

# RPC-1ER/EA/ES/EU/IP/SA/WT-...

## time relays



RPC-1...-UNI



RPC-1...-A230



- **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
- Directive RoHS

### • 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 <sub>2</sub>	
Max. switching voltage		300 V AC	
Rated load	AC1	16 A / 250 V AC	
	DC1	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	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 <sub>n</sub>	
Operating range of supply voltage		0,9...1,1 U <sub>n</sub>	
Rated power consumption	AC	≤ 3,5 VA 230 V AC, 50 Hz	
	DC	≤ 1,5 W 12...240 V AC/DC	
Range of supply frequency	AC	48...63 Hz	
<b>Control contact S ①</b>			
• min. voltage ②		0,7 U <sub>n</sub>	
• 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	Recognitions, certifications	Time relay code	Rated input voltage	Recognitions, certifications
<b>with 1 CO contact</b>			<b>with 1 CO contact</b>		
RPC-1ER-UNI	12...240 V AC/DC AC: 50/60 Hz	CE, cULus, EAC, UKCA	RPC-1ER-A230	230 V AC 50/60 Hz	CE, EAC, UKCA
RPC-1EA-UNI			RPC-1EA-A230		
RPC-1ES-UNI			RPC-1ES-A230		
RPC-1EU-UNI			RPC-1EU-A230		
RPC-1IP-UNI			RPC-1IP-A230		
RPC-1SA-UNI			RPC-1SA-A230		
RPC-1WT-UNI			RPC-1WT-A230		

### General data

Electrical life	• resistive AC1	> 0,5 x 10 <sup>5</sup>	16 A, 250 V AC
Mechanical life (cycles)		> 3 x 10 <sup>7</sup>	
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 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
	DC	≤ 150 ms    12...240 V AC/DC, AC: 50 Hz
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

④ 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

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

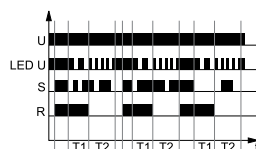
Codes of versions: **RPC-1ER-...**



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-...**

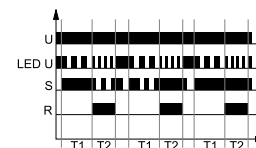


The input of the time relay is supplied with voltage U continuously. Closing of the control contact S switches on the output relay R. Opening of the control contact S starts the interval T1, and after the interval has

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.

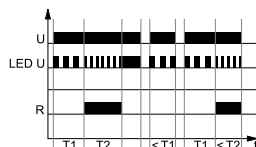
U - supply voltage; R - output state of the relay;

S - control contact state; T1, T2 - measured times; t - time axis

### Time functions

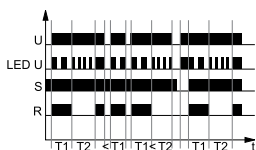
**EWu + NWu** - ON delay for the set interval (EWu) or switching ON for the set interval-switching OFF for the set interval-continuous ON (NWu), with the control contact S. Independent settings of T1 and T2 intervals. Codes of versions: **RPC-1EU-...**

#### 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.

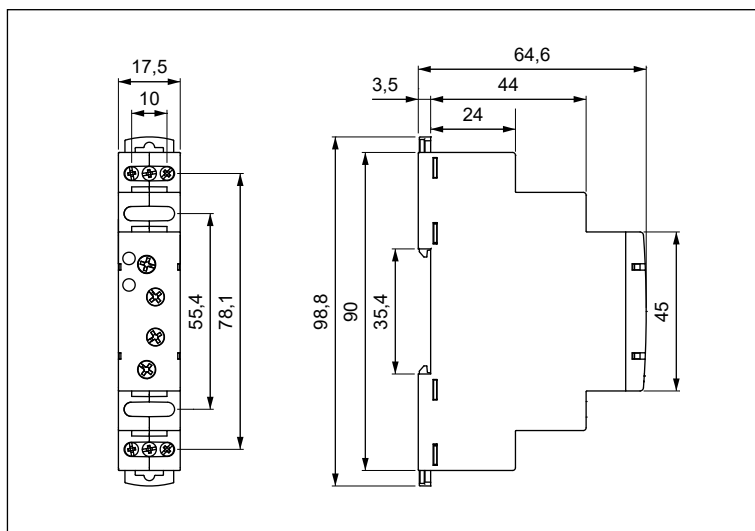
**Adjustment of the set values:** the values of time and range are read in the course of the relay's operation. The set values may be modified at any moment.

**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.

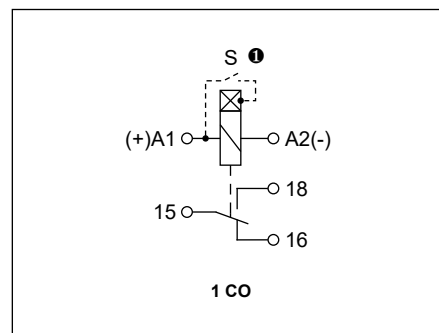
#### Supply:

- **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

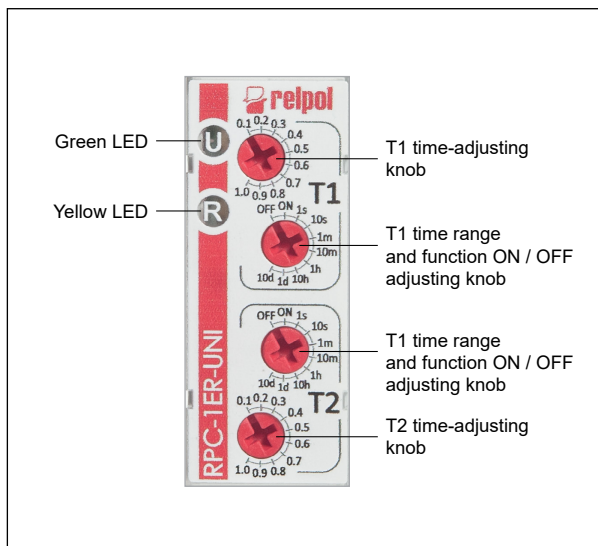


### Connection diagram



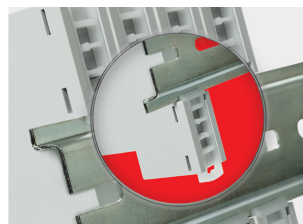
**Note:** the indicated polarization of the supply refers only to the relays RPC-...-UNI. ❶ The control terminal S is activated by connection to A1 terminal via the external control contact S.

### 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 mm<sup>2</sup> (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).

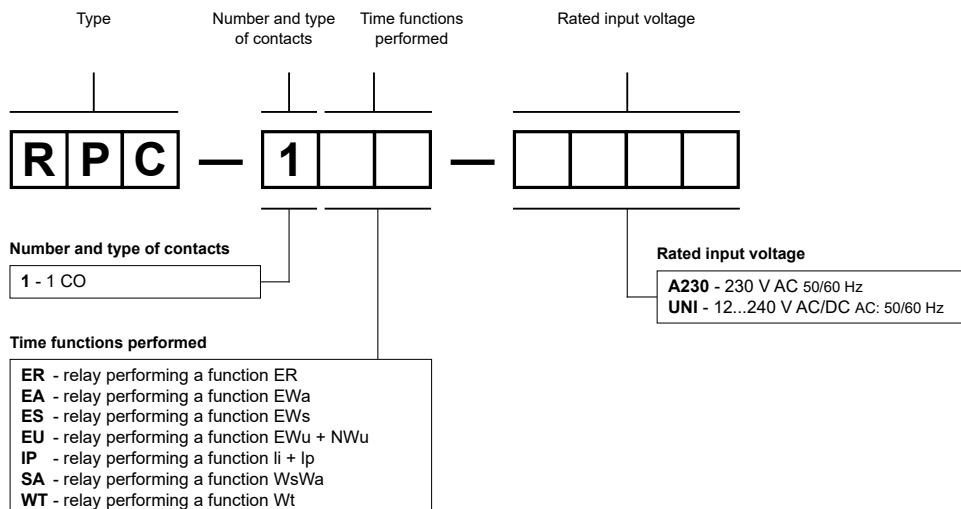


**Mounting wires in clamps:** universal screw (cross-recessed or slotted head).

# RPC-1ER/EA/ES/EU/IP/SA/WT-...

## time relays

### 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 AgSnO<sub>2</sub>, 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 AgSnO<sub>2</sub>, 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	Recognitions, certifications	Time relay code	Rated input voltage	Recognitions, certifications
<b>with 1 CO contact</b>			<b>with 1 CO contact</b>		
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RPC-1EA-UNI			RPC-1EA-A230		
RPC-1ES-UNI			RPC-1ES-A230		
RPC-1EU-UNI			RPC-1EU-A230		
RPC-1IP-UNI			RPC-1IP-A230		
RPC-1SA-UNI			RPC-1SA-A230		
RPC-1WT-UNI			RPC-1WT-A230		

### PRECAUTIONS:

1. Ensure that the parameters of the product described in its specification provide a safety margin for the appropriate operation of the device or system and never use the product in circumstances which exceed the parameters of the product. 2. Never touch any live parts of the device. 3. Ensure that the product has been connected correctly. An incorrect connection may cause malfunction, excessive heating or risk of fire. 4. In case of any risk of any serious material loss or death or injuries of humans or animals, the devices or systems shall be designed so to equip them with double safety system to guarantee their reliable operation.