



• 10-functions electronic time relays in compact cover • Cadmium - free contacts • AC and AC/DC input voltages • Direct mounting on 35 mm DIN rail mount, EN 50022 (wiring: 1 x 2,5 mm², 2 x 1,5 mm²) • 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 C/O) or RM84 (2 C/O) electromagnetic relay • Compliance with standard PN-EN 61812-1 • Recognitions, certifications, directives:

Type of relay	TR4N 1 C/O		TR4N 2 C/O	
Output circuits - contact data				
Number and type of contacts		1 C/O - changeover		2 C/O - changeover
Contact material		AgNi		AgNi
Max. switching voltage		AC/DC 250 V / 250 V		250 V / 250 V
Min. switching voltage		5 V		5 V
Rated load		AC1 16 A / 250 V AC		8 A / 250 V AC
		DC1 16 A / 24 V DC		8 A / 24 V DC
Min. switching current		5 mA		5 mA
Rated current		16 A		8 A
Max. breaking capacity		AC1 4 000 VA		2 000 VA
Min. breaking capacity		0,3 W		
Contact resistance		≤ 100 mΩ		
Max. operating frequency		1 200 cycles/hour		
• at rated load		18 000 cycles/hour		
• no load				
Input control 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 < U _n < 1,2 12 V AC/DC		
		0,85 < U _n < 1,2 24 V AC/DC, 115 V AC, 230 V AC		
Rated power consumption		0,5 VA / 0,5 W 12 V AC/DC 0,7 VA / 0,7 W 24 V AC/DC		
		1,3 VA 115 V AC 1,7 VA 230 V AC		
Range of supply frequency		AC: 48...63 Hz		
		AC/DC: 48...100 Hz		
Insulation				
Insulation category		B250		
Overvoltage category		III PN-EN 60664-1		
Insulation pollution degree		2		
Flammability degree		V-1 UL94		
Dielectric strength		2 500 V AC		
• input - outputs				
Input - outputs distance		≥ 10 mm		
• clearance		≥ 10 mm		
• creepage				
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		
Environmental protection		RTI PN-EN 116000-3		
Shock resistance		15 g		
Vibration resistance		0,35 mm DA 10...55 Hz		

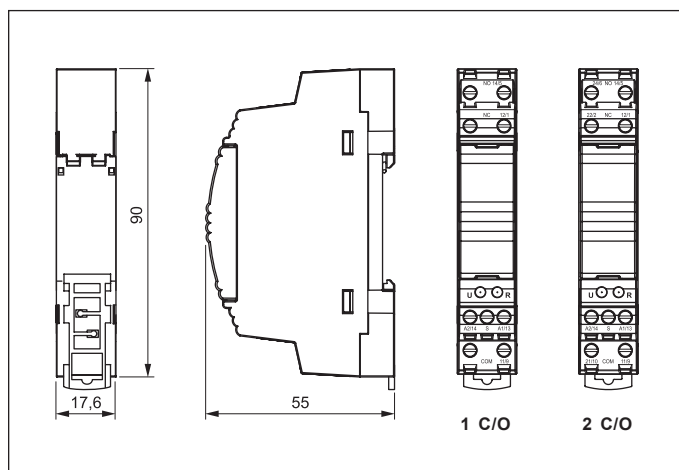
The data in bold type pertain to the standard versions of the relays.

Time module data

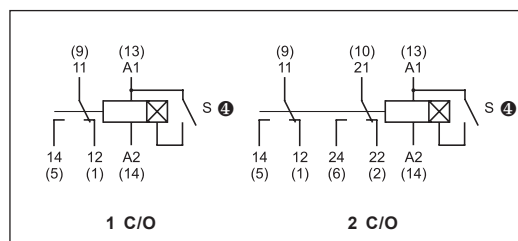
Functions ❶	E, Wu, Bp, Bi, PWM, R, Ws, Wa, Esa, B permanent switching ON and OFF
Time intervals	1 s ❷; 10 s; 1 min.; 10 min.; 1 h; 10 h; 1 d; 10 d
Timing adjustment	smooth - (0,1...1) x time interval
Setting accuracy	± 5% (calculate from final range value) ❷
Repeatability	± 0,5% ❷
Temperature influence	± 0,01% / °C
Recovery time	80 ms
Min. pulse of the control contact	AC: 25 ms DC: 15 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 ❸

❶ Descriptions of time functions - see pages 20-21. ❷ 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. ❸ The yellow LED - T time measurement (flashing); excited operational relay, time not measured (steady light); de-excited operational relay, time not measured (no light).

Dimensions



Connections diagrams

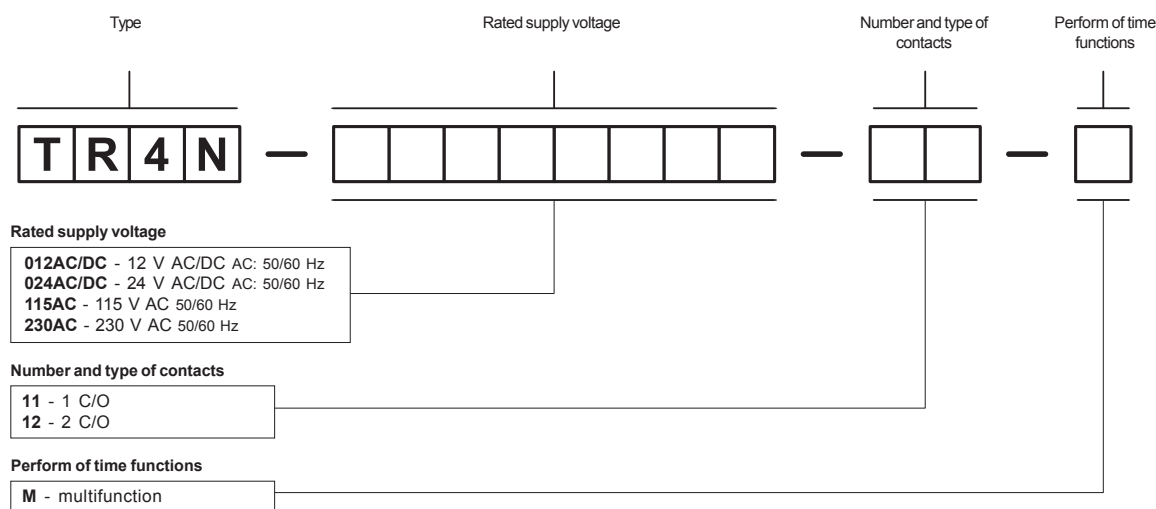


❹ Control contact S is activated by connecting it to A1 terminal.

Mounting

Relays **TR4N 1 C/O, 2 C/O** are designed for direct mounting on 35 mm DIN rail mount, EN 50022.

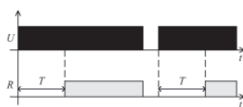
Ordering codes



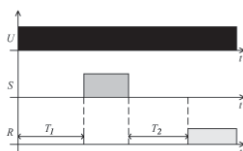
Examples of ordering codes:

TR4N-230AC-11-M time relay **TR4N 1 C/O**, rated input voltage 230 V AC 50/60 Hz, with one changeover contact, multifunction (relay perform 10 functions), contact material AgNi

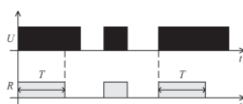
TR4N-024AC/DC-12-M time relay **TR4N 2 C/O**, rated input voltage 24 V AC/DC 50/60 Hz, with two changeover contacts, multifunction (relay perform 10 functions), contact material AgNi

E - ON Delay Voltage Controlled

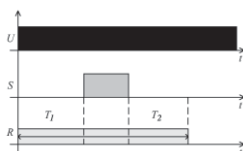
After the supply voltage [U] has been applied, the preset time [T] measurement starts. After the time [T] has been measured, the output relay [R] switches to ON position and remains in such until the supply voltage [U] is removed.

E(S) - ON Delay Voltage Controlled with Control Contact

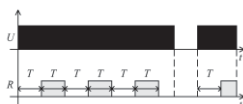
After the supply voltage [U] has been applied, the time [T] measurement starts. If the control contact [S] is switched on, the measurement of time [T] is interrupted for the time of switching the control contact [S]. After the control contact [S] has been switched off, the time [T] ($T=T_1+T_2$) is continued to be measured. After the time [T] has been measured, the output relay [R] will switch, and it will be in operating position until the supply voltage [U] is removed.

Wu - Single Shot Leading Edge Voltage Controlled

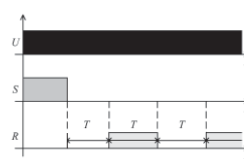
After the supply voltage [U] has been applied, the output relay [R] switches immediately, and the preset time [T] is measured. After the preset time [T] has been measured, the output relay [R] returns to the initial state.

Wu(S) - Single Shot Leading Edge Voltage Controlled with Control Contact

After the supply voltage [U] has been applied, the output relay [R] switches immediately and the preset time [T] measurement starts. If the control contact [S] is switched on, the time [T] measurement will be interrupted for the time for which the control contact [S] is switched. After the control contact [S] has been released, the time [T] ($T=T_1+T_2$) is continued to be measured. After the preset time [T] has been measured, the output relay [R] returns to the initial position.

Bp - Flasher Pause First

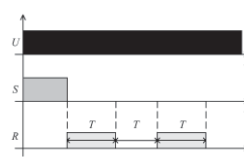
After the supply voltage [U] has been applied, the preset time [T] measurement starts. After the time [T] has been measured, the output relay [R] switches to ON position and the preset time [T] is being measured once more. After the preset time [T] has been measured, the output relay [R] returns to the initial state, and the next operating cycle of the relay starts. The relay operates until the supply voltage is removed.

Bp(S) - Flasher Pause First with Control Contact

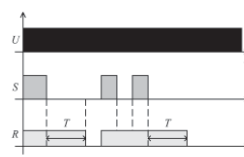
After the control contact [S] has been switched on and then off at the supply voltage [U] being applied, the measurement of the preset time [T] starts. After the time has been measured, the output relay [R] switches, and the time [T] is measured again. After the time has been measured, the output relay returns to the initial position, and the next cycle of the relay operation starts. The relay operates until the supply voltage is removed.

Bi - Flasher Impulse First

After the supply voltage [U] has been applied, the preset time [T] measurement starts simultaneously with switching of the output relay [R]. After the preset time [T] has been measured, the output relay [R] returns to the initial state, and the next operating cycle of the relay starts. The relay operates until the supply voltage is removed.

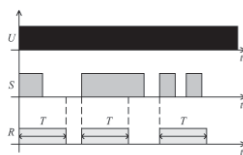
Bi(S) - Flasher Impulse First with Control Contact

After the control contact [S] has been switched on and then off at the supply voltage [U] being applied, the measurement of the preset time [T] starts with the simultaneous switching of the output relay [R]. After the time [T] has been measured, the output relay [R] returns to the initial position and the time [T] measurement starts again. After the time [T] has been measured, the next cycle of the relay operation starts. The relay operates until the supply voltage is removed.

R - OFF Delay with Control Contact

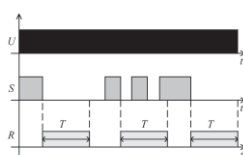
The supply voltage [U] must be applied to the time relay continuously. After the control contact [S] has been closed, the output relay [R] switches immediately. After opening of the control contact [S] measurement of the preset time [T] starts. After the preset time [T] has lapsed, the output relay [R] returns to the initial position. If the control contact [S] is closed again, even before the preset time [T] has lapsed, the previously measured time is cancelled, and after the control contact [S] has been opened, the preset time [T] is measured again.

Ws - Single Shot Leading Edge with Control Contact



The supply voltage [U] must be applied to the time relay continuously. After the control contact [S] has been closed, the output relay [R] switches immediately. After opening of the control contact [S] measurement of the preset time [T] starts. After the preset time [T] has lapsed, the output relay [R] returns to the initial position. In course of the time [T] measurement the control contact [S] may be repeatedly closed and opened with no influence upon the output relay [R]. It is only after the time [T] has lapsed that closing of the control contact [S] causes switching the output relay [R] on again and measurement of the time [T].

Wa - Single Shot Trailing Edge with Control Contact



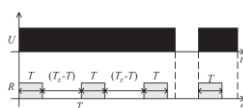
The supply voltage [U] must be applied to the time relay continuously. Closing of the control contact [S] does not result in measurement of the time delay or switching of the output relay [R]. It is only when the control contact [S] is opened that the output relay [R] switches immediately and the preset time [T] measurement starts. After the preset time [T] has lapsed, the output relay [R] returns to the initial position. In course of the time [T] measurement the control contact [S] may be repeatedly closed and opened with no influence upon the output relay [R]. It is only after the time [T] has lapsed that closing and opening of the control contact [S] causes switching the output relay [R] on again and measurement of the time [T].

Es - ON Delay with Control Contact



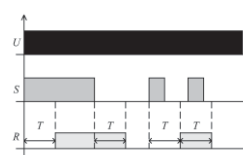
The supply voltage [U] shall be applied to the time relay continuously. After the control contact [S] has been closed, the preset time [T] is measured after which the output relay [R] is switched on and remains in this position until the control contact [S] is opened. If the closing time of [S] is shorter than the preset time [T], the relay [R] will not operate.

PWM - Pulse with Modulation



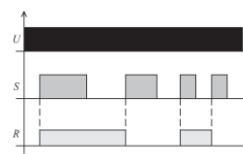
After the supply voltage has been applied, the output relay switches on for the preset time [T], and then switches off for the remaining time interval to complete the full value of the preset interval [Tz].

Esa - Delayed Switching ON and OFF Controlled with Control Contact



The supply voltage [U] must be applied to the time relay continuously. After the control contact [S] has been closed, the preset time [T] measurement starts, and after it has lapsed, the output relay [R] is switched on. If closing time of control contact [S] is shorter than setting time delay [T] output relay [R] will switch on after time delay [T] and will be on during time [T]. Closing of control contact [S] during time of switch on output relay [R] will not influence for realize function.

B - Flasher with Control Contact



Each closing of the control contact [S] results in the change of the output relay position to the opposite one (a feature of bistable relay).

Permanent switching ON and OFF

The functions available in TR4N relays. The functions ON and OFF are selected with TIME potentiometer. 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 FUNC potentiometer 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.

OFF - OFF mode

The mode available in PIR6WT-1Z relays. The OFF mode is selected with the switches of TIME range settings. In the OFF mode the normally open contact is permanently open. The position of MODE setting switches is of no significance with this mode. The OFF mode appears useful in operation control of the the time relay in electrical system.

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