

Time relays



 **repol**® S.A.

Time relays are available in modular covers (MT-W...M with LED display, RPC series) and in industrial covers (TR4N series, T-R4, PIR15...T).



Design features (depending on the type of relay):
multifunctions, single-functions; with settings of T interval, with independent settings of T1 and T2 intervals, with independent settings of T1, T2 and T3 intervals (MT-W...M); contacts / outputs: 1 CO, 2 CO, 3 CO, 4 CO; supply: universal AC/DC; specified voltage.



Applications in low voltage systems: in industrial automation; in BMS automation; in air-conditioning, ventilation, heating systems; in protection, signalling, alarm systems; in lighting systems; various other applications.



They meet the requirements of REACH and RoHS Directive. The relays are recognized and certified by:

CE ENEC 

modular covers

MT-W...M	467
RPC-MA-.....	474
RPC-MB-.....	479
RPC-2A-UNI	484
RPC-1MC-UNI	488
RPC-MD-UNI	492
RPC-1ER/EA/ES/ EU/IP/SA/WT-...	496
RPC-E/WU/BP-.....	501
RPC-2SD-UNI	505
RPC-1AS-A230	508

industrial covers

TR4N 1 CO, 2 CO	511
TR4N 4 CO	515
T-R4	519
PIR15...T with time module COM3	523
COM3	528



- **Universal, multifunction time relays with independently controlled times T1, T2 and T3 (25 time functions + functions ON and OFF; quick times set with the accuracy of 0,1 s)**
- Two digit LED display • Programming with two buttons only • Cadmium - free contacts
- AC/DC input voltages • Cover - modular, width 17,5 mm • Direct mounting on 35 mm rail mount acc. to EN 60715 • Applications: in low-voltage systems
- Compliance with standards: EN 45545-2 (category EL5, requirement R23 - flammability class V-0 as per EN 60695-11-10); EN 61373:2011 category 1, class B (mechanical shock and vibration resistance); EN 50121-3-2 (railroad applications - electromagnetic compatibility); EN 50155:2007; EN 60077-1; EN 61810-1; EN 61812-1

• Recognitions, certifications, directives: RoHS, **CE** **EAC** **UK**

Output circuit - contact data

Number and type of contacts	1 CO	
Contact material	AgSnO ₂	
Max. switching voltage	300 V	
Rated load	AC1	10 A / 250 V AC
	DC1	10 A / 24 V DC
Max. inrush current	16 A	
Rated current	10 A	
Max. breaking capacity	AC1	2 500 VA
Min. breaking capacity	1 W 10 V, 10 mA	
Contact resistance	≤ 100 mΩ	
Max. operating frequency		
• at rated load	AC1	600 cycles/hour
• no load		72 000 cycles/hour
Input circuit		
Rated voltage	AC: 50/60 Hz AC/DC	12...240 V terminals (+)A1 – (-)A2
Operating range of supply voltage	0,9...1,1 U _n	
Rated power consumption	AC	≤ 2,0 VA AC: 50 Hz
	DC	≤ 1,5 W
Range of supply frequency	AC	48...63 Hz
Residual ripple to DC	5%	
Control contact S ①		
• min. voltage ②	0,9 U _n	
• min. time of pulse duration ②	AC: > 50 ms	DC: > 20 ms
• max. length of control line	10 m	
Insulation according to EN 60664-1		
Insulation rated voltage	250 V AC	
Rated surge voltage	2 500 V 1,2 / 50 μs	
Overvoltage category	II	
Insulation pollution degree	1	
Flammability class	V-0	UL 94 , EN 60695-11-10
Dielectric strength		
• input - output	2 500 V AC	type of insulation: basic
• contact clearance	1 000 V AC	type of clearance: micro-disconnection
General data		
Electrical life		
• resistive AC1	> 0,5 x 10 ⁵	10 A, 250 V AC
Mechanical life (cycles)	> 3 x 10 ⁷	
Dimensions (L x W x H)	90 ③ x 17,5 x 65,5 mm	
Weight	70 g	
Ambient temperature	• storage	-40...+85 °C
(non-condensation and/or icing)	• operating	-20...+50 °C
Cover protection category	IP 20	EN 60529
Environmental protection	RTI	EN 61810-7
Relative humidity	up to 85%	
Shock resistance	15 g	
Vibration resistance	0,35 mm DA 10...55 Hz	

① The control terminal S is activated by connection to A1 terminal via the external control contact S. ② Where the control signal is recognizable.

③ Length with 35 mm rail catches: 98,8 mm.

Time module data

Functions	Es, E, E(S), E(R), R, Wu, Wu(S), Wu(R), Ws, Wa, B, Wi, ER, EWs, EWa, EWu, WsWa, EWf, Wt, Pi, Pi(S), Pp, Pp(S), Est, Esp, ON, OFF
Selection of function and settings of T1, T2, T3 intervals	with two buttons: "F/T" and "OK", to be with viewed on the LED display
Timing adjustments	0,1 s ... 99 h 59 min. 59,9 s
Setting accuracy / Repeatability	0,1 s / 0,12 s
Values affecting the timing adjustment	temperature: ≤ 0,01% / °C supply voltage: ≤ 0,1% / V
Recovery time	controlled by contact S / supply voltage: ≤ 50 ms / ≤ 650 ms
LED indicator	LEDs green "U" - indication of supply voltage U yellow "h" - indication of setting hours T1, T2, T3 times ④ yellow "m" - indication of setting minutes T1, T2, T3 times ④ yellow "s" - indication of setting seconds T1, T2, T3 times ④ green "T2" - indication of setting T2 time ④ green "T3" - indication of setting T3 time ④ ⑤ green "T3" flashing - measurement of T3 time / request for programming T3 time ⑥ yellow "R" - status ON of operational relay R
	LED display strip spinning to the right - measurement of T1 time strip spinning to the left - measurement of T2 time message "End" - stop of the function being carried out pulsating point during programming - indication of setting decimal parts of a second

Instruction of programming

1. Hold the lower button "F/T" for a longer time (> 2 s). A symbol of service function F0 will appear on LED display.
2. By pressing the button "F/T" choose the required number of function (F0 ... F21 - see table below).
3. Save the number of the selected function by shortly pressing the upper button "OK". The display will show two digits "Zero" and the yellow LED "h" will appear (T1 time hours setting). The first "Zero" is for tens of hours, the other "Zero" specifies the units of hours. Each number set has to be confirmed with the "OK" button. Note: similar situation applies for setting minutes and seconds.
4. By clicking the lower button "F/T" select the required number of T1 time hours.
5. After selecting the number of T1 time hours click the "OK" button in order to confirm the selection.
6. Again two digits "Zero" will appear and the yellow LED "m" will appear - setting minutes. Next, act accordingly to points 4 and 5. Similarly set seconds when the yellow LED "s" appears. Then set decimal parts of second when a point is pulsing on the display.
7. After confirming with the "OK" button the decimal parts of second the green LED "T2" will start flashing (if T2 time appears in a given function).
8. If we select T2 time, then we do everything accordingly to the way of T1 time setting.
9. Next the green LED "T3" will start flashing (if T3 time appears in a given function) - request for setting T3 time ⑤. T3 time setting may be confirmed with "OK" or rejected with "F/T". T3 time is set similarly to T1 or T2.
10. Turn off feeding. After another provision of feeding the function will start. Some functions are started by the external control contact S ①.
11. During carrying out of the function (lasting longer than 60 s) it is possible to check the used time [%] by shortly pressing the "OK" button. A longer pressing will show the "presentation" of settings (checking the set function and times).
12. In order to "exit" the set service function F0 or F1 press the lower button "F/T" for a longer time until the symbol of a given function disappears from the display.

Note: a new function can be programmed during the operation of the relay (during the operation of any function). The newly programmed function will be active only after turning on and providing feeding voltage.

Number	Name	Times ⑤	Control ①
F0	OFF	-	U
F1	ON	-	U
F2	Es	T1	U, S
F3	E E(S)	T1 T1	U U, S
F4	E(R)	T1	U, S
F5	R	T1	U, S
F6	Wu Wu(S)	T1 T1	U U, S
F7	Wu(R)	T1	U, S
F8	Ws	T1	U, S
F9	Wa	T1	U, S
F10	B Wi	T1 = 0 ⑥ T1	U, S U, S
F11	ER	T1, T2	U, S
F12	EWs	T1, T2	U, S
F13	EWa	T1, T2	U, S
F14	EWu	T1, T2	U
F15	WsWa	T1, T2	U, S
F16	EWf	T1, T2	U, S
F17	Wt	T1, T2	U, S
F18	Pi Pi(S)	T1, T2, T3 T1, T2, T3	U U, S
F19	Pp Pp(S)	T1, T2, T3 T1, T2, T3	U U, S
F20	Est	T1	U, S
F21	Esp	T1	U, S

① The control terminal S is activated by connection to A1 terminal via the external control contact S. ④ View on LED display. ⑤ Option: possibility of turning on or omitting T3 time. ⑥ Time T1 has to be set with "Zero" value.

Time functions

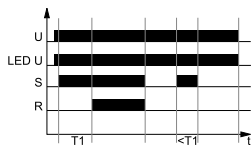
F0 – OFF - Constant service off.

F0 function can be turned on at any time, during feeding the time relay with U_n voltage. Turning on F0 function during carrying out any time function will cause the function to stop as well as constant operating relay R off (LED diode "R" is off). Function F0 is activated by pressing "F/T" button for a longer time (more than 2 seconds) and selecting F0 function. Confirm this function with red button "OK" (after confirmation display will show digit 0). Exiting the service function needs a longer pressing of "F/T" button - until the display stops showing F0 function symbol. Next, after a short time, display will show "End". Going back to the function previously carried out is done by turning off feeding voltage U_n and turning it on again. If the "T/F" button is being pressed for too long and it will cause, after turning off F0 function symbol, showing the symbols of other functions, then going back to the function previously carried out (set before F0 function) is done by turning off feeding voltage U_n and turning it on again.

F1 – ON - Constant service on.

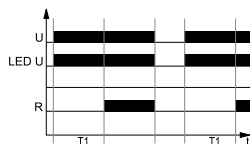
F1 function can be turned on at any time, during feeding the time relay with U_n voltage. Turning on F1 function during carrying out any time function will cause the function to stop as well as constant operating relay R on (LED diode "R" is on). Function F1 is activated by pressing "F/T" button for a longer time (more than 2 seconds) and selecting F1 function. Confirm this function with red button "OK" (after confirmation display will show digit 1). Exiting the service function needs a longer pressing of "F/T" button - until the display stops showing F1 function symbol. Next, after a short time, display will show "End". Going back to the function previously carried out is done by turning off feeding voltage U_n and turning it on again. If the "T/F" button is being pressed for too long and it will cause, after turning off F1 function symbol, showing the symbols of other functions, then going back to the function previously carried out (set before F1 function) is done by turning off feeding voltage U_n and turning it on again.

F2 – Es - ON delay with the control contact S.



Feeding voltage U has to be put onto time relay in a constant way (LED diode "U" gives constant light). Turning off controlling contact S starts measuring the set time T_1 (display shows a vertical strip spinning to the right). When T_1 time is finished operating relay R turns on (display shows "End", LED diode "R" is on). Such state lasts until the moment of opening control contact S. Opening the control contact S causes immediate turning off the operating relay R (display still shows "End", and LED diode "R" is off). When the control contact S is open before T_1 time is finished, the operating relay will not turn on and the measurement of T time will be cancelled.

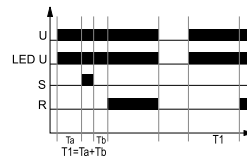
F3 – E - ON delay.



Turning on the feeding voltage U starts measuring set T_1 time (display shows vertical strip spinning to the right). After measuring T_1 time the operating relay R turns on and stays in this state until feeding U is turned off (display shows "End", and LED diode "R" is on).

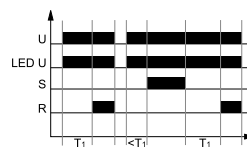
U - supply voltage; R - output state of the relay; S - control contact state; T_1, T_2, T_3 - measured times; T_s - pause in function performance - time measurement stop period (applies to F18 and F19); t - time axis

F3 – E(S) - ON delay, with time measurement stopped with contact S.



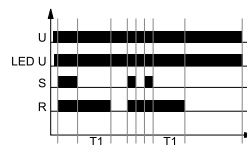
Turning on the feeding voltage U starts measuring set T_1 time (display shows vertical strip spinning to the right). If during measuring T_1 time control contact S is closed, measuring of T_1 time is stopped for the time of closing contact S (display shows two horizontal strips). Opening of control contact S resumes measuring of T_1 time (display shows a vertical strip spinning to the right). After finishing measuring T_1 time the operating relay R turns on and stays in this state until feeding U is turned off (display shows "End", and LED diode "R" is on).

F4 – E(R) - ON delay with the Reset function.



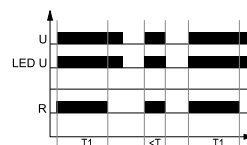
Turning on the feeding voltage U starts measuring set T_1 time (display shows vertical strip spinning to the right). After measuring T_1 time operating relay R turns on. If control contact S is closed during measuring T_1 time measuring of T_1 time is stopped for the time of closing contact S (display shows two horizontal strips). After opening contact S T_1 time is measured from the start. After measuring T_1 time operating relay R turns on (display shows "End", and LED diode "R" is on), and this state lasts until the moment of turning off feeding voltage U or when the control contact is closed again.

F5 – R - OFF delay with the control contact S.



Time relay input is powered by voltage U in a constant way. Closing the control contact S causes immediate turning on of the operating relay R (display shows two horizontal strips, LED diode "R" is on). Opening the control contact S starts measuring of the set T_1 time (display shows vertical strip spinning to the right). After measuring T_1 time the operating relay turns off (display shows "End", and LED diode "R" is off). If control contact S is closed before T_1 time is finished, the previously measured time will be restarted and the operating relay will stay on. The delay of turning off the operating relay R will start at the moment of another opening of control contact S.

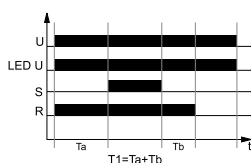
F6 – Wu - ON for the set interval.



Turning on the feeding voltage U causes immediate turning on the operating relay R at the set time T_1 (display shows vertical strip spinning to the right, LED diode "R" is on). After measuring T_1 time the operating relay R turns off (display shows "End", and LED diode "R" is off).

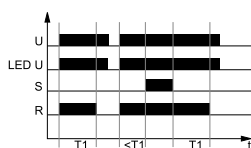
Time functions

F6 – Wu(S) - ON for the set interval, with time measurement stopped with contact S closing.



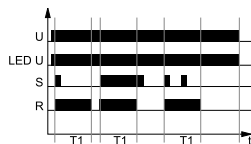
Turning on the feeding voltage U causes immediate turning on the operating relay R at the set time T1 (display shows vertical strip spinning to the right, LED diode "R" is on). If the control contact S is closed, measuring T1 time will be stopped (display shows two horizontal strips) until the moment when control contact is opened. Opening contact S starts further measuring of T1 time. After finishing measuring T1 time the operating relay turns off (display shows "End", and LED diode "R" is off).

F7 – Wu(R) - ON for the set interval with the Reset function.



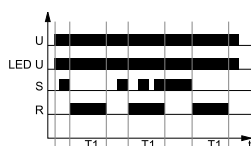
Turning on feeding voltage U causes immediate turning on the operating relay R at the set time T1 (display shows vertical strip spinning to the right, LED diode "R" is on). When control contact S is closed, measuring time T1 is stopped for the time of closing contact S (with operating relay being on, and display showing two horizontal strips). After opening contact S T1 time is measured from the start. After measuring T1 time the operating relay R turns off (display shows "End", and LED diode "R" is off).

F8 – Ws - Single shot for the set interval triggered by closing of the control contact S.



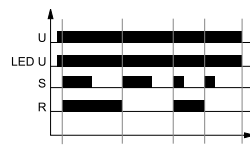
Time relay input is powered by voltage U in a constant way. Closing the control contact S causes immediate turning on operating relay R for the T1 time (display shows vertical strip spinning to the right, LED diode "R" is on). After measuring T1 time the operating relay R turns off display shows "End", and LED diode "R" is off). Opening and closing the control contact S during measuring T1 time does not affect the function being carried out. Turning on the operating relay R again is possible (after measuring T1 time) by another closing of control contact S.

F9 – Wa - ON for the set interval triggered with the control contact S.



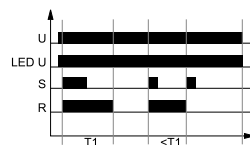
Time relay input is powered by voltage U in a constant way. Opening the control contact S causes immediate turning on operating relay R for the T1 time (display shows vertical strip spinning to the right, LED diode "R" is on). After measuring T1 time the operating relay R turns off display shows "End", and LED diode "R" is off). Opening and closing the control contact S during measuring T1 time does not affect the function being carried out. Turning on the operating relay R again is possible (after measuring T1 time) by another closing of control contact S.

F10 – B - Cyclical operation with the control contact S (the feature of a bistable relay) - setting T1 time to the value of "Zero" is required.



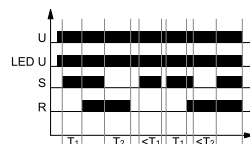
Time relay input is powered by voltage U in a constant way. Each closing of control contact S causes the change of the state of the operating relay R into the opposite one (the feature of a bistable relay).

F10 – Wi - ON for the set interval controlled by closing of the control contact S, with the function of switching off the output relay R prior to the lapse of the interval T1 (the feature of a bistable relay).



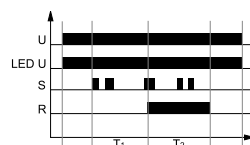
Time relay input is powered by voltage U in a constant way. Closing the control contact S causes immediate turning on the operating relay for T1 time (display shows a vertical strip spinning to the right, and LED diode "R" is on). After measuring T1 time the operating relay R turns off (display shows "End", and LED diode "R" is off). If during the measuring T1 time the control contact is closed, the measured time T1 will be restarted, and the operating relay R turns off. Another closing of the control contact S causes another turning on the operating relay R for the T1 time. Relay with this function adopts the feature of bistable relay.

F11 – ER - ON delay and OFF delay with control contact S. Independent settings of T1 and T2 intervals.



Time relay input is powered by voltage U in a constant way Closing the control contact S starts measuring the T1 time (display shows a vertical strip spinning to the right) and after measuring the T1 time the operating relay R turns on (display shows two horizontal strips, and LED diode "R" is on). Opening the control contact S starts measuring T1 time - the delayed turning off the operating relay R (display shows a vertical strip spinning to the left) and after the time is finished the operating relay R turns off display shows "End", and LED diode "R" is off). If during the measuring T2 time the control contact S is closed, the measured time will be restarted, and the operating relay R stays on. If the control contact S is closed for a shorter time than T1 time, the system will not turn on the operating relay R.

F12 – EWs - ON delay and ON for the set time with closing of the control contact S. Independent settings of T1 and T2 intervals.

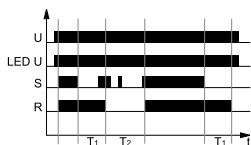


Time relay input is powered by voltage U in a constant way. Closing the control contact (impulsive or constant) starts measuring T1 time (Time relay input is powered by voltage U in a constant way.), and after its completion the operating relay R turns on for T2 time (display shows a vertical strip spinning to the left, LED diode "R" is on). After the T2 time the operating relay R turns off (display shows "End", and LED diode is off). The system is waiting for another closing of the control contact S. During measuring times T1 and T2 the state of the contact S does not matter.

U - supply voltage; R - output state of the relay; S - control contact state; T1, T2, T3 - measured times; Ts - pause in function performance - time measurement stop period (applies to F18 and F19); t - time axis

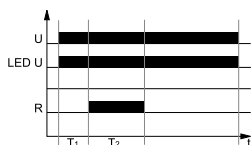
Time functions

F13 – EWa - OFF delay and breaking time delay with opening of the control contact S. Independent settings of T1 and T2 intervals.



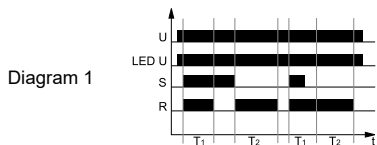
Time relay input is powered by voltage U in a constant way. Closing the control contact S causes immediate turning on the operating relay R (display shows two horizontal strips, and LED diode "R" is on). Opening the control contact S starts measuring the time T1 (display shows a vertical strip spinning to the right), and after measuring is finished the operating relay R turns off and measuring of T2 time starts (display shows a vertical strip spinning to the left, and LED diode "R" is off) After measuring T2 time display shows "End", and the operating relay R - depending on the state of the control contact S - stays off when the control contact S is open or turns on when the control contact S is closed, and LED diode "R" goes on.

F14 – EWu - ON delay for the set interval. Independent settings of T1 and T2 intervals.



Turning on feeding U starts work from measuring the time T1 (display shows a vertical strip spinning to the right), and after its completion the operating relay R starts at T2 time (display shows a vertical strip spinning to the left, and LED diode "R" is on). After measuring T2 time the operating relay turns off (display shows "End", and LED diode "R" is off).

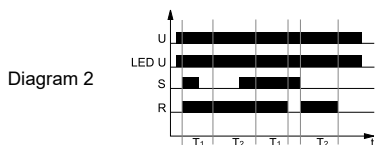
F15 – WsWa - ON for the set intervals T1 and T2 with the control contact S. Independent settings of T1 and T2 intervals.



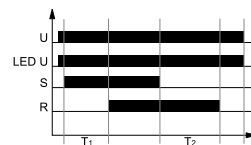
Time relay input is powered by voltage U in a constant way. Closing the control contact S turns on the operating relay R for T1 time (display shows a vertical strip spinning to the right, and the LED diode "R" is on). After measuring T1 time the operating relay R turns off (display shows two horizontal strips, and LED diode "R" is off). Opening the control contact S causes another turning on the operating relay R for T2 time (display shows a vertical strip spinning to the left, and the LED diode "R" is on). After measuring T2 time the operating relay turns off (display shows "End", and LED diode "R" is off).

a/ If during measuring T1 time the control contact S is opened, then (after measuring T1 time) the operating relay will stay on until the moment of the end of measuring T2 time. After measuring T2 time the operating relay R will turn off (display shows "End", and LED diode "R" turns off) - see Diagram 1.

b/ If during measuring T1 time the control contact S is opened, and next, during measuring T2 time, it is closed, then (after measuring T1 and T2 times) the operating relay R will turn on for the additional T1 time. After measuring additional T1 time the operating relay R will turn off (display shows two horizontal strips, and LED diode will turn off). Such state will last until the opening of the control contact S. After opening the control contact S the operating relay R will turn on again and the measuring of T2 time will start (display shows a vertical strip spinning to the left, and LED diode "R" is on). After measuring T2 time the operating relay R will turn off (display shows "End", and LED diode "R" will turn off) - see Diagram 2.

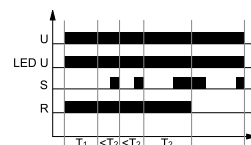


F16 – EWf - ON delay and OFF delay with the control contact S. Independent settings of T1 and T2 intervals.



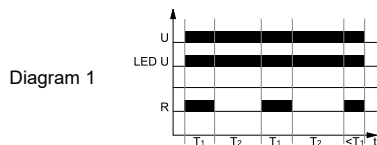
Time relay input is powered by voltage U in a constant way. Closing the control contact S starts measuring the time T1 (display shows a vertical strip spinning to the right). After T1 time is finished, the relay R turns on (display shows two horizontal strips, and LED diode "R" is on). Opening the control contact S starts measuring the time T2 - delayed turning off the operating relay R (display shows a vertical strip spinning to the left). After measuring T2 time the operating relay R turns off (display shows "End", and LED diode "R" is off).

F17 – Wt - Monitoring of the sequence of pulses. Switching on T2 interval is extended with consecutive pulses (closing and opening of the contact S). Independent settings of T1 and T2 intervals.

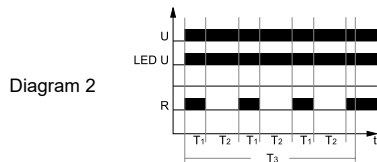


Turning on the feeding voltage U causes immediate turning on of the operating relay R for the set T1 time (display shows a vertical strip spinning to the right, and LED diode "R" is on). After measuring T1 time measuring T2 time starts with the operating relay R still being on (display shows a vertical strip spinning to the left, and LED diode "R" is on) In order to keep the operating relay R on, during measuring T2 time closing, and next opening of the control contact S must occur (single impulse), which will cause resetting the time measured so far and start measuring T2 time again. If before T2 time is finished the single impulse of the control contact S does not occur, the operating relay will turn off (display shows "End", and LED diode "R" will turn off). Another turning on of the operating relay will be possible after turning off feeding U and turning it on again.

F18 – Pi - Cyclical operation pulse first. Independent settings of T1 and T2 intervals. Possibility of turning on or omitting T3 time.



Turning on feeding voltage U starts cyclic work from turning on the operating relay R for the T1 time (display shows a vertical strip spinning to the right, and LED diode "R" is on), after which occurs turning off of the operating relay R for T2 time (display shows a vertical strip spinning to the left, and LED diode "R" is off). Cyclic work lasts until the moment of turning off feeding voltage - see Diagram 1.

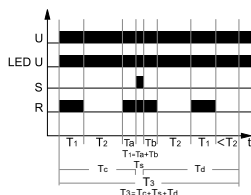


Note: it is possible to turn on T3 time (i.e. the time of cyclic work) during programming the relay (when the LED T3 diode is flashing) by confirming it with the OK button, or omitting the T3 time by pressing "F/T" button. When T3 time has been turned on and set, during cyclic work green LED diode T3 is flashing. After T3 time is finished display shows "End", LED diode T3 is off, and operating relay R remains in the state which it was in at the moment of the end of T3 time. If T3 time finishes during measuring T1 time, the operating relay R will remain on (LED "R" is on), and if it finishes during measuring T2 time, the operating relay R will remain off (LED diode "R" is off). Another turning on the function of cyclic work will be possible after turning off feeding U and turning it on again - see Diagram 2.

U - supply voltage; R - output state of the relay; S - control contact state; T1, T2, T3 - measured times; Ts - pause in function performance - time measurement stop period (applies to F18 and F19); t - time axis

Time functions

F18 – Pi(S) - Cyclical operation pulse first. Independent settings of T1 and T2 intervals. Possibility of turning on or omitting T3 time. Possibility of stopping and resuming cyclic work by control contact S.

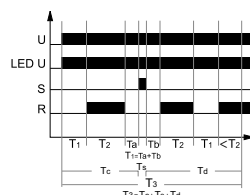


Turning on the feeding voltage U starts cyclic work from turning on the operating relay R for the T1 time (display shows a vertical strip spinning to the right, and LED diode "R" is on), after which the operating relay turns off for T2 time (display shows a vertical strip spinning to the left, and LED diode "R" is off). Cyclic work lasts until the moment of turning off feeding voltage U.

Note: it is possible to turn on T3 time (i.e. the time of cyclic work) during programming the relay (when the LED T3 diode is flashing) by confirming it with the OK button, or omitting the T3 time by pressing "F/T" button. When T3 time has been turned on and set, during cyclic work green LED diode T3 is flashing. After T3 time is finished display shows "End", LED diode T3 is off, and operating relay R remains in the state which it was in at the moment of the end of T3 time. If T3 time finishes during measuring T1 time, the operating relay R will remain on (LED "R" is on), and if it finishes during measuring T2 time, the operating relay R will remain off (LED diode "R" is off). Another turning on the function of cyclic work will be possible after turning off feeding U and turning it on again. **Operation of contact S:** closing control contact S immediately stops measuring times. Opening control contact S resumes measuring times. The break in carrying out the function Pi(S) (by the period of closing contact S) is included in T3.

F19 – Pp - Cyclical operation pause first. Independent settings of T1 and T2 intervals. Possibility of turning on or omitting T3 time.

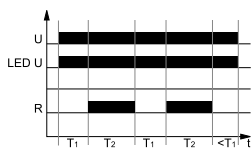
F19 – Pp(S) - Cyclical operation pause first. Independent settings of T1 and T2 intervals. Possibility of turning on or omitting T3 time. Possibility of stopping and resuming cyclic work by control contact S.



Turning on feeding voltage U starts cyclic work from measuring break time T1 - time of turning off the operating relay R (display shows a vertical strip spinning to the right), after which occurs turning on the operating relay R for the T2 time (display shows a vertical strip spinning to the left, and LED diode "R" is on). Cyclic work lasts until the moment of turning off feeding voltage U.

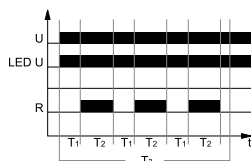
Note: it is possible to turn on T3 time (i.e. the time of cyclic work) during programming the relay (when the LED T3 diode is flashing) by confirming it with the OK button, or omitting the T3 time by pressing "F/T" button. When T3 time has been turned on and set, during cyclic work green LED diode T3 is flashing. After T3 time is finished display shows "End", LED diode T3 is off, and operating relay R remains in the state which it was in at the moment of the end of T3 time. If T3 time finishes during measuring T1 time, the operating relay R will remain on (LED "R" is on), and if it finishes during measuring T2 time, the operating relay R will remain off (LED diode "R" is off). Another turning on the function of cyclic work will be possible after turning off feeding U and turning it on again. **Operation of contact S:** closing control contact S immediately stops measuring times. Opening control contact S resumes measuring times. The break in carrying out the function Pi(S) (by the period of closing contact S) is included in T3.

Diagram 1



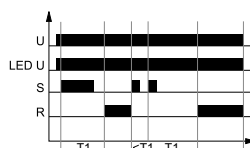
Turning on feeding voltage U starts cyclic work from measuring the time of break T1 - the time of turning off the operating relay R (display shows a vertical strip spinning to the right), after which occurs turning off of the operating relay R for the T2 time (Display shows a vertical strip spinning to the left, and LED diode "R" is on). Cyclic work lasts until the moment of turning off feeding voltage U - see Diagram 1.

Diagram 2



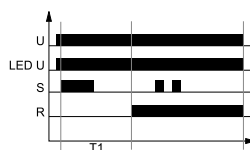
Note: it is possible to turn on T3 time (i.e. the time of cyclic work) during programming the relay (when the LED T3 diode is flashing) by confirming it with the OK button, or omitting the T3 time by pressing "F/T" button. When T3 time has been turned on and set, during cyclic work green LED diode T3 is flashing. After T3 time is finished display shows "End", LED diode T3 is off, and operating relay R remains in the state which it was in at the moment of the end of T3 time. If T3 time finishes during measuring T1 time, the operating relay R will remain on (LED "R" is on), and if it finishes during measuring T2 time, the operating relay R will remain off (LED diode "R" is off). Another turning on the function of cyclic work will be possible after turning off feeding U and turning it on again - see Diagram 2.

F20 – Est - ON delay with closing of the control contact S, with the interval T1 extended.



The input of the time relay is supplied with voltage U continuously. Closing of the control contact S for a shorter time than T1 time starts the T1 time, and after the T1 time has lapsed, the output relay R switches on and remains in this position until the control contact S is closed again or until the supply voltage U is interrupted. Closing of the control contact S resets the thus far measured time and starts the new T1 time.

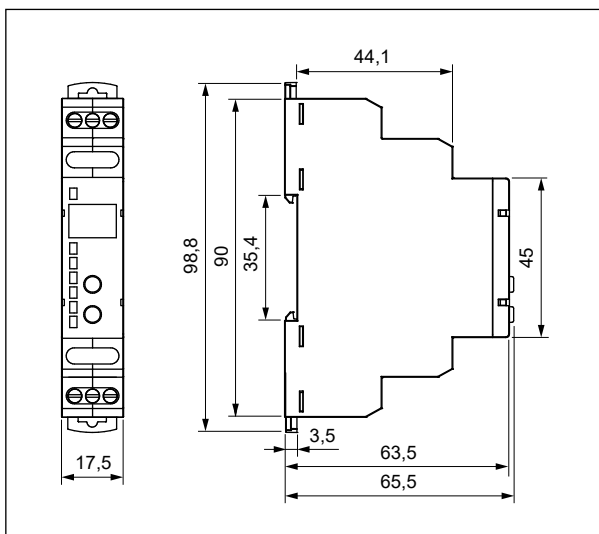
F21 – Esp - ON delay - one cycle, with closing of the control contact S.



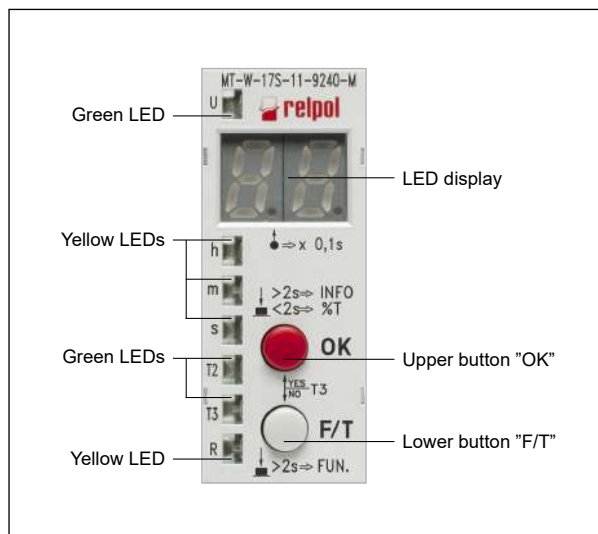
The input of the time relay is supplied with voltage U continuously. Closing of the control contact S starts the T1 time, and after the T1 time has lapsed, the output relay R switches on and remains in this position until the supply voltage U is interrupted. When the output relay R is on, opening or closing of the control contact S does not affect its status.

U - supply voltage; R - output state of the relay; S - control contact state; T1, T2, T3 - measured times; Ts - pause in function performance - time measurement stop period (applies to F18 and F19); t - time axis

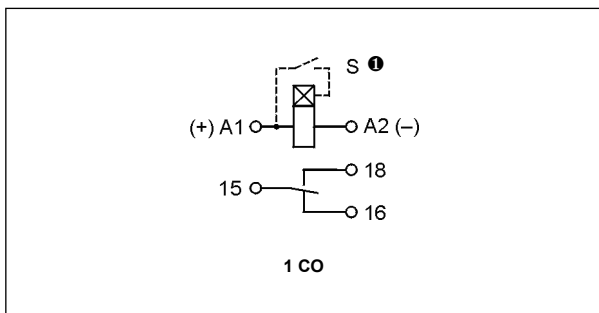
Dimensions



Front panel description



Connection diagram



❶ The control terminal S is activated by connection to A1 terminal via the external control contact S.

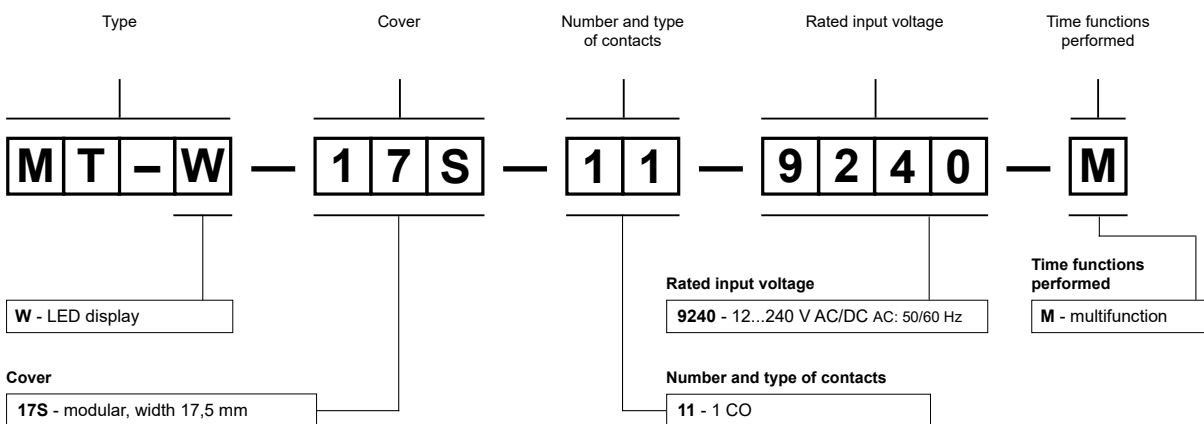
Mounting

Relays **MT-W...M** are designed for direct mounting on 35 mm rail mount acc. to EN 60715. Operational position - any. **Connections:** max. cross section of the cables: 1 x 2,5 mm² / 2 x 1,5 mm² (1 x 14 / 2 x 16 AWG), stripping length: 6,5 mm, max. tightening moment for the terminal: 0,6 Nm.

Two catches:
easy mounting on 35 mm rail,
firm hold (top and bottom).



Ordering codes



Example of ordering codes:

MT-W-17S-11-9240-M

universal time relay **MT-W...M** with LED display, multifunction (relay perform 6 functions), cover - modular, width 17,5 mm, one changeover contact, contact material AgSnO₂, rated input voltage 12...240 V AC/DC AC: 50/60 Hz



RPC-1MA-UNI



RPC-2MA-A230

- **Multifunction time relays (10 time functions; 8 time ranges)**
- Cadmium - free contacts 1 CO and 2 CO
- AC and AC/DC input voltages
- Cover - modular, width 17,5 mm
- Direct mounting on 35 mm rail mount acc. to EN 60715
- Applications: in low-voltage systems
- Compliance with standard EN 61812-1
- Recognitions, certifications, directives: RoHS, **CE ENEC**

Output circuit - contact data

Number and type of contacts	1 CO	2 CO
Contact material	AgSnO ₂	
Max. switching voltage	300 V AC	
Rated load	AC1 DC1 DC1	8 A / 250 V AC 8 A / 24 V DC 0,3 A / 250 V DC
Rated current	16 A / 250 V AC	
Max. breaking capacity	AC1	4 000 VA
Min. breaking capacity	1 W 10 mA	
Contact resistance	≤ 100 mΩ	
Max. operating frequency	600 cycles/hour at rated load AC1	
Input circuit		
Rated voltage	50/60 Hz AC AC: 50/60 Hz AC/DC	230 V terminals A1, A2 12...240 V terminals (+)A1, (-)A2
Must release voltage	≥ 0,1 U _n	
Operating range of supply voltage	0,9...1,1 U _n	
Rated power consumption	AC DC	≤ 3,5 VA 230 V AC, 50 Hz ≤ 1,5 W 12...240 V AC/DC
Range of supply frequency	AC	48...63 Hz
Control contact S ①		
• min. voltage ②	0,7 U _n	
• min. time of pulse duration ②	AC: ≥ 50 ms	DC: ≥ 30 ms
• max. length of control line	10 m	
Insulation according to EN 60664-1		
Insulation rated voltage	250 V AC	
Rated surge voltage	4 000 V 1,2 / 50 μs	
Overvoltage category	III	
Insulation pollution degree	2	
Flammability class	V-0 for modular cover, UL 94	
Dielectric strength	• input - output • contact clearance • pole - pole	4 000 V AC type of insulation: basic 1 000 V AC type of clearance: micro-disconnection 2 000 V AC contacts 2 CO, type of insulation: basic
General data		
Electrical life	• resistive AC1	> 0,5 x 10 ⁵ 16 A, 8 A, 250 V AC
Mechanical life (cycles)	> 3 x 10 ⁷	
Dimensions (L x W x H)	90 ③ x 17,5 x 64,6 mm	
Weight	contact 1 CO: 65...66 g	contacts 2 CO: 72...73 g
Ambient temperature (non-condensation and/or icing)	• storage • operating	-40...+70 °C -20...+50 °C
Cover protection category	IP 20 EN 60529	
Relative humidity	up to 85%	
Shock resistance	15 g	
Vibration resistance	0,35 mm DA 10...55 Hz	

① The control terminal S is activated by connection to A1 terminal via the external control contact S.
 ② Where the control signal is recognizable. ③ Length with 35 mm rail catches: 98,8 mm.

Table of codes

Table 1

Time relay code		Rated input voltage
with 1 CO contact	with 2 CO contacts	
RPC-1MA-A230	RPC-2MA-A230	230 V AC 50/60 Hz
RPC-1MA-UNI	RPC-2MA-UNI	12...240 V AC/DC AC: 50/60 Hz

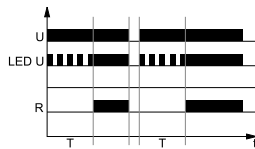
Time module data

Functions	E, Wu, Bp, Bi, R, Ws, Wa, Esa, B, T	
Time ranges	OFF - permanent switching off; ON - permanent switching on 1 s ④; 10 s; 1 min.; 10 min.; 1 h; 10 h; 1 d; 10 d	
Timing adjustment	smooth - (0,1...1) x time range (does not refer to range ON / OFF)	
Setting accuracy	± 5% ⑤ ④	
Repeatability	± 0,5% ④	
Values affecting the timing adjustment	temperature: ± 0,05% / °C supply voltage: ± 0,01% / V	
Recovery time	AC	≤ 150 ms 230 V AC, 50 Hz ≤ 400 ms 12...240 V AC/DC, AC: 50 Hz
	DC	≤ 150 ms 12...240 V AC/DC
LED indicator	green LED U ON - indication of supply voltage U green LED U flashing - measurement of T time yellow LED R ON/OFF - output relay status	

④ For first range setpoint (1 s) setting accuracy and repeatability are smaller than the given ones in technical parameters (significant influence of the operational relay operating time, processor start-time, and the moment of supply switching as referred to the AC supply course). ⑤ Calculated from the final range values, for the setting direction from minimum to maximum.

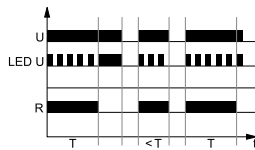
Time functions

E - ON delay.



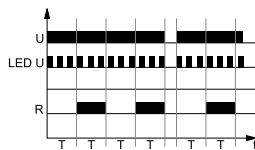
On applying the supply voltage U the set interval T begins - off-delay of the output relay R. After the interval T has lapsed, the output relay R switches on and remains on until supply voltage U is interrupted.

Wu - ON for the set interval.



Applying the supply voltage U immediately switches the output relay R on for the set interval T. After the interval T has lapsed, the output relay R switches off.

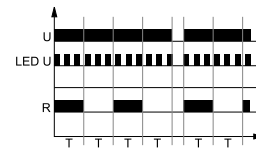
Bp - Symmetrical cyclical operation pause first.



Applying the supply voltage U starts the cyclical operation from the interval T - switching the output relay R off followed by switching on the output relay R for the interval T. The cyclical operation lasts until the supply voltage U is interrupted.

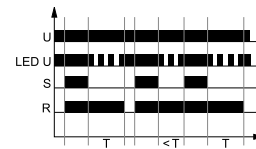
U - supply voltage; R - output state of the relay; S - control contact state; T - measured time; t - time axis

Bi - Symmetrical cyclical operation pulse first.



Applying the supply voltage U starts the cyclical operation from switching on the output relay R for the set interval T. After the interval T has lapsed, the output relay R switches off for the interval T. The cyclical operation lasts until the supply voltage U is interrupted.

R - OFF delay with the control contact S.



The input of the time relay is supplied with voltage U continuously. Closing of the control contact S immediately switches on the output relay R. Opening of the control contact S starts the set time of the delayed switching off of the output relay R. After the interval T has lapsed, the output relay R switches off. If the control contact S is closed during the interval T, the already measured time is reset, and the output relay R is switched on again. The OFF delay of the output relay R will start when the control contact S is opened again.

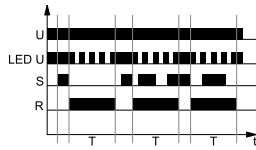
Ws - Single shot for the set interval triggered by closing of the control contact S.



The input of the time relay is supplied with voltage U continuously. Closing of the control contact S immediately switches the output relay R on for the set interval T. After the interval T has lapsed, the output relay R is switched off. In the course of the interval T, any opening of the control contact S does not affect the function to be performed. The output relay R may be switched on again for the set interval, after the interval T has lapsed, by closing the control contact S again.

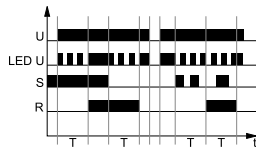
Time functions

Wa - ON for the set interval triggered with the control contact S.



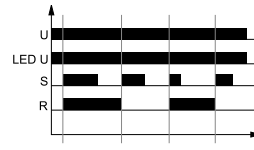
The input of the time relay is supplied with voltage U continuously. Closing of the control contact S does not start the interval T, and it does not change the position of the output relay R. Opening of the control contact S immediately switches on the output relay R for the set time. After the interval T has lapsed, the output relay R switches off. Opening and closing of the control contact S in the course of the interval T does not affect the function to be performed. The output relay R may be switched on again for the set interval with another closing and opening of the control contact S.

Esa - ON and OFF delay with the control contact S.



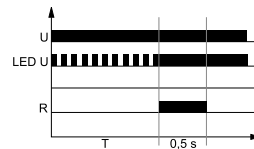
The input of the time relay is supplied with voltage U continuously. Closing of the control contact S starts the interval T - on-delay of the output relay R. After the interval T has lapsed, the output relay R switches on. Opening of the control contact S begins further measurement of the interval T - off-delay of the output relay R, and after the interval has lapsed, the output relay switches off. In case the time for which the control contact S is closed in the course of measurement of the on-delay of the output relay R is shorter than the set interval T, the output relay R will switch on after the set interval T, and the output relay R will remain in on position for the interval T. When the output relay R is in on position, closing of the control contact S does not affect the function to be performed.

B - Cyclical operation controlled with closing of the control contact S.



The input of the time relay is supplied with U voltage continuously. Closing of the control contact S immediately switches on the output relay R. Each next closing of the control contact S results in a change of the status of the output relay R to an opposite one (the feature of a bistable relay).

T - Generation of the 0,5 s pulse after the interval T.



Applying the supply voltage U starts the interval T. After the interval T has lapsed, the output relay switches on for 0,5 s (the time of the NO contact of the output relay).

ON / OFF - Permanent switching on / off.

The functions ON and OFF are selected with T time range adjusting knob. In the ON function, the normally open contacts are closed all the time whereas in the OFF function they are open. The position of the function-adjusting knob is of no significance in these functions as is the preset measurement time. The ON or OFF functions are used for the time relay operation control in electric systems.

U - supply voltage; **R** - output state of the relay; **S** - control contact state; **T** - measured time; **t** - time axis

Additional functions

Supply diode: it is lit permanently when the time is not being measured. In course of the T time measurement, it flashes at 500 ms period where it is lit for 50% of the time, and off for 50% of the time.

Adjustment of the set values:

- the values of time and range are read in the course of the relay's operation. The set values may be modified at any moment,
- no change of the function is possible in the course of the relay's operation. Any change of the settings of the relay shall be read only after the supply voltage has been switched off and on again.

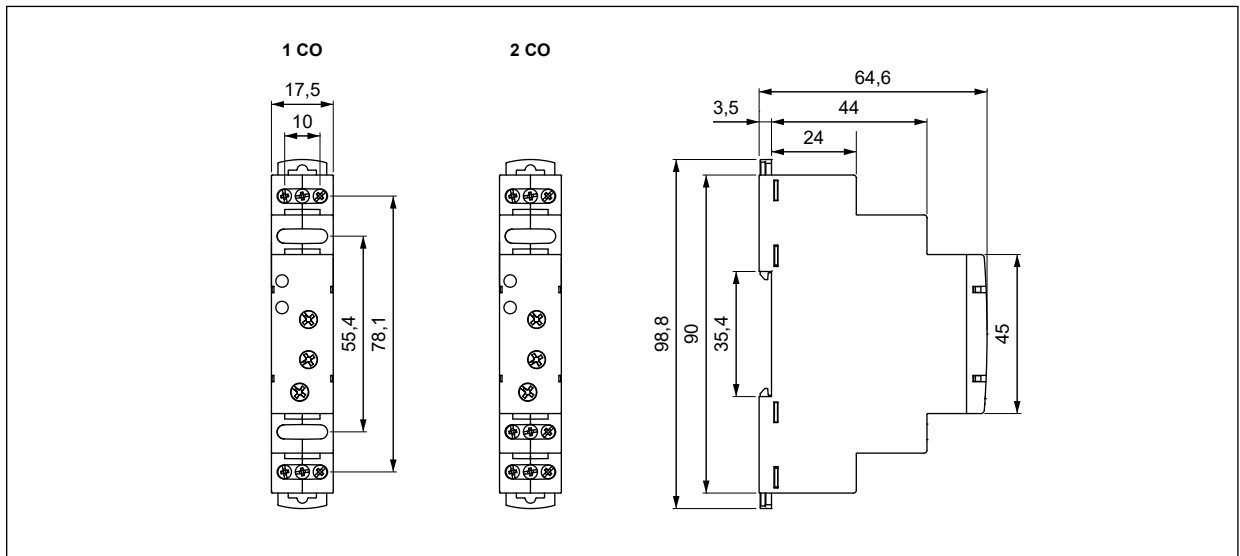
Triggering: depending on the function to be performed, the relay is triggered with the supply voltage or by connection of the S contact to the A1 line. For DC supply, the positive pole must be connected to the A1 line. The level of the S contact activation is adjusted automatically depending on the supply voltage.

Supply:

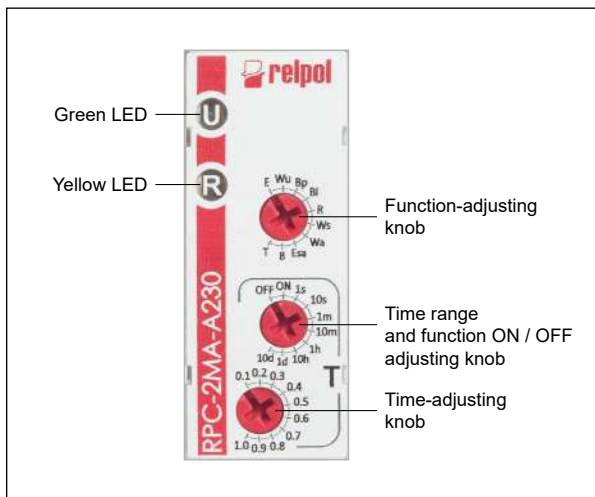
- **RPC-...-A230:** the relay may be supplied with AC voltage 48...63 Hz of 207...253 V,
- **RPC-...-UNI:** the relay may be supplied with DC voltage or AC voltage 48...63 Hz of 10,8...264 V.



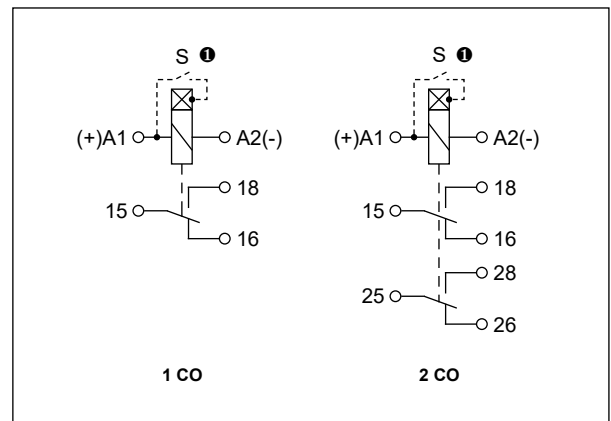
Dimensions



Front panel description



Connection diagrams



Note: the indicated polarization of the supply refers only to the relays RPC-...-UNI. ⚡ The control terminal S is activated by connection to A1 terminal via the external control contact S.

Mounting

Relays **RPC-.MA-...** are designed for direct mounting on 35 mm rail mount acc. to EN 60715. Operational position - any. **Connections:** max. cross section of the cables: 1 x 2,5 mm² (1 x 14 AWG), stripping length: 6,5 mm, max. tightening moment for the terminal: 0,5 Nm.

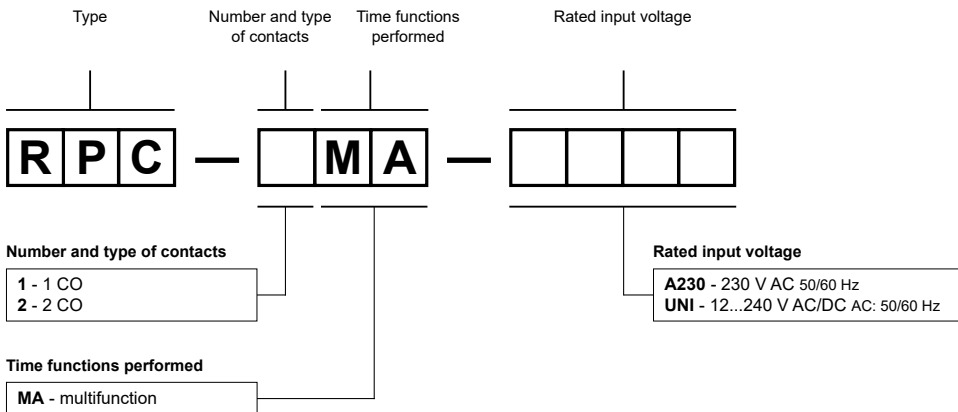


Two catches: easy mounting on 35 mm rail, firm hold (top and bottom).



Mounting wires in clamps: universal screw (cross-recessed or slotted head).

Ordering codes



Examples of ordering codes ⑥:

RPC-1MA-A230 time relay **RPC-MA-...**, multifunction (relay perform 10 functions), cover - modular, width 17,5 mm, one changeover contact, contact material AgSnO₂, rated input voltage 230 V AC 50/60 Hz

RPC-2MA-UNI time relay **RPC-MA-...**, multifunction (relay perform 10 functions), cover - modular, width 17,5 mm, two changeover contacts, contact material AgSnO₂, rated input voltage 12...240 V AC/DC AC: 50/60 Hz

⑥ Ordering codes **RPC-MA-...** are specified in Table 1, "Time relay code" column.

Table of codes

Table 1

Time relay code		Rated input voltage
with 1 CO contact	with 2 CO contacts	
RPC-1MA-A230	RPC-2MA-A230	230 V AC 50/60 Hz
RPC-1MA-UNI	RPC-2MA-UNI	12...240 V AC/DC AC: 50/60 Hz



RPC-1MB-UNI



RPC-2MB-A230

- Multifunction time relays (10 time functions; 8 time ranges)
- Cadmium - free contacts 1 CO and 2 CO
- AC and AC/DC input voltages
- Cover - modular, width 17,5 mm
- Direct mounting on 35 mm rail mount acc. to EN 60715
- Applications: in low-voltage systems
- Compliance with standard EN 61812-1
- Recognitions, certifications, directives: RoHS, **CE** **ERC**

Output circuit - contact data

Number and type of contacts		1 CO	2 CO
Contact material		AgSnO ₂	
Max. switching voltage		300 V AC	
Rated load	AC1	16 A / 250 V AC	8 A / 250 V AC
	DC1	16 A / 24 V DC	8 A / 24 V DC
	DC1	0,3 A / 250 V DC	0,3 A / 250 V DC
Rated current		16 A / 250 V AC	
Max. breaking capacity	AC1	4 000 VA	2 000 VA
Min. breaking capacity		1 W 10 mA	
Contact resistance		≤ 100 mΩ	
Max. operating frequency		600 cycles/hour at rated load AC1	
Input circuit			
Rated voltage	50/60 Hz AC	230 V	terminals A1, A2
	AC: 50/60 Hz AC/DC	12...240 V	terminals (+)A1, (-)A2
Must release voltage		≥ 0,1 U _n	
Operating range of supply voltage		0,9...1,1 U _n	
Rated power consumption	AC	≤ 3,5 VA 230 V AC, 50 Hz	≤ 1,5 VA 12...240 V AC/DC, AC: 50 Hz
	DC	≤ 1,5 W 12...240 V AC/DC	
Range of supply frequency	AC	48...63 Hz	
Control contact S ①			
• min. voltage ②		0,7 U _n	
• min. time of pulse duration ②		AC: ≥ 50 ms	DC: ≥ 30 ms
• max. length of control line		10 m	
Insulation according to EN 60664-1			
Insulation rated voltage		250 V AC	
Rated surge voltage		4 000 V 1,2 / 50 μs	
Overvoltage category		III	
Insulation pollution degree		2	
Flammability class		V-0	for modular cover, UL 94
Dielectric strength	• input - output	4 000 V AC	type of insulation: basic
	• contact clearance	1 000 V AC	type of clearance: micro-disconnection
	• pole - pole	2 000 V AC	contacts 2 CO, type of insulation: basic
General data			
Electrical life	• resistive AC1	> 0,5 x 10 ⁵	16 A, 8 A, 250 V AC
Mechanical life (cycles)		> 3 x 10 ⁷	
Dimensions (L x W x H)		90 ③ x 17,5 x 64,6 mm	
Weight		contact 1 CO: 65...66 g	contacts 2 CO: 72...73 g
Ambient temperature	• storage	-40...+70 °C	
(non-condensation and/or icing)	• operating	-20...+50 °C	
Cover protection category		IP 20	EN 60529
Relative humidity		up to 85%	
Shock resistance		15 g	
Vibration resistance		0,35 mm DA 10...55 Hz	

① The control terminal S is activated by connection to A1 terminal via the external control contact S.

② Where the control signal is recognizable. ③ Length with 35 mm rail catches: 98,8 mm.

Table of codes

Table 1

Time relay code		Rated input voltage
with 1 CO contact	with 2 CO contacts	
RPC-1MB-A230	RPC-2MB-A230	230 V AC 50/60 Hz
RPC-1MB-UNI	RPC-2MB-UNI	12...240 V AC/DC AC: 50/60 Hz

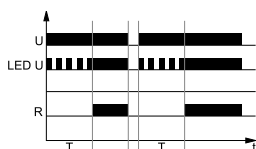
Time module data

Functions	E, Wu, Bp, Bi, Ra, Wst, Wi, Esf, Esp, Est	
Time ranges	OFF - permanent switching off; ON - permanent switching on 1 s ④; 10 s; 1 min.; 10 min.; 1 h; 10 h; 1 d; 10 d	
Timing adjustment	smooth - (0,1...1) x time range (does not refer to range ON / OFF)	
Setting accuracy	± 5% ⑤ ④	
Repeatability	± 0,5% ④	
Values affecting the timing adjustment	temperature: ± 0,05% / °C supply voltage: ± 0,01% / V	
Recovery time	AC	≤ 150 ms 230 V AC, 50 Hz ≤ 400 ms 12...240 V AC/DC, AC: 50 Hz
	DC	≤ 150 ms 12...240 V AC/DC
LED indicator	green LED U ON - indication of supply voltage U green LED U flashing - measurement of T time yellow LED R ON/OFF - output relay status	

④ For first range setpoint (1 s) setting accuracy and repeatability are smaller than the given ones in technical parameters (significant influence of the operational relay operating time, processor start-time, and the moment of supply switching as referred to the AC supply course). ⑤ Calculated from the final range values, for the setting direction from minimum to maximum.

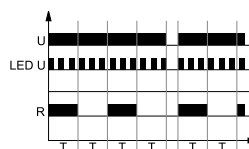
Time functions

E - ON delay.



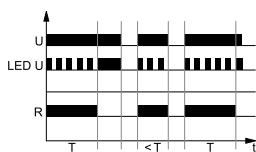
On applying the supply voltage U the set interval T begins - off-delay of the output relay R. After the interval T has lapsed, the output relay R switches on and remains on until supply voltage U is interrupted.

Bi - Symmetrical cyclical operation pulse first.



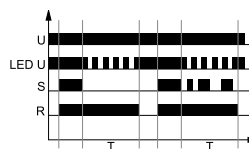
Applying the supply voltage U starts the cyclical operation from switching on the output relay R for the set interval T. After the interval T has lapsed, the output relay R switches off for the interval T. The cyclical operation lasts until the supply voltage U is interrupted.

Wu - ON for the set interval.



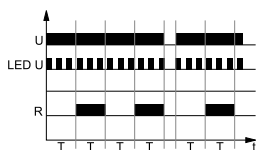
Applying the supply voltage U immediately switches the output relay R on for the set interval T. After the interval T has lapsed, the output relay R switches off.

Ra - OFF delay with the control contact S, without the interval T extension.



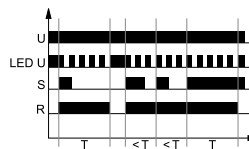
The input of the time relay is supplied with voltage U continuously. Closing of the control contact S immediately switches on the output relay R. Opening of the control contact S starts the set time of the delayed switching off of the output relay R. After the interval T has lapsed, the output relay R switches off. Opening or closing of the control contact S within the interval T does not affect the function to be performed.

Bp - Symmetrical cyclical operation pause first.



Applying the supply voltage U starts the cyclical operation from the interval T - switching the output relay R off followed by switching on the output relay R for the interval T. The cyclical operation lasts until the supply voltage U is interrupted.

Wst - ON for the set interval by closing the control contact S, with extension of the interval T - extension of the time of switching on the output relay R.

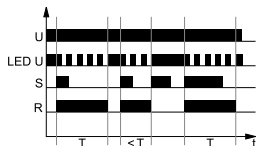


The input of the time relay is supplied with voltage U continuously. Closing of the control contact S immediately switches the output relay R on for the set interval T. After the interval T has lapsed, the output relay R is switched off. The next closing of the control contact S immediately switches on the output relay R for the interval T. In case the control contact S is closed within the interval T, the measured time is cancelled, and the interval T starts again.

U - supply voltage; R - output state of the relay; S - control contact state; T - measured time; t - time axis

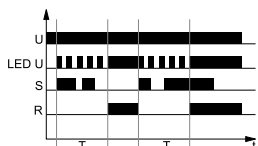
Time functions

Wi - ON for the set interval controlled by closing of the control contact S, with the function of switching off the output relay R prior to the lapse of the interval T.



The input of the time relay is supplied with voltage U continuously. Closing of the control contact S immediately switches the output relay R on for the set interval T. After the interval T has lapsed, the output relay R is switched off. Any next closing of the control contact S switches on the output relay R again. In case the control contact S is closed again during the interval T, the output relay is immediately switched off, and the measured interval is cancelled. In the course of the interval T, any opening of the control contact S does not affect the function to be performed.

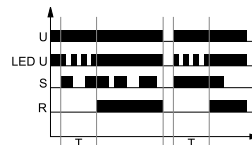
Esf - ON delay with the control contact S, without the interval T extension.



The input of the time relay is supplied with voltage U continuously. Closing of the control contact S starts the interval T - on-delay of the output relay R. After the interval T has lapsed, the output relay R switches on and remains in this position until the control contact S is closed again, which instantly switches the output relay off for the time T, and after the interval T has lapsed, the output relay R switches on again. In the course of measurement of the interval T, opening or closing of the control contact S does not affect the status of the output relay R. The output relay R may be switched on again after the current cycle has been completed.

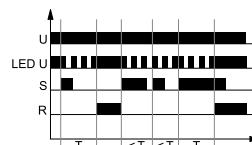
U - supply voltage; **R** - output state of the relay; **S** - control contact state; **T** - measured time; **t** - time axis

Esp - ON delay - one cycle, with closing of the control contact S.



The input of the time relay is supplied with voltage U continuously. Closing of the control contact S starts the interval T, and after the interval T has lapsed, the output relay R switches on and remains in this position until the supply voltage U is interrupted. When the output relay R is on, opening or closing of the control contact S does not affect its status.

Est - ON delay with closing of the control contact S, with the interval T extended.



The input of the time relay is supplied with voltage U continuously. Closing of the control contact S starts the interval T, and after the interval T has lapsed, the output relay R switches on and remains in this position until the control contact S is closed again or until the supply voltage U is interrupted. Closing of the control contact S resets the thus far measured time and starts the new interval T.

ON / OFF - Permanent switching on / off.

The functions ON and OFF are selected with T time range adjusting knob. In the ON function, the normally open contacts are closed all the time whereas in the OFF function they are open. The position of the function-adjusting knob is of no significance in these functions as is the preset measurement time. The ON or OFF functions are used for the time relay operation control in electric systems.

Additional functions

Supply diode: it is lit permanently when the time is not being measured. In course of the T time measurement, it flashes at 500 ms period where it is lit for 50% of the time, and off for 50% of the time.

Adjustment of the set values:

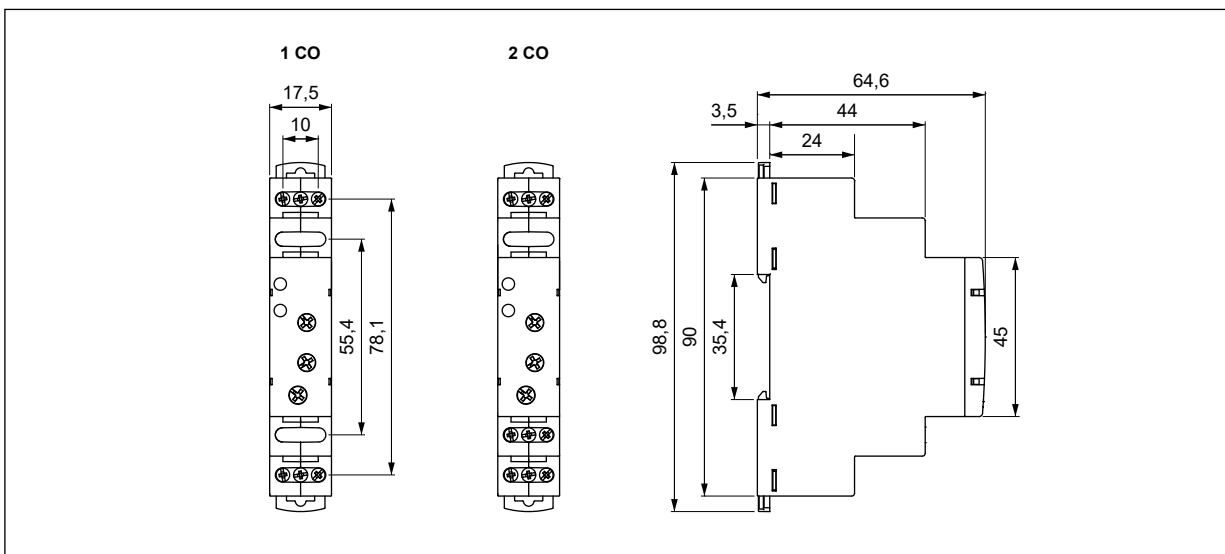
- the values of time and range are read in the course of the relay's operation. The set values may be modified at any moment,
- no change of the function is possible in the course of the relay's operation. Any change of the settings of the relay shall be read only after the supply voltage has been switched off and on again.

Triggering: depending on the function to be performed, the relay is triggered with the supply voltage or by connection of the S contact to the A1 line. For DC supply, the positive pole must be connected to the A1 line. The level of the S contact activation is adjusted automatically depending on the supply voltage.

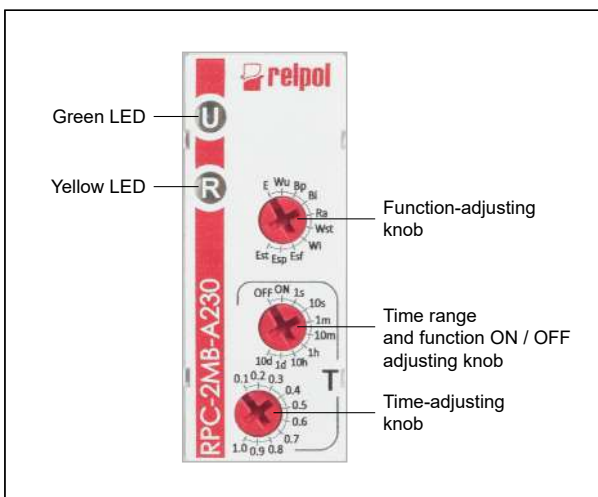
Supply:

- **RPC-...-A230:** the relay may be supplied with AC voltage 48...63 Hz of 207...253 V,
- **RPC-...-UNI:** the relay may be supplied with DC voltage or AC voltage 48...63 Hz of 10,8...264 V.

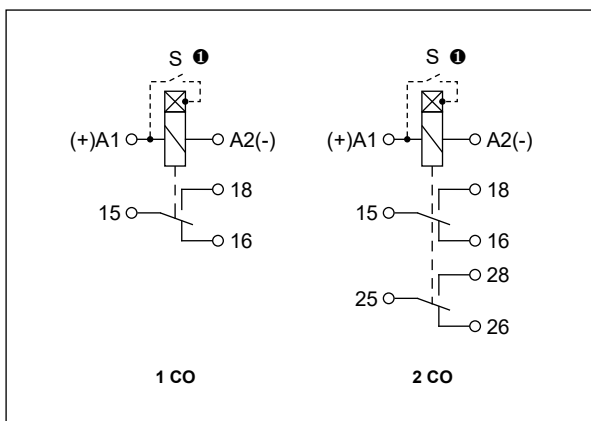
Dimensions



Front panel description



Connection diagrams



Note: the indicated polarization of the supply refers only to the relays RPC-...-UNI. ⚡ The control terminal S is activated by connection to A1 terminal via the external control contact S.

Mounting

Relays **RPC-.MB-...** are designed for direct mounting on 35 mm rail mount acc. to EN 60715. Operational position - any. **Connections:** max. cross section of the cables: 1 x 2,5 mm² (1 x 14 AWG), stripping length: 6,5 mm, max. tightening moment for the terminal: 0,5 Nm.

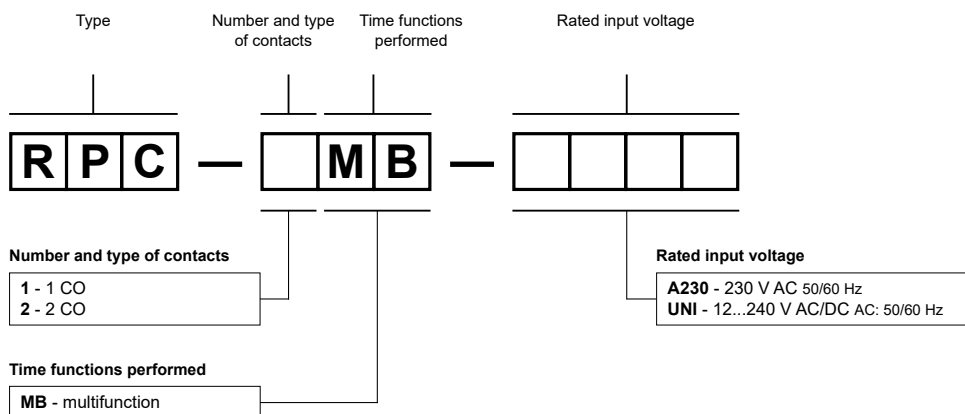


Two catches:
easy mounting
on 35 mm rail,
firm hold
(top and bottom).



**Mounting wires
in clamps:**
universal screw
(cross-recessed
or slotted head).

Ordering codes



Examples of ordering codes ③:

RPC-1MB-A230 time relay **RPC-.MB-...**, multifunction (relay perform 10 functions), cover - modular, width 17,5 mm, one changeover contact, contact material AgSnO₂, rated input voltage 230 V AC 50/60 Hz

RPC-2MB-UNI time relay **RPC-.MB-...**, multifunction (relay perform 10 functions), cover - modular, width 17,5 mm, two changeover contacts, contact material AgSnO₂, rated input voltage 12...240 V AC/DC AC: 50/60 Hz

③ Ordering codes **RPC-.MB-...** are specified in Table 1, "Time relay code" column.

Table of codes

Table 1

Time relay code		Rated input voltage
with 1 CO contact	with 2 CO contacts	
RPC-1MB-A230	RPC-2MB-A230	230 V AC 50/60 Hz
RPC-1MB-UNI	RPC-2MB-UNI	12...240 V AC/DC AC: 50/60 Hz



RPC-2A-UNI

NEW

- **Operation after the power supply is switched off** - with the operational relay on, contact holding time up to 10 minutes

- **Multifunction time relays (6 time functions; 10 time ranges)**
- Cadmium - free contacts 2 CO • AC/DC input voltages
- Cover - modular, width 17,5 mm • Direct mounting on 35 mm rail mount acc. to EN 60715 • Applications: in low-voltage systems
- Compliance with standard EN 61812-1
- Recognitions, certifications, directives: RoHS, **CE ENEC**

Output circuit - contact data

Number and type of contacts		2 CO
Contact material		AgSnO ₂
Max. switching voltage		300 V AC
Rated load	AC1 DC1	8 A / 250 V AC 8 A / 24 V DC; 0,3 A / 250 V DC
Rated current		8 A / 250 V AC
Max. breaking capacity	AC1	2 000 VA
Min. breaking capacity		1 W 10 mA
Contact resistance		≤ 100 mΩ
Max. operating frequency		600 cycles/hour at rated load AC1

Input circuit

Rated voltage	AC: 50/60 Hz AC/DC	12...240 V terminals (+)A1, (-)A2
Must release voltage		≥ 0,1 U _n
Operating range of supply voltage		0,9...1,1 U _n
Rated power consumption	AC DC	≤ 1,5 VA AC: 50 Hz ≤ 1,5 W
Range of supply frequency	AC	48...63 Hz

Insulation according to EN 60664-1

Insulation rated voltage		250 V AC
Rated surge voltage		4 000 V 1,2 / 50 μs
Overvoltage category		III
Insulation pollution degree		2
Flammability class		V-0 for modular cover, UL 94
Dielectric strength	• input - output	4 000 V AC type of insulation: basic
	• contact clearance	1 000 V AC type of clearance: micro-disconnection
	• pole - pole	2 000 V AC type of insulation: basic

General data

Electrical life	• resistive AC1	> 0,5 x 10 ⁵ 8 A, 250 V AC
Mechanical life (cycles)		> 3 x 10 ⁷
Dimensions (L x W x H)		90 ① x 17,5 x 64,6 mm
Weight		72 g
Ambient temperature	• storage (non-condensation and/or icing)	-40...+70 °C
	• operating	-20...+50 °C
Cover protection category		IP 20 EN 60529
Relative humidity		up to 85%
Shock resistance		15 g
Vibration resistance		0,35 mm DA 10...55 Hz

Time module data

Functions		E, A, nWa, nWu, nWuWa, nWs
Time ranges		1 s ②; 10 s; 20 s; 30 s; 1 min.; 1,5 min.; 2 min.; 3 min.; 5 min.; 10 min.
Timing adjustment		smooth - (0,1...1) x time range
Setting accuracy		± 5% ③ ④
Repeatability		± 0,5% ④
Values affecting the timing adjustment		temperature: ± 0,05% / °C supply voltage: ± 0,01% / V
Recovery time		AC: ≤ 400 ms DC: ≤ 150 ms
LED indicator		green LED U ON - indication of supply voltage U green LED U flashing - measurement of T time yellow LED R ON/OFF - output relay status

① Length with 35 mm rail catches: 98,8 mm. ② For first range setpoint (1 s) setting accuracy and repeatability are smaller than the given ones in technical parameters (significant influence of the operational relay operating time, processor start-time, and the moment of supply switching as referred to the AC supply course). ③ Calculated from the final range values, for the setting direction from minimum to maximum.

Time functions

Note: before the first use, perform the **RESET** of the relay:

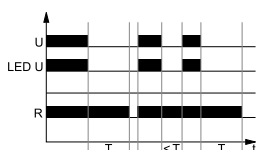
- set the E function,
- set 1 s on the time range knob,
- connect terminals A1, A2 with supply power,
- after approx. 5 s turn off the supply power.

E - ON delay.



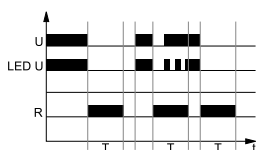
On applying the supply voltage U the set interval T begins - off-delay of the output relay R. After the interval T has lapsed, the output relay R switches on and remains on until supply voltage U is interrupted.

A - OFF delay without supply voltage.



When the supply voltage U is supplied, the output relay R switches into on-position (green LED U illuminated). If the supply voltage is interrupted (green LED U not illuminated), the set interval T begins. After the set interval T has lapsed, the output relay R switches into off-position. If the supply voltage is reconnected before the interval T has lapsed, the interval already measured is erased and is restarted with the next cycle.

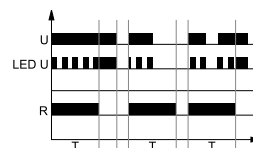
nWa - Maintained single shot trailing edge.



When the supply voltage U is supplied, the output relay R remains in off-position (green LED U illuminated). As soon as the supply voltage is interrupted, the output relay switches into on-position and the set interval T begins (green LED not illuminated). After the set interval T has lapsed, the output relay switches into off-position. When the supply voltage is reconnected before the interval T has lapsed, the unit continues to perform the actual single shot.

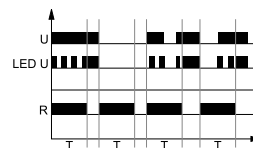
U - supply voltage; **R** - output state of the relay;
T - measured time; **t** - time axis

nWu - Maintained single shot leading edge.



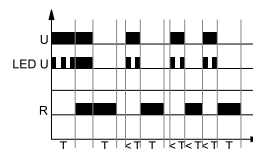
When the supply voltage U is applied (green LED U illuminated), the output relay R switches into on-position and the set interval T begins (green LED U flashes). After the interval T has lapsed, the output relay switches into off-position. This status remains until the supply voltage is interrupted. If the supply voltage is reconnected before the interval T has lapsed, the unit continues to perform the actual single shot.

nWuWa - Maintained single shot leading and trailing edge.



When the supply voltage U is applied, the output relay R switches into on-position and the set interval T begins (green LED U illuminated). After the interval T has lapsed, the output relay switches into off-position. As soon as the supply voltage is interrupted the output relay switches into on-position again, and the set interval T begins (green LED not illuminated). After the set interval T has lapsed, the output relay switches into off-position. If the supply voltage is interrupted (nWu) or reconnected (nWa) before the interval T has lapsed, the unit continues to perform the actual single shot.

nWs - Latching ON delay.



Applying the supply voltage U triggers the operation with delay in switching on the R contact by the set T interval. The R contact is switched on after the delay interval has lapsed. Interrupting the supply voltage while the R contact starts measurement of the T interval after which the R contact is to be switched off. After the T interval of switching the R contact off has lapsed, the R contact is switched off. Interruption of the supply voltage U while ON-delay by the set T interval is being measured for the R contact stops measurement of the T interval and switches the R contact immediately for the set T interval; after the interval has lapsed, the R contact is switched off. Applying the supply voltage U when the T interval is being measured for the R contact to be switched off stops measurement of the interval, switches the R contact off, and starts measurement of ON-delay for the R contact.

Additional functions

Green supply diode:

- when supply of the relay is on: it is lit permanently when the time is not being measured. In course of the T time measurement, it flashes at 500 ms period where it is lit for 50% of the time, and off for 50% of the time,
- when supply of the relay is off: it is not illuminated.

Yellow diode R:

- when the supply voltage is on: the diode is permanently illuminated for the R relay switched on,
- when the supply voltage is off, and the output relay R is on: the time range 1 s - it is illuminated permanently; time ranges 10 s, 20 s, 30 s: a blink of 30 ms every 1 s; time ranges longer than 1 min: a blink of 30 ms every 10 s.

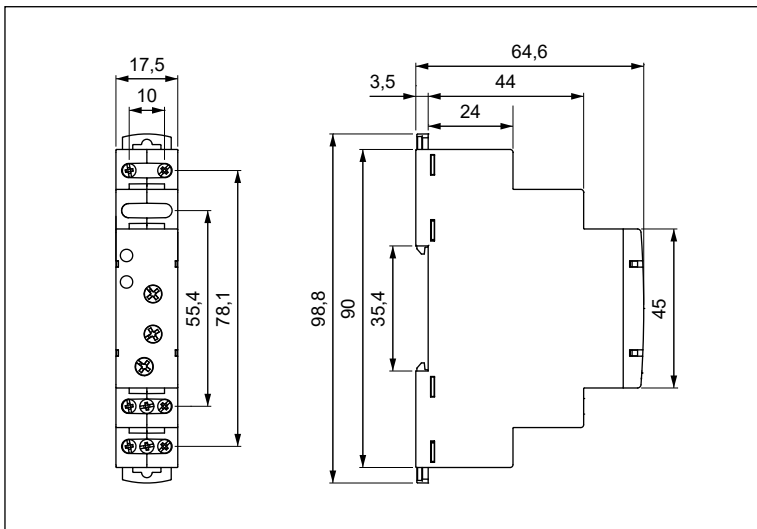
Adjustment of the set values:

- no change of the time value and range is possible when the relay operates. Any change of the time setting shall be read only after the supply voltage has been interrupted and reconnected,
- no change of the function is possible in the course of the relay's operation. Any change of the settings of the relay shall be read only after the supply voltage has been switched off and on again.

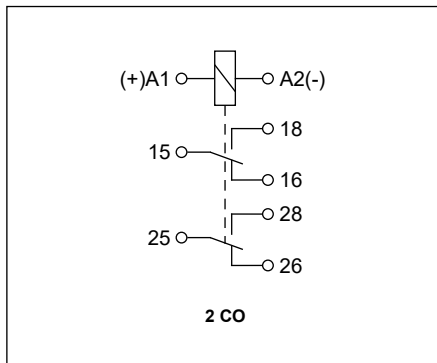
Triggering:

- the relay is triggered with the supply voltage.
- Supply:** the relay may be supplied with DC voltage or AC voltage 48...63 Hz of 10,8...264 V.

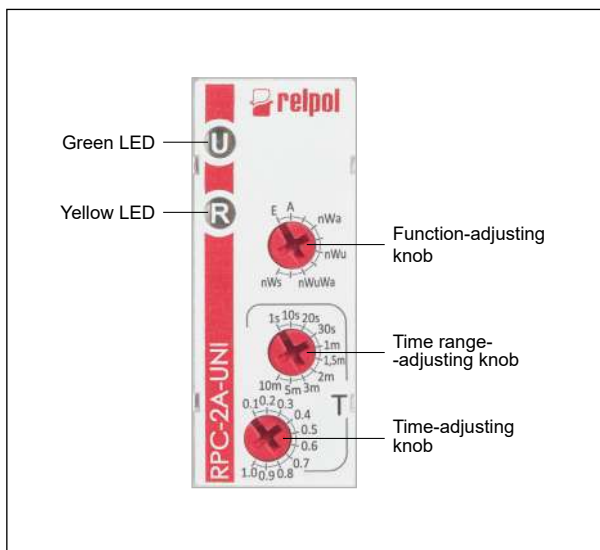
Dimensions



Connection diagram

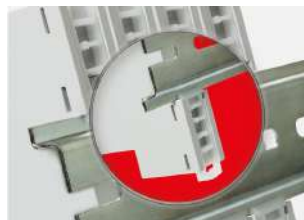


Front panel description



Mounting

Relays **RPC-2A-UNI** are designed for direct mounting on 35 mm rail mount acc. to EN 60715. Operational position - any. **Connections:** max. cross section of the cables: 1 x 2,5 mm² (1 x 14 AWG), stripping length: 6,5 mm, max. tightening moment for the terminal: 0,5 Nm.

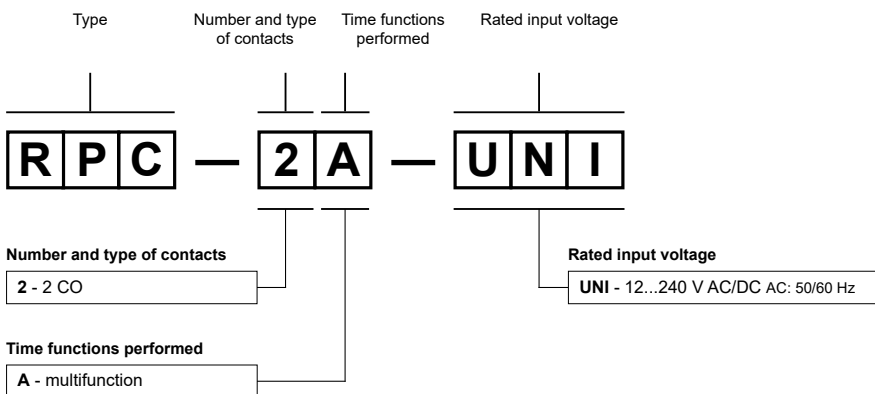


Two catches:
easy mounting on 35 mm rail, firm hold (top and bottom).



Mounting wires in clamps:
universal screw (cross-recessed or slotted head).

Ordering codes



Example of ordering codes:

RPC-2A-UNI

time relay **RPC-2A-UNI**, multifunction (relay perform 6 functions), cover - modular, width 17,5 mm, two changeover contacts, contact material AgSnO₂, rated input voltage 12...240 V AC/DC AC: 50/60 Hz



RPC-1MC-UNI

- **Immediate activation of the selected function**
- without having to temporarily turn off the power supply

- **Multifunction time relays (14 time functions; 8 time ranges)**
- Cadmium - free contacts 1 CO • AC/DC input voltages
- Cover - modular, width 17,5 mm • Direct mounting on 35 mm rail mount acc. to EN 60715 • Applications: in low-voltage systems
- Compliance with standard EN 61812-1
- Recognitions, certifications, directives: RoHS, **CE ENEC**

Output circuit - contact data

Number and type of contacts		1 CO
Contact material		AgSnO ₂
Max. switching voltage		300 V AC
Rated load	AC1 DC1	16 A / 250 V AC 16 A / 24 V DC 0,3 A / 250 V DC
Rated current		16 A / 250 V AC
Max. breaking capacity	AC1	4 000 VA
Min. breaking capacity		1 W 10 mA
Contact resistance		≤ 100 mΩ
Max. operating frequency		600 cycles/hour at rated load AC1

Input circuit

Rated voltage	AC: 50/60 Hz AC/DC	12...240 V terminals (+)A1, (-)A2
Must release voltage		≥ 0,1 U _n
Operating range of supply voltage		0,9...1,1 U _n
Rated power consumption	AC DC	≤ 1,5 VA AC: 50 Hz ≤ 1,5 W
Range of supply frequency	AC	48...63 Hz
Control contact S ①	• min. voltage ② • min. time of pulse duration ③ • max. length of control line	0,7 U _n AC: ≥ 50 ms DC: ≥ 30 ms 10 m

Insulation according to EN 60664-1

Insulation rated voltage		250 V AC
Rated surge voltage		4 000 V 1,2 / 50 μs
Overvoltage category		III
Insulation pollution degree		2
Flammability class		V-0 for modular cover, UL 94
Dielectric strength	• input - output • contact clearance	4 000 V AC type of insulation: basic 1 000 V AC type of clearance: micro-disconnection

General data

Electrical life	• resistive AC1	> 0,5 x 10 ⁵ 16 A, 250 V AC
Mechanical life (cycles)		> 3 x 10 ⁷
Dimensions (L x W x H) / Weight		90 ④ x 17,5 x 64,6 mm / 65 g
Ambient temperature	• storage (non-condensation and/or icing) • operating	-40...+70 °C -20...+50 °C
Cover protection category		IP 20 EN 60529
Relative humidity		up to 85%
Shock / vibration resistance		15 g / 0,35 mm DA 10...55 Hz

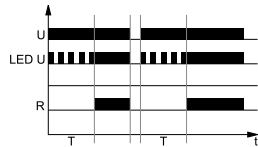
Time module data

Functions		E, E(S), Wu, Wu(S), Bp, Bp(S), Bi, Bi(S), R, Ws, Wa, Esa(R), E(R), Wu(R)
Time ranges		OFF - permanent switching off; ON - permanent switching on 1 s ⑤; 10 s; 1 min.; 10 min.; 1 h; 10 h; 1 d; 10 d
Timing adjustment		smooth - (0,1...1) x time range (does not refer to range ON / OFF)
Setting accuracy		± 5% ⑤ ④
Repeatability		± 0,5% ④
Values affecting the timing adjustment		temperature: ± 0,05% / °C supply voltage: ± 0,01% / V
Recovery time		AC: ≤ 400 ms DC: ≤ 150 ms
LED indicator		green LED U ON - indication of supply voltage U green LED U flashing - measurement of T time yellow LED R ON/OFF - output relay status

① The control terminal S is activated by connection to A1 terminal via the external control contact S. ② Where the control signal is recognizable.
③ Length with 35 mm rail catches: 98,8 mm. ④ For first range setpoint (1 s) setting accuracy and repeatability are smaller than the given ones in technical parameters (significant influence of the operational relay operating time, processor start-time, and the moment of supply switching as referred to the AC supply course). ⑤ Calculated from the final range values, for the setting direction from minimum to maximum.

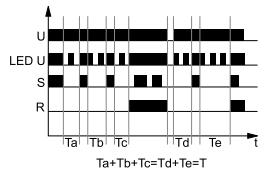
Time functions

E - ON delay.



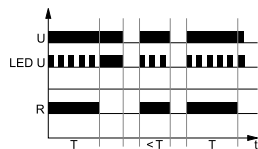
On applying the supply voltage U the set interval T begins - off-delay of the output relay R. After the interval T has lapsed, the output relay R switches on and remains on until supply voltage U is interrupted.

E(S) - ON delay, with time measurement stopped with contact S.



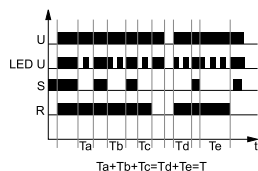
On applying the supply voltage U the set interval T begins. If during measuring time T control contact S is closed, measuring of time T is stopped for the time of closing contact S. Opening of control contact S resumes measuring of time T. After finishing measuring time T, the output relay R switches on and remains on until supply voltage U is interrupted.

Wu - ON for the set interval.



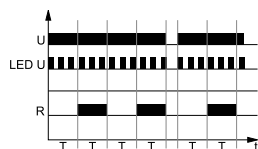
Applying the supply voltage U immediately switches the output relay R on for the set interval T. After the interval T has lapsed, the output relay R switches off.

Wu(S) - ON for the set interval, with time measurement stopped with closing of contact S.



Applying the supply voltage U immediately switches the output relay R on for the set interval T. If the control contact S is closed, the interval T measurement will be stopped until the moment when control contact is opened. Opening contact S starts further measuring of time T. After finishing measuring time T, the output relay R switches off.

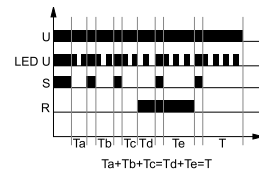
Bp - Symmetrical cyclical operation pause first.



Applying the supply voltage U starts the cyclical operation from the interval T - switching the output relay R off followed by switching on the output relay R for the interval T. The cyclical operation lasts until the supply voltage U is interrupted.

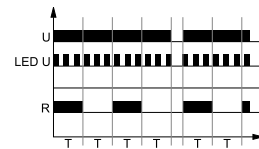
U - supply voltage; R - output state of the relay; S - control contact state; T - measured time; t - time axis

Bp(S) - Symmetrical cyclical operation pause first, with interval T measurement stopped for the time the S contact is switched on.



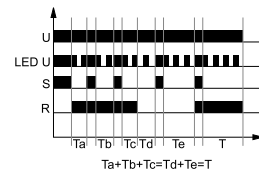
Applying the supply voltage U starts the cyclical operation from the interval T - switching the output relay R off. If in the course of measurement of the interval T the control contact S is closed, the measurement of the time of switching off the R relay will be interrupted for the time the S contact remains closed. Opening of the control contact S triggers further measurement of the interval T. After the interval T has lapsed, the output relay R switches on for the set interval T. If during the measurement of the interval T the control contact S is closed, measurement of the time of switching on the R relay will be interrupted for the time the S contact remains closed. Opening of the control contact S triggers further measurement of the interval T. The cyclical operation lasts until the supply voltage U is interrupted.

Bi - Symmetrical cyclical operation pulse first.



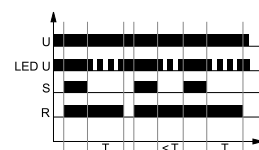
Applying the supply voltage U starts the cyclical operation from switching on the output relay R for the set interval T. After the interval T has lapsed, the output relay R switches off for the interval T. The cyclical operation lasts until the supply voltage U is interrupted.

Bi(S) - Symmetrical cyclical operation pulse first, with interval T measurement stopped for the time the S contact is switched on.



Applying the supply voltage U starts cyclical operation from measurement of the interval T - switching on the output relay R. If in the course of measurement of the interval T the control contact S is closed, the measurement of the time of switching off the R relay will be interrupted for the time the S contact remains closed. Opening of the control contact S triggers further measurement of the interval T. After the interval T has lapsed, the output relay R switches on for the set interval T. If during the measurement of the interval T the control contact S is closed, measurement of the time of switching off the R relay will be interrupted for the time the S contact remains closed. Opening of the control contact S triggers further measurement of the interval T. The cyclical operation lasts until the supply voltage U is interrupted.

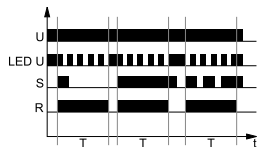
R - OFF delay with the control contact S.



The input of the time relay is supplied with voltage U continuously. Closing of the control contact S immediately switches on the output relay R. Opening of the control contact S starts the set time of the delayed switching off of the output relay R. After the interval T has lapsed, the output relay R switches off. If the control contact S is closed during the interval T, the already measured time is reset, and the output relay R is switched on again. The OFF delay of the output relay R will start when the control contact S is opened again.

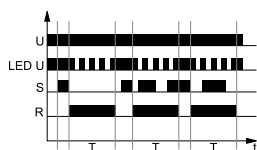
Time functions

Ws - Single shot for the set interval triggered by closing of the control contact S.



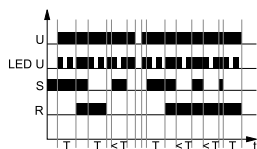
The input of the time relay is supplied with voltage U continuously. Closing of the control contact S immediately switches the output relay R on for the set interval T. After the interval T has lapsed, the output relay R is switched off. In the course of the interval T, any opening of the control contact S does not affect the function to be performed. The output relay R may be switched on again for the set interval, after the interval T has lapsed, by closing the control contact S again.

Wa - ON for the set interval triggered with the control contact S.



The input of the time relay is supplied with voltage U continuously. Closing of the control contact S does not start the interval T, and it does not change the position of the output relay R. Opening of the control contact S immediately switches on the output relay R for the set time. After the interval T has lapsed, the output relay R switches off. Opening and closing of the control contact S in the course of the interval T does not affect the function to be performed. The output relay R may be switched on again for the set interval with another closing and opening of the control contact S.

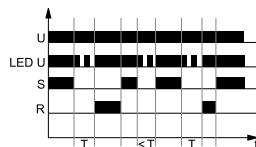
Esa(R) - ON and OFF delay controlled with on and off of the S contact with the Reset function.



The input of the time relay is supplied with voltage U continuously. Closing of the control contact S begins the measurement of the set interval T - ON delay of the output relay R. If the control contact S is opened during the measurement of the interval T - ON delay of the output relay R, the measured time will be reset. The interval T measurement will start after the control contact S has been closed. After the set interval T has lapsed,

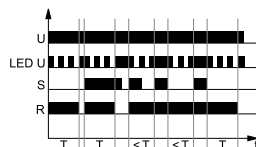
the output relay R switches on. Opening of the control contact S will again trigger measurement of the set interval T - OFF delay of the output relay R, and after the interval has been measured, the output relay R switches off. If the control contact S is closed during the interval T measurement, the measured time will be reset. Opening of the control contact S will again trigger measurement of the interval T.

E(R) - ON delay with the Reset function.



On applying the supply voltage U the set interval T begins. After the interval T has lapsed, output relay R turns on. If control contact S is closed during the measurement T, measuring of interval T is stopped for the time the S contact remains closed. After opening contact S, time T is measured from the start. After the interval T has lapsed, the output relay R switches on until the moment of turning off supply voltage U or when the control contact S is closed again.

Wu(R) - ON for the set interval with the Reset function.



Applying the supply voltage U immediately switches the output relay R on for the set interval T. When control contact S is closed, measurement of the interval T is stopped for the time of closing contact S (with output relay R on). After opening contact S, time T is measured from the beginning. After the interval T has lapsed, the output relay R switches off.

ON / OFF - Permanent switching on / off.

The functions ON and OFF are selected with T time range adjusting knob. In the ON function, the normally open contacts are closed all the time whereas in the OFF function they are open. The position of the function-adjusting knob is of no significance in these functions as is the preset measurement time. The ON or OFF functions are used for the time relay operation control in electric systems.

U - supply voltage; **R** - output state of the relay; **S** - control contact state; **T** - measured time; **t** - time axis

Additional functions

Supply diode: it is lit permanently when the time is not being measured. In course of the T time measurement, it flashes at 500 ms period where it is lit for 50% of the time, and off for 50% of the time.

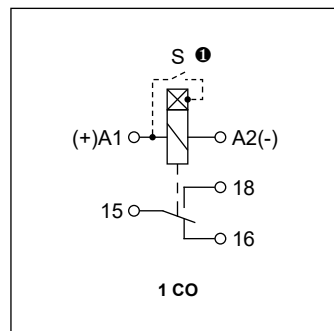
Adjustment of the set values:

- the values of time and range are read in the course of the relay's operation. The set values may be modified at any moment,
- it is possible to change the function during operation of the relay, which results in triggering operation with a new setting. It is not necessary to switch the supply off and on again for the relay to start operating with a new setting.

Triggering: depending on the function to be performed, the relay is triggered with the supply voltage or by connection of the S contact to the A1 line. For DC supply, the positive pole must be connected to the A1 line. The level of the S contact activation is adjusted automatically depending on the supply voltage.

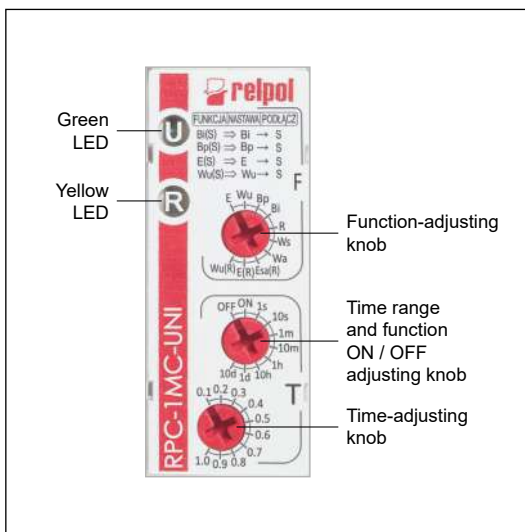
Supply: the relay may be supplied with DC voltage or AC voltage 48...63 Hz of 10,8...264 V.

Connection diagram

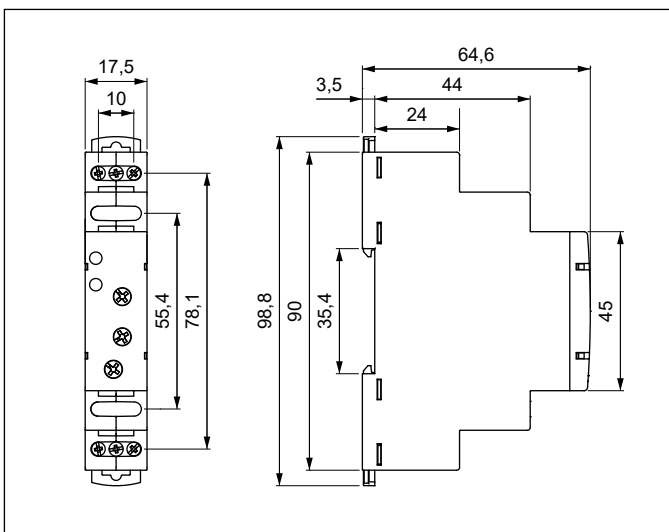


① The control terminal S is activated by connection to A1 terminal via the external control contact S.

Front panel description



Dimensions



Mounting

Relays **RPC-1MC-UNI** are designed for direct mounting on 35 mm rail mount acc. to EN 60715. Operational position - any. **Connections:** max. cross section of the cables: 1 x 2,5 mm² (1 x 14 AWG), stripping length: 6,5 mm, max. tightening moment for the terminal: 0,5 Nm.

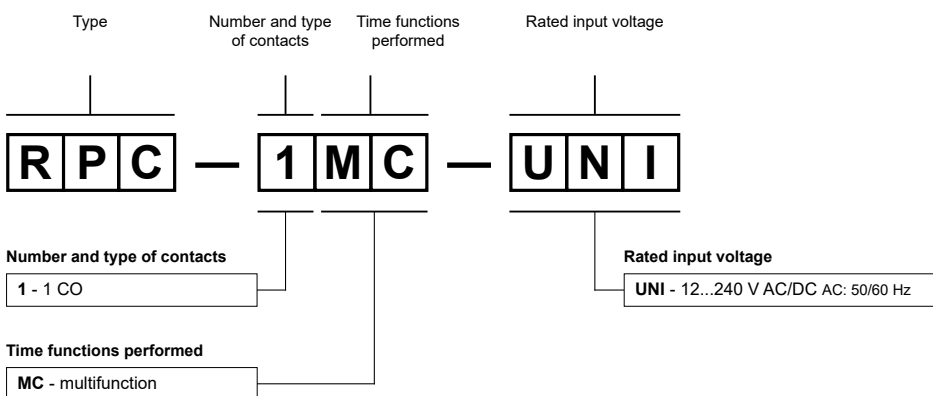


Two catches:
easy mounting
on 35 mm rail,
firm hold
(top and bottom).



**Mounting wires
in clamps:**
universal screw
(cross-recessed
or slotted head).

Ordering codes



Example of ordering codes:

RPC-1MC-UNI

time relay **RPC-1MC-UNI**, multifunction (relay perform 14 functions), cover - modular, width 17,5 mm, one changeover contact, contact material AgSnO₂, rated input voltage 12...240 V AC/DC AC: 50/60 Hz



RPC-1MD-UNI



RPC-3MD-UNI



- **Immediate activation of the selected function**
- without having to temporarily turn off the power supply

- **Multifunction time relays (10 time functions; 8 time ranges)**
- Cadmium - free contacts 1 CO and 3 CO • AC/DC input voltages
- Cover - modular, width 17,5 mm • Direct mounting on 35 mm rail mount acc. to EN 60715 • Applications: in low-voltage systems
- Compliance with standard EN 61812-1
- Recognitions, certifications, directives: RoHS, **CE ENEC**

Output circuit - contact data

Number and type of contacts	1 CO	3 CO
Contact material	AgSnO ₂	
Max. switching voltage	300 V AC	
Rated load	AC1 DC1 DC1	8 A / 250 V AC 8 A / 24 V DC 0,2 A / 250 V DC
Rated current	16 A / 250 V AC	
Max. breaking capacity	AC1	4 000 VA
Min. breaking capacity	1 W 10 mA	
Contact resistance	≤ 100 mΩ	
Max. operating frequency	600 cycles/hour at rated load AC1	

Input circuit

Rated voltage	AC: 50/60 Hz AC/DC	12...240 V terminals (+)A1, (-)A2
Must release voltage	≥ 0,1 U _n	
Operating range of supply voltage	0,9...1,1 U _n	
Rated power consumption	AC DC	≤ 1,5 VA AC: 50 Hz ≤ 1,5 W
Range of supply frequency	AC	48...63 Hz
Control contact S Ⓢ	• min. voltage Ⓢ • min. time of pulse duration Ⓢ • max. length of control line	0,7 U _n AC: ≥ 50 ms DC: ≥ 30 ms 10 m

Insulation according to EN 60664-1

Insulation rated voltage	250 V AC	
Rated surge voltage	4 000 V 1,2 / 50 μs	
Overvoltage category	III	
Insulation pollution degree	2	
Flammability class	V-0 for modular cover, UL 94	
Dielectric strength	• input - output • contact clearance • pole - pole	4 000 V AC type of insulation: basic 1 000 V AC type of clearance: micro-disconnection 2 000 V AC contacts 3 CO, type of insulation: basic

General data

Electrical life	• resistive AC1	> 0,5 x 10 ⁵ 16 A, 8 A, 250 V AC
Mechanical life (cycles)	> 3 x 10 ⁷	
Dimensions (L x W x H)	90 Ⓢ x 17,5 x 64,6 mm	
Weight	contact 1 CO: 65 g	contacts 3 CO: 88 g
Ambient temperature	• storage (non-condensation and/or icing)	-40...+70 °C
	• operating	-20...+50 °C
Cover protection category	IP 20	EN 60529
Relative humidity	up to 85%	
Shock / vibration resistance	15 g / 0,35 mm DA 10...55 Hz	

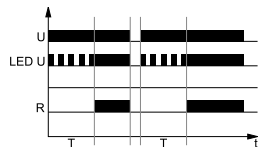
Time module data

Functions	E, Wu, Bp, Bi, R, Ws, Wa, Esa, B, T
Time ranges	OFF - permanent switching off; ON - permanent switching on 1 s Ⓢ; 10 s; 1 min.; 10 min.; 1 h; 10 h; 1 d; 10 d
Timing adjustment	smooth - (0,1...1) x time range (does not refer to range ON / OFF)
Setting accuracy / Repeatability	± 5% Ⓢ Ⓢ / ± 0,5% Ⓢ
Values affecting the timing adjustment	temperature: ± 0,05% / °C supply voltage: ± 0,01% / V
Recovery time	AC: ≤ 400 ms DC: ≤ 150 ms
LED indicator	green LED U ON - indication of supply voltage U green LED U flashing - measurement of T time yellow LED R ON/OFF - output relay status

Ⓢ The control terminal S is activated by connection to A1 terminal via the external control contact S. Ⓢ Where the control signal is recognizable.
 Ⓢ Length with 35 mm rail catches: 98,8 mm. Ⓢ For first range setpoint (1 s) setting accuracy and repeatability are smaller than the given ones in technical parameters (significant influence of the operational relay operating time, processor start-time, and the moment of supply switching as referred to the AC supply course). Ⓢ Calculated from the final range values, for the setting direction from minimum to maximum.

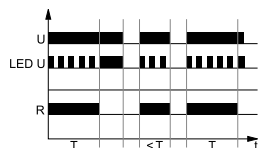
Time functions

E - ON delay.



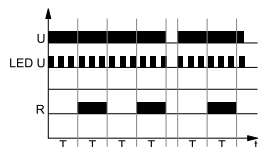
On applying the supply voltage U the set interval T begins - off-delay of the output relay R. After the interval T has lapsed, the output relay R switches on and remains on until supply voltage U is interrupted.

Wu - ON for the set interval.



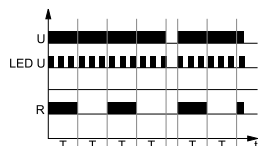
Applying the supply voltage U immediately switches the output relay R on for the set interval T. After the interval T has lapsed, the output relay R switches off.

Bp - Symmetrical cyclical operation pause first.



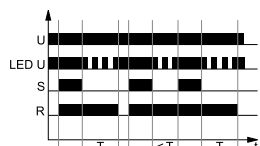
Applying the supply voltage U starts the cyclical operation from the interval T - switching the output relay R off followed by switching on the output relay R for the interval T. The cyclical operation lasts until the supply voltage U is interrupted.

Bi - Symmetrical cyclical operation pulse first.



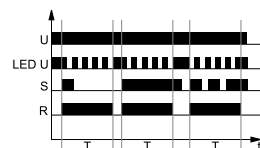
Applying the supply voltage U starts the cyclical operation from switching on the output relay R for the set interval T. After the interval T has lapsed, the output relay R switches off for the interval T. The cyclical operation lasts until the supply voltage U is interrupted.

R - OFF delay with the control contact S.



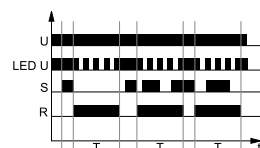
The input of the time relay is supplied with voltage U continuously. Closing of the control contact S immediately switches on the output relay R. Opening of the control contact S starts the set time of the delayed switching off of the output relay R. After the interval T has lapsed, the output relay R switches off. If the control contact S is closed during the interval T, the already measured time is reset, and the output relay R is switched on again. The OFF delay of the output relay R will start when the control contact S is opened again.

Ws - Single shot for the set interval triggered by closing of the control contact S.



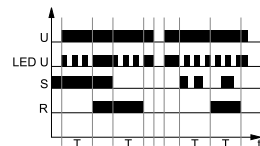
The input of the time relay is supplied with voltage U continuously. Closing of the control contact S immediately switches the output relay R on for the set interval T. After the interval T has lapsed, the output relay R is switched off. In the course of the interval T, any opening of the control contact S does not affect the function to be performed. The output relay R may be switched on again for the set interval, after the interval T has lapsed, by closing the control contact S again.

Wa - ON for the set interval triggered with the control contact S.



The input of the time relay is supplied with voltage U continuously. Closing of the control contact S does not start the interval T, and it does not change the position of the output relay R. Opening of the control contact S immediately switches on the output relay R for the set time. After the interval T has lapsed, the output relay R switches off. Opening and closing of the control contact S in the course of the interval T does not affect the function to be performed. The output relay R may be switched on again for the set interval with another closing and opening of the control contact S.

Esa - ON and OFF delay with the control contact S.

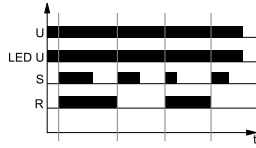


The input of the time relay is supplied with voltage U continuously. Closing of the control contact S starts the interval T - on-delay of the output relay R. After the interval T has lapsed, the output relay R switches on. Opening of the control contact S begins further measurement of the interval T - off-delay of the output relay R, and after the interval has lapsed, the output relay switches off. In case the time for which the control contact S is closed in the course of measurement of the on-delay of the output relay R is shorter than the set interval T, the output relay R will switch on after the set interval T, and the output relay R will remain in on position for the interval T. When the output relay R is in on position, closing of the control contact S does not affect the function to be performed.

U - supply voltage; R - output state of the relay; S - control contact state; T - measured time; t - time axis

Time functions

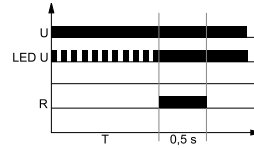
B - Cyclical operation controlled with closing of the control contact S.



The input of the time relay is supplied with U voltage continuously. Closing of the control contact S immediately switches on the output relay R. Each next closing of the control contact S results in a change of the status of the output relay R to an opposite one (the feature of a bistable relay).

U - supply voltage; **R** - output state of the relay; **S** - control contact state; **T** - measured time; **t** - time axis

T - Generation of the 0,5 s pulse after the interval T.



Applying the supply voltage U starts the interval T. After the interval T has lapsed, the output relay switches on for 0,5 s (the time of the NO contact of the output relay).

ON / OFF - Permanent switching on / off.

The functions ON and OFF are selected with T time range adjusting knob. In the ON function, the normally open contacts are closed all the time whereas in the OFF function they are open. The position of the function-adjusting knob is of no significance in these functions as is the preset measurement time. The ON or OFF functions are used for the time relay operation control in electric systems.

Additional functions

Supply diode: it is lit permanently when the time is not being measured. In course of the T time measurement, it flashes at 500 ms period where it is lit for 50% of the time, and off for 50% of the time.

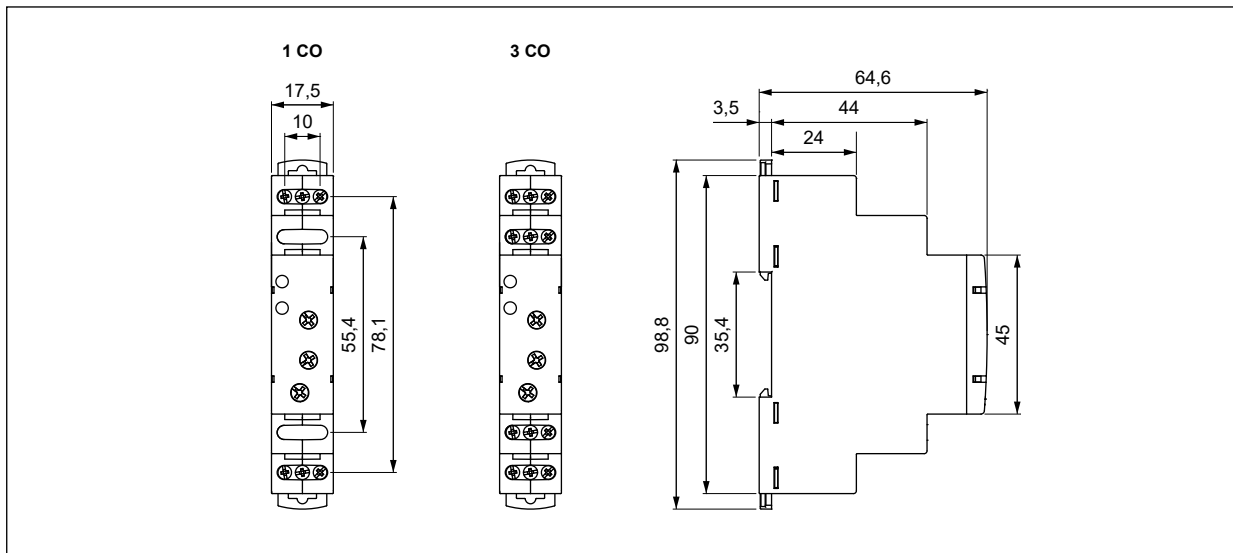
Adjustment of the set values:

- the values of time and range are read in the course of the relay's operation. The set values may be modified at any moment,
- it is possible to change the function during operation of the relay, which results in triggering operation with a new setting. It is not necessary to switch the supply off and on again for the relay to start operating with a new setting.

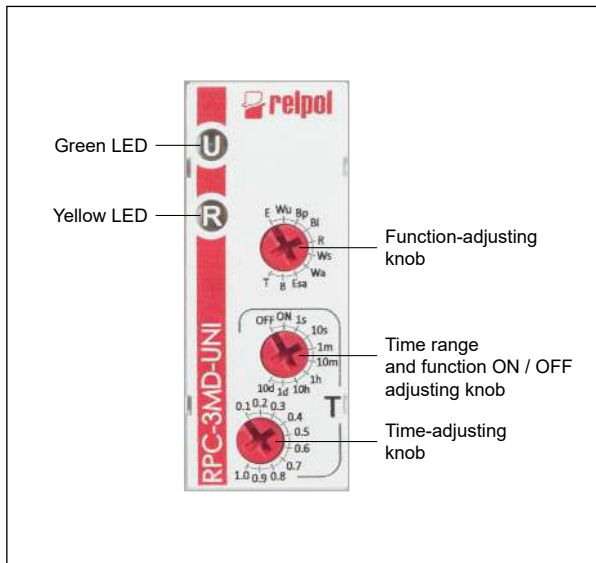
Triggering: depending on the function to be performed, the relay is triggered with the supply voltage or by connection of the S contact to the A1 line. For DC supply, the positive pole must be connected to the A1 line. The level of the S contact activation is adjusted automatically depending on the supply voltage.

Supply: the relay may be supplied with DC voltage or AC voltage 48...63 Hz of 10,8...264 V.

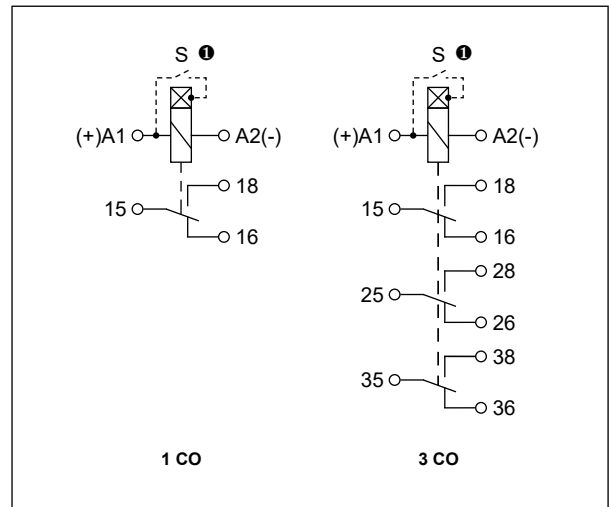
Dimensions



Front panel description



Connection diagrams



① The control terminal S is activated by connection to A1 terminal via the external control contact S.

Mounting

Relays **RPC-.MD-UNI** are designed for direct mounting on 35 mm rail mount acc. to EN 60715. Operational position - any. **Connections:** max. cross section of the cables: 1 x 2,5 mm² (1 x 14 AWG), stripping length: 6,5 mm, max. tightening moment for the terminal: 0,5 Nm.

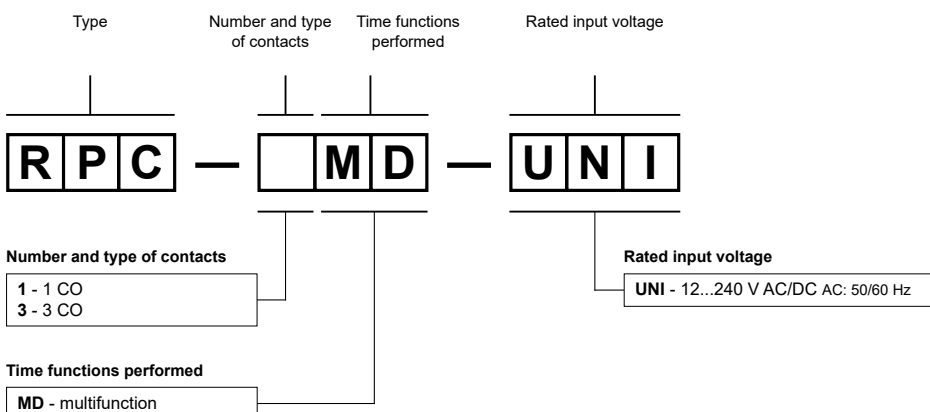


Two catches:
easy mounting
on 35 mm rail,
firm hold
(top and bottom).



**Mounting wires
in clamps:**
universal screw
(cross-recessed
or slotted head).

Ordering codes



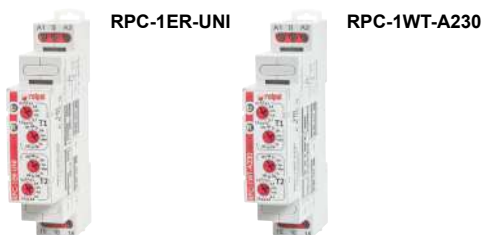
Examples of ordering codes:

RPC-1MD-UNI

time relay **RPC-.MD-UNI**, multifunction (relay perform 10 functions), cover - modular, width 17,5 mm, one changeover contact, contact material AgSnO₂, rated input voltage 12...240 V AC/DC AC: 50/60 Hz

RPC-3MD-UNI

time relay **RPC-.MD-UNI**, multifunction (relay perform 10 functions), cover - modular, width 17,5 mm, three changeover contacts, contact material AgSnO₂, rated input voltage 12...240 V AC/DC AC: 50/60 Hz



- **Single-function time relays with independently controlled times T1 and T2 (8 time ranges)**
- Cadmium - free contacts 1 CO • AC and AC/DC input voltages
- Cover - modular, width 17,5 mm
- Direct mounting on 35 mm rail mount acc. to EN 60715
- Applications: in low-voltage systems
- Compliance with standard EN 61812-1
- Recognitions, certifications, directives: RoHS, **CE ENEC**

• **Codes of versions - time functions performed:**

RPC-1ER-...	RPC-1EA-...	RPC-1ES-...	RPC-1EU-...	RPC-1IP-...	RPC-1SA-...	RPC-1WT-...
function ER	function EWa	function EWs	function EWu + NWu	function li + lp	function WsWa	function Wt

Output circuit - contact data

Number and type of contacts	1 CO		
Contact material	AgSnO ₂		
Max. switching voltage	300 V AC		
Rated load	AC1	16 A / 250 V AC	0,3 A / 250 V DC
	DC1	16 A / 24 V DC	
Rated current	16 A / 250 V AC		
Max. breaking capacity	AC1	4 000 VA	
Min. breaking capacity	1 W 10 mA		
Contact resistance	≤ 100 mΩ		
Max. operating frequency	600 cycles/hour at rated load AC1		
Input circuit			
Rated voltage	50/60 Hz AC	230 V	terminals A1, A2
	AC: 50/60 Hz AC/DC	12...240 V	terminals (+)A1, (-)A2
Must release voltage	≥ 0,1 U _n		
Operating range of supply voltage	0,9...1,1 U _n		
Rated power consumption	AC	≤ 3,5 VA 230 V AC, 50 Hz	≤ 1,5 VA 12...240 V AC/DC, AC: 50 Hz
	DC	≤ 1,5 W 12...240 V AC/DC	
Range of supply frequency	AC	48...63 Hz	
Control contact S ①			
• min. voltage ②	0,7 U _n		
• min. time of pulse duration ②	AC: ≥ 50 ms		DC: ≥ 30 ms
• max. length of control line	10 m		
Insulation according to EN 60664-1			
Insulation rated voltage	250 V AC		
Rated surge voltage	4 000 V 1,2 / 50 μs		
Overvoltage category	III		
Insulation pollution degree	2		
Flammability class	V-0 for modular cover, UL 94		
Dielectric strength	• input - output	4 000 V AC type of insulation: basic	
	• contact clearance	1 000 V AC type of clearance: micro-disconnection	

① The control terminal S is activated by connection to A1 terminal via the external control contact S.

② Where the control signal is recognizable.

Table of codes

Table 1

Time relay code	Rated input voltage	Time relay code	Rated input voltage
with 1 CO contact	230 V AC 50/60 Hz	with 1 CO contact	12...240 V AC/DC AC: 50/60 Hz
RPC-1ER-A230		RPC-1ER-UNI	
RPC-1EA-A230		RPC-1EA-UNI	
RPC-1ES-A230		RPC-1ES-UNI	
RPC-1EU-A230		RPC-1EU-UNI	
RPC-1IP-A230		RPC-1IP-UNI	
RPC-1SA-A230		RPC-1SA-UNI	
RPC-1WT-A230		RPC-1WT-UNI	

General data

Electrical life	• resistive AC1	> 0,5 x 10 ⁵	16 A, 250 V AC
Mechanical life (cycles)		> 3 x 10 ⁷	
Dimensions (L x W x H)		90 Ⓣ x 17,5 x 64,6 mm	
Weight		65...66 g	
Ambient temperature	• storage	-40...+70 °C	
(non-condensation and/or icing)	• operating	-20...+50 °C	
Cover protection category		IP 20	EN 60529
Relative humidity		up to 85%	
Shock resistance		15 g	
Vibration resistance		0,35 mm DA	10...55 Hz

Time module data

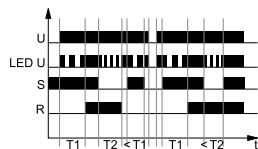
Functions	ER, EWa, EWs, EWu + NWu, li + lp, WsWa, Wt		
Time ranges	OFF - permanent switching off; ON - permanent switching on 1 s Ⓣ; 10 s; 1 min.; 10 min.; 1 h; 10 h; 1 d; 10 d		
Timing adjustment	smooth - (0,1...1) x time range (does not refer to range ON / OFF)		
Setting accuracy	± 5% Ⓣ Ⓢ		
Repeatability	± 0,5% Ⓣ		
Values affecting the timing adjustment	temperature: ± 0,05% / °C		supply voltage: ± 0,01% / V
Recovery time	AC	≤ 150 ms 230 V AC, 50 Hz	≤ 400 ms 12...240 V AC/DC, AC: 50 Hz
	DC	≤ 150 ms 12...240 V AC/DC	
LED indicator	green LED U ON - indication of supply voltage U green LED U slow flashing - measurement of T1 time green LED U fast flashing - measurement of T2 time yellow LED R ON/OFF - output relay status		

Ⓣ Length with 35 mm rail catches: 98,8 mm. Ⓢ For first range setpoint (1 s) setting accuracy and repeatability are smaller than the given ones in technical parameters (significant influence of the operational relay operating time, processor start-time, and the moment of supply switching as referred to the AC supply course). Ⓢ Calculated from the final range values, for the setting direction from minimum to maximum.

Time functions

ER - ON delay and OFF delay with control contact S. Independent settings of T1 and T2 intervals.

Codes of versions: **RPC-1ER-...**



The input of the time relay is supplied with voltage U continuously. Closing of the control contact S starts the interval T1, and after it has lapsed, the output relay R switches on. Opening of the control contact S starts the interval T2, and after it has lapsed, the output relay R switches off. In case the control contact S is closed in the course of the interval T2, the measured time is reset and the output relay R remains switched on. In case the control contact S is closed for time shorter than T1, the unit will not switch the output relay R on.

EWa - OFF delay and breaking time delay with opening of the control contact S. Independent settings of T1 and T2 intervals.

Codes of versions: **RPC-1EA-...**



The input of the time relay is supplied with voltage U continuously. Closing of the control contact S switches on the output relay R. Opening of the control contact S starts the interval T1, and after the interval has

lapsed, the output relay R switches off for the interval T2. Following the interval T2, the output relay R will be switched on again when the control contact S is closed on the lapse of the interval. In the course of the intervals T1 and T2 the position of the control contact S is of no importance.

EWs - ON delay and ON for the set time with closing of the control contact S. Independent settings of T1 and T2 intervals.

Codes of versions: **RPC-1ES-...**



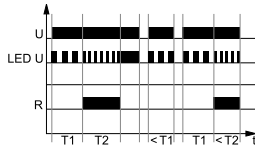
The input of the time relay is supplied with voltage U continuously. Closing of the control contact S starts the interval T1, and after the interval has lapsed, the output relay R switches on for the interval T2. Following the interval T2, the output relay switches off, and the circuit awaits for the control contact S to be closed again. In the course of the intervals T1 and T2 the position of the control contact S is of no importance.

U - supply voltage; R - output state of the relay;
S - control contact state; T1, T2 - measured times; t - time axis

Time functions

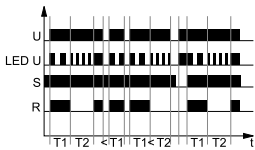
EWu + NWu - ON delay for the set interval (EWu) or switching ON for the set interval-switching OFF for the set interval-continuous ON (NWu), with the control contact S. Independent settings of T1 and T2 intervals. Codes of versions: **RPC-1EU-...**

function EWu



When the control contact S is open, application of the supply voltage U starts operation in the EWu function - the interval T1, and after the interval T1 has lapsed, the output relay switches on for the interval T2.

function NWu

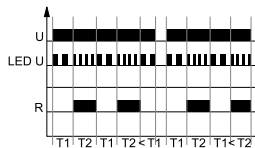


When the control contact S is closed, application of the supply voltage U starts operation in the NWu function - from switching on the output relay R for the interval T1, and after the interval T1 has lapsed, the output relay switches off for the interval T2, and following the interval T2, the output relay R switches on for continuous time.

In the course of the relay operation, closing of the control contact S at any time will cause reset and the operation in the NWu function will start whereas opening of the control contact S at any time will cause reset and the operation in the EWu function will start.

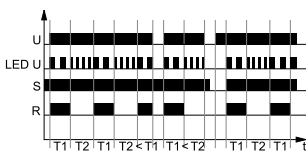
Ii + Ip - Cyclical operation in two independent intervals T1 and T2. Operation in the function Ii or Ip depending on the position of the control contact S. Codes of versions: **RPC-1IP-...**

function Ip



Application of the supply voltage U when the control contact S is open start the cyclical operation in the Ip function - from the interval T1 (time of switching off the output relay R), following which the output relay R is switched on for the interval T2. The cyclical operation continues until the supply voltage U is interrupted.

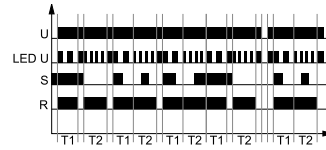
function Ii



When the control contact S is closed, application of the supply voltage U starts operation in the Ii function - from switching on the output relay R for the interval T1, and after the interval T1 has lapsed, the output relay switches off for the interval T2. The cyclical operation continues until the supply voltage U is interrupted.

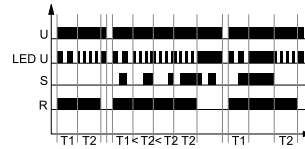
In the course of the relay operation, closing of the control contact S at any time will cause reset and the operation in the Ii function will start whereas opening of the control contact S at any time will cause reset and the operation in the Ip function will start.

WsWa - ON for the set intervals T1 and T2 with the control contact S. Independent settings of T1 and T2 intervals. Codes of versions: **RPC-1SA-...**



The input of the time relay is supplied with voltage U continuously. Closing of the control contact S switches the output relay R for the interval T1, and after the interval has lapsed, the relay R is switched off. Opening of the control contact S switches on the output relay R for the interval T2. If the control contact S is open when the interval T1 lapses, the output relay R will remain on for the interval T2. If the control contact S is closed when the interval T2 lapses, the output relay R will remain on for the interval T1.

Wt - Monitoring of the sequence of pulses. Switching on extended with consecutive pulses / closings of the contact S. Independent settings of T1 and T2 intervals. Codes of versions: **RPC-1WT-...**



On applying the supply voltage U the output relay R is switched on for the set interval T1. After the interval T1 has lapsed, the interval T2 starts with the output relay R still switched on. For the output relay to switch on, the control contact S must be closed and then opened (single pulse) during the interval T2, which cancels the time already measured and starts the interval T2 again. In case of absence of a single pulse prior to lapse of the interval T2, the output relay R will switch off, and it may be switched on after the supply voltage has been interrupted and applied again.

ON / OFF - Permanent switching on / off. The functions ON and OFF are selected with T1, T2 time range adjusting knobs. In the ON function, the normally open contacts are closed all the time whereas in the OFF function they are open. The ON state is implemented only when both T1, T2 time range adjusting knobs are set to ON. The OFF state is implemented only when at least one of the T1, T2 time range adjusting knobs is set to OFF or when one of these knobs is set to time range 1 s, 10 s, etc., and the other is set to ON. The ON or OFF functions are used for the time relay operation control in electric systems.

U - supply voltage; **R** - output state of the relay;
S - control contact state; **T1, T2** - measured times; **t** - time axis

Additional functions

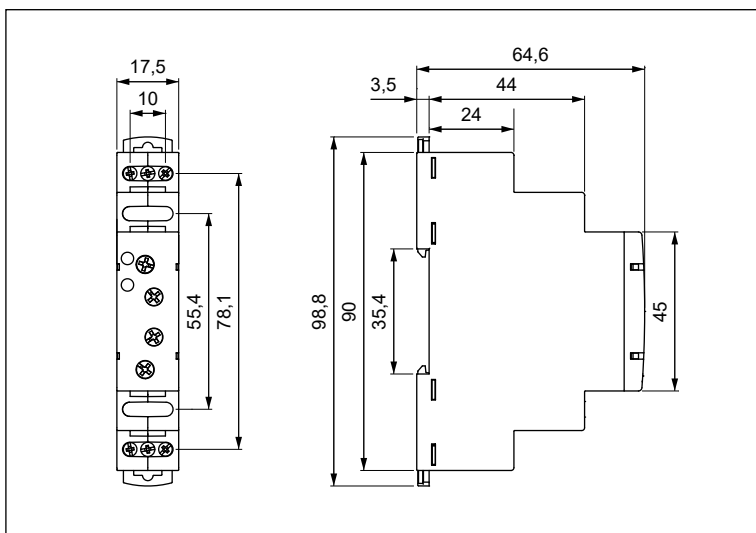
Supply diode: it is lit permanently when the time is not being measured. In course of the T1 time measurement, it flashes at 500 ms period, in course of the T2 time measurement at 250 ms period, where it is lit for 50% of the time, and off for 50% of the time.

Adjustment of the set values: the values of time and range are read in the course of the relay's operation. The set values may be modified at any moment.

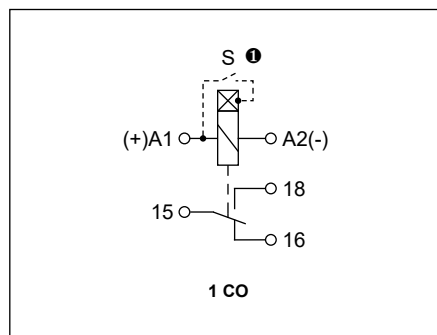
Triggering: the relay is triggered by connection of the S contact to the A1 line. For DC supply, the positive pole must be connected to the A1 line. The level of the S contact activation is adjusted automatically depending on the supply voltage.

Supply:
 - **RPC-...-A230:** the relay may be supplied with AC voltage 48...63 Hz of 207...253 V,
 - **RPC-...-UNI:** the relay may be supplied with DC voltage or AC voltage 48...63 Hz of 10,8...264 V.

Dimensions

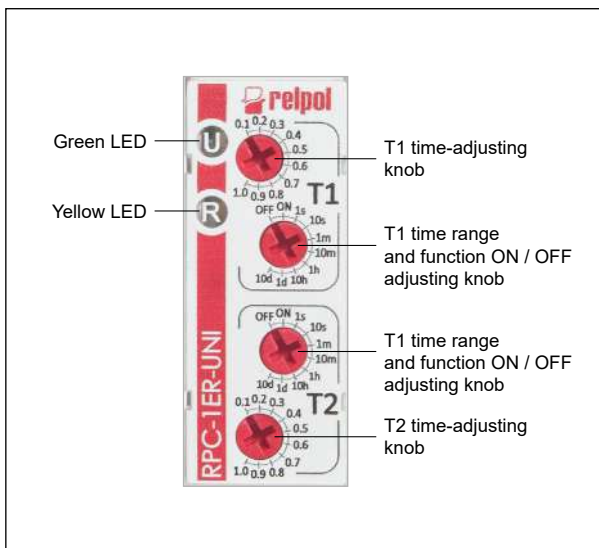


Connection diagram



Note: the indicated polarization of the supply refers only to the relays RPC-...-UNI. **!** The control terminal S is activated by connection to A1 terminal via the external control contact S.

Front panel description



Mounting

Relays **RPC-1-....** are designed for direct mounting on 35 mm rail mount acc. to EN 60715. Operational position - any. **Connections:** max. cross section of the cables: 1 x 2,5 mm² (1 x 14 AWG), stripping length: 6,5 mm, max. tightening moment for the terminal: 0,5 Nm.

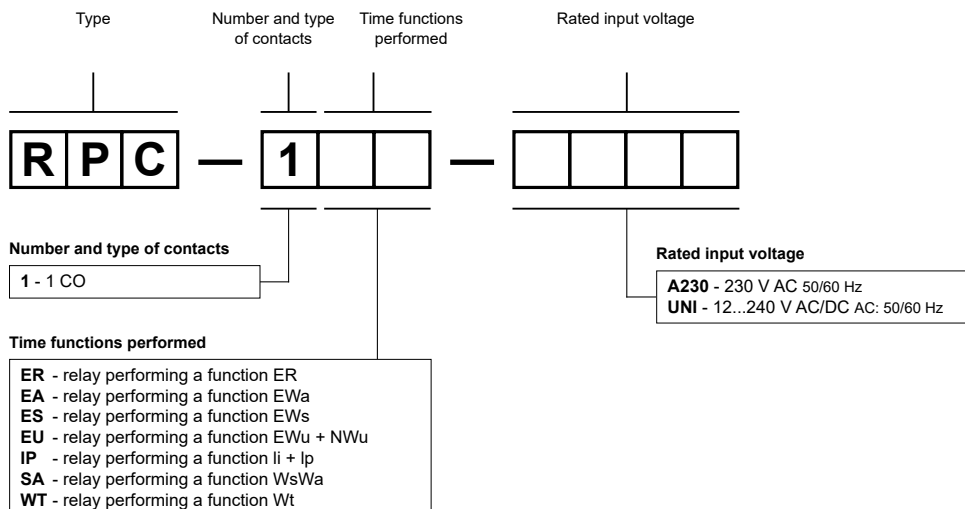


Two catches: easy mounting on 35 mm rail, firm hold (top and bottom).



Mounting wires in clamps: universal screw (cross-recessed or slotted head).

Ordering codes



Examples of ordering codes ⑥:

RPC-1ER-A230 time relay **RPC-1ER-...**, single-function (relay perform function ER), cover - modular, width 17,5 mm, one changeover contact, contact material AgSnO₂, rated input voltage 230 V AC 50/60 Hz

RPC-1WT-UNI time relay **RPC-1WT-...**, single-function (relay perform function Wt), cover - modular, width 17,5 mm, one changeover contact, contact material AgSnO₂, rated input voltage 12...240 V AC/DC AC: 50/60 Hz

⑥ Ordering codes **RPC-1ER/EA/ES/EU/IP/SA/WT-...** are specified in Table 1, "Time relay code" column.

Table of codes

Table 1

Time relay code	Rated input voltage	Time relay code	Rated input voltage
with 1 CO contact	230 V AC 50/60 Hz	with 1 CO contact	12...240 V AC/DC AC: 50/60 Hz
RPC-1ER-A230		RPC-1ER-UNI	
RPC-1EA-A230		RPC-1EA-UNI	
RPC-1ES-A230		RPC-1ES-UNI	
RPC-1EU-A230		RPC-1EU-UNI	
RPC-1IP-A230		RPC-1IP-UNI	
RPC-1SA-A230		RPC-1SA-UNI	
RPC-1WT-A230		RPC-1WT-UNI	

RPC-1E-UNI

RPC-2BP-A230



- **Single-function time relays (8 time ranges)**
- Cadmium - free contacts 1 CO and 2 CO
- AC and AC/DC input voltages
- Cover - modular, width 17,5 mm
- Direct mounting on 35 mm rail mount acc. to EN 60715
- Applications: in low-voltage systems
- Compliance with standard EN 61812-1
- Recognitions, certifications, directives: RoHS, **CE EAC**

• **Codes of versions** - time functions performed:

RPC-.E-...	RPC-.WU-...	RPC-.BP-...
function E	function Wu	function Bp

Output circuit - contact data

Number and type of contacts	1 CO	2 CO	
Contact material	AgSnO ₂		
Max. switching voltage	300 V AC		
Rated load	AC1	16 A / 250 V AC	8 A / 250 V AC
	DC1	16 A / 24 V DC	8 A / 24 V DC
	DC1	0,3 A / 250 V DC	0,3 A / 250 V DC
Rated current	16 A / 250 V AC		8 A / 250 V AC
Max. breaking capacity	AC1	4 000 VA	2 000 VA
Min. breaking capacity	1 W 10 mA		
Contact resistance	≤ 100 mΩ		
Max. operating frequency	600 cycles/hour at rated load AC1		
Input circuit			
Rated voltage	50/60 Hz AC	230 V	terminals A1, A2
	AC: 50/60 Hz AC/DC	12...240 V	terminals (+)A1, (-)A2
Must release voltage	≥ 0,1 U _n		
Operating range of supply voltage	0,9...1,1 U _n		
Rated power consumption	AC	≤ 3,5 VA 230 V AC, 50 Hz	≤ 1,5 VA 12...240 V AC/DC, AC: 50 Hz
	DC	≤ 1,5 W 12...240 V AC/DC	
Range of supply frequency	AC	48...63 Hz	
Insulation according to EN 60664-1			
Insulation rated voltage	250 V AC		
Rated surge voltage	4 000 V 1,2 / 50 μs		
Overvoltage category	III		
Insulation pollution degree	2		
Flammability class	V-0 for modular cover, UL 94		
Dielectric strength	• input - output	4 000 V AC	type of insulation: basic
	• contact clearance	1 000 V AC	type of clearance: micro-disconnection
	• pole - pole	2 000 V AC	contacts 2 CO, type of insulation: basic
General data			
Electrical life	• resistive AC1	> 0,5 x 10 ⁵	16 A, 8 A, 250 V AC
Mechanical life (cycles)		> 3 x 10 ⁷	
Dimensions (L x W x H)	90 ① x 17,5 x 64,6 mm		
Weight	contact 1 CO:	64...71 g	contacts 2 CO: 70...71 g
Ambient temperature (non-condensation and/or icing)	• storage	-40...+70 °C	
	• operating	-20...+50 °C	
Cover protection category	IP 20	EN 60529	
Relative humidity	up to 85%		
Shock / vibration resistance	15 g / 0,35 mm DA 10...55 Hz		

① Length with 35 mm rail catches: 98,8 mm.

Table of codes

Table 1

Time relay code		Rated input voltage
with 1 CO contact	with 2 CO contacts	
RPC-1E-A230	RPC-2E-A230	230 V AC 50/60 Hz
RPC-1WU-A230	RPC-2WU-A230	
RPC-1BP-A230	RPC-2BP-A230	
RPC-1E-UNI	RPC-2E-UNI	12...240 V AC/DC AC: 50/60 Hz
RPC-1WU-UNI	RPC-2WU-UNI	
RPC-1BP-UNI	RPC-2BP-UNI	

Time module data

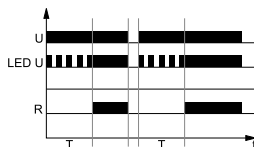
Functions	E, Wu, Bp	
Time ranges	OFF - permanent switching off; ON - permanent switching on 1 s ②; 10 s; 1 min.; 10 min.; 1 h; 10 h; 1 d; 10 d	
Timing adjustment	smooth - (0,1...1) x time range (does not refer to range ON / OFF)	
Setting accuracy	± 5% ③ ④	
Repeatability	± 0,5% ④	
Values affecting the timing adjustment	temperature: ± 0,05% / °C supply voltage: ± 0,01% / V	
Recovery time	AC	≤ 150 ms 230 V AC, 50 Hz ≤ 400 ms 12...240 V AC/DC, AC: 50 Hz
	DC	≤ 150 ms 12...240 V AC/DC
LED indicator	green LED U ON - indication of supply voltage U green LED U flashing - measurement of T time yellow LED R ON/OFF - output relay status	

② For first range setpoint (1 s) setting accuracy and repeatability are smaller than the given ones in technical parameters (significant influence of the operational relay operating time, processor start-time, and the moment of supply switching as referred to the AC supply course). ③ Calculated from the final range values, for the setting direction from minimum to maximum.

Time functions

E - ON delay.

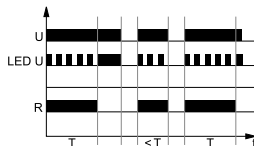
Codes of versions: **RPC-.E-...**



On applying the supply voltage U the set interval T begins - off-delay of the output relay R. After the interval T has lapsed, the output relay R switches on and remains on until supply voltage U is interrupted.

Wu - ON for the set interval.

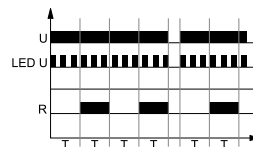
Codes of versions: **RPC-.WU-...**



Applying the supply voltage U immediately switches the output relay R on for the set interval T. After the interval T has lapsed, the output relay R switches off.

Bp - Symmetrical cyclical operation pause first.

Codes of versions: **RPC-.BP-...**



Applying the supply voltage U starts the cyclical operation from the interval T - switching the output relay R off followed by switching on the output relay R for the interval T. The cyclical operation lasts until the supply voltage U is interrupted.

ON / OFF - Permanent switching on / off.

The functions ON and OFF are selected with T time range adjusting knob. In the ON function, the normally open contacts are closed all the time whereas in the OFF function they are open. The preset measurement time is of no significance in these functions. The ON or OFF functions are used for the time relay operation control in electric systems.

U - supply voltage; R - output state of the relay; S - control contact state; T - measured time; t - time axis

Additional functions

Supply diode: it is lit permanently when the time is not being measured. In course of the T time measurement, it flashes at 500 ms period where it is lit for 50% of the time, and off for 50% of the time.

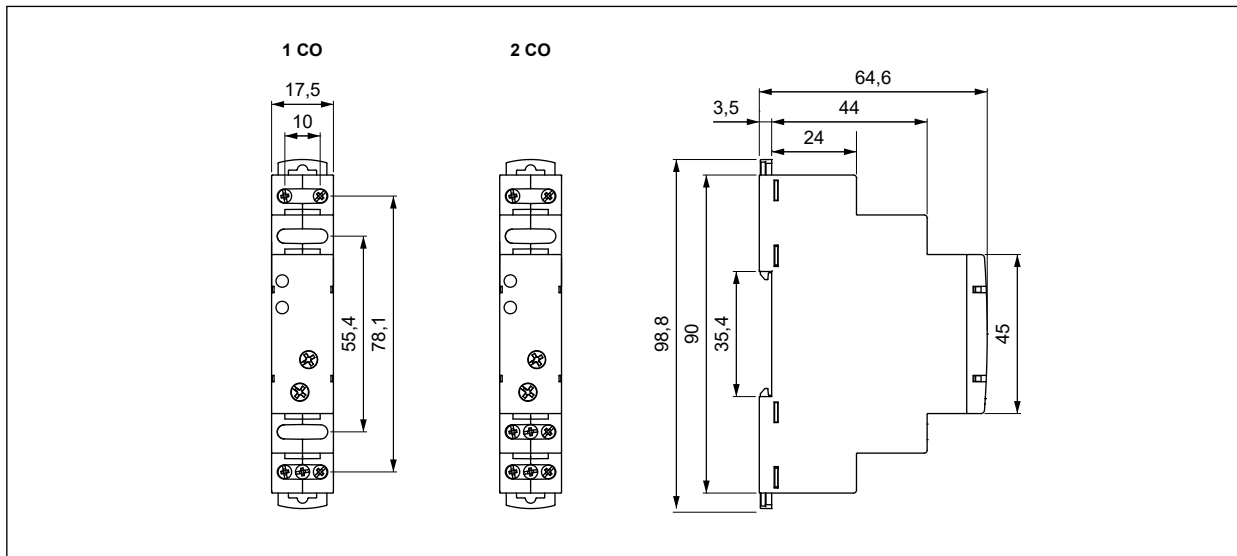
Adjustment of the set values: the values of time and range are read in the course of the relay's operation. The set values may be modified at any moment.

Triggering: the relay is triggered with the supply voltage.

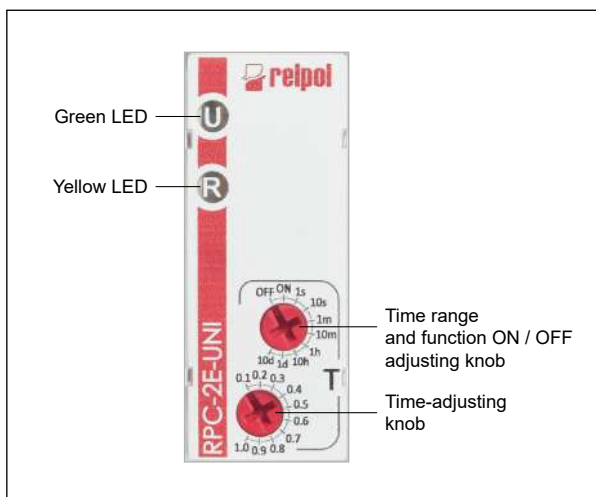
Supply:

- **RPC-...-A230:** the relay may be supplied with AC voltage 48...63 Hz of 207...253 V,
- **RPC-...-UNI:** the relay may be supplied with DC voltage or AC voltage 48...63 Hz of 10,8...264 V.

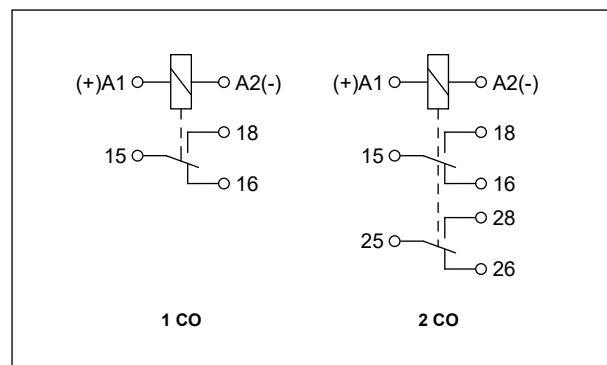
Dimensions



Front panel description



Connection diagrams



Note: the indicated polarization of the supply refers only to the relays RPC-...-UNI.

Mounting

Relays **RPC-...-...** are designed for direct mounting on 35 mm rail mount acc. to EN 60715. Operational position - any. **Connections:** max. cross section of the cables: 1 x 2,5 mm² (1 x 14 AWG), stripping length: 6,5 mm, max. tightening moment for the terminal: 0,5 Nm.

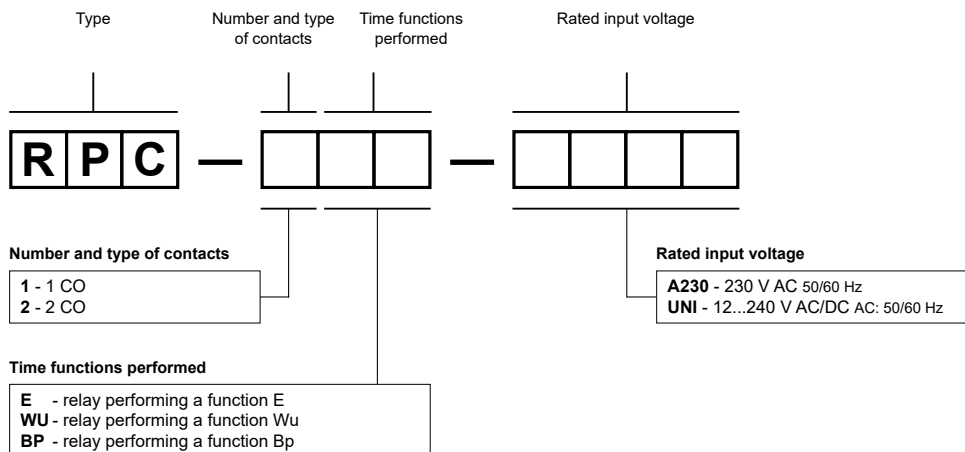


Two catches:
easy mounting
on 35 mm rail,
firm hold
(top and bottom).



**Mounting wires
in clamps:**
universal screw
(cross-recessed
or slotted head).

Ordering codes



Examples of ordering codes ④:

RPC-1E-A230 time relay **RPC-.E-...**, single-function (relay perform function E), cover - modular, width 17,5 mm, one changeover contact, contact material AgSnO₂, rated input voltage 230 V AC 50/60 Hz

RPC-2BP-UNI time relay **RPC-.BP-...**, single-function (relay perform function Bp), cover - modular, width 17,5 mm, two changeover contacts, contact material AgSnO₂, rated input voltage 12...240 V AC/DC AC: 50/60 Hz

④ Ordering codes **RPC-.E/WU/BP-...** are specified in Table 1, "Time relay code" column.

Table of codes

Table 1

Time relay code		Rated input voltage
with 1 CO contact	with 2 CO contacts	
RPC-1E-A230	RPC-2E-A230	230 V AC 50/60 Hz
RPC-1WU-A230	RPC-2WU-A230	
RPC-1BP-A230	RPC-2BP-A230	
RPC-1E-UNI	RPC-2E-UNI	12...240 V AC/DC AC: 50/60 Hz
RPC-1WU-UNI	RPC-2WU-UNI	
RPC-1BP-UNI	RPC-2BP-UNI	



RPC-2SD-UNI

- **Single-function time relays with independently controlled times T1 and T2 (time function SD - Star-Delta start-up; 10 time ranges)**
- Cadmium - free contacts 2 x 1 CO • AC/DC input voltages
- Cover - modular, width 17,5 mm
- Direct mounting on 35 mm rail mount acc. to EN 60715
- Applications: in low-voltage systems
- Compliance with standard EN 61812-1
- Recognitions, certifications, directives: RoHS, **CE EAC**

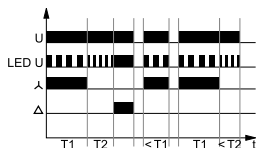
Output circuit - contact data

Number and type of contacts	2 x 1 CO	
Contact material	AgSnO ₂	
Max. switching voltage	300 V AC	
Rated load	AC1	8 A / 250 V AC
	DC1	8 A / 24 V DC 0,3 A / 250 V DC
Rated current	8 A / 250 V AC	
Max. breaking capacity	AC1	2 000 VA
Min. breaking capacity	1 W 10 mA	
Contact resistance	≤ 100 mΩ	
Max. operating frequency	600 cycles/hour at rated load AC1	
Input circuit		
Rated voltage	AC: 50/60 Hz AC/DC	12...240 V terminals (+)A1, (-)A2
Must release voltage	≥ 0,1 U _n	
Operating range of supply voltage	0,9...1,1 U _n	
Rated power consumption	AC	≤ 1,5 VA AC: 50 Hz
	DC	≤ 1,5 W
Range of supply frequency	AC	48...63 Hz
Insulation according to EN 60664-1		
Insulation rated voltage	250 V AC	
Rated surge voltage	4 000 V 1,2 / 50 μs	
Overvoltage category	III	
Insulation pollution degree	2	
Flammability class	V-0 for modular cover, UL 94	
Dielectric strength	• input - output	4 000 V AC type of insulation: basic
	• contact clearance	1 000 V AC type of clearance: micro-disconnection
	• pole - pole	2 000 V AC type of insulation: basic
General data		
Electrical life	• resistive AC1	> 0,5 x 10 ⁵ 8 A, 250 V AC
Mechanical life (cycles)	> 3 x 10 ⁷	
Dimensions (L x W x H)	90 ① x 17,5 x 64,6 mm	
Weight	83 g	
Ambient temperature	• storage	-40...+70 °C
(non-condensation and/or icing)	• operating	-20...+50 °C
Cover protection category	IP 20	EN 60529
Relative humidity	up to 85%	
Shock resistance	15 g	
Vibration resistance	0,35 mm DA 10...55 Hz	
Time module data		
Functions	SD	
Time ranges (start-up for the star) T1	1 s ②; 10 s; 30 s; 1 min.; 1,5 min.; 3 min.; 5 min.; 10 min.; 30 min.; 1 h	
Timing adjustment T1	smooth - (0,1...1) x time range	
Transit time (adjustable) ③ T2	smoothly within the range 0,05...0,9 s (linear adjustment of time)	
Setting accuracy	± 5% ④ ⑤	
Repeatability	± 0,5% ⑤	
Values affecting the timing adjustment	temperature: ± 0,05% / °C	supply voltage: ± 0,01% / V
Recovery time	AC: ≤ 400 ms	DC: ≤ 150 ms
LED indicator	green LED U ON - indication of supply voltage U green LED U slow flashing - measurement of T1 time green LED U fast flashing - measurement of T2 time yellow LEDs ON/OFF - contactors switching signal	

① Length with 35 mm rail catches: 98,8 mm. ② For first range setpoint (1 s) setting accuracy and repeatability are smaller than the given ones in technical parameters (significant influence of the operational relay operating time, processor start-time, and the moment of supply switching as referred to the AC supply course). ③ Pause time between switching off the star contactor and switching on the delta contactor. ④ Calculated from the final range values, for the setting direction from minimum to maximum.

Time functions

SD - Star-Delta start-up.



When the supply voltage U is applied, the operating star-contact (15-18) becomes closed, which is signaled with illumination of the yellow LED. Measurement of the set time T1 starts, and the green LED slow flashes. After the T1 time has lapsed, the star contact is disconnected and the relay begins measuring the T2 time, which is signaled with the green LED fast flashing. After the T2 time has lapsed, the delta contact (25-28) is switched on together with the yellow LED, and the green LED remains illuminated.

Additional functions

Supply diode: it is lit permanently when the time is not being measured. In course of the T1 time measurement, it flashes at 500 ms period, in course of the T2 time measurement at 250 ms period, where it is lit for 50% of the time, and off for 50% of the time.

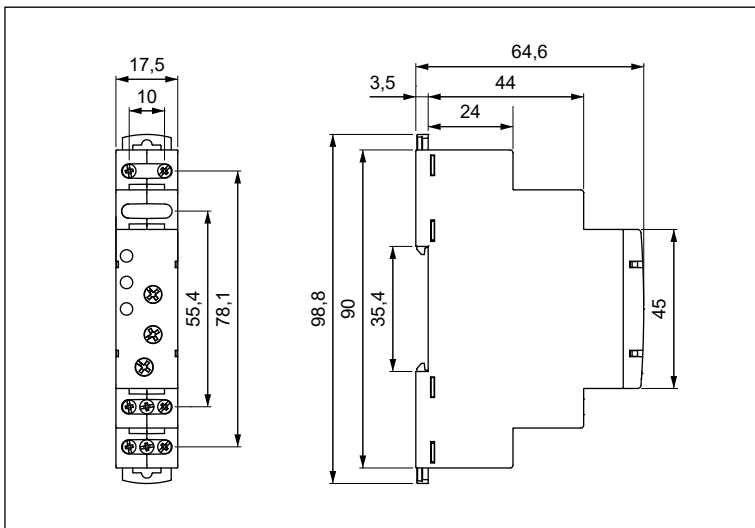
Adjustment of the set values: the values of time and range are read in the course of the relay's operation. The set values may be modified at any moment.

Triggering: the relay is triggered with the supply voltage.

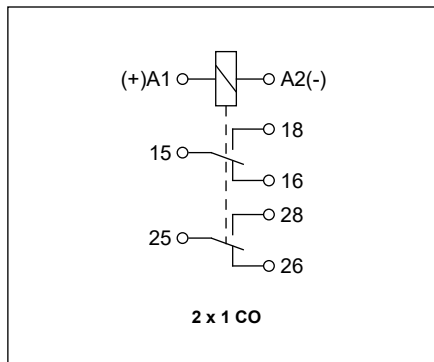
Supply: the relay may be supplied with DC voltage or AC voltage 48...63 Hz of 10,8...264 V.

U - supply voltage; T1, T2 - measured times; t - time axis

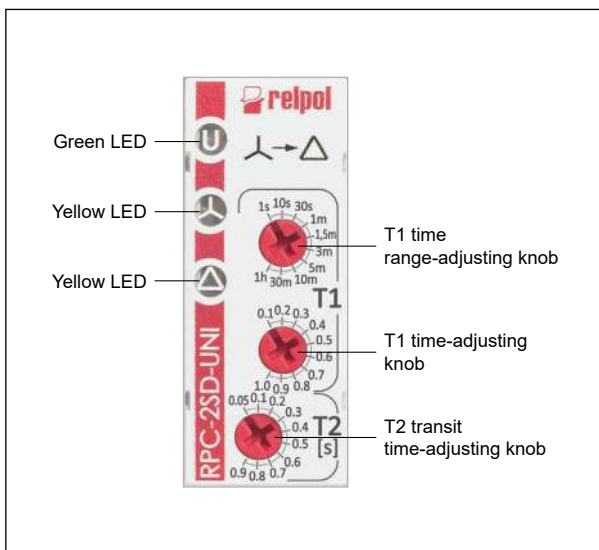
Dimensions



Connection diagram

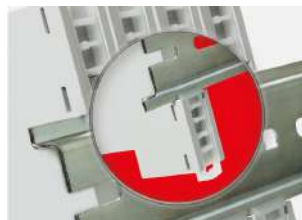


Front panel description



Mounting

Relays **RPC-2SD-UNI** are designed for direct mounting on 35 mm rail mount acc. to EN 60715. Operational position - any. **Connections:** max. cross section of the cables: 1 x 2,5 mm² (1 x 14 AWG), stripping length: 6,5 mm, max. tightening moment for the terminal: 0,5 Nm.

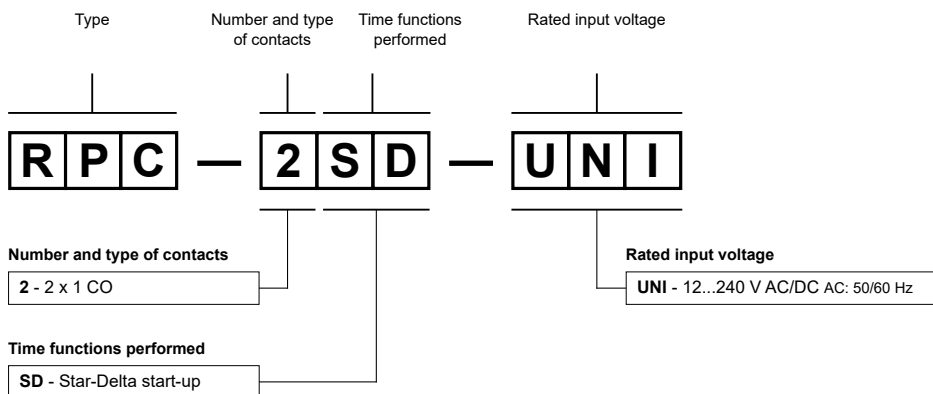


Two catches:
easy mounting on 35 mm rail, firm hold (top and bottom).



Mounting wires in clamps:
universal screw (cross-recessed or slotted head).

Ordering codes



Example of ordering codes:

RPC-2SD-UNI

time relay **RPC-2SD-UNI**, single-function (relay perform function SD), cover - modular, width 17,5 mm, two changeover contacts, contact material AgSnO₂, rated input voltage 12...240 V AC/DC AC: 50/60 Hz

RPC-1AS-A230

time relays

508



RPC-1AS-A230



- **Staircase switches** - switching lighting circuits equipped with gas-discharge lamps or bulbs

- **Multifunction time relays (5 time functions; 10 time ranges)**
- **Resistance to inrush current 120 A (20 ms)**
- Cadmium - free contacts 1 NO • AC input voltages • Cover - modular, width 17,5 mm • Direct mounting on 35 mm rail mount acc. to EN 60715 • Applications: in low-voltage systems • Compliance with standard EN 61812-1 • Recognitions, certifications, directives: RoHS,



Output circuit - contact data

Number and type of contacts		1 NO
Contact material		AgSnO ₂
Max. switching voltage		300 V AC
Rated load	AC1 AC5a AC5b	16 A / 250 V AC 3 A / 230 V AC 690 VA, gas-discharge lamps ① 230 V AC 1 000 W, bulbs ①
Rated current		16 A / 250 V AC
Max. breaking capacity	AC1	4 000 VA
Min. breaking capacity		1 W 10 mA
Contact resistance		≤ 100 mΩ
Max. operating frequency		600 cycles/hour at rated load AC1

Input circuit

Rated voltage	50/60 Hz AC	230 V terminals A1, A2
Must release voltage		≥ 0,1 U _n
Operating range of supply voltage		0,9...1,1 U _n
Rated power consumption	AC	≤ 3,5 VA 50 Hz
Range of supply frequency	AC	48...63 Hz
Control contact S ②	• min. voltage ③ • min. time of pulse duration ④ • max. length of control line • max. load	0,7 U _n AC: ≥ 50 ms 10 m 10 mA

Insulation according to EN 60664-1

Insulation rated voltage		250 V AC
Rated surge voltage		4 000 V 1,2 / 50 μs
Overvoltage category		III
Insulation pollution degree		2
Flammability class		V-0 for modular cover, UL 94
Dielectric strength	• input - output • contact clearance	4 000 V AC type of insulation: basic 1 000 V AC type of clearance: micro-disconnection

General data

Electrical life	• resistive AC1	> 0,5 x 10 ⁵ 16 A, 250 V AC
Mechanical life (cycles)		> 3 x 10 ⁷
Dimensions (L x W x H) / Weight		90 ⑤ x 17,5 x 64,6 mm / 66 g
Ambient temperature	• storage (non-condensation and/or icing) • operating	-30...+70 °C -20...+50 °C
Cover protection category		IP 20 EN 60529
Relative humidity		up to 85%
Shock / vibration resistance		15 g / 0,35 mm DA 10...55 Hz

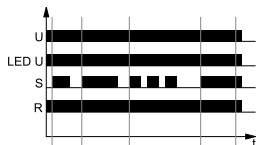
Time module data

Functions		ON, OFF, AUTO, R, Wi, Extra Time
Time ranges		1 s ⑥; 10 s; 20 s; 30 s; 1 min.; 1,5 min.; 2 min.; 3 min.; 5 min.; 10 min.
Timing adjustment		(1...10) x time range
Setting accuracy / Repeatability		± 5% ⑦ ⑧ / ± 0,5% ⑧
Values affecting the timing adjustment		temperature: ± 0,05% / °C supply voltage: ± 0,01% / V
Recovery time		AC: ≤ 150 ms
LED indicator		green LED U ON - indication of supply voltage U green LED U flashing - measurement of T time yellow LED R ON/OFF - output relay status

① Acc. to EN 60669-2-1; AC5a - without an additional capacitor or test with a 14 μF capacitor. ② The control terminal S is activated by connection to A1 terminal via the external control contact S. ③ Where the control signal is recognizable. ④ Length with 35 mm rail catches: 98,8 mm. ⑤ For first range setpoint (1 s) setting accuracy and repeatability are smaller than the given ones in technical parameters (significant influence of the operational relay operating time, processor start-time, and the moment of supply switching as referred to the AC supply course). ⑥ Calculated from the final range values, for the setting direction from minimum to maximum.

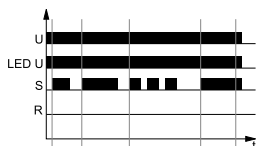
Time functions

ON - Stable ON.



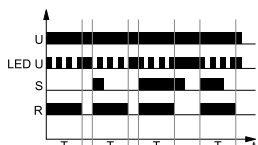
Applying the supply voltage U results in stable switching on the R contact. Switching the control contact S does not affect the status of the R contact.

OFF - Stable OFF.



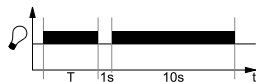
Applying the supply voltage U does not result in any change of the status of the relay - the R contact remains switched off permanently. Switching the control contact S on and off does not affect the status of the R contact.

AUTO - ON for a set interval triggered by applying the supply voltage U or closing of the control contact S.



Each application of the supply voltage U or closing of the control contact S while supply voltage U is applied results in immediate switching the R contact on for an adjustable interval T. After the T interval has lapsed, the R contact remains off. Opening and closing of the control contact S within the T interval does not affect the function to be fulfilled.

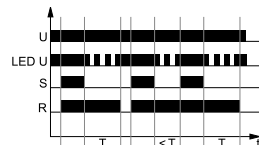
AUTO + Extra Time



If the AUTO function is activated in the "Extra Time" Mode, after the T interval has lapsed, the R contact is switched off for 1 s, and switched on again for 10 s. After the time of 10 s has been measured, the R contact is switched off.

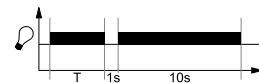
U - supply voltage; R - output state of the relay; S - control contact state; T - measured time; t - time axis

R - OFF delay with the control contact S.



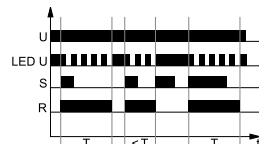
The input of the time relay is supplied with voltage U continuously. Closing of the control contact S immediately switches on the output relay R. Opening of the control contact S starts the set time of the delayed switching off of the output relay R. After the interval T has lapsed, the output relay R switches off. If the control contact S is closed during the interval T, the already measured time is reset, and the output relay R is switched on again. The OFF delay of the output relay R will start when the control contact S is opened again.

R + Extra Time



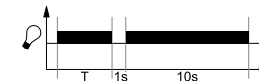
If the R function is activated in the "Extra Time" Mode, after the T interval has lapsed, the R contact is switched off for 1 s, and switched on again for 10 s. After the time of 10 s has been measured, the R contact is switched off.

Wi - ON for the set interval controlled by closing of the control contact S, with the function of switching off the output relay R prior to the lapse of the interval T.



The input of the time relay is supplied with voltage U continuously. Closing of the control contact S immediately switches the output relay R on for the set interval T. After the interval T has lapsed, the output relay R is switched off. Any next closing of the control contact S switches on the output relay R again. In case the control contact S is closed again during the interval T, the output relay is immediately switched off, and the measured interval is cancelled. In the course of the interval T, any opening of the control contact S does not affect the function to be performed.

Wi + Extra Time



If the Wi function is activated in the "Extra Time" Mode, after the T interval has lapsed, the R contact is switched off for 1 s, and switched on again for 10 s. After the time of 10 s has been measured, the R contact is switched off.

Additional functions

Supply diode: it is lit permanently when the time is not being measured. In course of the T time measurement, it flashes at 500 ms period where it is lit for 50% of the time, and off for 50% of the time.

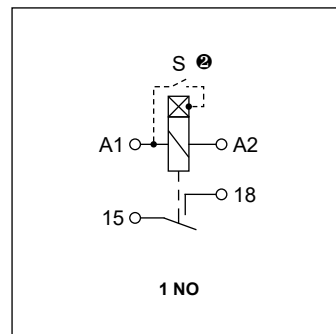
Adjustment of the set values:

- the values of time and range are read in the course of the relay's operation. The set values may be modified at any moment,
- it is possible to change the function during operation of the relay, which results in triggering operation with a new setting. It is not necessary to switch the supply off and on again for the relay to start operating with a new setting.

Triggering: depending on the function to be performed, the relay is triggered with the supply voltage or by connection of the S contact to the A1 line.

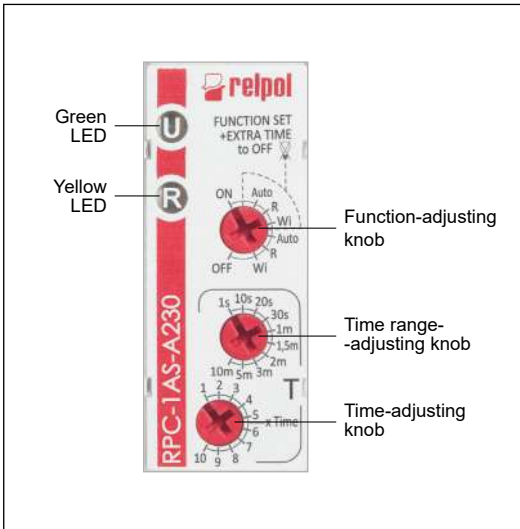
Supply: the relay may be supplied with AC voltage 48...63 Hz with a nominal value 230 V.

Connection diagram

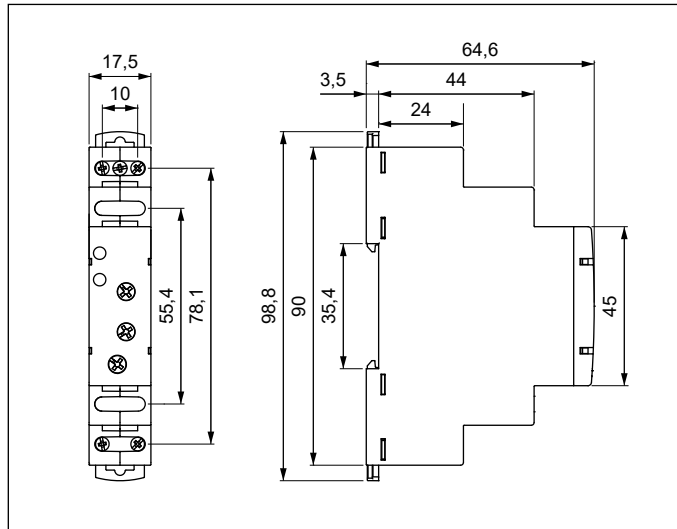


⊗ The control terminal S is activated by connection to A1 terminal via the external control contact S.

Front panel description



Dimensions

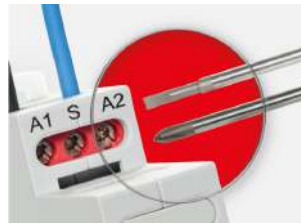


Mounting

Relays **RPC-1AS-A230** are designed for direct mounting on 35 mm rail mount acc. to EN 60715. Operational position - any. **Connections:** max. cross section of the cables: 1 x 2,5 mm² (1 x 14 AWG), stripping length: 6,5 mm, max. tightening moment for the terminal: 0,5 Nm.

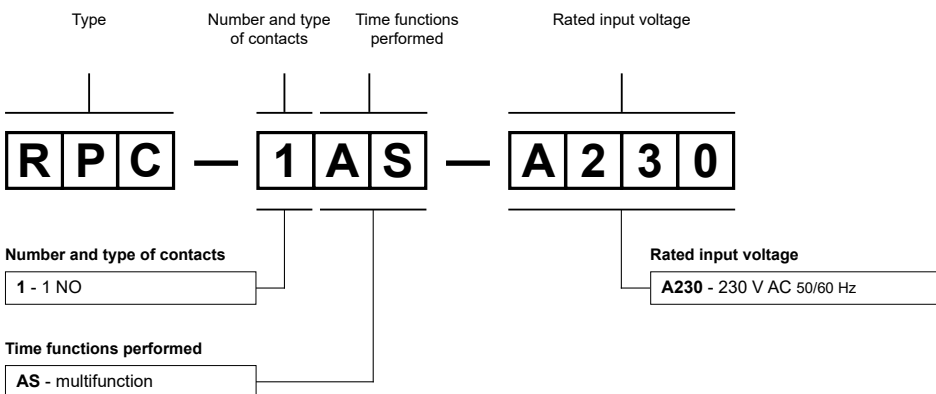


Two catches:
easy mounting
on 35 mm rail,
firm hold
(top and bottom).



**Mounting wires
in clamps:**
universal screw
(cross-recessed
or slotted head).

Ordering codes



Example of ordering codes:

RPC-1AS-A230

time relay **RPC-1AS-A230**, multifunction (relay perform 5 functions), cover - modular, width 17,5 mm, one normally open contact, contact material AgSnO₂, rated input voltage 230 V AC 50/60 Hz



- 10-function electronic time relays in compact cover • Cadmium - free contacts • AC and AC/DC input voltages • Direct mounting on 35 mm rail mount acc. to EN 60715 • The main advantages of application: simple selection of the performed function, possibility to control one or two circuits (1 or 2 changeover contacts), esthetic design in the control cabinet
- The switching capacity of contacts as in RM85 (1 CO) or RM84 (2 CO) electromagnetic relay • Compliance with standard EN 61812-1
- Recognitions, certifications, directives: RoHS, **CE** **EMC**

Output circuits - contact data

Number and type of contacts		1 CO	2 CO
Contact material		AgNi	AgNi
Max. switching voltage		400 V AC / 300 V DC	400 V AC / 300 V DC
Rated load	AC1	16 A / 250 V AC	8 A / 250 V AC
	DC1	16 A / 24 V DC; 0,3 A / 250 V DC	8 A / 24 V DC; 0,3 A / 250 V DC
Rated current		16 A	8 A
Max. breaking capacity		4 000 VA	2 000 VA
Min. breaking capacity		0,3 W 5 V, 5 mA	
Contact resistance		≤ 100 mΩ	
Max. operating frequency	AC1	• at rated load	600 cycles/hour
		• no load	72 000 cycles/hour
Input circuit			
Rated voltage	50/60 Hz AC	115, 230 V	
	AC: 50/60 Hz AC/DC	12, 24 V	
Operating range of supply voltage		0,9...1,2 U _n 12 V AC/DC	0,85...1,2 U _n 24 V AC/DC, 115 V AC, 230 V AC
Rated power consumption	AC	1,3 VA	115 V AC 1,7 VA 230 V AC
	AC/DC	0,5 VA / 0,5 W	12 V AC/DC 0,7 VA / 0,7 W 24 V AC/DC
Range of supply frequency	AC	48...63 Hz	
	AC/DC	48...100 Hz	
Control contact S ①			
• min. voltage ②		0,6 U _n	
• min. time of pulse duration ②		AC: ≥ 25 ms	DC: ≥ 15 ms
Insulation according to EN 60664-1			
Insulation rated voltage		250 V AC	
Insulation category		B250	
Overvoltage category		III	
Insulation pollution degree		2	
Flammability class		V-1	UL 94
Dielectric strength	• input - outputs	2 000 V AC	type of insulation: basic
	• contact clearance	1 000 V AC	type of clearance: micro-disconnection
Input - outputs distance		≥ 10 mm	
• clearance		≥ 10 mm	
• creepage		≥ 10 mm	
General data			
Electrical life			
• resistive AC1		> 0,7 x 10 ⁵ 16 A, 250 V AC	> 10 ⁵ 8 A, 250 V AC
Mechanical life (cycles)		> 3 x 10 ⁷	
Dimensions (L x W x H)		90 x 17,6 x 55 mm	
Weight		67 g	
Ambient temperature	• storage	-40...+70 °C	
	• operating	-20...+55 °C	
Cover protection category		IP 20	EN 60529
Environmental protection		RTI	EN 61810-7
Shock resistance		15 g	
Vibration resistance		0,35 mm DA 10...55 Hz	

The data in bold type relate to the standard versions of the relays.

① The control terminal S is activated by connection to A1 terminal via the external control contact S.

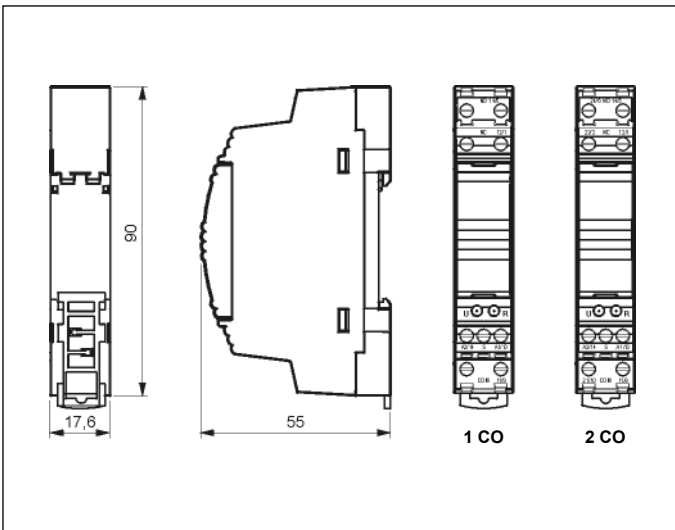
② Where the control signal is recognizable.

Time module data

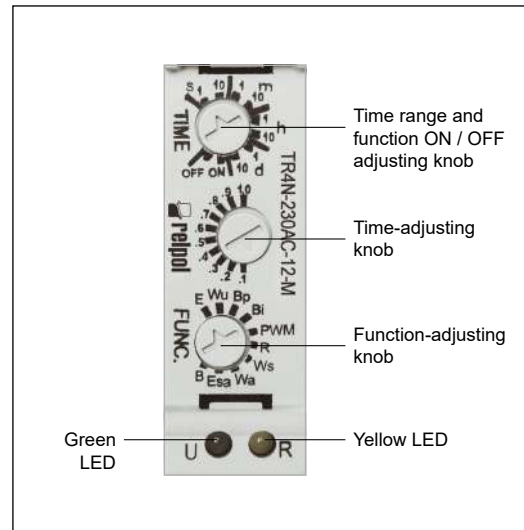
Functions	E, Wu, Bp, Bi, PWM, R, Ws, Wa, Esa, B permanent switching ON and OFF
Time ranges	1 s ③; 10 s; 1 min.; 10 min.; 1 h; 10 h; 1 d; 10 d
Timing adjustment	smooth - (0,1...1) x time range
Setting accuracy	± 5% (calculated from the final range values) ③
Repeatability	± 0,5% ③
Temperature influence	± 0,01% / °C
Recovery time	80 ms
LED indicator	green LED - indication of supply voltage U yellow LED - indication of time period T and the status of outputs after the time T has been measured ④

③ For first range setpoint (1 s) setting accuracy and repeatability are smaller than the given ones in technical parameters (significant influence of the operational relay operating time). Recommend to set measuring time by experimental method. ④ The yellow LED - T time measurement (pulsating); excited operational relay; time not measured (steady light); de-excited operational relay, time not measured (no light).

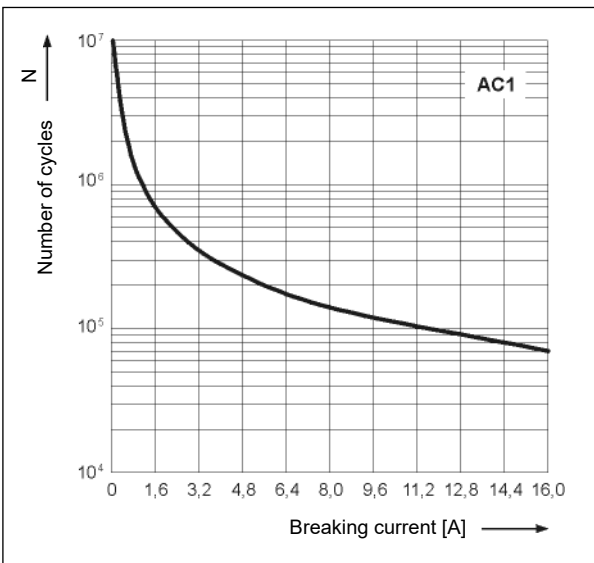
Dimensions



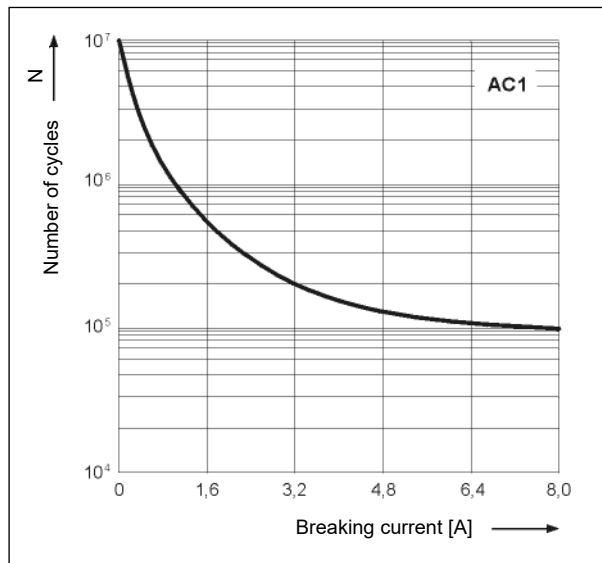
Front panel description



Electrical life at AC resistive current.
Switching frequency: 600 cycles/hour
- TR4N 1 CO Fig. 1

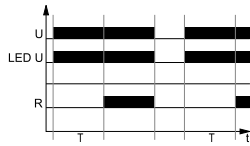


Electrical life at AC resistive current.
Switching frequency: 600 cycles/hour
- TR4N 2 CO Fig. 2



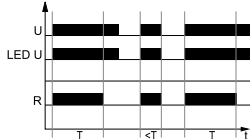
Time functions

E - ON delay.



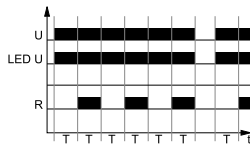
On applying the supply voltage U the set interval T begins - off-delay of the output relay R. After the interval T has lapsed, the output relay R switches on and remains on until supply voltage U is interrupted.

Wu - ON for the set interval.



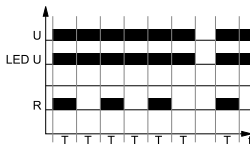
Applying the supply voltage U immediately switches the output relay R on for the set interval T. After the interval T has lapsed, the output relay R switches off.

Bp - Symmetrical cyclical operation pause first.



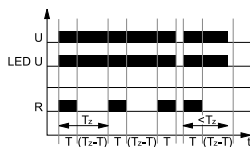
Applying the supply voltage U starts the cyclical operation from the interval T - switching the output relay R off followed by switching on the output relay R for the interval T. The cyclical operation lasts until the supply voltage U is interrupted.

Bi - Symmetrical cyclical operation pulse first.



Applying the supply voltage U starts the cyclical operation from switching on the output relay R for the set interval T. After the interval T has lapsed, the output relay R switches off for the interval T. The cyclical operation lasts until the supply voltage U is interrupted.

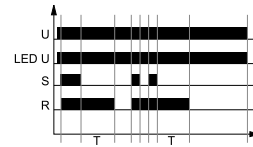
PWM - Pulse width modulation.



Set the relay to a single Tz cycle which is one of the time ranges available for a time relay. The cycle shall be set with the time selection knob. Then, set the interval T, i.e. the ON time of the output relay R with the time fine setting knob. The interval T may be set from 0.1 to 1.0 of the time range (Tz cycle). Applying the supply voltage U immediately switches on the output relay R for the set interval, and after the interval has lapsed, the output relay R switches off for the time left until the set time Tz. After the Tz time, consecutive cycles start and are continued until the supply voltage U is interrupted. In the course of the PWM function, the ON time of the output relay R may be changed, and such change does not affect the interval of the Tz cycle. The changed ON time of the output relay R shall be realized starting from the new Tz cycle following the change.

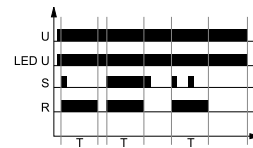
U - supply voltage; R - output state of the relay; S - control contact state; Tz - value of the set interval; T - measured time; t - time axis

R - OFF delay with the control contact S.



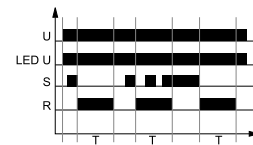
The input of the time relay is supplied with voltage U continuously. Closing of the control contact S immediately switches on the output relay R. Opening of the control contact S is closed during the interval T, the already measured time is reset, and the output relay R is switched on again. The OFF delay of the output relay R will start when the control contact S is opened again.

Ws - Single shot for the set interval triggered by closing of the control contact S.



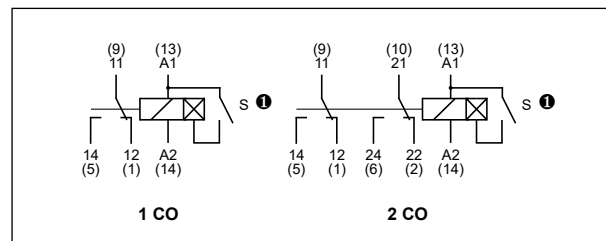
The input of the time relay is supplied with voltage U continuously. Closing of the control contact S immediately switches the output relay R on for the set interval T. After the interval T has lapsed, the output relay R is switched off. In the course of the interval T, any opening of the control contact S does not affect the function to be performed. The output relay R may be switched on again for the set interval, after the interval T has lapsed, by closing the control contact S again.

Wa - ON for the set interval triggered with the control contact S.



The input of the time relay is supplied with voltage U continuously. Closing of the control contact S does not start the interval T, and it does not change the position of the output relay R. Opening of the control contact S immediately switches on the output relay R for the set time. After the interval T has lapsed, the output relay R switches off. Opening and closing of the control contact S in the course of the interval T does not affect the function to be performed. The output relay R may be switched on again for the set interval with another closing and opening of the control contact S.

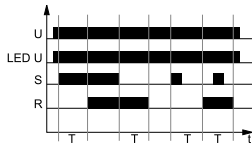
Connections diagrams



❶ The control terminal S is activated by connection to A1 terminal via the external control contact S.

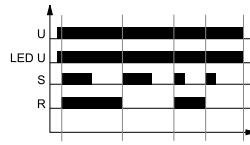
Time functions

Esa - ON and OFF delay with the control contact S.



The input of the time relay is supplied with voltage U continuously. Closing of the control contact S starts the interval T - on-delay of the output relay R. After the interval T has lapsed, the output relay R switches on. Opening of the control contact S begins further measurement of the interval T - off-delay of the output relay R, and after the interval has lapsed, the output relay switches off. In case the time for which the control contact S is closed in the course of measurement of the on-delay of the output relay R is shorter than the set interval T, the output relay R will switch on after the set interval T, and the output relay R will remain in on position for the interval T. When the output relay R is in on position, closing of the control contact S does not affect the function to be performed.

B - Cyclical operation controlled with closing of the control contact S.



The input of the time relay is supplied with U voltage continuously. Closing of the control contact S immediately switches on the output relay R. Each next closing of the control contact S results in a change of the status of the output relay R to an opposite one (the feature of a bistable relay).

Permanent switching ON and OFF. The functions ON and OFF are selected with range adjusting knob (TIME). In the ON function, the normally open contacts are closed all the time whereas in the OFF function they are open. The position of the function-adjusting knob (FUNC.) is of no significance in these functions as is the preset measurement time. The ON or OFF functions are used for the time relay operation control in electric systems.

U - supply voltage; R - output state of the relay; S - control contact state; Tz - value of the set interval; T - measured time; t - time axis

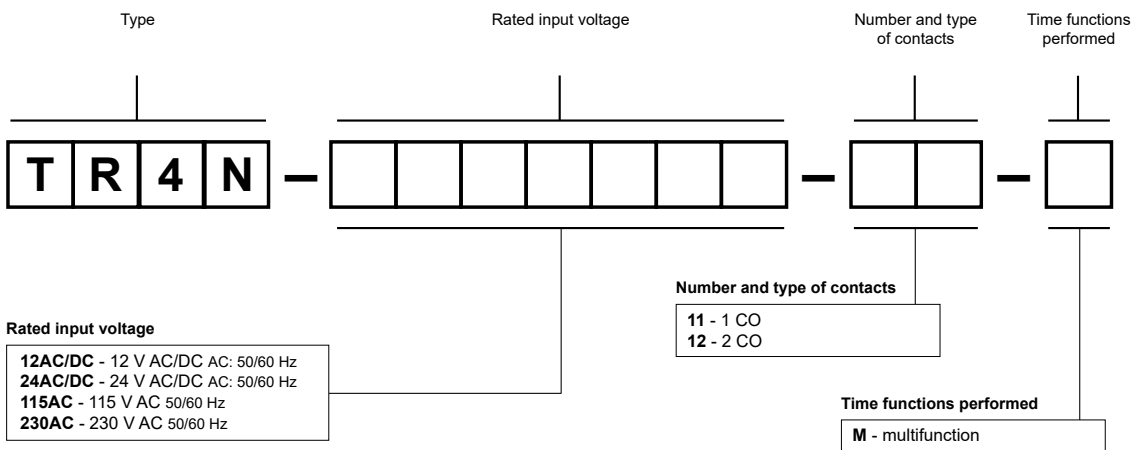
Mounting

Relays **TR4N 1 CO, 2 CO** are designed for direct mounting on 35 mm rail mount acc. to EN 60715. Operational position - any. **Connections:** max. cross section of the cables: 1 x 2,5 mm² / 2 x 1,5 mm² (1 x 14 / 2 x 16 AWG), stripping length: 6,5 mm, max. tightening moment for the terminal: 0,6 Nm.

One catch:
easy mounting
on 35 mm rail,
firm hold (bottom).



Ordering codes



Examples of ordering codes:

TR4N-230AC-11-M

time relay **TR4N 1 CO**, multifunction (relay perform 10 functions), one changeover contact, contact material AgNi, rated input voltage 230 V AC 50/60 Hz

TR4N-24AC/DC-12-M

time relay **TR4N 2 CO**, multifunction (relay perform 10 functions), two changeover contacts, contact material AgNi, rated input voltage 24 V AC/DC AC: 50/60 Hz



- 10-function electronic time relays in compact cover
- Cadmium - free contacts
- AC and AC/DC input voltages
- Direct mounting on 35 mm rail mount acc. to EN 60715
- The main advantages of application: simple selection of the performed function, possibility to control a few circuits (4 changeover contacts), esthetic design in the control cabinet
- The switching capacity of contacts as in R4 electromagnetic relay
- Compliance with standard EN 61812-1
- Recognitions, certifications, directives: RoHS, **CE** **ERC**

Output circuits - contact data

Number and type of contacts	4 CO	
Contact material	AgNi	
Max. switching voltage	250 V AC	
Rated load	AC1	6 A / 250 V AC
	DC1	6 A / 24 V DC 0,15 A / 250 V DC
Rated current	6 A	
Max. breaking capacity	AC1	1 500 VA
Min. breaking capacity	0,3 W 5 V, 5 mA	
Contact resistance	≤ 100 mΩ	
Max. operating frequency		
• at rated load	AC1	1 200 cycles/hour
• no load		18 000 cycles/hour
Input circuit		
Rated voltage	50/60 Hz AC	115, 230 V
	AC: 50/60 Hz AC/DC	12, 24 V
Operating range of supply voltage	0,9...1,1 U _n 12 V AC/DC	
	0,85...1,1 U _n 24 V AC/DC, 115 V AC, 230 V AC	
Rated power consumption	AC	2,2 VA 115 V AC, 230 V AC
	AC/DC	1,0 VA / 1,0 W 12 V AC/DC, 24 V AC/DC
Range of supply frequency	AC	48...63 Hz
	AC/DC	48...100 Hz
Control contact S ①		
• min. voltage ②	0,6 U _n	
• min. time of pulse duration ②	AC: ≥ 25 ms	DC: ≥ 15 ms
Insulation according to EN 60664-1		
Insulation rated voltage	250 V AC	
Insulation category	B250	
Overvoltage category	II	
Insulation pollution degree	2	
Flammability class	V-1	UL 94
Dielectric strength	• input - outputs	2 500 V AC type of insulation: basic
	• contact clearance	1 500 V AC type of clearance: micro-disconnection
Input - outputs distance		
• clearance	≥ 1,6 mm	
• creepage	≥ 3,2 mm	
General data		
Electrical life		
• resistive AC1	> 10 ⁵	6 A, 250 V AC
Mechanical life (cycles)	> 2 x 10 ⁷	
Dimensions (L x W x H)	90 x 36 x 55 mm	
Weight	115 g	
Ambient temperature	• storage	-40...+70 °C
(non-condensation and/or icing)	• operating	-20...+55 °C
Cover protection category	IP 20	EN 60529
Environmental protection	RTI	EN 61810-7
Shock resistance	(NO/NC)	10 g / 5 g
Vibration resistance	0,35 mm DA 10...55 Hz	

The data in bold type relate to the standard versions of the relays.

① The control terminal S is activated by connection to A1 terminal via the external control contact S.

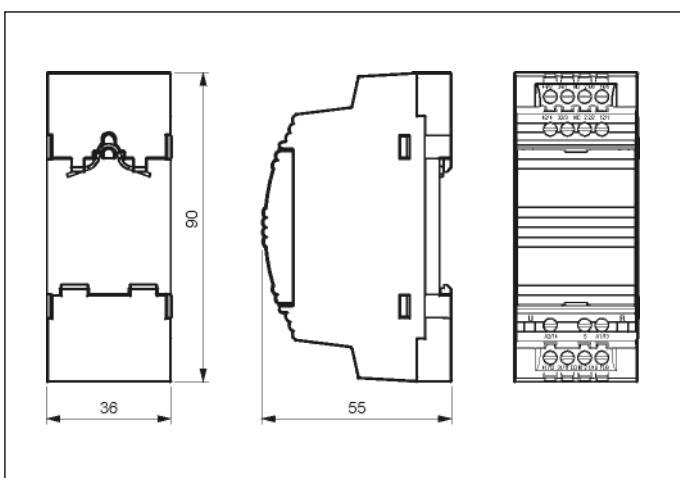
② Where the control signal is recognizable.

Time module data

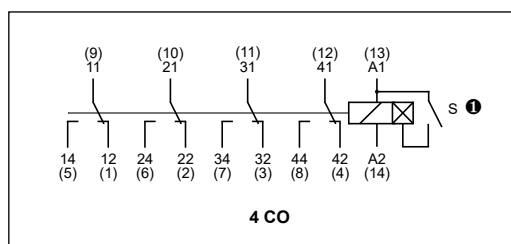
Functions	E, Wu, Bp, Bi, PWM, R, Ws, Wa, Esa, B permanent switching ON and OFF
Time ranges	1 s ③; 10 s; 1 min.; 10 min.; 1 h; 10 h; 1 d; 10 d
Timing adjustment	smooth - (0,1...1) x time range
Setting accuracy	± 5% (calculated from the final range values) ③
Repeatability	± 0,5% ③
Temperature influence	± 0,01% / °C
Recovery time	90 ms
LED indicator	green LED - indication of supply voltage U yellow LED - indication of time period T and the status of outputs after the time T has been measured ④

③ For first range setpoint (1 s) setting accuracy and repeatability are smaller than the given ones in technical parameters (significant influence of the operational relay operating time). Recommend to set measuring time by experimental method. ④ The yellow LED - T time measurement (pulsating); excited operational relay; time not measured (steady light); de-excited operational relay, time not measured (no light).

Dimensions



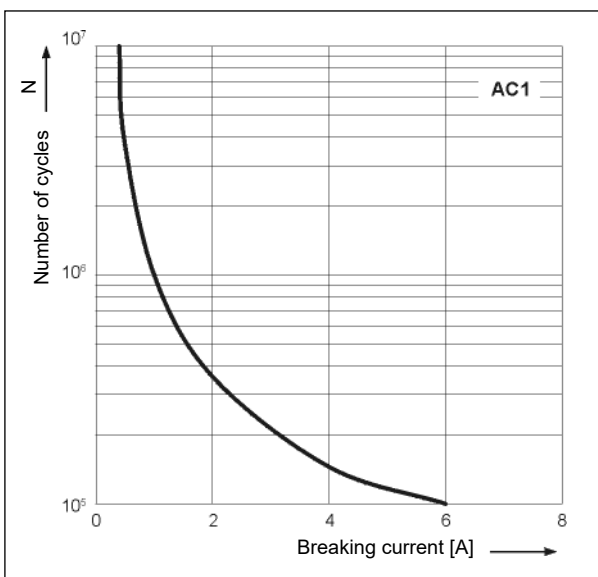
Connections diagram



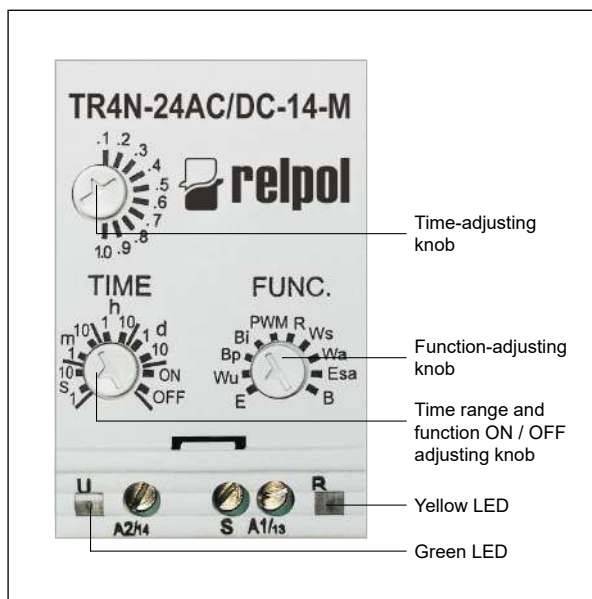
① The control terminal S is activated by connection to A1 terminal via the external control contact S.

Electrical life at AC resistive current. Switching frequency: 1 200 cycles/hour

Fig. 1

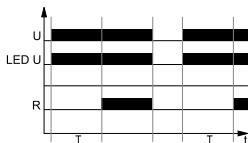


Front panel description



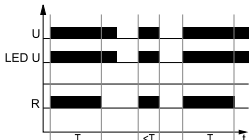
Time functions

E - ON delay.



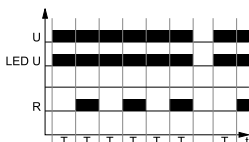
On applying the supply voltage U the set interval T begins - off-delay of the output relay R. After the interval T has lapsed, the output relay R switches on and remains on until supply voltage U is interrupted.

Wu - ON for the set interval.



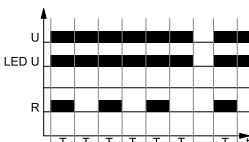
Applying the supply voltage U immediately switches the output relay R on for the set interval T. After the interval T has lapsed, the output relay R switches off.

Bp - Symmetrical cyclical operation pause first.



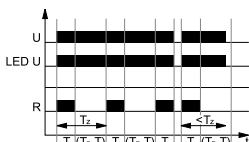
Applying the supply voltage U starts the cyclical operation from the interval T - switching the output relay R off followed by switching on the output relay R for the interval T. The cyclical operation lasts until the supply voltage U is interrupted.

Bi - Symmetrical cyclical operation pulse first.



Applying the supply voltage U starts the cyclical operation from switching on the output relay R for the set interval T. After the interval T has lapsed, the output relay R switches off for the interval T. The cyclical operation lasts until the supply voltage U is interrupted.

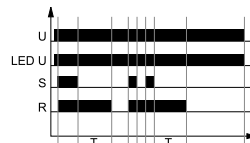
PWM - Pulse width modulation.



Set the relay to a single Tz cycle which is one of the time ranges available for a time relay. The cycle shall be set with the time selection knob. Then, set the interval T, i.e. the ON time of the output relay R with the time fine setting knob. The interval T may be set from 0.1 to 1.0 of the time range (Tz cycle). Applying the supply voltage U immediately switches on the output relay R for the set interval, and after the interval has lapsed, the output relay R switches off for the time left until the set time Tz. After the Tz time, consecutive cycles start and are continued until the supply voltage U is interrupted. In the course of the PWM function, the ON time of the output relay R may be changed, and such change does not affect the interval of the Tz cycle. The changed ON time of the output relay R shall be realized starting from the new Tz cycle following the change.

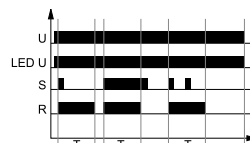
U - supply voltage; R - output state of the relay; S - control contact state; Tz - value of the set interval; T - measured time; t - time axis

R - OFF delay with the control contact S.



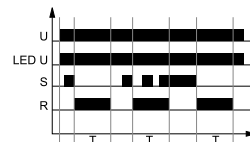
The input of the time relay is supplied with voltage U continuously. Closing of the control contact S immediately switches on the output relay R. Opening of the control contact S starts the set time of the delayed switching off of the output relay R. After the interval T has lapsed, the output relay R switches off. If the control contact S is closed during the interval T, the already measured time is reset, and the output relay R is switched on again. The OFF delay of the output relay R will start when the control contact S is opened again.

Ws - Single shot for the set interval triggered by closing of the control contact S.



The input of the time relay is supplied with voltage U continuously. Closing of the control contact S immediately switches the output relay R on for the set interval T. After the interval T has lapsed, the output relay R is switched off. In the course of the interval T, any opening of the control contact S does not affect the function to be performed. The output relay R may be switched on again for the set interval, after the interval T has lapsed, by closing the control contact S again.

Wa - ON for the set interval triggered with the control contact S.

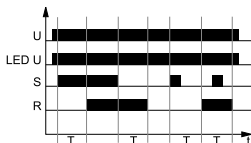


The input of the time relay is supplied with voltage U continuously. Closing of the control contact S does not start the interval T, and it does not change the position of the output relay R. Opening of the control contact S immediately switches on the output relay R for the set time. After the interval T has lapsed, the output relay R switches off. Opening and closing of the control contact S in the course of the interval T does not affect the function to be performed. The output relay R may be switched on again for the set interval with another closing and opening of the control contact S.



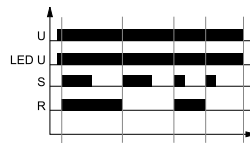
Time functions

Esa - ON and OFF delay with the control contact S.



The input of the time relay is supplied with voltage U continuously. Closing of the control contact S starts the interval T - on-delay of the output relay R. After the interval T has lapsed, the output relay R switches on. Opening of the control contact S begins further measurement of the interval T - off-delay of the output relay R, and after the interval has lapsed, the output relay switches off. In case the time for which the control contact S is closed in the course of measurement of the on-delay of the output relay R is shorter than the set interval T, the output relay R will switch on after the set interval T, and the output relay R will remain in on position for the interval T. When the output relay R is in on position, closing of the control contact S does not affect the function to be performed.

B - Cyclical operation controlled with closing of the control contact S.



The input of the time relay is supplied with U voltage continuously. Closing of the control contact S immediately switches on the output relay R. Each next closing of the control contact S results in a change of the status of the output relay R to an opposite one (the feature of a bistable relay).

Permanent switching ON and OFF.

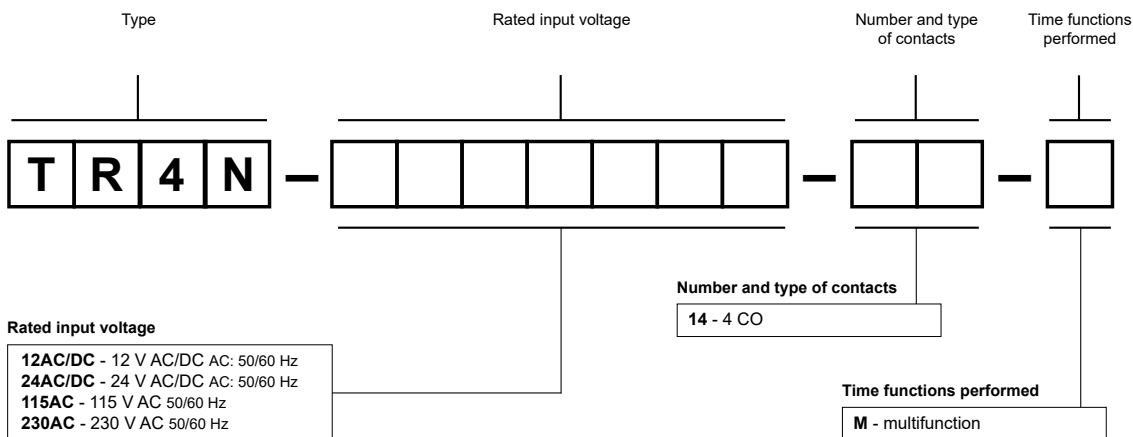
The functions ON and OFF are selected with range adjusting knob (TIME). In the ON function, the normally open contacts are closed all the time whereas in the OFF function they are open. The position of the function-adjusting knob (FUNC.) is of no significance in these functions as is the preset measurement time. The ON or OFF functions are used for the time relay operation control in electric systems.

U - supply voltage; R - output state of the relay; S - control contact state; Tz - value of the set interval; T - measured time; t - time axis

Mounting

Relays **TR4N 4 CO** are designed for direct mounting on 35 mm rail mount acc. to EN 60715. Operational position - any. **Connections:** max. cross section of the cables: 1 x 2,5 mm² / 2 x 1,5 mm² (1 x 14 / 2 x 16 AWG), stripping length: 6,5 mm, max. tightening moment for the terminal: 0,6 Nm.

Ordering codes



Examples of ordering codes:

TR4N-230AC-14-M

time relay **TR4N 4 CO**, multifunction (relay perform 10 functions), four changeover contacts, contact material AgNi, rated input voltage 230 V AC 50/60 Hz

TR4N-24AC/DC-14-M

time relay **TR4N 4 CO**, multifunction (relay perform 10 functions), four changeover contacts, contact material AgNi, rated input voltage 24 V AC/DC AC: 50/60 Hz

T-R4



T-R4 + GZM4



- **Single-function, single-voltage time relays (7 time ranges)**
- Cadmium - free contacts 4 CO • AC and DC input voltages
- For plug-in sockets, 35 mm rail mount acc. to EN 60715 or on panel mounting
- Applications: as time systems in electric circuits of machines, technological lines, in automation systems, etc.
- Recognitions, certifications, directives: RoHS, recognitions R4N,



• **Codes of versions** - time functions performed:

T-R4E-...	T-R4Wu-...	T-R4Bp-...	T-R4Bi-...
function E	function Wu	function Bp	function Bi

Output circuits - contact data

Number and type of contacts	4 CO	
Contact material	AgNi	
Max. switching voltage	250 V AC / 250 V DC	
Rated load	AC1	6 A / 230 V AC
Max. inrush current	12 A	
Rated current	6 A	
Max. breaking capacity	AC1	1 500 VA
Min. breaking capacity	0,3 W 5 V, 5 mA	
Contact resistance	≤ 100 mΩ	
Max. operating frequency		
• at rated load	AC1	1 200 cycles/hour
• no load	18 000 cycles/hour	
Input circuit		
Rated voltage	50/60 Hz AC DC	24, 115, 230 V 12, 24 V
Must release voltage	AC: ≥ 0,2 U _n	DC: ≥ 0,1 U _n
Operating range of supply voltage	0,8...1,1 U _n see Tables 1, 2	
Rated power consumption	AC DC	2,2 VA 1,2 W
Range of supply frequency	48...63 Hz	
Insulation according to EN 60664-1		
Insulation rated voltage	250 V AC	
Overvoltage category	III	
Dielectric strength	• input - outputs • contact clearance • pole - pole	2 500 V AC type of insulation: basic 1 500 V AC type of clearance: micro-disconnection 2 000 V AC type of insulation: basic
Input - outputs distance	• clearance • creepage	≥ 1,6 mm ≥ 3,2 mm
General data		
Operating / release time (typical values)	10 ms / 8 ms	
Electrical life		
• resistive AC1	> 10 ⁵ 6 A, 250 V AC	
• cosφ	see Fig. 2	
Mechanical life (cycles)	> 2 x 10 ⁷	
Dimensions (L x W x H)	T-R4 + GZM4: 75 x 27 x 91,5 mm T-R4 + GZT4: 76,3 x 27 x 90 mm T-R4: 27,5 x 21,2 x 62,5 mm	
Weight	T-R4 + GZM4: 123 g T-R4 + GZT4: 113 g T-R4: 49 g	
Ambient temperature	• storage • operating	-20...+85 °C -20...+55 °C
Cover protection category	IP 20 (with socket) EN 60529	
Environmental protection	T-R4: RTI GZM4: RT0 EN 61810-7	
Shock resistance	(NO/NC)	10 g / 5 g
Vibration resistance	5 g 10...150 Hz	

The data in bold type relate to the standard versions of the relays.

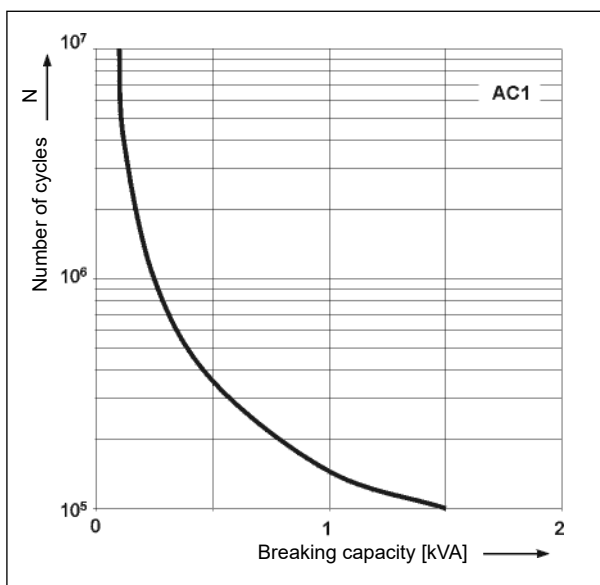
① Length with 35 mm rail catch: 100 mm.

Time module data

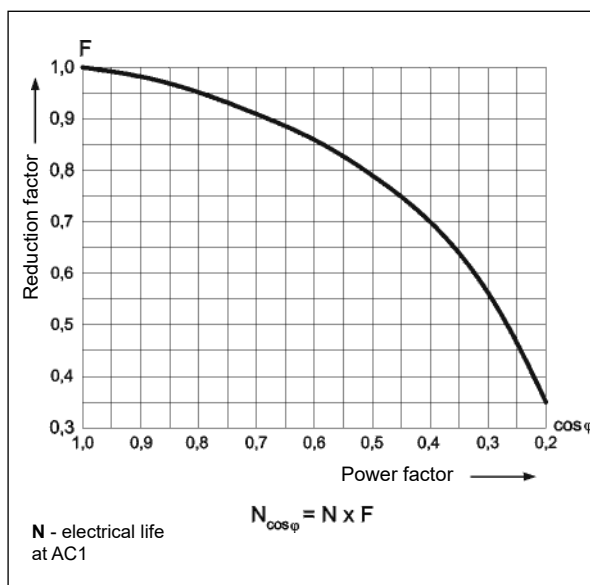
Functions	E, Wu, Bp, Bi
Time ranges	1 s ❶; 10 s; 1 min.; 10 min.; 1 h; 10 h; 100 h
Timing adjustment	range - with the range-adjusting knob / switch; within the range - with the time-adjusting knob / potentiometer
Setting accuracy	± 5% (calculated from the final range values) ❶
Repeatability	± 1% ❶
Temperature influence	± 0,01% / °C
Recovery time	100 ms
LED indicator	green LED - indication of supply voltage U yellow LED - indication of time period T and the status of outputs after the time T has been measured ❷

❶ For first range setpoint (1 s) setting accuracy and repeatability are smaller than the given ones in technical parameters (significant influence of the operational relay operating time). Recommend to set measuring time by experimental method. ❷ The yellow LED - T time measurement (pulsating); excited operational relay; time not measured (steady light); de-excited operational relay, time not measured (no light).

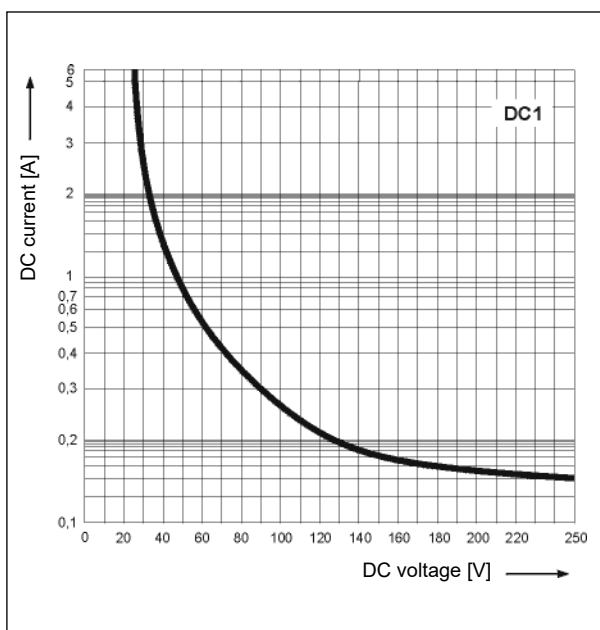
Electrical life at AC resistive load. Switching frequency: 1 200 cycles/hour Fig. 1



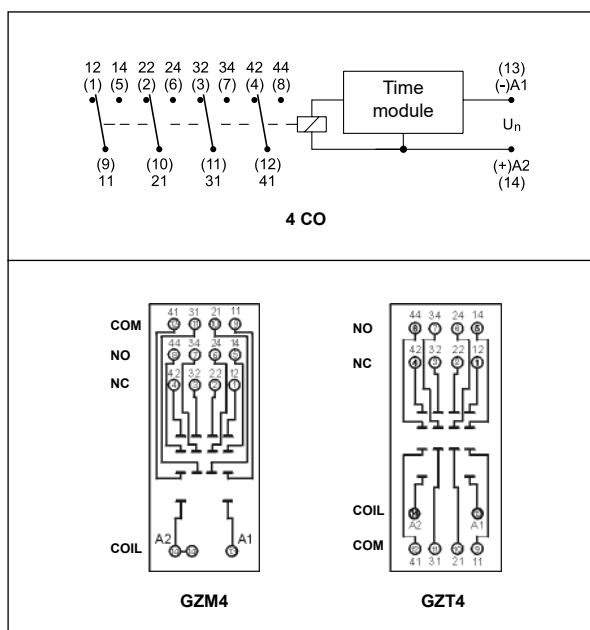
Electrical life reduction factor at AC inductive load Fig. 2



Max. DC resistive load breaking capacity Fig. 3



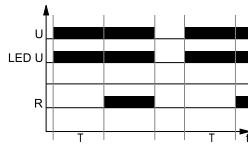
Connection diagrams



Time functions

E - ON delay.

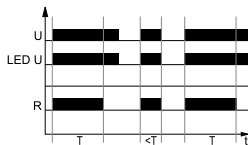
Codes of versions: **T-R4E**-...



On applying the supply voltage U the set interval T begins - off-delay of the output relay R. After the interval T has lapsed, the output relay R switches on and remains on until supply voltage U is interrupted.

Wu - ON for the set interval.

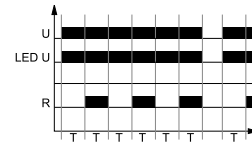
Codes of versions: **T-R4Wu**-...



Applying the supply voltage U immediately switches the output relay R on for the set interval T. After the interval T has lapsed, the output relay R switches off.

Bp - Symmetrical cyclical operation pause first.

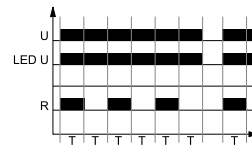
Codes of versions: **T-R4Bp**-...



Applying the supply voltage U starts the cyclical operation from the interval T - switching the output relay R off followed by switching on the output relay R for the interval T. The cyclical operation lasts until the supply voltage U is interrupted.

Bi - Symmetrical cyclical operation pulse first.

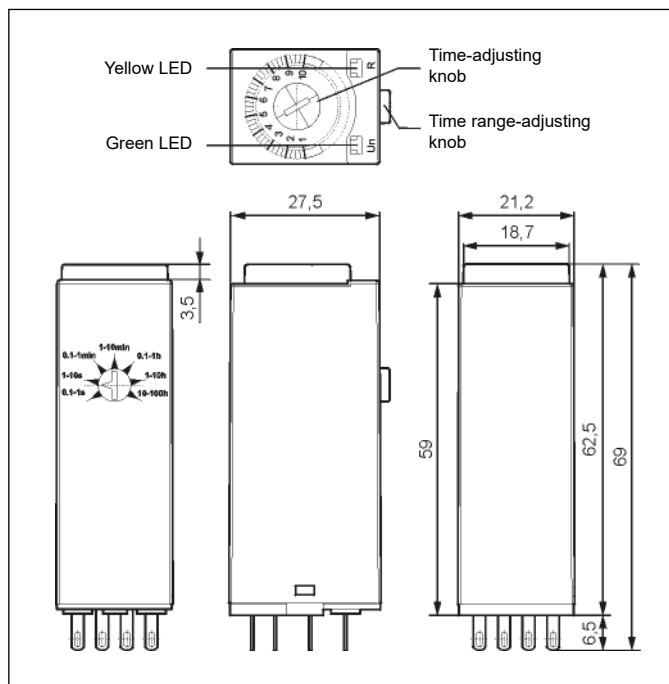
Codes of versions: **T-R4Bi**-...



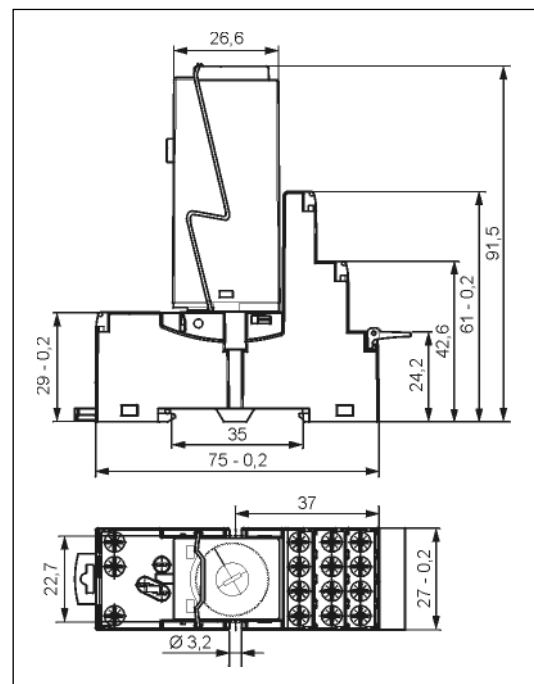
Applying the supply voltage U starts the cyclical operation from switching on the output relay R for the set interval T. After the interval T has lapsed, the output relay R switches off for the interval T. The cyclical operation lasts until the supply voltage U is interrupted.

U - supply voltage; R - output state of the relay; T - measured time; t - time axis

Dimensions - T-R4



Dimensions - T-R4 with socket GZM4



Mounting, sockets and accessories for relays

Relays **T-R4E**, **T-R4Wu**, **T-R4Bp**, **T-R4Bi** are designed for mounting in plug-in sockets.

Sockets for T-R4	Accessories		Additional equipment
	Spring wire clips	Description plates	
Screw terminals sockets , 35 mm rail mount (acc. to EN 60715) or on panel mounting (two M3 screws)			
GZT4 ④	TR4-2000	GZT4-0035	ZGGZ4 ⑤
GZM4 ④	TR4-2000	GZT4-0035	ZGGZ4 ⑤

④ Sockets GZT4, GZM4 - connections: max. cross section of the cables (stranded): 2 x 2,5 mm² (2 x 14 AWG), stripping length: 6,5 mm, max. tightening moment for the terminal: 0,7 Nm. ⑤ Interconnection strips ZGGZ4 - see page 401.

Separate T-R4 control circuits from load circuits (T-R4 contacts)	GZM4: yes GZT4: no
Increased dielectric strength spacing between coil and contacts clamps	GZM4: min. 5 kV GZT4: min. 4 kV
Double A2(14) terminal is introduced for easy wiring in electrical devices	GZM4: yes GZT4: no

Input data - DC voltage version

Table 1

Input voltage code	Rated input voltage U _n V DC	Input resistance at 20 °C Ω	Acceptable resistance	Input - voltage range V DC	
				min. (at 20 °C)	max. (at 55 °C)
1012	12	160	± 10%	9,6	13,2
1024	24	640	± 10%	19,2	26,4

The data in bold type relate to the standard versions of the relays.

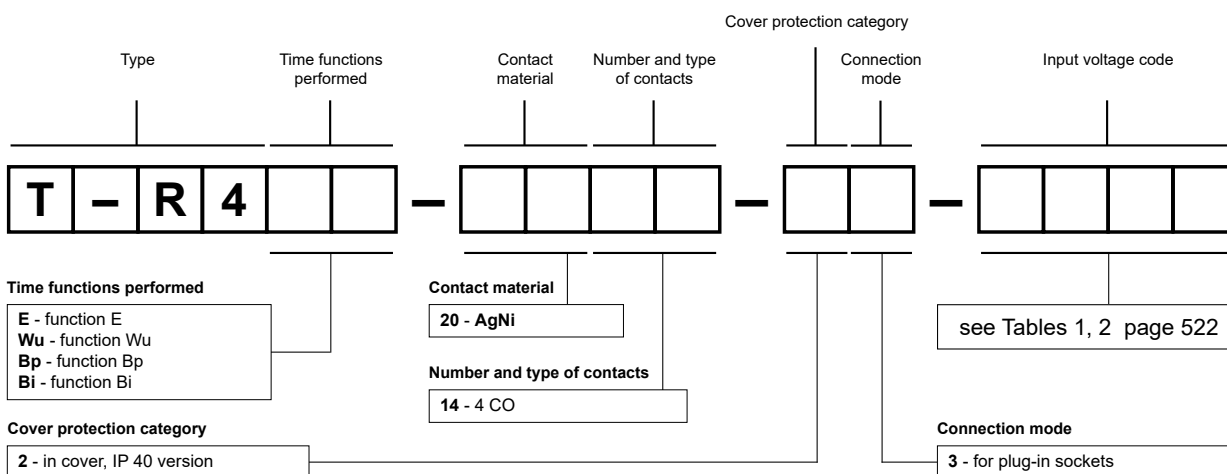
Input data - AC 50/60 Hz voltage version

Table 2

Input voltage code	Rated input voltage U _n V AC	Input resistance at 20 °C Ω	Acceptable resistance	Input - voltage range V AC	
				min. (at 20 °C)	max. (at 55 °C)
5024	24	158	± 10%	19,2	26,4
5115	115	3 610	± 10%	92,0	127,0
5230	230	16 100	± 10%	184,0	253,0

The data in bold type relate to the standard versions of the relays.

Ordering codes



Example of ordering code:

T-R4E-2014-23-1012 time relay **T-R4**, single-function (relay perform function **E** - ON delay), for plug-in sockets, four changeover contacts, contact material AgNi, rated input voltage 12 V DC, in cover IP 40

**R15 - 3 CO (AC)
+ GZP11 + COM3**



**R15 - 2 CO (DC)
+ GZP8 + COM3**



- Time relay **PIR15 - 3 CO (standard)** consists of: electromagnetic relay **R15 - 3 CO**, black plug-in socket **GZP11**, time module **COM3**, spring wire clip **GZP-0054**, white description plate **GZP-0035**
- Time relay **PIR15 - 2 CO** consists of: electromagnetic relay **R15 - 2 CO**, black plug-in socket **GZP8**, time module **COM3**, spring wire clip **GZP-0054**, white description plate **GZP-0035**
- 35 mm rail mount acc. to EN 60715 or on panel mounting with two M3 screws
- Recognitions, certifications, directives: recognitions R15, RoHS,



Output circuits - contact data

Number and type of contacts	2 CO, 3 CO	
Contact material	AgNi	
Max. switching voltage	250 V AC / 300 V DC	
Rated load (capacity)	AC1	10 A / 250 V AC
	AC15	3 A / 120 V 1,5 A / 240 V (B300)
	DC1	10 A / 24 V DC (see Fig. 3)
	DC13	0,22 A / 120 V 0,1 A / 250 V (R300)
Motor load	acc. to UL 508	1/2 HP 240 V AC, 4,9 FLA, single-phase motor ①
	AC3 acc. to IEC 60947-4-1	0,37 kW 240 V AC, single-phase motor
Max. inrush current	20 A	
Rated current	10 A	
Max. breaking capacity	AC1	2 500 VA
Min. breaking capacity	0,3 W 5 V, 5 mA	
Contact resistance	≤ 100 mΩ	
Max. operating frequency	• at rated load AC1	1 200 cycles/hour
	• no load	12 000 cycles/hour
Input circuit		
Rated voltage of output relay R15	50/60 Hz AC	24, 48, 60, 110, 120, 230, 240 V
	DC	24, 48, 60, 110, 120, 220 V
Supply voltage of time module COM3	24...240 V AC/DC (universal module)	
Operating range of supply voltage	0,85...1,1 U _n see Tables 1, 2	
Rated power consumption	AC	3,0 VA
	DC	2,0 W
Range of supply frequency	48...63 Hz	
Control contact S ②	• connections	not potential free, terminals A1-B1
	• line length	max. 10 m (twisted pair)
	• min. time of pulse duration ③	100 ms
Insulation according to EN 60664-1		
Insulation rated voltage	250 V AC	
Overtoltage category	III	
Dielectric strength	• between coil and contacts	2 500 V AC type of insulation: basic
	• contact clearance	1 500 V AC type of clearance: micro-disconnection
	• pole - pole	2 000 V AC type of insulation: basic
Contact - coil distance	• clearance	≥ 3 mm
	• creepage	≥ 4,2 mm
General data		
Operating / release time (typical values)	AC: 12 ms / 10 ms	DC: 18 ms / 7 ms
Electrical life	• resistive AC1	> 2 x 10 ⁵ 10 A, 250 V AC
	• cosφ	see Fig. 2
Mechanical life (cycles)	> 2 x 10 ⁷	
Dimensions (L x W x H)	73 x 38,2 x 85,4 mm	
Weight	3 CO: 175 g	2 CO: 168 g
Ambient temperature	• storage	-25...+70 °C
	• operating	-25...+55 °C
Cover protection category	IP 20	EN 60529
Environmental protection	R15: RTI GZP11, GZP8: RT0	EN 61810-7
Shock resistance	10 g	
Vibration resistance	5 g 10...500 Hz	

The data in bold type relate to the standard versions of the relays. ① For single phase motors for 110-120 V AC do not use motors with higher FLA than given for 240 V AC. ② The control terminal B1 is activated by connection to A1 terminal via the external control contact S. ③ Where the control signal is recognizable.

Time module data

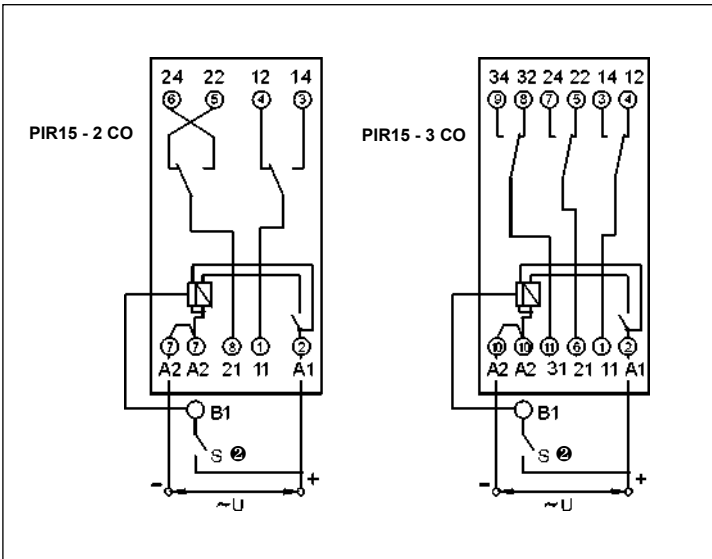
Functions	E, Wu, Bp, Bi, R, Ws, Wa, Es
Function adjustment ④	selection with microswitches
Time ranges	1 s; 10 s; 1 min.; 10 min.; 1 h; 10 h; 1 d; 10 d
Timing adjustment ④	time range - with microswitches smooth - (0,05...1) x time range - with potentiometer
Base accuracy	± 1% (calculated from the final range values)
Setting accuracy	± 5% (calculated from the final range values)
Repeatability	± 0,5% or ± 5 ms
Temperature influence	± 0,01% / °C
Recovery time	150 ms
LED indicator	green LED U ON - indication of supply voltage U green LED U flashing - measurement of T time

④ Settings of switches - see below.

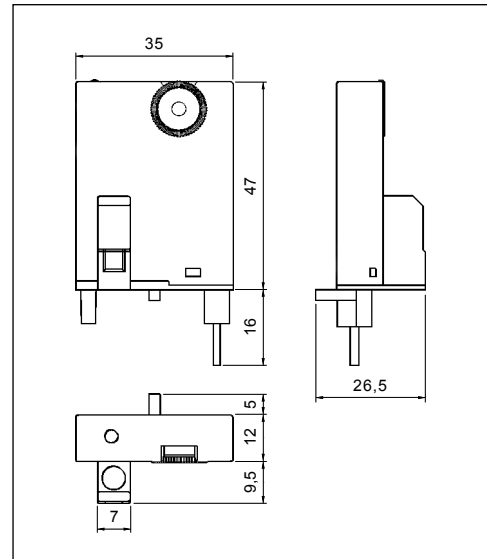
Settings of switches

Function adjustment	E	Wu	Bi	Bp	R	Ws	Wa	Es
microswitches 1, 2, 3								
Timing adjustment (max.) microswitches 4, 5, 6	1 s	10 s	1 min.	10 min.	1 h	10 h	1 d	10 d

Connection diagrams (screw terminals side view)



Dimensions - time module COM3



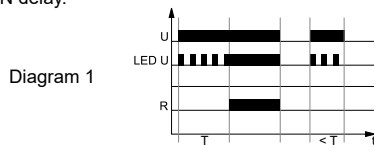
④ The control terminal B1 is activated by connection to A1 terminal via the external control contact S.

COM3
Universal
time modules

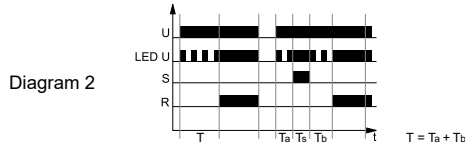


Time functions

E - ON delay.

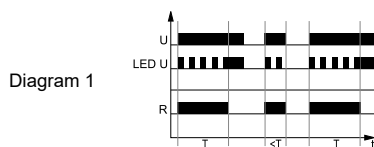


When the supply voltage U is applied, the set interval T begins (green LED flashing). After the interval T has expired (green LED illuminated) the output relay R switches into on-position. This status remains until the supply voltage is interrupted - see Diagram 1.

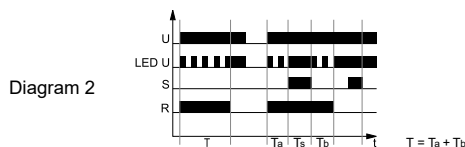


Additional option (ON delay adding): if the control contact S is closed the running interval T is stopped (green LED illuminated) and the interval already expired is saved. When the control contact S is opened once again the interval T is continued (green LED flashing). After the interval T has expired, the control contact S can be operated as you like - see Diagram 2.

Wu - Single shot leading edge voltage controlled.

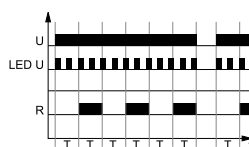


When the supply voltage U is applied, the output relay R switches into on-position and the set interval T begins (green LED flashing). After the interval T has expired (green LED illuminated) the output relay switches into off-position. This status remains until the supply voltage is interrupted. If the supply voltage is interrupted before the interval T has expired, the output relay switches into off-position. The interval already expired is erased and is restarted when the supply voltage is next applied - see Diagram 1.



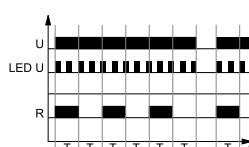
Additional option (Single shot leading edge adding): if the control contact S is closed the running interval T is stopped (green LED illuminated) and the interval already expired is saved. When the control contact S is opened once again the interval T is continued (green LED flashing). After the interval T has expired, the control contact S can be operated as you like - see Diagram 2.

Bp - Symmetrical cyclical operation pause first.



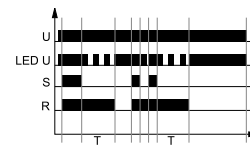
Applying the supply voltage U starts the cyclical operation from the interval T - switching the output relay R off followed by switching on the output relay R for the interval T. The cyclical operation lasts until the supply voltage U is interrupted.

Bi - Symmetrical cyclical operation pulse first.



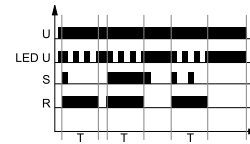
Applying the supply voltage U starts the cyclical operation from switching on the output relay R for the set interval T. After the interval T has lapsed, the output relay R switches off for the interval T. The cyclical operation lasts until the supply voltage U is interrupted.

R - OFF delay with the control contact S.



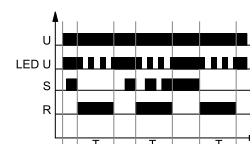
The input of the time relay is supplied with voltage U continuously. Closing of the control contact S immediately switches on the output relay R. Opening of the control contact S starts the set time of the delayed switching off of the output relay R. After the interval T has lapsed, the output relay R switches off. If the control contact S is closed during the interval T, the already measured time is reset, and the output relay R is switched on again. The OFF delay of the output relay R will start when the control contact S is opened again.

Ws - Single shot for the set interval triggered by closing of the control contact S.



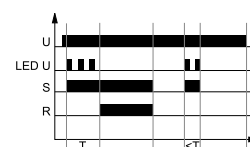
The input of the time relay is supplied with voltage U continuously. Closing of the control contact S immediately switches the output relay R on for the set interval T. After the interval T has lapsed, the output relay R is switched off. In the course of the interval T, any opening of the control contact S does not affect the function to be performed. The output relay R may be switched on again for the set interval, after the interval T has lapsed, by closing the control contact S again.

Wa - ON for the set interval triggered with the control contact S.



The input of the time relay is supplied with voltage U continuously. Closing of the control contact S does not start the interval T, and it does not change the position of the output relay R. Opening of the control contact S immediately switches on the output relay R for the set time. After the interval T has lapsed, the output relay R switches off. Opening and closing of the control contact S in the course of the interval T does not affect the function to be performed. The output relay R may be switched on again for the set interval with another closing and opening of the control contact S.

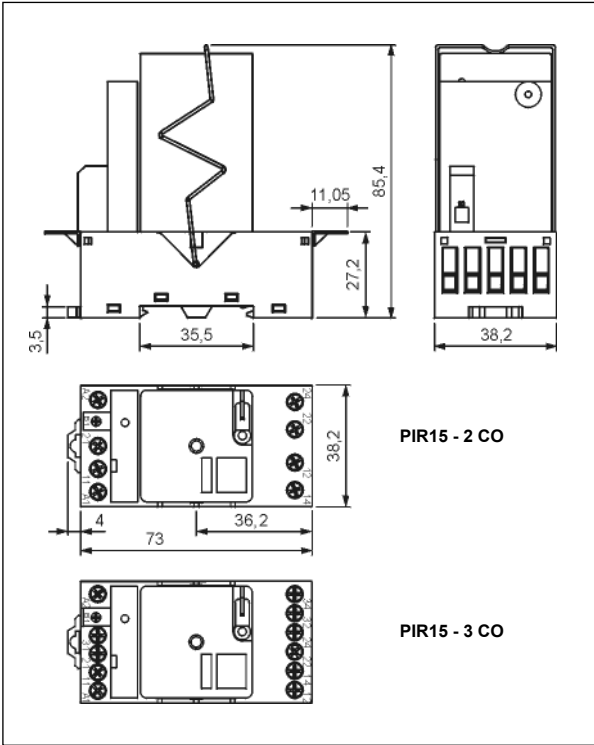
Es - ON delay with the control contact S.



The input of the time relay is supplied with voltage U continuously. Closing of the control contact S starts the interval T - on-delay of the output relay R. After the interval T has lapsed, the output relay R switches on and remains in this position until the control contact S is opened. In case the control contact S is closed for time shorter than the set interval T, the output relay R will not activate.

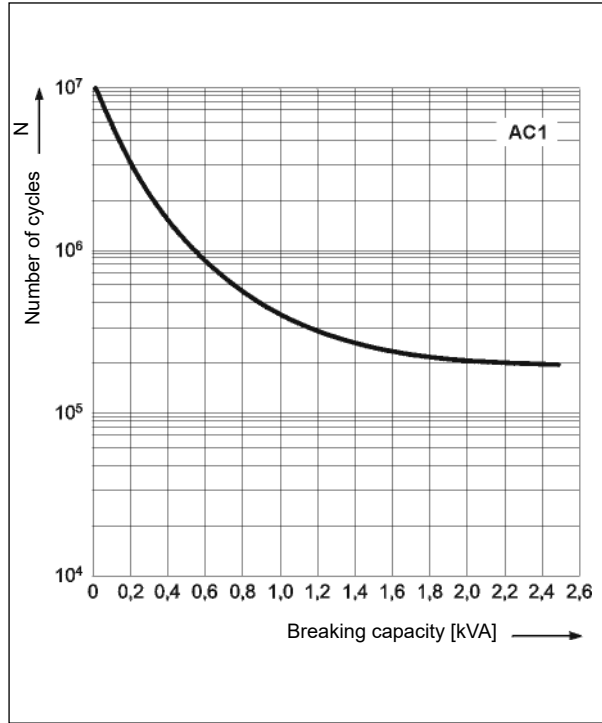
U - supply voltage; R - output state of the relay; S - control contact state; T - measured time; Ta, Tb - component intervals of T time; Ts - period of T time interrupt; t - time axis

Dimensions



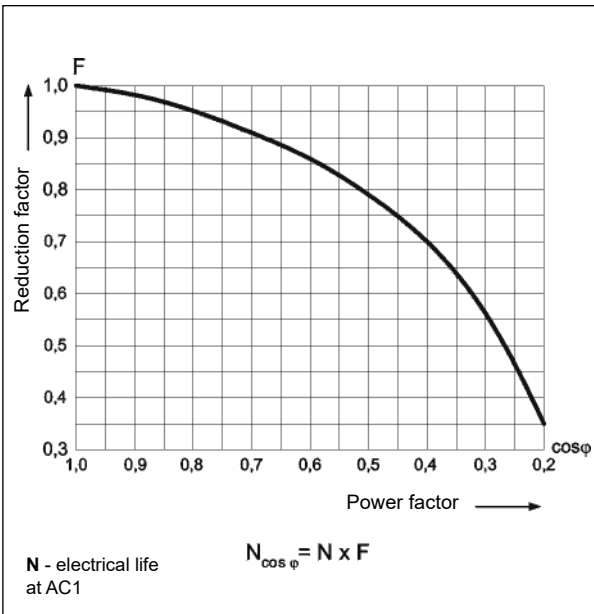
Electrical life at AC resistive load. Switching frequency: 1 200 cycles/hour

Fig. 1



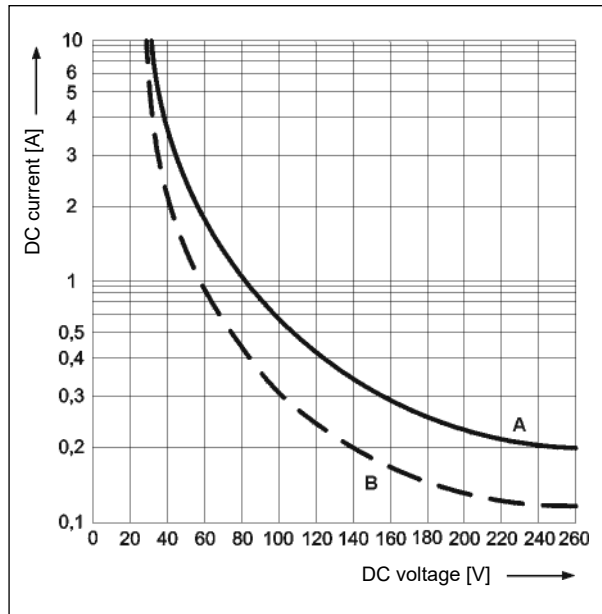
Electrical life reduction factor at AC inductive load

Fig. 2



Max. DC breaking capacity A - resistive load DC1 B - inductive load L/R = 40 ms

Fig. 3



Mounting

Relays PIR15...T are designed for direct mounting on 35 mm rail mount acc. to EN 60715 or on panel mounting with two M3 screws. **Connections:** max. cross section of the cables (stranded): 2 x 2,5 mm² (2 x 14 AWG), stripping length: 6,5 mm, max. tightening moment for the terminal: 0,5 Nm.

Input data - DC voltage version

Table 1

Input voltage code	Rated input voltage U_n V DC	Input resistance at 20 °C Ω	Acceptable resistance	Input - voltage range V DC	
				min. (at 20 °C)	max. (at 55 °C)
024DC	24	430	± 10%	19,2	26,4
048DC	48	1 750	± 10%	38,4	52,8
060DC	60	2 700	± 10%	48,0	66,0
110DC	110	9 200	± 10%	88,0	121,0
120DC	120	11 000	± 10%	96,0	132,0
220DC	220	37 000	± 10%	176,0	242,0

The data in bold type relate to the standard versions of the relays.

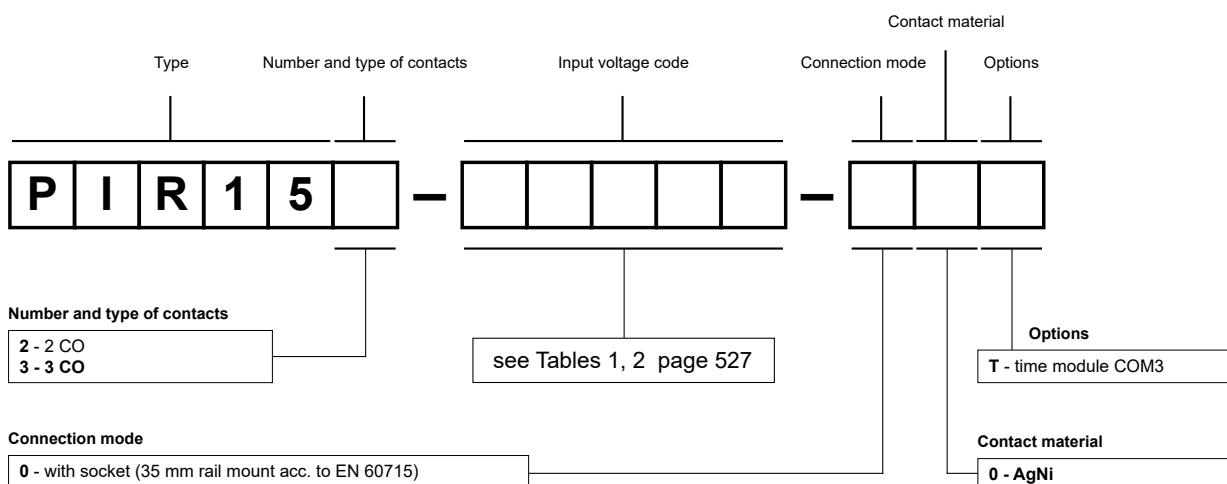
Input data - AC 50/60 Hz voltage version

Table 2

Input voltage code	Rated input voltage U_n V AC	Input resistance at 20 °C Ω	Acceptable resistance	Input - voltage range V AC	
				min. (at 20 °C)	max. (at 55 °C)
024AC	24	75	± 15%	19,2	26,4
048AC	48	305	± 15%	38,4	52,8
060AC	60	475	± 15%	48,0	66,0
110AC	110	1 700	± 15%	88,0	121,0
120AC	120	1 910	± 15%	96,0	132,0
230AC	230	7 080	± 15%	184,0	253,0
240AC	240	7 760	± 15%	192,0	264,0

The data in bold type relate to the standard versions of the relays.

Ordering codes



Examples of ordering codes:

PIR153-230AC-00T

time relay **PIR15 - 3 CO** consists of: relay **R15 - 3 CO** (three changeover contacts, contact material AgNi, input voltage 230 V AC 50/60 Hz), socket **GZP11** (black, screw terminals), time module **COM3**, spring wire clip **GZP-0054**, description plate **GZP-0035** (white)

PIR152-024DC-00T

time relay **PIR15 - 2 CO** consists of: relay **R15 - 2 CO** (two changeover contacts, contact material AgNi, input voltage 24 V DC), socket **GZP8** (black, screw terminals), time module **COM3**, spring wire clip **GZP-0054**, description plate **GZP-0035** (white)



- **Multifunction time modules (8 time functions; 8 time ranges)**
- AC/DC input voltages
- Mounting: combinable to relay R15 - 3 CO (2 CO) with plug-in socket GZP11 (GZP8)
- Recognitions, certifications, directives: RoHS,

Output circuits - contact data

Number and type of contacts	according to relays R15 - 3 CO (2 CO)		
Input circuit			
Rated voltage	AC: 50/60 Hz AC/DC	24...240 V	terminals (+)A1 – (-)A2
Must release voltage		> 10 V AC or 10 V DC	
Operating range of supply voltage		0,85...1,1 U _n	
Rated power consumption	AC	80 mVA (54 mW)	24 V AC
		940 mVA (520 mW)	230 V AC
	DC	60 mW	24 V DC
		765 mW	240 V AC
Range of supply frequency	AC	45...65 Hz	
Duty cycle		100%	
Residual ripple to DC		10%	
Control contact S ①	<ul style="list-style-type: none"> • connections • line length • min. time of pulse duration ② 	not potential free, terminals A1-B1 max. 10 m (twisted pair) 100 ms	
Insulation according to EN 60664-1			
Insulation pollution degree		2	if built-in: 3
General data			
Dimensions (L x W x H)		26,5 x 35 x 47 mm	
Ambient temperature (non-condensation and/or icing)	<ul style="list-style-type: none"> • storage • operating 	-25...+70 °C -25...+55 °C	
Cover protection category		IP 40	EN 60529
Relative humidity		15...85%	
Time module data			
Functions		E, Wu, Bp, Bi, R, Ws, Wa, Es	
Function adjustment ③		selection with microswitches	
Time ranges		1 s; 10 s; 1 min.; 10 min.; 1 h; 10 h; 1 d; 10 d	
Timing adjustment ③		time range - with microswitches smooth - (0,05...1) x time range - with potentiometer	
Base accuracy		± 1% (calculated from the final range values)	
Setting accuracy		± 5% (calculated from the final range values)	
Repeatability		± 0,5% or ± 5 ms	
Temperature influence		± 0,01% / °C	
Recovery time		150 ms	
LED indicator		green LED U ON - indication of supply voltage U green LED U flashing - measurement of T time	

① The control terminal B1 is activated by connection to A1 terminal via the external control contact S.

② Where the control signal is recognizable.

③ Settings of switches - see page 530.

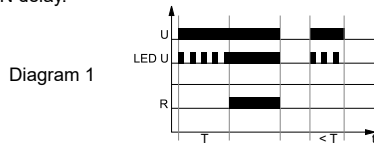
Time relay PIR15...T

- set: relay R15 - 3 CO (2 CO)
- + socket GZP11 (GZP8)
- + time module COM3

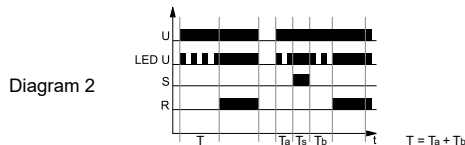


Time functions

E - ON delay.

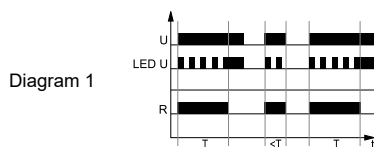


When the supply voltage U is applied, the set interval T begins (green LED flashing). After the interval T has expired (green LED illuminated) the output relay R switches into on-position. This status remains until the supply voltage is interrupted - see Diagram 1.

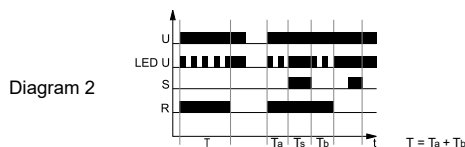


Additional option (ON delay adding): if the control contact S is closed the running interval T is stopped (green LED illuminated) and the interval already expired is saved. When the control contact S is opened once again the interval T is continued (green LED flashing). After the interval T has expired, the control contact S can be operated as you like - see Diagram 2.

Wu - Single shot leading edge voltage controlled.

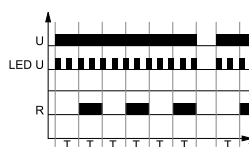


When the supply voltage U is applied, the output relay R switches into on-position and the set interval T begins (green LED flashing). After the interval T has expired (green LED illuminated) the output relay switches into off-position. This status remains until the supply voltage is interrupted. If the supply voltage is interrupted before the interval T has expired, the output relay switches into off-position. The interval already expired is erased and is restarted when the supply voltage is next applied - see Diagram 1.



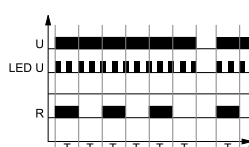
Additional option (Single shot leading edge adding): if the control contact S is closed the running interval T is stopped (green LED illuminated) and the interval already expired is saved. When the control contact S is opened once again the interval T is continued (green LED flashing). After the interval T has expired, the control contact S can be operated as you like - see Diagram 2.

Bp - Symmetrical cyclical operation pause first.



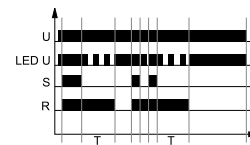
Applying the supply voltage U starts the cyclical operation from the interval T - switching the output relay R off followed by switching on the output relay R for the interval T. The cyclical operation lasts until the supply voltage U is interrupted.

Bi - Symmetrical cyclical operation pulse first.



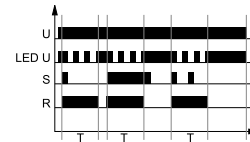
Applying the supply voltage U starts the cyclical operation from switching on the output relay R for the set interval T. After the interval T has lapsed, the output relay R switches off for the interval T. The cyclical operation lasts until the supply voltage U is interrupted.

R - OFF delay with the control contact S.



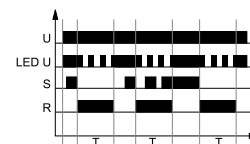
The input of the time relay is supplied with voltage U continuously. Closing of the control contact S immediately switches on the output relay R. Opening of the control contact S starts the set time of the delayed switching off of the output relay R. After the interval T has lapsed, the output relay R switches off. If the control contact S is closed during the interval T, the already measured time is reset, and the output relay R is switched on again. The OFF delay of the output relay R will start when the control contact S is opened again.

Ws - Single shot for the set interval triggered by closing of the control contact S.



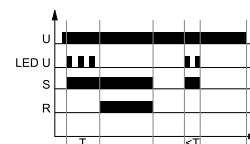
The input of the time relay is supplied with voltage U continuously. Closing of the control contact S immediately switches the output relay R on for the set interval T. After the interval T has lapsed, the output relay R is switched off. In the course of the interval T, any opening of the control contact S does not affect the function to be performed. The output relay R may be switched on again for the set interval, after the interval T has lapsed, by closing the control contact S again.

Wa - ON for the set interval triggered with the control contact S.



The input of the time relay is supplied with voltage U continuously. Closing of the control contact S does not start the interval T, and it does not change the position of the output relay R. Opening of the control contact S immediately switches on the output relay R for the set time. After the interval T has lapsed, the output relay R switches off. Opening and closing of the control contact S in the course of the interval T does not affect the function to be performed. The output relay R may be switched on again for the set interval with another closing and opening of the control contact S.

Es - ON delay with the control contact S.



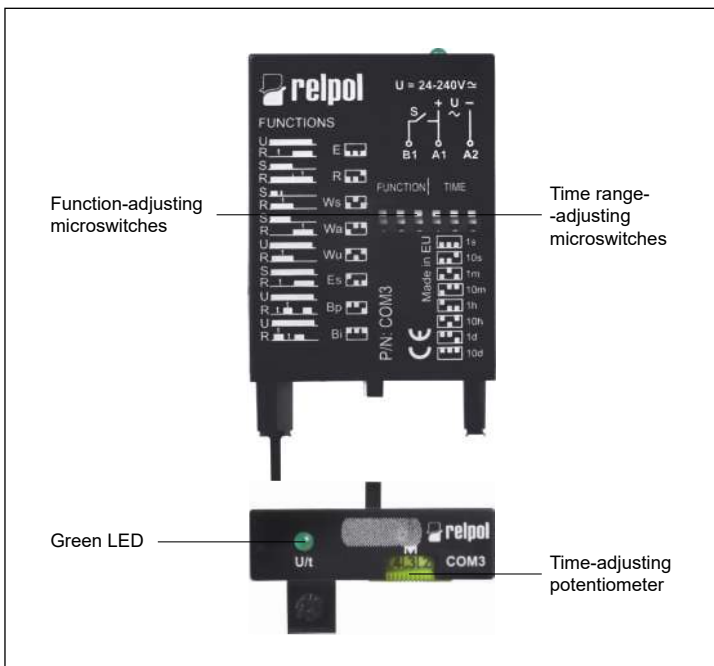
The input of the time relay is supplied with voltage U continuously. Closing of the control contact S starts the interval T - on-delay of the output relay R. After the interval T has lapsed, the output relay R switches on and remains in this position until the control contact S is opened. In case the control contact S is closed for time shorter than the set interval T, the output relay R will not activate.

U - supply voltage; R - output state of the relay; S - control contact state; T - measured time; Ta, Tb - component intervals of T time; Ts - period of T time interrupt; t - time axis

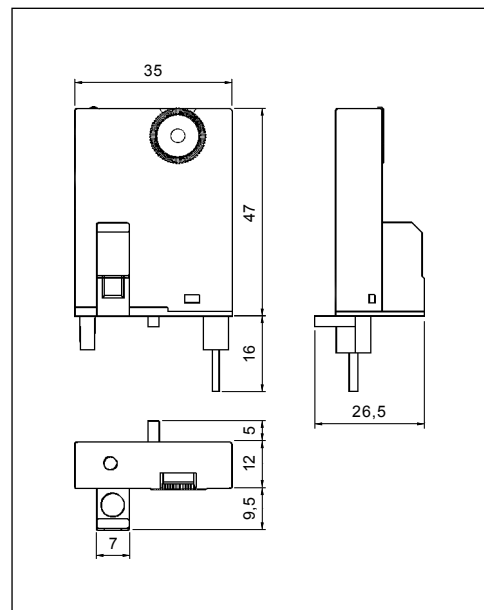
Settings of switches

Function adjustment	E	Wu	Bi	Bp	R	Ws	Wa	Es
microswitches 1, 2, 3								
Timing adjustment (max.)	1 s	10 s	1 min.	10 min.	1 h	10 h	1 d	10 d
microswitches 4, 5, 6								

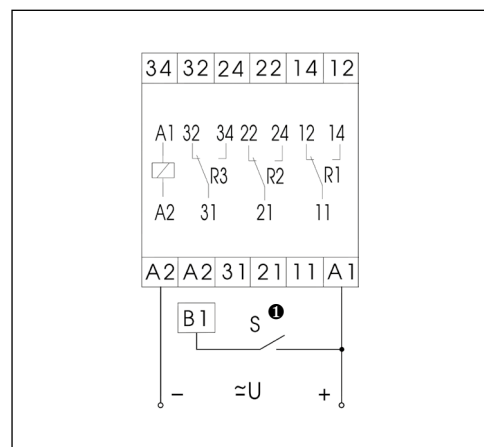
Panels description



Dimensions - time module COM3



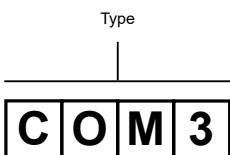
Connection diagram (COM3 + GZP11 + R15 - 3 CO)



Mounting

Modules **COM3** are designed for mounting on plug-in sockets GZP11 or GZP8 (combinable to relays R15 - 3 CO or R15 - 2 CO). Operational position - any.

Ordering codes



❗ The control terminal B1 is activated by connection to A1 terminal via the external control contact S.