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RETIFICADOR CARREGADOR
DE BATERIAS INTELIGENTE

Tracel

RECT (SBCR)
SMART BATTERY CHARGER RECTIFIER

Mod.: IF3FCC60010A
Current: 20A

24Vcc | 48Vcc | 125Vcc | 250Vcc | 400Vcc*
50 a 500A*

*Other voltages and currents upon inquiry

Applications:
- Industries, Laboratories, Hospitals, and Buildings
- Substations
- Automation
- Emergency Lighting
- Naval (Offshore)
- Telecommunications
- Uninterruptible DC Systems

The Industrial Rectifiers from TRACEL aim to provide stabilized direct current power with the necessary quality to various types of consumers, from standard to more sensitive ones.

They typically operate in conjunction with a battery bank with autonomy tailored to the needs of the consumer connected to the system.

Designed with the concept of Ecotechnology

- High-efficiency equipment (low energy waste).
- Robust design and use of professional components, increasing MTBF (Mean Time Between Failures) and lifespan, thereby avoiding component replacements or equipment replacement.
- Manufacturing processes with fewer pollutants.

Key Features

- Topologies: Thyristorized or Switched (IGBT).
- Input Voltage: Single-phase (110/127/220/380/440/480Vac) for models up to 5KW output and Three-phase (220/380/440/480Vac) for models above 5KW.
- Power Factor: 0.85 (standard) or 0.97 (optional).
- Operation with Electric Generators.
- DC Output Voltages: 24/48/125/220/250V (other voltages upon request).
- Output Currents: from 50 to 500A (other currents upon request).
- Batteries: use with alkaline, stationary lead-acid, sealed, ventilated, or valve-regulated batteries.
- Galvanic Isolation - through own technology Isolation Transformer (low losses and low noise coupling between primary and secondary).
- Output Ripple: 0.1 to 1% (according to order).
- Redundant operation capability.
- Microprocessor control with state-of-the-art DSP.
- Digital monitoring, control, and programming panel.
- Remote communication and diagnostics with event log (via WEB server).
- Remote interface (Serial, Ethernet, and dry contacts).

Optional

• Power factor greater than 0.95.

• DFD (Diode Drop Unit): allows the consumer to receive a continuous voltage within the necessary tolerance range when the rectifier/charger is recharging the battery (float or equalization voltages).

• VCR (Voltage Compensation Unit): performs the same function as the DFD, but through a high-frequency PWM DC/DC converter in series with the output, ensuring fine voltage regulation at the consumer of +/- 1% even with the rectifier operating in float or equalization mode.

• Magnetic switch for battery disconnection when a network fault occurs or when the battery reaches its minimum discharge voltage.

• External temperature sensor for battery recharge compensation.

• Models for military use.

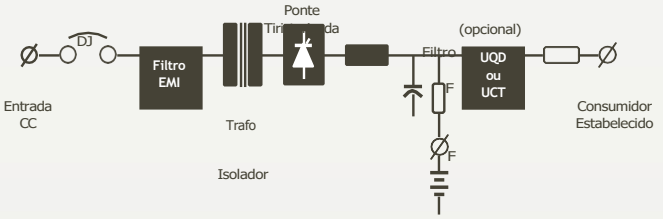
Distinguishing Features

• National design, manufacturing, and maintenance.

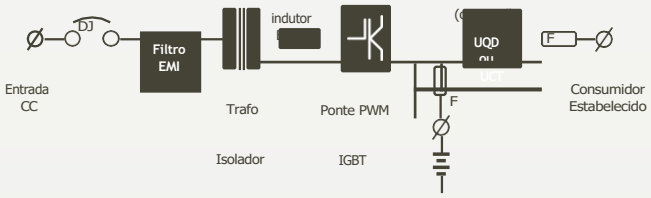
• Prompt technical support.

• Ecotechnology.

Thyristorized Model

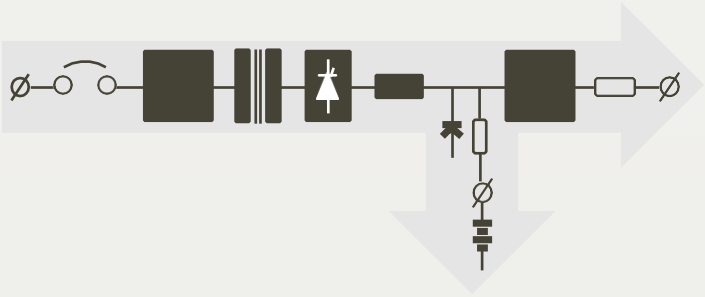


IGBT Transistor Model (high power factor)

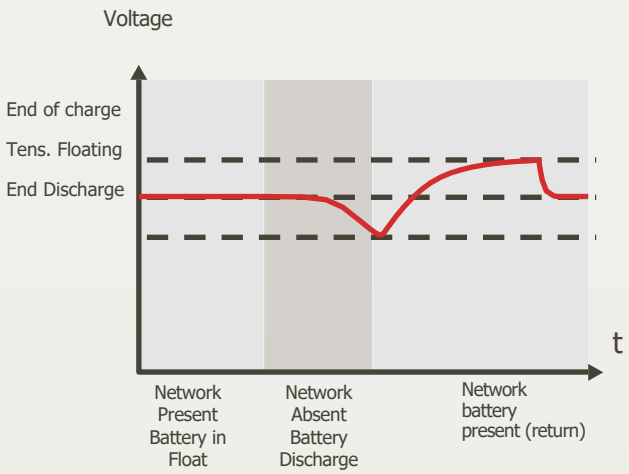


Designed with the concept of Ecotechnology

Under normal circumstances, the network power feeds the consumer while keeping the battery in float mode (voltage necessary to overcome internal losses and maintain the battery 100% charged). In the event of a network failure, the battery immediately supplies power to the consumer without any interruption or switching. Upon network restoration, the battery is recharged. During this recharge, the current to the battery is limited (to avoid compromising its elements), increasing the voltage up to the final charge voltage (equalization value among the battery elements). Once this threshold is reached, the equipment adjusts the output voltage to a lower value (float voltage) that will keep the batteries fully charged while the network is present.



During the recharge cycle, the consumer will experience voltage variations in the battery. Therefore, if a narrower voltage variation range is required at the consumer, the equipment can be equipped with a DFD (Diode Drop Unit) or a VCR (Voltage Compensation Unit).



Electrical Characteristics

Ambient Temperature: 0 to 45ºC.

Altitude: Up to 1000 meters.

Humidity: Up to 95% non-condensing.

Nominal AC Input Voltage:
- 110/127/220/380/440/480Vac 1Ø (Equipment up to 5KW).
- 220/380/440/480Vac 3Ø (Equipment above 5KW).

Allowable input variation: +/- 15%.
Input Frequency: 50/60Hz (+/- 5%).
Power Factor: 0.85 (thyristorized) or 0.97 (with IGBT). Efficiency: 90% (1F) and 95% (3F).

Input Configuration:
- **Single-phase models:** P+N+G ou 2P+G.
- Three-phase models: 3L+G (no need for neutral).

Nominal DC Output Voltages: 24V-48V-125V-250V-400V.
Float Voltage (adjustable via software by +/- 10%):
• Lead-Acid Batteries: 2.2V/cell.
• Alkaline Batteries: 1.4V/cell.
End-of-Charge Voltage (adjustable via software by +/- 10%):
• Lead-Acid Batteries: 2.4V/cell.
• Alkaline Batteries: 1.65V/cell.
Output Voltage Regulation: less than +/- 1%.
Dynamic Regulation: 50mS.
AC Ripple at Output: 1% or 0.1% (on demand).

Output Currents: 50/75/100/150/200/250/300/400/500A.

Battery Current Limitation:
• Adjustable from 10 to 50% of the nominal output current.

Controls:
• Circuit breaker for protection and energization.
• Power On/Off button on the LCD panel.
• Automatic/Manual Load Selection via menu.
• Float/Charge Selection (manual condition) via menu.
• Sound Alarm Mute button (MUTE).
• Control buttons on the LCD panel menu.

Protections:
• Thermal-magnetic circuit breaker on the AC input.
• Fuses on the DC output for the battery and consumer.
• Thermal protection for power semiconductors.
• Current protection for power semiconductors.
• Total current limitation on the output.
• Battery current limitation.
• Shutdown due to output overvoltage.
• Shutdown due to abnormal network (voltage and frequency).
• Input surge voltage protection filter.
• Ground fault output (alarm)

Indicators:
• LED equipment powered on.
• LED equipment in service.
• LED network absence (battery in discharge).
• LED output overvoltage.
• LED overcurrent on output.
• LED system failure.
• Abnormal network, abnormal temperature, incorrect input phase sequence, input undervoltage and overvoltage, via LCD (liquid crystal display).
• Battery charge status (via LCD)

Measurements:
• Input Voltages and Currents.
• Input Frequency.
• Input Power and Power Factor.
• Battery Voltage and Current.
• Battery Charge/Discharge Percentage.
• Consumer Voltage and Current.
• Output Power.
• Equipment Event Log.

Communication Interfaces:
• RS-232 / RS-485 / Ethernet / USB.
• 03 Programmable dry contacts.

Construction Features

Panel with modular screw-fastened structure with base frame, front door, removable covers: back, sides, top, and front. Powder-coated polyester resin electrostatic paint with a thickness of 80 micrometers, structure, and closures in RAL 7032 beige color.

Other Equipment Interface Panel

• AC Uninterruptible Power Supply (UPS) Systems.
• Voltage Stabilizers.
• Inverters for Motors.
• Grid-Tied Photovoltaic Energy Converters.
• Off-Grid Photovoltaic Energy Converters.
• Hybrid UPS + Solar Energy Systems.
• Electronic Converters for Electric Vehicles (buses, cars, and boats).
• Development of Special Energy Converter Projects.

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