

BOXER

SERIES

10-120 kVA

10-30 kVA

ONLINE UPS



DATA CENTER



MEDICAL



TRANSPORT



INDUSTRY



EMERGENCY

3:3
PHASE

3:1
PHASE



UPS ONLINE



TOWER



POWER FACTOR



SERVICE



HIGHLIGHTS

- IGBT PWM Rectifier & Inverter Technology
- Low Input Current THD (<3%)
- High Input Power Factor (>0.99)

DSP Power Factor Corrected IGBT Rectifier

- Equipped with its new IGBT rectifier BOXER 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 BOXER Series presents maximum flexibility advantage to users and optimizes total cost of ownership.

CERTIFICATES

BUREAU VERITAS
Certification



The BOXER Series is attested by Bureau Veritas with regard to performance (EN 62040-3)

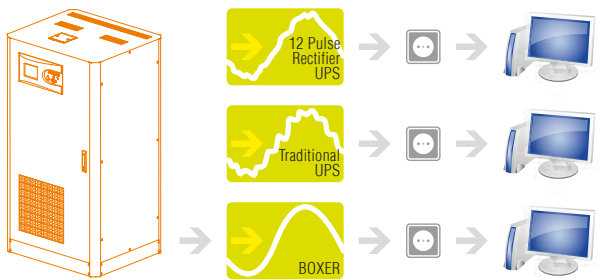


POWER
FORLIFE

MAKELSAN®
Uninterruptible Power Supplies

High Performance & Low Total Cost of Ownership

- IGBT based power factor correction technology provides input power factor close to 1 ($\geq 0,99$). The high input power leads to reduced electricity pay-out, minimizes cable, switchboard, fuse and generator requirements, thus reducing investment cost.
- Low input current total harmonic distortion (THDi) less than 3% helps to avoid the disturbance and expensive harmonic filters.
- Small footprint and easy maintenance.



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

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.

Maximum Availability

- Parallel configuration up to 8 units per redundancy (N+1) and power increase.
- Loop connection helps the UPS system to continue the operation when the connection cable is interrupted.

Standard Electrical Features

- Backfeed Protection
- Cold Start (Optional)
- Advanced Battery Management
- Short Circuit and Overload Protection
- Parallel Ready
- Redundant Power Supply
- Power Walk-in for Progressive Rectifier Start-up when the Mains is Restored.
- Battery Temperature Sensor
- Static & Manual Bypass Operation

Advanced Communication Features

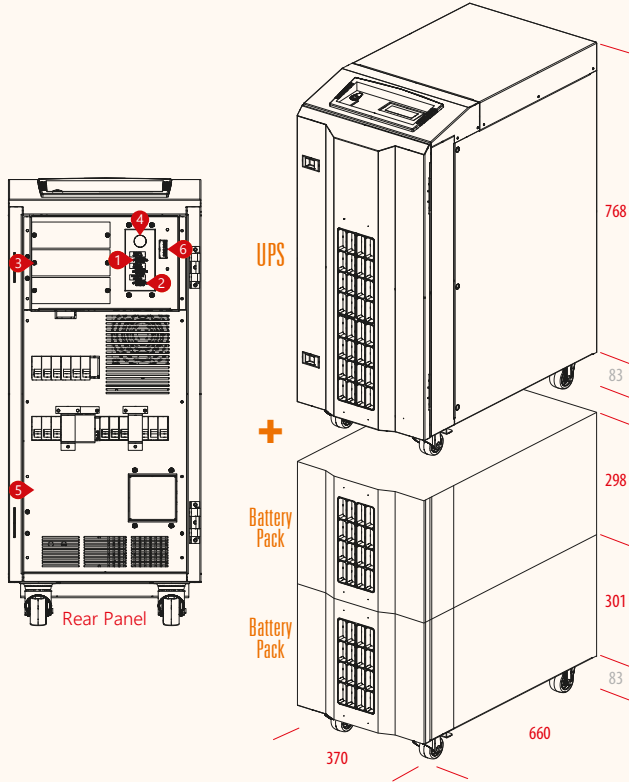
- 1500 Real Time Event Log with Detailed Parameters
- User Friendly Multilingual 320x240 Graphic Display Provides Operation Information
- Monitoring and Shutdown Software
- RS232 Serial and RS485 Ports
- 2 Communication Slots
- ModBUS RTU / ModBUS TCP (Optional)
- Remote Emergency Power Off (Optional)
- Remote Display Panel (Optional)
- Dry Contact (Optional)
- SNMP (Optional)
- ProfiBUS (Optional)

Flexibility

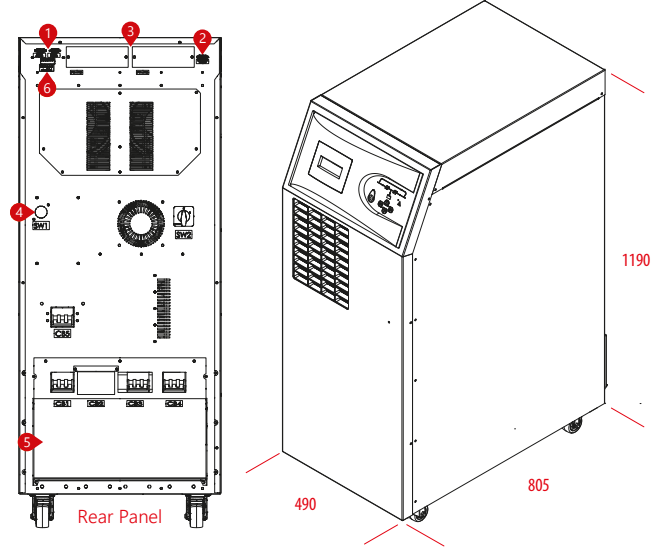
- Temperature sensor for external battery cabinets for extended runtimes.
- External battery cabinets for different sizes of batteries to provide extended runtimes.
- Different sizes of 10-40kVA cabinets for larger capacity of internal batteries when long autonomy times are required.
- 3/1 Phase version is available for 10-30kVA power ratings
- Frequency converter mode.
- Isolation transformers to vary neutral connectivity in the event of separate power sources or for galvanic isolation between input and output.
- Compatible version with EN 50171 for supplying power to emergency lighting systems.

DETAILS

MiniBOXER SERIES 10-15-20 kVA

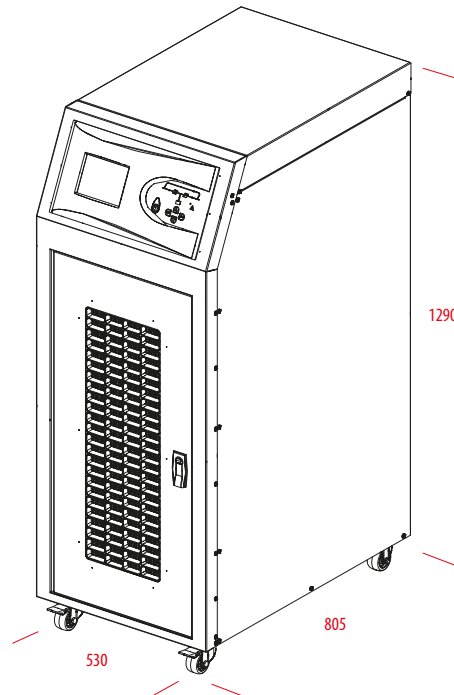
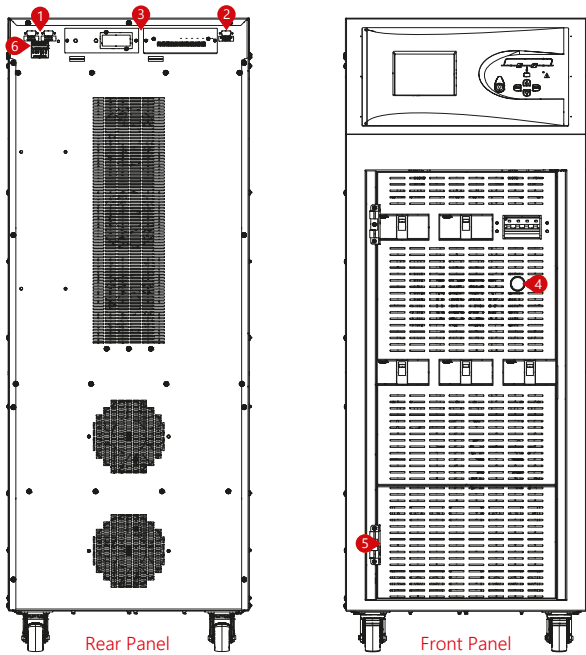


BOXER SERIES 10-15-20-30-40-60 kVA



1. Parallel Port Terminal
2. RS232 Terminal
3. Optional Card Slots
4. DC Bus Ramping Up Button
5. Connection Terminal
6. External Battery Temperature Sensor Terminal

BOXER SERIES 80-100-120 kVA



| MODEL | | MiniBOXER | | | | | | | | |
|---------------------------|-------|--|--------|--------|---------------------------------------|--------|-----------------------|--------|--------|-------|
| Capacity | | 10kVA | 15kVA | 20kVA | 10kVA | 15kVA | 20kVA | 30kVA | 40kVA | 60kVA |
| Power Watt | | 9kW | 13.5kW | 18kW | 9kW | 13.5kW | 18kW | 27kW | 36kW | 54kW |
| INPUT | | | | | | | | | | |
| Nominal Voltage | | 380/400/415 VAC 3P+N (Optional 220/380 VAC -37% +22% 3P+N+PE) | | | | | | | | |
| Voltage Tolerance | | | | | -20% +15% | | | | | |
| Frequency Tolerance | | | | | 50-60 Hz ± 10% (Selectable) | | | | | |
| Power Factor | | | | | >0.99 | | | | | |
| Total Harmonic Distortion | | | | | THDi <%3 | | | | | |
| OUTPUT | | | | | | | | | | |
| Power Factor | | | | | 0.9 | | | | | |
| Nominal Voltage | | | | | 380/400/415 VAC 3P+N | | | | | |
| Voltage Tolerance | | | | | Static ±1, Dynamic ±3 | | | | | |
| Frequency Tolerance | | | | | 50-60 Hz ±0,01% (Battery Mode) | | | | | |
| Output THD | | | | | Linear Load <1% / Non Linear Load <3% | | | | | |
| Crest Factor | | | | | 3:1 | | | | | |
| Overload Capacity* | | | | | At 125% Load 10min, At 150% Load 1min | | | | | |
| Efficiency (Online Mode) | | | | | Up to 93% | | | | | |
| Efficiency (Eco Mode) | | | | | Up to 99% | | | | | |
| BYPASS | | | | | | | | | | |
| Nominal Voltage | | | | | 380/400/415 VAC 3P+N | | | | | |
| Voltage Tolerance | | | | | 15% (Configurable from 10% to 30%) | | | | | |
| Frequency Tolerance | | | | | ±5 (Selectable) | | | | | |
| BATTERY | | | | | | | | | | |
| Type | | | | | VRLA / GEL | | | | | |
| Quantity (12V DC VRLA) | | | | | 62 | | | | | |
| Charge Capacity | | 25% of Active Power (Nominal 0,1 C10, Adjustable) | | | | | | | | |
| Recharge Time | | | | | 6-8 hours | | | | | |
| Internal Battery | | 62 x 7Ah or 9Ah | | | 62 x 7Ah or 9Ah | | External Battery Pack | | | |
| ENVIRONMENTAL | | | | | | | | | | |
| Operating Temperature | | For UPS 0°C/+40°C For Battery +15°C/+25°C | | | | | | | | |
| Storage Temperature | | For UPS -15°C/+45°C For Battery 0°C/+30°C | | | | | | | | |
| Protection Class | | | | | IP20 | | | | | |
| Humidity | | | | | 0-95% Without Condensation | | | | | |
| Altitude | | <1000m Correction Factor 1, <2000m Correction Factor >0.92, <3000m Correction Factor >0.84 | | | | | | | | |
| Noise Level | | <53dBA | <55dBA | <60dBA | <53dBA | <55dBA | <60dBA | <65dBA | <72dBA | |
| COMMUNICATION | | | | | | | | | | |
| Communication Port | | RS232 Standart, RS485 and SNMP Adapter Option | | | | | | | | |
| STANDARDS | | | | | | | | | | |
| Quality | | ISO 9001, ISO 14001, ISO 45001, ISO 10002, CE, TSE, TSE-HYB | | | | | | | | |
| Performance | | EN62040-3 (VFI-SS-111, Bureau Veritas Certified) | | | | | | | | |
| EMC/LVD | | EN62040-2, EN62040-1, TS EN ISO/IEC 17025 Accredited Test Report | | | | | | | | |
| DIMENSIONS & WEIGHT | | | | | | | | | | |
| Cabinet Dimensions (mm) | Width | 370 | | | 490 | | | | | |
| | Depth | 660 | | | 805 | | | | | |
| | Hight | 851 | | | 1190 | | | | | |
| Net Weight (kg) | | 85 | 85 | 85 | 122 | 123 | 127 | 146 | 167 | 177 |
| Packaging Dimensions (mm) | Width | 500 | | | 600 | | | | | |
| | Depth | 760 | | | 900 | | | | | |
| | Hight | 1000 | | | 1400 | | | | | |
| Gross Weight (kg) | | 105 | 105 | 105 | 140 | 141 | 145 | 164 | 185 | 195 |

* under certain conditions.

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

Makelsan reserves the right to change or modify product design, construction, specifications, or materials without prior notice and without incurring any obligation to make such changes and modifications on Makelsan products previously or subsequently sold.

Makelsan does not guarantee the items of the accuracy and completeness.

| MODEL | | | | |
|--------------------------------|-------|--|--------|--------|
| Capacity | | 80kVA | 100kVA | 120kVA |
| Power Watt | | 72kW | 90kW | 108kW |
| INPUT | | | | |
| Nominal Voltage | | 380/400/415 VAC 3P+N (Optional 220/380 VAC -37% +22% 3P+N+PE) | | |
| Voltage Tolerance | | -20% +15% | | |
| Frequency Tolerance | | 50-60 Hz ± 10% (Selectable) | | |
| Power Factor | | >0.99 | | |
| Total Harmonic Distortion | | THDi <%3 | | |
| OUTPUT | | | | |
| Power Factor | | 0.9 | | |
| Nominal Voltage | | 380/400/415 VAC 3P+N | | |
| Voltage Tolerance | | Static ±1, Dynamic ±3 | | |
| Frequency Tolerance | | 50-60 Hz ±0,01% (Battery Mode) | | |
| Output THD | | Linear Load <1% / Non Linear Load <3% | | |
| Crest Factor | | 3:1 | | |
| Overload Capacity* | | At 125% Load 10min, At 150% Load 1min | | |
| Efficiency (Online Mode) | | Up to 93% | | |
| Efficiency (Eco Mode) | | Up to 99% | | |
| BYPASS | | | | |
| Nominal Voltage | | 380/400/415 VAC 3P+N | | |
| Voltage Tolerance | | 15% (Configurable from 10% to 30%) | | |
| Frequency Tolerance | | ±5 (Selectable) | | |
| BATTERY | | | | |
| Type | | VRLA / GEL | | |
| Quantity (12V DC VRLA) | | 62 | | |
| Charge Capacity | | 25% of Active Power (Nominal 0,1 C10, Adjustable) | | |
| Recharge Time | | 6-8 hours | | |
| Internal Battery | | External Battery Pack | | |
| ENVIRONMENTAL | | | | |
| Operating Temperature | | For UPS 0°C/+40°C For Battery +15°C/+25°C | | |
| Storage Temperature | | For UPS -15°C/+45°C For Battery 0°C/+30°C | | |
| Protection Class | | IP20 | | |
| Humidity | | 0-95% Without Condensation | | |
| Altitude | | <1000m Correction Factor 1, <2000m Correction Factor >0.92, <3000m Correction Factor >0.84 | | |
| Noise Level | | <65dBA | | |
| COMMUNICATION | | | | |
| Communication Port | | RS232 Standart, RS485 and SNMP Adapter Option | | |
| STANDARDS | | | | |
| Quality | | ISO 9001, ISO 14001, ISO 45001, ISO 10002, CE, TSE, TSE-HYB | | |
| Performance | | EN62040-3 (VFI-SS-111, Bureau Veritas Certified) | | |
| EMC/LVD | | EN62040-2, EN62040-1, TS EN ISO/IEC 17025 Accredited Test Report | | |
| DIMENSIONS & WEIGHT | | | | |
| Cabinet Dimensions (mm) | Width | 530 | | |
| | Depth | 780 | | |
| | Hight | 1290 | | |
| Net Weight (kg) | | | | |
| Packaging Dimensions (mm) | Width | 650 | | |
| | Depth | 900 | | |
| | Hight | 1400 | | |
| Gross Weight (kg) | | | | |

* under certain conditions.

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

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