PHO
ASSEMBLING THE FUTURE

PHONOTRONICA Ltd.

ELECTRONIC CLOCK

PHONOTRONICA 2

OPERATING INSTRUCTIONS

1. INSTRUCTIONS

As indicated in the operating instructions, the clock simultaneously controls the electricity meters at two rates and the lamps from the street and park lighting.

When connecting the clock, follow the instructions on the diagram next to the terminal block. If the positions of phase and zero are interchanged, the clock will not be damaged, only the meters and lamps will not be controlled.

Upon connecting the phase and zero, the clock starts and shows the astronomical time. If it has been idle for more than 10 days without power supply, its readings may be incorrect. Adjusting shall be done using the two buttons as shown in the instructions. The date, month, year, day of the week must be entered in order to perform the change of time and tariffs exactly, as the last week on Saturday of the months of March and October, as it is for the country.

There is a phase at output T for controlling the electricity meters only during the night tariff, as accepted for Bulgaria.

Outputs I2 (economy) and I1 (all-night) are used to control lighting fixtures.

If you want the lamps to shine all night from sunset to sunrise, you should connect them to output I1. Switching on will take place at dusk (about 20 minutes after astronomical sunset), and switching off at dawn (about 20 minutes before astronomical sunrise).

The on and off times are stored in the microcontroller's program memory and are automatically adjusted for each day of the year.

Depending on the geographic location of the site, the hours thus set can be changed by the user within 60 minutes for on and off separately.

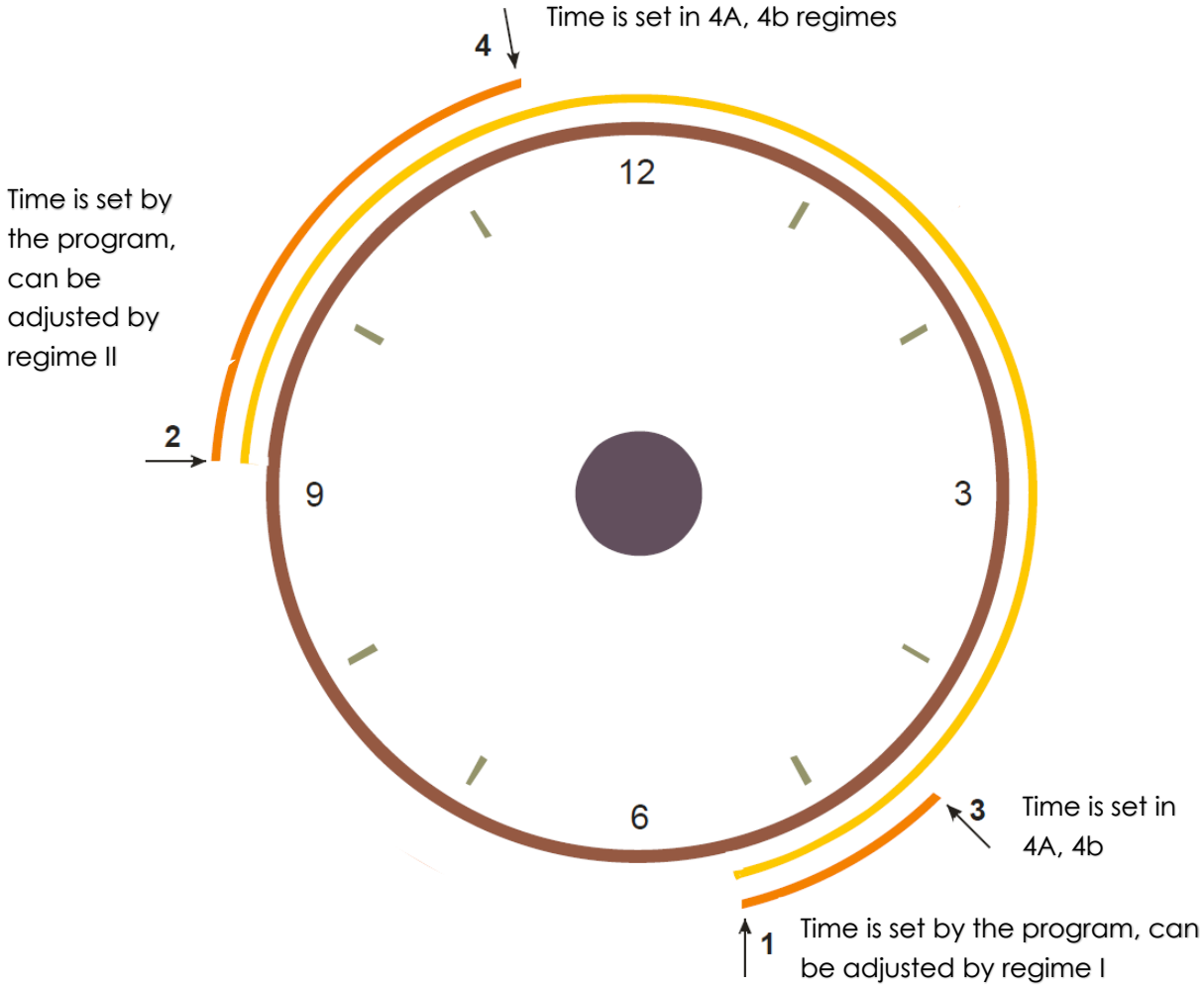
Channel I2 is the Economy mode of operation. It works evenings and mornings until a specified time. These times are set by the owner. The settings of these hours and minutes are in modes 3A, 3b, 4A, 4b of the description.

Let's say we want to set the economy channel to work in the evening from the moment of switching on until 23.40 and in the morning from 04.50 until sunrise. Use B1 to reach mode 3A. The numbers 00 are flashing in mode 3A. Use button B2 to enter 04. This is the switch-on time. Press B1 again to switch to mode 3b. Using the B2 button, enter the number 50. These are the minutes.

In this way, we have set the operation time in the morning on channel I2 - switching on at 4 hours and 50 minutes and switching off at sunrise. Switch to mode 4A. Enter the number 23, this is the hour. Switch to mode 4b. Enter the number 40, these are the minutes. In this way, we have set the working hours of channel I2 in the evening from sunset to 11:40 p.m. In the evening, with the onset of sunset, both channels will turn on the lamps connected to I1 and I2. At

11:40 p.m., channel I2 will turn off the lights controlled by it. In the morning at 04.40 hours before dawn, channel I2 will turn on the lamps connected to it. At dawn, both channels will simultaneously shut down.

In the next two modes, you can set a time offset to the start times entered in the program for turning off the lamps in the morning and turning on the lamps in the evening. In mode I, the entered number offsets in "plus" or in "minus" 60 minutes the switch-off time of the lamps from both channels in the morning. In mode II, the entered number offsets "plus" or "minus" 60 minutes the time of switching on the lamps from both channels in the evening.



The figure shows the 24-hour day and night period. Point 1 shows the moment of sunrise - in hours and minutes, and point 2 - the moment of sunset. In the specific example, the date selected is the 01 of June. The corresponding time is sunrise (item 1) 04:36 hours and sunset (item 2) 20:13 hours.

These are the actual hours and in summer mode the correction of 1 hour shall be added. Every day, points 1 and 2 change automatically according to the set program, following the sunrises and sunsets of the sun. The duration of lighting of the lamps controlled by output I1 (all-night mode) is marked in yellow.

The orange colour indicates the lighting duration of the lamps controlled by output I2 (economy mode). Point 3 shows the time when output I2 will turn on the lights in the morning, before sunrise, and point 4 shows the time when output I2 will turn off the lights in the evening, after sunset. These times are set by the user in modes 3A, 3b for item 3 and 4A 4b for item 4. They are set as actual hours and minutes. In the figure, these times are selected as 04:30 in the morning and 23:30 in the evening, respectively. In this way, a dark window is formed - a period during which the lamps do not light - from 23:30 hours to 04:30 hours. The duration of this dark window is defined by the user.

Both outputs I1, I2 start (item 2) and end (item 1) the management according to the sunrise and sunset times set in the software. Naturally, for different geographical longitudes, these hours shall be different. Therefore, it is possible to adjust them ± 60 minutes. This adjustment is made by setting the corresponding number of minutes with a sign (the sign is not shown on the display) or a sign – (the sign – is shown on the display) in modes I for sunrises and II for sunsets. In other words, for the specific date 01. June, if we enter the value 15 in mode I, item 1 will be shifted from 04:36 hours (as per the program) to 04:51 hours, if we enter - 10, the shift will be at 04:26 hours.