

## Mini CCR

### Operation Manual



**Airsafe Airport Equipment Co., Ltd.**

Please read this manual carefully before use the product  
Please keep the manual properly for further reading

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## 1. Overview

ICAO Airport Service Manual Part 9 "Airport Maintenance Practices" and FAA AC150/5345-26 "Maintenance of Airport Visual Navigation Aid Equipment" are the highest standards for on-site installation and maintenance of lamps and lanterns. This manual has taken much reference to these two standards.

Content in this manual is highly important, operator should read carefully to understand all, and strictly follow the methods specified to ensure safe and correct installation.

Airport maintenance staff should complete the daily maintenance work strictly in accordance with the relevant regulations to ensure that the lights are in the best working condition.

Relevant personnel must strictly abide by safety standards. Non-specially trained personnel are strictly prohibited from touching the lights and equipment. In any case, work under electricity should be avoided. Construction and maintenance personnel should be aware of the relevant first aid knowledge in case of emergencies.

### 1.1 Graphic and meaning

The following graphics will appear where necessary in this manual to remind construction or maintenance personnel or draw attention.

Please continue to read the following contents of this manual after you understand the meaning of the graphics correctly.



- ※ Graphic reminds this behavior is likely to cause serious injury or death
- ※ Specific instructions will be given in the box



- ※ Graphic reminds this behavior is likely to cause damages to people and products
- ※ Specific instructions will be given in the box



- ※ Graphic informs this behavior should be banned
- ※ Specific instructions will be given in the box

## 1.2 Security and attention



- ※ Ensure power-off before installation and maintenance
- ※ Surge shock or other causes may lead to power damages



- ※ Non-professional electricians are strictly prohibited from maintaining power supply electrical failures
- ※ May cause damages to the electrical components of the power supply, or larger failures



- ※ Forbidden to maintain the power supply under electricity or during lightning and rain
- ※ May cause electric shock accident



- ※ Handling carefully for power delivery
- ※ Power falling down may cause damages to prisms and other parts of lights, or injuries to personnel.

### **1.3 Warranty**

Any defect in design, material or workmanship, which may occur during proper and normal use over a period of one year from date of installation but less than 15 months from date of shipment, or within the warranty period of the tender, will be repaired or replaced by manufacturer free of charge. Manufacturer compensation is limited to the equipment itself, the loss of other aspects is not involved. However, manufacturer shall not undertake the compensation of damage caused by power burn-out, improper operations or incorrect maintenance methods, or damage caused by shoveling snow etc.

## **2. Profiles of MINICCR**

MINI CCR is designed and developed independently by Airsafe Airport Equipment Co Ltd, used in civil airfield lighting as constant current dimming power supply. Reference standard is FAA AC150/5345-10G.

Laboratory and airport lighting station may eliminate the large-scale dimming power supply in the daily simple application. Meantime the power supply has a certain power independent driving circuit.

The power supply is compact in size, convenient in operation and high in accuracy. It has both short circuit and over current protection function. In case of sudden power-off, it can be recovered to the previous state after turn-on. At the same time, the internal part has input/output isolation and heat dissipation fans to ensure stable and reliable work.

Adapt to the world scope of the voltage and frequency (max output power 200W when 110V).

Use FAA Style 7 plug to connect with lighting fixtures.

Customized to 2000W output power when requested

### **2.1 Summary of MINICCR**

Content in this manual is highly important, operator should read carefully to understand all, and strictly follow the methods specified during operation. Otherwise, it may cause damage to the equipment.

## 2.2 Company disclaimer

Any defect in design, material or workmanship, which may occur during proper and normal use over a period of one year from date of installation but less than 15 months from date of shipment, or within the warranty period of the tender, will be repaired or replaced by manufacturer free of charge. Manufacturer compensation is limited to the equipment itself, the loss of other aspects is not involved. However, manufacturer shall not undertake the compensation of damage caused by improper operations or incorrect maintenance methods, etc.

The system can provide accurate AC/Constant current, but the actual effect is closely related to the stability of the input electricity. Manufacturer refuses to provide absolute guarantee for the accuracy of output current in any form.

Due to the continuous improvement of the equipment and other reasons, manufacturer reserves the right to modify this manual without any explanation.

## 2.3 Technical parameters

input power: 110-230VAC

input frequency: 50/60HZ $\pm$ 1%

rated power: 350W

output current range: 2.00A-7.00A

output current error:  $<1\%$

lighting stage: 5 steps

adjustment range: 0.01A/0.1A

power factor:  $>0.9$

operation noise:  $<38\text{dB}$

operation temperature: 0-55°C

External size:

Length: 330mm

Width: 180mm

Height: 108mm

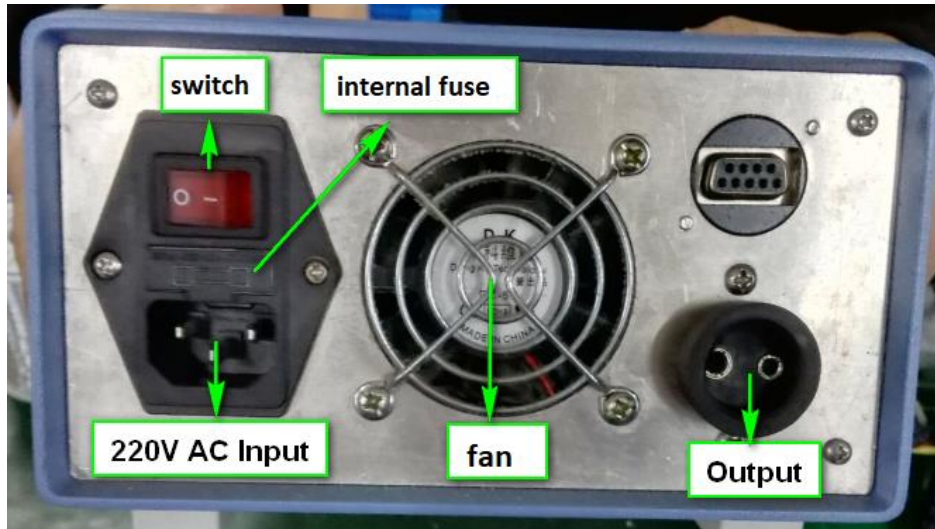
Weight: 6KG

## 2.4 MINICCR standard accessories

10A 250V 1.5M power cord	x1
A6/A7 male plug to A2/A9 isolation transformer connector, length 0.7M	x1
A6/A7 male plug to A6/A7 female plug extension cable, length 3M	x1
A6/A7 male plug to crocodile pliers, length 0.5M	x1



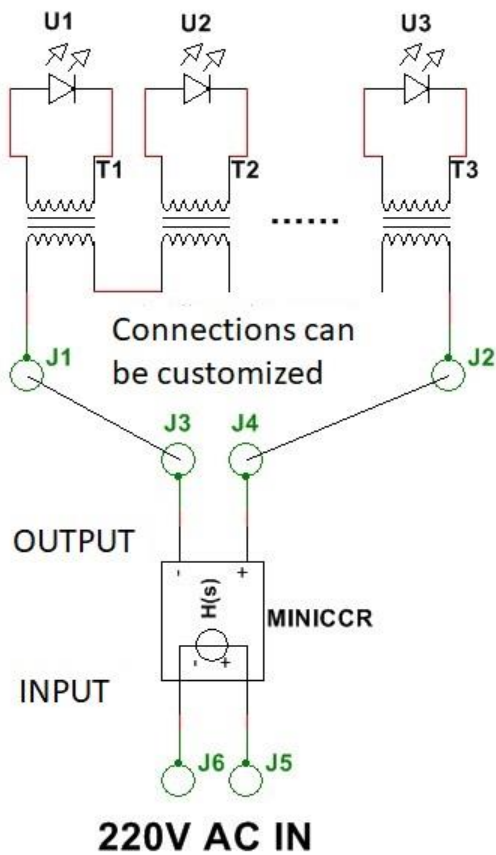
### 3. Installation of MINICCR



- a. Connect the provided cable to AC 220V plug shown above.
- b. Set switch at “0”, fuse between switch and joint, able to change if damaged.
- c. Be careful not to block the outlet of the fan when placing MINICCR
- d. Customer may choose the provided cable depending on the requirements, A6/A7 switch to A2/A9 cable is recommended to match the isolation transformer.



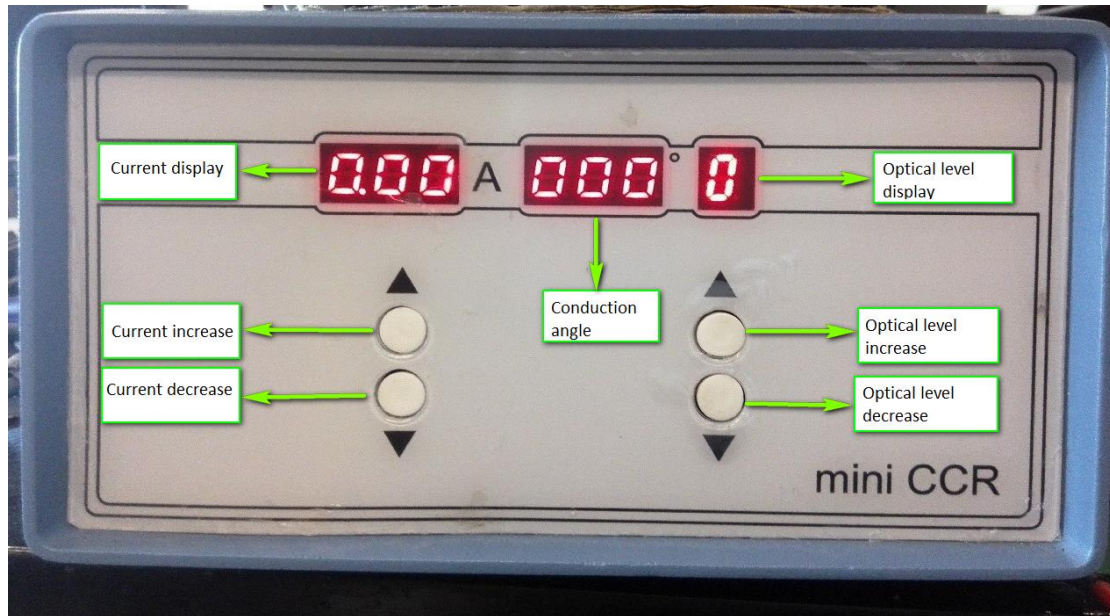
- e. Insert the fitted connection into the socket. Please pay attention to the size of the interface.
- f. The basic connection line is shown in the following figure. The total capacity of the isolation transformer does not exceed the power of CCR:



- g. Turn on 220V power switch after all connection completed including the load.
- h. Push button on the right side of the panel to work when switch light and front panel light up.



## 4. Basic operation of MINICCR



### 4.1 Manual mode

#### 4.1.1 Optical level adjustment

Push the button on the right to adjust optical level, each stage is corresponding with the effective current value.

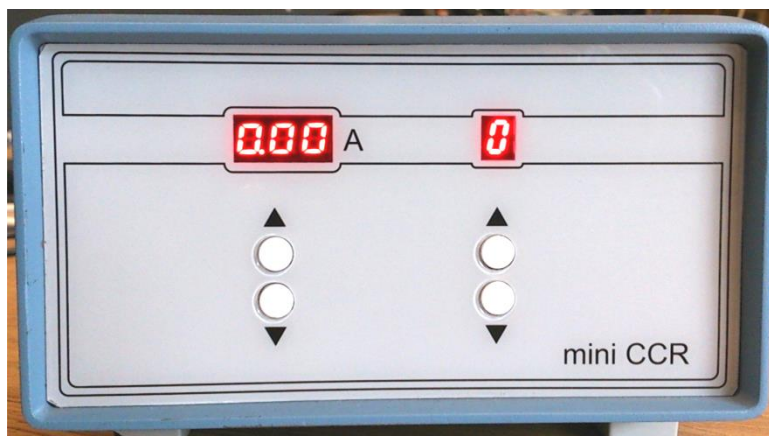
First stage: 2.80A

Second stage: 3.40A

Third stage: 4.10A

Forth stage: 5.20A

Fifth stage: 6.60A



#### 4.1.2 Random current adjustment

Current micro-regulation can be realized with pressing the button on the left under normal transmission environment (1-5 stage). Adjustment range: 2.00A-7.00A. Press shortly, adjustment step is 0.01A. Pressing more than 1 second is fast adjustment, 0.1A.

Output current returns to the corresponding effective current value when pressing the adjustment button under random current.

Note: useless adjustment under 0 stage.

## **4.2 Automatic mode**

Start-up automatically output 2.6A, output 2.7A after 20 seconds, and then increase by 0.1A every 4 seconds until 6.8A.

In automatic mode, the key is invalid.

## **4.3 Mode switching**

In the shutdown state, press the two buttons on the left side of the front panel (current adjustment button) at the same time, then turn on, and release the two buttons when the digital tube is on, then the mode switching is completed.

Mode switching has memory function. After mode switching, shut down and start up again, the mode will not change.

## 4.4 Others



- ※ For high precision applications, it is recommended to wait 10-20 minutes after adjusting the optical level each time so as to achieve thermal balance within the power supply.
- ※ May affect the accuracy of output current of the power supply.

CCR output current will automatically cut off if it continues to exceed 5% of the set value for more than 5 seconds or 25% of the set value for more than 1 second.



- ※ Forbidden to pull out the load directly when the power supply is working.
- ※ CCR turns off the output in one second when the load is open. Although the power is relatively small and the peak value of open-circuit voltage does not exceed 100V, pulling out the load has no great impact on the CCR, but the voltage can already cause harm to the human.

When the load is too light, the conduction angle is small and the peak factor is high. Therefore, the matching isolation transformer is recommended to ensure safety.



- ※ Electric net jitter will have a great impact on CCR. Clean and stable electric net is selected for testing.

CCR has higher tolerance to inductive load than capacitive load. The power factor of inductive load must not be less than 0.7, otherwise CCR will jitter or turn off. The lower tolerance of capacitive load is determined by the principle of CCR, which can make CCR out of control.

## 5. Daily maintenance of MINICCR



- ※ Notice that there should be no obstacles in the bottom air inlet or the rear air outlet when the power supply works.
- ※ May affect the accuracy of the output current and life of the power supply.

## 6. Simple troubleshooting

Item	Fault description		Fault Causes	Troubleshooting
1	Optical level, conduction angle and current indication display 0 suddenly during normal operation		a. Open load of output circuit b. Electric net off c. Heavy inductive load d. Heavy capacitive load	a. Please check whether there is an open load on output circuit b. Please check whether the electric net is working c. Please check load power factor d. Please check load power factor
2	No display when power on the switch		Internal protective tube damage	Please change the fuse under the button switch
3	The current display is less than 6.60A when adjusted to 5 <sup>th</sup> level		a. Over the limitation of maximum output power (conduction angle displays 180) b. Area with 110V can only output half of 220V	a. Please decrease the load b. Please check the voltage and decrease the load
4	Abnormal jitter of output current		a. Unreliable grounding of Input power supply b. Power of isolation transformer not matching the actual power of the tested light (smaller)	a. Please check the grounding reliability, whether high grounding resistance b. Increase conduction angle by adding the power of isolation transformer or changing an isolation transformer with higher power
5	Error Code display of conduction angle	E01	Open load of output circuit under normal operation	Please check whether the output circuit is loaded open.
6		E02	Open Load when start-up	Please check whether the output circuit is loaded open.
7		E03	Overcurrent 5%	a. Please check the load of output circuit b. damage of MiniCCR driver
8		E04	Overcurrent 25%	a. Please check the load of output circuit b. damage of MiniCCR driver
9		E05	Synchronization anomaly of electric net	a. Please check whether harmonic component of the electric net is too large. b. damage of MiniCCR driver
10	Squeaking noise from inside of the power supply		secondary side open circuit of isolation transformer	Please check the secondary circuit of isolation transformer

The final right to interpret this manual is reserved by Airsafe Airport Equipment Co., Ltd.

Thanks for your purchasing and using AIRSAFE product!

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