Integrated Power and Protection System (IPPS)

CODE 11638

PRODUCT SPECIFICATION

POWER PANELS AND STATIONS FOR UTILITY SERVICES

The Integrated Power and Protection System (IPPS) Code 11638 represents the Power Station for uninterruptible power supply of RFI's signaling systems designed and built according to RFI Technical Specification RFIDTCDNSSSTBSFIS06732 - D.

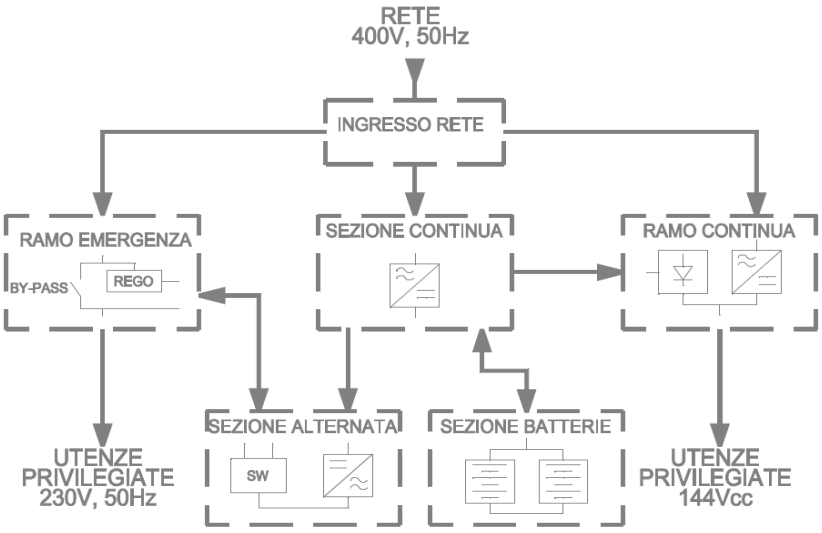
In addition to the provisions of the Technical Specification, the device has the following improved features representing the result of R&D activities carried out on the system:

- Replacement of the DC Branch static conversion module with a rectifier of the same technical characteristics as the module used in the DC Section;
- Elimination of the Power Factor Improvement Branch as a result of the limited Power Factors associated with the possible IPPS operating configurations;
- Use of a single static switch for automatic switching between AC Branch and Emergency Branch.

IPPS consists of the following functional subassemblies (see also figure below):

- "**NETWORK INPUT**": drawer made both for interfacing to the external system via terminal blocks and for controlling and measuring the power quantities of the device.
- "**CONTINUOUS SECTION**" **(DC)**: drawer made for AC/DC conversion and also intended for housing the control units of the whole device. It is used as power source of the "ALTERNATE SECTION," the "BATTERY SECTION," and as backup for the DC privileged users in case of the "CONTINUOUS BRANCH" being out of service.
- "**ALTERNATE SECTION**" **(AC)**: drawer intended for the second stage of AC conversion for supplying power to the privileged users. The box also houses the static switch.
- "**EMERGENCY BRANCH**": drawer made to ensure the continuity of power supply to privileged AC users. This supply is achieved, under normal operating conditions, through the double conversion system ("CONTINUOUS SECTION" and "ALTERNATE SECTION"). In case of AC branch failure or for maintenance operations, through a voltage regulator directly connected to the input, the system can supply AC power directly from the "NETWORK INPUT."

- "**CONTINUOUS BRANCH**": drawer intended for DC conversion for supplying DC privileged users.
- "**BATTERY SECTION**": compartment dedicated to housing accumulator batteries.



The IPPS is made as single cabinet with the following dimensions and features:

- Dimensions 600(l)×750(w)×2000(h)mm
- Approximate weight 450 kg
- External treatment/finish Paint color RAL 7032, fine textured
- Front and back accessibility
- Floor mounting
- Frontal protection rating IP20B

Stabilized Battery Charger Feeder (SBCF)

CODE 11693

PRODUCT SPECIFICATION

POWER PANELS AND STATIONS FOR UTILITY SERVICES

The "Stabilized Battery Charger Feeder" (SBCF) Model OM-RFI-ASC Code 11693 is designed and manufactured in accordance with RFI Technical Specification DMA IM LA SP IFS 330 A and is the device for supplying DC Auxiliary Services of Electric Sub-Stations (ESS) and ET (Electric Traction) Cabins.

The Power Station is made in two different model variants:

- "NON-REDUNDANT" model with No. 1 FU and No. 1 BCU;
- "REDUNDANT" model with No. 2 FUs and No. 2 BCUs (including 1 Stand-By).

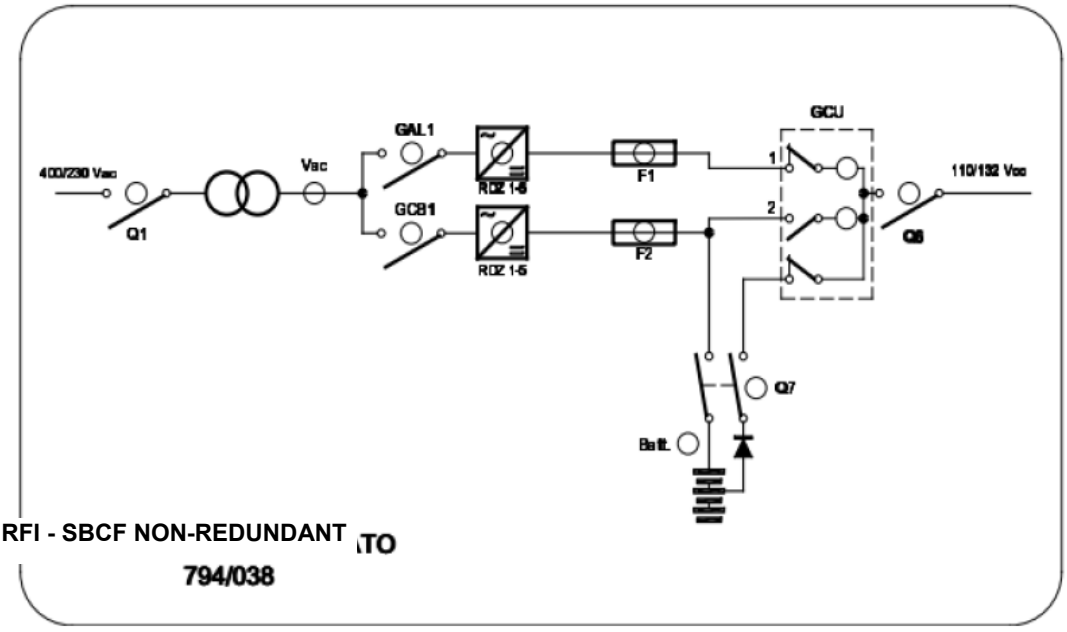
The acronyms "FU" and "BCU" refer to the two basic active subsystems that make up the device, namely, the "Feeder Unit" and the "Battery Charging Unit," respectively.

The rack, capable of housing up to 42 conversion modules, is prepared for configuration in both "NON-REDUNDANT" and "REDUNDANT" versions. The model supplied as "NON-REDUNDANT" is normally equipped with all the elements that would make the device house any additional modules. This versatility allows for the possible future conversion of a "NON-REDUNDANT" Power Station to a "REDUNDANT" one.

The main subsystems and components that make up the entire SdE are:

- Isolation transformer;
- Protective switches section;
- Feeder Unit (FU);
- Switching Unit (SU);
- Battery Charging Unit (BCU);
- Blocking diode;
- Control and Supervision Unit.

General operation diagrams of the device in its two different versions are given below:



RFI - SBCF NON-REDUNDANT ITO

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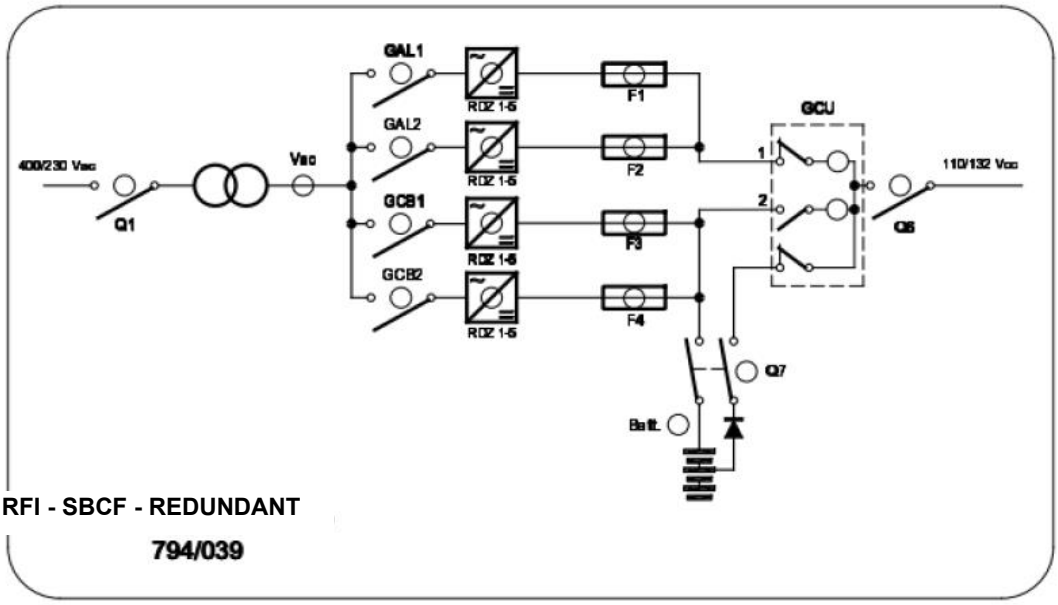

RFI - SBCF - REDUNDANT

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The FU and BCU units are made by OMICRON Industrial static conversion systems, which can deliver nominally 100A and 60A. FU is a three-phase static conversion system that delivers nominally 100A and consists of 5 units in parallel 20°. BCU is a three-phase static conversion system that delivers nominally 60° and consists of 3 parallel 20A units.