LZTKZQ-01

Detailed Description

LZTKZQ-01

Detailed Description

User Manual

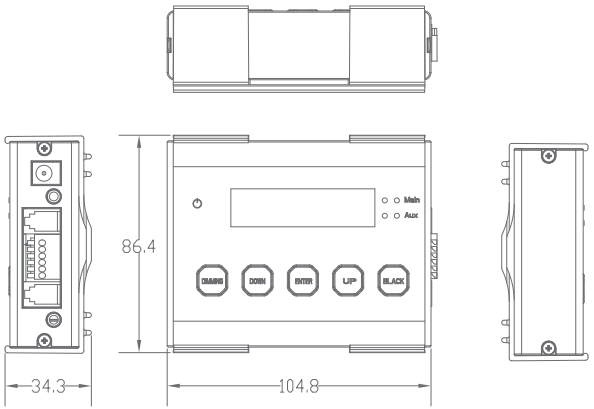
1. Specification

Input Volts	Adapter:100V-240V AC 50/60Hz -5V DC
Select ballast type	315W/400W/600W/ 630W/750W/1000W/LED
Outputs	2
Temperature sensors	2
Number of ballasts per output	50
Total number of ballasts	100
External Contactor Modules	2 optional

2. Parameter

Case Length	104.8mm	4.13"
Case Width	86.4mm	3.40"
Height	34.3mm	1.35"
Weight	0.25kg	0.55lb

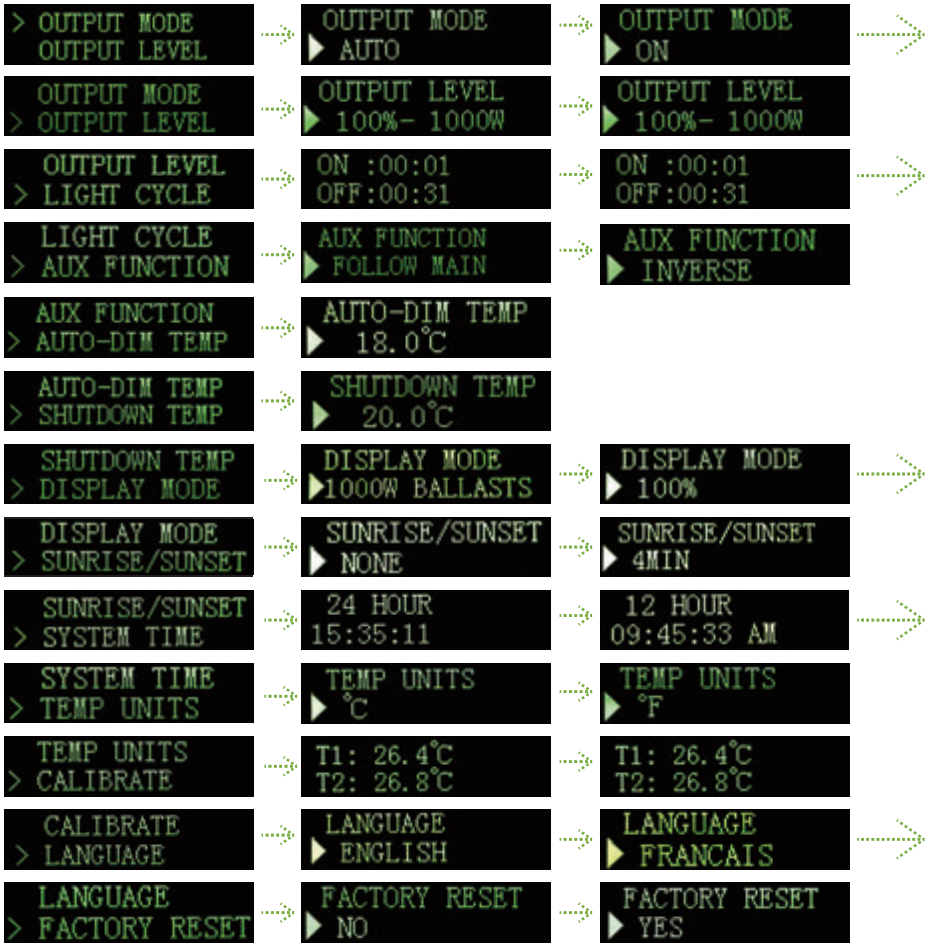
Diagram



Sunrise/set

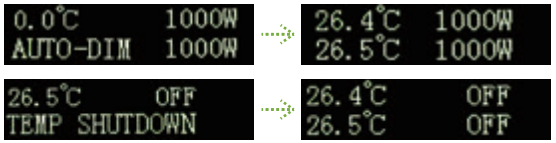
TIME

12. Appendix I – Overview of all screens on display



FAILURES

TEMP



3. Complete lighting control at your fingertips

Using a Master controller to control your e-series fixtures offers you maximum control, ease of using, plug and play installation and safety. Just connect the controller cables to the fixtures with the included T-splitter (see diagram), set the dials on the fixtures to EXT (Externalcontrol), plug the controller and the fixtures directly into mains and you are set to go.

The controller can switch all the interconnected fixtures on and off with its internal timer, adjust them to your required output level (in percentage or exact output power) and even simulate sunrise and sunset to gradually adjust the climate in your grow room when your lights go on or off. This electronic controller replaces expensive lighting timers and contactors while preventing ballast current in-rush when switching on your lights.

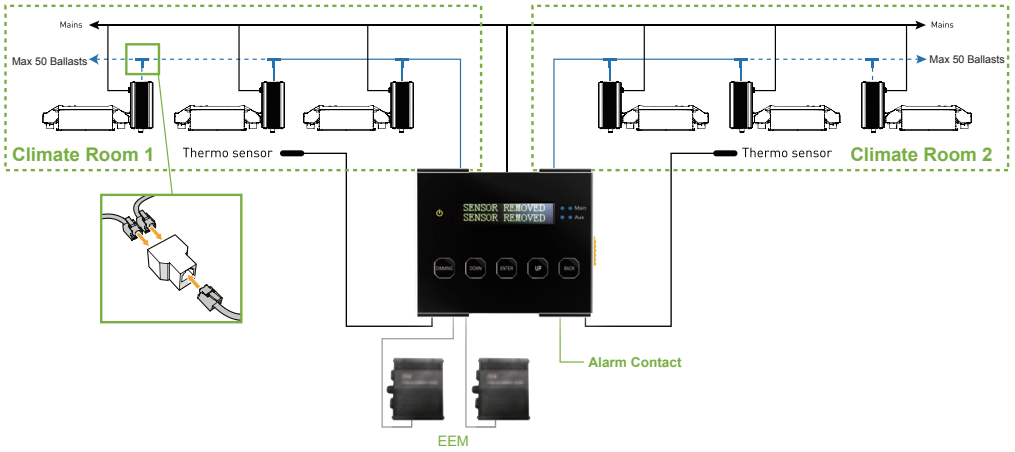
Two very important features are the autodim function and emergency shut-down. When the temperature in your grow room rises beyond the control level of your climate control your crop can be damaged beyond recovery. The temperature probe senses this and will automatically dim.

The lights to not overshoot your safe temperature, and maintain it. The display and warning LED indicate when this happens, and also indicate if this has happened while you were away so you can correct the problem. If for any reasons your climate control completely fails and the temperature rises to unacceptable levels the system will perform an emergency shutdown of all connected equipment. The alarm contact of the controller can be connected to you alarm system for instant notification.

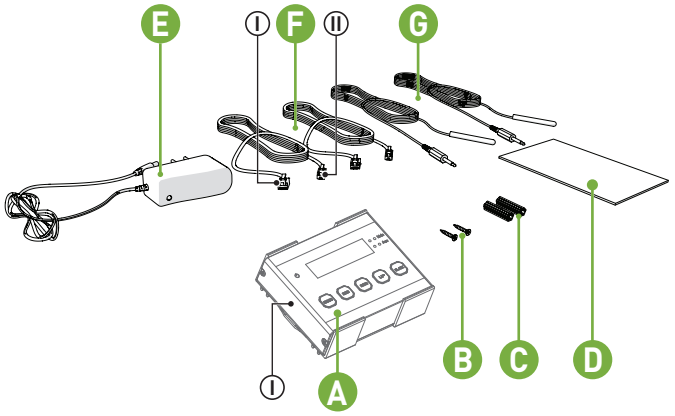
You can connect all your e-series fixtures to one controller, even divided in 2 separate rooms with their own temperature sensor for auto-dim at high temperature and emergency shutdown at extreme temperature. There are different controllers available to suit your specific requirements.

For auxiliary equipment you can connect up to two accessory EEM contactor modules, one to switch equipment when lights are on (for example a humidifier, CO2 equipment or air conditioning) and one for during lights off (for example a room heater).

4.Master controllers



5. Components

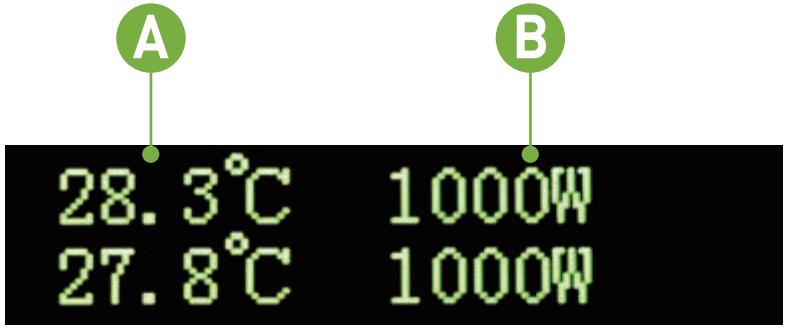


A. Master controller EL2
   I. Mounting plate
B. 2x Countersunk screw
C. 2x Plug
D. Manual
E. 120-240V AC - 5V DC power adapter (2000mA)
F. 2x Controller cable (5m/16ft)
   I. RJ14 (6P4C) plug (connect to ballasts)
   II. RJ9 (4P4C) plug (connect to controller)
G. 2x Temperature sensor with cable (5m/16ft)

11. Interpreting controller information

11.1 Interpreting controller information

The default screen displays the temperature measured by one or two temperature sensors (21A). The screen also displays the output of both its channels, either in % or in Watts (21B). If an error occurs, it may also be displayed in the display. (See paragraphs 7.3 and 7.4 for potential error messages).



Default screen

11.2 Show system time

1). Press an arrow key or in the default screen to show the system time
2). Press an arrow key or again to return to the default screen.

10.9 Activate or deactivate the lights manually or set automatic mode

⚠ **Warning!** When replacing a light, setting the ballast to “Off” to override the clock is insufficient! ALWAYS disconnect the ballast from the mains.

⚠ **Warning!** When the controller “Output mode” is set to “on” or “off”, the temperature safety features of the controller will not work.

Note: The on and off mode are included to allow for replacement of ballasts and testing of lamps.

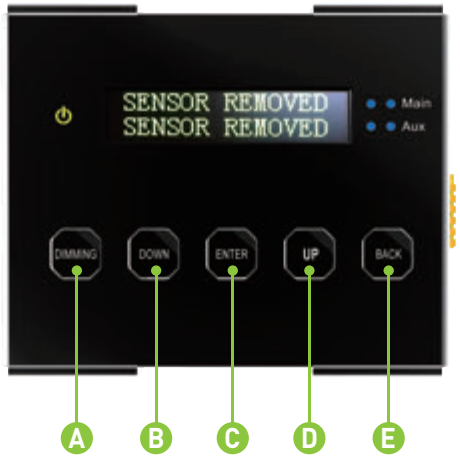
1).Press “enter”, the controller menu will open
2). Press the arrow keys ▲▼ to locate “Output mode” and press “enter”
3). Press the arrow keys ▲▼ to switch between “auto”, “on” and “off”
-- Select “on” to turn all the lights on. This setting will ignore temperature safety settings. (see paragraph 6.4)
-- Select “off” to turn all the lights off
-- Select “auto” to follow the programmed light cycle (see paragraph 6.2) and temperature safety settings (see paragraph 6.4)
4). Press “enter” to confirm your choice.

10.10 Resetting the controller to factory settings

The factory reset will return all values to factory settings. It will also undo any changes to the temperature calibration of the temperature sensors.

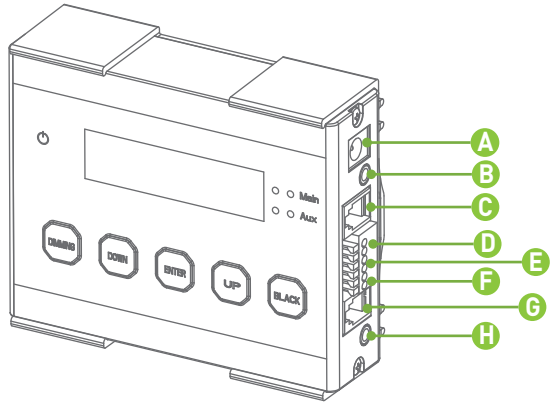
1). Press “enter”, the controller menu will open
2). Press the arrow keys to locate “Factory Reset” and press “enter”. The “Factory Reset” screen opens
3). Press the arrow keys to switch to “yes” and press “enter”.
The controller is now reset to factory settings.

6. Controls



	Key	Function
A	Dimmng	View and adjust output level
B	Down	Navigate down in menu/decrease value
C	Enter	Go to menu/confirm
D	Up	Navigate up in menu/increase value
E	Back	Navigate back in menu/cancel/reset

7. Indications

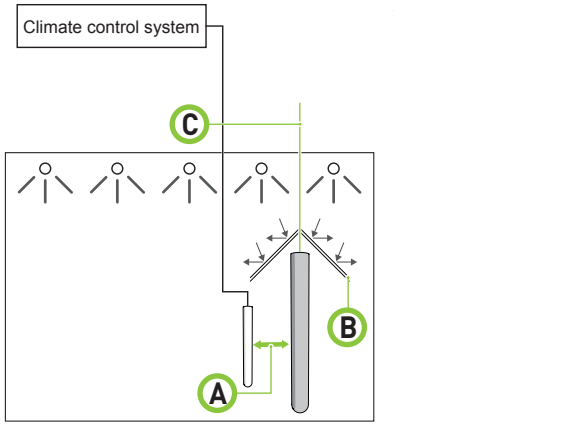


A. 5V DC input
B. 3,5 mm port main temperature sensor (T1)
C. RJ9 (4P4C) Main port for controlling up to 50 ballasts
D. Cage clamp connector EEM1 (output is active when main channel is on)
E. Cage clamp connector EEM2 (output is active when main channel is off)
F. Cage clamp alarm Normally Open (potential free contact)
G. RJ9 (4P4C) Auxiliary port for controlling up to 50 ballasts
H. 3,5 mm port auxiliary temperature sensor (T2)

8. Installing the temperature sensor in “Follow mode” (one room)

Only one of the provided temperature sensors is needed in “Follow mode”.

1). Place the provided temperature sensor as close as possible to the sensor of the existing climate control system, so both sensors will measure the same temperature (4A)
2). Ensure the sensor is covered from the light, as this will disrupt temperature measurements. Use a hood if necessary (4B).
A template for a hood is included on the last page
3). Insert the plug of the temperature sensor into the T1 port (4C)
4). The temperature measured by the sensor will be displayed on the controller display.



Placing a temperature sensor in “follow mode”

Note: The displayed temperature may take some time to level out.
Note: If the length of the sensor cable is insufficient to reach the controller, try to relocate the controller. If this is not possible, the sensor cable may be lengthened an extra 5 meters by using a standard 3,5 mm jack extension cable. If the message “sensor removed” appears, the plug of the sensor is not (fully) plugged in. Plug the sensor in completely.
Note: If the message “sensor failure” appears, the sensor is defect. Replace the sensor.

1). Press “enter”, the controller menu will open
2). Press the arrow keys ▲▼ to locate “Auto-Dim Temp” and press “enter”. The auto-dim temperature screen opens
3). Press the arrow keys ▲▼ to increase or decrease the temperature.
4). Press “enter” to confirm.

Once the auto-dim temperature is reached, the controller will automatically start dimming the lights. No auto-dim will occur if the shutdown temperature is set at the auto-dim temperature.

Note: the auto-dim will stay on until half a degree Celsius / 0,9 degrees Fahrenheit under the set temperature.

10.7 Setting safety shutdown temperature

Note: The default shutdown temperature is set at 35 0C /95 0F.
Note: The safety shutdown temperature of the controller cannot be set lower than the auto-dim temperature.
⚠ **Warning!** Always set the shutdown temperature so it does not accidentally deactivate the lights.
⚠ **Warning!** After a shutdown, a manual reset is required.

1). Press “enter”, the controller menu will open
2). Press the arrow keys ▲▼ to locate “Shutdown Temp” and press “enter”. The “Shutdown temperature” screen opens
3). Press the arrow keys ▲▼ to increase or decrease the temperature.
4). Press “enter” to confirm.

Once the shutdown temperature is reached (20), the controller will automatically shut down all the lights and all the equipment connected to the EEMs. The A-NO alarm contacts will also switch (see paragraph 4.5).

10.8 Setting the sunrise and sunset period

To allow crops to adjust to either a lights-on or lights-off period, a sunrise and sunset period may be set. During this period, the light intensity increases from 50 percent to up to the desired intensity.

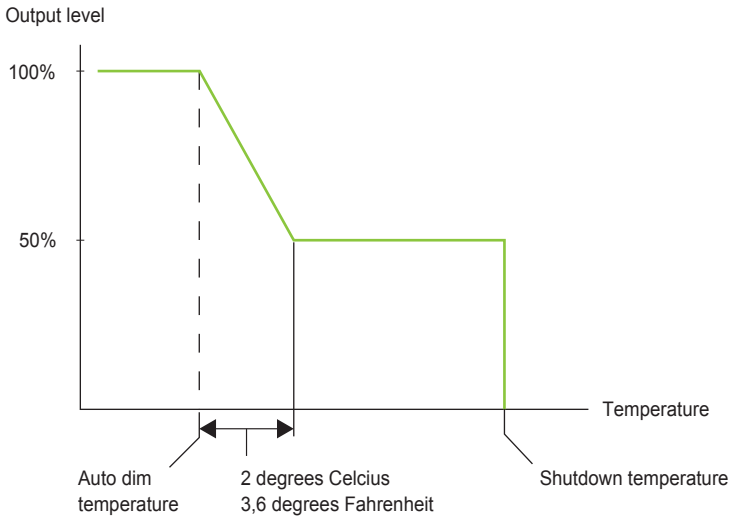
1). Press “enter”, the controller menu will open
2). Press the arrow keys ▲▼ to locate “Sunrise/sunset” and press “enter”. The “Set ramp time” screen opens
3). Press the arrow keys ▲▼ to increase the ramp up/down time to up to 30 minutes.
0 minutes indicates no ramp up/down time
4). Press “enter” to confirm your choice.

10.5 Set temperature safety settings

When the temperature in a climate room gets above a certain value, the planted crops will start to degrade. If this rise in temperature occurs, it is desirable to dim or shut down the lights in the climate room to reduce the temperature in the room.
The controller offers the possibility to set a temperature at which it will dim the lights and a temperature on which it will shut down the lights. Through its temperature sensors, it can sense when a harmful temperature is reached.
To set the auto-dim temperature, go to paragraph 6.4.1. To set the shut-down temperature, go to paragraph 6.4.2.

10.6 Setting the auto-dim temperature

- **Note:** The default auto-dim temperature is set at 30 0C / 86 0F.
- **Note:** The auto-dim temperature cannot be set higher than the shutdown temperature.
- **Note:** The auto-dim will decrease the light intensity to 50% over a span of two degrees Celsius or 3,6 degrees Fahrenheit (20)
- **Warning!** Always set the auto-dim temperature at least two degrees Celsius / 3,6 degrees Fahrenheit above the temperature of the climate control system. This will prevent the controller from interfering with the climate control system.



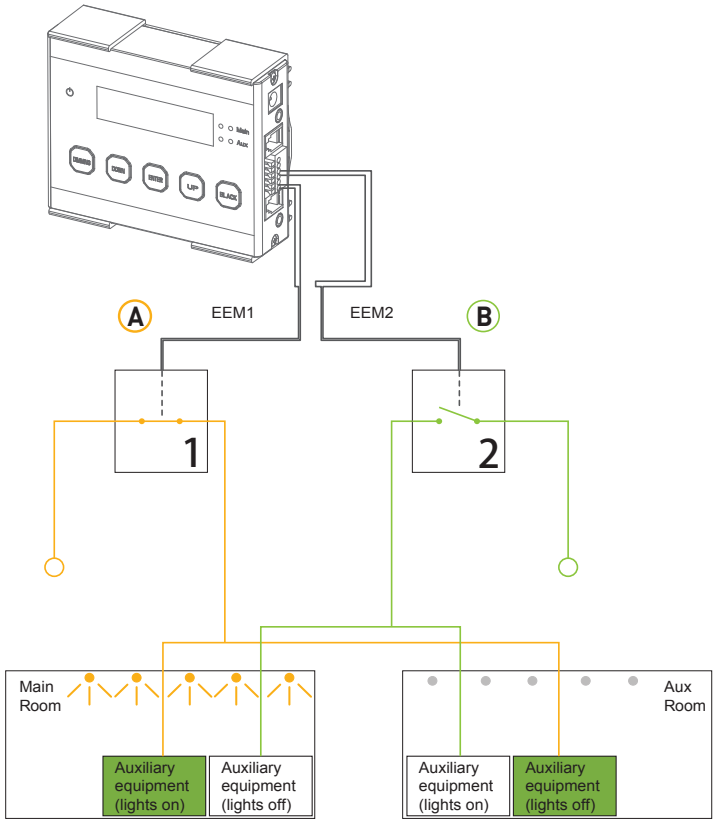
Auto-dim and shutdown behavior

8.1 Connecting equipment which must be used during lights-off periods

- **Example:** a heater may be activated during lights-off periods.
  - Connect the EEM to the cage clamps marked“EEM2”(11B)
  - Connect the auxiliary equipment which must be activated during lights-off periods to the EEM connected to clamps marked “EEM2”.

8.2 Controlling auxiliary equipment in “Inverse mode” (two rooms 12h/12h)

- ⚠ **Caution!** recommends you install and connect the EEM before plugging it into the mains.
- **Note:** Two EEMs are needed for a two room setup.
- **Note:** When activated, the blue light on the EEM will burn.
  - Link one EEM to the controller cage clamps marked “EEM1” and a second EEM to the controller cage clamps marked “EEM2”.



Controlling auxiliary equipment in “Inverse mode”

9. Preparations before use

⚠ **Caution!** Set the controllers output mode to “OFF” (see paragraph 6.6.) to ensure no ballasts will be accidentally activated during the controller setup. After this it is safe to either connect the ballasts to mains or insert the signal cable to the ballasts into the controller.

Note: after 60 seconds of inactivity the controller interface will return to the main menu.

Note: to leave any screen without saving changes, press the arrow key◄.

Note: lesser used functions can be accessed faster by clicking the arrow key▲ .

1). Ensure you have carried out all applicable steps from chapter 4
2). Plug the ballast in the mains. The status led on the ballast will indicate that they are connected to the controller
3). Examine whether all LEDs show the correct code. Check the connections when you see an error code. In case an overload is indicated on the controller display please check if you did not make a cabling error connecting a RJ connector (see paragraph 4.3.3.)
4). Verify your controller is ready for use by performing the actions described in this chapter.

9.1. Localizing your controller

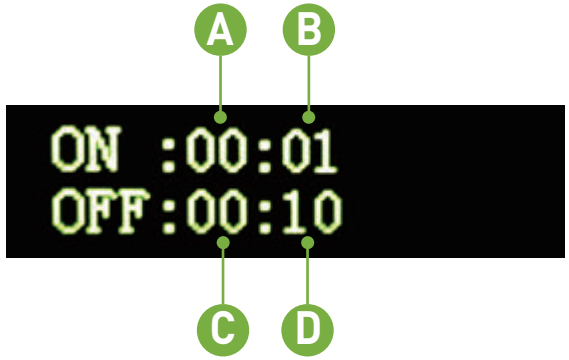
1). Selecting your default language

The controller can be set to five languages: Dutch, English, German, French and Spanish.

1.1). Press “enter”, the controller menu will open
1.2). Press the arrow keys ▲▼ to locate “language” and press “enter”. The “language” screen will open
1.3). Press the arrow keys ▲▼ to locate your language. Press “enter” to confirm your choice and return to the controller menu.

2). Switching between 24 hour and AM/PM clock mode and setting the time

2.1). Press “enter”, the controller menu will open
2.2). Press the arrow keys ▲▼ to locate “System time” and press “enter”. The “System Time” screen (15) will open. In this screen the “clock mode” indication blinks (15A)
2.3). Press the arrow keys ▲▼ to switch between the 24-hour and the AM/PM-hour clock mode. Press “enter” to confirm your choice. The “hour” indication (15B) will start blinking
2.4). Press the arrow keys ▲▼ to select the correct hour. In a AM/PM-hour clock mode, continue pressing to select AM/PM. Press “enter” to confirm.
2.5). Use the same procedure to set the “minutes” (15C). Press “enter” to confirm your choice and return to the controller menu.



Programming a light cycle

10.4 Set follow- or inverse mode (aux function)

The controller can be set to activate and deactivate all ballasts connected to it simultaneously. In this manual, this mode will be referred to as the “Follow Mode”.
The controller may also be set to invert the output of its main and the auxiliary channel. This means the auxiliary channel and the ballasts connected to it, are switched off when the main channel and the ballasts connected to it are switched on. An inverted light cycle may be used to alternate light between two rooms in a 12/12 hour system. Such a system may be used in the generative phase to optimize power utilization. In this manual this mode will be referred to as the “Inverse Mode”.

⚠ **Caution!** Always set the light interval to 12 hour periods in the “Inverse mode”.

1). Press “enter”, the controller menu will open
2). Press the arrow keys ▲▼ to locate “Aux function” and press “enter”. The “Aux Function” screen opens.
3). Press the arrow keys ▲▼ to switch between “follow” and “inverse”.
4). For the “Inverse mode”, select “inverse” and press “enter”. The output of the Aux channel will now be off when the main channel is on.
5). Set the light interval to 12 hour periods (see paragraph) to ensure both climate rooms are equally lit. The selected “ON”-“OFF” period will be set for the main channel. (The aux channel operates inverse of the main channel).

1). Set the shutdown temperature (see paragraph 6.4.2)
2). Set sunrise/sunset period (optional) (see paragraph 6.5)
3). Activate the auto mode on the controller (see 6.6.).

10.1 Adjust ballast output to change light intensity

The controller can set the output of a ballast between 50 and 115 percent. Adjusting this ballast output enables the user to change the light intensity in the climate room.

1). Press the DIMMING quick-key, the “output level” screen opens
2). Press the arrow keys ▲▼ to set the ballast output between 50 and 115 percent (400W, 600W and 750W fixtures can only be boosted up tot 110%)
3). Press “enter” to confirm your choice.

Note: the output level can also be found in the general menu.

10.2 Control a lamp with a lower power rating then its ballast

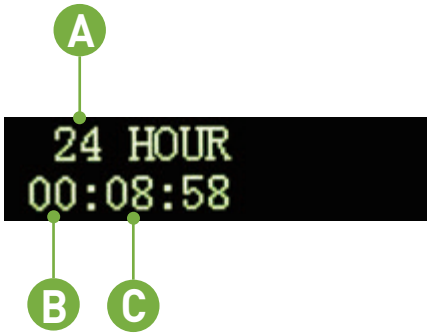
Warning! When fitting a lamp with a lower output then its ballast, ALWAYS adjust the output level of the ballast before switching the light on. Failing to do will cause immediate damage to the lamp. A ballast may be used to control a lamp with a lower power output then the nominal value of the ballast. For example: a 1000 watt ballast set at 750 watt can be used to control a 750 watt lamp. To prevent damage to the light, the controller output must be adjusted to the appropriate value.

1). Disconnect the ballast(s) from the mains
2). Make sure the display mode of the controller is set to represent the output power of your ballast, NOT of your lamp (see paragraph 5.3)
3). Adjust the ballast output to match the wattage of the lamp (see paragraph 6.1)
4). Exchange the lamps of all connected ballasts
5). Reconnect the ballast to the mains.

10.3 Programming a light cycle

Press “enter”, the controller menu will open

1). Press the arrow keys ▲▼ to locate “Light Cycle” and press “enter”. The “Light Cycle” screen will open. (19) In this screen the hour indication behind “ON” blinks (19A)
2). Press the arrow keys ▲▼ to select the hour on which the lights must be activated and press “enter” to confirm your choice.
3). Use the same procedure to set the minute (19B) on which the lights must be activated and the hour (19C) and minute (19D) on which the lights must be deactivated.



Switching clock mode and setting the time

3). Switch temperature units between 0Fahrenheit and 0Celsius

1.1). Press “enter”, the controller menu will open
1.2). Press the arrow keys ▲▼ to locate “Temp units” and press “enter”. The “temperature units” screen will open
1.3). Press the arrow keys ▲▼to switch between 0F and 0C. Press “enter” to confirm your choice and return to the controller menu.

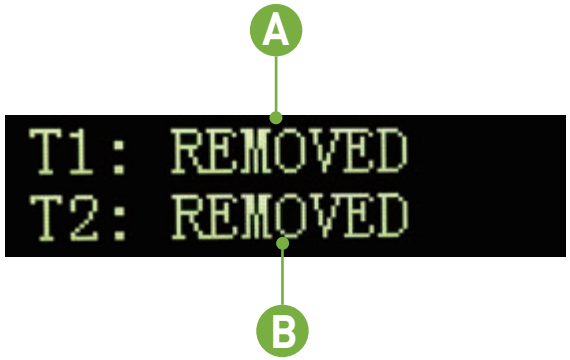
9.2 . Calibrating the temperature sensor(s)

Caution! The controller will not immediately display the correct temperature when the sensor is plugged in. The sensor will take some time to respond to temperature changes.

Caution! To allow for accurate temperature management within the climate room, the temperature measured by the controller must match the temperature measured by the climate control system. If these values do not match, the temperature safety system of the controller may interfere with the climate control system.

Caution! Always place the temperature sensor of the controller as close as possible to the temperature sensor of the climate control system.
If necessary, the temperature measured by the controller can be adjusted to match the temperature measured by the climate control system.

1). Press “enter”, the controller menu will open
2). Press the arrow keys ▲▼ to locate “Calibrate” and press “enter”.
The “Calibration” screen will open (16). This screen displays the temperature measured by the main temperature sensor “T1” (16A) and auxiliary temperature sensor“T2” (16B). If one or both temperature sensors are not or incorrectly connected, the text “removed” or “failure” will be displayed behind the applicable temperature sensor.



Calibrating the temperature sensor

3). Use the arrow keys ▲▼ to switch between “T1” or “T2” and press “enter” to select the temperature value you wish to adjust
4). Use the arrow keys ▲▼ to adjust the temperature to the desired value and press “enter” to confirm your choice.

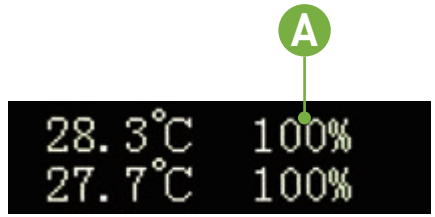
Note: The calibrated temperature values are stored in the internal memory of the controller. Resetting the controller will restore these values (see paragraph 6.7).

9.3. Change the display mode from the controller output from % to Watts

⚠ **Caution!** The wattage displayed by the controller only serves as a visual aid, calculating the output in wattage from the set percentage. If a 400W ballast model is selected in the controller but a 1000W ballast is connected, the ballast will still provide a 1000W output at 100%.

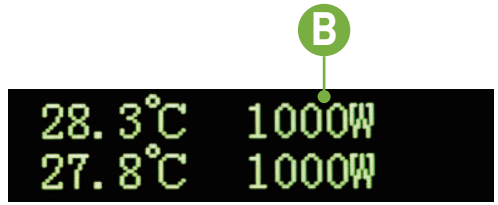
⚠ **Warning!** Always use the % setting when ballasts with different wattages are used simultaneously.

By default the controller represents ballast output as a percentage of the total output (17A). The controller can also convert this percentage into Watts if the wattage of the ballast is known.



Default output display

1). Press “enter”, the controller menu will open
2). Press the arrow keys to locate “Display mode” and press “enter”. The “Display mode” screen opens
3). Press the arrow keys to select which type of ballasts you have connected: 400W, 600W, 750W, 1000W, or select percentage in a mixed environment
4). Press “enter”to confirm your choice. The “main” screen and the “output level” screen (see paragraph 6.1) will now represent the ballast output in Watts (18B).



Output display in Watts

10. Programming and using the controller

⚠ **Caution!** Set the controllers output mode to “OFF” (see paragraph 6.6.) to ensure no ballasts will be accidentally activated during the controller setup.
Follow the actions listed below to quickly start using the controller.
1). Set the controller output level (see paragraph 6.1)
2). Program a light cycle (see paragraph 6.2)
3). Set the output mode of the controller to “follow” or “inverse” (see paragraph 6.3)
4). Set the auto-dim temperature (see paragraph 6.4.1)

说明书技术制作说明

1. 材质为70g双胶纸
2. 尺寸：展开尺寸 285*210mm
3. 页面为彩色双面印刷,一共20P页，手册安装骑马钉，将两页对折，然后在对折的地方打上钉；
4. 要求确保内容保持原来比例不变形；
5. 字迹清晰明显，不缺字体，颜色均匀；
6. 在图纸虚线处压出一条折痕，虚线不印出

名　称	ZTKQZ-01 说明书		有 效 期	2018.10-2020.10		说明书	KZQ-SMS-03
版　本	V1.0	更改单号		标 记			
设　计			变更说明			珠海美光原科技股份有限公司	
外观审核			技术审核				