TekSea®

TEKPOWER

Technical Catalog

Portable Switched-Mode Rectifier / Charger TPS125-P

Confidence in critical missions.

- High-Frequency Switching Rectification
- Compact and Portable Design
- Designed for Maintenance Operations, Emergencies, and Interventions
- High Power Factor and Low Harmonic Distortion
- User-Friendly and Intuitive Human-Machine Interface (HMI)
- 100% National Technology

Purpose and Applications

The TekSea Battery Rectifier/Charger, model Tekpower TPS125-P, is a high-frequency switched-mode system developed for maintenance, commissioning, and emergency operation applications in DC systems.

Its main application is the controlled recharging of battery banks and the temporary supply of DC loads, supporting field interventions, temporary replacement of rectifiers, and support for critical systems.

The portable design allows easy transportation and rapid commissioning, reducing downtime during corrective or preventive maintenance.

The equipment prioritizes mobility, ease of use, and temporary support for DC systems during technical interventions.

FEATURES

The TPS125-P features comprehensive monitoring, operation, and alarm functions, enabling rapid assessment of the system status during maintenance, commissioning, and emergency service activities.

- Compact and portable architecture, allowing easy transportation and rapid commissioning.
- High efficiency (92% typical) and low ripple (<1%), ensuring clean and stable power.
- Configurable alarms with user-adjustable timing settings.
- Digital current limiting of the rectifier and battery in closed-loop control.
- Comprehensive protection against short circuits, input and output undervoltage/overvoltage, phase loss, overtemperature, and frequency deviations.
- Integrated battery testing, including measurement of autonomy, capacity in Ah, and energy in kWh.
- Automatic voltage compensation according to temperature.
- Automatic and manual charging modes (float and equalization), with programmable timing.
- Wide AC input range, soft start, and dynamic compensation for frequency fluctuations: reliable operation on unstable power grids and generator sets.
- Compatibility with communication protocols:

✔ Modbus RTU (Standard)

✔ Modbus TCP, DNP3, MMS IEC 61850, and SNMP (Optional) via gateway

- Digital inputs and outputs for status monitoring, external alarms, and remote commands. (Optional)
- Fast dynamic response to load steps.
- Detection and protection against recurring cyclic failures in the AC power supply: high reliability even in highly intermittent power networks, typical of maintenance and emergency operation environments.

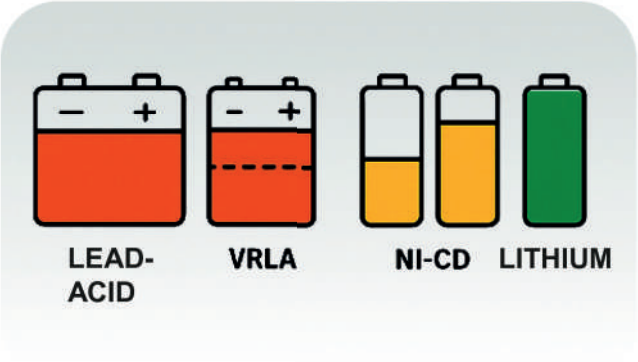
Technological Differentiators

Performance and Reliability

- High-frequency switched-mode architecture, ensuring low ripple, excellent static and dynamic regulation, and high durability.
- Reliable operation even on low-quality power grids, tolerating high harmonic distortion and severe voltage and frequency variations, including critical conditions with generator sets.

Compatibility with Multiple Battery Technologies

- Flexibility to operate with different types of batteries, including vented lead-acid, VRLA, Ni-Cd, and lithium.
- Allows adaptation to different projects and customer requirements, ensuring greater versatility in industrial maintenance activities.



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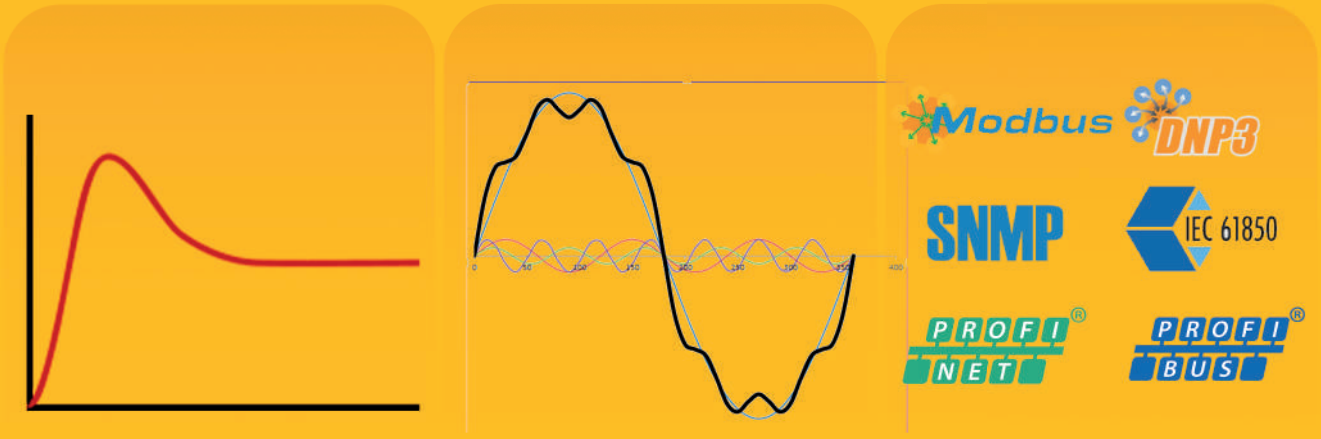
Technological Differentiators



Short-Circuit Protection

Thanks to the high-frequency switched-mode architecture combined with advanced digital control, the T**ekpower TPS125-P** supports short circuits on both the load output and the battery output. This feature ensures operator safety and prevents equipment damage even under extreme conditions.

Support for High Levels of Harmonic Distortion

The **Tekpower TPS125-P** is designed to operate stably even on power grids with high levels of harmonic distortion, without compromising the system's service life or reliability. This robustness makes the equipment ideal for maintenance applications, emergency use, and operation with generator sets, including industrial environments with severe grid conditions.

Integration with Supervisory Systems

Available with the following protocols:

- ✔ Modbus RTU **(Standard)**.
- ✔ Modbus TCP; DNP3; SNMP (v2c and v3); MMS IEC 61850, among others **(Optional)**.

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Technological Differentiators

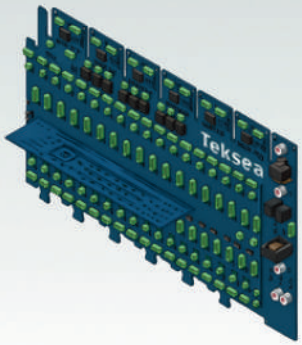
Graphical Human-Machine Interface (HMI)

Equipped with a 128 × 64 pixel graphical HMI, providing clear visualization of electrical parameters and operating status.

It also features an intuitive operational schematic and an alarm and event log, ensuring traceability and ease of diagnosis.

Electrical Protection and Full Isolation

The rectifier modules feature full isolation between their internal stages, ensured by the unit's topology, providing greater reliability, protection against grid disturbances, and continuity of operation.



Digital Control on Proprietary Platform

The control is fully implemented in a DSP (Digital Signal Processor), using a proprietary platform that enables high precision, flexibility, and future expansions.

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100% National Technology

TekSea invests in national technology as a strategic pillar, with solutions developed by a technical team composed of engineers, master's degree holders, and PhDs. This commitment strengthens innovation and drives the technological development of the Brazilian industry.

TSU125 – Rectifier Unit of the Portable System

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The **TSU125** is the rectifier module that makes up the TPS125-P system.
Designed for high-frequency operation, it provides robustness, reliability, and performance for maintenance, commissioning, and emergency support applications in DC systems.

Key Highlights:

- ✓ Rated power of 2.9 kW and output current of up to 22 A
- ✓ Switched-mode architecture that facilitates maintenance and technical support
- ✓ Front interface with digital display, navigation keys, and status, alarm, and fault LEDs
- ✓ Closed-loop digital control, ensuring voltage and current accuracy

The **TSU125** incorporates electronic protections, automatic current balancing between modules (when applicable), high efficiency, and ripple below 1%, maintaining stable operation even under severe grid conditions.Its design aims to ensure operational reliability and ease of maintenance, reducing system downtime.

Advanced Features of the Tekpower TPS125-P

INTEGRATED BATTERY TEST

The **Tekpower TPS125-P** incorporates an exclusive battery testing function that allows accurate assessment of the condition and autonomy of the battery bank, reducing operational risks and ensuring reliability in emergency situations.

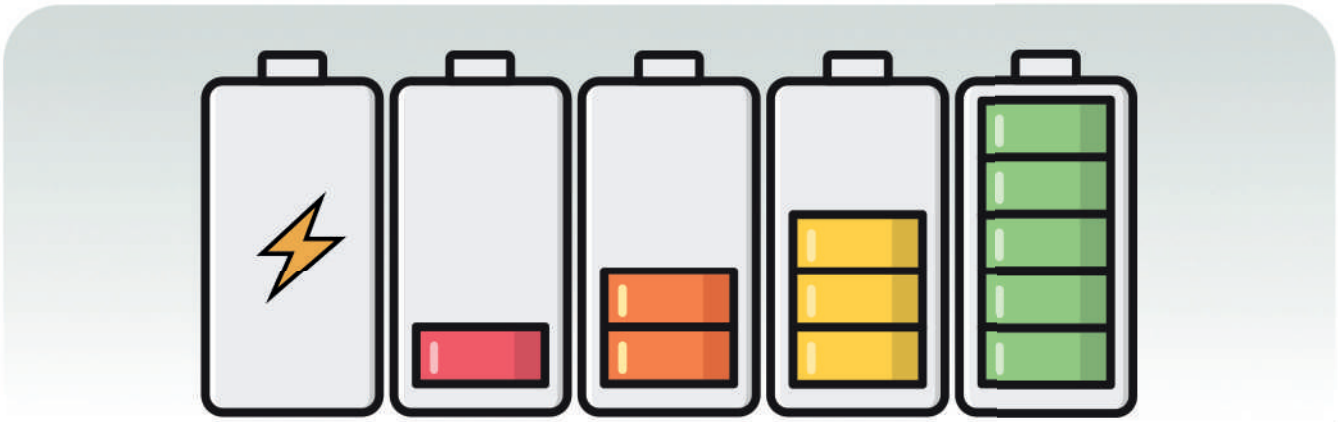
Active Current Control Mode

- ✔ Maintains a constant discharge current, as configured in the rectifier
- ✔ Ideal for standardized tests according to the manufacturer's table
- ✔ Accurate assessment of capacity (Ah) and autonomy (min)

External Load Discharge Mode

- ✔ Accurate assessment of the actual battery capacity and autonomy
- ✔ Verification of dynamic behavior during discharge
- ✔ Allows assessment of actual capacity and autonomy under real operating conditions

This integrated functionality transforms the **Tekpower TPS125-P** into a complete preventive diagnostic tool, avoiding unexpected issues in the field and optimizing battery bank management.



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TECHNICAL SPECIFICATIONS

General Data	Power Range	Up to 8.7 kW
	Topology	High-Frequency Switched-Mode
	Technology	Modular
	Isolation	Complete
	Compliant with:	IEC 55032; IEC 55035; IEC 61000-3-2; IEC 61000-3-3; IEC 61000-4-2; IEC 61000-4-3; IEC 61000-4-4; IEC 61000-4-5; IEC 61000-4-6; IEC 61000-4-8; IEC 61000-4-11; EN 61000-6;
AC Input	System	1F / 2F / 3F / 3F + N
	Nominal Voltage	220 / 380 V *
	Nominal Frequency	50 / 60 Hz
	Frequency Variation	± 20%
	Power Factor	0.99
	THDi	< 3%
DC Output	Nominal Voltage	91 ~ 145 Vdc
	Nominal Current	Up to 66 A
	Voltage Ripple	< 1% Vrms
	Efficiency	92%
	Static Regulation	± 1%
	Dynamic Regulation	± 5% (Stabilization Time < 50 ms)
TSU125 Rectifiers	Input Voltage	220 Vac (90 Vac ~ 264 Vac)
	Efficiency	92%
	Power Factor	0.99
	THDi	< 3%
	Power	2900 W (176 ~ 264 Vac) / 1200 W (90 ~ 175 Vac)
	Maximum Current	22 A
	Operating Temperature	-40°C to +60°C (Linear Derating from 100% to 40%)
	Dimensions (H × W × D)	111 mm × 88 mm × 270 mm (2U/A)
	Ventilation	Forced Ventilation
System	Display	Graphical HMI 128 × 64 pixels
	Standard Communication Protocols	Modbus RTU – RS485
	Ethernet Communication Protocols (optional)*	Modbus TCP DNP3 SNMP v1, v2c and v3 MMS IEC 61850 Dry Contact
	Additional Features	Current Limitation at the Rectifier and Battery Output Battery Test Function Hour Meter Recharge Cycle Counter USB Access to Supervisory System
	Dimensions (H × W × D)	511 mm × 507 mm × 268 mm
	Weight (kg)	30 kg
	Options	Battery Temperature Sensor Battery Disconnection by Contactor Output Relay Expansion Dry Contact, Digital Inputs and Outputs Communication Gateway (Modbus TCP, DNP3, MMS IEC 61850, SNMP)
Environmental Conditions	Operating Temperature	-10°C to +45°C
	Humidity	5% to 95% (Non-Condensing)

* Other options available upon request.

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Also discover other solutions in our portfolio

Energy

Thyristor Rectifier/Chargers (with and without battery bank)

Industrial and Commercial UPS Systems (Modular)

BMS – Battery Monitoring System

DC/AC Inverters with Static Switch

Integração

Electrical Panels for Auxiliary Services

Monitoring and Automation Systems

Serviços

Maintenance Contracts and Specialized Technical Support

Spare Parts Supply

Retrofit and Modernization Services

24/7 Hotline Support

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Contact us and find out how to integrate these solutions into your project.

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Need More Information?

www.teksea.net

The information contained in this document consists of general descriptions of the available technical solutions and is intended for reference purposes only.

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