MINITIMER, MULTITIMER
Timer
RK 7813, RK 7814, RK 7815, RK 7816, RK 7817

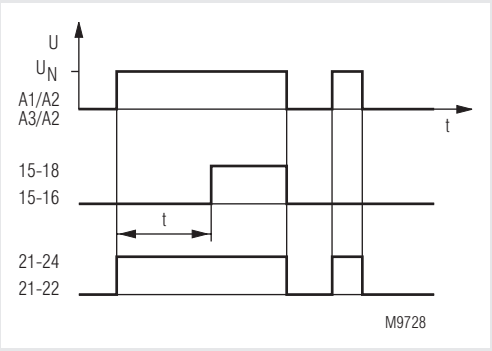
0257876


RK 7813, RK 7815, RK 7816

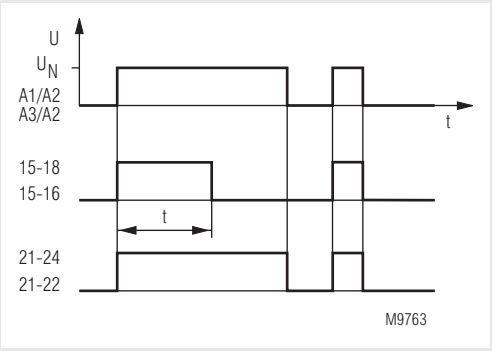

RK 7814


RK 7817

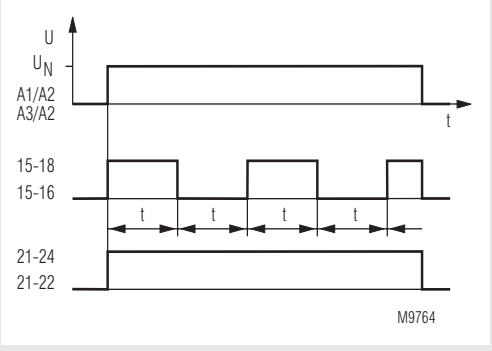
Function Diagrams



RK 7813, RK 7814



RK 7815



RK 7816

Your Advantages
- Timers in compact design enclosures for consumer units
  - timer RK 7813 on delayed
  - multi range time relay RK 7814 on delayed
  - fleeting action relay RK 7815
  - flusher relay RK 7816
  - multifunction relay RK 7817 with 8 functions and adjustment aid for quick setting of long times

Features
- According to IEC/EN 61 812-1
- RK 7813, RK 7815, RK 7816: Time ranges up to 10 h
- RK 7814: 4 time ranges up to 16 h
- RK 7817: 8 time ranges adjustable from 0.02 s to 300 h via rotational switches
- LED indicator for state of contact
- Dual-voltage-version AC 230 V + AC/DC 24 V or AC 110 ... 127 V + AC/DC 24 V
- 1 changeover contact
- As option units with second changeover contact (only for voltage AC 230 V + AC/DC 24)
  - on delayed
  - as instantaneous contact
- Start with impuls only for version RK 7816
- Start with space only for version RK 7816._ _ /_10
- As option with plug in terminal blocks for exchange of devices, available
  - with screw terminals
  - with cage clamp terminals
- Width: 17.5 mm

RK 7817: Additional features
- 8 functions via rotational switches adjustable:
  - delay on energisation (AV)
  - fleeting on make (EW)
  - delayed pulse (IE)
  - flasher, start with puls (BI)
  - delay on de-energisation (RV)
  - pulse forming function (IF)
  - fleeting on break (AW)
  - delay on energisation and de-energisation (AV / RV)
- With time interruption / time adding
- Adjustment aid for quick setting of long times
- LED indicators for operation, contact position and time delay

Approvals and Marking

CE c UL us LISTED * Canada / USA

* see variants

Application

Time dependent controls

Indicators

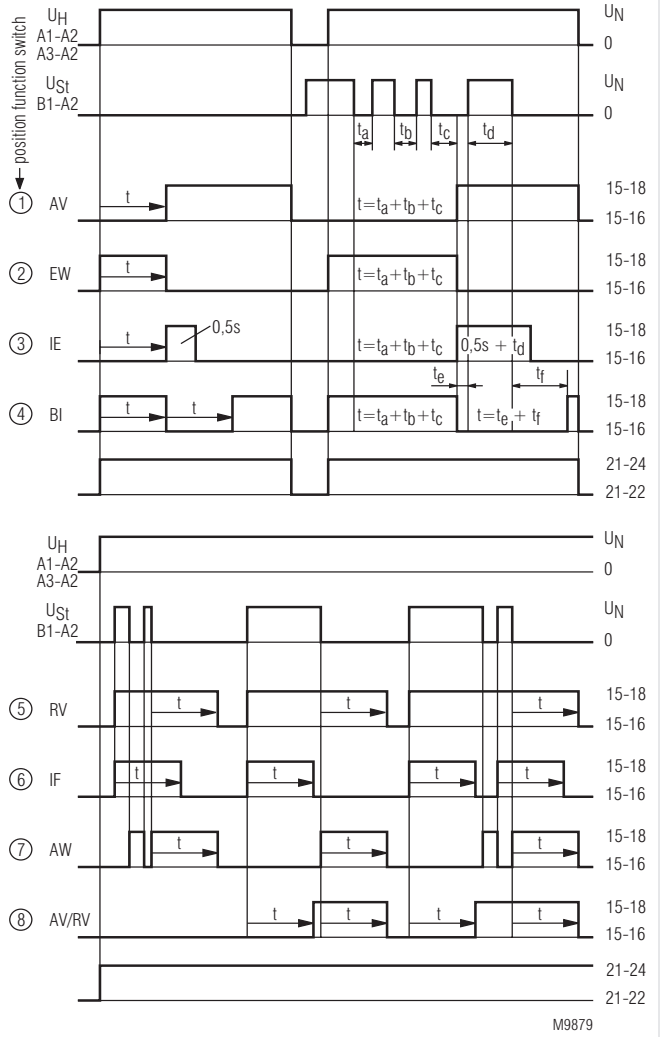
RK 7813, RK 7814, RK 7815, RK 7816

LED:	on, when corresponding output relay is active (Contact 15 - 18 closed)

RK 7817

green LED:	on, when supply connected
yellow LED "R/t":	shows status of output relay and time delay (15-16-18):
-Continuous off:	output relay not active; no time delay
-Continuous on:	output relay active no time delay
-Flashing (short on, long off)	time delay: output relay not active
-Flashing (long on, short off)	time delay: output relay active

Function Diagram

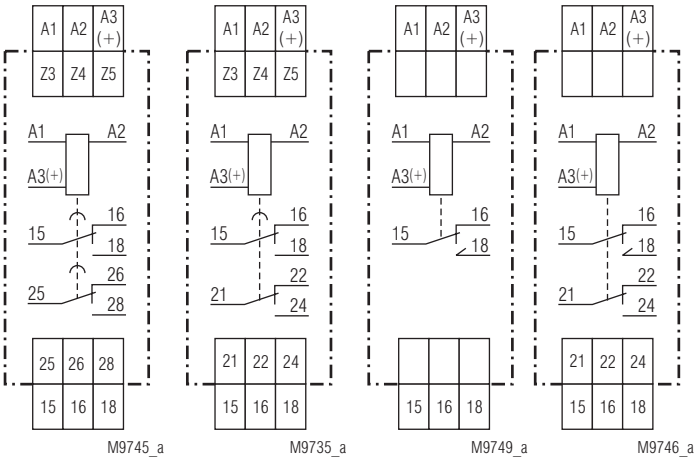


① ... ⑧ = Position of function switch

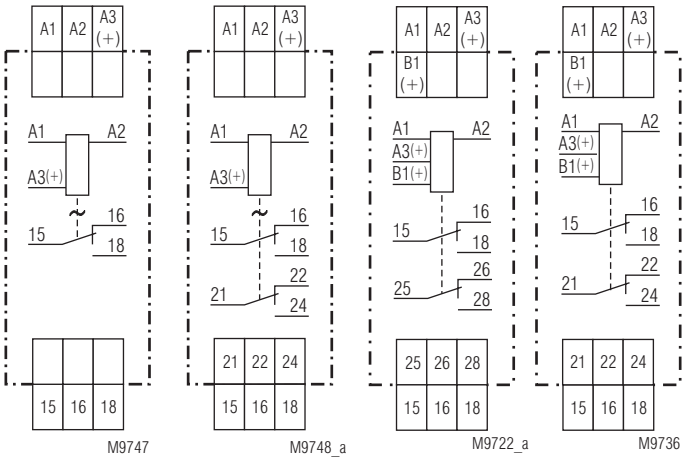
①	AV	= Delay on energisation	⑤	RV	= Delay on de-energisation
②	EW	= Fleeting on make	⑥	IF	= Pulse-forming function
③	IE	= Delayed pulse	⑦	AW	= Fleeting on break
④	BI	= Flasher, start with pusle	⑧	AV/RV	= Delay on energisation and de-energisation

RK 7817

Circuit Diagrams

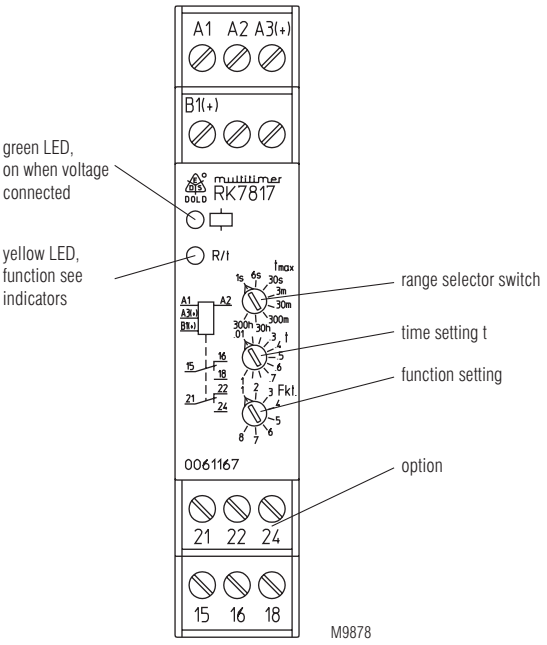


RK 7813.82 without Z3, Z4, Z5 RK 7814.82 | RK 7813.32 without Z3, Z4, Z5 RK 7814.32 | RK 7815.71 | RK 7815.77



RK 7816.81 | RK 7816.32 | RK 7817.82 | RK 7817.32

Setting RK 7817



Function- and time range setting
The function and time setting via rotary switches are enabled only when the auxiliary voltage is connected. Changing of these rotary switches while during operation does not take an effect

Adjustment assistance
The flashing period of the yellow LED is 1 s ± 4% and can be used to adjust the time. Especially on the lower end of scale and for long times it is suitable as the multiplication factors between the different time ranges are exact without tolerance.

Notes for setting of the RK 7817

Example:
The required time is 40 min. It has to be adjusted within the range 3 ... 300 min. The time check takes too long as several timing cycles would be necessary for a precise value.

For faster adjustment the setting is made to 0.03 ... 3 min. On this range the potentiometer should be set to 0.4 min (= 24 sec). With the right potentiometer setting the LED must show 24 flashing cycles. After that the time range is switched over to 3 ... 300 min and the setting is complete.

Time interruption / Time adding
The timing cycle can be interrupted by controlling input B1 (+) with control voltage. Removing the control signal will continue the timing cycle (time addition).

Control input B1
The control input B1 (+) has to be supplied with voltage against A2 with the functions RV, IF, AW, AV / RV. The control signal could be the same as the auxiliary/control voltage of A1 and A3 or any other voltage between 12 and 240 V AC or DC. Operating a parallel load between B1 and A2 is also possible.

If with function IF the inputs A1 and B1 are controlled simultaneously a pulse with the adjusted length is started.

Technical Data

Time circuit

Time ranges

RK 7813, RK 7815, RK 7816:	0,1	... 1	s	1,0	... 10	min
	1,0	... 10	s	10	... 100	min
	10	... 100	s	1	... 10	h

Time ranges
RK 7814: 4 time ranges are settable via terminals Z3-Z4-Z5

Bridge Z3 Z4 Z5	Device with second ranges	Device with minute ranges (on request)
0 0—0	0.05 - 0.5 s	0.4 - 4 min
0———0	0.2 - 2 s	1.5 - 15 min
0—0—0	1.5 - 15 s	12 - 120 min
0 0 0	12 - 120 s	96 - 960 min

Time ranges
RK 7817: 8 time ranges in one unit, settable via rotational switch.

0.02*) ... 1 s	0.3 ... 30 min
0.06*) ... 6 s	3 ... 300 min
0.3 ... 30 s	0.3 ... 30 h
0.03 ... 3 min	3 ... 300 h

*) 0.08 s bei Funktion AV und IE

Time setting
RK 7813, RK 7814,
RK 7815, RK 7816: infinite, 1:10 on relative scale
RK 7817: infinite, 1:100 on relative scale
Recovery time: < 100 ms
Repeat accuracy
RK 7813, RK 7814,
RK 7815, RK 7816: ≤ 0.5 % of set time delay + 10 ms
RK 7817: ≤ 0.8 % of set time delay + 20 m
Voltage influence: ≤ 1 %
Temperature influence
RK 7813, RK 7814,
RK 7815, RK 7816: 0.25 % / K
RK 7817: ≤ 2 % at range 0 ... +60°C
≤ 5 % at range -20 ... 0°C

Technical Data

Input

Nominal voltage U_N
RK 7813, RK 7814,
RK 7815, RK 7816: AC/DC 24 V [1] + AC 230 V [2] or
AC/DC 24 V [1] + AC 110 ... 127 V [2]
RK 7817: AC/DC 24 V [1] + AC 230 V [2] or
AC/DC 24 V [1] + AC 110 ... 127 V [2]

[1] at terminals A3-A2
[2] at terminals A1-A2

Voltage range
AC: 0.8 ... 1.1 U_N
DC: 0.9 ... 1.25 U_N
Release voltage A1 - A2:
RK 7813, RK 7814,
RK 7815, RK 7816: AC 50 Hz approx. 40 V
RK 7817: AC 50 Hz approx. 30 V
Release voltage A3 - A2:
RK 7813, RK 7814,
RK 7815, RK 7816: DC approx. 5 V
RK 7817: DC approx. 4 V
Control current B1
RK 7817: Input resistance approx. 150 kΩ in series with diode

Min. operate / off time of the control contact B1(+) IK 7817
AC 50 Hz: approx. 25 ms / approx. 60 ms
DC: approx. 15 ms / approx. 60 ms
Release voltage (B1-A2) IK 7817
AC 50 Hz: approx. 5 V
DC: approx. 4 V
Nominal consumption AC 24 V
RK 7813, RK 7814,
RK 7815, RK 7816: approx. 1 VA
RK 7817: approx. 1 VA
Nominal consumption AC 230 V
RK 7813, RK 7814,
RK 7815, RK 7816: approx. 6 VA
RK 7817: approx. 7.5 VA
Nominal consumption DC 24 V
RK 7813, RK 7814,
RK 7815, RK 7816: approx. 0.4 W
RK 7817: approx. 0.5 W
Nominal frequency: 50 Hz / 60 Hz
Frequency range: ± 5 %

Output

Contacts
RK 7813.81, RK 7814.81,
RK 7815.71, RK 7816.81,
RK 7817.81: 1 changeover contact delayed (15-16-18)
RK 7813.82, RK 7814.82,
RK 7817.82: 2 changeover contact delayed (15-16-18), (25-26-28)
RK 7813.32, RK 7814.32,
RK 7815.77, RK 7816.32,
RK 7817.32: 1 changeover contact delayed (15-16-18)
1 changeover contact as instantaneous contact (21-22-24)
Thermal current I_{th}: 4 A
Switching capacity
according to AC 15
NO contact: 2 A / AC 230 V IEC/EN 60 947-5-1
NC contact: 1 A / AC 230 V IEC/EN 60 947-5-1
Electrical life: > 1 x 10^5 switch. cycl. IEC/EN 60 947-5-1
Mechanical life: > 1 x 10^7 switching cycles
Permissible switching frequency
(without / at load): 7200 / 360 switching cycles / h

Technical Data

General Data

Nominal operating mode:	continuous operation	
Temperature range:	- 40 ... + 60°C	
Clearance and creepage distance		
rated impuls voltage / pollution degree:	4 kV / 2	IEC 60 664-1
EMC		
Electrostatic discharge (ESD):	8 kV (air)	IEC/EN 61 000-4-2
HF irradiation:	10 V/m	IEC/EN 61 000-4-3
Fast transients:	4 kV	IEC/EN 61 000-4-4
Surge voltage between		
wires for power supply:	2 kV	IEC/EN 61 000-4-5
between wire and ground:	4 kV	IEC/EN 61 000-4-5
HF-wire guided:	10 V	IEC/EN 61 000-4-6
Interference suppression:	Limit value class B	EN 55 011
Degree of protection		
Housing:	IP 40	IEC/EN 60 529
Terminals:	IP 20	IEC/EN 60 529
Enclosure:	thermoplastic with VO behaviour according to UL Subject 94	
Vibration resistance:	Amplitude 0.35 mm Frequency 10 ... 55 Hz,	IEC/EN 60 068-2-6
Climate resistance:	40 / 060 / 04	IEC/EN 60 068-1
Terminal designation:	EN 50 005	
Wire connections		DIN 46 228-1/-2/-3/-4
Screw terminal (fixed):	1 x 4 mm² solid or 1 x 2.5 mm² stranded ferruled (isolated) or 2 x 1.5 mm² stranded ferruled (isolated) or 2 x 2.5 mm² solid	
Insulation of wires:	7 mm	
Length of ferrule:	8 mm	
Pluggable terminal blocks with screw terminals		
max. cross section:	1 x 2.5 mm² solid or 1 x 2.5 mm² stranded ferruled (isolated)	
Insulation of wires:	7 mm	
Length of ferrule:	8 mm	
Pluggable terminal blocks with cage clamp terminals		
max. cross section:	1 x 4 mm² solid or 1 x 2.5 mm² stranded ferruled (isolated)	
min. cross section:	0.5 mm²	
Insulation of wires:	10 mm	
Length of ferrule:	12 mm	
Wire fixing:	Plus-minus terminal screws M3.5 box terminals with wire protection or cage clamp terminals	
Mounting:	DIN-rail	IEC/EN 60 715
Weight:		
RK 7813:	60 g	
RK 7814:	65 g	
RK 7815:	60 g	
RK 7816:	60 g	
RK 7817:	70 g	

Dimensions

Width x height x depth:	
RK 781_:	17.5 x 90 x 66 mm
RK 781_ PC:	17.5 x 121 x 66 mm
RK 781_ PS:	17.5 x 107 x 66 mm

UL-Data

Switching capacity:
Ambient temperature 60°C: Pilot duty B300
4A 240Vac G.P.
4A 30Vdc G.P.

Wire connection: 60°C / 75°C copper conductors only
AWG 22 - 14 Sol/Str Torque 0.5 Nm

Technical data that is not stated in the UL-Data, can be found in the technical data section.

Standard Types

RK 7813.81/61 AC 230 V + AC/DC 24 V 1 ... 10 s
Article number: 0061585
- Time relay, operate delayed
- Output: 1 changeover contact
- Nominal voltage U_N: AC 230 V + AC/DC 24 V
- Width: 17.5 mm

RK 7814.81/61 AC 230 V + AC/DC 24 V 120 s
Article number: 0061169
- Multi range time relay on delayed
- Output: 1 changeover contact
- Nominal voltage U_N: AC 230 V + AC/DC 24 V
- Width: 17.5 mm

RK 7815.71/61 AC 230 V + AC/DC 24 V 1 ... 10 s
Article number: 0061587
- Fleeting action relay
- Output: 1 changeover contact
- Nominal voltage U_N: AC 230 V + AC/DC 24 V
- Width: 17.5 mm

RK 7816.81/61 AC 230 V + AC/DC 24 V 1 ... 10 s
Article number: 0061593
- Flasher relay
- Output: 1 changeover contact
- Nominal voltage U_N: AC 230 V + AC/DC 24 V
- Width: 17.5 mm

RK 7817.81/61 AC 230 V + AC/DC 24 V 0.02 s ... 300 h
Article number: 0061137
- Multifunction relay
- Output: 1 changeover contact
- Nominal voltage U_N: AC 230 V + AC/DC 24 V
- Width: 17.5 mm

Variant

RK 7813.81/61, RK 7814.81/61,
RK 7815.71/61, RK 7816.81/61
RK 7817.81/61: with UL-approval

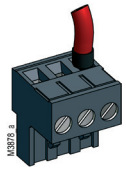
RK 7816.81/010/61: same as RK 7816._ _ / _ _ _
but start with break

Ordering example for variant

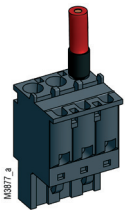
RK 781_ .81 _ _ /010 /61 AC 230 V + AC/DC 24 V 120 s

- 120 s: Set time delay
- AC 230 V + AC/DC 24 V: Nominal voltage
- /61: with UL-approval (1 changeover contact)
- /010: Variant
- _ _: Type of terminals
  without indication: terminal blocks fixed, with screw terminals
  PC (plug in cage clamp): pluggable terminal blocks with cage clamp terminals
  PS (plug in screw): pluggable terminal blocks with screw terminals
- .81: Contact
- RK 781_: Type

Options with Pluggable Terminal Blocks

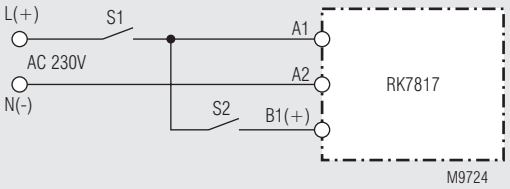


Screw terminal
(PS/plugin screw)

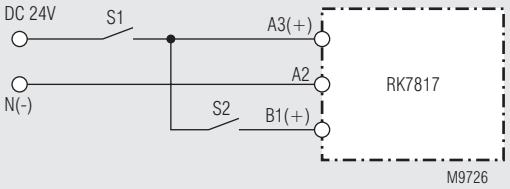


Cage clamp terminal
(PC/plugin cage clamp)

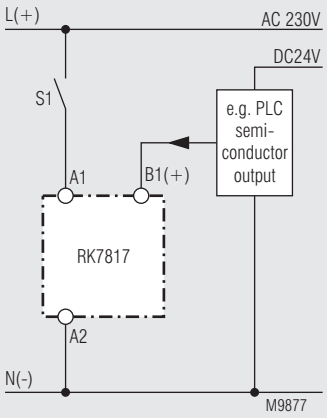
Connection Example



Control with AC 230 V



Control with DC 24 V



Controlled via A1 and B1 with different voltages.