



*'Feel
your Airport'*

Primary Cable is the Backbone

CCR by GRP

Constant current regulator with true sine wave output IGBT controlled technology.

Introduction

AGL technology has been evolving a lot in the past 15 years.

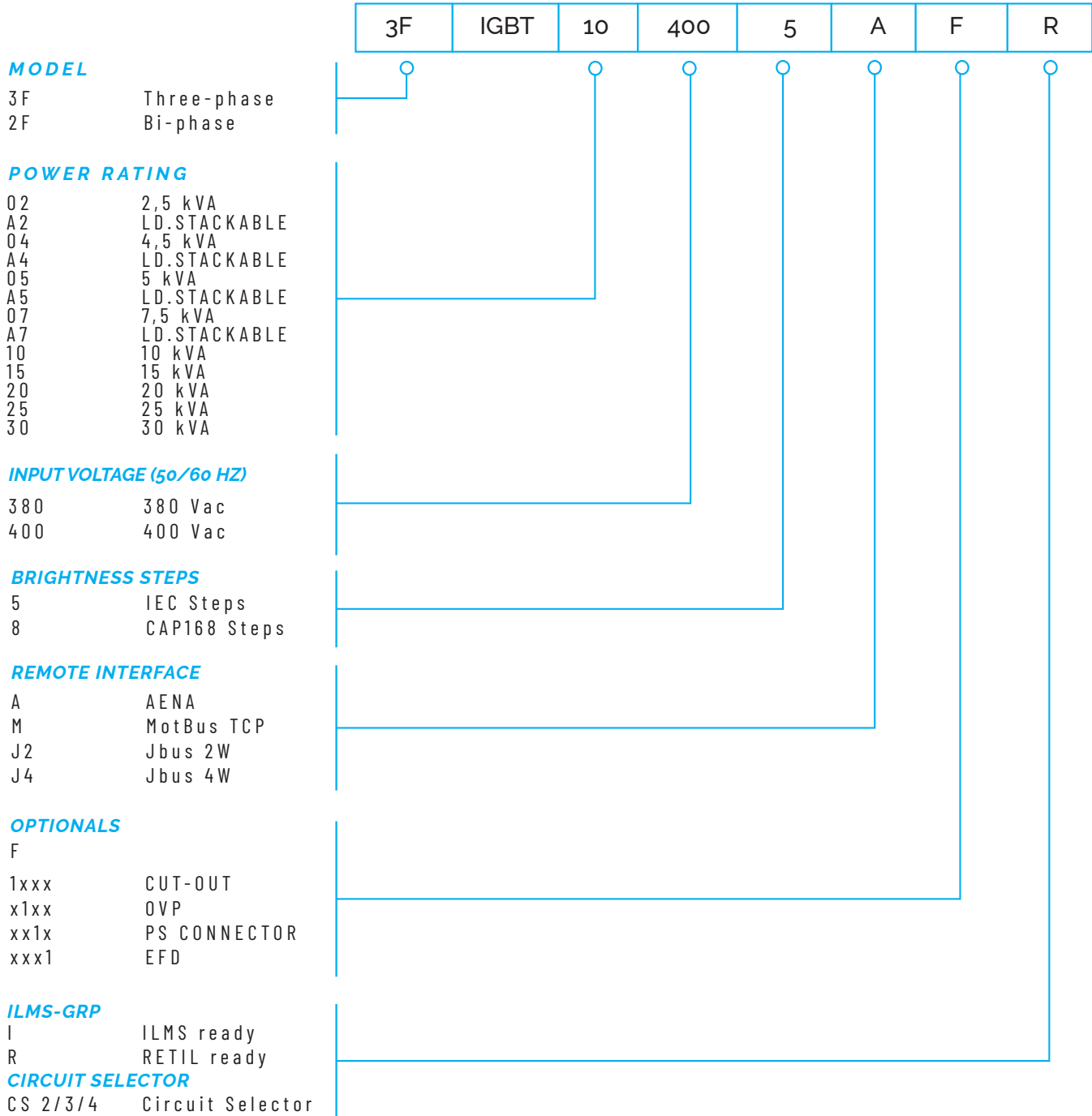
LED light fixtures are now common products found on taxiways and runways, regulation has extended the use of signs, loads are more and more non-linear, green airport is now a reality thus power consumption is an issue, and further evolution is on its way.

In order to match that challenge and provide a solution to its airport customers that will allow compatibility with existing installation and prepare the next generation of AGL series circuits, GRP has developed a new range of state of the art sinewave CCRs.

Based on IGBT technology to achieve current control, an efficient algorithm supported by the latest ARM Cortex-M CPU generation is providing an almost perfect sinewave whatever the load conditions as well as a fast response time to provide perfect operation as per ICAO and EASA requirements.

An efficient design and easy access to internal parts will keep maintenance operation smooth and friendly.

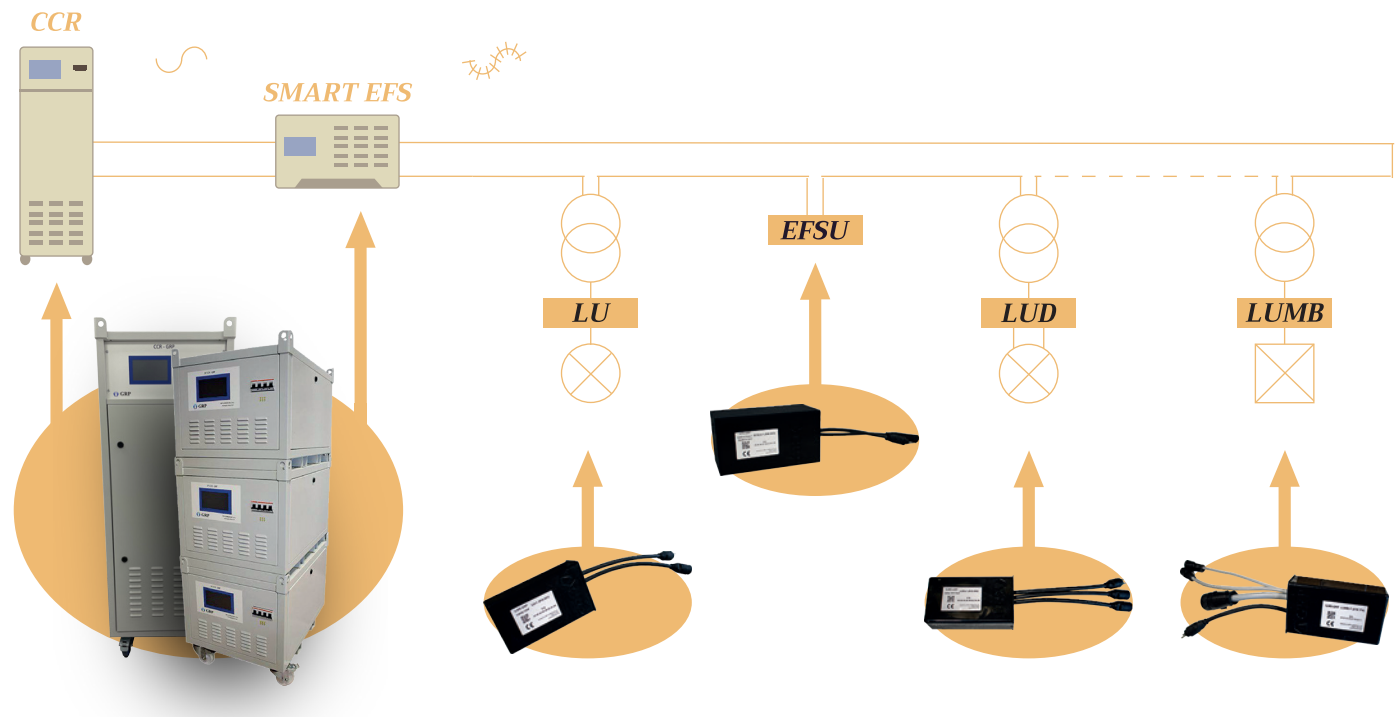
Ordering code



Integration of Individual Lamp Control and Monitoring (ILCMS)

CCR - GRP can integrate state of the art GRP powerline communication (PLC) technology for **Individual Lamp control and Monitoring System (ILCMS-GRP)** through primary cable. Consequently, CCR will include inside a CU (CCR Unit) and a FLT (filter), system key components at circuit level, thus CMS will control and monitor both CCR and lights by serial remote interface (Ethernet or RS485). Any light to be controlled and monitored individually must be equipped with the associated LU (Lamp Unit).

See **ILCMS-GRP brochure for more information.**



There are **two integration possibilities**:

- **"ILMS ready"**, it allows CCR - GRP to communicate with LUs in order to control and monitor lights.
- **"RETIL ready"**, it allows CCR - GRP to operate as a RETIL - GRP unit, see its brochure.

Therefore, it can provide power supply and manage up to 6 groups of **Rapid Exit Taxiway Identification Lights (RETIL)**.



Compliance with Standards

ICAO

Aerodrome Design Manual, Part 5

IEC

61822:2011

AENA

PPT-002 05-13

General description

CCR - GRP is a family of Constant Current Regulators (CCR) with a true sine wave output thanks to their power module based on Insulated Gate Bipolar Transistor (IGBT) technology.

True sine wave output means that output wave has a very low total harmonic distortion (THD).

IGBTs are driven by the latest ARM cortex core M4 microcontroller allowing a very fast response time, which is especially suitable for circuits with non-linear loads like LED lights, Signs and those with Individual Lamp Control and Monitoring Systems (ILCMS).

There are two models depending on mains supply:

- Three-phase: allowing a perfect balance power consumption **MODEL 3F CCR-GRP**.
- Bi-phase: allowing a fast replacing of existing thyristors based CCRs **MODEL 2F CCR-GRP**.

Power range goes from 2,5 to 30kVA, intermediate power ratings are 4 - 5 - 7,5 - 10 -15 - 20 - 25kVA.



Features

Human Machine Interface (HMI) is done with a resistive touchscreen especially designed for hard environments like electrical substations and vaults.

Real time clock for logging main events and alarms in an SD card for troubleshooting or maintenance statistics. By default, it stores operational hours per brightness step.

Up to 7 brightness steps plus a configurable warm up or dark current step.

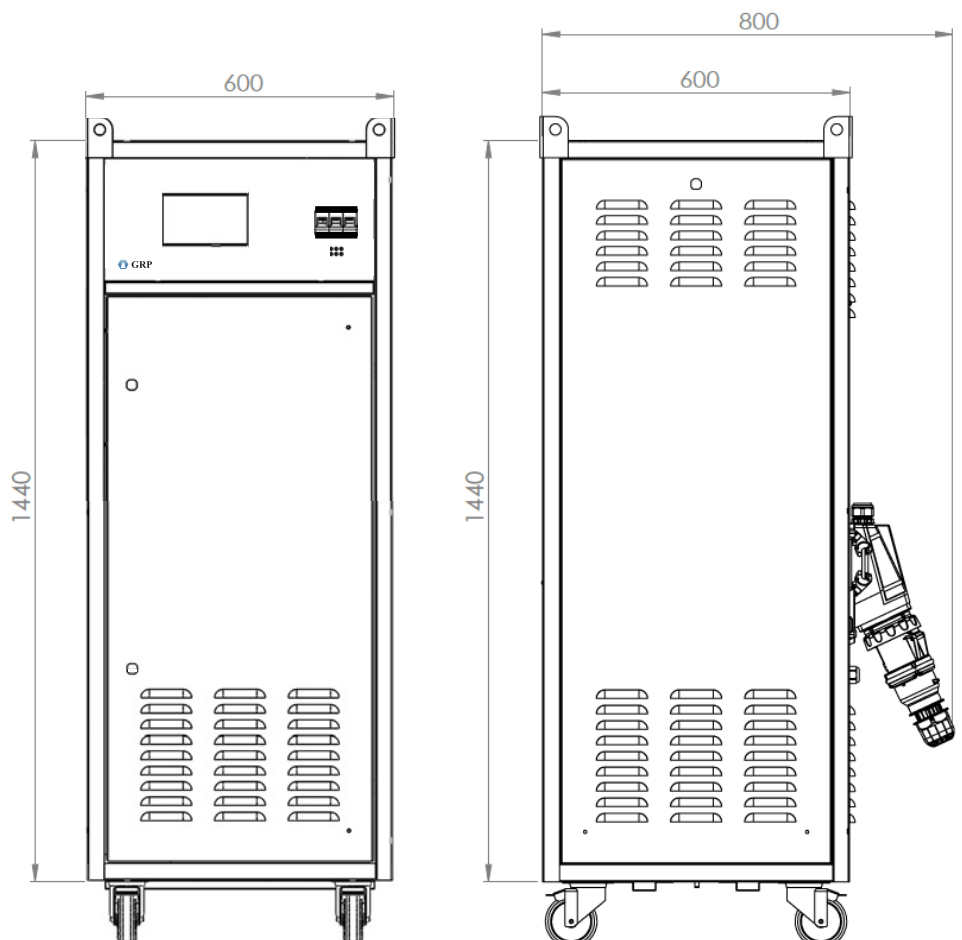
Users can easily get access to any information or configuration menus as per their needs, there is no need of an external app to configure the CCR. HMI is controlled by a second ARM cortex core M3 microcontroller, which is also responsible for:

Lamp Fault Detection (LFD) by an accurate signal processing algorithm it calculates failed or burnt out lamps.

- Dual and redundant ethernet interface using **ModBus TCP** protocol.
- Dual and redundant RS485 interface using **ModBus RTU** or **JBus** protocol.
- Digital Input/Outputs interface for old fashion Control and Monitoring Systems (CMS).

LFD and digital interfaces (Ethernet and RS485) are always delivered with any CCR configuration. User can easily enable which are primary interface (Ethernet 1 or RS485 1) and secondary interface (Ethernet 2 or RS485 2).

CCR - GRP config tool APP provides a simple way of remotely control a CCR by ethernet interface allowing also CCR configuration.



Main optional accessories

- Digital Input/Output or multiwire interface through heavy duty 32p connector. It can be configured as primary or secondary interface as any other available interface.
- External four positions cut-out:

Normal: circuit connected to CCR.

Service: CCR short-circuited and circuit short-circuited and connected to earth.

Measure: CCR short-circuited and both circuit sides available in test points.

Earth: CCR and circuit connected to earth.

- IP67 input power base socket and connector
- Output overvoltage protection.
- Earth Fault Detector (EFD), it can either measure resistance to earth while there is current in the circuit or not, configurable by user in HMI.



CCR - GRP is a CCR designed in a modular way in order to allow an easy maintenance and troubleshooting of the equipment. All models are equipped with two fix and two pivoting wheels for an easy movement.

There are four subassemblies:

- Input/Low voltage compartment.
- Power module.
- Output/high voltage compartment.
- Control electronics.

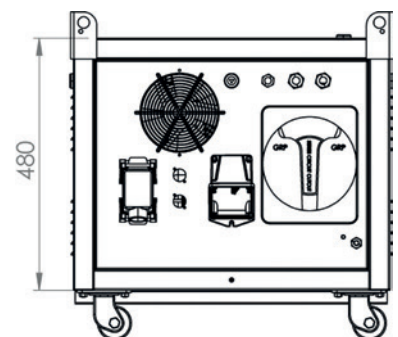
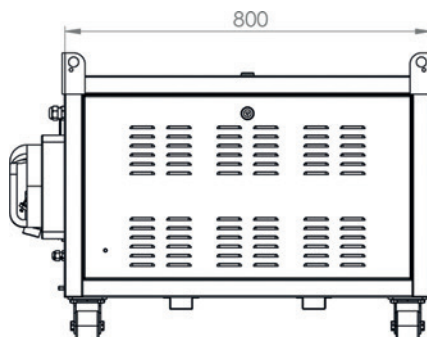
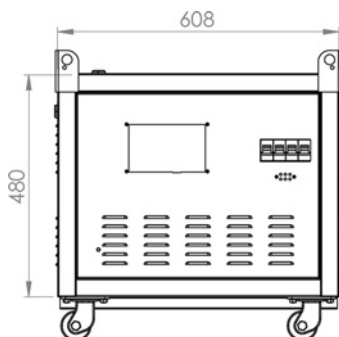
All components among **2F CCR - GRP** and **3F CCR - GRP** are the same except:

- **EMC filter** and Line inductor in Input/Low voltage compartment.
- Line rectifier in Power module.

Above two exceptions come from the fact that input line is bi-phase or three-phase, consequently line inductor and rectifier should be as per input line.

Summarizing, training, maintenance and spare parts for both types are the same and are compatible.

STACKABLE VERSION (UP TO 7, 5kVA) WITH OR WITHOUT WHEELS





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