

PHOENIX **SU** ONLINE UPS

Critical Power Protection, Zero Downtime!

The new PHOENIX **SU** UPS offers flexibility, versatility & adaptability for critical applications in small&medium businesses worldwide.



Key Applications



Small Office
Home Office



Office
Workshop



Servers
& IT
Environment



Telecom,
Internet,
Fiberoptics



Home
Appliances



Security
Systems



Emergency
Power



Clinics
& Medical
Facilities



Laboratory
Equipment



ATM Machines
& Banks



Industry
& Process
Control

Product Snapshot

Delivers An Outstanding Power Performance & Increased Power Quality

- True VFI | online double conversion design guarantees the complete isolation of critical load from any mains disturbances.
- Transformerless; high frequency, IGBT rectifier & inverter design via PWM technique presents active power factor correction at input which lowers THDi at input & maximizes the input power factor as > 0,996. This leads minimized generator : UPS sizing, less investment and costs due to very low harmonics. The system reduces the effect on utility and the loads connected to the same network with the ups itself. IGBT design at the inverter stage also brings high output power as 0,9 while reducing the THDv as low as 1%.
- Twin DSP microprocessor control offers maximized reliability, total protection of UPS & critical load against failures & damages, unbeatable parallel redundant operation in business-critical environments and applications.
- Transformerless design also brings a compact, lightweight design which brings ease of transport, installation and maximizes power density in minimum footprint as low as 0,05 m2 for a 1 kVA **SU** UPS
- Greater adaptability, versatility in system configurations, higher immunity to harmonics, sudden inrush currents & disturbances in utility power. Flexible & versatile to vast of applications & environments.

Controlling Both CAPEX and OPEX

- Delivers industry leading 95%* AC~AC online double-conversion efficiency without sacrificing reliability. Thanks to its highly efficient design, savings can reach up to 35% in dissipated energy in one year compared to traditional legacy UPS [87%] systems resulting in a faster payback period of 4 years as ROI.
- Ease of installation & deployment - for some models plug&play design-reduced cooling infrastructure requirement. Keeping power & cooling infrastructure cost at minimum [CAPEX] along with operating costs at minimum [OPEX], UPS **SU** gives the power of control.
- Scalability - Pay as You Grow! Capacity can flex to meet power infrastructure growth by adding an additional ups in the field whilst offering true redundancy, ease of expansion from small-sized installations to mid-sized infrastructures.

Power Protection! Affordable, Dependable!

The UPS **SU** is the premium of TSINE' s single phase PHOENIX UPS family thanks to its innovative DSP controlled, transformerless-high frequency, IGBT Rectifier & Inverter design.

PHOENIX **SU** offers extended power protection performance, increased power quality & continuous power for any type of small-mid range applications via its true online double conversion, voltage-frequency independent [VFI] design which isolates the critical output load against any failures and disturbances in utility power whilst powering it continuously by the inverter which supplies a sinusoidal voltage, filtered & conditioned in terms of voltage, form & frequency. Input and output filters provide significant further immunity from mains disturbances & lightning strikes.

The UPS **SU** is one of the best UPS systems available on the market with its efficiency values & power density, proven reliability and maximised availability which dramatically decrease operational downtimes and costs during its lifetime.

PHOENIX **SU** comes with standard communication, supervision & diagnostics features such as LCD display & RS232 as standard, USB, Dry Contact interfaces & network card as an option. The UPS **SU** is the smart choice for mission-critical applications requiring the highest levels of reliability.

Advanced Battery Care

The UPS PHOENIX **SU** provides extended service life for batteries via its IBC [Innovative Battery Care] Extendable scalable runtime feature of The UPS **SU** offers the ultimate solution for business continuity applications requiring long runtimes.

Reliability, Availability and Serviceability (RAS)

Maximized availability and reliability by the power engineering at its top level, PHOENIX **SU** offers very robust & reliable power protection, this also leads minimized downtime and highest level of availability. Very high level of MTBF [Mean Time Between Failures] and very low MTTR [Mean Time to Repair] ensures the critical load not to fail for its duty. Serviceability is a measure of the system to be recovered after a disaster. A min. of 15 mins. of enough for a technician to diagnose and recover the system to reduce the downtime for business.

UPS Rating

Rated Power [kVA]	1	2	3	6	10	15	20
Active Power [kW]	0,9	1,8	2,7	5,4	9	13,5	18 [0,9 Power Factor]
Active Power [kW]	1	2	3	6	10	15	20 [Unity, 1, kVA=kW]
Model Codes	PSU0901	1 kVA;	PSU0902	2 kVA;	PSU0903	3 kVA;	Power Factor]
<i>for Standard Back Up UPS</i>	PSU0906	6 kVA;	PSU0910	10 kVA;	PSU0915	15 kVA;	
	PSU0920	20 kVA;					
<i>for Long Runtime UPS</i>	PSU09011R	1 kVA;	PSU09021R	2 kVA;	PSU09031R	3 kVA;	
	PSU09061R	6 kVA;	PSU09101R	10 kVA;	PSU09151R	15 kVA;	
	PSU09201R	20 kVA;					

General Characteristics

MTBF/ MTTR	Over 225000 Hours/ Under 30 Minutes
UPS Type & Technology	VFI Online Double Conversion [Complete Isolation of Output Load with Any Mains Disturbances] High Frequency Operation, IGBT Rectifier & Inverter, Transformerless Design Twin DSP Microprocessor Control via PWM Technique
62040-3	COMPATIBLE
Power Factor	0.9, Optional Unity PF, kVA=kW, 1.0
Input Voltage Range	120 ~ 295 ±5 VAC 80 ~ 295 ±5 VAC [at 50% Rated Load]
True Redundancy	N+X, N+1 Redundant Configurations
Parallel Configuration [N+1]	Up To 4 Units
Standard Protection Features	Overload, Low Battery, Deep Discharge Protection, Input Power Limiting, Phase Reversal, Power Module Over Temperature, Over Current, High Temperature Alert, Smart Short Circuit, Load Current Limiting, Charging Current Limiting, Temperature Compensated Charging.
Operating Conditions	20°C, <1000m Above Sea Level, <45% to 55% RH, for Best Performance
Cooling/ Isolation	Forced Air Cooling via Redundant Fans, Smart Fan Speed Control 1-3 kVA <i>LED Display:</i> Utility or Bypass, Battery Low, Battery Abnormal, Overload, Site Wiring Fault, Service Mode, UPS Off, UPS Abnormal <i>Parameters Shown on LCD:</i> Input /Output Voltage and Frequency Values, Load%, Battery Voltage, Internal Temperature <i>Alarms:</i> Line Failure, Battery Low, Over Load, Failure Events 6*20 kVA <i>LED & LCD Display:</i> Line Mode, Backup Mode, ECO Mode, Bypass Supply, Battery Low, Battery Bad/Disconnect, Overload and Transferring with Interruption & UPS Fault <i>Parameters Shown on LCD:</i> Input Voltage, Input Frequency, Output Voltage, Output Current, Output Frequency, Load Percentage, Battery Voltage & Inner Temperature. <i>Self Diagnostics:</i> Upon Powering-on, Front Panel Setting & Software Control, 24-hour routine checking <i>Audible & Visual Alarms:</i> Line Failure, Battery Low, Transfer to Bypass, System Fault Conditions
Display & Parameters	
Maintenance Bypass	STANDARD
Material [Casing]/ Colour	BLACK
Cable Entry	REAR/ FRONT BOTTOM

Efficiency

AC~AC Mode	92%	92.5%	93.3%	95%	95%	95%	95%
Eco-Mode	≥ 98%			≥ 98%			
DC~AC/ Battery Mode	≥ 95%			≥ 96%			

Input

Rated Voltage & Range	208/ 220/ 230/ 240 VAC 1P+N+PE [Selectable via LCD]
[at 100% Rated Load]	145 ~ 295 ±5 VAC 165 ~ 295 ±5 VAC
[at 50% Rated Load]	120 ~ 295 ±5 VAC 80 ~ 295 ±5 VAC
Rated Frequency & Range	50/60 Hz [Automatic Self Synchronization] 45-55 Hz ± 0,5% / 40-70 Hz ± 0,5%
Power Factor	≥ 0,99 ≥ 0,99 Active Power Factor Correction Circuitry
Current Distortion [THDi]	< 5%

Battery

Rated Voltage [DC]	24 48 72 192 192 192 192
Intelligent Battery Management	Temperature Compensated 4 Stage Charging, Deep Discharge Protection, Scheduled/Automatic & Manual Battery Test, Operating Temperature
Charging Capacity	25% of Rated Power, 20°C - 25°C for Longer Battery Lifetime

Output Characteristics

Rated Voltage & Accuracy	208/ 220/ 230/ 240 VAC 1P+N+PE [Selectable via LCD] < ±1% at 100% Rated Linear-Static Load, < ±2% at Non-Linear Load; < ±5% at Dynamic Loads
Rated Frequency & Accuracy	50/ 60 Hz (Selectable), ±0,2 Hz (Synchronized to Mains) ±0,2 Hz (Battery Mode)
Power Factor	0.9, Optional Unity PF, kVA=kW, 1.0
Voltage Distortion [THDv]	< 2% at 100% Linear Load < 1% < 5% at Non-linear Load < 4%
Waveform	Pure Sinewave
Transfer Time	0 ms, From AC Mode to Battery Mode, Inverter to Bypass
Cold Start	Standard, The UPS operated without AC Mains, on Battery Power
Crest Factor	3:1
Unbalanced Load & Acceptable Load PF	Compatible Operation on 100% Unbalanced Load 0.9 leading to 0.9 lagging
Overload Operation	30 seconds 3 minutes @ 105% ~ 150% Rated Load; @ 105% ~ 125% Rated Load 300 milliseconds 30 seconds @ ≥ 150% Rated Load @ 125% ~150% Rated Load 100 milliseconds @ ≥ 150% Rated Load Switches to Bypass Line over 150% Rated Load

Static Bypass

Rated Voltage & Range	208/ 220/ 230/ 240 VAC 1P+N+PE Output Voltage ±32 VAC 160 VAC ~ OV ±32 VAC
Rated Frequency & Range	50/60 Hz, 47 ~ 53 Hz/ 57 ~ 63 Hz [Adjustable]

Communication & Supervision

Remote Monitoring & Management	<i>Standard (Available As Hardware & Software):</i> RS232 Serial Comm. Port, SNMP Slot, USB slot, EPO (Emergency Power OFF) Button, Monitoring & Management Software. <i>Optional (As Hardware, Standard in Software):</i> Network Manager [SNMP] Monitoring & Management over Web Browser, USB, Dry Contacts [The Following Data Can Be Seen: UPS Failure, UPS Audible Alarm, GND, Remote Shutdown, Bypass Active, Low Battery, UPS On, Utility Failure], Remote Monitoring & Management Panel, TCP/IP converter, GSM/GPRS Modem, Communication Ports Multiplier.
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Environment

Operating Temperature Range	0°C - 40°C / 20°C - 25°C / -30°C ~ 60°C
Prespecified Operating T.	
Storage Temperature	
Altitude/ Relative Humidity	< 2000m above sea level/ < 95% (non-condensing)
Noise	< 50 dBA < 55 dBA

Certifications

Safety	EN 62040-1
Electromagnetic Compatibility [EMC]	EN 62040-2
Performance [VFI-SS-111]	EN 62040-3
Safety	EN 60950-1 Information Technology Equipment
Quality Management	CE, ISO 9001:2015, ISO 14001:2015

Optional Features & Accessories

Isolation Transformer	Optional for Input & Output
Custom Input Voltage Range	Optional
IP Classified Enclosure	Available from IP21 ~ IP 66
Others	Paralleling Kit, Network Management Kit(Internal/ External), External Bypass, Remote Monitoring & Management Panel, UPS Looking Battery Enclosures...etc

Physical

Dimensions [mm]	145*360*225 1 kVA 190*400*330 2-3kVA	230*502*553 6-10 kVA ask for 15-20 kVA
Weight [kg]	9.2 for 1 kVA 17.7 for 2 kVA 22.9 for 3 kVA	54.5 for 6 kVA 56.2 for 10 kVA ask for 15-20 kVA
Protection Degree	IP20 (Standard)	



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