

NEW TIME



Automation is our passion



For dozens of years now, Relpol S.A.

has been a worldwide known supplier of components

used in industrial and power automation, power electronics,
industrial and applied electronics, telecommunication, etc.



Apart from complete delivery of components, Relpol S.A. provides its partners with technical consultancy based upon **extensive knowledge of the application of the components.**

Taking into account **the significant role of the products of Relpol S.A.**, we have made their quality improvement our priority strategic goal.

You are welcome to review our catalogs which present a very wide line of products for industrial automation.

Due to the wide line of products, orders of non-standard products should be consulted with the manufacturer or distributor.



The leading position

of the manufacturer of electromagnetic relays in Europe

provides for Relpol's presence
in markets worldwide.

Commercial Partnerships of Relpol S.A.

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The standards quality guaranteed

Taking into account the high requirements of the market and our customers' full satisfaction, Relpol S.A. constantly strives for improvement of the quality of the products and services we offer. Our own technological, designing and research facilities remarkably help us to achieve our goals.

The modern production profile and high quality of the products that comply with the requirements of the European Union are confirmed by the ISO 9001 : 2001, ISO 14001 : 2005 CERTIFICATES.

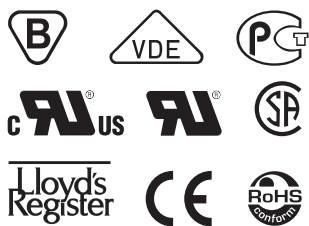
ISO 9001 : 2001

ISO 14001 : 2005

The Gold Statuette of the Business Centre Club 1995 / EUROPRODUCT 2002 / EUROPRODUCT 2003 / the Statuette of the Minister of Economic Affairs, Labor and Social Policy 2003 / GOLD EUROPRODUCT 2003 / ELECTROPRODUCT 2003 / GOLD MEDAL Automaticon 2004 / the Statuette for the Pillar of the Polish Economy 2004 / Product of the Year 2005

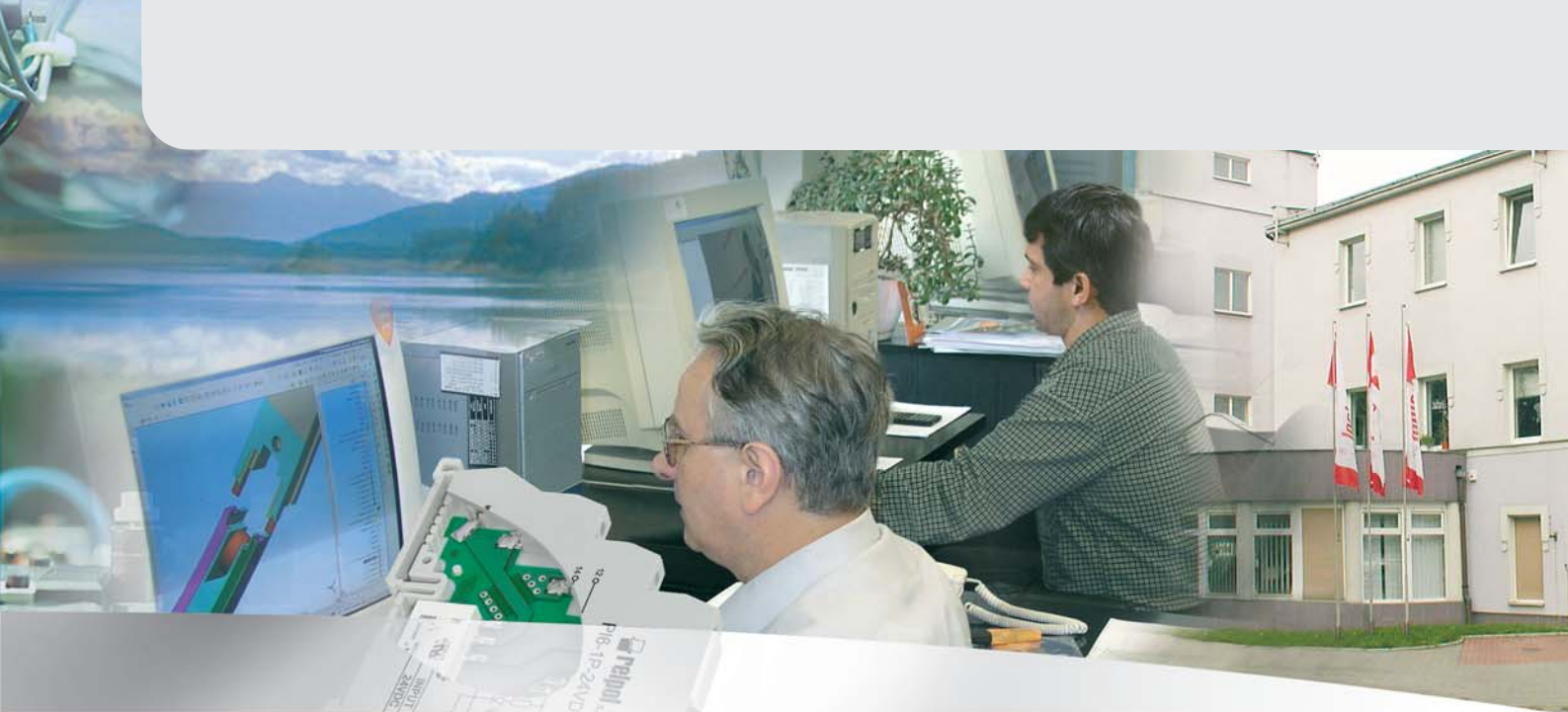
The innovative features of our technological solutions

and the reliability of our products



are confirmed by numerous recognitions and certifications BBJ, VDE, UL, CSA, GOST, LR, RoHS and by prizes and awards.





Relations and trust

Our co-operation with numerous renowned suppliers of materials and components necessary for the production process allows us to realize even complex deliveries quickly and smoothly. We build long-term partnership relations with our customers.

Owing to regular consultations and steady contribution of our Partners to our activities, we gain the knowledge necessary for reliable and professional services.

Relpol S.A. runs its own Research and Development Department which designs new products to follow the worldwide trends and solutions in the electrotechnical industry.

The permanent development of our staff along with human resources stabilization provide our customers with professional service.

Relpol S.A. Technical Support Department advises the Client and helps to solve the problems of electrical applications and, thus, enhances their satisfaction at cooperation with ourselves.

The long years of experience, the knowledge of the electrotechnical industry and the market activities of Relpol S.A. have been proved by co-operation with the largest corporations worldwide.

Environment protection

With the development of technology we shall not forget

about the issues of the environment protection.

Reduction of the natural environment pollution with regard to the production process and the products of Relpol S.A. is a constant process aimed at minimizing of the environmental impact.

Our products meet the requirements of the RoHS Directive.



Time relays



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- 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 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 PN-EN 61812-1
- Recognitions, certifications, directives:  

Type of relay

TR4N 4 C/O

Output circuits - contact data

Number and type of contacts		4 C/O - changeover
Contact material		AgNi
Max. switching voltage	AC/DC	250 V / 250 V
Min. switching voltage		5 V
Rated load	AC1 DC1	6 A / 250 V AC 6 A / 24 V DC
Min. switching current		5 mA
Rated current		6 A
Max. breaking capacity	AC1	1 500 VA
Min. breaking capacity		0,3 W
Contact resistance		≤ 100 mΩ
Max. operating frequency		
• at rated load	AC1	1 200 cycles/hour
• no load		18 000 cycles/hour

Input control circuit

Rated voltage	50/60 Hz AC AC: 50/60 Hz AC/DC	115-230 V 12-24 V
Operating range of supply voltage		0,9 < U _n < 1,1 12 V AC/DC 0,85 < U _n < 1,1 24 V AC/DC, 115 V AC, 230 V AC
Rated power consumption		1,0 VA / 1,0 W 12 V AC/DC, 24 V AC/DC 2,2 VA 115 V AC, 230 V AC
Range of supply frequency		AC: 48...63 Hz AC/DC: 48...100 Hz

Insulation

Insulation category	B250
Overvoltage category	II PN-EN 60664-1
Insulation pollution degree	2
Flammability degree	V-1 UL94
Dielectric strength	
• input - outputs	2 500 V AC
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
• operating	-20...+55 °C
Cover protection category	IP 20
Environmental protection	RTI PN-EN 116000-3
Shock resistance	(NO/NC) 10 g / 5 g
Vibration resistance	0,35 mm DA 10...55 Hz

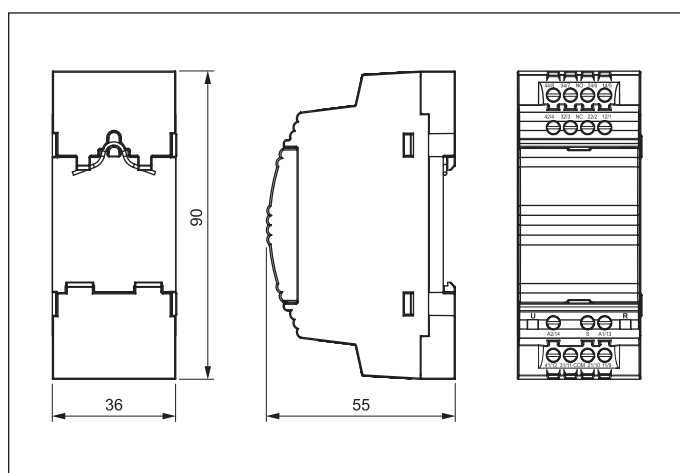
The data in bold type pertain to the standard versions of the relays.

Time module data

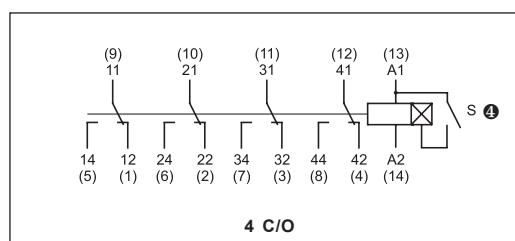
Functions ❶	E, Wu, Bp, Bi, PWM, R, Ws, Wa, Esa, B permanent switching ON and OFF
Time intervals	1 s ❷; 10 s; 1 min.; 10 min.; 1 h; 10 h; 1 d; 10 d
Timing adjustment	smooth - (0,1...1) x time interval
Setting accuracy	± 5% (calculate from final range value) ❷
Repeatability	± 0,5% ❷
Temperature influence	± 0,01% / °C
Recovery time	90 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 22-21. 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 diagram

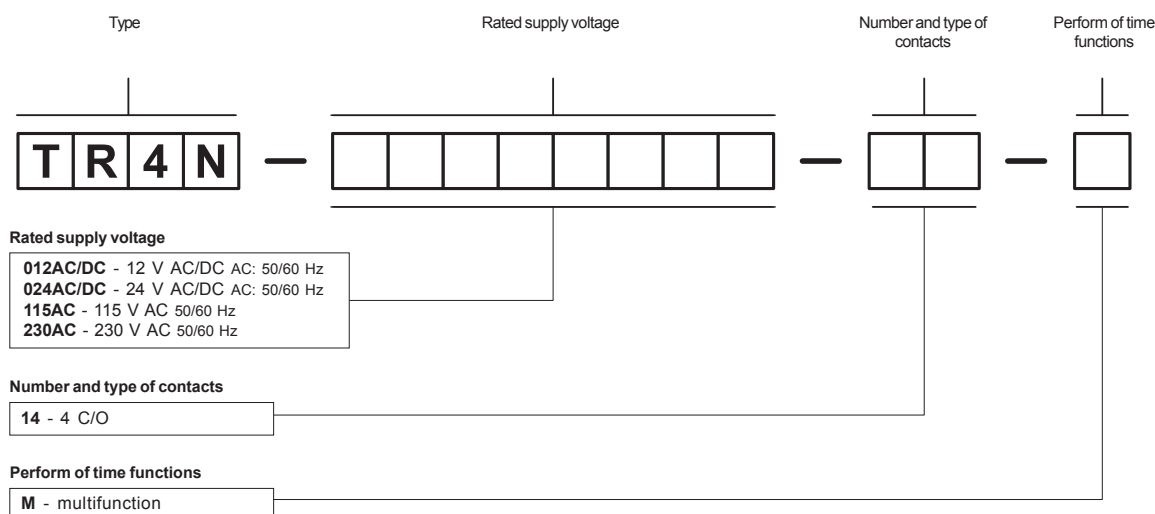


❹ Control contact S is activated by connecting it to A1 terminal.

Mounting

Relays **TR4N 4 C/O** are designed for direct mounting on 35 mm DIN rail mount, EN 50022.

Ordering codes



Example of ordering code:

TR4N-230AC-14-M

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



• 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		AC1	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			≥ 0,7 x 10 ⁵ 16 A, 250 V AC	
• resistive AC1			≥ 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			-40...+70 °C	
• storage			-20...+55 °C	
• operating				
Cover protection category			IP20	
Environmental protection			RTI PN-EN 116000-3	
Shock resistance			15 g	
Vibration resistance			0,35 mm DA 10...55 Hz	

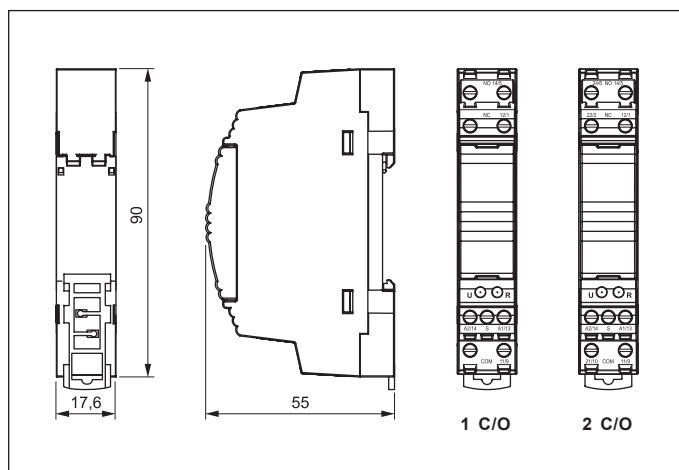
The data in bold type pertain to the standard versions of the relays.

Time module data

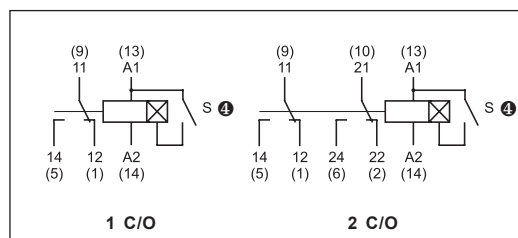
Functions ❶	E, Wu, Bp, Bi, PWM, R, Ws, Wa, Esa, B permanent switching ON and OFF
Time intervals	1 s ❷; 10 s; 1 min.; 10 min.; 1 h; 10 h; 1 d; 10 d
Timing adjustment	smooth - (0,1...1) x time interval
Setting accuracy	± 5% (calculate from final range value) ❷
Repeatability	± 0,5% ❷
Temperature influence	± 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

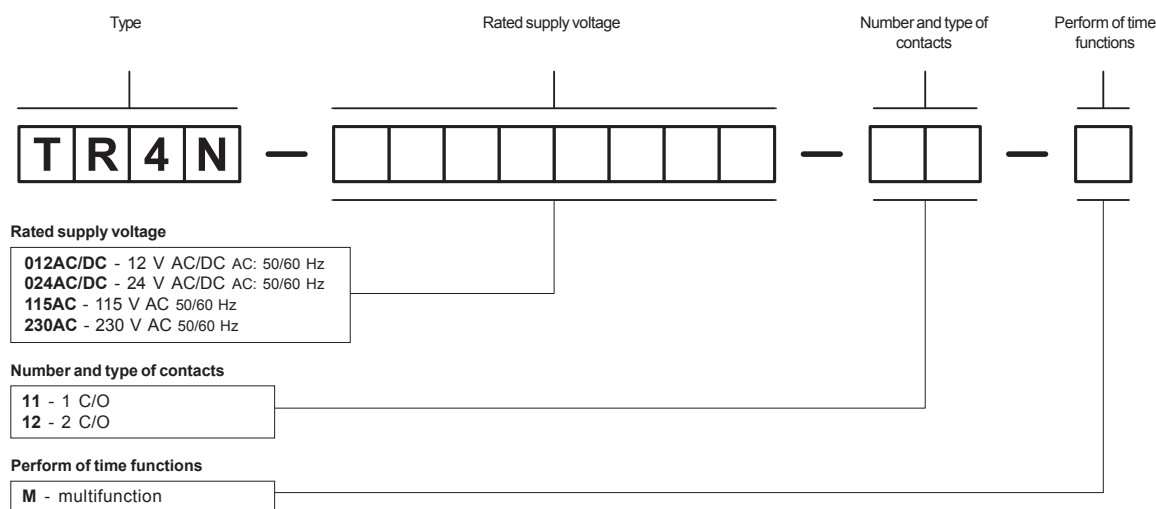


❹ Control contact S is activated by connecting it to A1 terminal.

Mounting

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

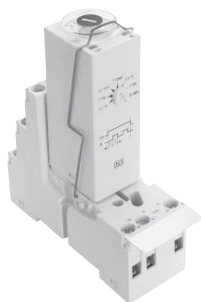
Ordering codes



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



- Single-function, single-voltage time relays offered in the following versions: **T-R4E** - relay with time function E, **T-R4Wu** - relay with time function Wu, **T-R4Bp** - relay with time function Bp, **T-R4Bi** - relay with time function Bi • Cadmium - free contacts • AC and DC input voltages
- For plug-in sockets, 35 mm DIN rail mount, EN 50022 or on panel mounting • Applications: as time systems in electric circuits of machines, technological lines, in automation systems, etc.
- Recognitions, certifications, directives: recognitions R4,

Type of relay

T-R4

Output circuits - contact data

Number and type of contacts		4 C/O - changeover
Contact material		AgNi
Max. switching voltage	AC/DC	250 V / 250 V
Min. switching voltage		5 V
Rated load	AC1	6 A / 230 V AC
Min. switching current		5 mA
Max. inrush current		12 A
Rated current		6 A
Max. breaking capacity	AC1	1 500 VA
Min. breaking capacity		0,3 W
Contact resistance		$\leq 100 \text{ m}\Omega$
Max. operating frequency		1 200 cycles/hour
• at rated load	AC1	18 000 cycles/hour
• no load		

Input control circuit

Rated voltage	50/60 Hz AC DC	24-115-230 V 12-24 V
Must release voltage		AC: $\geq 0,2 U_n$ DC: $\geq 0,1 U_n$
Operating range of supply voltage		$0,8 < U_n < 1,1$ see Tables 1, 2
Rated power consumption	AC DC	2,2 VA 1,2 W
Range of supply frequency		48...63 Hz

Insulation

Insulation category		B250
Insulation rated voltage		250 V AC
Overvoltage category		III PN-EN 60664-1
Dielectric strength		
• input - outputs		2 500 V AC
• contact clearance		1 500 V AC
• pole - pole		2 000 V AC
Input - outputs distance		
• clearance		$\geq 1,6 \text{ mm}$
• creepage		$\geq 3,2 \text{ mm}$

General data

Operating time (typical value)		10 ms
Release time (typical value)		8 ms
Electrical life		
• resistive AC1		$\geq 10^5$ 6 A, 250 V AC
• $\cos \phi$		see Fig. 2
Mechanical life (cycles)		$\geq 2 \times 10^7$
Dimensions (L x W x H)		21,2 x 29,5 x 62,5 mm
Weight		49 g
Ambient temperature		
• storage		-20...+85 °C
• operating		-20...+55 °C
Cover protection category		IP 20 (with socket)
Environmental protection		T-R4: RTI GZM4: RT0 PN-EN 116000-3
Shock resistance	(NO/NC)	10 g / 5 g
Vibration resistance		5 g 10...150 Hz

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

Time module data

Functions ❶	E, Wu, Bp, Bi
Time intervals	0,1 s ❷; 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% (calculate from final range value) ❷
Repeatability	± 1% ❷
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 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).

Input data - DC voltage version

Table 1

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

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

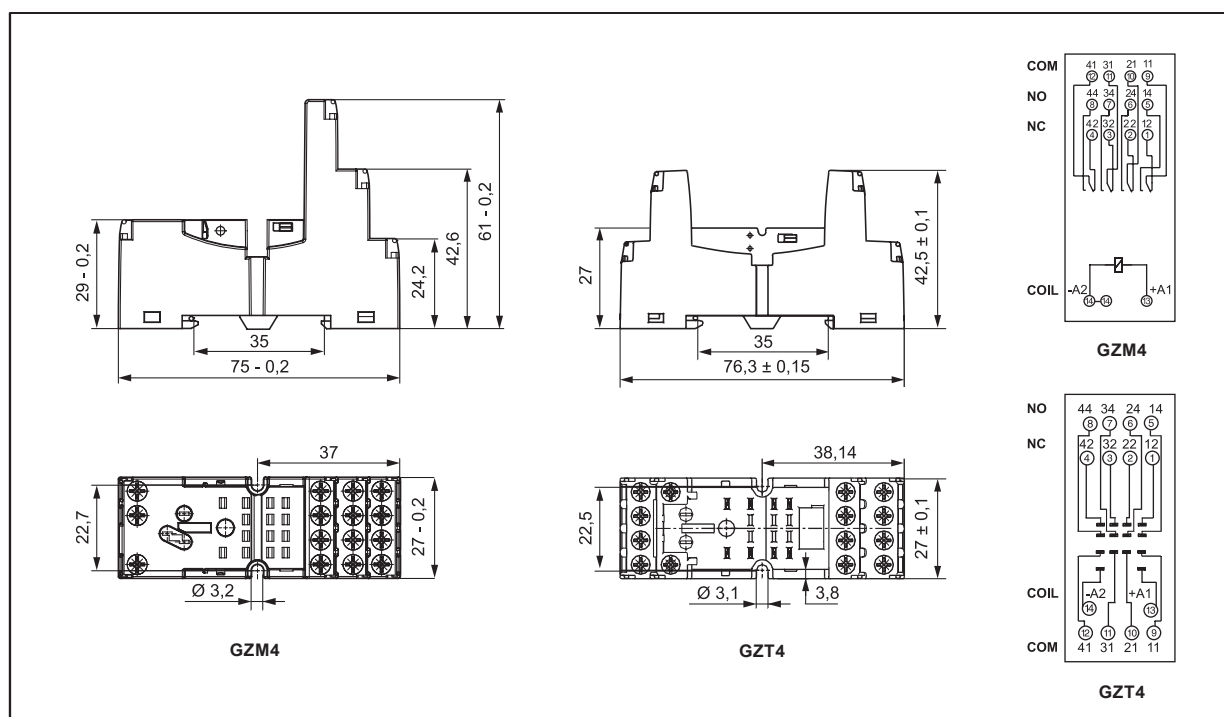
Input data - AC 50/60 Hz voltage version

Table 2

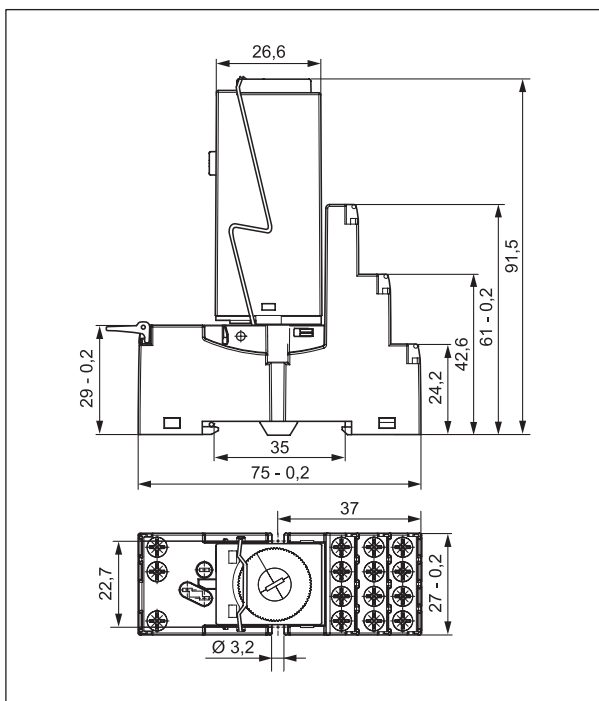
Input voltage code	Rated input voltage U_n V AC	Input resistance ± 10% at 20°C Ω	Input - voltage range V AC	
			min. (at 20°C)	max. (at 55°C)
5024	24	158	19,2	26,4
5115	115	3 610	92,0	127,0
5230	230	16 100	184,0	253,0

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

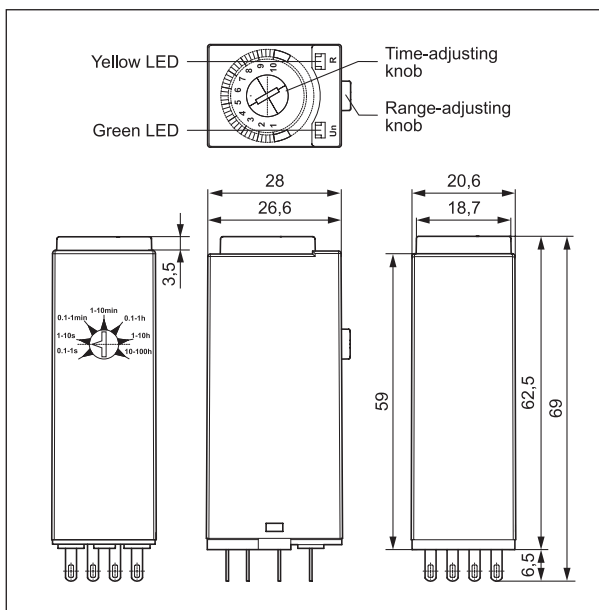
Dimensions, connections diagrams - sockets with screw terminals for T-R4 relays



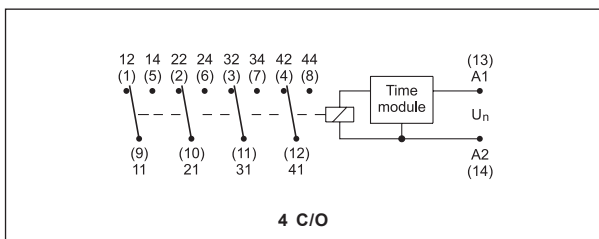
Dimensions - T-R4 relays with GZM4 sockets



Dimensions - T-R4 relays

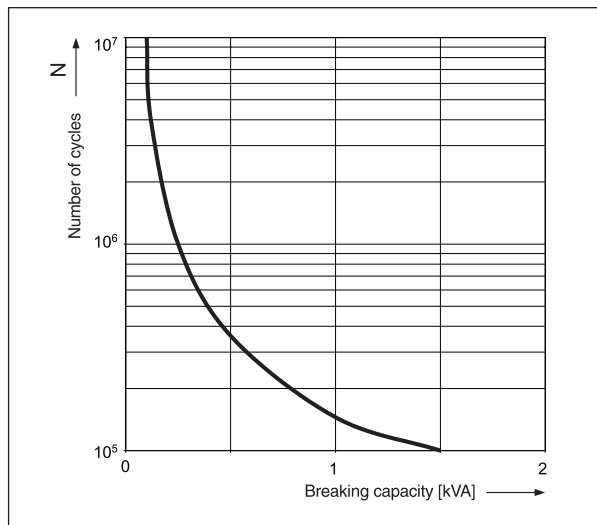


Connections diagram



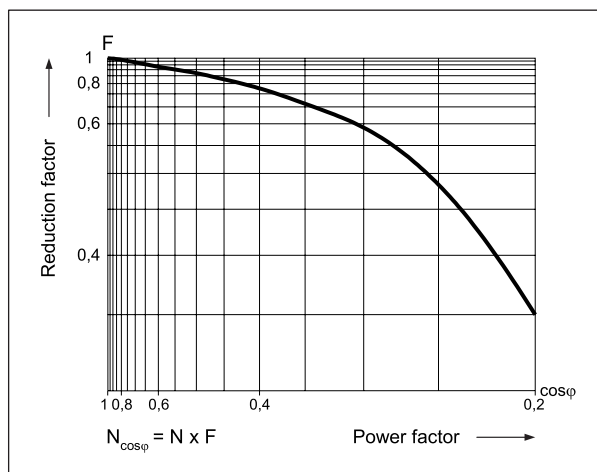
Electrical life at AC resistive load

Fig. 1



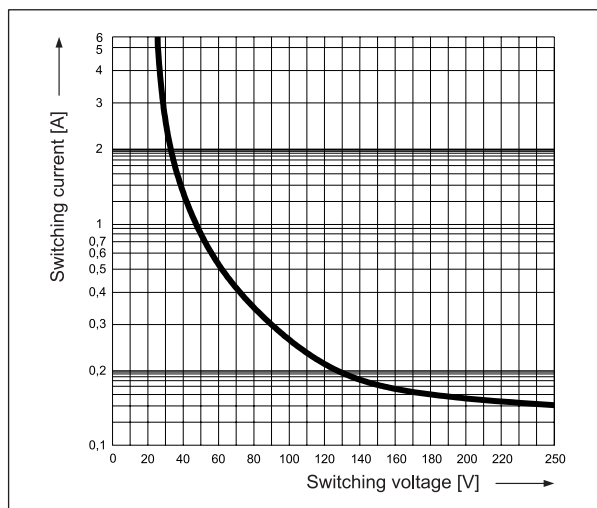
Electrical life reduction factor at AC inductive load

Fig. 2



Max. DC resistive load breaking capacity

Fig. 3



Mounting

Relays **T-R4E**, **T-R4Wu**, **T-R4Bp**, **T-R4Bi** are designed for screw terminals plug-in sockets **GZM4** or **GZT4**, 35 mm DIN rail mount, EN 50022 or on panel mounting with two M3 screws. For sockets are offered description plates **GZT4-0035** and clips **TR4-2000**.

Separate T-R4 control circuits from load circuits (T-R4 contacts)	GZM4: yes GZT4: no
Increased dielectric strength spacing between coil and contacts clamps	GZM...: min. 5 kV GZT...: min. 4 kV
Double A2(14) terminal is introduced for easy wiring in electrical devices	GZM2/3/4: yes GZT2/3/4: no



T-R4



GZM4



GZM4



GZT4



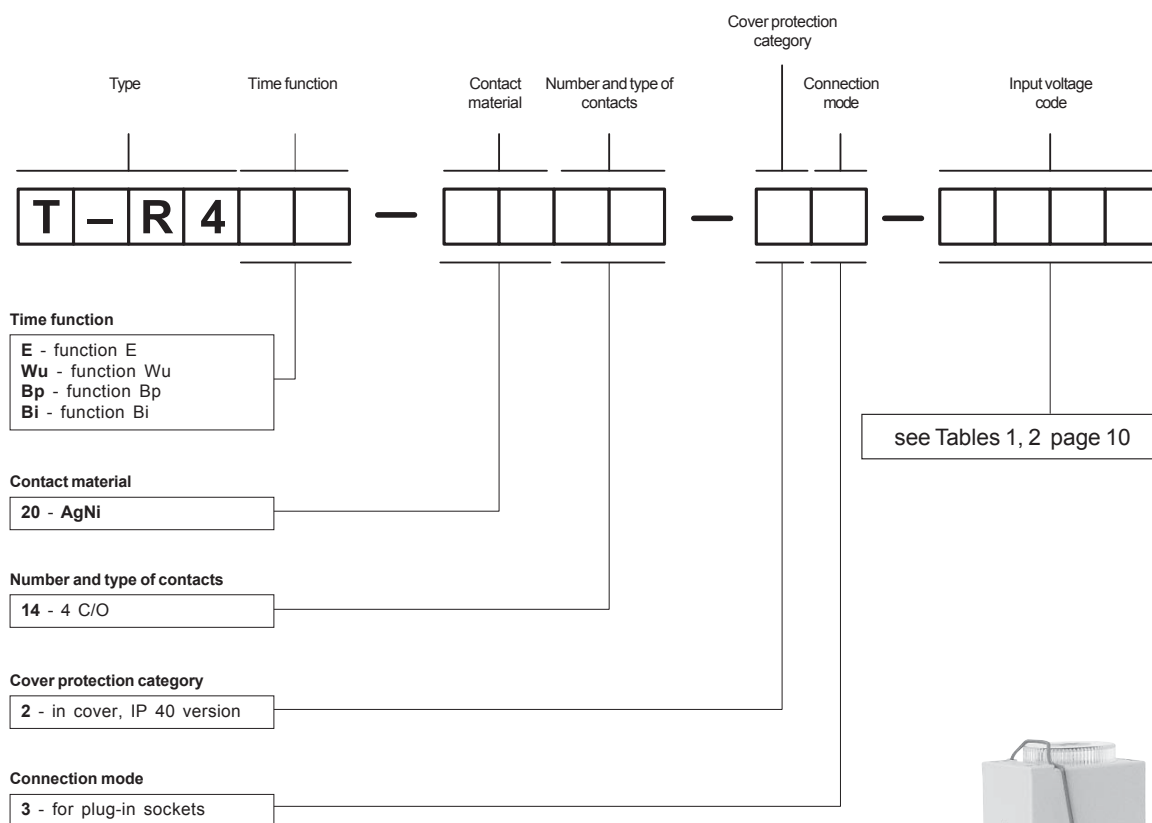
TR4-2000



GZT4-0035

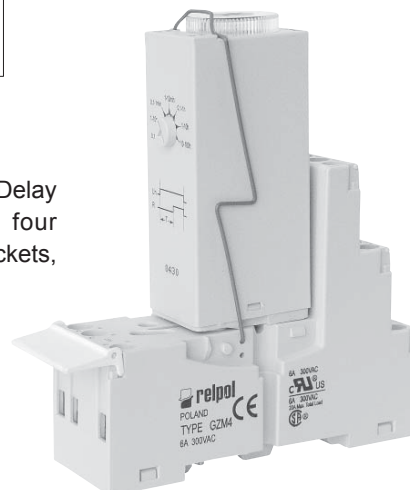
Note: sockets **GZM4** are available in black and gray colours.

Ordering codes




Example of ordering code:

T-R4E-2014-23-1012 time relay **T-R4**, performing the time function **E** - ON Delay Voltage Controlled, contact material AgNi, with four changeover contacts, in cover IP 40, for plug-in sockets, rated input voltage 12 V DC





- 35 mm DIN rail mount, EN 50022 or on panel mounting with two M3 screws.
- Interface relay **PIR15 2 C/O** consists of:
 - electromagnetic relay **R15 2 C/O**, plug-in socket **ES 9** black,
 - time module **T(COM3)**, spring wire clip **PZ11 0031**.
- Interface relay **PIR15 3 C/O (standard)** consists of:
 - electromagnetic relay **R15 3 C/O**, plug-in socket **ES 12** black,
 - time module **T(COM3)**, spring wire clip **PZ11 0031**.
- Recognitions, certifications, directives: recognitions R15, RoHS, 

Type of relay		PIR15 2 C/O	PIR15 32 C/O
Output circuits - contact data			
Number and type of contacts		2 C/O - changeover	3 C/O - changeover
Contact material		AgNi	
Max. switching voltage	AC/DC	250 V / 300 V	
Min. switching voltage		5 V	
Rated load	AC1	10 A / 250 V AC	
	DC1	10 A / 24 V DC	
Min. switching current		5 mA	
Max. inrush current		20 A	
Rated current		10 A	
Max. breaking capacity	AC1	2 500 VA	
Min. breaking capacity		0,3 W	
Contact resistance		≤ 100 mΩ	
Max. operating frequency	AC1	1 200 cycles/hour	
• at rated load		12 000 cycles/hour	
• no load			
Input control 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 T(COM3)		24...240 V AC/DC (uniwersal module)	
Operating range of supply voltage		0,85 < U _n < 1,1 see Tables 1, 2	
Must operate voltage		≥ 0,85 U _n	
Rated power consumption	AC	3,0 VA	
	DC	2,0 W	
Range of supply frequency		48...63 Hz	
Insulation			
Insulation category		C250	
Insulation rated voltage		250 V AC	
Overvoltage category		III PN-EN 60664-1	
Dielectric strength			
• input - outputs		2 500 V AC	
• contact clearance		1 500 V AC	
• pole - pole		2 000 V AC	
Input - outputs distance			
• clearance		≥ 3 mm	
• creepage		≥ 4,2 mm	
General data			
Operating time (typical value)		AC: 12 ms DC: 18 ms	
Release time (typical value)		AC: 10 ms DC: 7 ms	
Electrical life			
• resistive AC1		≥ 2 x 10 ⁵ 10 A, 250 V AC	
• cos ϕ		see Fig. 2	
Mechanical life (cycles)		> 2 x 10 ⁷	
Dimensions (L x W x H)		75 x 38 x 83,1 mm	
Weight		168 g	
Ambient temperature			
• storage		-40...+70 °C	
• operating		-40...+55 °C	
Cover protection category		IP20	
Environmental protection		R15: RTI ES 9, ES 12: RT0 PN-EN 116000-3	
Shock resistance		10 g	
Vibration resistance		5 g 10...500 Hz	

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

Time module data

Functions ❶	E, E(S), Wu, Wu(S), Bi, Bi(S), Bp, Bp(S), R, Ws, Wa, Es
Function adjustment ❷	selection with microswitches
Time intervals	1 s; 10 s; 1 min.; 10 min.; 1 h; 10 h; 1 d; 10 d
Timing adjustment ❸	range - with microswitches within the range - with a potentiometer
Setting accuracy \ Repeatability	$\pm 1\% \setminus 0,2\%$
Temperature influence	$\pm 0,01\% / ^\circ\text{C}$
Recovery time	150 ms
LED indicator	green LED - indication of time period T and the status of outputs after the time T has been measured ❹

❶ Descriptions of time functions - see pages 20-21. ❷ Settings of switches - see page 216. ❸ The green LED - T time measurement (flashing); excited operational relay, time not measured (steady light); de-excited operational relay, time not measured (no light).

Settings of switches

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

Input data - DC voltage version

Table 1

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

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

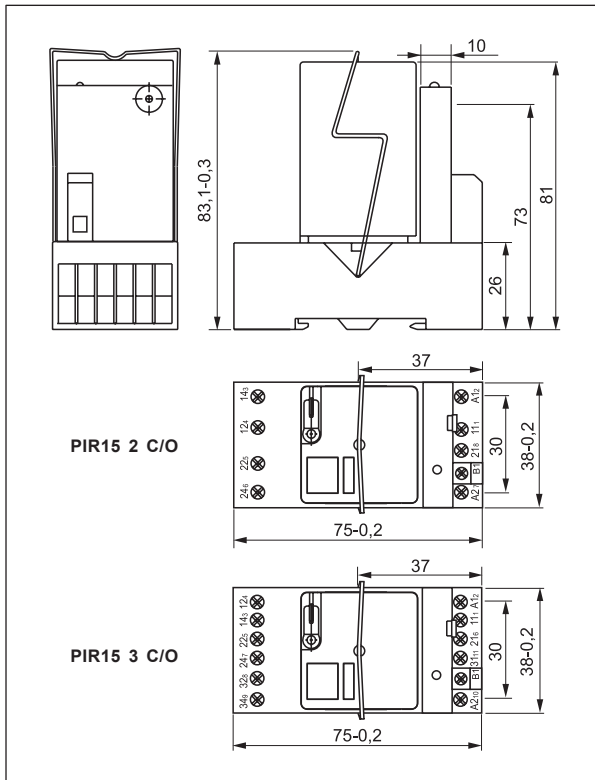
Input data - AC 50/60 Hz voltage version

Table 2

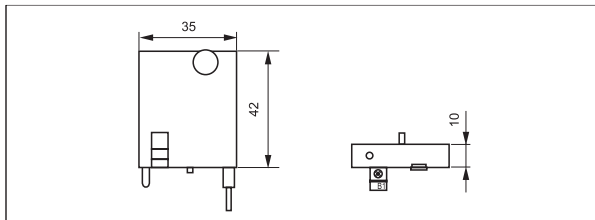
Input voltage code	Rated input voltage U_n V AC	Input resistance $\pm 15\%$ at 20°C Ω	Input - voltage range V AC	
			min. (at 20°C)	max. (at 55°C)
024AC	24	75	19,2	26,4
048AC	48	305	38,4	52,8
060AC	60	475	48,0	66,0
110AC	110	1 700	88,0	121,0
120AC	120	1 910	96,0	132,0
230AC	230	7 080	184,0	253,0
240AC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

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

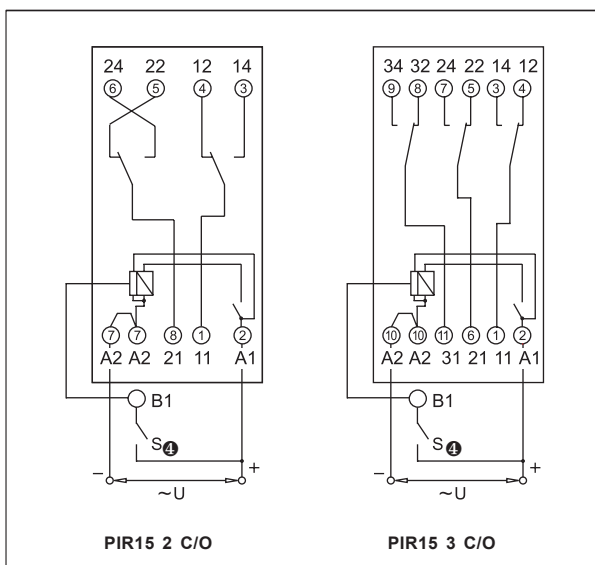
Dimensions - PIR 2 C/O, PIR 3 C/O relays



Dimensions - time modules T(COM3)



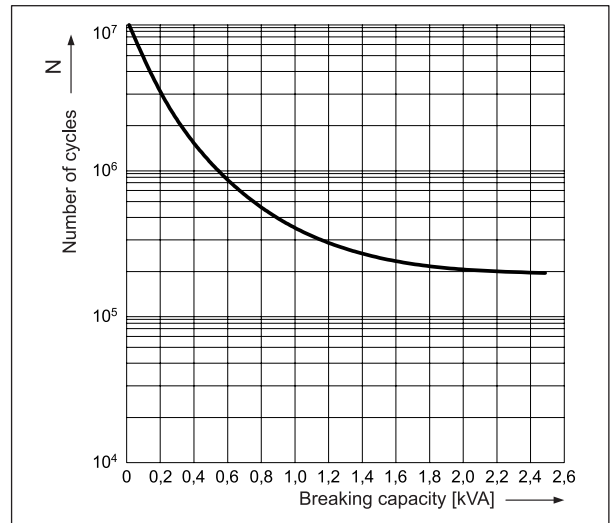
Connections diagrams (screw terminals side view)



④ Control contact (B1) S is activated by connecting it to A1 terminal.

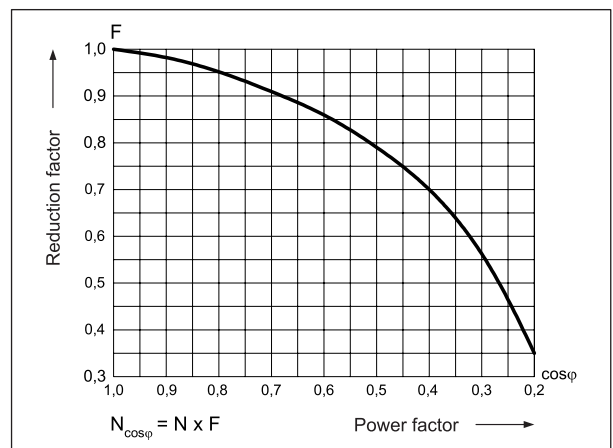
Electrical life at resistive load. Maximum switching frequency at rated load

Fig. 1



Electrical life reduction factor at AC inductive load

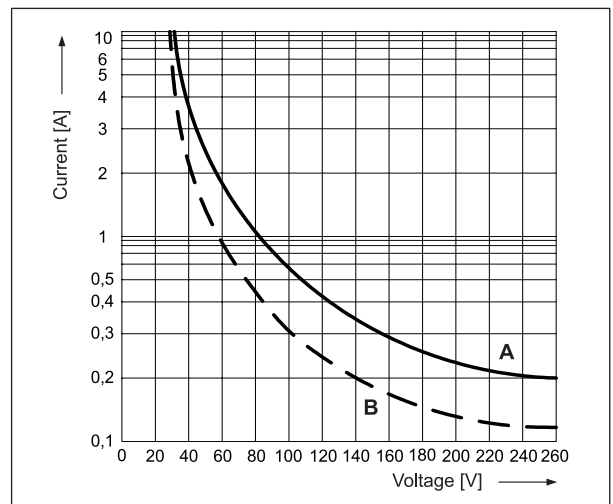
Fig. 2



Max. DC breaking capacity

A - resistive load $T = 0$ ms
B - inductive load $L/R = 40$ ms

Fig. 3



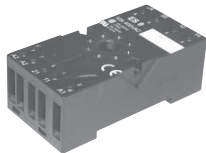
Mounting

Relays **PIR15...T** are designed for 35 mm DIN rail mount, EN 50022 or on panel mounting with two M3 screws. Interface relay **PIR15 2 C/O** consists of: electromagnetic relay **R15 2 C/O**, plug-in socket **ES 9** black, time module **T(COM3)** and spring wire clip **PZ11 0031**.

Interface relay **PIR15 3 C/O** consists of: electromagnetic relay **R15 3 C/O**, plug-in socket **ES 12** black, time module **T(COM3)** and spring wire clip **PZ11 0031**.



R15 2 C/O



ES 9



R15 3 C/O



ES 12

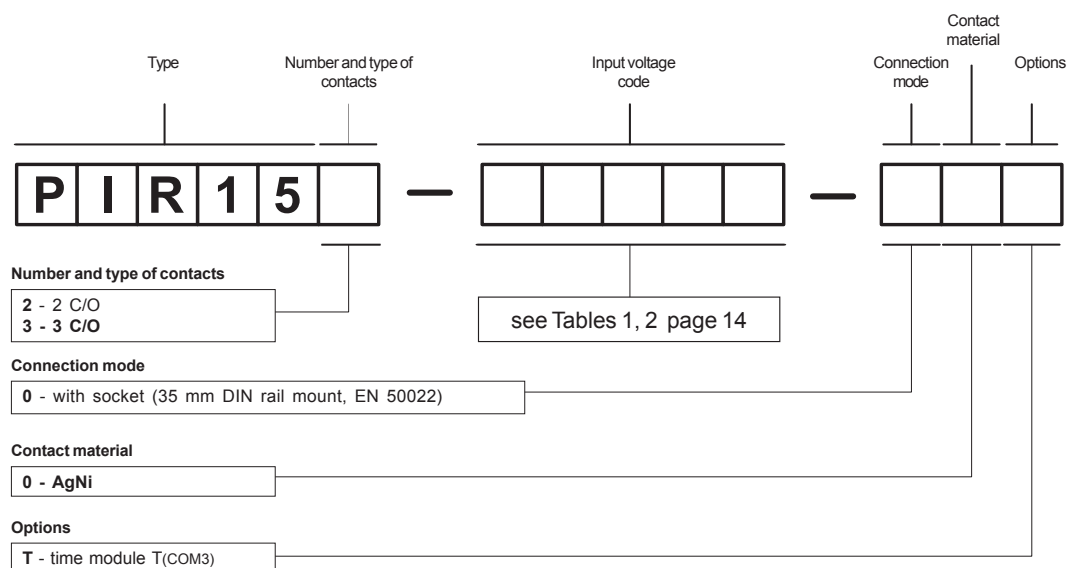


T(COM3)



PZ11 0031

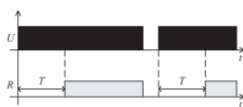
Ordering codes



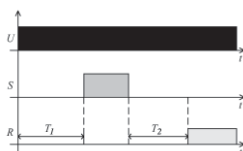
Examples of ordering codes:

PIR152-012DC-00T interface relay **PIR15 2 C/O**, which consists of: relay **R15 2 C/O**, contact material AgNi, rated input voltage 12 V DC, plug-in socket **ES 9** black (screw terminals), time module **T(COM3)**, spring wire clip **PZ11 0031**

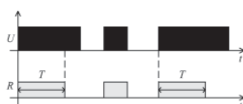
PIR153-230AC-00T interface relay **PIR15 3 C/O**, which consists of: relay **R15 3 C/O**, contact material AgNi, rated input voltage 230 V AC 50/60 Hz, plug-in socket **ES 12** black (screw terminals), time module **T(COM3)**, spring wire clip **PZ11 0031**

E - ON Delay Voltage Controlled

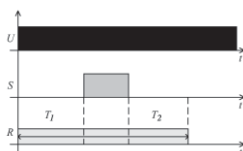
After the supply voltage [U] has been applied, the preset time [T] measurement starts. After the time [T] has been measured, the output relay [R] switches to ON position and remains in such until the supply voltage [U] is removed.

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

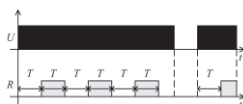
After the supply voltage [U] has been applied, the time [T] measurement starts. If the control contact [S] is switched on, the measurement of time [T] is interrupted for the time of switching the control contact [S]. After the control contact [S] has been switched off, the time [T] ($T=T_1+T_2$) is continued 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

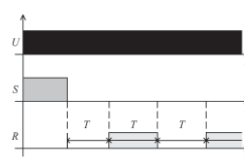
After the supply voltage [U] has been applied, the output relay [R] switches immediately, and the preset time [T] is measured. After the preset time [T] has been measured, the output relay [R] returns to the initial state.

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

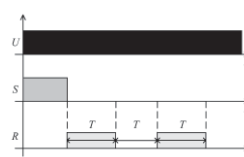
After the supply voltage [U] has been applied, the preset time [T] measurement starts. After the time [T] has been measured, the output relay [R] switches to ON position and the preset time [T] is being measured once more. After the preset time [T] has been measured, the output relay [R] returns to the 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

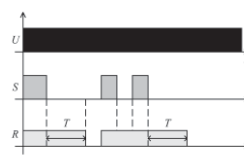
After the control contact [S] has been switched on and then off at the supply voltage [U] being applied, the measurement of the preset time [T] starts. After the time has been measured, the output relay [R] switches, and the time [T] is measured again. After the time has been measured, the output relay 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.

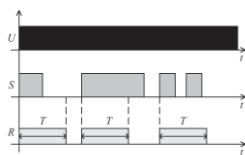
Bi(S) - Flasher Impulse First with Control Contact

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

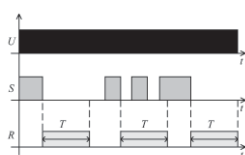
The supply voltage [U] must be applied to the time relay continuously. After the control contact [S] has been closed, the output relay [R] switches immediately. After opening of the control contact [S] measurement of the preset time [T] starts. After the preset time [T] has lapsed, the output relay [R] 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



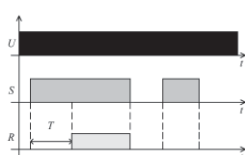
The supply voltage [U] must be applied to the time relay continuously. After the control contact [S] has been closed, the output relay [R] switches immediately. After opening of the control contact [S] measurement of the preset time [T] starts. After the preset time [T] has lapsed, the output relay [R] 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



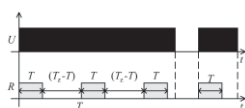
The supply voltage [U] must be applied to the time relay continuously. Closing of the control contact [S] does not result in measurement of the time delay or switching of the output relay [R]. It is only when the control contact [S] is opened that the output relay [R] switches immediately and the preset 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



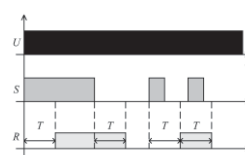
The supply voltage [U] shall be applied to the time relay continuously. After the control contact [S] has been closed, the preset time [T] is measured after which the output relay [R] is switched on and remains in this position until the control contact [S] is opened. If the closing time of [S] is shorter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

PWM - Pulse with Modulation



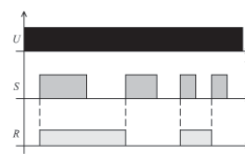
After the supply voltage has been applied, the output relay switches on for the preset time [T], and then switches off for the remaining time interval to complete the full value of the preset interval [Tz].

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



- Multifunction time relay
- 7 time functions: E, Wu, Bp, R, Ws, Wa, Es
- 7 time ranges: 1 s; 10 s; 1 min.; 10 min.; 1 h; 10 h; 100 h
- Wide input voltage range: 12...240 V AC/DC
- 1 changeover contact: 1 C/O
- Rated load: 8 A / 250 V AC at cat. AC1
- Installation design: width 17,5 mm
- Recognitions, certifications, directives:

Type of relay

TR-EM1P-UNI

Output circuit

Number and type of contacts		1 C/O - changeover	
Rated load	AC1	8 A / 250 V AC	
Max. breaking capacity	AC1	2 000 VA	
Max. operating frequency		3 600 cycles/hour	PN-EN 60947-5-1
• at 100 VA resistive load		360 cycles/hour	
• at 1 000 VA resistive load			

Input circuit

Input circuit		
Supply voltage U		12...240 V AC/DC, AC: 50/60 Hz; terminals A1(+)-A2
Drop-out voltage		AC: $\geq 0,3 U_n$
Operating range of supply voltage		$0,9 < U_n < 1,1$
Rated power consumption		4,0 VA / 1,5 W
Rated frequency		AC: 48...63 Hz
Duty cycle		100%
Residual ripple to DC		10%
Control contact	• input	terminals A1-B1
	• loadable	yes
	• max. line length	10 m
	• trigger level (sensitivity)	automatic adaption to supply voltage

Insulation

Rated surge voltage	4 000 V AC
Overvoltage category	III PN-EN 60664-1
Insulation pollution degree	2, if built-in 3 PN-EN 60664-1

General data

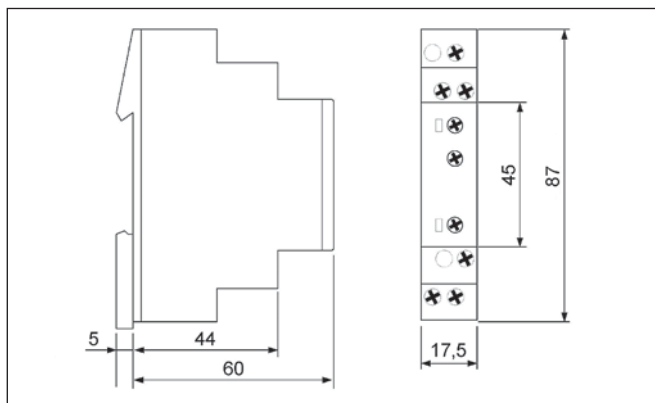
Electrical life	• resistive AC1	$\geq 2 \times 10^5$ 1 000 VA
Mechanical life (cycles)		$\geq 2 \times 10^7$
Dimensions (L x W x H)		87 x 17,5 x 60 mm
Weight		63 g
Ambient temperature	• storage, transport	-25...+70 °C
	• operating	-25...+55 °C PN-EN 60068-1
Housing protection category		IP40
Relative humidity		15...85% PN-EN 60721-3-3 class 3K3
Shock resistance		15 g 11 ms PN-EN 60068-2-27
Vibration resistance		0,35 mm DA 10...55 Hz PN-EN 60068-2-6

Time module data

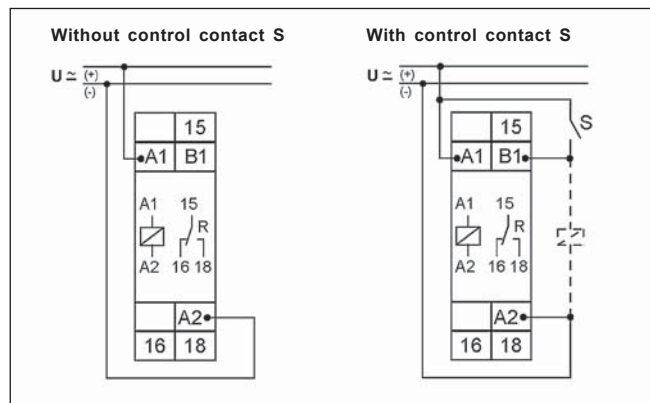
Functions	E, Wu, Bp, R, Ws, Wa, Es ❶
Time intervals (timing adjustment)	1 s (50 ms...1 s); 10 s (0,5...10 s); 1 min. (3 s...1 min.); 10 min. (30 s...10 min.); 1 h (3 min. ...1 h); 10 h (30 min. ...10 h); 100 h (5...100 h)
Base accuracy	$\pm 1\%$ (calculate from final range value)
Setting accuracy	$\pm 5\%$ (calculate from final range value)
Repeatability	$\pm 0,5\%$ or ± 5 ms
Temperature influence	$\pm 0,01\% / ^\circ\text{C}$
Recovery time	100 ms
Min. pulse of the control contact	AC: 100 ms DC: 50 ms
LED indicator	green LED U/T ON - indication of supply voltage green LED U/T flashing - indication of time period T yellow LED R ON/OFF - indication of output relay

❶ The function has to be set before connecting the relay to the supply voltage.

Dimensions



Connections diagrams



Mounting, mechanical design

Relays **TR-EM1P-UNI** are designed for direct mounting on 35 mm DIN rail mount, EN 50022. Mounting position: any. Self-extinguishing plastic housing, IP 40. Shockproof terminal connection according to VBG 4 (PZ1 required), IP 20. Maximum screw torque: 1,0 Nm. Terminal capacity: 1 x 0,5 do 2,5 mm² with/without multicore cable end, 1 x 4 mm² without multicore cable end, 2 x 0,5 do 1,5 mm² with/without multicore cable end, 2 x 2,5 mm² flexible without multicore cable end.

Functions

E - ON delay



When the supply voltage **U** is applied, the set interval **T** begins (green LED **U/T** flashes). After the interval **T** has expired (green LED **U/T** illuminated) the output relay **R** switches into on-position (yellow LED illuminated). This status remains until the supply voltage is interrupted. If the supply voltage is interrupted before the expiry of the interval **T**, the interval already expired is erased and is restarted when the supply voltage is next applied.

Wu - single shot leading edge voltage controlled



When the supply voltage **U** is applied, the output relay **R** switches into on-position (yellow LED illuminated) and the set interval **T** begins (green LED **U/T** flashes). After the interval **T** has expired (green LED **U/T** illuminated) the output relay switches into off-position (yellow LED not illuminated). 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.

Bp - flasher pause first



When the supply voltage **U** is applied, the set interval **T** begins (green LED **U/T** flashes). After the interval **T** has expired, the output relay **R** switches into on-position (yellow LED illuminated) and the set interval **T** begins

again. After the interval **T** has expired, the output relay switches into off-position (yellow LED not illuminated). The output relay is triggered at a ratio of 1:1 until the supply voltage is interrupted.

R - OFF delay



The supply voltage **U** must be constantly applied to the device (green LED **U/T** illuminated). When the control contact **S** is closed, the output relay **R** switches into on-position (yellow LED illuminated). If the control contact is opened, the set interval **T** begins (green LED flashes). After the interval **T** has expired (green LED **U/T** illuminated) the output relay switches into off-position (yellow LED not illuminated). If the control contact is closed again before the interval **T** has expired, the interval already expired is erased and is restarted.

Ws - single shot leading edge with control input S



The supply voltage **U** must be constantly applied to the device (green LED **U/T** illuminated). When the control contact **S** is closed, the output relay **R** switches into on-position (yellow LED illuminated) and the set interval **T** begins (green LED **U/T** flashes). After the interval **T** has expired (green LED **U/T** illuminated) the output relay switches into off-position (yellow LED not illuminated). During the interval, the control contact can be operated any number of times. A further cycle can only be started when the cycle run has been completed.

Wa - single shot trailing edge with control input S



The supply voltage **U** must be constantly applied to the device (green LED **U/T** illuminated). Closing the control contact **S** has no influence on the condition of the output **R**. When the control contact is opened, the output relay switches into on-position (yellow LED illuminated) and the set interval **T** begins (green LED **U/T** flashes). After the interval **T** has expired (green LED **U/T** illuminated), the output relay switches into off-position (yellow LED not illuminated). During the interval, the control contact can be operated any number of times. A further cycle can only be started when the cycle run has been completed.

Es - ON delay with control input S



The supply voltage **U** must be constantly applied to the device (green LED **U/T** illuminated). When the control contact **S** is closed, the set interval **T** begins (green LED **U/T** flashes). After the interval **T** has expired (green LED **U/T** illuminated) the output relay **R** switches into on-position (yellow LED illuminated). This status remains until the control contact is opened again. If the control contact is opened before the interval **T** has expired, the interval already expired is erased and is restarted with the next cycle.

U - supply voltage; **R** - output relay;
S - control contact; **T** - timing adjustment



NEW
product

- Multifunction time relay
- 7 time functions: E, Wu, Bp, R, Ws, Wa, Es
- 7 time ranges: 1 s; 10 s; 1 min.; 10 min.; 1 h; 10 h; 100 h
- Wide input voltage range: 12...240 V AC/DC
- 2 changeover contacts: 2 C/O
- Rated load: 8 A / 250 V AC at cat. AC1
- Installation design: width 35 mm
- Recognitions, certifications, directives:

Type of relay

TR-EM2P-UNI

Output circuit

Number and type of contacts		2 C/O - changeover	
Rated load	AC1	8 A / 250 V AC	
Max. breaking capacity	AC1	2 000 VA	
Max. operating frequency		3 600 cycles/hour	PN-EN 60947-5-1
• at 100 VA resistive load		360 cycles/hour	
• at 1 000 VA resistive load			

Input circuit

Supply voltage U	12...240 V AC/DC, AC: 50/60 Hz; terminals A1(+)-A2
Drop-out voltage	AC: $\geq 0,3 U_n$
Operating range of supply voltage	$0,9 < U_n < 1,1$
Rated power consumption	6,0 VA / 2,0 W
Rated frequency	AC: 48...63 Hz
Duty cycle	100%
Residual ripple to DC	10%
Control contact	• input • loadable • max. line length • trigger level (sensitivity)
	terminals A1-B1 yes 10 m automatic adaption to supply voltage

Insulation

Rated surge voltage	4 000 V AC
Overvoltage category	III PN-EN 60664-1
Insulation pollution degree	2, if built-in 3 PN-EN 60664-1

General data

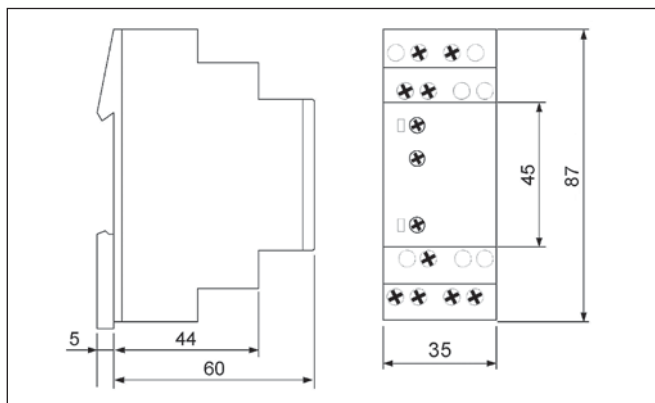
Electrical life	• resistive AC1	$\geq 2 \times 10^5$ 1 000 VA
Mechanical life (cycles)		$\geq 2 \times 10^7$
Dimensions (L x W x H)		87 x 35 x 60 mm
Weight		120 g
Ambient temperature	• storage, transport • operating	-25...+70 °C -25...+55 °C PN-EN 60068-1
Housing protection category		IP40
Relative humidity		15...85% PN-EN 60721-3-3 class 3K3
Shock resistance		15 g 11 ms PN-EN 60068-2-27
Vibration resistance		0,35 mm DA 10...55 Hz PN-EN 60068-2-6

Time module data

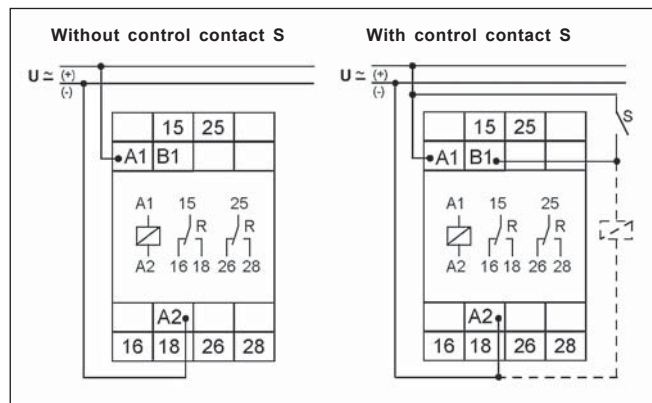
Functions	E, Wu, Bp, R, Ws, Wa, Es ❶
Time intervals (timing adjustment)	1 s (50 ms...1 s); 10 s (0,5...10 s); 1 min. (3 s...1 min.); 10 min. (30 s...10 min.); 1 h (3 min. ...1 h); 10 h (30 min. ...10 h); 100 h (5...100 h)
Base accuracy	$\pm 1\%$ (calculate from final range value)
Setting accuracy	$\pm 5\%$ (calculate from final range value)
Repeatability	$\pm 0,5\%$ or ± 5 ms
Temperature influence	$\pm 0,01\% / ^\circ\text{C}$
Recovery time	100 ms
Min. pulse of the control contact	AC: 100 ms DC: 50 ms
LED indicator	green LED U/T ON - indication of supply voltage green LED U/T flashing - indication of time period T yellow LED R ON/OFF - indication of output relay

❶ The function has to be set before connecting the relay to the supply voltage.

Dimensions



Connections diagrams



Mounting, mechanical design

Relays **TR-EM2P-UNI** are designed for direct mounting on 35 mm DIN rail mount, EN 50022. Mounting position: any. Self-extinguishing plastic housing, IP 40. Shockproof terminal connection according to VBG 4 (PZ1 required), IP 20. Maximum screw torque: 1,0 Nm. Terminal capacity: 1 x 0,5 do 2,5 mm² with/without multicore cable end, 1 x 4 mm² without multicore cable end, 2 x 0,5 do 1,5 mm² with/without multicore cable end, 2 x 2,5 mm² flexible without multicore cable end.

Functions

E - ON delay



When the supply voltage U is applied, the set interval T begins (green LED U/T flashes). After the interval T has expired (green LED U/T illuminated) the output relay R switches into on-position (yellow LED illuminated). This status remains until the supply voltage is interrupted. If the supply voltage is interrupted before the expiry of the interval T, the interval already expired is erased and is restarted when the supply voltage is next applied.

Wu - single shot leading edge voltage controlled



When the supply voltage U is applied, the output relay R switches into on-position (yellow LED illuminated) and the set interval T begins (green LED U/T flashes). After the interval T has expired (green LED U/T illuminated) the output relay switches into off-position (yellow LED not illuminated). 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.

Bp - flasher pause first



When the supply voltage U is applied, the set interval T begins (green LED U/T flashes). After the interval T has expired, the output relay R switches into on-position (yellow LED illuminated) and the set interval T begins

again. After the interval T has expired, the output relay switches into off-position (yellow LED not illuminated). The output relay is triggered at a ratio of 1:1 until the supply voltage is interrupted.

R - OFF delay



The supply voltage U must be constantly applied to the device (green LED U/T illuminated). When the control contact S is closed, the output relay R switches into on-position (yellow LED illuminated). If the control contact is opened, the set interval T begins (green LED flashes). After the interval T has expired (green LED U/T illuminated) the output relay switches into off-position (yellow LED not illuminated). If the control contact is closed again before the interval T has expired, the interval already expired is erased and is restarted.

Ws - single shot leading edge with control input S



The supply voltage U must be constantly applied to the device (green LED U/T illuminated). When the control contact S is closed, the output relay R switches into on-position (yellow LED illuminated) and the set interval T begins (green LED U/T flashes). After the interval T has expired (green LED U/T illuminated) the output relay switches into off-position (yellow LED not illuminated). During the interval, the control contact can be operated any number of times. A further cycle can only be started when the cycle run has been completed.

Wa - single shot trailing edge with control input S



The supply voltage U must be constantly applied to the device (green LED U/T illuminated). Closing the control contact S has no influence on the condition of the output R. When the control contact is opened, the output relay switches into on-position (yellow LED illuminated) and the set interval T begins (green LED U/T flashes). After the interval T has expired (green LED U/T illuminated) the output relay switches into off-position (yellow LED not illuminated). During the interval, the control contact can be operated any number of times. A further cycle can only be started when the cycle run has been completed.

Es - ON delay with control input S



The supply voltage U must be constantly applied to the device (green LED U/T illuminated). When the control contact S is closed, the set interval T begins (green LED U/T flashes). After the interval T has expired (green LED U/T illuminated) the output relay R switches into on-position (yellow LED illuminated). This status remains until the control contact is opened again. If the control contact is opened before the interval T has expired, the interval already expired is erased and is restarted with the next cycle.

U - supply voltage; R - output relay;
S - control contact; T - timing adjustment



- Asymmetric flasher with controlled times T1 and T2
- 2 time functions: li, lp
- 7 time ranges: 1 s; 10 s; 1 min.; 10 min.; 1 h; 10 h; 100 h
- Wide input voltage range: 12...240 V AC/DC
- 1 changeover contact: 1 C/O
- Rated load: 8 A / 250 V AC at cat. AC1
- Installation design: width 17,5 mm
- Recognitions, certifications, directives:

Type of relay

TR-EI1P-UNI

Output circuit

Number and type of contacts		1 C/O - changeover	
Rated load	AC1	8 A / 250 V AC	
Max. breaking capacity	AC1	2 000 VA	
Max. operating frequency		3 600 cycles/hour	PN-EN 60947-5-1
• at 100 VA resistive load		360 cycles/hour	
• at 1 000 VA resistive load			

Input circuit

Supply voltage U		12...240 V AC/DC, AC: 50/60 Hz; terminals A1(+)-A2
Drop-out voltage		AC: $\geq 0,3 U_n$
Operating range of supply voltage		$0,9 < U_n < 1,1$
Rated power consumption		4,0 VA / 1,5 W
Rated frequency		AC: 48...63 Hz
Duty cycle		100%
Residual ripple to DC		10%
Control contact	• input	terminals A1-B1
	• loadable	yes
	• max. line length	10 m
	• trigger level (sensitivity)	automatic adaption to supply voltage

Insulation

Rated surge voltage		4 000 V AC
Overvoltage category		III PN-EN 60664-1
Insulation pollution degree		2, if built-in 3 PN-EN 60664-1

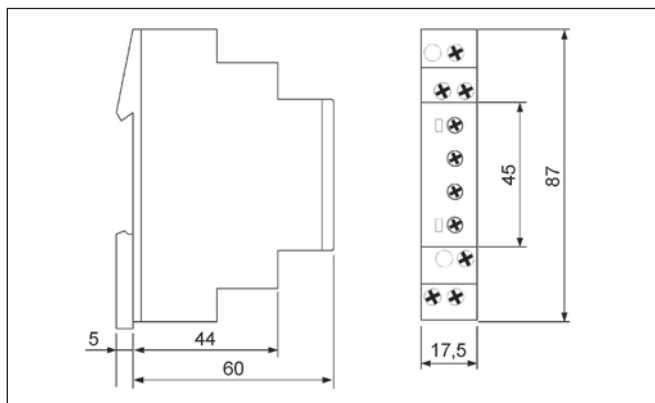
General data

Electrical life	• resistive AC1	$\geq 2 \times 10^5$ 1 000 VA
Mechanical life (cycles)		$\geq 2 \times 10^7$
Dimensions (L x W x H)		87 x 17,5 x 60 mm
Weight		63 g
Ambient temperature	• storage, transport	-25...+70 °C
	• operating	-25...+55 °C PN-EN 60068-1
Housing protection category		IP40
Relative humidity		15...85% PN-EN 60721-3-3 class 3K3
Shock resistance		15 g 11 ms PN-EN 60068-2-27
Vibration resistance		0,35 mm DA 10...55 Hz PN-EN 60068-2-6

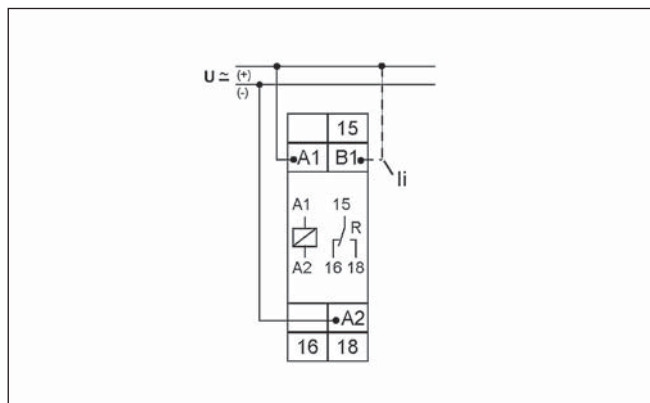
Time module data

Functions	li - A1-B1 terminals bridged lp - terminals not bridged
Time intervals (timing adjustment)	1 s (50 ms...1 s); 10 s (0,5...10 s); 1 min. (3 s...1 min.); 10 min. (30 s...10 min.); 1 h (3 min. ...1 h); 10 h (30 min. ...10 h); 100 h (5...100 h)
Base accuracy	$\pm 1\%$ (calculate from final range value)
Setting accuracy	$\pm 5\%$ (calculate from final range value)
Repeatability	$\pm 0,5\%$ or ± 5 ms
Temperature influence	$\pm 0,01\%$ / °C
Recovery time	100 ms
LED indicator	green LED U/T ON - indication of supply voltage green LED U/T slow flashing - indication of time period T1 green LED U/T fast flashing - indication of time period T2 yellow LED R ON/OFF - indication of output relay

Dimensions



Connections diagram

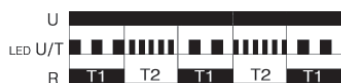


Mounting, mechanical design

Relays **TR-EI1P-UNI** are designed for direct mounting on 35 mm DIN rail mount, EN 50022. Mounting position: any. Self-extinguishing plastic housing, IP 40. Shockproof terminal connection according to VBG 4 (PZ1 required), IP 20. Maximum screw torque: 1,0 Nm. Terminal capacity: 1 x 0,5 do 2,5 mm² with/without multicore cable end, 1 x 4 mm² without multicore cable end, 2 x 0,5 do 1,5 mm² with/without multicore cable end, 2 x 2,5 mm² flexible without multicore cable end.

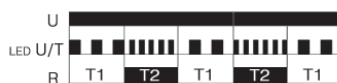
Functions

li - asymmetric flasher pulse first



When the supply voltage U is applied, the output relay R switches into on-position (yellow LED illuminated) and the set interval $T1$ begins (green LED U/T flashes slowly). After the interval $T1$ has expired, the output relay switches into off-position (yellow LED not illuminated) and the set interval $T2$ begins (green LED U/T flashes fast). After the interval $T2$ has expired, the output relay switches into on-position (yellow LED illuminated). The output relay is triggered at the ratio of $T1:T2$ until the supply voltage is interrupted.

lp - asymmetric flasher pause first



When the supply voltage U is applied, the set interval $T1$ begins (green LED U/T flashes slowly). After the interval $T1$ has expired, the output relay R switches into on-position (yellow LED illuminated) and the set interval $T2$ begins (green LED U/T flashes fast). After the interval $T2$ has expired, the output relay switches into off-position (yellow LED not illuminated). The output relay is triggered at the ratio of $T1:T2$ until the supply voltage is interrupted.

li - A1-B1 terminals bridged



lp - terminals not bridged



U - supply voltage; R - output relay; $T1-T2$ - timing adjustment



NEW
product

- Multifunction time relays with controlled times T1 and T2
- 7 time functions: li, lp, EWu, ER, EWs, WsWa, Wt
- 7 time ranges: 1 s; 10 s; 1 min.; 10 min.; 1 h; 10 h; 100 h
- Wide input voltage range: 12...240 V AC/DC
- 2 changeover contacts: 2 C/O
- Rated load: 8 A / 250 V AC at cat. AC1
- Installation design: width 35 mm
- Recognitions, certifications, directives:

Type of relay

TR-EI2P-UNI

Output circuit

Number and type of contacts		2 C/O - changeover	
Rated load	AC1	8 A / 250 V AC	
Max. breaking capacity	AC1	2 000 VA	
Max. operating frequency		3 600 cycles/hour	PN-EN 60947-5-1
• at 100 VA resistive load		360 cycles/hour	
• at 1 000 VA resistive load			

Input circuit

Supply voltage U	12...240 V AC/DC, AC: 50/60 Hz; terminals A1(+)-A2
Drop-out voltage	AC: $\geq 0,3 U_n$
Operating range of supply voltage	$0,9 < U_n < 1,1$
Rated power consumption	6,0 VA / 2,0 W
Rated frequency	AC: 48...63 Hz
Duty cycle	100%
Residual ripple to DC	10%
Control contact	terminals A1-B1
• input	
• loadable	yes
• max. line length	10 m
• trigger level (sensitivity)	automatic adaption to supply voltage

Insulation

Rated surge voltage	4 000 V AC
Overvoltage category	III PN-EN 60664-1
Insulation pollution degree	2, if built-in 3 PN-EN 60664-1

General data

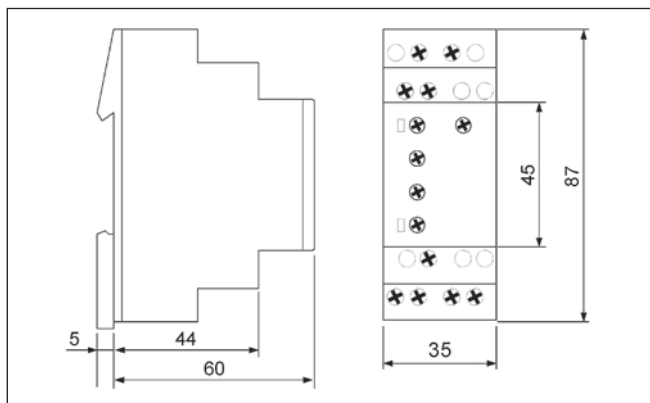
Electrical life	• resistive AC1	$\geq 2 \times 10^5$ 1 000 VA
Mechanical life (cycles)		$\geq 2 \times 10^7$
Dimensions (L x W x H)		87 x 35 x 60 mm
Weight		120 g
Ambient temperature	• storage, transport	-25...+70 °C
	• operating	-25...+55 °C PN-EN 60068-1
Housing protection category		IP40
Relative humidity		15...85% PN-EN 60721-3-3 class 3K3
Shock resistance		15 g 11 ms PN-EN 60068-2-27
Vibration resistance		0,35 mm DA 10...55 Hz PN-EN 60068-2-6

Time module data

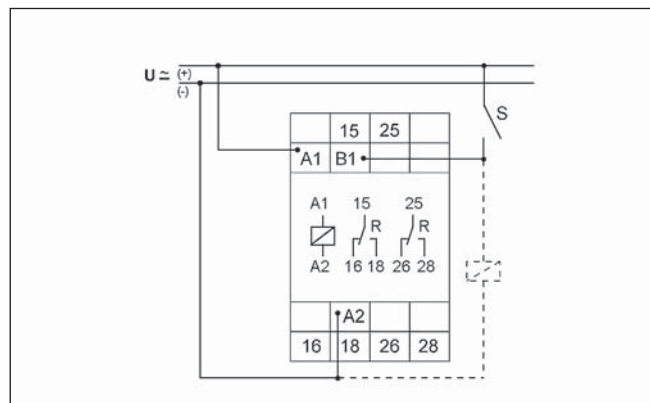
Functions	EWu, ER, EWs, WsWa, Wt
	li - A1-B1 terminals bridged lp - terminals not bridged
Time intervals (timing adjustment)	1 s (50 ms...1 s); 10 s (0,5...10 s); 1 min. (3 s...1 min.); 10 min. (30 s...10 min.); 1 h (3 min. ...1 h); 10 h (30 min. ...10 h); 100 h (5...100 h)
Base accuracy	$\pm 1\%$ (calculate from final range value)
Setting accuracy	$\pm 5\%$ (calculate from final range value)
Repeatability	$\pm 0,5\%$ or ± 5 ms
Temperature influence	$\pm 0,01\%$ / °C
Recovery time	100 ms
Min. pulse of the control contact	AC: 100 ms DC: 50 ms
LED indicator	green LED U/T ON - indication of supply voltage green LED U/T slow flashing - indication of time period T1 green LED U/T fast flashing - indication of time period T2 yellow LED R ON/OFF - indication of output relay

The function has to be set before connecting the relay to the supply voltage.

Dimensions



Connections diagram



Mounting, mechanical design

Relays **TR-EI2P-UNI** are designed for direct mounting on 35 mm DIN rail mount, EN 50022. Mounting position: any. Self-extinguishing plastic housing, IP 40. Shockproof terminal connection according to VBG 4 (PZ1 required), IP 20. Maximum screw torque: 1,0 Nm. Terminal capacity: 1 x 0,5 do 2,5 mm² with/without multicore cable end, 1 x 4 mm² without multicore cable end, 2 x 0,5 do 1,5 mm² with/without multicore cable end, 2 x 2,5 mm² flexible without multicore cable end.

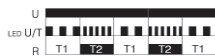
Functions

li - asymmetric flasher pulse first



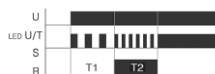
When the supply voltage U is applied, the output relay R switches into on-position (yellow LED illuminated) and the set interval T1 begins (green LED U/T flashes slowly). After the interval T1 has expired, the output relay switches into off-position (yellow LED not illuminated) and the set interval T2 begins (green LED U/T flashes fast). After the interval T2 has expired, the output relay switches into on-position (yellow LED illuminated). The output relay is triggered at the ratio of T1:T2 until the supply voltage is interrupted.

lp - asymmetric flasher pause first



When the supply voltage U is applied, the set interval T1 begins (green LED U/T flashes slowly). After the interval T1 has expired, the output relay R switches into on-position (yellow LED illuminated) and the set interval T2 begins (green LED U/T flashes fast). After the interval T2 has expired, the output 2 changeover contacts switches into off-position (yellow LED not illuminated). The output 2 changeover contacts is triggered at the ratio of T1:T2 until the supply voltage is interrupted.

EWu - ON delay and single shot leading edge voltage controlled



When the supply voltage U is applied, the set interval T1 begins (green LED U/t flashes slowly). After the interval T1 has expired, the output relay R switches into on-position (yellow LED illuminated) and the set interval T2 begins (green LED U/T flashes fast). After the interval T2 has expired, the output relay switches into off-position (yellow LED not illuminated). The output relay is triggered at the ratio of T1:T2 until the supply voltage is interrupted.

not illuminated). If the supply voltage is interrupted before the interval T1+T2 has expired, the interval already expired is erased and is restarted when the supply voltage is next applied.

ER - ON delay and OFF delay with control contact



The supply voltage U must be constantly applied to the device (green LED U/T illuminated). When the control contact S is closed, the set interval T1 begins (green LED U/T flashes slowly). After the interval T1 has expired, the output relay R switches into on-position (yellow LED illuminated). If the control contact is opened, the set interval T2 begins (green LED U/T flashes fast). After the interval T2 has expired, the output relay switches into off-position (yellow LED not illuminated). If the control contact is opened before the interval T1 has expired, the interval already expired is erased and is restarted with the next cycle.

EWs - ON delay and single shot leading edge with control contact



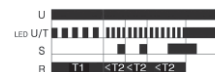
The supply voltage U must be constantly applied to the device (green LED U/T illuminated). When the control contact S is closed, the set interval T1 begins (green LED U/T flashes slowly). After the interval T1 has expired, the output relay R switches into on-position (yellow LED illuminated) and the set interval T2 begins (green LED U/T flashes fast). After the interval T2 has expired, the output relay switches into off-position (yellow LED not illuminated). During the interval, the control contact can be operated any number of times. A further cycle can only be started when the cycle run has been completed.

WsWa - single shot leading and single shot trailing edge with control contact



The supply voltage U must be constantly applied to the device (green LED U/T illuminated). When the control contact S is closed, the output relay R switches into on-position (yellow LED illuminated) and the set interval T1 begins (green LED U/T flashes slowly). After the interval T1 has expired, the output relay R switches into off-position (yellow LED not illuminated). If the control contact is opened, the output relay again switches into on-position (yellow LED illuminated) and the set interval T2 begins (green LED U/T flashes fast). After the interval T2 has expired, the output relay switches into off-position (yellow LED not illuminated). During the interval, the control contact can be operated any number of times.

Wt - pulse sequence monitoring



When the supply voltage U is applied, the set interval T1 begins (green LED U/T flashes slowly) and the output relay R switches into on-position (yellow LED illuminated). After the interval T1 has expired, the set interval T2 begins (green LED U/T flashes fast). So that the output relay R remains in on-position, the control contact S must be closed and opened again within the set interval T2. If this does not happen, the output relay R switches into off-position (yellow LED not illuminated) and all further pulses at the control contact are ignored. To restart the function the supply voltage must be interrupted and reapplied.

U - supply voltage; R - output relay;
S - control contact; T1-T2 - timing adjustment



NEW
product

- Star-delta start up with controlled times T1 and T2
- 4 time ranges: 10 s; 30 s; 1 min.; 3 min.
- 4 transit times (fixed): 40 ms; 60 ms; 80 ms; 100 ms
- Wide input voltage range: 12...240 V AC/DC
- 2 changeover contacts: 2 C/O
- Rated load: 8 A / 250 V AC at cat. AC1
- Installation design: width 35 mm
- Recognitions, certifications, directives: **CE**

Type of relay

TR-ES2P-UNI

Output circuit

Number and type of contacts		2 C/O - changeover	
Rated load	AC1	8 A / 250 V AC	
Max. breaking capacity	AC1	2 000 VA	
Max. operating frequency		3 600 cycles/hour	PN-EN 60947-5-1
• at 100 VA resistive load		360 cycles/hour	
• at 1 000 VA resistive load			

Input circuit

Supply voltage U	12...240 V AC/DC, AC: 50/60 Hz; terminals A1(+)-A2
Drop-out voltage	AC: $\geq 0,3 U_n$
Operating range of supply voltage	$0,9 < U_n < 1,1$
Rated power consumption	4,0 VA / 1,5 W
Rated frequency	AC: 48...63 Hz
Duty cycle	100%
Residual ripple to DC	10%
Control contact	terminals A1-B1
• input	
• loadable	yes
• max. line length	10 m
• trigger level (sensitivity)	automatic adaption to supply voltage

Insulation

Rated surge voltage	4 000 V AC
Overvoltage category	III PN-EN 60664-1
Insulation pollution degree	2, if built-in 3 PN-EN 60664-1

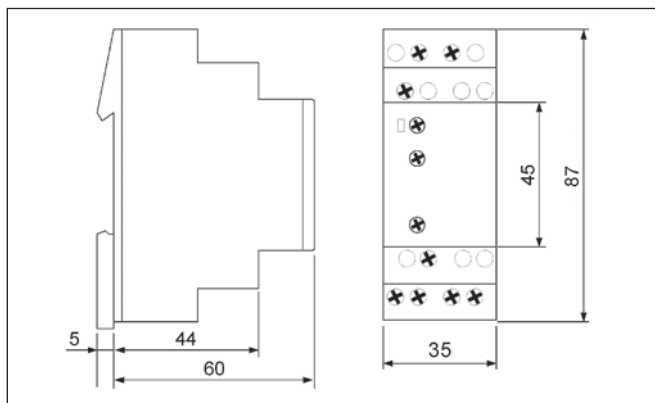
General data

Electrical life	• resistive AC1	$\geq 2 \times 10^5$ 1 000 VA
Mechanical life (cycles)		$\geq 2 \times 10^7$
Dimensions (L x W x H)		87 x 35 x 60 mm
Weight		120 g
Ambient temperature	• storage, transport	-25...+70 °C
	• operating	-25...+55 °C PN-EN 60068-1
Housing protection category		IP40
Relative humidity		15...85% PN-EN 60721-3-3 class 3K3
Shock resistance		15 g 11 ms PN-EN 60068-2-27
Vibration resistance		0,35 mm DA 10...55 Hz PN-EN 60068-2-6

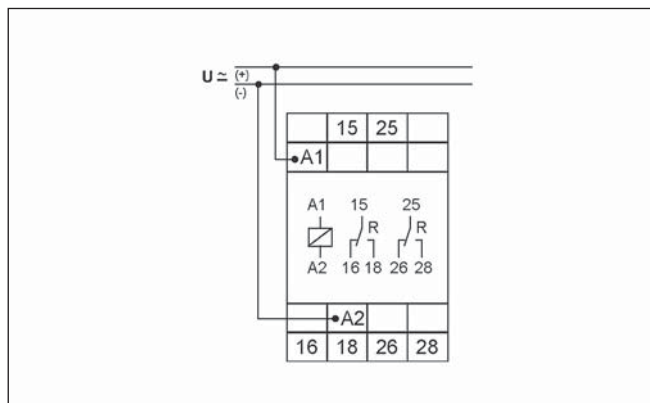
Time module data

Functions	S
Time intervals (timing adjustment)	10 s (0,5...10 s); 30 s (1,5...30 s); 1 min. (3 s...1 min.); 3 min. (9 s...3 min.)
transit times (fixed)	40 ms; 60 ms; 80 ms; 100 ms
Base accuracy	$\pm 1\%$ (calculate from final range value)
Setting accuracy	$\pm 5\%$ (calculate from final range value)
Repeatability	$\pm 0,5\%$ or ± 5 ms
Temperature influence	$\pm 0,01\%$ / °C
Recovery time	100 ms
LED indicator	green LED U/T ON - indication of supply voltage delta-contactor in on-position (terminals 25-28) green LED U/T flashing - indication of time period star time yellow LED R ON/OFF - indication of star-contactor (terminals 15-18)

Dimensions



Connections diagram

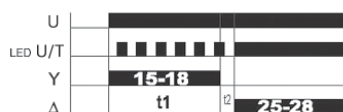


Mounting, mechanical design

Relays **TR-ES2P-UNI** are designed for direct mounting on 35 mm DIN rail mount, EN 50022. Mounting position: any. Self-extinguishing plastic housing, IP 40. Shockproof terminal connection according to VBG 4 (PZ1 required), IP 20. Maximum screw torque: 1,0 Nm. Terminal capacity: 1 x 0,5 do 2,5 mm² with/without multicore cable end, 1 x 4 mm² without multicore cable end, 2 x 0,5 do 1,5 mm² with/without multicore cable end, 2 x 2,5 mm² flexible without multicore cable end.

Functions

S - Star-delta start up



When the supply voltage U is applied, the star-contact switches into on-position (yellow LED illuminated) and the set star-time T1 begins (green LED U/T flashes). After the interval T1 has expired (green LED U/T illuminated) the star-contact switches into off-position (yellow LED not illuminated) and the set transit-time T2 begins. After the interval T2 has expired the contact for the delta-contactor switches into on-position. To restart the function the supply voltage must be interrupted and re-applied.

U - supply voltage; T1-T2 - timing adjustment