RTM-20 TEMPERATURE REGULATOR

INSTRUCTION MANUAL

Zakład Mechaniki i Elektroniki
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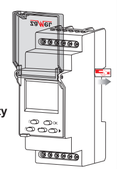
DESCRIPTION

The RTM-20 temperature digital regulator is designed for load control (e.g. heaters, floor heating systems) in dependence of ambient temperature near an external NTC sensor. It is possible to control temperature within the range of +5°C ÷ +60°C.
The external NTC-03 probe is needed for a correct device operation. The is not part of the set and it is necessary to purchase it separately. The probe lead is 3 m in length. It is possible to extend it up to 50 m with 0,2 ÷ 2,5 mm² lead. Do not join the probes.

CAUTION:
Before installing the device in the switchboard or starting the system operation in order to programme it, the battery security separator should be removed against discharging.



FEATURES

- Temperature control within the range of 5°C ÷ 60°C,
- External NTC-03 probe,
- Led display + keyboard,
- Load control in dependence of ambient temperature,
- Double-module casing with a protection flap,
- Mounted on TH 35 rail,
- Relay output, 16 A maximum load.

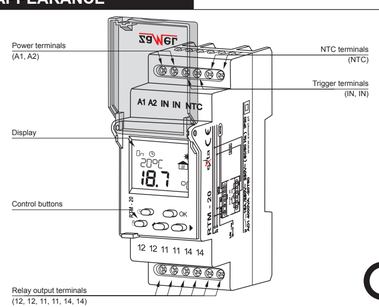
CAUTION

The device should be connected to a single-phase system according to current standards. The device connections will be described in this manual. Only qualified electricians are allowed to mount, connect and adjust the module. It is necessary to read this manual before the device mounting. Do not disassembly the device casing or you will lose any warranty rights and expose yourself to the electric shock hazard. Before mounting operation make sure of disconnecting the connection wires from the electric network. Use a cross-head screwdriver of 3.5 mm diameter to mount the device. The regulator should be carried, stored and used in an appropriate way. Do not mount the device in case of any regulator parts lack, damage or deformation. In case of malfunction please notify the manufacturer.

TECHNICAL DATA

RTM-20	
Power terminals :	A1, A2
Rated voltage:	230 V~
Rated voltage tolerance:	-15 ÷ +10 %
Rated frequency:	50 / 60 Hz
Rated power consumption:	2 W / 14 VA
NTC sensor terminals:	NTC
Input terminals:	IN, IN
Temperature adjustment range:	5 ÷ 60 °C
Hysteresis:	± 1 °C
Relay terminals:	12, 12, 11, 11, 14, 14
Load indicator:	LCD
Colour of LCD panel lighting:	amber
Parameters of transmitter contacts:	16A NO/NC 4000 VA AC1
Number of terminating clamps:	12
Intersection of terminating conductors:	0,2 ÷ 2,50 mm²
Temperature of work:	-20 ÷ 60 °C
Temperatura pracy sondy:	-20 ÷ 90 °C
Position of work:	any
Fixing of casing:	TH 35 rail (EN 60715)
Level of protection of casing:	IP20 (EN 60529)
Protectivity class:	II
Overvoltage category:	II
Level of pollution:	2
Measurements:	two-module (35 mm) 90x35x66 mm
Weight:	130 g
Compatibility with norms:	EN 60730-1; PN-EN 60730-2-7 EN 61000-4-2,3,4,5,6,11

APPEARANCE



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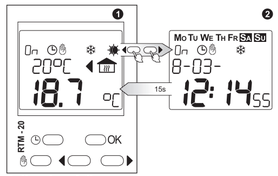
DESCRIPTION



Button description

- the main window – entering the automatic op mode;
- ther windows – exit to a higher level without saving changes entered;
- the main window – entering the manual op mode or the temperature setting changing, if the manual mode set previously;
- other windows - exit to a higher level without saving changes;

OK
- the main window – entering the main menu;
- other windows – entering a submenu or the set value acknowledgement;

◀ ▶ - toggle between menu windows / options or the set value increase / decrease.

Description of displayed fields and messages

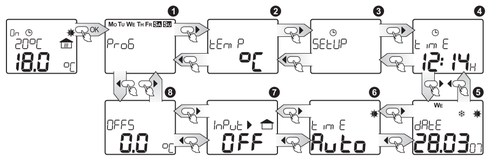
From window no. ❶ it is possible to enter the info window (time and date) no. ❷ after pressing the cursor ◀ or ▶. The window will be closed after 15 seconds automatically.

Window ❶
- On, OFF - relay state
- automatic mode
- manual mode
- output temperature
- non-freeze temperature
- comfort temperature
- econo temperature
- 20°C - temperature setting
- 18.7 °C - actual temperature

Other windows:
- dAY - day
- YEAR - year
- Auto - automatic
- USEr - user's
- On OFF - ON/OFF
- Error - NTC probe error (short circuit or break)

Window ❷
Mo Tu We Th Fr Sa Su - days of week
On OFF - relay state
- automatic mode
- manual mode
- winter time
- 8-03- - current date
- 12:14 55 - current time

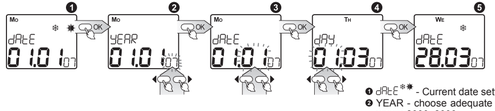
MAIN MENU



Enter the menu by pressing OK in the main window; scroll the menu by means of the following cursors ◀ ▶.

	Function	Description
❶	Prob	PROGRAM ASSIGNING
❷	tEmP	TEMPERATURE SETTING
❸	SEtUP	PROGRAM SETTING
❹	tim E	CURRENT TIME SETTING
❺	dAtE	CURRENT DATE SETTING
❻	tim E	SUMMER / WINTER TIME SETTING
❼	InPut	EXTERNAL OUTPUT SETTING
❽	OFFS	SENSOR ADAPTATION SETTING

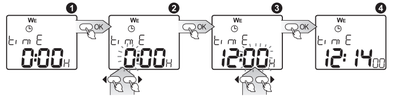
DATE SETTING



❶ dAtE - Current date setting; entry after pressing OK;
❷ YEAR - choose adequate year with cursors ◀ ▶ confirm with OK, range of years: 2000÷2099;
❸ MONTH - choose month with cursors ◀ ▶ confirm with OK;
❹ DAY - choose day with cursors ◀ ▶ confirm with OK; the system has a protection against introducing incorrect parameter of a day for a given month (it takes into account leap years and it automatically calculates the day of the week on the basis of an arranged date);
❺ Confirmation causes movement to a date setting window and set-up of current summer/ winter time - if the option Auto is arranged.

It is possible to exit every sub- menu window in any moment without saving settings by pressing the button ◷ or ⌂.

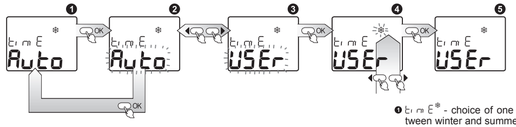
TIME SETTING



❶ tim E - setting the current clock time; entry after pressing OK;
❷ HOUR- choose adequate hour with cursor ◀ ▶ which you can set in 1-24 H or 1-12 A (AM) and 1-12 P (PM)format; confirm with OK;
❸ MINUTES - choose adequate parameter of minutes with cursors ◀ ▶ confirm with OK;
❹ Confirmation of the parameter of minutes causes simultaneous nullification of the parameter of seconds and movement to the window of time setting.

It is possible to exit every sub- menu window in any moment without saving settings by pressing the button ◷ or ⌂.

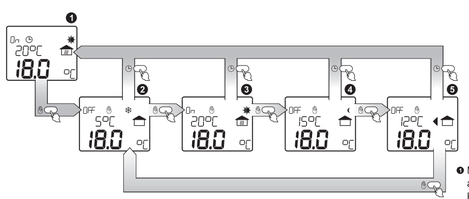
WINTER / SUMMER TIME SETTING



❶ tim E - choice of one of the two modes in which switching between winter and summer season time will occur. Auto - switching will take place in an automatic way, on the last Sunday of March, at 2.00 (for summer time) and on the last Sunday of October, at 3.00 (for winter time), USEr - a user chooses between winter/ summer time, entry after pressing OK;
❷ ❸ setting the mode - choose mode Auto or USEr with cursors ◀ ▶, confirm with OK; after choosing the mode Auto, the clock automatically sets the time as winter or summer one, depending on the arranged date; after choosing the mode USEr you go to another window;
❹ Choose time for winter/ summer one with cursors ◀ ▶ where ❄ is winter time and ✸ is summer time, if change of marker has happened the system will change the current time by adding or subtracting 1 hour, confirm the operation with OK;
❺ After choosing the system moves to winter/ summer time shift window.

It is possible to exit every sub- menu window in any moment without saving settings by pressing the button ◷ or ⌂.

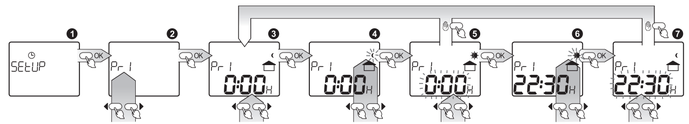
OPERATING MODE CHANGE (AUTOMATIC, MANUAL)



❶ MANUAL OP MODE TOGGLE - if the main window is open and the device is in the automatic op mode ◷, pressing the key ⌂ will force the unit to toggle into the manual op mode with active non-freeze temperature ❷; successive pressing the key ⌂ will force the manual op mode changeover as follows:
❷ non-freeze temperature;
❸ comfort temperature;
❹ econo temperature;
❺ output temperature.

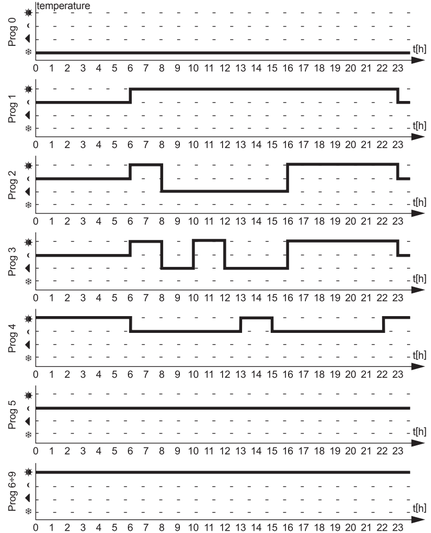
If the unit is in one of the mentioned manual op modes ⌂, pressing the key ◷ will force return to the automatic mode ◷.

PROGRAM SETTING

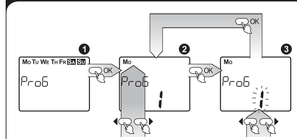


❶ SEtUP - iewing and setting programs, enter by pressing OK;
❷ With ◖ ◗ cursors select a program for edition, acknowledge by pressing OK;
❸ After the program no. selection it is possible to view its contents by means of cursors ◖ ◗ the program data will be displayed with 15 min. steps. In order to edit program press OK;
❹ With ◖ ◗ cursors select an op mode (temperature) for 0:00 hour, confirm with OK;
❺ After the mode selection with ◖ ◗ cursors select last hour for the preset temperature maintaining; acknowledge by pressing OK; if the given temperature is to be the same for the whole program duration, press the key in order to save the given mode to the remaining program memory;
❻ After the hour acknowledgement by pressing OK, with ◖ ◗ select another op mode for the previously set time (select an hour as described in entry ❺); confirm with OK;
❼ With ◖ ◗ select last hour for the preset temperature maintaining – after pressing the key the settings will be saved and the program viewing mode will start.

Prog 0	Non-editable program: 24 hrs non-freeze temperature ❄
Prog 1	00:00 - 06:00 - econo temperature ☾ 06:00 - 23:00 - comfort temperature ☀ 23:00 - 00:00 - econo temperature ☾
Prog 2	00:00 - 06:00 - econo temperature ☾ 06:00 - 08:00 - comfort temperature ☀ 08:00 - 16:00 - output temperature ◖ 16:00 - 23:00 - comfort temperature ☀ 23:00 - 00:00 - econo temperature ☾
Prog 3	00:00 - 06:00 - econo temperature ☾ 06:00 - 08:00 - comfort temperature ☀ 08:00 - 10:00 - output temperature ◖ 10:00 - 12:00 - comfort temperature ☀ 12:00 - 16:00 - output temperature ◖ 16:00 - 23:00 - comfort temperature ☀ 23:00 - 00:00 - econo temperature ☾
Prog 4	00:00 - 06:00 - comfort temperature ☀ 06:00 - 13:00 - econo temperature ☾ 13:00 - 15:00 - comfort temperature ☀ 15:00 - 22:00 - econo temperature ☾ 22:00 - 00:00 - comfort temperature ☀
Prog 5	24 hrs econo temperature ☾
Prog 6-9	Empty – for the user's edition - set by default: comfort temperature ☀

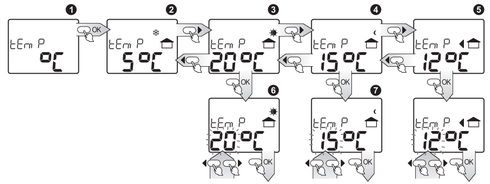


PROGRAM ASSIGNING



❶ Prob - program no. assigning to a week's day; enter by pressing OK;
❷ With ◖ ◗ cursors select a week's day for edition; select by pressing OK;
❸ With ◖ ◗ select the program no. to assign to the given day; after acknowledgement by pressing OK the week's day selection ❷ window will be open.

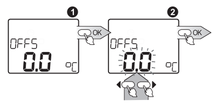
TEMPERATURE SETTING



❶ tEmP - temperature setting; press OK in order to view and edit; with ◖ ◗ cursors select the temperature to set:
Window ❷: Non-freeze temperature - the user is not allowed to change it;
Window ❸: Comfort temperature (day) – in order to change the set value press OK; with cursors ◖ ◗ set temperature demanded ❸; confirm with OK.
Window ❹: Econo temperature (night) - in order to change the set value press OK; with cursors ◖ ◗ set temperature demanded ❹; confirm with OK.
Window ❺: Output temperature - in order to change the set value press OK; with cursors ◖ ◗ set temperature demanded ❺; confirm with OK.

It is possible to exit every sub- menu window in any moment without saving settings by pressing the button or .

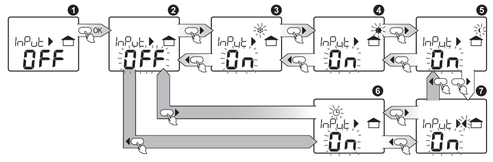
SENSOR ADAPTATION SETTING



Sensor adaptation setting – If there are any differences between real and measured temperature, it is possible to correct the error by means of the sensor correction:
❶ Enter the adaptation temperature setting mode by pressing OK;
❷ With ◖ ◗ cursors select temperature correction within the range -4,5°C ÷ +4,5°C; confirm selection by pressing OK.

It is possible to exit every sub- menu window in any moment without saving settings by pressing the button or .

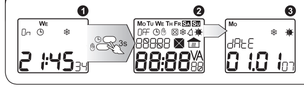
EXTERNAL INPUT SETTING



❶ InPut - setting the op mode for the unit after IN external input triggering; enter edition after pressing OK; with cursors ◖ ◗ select an appropriate external input mode, where:
❷ OFF - external input function OFF;
❸ ❄ - manual mode – temperature setting: non-freeze;
❹ ☀ - manual mode – temperature setting: comfort;
❺ ☾ - manual mode – temperature setting: econo;
❻ - automatic op mode – temperature setting according to the program selected;
❼ ◖ - manual op mode – temperature setting: output;
Confirm the selected mode by pressing OK.

It is possible to exit every sub- menu window in any moment without saving settings by pressing the button or .

MAIN RESET



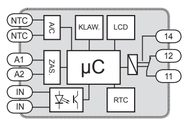
❶ In order to cancel the clock system (time, date, activity of given functions etc.) you should hold buttons and simultaneously in the main menu for **3 sec**;
❷ All the display fields will light up;
❸ After a while, the clock will automatically set date and time.

Attention: In order to restore factory settings, you should additionally hold button OK

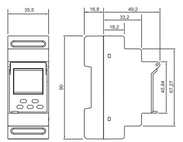
ASSEMBLY

1. Disconnect the electric network by means of an appropriate cut-off, current- limiting circuit-breaker or separator.
2. **Check if there is no any voltage between power leads by means of an appropriate gauge.**
3. Mount the RTM-20 regulator on TH 35 rail.
4. Connect the system leads to the terminals according to the electric diagram.
5. Connect power supply circuit.

INNER DIAGRAM



CASING DIMENSIONS



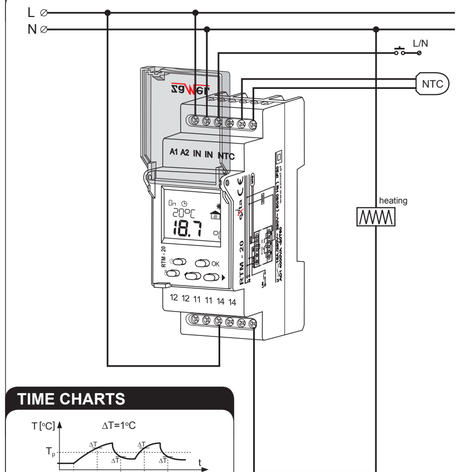
PRODUCT FAMILY

The RTM-20 regulator is a member of the RTM product family.

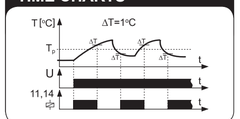
RTM - xx

- Device version:
  01 - basic
  20 – with the LCD display
- Device type

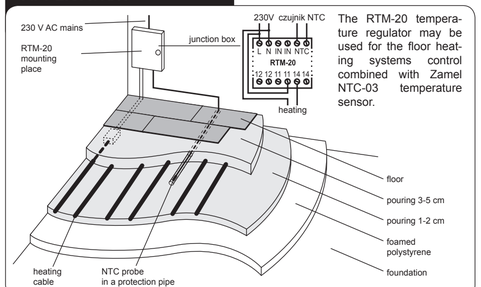
CONNECTIONS



TIME CHARTS



APPLICATION



The RTM-20 temperature regulator may be used for the floor heating systems control combined with Zamel NTC-03 temperature sensor.

WARRANTY CARD

There is 24 months guarantee on the product

Salesman stamp and signature, date of sale

1. ZMIE ZAMEL SP. J. assures 24 months guarantee for the product.
2. The manufacturer's guarantee does not cover any of the following actions:
   a) mechanical damage during transport, loading / unloading or under other circumstances,
   b) damage caused by incorrect product mounting or misuse,
   c) damage caused by unauthorised modifications made by the PURCHASER or any third parties to the product or any other devices needed for the product functioning,
   d) damage caused by Act of God or any other incidents independent of the manufacturer.
3. The PURCHASER shall lay any claims in writing to the dealer or ZMIE ZAMEL SP. J.
4. ZMIE ZAMEL SP. J. is liable for processing any claim according to current Polish legislation.
5. ZMIE ZAMEL SP. J. shall process the claim at its own discretion: product repair, replacement or money return.
6. The manufacturer's guarantee is valid in the Republic of Poland.
7. The PURCHASER's statutory rights in any applicable legislation whether against the retailer arising from the purchase contract or otherwise are not affected by this warranty.