

# CUSTOMIZED

## POWER SOLUTIONS



OUTDOOR



TRANSPORT



INDUSTRY



EMERGENCY

A full range of custom and rugged AC&DC Power Solutions to meet with your specific requirements and where a standard UPS will not be suitable.



### SOLUTIONS

- Containerised Power Systems
- Outdoor AC&DC Power Systems
- Marine/Offshore AC&DC Power Systems
- Defence Power Systems
- Custom DC Systems/Chargers
- Standalone or Modular Design Tailored to the Requirements

### CONTAINERISED POWER SYSTEMS

- Makelsan's containerised solutions integrates Makelsan UPS and Generator together where the UPS supports critical loads without interruption until the generator kicks in. With the "True no break power solution", business continuity without costly downtime is ensured.
- Cost effective and energy saving - all in one solution. It features high reliability and security, Fast deployment, best mobility, energy saving and is suitable for a wide variety of applications and also applicable to special mobile scenarios.

Telecom

Marine

ITS Traffic

Military/Defence

Power Distribution

Oil and Gas

Railway

Alternative Power



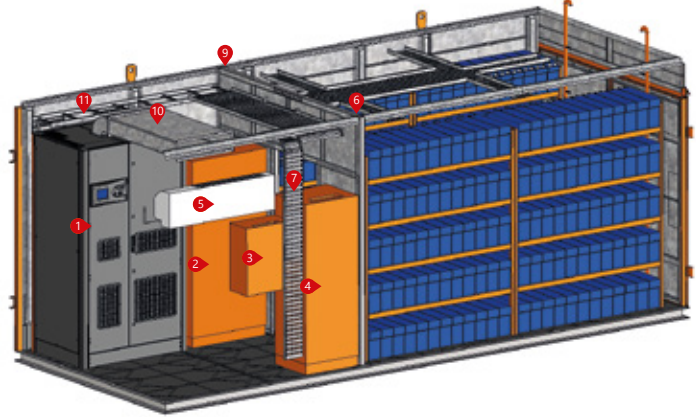
**POWER**  
FORLIFE

**MAKELSAN®**  
Uninterruptible Power Supplies

## Features

- Complete containerised UPS system up to 1000kVA 3Phase
- Up to 96% efficiency
- Integrated transfer and bypass switches
- Fully bunded ISO container
- Personnel and maintenance access doors
- Digital controls for UPS and switchgear
- Fire detection and protection
- Air conditioned UPS and battery compartments
- Environment control system.

1. Active Power Unit: UPS/ Power Converter/Freq. Converter etc.
2. Main AC In/Out Electrical Panel
3. Internal AC Distribution Electrical Panel
4. Battery Breaker Panel
5. AC Aircon
6. Cable Tray
7. Cable Tray
8. Hydrogen Gas Release
9. Active Power Unit/ Battery Compartments Separation
10. Air Baffle
11. Cables Conduit



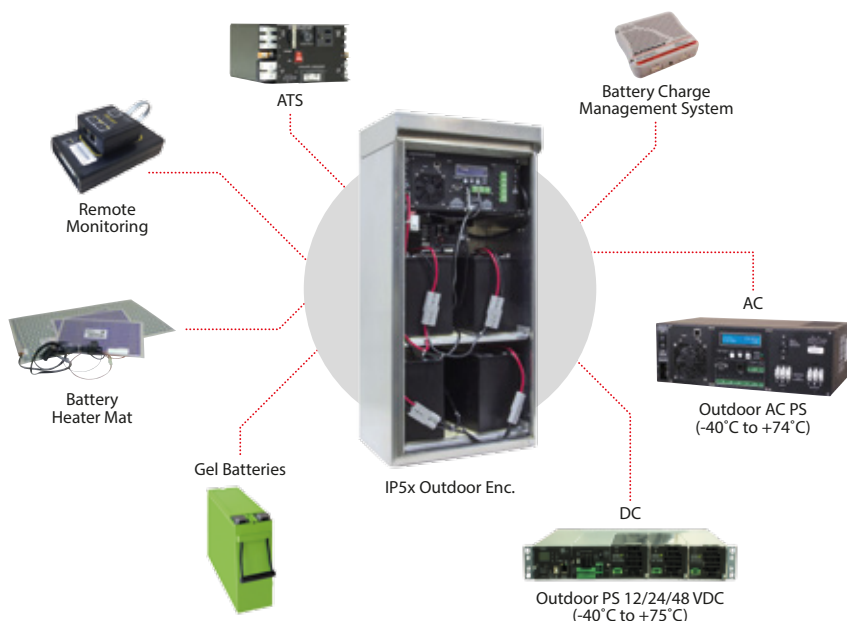
## OUTDOOR AC&DC POWER SYSTEMS

### Features

- Designed to operate under extreme temperature conditions (-40C to +74C)
- Made of rugged electric and electronic components:
- Due to fact that the UPS is designed for extreme conditions, the elements that make the UPS are also designed for extreme conditions
- Conformal coated PCB's protect against exposure to moisture and high humidity environment
- Thermostatically controlled battery heater mats available
- Temperature compensation utilized to effectively manage the battery charge voltage based on temperature
- Remote monitoring via SNMP web based communication
- Built in AVR (Automatic Voltage Regulation) allows for a wider input voltage range for World-wide use
- Enhanced surge protection capability (TVSS- Transient Voltage Surge Suppressor, LAP (Lighting Arrestor Protection)
- Enclosures meet specific ingress protection (IPXX) standard for extreme environments (Zone 4 earthquake, rain test, dust, impact test, etc)

### Applications

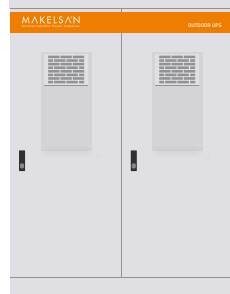
- Intelligent Transportation Systems
- Security Applications (Sea/Land/Airport)
- Telecom Applications
- Defence/Military Backup Systems
- Railway Applications
- Marine/Offshore Applications
- Industrial Applications



Outdoor AC&DC UPS Systems for Intelligent Transportation/Traffic/Security Systems



*Customized Railway UPS System can take Inputs from both a 25kV Overhead Line as well as a 400VAC Mains Supply. Available in Single Phase and Three Phase*



*IP 65 AC Standalone UPS Systems 1-20kVA with Built-in Batteries*



*IP 31-41 High Reliable and Robust 3 Phase AC Standalone Makelsan UPS Designed for Most Harsh Industrial Processes*

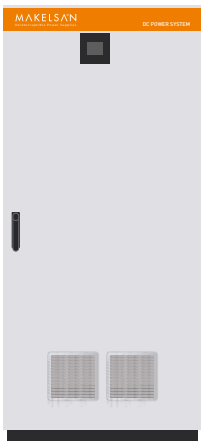
## CUSTOM DC SYSTEM/CHARGERS

Makelsan offers a comprehensive range of DC power protection products available in standalone or 19" rack, modular configurations.

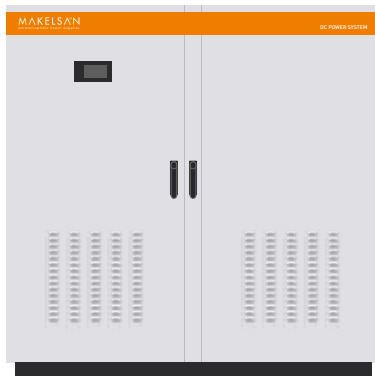
- Chargers - Single or Three Phase. 12/24/48/110/220VDC
- Power Supplies 12/24/48/110/220VDC
- DC UPS - 12-220VDC / 10A-10000A
- DC Rectifiers
- DC-AC Industrial Single/Three Phase Modular Inverters
- DC Load Distribution Panels



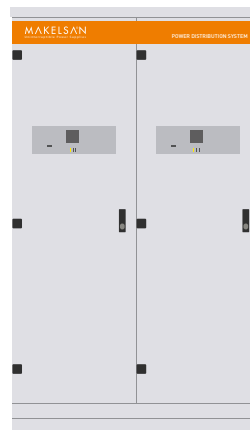
*110VDC/200A, Hotswappable/Upgradable DC System in IP41 Cabinet with 2 Groups of 12V FT Batteries and Remote Access*



*110VDC/40-10000A DC Power System*



*8X2V3000Ah Battery Change Over System Easy Change Over of 2V 1000-3000Ah Telco Batteries for Test/Maintenance Purposes*



*48VDC Power Distribution Panel with Remote Monitoring of DC Voltage and Currents*