

## DESCRIPTION

The multifunctional time relay has a time functions in automation and control systems. It is equipped with 10 independent operating modes released by power supply voltage or external impulse command (coming from L or N line). It has a wide two time adjustment range  $t_1$  and  $t_2$  and constant switch on/off function. The mode change is possible without waiting for the current cycle to be finished.

## FEATURES

- ☞ 10 operating modes (external release or from power supply voltage),
- ☞ supply voltage control signal - LED green,
- ☞ power/relay supply indicator and time measure - LED red,
- ☞ two time ranges adjustment,
- ☞ wide time adjustment range,
- ☞ time measure accuracy,
- ☞ constant switch on, switch off function,
- ☞ voltage relay output - 1 change over contact (NO/NC) contact max 16 A capacity,
- ☞ doublemodular casing.

## TECHNICAL PARAMETERS

Input (supply) terminals:	L, N
Input rated voltage:	230 V ~
Input voltage tolerance:	from -15 to +10 %
Supply voltage control indicator:	LED green
Nominal frequency:	50 / 60 Hz
Rated power consumption:	35 mA
External release terminals:	IN, IN (released from L or N)
Release current:	510 $\mu$ A
Operating modes number:	10
Time measure accuracy:	0,2%
Time adjustment range $t_1$ :	from 0,1 s to 100 days (step+smooth)
Time adjustment range $t_2$ :	from 0,1 s to $\infty$ (step+smooth)
Power/relay supply indicator and time measure:	dioda LED czerwona
Output relay parameters:	1NO/NC-16 A/250 V AC1 4000 VA
Number of terminal clamps:	8
Section of connecting cables:	from 0,2 to 2,50 mm <sup>2</sup>
Ambient temperature range:	from -20 to +60 °C
Operating position:	free
Mounting:	TH35 rail (PN-EN 60715)
Protection degree:	IP20 (PN-EN 60529)
Protection class:	II
Overvoltage category:	II
Pollution degree:	2
Rated impulse withstand voltage:	2 kV (PN-EN 61000-4-5)
Dimensions (height / width / depth):	doublemodular (35mm) 90x35x66 mm
Weight:	112 g
Reference standards:	PN-EN 60730-1; PN-EN 60730-2-7 PN-EN 61000-4-2,3,4,5,6,11

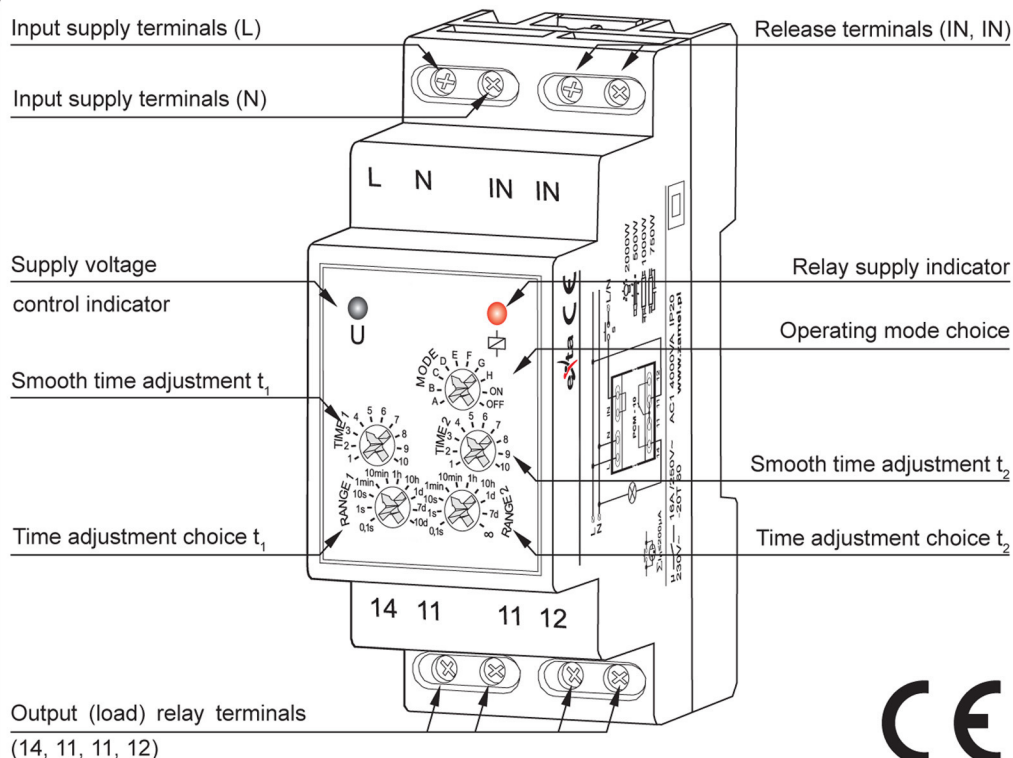


The device is designed for one-phase installation and must be installed in accordance with standards valid in a particular country.

The device should be

connected according to the details included in this operating manual. Installation, connection and control should be carried out by a qualified electrician staff, who act in accordance with the service manual and the device functions. Disassembling of the device is equal with a loss of guarantee and can cause electric shock. Before installation make sure the connection cables are not under voltage. The cruciform head screwdriver 3,5 mm should be used to instal the device. Improper transport, storage, and use of the device influence its wrong functioning. It is not advisable to instal the device in the following cases: if any device part is missing or the device is damaged or deformed. In case of improper functioning of the device contact the producer.

## APPEARANCE



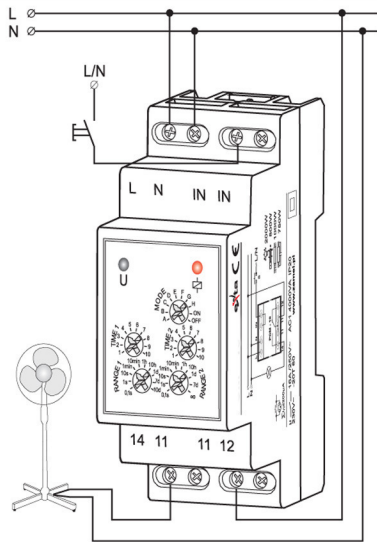
## MOUNTING

1. Disconnect the power supply from the mains by the phase fuse, the circuit-breaker or the switch-disconnector that are joined to the proper circuit.
2. Check if there is no voltage on connection cables by means of a special measure equipment.
3. Install device in the switchboard on TH-35 DIN rail.
4. Connect the cables with the terminals according to installing diagram.
5. Switch on the power supply from the mains.
6. Choose the required operating mode by Mode knob.
7. Adjust the time  $t_1$  and  $t_2$  using the  $TIME_x$ ,  $RANGE_x$  knob where  $t_x = TIME_x \times RANGE_x$ .

## DIMENSIONS



## CONNECTING



## FUNCTIONING

### Power supply voltage release:

		SWITCH ON DELAY - after the supply voltage [U] has been applied the $t_1$ time measure starts. After the time is over the relay switches on (pos. 11-14) for $t_2$ time. The next switch on interval appears after power supply voltage reset.
		SWITCH OFF DELAY - after the supply voltage [U] has been applied, the output relay [R] switches on immediately (pos. 11-14), and the preset time $t_1$ is measured. After the preset time is measured, the relay [R] is switched off (pos. 11-12) for $t_2$ time and its another switch on mode. The next switch on interval appears after power supply voltage reset.
		FLASHER STARTING WITH OFF - (Starting from the switch off position). After the supply voltage [U] has been applied, the preset time $t_1$ is measured. After the time is over, the relay switches on (pos. 11-14) for $t_2$ time and it switches off again for $t_1$ time (pos. 11-12). The next switch on interval appears after power supply voltage reset.
		FLASHER STARTING WITH ON - (Starting from the switch on position). After the supply voltage [U] has been applied, the relay is switched on immediately (pos. 11-14) for time. After the time is over, the relay switches off (pos. 11-12) for $t_2$ time and its another switch on mode for $t_1$ time. The next switch on interval appears after power supply voltage reset.
		PERMANENT SWITCH ON MODE - After the supply voltage has been applied the relay is switched on permanently. When choosing the mode $t_1$ and $t_2$ time adjustment does not matter.
		PERMANENT SWITCH OFF MODE - After the supply voltage has been applied the relay is switched off permanently. When choosing the mode $t_1$ and $t_2$ time adjustment does not matter.

### External signal release:

		SWITCH ON/OFF DELAY - (retriggerable) after the impulse release has been applied to the powered system (growing value) let the relay be switched off (pos. 11-12), the same, starts the preset time $t_1$ measurement. After the time is over the relay is switched on (pos. 11-14). After the impulse release fade is detected (falling modulated voltage), the system starts preset $t_2$ time measurement and after it is finished the relay is switched off (pos. 11-12). In case impulse duration is longer than the preset time $t_1$ the relay is not switched on. Applying the impulse release during the preset $t_2$ time measurement does not cause switching off the relay but it starts time measurement after the impulse fade (falling modulated voltage).
		SWITCH ON/OFF DELAY - (non-retriggerable) - after the impulse release has been applied to the powered system (growing value) let the relay be switched off (pos. 11-12) starts the preset time $t_1$ measurement. After the time is over the relay is switched on (pos. 11-14). After the impulse release fade is detected (falling modulated voltage), the system starts preset $t_2$ time measurement and after it is finished the relay is switched off (pos. 11-12). Release input state can change during the time $t_2$ measurement and does not affect on functioning of the system. In case impulse duration is shorter than the preset time $t_1$ the relay is not switched on.
		IMPULSE GENERATION WITH AN ALTERNATE TIME DURATION - powered system switches on the relay after impulse release (growing value) switches on the relay for $t_1$ time, and it switches off. The next impulse release causes the relay switches on for $t_2$ time. Another one switches on the relay for $t_1$ time, etc. The impulse release time duration does not influence switches on relay time.
		SWITCH OFF DELAY RELEASED BY FALLING MODULATED VOLTAGE - powered system switches on the relay after impulse release switches on the relay. Impulse release fade causes adjusted $t_1$ time measurement starts with the relay switch off for $t_2$ time. During $t_2$ time the system is resistant to signals release. After the $t_2$ time is finished the relay is switched on again in the moment of applying impulse release (growing value).

### Simulation modes:

	lub		In order to cause simulation mode one of the release terminals (IN) with L or N line must be externally connected. Simulation mode can operate in MODE=C or MODE=D cycle. Time courses analogical to C and D mode. RANGE must be adjusted for every $t_1$ and $t_2$ time whereas TIME is changed accidentally by the system.
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U		Diode signal description	U		Diode signal description
		Relay switched off, time measure off			Relay switched off, time measure on
		Relay switched on, time measure off			Relay switched on, time measure on