CCR-I

IGBT Sine Wave Constant Current Regulator

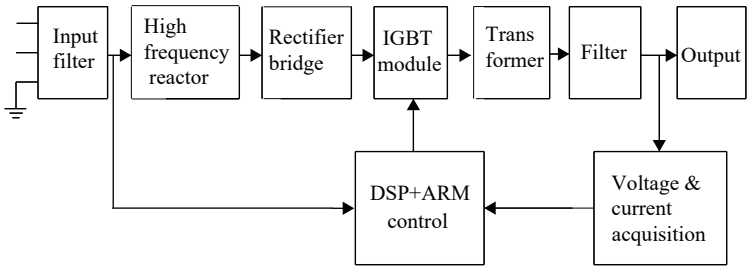
Compliance with Standards

CAAC: MH/T 6010
ICAO: DOC 9157, Part 5, Para3.2
IEC: 61822&61820-3-2
FAA: AC150/5345-10

Application/Use

Specially used for power supply and control for airport series lighting circuits with output current 2.8-6.6A

System Structure

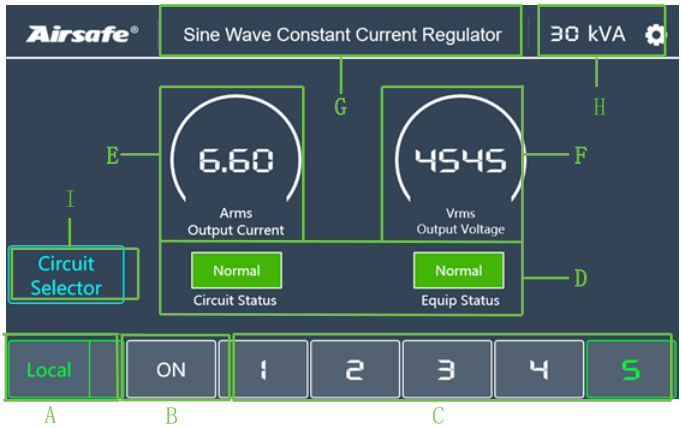


1. The innovative design of the CCR-I series is based on the DSP dual-core directly collecting and outputting the measured current and voltage to control the pulse width modulation of the IGBT;
2. The input and output of the system have high-response filters to prevent harmonic pollution to the power grid;
3. All A/D measurement quantities of the system are processed by DSP software algorithm, and the dynamic response capability is at least ten times higher than that of traditional thyristor controlled CCR;
4. Equipped with a variety of communication methods, remote control and monitoring are achieved through switch signals, single or dual RS485\RJ45.

Features

- Adopt IGBT AC conversion technology and dual core DSP with high adjustment accuracy and fast dynamic response;
- Power frequency sine wave output, low output current harmonic;
- Designed with separate power supply module, low noise;
- Power factor no less than 0.97 and 96% output efficiency;
- Supports 5-level dimming from 2.8-6.6A, provides custom light level dimming including the low current light level (1.8A), with current accuracy of <±0.1A.
- The preset brightness level current can be reached within 0.5s after starting or switching to any brightness level;
- Modular design, simple structure, high reliability and easy management;
- Fast dynamic response capabilities, with protection functions such as open circuit, short circuit, and over-current, etc;
- With standard redundant dual 485 , dual rj45 communication interfaces and switch design to achieve matching control with switching cabinet and monitoring system;
- With insulation resistance detection unit accessories, and the detection insulation value range reaches 10K Ω - 5G Ω;
- With fail open device detection accessories, and detection accuracy of the number of failed lighting fixtures is less than 2%;
- Adopt fast response IGBT control technology, which can intelligently control and protect within 1.4ms;
- Use wide-angle LCD touch screen, allowing on-site configuration without any accessory equipment;
- Equipped with an emergency brightness light level control knob switch to achieve operation and control in an emergency;
- With warning, alarm, and abnormal event recording functions.
- In the event of a power interruption of 10ms, 50ms, 200ms, 500ms, or 1 second, the correct lighting level will be restored within 500ms
- It supports automatic stabilization and switching between generator and mains power.
- Equipped with a circuit selector module, it supports 1-6 circuit selectors, allowing users to choose according to their needs.
- To improve the operational efficiency of the equipment, a tapped transformer design is used, enabling users to select the required power based on actual needs.

Main Interface



- A area function: local/remote control switch button;
- B area function: CCR brightness level on and off button;
- C area function: CCR brightness level on and off button;
- D area function: display the status of CCR output series circuit and the operation of equipment, once there is an alarm message, the "normal" button will be displayed in red; meanwhile, you can directly click the "normal" button to view the corresponding detailed malfunction information ;
- E area function: display the current Rms value of the current brightness level of CCR;
- F area function: display the voltage Rms value of the current brightness level of CCR;
- G area function: display the current position of CCR;
- H zone function: CCR function, parameter setting button;
- I zone function: enters the circuit selector parameter settings and selection button

Tel:021 39533596 Fax:021 63643114 Mail:sales@airsafe.com.cn

Airsafe

CCR-I

IGBT Sine Wave Constant Current Regulator

Type

Brightness	CCR current（A）		
	Type 1	Type 2	Type 3
1	4.8	2.8	Customize
2	5.5	3.4	
3	6.6	4.1	
4	—	5.2	
5	—	6.6	

*Different levels of current can be set according to customer requirements

Capacity Grade

Output current（A）	Max. effective value output voltage（V）	Rated Power (KVA)
6.6	303	2.0
6.6	757	5.0
6.6	1136	7.5
6.6	1515	10
6.6	2272	15
6.6	3030	20
6.6	3788	25
6.6	4545	30

Technical Parameters

Environment

- Temperature: -40°C to 55°C;
- Altitude: 0 to 5000m;
- Humidity: ≤ 95% (without condensation);

Input

- Single-phase input voltage 380VAC±10%, frequency 50Hz\60Hz;
- Single-phase input voltage 400VAC±10%, frequency 50Hz\60Hz;
- Single-phase input voltage 415VAC±10%, frequency 50Hz\60Hz;

Remote Control

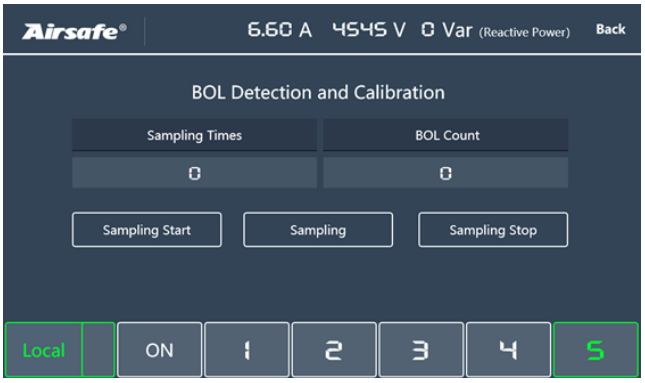
- Multi-wire switch signal supports 24VDC, 48VDC;
- Support dual RS485 bus communication;
- Support dual RJ45 communication;

*The remote monitoring interface and protocol can be customized according to customer requirements.

Other Options

Light Detection

The LFD (Lamp Failure Detector) is an optional accessory that can accurately and in real time detect the number of faulty lamps in the series load circuit and display this information on the dimmer interface.



- When the number of faulty lamps is less than 10% of the total, the accuracy is within 1%;
- When the number of faulty lamps is between 10% and 30% of the total, the accuracy is within 2%;

Ground Resistance Detection

As an optional accessory, EFD can detect the insulation resistance between the cable core of the series load loop and the ground regardless of whether CCR is on or off;

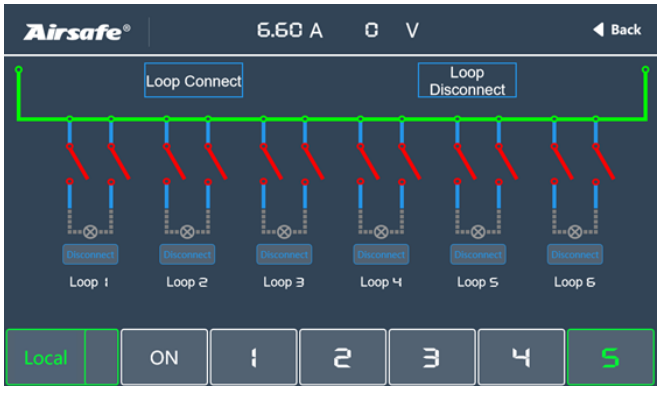
- The insulation resistance test range can reach 10KΩ-5GΩ;
- The grounding resistance preset warning and alarm can be set on the display interface. If the detected insulation resistance value is lower than the warning or alarm limit, the information will be displayed on the dimmer interface;

Circuit Breaker

The circuit breaker, as an optional accessory, can be integrated into the series lamp circuit to safely disconnect, connect, isolate, and ground the circuit. By rotating the connector cover, different functional needs can be met without interrupting operations, while also preventing users from coming into contact with high voltage

- It can be installed externally to the dimmer;
- Providing convenience and safety assurance for field circuit testing and maintenance
- Three main functions: Operating Mode, Maintenance Mode, and Testing Mode.
  Operating Mode: CCR output is directly connected to the circuit.
  Maintenance Mode: CCR output is short-circuited, the series circuit is short-circuited and grounded, used for dimmer debugging or maintenance.
  Testing Mode: CCR output is short-circuited, and the series circuit is connected to the testing interface, used for insulation and impedance testing of the series circuit

Circuit Selector



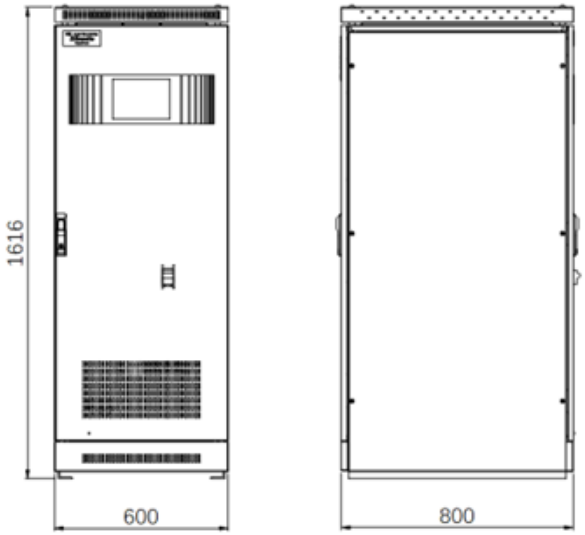
Tel:021 39533596 Fax:021 63643114 Mail:sales@airsafe.com.cn

Airsafe

CCR-I

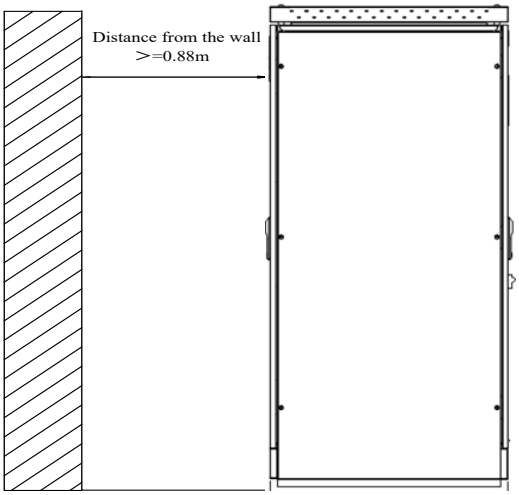
IGBT Sine Wave Constant Current Regulator

Dimension



Installation Method

The rear door of the equipment should be at least 0.8 meters away from walls or obstructions to facilitate wiring and maintenance by relevant personnel.



Packing Data

Rated Power (KVA)	Dimension(mm) L*W*H	Net Weight (Kg)	Gross Weight (Kg)
2.0	650x850x1700	240	270
5.0	650x850x1700	280	310
7.5	650x850x1700	320	350
10	650x850x1700	360	390
15	650x850x1700	400	430
20	650x850x1700	440	470
25	650x850x1700	480	510
30	650x850x1700	520	550

Spare Parts

Components Order

S/N	Part Name	Order No.	Suggested Qty
1	IGBT Driver Board	7911K	2
2	Main Control Board	791AA	2
3	Multi-wire interface Board	791AF	1
4	Voltage and Current Acquisition Board	791AC-B	1
5		791AC-C	1
6		791AC-D	1
7	Rectifier Bridge	48CC1	2
8		48CC2	2
9	Current Sensor Board	791AB	2
10	Power Surge Protection Module	48C11	2
11	Fuse	Fuse 5x20x3A	5
12	Switching Power Supply - 24V	7914N	1
13	Switching Power Supply - 15V	7914J	1
14	Switching Power Supply - 12V	7914K	1
15	Power Transformer	7912G	1
16	Touch Control Main Screen	791A7	1
17	Surge protection board	791AD	1
18	Circuit Selector Panel	791AS	1

Accessories Order

Component Name	Subcomponent Name	Order No.	Suggested Qty	Used For
Contactor	AC Contactor 40A	48C91	1	Suitable For 5-10KVA
	AC Contactor 65A	48C92	1	Suitable For 15-20KVA
	AC Contactor 95A	48C93	1	Suitable For 25-30KVA
Air Switch	Air Switch 40A	48C51	1	Suitable For 5-10KVA
	Air Switch 63A	48C52	1	Suitable For 15-20KVA
	Air Switch 125A	48C53	1	Suitable For 25-30KVA
Lightning Arrester	HMYGS-3/9.9	485AF-10	2	Suitable For 5-10KVA
	HMYGS-5/13.6	485AF-20	2	Suitable For 15-20KVA
	HMYGS-6/19.8	485AF-30	2	Suitable For 25-30KVA
Vacuum Relay	JPK-11	48CF2	2	Suitable For 5-30KVA

Other Accessories

S/N	Part Name	Order No.	Suggested Qty
1	Insulation Test Board	791AE	1
2	Circuit Selector	SC0	1

Tel:021 39533596 Fax:021 63643114 Mail:sales@airsafe.com.cn

Airsafe

CCR-I

IGBT Sine Wave Constant Current Regulator

Order Information

CCR - I - X1 - X2 - X3 - XX4 - X5

CCR Type
1=3 Level
2=5 Level
Power Capacity
020=2kVA
050=5kVA
075=7.5kVA
100=10kVA
150=15kVA
200=20kVA
250=25kVA
300=30kVA
Input Voltage
380A=380V, 50/60Hz
400A=400V, 50/60Hz
415A=415V, 50/60Hz
Remote Control of Multi Wire System:
0=Not
A=wire system 24V
B=wire system 48V
Remote Control Communication:
0=Not
A=Dual RS485
B=Dual RJ45
C=Customize
Output Attachments:
0=Not
A=Cutout
B=Circuit Selector
C=EFD
D=LFD

Note: The circuit selector supports 1-6 circuits. Please consult relevant personnel before purchasing.

Tel:021 39533596 Fax:021 63643114 Mail:sales@airsafe.com.cn