



DTS-200A
Astronomical time switch

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1. Description

DTS-200A astronomical time switch is for realization of time functions in the systems of automatics and steering. Night break program can be used to turn off the output at night, set the offset times and operation time of sunrise and sunset.

There is an internal battery which can protect real time clock and all the settings when the electric power supply is off.

2. Features

- Astronomical and annual program
- 10 year power reserve(lithium battery)
- 40 programs
- Sealable cover of the front panel, easy setting by 4 keys.
- Automatic summer/winter time changeover
- Back-lit LCD display
- Holiday mode.
- Random mode
- Single channel
- Automatic transfer of weekdays
- 24-264V AC/DC input supply.
- Double-module, mounted on TH-35 rail.

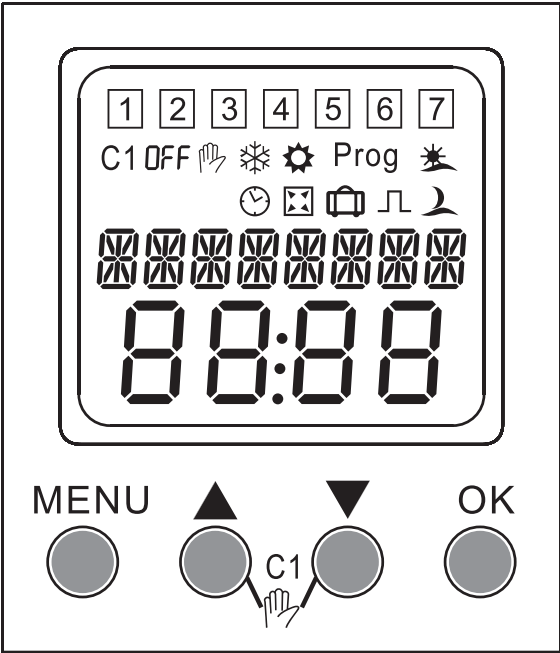
3. Safety instructions

- 3.1. The device must be installed by a qualified person.
- 3.2. Disconnect all power before working on the device. Don't touch any terminal when the power is ON.
- 3.3. Verify correct terminal connection when wiring.
- 3.4. Don't dismantle or repair the device whether it works normally, otherwise no responsibility is assumed by producer or seller.
- 3.5. Never use the device at the site which can be invaded by corrosive gas, strong sunshine light and rain.
- 3.6. Clean the device with a dry cloth.
- 3.7. Failure to follow these instructions will result in serious injury or death.

4. Technical data

Supply terminals	A1-A2
Rated voltage	AC/DC 24-264V
Rated frequency	50/60Hz, 0
Power consumption	1W
Supply voltage tolerance	±10%
Number of channels	1
Programs	astronomical and annual
Mode of work	manual, automatic, holiday and random
Summer/winter time	off, automatic changeover
Time tolerance	≤1s/day at 20°C
Power reserve	10 year
Data readout	LCD display, with back light
Number of contacts	1C/O
Current of contacts	16A/250V AC1
Switching capacity	4000VA/AC, 384W/DC
Mechanical life	10 ⁶
Electrical life	10 ⁵
Rated insulation voltage	250V
Protection degree	IP20
Pollution degree	3
Altitude	≤2000m
Ambient temperature	-30°C~55°C
Permissible relative humidity	≤50%(40°C, without condensation)
Storage temperature	-30°C~70°C
Wire size	1mm ² ~ 4mm ²
Tightening torque	0.5Nm
Mounting	TH-35 Rail(EN60715)
Dimensions	90*36*65mm
Standard	IEC60730-1/IEC60730-2-7

5.Display and keys



Symbol legend

- 1 2 3 4 5 6 7 — Days of the week Monday, Tuesday, ...Sunday
- C1 — Channel 1
- OFF — Relay status

⌚ — Automatic mode

👉 — Manual mode

📅 — Holiday mode

🎲 — Random mode

☀ — Sunrise

🌄 — Sunset

❄ — Winter time

☀ — Summer time

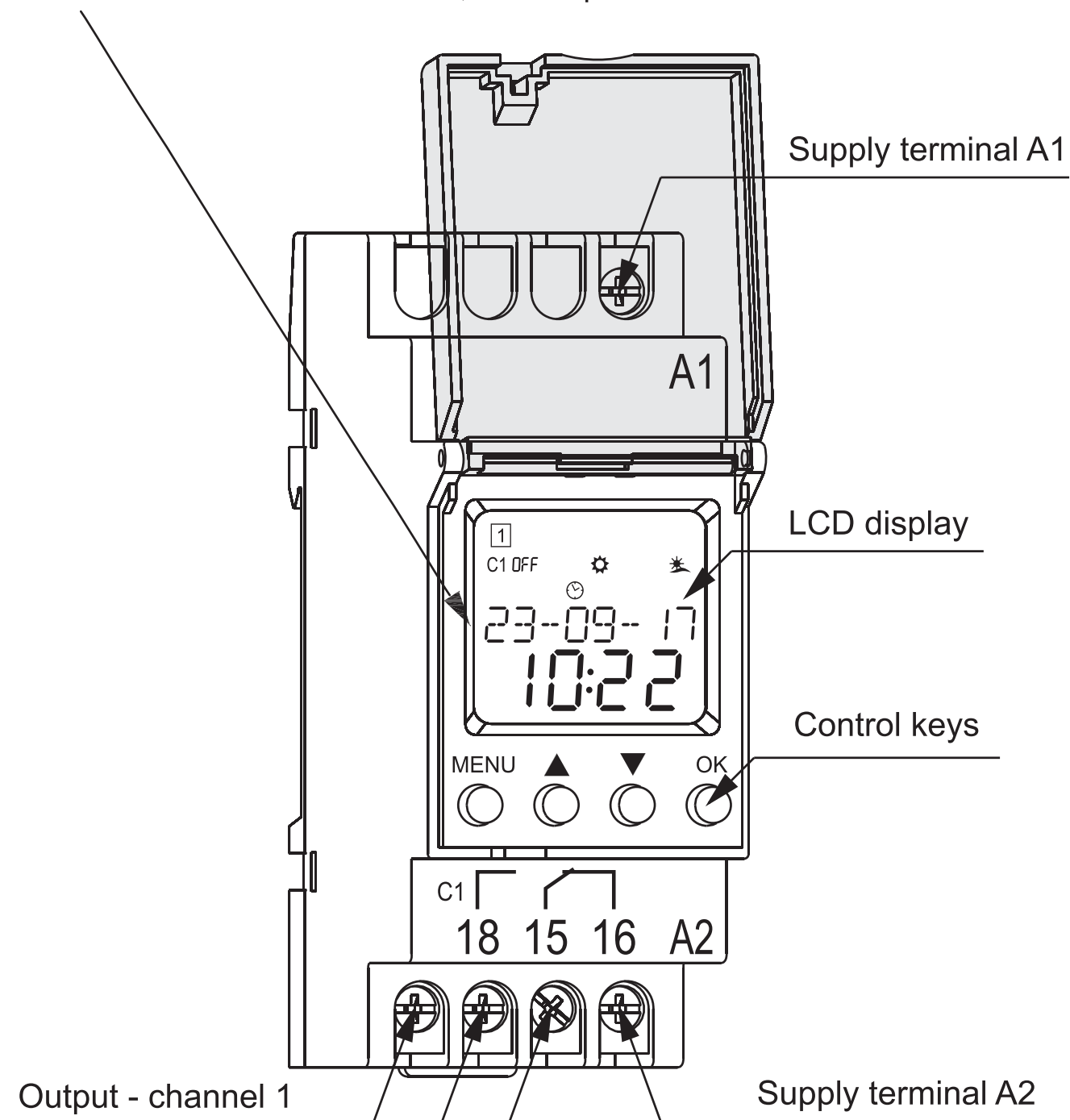
Prog — Program setting

Backlight display

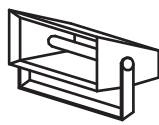
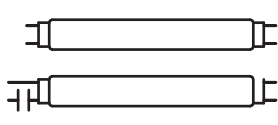
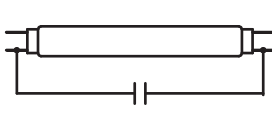
After the external power supply is applied and then press any of four keys, the backlit display will be illuminated. Otherwise, only symbols are displayed on the screen.

MENU ○ Enter main menu ○ Back to main menu	OK ○ Confirm selection
○ Select menu ○ Increase a numerical value	○ Select menu ○ Decrease a numerical value
○ C1 manual operation	

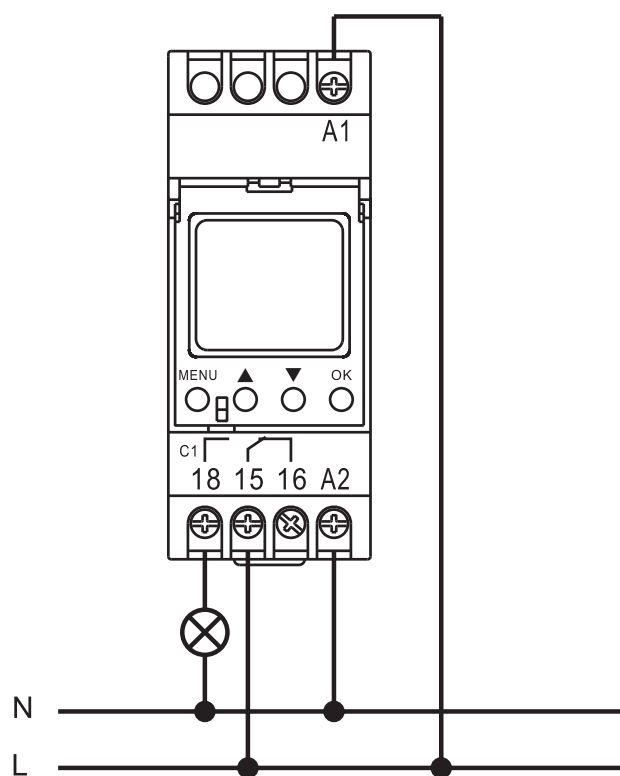
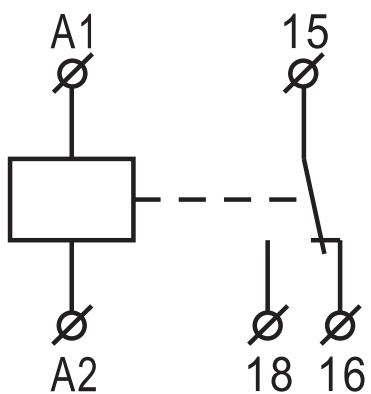
23-09-17: DD-MM-YY, 23th.September.2017



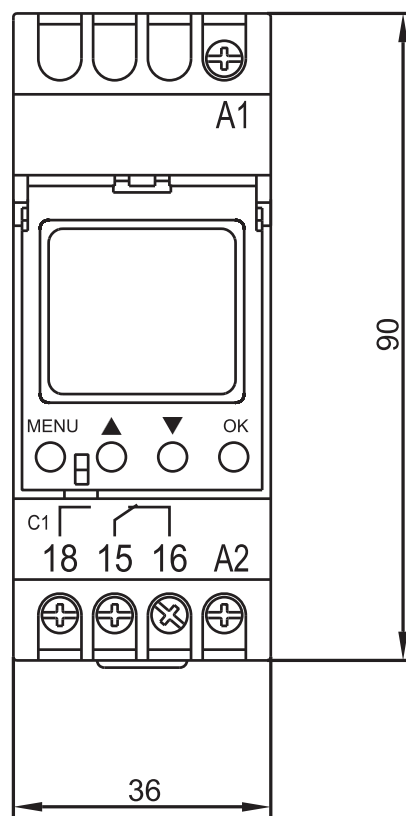
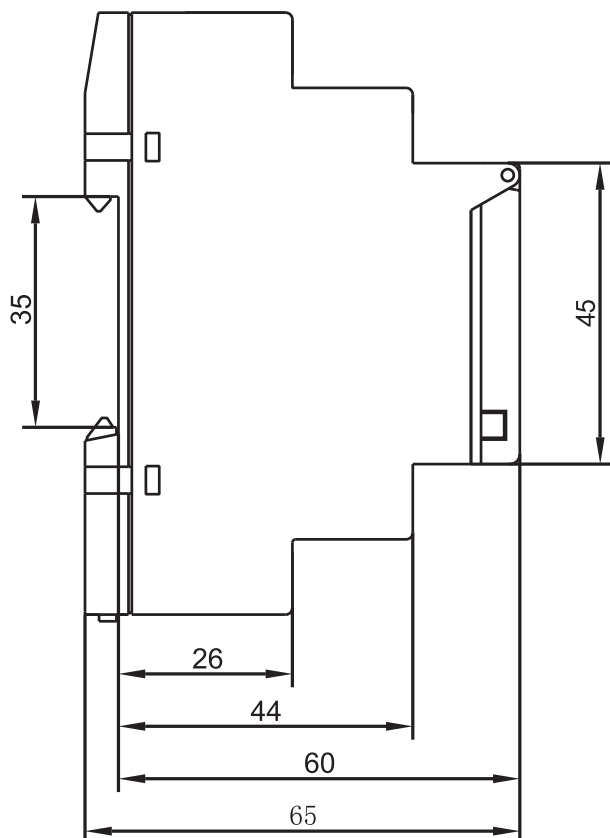
6.Maximum pilotable power

				
2300W	2300W	1000W	500W	500W

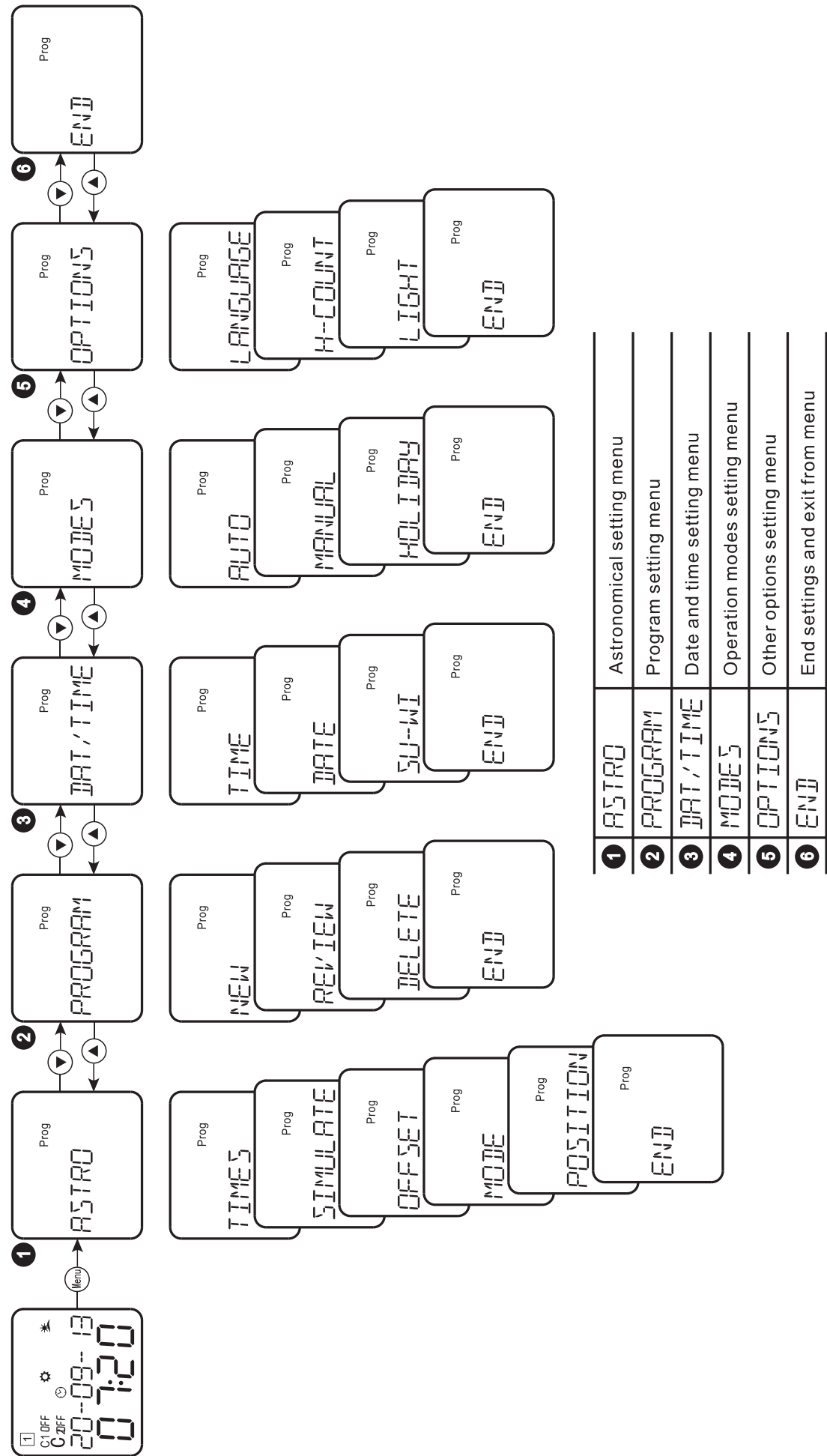
7. Wiring diagram



8. Dimensions

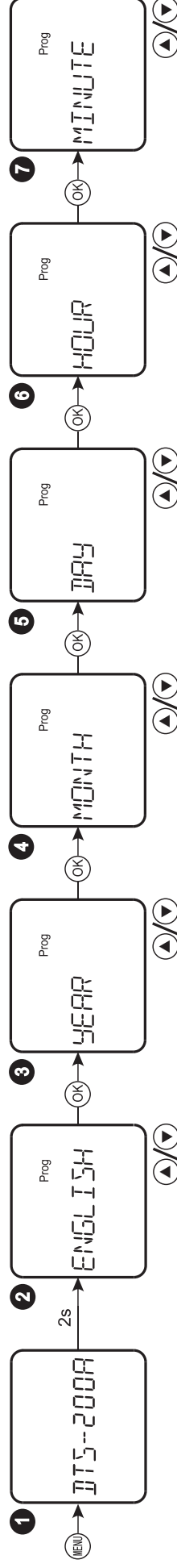


9. Main menu



Press **MENU** key to enter menu setting, and symbol **Prog** appears on the screen. If not operated for 1 minute, the device will automatically exit from setting. Select the desired menu by pressing “▲” keys.

10. Initial operation

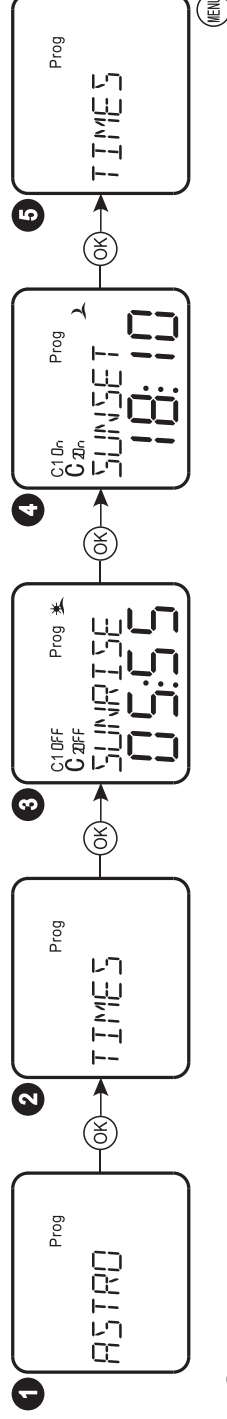


- 1 Press "MENU" key, the screen will display the mode for 2 seconds.
- 2 Select the desired language with "▲▼" keys and press "OK" key.
- 3 Select adequate year with "▲▼" keys and press "OK" key.
- 4 Select adequate month with "▲▼" keys and press "OK" key.
- 5 Select adequate day with "▲▼" keys and press "OK" key.
- 6 Select adequate hour with "▲▼" keys and press "OK" key.
- 7 Select the minute with "▲▼" keys and press "OK" key.

Note: If the settings were not ended and not operated by keys for 2 minutes, device will return to **ENGLISH** menu, and backlight is switched off. Pressing any keys can switch on display and backlight.

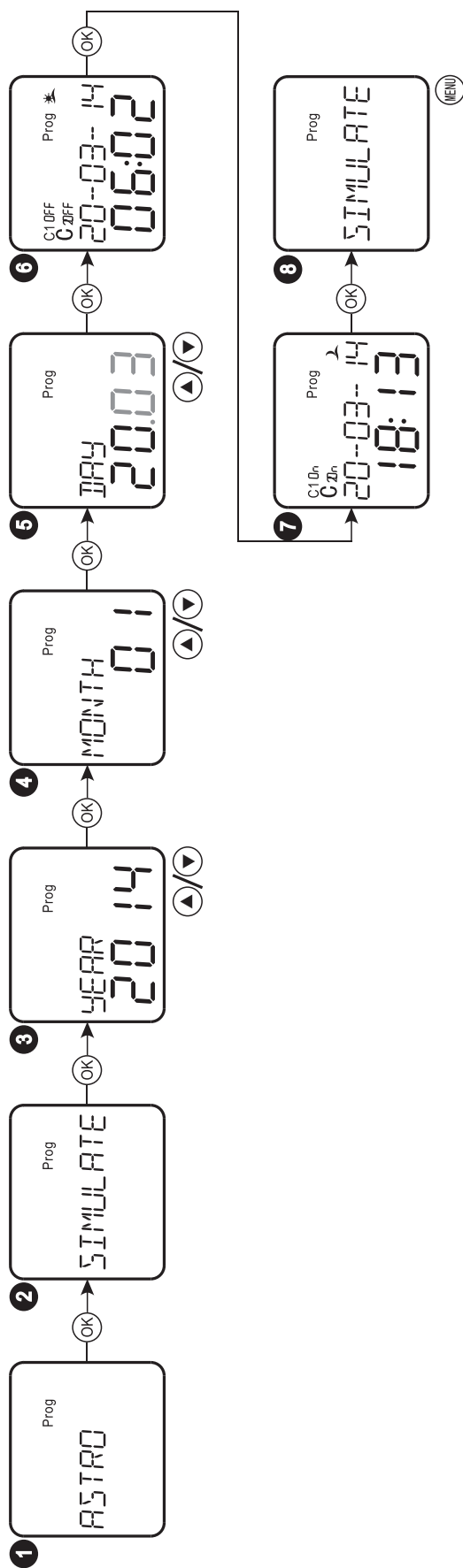
11. Astro time setting and display

- Check the astro time (sunrise/sunset)



- 1 Select **ASTRO** and press "OK" key.
- 2 Select **TIMES** and press "OK" key.
- 3 Displaying the sunrise time.
- 4 Displaying the sunset time.
- 5 Exit from the setting by pressing "MENU" key.

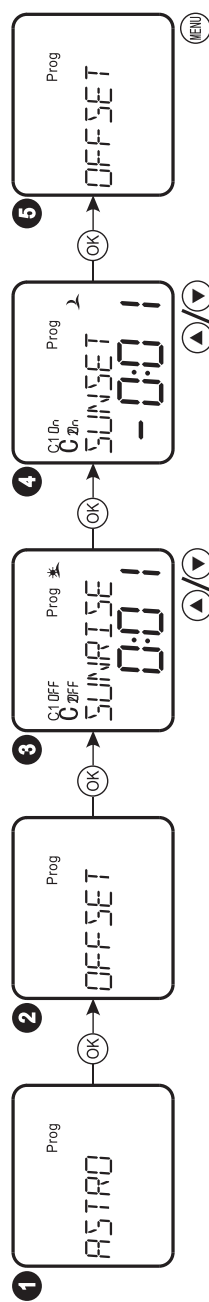
● Check astro times on the required day



- 1 Select **ASTRO** and press “OK” key.
- 2 Select **SIMULATE** and press “OK” key.
- 3 Select the required year with “▲▼” keys and then press “OK” key.
Year setting range is 2000~2095.
- 4 Select the required month with “▲▼” keys and then press “OK” key.
- 5 Select the required day with “▲▼” keys and then press “OK” key.
- 6 Display the sunrise time.
- 7 Display the sunset time.
- 8 Exit from the setting by pressing “MENU” key.

Long press ▲ 0.5s, increase the numerical value quickly
 Long press ▼ 0.5s, decrease the numerical value quickly

● Set offset time



1 Select **ASTRO** and press "OK" key.

2 Select **OFFSET** and press "OK" key.

3 Select the offset time of sunrise with "▲▼" keys and press "OK" key. Offset range is $\pm 2h$.

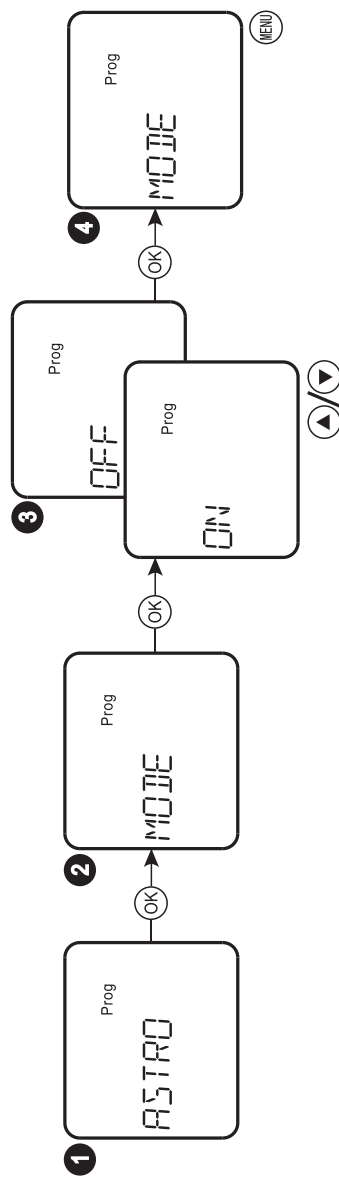
4 Select the offset time of sunset with "▲▼" keys and press "OK" key. Offset range is $\pm 2h$.

5 Exit from the setting by pressing "MENU" key.

Long press ▲ 0.5s, increase the numerical value quickly

Long press ▼ 0.5s, decrease the numerical value quickly

● Set astro operating mode



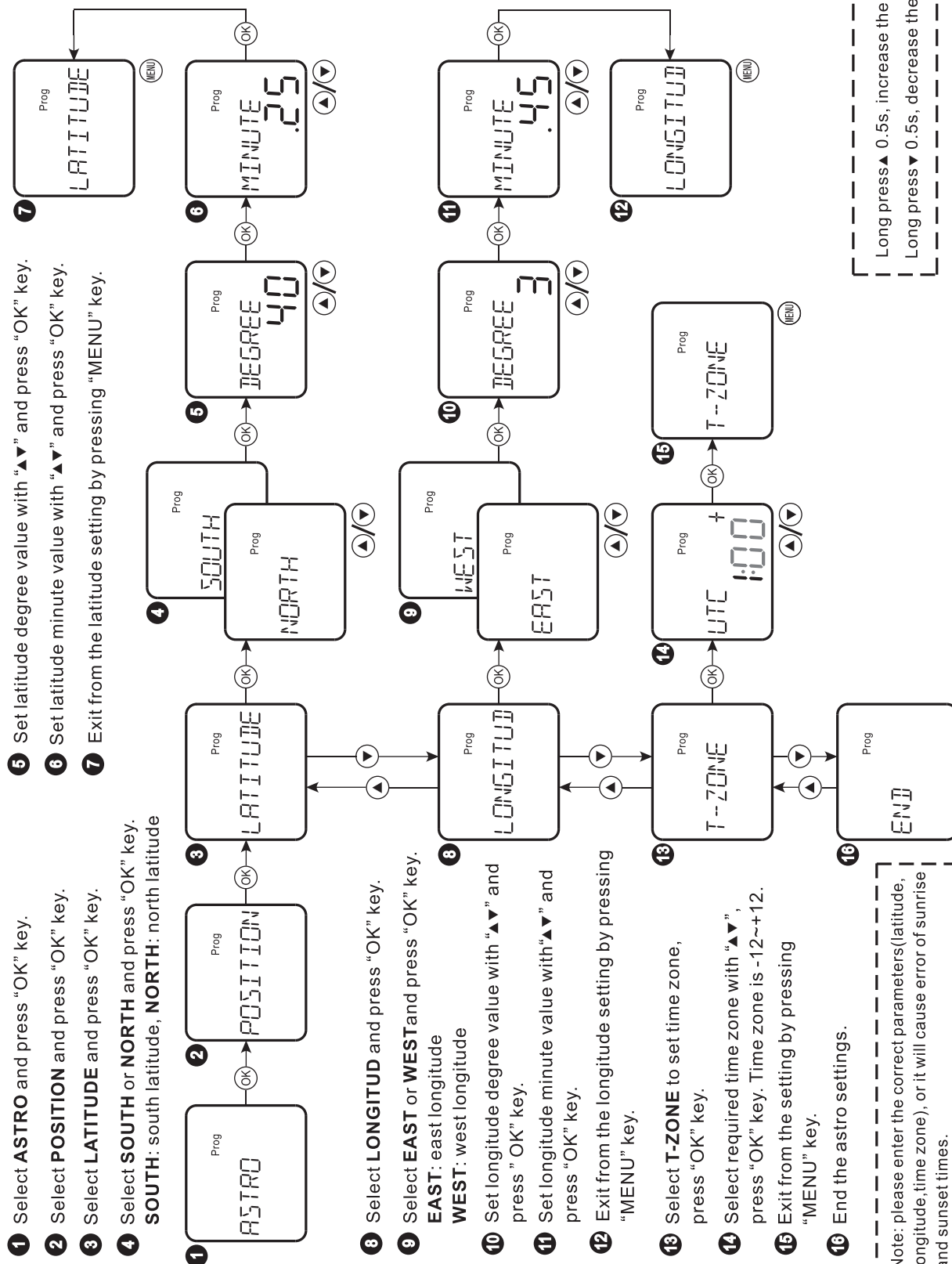
1 Select **ASTRO** and press "OK" key.

2 Select **MODE** and press "OK" key.

3 Select **OFF** or **ON** to activate or deactivate astro mode with "▲▼" keys and then press "OK" key.

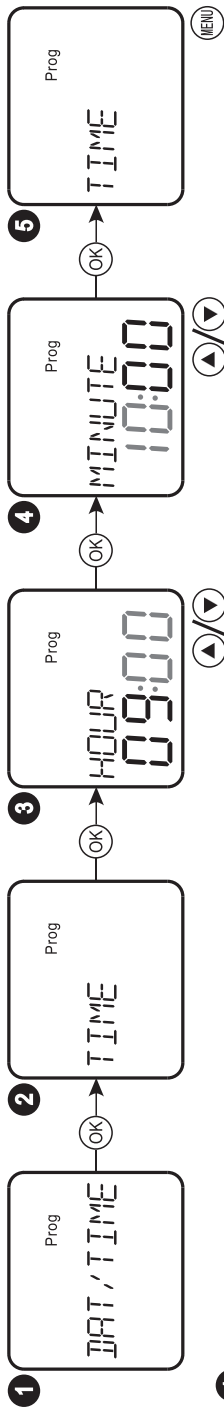
4 Exit from the setting by pressing "MENU" key.

● Geographical location setting



12. Time and date setting

● Time setting



1 Select **DAT/TIME** and press "OK" key.

2 Select **TIME** and press "OK" key.

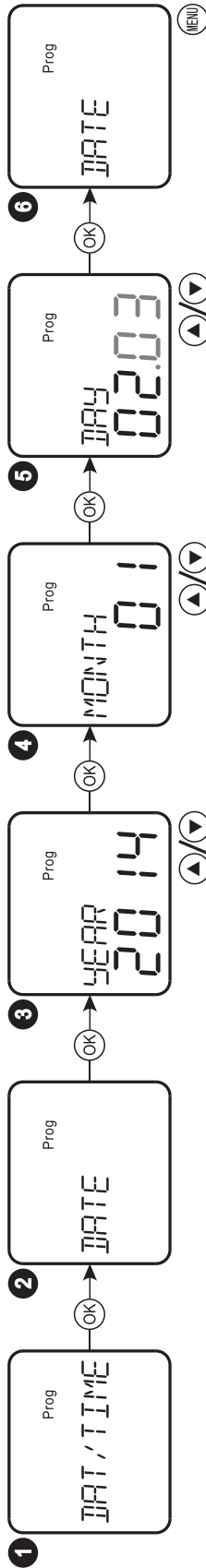
3 Choose adequate hour with "▲▼" keys and press "OK" key. adjusting range is 0~23.

4 Choose adequate minute with "▲▼" keys and press "OK" key. adjusting range is 0~59.

5 Exit from the setting by pressing "MENU" key.

Long press ▲ 0.5s, increase the numerical value quickly
Long press ▼ 0.5s, decrease the numerical value quickly

● Date setting



1 Select **DAT/TIME** and press "OK" key.

2 Select **DATE** and press "OK" key.

3 Choose adequate year with "▲▼" keys and press "OK" key. adjusting range is 2000~2095.

4 Choose adequate month with "▲▼" keys and press "OK" key.

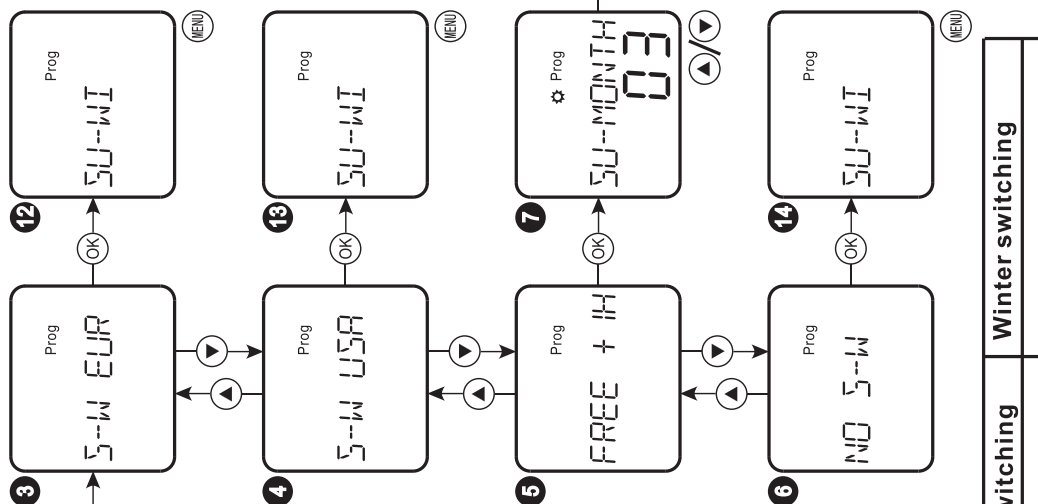
5 Choose adequate day with "▲▼" keys and press "OK" key.

6 Exit from the setting by pressing "MENU" key.

Long press ▲ 0.5s, increase the numerical value quickly
Long press ▼ 0.5s, decrease the numerical value quickly

● Summer/winter time setting

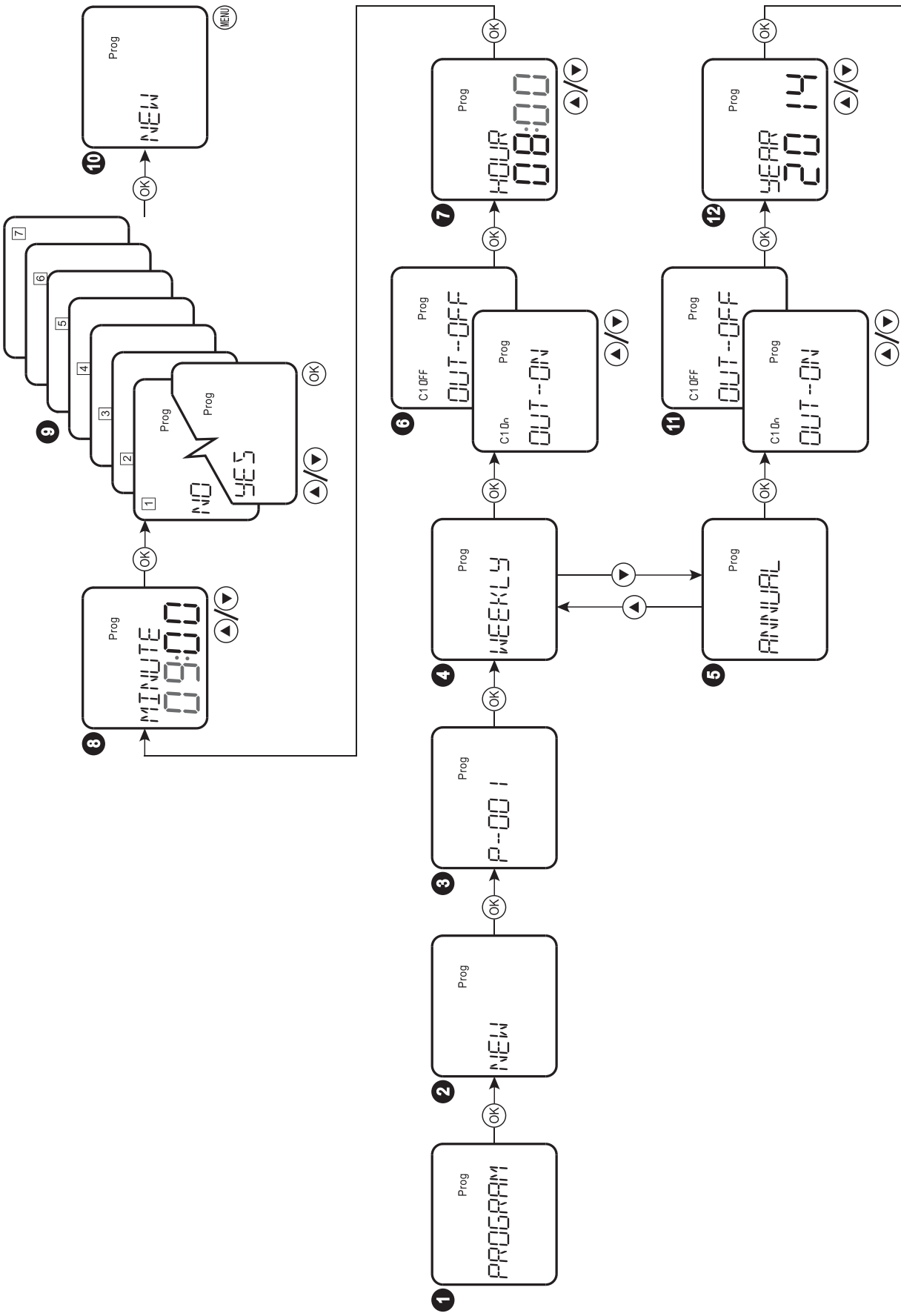
- 1 Select **DAT/TIME** and press "OK" key.
- 2 Select **SU-WI** and press "OK" key.
- 3 4 5 6 Select the required summer/winter mode with "▲▼" keys and press "OK" key.
- 7 Set the start month of summer time and press "OK" key.
- 8 Set the start day of summer time and press "OK" key.
- 9 Set the start month of winter time and press "OK" key.
- 10 Set the start day of winter time and press "OK" key.
- 11 12 13 14 Exit from the setting by pressing "MENU" key.

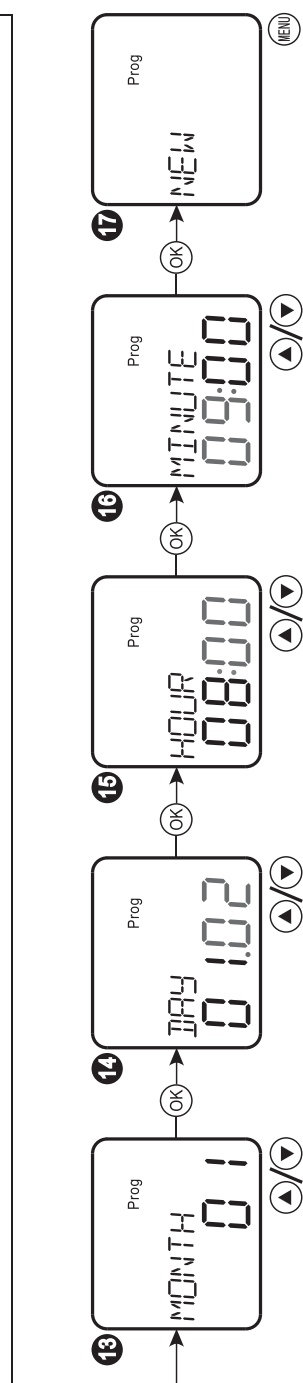


Display	Function	Summer switching	Winter switching
S--W EUR	Europe sum/win	Last Sunday in March	Last Sunday in October
S--W USA	U.S.A. sum/win	Second Sunday in March	First Sunday in November
FREE + IH	Free sum/win	Freely programmed	Freely programmed
NO S--W	No sum/win	None	None

13. Program setting

● Create a program



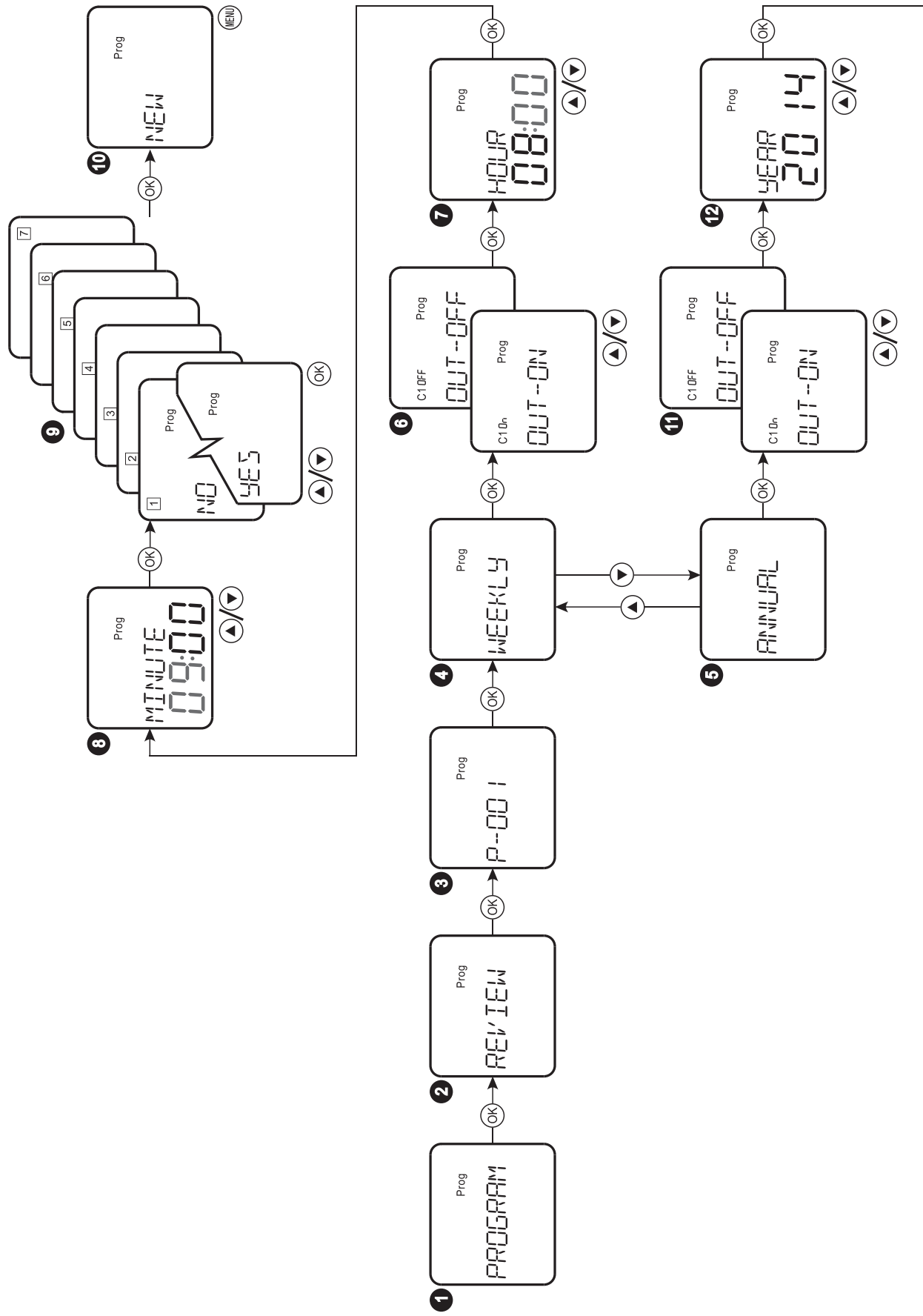


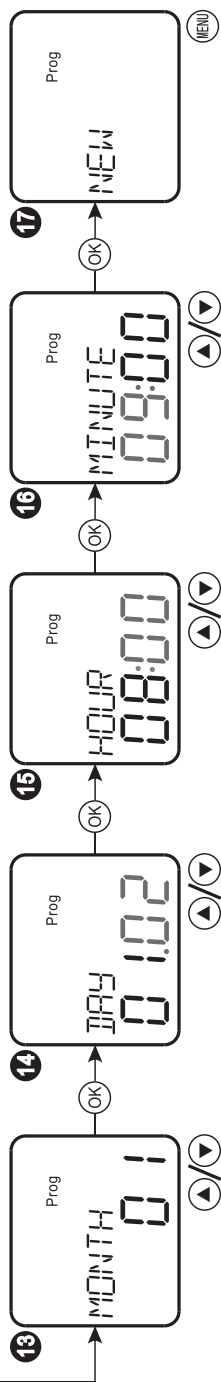
- 1** Select **PROGRAM** and press "OK" key.
- 2** Select **NEW** and press "OK" key.
- 3** Display new program number and press "OK" key.
When the programs memory is full, new program will not be created, symbol "FULL" appears on the screen.
- 4** Select **WEEKLY** with "▲▼" and press "OK" key.
- 5** Select **ANNUAL** with "▲▼" and press "OK" key.
- 6** **11** Display the output state of channel 1. Choose "ON" or "OFF" with "▲▼" keys and then press "OK" key.
- 7** **15** Set the hour with "▲▼" keys and then press "OK" key.
- 8** **16** Set the minute with "▲▼" keys and then press "OK" key.
- 9** Set the program activity on a week day(from Monday to Sunday) with "▲▼" keys.
If $\square$ is selected, program operation is enabled for flashing day.
If $\square$ is selected, program is not used for flashing day.
- 10** **17** Exit from the setting by pressing "MENU" key.
- 12** Set the year with "▲▼" keys and then press "OK" key.
- 13** Set the month with "▲▼" keys and then press "OK" key.
- 14** Set the day with "▲▼" keys and then press "OK" key.

Long press ▲ 0.5s, increase the numerical value quickly
Long press ▼ 0.5s, decrease the numerical value quickly

13. Program setting

● Modify a program

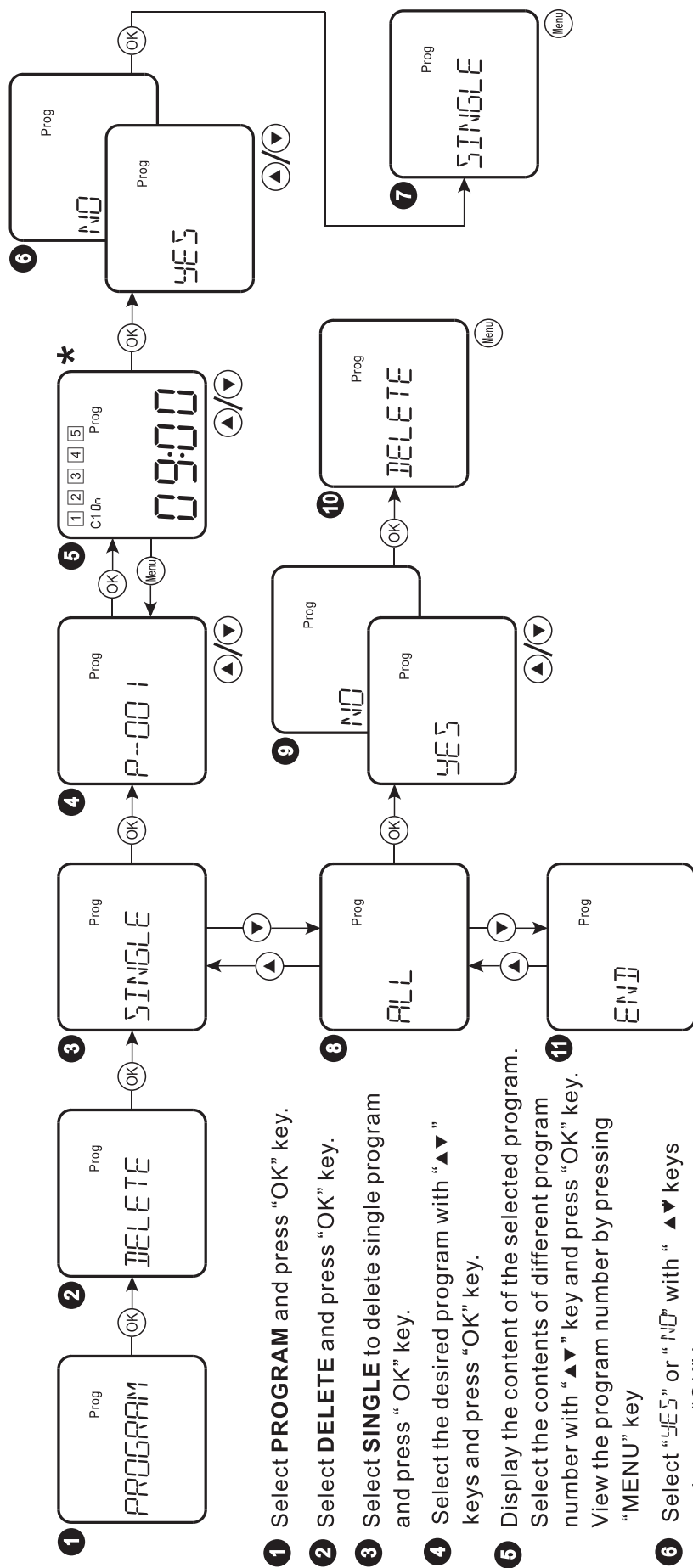




- 1 Select **PROGRAM** and press "OK" key.
- 2 Select **REVIEW** and press "OK" key.
- 3 Display new program number and press "OK" key.
When the programs memory is full, new program will not be created, symbol "FULL" appears on the screen.
- 4 Select **WEEKLY** with "▲▼" and press "OK" key.
- 5 Select **ANNUAL** with "▲▼" and press "OK" key.
- 6 11 Display the output state of channel 1. Choose "ON" or "OFF" with "▲▼" keys and then press "OK" key.
- 7 15 Set the hour with "▲▼" keys and then press "OK" key.
- 8 16 Set the minute with "▲▼" keys and then press "OK" key.
- 9 Set the program activity on a week day(from Monday to Sunday) with "▲▼" keys.
If $\square$ is selected, program operation is enabled for flashing day.
If $\square$ is selected, program is not used for flashing day.
- 10 17 Exit from the setting by pressing "MENU" key.
- 12 Set the year with "▲▼" keys and then press "OK" key.
- 13 Set the month with "▲▼" keys and then press "OK" key.
- 14 Set the day with "▲▼" keys and then press "OK" key.

Long press ▲ 0.5s, increase the numerical value quickly
Long press ▼ 0.5s, decrease the numerical value quickly

- Delete a program



Symbols	Description
09:00	Weekly program
23-09-13 09:00	Annual program

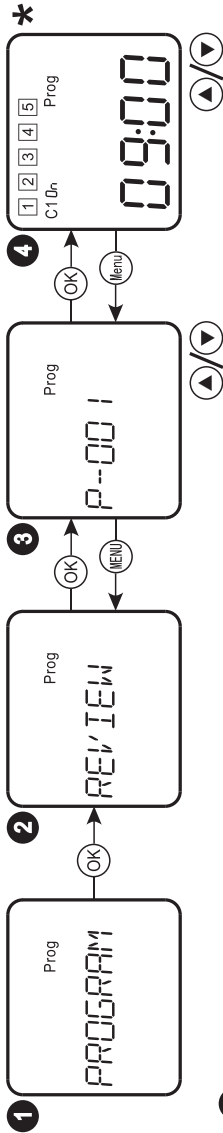
8 Select **ALL** to delete all programs and press “OK” key.

9 Select “YES” or “NO” with “▲” keys and press “OK” key.

10 Return to **DELETE** sub-menu, Exit from the setting by pressing “MENU”.

11 End program setting.

● Check a program

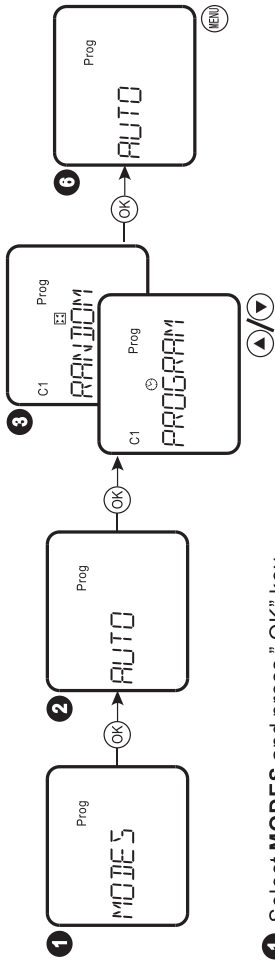


*

Symbols	Description
09:00	Weekly program
23-09-13 09:00	Annual program

14. Operation modes setting

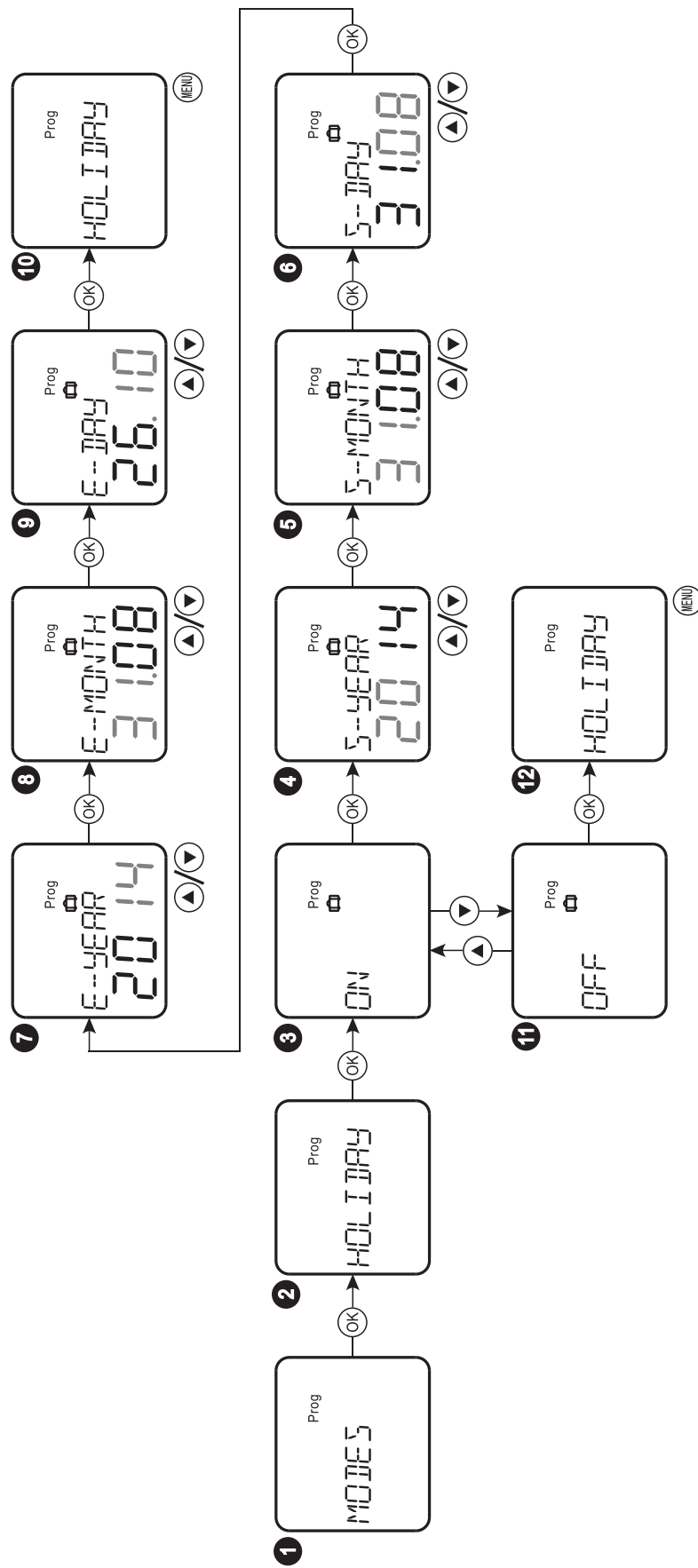
● Auto mode



- 1 Select **MODES** and press "OK" key.
- 2 Select **AUTO** submenu and press "OK" key.
- 3 Select **AUTO** or **RANDOM** modes for channel 1 with "▲" and press "OK" key. The random on and off times range is 1min-30mins.
- 4 Exit from the setting by pressing "MENU" key.

Symbols	Function
PROGRAM	Auto mode
RANDOM	Random mode

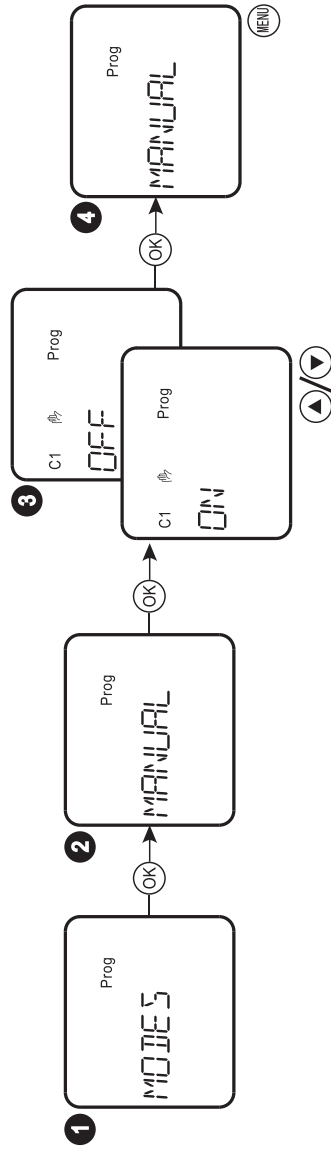
● Holiday mode



- 1 Select **MODES** and press “OK” key.
 - 2 Select **HOLIDAY** and press “OK” key.
 - 3 Select **ON** activate holiday mode and press “OK” key.
 - 4 Set the start year of holiday with “▲▼” keys and press “OK” key.
 - 5 Set the start month of holiday with “▲▼” keys and press “OK” key.
 - 6 Set the start day of holiday with “▲▼” keys and press “OK” key.
 - 7 Set the end year of holiday with “▲▼” keys and press “OK” key.
 - 8 Set the end month of holiday with “▲▼” keys and press “OK” key.
 - 9 Set the end day of holiday with “▲▼” keys and press “OK” key.
 - 10 Return to **HOLIDAY** menu. Exit from the setting by pressing “MENU” key.
 - 11 Select **OFF** to deactivate holiday mode and press “OK” key.
 - 12 Return to **HOLIDAY** menu. Exit from the setting by pressing “MENU” key.
- Long press ▲ 0.5s, increase the numerical value quickly

Long press ▼ 0.5s, decrease the numerical value quickly

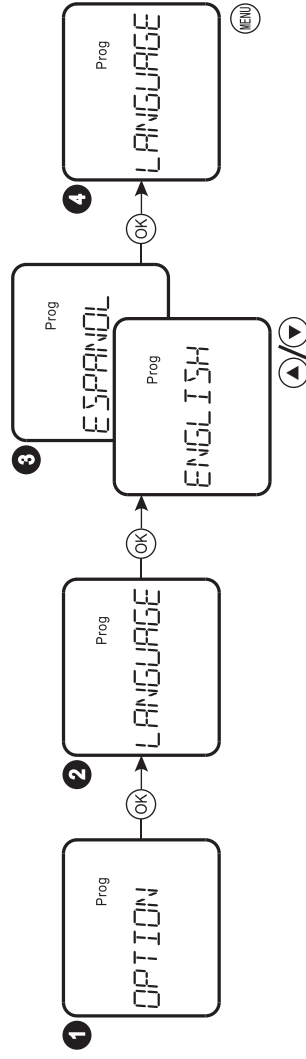
● Manual mode



- 1 Select **MODES** and press "OK" key.
- 2 Select **MANUAL** submenu and press "OK" key.
- 3 Display the output state of channel 1. Select "ON" or "OFF" with "▲▼" keys and then press "OK" key.
- 4 Exit from the setting by pressing "MENU" key.

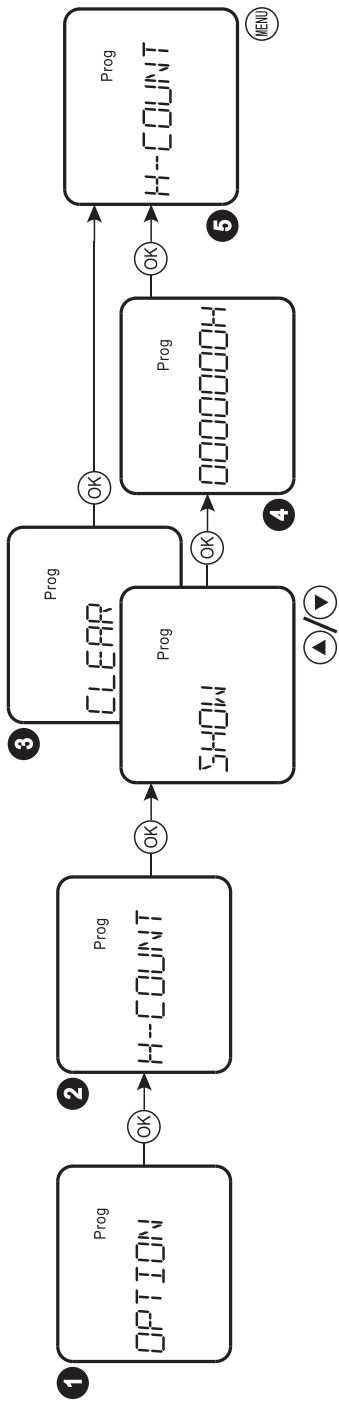
15. Options

● Language setting



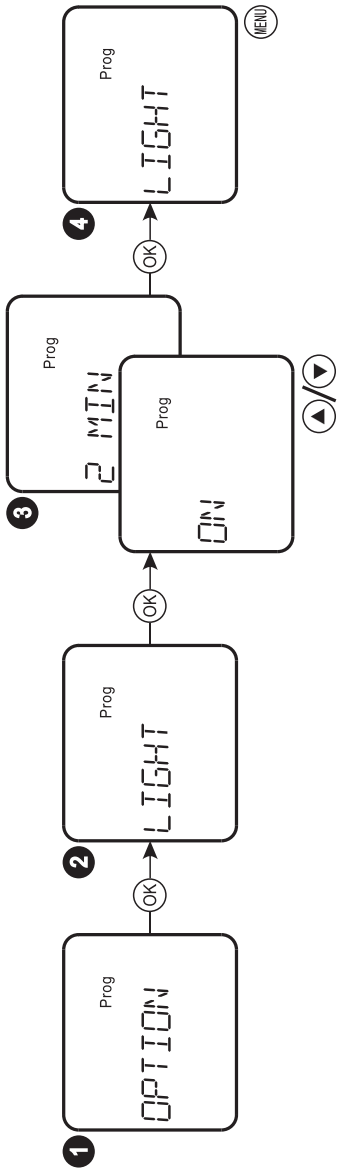
- 1 Select **OPTION** and press "OK" key.
- 2 Select **LANGUAGE** and press "OK" key.
- 3 Select the desired language with "▲▼" keys and press "OK" key.
- 4 Exit from the setting by pressing "MENU" key.

● Hour counter



- 1 Select **OPTIONS** and press “OK” key.
- 2 Select **H-COUNT** sub-menu and press “OK” key.
- 4 Select **SHOW** or **CLEAR** with “▲▼” keys and press “OK” key.
- 5 Display the operation time. The minimum time unit is hour. Exit by pressing “OK” key after viewing.
- 6 Exit from the setting by pressing “MENU” key.

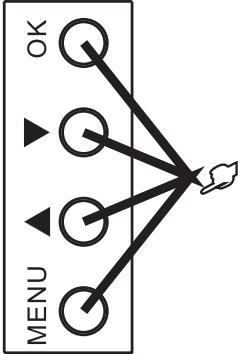
● Back-light



- 1 Select **OPTION** and press “OK” key.
- 2 Select **LIGHT** sub-menu and press “OK” key.
- 3 Select **ON** or **2 MIN** with “▲▼” keys and press “OK” key.
- 4 Exit from the setting by pressing “MENU” key.

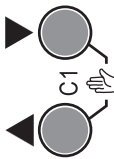
Display	Function
ON	Fixed ON for backlight
2 MIN	Switch off 2 minutes after last input.

16.Reset



Press the four keys simultaneously for 3 seconds to reset automatically.
The data restored to factory settings.

17.Keys combination for MANUAL



Press “▲▼” keys simultaneously, the output state of channel 1 switches to MANUAL.
When the output states of other operation modes was changed, Manual mode exits automatically.

18.Mode precedence

Precedence	Display	Output modes
Highest ↑ ↓ Lowest	On / OFF	Manual control
		Holiday mode
		Random mode
		Auto mode
		Astro mode

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