

# BOXER

SERIES

10-120 kVA

3:3  
PHASE

10-30 kVA

3:1  
PHASE

ONLINE UPS



DATA CENTER



MEDICAL



TRANSPORT



INDUSTRY



EMERGENCY



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)

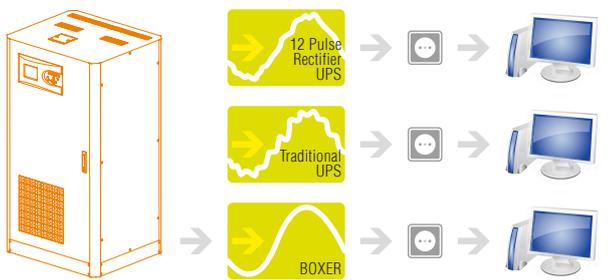


POWER  
FORLIFE

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

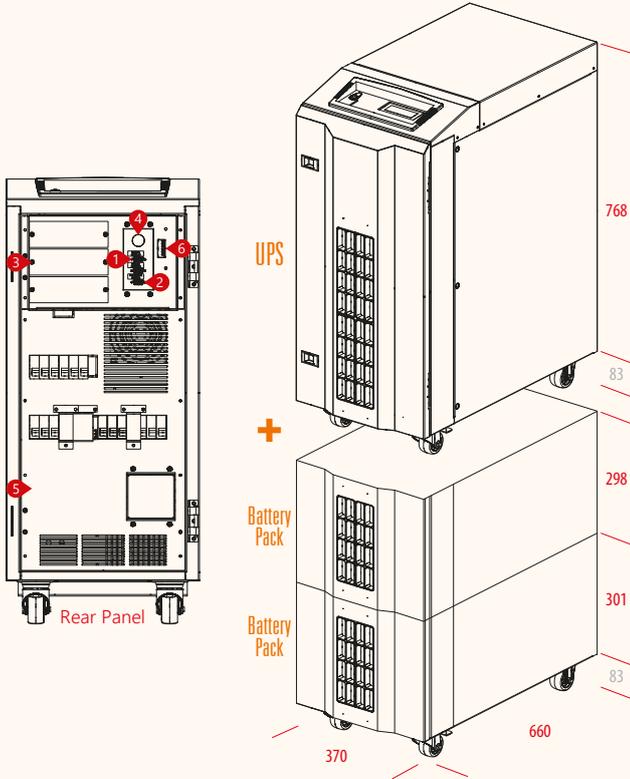
- 1500 Real Time Event Log with Detailed Parameters
- User Friendly Multilingual 320x240 Graphic Display Provides Operation Information
- Monitoring and Shutdown Software
- RS232 Serial and RS485 Ports
- 2 Communication Slots
- ModBUS RTU / ModBUS TCP (Optional)
- Remote Emergency Power Off (Optional)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

## Flexibility

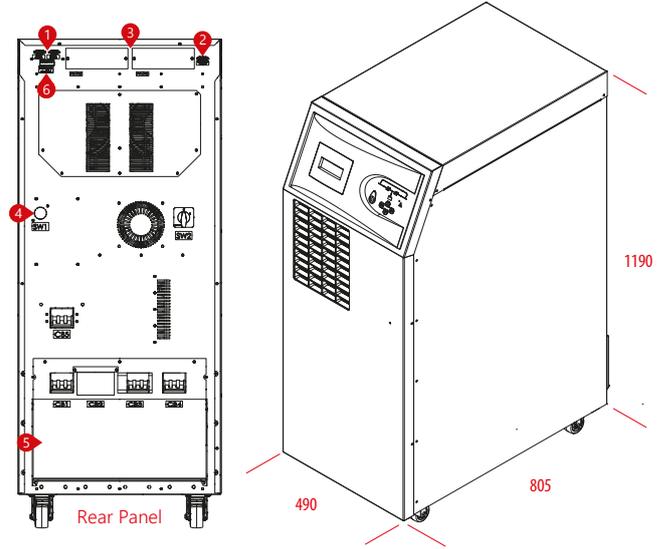
- Temperature sensor for external battery cabinets for extended runtimes.
- External battery cabinets for different sizes of batteries to provide extended runtimes.
- Different sizes of 10-40kVA cabinets for larger capacity of internal batteries when long autonomy times are required.
- 3/1 Phase version 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

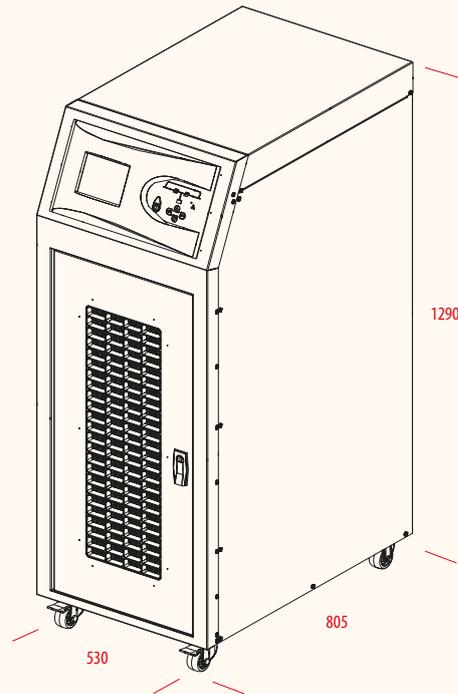
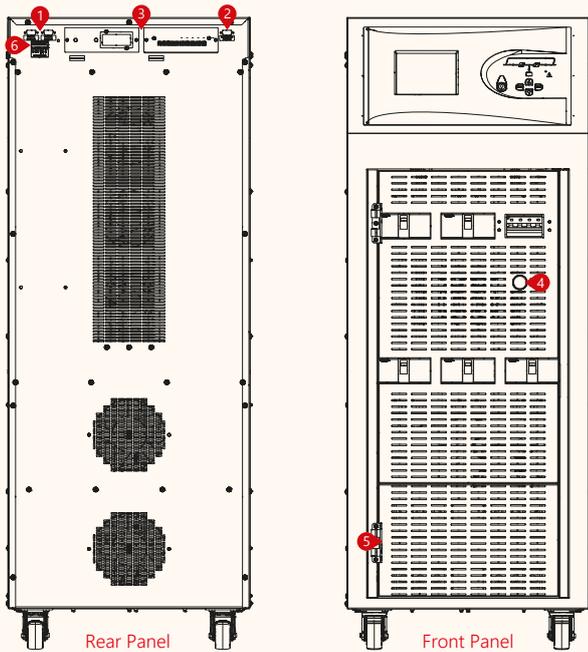


**BOXER** SERIES 10-15-20-30-40-60 kVA



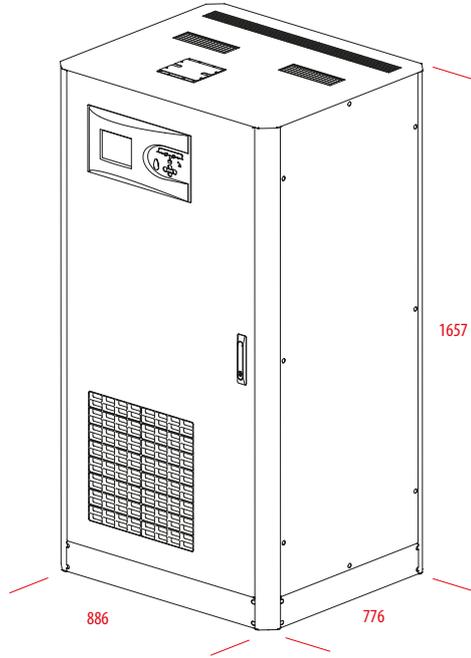
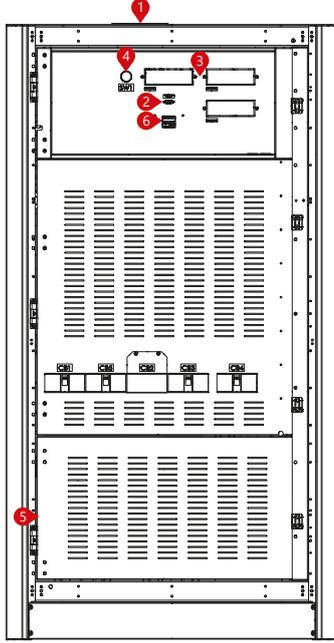
1. Parallel Port Terminal
2. RS232 Terminal
3. Optional Card Slots
4. DC Bus Ramping Up Button
5. Connection Terminal
6. External Battery Temperature Sensor Terminal

**BOXER** SERIES 80-100-120 kVA



DETAILS

**BOXER** SERIES 80-100-120 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

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
<b>INPUT</b>									
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								
<b>OUTPUT</b>									
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%								
<b>BYPASS</b>									
Nominal Voltage	380/400/415 VAC 3P+N								
Voltage Tolerance	15% (Configurable from 10% to 30%)								
Frequency Tolerance	±5 (Selectable)								
<b>BATTERY</b>									
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		
<b>ENVIRONMENTAL</b>									
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		<53dBA		<55dBA		<60dBA		<65dBA
<b>COMMUNICATION</b>									
Communication Port	RS232 Standart, RS485 and SNMP Adapter Option								
<b>STANDARDS</b>									
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								
<b>DIMENSIONS &amp; WEIGHT</b>									
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)

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MODEL							
Capacity		80kVA	100kVA	120kVA	80kVA	100kVA	120kVA
Power Watt		72kW	90kW	108kW	72kW	90kW	108kW
<b>INPUT</b>							
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						
<b>OUTPUT</b>							
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%						
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<b>BYPASS</b>							
Nominal Voltage	380/400/415 VAC 3P+N						
Voltage Tolerance	15% (Configurable from 10% to 30%)						
Frequency Tolerance	±5 (Selectable)						
<b>BATTERY</b>							
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						
<b>ENVIRONMENTAL</b>							
Operating Temperature	For UPS 0°C/+40°C For Battery +15°C/+25°C						
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Protection Class	IP20						
Humidity	0-95% Without Condensation						
Altitude	<1000m Correction Factor 1, <2000m Correction Factor >0.92, <3000m Correction Factor >0.84						
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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						
<b>DIMENSIONS &amp; WEIGHT</b>							
Cabinet Dimensions (mm)	Width	530			886		
	Depth	805			776		
	Hight	1290			1657		
Net Weight (kg)				322	351	360	
Packaging Dimensions (mm)	Width	650			970		
	Depth	900			900		
	Hight	1400			2040		
Gross Weight (kg)				357	376	395	

\* under certain conditions.  
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