

I. Product Overview

SolarRaptor CON-TH temperature, humidity and time controller is an intelligent product developed under the theoretical instructions of numerous reptile experts around the world and based on the feeding experience of reptile professionals over the years. It can realize day and night time-period temperature control, all-day humidity control and multi-time period timing control (a maximum of four periods). It provides power control for heating, cooling, humidifying, dehumidifying, timing devices in reptile pet and aquarium pet feeding, garden building, etc. It is an excellent intelligent management product in reptile pet feeding industry.

Thank you for choosing the products of SolarRaptor. Please read this Manual carefully and follow the instructions before operation.

II. Product List

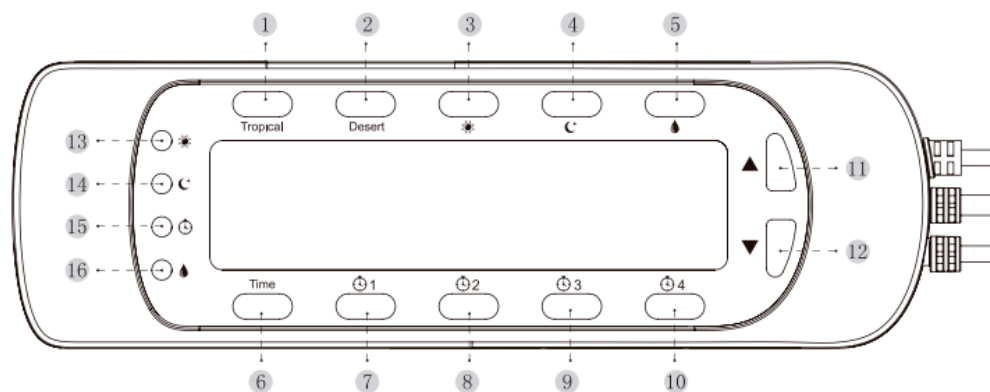
1. Temperature and humidity timing control box (control box): 1
2. Power output box: 1
3. Temperature sensor: 1
4. Humidity sensor: 1
5. Hook and loop: 1 pair
6. User's Manual: 1
7. C of C: 1
8. Warranty Card: 1

III. Product features

1. The integrated design adopting multiple control in temperature, humidity and timing can meet the needs of reptile pets for temperature, humidity, lighting and other environmental conditions.
2. Thanks to the “One Click” setting function, it can quickly switch to Tropical Mode or Desert Mode.
3. With separate day and night temperature control design, it can adequately simulate the diurnal temperature variations of reptile pets.
4. Both the temperature and humidity sensor connectors employ quick-plug design, which can realize fast storage and replacement, and simple and practical product maintenance to a certain extent.
5. The cooling delay protection function can prevent the cold air compressor from being damaged due to frequent start-up and significantly prolong the service life of the cooling device.
6. The over-temperature alarm function can intuitively show the discomforts of pets arising from the temperature being too high or too low thus to better protect your pet.
7. Relying on the power failure memory function, the parameters that have been set can be memorized in case of power off or sudden power failure so that the control box doesn't need to be reset in such a circumstance.
8. The overload protection function of power output box can eliminate the unsafe hazards caused by excessive load power or short circuit.

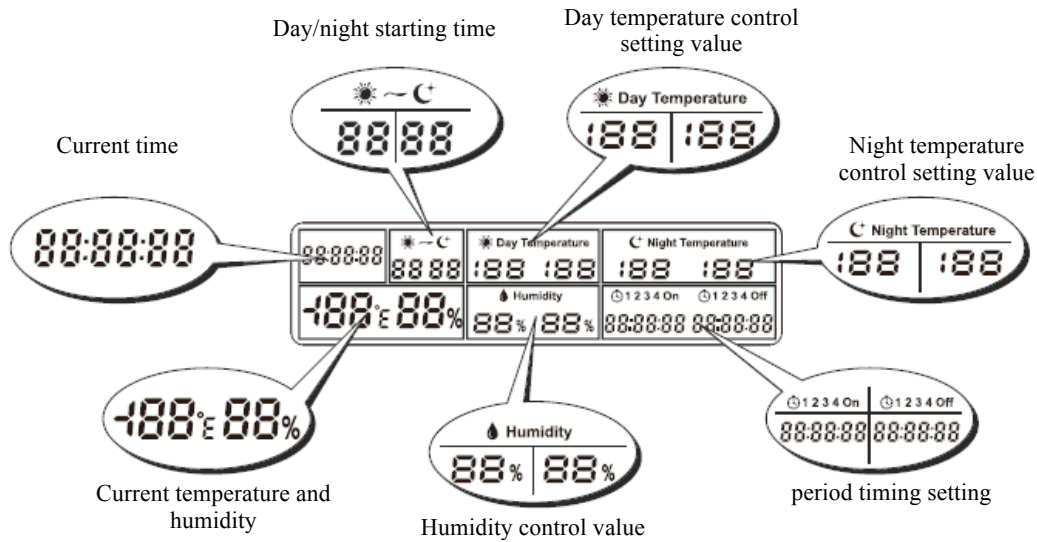
IV. Description of the operation interface of the control box and power output box

1. Description of the control box panel

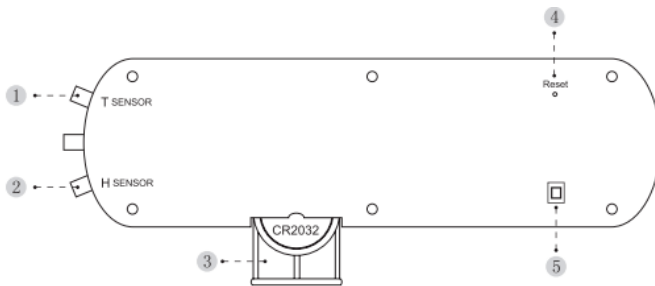


- | | | | |
|---|-------------------------------------|--------------------------------------|--|
| 1 Tropical mode key | 5 Humidity control setting key | 9 Period 3 time control setting key | 13 Day temperature control indicator light |
| 2 Desert mode key | 6 Time setting key | 10 Period 4 time control setting key | 14 Night temperature control indicator light |
| 3 Day temperature control setting key | 7 Period 1 time control setting key | 11 Increase | 15 Timing control indicator light |
| 4 Night temperature control setting key | 8 Period 2 time control setting key | 12 Decrease | 16 Humidity control indicator light |

2. Description of controller panel and LCD

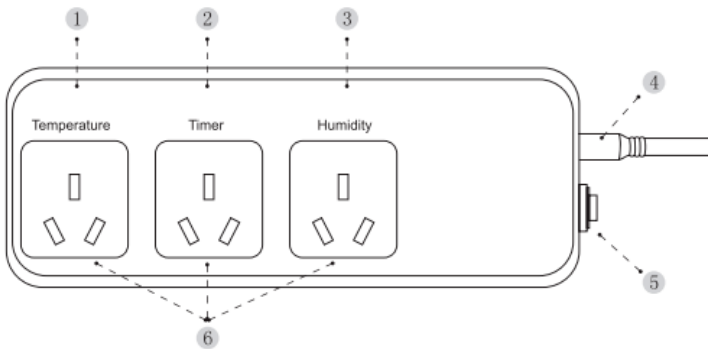


3. Back of the control box



- 1 Temperature sensor
- 2 Humidity sensor
- 3 Memory battery slot
- 4 Default reset button
- 5 Back light switch

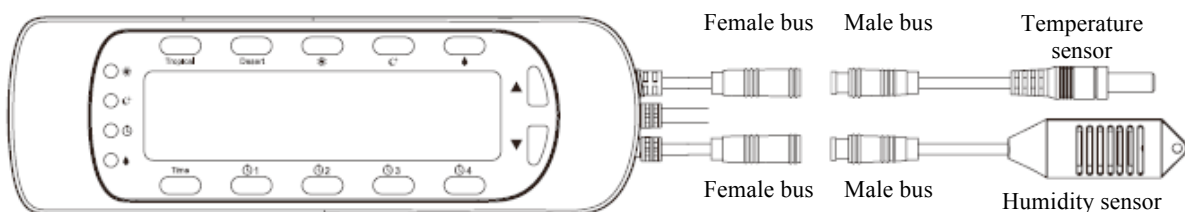
4. Power output box interface (American system)



- 1 Temperature control socket
- 2 Timer socket
- 3 Humidity control socket
- 4 Power cord
- 5 Fuse reset button
- 6 A max. of 400W for each socket

5. Mounting of waterproof quick-plug bus of temperature and humidity sensor.

- "T SENSOR" indicates the temperature sensor. It can be mounted by aligning the male and female bus to the slots and pressing hardly.
- "H SENSOR" indicates the humidity sensor. It can be mounted by aligning the male and female bus to the slots and pressing hardly.



V. Technical parameters and description

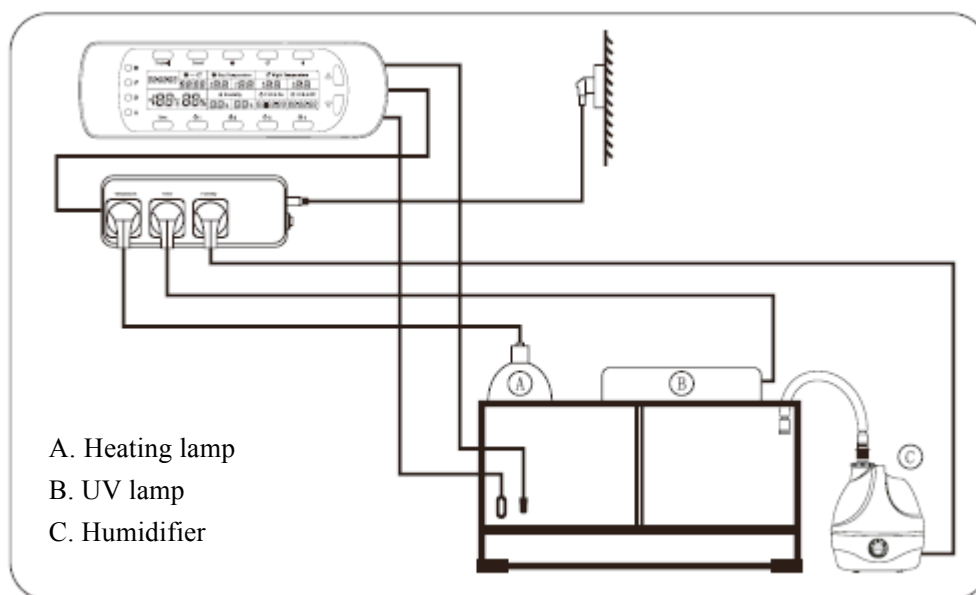
1. Description of the major parameters:

- Control box size: 160*50*23 mm
- Power output box size: 195*77*50 mm
- Working voltage: 110-240 V~ 50/60Hz
- Temperature control range: 0-50℃ (32~122°F)
- Temperature measurement range: -20~50℃ (-4~122°F)
- Temperature difference setting range: 1-15℃ (34~59°F)
- Over-temperature alarm value: ± 3 °C (± 6 °F) outside the setting range
- Humidity control range: 10-90%
- Temperature difference setting range: 5~30%
- Time is in 24-hour system.
- Day and night temperature, humidity and temperature control modes are set and controlled separately.
- When the temperature and humidity exceed the measurement upper limit, the LCD will display HH and make an alarm sound.
- When the temperature and humidity exceed the measurement lower limit, the LCD will display LL and make an alarm sound.
- In case of an sensor failure or no sensor installed, a flashing “-” will be displayed in the corresponding LCD area, and the power output will be automatically cut off with an alarm sound.
- In the setting state, the device will automatically save the parameters and return to the working state if no button is pressed within 30 seconds.
- The starting point for daytime must be lower than that for night.
- When the set timing time of two or more adjacent points is the same, the system only executes the setting time of the next point.
- When setting the value, long press “▲” or “▼” button to increase or decrease the number quickly.
- With overload protection function.
- With power failure memory function.
- The sensor detection frequency is once per every 5 seconds.

2.Original parameters / TROPICAL parameters / DESERT parameters and description

No.	Mode	Function Description	Default Value	TROPICAL Original Set Value	DESERT Original Set Value
1	Day on	Starting time of day	8:00	8:00	8:00
2	Night on	Starting time of night	18:00	18:00	18:00
3	Day temperature on	Power-on day temperature	86°F/30°C	82°F/28°C	86°F/30°C
4	Day temperature off	Power-off day temperature	91°F/33°C	86°F/30°C	91°F/33°C
5	Night temperature on	Power-on night temperature	73°F/23°C	75°F/24°C	73°F/23°C
6	Night temperature off	Power-off night temperature	77°F/25°C	79°F/26°C	77°F/25°C
7	Humidity on	Power-on humidity	30%	50%	30%
8	Humidity off	Power-off humidity	40%	60%	40%
9	T Timer 1 ON	Timer 1 turn-on time	08:00:00	08:00:00	08:00:00
10	T Timer 1 OFF	Timer 1 turn-off time	18:00:00	18:00:00	18:00:00
11	T Timer 2 ON	Timer 2 turn-on time	23:59:59	23:59:59	23:59:59
12	T Timer 2 OFF	Timer 2 turn-off time	23:59:59	23:59:59	23:59:59
13	T Timer 3 ON	Timer 3 turn-on time	23:59:59	23:59:59	23:59:59
14	T Timer 3 OFF	Timer 3 turn-off time	23:59:59	23:59:59	23:59:59
15	T Timer 4 ON	Timer 4 turn-on time	23:59:59	23:59:59	23:59:59
16	T Timer 4 OFF	Timer 4 turn-off time	23:59:59	23:59:59	23:59:59

3. Operation diagram



4. Operation description:

- This product can turn on and off the devices on three-way power supplies by controlling three-way power outputs. As shown in the diagram above, control the heating lamp, UV lamp and humidifier respectively at three ways.
- Operation description of the device at way A (heating lamp): First, set the current time based on which we can determine whether to enable the day temperature controller or the night temperature controller, and then set the power-on temperature and power-off temperature with the day temperature controller or the night temperature controller. If the current temperature is \leq the power-on temperature, start way A power output and the heating lamp will start working. Conversely, if the temperature is \geq the power-off temperature, stop way A power output and the heating lamp will stop working.
- Operation description of the device at way B (UV lamp): Set the time by timer. A maximum of 4 time periods can be set (four power-on time and four power-off time). If the current time reaches the power-on time value, start way B power output and the UV lamp will start working. Conversely, if the current time reaches the power-off output value, stop way B power output and the UV lamp will stop working.
- Operation description of the device at way C (humidifier): Set the humidity. If the current humidity is \leq the power-on humidity, start way B power output and the humidifier will start working. Conversely, if the current humidity is \geq the power-off humidity, stop way B power output and the humidifier will stop working.

VI Operation method

Before using for the first time, make sure the power is plugged in and get familiar with the setting method according to the instructions below. (The diagram is for reference only)

1. Beginner (default setting)

- Tropical mode: Long press “Tropical” for 3 seconds to directly call the preset temperature and humidity values in the Tropical mode.

(Please refer to Chapter IV: Technical parameters and description, clause 2 "Original parameters / TROPICAL parameters / DESERT parameters and description")

09:30:08	☀ ~ ☾		☀ Day Temperature		☾ Night Temperature	
	08	18	82	86	75	79
83 °F 55%		💧 Humidity		⌚ 1 2 3 4 On	⌚ 1 2 3 4 Off	
		50%	60%	08:00:00	18:00:00	

- Desert mode: Long press “Desert” for 3 seconds to directly call the preset temperature and humidity values in the Desert mode.

(Please refer to Chapter IV: Technical parameters and description, clause 2 "Original parameters / TROPICAL parameters / DESERT parameters and description")

09:30:08	☀ ~ ☾		☀ Day Temperature		☾ Night Temperature	
	08	18	89	91	73	77
90 °F 35%		💧 Humidity		⌚ 1 2 3 4 On	⌚ 1 2 3 4 Off	
		30%	40%	08:00:00	18:00:00	

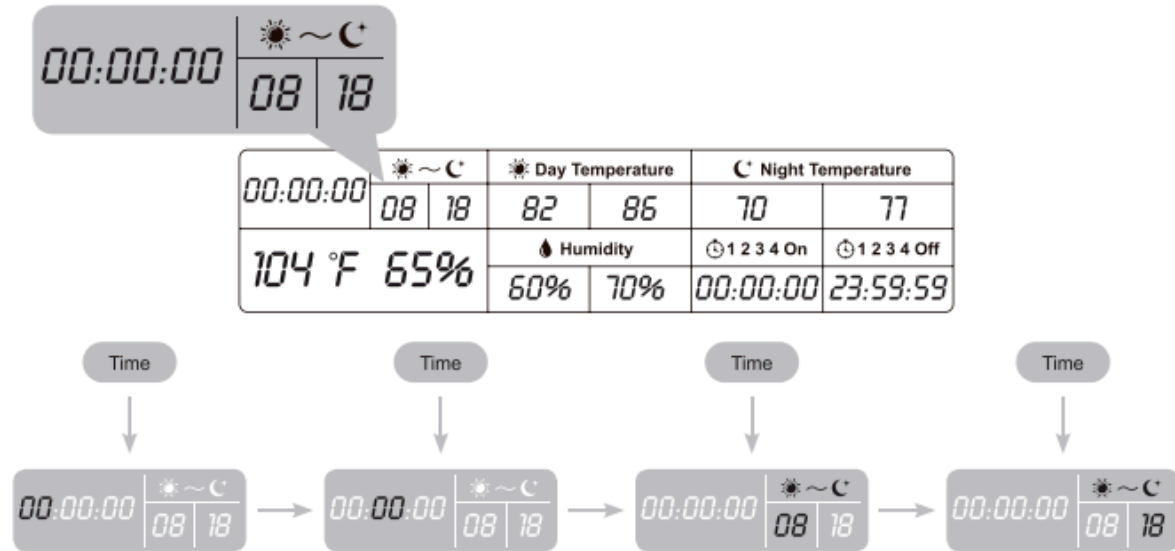
- After selecting the above two default modes, if you want to set the current time, please refer to the corresponding setting method for the advanced user as follows.

2. Advanced user (user defining)

- Settings of current time, day and night starting time:

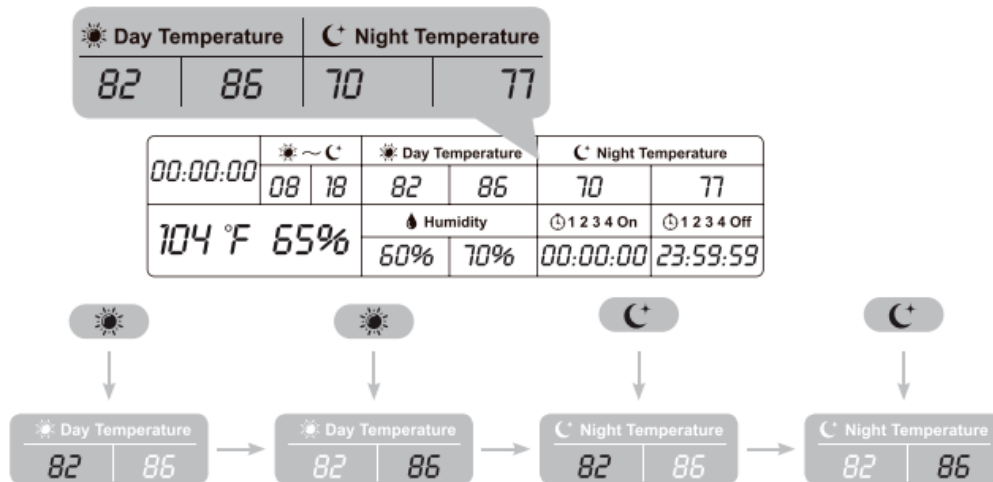
Press the “Time” button in sequence, and the corresponding hours, minutes corresponding to current time, day starting time and night starting time will flash on the LCD in sequence.

When the number is flashing, you can adjust it by pressing “▲” or “▼”, increasing or decreasing by 1 each time. Long press to increase or decrease the value quickly.

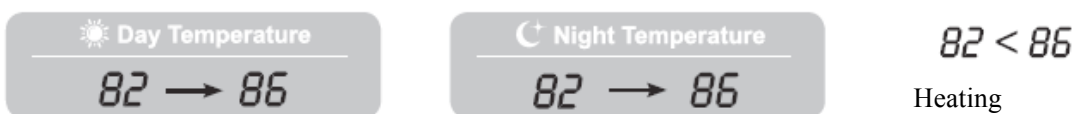


- Day and night temperature setting:

Press the “☀” and “☾” in sequence. The corresponding day temperature and night temperature will flash in sequence on the LCD. When the number is flashing, you can adjust it by pressing “▲” or “▼”, increasing or decreasing by 1 each time. Long press to increase or decrease the value quickly.

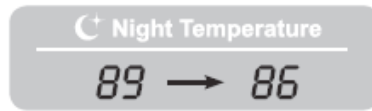
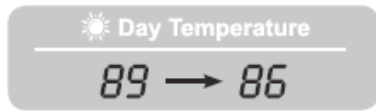


When the first value is less than the second value under the symbols “☀ Day Temperature” and “☾ Night Temperature”, it means heating mode.



When the first value is greater than the second value under the symbol “☀ Day Temperature”, it means cooling mode.

The cooling mode is started with 3 min. delay every time to prevent the compression pump of the cooling device from being damaged due to frequent startup in a short time.

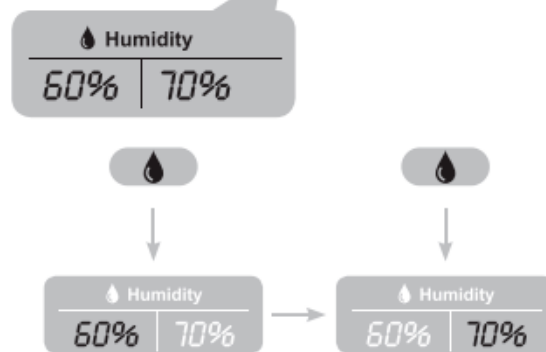


89 > 86
Cooling Mode

- Humidity setting:

Press the “” in sequence. The corresponding power-on/off humidity will flash in sequence on the LCD. When the number is flashing, you can adjust it by pressing “▲” or “▼”, increasing or decreasing by 1 each time. Long press to increase or decrease the value quickly.

00:00:00	☀ ~ °C	☀ Day Temperature	☾ Night Temperature
08 18	82 86	70 77	
104 °F	65%	Humidity	⌚ 1 2 3 4 On ⌚ 1 2 3 4 Off
	60% 70%	00:00:00	23:59:59



Continue to press “”, the value in the humidity control setting area will stop flashing and the set value will take effect immediately. When the first value under the “ Humidity” symbol is less than the second value, it means humidifying mode.



When the first value under the “ Humidity” symbol is greater than the second value, it means dehumidifying mode.



- Power-on and power-off time values for four time periods:
Power-on and power-off time values for time period 1:

Press the “ 1” button in turn, and the hours, minutes, and seconds of the power-on and power-off time of time period 1 will flash on the LCD in sequence. When the number is flashing, you can adjust it by pressing “▲” or “▼”, increasing or decreasing by 1 each time. Long press to increase or decrease the value quickly.

00:00:00	☀~°C	☀ Day Temperature		°C Night Temperature	
08	18	82	86	70	77
104 °F 65%		💧 Humidity		🕒 1 2 3 4 On	🕒 1 2 3 4 Off
		60%	70%	00:00:00	23:59:59



T1 T2



The setting method of power-on and power-off time of time period 2, 3 and 4 is the same as above.



T3 T4 T5 T6 T7 T8

Notes:

A total of 8 time points should be set for the power-on and power-off time of four time periods. If the power-on time of time period 1 is set to T1, the power-off time of time period 1 will be T2; the power-on time of time period 2 will be T3, the power-off time of time period 2 will be T4; the power-on time of time period 3 will be T5, the power-off time of time period 3 will be T6; the power-on time of time period 4 will be T7, and the power-off time of time period 4 will be T8.

Then, when we set the values, we must make sure that $T1 \leq T2 \leq T3 \leq T4 \leq T5 \leq T6 \leq T7 \leq T8$.

- Description of over-temperature alarm function:

Over-temperature alarm:

When the ambient temperature is +6°F/3°C (fixed value) above the preset upper temperature limit for some reasons, the current temperature value on the LCD will flash and make an alarm sound.

For example, if the preset upper temperature limit is 35°C, the over-temperature alarm will be made at 38.1°C. You can press any key to turn off the alarm sound, and set other values after turning off the audible alarm.

Ultralow temperature alarm:

When the ambient temperature is -6°F/3°C (fixed value) below the preset lower temperature limit for some reasons, the current temperature value on the LCD will flash and make an alarm sound.

For example, if the preset temperature is 30°C, the ultralow temperature alarm will be made at 26.9°C. You can press any key to turn off the alarm sound, and set other values after turning off the audible alarm.

VII Safety and maintenance

1. Check if there is any damage, deformation or other defects of the device and sensor cables. If yes, it is suggested not to use, but report to the manufacturer or its service agent or relevant professional for detection and maintenance to avoid danger.
2. Do not install or store the device in an environment exposed to the sun, rain or freezing temperatures (indoor use only).
3. Confirm whether the voltage conditions meet the requirements before connecting the device.

4. Before operating the device, make sure that the temperature and humidity sensor of the controller have been properly installed and the electrical devices on the power output box have been securely connected as required.
If the electrical devices on the power output box are turned on or off frequently, the service life of the lamps, e.g. lamp bulb or spot light will be shortened when using the temperature controller.
To further protect your device, it is recommended to choose G.F.C.I (ground fault circuit interrupter) and surge protectors.
5. Carefully inspect the device after the installation. If there is any water observed on the product, do not power on (special attention should be paid when using aquatic products). It is recommended to use the products in a dry environment.
6. Protect the device from moisture or splashed water during use.
7. If any extension cord is used, the extension cord should be of appropriate rating (current and weather rating). Place the wires with care to avoid being torn or pulled.
8. When toggling the power switch and plugging the power cord from the socket, make sure your hands are dry. Do not pull the cable out of the socket forcibly.
9. When the product is not in use, unplug the product from the power socket.
10. To avoid accidents, please check the temperature and humidity settings regularly to eliminate the adverse effects caused by control system failures as far as possible.
11. This product is not suitable to be used alone by persons who lack normal behavior ability including children, or persons who are mentally disturbed or lacking in experience or relevant knowledge. The persons above can only use this product under the supervision and direction of an experienced adult to ensure safety. Children must be closely monitored to ensure that they are not playing with the device.
12. All accessories of this product are not recommended for other purposes, which may cause unsafe factors.
13. If you have any questions about the electrical installation or safety of this product, please consult a qualified electrician. Please see the warranty conditions in the warranty card attached to this Manual. All electrical products are equipped with a special plug. The plugs may not be modified or removed in any way otherwise they are not covered by the warranty service.

VIII. Troubleshooting

1. The LCD does not display the time after the battery insulating strip is removed:
 - Check whether the battery (CR2032) is properly placed in the slot.
 - If it still does not work, try replacing the battery (CR2032).
2. The LCD fails to display normally after inserting the power (only display the time at the upper left corner):
 - Check if the plug is properly plugged in.
 - Check if the power socket is properly powered.
 - Check if the fuse reset button pops up. If yes, press to reset.
 - Press the “▲” and “▼” buttons simultaneously, and then use an ejector pin to press the RESET button on the back of the control box to reset.
 - If all attempts fail, replace the entire device.
3. The temperature and humidity values are displayed as "-":
 - Check if the temperature or humidity sensor is reversely connected. If yes, exchange to the right position.
 - Check if there is any breakage, damage, or severe indentation on the sensor cable. If yes, please replace the sensor.

Time powered battery:

It is recommended to replace the battery every six months (CR2032).

Reset to factory settings:

Press the “▲” and “▼” buttons simultaneously, and then use an ejector pin to press the RESET button on the back of the control box to reset.

IX. After-sales services

This product is warranted for one year from the date of purchasing.

The warranty is limited to product failure but does not cover damages to the product caused by man-made damage or misoperation.

X. Important safety information

[Warning] Failure to follow these safety instructions may result in damage to the product and, in severe cases, personal safety.

[Operation] Please read all safety information before using the product.

[Maintenance] Do not attempt to disassemble it by yourself. In case of product damage or failure, please contact ETAN or its authorized dealer.

You can find out more about getting services by: www.ZooMonster.com

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