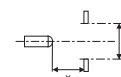


# Remarks

| Objects | Configuration (indicator green LED) |
|---|---|
| Clear glass, PET, foil | Operating pt. 1  |

- The potentiometer may only be used in basic setting (D2=0, D3=0).
- In autoControl (D1=0) clean the system and align it optimally with reflector, set a new basic setting, if required.
- Reflectors with small triple structures are required for ranges ≤ 200mm.
- The light spot may not exceed the reflector.
- Preferably use MTK(S) or tape 6.
- For foil 6 the sensor's side edge must be aligned parallel to the side edge of the reflective tape.