1. Description

RD-TPA series astronomical time switch is for realization of time functions in the systems of automatics and steering. Night break program can be use 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

- Digital time switch with astronomical program
- 3 or 10 years power reserve(lithium battery).
- Sealable cover of the front panel, easy setting by 4 keys.
- Automatic summer/winter time switchover
- LCD display
- Holiday mode.
- Single or double channel
- Automatic transfer of weekdays
- Double-module, mounted on TH-35 rail.

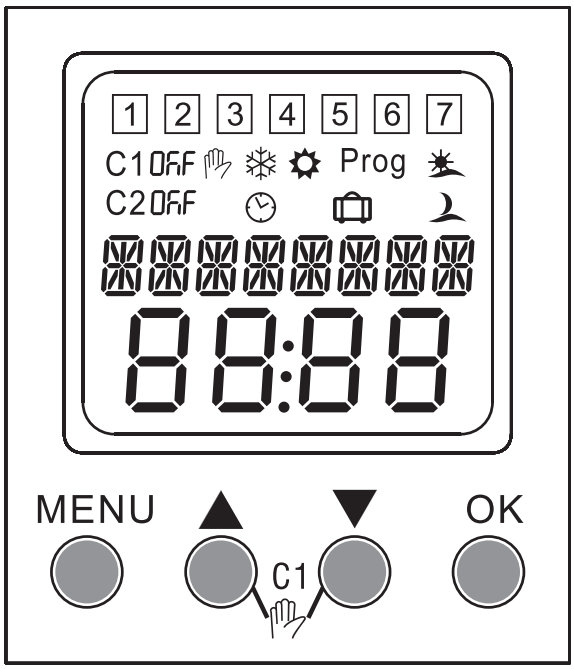
3.Safety instructions

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 corrode gas, strong sunshine light and rain.
3.6. Clean the device with a dry cloth.
3.7. Fail to follow these instructions will result in serious injury or death.

4.Technical data

Models	RD-TPA1	RD-TPA1B	RD-TPA2
Supply terminals	A1-A2		
Rated voltage	AC220-240V	AC/DC 24-264V	
Rated frequency	50/60Hz	50/60Hz, 0	
Power consumption	1W		2W
Supply volltage tolerance	±10%		
Number of channels	1		2
Program	astronomical		
Mode of work	manual, automatic, holiday,		
Summer/winter time	off, automatic changeover		
Time tolerance	=1s/day at 20°C		
Power reserve	3 years	10 years	
Data readout	LCD display	Back-lighted LCD display	
Number of contacts	1 C/O		2 C/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		
Permissable 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)		
Standard	EN60730-1/EN60730-2-7		

5.Display and keys



Symbol legend

1 2 3 4 5 6 7 — Days of the week Monday, Tuesday, ...Sunday

C1 — Channel 1

C2 — Channel 2

On OFF — Relay status

— Automatic mode

— Manual mode

— Holiday mode

— Sunrise

— Sunset

— Winter time

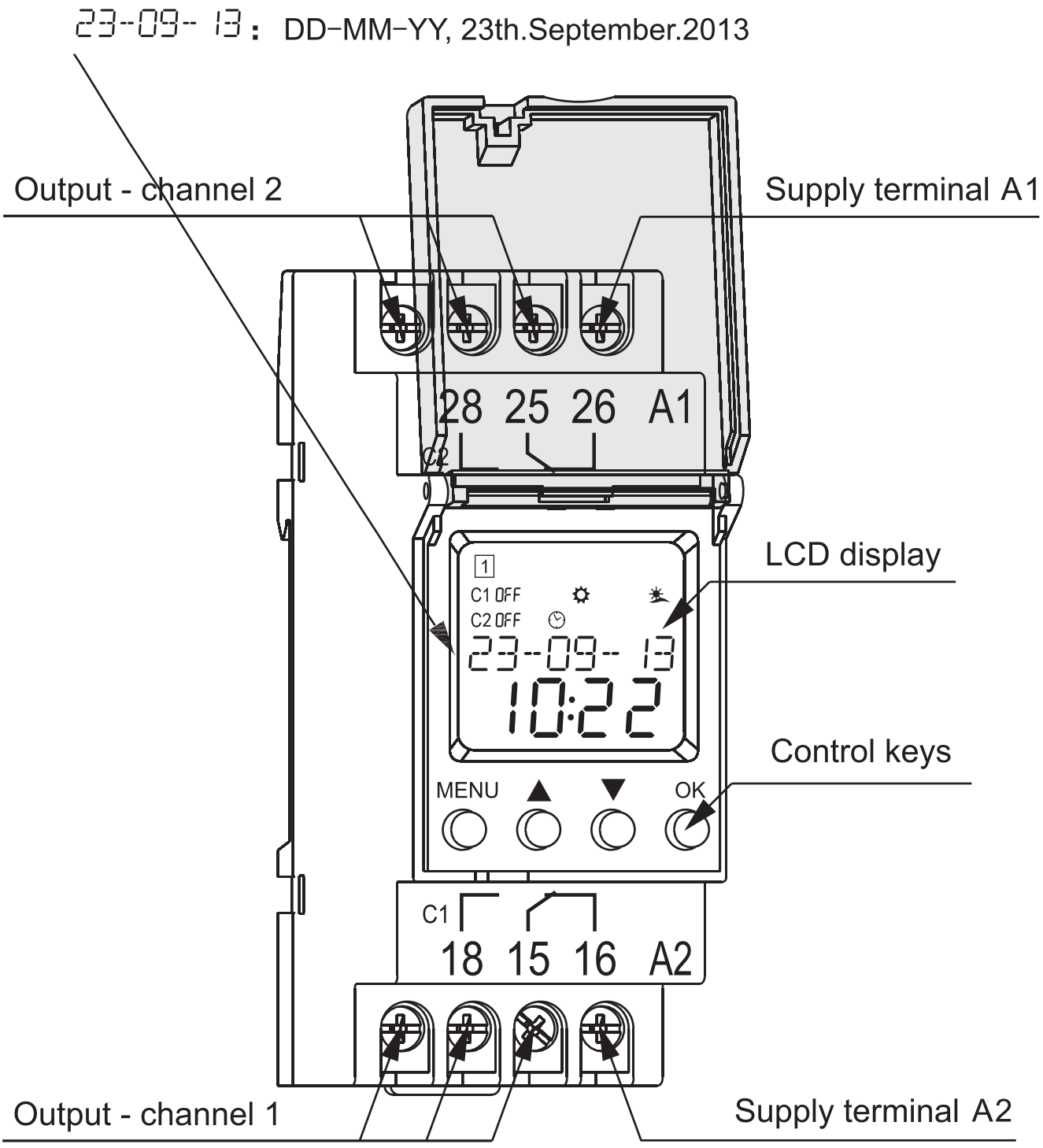
— Summer time

Prog — Program setting

Backlighted display

After the external power supply is applied and then press any of four keys, the backlighted 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 ○ C1 manual operation	OK C2 ○ C2 manual operation

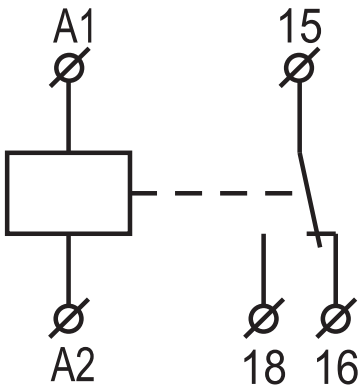


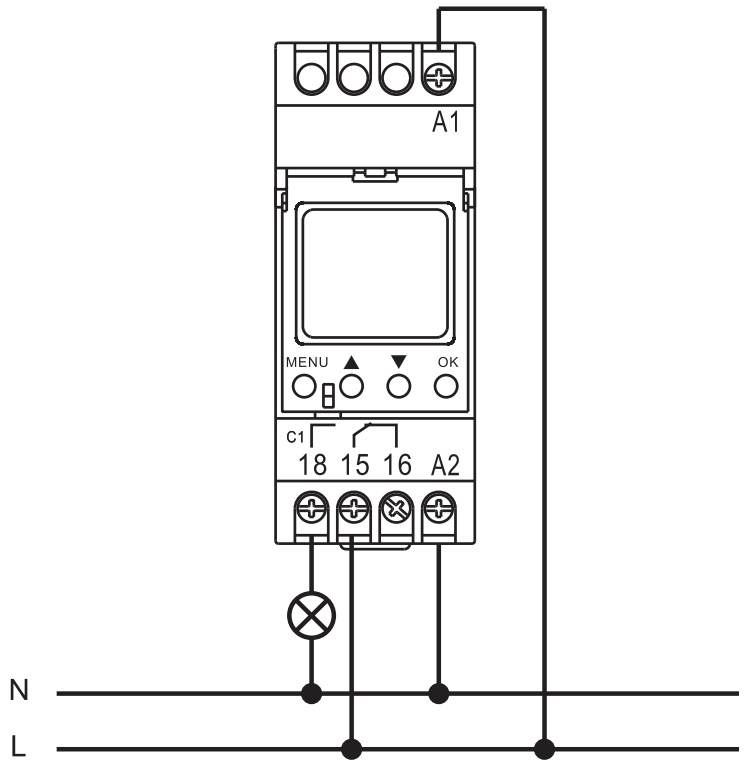
6.Maximum pilotable power

2300W	2300W	1000W	500W	500W

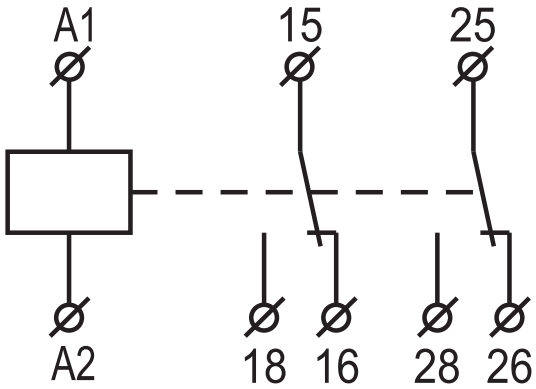
7. Wiring diagram

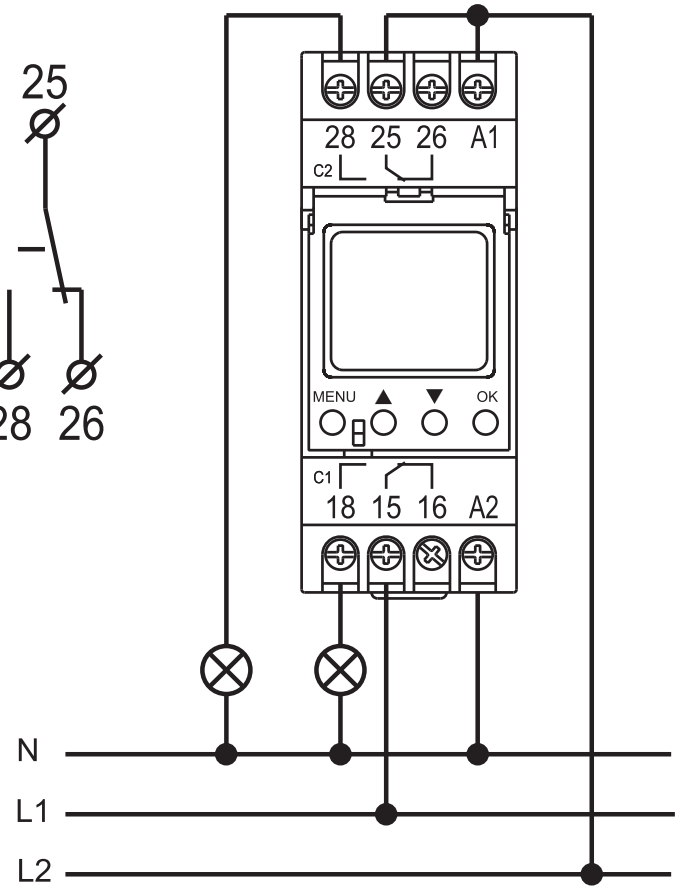
RD-TPA1/RD-TPA1B



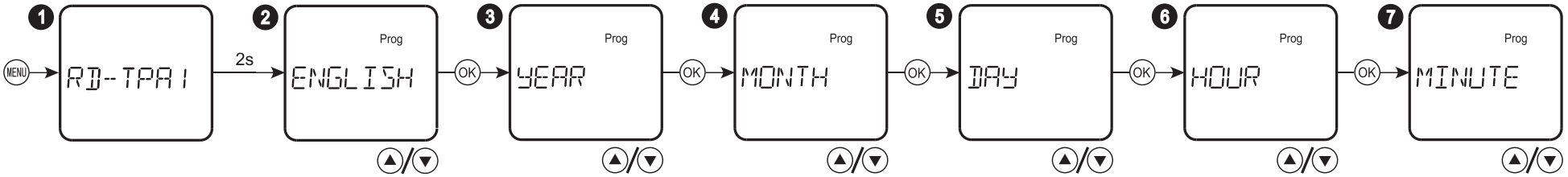


RD-TPA2





8. Initial operation

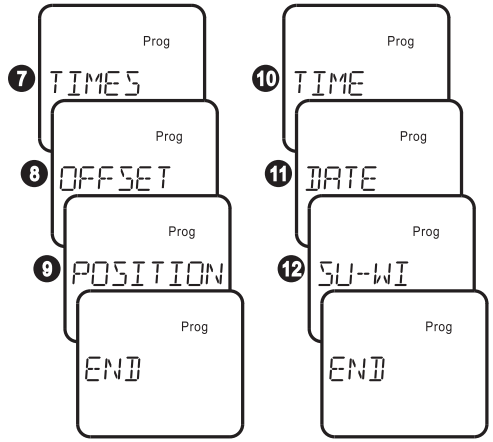


1. Press “MENU” key, the screen will display the mode for 2 seconds.
2. Select the desired language with “▲▼” keys and press “OK” key.
3. Select adequate year with “▲▼” keys and press “OK” key.
4. Select adequate month with “▲▼” keys and press “OK” key.
5. Select adequate day with “▲▼” keys and press “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.

9. Main menu

1	NIGHT-BR	Nightbreak setting menu
2	ASTRO	Astronomical setting menu
3	DAT/TIME	Date and time setting menu
4	HOLIDAY	Holiday mode setting menu
5	LANGUAGE	Language setting menu
6	END	End settings and exit

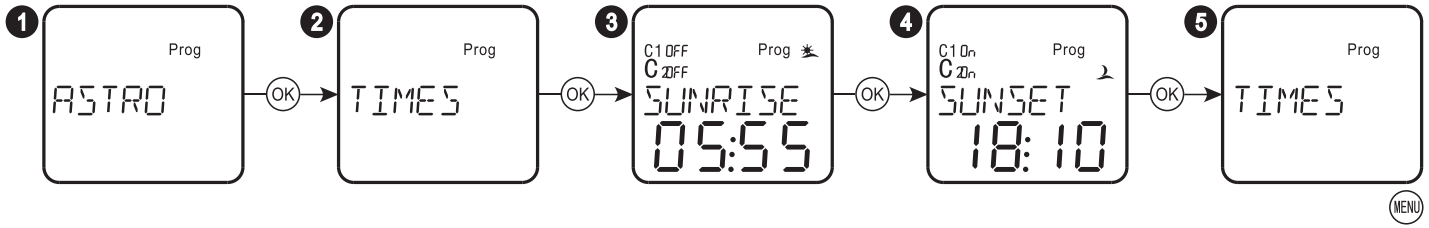


7	TIMES	Astro times displaying menu
8	OFFSET	Astro offset setting menu
9	POSITION	Geographical position setting menu
10	TIME	Time setting menu
11	DATE	Date setting menu
12	SU-WI	Summer/winter setting menu

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

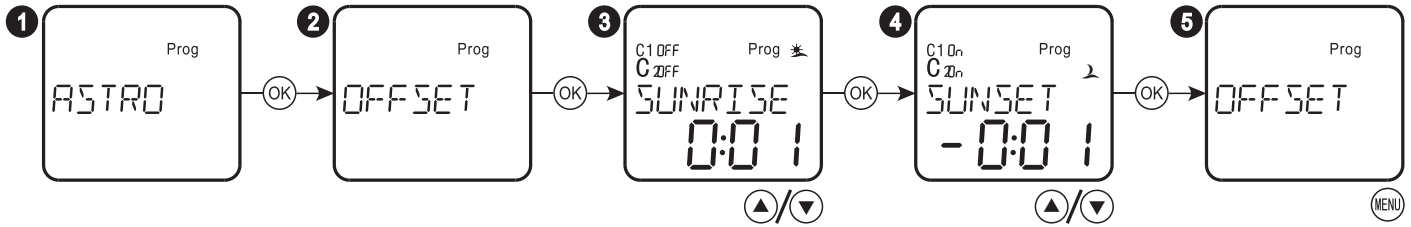
10. Astro time setting and display

● 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.

● Offset time setting

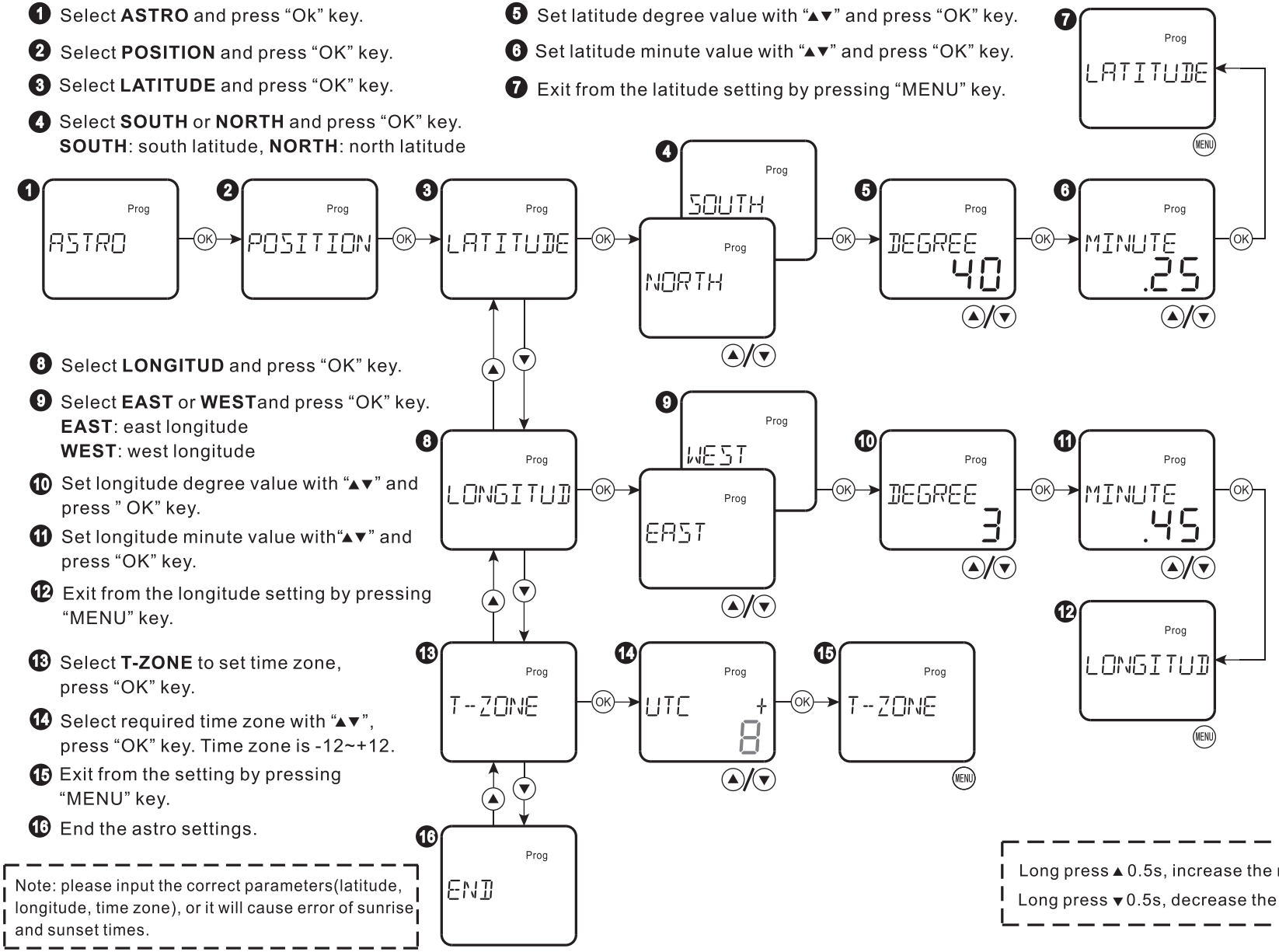


1. Select **ASTRO** and press “OK” key.
2. Select **OFFSET** and press “OK” key.
3. Select the offset time of sunrise with “▲▼” keys and press“OK” key. Offset range is ±2h.
4. Select the offset time of sunset with “▲▼” keys and press“OK” key. Offset range is ±2h.
5. Exit from the setting by pressing “MENU” key.

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

● Geographical location setting

1. Select **ASTRO** and press “Ok” key.
2. Select **POSITION** and press “OK” key.
3. Select **LATITUDE** and press “OK” key.
4. Select **SOUTH** or **NORTH** and press “OK” key.
   SOUTH: south latitude, **NORTH**: north latitude
5. Set latitude degree value with “▲▼” and press “OK” key.
6. Set latitude minute value with “▲▼” and press “OK” key.
7. Exit from the latitude setting by pressing “MENU” key.
8. Select **LONGITUD** and press “OK” key.
9. Select **EAST** or **WEST**and press “OK” key.
   EAST: east longitude
   WEST: west longitude
10. Set longitude degree value with “▲▼” and press ” OK” key.
11. Set longitude minute value with“▲▼” and press “OK” key.
12. Exit from the longitude setting by pressing “MENU” key.
13. Select **T-ZONE** to set time zone, press “OK” key.
14. Select required time zone with “▲▼”, press “OK” key. Time zone is -12~+12.
15. Exit from the setting by pressing “MENU” key.
16. End the astro settings.

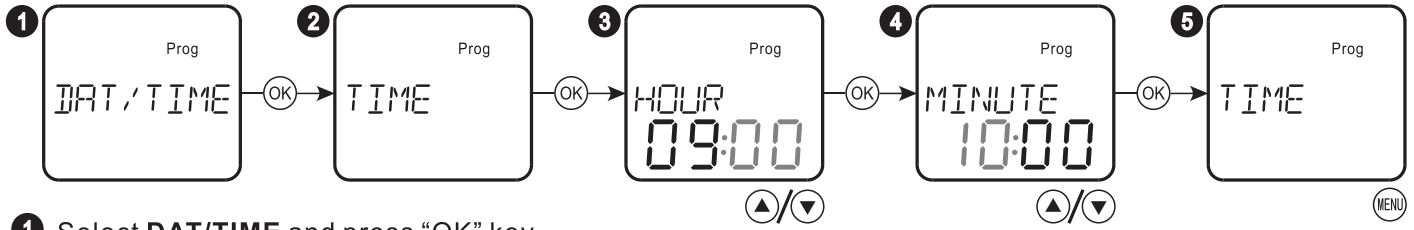


Note: please input the correct parameters(latitude, longitude, time zone), or it will cause error of sunrise and sunset times.

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

11. Time and date setting

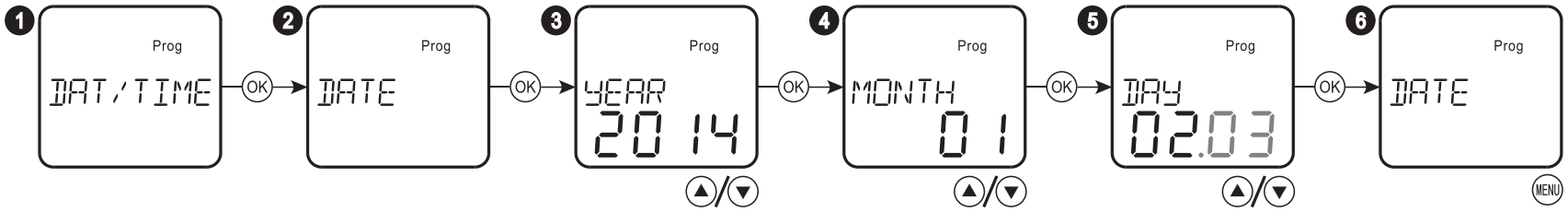
● Time setting



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

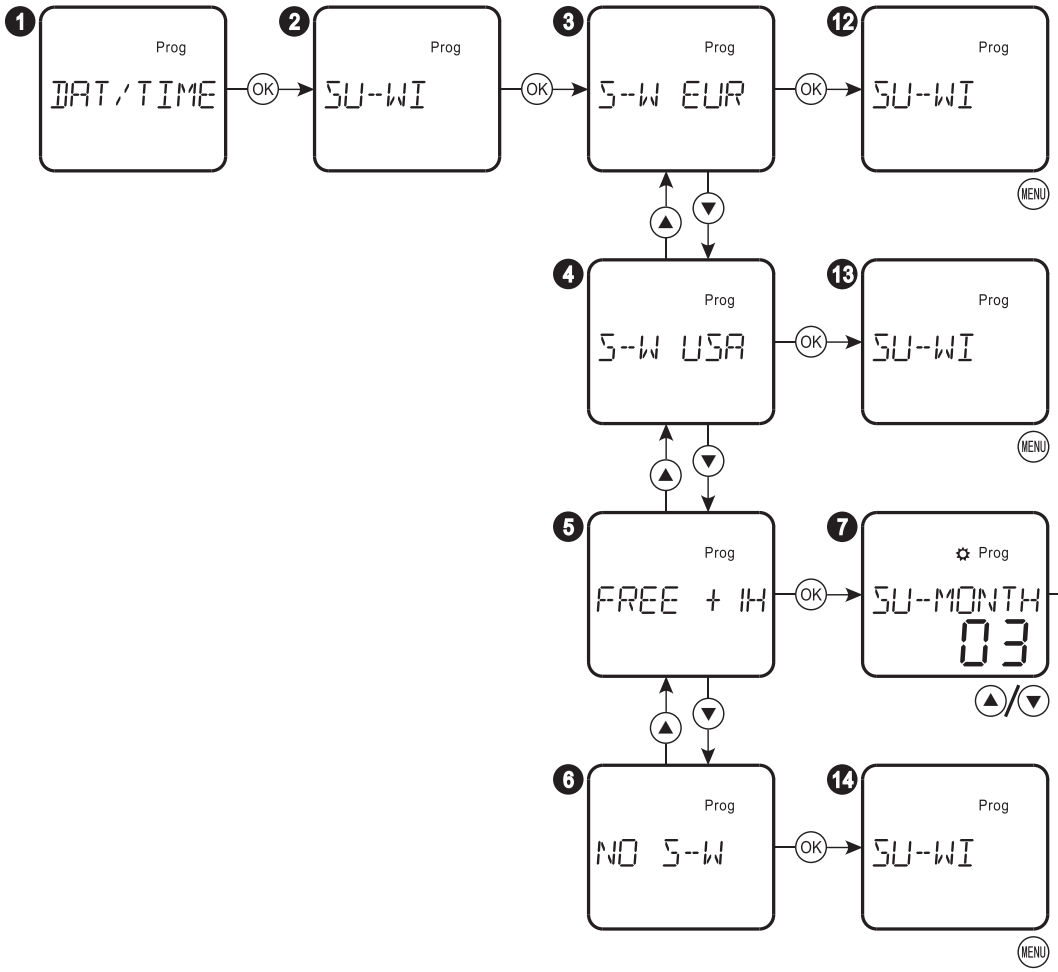
● Date setting



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



❶ Select **DAT/TIME** and press “OK” key.

❷ Select **SU-WI** and press “OK” key.

❸ ❹ ❺ ❻ Select the required summer/winter mode with “▲▼” keys and press“OK” key.

❼ Set the start month of summer time and press “OK” key.

❽ Set the start day of summer time and press “OK” key.

❾ Set the start month of winter time and press “OK” key.

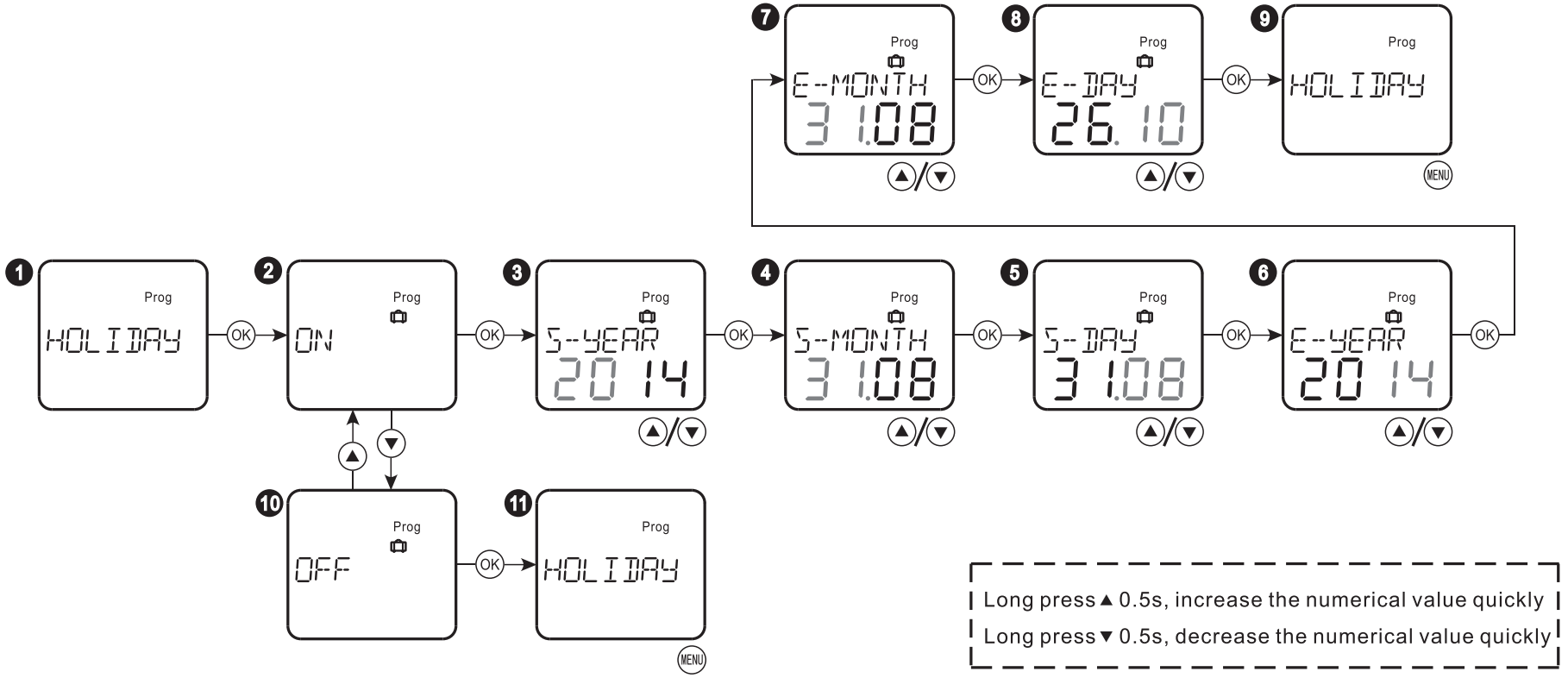
❿ Set the start day of winter time and press “OK” key.

⓫ ⓬ ⓭ ⓮ 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

12. Holiday setting

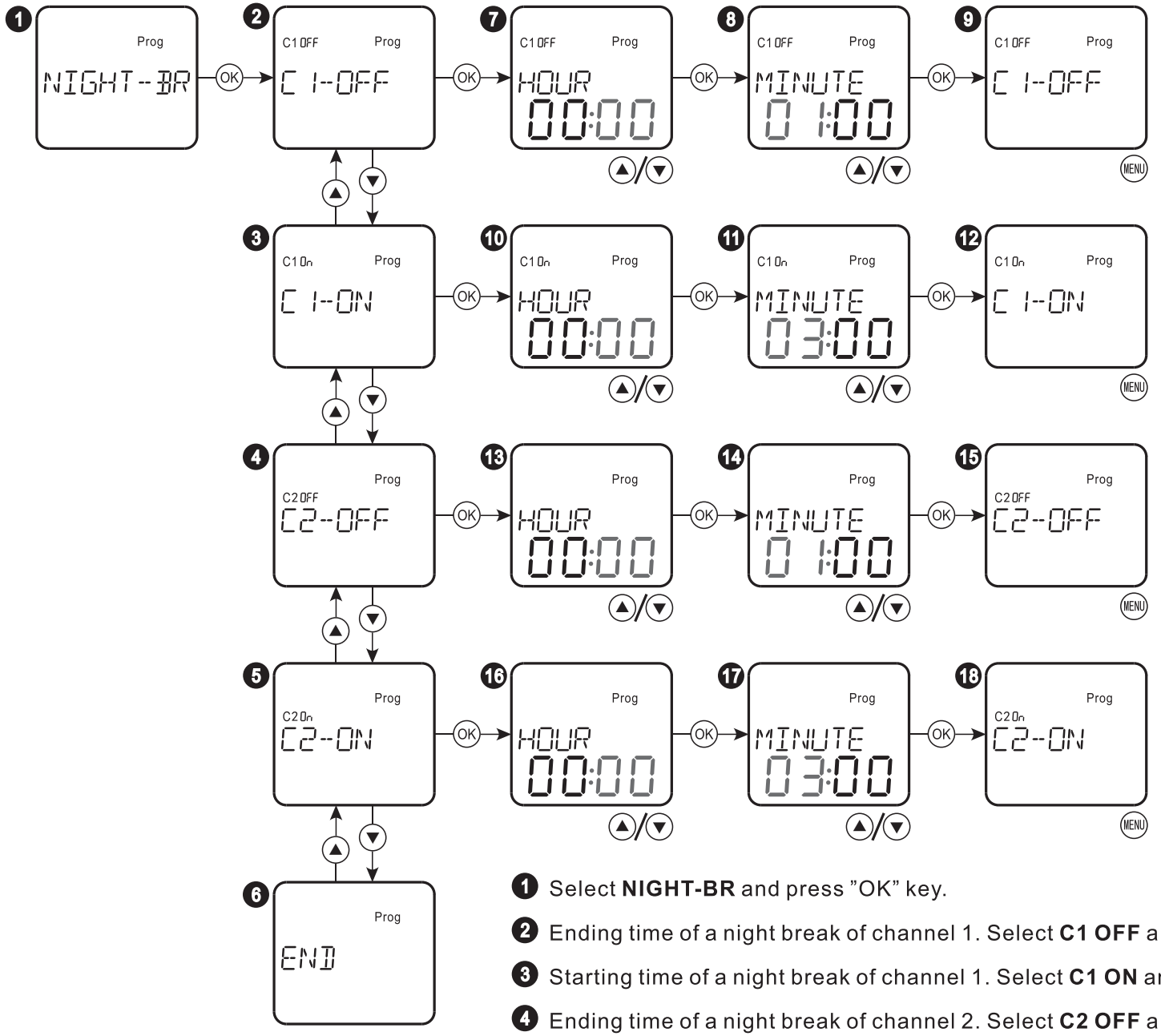
● Holiday mode



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

13. Program setting

● Night break setting



1. Select **NIGHT-BR** and press ”OK” key.
2. Ending time of a night break of channel 1. Select **C1 OFF** and press “OK” key
3. Starting time of a night break of channel 1. Select **C1 ON** and press “OK” key
4. Ending time of a night break of channel 2. Select **C2 OFF** and press “OK” key

Long press ▲ 0.5s, increase the numerical value quickly

Long press ▼ 0.5s, decrease the numerical value quickly

❺ Starting time of a night break of channel 2. Select **C2 ON** and press “OK” key

❻ End the setting and exit.

❼ ❿ ⓭ ⓰ Select adequate hour with “▲▼” keys and press “OK” key

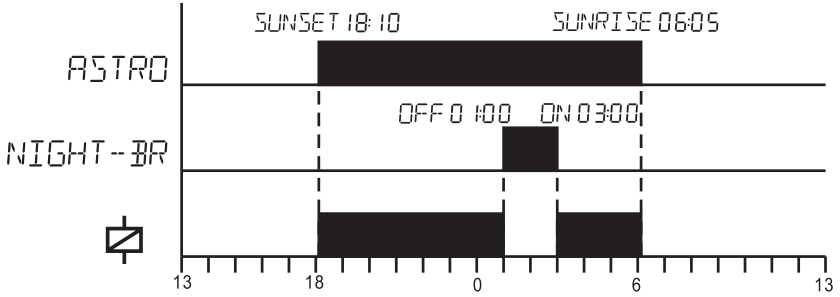
❽ ⓫ ⓮ ⓱ Select adequate minute with “▲▼” keys and press “OK” key

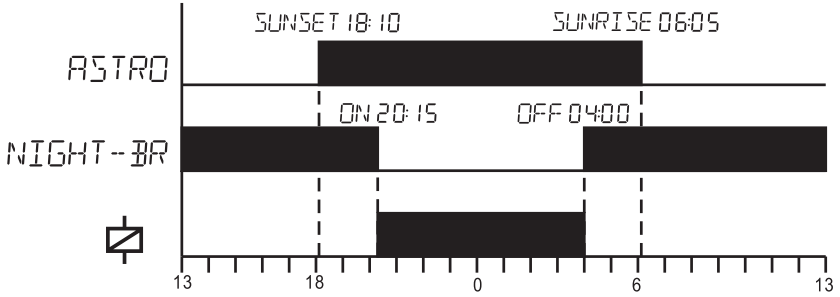
❾ Return to **C1-OFF** sub-menu. Exit from the setting by pressing “MENU” key

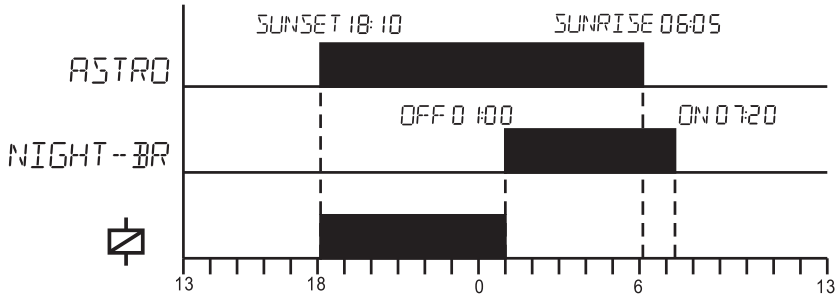
⓬ Return to **C1-ON** sub-menu. Exit from the setting by pressing “MENU” key

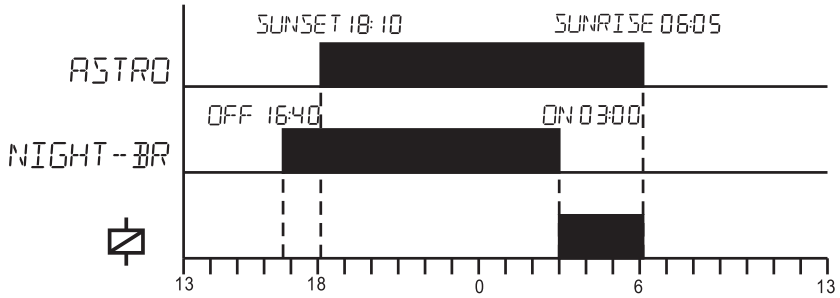
⓯ Return to **C2-OFF** sub-menu. Exit from the setting by pressing “MENU” key

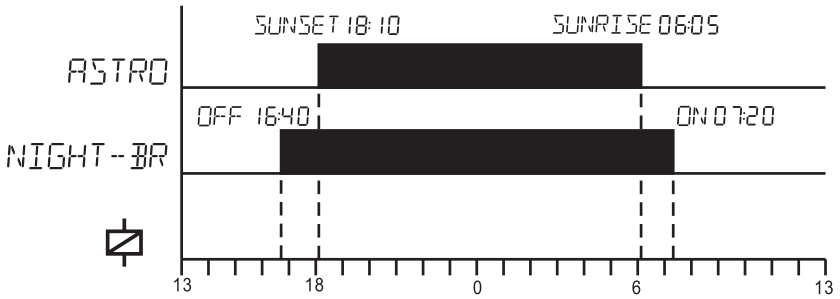
⓲ Return to **C2-ON** sub-menu. Exit from the setting by pressing “MENU” key

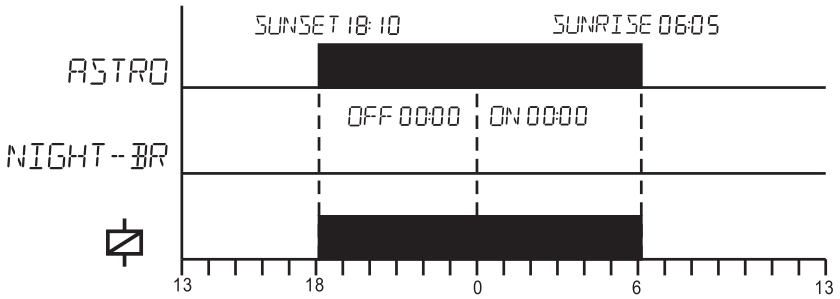






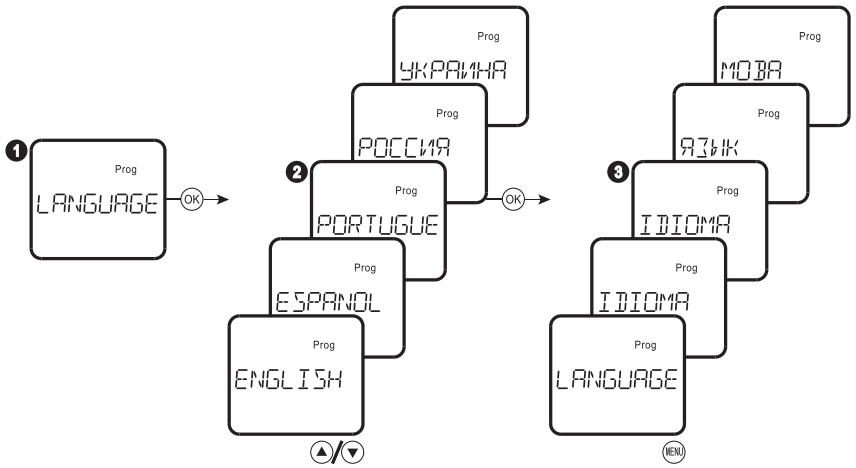






14. Language setting

● Language setting

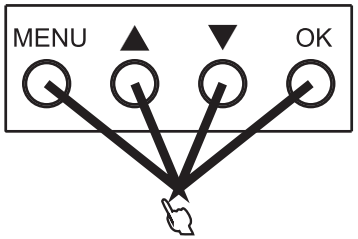


❶ Select **LANGUAGE** and press “OK” key.

❷ Select the desired language with “▲▼” keys and press “OK” key

❸ Exit from the setting by pressing “MENU” key.

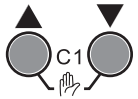
15.Reset



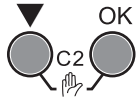
Press the four keys simultaneously for 3 seconds to reset automatically. The device was restored to factory settings.

16.Keys combination for MANUAL control

○ AUTO/MANUAL

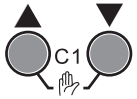


Press “▲▼” keys simultaneously, the output state of channel 1 switches to MANUAL.
When the output states of other operation modes was changed, Manual mode exits automatically.

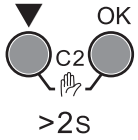


Press “▼” and “OK”keys simultaneously, th e output state of channel 2 switches to MANUAL.
When the output states of other operation modes was changed, Manual mode exits automatically.

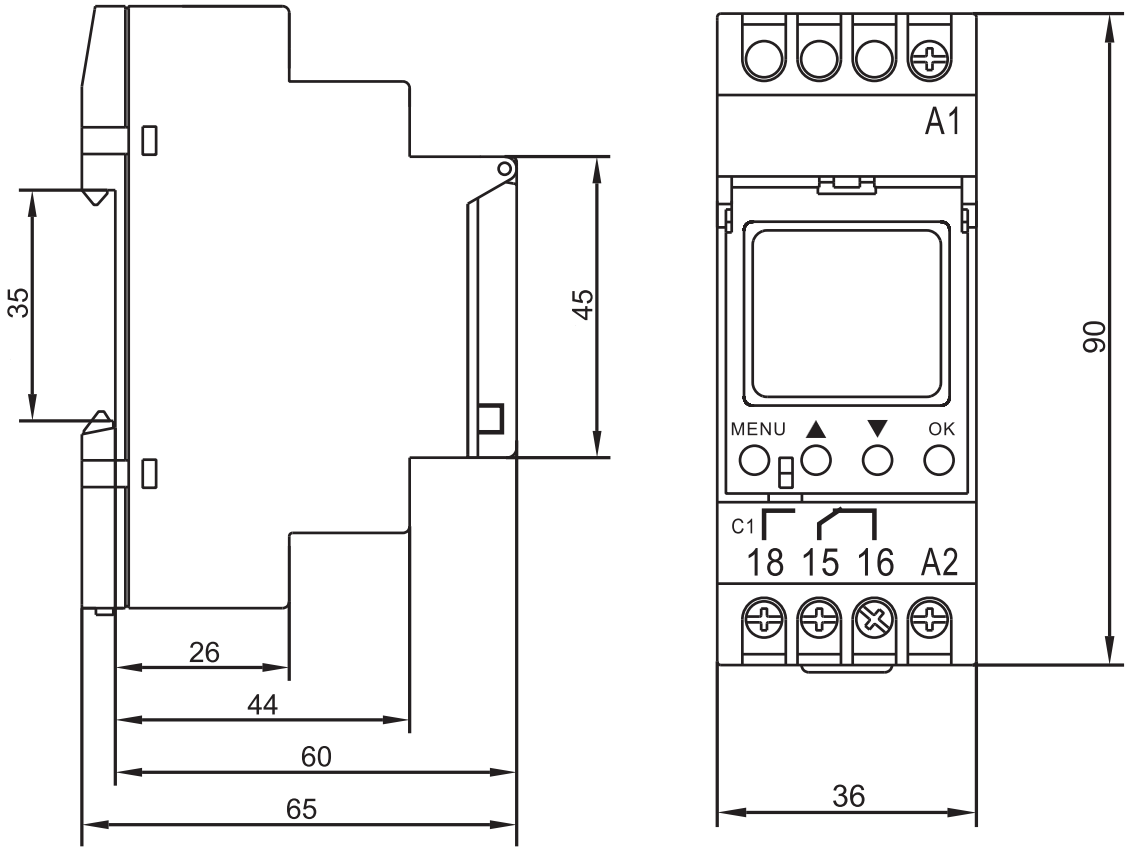
○ PERM ON/PERM OFF



Press “▲▼” keys simultaneously for 2s, the output state of channel 1 switches to PERM ON/PERM OFF.
✋ flashes.



Press “▼” and “OK”keys simultaneously for 2s, the output state of channel 1 switches to PERM ON/PERM OFF.
✋ flashes.

AUTO	AUTO mode
MANUAL	MANUAL mode
PERM ON	PERMANENT ON mode
PERM OFF	PERMANENT ON mode

17. Dimensions