GRP

CCR by GRP

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

'Feel your Airport'

Primary Cable is the Backbone

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

Compliance with Standards

ICAO

Aerodrome Design Manual, Part 5

IEC

61820-3-2:2023 (ex-61822)

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 Transitor (IGBT) Technology.

True sine wave outputs 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 Monitoring Systems (ILCMS).

There are three 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-GR**.
- Single-phase: allowing a simple low voltage distribution switchboard with **MODEL 1F 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 touch-screen especially designed for hard environments like electrical substations and vaults.

Real-time clock for logging main events and alarms in an µSD 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, total 8 brightness steps.

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

LFD and digital interfaces (Ethernet and RS485) are always delivered with any CCR configuration. Users can easily enable which are the 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.

Environment conditions

IP

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Supply voltage

Single, bi and three-phase
230V, 380V, 400V

Network frequency

50Hz or 60Hz

Temperature range

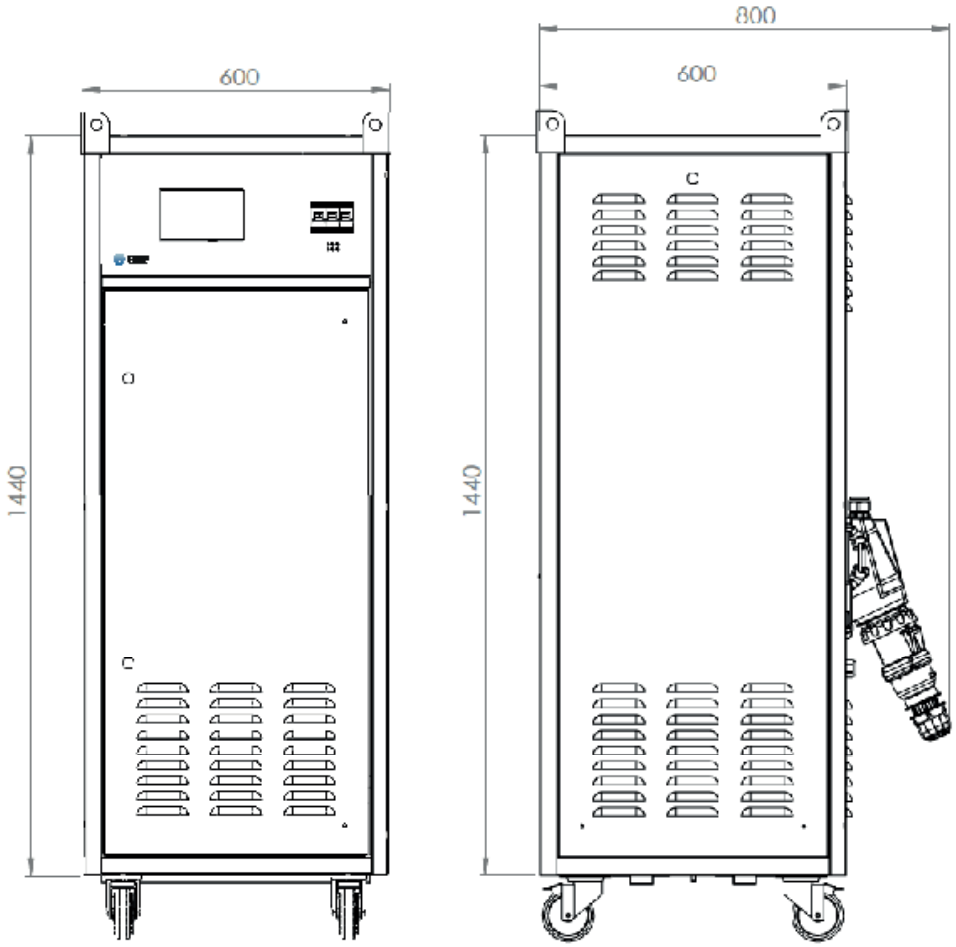
-20º to 50º

Altitude

Up to 1000m (consult us for higher altitude)

Humidity

Up to 95% non condensing



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 both short-circuited and both 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 fixed and two pivoting wheels for an easy movement

There are four subassemblies:

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

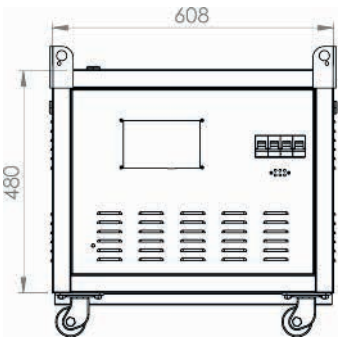
All components among the whole range of CCR - GRP are the same except:

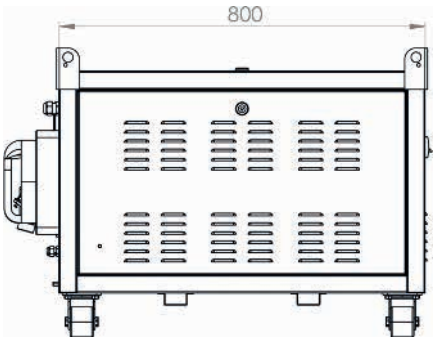
- EMC filter and Line inductor in Input/Low voltage compartment.
- Line rectifier in Power module.

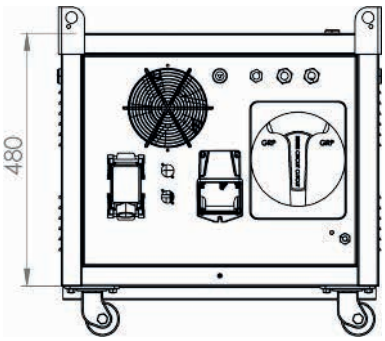
Above two exceptions come from the fact that input line is single, bi or three-phase; consequently, line inductor and rectifier should be as per input line.

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

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



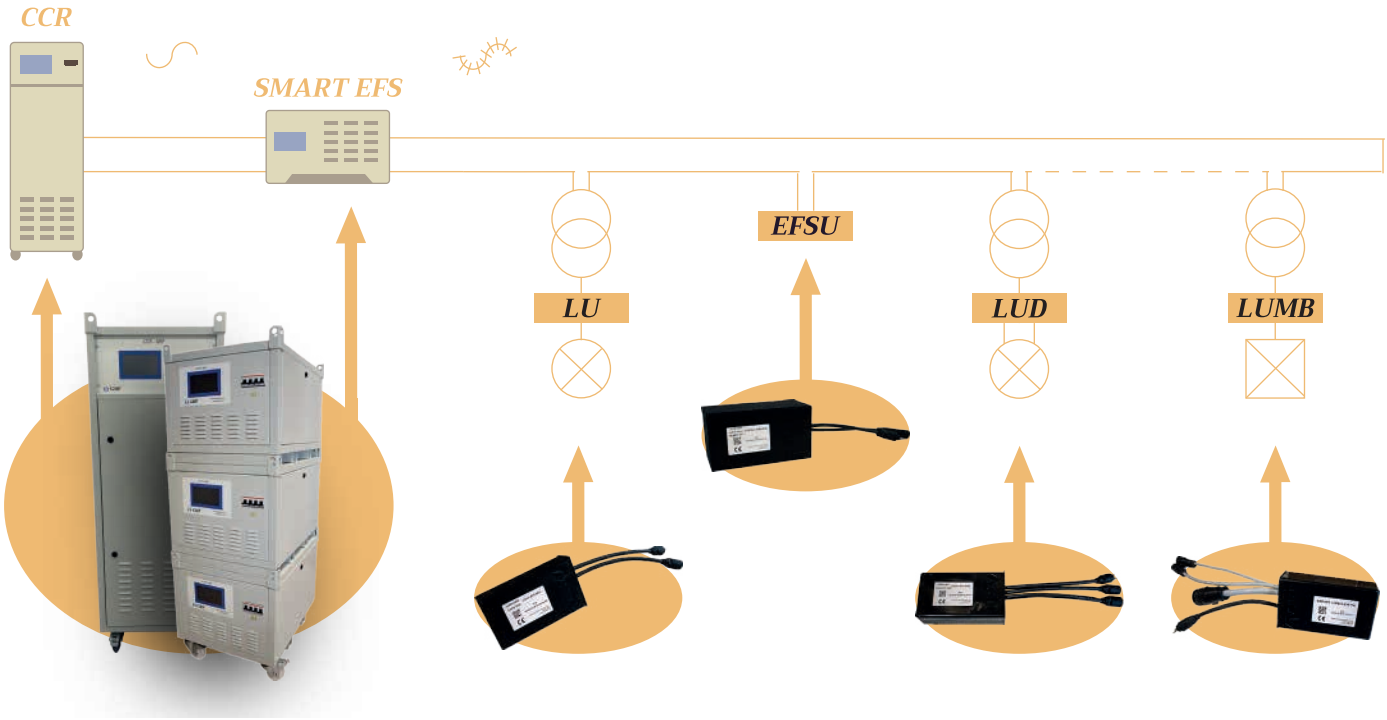




Integration of individual Lamp Control and Monitoring (ILCMS)

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) or LUD (Lamp Unit Dual).

See ILCMS-GRP brochure for more information.

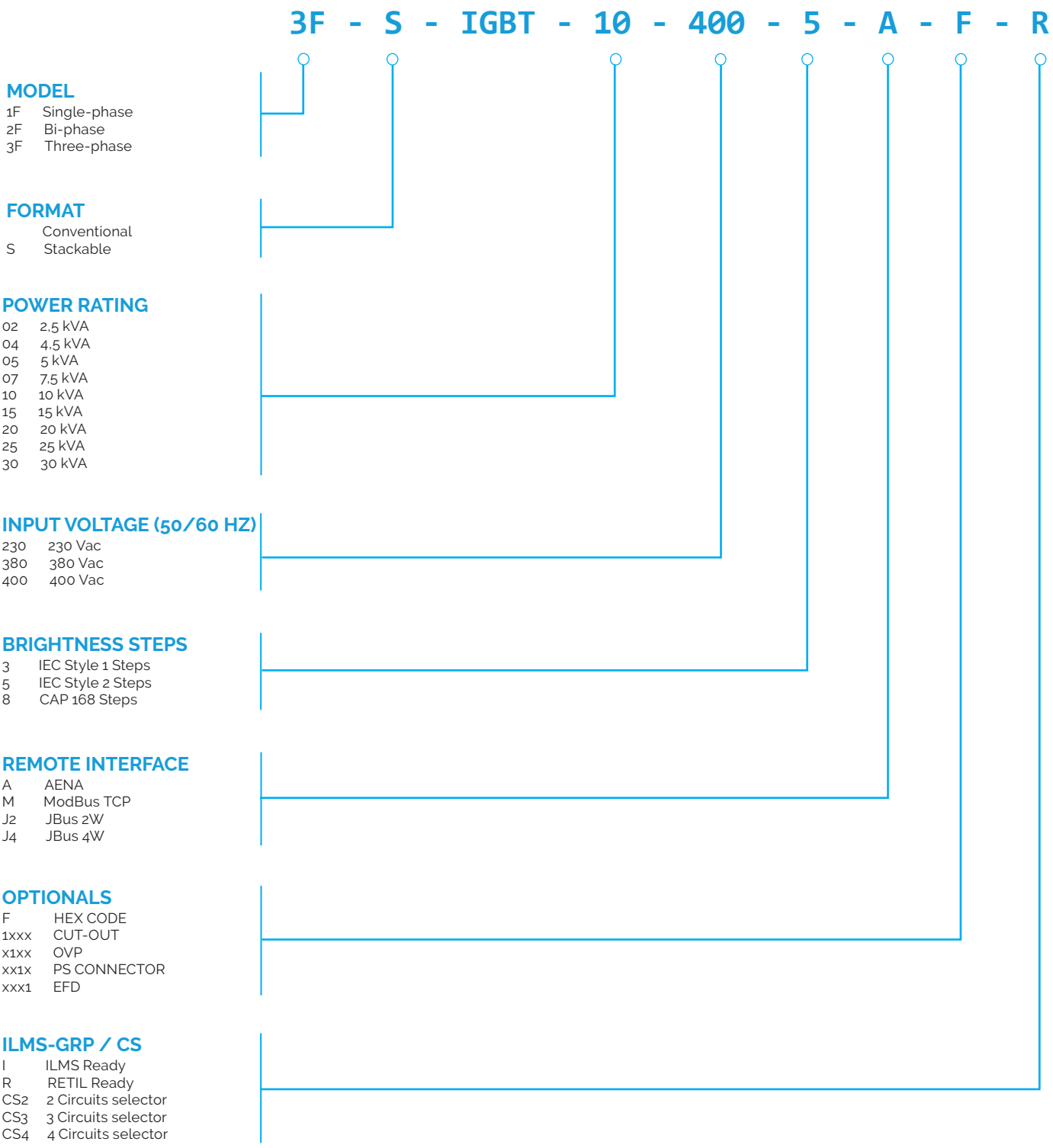


There are two integration possibilities:

- **"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).

Ordering code



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