



## LS 96

## Throughbeam photoelectric sensors



**39m**  
**65m**



- Throughbeam photoelectric sensors with high performance reserve in visible red light or infrared light
- Robust metal housing with glass cover or plastic housing, protection class IP 67 for industrial application
- Complementary outputs for standard applications and a wide range of input and output variants for optimum adaptation to the application
- Multiple options with warning output, activation input, switching delays and optics heating for use at low temperatures

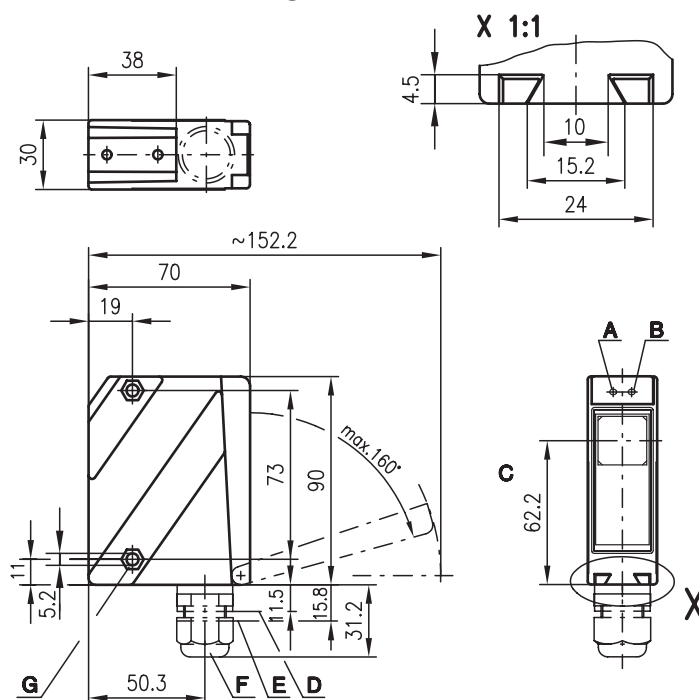


### Accessories:

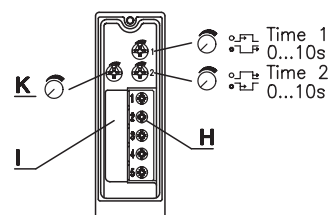
(available separately)

- Mounting systems (BT 96, BT 96.1, UMS 96, BT 450.1-96)
- M12 connectors (KD ...)
- Ready-made cables (K-D ...)
- Alignment aid ARH 96

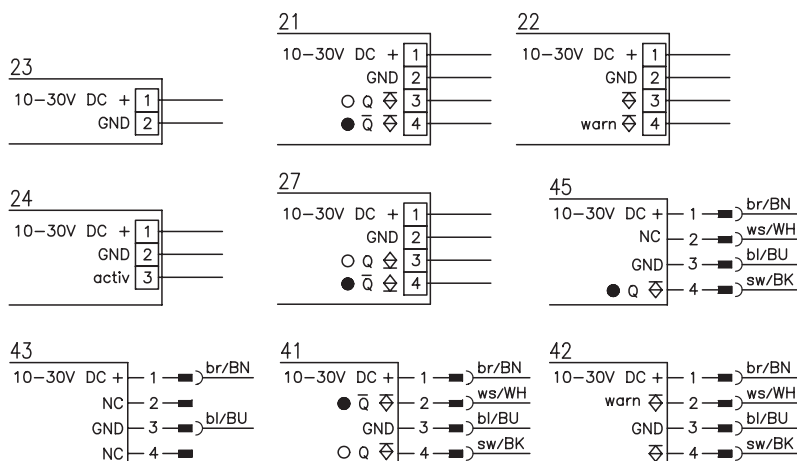
### Dimensioned drawing



- A** Indicator diode green  
**B** Indicator diode yellow  
**C** Optical axis  
**D** Device plug M12x1  
**E** Device plug M18x1  
**F** Screwed cable gland M16x1.5 for Ø 5 ... 10mm  
**G** Countersinking for SK nut M5, 4.2 deep  
**H** Connection terminals  
**I** Cable entry  
**K** Sensitivity adjustment



### Electrical connection



## Specifications

### Optical data

Typ. operating range limit <sup>1)</sup>  
Operating range <sup>2)</sup>  
Light source  
Wavelength

### Infrared light

0 ... 65m  
0 ... 50m  
LED (modulated light)  
880nm

### Red light

0 ... 39m  
0 ... 30m  
LED (modulated light)  
660nm

### Timing

Switching frequency  
Response time  
Delay before start-up

500Hz  
1 ms  
≤ 200ms

### Electrical data

Operating voltage  $U_B$   
Residual ripple  
Bias current  
Switching output  
Function characteristics  
Signal voltage high/low  
Output current  
Sensitivity

10 ... 30VDC (incl. residual ripple)  
≤ 15% of  $U_B$   
≤ 50mA, ≤ 130mA with optional optics heating  
NPN or PNP transistor  
light/dark switching  
≥ ( $U_B - 2V$ ) ≤ 2V (PNP)  
max. 100mA  
adjustable

### Indicators

LED green  
LED yellow  
LED yellow flashing

ready  
light path free  
light path free, no performance reserve

### Mechanical data

Housing  
Optics cover  
Weight  
Connection type

**Plastic housing**  
polycarbonate  
plastic  
150g  
terminals or M12 connector

### Environmental data

Ambient temp. (operation/storage)  
Protective circuit <sup>3)</sup>  
VDE safety class <sup>4)</sup>  
Protection class  
LED class  
Standards applied

-20°C ... +60°C/-40°C ... +70°C  
1, 2, 3  
II, all-insulated  
IP 67  
1 (acc. to EN 60825-1)  
IEC 60947-5-2

### Options

**Activation input** activ  
Transmitter active/not active  
Activation/disable delay  
Input resistance

≤ 2V/≥ 8V <sup>5)</sup>  
≤ 0.5ms  
47KΩ ± 10%

**Warning output autoControl** warn

**Optics heating**

**Low temperature**

**Switching delay** (slow oper./release)

PNP transistor, 100mA, counting principle  
for temperature changes, prevents fogging  
to -35°C  
0 ... 10s (separately adjustable)

- 1) Typ. operating range limit: max. attainable range without performance reserve
- 2) Operating range: recommended range with performance reserve
- 3) 1=transient protection, 2=polarity reversal protection, 3=short-circuit protection for all outputs
- 4) Rating voltage 250VAC
- 5) Active low

## Order guide

| Selection table |                               | Order code →                                                          |                                                                       |                                                                       |                                                                       |                                                                       |                                                                         |
|-----------------|-------------------------------|-----------------------------------------------------------------------|-----------------------------------------------------------------------|-----------------------------------------------------------------------|-----------------------------------------------------------------------|-----------------------------------------------------------------------|-------------------------------------------------------------------------|
| Equipment ↓     |                               | LS 96K/P-1010-4<br>Part No. 500 25254 (Tr)<br>Part No. 500 25258 (Re) | LS 96K/P-1030-2<br>Part No. 500 25255 (Tr)<br>Part No. 500 25259 (Re) | LS 96K/P-1030-4<br>Part No. 500 25254 (Tr)<br>Part No. 500 80483 (Re) | LS 96K/P-1140-2<br>Part No. 500 80657 (Tr)<br>Part No. 500 31295 (Re) | LS 96K/P-1015-4<br>Part No. 500 25254 (Tr)<br>Part No. 501 03004 (Re) | LS 96K/P-1010.1-4<br>Part No. 500 25254 (Tr)<br>Part No. 501 03218 (Re) |
| Housing         | metal                         |                                                                       |                                                                       |                                                                       |                                                                       |                                                                       |                                                                         |
|                 | plastic                       | ●                                                                     | ●                                                                     | ●                                                                     | ●                                                                     | ●                                                                     | ●                                                                       |
| Light source    | red light (30m)               |                                                                       |                                                                       |                                                                       | ●                                                                     |                                                                       |                                                                         |
|                 | infrared light (50m)          | ●                                                                     | ●                                                                     | ●                                                                     |                                                                       | ●                                                                     | ●                                                                       |
| Connection      | terminals                     |                                                                       | ●                                                                     |                                                                       | ●                                                                     |                                                                       |                                                                         |
|                 | M12 connector                 | ●                                                                     |                                                                       | ●                                                                     |                                                                       | ●                                                                     | ●                                                                       |
| Features        | switching delay               |                                                                       | ●                                                                     | ●                                                                     |                                                                       |                                                                       |                                                                         |
|                 | warning output                |                                                                       |                                                                       |                                                                       |                                                                       |                                                                       |                                                                         |
|                 | activation input              |                                                                       |                                                                       |                                                                       | ● 5)                                                                  |                                                                       |                                                                         |
|                 | PIN 2 = NC *                  |                                                                       |                                                                       |                                                                       |                                                                       | ●                                                                     | ●                                                                       |
|                 | PIN 4 = dark switching        |                                                                       |                                                                       |                                                                       |                                                                       | ●                                                                     |                                                                         |
|                 | PIN 4 = light/dark reversible |                                                                       |                                                                       |                                                                       |                                                                       |                                                                       | ●                                                                       |

## Tables

### Red light

|   |    |    |
|---|----|----|
| 0 | 30 | 39 |
|---|----|----|

### Infrared light

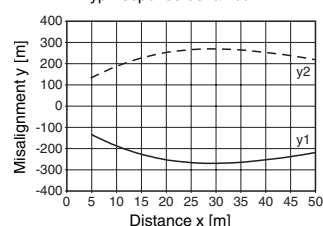
|   |    |    |
|---|----|----|
| 0 | 50 | 65 |
|---|----|----|

Operating range [m]  
Typ. operating range limit [m]

## Diagrams

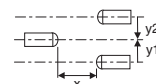
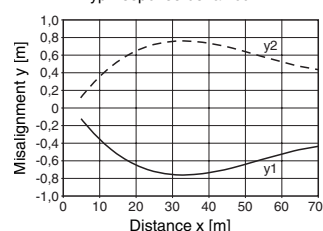
### Red light

Typ. response behaviour



### Infrared light

Typ. response behaviour



## Remarks

- The throughbeam photoelectric sensor is also available with integrated AS-i chip for direct connection to the AS-i system.
- \*For direct connection to AS-i I/O coupling modules (LS 96K/P-1015-4 and LS 96K/P-1010.1-4)