Aytemiz MAKELSAN®
Uninterruptible Power Supplies/Generator

POWER FOR LIFE

HF SERIES

ON-LINE UPS

10-800 kVA 3:3 PHASE

10-30 kVA 3:1 PHASE



- IGBT PWM Rectifier and Inverter Technology
- True Double Conversion (Online) Technology
- Low Input Current Harmonic Distortion (THDi < 3%)
- High Input Power Factor (>0.99)

DATA CENTER | MEDICAL | INDUSTRIAL | TRANSPORT | EMERGENCY

VFI TYPE	PF 0.9		24H
ON-LİNE UPS	POWER FACTOR	TOWER	SERVICE

DSP-Controlled Power Factor Correction IGBT Rectifier

- The Boxer member of the HF Series, equipped with an IGBT rectifier, ensures the protection of your critical loads while reducing the mean time to repair (MTTR) thanks to its space-saving compact design and front access for easy maintenance.
- With a wide range of accessories and options, the HF Series Boxer offers maximum flexibility to users and helps optimize the total cost of ownership.

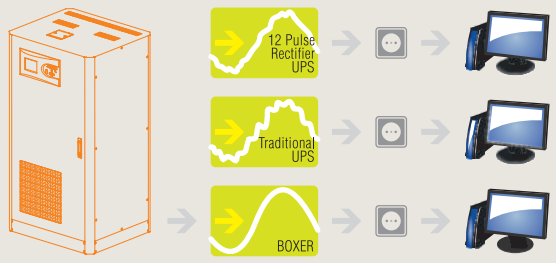
Avrupa AC UPS Tedarik Kodu Seviyesinden Daha Yüksek Verimlilik Değeri

BUREAU VERITAS Certification

TSE TSE-HYB CE

Compact Design

- IGBT-based power factor correction technology maintains the input power factor close to unity (e.g. 0.99). Thanks to the high input power factor, electricity costs are reduced, while cable, panel, fuse, and generator requirements are minimized, thereby lowering overall investment costs.
- Low input current total harmonic distortion (THDi < 3%) prevents interference and eliminates the need for costly harmonic filters.
- It offers a compact design 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

HF SERIES BOXER

Standard Electrical Features

- Backfeed Protection
- Cold Start (Optional)
- Advanced Battery Management
- Short-Circuit and Overload Protection
- Parallel Connection Capability
- Redundant Power Supply
- Advanced Rectifier with Mains Recovery Soft Start (Gradual Power Input for Startup)
- Battery Temperature Sensor
- Static and Manual Bypass Operation

Advanced Communication Features

- 1500 Real-Time Event Log With Detailed Parameters.
- User-Friendly Multilingual 320x240 Graphical Display Provides Operating Information.
- Operating 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)

High Input Power Factor

- An input power factor of 0.99 ensures a clean and sinusoidal input current.
- High input power reduces electricity costs and minimizes the need for cables, switchboards, fuses, and generators, thereby lowering overall investment costs.

Maximum Availability

- Parallel configuration allows up to 8 units for redundancy (N+1) and power expansion.
- Loop connection ensures continuous UPS operation even if a communication cable is disconnected.

Flexibility

- Temperature sensor for use with external battery cabinets for extended runtime.
- External battery cabinets providing long runtime for different battery sizes.
- Frequency converter mode.
- Isolation transformers to change the neutral connection in separate power supply systems or to provide galvanic isolation between input and output.
- Version compliant with EN 50171 for supplying emergency lighting systems.

MODEL		HF SERIES ON-LINE UPS 10-800 kVA 3:3 PHASE / 10-30 kVA 3:1 PHASE								
Capacity		10kVA	15kVA	20kVA	30kVA	40kVA	60kVA	80kVA	100kVA	120kVA
Power Watt		9kW	13.5kW	18kW	27kW	36kW	54kW	72kW	90kW	108kW
INPUT										
Nominal Voltage		380/400/415 VAC 3 P+N+PE Optional (220/380 VAC -37% +22% 3 P+N+PE)								
Voltage Tolerance		-15% +18%								
Frequency Tolerance Range		50 / 60 Hz ±10% (Selectable)								
Power Factör		>0.99								
Total Harmonic Distortion (THDi)		<3%								
OUTPUT										
Power Factor		0.9 (1 Optional)								
Nominal Voltage		380/400/415 VAC 3 P+N Optional(220/230/240 VAC 1 P+N)								
Voltage Tolerance		Static ±1, Dynamic ±3								
Frequency	AC Mod	±1%, ±2% , ±4%, ±5%, ±10% (Optional)								
	Battery Mod	50/60 ±0.1Hz								
Output THDv		Linear Load < 1% / Non-Linear Load < 3%								
Crest Factor		3:1								
Overload Capacity*		125% load for 10 min, 150% load for 1 min, >150% immediate bypass.								
Efficiency (Online Mod)		92%								
Efficiency (Eco Mod)		99%								
STATIC BYPASS										
Nominal Voltage		380/400/415 VAC 3 P+N								
Voltage Tolerance		±15% (±1% ~ ±25% configurable within the range)								
Frequency Tolerance		±5% (±1% ~ ±25% configurable within the range)								
BATTERY										
Type		VRLA / GEL								
Quantity (12V DC VRLA)		62								
Charging Capacity		25% of active power (Nominal 0.1 C10, adjustable)								
Charging Time		6–8 hour								
Internal Battery		62 x 7Ah or 9Ah				External Battery				
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% (Non-condensing)								
Altitude		<1000 m: Derating factor 1, <2000 m: Derating factor >0.92, <3000 m: Derating factor >0.84								
Noise Level		<53dBA		<55dBA		<60dBA		<65dBA		
COMMUNICATION										
Communication Port		RS232 Standard, RS485 and SNMP Adapter Optional								
STANDARTLAR										
Quality		ISO 9001, ISO 14001, ISO 45001, ISO 10002, CE, TSE, TSE-HYB								
Performance		EN62040-3 (VFI-SS-111, Bureau Veritas Certificate)								
EMC/LVD		EN62040-2, EN62040-1, TS EN ISO/IEC 17025 Accredited Test Report								
DIMENSIONS & WEIGHT		10kVA	15kVA	20kVA	30kVA	40kVA	60kVA	80kVA	100kVA	120kVA
Cabinet Dimensions(mm)	Width	490						530		
	Depth	805						780		
	Height	1190						1290		
Net Weight (kg)		125	126	131	145	173	323	222	231	240
Packaging Dimensions (mm)	Width	600						650		
	Depth	900						900		
	Height	1400						1400		
Gross Weight (kg)		45	146	151	166	193	353	253	261	270

* Under specific conditions,
3-phase input / 1-phase output version is available (10–30 kVA).

Aytemiz-Makelsan reserves the right to make changes or modifications to product design, structure, technical specifications, or materials without prior notice and is not obliged to apply such changes to Aytemiz-Makelsan products sold before or after these modifications. Aytemiz-Makelsan does not guarantee the accuracy or completeness of the information provided.

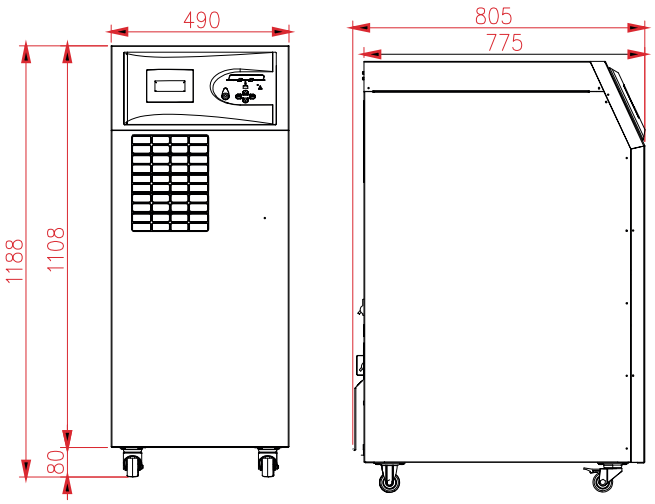
MODEL		HF SERIES ON-LINE UPS 10-800 kVA 3:3 PHASE / 10-30 kVA 3:1 PHASE										
Capacity		160kVA	200kVA	250kVA	250kVA	300kVA	400kVA	500kVA	500kVA	600kVA	800kVA	800kVA
Power Watt		144kW	180kW	200kW	225kW	270kW	360kW	400kW	450kW	540kW	720kW	800kW
INPUT												
Nominal Voltage		380/400/415 VAC 3 P+N+PE Optional (220/380 VAC -37% +22% 3 P+N+PE)										
Voltage Tolerance		-15% +18%										
Frequency Tolerance Range		50 / 60 Hz ±10% (Selectable)										
Power Factör		>0.99										
Total Harmonic Distortion (THDi)		<3%										
OUTPUT												
Power Factor		0.9 (1 Optional)	0.8	0.9 (1 Optional)				0.8	0.9 (1 Optional)			
Nominal Voltage		380/400/415 VAC 3 P+N										
Voltage Tolerance		Static ±1, Dynamic ±3										
Frequency	AC Mod	±1%, ±2% , ±4%, ±5%, ±10% (Optional)										
	Battery Mod	50/60 ±0.1Hz										
Output THDv		Linear Load < 1% / Non-Linear Load < 3%										
Crest Factor		3:1										
Overload Capacity*		125% load for 10 min, 150% load for 1 min, >150% immediate bypass.										
Efficiency (Online Mod)		92%										
Efficiency (Eco Mod)		99%										
STATIC BYPASS												
Nominal Voltage		380/400/415 VAC 3 P+N										
Voltage Tolerance		±15% (±1% ~ ±25% configurable within the range)										
Frequency Tolerance		±5% (±1% ~ ±25% configurable within the range)										
BATTERY												
Type		VRLA / GEL										
Quantity (12V DC VRLA)		60										
Charging Capacity		25% of active power (Nominal 0.1 C10, adjustable)										
Charging Time		6–8 hour										
Internal Battery		External Battery										
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% (Non-condensing)										
Altitude		<1000 m: Derating factor 1, <2000 m: Derating factor >0.92, <3000 m: Derating factor >0.84										
Noise Level		<72dBA							<74dBA			<75dBA
COMMUNICATION												
Communication Port		RS232 Standard, RS485 and SNMP Adapter Optional										
STANDARTLAR												
Quality		ISO 9001, ISO 14001, ISO 45001, ISO 10002, CE, TSE, TSE-HYB										
Performance		EN62040-3 (VFI-SS-111, Bureau Veritas Certificate)										
EMC/LVD		EN62040-2, EN62040-1, TS EN ISO/IEC 17025 Accredited Test Report										
DIMENSIONS & WEIGHT		160kVA	200kVA	250kVA	250kVA	300kVA	400kVA	500kVA	500kVA	600kVA	800kVA	800kVA
Cabinet Dimensions(mm)	Width	830			1200				2000			
	Depth	870			825				870			
	Height	1800			1854				2050			
Net Weight (kg)		475	490	495	645	830	840	845	1195	1510	1740	1740
Packaging Dimensions (mm)	Width	900			1370				2110			
	Depth	970			845				950			
	Height	2040			2040				2250			
Gross Weight (kg)		505	520	525	695	870	880	885	1345	1590	1820	1820

* Under specific conditions,
3-phase input / 1-phase output version is available (10–30 kVA).

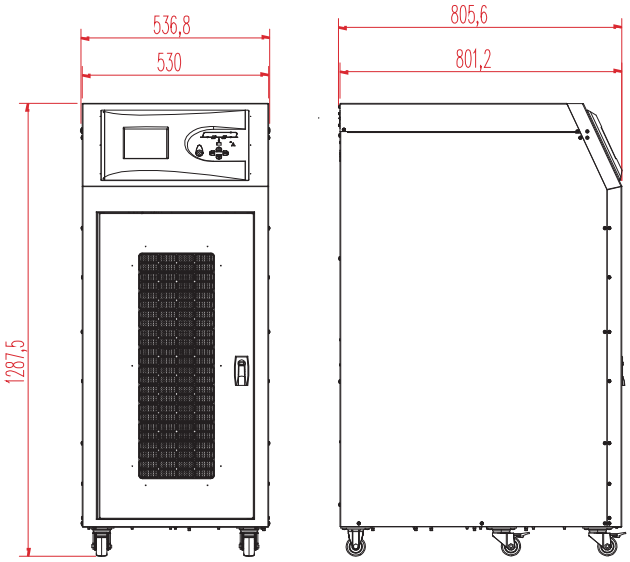
Aytemiz-Makelsan reserves the right to make changes or modifications to product design, structure, technical specifications, or materials without prior notice and is not obliged to apply such changes to Aytemiz-Makelsan products sold before or after these modifications. Aytemiz-Makelsan does not guarantee the accuracy or completeness of the information provided.

DETAILS

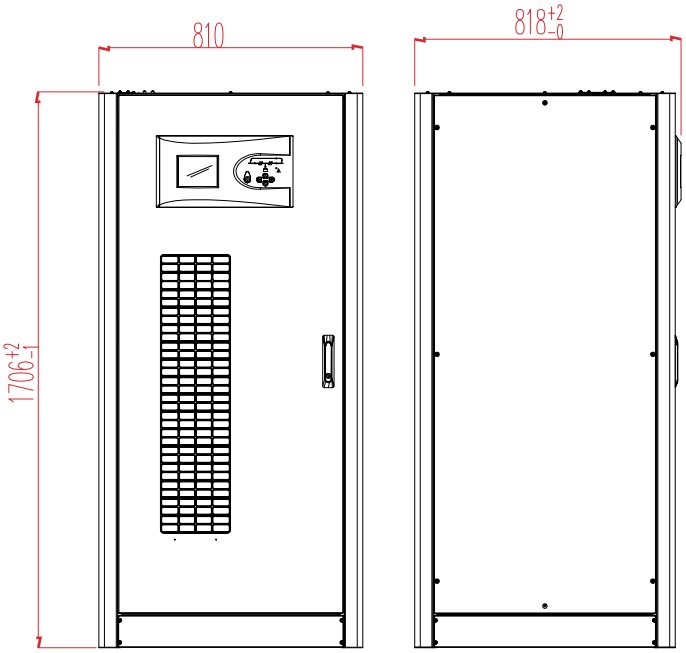
HF SERIES 10-60kVA



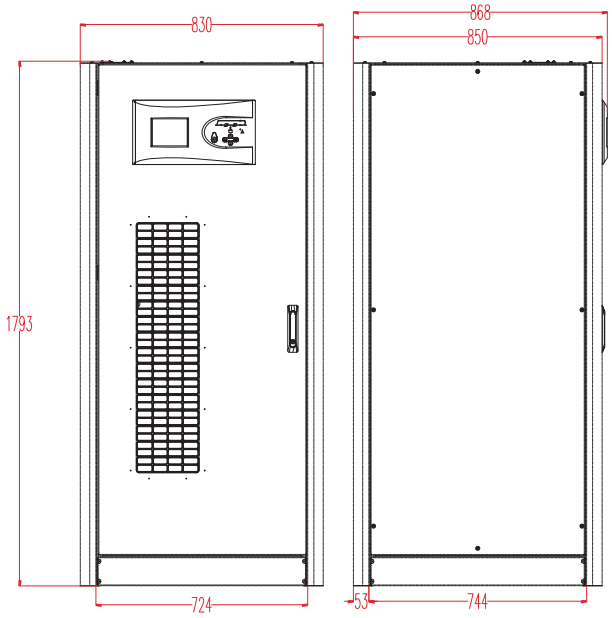
HF SERIES 60(PF:1) 80-100-120kVA WHEELED



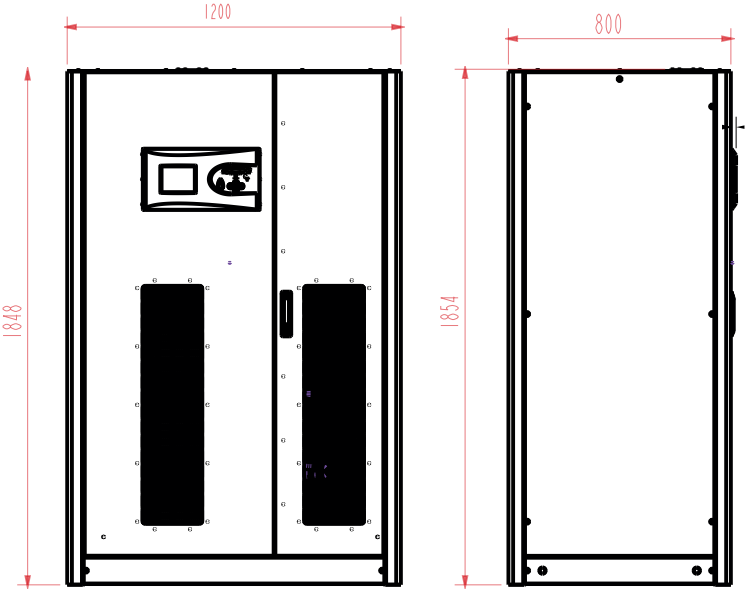
HF SERIES 80-100-120kVA TOWER



HF SERIES 120(PF:1)160-200-250(PF: 0.8) kVA



HF SERIES 250(PF: 0.9) 300-400-500(PF: 0.8)kVA



HF SERIES 500kVA (PF: 0.9)- 600kVA-800kVA

