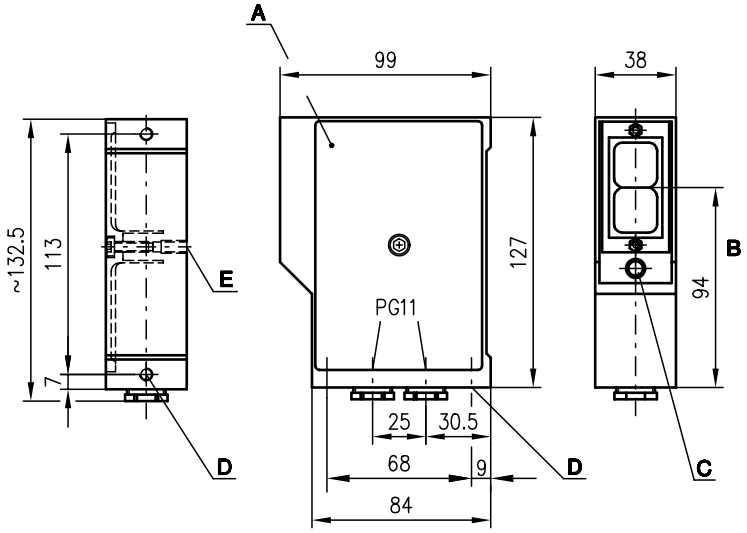
LS 78 — Throughbeam photoelectric sensors

180m

10 - 30 V DC

- Voltage ranges from 12 … 30VDC and 11 … 30VDC with NPN, PNP and/or relay outputs
- Light/dark switching in each device
- Universal connection via terminals
- Additional plug-in time module
- Special type with activation input
- Integrated optics heating

Dimensioned drawing

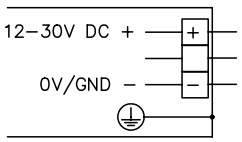


A Removable lid • cheese head screw DIN 6912 M5x16 (machined)
B Optical axis
C Indicator diodes
D Device fixture M6x9
E Device fixture M6x12

Electrical connection

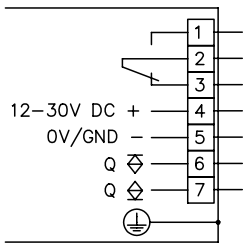
Transmitter

LS 78/2 SE

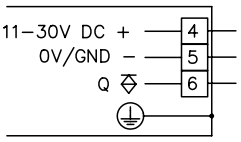


Receiver

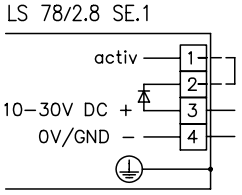
LS 78/24 RE



LS 78/4 E.1



LS 78/2.8 SE.1



1. Operation with activation: no connection between 1 and 2
2. Operation without activation: make a connection between 1 and 2

Accessories:

(available separately)

- Mounting systems (BT 16, UMS 78)
- Fastening adapter BT 08
- Diaphragm BL 04
- Time module transient pulses ZK 7810
- Time module slow operation/release ZK 7820
- Alignment aid ARH 2

Specifications

Optical data

Typ. operating range limit [1]	180m
Operating range [2]	120m
Light source	LED (modulated light)
Wavelength	880nm

Timing

Sensor switching frequency	100Hz (PNP/NPN) 20Hz (relay)
Sensor response time	5ms (PNP/NPN) approx. 25ms (relay)
Delay before start-up	≤ 200ms

Electrical data

Operating voltage U_B	12 … 30VDC, 11 … 30VDC
Power consumption	approx. 600mW (PNP/NPN) approx. 3.5VA (relay)
Residual ripple	≤ 15% of U_B
Bias current	≤ 70mA (PNP/NPN) max. 120mA (relay)
Switching output	PNP/NPN transistor output or relay
Function characteristics	Light/dark switching through sliding switch
Signal voltage high/low	≥ (U_B-2V)/≤ 2V (PNP/NPN)
Output current	max. 100mA (PNP/NPN)
Switching voltage, relay	max. 240VAC with resistive load
Switching current, relay	max. 2.5AAC with resistive load

Indicators

LED red	light path interrupted
LED green	light path free (for LS78/4 E.1, LS78/74R)
LED yellow	transmitter ready (for LS78/2.8SE.1)

Mechanical data

Housing	diecast aluminium
Weight	transmitter 600g, receiver 600g
Optics	glass lens
Connection type	screw terminals

Environmental data

Ambient temp. (operation/storage) [3]	-20°C … +60°C/-30°C …+70°C
Protective circuit [4]	1, 2, 3
VDE safety class	I, all-insulated
Protection class	IP 65
LED class	1 (acc. to EN 60825-1)
Standards applied	IEC 60947-5-2

Options

Activation input activ	
Transmitter active/not active	≥ 8V/≤ 2V or not connected
Activation/disable delay	≤ 400µs
Input resistance	4.7kΩ ± 10%
De-humidifying system	to prevent condensation on the optics due to temperature changes

1) Typ. operating range limit: max. attainable range without performance reserve
2) Operating range: recommended range with performance reserve
3) -30°C with operating voltage continuously applied
4) 1=transient protection, 2=polarity reversal protection, 3=short circuit protection

Order guide

Selection table **Equipment ↓**	**Order code →**	**LS 78/24 R** Part No. 500 00229 (Tr) Part No. 500 06684 (Re)	**LS 78/4.8.1** Part No. 500 20617 (Tr) Part No. 500 20618 (Re)				
Housing	metal	●	●				
Operating range	120m	●	●				
Connection	terminals	●	●				
Features							
Voltage supply	12 … 30VDC	●					
	11 … 30VDC		●				
Switching output	NPN	●					
	PNP	●	●				
	relay	●	●				
Activation input			●				
Integrated time module							
Time modules ZK 7810, ZK 7820 retrofittable		●	●				

Tables

Diagrams

Remarks

The standard devices (see table) are expandable through plug-in time modules:

- Time module ZK 7810 (transient pulses), slow operation and pulse length adjustable from 0.1s … 5s.
- Time module ZK 7820 (slow operation and release), slow operation and release separately adjustable from 0.2s … 10s.

See figure for adjustment: