



LS 78

Throughbeam photoelectric sensors

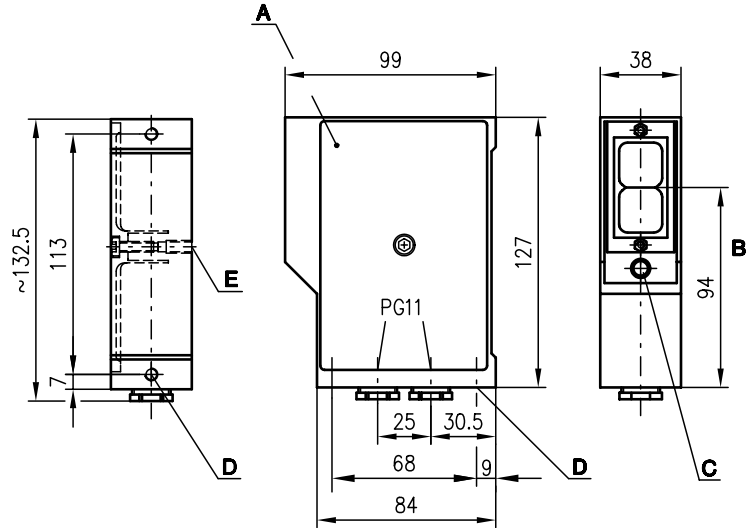


180m

10 - 30 V
DC

- Voltage range from 12 ... 30VDC with NPN, PNP and/or relay outputs
- Light/dark switching
- Universal connection via terminals
- Additional plug-in time module
- Integrated optics heating

Dimensioned drawing

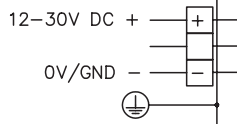


- A Removable lid • cheese head screw DIN 6912 M5x16 (machined)
- B Optical axis
- C Indicator diodes
- D Device fixture M6x9
- E Device fixture M6x12

Electrical connection

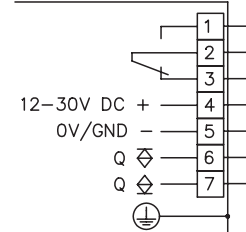
Transmitter

LS 78/2 SE



Receiver

LS 78/24 RE



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

We reserve the right to make changes • 78_a01e.fm



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	5 ms (PNP/NPN) approx. 25ms (relay)
Delay before start-up	≤ 200ms

Electrical data

Operating voltage U _B	12 ... 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

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

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

	Designation	Part No.
Transmitter and receiver	LS 78/24 R	
Transmitter	LS 78/2 SE	500 00229
Receiver	LS 78/24 RE	500 06684

Tables

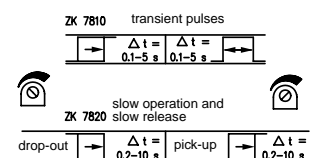
Diagrams

Remarks

The standard devices 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:



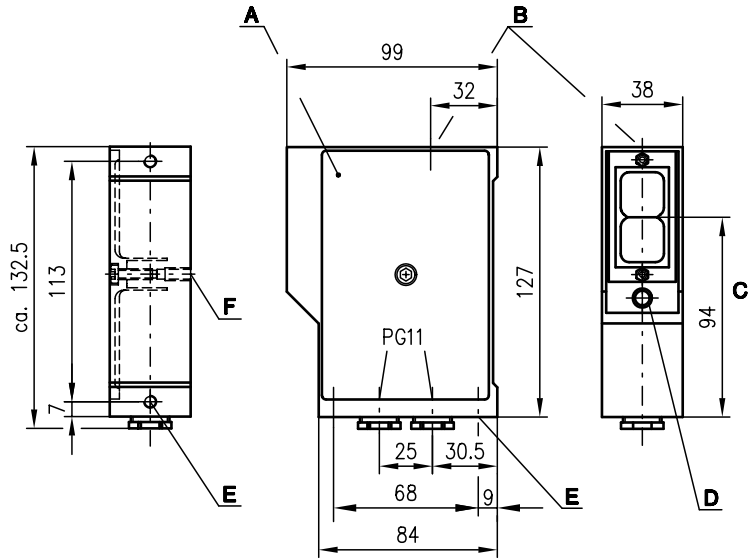


RK 78

Energetic diffuse reflection light scanner



Dimensioned drawing



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

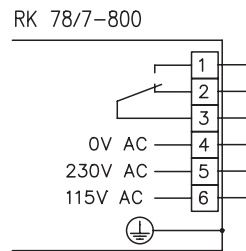


0 ... 0.8m



- AC voltage 115/230V
- Relay output
- Light/dark switching
- Universal connection via terminals
- Additional plug-in time module

Electrical connection



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 and release ZK 7820
- Alignment aid ARH 2

We reserve the right to make changes • 78_c01e.fm



Specifications

Optical data

Scanning range (white 90%) ¹⁾	0 ... 800mm
Adjustment range	5 ... 100%
Light source	LED (modulated light)
Wavelength	880nm

Timing

Sensor switching frequency	20Hz
Sensor response time	approx. 25ms
Delay before start-up	≤ 200ms

Electrical data

Operating voltage U _B	115/230VAC
Power consumption	approx. 3.5VA
Residual ripple	≤ 15% of U _B
Bias current	max. 120mA
Switching output	relay: 1 change-over contact
Function characteristics	Light/dark switching through sliding switch
Switching voltage, relay	max. 240VAC with resistive load
Switching current, relay	max. 2.5AAC with resistive load

Indicators

LED red	light path interrupted
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Mechanical data

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

Environmental data

Ambient temp. (operation/storage) ²⁾	-20°C ... +60°C/-30°C ...+70°C
Protective circuit ³⁾	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

De-humidifying system	to prevent condensation on the optics due to temperature changes
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- 1) Scanning range: recommended range with performance reserve
- 2) -30°C with operating voltage continuously applied
- 3) 1=transient protection, 2=polarity reversal protection, 3=short circuit protection

Tables

Diagrams

Order guide

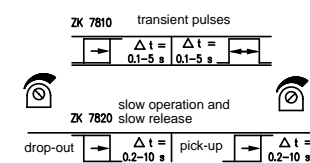
	Designation	Part No.
Energetic diffuse reflection light scanner	RK 78/7-800	500 00452

Remarks

The standard devices are expandable through plug-in time modules:

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

See figure for adjustment:





SLS 78

Protective throughbeam photoelectric sensors



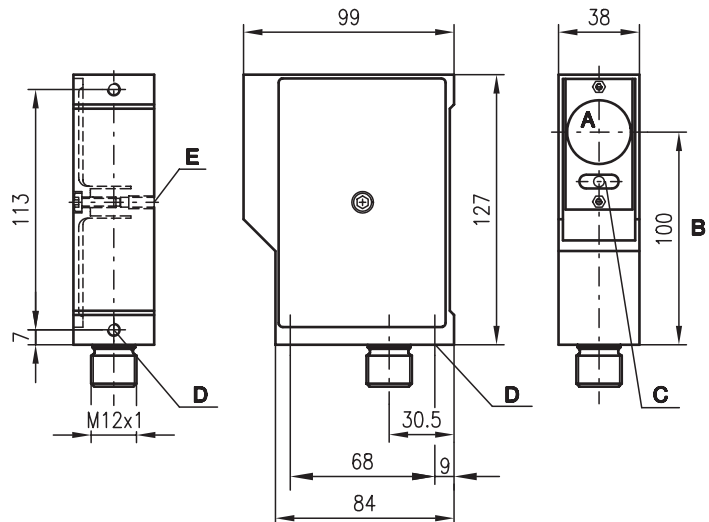
Dimensioned drawing



0 ... 150m



- Activation input for testing and interlinking
- Connection via M12 connector
- Integrated optics heating



- A Transmitter/receiver
- B Optical axis
- C Indicator diodes
- D Device fixture M6x9
- E Device fixture M6x12



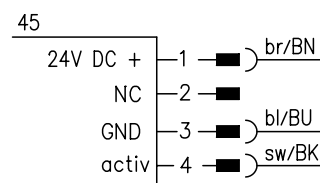
Electrical connection

Accessories:

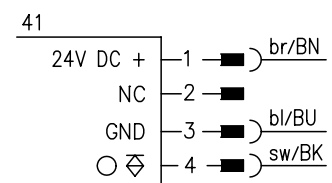
(available separately)

- Mounting systems (BT 16, UMS 78)
- Alignment aid ARH 2
- M12 connectors (KD ...)
- Test-monitoring units:
- available only from Leuze lumiflex

SLSS 78M-1720-T2-45



SLSE 78 M/P-1730-T2-41





Specifications

Optical data

Typ. operating range limit ¹⁾	0 ... 150m
Operating range ²⁾	0 ... 120m
Light source	LED (modulated light)
Wavelength	880nm

Timing

Switching frequency	300Hz
Response time	1.7ms
Delay before start-up	≤ 200ms
Input pulse	min. 1.7ms

Electrical data

Operating voltage U_B	24VDC ± 20%
Residual ripple	≤ 15% of U_B
Bias current	receiver ≤ 35mA transmitter ≤ 60mA
Switching output	PNP transistor output
Function characteristics	light switching
Signal voltage high/low	≥ ($U_B - 2V$) / ≤ 2V
Output current	max. 200mA

Indicators

Receiver

LED red	light path interrupted
LED green	light path free
LED green flashing	light path free, no performance reserve

Transmitter

LED yellow	transmitter ON
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Mechanical data

Housing	diecast aluminium
Optics	glass, eff. angle of radiation ± 4° acc. to prEN 50100-2
Weight	463g
Connection type	M12 connector, 4-pin

Environmental data

Ambient temp. (operation/storage)	-25°C ... +60°C / -30°C ... +70°C
VDE safety class	III
Protective circuit ³⁾	1, 2, 3
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%

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

Order guide

	Designation	Part No.
Transmitter and receiver	SLS 78M/P-1730-T2-4	
Transmitter	SLSS 78M-1720-T2-45	500 29536
Receiver	SLSE 78 M/P-1730-T2-41	500 80323

Tables

Diagrams

Remarks

The protective throughbeam photoelectric sensor is a contactless active protective device only in connection with a safety-relevant control system, in which the cyclical testing of transmitter and receiver is carried out according to EN 61496-1, category 2 (testing).

The power supply unit used to operate the photoelectric sensor has to be able to compensate for changes and interruptions of the supply voltage acc. to EN 61496-1. Minimum blackening object: Ø30mm.



LS 78

Throughbeam photoelectric sensors



180m



- AC voltage 115/230V and 24/48V
- Light/dark switching
- Universal connection via terminals
- Additional plug-in time module

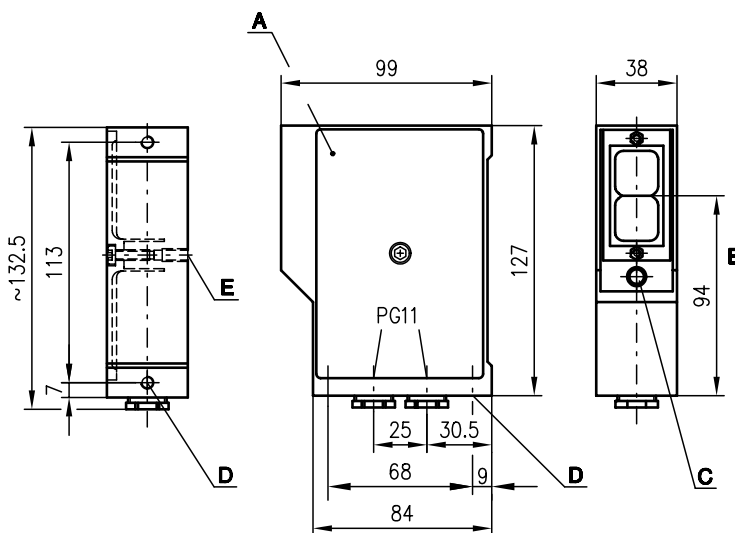


Accessories:

(available separately)

- Mounting systems (BT 16, UMS 78)
- Alignment aid ARH 2
- Test monitoring unit:
 - TNT 32 (Part No. 500 20476)
 - TNT 33 (Part No. 500 28158)
 - TNT 34 (Part No. 500 81023)

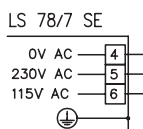
Dimensioned drawing



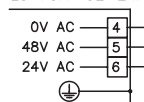
- A** Removable lid • cheese head screw DIN 6912 M5x16 (machined)
- B** Optical axis
- C** Indicator diodes
- D** Device fixture M6x9
- E** Device fixture M6x12

Electrical connection

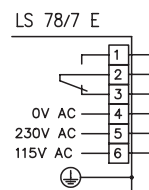
Transmitter



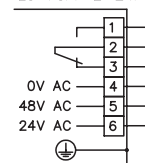
LS 78/7 SE-24/48V



Receiver



LS 78/7 E-24/48V





Specifications

Optical data

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

Timing

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

Electrical data

Operating voltage U _B	115/230VAC, 24/48VAC
Power consumption	approx. 3.5VA (relay)
Bias current	max. 120mA (relay)
Switching output	relay: 1 change-over contact
Function characteristics	Light/dark switching through sliding switch
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

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

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		Order code →					
Equipment ↓		LS 7817 Part No. 500 00235 (Tr) Part No. 500 00240 (Re)	LS 7817 24/48 V Part No. 500 25233 (Tr) Part No. 500 25232 (Re)				
Housing	metal	●	●				
Typ. operating range limit	180m	●	●				
Connection	terminals	●	●				
Features							
Voltage supply	115/230VAC	●					
	24/48VAC		●				
Switching output	relay	●	●				
Time modules ZK 7810, ZK 7820 retrofittable		●	●				

Tables

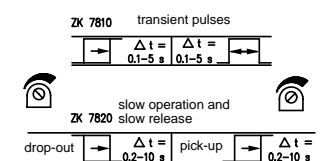
Diagrams

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 0.1 s ... 5s.
- Time module ZK 7820 (slow operation and release), slow operation and release separately adjustable from 0.2s ... 10s.

See figure for adjustment:



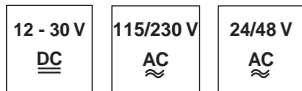


FRK 78

Diffuse reflection light scanner with background suppression



50 ... 800 mm



- With PNP switching output and/or relay outputs
- Light/dark switching in each device
- Universal connection via terminals
- Additional plug-in time module

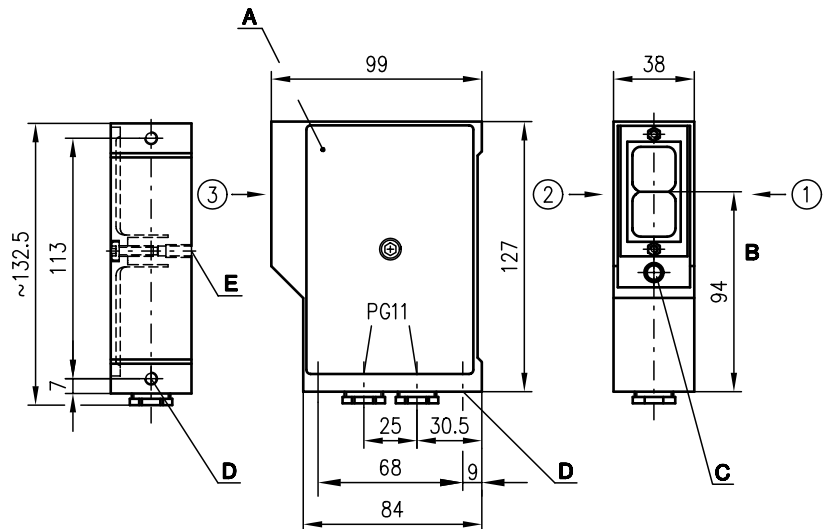


Accessories:

(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 and release ZK 7820
- Alignment aid ARH 2

Dimensioned drawing

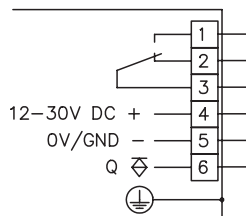


- A** Removable lid • cheese head screw DIN 6912 M5x16 (machined)
- B** Optical axis
- C** Indicator diodes
- D** Device fixture M6x9
- E** Device fixture M6x12

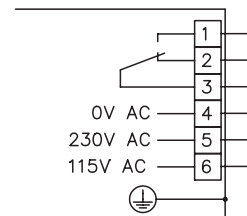
Preferred entry direction for objects ① + ② + ③

Electrical connection

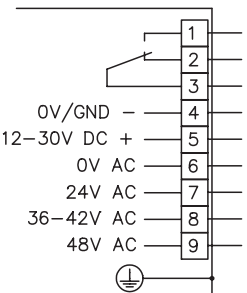
FRK 78/4 R-800



FRK 78/7-800



FRK 78/7-800-24-48V





Specifications

Optical data

Scanning range ¹⁾	50 ... 800mm
Adjustment range	140 ... 1000mm
Light source	LED (modulated light)
Wavelength	880nm

Timing

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

Electrical data

Operating voltage U_B	12 ... 30VDC, 115/230VAC, 24/48VAC
Power consumption	approx. 600mW (PNP) approx. 3.5VA (relay)
Residual ripple	≤ 15% of U_B
Bias current	≤ 70mA (PNP / NPN) max. 120mA (relay)
Switching output	PNP transistor output, relay: 1 change-over contact
Function characteristics	Light/dark switching through sliding switch
Signal voltage high/low	$\geq (U_B - 2V) \leq 2V$ (PNP)
Output current	max. 100mA (PNP)
Switching voltage, relay	max. 240VAC with resistive load
Switching current, relay	max. 2.5AAC with resistive load

Indicators

LED red	light path interrupted
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Mechanical data

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

Environmental data

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

Options

De-humidifying system	to prevent condensation on the optics due to temperature changes
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- 1) Scanning range: adjustable through spindle drive inside the housing
- 2) -30°C with operating voltage continuously applied
- 3) 1=transient protection, 2=polarity reversal protection, 3=short circuit protection
- 4) Rating voltage 250VAC

Order guide

Selection table		Order code →								
Equipment ↓		FRK 78/4 R-800 Part No. 500 00590	FRK 78/7-800 Part No. 500 00591	FRK 78/7-800-24-48 V Part No. 500 00365						
Housing	metal	●	●	●						
Scanning range	800mm	●	●	●						
Connection	terminals	●	●	●						
Features										
Voltage supply	12 ... 30VDC	●		●						
	115/230VAC		●							
	24/48VAC			●						
Switching output	PNP	●								
	relay	●	●	●						
Time modules ZK 7810, ZK 7820 retrofitable		●	●	●						

Tables

Diagrams

Remarks

Operation without relay through splitting of bridge "B" (FRK 78/4 R-800).

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 0.1 s ... 5s.
- Time module ZK 7820 (slow operation and release), slow operation and release separately adjustable from 0.2s ... 10s.

See figure for adjustment:

