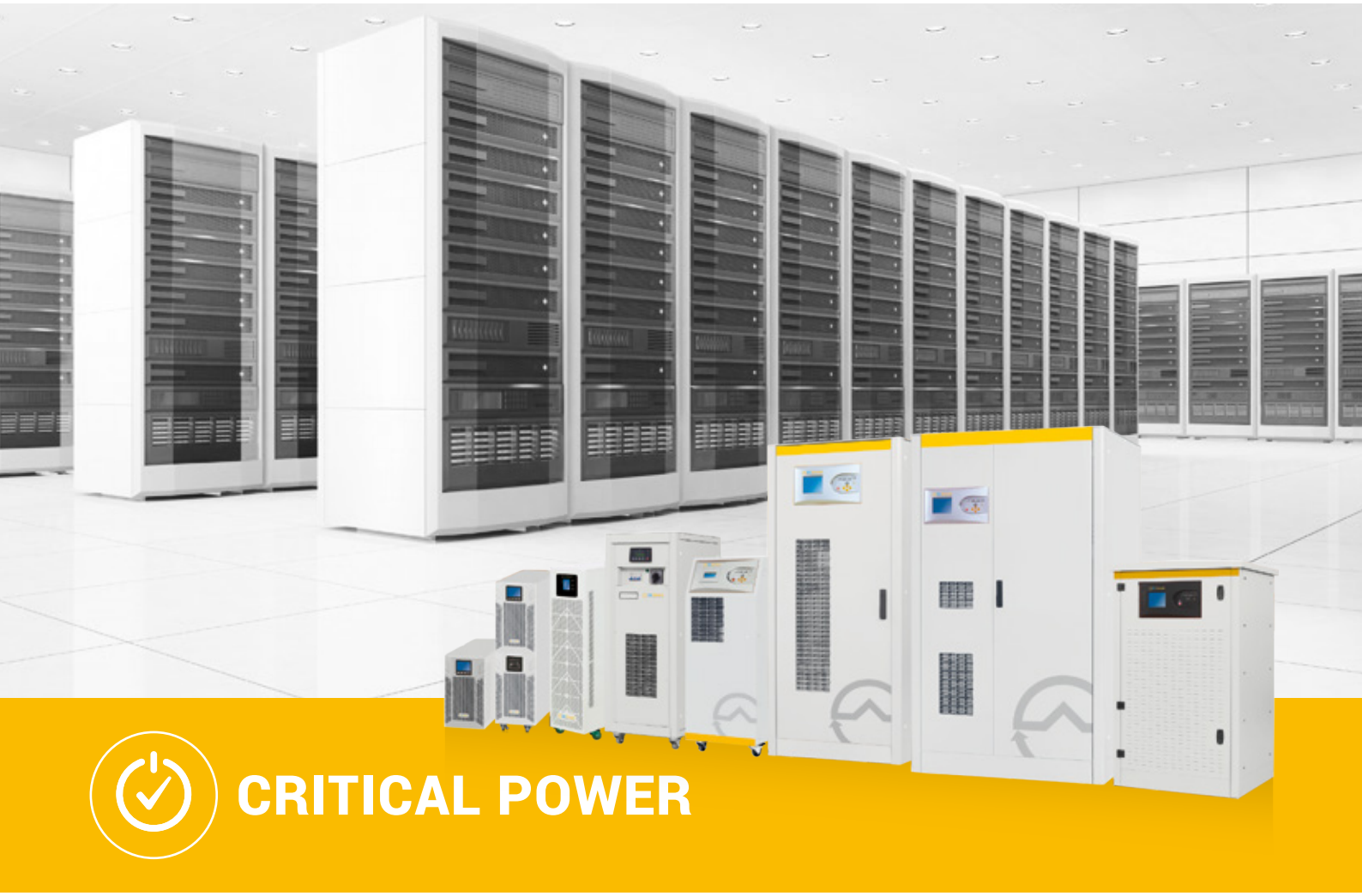
GENERAL CATALOGUE

UPS and Critical Power
Solutions



CRITICAL POWER

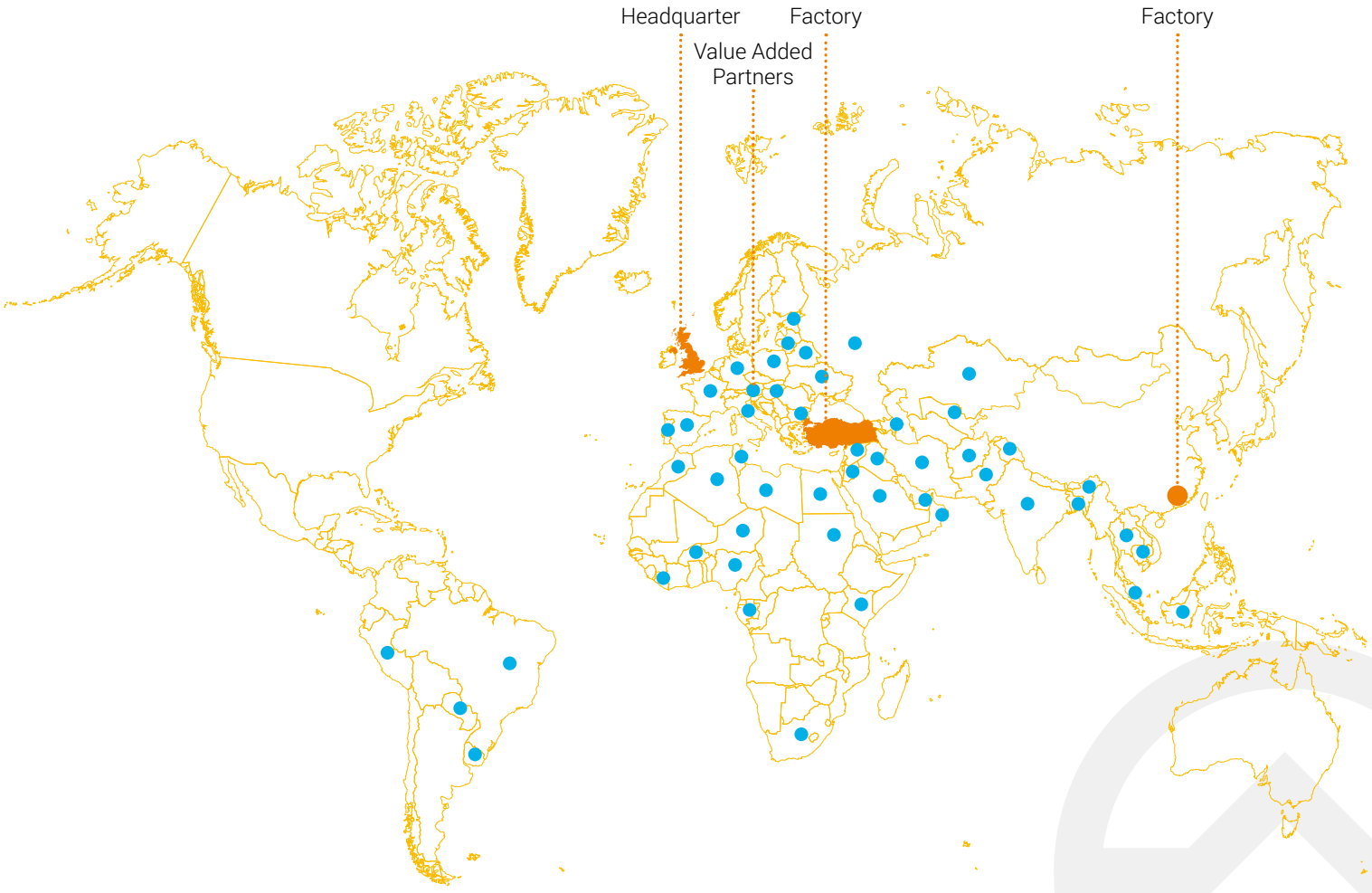
www.ensmartpower.com

EnSmart
Power Conversion & Energy Storage

ENSMART POWER CONVERSION
LEADING SPECIALIST IN POWER ELECTRONIC

EnSmart Power is a leading specialist in the design and manufacturing of uninterruptible power supplies, power protection and energy systems with over 4 decades of extensive experience in power electronics.

With our team **committed to power quality and our expertise on the power conversion** we provide the latest technologies to strategic customers in more than 50 countries and protect people and businesses against costly downtime, equipment damage and data loss.



KEY **SECTORS**

Designing, integrating a wide range of power supply systems, EnSmart Power ensures the availability of reliable and efficient power to all critical applications and powering non-stop productivity in a large number of industries.

DATA CENTER

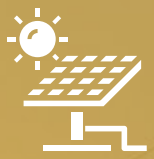
RAILWAY

HEAVY INDUSTRY

MANUFACTURING

MARINE

TELECOM



RENEWABLE ENERGY

EMERGENCY

INTERNATIONAL **STANDARDS**

Higher Level of Efficiency than the EU CoC for AC Ups

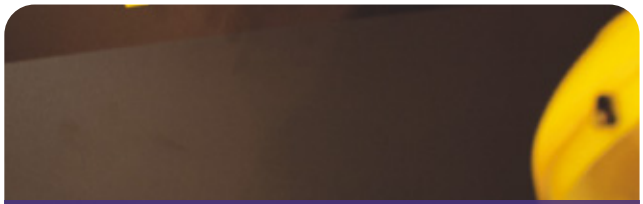
OUR VALUES

At EnSmart, **we are engineering** innovative **power solutions** that helps the energy to get **smarter and cleaner for a sustainable world**

OUR VISION

To provide energy solutions that guarantee power quality for all critical applications and help world's energy to be more reliable and sustainable

Innovation



Strong focus on R&D

+ Staying at the front of technology, constanty innovating product portfolio.
+ Developing eco-friendly products with leading technologies that secures high quality power supply to any critical application.

Continuous Improvement

Constant improvement of all proceses

+ Co-operating worldwide reliable production facilities besides investing in its own production processes.
+ Direct control over quality and reliability standards following the entire manufacturing process closely.

BE INNOVATIVE & IMPROVE CONTIUOUSLY

We are committed to innovate and develop leading technologies.

BE COMMITED TO QUALITY

We are committed to produce excellent products which are fully compliant with international standards to achieve highest level of customer satisfaction.

BE SUSTAINABLE

We are mindful of our responsibilities on the way to sustainable development.

Sustainability

Success with social and environmental responsibility

We carry out a policy of protection of our employees, the environment, natural resources in all of our business activities

ENERGY

+ Reducing energy consumption
+ Developing new technologies for clean and renewable energy

EMPLOYEES & SOCIETY

High ethical standards in dealings with employees, customers, suppliers and the community

QUALITY

We disseminate customer-focus throughout the company with effective communication and provide value to our stakeholders.

Quality

Integrated quality management

+ Having achieved the very highest of international standards in ISO9001 Quality Management and International Compliances such as EMC, LVD and continue to implement these practices for the benefit of employees, customers, suppliers and communities the company operate in.

INVOLVED IN THE ENTIRE VALUE CHAIN OF POWER INDUSTRY

Increasing digitalization and energy transition issues in 21st century requires ever greater power needs. EnSmart Power **constantly enlarging its solutions and services to address a range of challenges - reliable supply of electricity, energy efficiency, energy stability**.

Our expertise over the entire value chain of the power industry enables it to furnish our customers with a wide range of power products that includes AC and DC UPS, Battery Chargers, Batteries, Frequency Converters, Rectifier Systems, Servo and Static Voltage Regulators, Inverters, Power Converters and Energy Storage Systems.

UPS and Critical Power Solutions

index

+ UPS Systems

+ Voltage Stabilizers

+ DC Systems

+ Isolation Transformers

+ Frequency Converters

+ Accessories

SMART LV
SERIES

10-1000 kVA 3:3 PHASE

10-30 kVA 3:1 PHASE

ONLINE UPS

DATA CENTER · MEDICAL · TRANSPORT · INDUSTRY · EMERGENCY

VFI TYPE — UPS ONLINE · TOWER · PF=1.0 — POWER FACTOR · Service — SERVICE

Innovative 3 Level Technology

+ **SMART LV** Series with Innovative 3 Level Technology is a true on-line double conversion, three-phase UPS system that provides one of the highest level energy efficiencies in the industry.

+ Three level inverter & rectifier design **SMART LV** Series brings the newest power conversion technology and delivers efficiency up to 96% at 50-75% load operation which is the most common operating range.

+ True Three Level Rectifier and Inverter
+ Ultra High Energy Efficiency
+ Full Rated Power Factor kW=kVA

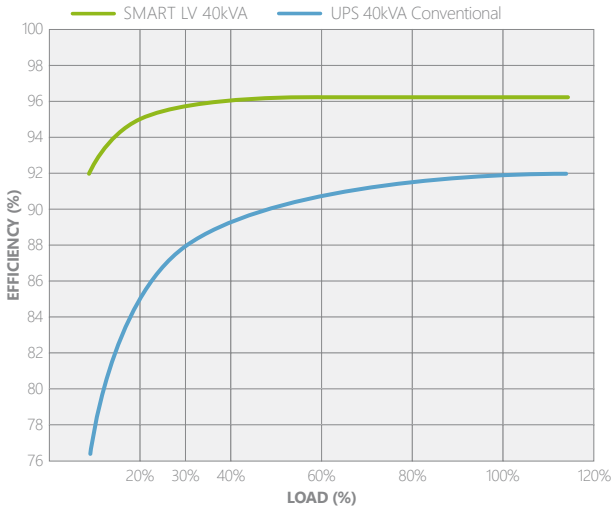
The **SMART LV** *Series* is certified by TÜV SÜD with regard to product safety (EN 62040-1)

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

Higher Level of Efficiency than the EU CoC for AC Ups

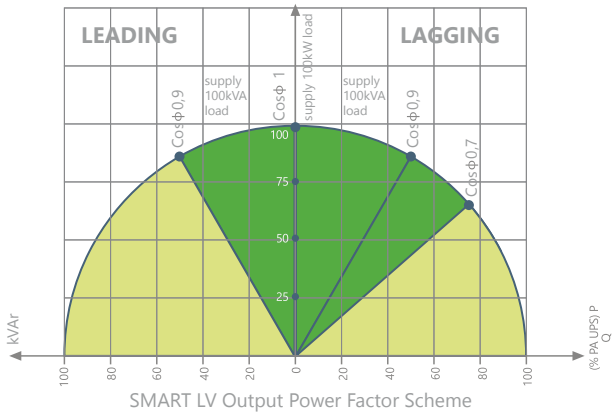
High Efficiency & Low Total Cost of Ownership

- Less energy consumption to supply the loads thanks to high efficiency up to 96%.
- Reduced energy loss.
- Reduced electricity usage and air conditioning requirements.
- Reduction in operating cost of UPS.
- IGBT based power factor correction technology provides input power factor close to 1 (≥ 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.



High Output Power Factor 1

- Output power factor of 1 (kVA=kW) rate provides up to 25% more active power than a traditional UPS.
- Suitable for modern power supply application with unit or capacitive power factor (e.g. new servers generation).
- No reduction in active power from 0,9 leading to 0,9 lagging.



SMART LV Output Power Factor Scheme

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 inturrupted.

Standard Electrical Features

- Parallel-Redundant (N+X) Systems
- Co-Aging
- Dual Input
- Common Battery
- 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 and Manual Bypass Operation

Advanced Communication Features

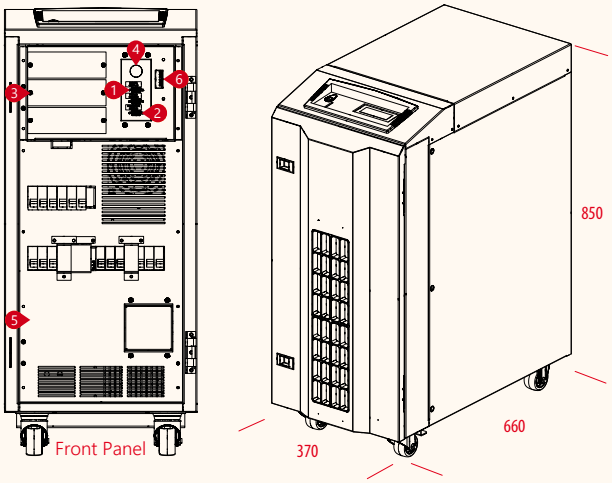
- 1500 Real Time Event Log with Detailed Parameters
- User Friendly Multilingual 320x240 Graphic Display Provides Operation Information
- Monitoring and Shutdown Software
- RS232 Serial and RS485 Ports
- 2 Communication Slots
- ModBUS RTU / ModBUS TCP (Optional)
- Remote Emergency Power Off (Optional)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

Flexibility

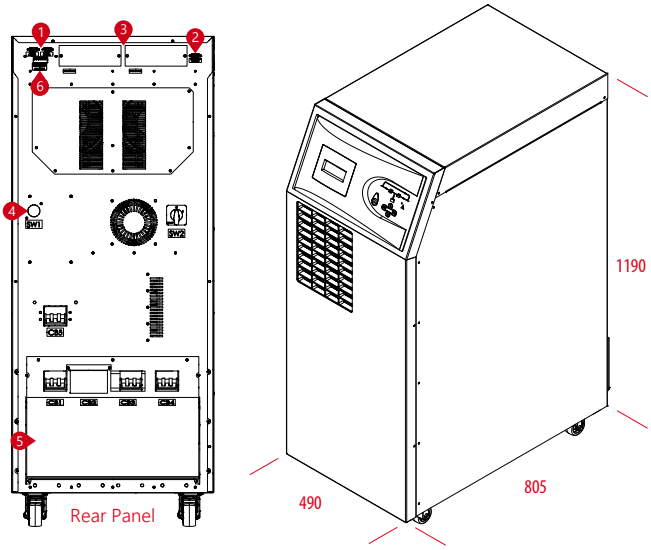
- Temperature sensor for external battery cabinets for extended runtimes.
- External battery cabinets for different sizes of batteries to provide extended runtimes.
- Different sizes of 10-40kVA cabinets for larger capacity of internal batteries when long autonomy times are required.
- 3/1 Phase version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

MiniSMART LV SERIES 10-15-20 kVA

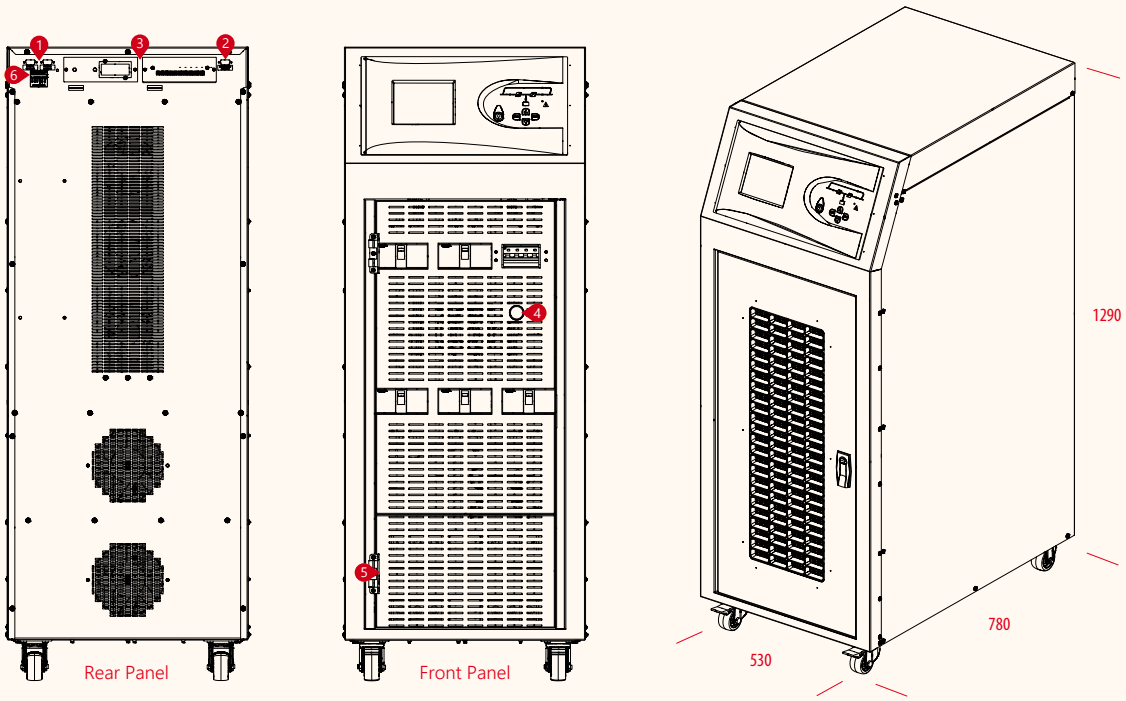


SMART LV SERIES 10-15-20-30-40-60 kVA



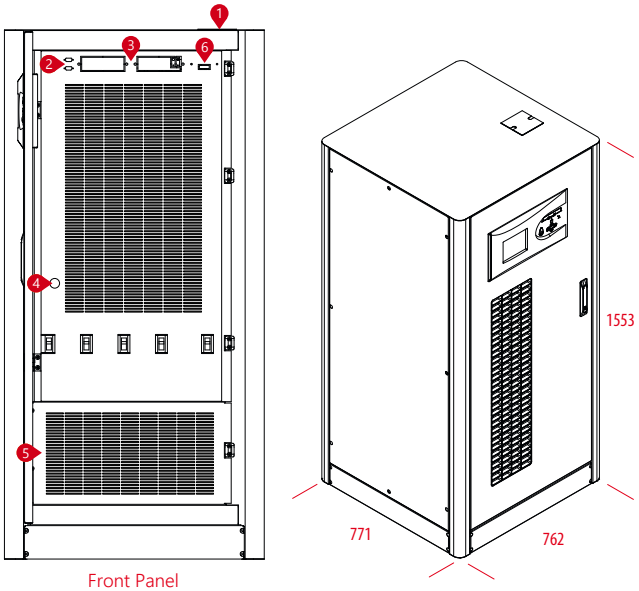
1. Parallel Port Terminal
2. RS232 Terminal
3. Optional Card Slots
4. DC Bus Ramping Up Button
5. Connection Terminal
6. External Battery Temperature Sensor Terminal

SMART LV SERIES 80-100-120 kVA



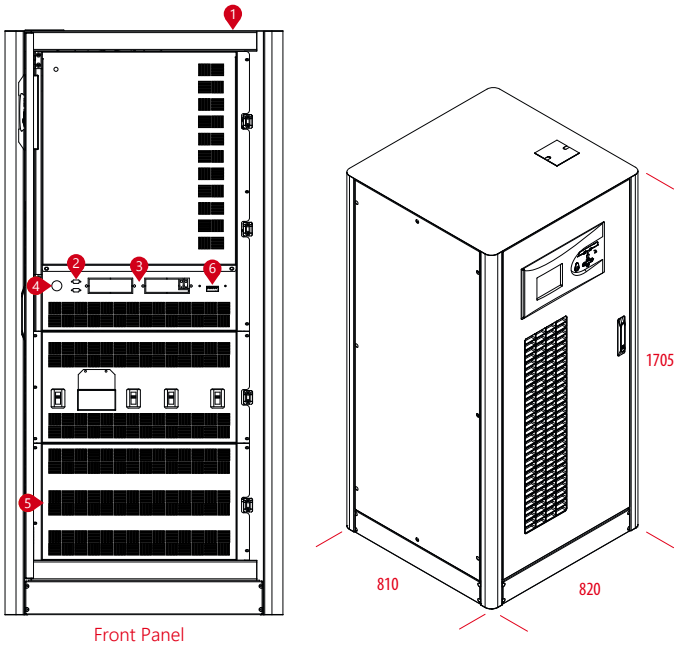
DETAILS

SMART LV SERIES 80 kVA



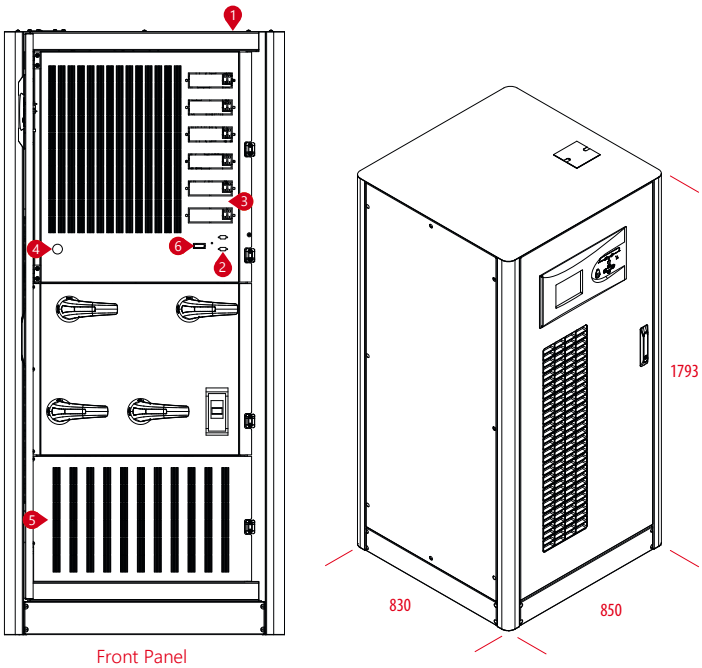
Front Panel

SMART LV SERIES 100-120 kVA



Front Panel

SMART LV SERIES 160-200-250 kVA

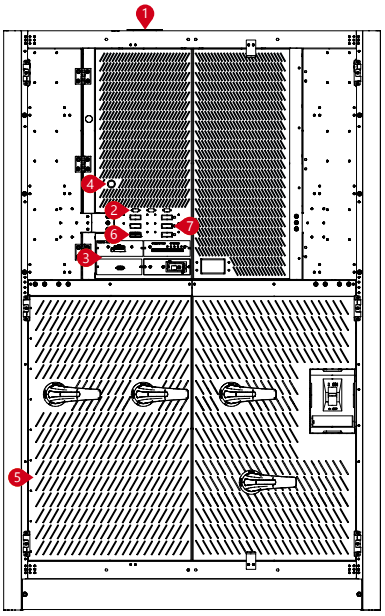


Front Panel

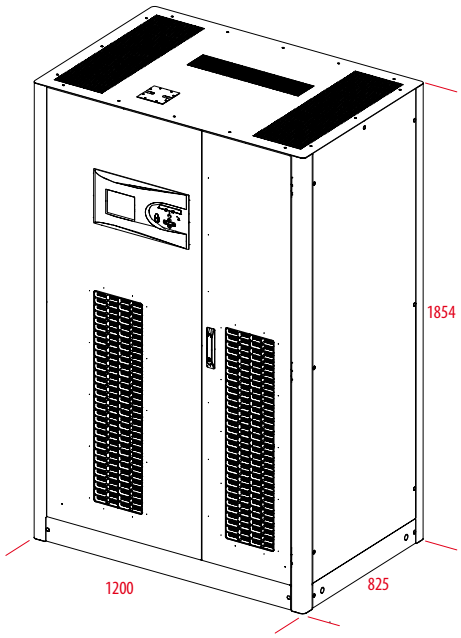
1. Parallel Port Terminal
2. RS232 Terminal
3. Optional Card Slots
4. DC Bus Ramping Up Button
5. Connection Terminal
6. External Battery Temperature Sensor Terminal

DETAILS

SMART LV SERIES 300-400-500 kVA

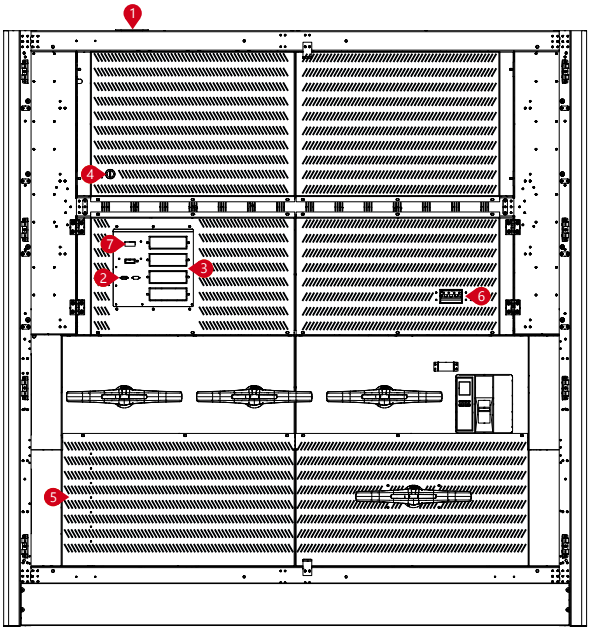


Front Panel

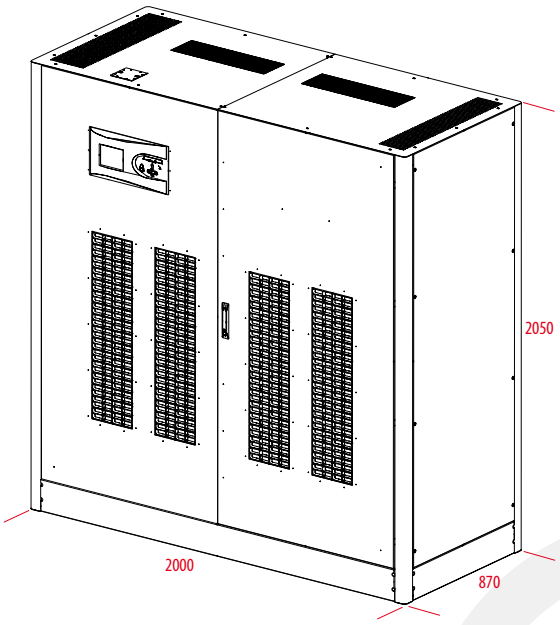


1. Parallel Port Terminal
2. RS232 Terminal
3. Optional Card Slots
4. DC Bus Ramping Up Button
5. Connection Terminal
6. External Battery Temperature Sensor Terminal
7. Optional Slot

SMART LV SERIES 600-800-1000 kVA



Front Panel



MODEL		MiniSMART LV														
Capacity		10kVA	15kVA	20kVA	10kVA	15kVA	20kVA	30kVA	40kVA	60kVA	80kVA	100kVA	120kVA	80kVA	100kVA	120kVA
Power Watt		9kW	13.5kW	18kW	9kW	13.5kW	18kW	27kW	36kW	54kW	72kW	90kW	108kW	72kW	90kW	108kW
INPUT																
Nominal Voltage		380/400/415 VAC 3 P+N (Optional 220/380 VAC -37% +22% 3 P+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 (1 Optional)														
Nominal Voltage		380/400/415 VAC 3 P+N														
Voltage Tolerance		Statik ±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)		96%														
Efficiency (Eco Mode)		99%														
BYPASS																
Nominal Voltage		380/400/415 VAC 3 P+N														
Voltage Tolerance		%15 (Configurable from 10% to 30%)														
Frequency Tolerance		±5 (Selectable)														
BATTERY																
Type		VRLA / GEL														
Quantity (12V DC VRLA)		60														
Charge Capacity		12,5% of Active Power (Nominal 0,1 C10, Adjustable)														
Recharge Time		6-8 hours														
Internal Battery		62 x 7Ah or 9Ah			60 x 7Ah or 9Ah			External Battery			External 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% (Without Condensation)														
Altitude		<1000m: Correction Factor 1, <2000m: Correction Factor >0.92, <3000m: Correction Factor >0.84														
Noise Level		<53dBA			<53dBA		<55dBA		<60dBA		<65dBA			<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 Acredited Test Report														
DIMENSIONS & WEIGHT																
Cabinet Dimensions (mm)	Width	370			490						530			763	810	
	Depth	660			805						780			771	820	
	Height	850			1190						1290			1555	1705	
Net Weight (kg)		85	85	85	125	126	131	145	173	323				331	353	368
Packaging Dimensions (mm)	Width	500			600						650			900	900	
	Depth	760			900						900			970	970	
	Height	1000			1400						1400			2040	2040	
Gross Weight (kg)		105	105	105	145	146	151	166	193	353				361	383	398

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

MODEL										
Capacity		160kVA	200kVA	250kVA	300kVA	400kVA	500kVA	600kVA	800kVA	1000kVA
Power Watt		144kW	180kW	225kW	270kW	360kW	450kW	540kW	720kW	900kW
INPUT										
Nominal Voltage		380/400/415 VAC 3 P+N (Optional 220/380 VAC -37% +22% 3 P+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 (1 Optional)								
Nominal Voltage		380/400/415 VAC 3 P+N								
Voltage Tolerance		Statik ±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)		96%								
Efficiency (Eco Mode)		99%								
BYPASS										
Nominal Voltage		380/400/415 VAC 3 P+N								
Voltage Tolerance		15% (Configurable from 10% to 30%)								
Frequency Tolerance		±5 (Selectable)								
BATTERY										
Type		VRLA / GEL								
Quantity (12V DC VRLA)		60								
Charge Capacity		12,5% of Active Power (Nominal 0,1 C10, Adjustable)								
Recharge Time		6-8 hours								
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% (Without Condensation)								
Altitude		<1000m: Correction Factor 1, <2000m: Correction Factor >0.92, <3000m: Correction Factor >0.84								
Noise Level		<72dBA					<74dBA			<75dBA
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 Acredited Test Report								
DIMENSIONS & WEIGHT										
Cabinet Dimensions (mm)	Width	830			1200			2000		
	Depth	870			825			870		
	Height	1800			1854			2050		
Net Weight (kg)		475	490	553	830	840	850	1510	1510	1510
Packaging Dimensions (mm)	Width	900			1370			2100		
	Depth	970			845			950		
	Height	2040			2040			2250		
Gross Weight (kg)		505	520	583	870	880	890	1590	1590	1590

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

CRITICAL POWER

SMART BX

SERIES

10-120 kVA 3:3 PHASE

10-30 kVA 3:1 PHASE

ONLINE UPS

DATA CENTER · MEDICAL · TRANSPORT · INDUSTRY · EMERGENCY

VFI TYPE — UPS ONLINE

TOWER

PF= 0.9 — POWER FACTOR

Service — SERVICE

Power Protection for Datacenters, Commercial Buildings and Industrial Facilities

+ Equipped with its new IGBT rectifier **SMART BX** 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 **SMART BX** series presents maximum flexibility advantage to users and optimizes total cost of ownership.

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

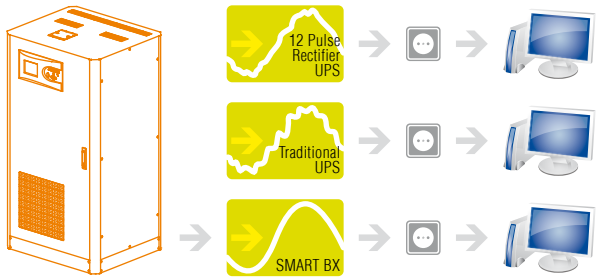
The **SMART BX** *Series* is certified by TÜV SÜD with regard to product safety (EN 62040-1)

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

Higher Level of Efficiency than the EU CoC for AC Ups

High Performance & Low Total Cost of Ownership

- IGBT based power factor correction technology provides input power factor close to 1 (≥ 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
SMART BX 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 inturrupted.

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

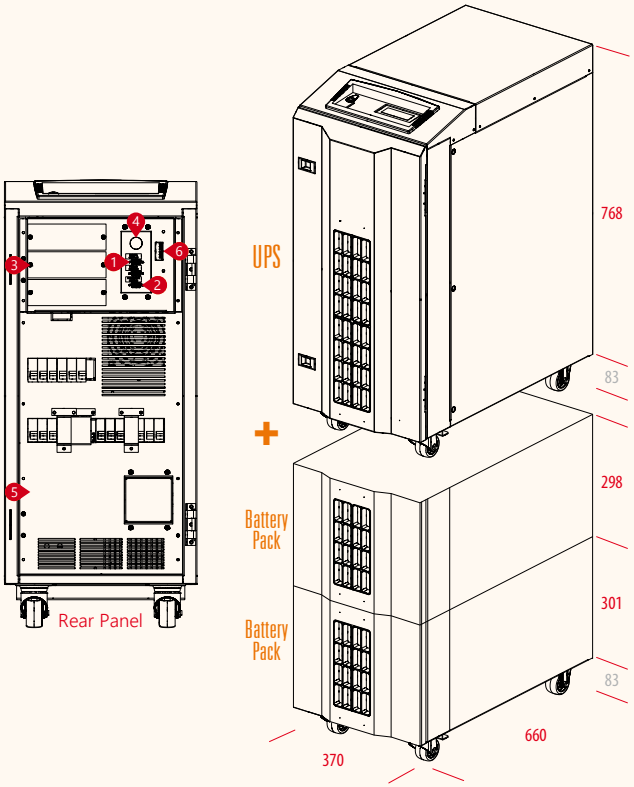
- 1500 Real Time Event Log with Detailed Parameters
- User Friendly Multilingual 320x240 Graphic Display Provides Operation Information
- Monitoring and Shutdown Software
- RS232 Serial and RS485 Ports
- 2 Communication Slots
- ModBUS RTU / ModBUS TCP (Optional)
- Remote Emergency Power Off (Optional)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

Flexibility

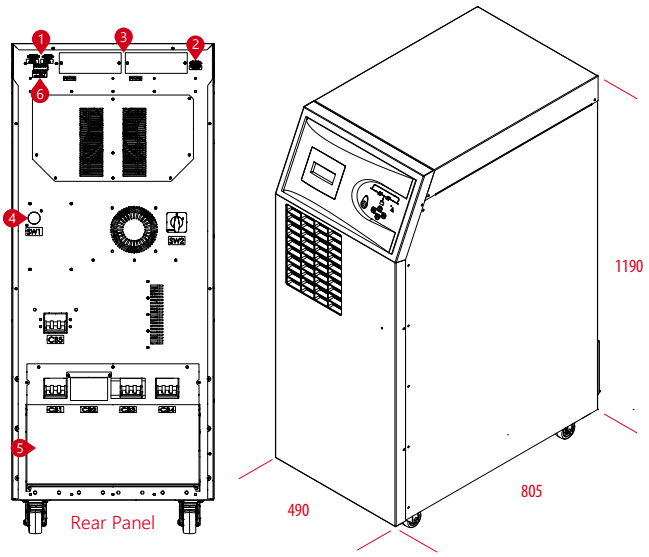
- Temperature sensor for external battery cabinets for extended runtimes.
- External battery cabinets for different sizes of batteries to provide extended runtimes.
- Different sizes of 10-40kVA cabinets for larger capacity of internal batteries when long autonomy times are required.
- 3/1 Phase version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

MiniSMART BX SERIES 10-15-20 kVA

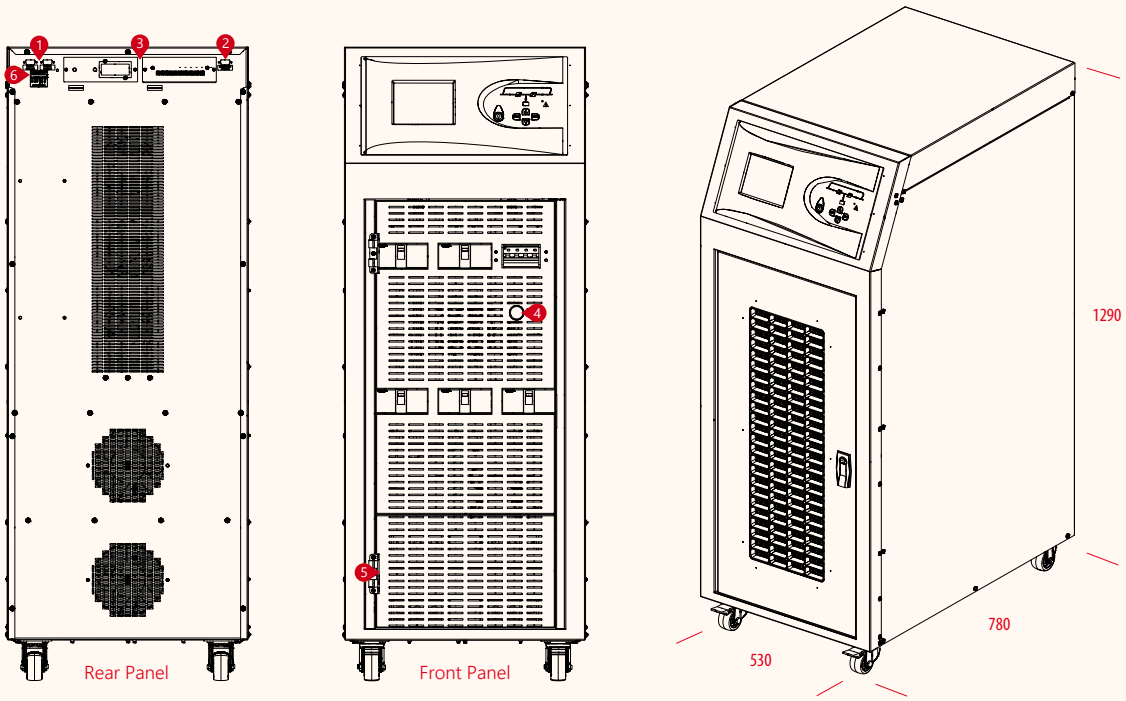


SMART BX SERIES 10-15-20-30-40-60 kVA



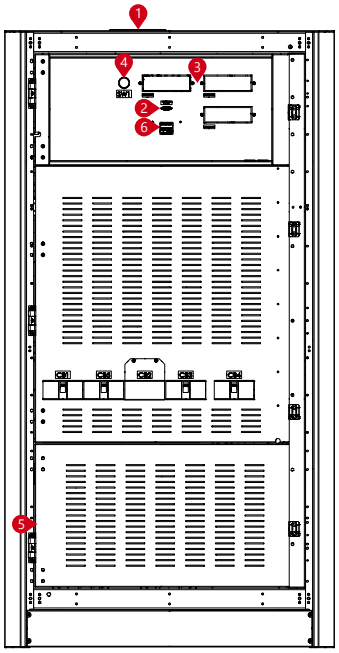
1. Parallel Port Terminal
2. RS232 Terminal
3. Optional Card Slots
4. DC Bus Ramping Up Button
5. Connection Terminal
6. External Battery Temperature Sensor Terminal

SMART BX SERIES 80-100-120 kVA

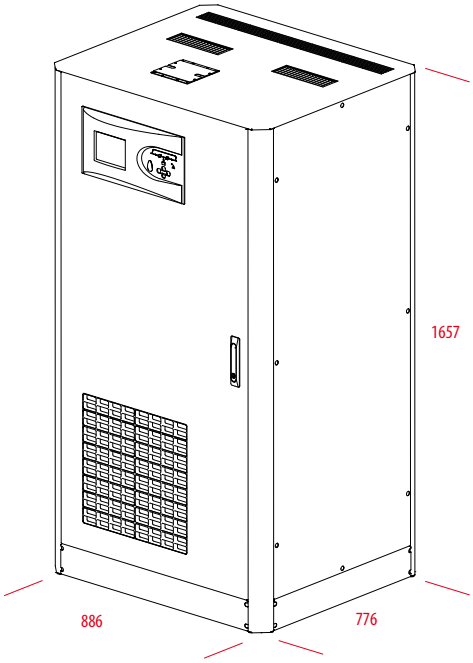


DETAILS

SMART BX SERIES 80-100-120 kVA



Ön Panel



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	Mini SMART BX								
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									
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					
Cabinet Dimensions (mm) Depth	660			805					
Cabinet Dimensions (mm) Hight	851			1190					
Net Weight (kg)	85	85	85	122	123	127	146	167	177
Packaging Dimensions (mm) Width	500			600					
Packaging Dimensions (mm) Depth	760			900					
Packaging Dimensions (mm) 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)

MODEL										
Capacity		80kVA	100kVA	120kVA	80kVA	100kVA	120kVA			
Power Watt		72kW	90kW	108kW	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		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	<74dBA	<75dBA
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			886					
	Depth	780			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.
3 Phase in / 1 Phase Out Version is Available. (10 to 30kVA)

SMART T3
SERIES

80-200 kVA

3:3 PHASE

ONLINE UPS

DATA CENTER | MEDICAL | TRANSPORT | INDUSTRY | EMERGENCY

VFI TYPE — UPS ONLINE

TOWER

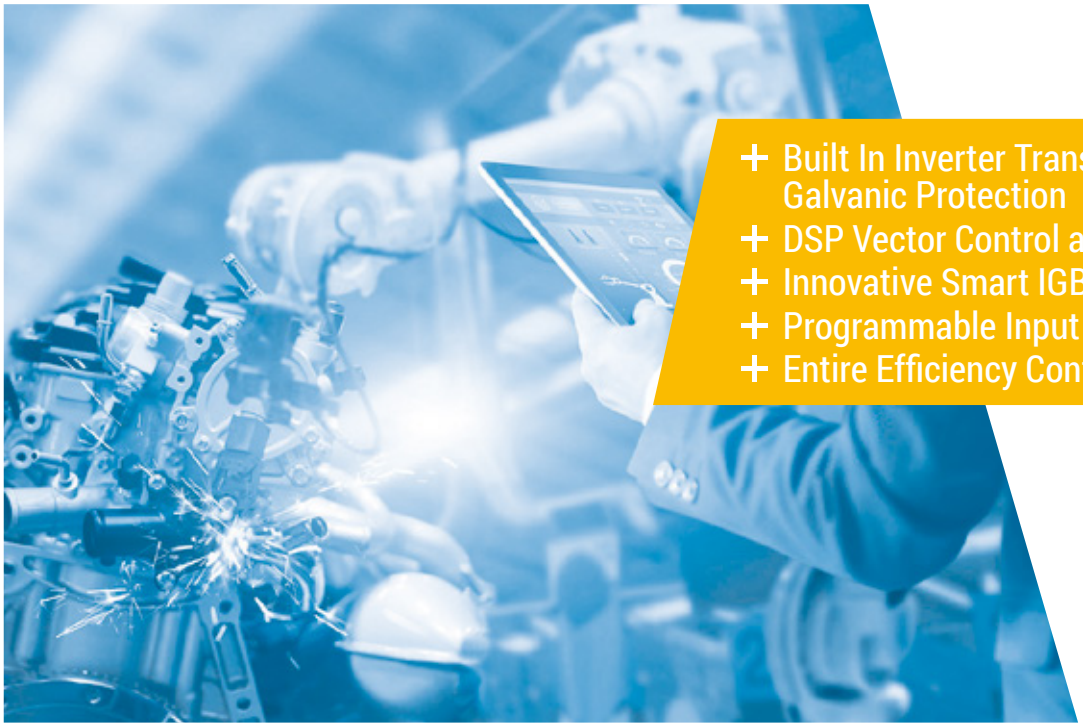
PF= 0.9 — POWER FACTOR

Service — SERVICE

Highest Reliability and Robust Protection for Industrial Loads

+ **SMART T3** Series is a true VFI on-line double conversion, three-phase UPS system and engineered to provide high level of energy efficiency and reliable and robust protection for most demanding industrial and medical environments.

+ DSP Vector Control Technology and Inverter Transformer makes **SMART T3** Series one of the most reliable systems for data security and other critical applications.



+ Built In Inverter Transformer for DC-AC Galvanic Protection
+ DSP Vector Control at Input and Output
+ Innovative Smart IGBT Control
+ Programmable Input Power
+ Entire Efficiency Control System

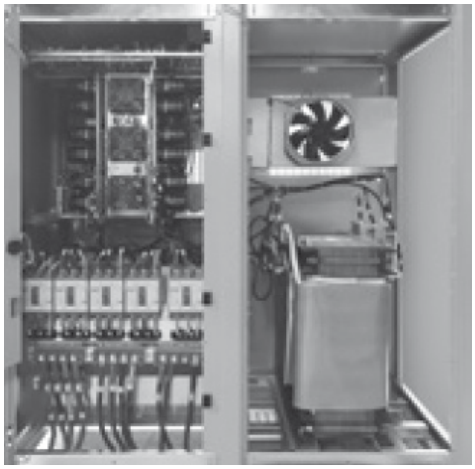
The **SMART T3** *Series* is certified by TÜV SÜD with regard to product safety (EN 62040-1)

The **SMART T3** *Series* is attested by Bureau Veritas with regard to performance (EN 62040-3)

Higher Level of Efficiency than the EU CoC for AC Ups

Compact Design

- Designed with an Integrated transformer on the inverter output ensuring galvanic isolation on the output for ultimate safe installation.
- Easy to install and service and can be integrated into harsh commercial and industrial environments.
- Compact footprint and matching battery cabinets.



Low Total Cost of Ownership

- Less energy consumption to supply the loads thanks to high efficiency.
- Reduced energy loss.
- Reduced electricity usage and air conditioning requirements.
- Reduction in operating cost of UPS.
- IGBT based power factor correction technology provides input power factor close to 1 (≥ 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

High Output Power Factor 0.9

- Output power factor of 0.9 rate.
- Suitable for modern power supply application with unit or capacitive power factor (e.g. new servers generation).
- No reduction in active power from 0,9 leading to 0,9 lagging.

Maximum Availability

- Intelligent parallel operation up to 8 units per redundancy (N+X) and power increase.

Standard Electrical Features

- Transformer Based Technology
- Dual Input
- Common Battery
- Frontal Access for Input/Output Cabling
- Backfeed Protection
- Cold Start (Optional)
- Advanced Battery Management
- Short Circuit and Overload Protection
- Parallel Ready
- Redundant Power Supply (Optional)
- Power Walk-in for Progressive Rectifier Start-up when the Mains is Restored
- Battery Temperature Sensor
- Static & Manual Bypass Operation

Advanced Communication Features

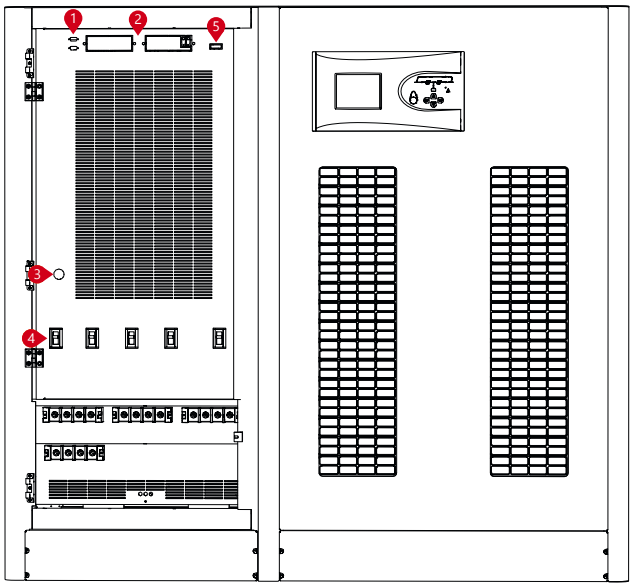
- 1000 Real Time Event Log with Detailed Parameters
- User Friendly Multilingual 320x240 Graphic Display Provides Operation Information
- Monitoring and Shutdown Software
- RS232 Serial and RS485 Ports
- Modbus RTU (Optional)
- 2 Communication Slots
- Remote Emergency Power Off (Optional)
- Remote Display Panel (Optional)
- Dry Contact (Optional)
- SNMP (Optional)
- Profibus (Optional)

Flexibility

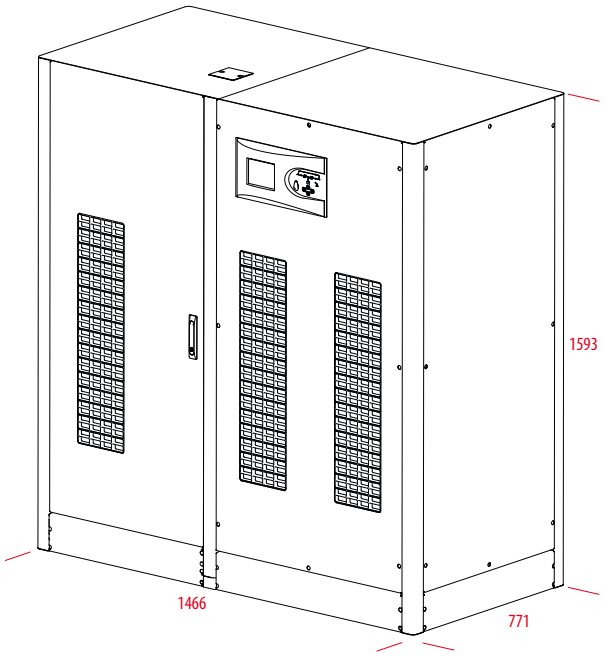
- Optional IP31, IP41, Protection degree for harsh environments.
- Optional tropicalization and anti-corrosion protection for electronic boards.
- Optional temperature sensor for external battery cabinets for extended runtimes.
- External battery cabinets for different sizes of batteries to provide extended runtimes.
- Adaptability to the mains without neutral.

DETAILS

SMART T3 SERIES 80 kVA

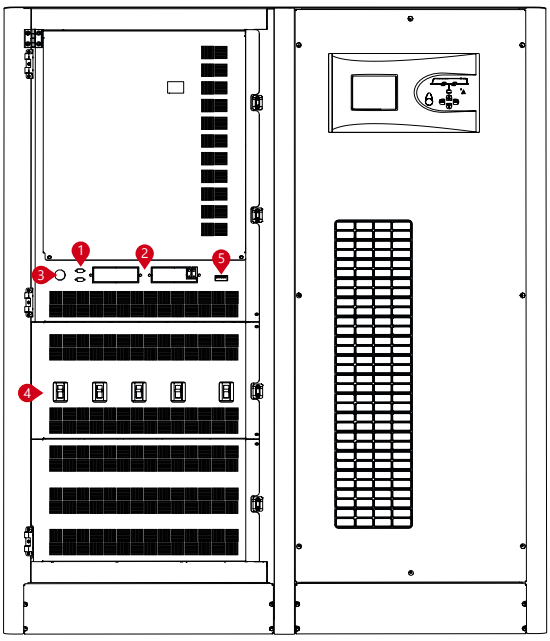


Front Panel

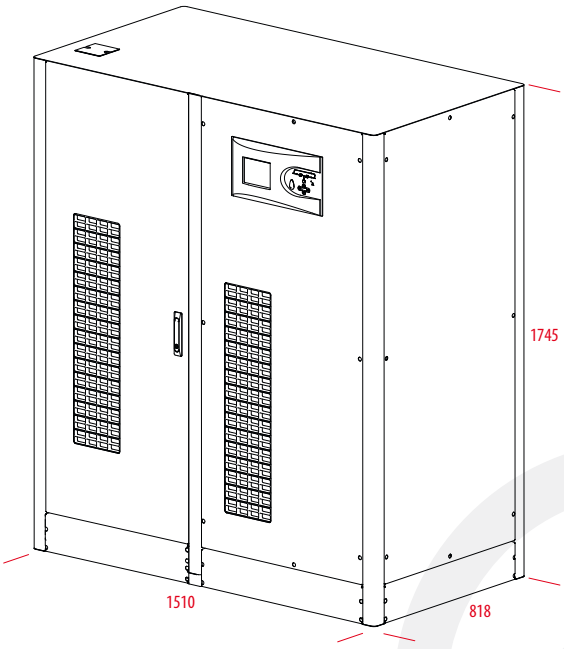


1. RS232 Terminal
2. Optional Card Slots
3. DC Bus Ramping Up Button
4. Switch
5. External Temperature Sensor Output

SMART T3 SERIES 100-120 kVA

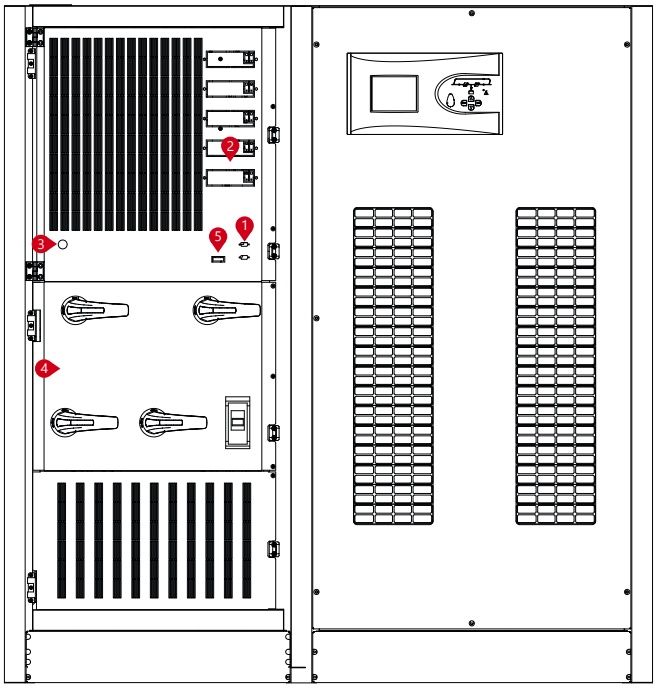


Front Panel

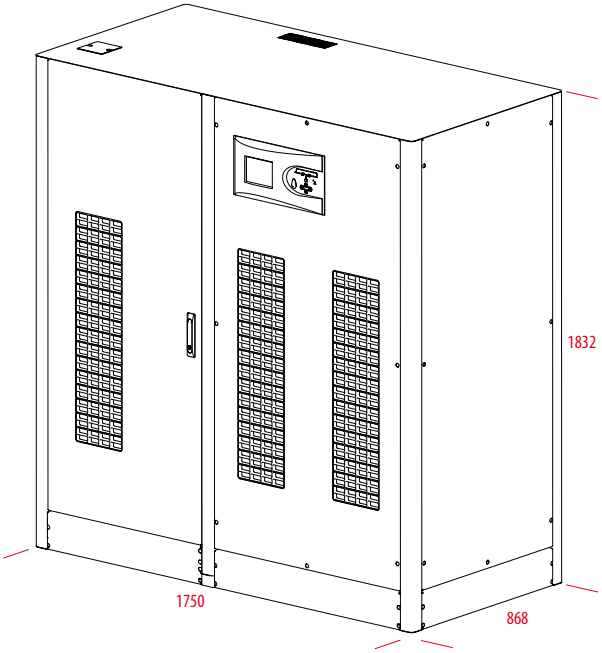


DETAILS

SMART T3 SERIES 160-200 kVA



Front Panel



1. RS232 Terminal
2. Optional Card Slots
3. DC Bus Ramping Up Button
4. Switch
5. External Temperature Sensor Output

MODEL						
Capacity		80kVA	100kVA	120kVA	160kVA	200kVA
Power Watt		72kW	90kW	108kW	144kW	180kW
INPUT						
Voltage Range		380/400/415 VAC 3 Phase (Optional 220/380 VAC -37% +22% 3P+PE)				
Power Factor		At Full Load >0.99				
Frequency Range		45 - 65 Hz				
Total Harmonic Distortion (THDi)		<3%				
OUTPUT						
Voltage Range		380/400/415 VAC 3 Phase + N				
Voltage Tolerance		Static ±1, Dynamic ±3				
Efficiency		92%				
Frequency Tolerance		50Hz / 60Hz ±0,01% (Battery Mode)				
THD (THDv)		Linear Load <2%				
		Non-Linear Load <5%				
Crest Factor (CF)		3:1				
Overload Capacity*		At 125% Load 10min, at 150% Load 1min				
BATTERY						
Quantity (12V DC VRLA)		50				
Charge Capacity		12,5% of Active Power (Nominal 0,1 C10, Adjustable)				
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		<65 dBA			<72 dBA	
COMMUNICATION						
Communication Port		RS232 Standart, RS485 and SNMP Adapter Option				
STANDARDS						
Quality		ISO 9001, ISO 14001, ISO 18001, TSE-HYB				
Performance		EN62040-3 (VFI-SS-111, Bureau Veritas Certified)				
EMC/LVD		EN62040-2, EN62040-1, EN60950, (TÜV SÜD Certified)				
DIMENSIONS & WEIGHT						
Cabinet Dimensions (mm)	Width	1466	1510		1750	
	Depth	771	818		868	
	Height	1593	1745		1832	
Net Weight (kg)		860	935	996	1189	1258
Packaging Dimensions (mm)	Width	1580	1580		1930	
	Depth	870	870		970	
	Height	1980	1980		2120	
Gross Weight (kg)		930	1005	1066	1269	1338

* under certain conditions.

CRITICAL POWER

SMART MODULE XL

SERIES

10-7200 kVA 3:3 PHASE

MODULAR ONLINE UPS

DATA CENTER | MEDICAL | TRANSPORT | INDUSTRY | EMERGENCY

VFI TYPE — UPS ONLINE | MODULAR SYSTEM | PF= 1.0 — POWER FACTOR | Service — SERVICE | kW=kVA | 96% Efficiency

Modular UPS Design for High Density Data Centers

+ **SMART MODULE XL** Series is a scalable, redundant Modular UPS system designed to cost effectively provide high level availability for high density data centers and critical applications.
+ True Online Double Conversion and advanced DSP control technology.
+ Modular Architecture can scale power and runtime as demand grows or as higher levels of availability required.
+ Combines the modular design with the N+X parallel redundancy technology.
+ The maximum capacity of a single cabinet is 520kVA. Cabinets can operate in parallel configuration to build a system of up to 2080kVA.

+ High Performance, Modular 3-Phase Power Protection
+ Scalable up to 2080kVA, with 96% High Efficiency

CE PG TSE Higher Level of Efficiency than the EU CoC for AC Ups

Scalable Modular Architecture

Scalable up to the highest active power rating available through two dimensional modularity: Vertical and Horizontal.

- Capacity of single power module is 10-15-20-25-30-40kVA
- The height of single hot swappable power module is 3U
- Standard 1.4m cabinet can hold up to 5 of power modules
- Standard 2m cabinet can hold up to 13 of power modules
- The single UPS cabinet capacity can reach 1200KVA and Ups cabinets can operate in parallel configuration to build a system of up to 7200kVA

Modules	Output Power	Dimensions (WxHxD)	Weight
SM 3310-RM	10kVA 3/3 Module	443x131x580mm 3U	26kg
SM 3315-RM	15kVA 3/3 Module	443x131x580mm 3U	30kg
SM 3320-RM	20kVA 3/3 Module	443x131x580mm 3U	31kg
SM 3325-RM	25kVA 3/3 Module	443x131x580mm 3U	31kg
SM 3330-RM	30kVA 3/3 Module	443x131x580mm 3U	32kg
SM 3340-RM	40kVA 3/3 Module	443x131x580mm 3U	33kg

"Size What You Need Now and Pay as You Grow"

Standart Electrical Features

- Output Power Factor: 0.9 (Optional 1.0)
- Hot Swappable Maintenance (UPS & Battery)
- Separated Bypass
- Maintenance Bypass
- Parallelable up to 4 Cabinets
- Common Battery
- Control of On/Off State of each Module
- Freely Set the Charge Current
- Intelligent Charging
- Mid or Small Power Distributing System
- Selectable Battery Voltage 3 Input 3 Output ±216VDC/ ±228VDC/±240VDC (32/34/36/38/40pcs)

Advanced Communication Features

- RS232 (USB)
- RS485 Communication Interface
- SNMP Card (Optional)
- Relay Card (Optional)
- Centralized Monitor Module that is Hot Swappable
- Single Module LCD Display
- Control Monitoring with 5" Color LCD Graphic Display

UPS Cabinet Control Panel

Module Control Panel

Hot Swappable Battery Modules

Plug and play battery modules ensures uninterrupted power to protected equipment while batteries are being replaced. Allows quick and easy battery replacement.

- Each Battery Module Consists of 18 pcs 7Ah/9Ah
- Only 3U Height
- Simply Plug into UPS System

3 U Battery Box Optional

19"Matching Battery Cabinets (Optional)

N+X Parallel Redundancy

SMART MODULAR Series UPS adopts N+X parallel redundancy design, users can set different redundancy according to the importance of the load. While the number of redundancy modules are more than two, the availability of UPS system will achieve 99.999% and the MTBF will be more than 15,000,000 hours which can satisfying the reliability requirement of critical load. The UPS redundancy degree can be set through the LCD, when the load exceeds the set value, the UPS will alarm in time.

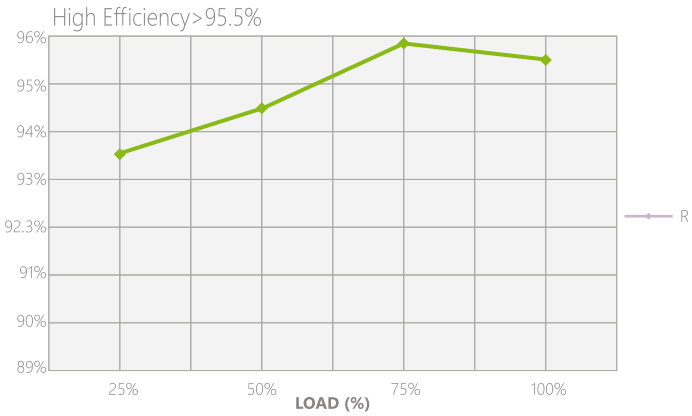
Independent Control System

Every power module is equipped independent control system, and control itself independently according to the sharing message, and the fault module separates from the system automatically.

High Efficiency and Low Total Cost of Ownership

SMART MODULAR Designed for highly economical energy consumption and is a perfect fit in your data center and server room. Offering efficiency of up to 96%, THDi of 2% and unity Input Power Factor without harmonic filters PM delivers:

- Significant energy savings
- Lower cooling costs
- Smaller generator sizing



- High input power factor (>0.99) and low input Total Harmonic Distortion (THDi<2%) minimizes installation costs by enabling the use of smaller generators and cabling.
- Fully-rated power kVA equals kW feature option reduces cost by eliminating the need for an oversized UPS for Power Factor Corrected (PFC) loads.

10kVA/15kVA/20kVA/25kVA/ 30kVA 3:3 phase

40kVA 3:3 phase

MODEL													
CAPACITY													
UPS Cabinet		10~100 kVA	20~100 kVA	20~200 kVA	25~250 kVA	30~150 kVA	30~300 kVA	40~200 kVA	40~320 kVA	40~520 kVA	40~800 kVA	40~1040 kVA	40~1560 kVA
Paralleling		Up to 6 Frame	Up to 6 Frame	Up to 6 Frame	Up to 6 Frame	Up to 6 Frame	Up to 6 Frame	Up to 6 Frame	Up to 6 Frame	Up to 4 Frame	Up to 2 Frame	Up to 2 Frame	Up to 1 Frame
PM Module		10kVA/10kW, 15kVA/15kW, 20kVA/20kW, 25kVA/25kW, 30kVA/30kW, 40kVA/40kW, 50kVA/50kW											
INPUT													
Phase		3 Phase 4 Wires and Ground											
Rated Voltage		380/400/415 VAC											
Voltage Range		208~478 VAC or 120 VAC~276 VAC											
Frequency Range (Hz)		40~70 Hz											
Power Factor		>0.99											
Bypass Voltage Range		Max. Voltage: +15% (Optional +5%, +10%, +25%) Min. Voltage: -45% (Optional -20%, -30%)											
		Frequency Protection Range: ±10%											
Current Harmonic		<2% (100% Non-Linear Load)											
Generator Input		Support											
OUTPUT													
Phase		3 Phase 4 Wires and Ground											
Rated Voltage		220/240 VAC 380/400/415 VAC											
Power Factor		1											
Voltage Precision		±1%											
Output Frequceny		±1%, ±2%, ±4%, ±5%, ±10% of the Rated Frequency (Optional) (50/60±0.2) Hz											
Crest Factor		3:1											
THD		≤1% With Linear Load ≤4% With Non-Linear Load											
Efficiency		96%											
COMMUNICATION													
UPS Cabinet		RS232, RS485, Intelligent Slot x 2 (SNMP Card, Relay Card, Dry Contact Optional)											
INTERFACE													
PM Series UPS Module		RS232											
BATTERY													
Voltage		±192V / ±204V / ±216V / ±228V / ±240V DC; Battery Quantity (Optional)											
Charge Current (A)	UPS Cabinet	60A Max	30A Max	60A Max	60A Max	50A Max	100A Max	50A Max	80A Max	130A Max	200A Max	260A Max	390A Max
	Module	6A/10A/(20A Optional) Max (Charge Current can be Set According to Battery Capacity Installed)											
Crest Factor Backup Time		Depends on the Capacity of External Batteries											
THD Transfer Time		Utilty to Battery : 0ms; Utily to Bypass: 0ms											
PROTECTION													
Overload	Normal Mode	Load ≤110%: Last 60min, ≤125%: Last 10min, ≤150%: Last 1min, ≥150% Shut Down UPS Immediately											
	Battery Mode	Load ≤110%: Last 10min, ≤125%: Last 1min, ≤150%: Last 1s ≥150% Shut Down UPS Immediately											
ENVIRONMENTAL													
Operating Temperature		0°C ~ 40°C											
Storage Temperature		-25°C ~ 55°C											
Humidity		0 ~ 95% Non-Condensing											
Noise	Number of Modules ≤5	<55 dBA (1m)											
	Number of Modules >5	<65 dBA (1m)											
Altitude		<1500m											
DIMENSIONS & WEIGHT													
Unit Dimensions WxDxH (mm)	UPS Cabinet	600x840 x1400	600x840 x1400	600x1100 x2000	600x1100 x2000	600x840 x1400	600x1100 x2000	860x600 x2000	860x600 x2000	860x1200 x2000	860x1800 x2000	860x3000 x2000	1100x4800 x2000
	Module	443 x 580 x 131 (3U)											
Weight (kg)	UPS Cabinet	170	170	270	275	152	280	205	310	514	1600	1810	2800
	Module	10kVA: 26kg; 15kVA: 30kg; 20kVA: 31kg; 25kVA: 31kg; 30kVA: 32kg; 40kVA: 33kg											
INDUSTRY STANDARD		CE, IEC 62040-2, IEC 62040-1, IEC 62040-3, IEC61000-4, IEC60950-1											

MODEL		60-300kVA	60-420kVA	60-480kVA	60-600kVA	60-960kVA	60-1200kVA
Capacity (VA/Watts)	UPS Cabinet	60k~300k/60k~300k	60k~420k/60k~420k	60k~480k/60k~480k	60k~600k/60k~600k	60k~960k/60k~960k	60k~1200k/60k~1200k
	Power Module	60kVA					
	Max. Number	5	7	8	10	16	20
INPUT							
Nominal Voltage		380/400/415 VAC, (3Ph+N+PE)					
Voltage Range		138~305 VAC for 40% Load; 305~485 VAC for 100% Load;					
Frequency Range (Hz)		40~70 Hz					
Power Factor		>0.99					
Harmonic Distortion (THDi)		3% (100% Linear Load)					
Bypass Voltage Range		Max. Voltage: 220V: +25% (Optional +10%, +15%, +20%) ; 230V: +20% (Optional +10%, +15%) ; 240V: +15% (Optional +10%)					
		Min. Voltage: -45% (Optional -10%, -20%, -30%)					
Bypass Frequency Range		Frequency Protection Range: ±10%					
Generator Input		Support					
OUTPUT							
Rated Voltage		380/400/415 VAC (3Ph+N+PE)					
Power Factor		0.9 or 1					
Voltage Regulation		±1%					
Output Frequceny		Line Mode: ±1%/±2%/±4%/±5%/±10% of the Rated Frequency (Optional) Bat. Mode: (50/60±0.1%) Hz					
Crest Factor		3:1					
Harmonic Distortion (THDi)		≤2% With Linear Load ≤4% With Non-Linear Load					
Efficiency		95.5%					
BATTERY							
Voltage		Optional Voltage: ±180/±192/±204/±216/±228/±240/±252/±264/±276/±288/±300VDC (30/32/34/38/40/42/44/46/48/50pcs Optional); 360VDC~600VDC (30~50pcs, 36pcs Define, 36 and 50pcs No Power Derating; 32~34pcs Output Power Factor 0.9; 30pcs Output Power Factor 0.8)					
Charge Current (A)	UPS Cabinet	100A (Max.)	140A (Max.)	160A (Max.)	200A (Max.)	320A (Max.)	400A (Max.)
	Power Module	20A (Max.)					
SYSTEM FEATURES							
Transfer Time		Utility to Battery: 0ms; Utility to Bypass: 0ms					
Charge Current (A)	Line Mode	110% Overload for 60min; 125% Overload for 10min; 150 Overload for 1 min					
	Bypass Mode	135% Overload for Long Term; >1000% Overload for 100ms					
Overheat		Line Mode: Switch to Bypass; Backup Mode: Shut Down UPS Immediately					
Low Battery Voltage		Alarm and Switch Off					
Self-Diagnostics		Upon Power On and Software Control					
Backfeed		Support					
EPO		Shut Down UPS Immediately					
Battery		Advanced Battery Management					
Noise Suppression		Complies with EN62040-3					
Audible & Visual Alarms		Line Failure, Battery Low, Overload, System Fault					
Communication Interface		RS232, CAN, RS485, Parallel, Dry Contact Port, Relay Card (Optional), SNMP Card (Optional), Battery Temperature Sensor Optional)					
ENVIRONMENTAL							
Operating Temperature		0°C ~ 40°C					
Storage Temperature		-25°C ~ 55°C					
Humidity		0 ~ 95% Non-Condensing					
Altitude		<1500m					
Noise Level (From 1m Distance)		<65dB	<68dB	<70dB		<73dB	
DIMENSIONS & WEIGHT							
Dimensions WxDxH (mm)	UPS Cabinet	600x850x1600/ 600x850x2000	600x850x2000/ 1200x850x2000	1200x850x2000	1200x850x2000	2000x850x2000	2400x850x2000
	Power Module	440 x 620 x 130 (3U)					
Weight (kg)	UPS Cabinet	260/400	280/450	480	550	980	1150
	Power Module	35					
STANDARDS							
Safety		IEC/EN62040-2, IEC61000-4-2, IEC61000-4-3, IEC61000-4-4, IEC61000-4-5, IEC61000-4-8,					
EMC		-25°C ~ 55°C					

CRITICAL POWER

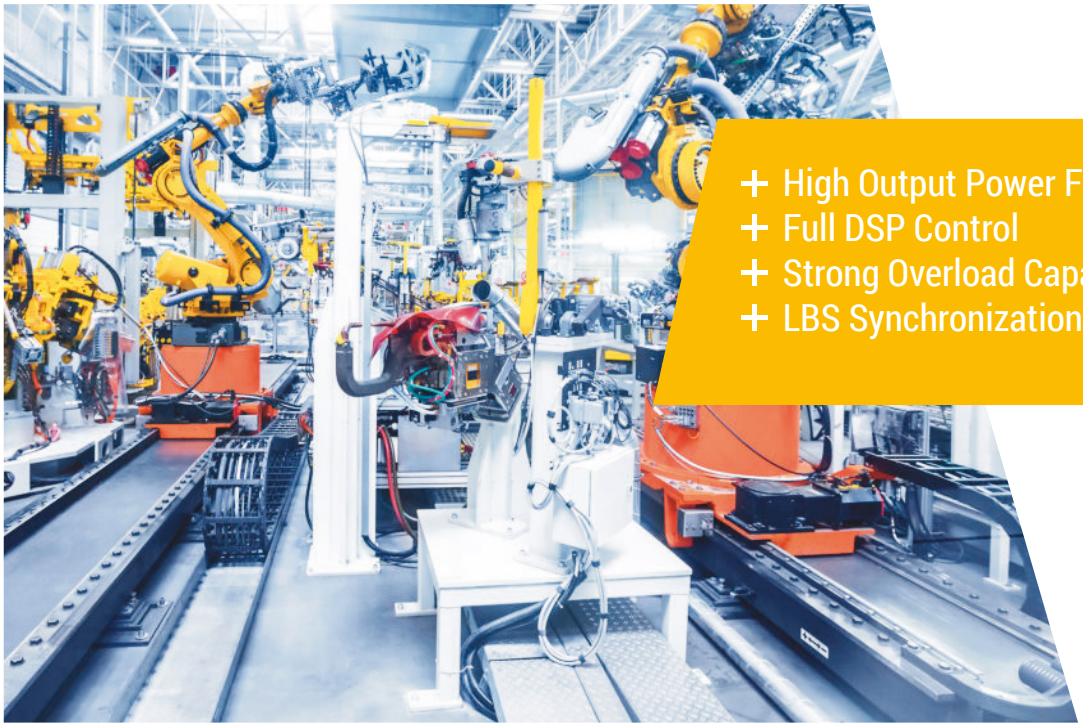
SMART TP
SERIES
10-800 kVA
ONLINE UPS

DATA CENTER | MEDICAL | TRANSPORT | INDUSTRY | EMERGENCY

VFI TYPE — UPS ONLINE
TOWER
PF= 0.9 — POWER FACTOR
Service — SERVICE

Robust Design Transformer Type
3 Phase Power Protection

+ Online Double-Conversion
+ Comprehensive Protection with Built in Isolation Transformer
+ Full DSP Control Optimizes Reliability
+ Active Power Factor Correction (PFC)
+ Wide Input Voltage Range (-25%/+20%
+ Output Power Factor 0.9
+ Optimized Battery Management
+ Strong Overload Capacity
+ Power Walk in
+ Battery Self Test
+ Generator Compatibility
+ LCS Synchronization
+ EPO Function



+ High Output Power Factor 0.9
+ Full DSP Control
+ Strong Overload Capability
+ LBS Synchronization

Online double conversion

• Online Double Conversion design helps to output a pure sine wave, which is immune from the UPS input, so that the load can run steadily.
• UPS transfers among different working mode without output interruption, thereby powering the load uninterruptedly.

Full DSP control

• Full DSP Control avoids the risks caused by analog devices failure and makes the control system more stable and reliable.

High power factor

• The output power factor up to 0.9 better matches the load.
• The input power factor 0.98 with filter helps to improve the efficiency, reduce the harmonic pollution to the Grid and lower the UPS running cost.

Wide input adaptability

• The range of AC input voltage is (380Va/400Vac/415Vac) (-25%/+20%), minimizing transfer to battery mode, thereby greatly prolonging the battery life.
Wide input frequency ranging from 45Hz to 65Hz, ensures stability of UPS while generator connected.

Optimized battery management

• Intelligent battery management system and advanced battery auto float/boost charge technology, reduces the frequency of battery maintenance, greatly improves the battery efficiency and extends battery life.
• Battery discharge time prediction: the system will display the backup time of battery calculated by discharge current and voltage.
• Battery self-test: battery is automatically tested at regular intervals.
• Flexible battery configuration ranging from 360-408VDC /480VDC.

N+X parallel redundancy

• N+X parallel redundant design, up to 6 units available, makes the configuration more flexible.
Any unit in parallel system fails, the faulty one will automatically cut off the output, and the load will be powered by the remained units.
• It is easy to configure the parallel system just by connecting the parallel cables and doing proper settings.
• Non-fixed Master-Slave relationship: Among several UPS in parallel, the unit startup first is Master UPS, the others are Slave. The master and slave may be exchanged.

Strong overload capability

• 110%/125%/150% overload for 60min/10min/1min.

Power walk in

• Specially designed power walk in function, in which rectifier of each unit in parallel system will be turned on in sequence at intervals to avoid the sudden load on the generator, thereby reducing the cost of the generator required.

Generator mode

• Set the maximum output power of the generator when a smaller one than needed is employed to extend the battery duration time. In this case, the load is supplied by both the generator and battery.

LBS synchronization

• Synchronize the output of the two independent UPS systems (single unit or parallel) even when the two systems are operating on different modes (bypass/inverter) or on battery.

Multi-protection

• Self-diagnosis function will take place before start-up for safety.
• Multi-protection: AC input under/over voltage, overload, short-circuit, over-current, over bus voltage, over-temperature, fan failure, auxiliary power failure, battery under voltage, battery over-charge and so on.

EPO function

• A concave red EPO button with transparent cover is embodied in the LCD control panel for emergency power off.

User-friendly network management

• English LCD and LED mimic diagram: real time operation parameters and status.

• RS232 & RS485 communication ports: for local monitor with corresponding software, and MODBUS protocol is optional.
• SNMP adapter (optional): for remote monitor through network.
• Dry contacts for additional monitoring:
a) UPS on Inverter
b) Mains input failure
c) remote EPO
d) Battery low voltage alarm
e) UPS fault
f) UPS alarm
g) UPS on battery
h) UPS on bypass
Note: d)--h) optional

MODEL	TP10	TP20	TP30	TP40	TP60	TP80
CAPACITY						
Capacity	10kVA	20kVA	30kVA	40kVA	60kVA	80kVA
Power Watt	9kW	18kW	27kW	36KW	54KW	72kW
INPUT						
Operating Voltage Range	380/400/415 VAC (-25% / +20%), 3Ph+N+PE)					
Operating Frequency Range	50/60Hz (±5HZ)					
Power Factor	>0.97 (With Filter)					
OUTPUT						
Output Voltage	380/400/415 VAC (±1%)					
Output Frequency	50/60Hz (±5HZ)					
Harmonic Distortion (THD)	<3% (Linear Load)					
Crest Factor	3:1 (Max)					
Efficiency	≥88%	≥89%		≥90%		≥90.5%
BYPASS						
Rated Voltage	380/400/415 VAC					
Rated Frequency	50/60Hz					
Voltage Protection Range	Upper Limit: +20% (+10%, +15%, +20% Adjustable) Lower Limit: -40% (-10%, -20%, -30%, -40% Adjustable)					
Frequency Protection Range	±10% (±2.5%, ±5%, ±10%, ±20% Adjustable)					
BATTERY						
Voltage	384 VDC (360-384 VDC)					
SYSTEM FEATURES						
Transfer Time	0ms (Line Mode ⟷ Battery Mode)					
Rated Frequency	110%/60min, 125%/10min, 150%/1min					
LED Display	Input, Inverter, Bypass, Battery, Output, Status					
LCD Display	I/O Voltage, Frequency, Power, Power Factor, Battery Voltage, Current, Battery Status, Load Percentage, UPS Status, History Record					
Communicatio Interface	Dry Contact, RS 232, Rs485, SNMP Card (Optional)					
Optional	Harmonic Filter, SNMP Adapter, LBS Cables, Battery Temperature Sensor, Bypass Current - Sharing Inductor					
ENVIRONMENTAL						
Operating Temperature	0°C ~ 40°C					
Storage Temperature	-25°C ~ 55°C					
Humidity Range	0 ~ 95% (Non-Condensing)					
Altitude	<1500m					
Noise Level	<60dB			<60.5dB		
DIMENSIONS & WEIGHT						
Dimension WxDxH (mm)	570 x 800 x 1195				880 x 760 x 1600	
Weight (kg)	217	273	316	330	483	525
Shipping Weight (kg)	272	328	371	385	553	595
STANDARDS						
Safety	IEC/EN62040-1; IEC/EN60950-1					
EMC	IEC/EN62040-2, IEC61000-4, IEC61000-4-3; IEC61000-4-4 IEC61000-4-5; IEC61000-4-6; IEC61000-4-8					

MODEL	TP100	TP120	TP160	TP200	TP300	TP400	TP500	TP600	TP800
CAPACITY									
Capacity	100kVA	120kVA	160kVA	200kVA	300kVA	400kVA	500kVA	600kVA	800kVA
Power Watt	90kW	108kW	144kW	180KW	270KW	360kW	450kW	540kW	720kW
INPUT									
Operating Voltage Range	380/400/415 VAC (-25% / +20%), 3Ph+N+PE)								
Operating Frequency Range	50/60Hz (±5HZ)								
Power Factor	>0.97 (With Filter)								
OUTPUT									
Output Voltage	380/400/415 VAC (±1%)								
Output Frequency	50/60Hz (±0.05HZ)								
Harmonic Distortion (THD)	<2% (Linear Load)								
Crest Factor	3:1 (Max)								
Efficiency	≥92%		≥92.5%		≥93%		≥93.5%		≥94%
BYPASS									
Rated Voltage	380/400/415 VAC								
Rated Frequency	50/60Hz (Auto Sensing)								
Voltage Protection Range	Upper Limit: +20% (+10%, +15%, +20% Adjustable) Lower Limit: -40% (-10%, -20%, -30%, -40% Adjustable)								
Frequency Protection Range	±10% (±2.5%, ±5%, ±10%, ±20% Adjustable)								
BATTERY									
Voltage	384 VDC (360-408 VDC)						480 VDC		
SYSTEM FEATURES									
Transfer Time	0ms (Line Mode ⟷ Battery Mode)								
Rated Frequency	110%/60min, 125%/10min, 150%/1min								
LED Display	Input, Inverter, Bypass, Battery, Output, Status								
LCD Display	I/O Voltage, Frequency, Power, Power Factor, Battery Voltage, Current, Battery Status, Load Percentage, UPS Status, History Record								
Communicatio Interface	Dry Contact, RS 232, Rs485, SNMP Card (Optional)								
Optional	Harmonic Filter, SNMP Adapter, LBS Cables, Battery Temperature Sensor, Bypass Current - Sharing Inductor								
ENVIRONMENTAL									
Operating Temperature	0°C ~ 40°C								
Storage Temperature	-25°C ~ 55°C								
Humidity Range	0 ~ 95% (Non-Condensing)								
Altitude	<1500m								
Noise Level	<650dB				<70dB				
DIMENSIONS & WEIGHT									
Dimension W+D+H (mm)	1160x805x1600 (6P) 1520x830x1600 (12P)		1160x805x1600 (6P) 1520x830x1600 (12P)		1160x805x1600 (6P) 1520x830x1600 (12P)		2580x 1000x1900	2800x 1040x1900	3900x1100 x1950 (12P)
Weight (kg)	800/1100	903/1250	980/1645	1030/1715	1560/2395	1640/2510	3510	4500	6400
Shipping Weight (kg)	890/1190	993/1293	1080/1775	1130/1845	1690/2545	1770/2665	3730	4750	6700
STANDARDS									
Safety	IEC/EN62040-1; IEC/EN60950-1								
EMC	IEC/EN62040-2, IEC61000-4, IEC61000-4-3; IEC61000-4-4 IEC61000-4-5; IEC61000-4-6; IEC61000-4-8								

COMPACT
SERIES

10-80 kVA
ONLINE UPS

3:3 PHASE

DATA CENTER | EMERGENCY | MEDICAL | INDUSTRY | TRANSPORT

VFI TYPE — UPS ONLINE | TOWER | PF= 0.9 — POWER FACTOR | Service — SERVICE

Compact 3 Phase Power Protection for Small to Medium IT Rooms

+ Three Level Inverter Technology
+ High Frequency and True Double-Conversion
+ High Efficiency %96
+ Parallelable Up to 6 units
+ Output Power Factor 0.9
+ LBS Function
+ Wide Input Voltage Range (138~485V)
+ Cold Start
+ Auto Sensing Frequency
+ ECO Mode Operation for Energy Saving
+ Selectable Output Voltage via LCD
+ 50Hz/60Hz Frequency Converter Mode
+ Selectable Battery Low Voltage via LCD
+ Power-On Self Test
+ Advanced Battery Management
+ Short Circuit and Overload Protection
+ Automatically Charging Battery at UPS Off Mode
+ Generator Compatible
+ RS232, Dry Contact, SNMP
+ Emergency Power Off (EPO)

+ Three Level Inverter - %96 Efficiency.
+ Flexible Battery Quantity form 30 to 50pcs.
+ Strong Performance at Unbalanced Loads
+ Output Power Factor 0.9
+ LBS Function

CE PCT TSE

MODEL								
Capacity		10kVA	15kVA	20kVA	30kVA	40kVA	60kVA	80kVA
Power Watt		9kW	13,5kW	18kW	27kW	36kW	54kW	72kW
INPUT								
Nominal Voltage		380/400/415 VAC, (3Ph+N+PE)						
Operating Voltage Range		208 ~ 478 VAC						
Operating Frequency Range		45 ~ 55Hz at 50Hz / 54 ~ 66Hz at 60Hz (Auto Sensing)					40 ~ 70Hz	
Power Factor		≥0.99						
Bypass Voltage Range		380 VAC Max. Voltage: +25% (Optional +10%, +15%, +20%) 400 VAC Max. Voltage: +20% (Optional +10%, +15%,) 415 VAC Max. Voltage: +15% (Optional +10%) Min. Voltage: -45% (Optional -20%, -30%,)						
Bypass Frequency Range		Frequency Synchronize Tracing Range: ±10%						
ECO Range		Same as Bypass						
Harmonic Distortion (THDi)		≤3% (100% Non-Linear Load)						
OUTPUT								
Output Voltage		380/400/415 VAC, (3Ph+N+PE)						
Power Factor		0.9						
Voltage Regulation		±1%						
Frequency	Line Mode Battery Mode	±1%/±2%±4%/±5%/±10% of the Rated Frequency (Optional) 50/60 (±0.1) Hz						
Crest Factor		3:1						
Harmonic Distortion (THDi)		≤2% (Linear Load) ≤5% (Non-Linear Load)						
Efficiency		93.5%	94.5%					
BATTERY								
Battery Voltage		Standart Unit: ±120VDC (20pcs 12V9Ah); Long Run Unit: ±96V/±108V/ ±120VDC (16/18/ 20pcs Optional)	Standart Unit: ±120VDC (2x20pcs 12V9Ah); Long Run Unit Optional Voltage: ±96V/±108V/±120VDC (16/18/20pcs Optional)		Standart Unit: ±120VDC (3x20pcs 12V9Ah); Long Run Unit Optional Voltage: ±96V/±108V/ ±120VDC (16/18/ 20pcs Optional)	Optional Voltage: ±192V/±204V/±216/±228/±240VDC (32/34/36/38/40pcs Optional)		
Charge Current (A) (Charge Current can be set according to Battery Capacity installed)		Standart Unit: 1.35A Long Run Unit: Max. Current 10A	Standart Unit: 2.7A Long Run Unit: Max. Current 10A		Standart Unit: 4.05A Long Run Unit: Max. Current 15A	Max. Current 15A	Max. Current 30A	Max. Current 30A
SYSTEM FEATURES								
Transfer Time		Utility to Battery: 0ms; Utility to Bypass: 0ms						
Overload		Load ≤110%: last 60min, ≤125%: last 10min, ≤150%: last 1min, ≥150% Change to Bypass						
Short Circuit		Hold Whole System						
Communication		USB, RS232, RS485, Parallel Port, REPO Port, Coupler Dry Contact, Intelligent Slot,, SNMP Card (Optional), Relay Card (Optional). LBS Port (Only 60~80k)						
ENVIRONMENTAL								
Operating Temperature		0~40°C						
Storage Temperature		-25~55°C (No Battery)						
Humidity Range		0~95°C (Non Condensing)						
Altitude		<1500m When >1500m, Lower the Rated Power for use						
Noise Level		<55dB	<58dB					
STANDARDS								
Safety		IEC/EN62040-1, IEC/EN60950-1						
EMC		IEC/EN62040-2, IEC61000-4-2, IEC61000-4-3, IEC61000-4-4, IEC61000-4-5, IEC61000-4-6, IEC61000-4-8						
PHYSICAL								
Dimension DxWxH (mm)		828x250x868						
Net Weight		115/57	170/63	171/64	223/71	73	118	122

COMPACT 3L
SERIES

60-200 kVA 3:3 PHASE

ONLINE UPS

DATA CENTER | EMERGENCY | MEDICAL | INDUSTRY | TRANSPORT

VFI TYPE — UPS ONLINE | TOWER | PF= 1.0 — POWER FACTOR | Service — SERVICE

Compact 3 Phase Power Protection for Small to Medium Datacenters

+ Three Level Inverter Technology
+ High Frequency and True Double-Conversion
+ High Efficiency %96
+ Parallelable Up to 6 units
+ Output Power Factor 1
+ LBS Function
+ Wide Input Voltage Range (138~485V)
+ Cold Start
+ Auto Sensing Frequency
+ ECO Mode Operation for Energy Saving
+ Selectable Output Voltage via LCD
+ 50Hz/60Hz Frequency Converter Mode
+ Selectable Battery Low Voltage via LCD
+ Power-On Self Test
+ Advanced Battery Management
+ Short Circuit and Overload Protection
+ Automatically Charging Battery at UPS Off Mode
+ Generator Compatible
+ RS232, Dry Contact, SNMP
+ Emergency Power Off (EPO)

+ Three Level Inverter - %96 Efficiency.
+ Flexible Battery Quantity form 30 to 50pcs.
+ Strong Performance at Unbalanced Loads
+ Output Power Factor 1
+ LBS Function

CE PCT TSE

MODEL							
Capacity		60kVA	80kVA	100kVA	120kVA	160kVA	200kVA
Power Watt		60kW	80kW	100kW	120kW	160kW	200kW
INPUT							
Nominal Voltage		380/400/415 VAC, (3Ph+N+PE)					
Operating Voltage Range		138 ~ 485VAC for 40% Load; 305 ~ 485VAC for Full-Load;					
Operating Frequency Range		40 ~ 70Hz					
Power Factor		≥0.99					
Bypass Voltage Range		220 VAC Max. Voltage: +25% (Optional +10%, +15%, +20%) 230 VAC Max. Voltage: +20% (Optional +10%, +15%,) 240 VAC Max. Voltage: +15% (Optional +10%) Min. Voltage: -45% (Optional -20%, -30%,)					
Bypass Frequency Range		Frequency Synchronize Tracing Range: ±10%					
Generator Input		Support					
OUTPUT							
Output Voltage		380/400/415 VAC, (3Ph+N+PE)					
Power Factor		0.9 & 1					
Voltage Regulation		±1%					
Frequency	Line Mode Battery Mode	±10% (±1%/±2%±4%/±5% Optional), Output 50/60 (±0.1)Hz 50/60 (±0.1) Hz					
Crest Factor		3:1					
Harmonic Distortion (THDi)		≤1% (Linear Load) ≤4% (Non-Linear Load)					
Efficiency		96%					
BATTERY							
Battery Voltage		Optional Voltage: ±180V/±192V/±204/±216V/±228V/±240V/±252V/±264/±276/±288V/±300VDC (30/32/34/36/38/40/42/44/46/48/50 pcs Optional); 360VDC-600VDC (30-50 pcs, 36 pcs default, 36 to 50 pcs Output Power Factor 1.0; 32-34 pcs Output Power Factor 0.9; 30 pcs Output Power Factor 0.8)					
Charge Current (A) (Charge Current can be set according to Battery Capacity installed)		Max. Current 10A	Max. Current 40A			Max. Current 60A	Max. Current 80A
SYSTEM FEATURES							
Transfer Time		Utility to Battery: 0ms; Utility to Bypass: 0ms					
Overload	INV Mode Bypass Mode	110%: Overload for 60min, 125%: Overload for 10min, 150%: Overload for 1min 135%: Overload for Long Time, >1000% Overload for 100ms					
Backfeed Protection		Short Circuit, Overload, Overtemperature, Battery Low, Fan Fault					
Remote LCD		Support					
Communication		USB, RS232, RS485, Parallel Port, Coupler Dry Contact, Intelligent Slot, LBS, SNMP Card (Optional), Relay Card (Optional)					
ENVIRONMENTAL							
Operating Temperature		0~40°C					
Storage Temperature		-25~55°C (No Battery)					
Humidity Range		0~95°C (Non Condensing)					
Altitude		<1500m When >1500m					
Noise Level		<55dB	<60dB	<62dB	<62dB	<63dB	<66dB
STANDARDS							
Safety		IEC/EN62040-1, IEC/EN60950-1					
EMC		IEC/EN62040-2, IEC61000-4-2, IEC61000-4-3, IEC61000-4-4, IEC61000-4-5, IEC61000-4-6, IEC61000-4-8					
PHYSICAL							
Dimension DxWxH (mm)		850x442x1200					
Net Weight		80	144	147	152	200	280

SMARTPACK
SERIES

1-2-3 kVA 1:1 PHASE
ONLINE UPS

HOME/OFFICE · EMERGENCY · MEDICAL · INDUSTRY

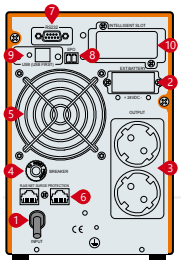
VFI TYPE — UPS ONLINE · TOWER · PF= 0.9 — POWER FACTOR · PLUG & PLAY

Power Protection for Entry Level IT Servers & Networks

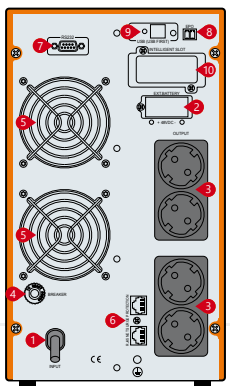
+ High Frequency and True Double-Conversion
+ Microprocessor Control Optimizes Reliability
+ Active Power Factor Correction (PFC)
+ Wide Input Voltage Range (110~300V)
+ Output Power Factor 0.9
+ Auto Sensing Frequency
+ ECO Mode Operation for Energy Saving
+ Selectable Output Voltage via LCD
+ Output Bypass Settable via LCD
+ Power-On Self Test
+ Advanced Battery Management (ABM)
+ Short Circuit and Overload Protection
+ Automatic Charging in Off Mode
+ Auto Fan Speed when Loads Varies
+ Generator Compatible
+ RS232 Port and RJ45 Protection

+ High Output Power Factor 0.9
+ High Energy Savings
+ Smart Charger Technology

MODEL				
Capacity		**1**kVA / **900**W	**2**kVA / **1800**W	**3**kVA / **2700**W
INPUT				
Nominal Voltage		200V / 208V / 220V / 230V / 240 VAC		
Voltage Range		110 ~ 300 VAC or 55 ~ 150 VAC @ 60% Load, 160 ~ 300 VAC or 80 ~ 145 VAC @ 100% Load		
Frequency Range		45 ~ 55 Hz / 55 ~ 65 Hz (Auto-Detect)		
Power Factor		> 0.99 @ Nominal Voltage (100% Load)		
THDi		<=10%		
OUTPUT				
Voltage Range		200V / 208V / 220V / 230V / 240 VAC		
Voltage Regulation		±1%		
Frequency (Synchronized Range)		45 ~ 55 Hz / 55 ~ 64 Hz		
Frequency (Batt. Mode)		50 Hz ±0.1 Hz or 60 Hz ±0.1 Hz		
Crest Factor		3:1 (Max)		
Harmonic Distortion		<2% THD (Linear Load); <=5% THD (Non-Linear Load)		
Transfer Time	AC to DC	Zero		
	Inverter to Bypass	4ms (Typical)		
Waveform		Pure Sinewave		
EFFICIENCY				
Mains Mode		Up to 90% @ Battery Full Charged	Up to 91% @ Battery Full Charged	
ECO Mode		94% @ Battery Full Charged		
BATTERIES				
DC Voltage		24V I 36 V	48V I 72V	72V I 96V
Inbuilt Battery		2 x 7Ah I External	4 x 9Ah I External	6 x 9Ah I External
Charging Current (Max.)		1A I 6A	1A I 6A	1A I 6A
Recharge Time		8 hour		
INDICATORS				
LCD		Load Level, Battery Level, AC Mode, Battery Mode, Bypass Mode and Fault Indicators		
ALARMS				
Battery Mode		Sounding Every 4sec		
Low Battery		Sounding Every 1sec		
Overload		Sounding Twice Every 1sec		
UPS Fault		Continously Sounding		
ENVIRONMENTAL				
Operating Temperature		0 ~ 40ºC		
Relative Humidity		0 ~ 90% (Non-Condensing)		
Noise Level		≤50 dB (1m)		
COMMUNICATION				
RS232 (Standard) / USB (Optional)		Supports Windows® 2000/2003/XP/Vista/2008/Windows® 7/8/10, Linux, Free BSD and Mac		
SNMP (Optional)		Power Management from SNMP Manager and Web Browser		
DIMENSIONS & WEIGHT				
Dimension WxDxH (mm)		144 x 400 x 215	191 x 468 x 340	
Net Weight (kg)		7.3 I 5.1	18.1 I 8.8	24.4 I 10.1
Gross Weight (kg)		8.5 I 6.1	19.5 I 9.8	25.8 I 11.1



Rear Panel
1kVA



Rear Panel
2-3kVA

1. AC Input
2. DC Input
3. Outlet
4. Breaker
5. Fan
6. Modem/Tel/Fax
7. RS232
8. USB *(Optional)*
9. EPO *(Optional)*
10. SNMP/AS400 *(Optional)*

Options :
USB/SNMP Port
Emergency Power Off (EPO)
Extension Battery Bank
Built-In Isolation Transformer

SMARTPACK
SERIES

6-10 kVA
ONLINE UPS

1:1 PHASE

DATA CENTER | EMERGENCY | MEDICAL | INDUSTRY | TRANSPORT

VFI TYPE — UPS ONLINE
TOWER
PF= 0.9 — POWER FACTOR
Service — SERVICE

Power Protection for Entry Level IT Servers & Networks

+ Online Double Conversion with DSP Control
+ Input Current Harmonic: <3%
+ Output Power Factor 0.9
+ Wide Input Voltage Range: 110-300VAC
+ Wide Input Frequency Range
+ Support Generator Input
+ ECO Mode Operation for Energy Saving
+ Self-Testing when UPS Startup
+ Cold Start
+ SNMP Card/Relay Card (Optional)

+ High Output Power Factor 0.9
+ High Energy Savings
+ Smart Charger Technology

MODEL			
Capacity		**6**kVA / **5400**W	**10**kVA / **9000**W
INPUT			
Nominal Voltage		220 / 230 / 240 VAC	
Operating Voltage Range		110 - 300 VAC	
Frequency		50 Hz: 45-55 Hz; 60 Hz: 54-66 Hz (Auto Sensing)	
Power Factor		≥0,99	
Bypass Voltage Range		Max. Voltage: 220V: +25% (Optional +10%, +15%, +20%), 230V: +20% (Optional +10%, +15%) 240V: +15% (Optional +10%), Min. Voltage: -45% (Optional -20%, -30%)	
Bypass Frequency Range		Frequency Protection Range: ±10%	
ECO Range		Same as the Bypass	
Harmonic Distortion (THDi)		<3% (100% Linear Load)	
Generator		Compatible	
OUTPUT			
Voltage Range		220 / 230 / 240 VAC	
Power Factor		1	
Voltage Regulation		±1%	
Frequency	AC Mode	±1%, ±2% , ±4%, ±5%, ±10% of the Rated Frequency (Optional)	
	Battery Mode	50-60 ± 0.1 Hz	
Crest Factor		3:1	
Harmonic Distortion		≤2% (Linear Load)	
		≤5% (Non-Linear Load)	
Efficiency		>92%	>93%
BATTERY			
Battery Voltage		±96 / 108 / 120 VDC (Optional)	
Capacity (Standar Unit)		12V-7Ah / 9Ah	
Typical Recharging Time		6-8 Hours (to 90% of Full Capacity)	
Charging Current		1A	
SYSTEM FEATURES			
Transfer Time		Main to Battery: 0ms; Mains to Bypass: 0ms	
Overload	AC Mode	Load ≤110%: last 10 min, ≤130%: last 10 min, >130%: turn to Bypass Mode Immediately	
	Battery Mode	40A (Breaker)	80A (Breaker)
Short Circuit		Hold Whole System	
Overheat		Line Mode: Turn to Bypass; Bat. Mode: Shut Down UPS Immediately	
Battery Low		Alarm and Switch Off	
Self-Diagnostics		Upon Power on and Software Control	
Battery		Advanced Battery Management	
Audible & Visual Alarms		Line Failure, Battery Low, Overload, System Fault	
LED&LCD Display		Line Mode, Battery Mode, Eco Mode, Bypass Mode, Battery Low, Overload & UPS Fault	
LCD Display		Input Voltage, Input Frequency, Output Voltage, Output Frequency, Load Percentage, Battery Voltage Inner Temperature & Remaining Battery Backup Time	
Communication Interface		RS232, USB, SNMP Card (Optional), Parallel Card (Optional), Relay Card (Optional)	
ENVIRONMENTAL			
Operation Temperature		0°C~40°C	
Storage Temperature		-25°C~55°C	
Humidity		0%~90% (Non-Condensing)	
Altitude		<1500 m	
Noise Level		<55 dB	
STANDARDS			
Safety		IEC/EN62040-1, IEC/EN60950-1	
EMC		IEC/EN62040-2, IEC61000-4-2, IEC61000-4-3, IEC61000-4-4, IEC61000-4-5, IEC61000-4-6, IEC61000-4-8	
DIMENSIONS & WEIGHT			
Dimensions WxDxH (mm)		191 x 460 x 720	
Net Weight (kg)		60	61

SMARTPACK 31

SERIES

10-20 kVA 3:1 PHASE

ONLINE UPS

HOME/OFFICE EMERGENCY MEDICAL INDUSTRY

VFI TYPE — UPS ONLINE

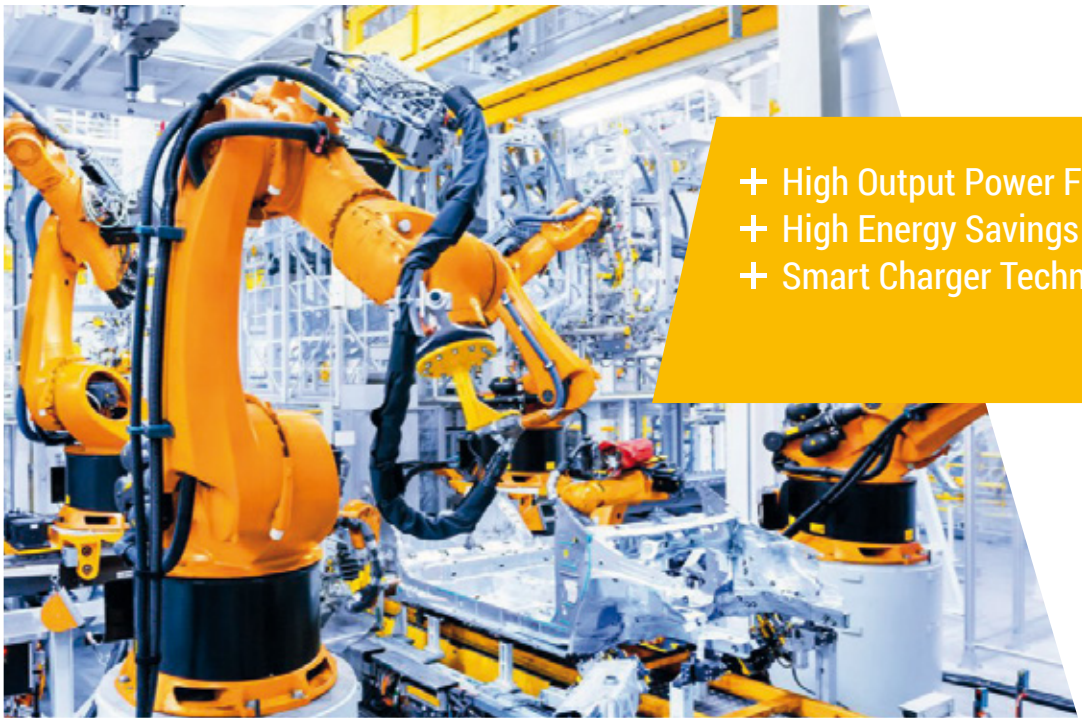
TOWER

PF= 0.9 — POWER FACTOR

PLUG & PLAY

Power Protection for Entry Level IT Servers & Networks

+ N+X Parallel Redundancy
+ Online Double Conversion with DSP Control
+ Input Current Harmonic: <30%
+ Optimization Battery Group, the Quantity of Battery: 16/18/20 pieces (Optional)
+ Output Power Factor 0.9
+ Wide Input Voltage Range (120~276V)
+ Wide Input Frequency Range
+ Support Generator Input
+ ECO Mode Operation for Energy Saving
+ Self Testing when UPS Startup
+ Cold Start
+ Options: SNMP Card / Relay Card / Parallel Card



+ High Output Power Factor 0.9
+ High Energy Savings
+ Smart Charger Technology

MODEL							
Capacity (VA/Watts)		10K/9K	10K/9K	15K/13.5K	15K/13.5K	20K/18K	20K/18K
INPUT							
Nominal Voltage		3:1P 380V/400V/415Vac 1:1P: 220/230/240Vac					
Operating Voltage Range		3:1P (277~520) ±5Vac 1:1P: 120~276Vac					
Frequency Range		50Hz:45~55Hz;60Hz:54~66Hz(auto sensing)					
Power Factor		≥0.99					
Bypass voltage range		Max.voltage: 220V: +25%(optional +10%,+15%,+20%) 230V: +20% (optional +10%,+15%) 240V: +15% (optional +10%) Min.voltage: -45% (optional -20%,-30%)					
Bypass frequency range		Frequency protection range: ± 10%					
ECO range		Same as the bypass					
Harmonic distortion (THDi)		<30%(100% linear load)					
Generator input		Support					
OUTPUT							
Output Voltage		220/230/240Vac					
Power Factor		0.9					
Voltage Regulation		± 1%					
Frequency	Line Mode	± 1%/ ± 2%/ ± 4%/ ± 5%/ ± 10% of the rated frequency(optional)					
	Bat. Mode	50/60(± 0.1)Hz					
Crest Factor		3:1					
Harmonic Distortion (THDv)		⩽2% with linear load ; ⩽5% with non-linear load					
Efficiency		>93%					
BATTERY							
Battery voltage		± 96/108/120Vdc (optional)					
Capacity (standard unit)		12V-7Ah/9Ah					
Typical recharging time		6~8 hours (to 90% of full capacity)					
Charging current		1A(Standard unit); Long run unit Max.current10A(charging current can be set according to battery capacity installed)					
SYSTEM FEATURES							
Transfer time		Mains to battery:0ms; Mains to bypass:0ms					
Overload	Line Mode	Load⩽110%: last 60min, ⩽125%: last 10min, ⩽150%: last 1min, >150% turn to bypass mode immediately					
	Bypass Mode	63A(Breaker)					
Short circuit		Hold whole system					
Overheat		Line Mode: Turn to Bypass; Bat. Mode: Shut down UPS immediately					
Battery low		Alarm and switch off					
Self-diagnostics		Upon power on and software control					
Battery		Advanced battery management					
Audible & Visual alarms		Line failure, Battery low, Overload, System fault					
LED & LCD display		Line mode, Bat. mode, Eco mode, Bypass mode, Battery under voltage, Overload & UPS fault					
LCD display		Input voltage, Input frequency, Output voltage, Output frequency, Load percentage, Battery voltage, Inner temperature & Remaining battery backup time					
Communication interface		RS232,USB,SNMP card(optional), Parallel card(optional), Relay card (optional)					
ENVIRONMENT							
Operating temperature		0℃ ~ 40℃					
Storage temperature		'-25℃ ~ 55℃					
Humidity range		'0 ~ 95% (non-condensing)					
Altitude		< 1500m					
Noise level		<55dB					
PHYSICAL(Output PF 1.0)							
Dimension W × D × H (mm)		Standard model:250*710*810 ; long run model:220*535*435					
Net weight (kg)		Standard model:98kg ; long run model:27kg					
STANDARDS							
Safety		IEC/EN62040-1,IEC/EN60950-1					
EMC		IEC/EN62040-2, IEC61000-4-2, IEC61000-4-3, IEC61000-4-4, IEC61000-4-5, IEC61000-4-6, IEC61000-4-8					

MODEL(Battery Pack)				
BATTERY SYSTEM				
Typical Recharge Time	6~8-hours (to 90% of full capacity)			
Typical Battery Life	3-5 years, depending on discharge cycles and ambient temp			
System Voltage	± 120VDC	± 120VDC	± 96VDC	± 120VDC
Charging current	0.15C max			
Battery Quantity	20	20	16	40
Capacity (standard unit)	7Ah/9Ah(12V)		5Ah(12V)	7Ah/9Ah(12V)
Battery Cable Type	Premolded #10 AWG		Premolded #10 AWG	
PHYSICAL				
Size - Net D X W X H (mm)	720 x 443 x 131	585 x 443 x 131	616 x 440 x 86.5	597 x 250 x 616
Weight - Net(kg)	56/62	54/60	33.5	122/134

Notes: Resettable Output Circuit Breaker, Operating Temperature (max):0 to 40° C Operating/Storage Humidity:95% Non-Condensing

SMARTPACK RT

SERIES

1-3 kVA

ONLINE UPS

1:1 PHASE

HOME/OFFICE · EMERGENCY · MEDICAL · INDUSTRY · DATA CENTER · TRANSPORT

VFI TYPE — UPS ONLINE

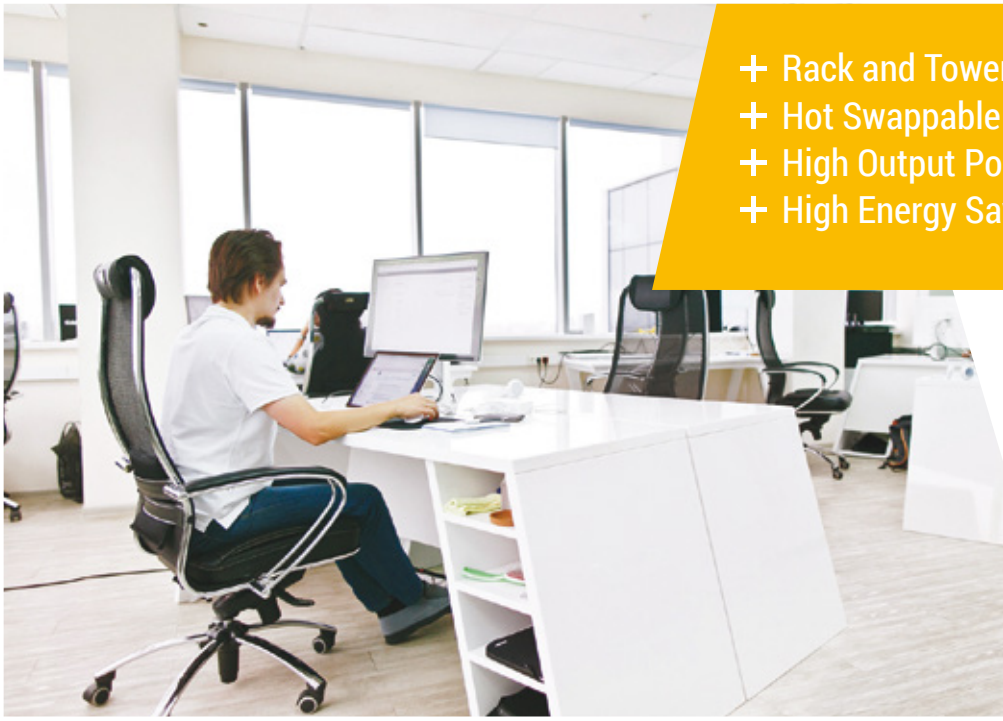
RACK/TOWER

PF= 0.9 — POWER FACTOR

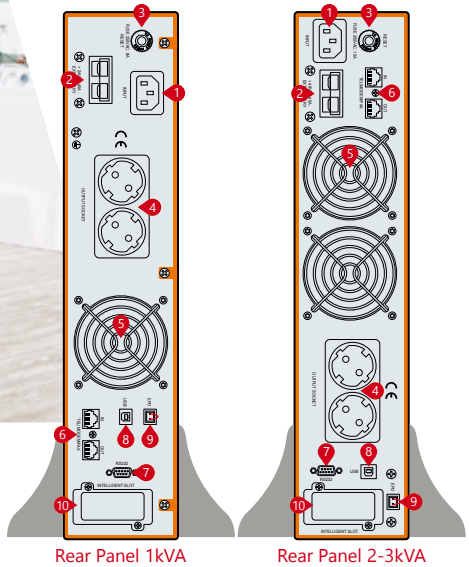
Service — SERVICE

Power Protection for Entry Level IT Servers & Networks

+ Rack/Tower Convertible Design
+ Patented Minic LCD Display can be rotated
+ True Online Double Conversion
+ High Output Power Factor at 0.9 PF
+ Comprehensive display allows easy monitoring and access of UPS status
+ Smart SNMP works with either USB or RS232 together
+ Hot-Swappable Battery
+ Efficiency up to 90%
+ Estimated Remaining Time displayed on the LCD
+ Support Economic (ECO) Operation Mode
+ Matching Battery Pack
+ Optional Powerful Charger
+ Cold Start
+ Power Shedding May Turn Off Uncritical Load in Battery Backup
+ Emergency Power Off
+ Frequency Converter Mode is Settable



+ Rack and Tower Convertible
+ Hot Swappable Battery
+ High Output Power Factor 0.9
+ High Energy Savings



Rear Panel 1kVA — Rear Panel 2-3kVA

Details

1. AC Input
2. DC Input
3. Breaker
4. Outlet
5. Fan
6. Modem/Tel/Fax
7. RS232
8. USB *(Optional)*
9. EPO *(Optional)*
10. SNMP/AS400 *(Optional)*

MODEL				
Capacity		**1**kVA / **900**W	**2**kVA / **1800**W	**3**kVA / **2700**W
INPUT				
Nominal Voltage		200/208/220/230/240 VAC or 100/110/115/120/127 VAC		
Voltage Range		55 ~ 150 VAC or 110 ~ 300 VAC @ 60% load, 80 ~ 145 VAC or 160 ~ 300 VAC @ 100% load		
Frequency Range		45 ~ 55 Hz / 55 ~ 65 Hz (Auto-Detect)		
Power Factor		> 0.99 @ Nominal Voltage (100% load)		
OUTPUT				
Voltage Range		200/208/220/230/240 VAC or 100/110/115/120/127 VAC		
Power Factor		0.9		
Voltage Regulation		±1%		
Frequency Range (Synchronized)		45 ~ 55 Hz / 56 ~ 64 Hz		
Frequency Range (Batt. Mode)		50 Hz / 60 Hz ±0.1 Hz		
Current Crest Ratio		3:1		
Harmonic Distortion		≤3% THD (Linear Load); ≤6% THD (Non-Linear Load)		
Transfer Time	AC to DC	Zero		
	Inverter to Bypass	4ms (Typical)		
Waveform		Pure Sinewave		
EFFICIENCY				
AC Mode		88%	89%	90%
Battery Mode		83%	85%	86%
BATTERIES				
Standard Model				
	Battery Type	12V / 9Ah	12V / 9Ah	12V / 9Ah
	Numbers	2 / 3	4 / 6	6
	Backup Time	Estimated Remaining Time Displayed on the LCD		
	Typical Recharging Time	4 hours Recover to 90% Capacity		
	Charging Current (Max)	1.0 A		
	Charging Voltage	27.4 VDC ±1% / 41.1 VDC ±1%	54.7 VDC ±1% / 82.1 VDC ±1%	82.1 VDC ±1%
Long Run Model (Only HV Models)				
	Battery Numbers	Depending on teh Capacity of External Batteries		
	Charging Current (Max)	6 A / 12 A (Double Board)		
	Charging Voltage	27.4 VDC ±1% / 41.1 VDC ±1%	54.7 VDC ±1% / 82.1 VDC ±1%	82.1 VDC ±1%
INDICATORS				
LCD		Load Level, Battery Level, AC Mode, Battery Mode, Bypass Mode and Fault Indicators		
ALARMS				
Battery Mode		Sounding Every 4sec		
Low Battery		Sounding Every 1sec		
Overload		Sounding Twice Every 1sec		
UPS Fault		Continously Sounding		
ENVIRONMENTAL				
Humidity		20 ~ 90% RH @ 0 ~ 40ºC (Non-Condensing)		
Noise Level		≤50 dB (1m)		
COMMUNICATION				
Smart RS232 / USB		Supports Windows® 2000/2003/XP/Vista/2008/Windows® 7/8/10, Linux, Free BSD and Mac		
SNMP (Optional)		Power Management from SNMP Manager and Web Browser		
DIMENSIONS & WEIGHT				
Standard Model				
	Dimension WxDxH (mm)	430x440x86,5	552x440x86,5/701x440x86,5	710x440x86,5
	Net Weight (kg)	13.9 / 16.4	20.1 / 25.1	23.3
Long Run Model (Only HV Models)				
	Dimension WxDxH (mm)	430x440x86,5	552x440x86,5	
	Net Weight (kg)	8.2	10.9	11.3

SMARTRACK RT
SERIES

6-10 kVA

ONLINE UPS

1:1 PHASE

HOME/OFFICE · EMERGENCY · MEDICAL · INDUSTRY · DATA CENTER · TRANSPORT

VFI TYPE — UPS ONLINE

RACK/TOWER

PF= 1.0 — POWER FACTOR 0.8/0.9PF OPTIONAL

Service — SERVICE

Power Protection for Entry Level IT Servers & Networks

+ N+X Parallel Redundancy
+ Online Double Conversion with DSP Control
+ Input Current Harmonic: <3%
+ Optimization Battery Group, the Quantity of Battery: 16/18/20 pieces (Optional)
+ High Output Power Factor at 0.9PF
+ Wide Input Voltage Range: 120-276VAC
+ Wide Input Frequency Range
+ Support Generator Input
+ ECO Mode Operation for Energy Saving
+ Self-Testing when UPS Startup
+ SNMP Card/Relay Card/Parallel Card (Optional)
+ Cold Start

+ High Output Power Factor
+ High Energy Savings
+ Smart Charger Technology

MODEL			
Capacity		**6**kVA / **6000**W	**10**kVA / **10000**W
INPUT			
Nominal Voltage		220V / 230V / 240 VAC	
Operating Voltage Range		120~276 VAC	
Frequency Range		50 Hz: 45~55 Hz; 60 Hz: 54~66 Hz (Auto Sensing)	
Power Factor		≥0.99	
Bypass Voltage Range		Max. Voltage: 220V: +25 (Optional +10%, +15%), 230V: +20 (Optional +10%, +15%, +20%), 240V: +15 (Optional +10%), Min. Voltage: -45% (Optional -20%, -30%)	
Bypass Frequency Range		Frequency Protection Range: ±10%	
ECO Range		Same as the Bypass	
Harmonic Distortion (THDi)		<3% (100% Linear Load)	
Generator Input		Support	
OUTPUT			
Output Voltage		220V / 230V / 240 VAC	
Power Factor		1	
Voltage Regulation		±1%	
Frequency	Line Mode	±1%/±2%/±4%/±5%/±10%/ of the Rated Frequency (Optional)	
	Bat. Mode	50/60 (±0.1) Hz	
Crest Factor		3:1	
Harmonic Distortion (THDv)		≤2% (Linear Load)	
		≤5% (Non-Linear Load)	
Efficiency		>93%	
BATTERIES			
Battery Voltage		±96/108/120 VDC (Optional)	
Capacity (Standard Unit)		12V-7Ah/9Ah	
Typical Recharging Time		6-8 hours (to 90% of Full Capacity)	
Charging Current		1A (Standard Unit); Long Run Unit Max. Current 10A (Charging current can be Sset according to battery capacity installed)	
SYSTEM FEATURES			
Transfer Time		Mains to Battery: 0ms; Mains to Bypass: 0ms	
Overload	Line Mode	Load ≤110%: last 10min, ≤130%: last 1min, ≤130%: turn to Bypass Mode immediately	
	Bypass Mode	40A (Breaker)	80A (Breaker)
Short Circuit		Hold Whole System	
Overheat		Line Mode: Turn to Bypass; Battery Mode: Shut Down UPS immediately	
Battery Low		Alarm an Switch Off	
Self-Diagnostic		Upon Power On and Software Control	
Battery		Advanced Battery Management	
Audible & Visual Alarms		Line Failure, Battery Low, Overload, System Fault	
LED & LCD Display		Line Mode, Battery Mode, ECO Mode, Bypass Mode, Battery Under Voltage, Overload & UPS Fault	
LCD Display		Input Voltage, Input Frequency, Output Voltage, Output Frequency, Load Percentage, Battery Voltage, Inner Temperature & Remaining Battery Backup Time	
Communication Interface		RS232, USB, SNMP Card (Optional), Parallel Card (Optional), Relay Card (Optional)	
ENVIRONMENTAL			
Operating Temperature		0~40ºC	
Storage Temperature		-25ºC~55ºC	
Humidity Range		0~40ºC	
Storage Temperature		0~95ºC (Non-Condensing)	
Altitude		<1500m	
Noise Level		<55dB	
STANDARDS			
Safety		IEC/EN62040-1, IEC/EN60950-1	
EMC		IEC/EN62040-2, IEC61000-4-2, IEC61000-4-3, IEC61000-4-4, IEC61000-4-5, IEC61000-4-6, IEC61000-4-8	
DIMENSIONS & WEIGHT			
Dimensions WxDxH (mm)		625 x 440 x 86,5	
Packaging Dimensions WxDxH (mm)		13	15

SMARTMASTER

SERIES

1-20 kVA

ONLINE UPS

1:1 PHASE

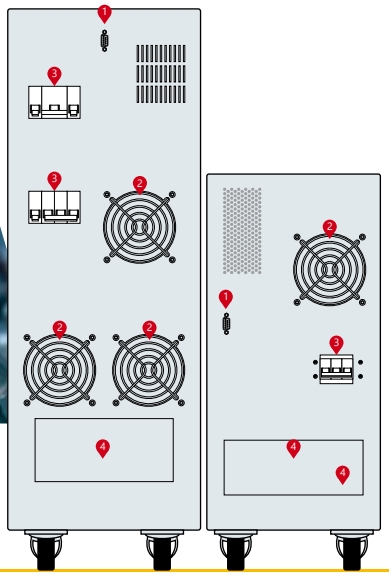
DATA CENTER | EMERGENCY | MEDICAL | INDUSTRY | TRANSPORT

VFI TYPE — UPS ONLINE | TOWER | PF=0.9 — POWER FACTOR | Service — SERVICE

Comprehensive Single Phase Power Protection For Harsh Environments

+ Online Double Conversion
+ Built-in Isolation Transformer
+ Output Power Factor 0.8
+ Wide Input Voltage Range: 165-275VAC
+ Wide Input Frequency Range
+ Support Generator Input
+ Advanced Battery Management
+ Self-Diagnosis Function
+ Cold Start
+ SNMP Card/Relay Card (Optional)

+ Strong Protection For Sensitive Loads
+ Wide Input Voltage Range
+ Built-in Isolation Transformer



1. RS232 Port
2. Fan
3. Input Breaker
4. Connection Box
5. Entrance Hole
6. Active Wheel

MODEL	SM801	SM802	SM803	SM804	SM806	SM808	SM810	SM812	SM815	SM820
Capacity	1kVA	2kVA	3kVA	4kVA	6kVA	8kVA	10kVA	12kVA	15kVA	20kVA
Power Watt	0.8kW	1.6kW	2.4kW	3.2kW	4.8kW	6.4kW	8kW	9.6kW	12kW	16kW
INPUT										
Nominal Voltage	220 / 230 VAC									
Operating Voltage Range	165 ~ 275 VAC									
Operating Frequency Range	50 / 60 Hz (±5%)									
Power Factor	>0,97 (With Filter)									
Max. Input Current (A)	12	18	24	30	42	54	66	78	96	112
OUTPUT										
Output Voltage	220 VAC (±0.5%) / 230 VAC (±0.5%)									
Output Frequency	50 / 60 Hz (±0.5%)									
Crest Factor	3:1 (Max)									
Efficiency	>82%			>85%		>88%				
Harmonic Distortion (THD)	<1.5% (Linear Load)									
BATTERY										
Battery Voltage	48 VDC or 192 VDC			192 VDC						
SYSTEM FEATURES										
Transfer Time	0 ms (Line Mode - Battery Mode)									
Overload	>125% : 1min, >150% : 200ms									
Communication Interface	RS232, SNMP Card (Optional), Dry Contact (Optional)									
ENVIRONMENTAL										
Operation Temperature	0°C~40°C									
Storage Temperature	-25°C~55°C									
Humidity	0%~95% (Non-Condensing)									
Altitude	<1500 m									
Noise Level	<55 dB									
STANDARDS										
Safety	IEC/EN62040-1, IEC/EN60950-1									
EMC	IEC/EN62040-2, IEC61000-4-2, IEC61000-4-3, IEC61000-4-4, IEC61000-4-5, IEC61000-4-6, IEC61000-4-8									
DIMENSIONS & WEIGHT										
Dimensions WxDxH (mm)	230 x 580 x 720 (S) 250 x 500 x 635 (H)					305 x 585 x 864			409 x 798 x 1044	
Net Weight (S/H) (kg)	85/45	85/50	99/54	102/57	108/63	105	115	125	180	200

TIGER
SERIES
650-2000 VA
LINE INTERACTIVE UPS

HOME/OFFICE

VI TYPE
UPS LINE INTERACTIVE

TOWER

PLUG & PLAY

USB

LCD
LCD DISPLAY (1000-1500-2000VA)

Power Protection for Computers, Modems, Game Consoles and Other Electronics in Home/Small Office.

+ With its compact design line interactive **TIGER UPS** offers secured power protection and battery backup during outages for computers, outers/modems, external storage devices, game consoles and other electronics in your home or business.

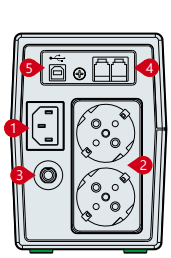
+ **TIGER UPS** secures your data and your equipment by protecting you against damaging surges and spikes.

+ LCD Status Display and Audible Alarms
+ Plug easily to PC, HD TV, Internet Gateway) with IEC or Schuko Outlets
+ Easy management and monitoring from PC

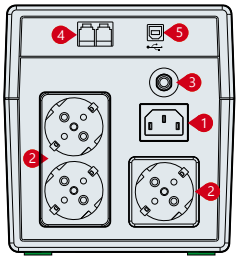
+ Internet / Modem / Tel Protection
+ AVR Boost and Buck
+ Cold Start, Auto Restart
+ Auto Charging Even at Off Mode
+ USB & Auto Shutdown Software

CE

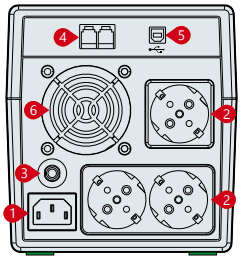
MODEL					
Capacity	650VA / 390W	800VA / 480W	1000VA / 600W	1500VA / 900W	2000VA / 1200W
INPUT					
Related Voltage	230 VAC				
Voltage Range	170-280 VAC (±%5)				
Frequency	50 Hz (±%10)				
OUTPUT					
Voltage Range	220 VAC				
Voltage Precision	±10% (Battery Mode)				
Frequency	50 Hz ±%1 (Akü Modu)				
Transfer Time	2-6ms Typical, 10ms max.				
Waveform	Modified Sine Wave (Battery Mode)				
EFFICIENCY					
Line Mode	Normal Mode: >95%, AVR Mode: >88%				
Battery Mode	>60%				
BATTERY					
Battery Configuration	12V/7Ah*1	12V/9Ah*1	12V/7Ah*2	12V/9Ah*2	12V/9Ah*2
Charge Current	1A				
Recharge/Charging Time	6-8 hours for Recharging up to 90% Capacity				
Backup Time	~16 min.	~20 min.	~30 min.	~50 min.	~50 min.
PROTECTION					
Full Protection	Overload, Short Circuit, Battery Charge-Discharge Protection				
INDICATION					
Display	LED		LCD		
ALARM					
Battery Mode	Sounding every 10 seconds				
Low Battery	Sounding every 1 seconds				
Overload	Sounding every 0.5 seconds				
Fault	Continuously Sounding				
ENVIRONMENTAL					
Operating Temperature	0 ~ 40ºC				
Storage Temperature	-20ºC ~ 55ºC				
Relative Humidity	0 - 95ºC (Non Condensing)				
Audible Noise (at 1m)	≤40 dB				
COMMUNICATION					
Communication Port	USB				
Software	Windows Family / Linux / Mac				
DIMENSIONS & WEIGHT					
Dimensions WxDxH (mm)	101 x 298 x 142		150 x 353 x 162		
Packaging Dimensions WxDxH (mm)	142 x 332 x 213		192 x 405 x 235		



Rear Panel
650-850 VA



Rear Panel
1000-1500 VA



Rear Panel
2000 VA

1. AC Input
2. Outlet
3. Breaker
4. RJ11/RJ45
5. USB
6. Fan

STR
SERIES

10-2000 kVA 3:3 PHASE 1-30 kVA 1:1 PHASE

STATIC VOLTAGE STABILIZER

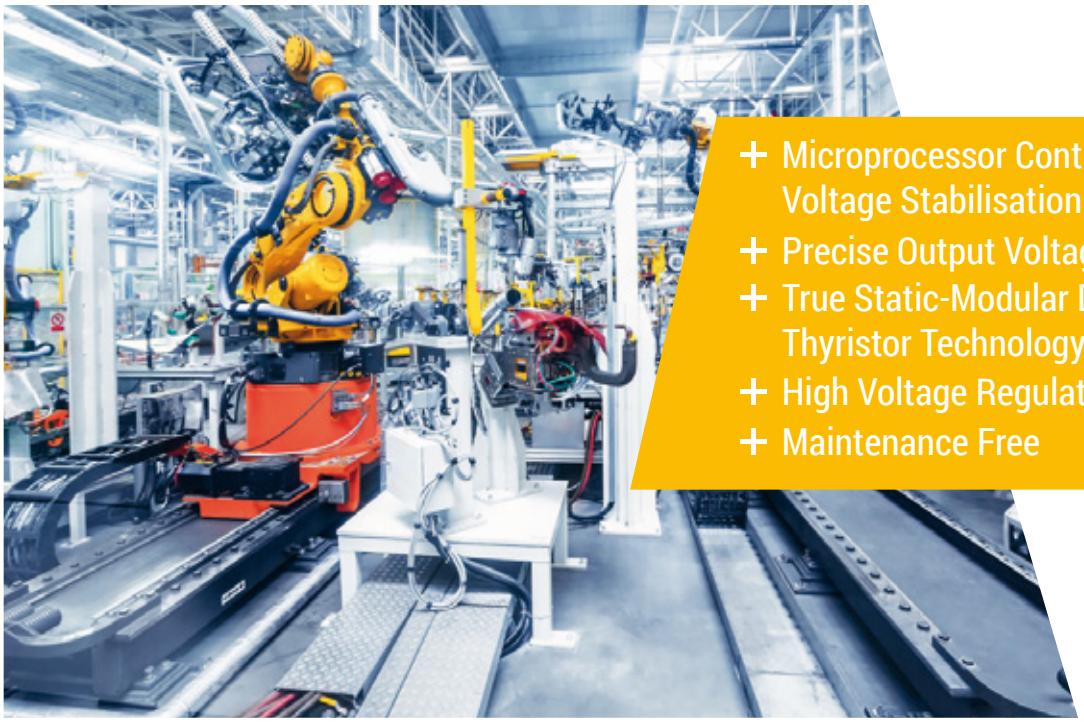
INDUSTRY TRANSPORT MEDICAL

TOWER PF= 0.8 POWER FACTOR Service SERVICE

Highly Reliable and Endurable Static Design

+ Microprocessor controlled Static design stabilizers automatically regulate and protect the loads against dangerous voltage changes.

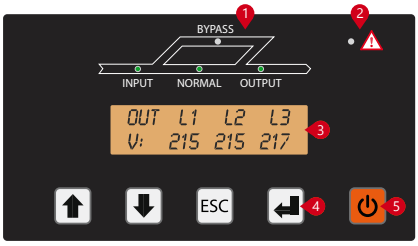
+ Compatible with all load types and offering independent phase control, they deliver ultra-fast response times in correcting under / over voltages, sags and surges - making them ideal for highly sensitive / mission critical loads and applications.



+ Microprocessor Controlled Voltage Stabilisation
+ Precise Output Voltage Accuracy
+ True Static-Modular Design with Thyristor Technology
+ High Voltage Regulation Speed
+ Maintenance Free

Standart Electrical Features

- Wide Input Voltage Range
- Precise Output Voltage Accuracy ±1% to ±5%
- Ultra Fast Voltage Regulation (500V/s)
- True 32-bit Microcontroller Controlled
- High Efficiency >97%
- Independent Phase Regulation to Correct Voltage aand Load Imbalance
- Electronic Protection Against to Over Load, Low Voltage, High Voltage, Over Temperature, Over Current and Short Circuit
- Overload Protection up to 150%
- Fast Responsive to Voltage Surges
- User Friendly, Easy and Comprehensive LCD Display and Mimic Diagram



1. Input Led
   Bypass Led
   Normal Led
   Output Led
2. Alarm/Warning Led
3. LCD Display
4. Menu Keys
5. On/Off Button

- Advanced Alarm Menu
- Manual Bypass
- Auto Restart when Mains Available
- 512 Events Log Memory (Opt.)
- Full Electronic Static Structure with No Moving Parts, Delivering a 'Maintenance Free' Voltage Regulation Solution
- Compact Design with High Quality Material and Minimum Malfunction Hazard
- Designed, Manufactured and Supplied to Comply with
- Fully CE Compliant and Labelled

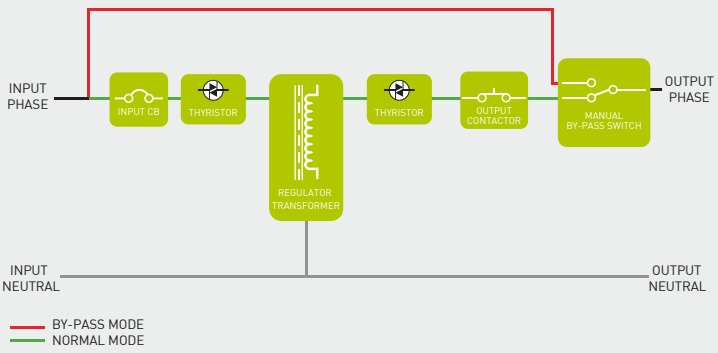
Flexibility

- Available at any required input voltage value and range.
- Available at any required output voltage value and tolerance from ±1% to ±5%.
- Output voltage can be adjusted by the LCD panel.
- Functionable with 50Hz and 60Hz.
- Optional MCCB can be added to the output to provide additonal protection.
- Optional automatic by-pass unit can be added to the output.
- Isolation transformer or voltage changing auto-transformer can be added for both input and output.
- Indoor and outdoor special cabinets with various IP protection classes can be provided.
- Optional EMC-filters at both input and output.
- Optional high-voltage protection and surge arrester.
- Input and output terminals can be designed and located specially on the cabinet.
- Optional Modbus.

MICROPROCESSOR CONTROLLED THYRISTOR TECHNOLOGY

Based on high speed semiconductor (Thyristor) technology and all digital microprocessor control, STR Series Static Voltage Stabilizers continuously monitor the incoming supply. Should the incoming voltage rise or drop, the stabilizers will automatically control the output to ensure the voltage reaching the load equipment always remains constant at the requisite voltage.

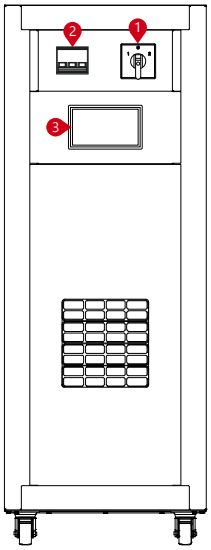
Inbuilt spike protection ensures the load is continuosly protected against harmful mains born high energy spikes and surges.

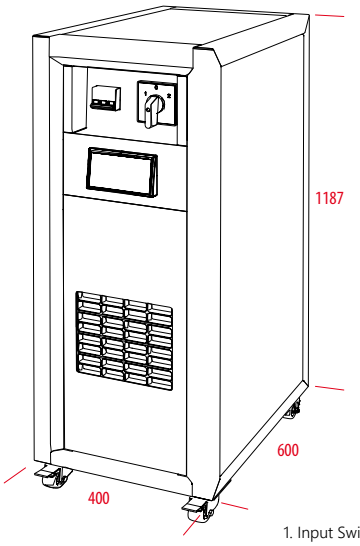


Static Voltage Stabilizer Single Line Diagram

DETAILS

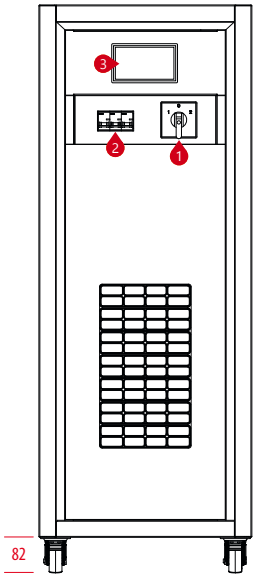
STR SERIES 10-30 kVA

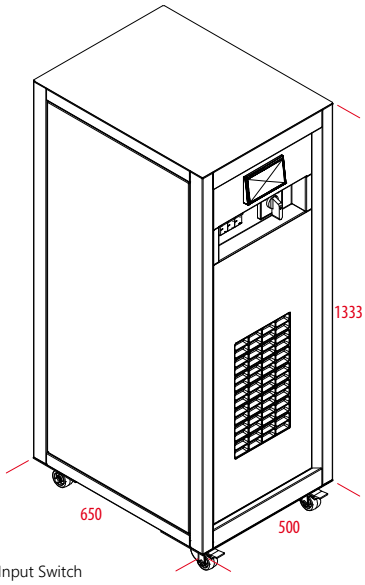




1. Input Switch
2. Output Switch
3. LCD Display

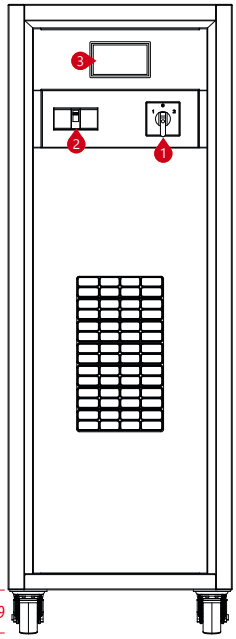
STR SERIES 40-60-75 kVA

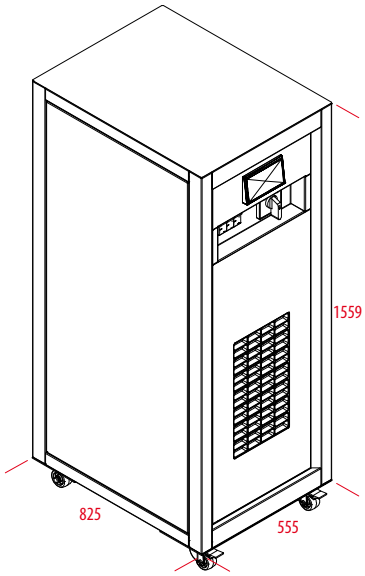




1. Input Switch
2. Output Switch
3. LCD Display

STR SERIES 100-120-150 kVA

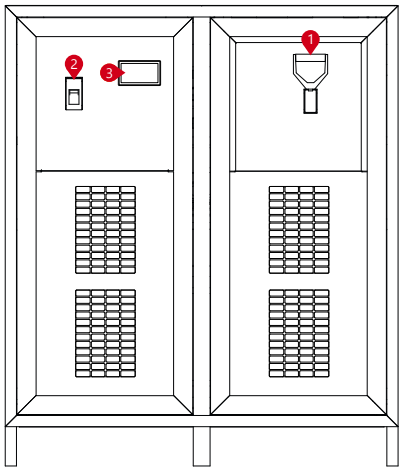


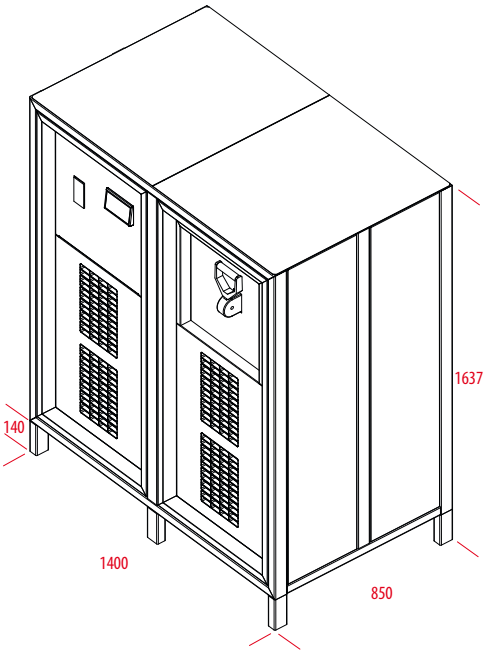


1. Input Switch
2. Output Switch
3. LCD Display

DETAILS

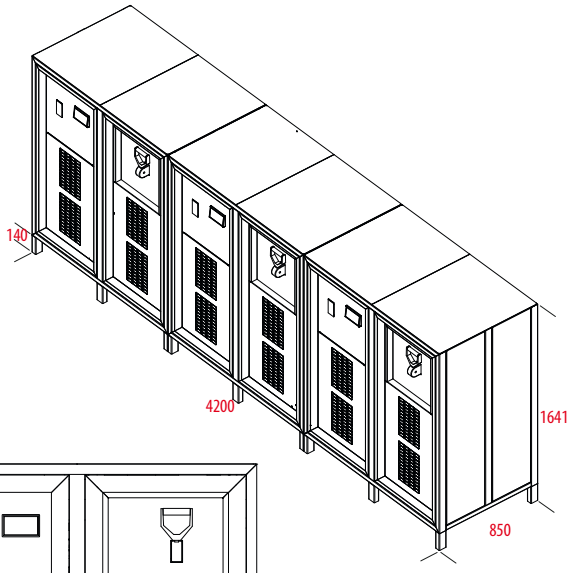
STR SERIES 200-300-400-500-600 kVA

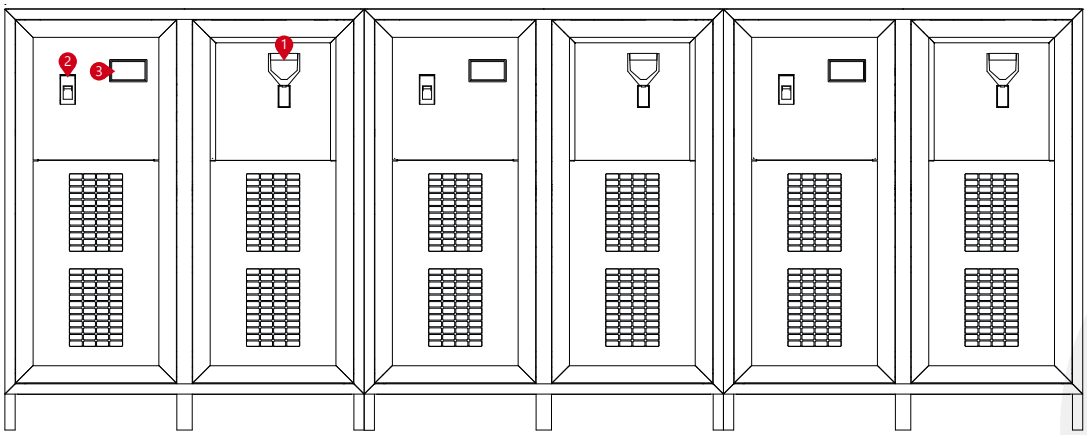




1. Input Switch
2. Output Switch
3. LCD Display

STR SERIES 800-1000-1250 kVA





1. Input Switch
2. Output Switch
3. LCD Display

MODEL																					
Capacity (kVA)	10	15	22,5	30	45	60	75	100	120	150	200	300	400	500	600	800	1000	1250	1500	2000
INPUT																				
In. Vol. Correct. Interval	275~450 VAC (Optional: 190V~485V)																			
Operation Frequency	50~60 Hz (±10%)																			
Line Input Protection	Overcurrent Thermic Fuse																			
OUTPUT																				
Output Voltage	380 VAC RMS ±3% (Std.)				380 VAC RMS ±5% (Optional 1% to 5%)															
Overloading	10min 125% Load, 1min 150% Load, 10sec 200% Load, 20ms 500% Load																			
Correction Speed	500 Volt/sec																			
Upturn Period	20ms																			
Output Protection	Short Circuit, Overload, Overtemperature, Over and Low Voltage Protections																			
WORKING PRINCIPLE	Microprocessor Controlled, Full Automatic, Static, Semi Conductor Electronic Structure Maintenance Free																			
CONTROL PANEL																				
Display and Buttons	Load Level, Input-Output Voltage																			
Alert Message	Input Low/High, Output Low/High, Overtemperature																			
GENERAL																				
Efficiency	>97% (Full Load)																			
Mechanical Bypass	"Manually Controlled Line - PAKO SWITCH Selects Voltage Regulator" Switch Turn On/Off																			
Protection Level	IP20																			
Standard	TS EN 61000-6-2:2006, TS EN 61000-6-3:2007 (EMC), IEC60204-1+A1:2008 (LVD)																			
ENVIRONMENTAL																				
Operating Temperature	-10ºC~50ºC																			
Storage Temperature	-25ºC~60ºC																			
Relative Humidity	<90%, DIN (40040)																			
Altitude	<2000m																			
Noise Level	<50 dB				<55 dB			<58 dB			<58 dB		<63 dB							
DIMENSIONS & WEIGHT																				
Cabinet Dimensions (mm) Width	400				500			555			1400					4200				
Cabinet Dimensions (mm) Depth	600				650			825			850					850				
Cabinet Dimensions (mm) Height	1187				1333			1559			1637					1637				
Weight (Kg)	80	95	112	120	175	203	233	277	320	369	639	775	857	930	2500	2750	3500	3750	4500	5500

MODEL									
Capacity (kVA)		1	2	3	7,5	10	15	20	30
INPUT									
In. Vol. Correct. Interval		120~230 / 145~245 / 160~250 VAC							
Operation Frequency		50~60 Hz (±10%)							
Line Input Protection		Overcurrent Thermic Fuse							
OUTPUT									
Output Voltage		380 VAC RMS ±3% (Std.)	380 VAC RMS ±5% (Optional 1% to 5%)						
Overloading		10min 125% Load, 1min 150% Load, 10sec 200% Load, 20ms 500% Load							
Correction Speed		500 Volt/sec							
Upturn Period		20ms							
Output Protection		Short Circuit, Overload, Overtemperature, Over and Low Voltage Protections							
WORKING PRINCIPLE		Microprocessor Controlled, Full Automatic, Static, Semi Conductor Electronic Structure Maintenance Free							
CONTROL PANEL									
Display and Buttons		Load Level, Input-Output Voltage							
Alert Message		Input Low/High, Output Low/High, Overtemperature							
GENERAL									
Efficiency		>97% (Full Load)							
Mechanical Bypass		"Manually Controlled Line - PAKO SWITCH Selects Voltage Regulator" Switch Turn On/Off							
Protection Level		IP20							
Standard		TS EN 61000-6-2:2006, TS EN 61000-6-3:2007 (EMC), IEC60204-1+A1:2008 (LVD)							
ENVIRONMENT									
Operating Temperature		-10ºC~50ºC							
Storage Temperature		-25ºC~60ºC							
Relative Humidity		<90%, DIN (40040)							
Altitude		<2000m							
Noise Level		<50 dB							
DIMENSIONS & WEIGHT									
Dimensions (mm)	Width	192		260			430		
	Depth	361		453			596		
	Height	352		416			777		

SVR
SERIES

6-2000 kVA
3:3 PHASE

1-50 kVA
1:1 PHASE

SERVO VOLTAGE STABILIZER

INDUSTRY TRANSPORT MEDICAL

TOWER PF= 0.8 POWER FACTOR Service SERVICE

IP20, IP21, IP31, IP44, IP54,
Versions Available

+ Non-Linear Charges Drive
+ Wide Power and Voltage Interval
+ Fast Regulation
+ High Reliability Thanks to Microprocessor and Smart Driver
+ High Efficiency
+ Load Transfer to Bypass Via Pole Charge Switch
+ Safe and Economic Usage
+ Digitally Displayed Status, Input & Output Measurements

+ Servo Drive Structure, Microcontroller Controlled Heavy Duty Devices which Regulates Mains Voltage for Critical Loads

Standart Electrical Features

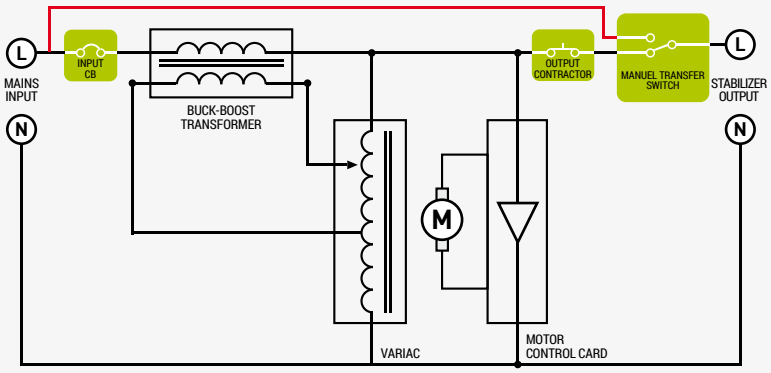
- Microprocessor Controlled
- Precise Output Voltage Correction Accuracy ±1%
- High Efficiency >96%
- Overcurrent, High Temperature, High-Low Voltage and Short Circuit Protection
- At 100%-125% Load 1min, At Above 125% Load 10sec
- Input Voltage, Output Voltage-Current, % Load and Transformer Temperature via User Friendly Panel
- Advanced Alarm Menu
- Manual Bypass
- Unaffected Chassis Technology by Dust, Moisture, Vibration
- Fan Cooling System
- Compact Design with High Quality Materials
- Minimum Fault Risk
- User Friendly LCD Display and Mimic Diagram
- CE Certified

Flexibility

- Available at any required input voltage value and range.
- Available at any required output voltage value and tolerance from ±1% to ±5%.
- Output voltage can be adjusted by the LCD panel.
- Functionable with 50Hz and 60Hz.
- Optional CB can be added to the output to provide additonal protection.
- Isolation transformer can be added for both input and output.
- Indoor and outdoor special cabinets with various IP protection classes can be provided.
- High voltage or lightning protection to input or output units can be added.

MICROPROCESSOR CONTROLLED SERVO TECHNOLOGY

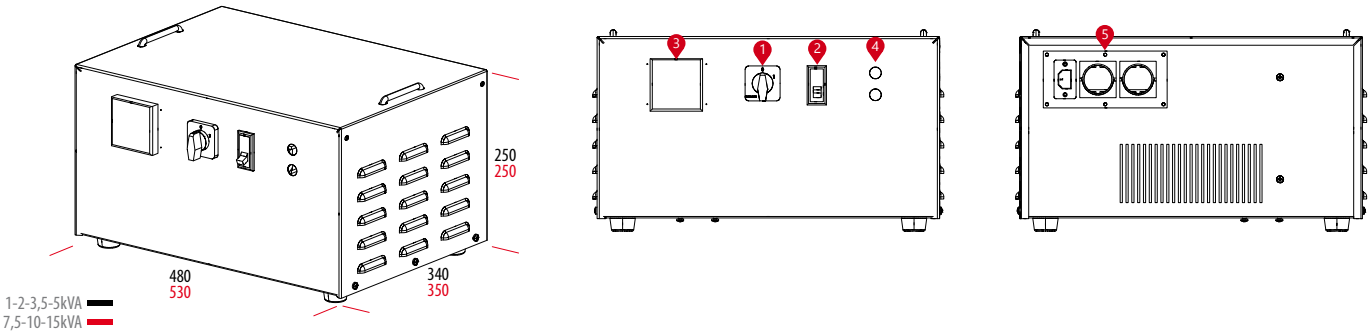
The SVR Series Servo Voltage Regulator transfers the electrical energy received from the grid to the output and continuously monitors the output voltage magnitude. If there is a deterioration in the output voltage according to the desired output voltage values, the microcontroller control unit immediately changes the position of the variac with the help of the motor and ensures that the output voltage remains within the appropriate values. Thus, the Servo Voltage Regulator (Servo) obtains a voltage magnitude between the desired values at the output by adding (or subtracting) the voltage magnitude of the appropriate additional energy generated by the electrical energy it receives from the network to the voltage magnitude of the grid.



Servo Voltage Stabilizer Block Diagram

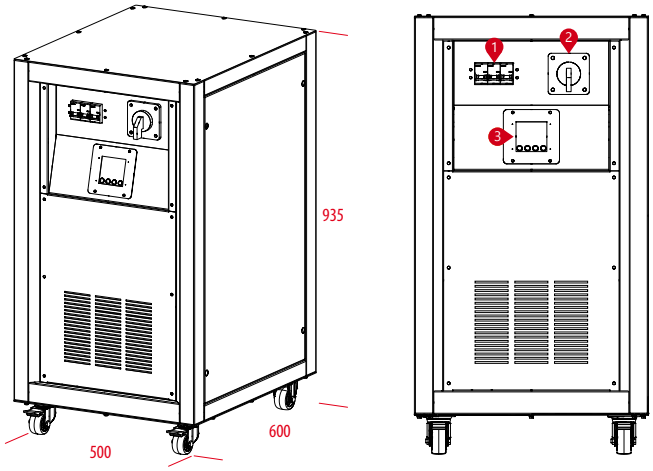
DETAILS

SVR SERIES 1-2-3,5-5-7,5-10-15 kVA 1:1F

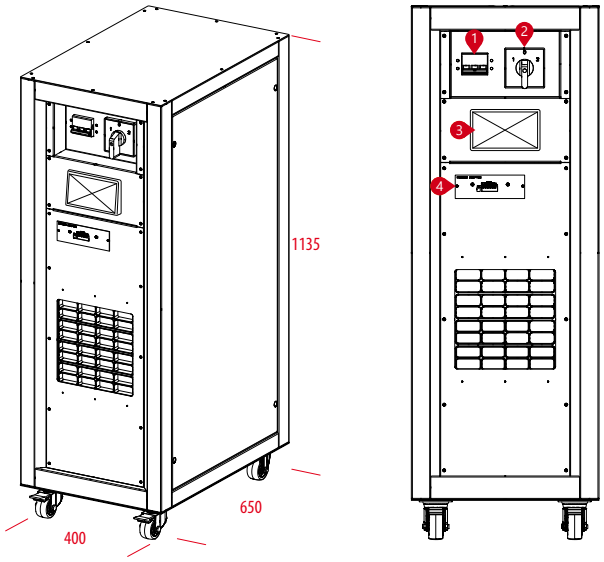


SVR SERIES 20-25-30-40-50 kVA 1:1F

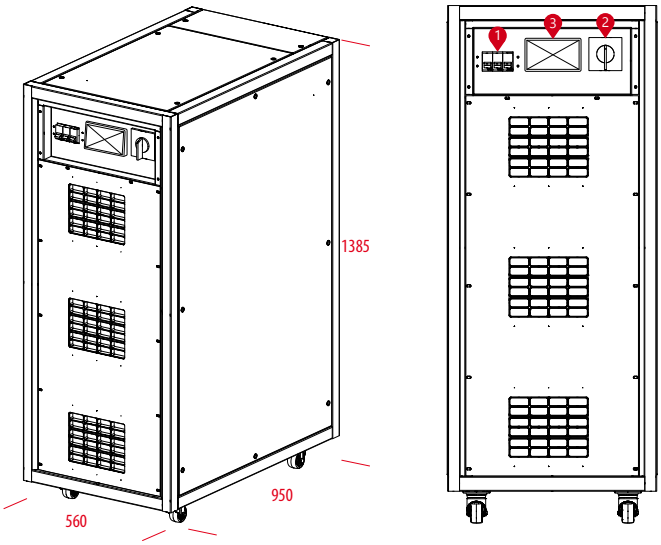
1. Input Switch
2. Bypass Switch
3. User Panel
4. Optional Card Slot
5. Connection Terminal (Rear Panel)



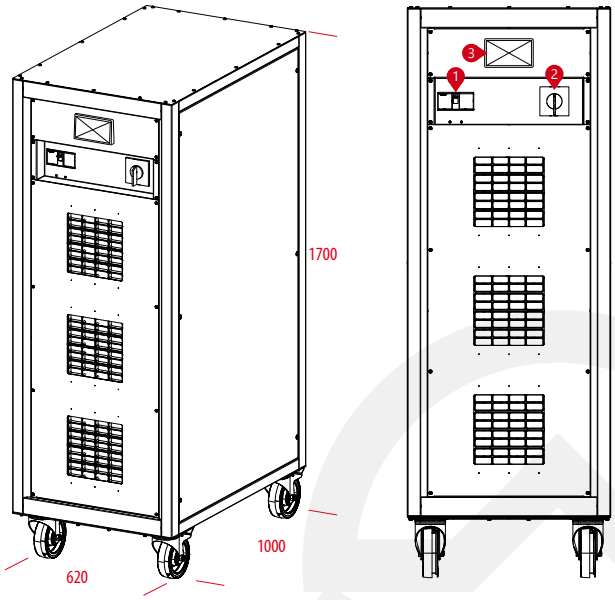
SVR SERIES 6-10,5-15-22,5-30-45 kVA 3:3F



SVR SERIES 60-75-100 kVA 3:3F

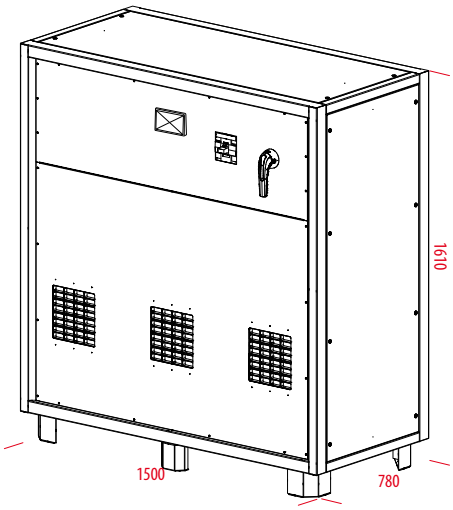


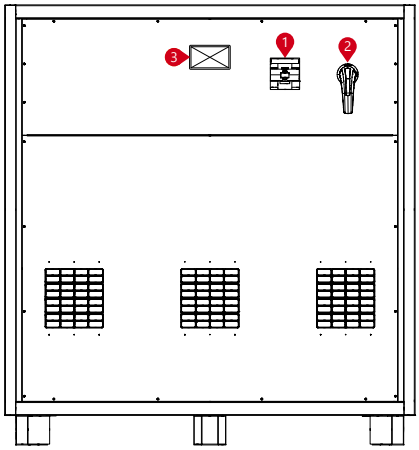
SVR SERIES 120-150 kVA 3:3F



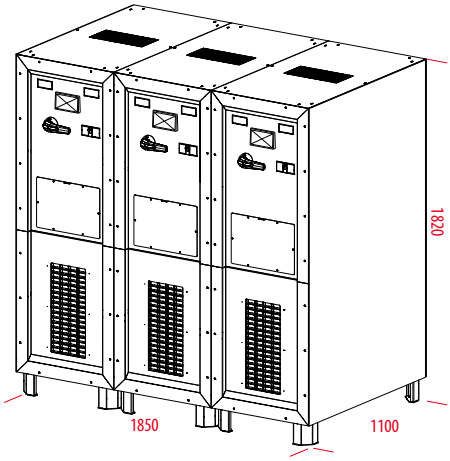
DETAILS

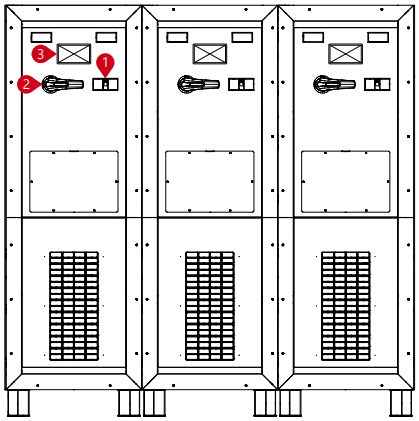
SVR SERIES
200-250-300 kVA 3:3F



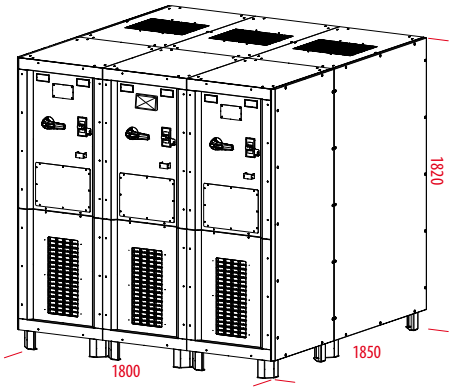


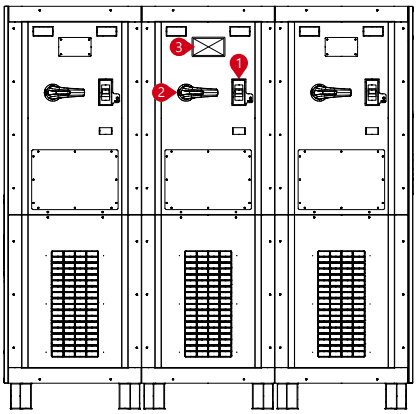
SVR SERIES
400-500-600 kVA 3:3F



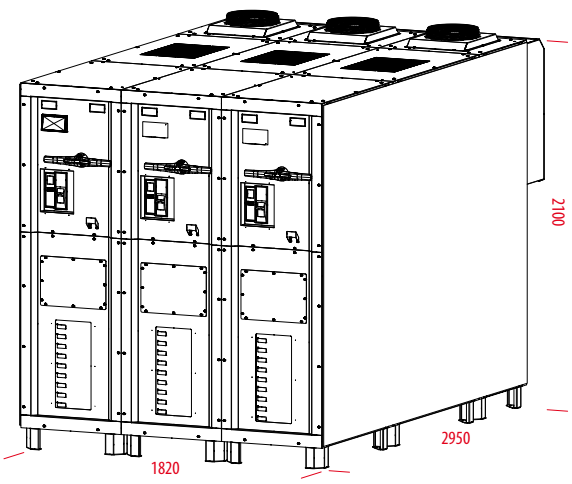


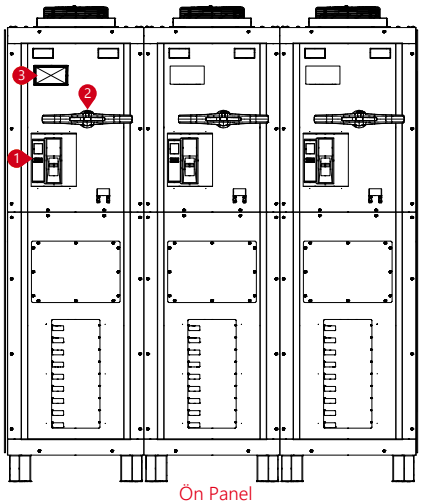
SVR SERIES
800-1000-1250 kVA 3:3F





SVR SERIES **1600-2000** kVA 3:3F





1. Input Switch
2. Bypass Switch
3. User Panel
4. Optional Card Slot
5. Connection Terminal (Rear Panel)

MODEL (3:3 Phase)																							
Capacity (kVA)		6	10,5	15	22,5	30	45	60	75	100	120	150	200	250	300	400	500	600	800	1000	1250	1600	2000
DIMENSIONS & WEIGHT																							
Cabinet Dimensions (mm)	Width	400						560			620		1500			1850			1800			610	
	Depth	650						950			1000		780			1100			1850			2890	
	Height	1135						1385			1700		1610			1820			1820			2080	
Net Weight (Kg)		65	120	135	154	183	237	330	356	456	545	565	1050	1150	1250	1500	2000	2500	2750	3500	3750	4500	5500
Noise Level		<50 dB																					

MODEL (1:1 Phase)													
Capacity (kVA)		1	2	3,5	5	7,5	10	15	20	25	30	40	50
BOYUTLAR & AĞIRLIK													
Cabinet Dimensions (mm)	Width	480				530			500				
	Depth	340				350			600				
	Height	250				250			935				
Net Weight (Kg)		15	20	29	40	47	55	75	90	110	130	165	185
Noise Level		<50 dB						<54 dB					

INPUT	
In. Vol. Correction Interval	**1:1 Phase:** 160~260 VAC • **3:3 Phase:** 275~450 VAC (Standard), 215~415 VAC (Optional)
Operation Frequency	47~65 Hz
Line Input Protection	Overcurrent, Low and High Voltage Protection (Optional)
OUTPUT	
Output Voltage	**1:1 Phase:** 220 VAC RMS ±2% • **3:3 Phase:** 380 VAC RMS ±1%
Overloading	At 100%-125% Load 1min, At Above 125% Load 10sec
Correction Speed	~90 Volt/sec
Upturn Period	~90 Volt/sec (160 VAC~250 VAC)
Output Protection	Short Circuit - Overcurrent Protection, Overvoltage Protection (Optional)
WORKING PRINCIPLE	Servo Motor, Microprocessor Controlled, Full Automatic
GENERAL	
Cooling	Smart Fan System
Measured Value Monitor	Monitoring Input Voltage, Output Voltage-Current,% Load and Transformer Temperature Values via MSR Panel
Total Efficiency	**1:1 Faz:** >96% • **3:3 Faz:** >96%
Mechanical Bypass	"Manually Controlled Line - PAKO SWITCH Selects Voltage Regulator" Switch Turn On/Off
Protection Level	IP 20
ENVIRONMENTAL	
Operating Temperature	-10°C~50°C
Storage Temperature	-25°C~60°C
Relative Humidity	<90%, DIN (40040)
Altitude	<2000m

CRITICAL POWER

BCSW
SERIES

1 PHASE **12/24VDC: 10A-300A**

SWITCH MODE (HF)
BATTERY CHARGER UNIT

New Generation Switch Mode Charging Rectifiers

+ Ensmart Switch Mode Charging Rectifiers are designed with the state of the art technology for charging batteries and DC energy needs of devices supplied by direct current.

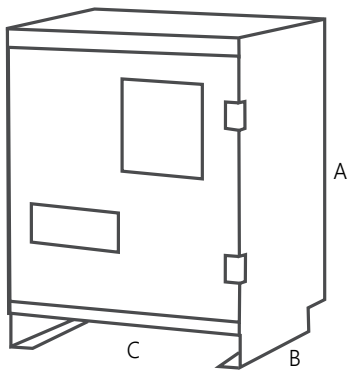
+ Batteries would be charged much safer with the improved software and special charging program. Non-complex structure, easy maintenance properties, user friendly program and other superior features will meet all requirements.

+ The most important feature of the device is it can be used as supply source as well as a battery charger. Besides low ripple factor increases the battery life. It's an ideal solution for where device weight and dimensions are problem.

+ Switch Mode Technology
+ Voltage Controlled Automatic Charging
+ Can Be Used as DC Power Supply
+ 1 Phase & 3 Phase Wide Power Range
+ High Efficiency and Reliability
+ Electronic Protections
+ Up to 30% Energy Saving

BCSW SERIES
12/24VDC: 10A-300A 1 PHASE
SWITCH MODE (HF) BATTERY CHARGER UNIT

MODEL	
INPUT	
Input Phase	1 Phase - 2 Phase - 3 Phase (Special Design)
Input Voltage Tolerance	±10%
Input Frequency	50 - 60 Hz
Power Factor	0.98
THDi	<%10
OUTPUT	
Output Current	10A - 300A
Output Voltage	12V - 24V
Ripple	≤1 Ripple
GENERAL	
Cooling	Air Cooling
Isolation Voltage	1500 VAC Input / Chassis Bridge, 500 VAC Output / Chassis Bridge, 500 VAC Between Input and Output
Insulation Class	IP 20 - RAL 7032 (Special Design)
Efficiency	90%
Operating Temperature	-20/50°C
Operating	Ability to set Charge Mode for all Battery Types
Input / Output Connections	Serial Connector - W Otomation
PROTECTION	
Heat Protection	Input / Output Overtemperature Protection
Measure	Output Overcurrent Protection - DC High Low - DC Leakage - Mains Failure
TECHNOLOGY	
IGBT	Switch Mode Technology
Standard	ISO 9001 - LVD - EN 62040 -1 - EMC
INDICATORS	
LCD Panel	2 x 16 - 4 x 16 Line
PLC	S71200 - S7300
Otomation	Modbus / Profibus / ProfiNET / RS 232 / RS 485



DIMENSIONS

CODE	A (mm)	B (mm)	C (mm)
ENS 1	340	240	150
ENS 2	340	240	200
ENS 3	290	260	370
ENS 4	340	280	400
ENS 5	400	320	450
ENS 6	580	390	500

OPTIONS

- DC +/- Ground Leakage Protection
- Modbus RTU Communication
- Individual Outputs for Battery and Load
- Deep Discharge Protection (LVD)
- Output Dropper Diode
- Additional Battery Fuse
- Temperature Comp. Battery Charge Voltage
- Power Fault Detection Dry Contact
- Battery Management, Test
- Rackmounted Chassis/Integrated Battery Racks / (IP31/IP42/IP54/IP65)
- Input Isolation Transformer / 6 Pulse Structure

RPL
SERIES

3 PHASE 12VDC: 50A-200A, 24VDC: 30A-300A
48VDC: 30A-150A, 110/220VDC: 30A-200A

1 PHASE 12/24VDC: 10A-300A, 36/48VDC: 10A-150A
110VDC: 10A-200A, 220VDC: 10A-100A

THYRISTOR CONTROLLED
BATTERY CHARGER

Thyristor Controlled Transformer Battery Charging Rectifier

+ Transformer battery charging devices are AC/DC rectifiers with automatic constant voltage and constant current properties. The isolation transformer and the load and batteries are completely isolated from the grid system.

+ Thyristor control ensures fast regulation and voltage distortions in the mains do not affect the batteries and loads. With the L-C filters on the output, the AC output fluctuation on the DC is less than 1%, helping to maximize the life of the charged battery pack.

Usage Areas:

- Transformer Centers
- Vessels and Yachts
- Shipyards
- Rail Systems
- Solar Power Plants
- Automobile Services
- Hospitals
- Electrical Devices
- Energy Generation
- Transmission and Distribution Centers
- Petroleum and Natural Gas Industry
- Mining Industry

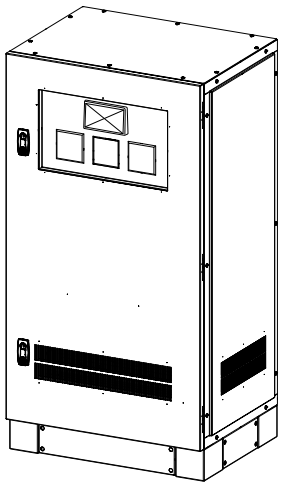
+ Thyristor Controlled, Full Automatic System with Isolation Transformer
+ Available for Using as DC Current Supply
+ All Operating Values Adjustable
+ All Operating Values Adjustable
+ Excess/Low Voltage, Over Current, Short Circuit Protection

RPL SERIES

12VDC: 50A-200A, 24VDC: 30A-300A, 48VDC: 30A-150A, 110/220VDC: 30A-200A 3 PHASE
12V/24VDC: 10A-300A, 36/48VDC: 10A-150A, 110VDC: 10A-200A, 220VDC: 10A-100A 1 PHASE

THYRISTOR CONTROLLED BATTERY CHARGER

MODEL		
INPUT		
Phase	3 Phase	1 Phase
Voltage	380 V, 400 V, 415 V	220 V, 230 V, 240 V
Voltage Tolerance	±20%	
Frequency	50/60Hz (±5%)	
Power Factor	>0.8	
THDi	<30%	
OUTPUT		
Voltage	12 / 24 / 48 / 110 / 220 VDC	
Voltage Tolerance	±1%	
Current	Up to 300A	
Fast Charging (Boost) Voltage	Up to 120% of the Float Voltage	
Ripple	±1% RMS AC	
Dynamic Response	±2%	
Output Protection	Electronic Short Circuit / Over Voltage / Over Temperature / Over Current	
	Reverse Voltage (Reverse Connection) Protection	
INDICATOR/COMMUNICATIONS		
LCD Indicator	Voltage, Current, Temperature and Status Information	
LED Indicator	Mains, Normal, Output, Fault	
Alarm	Mains Out of Limit, Fault (Adjustable)	
Communication	RS485 / Modbus Communication Feature	
NTC Input	Battery Temperature Compensation	
Parallel	Redundant Operation with Active or Passive Load Sharing Option	
Programmed Operation	Special Process is Applied for Each Process	
Input / Output Connection	Thermic Magnetic Switch / Copper Bus Bar	
GENERAL		
Topology	Isolation Transformer, Thyristor Phase Angle Controlled	
Electrical Standards	EN60146-1-1, EN60335-1 / EN60335-2-29/A2(LVD)	
	EN61000-6-2 / EN61000-6-4 (EMC)	
Cooling	Forced (Fan)	
Isolation Voltage	2500VAC Output/Chassis Bridge	
Efficiency	>85%	
Operating Temperature	0-50°C	
Humidity	5%-90%	
Protection Class	IP20	
Altitude	Max. 2000m	



OPTIONS

- Individual Outputs for Battery and Load
- Additional LVD Contactor Separating Load and Battery from each other
- Battery Racks Integrated into the Rectifier
- Chassises with Different Protection Class (IP31/IP42/IP54/IP65)
- DC +/- Ground Leakage Protection
- Redundant Operation with Active or Passive Load Sharing Option
- Battery Monitoring / Management System (BMS)
- Analog Hand Measuring Instruments
- Battery Charge Temperature Compensation
- ModBUS Communication

ISOLATION TRANSFORMERS

SERIES

5-1200 kVA 3 PHASE

1-25 kVA 1 PHASE

MEDICAL INDUSTRY TRANSPORT

Excellent Protection & High Level of Isolation

+ An isolation transformer is the best way to establish a new neutral-ground bond, in order to correct common mode and other grounding problems.
+ Isolation transformer provides excellent protection from all types of N-G disturbances (impulses, RMS voltage, and high frequency noise).
+ Ensmart isolation transformers can be used reliably in following areas: *Medical Devices, CNC Machines, UPS Systems, Ships and Boats, Shipyards, Metal Processing Plants, Rectifier and Battery Chargers, Industrial Machines Power Supply Units*

+ Reliable, Electrical Isolation
+ Suppresses Electrical Noise
+ Ensures Complete Safety of Equipment

ISOLATION TRANSFORMERS SERIES

5-1200 kVA 3 PHASE **1-25 kVA** 1 PHASE

FEATURES

- Input Voltage : 230 VAC Ph+N / 400 VAC Ph-Ph (Three Phase)*
  220 VAC Ph+N (Single Phase)*
- Output Voltage : 230 VAC Ph+N / 400 VAC Ph-Ph (Three Phase)*
  110 VAC Ph+N (Single Phase)*
- Frequency : 50 - 60 Hz
- Windings : Aluminum or Copper
- Connections : Star, Delta, Zig-Zag
- Protection Class : Standard**
- Isolation Class : Standard***
  Varnish Under Vacuum According to Isolation Class
- Cooling : Natural**
- Ambient Temparature : -10°C+40°C
- Storage Conditions : -20°C+70°C
- Connections : As Per to Customer Requirements:
  All Types of Terminals and Lugs

* It can be produced in different voltages and powers as requested.
** Can be changed upon request.
*** Can be produced in H (180°C) class upon request.

3 PHASE ISOLATION TRANSFORMERS				
Power	Chassis Dims. (WxHxD)	Chassis Weight	Connection	Wire
5kVA	630 x 715 x 332	70	Y-Y/Δ-Y/Y-Δ/Δ-Δ	COPPER/ALUMINIUM
10kVA	805 x 700 x 665	110	Y-Y/Δ-Y/Y-Δ/Δ-Δ	COPPER/ALUMINIUM
15kVA	650 x 459 x 564	120	Y-Y/Δ-Y/Y-Δ/Δ-Δ	COPPER/ALUMINIUM
20kVA	800 x 800 x 647	200	Y-Y/Δ-Y/Y-Δ/Δ-Δ	COPPER/ALUMINIUM
30kVA	800 x 800 x 647	240	Y-Y/Δ-Y/Y-Δ/Δ-Δ	COPPER/ALUMINIUM
40kVA	800 x 800 x 647	285	Y-Y/Δ-Y/Y-Δ/Δ-Δ	COPPER/ALUMINIUM
60kVA	905 x 1000 x 780	355	Y-Y/Δ-Y/Y-Δ/Δ-Δ	COPPER/ALUMINIUM
72kVA	905 x 1000 x 780	385	Y-Y/Δ-Y/Y-Δ/Δ-Δ	COPPER/ALUMINIUM
80kVA	905 x 1000 x 780	410	Y-Y/Δ-Y/Y-Δ/Δ-Δ	COPPER/ALUMINIUM
100kVA	905 x 1000 x 780	430	Y-Y/Δ-Y/Y-Δ/Δ-Δ	COPPER/ALUMINIUM
120kVA	905 x 1000 x 780	470	Y-Y/Δ-Y/Y-Δ/Δ-Δ	COPPER/ALUMINIUM
150kVA	905 x 1000 x 780	550	Y-Y/Δ-Y/Y-Δ/Δ-Δ	COPPER/ALUMINIUM
200kVA	1120 x 1000 x 842	690	Y-Y/Δ-Y/Y-Δ/Δ-Δ	COPPER/ALUMINIUM
250kVA	1120 x 1000 x 842	790	Y-Y/Δ-Y/Y-Δ/Δ-Δ	COPPER/ALUMINIUM
300kVA	1200 x 1100 x 800	900	Y-Y/Δ-Y/Y-Δ/Δ-Δ	COPPER/ALUMINIUM
450kVA	1200 x 1100 x 800	1100	Y-Y/Δ-Y/Y-Δ/Δ-Δ	COPPER/ALUMINIUM
500kVA	1200 x 1100 x 800	1280	Y-Y/Δ-Y/Y-Δ/Δ-Δ	COPPER/ALUMINIUM
720kVA	1285 x 1505 x 1070	1850	Y-Y/Δ-Y/Y-Δ/Δ-Δ	COPPER/ALUMINIUM
800kVA	1510 x 1690 x 1380	2100	Y-Y/Δ-Y/Y-Δ/Δ-Δ	COPPER/ALUMINIUM
1000kVA	1510 x 1690 x 1380	2500	Y-Y/Δ-Y/Y-Δ/Δ-Δ	COPPER/ALUMINIUM
1200kVA	1510 x 1690 x 1380	2750	Y-Y/Δ-Y/Y-Δ/Δ-Δ	COPPER/ALUMINIUM

1 PHASE ISOLATION TRANSFORMERS				
1kVA	306 x 290 x 340	20	1 Phase	COPPER/ALUMINIUM
2kVA	306 x 290 x 340	24	1 Phase	COPPER/ALUMINIUM
5kVA	625 x 800 x 495	75	1 Phase	COPPER/ALUMINIUM
10kVA	625 x 800 x 495	105	1 Phase	COPPER/ALUMINIUM
15kVA	625 x 800 x 495	120	1 Phase	COPPER/ALUMINIUM
25kVA	600 x 700 x 638	180	1 Phase	COPPER/ALUMINIUM

SHOREMASTER

SERIES

10-1000 kVA 3:3 PHASE

FREQUENCY CONVERTER

TRANSPORT INDUSTRY

TOWER POWER FACTOR SERVICE

Advanced Design For Highest Safety In Marine Industry

+ Latest high performance 3 Level IGBT Inverter and rectifier technology design controlled by DSP micro controller which provides a perfect output sinewave with no distortion.

+ The **SHOREMASTER** converter has been designed with a small footprint to operate in the most harsh marine environments such as high humidity and ambient temperature. The marine engineered product has been tested to ensure that no fluctuations of the output power when large motor loads start.

+ Compatible With Worldwide Marine Power Sources
+ Stable Regulated Frequency and Voltage
+ IP 21 to IP66 Alternative Enclosures

The **SHOREMASTER** *Series* is certified by TÜV SÜD with regard to product safety (EN 62040-1)

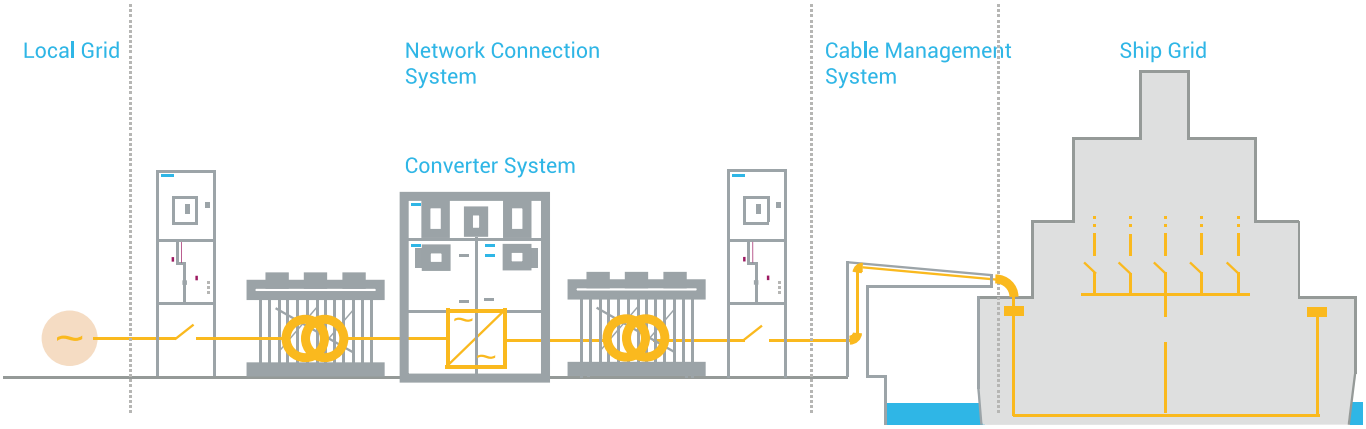
The **SHOREMASTER** *Series* is attested by Bureau Veritas with regard to performance (EN 62040-3)

Higher Level of Efficiency than the EU CoC for AC Ups

Shoremaster Converter for Portside Applications (Shore to Ship)

The environmental footprint of port areas is under close observation. Governments,
port authorities and ship owners are seeking different solutions to reduce emissions from ships while they are engaged in port operations. One solution to this problem has been identified as connecting ships in port to an onshore power supply, where electricity from the shore-based grid is used to power ships' infrastructure used for hosting crew and passengers while docked, and for cargo-handling activities.

Many of the port and marina operators are now offering vessels the opportunity to "plug into" the local city power supply grid on the dockside so the vessel can turn off its engines while at port. However many countries have their own local power distribution grid voltages.



Also when a ship is at berth, the engines are turned off but would normally continue to run its diesel engine generators to power all of the on board auxiliaries such as air conditioning, heating, lighting, battery charging, communications, water pump and other utility services.

These power diesel generators produce noise; vibrations; exhaust smoke; air pollution; gases; and CO2 emissions, as well as consume vast amounts of unpleasant smelling diesel fuel.

Ensmart ShoreMaster Series Frequency Converter offers solution to this challenge. shutting down the vessel's engine driven auxiliary power generators and regulates output voltage and frequency according to the needs of the ship with voltages and frequencies similar to the input.

Benefits

- Full galvanic isolation from shore
- Quick and easy connection for crew
- Exceeds shore supply quality regulations
- Extra power availability on low voltage shore supplies
- Protection from shore supply faults
- No interference with sensitive equipment
- Ventilation design prevents heat recirculation
- Real-time data logging and event access through display
- Reliable with low maintenance
- Lower operating cost with better efficiency
- Quiet, trouble-free operation.

Fuel Saving
Reduces Consumption of Diesel Fuel

Save Environment
Reduces Air Pollution

Better Working Conditions
Reduces Noise and Vibrations

Maximum Power Availability
with Active Front-End Technology Maximum Power Transfer from Shore and Stable Clean Output Power

Total Flexibility
Customized IP21 To IP42 or Outdoor IP66 Enclosures and Containerized Systems Available

Worldwide Operation
Connection to any Worldwide Shore Supply

Maximum Plug and Play Power for The Ships at Berth

Ensmart ShoreMaster Series Frequency Converters in sizes from 10-1000kVA three phase 50Hz and 60hz output offers solution:

- Shutting down the vessel's engine driven auxiliary power generators,
- Regulating output voltage and frequency according to the needs of the ship with voltages and frequencies similar to the input.

Features

- Wide input voltage range (180-520V)
- Frequency Range 40-70Hz
- 380-400-415-440-460-480V 50-60Hz Output Voltage Options
- Regulated Voltage to ±1%
- Seamless Power Transfer Between Converter and Generator
- RFI protection to prevent on board and shore supply disturbances
- Parallel load share with generators for extra power
- Reliable connection to new generation pedestals with built-in RCD protection; no nuisance tripping caused by earth leakage
- Single/Dual Shore Cord
- With active front-end technology maximum power transfer from shore supply to yacht
- Back feed and Phase Protection
- Short Circuit, Overload, Low/Over Voltage, Over
- Temperature Protection
- Parallel Ready
- Auto restart
- Static Bypass Option

High Efficiency & Low Total Cost of Ownership

- Less energy consumption to supply the loads thanks to high efficiency up to 96%.
- IGBT based power factor correction technology provides input power factor close to 1 (≥ 0,99). The high input power leads to reduced electricity pay-out, minimizes cable, 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

Worldwide Compatibility

- ShoreMaster Converter is available with single power modules form 10kVA to 1000kVA and parallelable up to 8MW. It is fully compatible with all types of marina power source and all shore supply regulations, it converts the shore power and frequency to a highly reliable and safe onboard power supply

Maximum Protection

- Shoremaster provides protection against marina voltage transients and precise output voltage and frequency regulation. The regulation remains stable even at unbalanced loads. Thanks to high overload capability, generators do not need to operate during peak times. Output power stays stable even when high output loads are supplied.

Maximum Availability

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

Flexibility

- Customized IP21 to IP42 or outdoor IP66 enclosures and containerized systems.
- With or without battery, single or parallel unit configurations.
- Isolation transformers to vary neutral connectivity in the event of separate power sources or for galvanic isolation between input and output.
- Available versions as Shore Power Converter for Ports and Static Converter for Ships

3x600kVA Parallel Containerized Shore Power Converter with HVAC, Control Panels and Communication options.

Shoremaster Converter for Onboard Applications

- Ensmart Frequency Converters can be installed on board and used to power on-board equipment with supply requirements different to that found on the ship's AC distribution.
  On board applications, Ensmart Shore Power Converters provide a galvanic isolation between city grid power pick up point and the on board vessel power distribution network. The ShoreMaster Series converter can regulate and condition the dockside power and eliminate spikes, dips,voltage surges and instability problems often encountered on supply networks connecting simultaneously to a number of vessels.

Benefits

- Fully galvanic isolated output supply
- Pure sinusiodal clean and stable output supply
- Protects sensitive all on board marine equipments from voltage distortion, voltage sags or frequency instability
- No fluctuations of the output power when large motor loads start
- Rugged Overload capability
- Small footprint to operate in the most harsh marine environments
- Low maintenance requirement

Turn Your Ship to a Global Vessel

Ensmart ShoreMaster Series Frequency Converters Provide Maximum Protection for All On Board Marine Equipments and Worldwide Connectivity.

Our on board ShoreMaster series frequency converters are available in sizes from 10kVA to 1000kVA with three phase 50Hz or 60Hz .The "Shoremaster" series converters are suitable for installation on board vessels of all types. Providing them with an ability to connect to any shore based power supply anywhere in the world.

MODEL																				
Capacity	10kVA	15kVA	20kVA	30kVA	40kVA	60kVA	80kVA	100kVA	120kVA	160kVA	200kVA	250kVA	300kVA	400kVA	500kVA	600kVA	800kVA	1000kVA		
Power Watt	10kW	15kW	20kW	30kW	40kW	60kW	80kW	100kW	120kW	160kW	200kW	225kW	270kW	360kW	450kW	540kW	720kW	900kW		
INPUT																				
Nominal Voltage	180 to 520 VAC 3 Phase-Phase																			
Frequency Tolerance	50 / 60 Hz ±20% (Selectable)																			
Power Factor	>0.99																			
Total Harmonic Distortion	THDi <3%																			
OUTPUT																				
Power Factor	0.9 (1 Optional)																			
Nominal Voltage	380/400/415/440/480 VAC 3 P (N Optional) (115/690 VAC Optional)																			
Voltage Tolerance	Static ±1%, Dynamic ±3%																			
Frequency Tolerance	50Hz / 60Hz ±0,01%																			
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)	93%																			
Efficiency (Eco Mode)	Up to 99%																			
BYPASS																				
Nominal Voltage	380/400/415 VAC 3 Phase + N																			
Voltage Tolerance	15% (Configurable from 10% to 30%)																			
Frequency Tolerance	±5 (Selectable)																			
ENVIRONMENTAL																				
Operating Temperature	0°C / +40°C																			
Storage Temperature	-15°C / +45°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	<53 dBA		<55 dBA		<60 dBA		<65 dBA		<72 dBA				<74 dBA				<75 dBA			
COMMUNICATION																				
Communication Port	RS232 (Standart), RS485, MOD-Bus, J-Bus, Web, Tel-Net, GPRS, CAN-Bus, SNMP (Option)																			
STANDARDS																				
Quality	ISO 9001, ISO 14001, ISO 18001, TSE-HYB																			
Performance	EN62040-3 (VFI-SS-111, Bureau Veritas Certified)																			
EMC/LVD	EN62040-2, EN62040-1, EN60950, (TÜV SÜD Certified)																			
DIMENSIONS & WEIGHT																				
Cabinet Dimensions (mm)	Width	490				763		810		830			1250			2345				
	Depth	805				771		820		870			845			485				
	Height	1190				1555		1705		1800			2102			2003				
Net Weight (kg)		125	126	131	146	173	323	331	353	368	475	490	553	850	850	850	1740	1740	1990	
Packaging Dimensions (mm)	Width	600				900		900		900			1370			2445				
	Depth	900				970		970		970			870			585				
	Height	1400				2040		2040		2040			2120			2250				
Gross Weight (kg)		145	146	151	166	193	353	361	383	398	505	520	583	890	890	890	1820	1820	2070	

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

ACCESSORIES
CONNECTIVITY & SOFTWARE

UPSilon 2000
Monitoring and Management Software

UPSilon 2000 is a monitoring and controlling software for RS-232 Smart UPS. When the power is normal, UPSilon 2000 will display real UPS status in analog diagram display. It can also monitor remote UPS with the use of the intranet/internet. Conbined with ClientMate, UPSilon 2000 could be a server software, and let ClientMate get UPS status from UPSilon 2000, therefore, there will be no distance-problem and makes work efficient. When any power event occurred, UPSilon 2000 can do automatic files saving, systems shutdown, and also send email, pager notification. User will no longer have problems with the system and data on system power failure.

Furthermore, UPSilon 2000 has also the Windows Service Function, UPSilon 2000 will be enable when Windows NT boot up even if no users login the server. ClientMate supports RUPS 2000, UPSilon 2000 and SNMP Agent, as a workstation software it is able to auto detect host in network, and monitor main UPS status. In the floating status/alert display, user could real-time monitor server UPS, in case of any power event, ClientMate will auto save files and safely shutdown operating system. In the internet world, it is more necessary to have 24-hours system protection, data and nessage receiving. The strong features of UPSilon 2000 and ClientMate will become the best solution for your UPS.

Supported OS:
Novell Netware 3X, 4X, 5X,
Windows 9x/NT/2000/Vist

RUPS 2000
Monitoring and Management Software

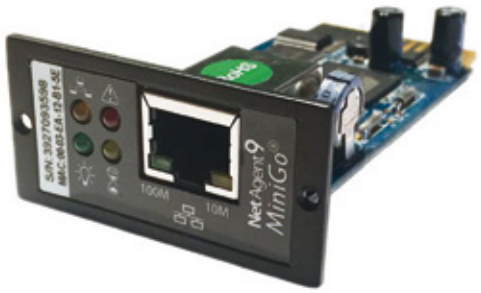
RUPS 2000 is a UPS monitoring and controlling software that continuously checks the status of system AC power and UPS battery condition both of local and network UPS. Conbined with ClientMate, RUPS 2000 could be as a server software, and let the Clientmate get UPS status from RUPS 2000. In the event of any abnormal condition, RUPS 2000 will send out warning message to inform user and even shut down the system after a pre-setting delay time after power failure. In using RUPS 2000, there will be no distance problem and makes work efficient. When any power event occurred, RUPS 2000 will do automatic files saving, system shut down, and also send email, pager notification. User will no longer have problems with the system and date on system power failure.

Furthermore, RUPS 2000 supports Windows NT Service function, RUPS 2000 will be enable when Windows NT boot up even if there is no users login the server. Design for contact closure interface UPS, monitoring power failure and low

Supported OS:
Novell Netware, DOS,
Windows 3.x/9x/NT

SmartNET Mini 801
SNMP/Network Card

Designed to work with Single Phase EnSmart UPS, the network agent SmartNET Mini 801 allows UPS directly connected over LAN 10/100 Mb connections to be managed using the main network communication protocols (TCP /IP , HTTP HTTPS, SSH, SNMPv1, SNMPv2 and SNMPv3). It is the ideal solution for the integration of UPS over Ethernet networks with Modbus/TCP protocols. SmartNET Mini 801 is highly recommended if you want to integrate UPS into medium-sized and large networks, to get a high level of reliability in communication between the UPS and associated management systems.



Features

+ Provide SNMP MIB to monitor & control UPS
+ Auto-sense 10M/100M Fast Ethernet
+ Manage and configure via Telnet, Web Browser or NMS
+ Support TCP/IP, UDP, SNMP, Telnet, SNTP, PPP, HTTP, SMTP Protocol
+ Providing easy setup and upgrade tools via MS-Windows, just a few seconds to finish IP setting, about 1.5 minutes to upgrade firmware.
+ Send SNMP TRAP; E-mail and SMS for events notification.
+ Auto email daily UPS history report
+ Client shutdown software for computer's file saving and graceful shut down.
+ SNMP-3PEX: Environment Measurement (Optional Kits), External modem dial in/out via PPP protocol or GSM/GPRS Modem

SmartNET Multi 500
SNMP/Network Card

Designed to work with Three Phase EnSmart UPS, the network agent SmartNET Mini 801 allows UPS directly connected over LAN 10/100 Mb connections to be managed using the main network communication protocols (TCP /IP , HTTP HTTPS, SSH, SNMPv1, SNMPv2 and SNMPv3).
It is the ideal solution for the integration of UPS over Ethernet networks with Modbus/TCP protocols. SmartNET Multi 500 is highly recommended if you want to integrate UPS into medium-sized and large networks, to get a high level of reliability in communication between the UPS and associated management systems.

Features

+ Provide SNMP MIB to monitor & control UPS
+ Auto-sense 10M/100M Fast Ethernet
+ Manage and configure via Telnet, Web Browser or NMS
+ Support TCP/IP, UDP, SNMP, Telnet, SNTP, PPP, HTTP, SMTP Protocol
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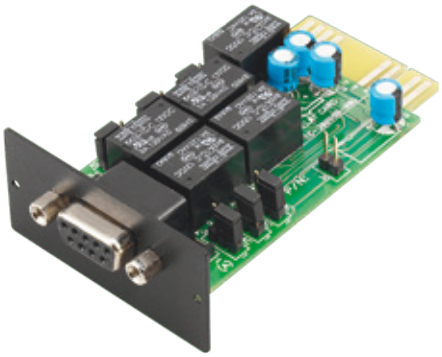
+ Auto email daily UPS history report
+ Client shutdown software for computer's file saving and graceful shut down.
+ SNMP-3PEX: Environment Measurement (Optional Kits), External modem dial in/out via PPP protocol or GSM/GPRS Modem

EnSmart AS400 Mini
Dry Contact I/O Management Card

AS/400 Mini Dry contact card is designed to provide clean dry contacts for remote shutdown and monitoring of EnSmart Online UPS 1-20kVA. It is frequently used along with PLCs and signal control panels. Information delivered are UPS failure, Alarm, Main Fail, Bypass, Battery Low, UPS On. Using AS/400 it possible to shutdown UPS remotely. Solution requires external 12V/24VDC source for a high signal.



EnSmart AS400 3P
Dry Contact I/O Management Card

AS/400 3P Dry contact card is designed to provide clean dry contacts for remote shutdown and monitoring of EnSmart Online Three Phase UPS 10-1000kVA. It is frequently used along with PLCs and signal control panels. Information delivered are UPS failure, Alarm, Main Fail, Bypass, Battery Low, UPS On. Using AS/400 it possible to shutdown UPS remotely. Solution requires external 12V/24VDC source for a high signal.

SmartView 500
Remote Monitoring Panel

The SmartNET Panel remote monitoring panel is designed to help the users to observe the operational status of the UPS in real time from a distant place. It is compatible with Three Phase EnSmart UPS LV-BX-T3 series and can display values for UPS specific input and output supplies, and battery set measurements. The user can be informed about status of all operations, events and parameters of the working UPS through the LCD screen of remote panel. The SmartNET remote panel has a high definition graphical display and can report in multi languages

SmartCom 500
ModBUS Protocol Converter

The SmartCom 500 card provides EnSmart Three Phase UPS systems the functionality of communication with PCs via ModBUS. Implements ModBUS RTU protocol and provides RS485 or RS232 interfaces. This allows monitoring of your UPS through an existing Building Management System (BMS) or Industrial Automation System (IAS).

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