



UPS-MAK Outdoor UPS Solutions

3kVA 1:1 UPS Solution with 20 Minutes



- True On Line-Double Conversion Technology (Class VFI-SS-111)
- IGBT PWM Rectifier & Inverter Technology
- DSP Control
- Low Input Current THD (<3%)
- High Input Power Factor (>0.99)
- High Efficiency up to 93%
- Optional Dual Input
- Wide Input Voltage Range
- Advanced Battery Management
- Short Circuit and Overload Protection
- Unlimited Number of Paralleled Modules
- Selectable Number of Batteries
- 500 Real Time Event Log with Detailed Parameters
- Static&Manual Bypass Operation
- Overload and Short Circuit Protection
- Small Footprint and Easy Maintenance
- Advanced Communication Capabilities
- Perfect Generator Compatibility
- Customizable as Frequency Converter
- Industrial Application, Data Centers, Military Usage and Customized
- Outdoor Solution IP66



Outdoor Solutions



Customized Solutions

*1kVA * 2kVA *3kVA *6kVA *10kVA *15kVA *20kVA *30kVA *40kVA *60kVA *80kVA *100kVA *120kVA *160kVA *200kVA *250kVA *300kVA



Outdoor Solutions



Customized Solutions



Military Solutions



Technical Advantages of UPS-MAK Outdoor

The UPS-MAK Outdoor Series An Advanced UPS Technology

Outdoor Series is a true Online Double Conversion, new generation fully digital controlled UPS. Its highly flexible design meets high efficiency and high availability power needs of a wide variety of critical applications and delivers an advanced power solution with low cost of ownership.

High Performance Power Protection Designed for Maximum Efficiency and Flexibility

Equipped with its new IGBT rectifier outdoor series keeps your critical loads protected while its space-saving compact design and front access for maintenance successfully reduce mean time to repair (MTTR).

Thanks to the wide variety of accessories and options Outdoor Series presents maximum flexibility advantage to users and optimizes total cost of ownership.

⦿ DSP Power Factor Corrected IGBT Rectifier

IGBT based power factor correction technology provides Input Power Factor close to 1 (≥ 0.99) and keeps Input Current Total Harmonic Distortion (THDi) less than 3%, that helps to avoid the disturbance.

⦿ Low Input Current THD

(THDi) less than 3% avoids the disturbance to connected loads

⦿ Digital Control System

All of the control functions for Outdoor Series UPS including power-on, start-up control, input stage power factor control, battery charging and boosting control, output stage ac voltage regulation and shut-down control, can be realized by using a single DSP control board.

⦿ High Input Power Factor

0,99 Input power factor ensures clean and sinusoidal input current. The high input power leads to reduced electricity pay-out, minimizes cable, switchboard, fuse and generator requirements, thus reducing investment cost.

⦿ High Efficiency & Low Total Cost of Ownership

With its high efficiency up to 93% Outdoor Series UPS consumes less energy to supply the loads. Thanks to this high efficiency rate, the percentage of energy that is produced as heat is reduced to a minimum. As a result of decreased heat emission users can reduce their electricity usage and air conditioning requirements.

⦿ Static & Manual (Maintenance) Bypass

Outdoor series includes standard static and manual bypass. Static bypass provides safe failure to mains if the UPS is overloaded or develops a fault condition. Where EMI filters are used to help to neutralize spikes and electrical noise, the load may be routed through bypass to provide further protection. Manual bypass function is intended only for maintenance work, this bypass supply is incorporated into the Outdoor UPS design. Manual bypass is used to power down the UPS without interrupting the power to the load. With this feature it is completely safe for the technical personnel to work on the faulty UPS.

⦿ Flexibility

Outdoor is compatible with wide range of application. Flexibility achieved through many choices, including type of battery, single or multi-unit configuration, accessories and options.

- ⦿ Frequency converter mode
- ⦿ Optional temperature sensor for external battery cabinets (to assist the recharge voltage compensation)
- ⦿ Additional battery chargers to optimize charge time
- ⦿ Optional separated bypass
- ⦿ Isolation transformers to vary neutral connectivity in the event of separate power sources or for galvanic isolation between input and output
- ⦿ Battery cabinets of different sizes and capacities, for providing extended runtimes.



	THD	Power Factor
UPS-MAK Outdoor with IGBT Rectifier	<3%	<0.99
Traditional UPS with Input Filter	<10%	<0.95
UPS without Input Filter	<25%	<0.85



Technical Advantages of UPS-MAK Boxer



Auto Restart

When the main and bypass sources fail, the UPS draws power from the battery system to supply the load until the batteries are depleted.

When UPS will reach its end of discharge, it will shut down.

The UPS will automatically restart and enable output power:

- After utility power is restored
- After the "Auto Start Delay Time" is expired (the default delay is 5 minutes) .

Perfect Generator Compatibility

Outdoor Series is perfectly compatible with diverse sources, especially with generators. When generator power is used, thanks to its robust IGBT rectifier, it ensures clean, uninterrupted power to protected equipment.

With high input power factor performance of outdoor Ups series it is enough to choose generator with power only %20 higher rated than the UPS.

Outdoor Series has the ability to adjust power walk-in from 5 to 15 seconds, along with reduced input current distortion.

EPO(Emergency Power Off)

EPO function is designed to switch off the UPS in emergency conditions (fire, flood, etc.). The system will turn off the rectifier, inverter and will stop powering the load immediately (including the inverter and bypass) also the battery stops charging or discharging.

Reverse Energy Tolerance for Regenerative Loads

The Outdoor UPS can be used with regenerative loads, such as synchronous motors. The regenerative loads pump the energy back to mains, traditional Ups systems burn this feedback energy and this causes lower efficiency. Outdoor Series Ups with IGBT rectifier are able to absorb intermittent load generated power. Additionally, this reverse power tolerance permits execution of important system operations like closed transition transfers of the UPS load directly to an engine generator source.

Advanced User Interface

Outdoor Series UPS has Large and user-friendly 320x240 LCD display that provides operating information in four different languages. Thanks to this advanced LCD display all parameters of working device can be monitored and controlled. UPS is capable of recording up to 500 events.

Advanced Battery Management

Outdoor Series guarantees enhanced battery life and maximizes battery performance, life span and reliability through intelligent precision charging. Temperature Compensated Battery Charging monitors performing measurement of external and internal battery temperature and adjusting the charge current rate accordingly. Advanced battery management provides real-time information about battery capacity and back up time, this information can be seen on LCD panel. The Ups tests the batteries at adjustable periods without switching off the system, the test periods can be set by users.

Parallel Operation

Outdoor Series features easy and simple scalability and redundancy. It is ready to grow with your business demands. Different power rated units and any number of UPS can be connected in parallel.

Power Increase: The UPS's can be connected in parallel to increase total capacity of the system. If one of the devices goes out of order, the critical loads are transferred to by-pass.

Parallel Operation Features :

- Internal standard parallel microprocessor for all models.
- Up to 16 units parallelable
- Parallel connection with ring cable
- Autosensing disconnected parallel cable
- Equal current share with DSP control
- Easy power upgrade without any interruption
- All parallel systems can be controlled from the front panel of one unit
- Full synchronization of parallel units
- Isolated parallel operation card
- Static by-pass for all units



Technical Details of UPS-MAK Outdoor

Capacity	3 kVA & Max 2.4kW Output
Power Watt	Calculations for 2.4 kw Load
INPUT	
Input Voltage Range	Single Phase 230Volt -15% +18% P+N+PE
Input Power Factor	At Full Load >0.99
Input Frequency Range	45 - 65 Hz (Selectable) Wide Range Optional 40Hz - 70Hz
Rectifier	IGBT
Total Harmonic Distortion (THDi)	<3%
OUTPUT	
Output Voltage Range	Single Phase 230V P+N+PE
Recovery	0% - 100% - 0% Load, Maximum Output Tolerance 5%, 1% Back to Band <40ms
Efficiency	Online Mode Up to 93%, "Online Mode Optional %95" & Standard Eco Mode 98%
Output Frequency Range	50Hz ±0.5% Synchronous With the Network / 50Hz ±0.01% Battery Mode
THD (THDv)	Linear Load <2% Non-Linear Load <5%
Crest Factor (CF)	3:1 / Output Power Factor 1.0
Overload Capacity*	At 125% Load 10min, at 150% Load 1min
BATTERY	
Quantity (12V DC VRLA)	All Solutions are for 20 Minutes Back Up Time
Charge Value (C)	Nominal 0,1 C, Adjustable
Battery Power	25% of The Device Power
Internal Battery	4x20x200AH 12V Battery with Air Conditioner 60 Hours & 8x20x200AH 12V Battery with Air Conditioner 120 Hours Back Up Time
COMMUNICATION	
Communication Port	RS232 Standart, RS485, SNMP Adapter Option & Dry Contact Card
Dry Contact	Optional
Protocol	SEC, TELNET
STANDARDS	
Quality	ISO 9001 - ISO 14001 - ISO 18001
Performance	EN62040 -3 (VFI-SS-111)
EMC/LVD	EN62040 - 2 / EN62040 -1 EN60950
GENERAL	
Running Temperature	For UPS -10°C~45°C with Fresh Air Cooler
Storage Temperature	For UPS 15°C ~45°C For Batteries 0°C~25°C
Protection Class & Cooling	IP22 & Small Size Special Industrial IP55 Max 550Watt Cooler
Chassis & Humidity	Anti-Static Paint Protection & 0-95%
Screen	In the Cabinet 320mm x 240mm LCD Screen & Mimic Diagram Languages English, German, Spanish, French & Russian
Altitude	@50°C Power Correction 1.0 & <@55°C is for each 1Celsius %3 Power Loss
Alerts	500 Event Logs & 180 Parameters for Each Log "As Excel Sheet"
Parallel Operation	Optional: Parallel Power Increase up to 4pcs. And Customized Solutions As Well with STS or Contactor
EPO (Emergency Power Off)	Standard <1000m, Correction Factor 1. / <2000m, Correction Factor >0.92, / <3000m; Correction Factor >0.84
Isolation Transformer	Optional
Net Weight (kg)	UPS Cab with Battery: 210kg & Packed: 240kg
Dimensions (WxDxH) (cm)	UPS Cab: 800x800x1600

*under certain conditions

* 3 Phase in / 1 Phase Out Version is Available. (10 to 30kVA)

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