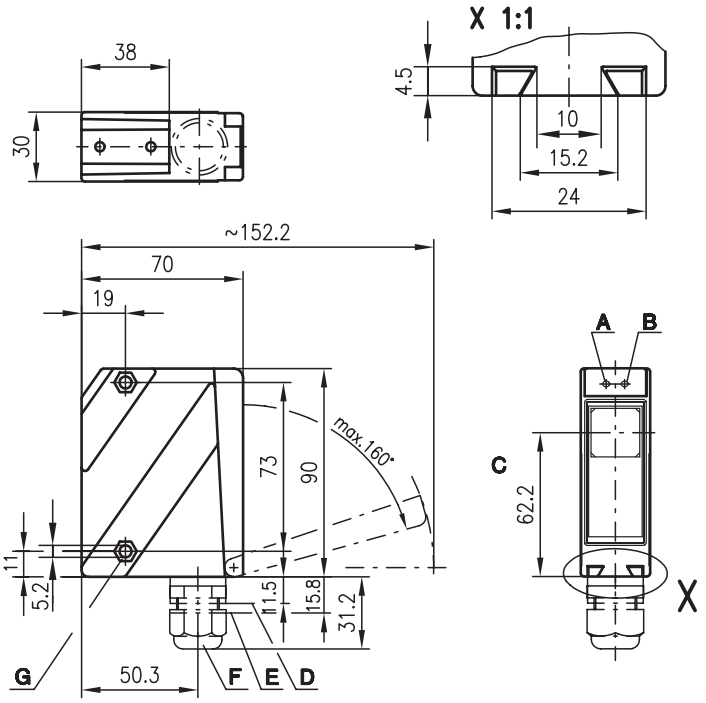
39 m
65 m

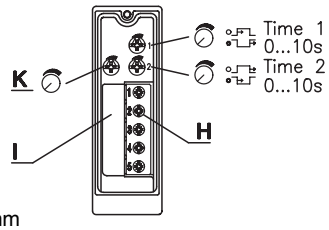
10 - 30 V DC

HF A²LS

- 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

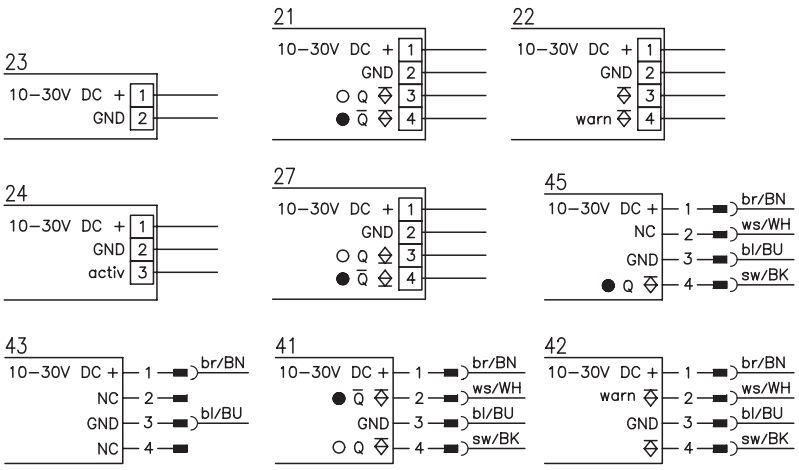
Dimensioned drawing





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 … 10 mm
G Countersinking for SK nut M5, 4.2 deep
H Connection terminals
I Cable entry
K Sensitivity adjustment

Electrical connection



IEC 60947... IEC 60947... IP 67

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

Specifications

	Infrared light	Red light
Optical data		
Typ. operating range limit [1]	0 … 65m	0 … 39m
Operating range [2]	0 … 50m	0 … 30m
Light source	LED (modulated light)	LED (modulated light)
Wavelength	880nm	660nm
Timing		
Switching frequency	500Hz	
Response time	1ms	
Delay before start-up	≤ 200ms	
Electrical data		
Operating voltage U_B	10 … 30VDC (incl. residual ripple)	
Residual ripple	≤ 15% of U_B	
Bias current	≤ 50mA, ≤ 130mA with optional optics heating	
Switching output	NPN or PNP transistor	
Function characteristics	light/dark switching	
Signal voltage high/low	≥ (U_B-2V)/≤ 2V (PNP)	
Output current	max. 100mA	
Sensitivity	adjustable	
Indicators		
LED green	ready	
LED yellow	light path free	
LED yellow flashing	light path free, no performance reserve	
Mechanical data	**Plastic housing**	
Housing	polycarbonate	
Optics cover	plastic	
Weight	150g	
Connection type	terminals or M12 connector	
Environmental data		
Ambient temp. (operation/storage)	-20°C … +60°C/-40°C … +70°C	
Protective circuit [3]	1, 2, 3	
VDE safety class [4]	II, all-insulated	
Protection class	IP 67	
LED class	1 (acc. to EN 60825-1)	
Standards applied	IEC 60947-5-2	
Options		
Activation input activ		
Transmitter active/not active	≤ 2V/≥ 8V [5]	
Activation/disable delay	≤ 0.5ms	
Input resistance	47KΩ ± 10%	
Warning output autoControl warn	PNP transistor, 100mA, counting principle	
Optics heating	for temperature changes, prevents fogging	
Low temperature	to -35°C	
Switching delay (slow oper./release)	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 Equipment ↓	Order code →	LS 96K/P-1010-4 Part No. 500 25254 (Tr) Part No. 500 25258 (Re)	LS 96K/P-1030-2 Part No. 500 25255 (Tr) Part No. 500 25259 (Re)	LS 96K/P-1030-4 Part No. 500 25254 (Tr) Part No. 500 80483 (Re)	LS 96K/P-1140-2 Part No. 500 80657 (Tr) Part No. 500 31295 (Re)	LS 96K/P-1015-4 Part No. 500 25254 (Tr) Part No. 501 03004 (Re)	LS 96K/P-1010.1-4 Part No. 500 25254 (Tr) 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

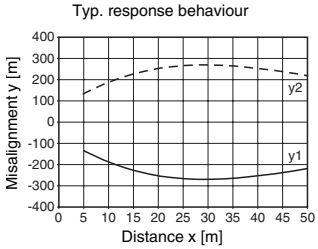
Infrared light

0	50	65

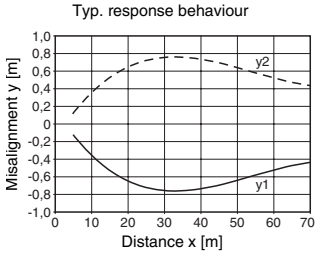
Operating range [m]
Typ. operating range limit [m]

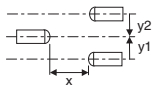
Diagrams

Red light



Infrared light





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)