



Sine Wave Output Constant Current Regulator

Type CCR-2100S

Application

Switch mode constant current regulator especially designed to power airport lighting series circuits at various intensity levels.

Compliance with Standards

- IEC: 61822 (current edition)
- FAA: AC 150/5345-10 (current edition)
- ICAO: Aerodrome Design Manual Part 5 (current edition)

Features

- True sinusoidal wave output, low harmonic output.
- High regulation precision and response dynamic thanks to high frequency PWM – IGBT technology.
- DSP and ARM microprocessor embedded processing control.
- Fully digitalized high precision control and regulation, via parameters processed in a numerical way to overcome affection by temperature, voltage or other physical parameters.
- Natural air cooling for all ratings
- Adaptable to circuit configurations consisting of non linear loads like new technology LED lights and taxiway signs with light sources other than halogen lamps.
- Remote network control, monitoring and diagnostic functionality.
- An integrated menu driven human machine interface (HMI) allowing full configuration on-site without any additional equipment.
- Single phase power supply.
- Standard built-in lamp fault detection.
- Optional earth fault detector and lightning arrester.



Concept

The innovative design principle adopted for CCR-2100S family is based on transferring most of the power control tasks from the hardware circuits into the software processing of control algorithms.

An IGBT H-bridge transfers the input signal into a PWM (Pulse Width Modulation) output sine wave. The switching timing is controlled directly by a very fast DSP (Digital Signal Processor) loaded with proper software.

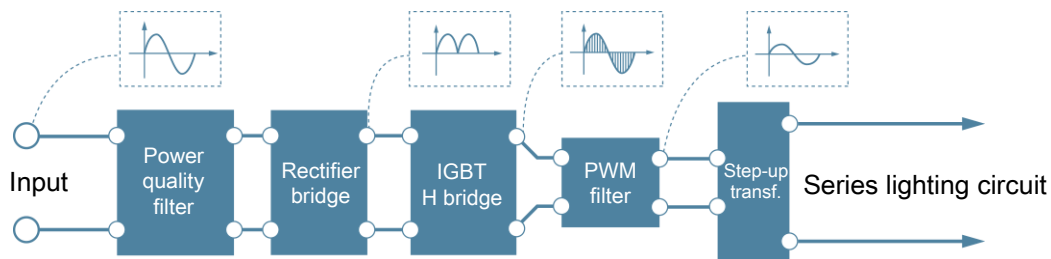
An A/D converter at the secondary side of the output transformer measures the output signal. The high speed DSP allows for real time control and decreases the regulation dynamics to one tenth compared with traditional thyristor type CCRs.

The same microprocessor also detects the lamp and earth faults and manages any other useful status information for local or remote control and monitoring.

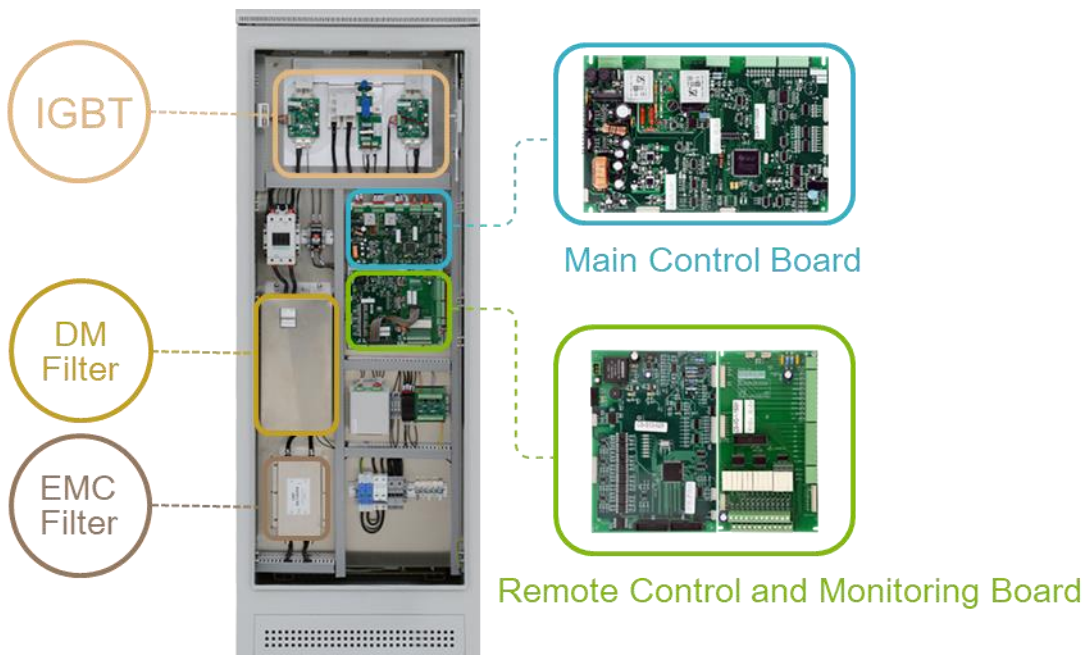
The remote control and monitoring can either be realized via multi-wire, or serial bus via single or dual CAN-bus connection.

Power quality filters protect the main against harmonic pollution on the mains.

CCR-2100S Block Diagram



CCR-2100S Components Lay-out



Technical data

Performance figures are always equal to or better than specified hereunder.

Environmental conditions

Under IEC 61822 environmental conditions

Ambient Temperature: $-25^{\circ}\text{C} \sim +55^{\circ}\text{C}$

Altitude: $0 \sim 5000\text{m}$

Cooling

Natural air cooling for all ratings

Enclosure

The CCR-2100S type CCRs are stand-alone units housing the complete regulator in one enclosure.

Baked epoxy powder coating color RAL 7035

Dimensions (WxDxH) mm : $600 \times 830 \times 1620$ (All power ratings)

Ratings

2.5, 5, 7.5, 10, 15, 20, 25, 30kVA.

Input voltage ratings

220/240V ac or 380/400Vac $\pm 10\%$ 50/60Hz Single phase

Remote control

Multi-wire: 24 or 48 V DC

Multiplex: Single or Dual CAN-Bus protocol, Single or Dual J-Bus protocol over RS485

Brightness control

Up to 6 brightness steps.

Within $\pm 1\%$ for all the brightness steps, under either IEC or FAA standard conditions.

Regulation response time

The regulation time is less than 0.5 seconds for any operational condition.

Open circuit output voltage

Less than 1.2 times the nominal output voltage (RMS)

Efficiency

92 to 94% depending on the CCR size, under nominal resistive load, nominal output current and nominal input voltage

Power factor at the output

Power factor at the output exceeds IEC and FAA requirements.

The power factor at rated load is close to 1 and is kept at high level for any possible operational conditions.

The power factor at over of the rated load is greater than 0.9 and is kept at all level for any possible operational conditions.

Total Harmonic Distortion

The input and output current total harmonic distortions not exceeding 5%.

Noise

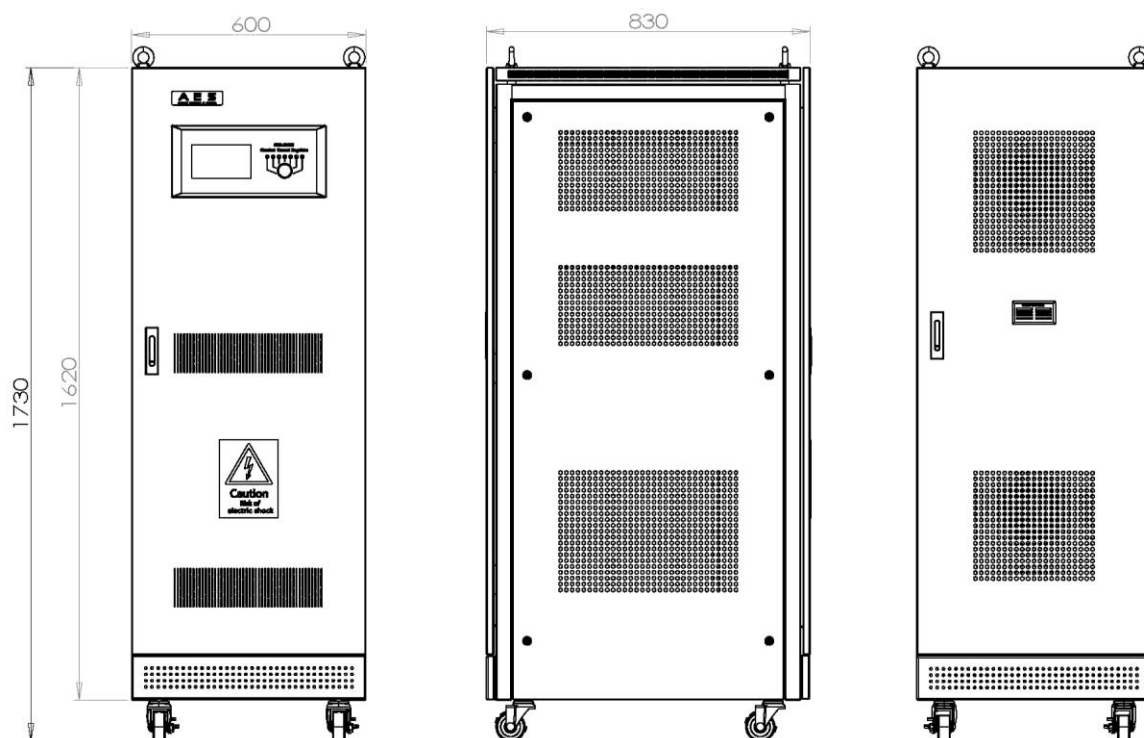
Less than 35 dB



Ordering Code

Type of CCR		CCR-2100S	5	B	D
Output Power					
2.5 kVA	02				
5 kVA	05				
7.5 kVA	07				
10 kVA	10				
15 kVA	15				
20 kVA	20				
25 kVA	25				
30 kVA	30				
Input Voltage (50/60 Hz)					
220/240V	A				
380/400V	B				
Remote Control					
Multiwire	M				
Single CAN-BUS	A				
Dual CAN-BUS	B				
Single J-BUS	C				
Dual J-BUS	D				

Dimensions



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