

เครื่องสำรองไฟฟ้า

CLEANLINE[®] UPS

True On-Line Double Conversion Design

"The best of trust power protection"

TS
series



3-phase input / 3-phase output online UPS

- Online double conversion technology with DSP control
- Advanced control with adaptive feed forward cancellation (AFC) technology for very low harmonic distortion
- Very low input current distortion (THDi < 1 %)
- Input power factor 0.99 at 10% to 100% load
- Space-saving compact design
- Front access makes maintenance and replacement easily
- Highly flexibility in single phase/three-phase set-ups
- Control designed to withstand all kinds of loads
- Variety of communication option available
- Remaining backup time calculation
- Adjustable battery numbers
- Sealed lead acid maintenance free battery
- Battery charger temperature compensation
- Generator compatible

Tower model:

LCD display

TS-15K	15kVA/13.5kW
TS-20K	20kVA/18kW
TS-30K	30kVA/27kW
TS-40K	40kVA/36kW
TS-60K	60kVA/54kW

Touch screen

TS-80K	80kVA/72kW
TS-100K	100kVA/90kW
TS-120K	120kVA/108kW
TS-160K	160kVA/144kW
TS-200K	200kVA/180kW

THE MOST VERSATILE SOLUTION FOR POWER PROTECTION

TS series, applied with state-of-the-art PWM-transformerless technology, can easily adapt to all kinds of diverse and complicated loads, such as the non-linear systems (IT systems), strongly inductive or capacitive loads, discharge lamps, and induction motors. Ranging from 15K-200K, TS series is designed in terms of criteria of maximum efficiency and energy savings with highly compact format. It makes installation and operation easily and eco-environmentally. Each unit also has a wide range of communication possibilities and a large variety of options to fill out customer's diverse inquiries. To facilitate expansion easily, this unit can be set up in parallel-redundant systems without any need for additional hardware in the near future

Online double conversion technology with DSP control

TS series is applied online double conversion technology to effectively insulate against network disturbances and enable higher load uptime. A Digital Signal Processor (DSP) control provides an improve solution with high performance.

Advanced control with adaptive feed Forward Cancellation (AFC) technology for very low harmonic distortion

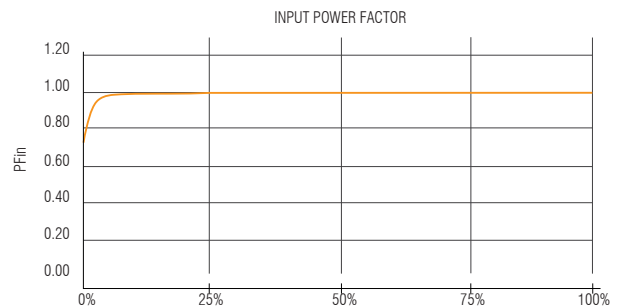
By cancelling input current and output voltage harmonics, the harmful effect of harmonic injection into the power network is eliminated and it will enhance load integrity.

Very low input current distortion (THDi < 1%)

AFC cells are used to achieve extremely low distortion values. Low input current distortion rat THDi < 1% at full load and also THDi < 5% with very small load (10% of load). This will avoid the distortion of the electrical network upstream of the UPS, resulting in savings from the optimal use of the cables and protection devices in the electrical network.

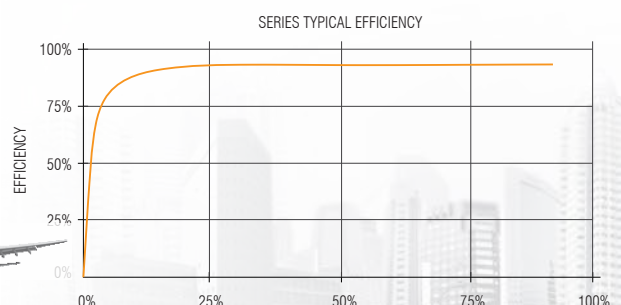
Input power factor 0.99 at 10% load

Lower power losses would resault in reduced consumption lower operation and maintenance costs.



Output efficiency up to 95%

Applied with DSP controller and the forth generation IGBT transistors, the UPS can achieve high efficiency of up to 95% It will save consumed energy due to lower heat losses and make a longer lifespan for the critical components of the unit.



Space-saving compact design

The use of transformerless technology allows a considerable reduction of the weight and volume of the units.

Front access makes maintenance and replacement easily

An important consideration has been given to allow generous access to the unit's electronic cards and power components. All the boards are accessible by front panel for easily maintenance and replacement.

Highly flexibility in single phase / three-phase set-ups

The UPS is a unit high flexibility in adapting inputs and output, and may easily be set up depending on the requirements of the facility.

- Three-phase input / Three-phase output (III / III)
- Three-phase input / Single phase output (III / I)
- Single phase input / Single phase output (I / I)
- Single phase input / Three-phase output (I / III)

Control designed to withstand all kinds of loads

In TS series, the control is designed to be able to withstand all kinds of loads: resistive, capacitive, non-linear, etc. It makes the UPS tremendously versatile and flexible in supplying power to different types of electronics. To make it simple to adapt the UPS for different environment, there are a large the UPS for different environment, there are a large number of parameters that can be programmed locally or remotely.

Parallel redundant operation with up to 4 units

Upto 4 units in parallel can be operated without additional hardware, to accommodate increases in power demand as well as to attain power redundancy with high system integrity.

Variety of communications and option available

The UPS has provided the following standard communication selection:

- Relay interface
- RS-232 / 485 port
- Modbus RTU / SEC protocol
- 2 x connectors for parallel connection
- SNMP

Over 60% materials recyclable

The UPS uses more than 60% recyclable materials for being more respectful of the environment.

Remaining backup time calculation

By using powerful algorithms, an estimated remaining backup time can be calculated and helps users for further arrangement in the event of a prolonged power outage.

5.7" graphic LCD touch screen panel design with multiple languages for easy-configuration (80K-200K)

We also offer touch panel for 5.7" LCD panel. Touch screen provides higher operability on configuration and information display with graphic design, it becomes more intuitive to configure programs. Besides, we also offer multiple languages for 5.7" LCD version. Users can easily configure programs and read displayed messages.



TS series 15K-60K



TS series 5.7" LCD 80K-120K TS series 5.7" LCD 160K-200K



APPLICATIONS:

TS series provides great flexibility and adaptability to suit versatile applications.

- Data centers (computing centers, centralized sales/ distribution systems, hosting, housing, ...)
- IT networks (server farms, local computer networks, network switches and hubs, ...)
- Financial services (bank offices, automatic cash dispensers, card payment authorisation systems, ...)
- Industrial processes (productive and control systems, industrial machinery, emergency and lighting systems, ...)
- Telecommunications
- Infrastructures (hospitals, airport, tunnels, ...)



Technical specifications

NOMINAL POWER	TS-15K	TS-20K	TS-30K	TS-40K	TS-60K	TS-80K	TS-100K	TS-120K	TS-160K	TS-200K
CAPACITY(VA/W)	15kVA/ 13.5kW	20kVA/ 18kW	30kVA/ 27kW	40kVA/ 36kW	60kVA/ 54kW	80kVA/ 72kW	100kVA/ 90kW	120kVA/ 108kW	160kVA/ 144kW	200kVA/ 180kW
DISPLAY	LCD Display					Touch Screen				
INPUT										
Nominal voltage	380V/400V/415V (3Ph + N)									
Acceptable voltage range	+20% / -25%									
Frequency	50/60 Hz \pm 10%									
Total harmonic distortion (THDi)	< 1.5% @ 100% load < 2.5% @ 50% load < 6.0% @ 10% load	< 1.0% @ 100% load < 2.0% @ 50% load < 5.0% @ 10% load				< 1.5% @ 100% load < 2.0% @ 50% load < 6.0% @ 10% load				
Current limitation	High overload: PFC limit (discharging batteries)									
Power factor	0.99									
INVERTER										
Nominal voltage	380V/400V/415V (3Ph + N)									
Precision	Stationary: \pm 1% ; transitory: \pm 2% (load variations 100-0-100%)									
Frequency	50/60 Hz synchronised \pm 4% with mains absent \pm 0.05%									
Max. Synchronisation speed	\pm 10 Hz / s									
Waveform	Pure sinewave									
Total harmonic distortion (THDv)	< 0.5% (linear load) < 1.5% (non-linear load)									
Phase displacement	120° \pm 1% (balanced load) 120° \pm 2% (imbalances 50% of the load)									
Dynamic recovery time	10 ms. at 98% of the static value									
Admissible overload	125% for 10 min., 150% for 60s									
Admissible crest factor	3.4: 1	3.2: 1				2.8: 1	3.2: 1		3.0: 1	
Admissible power factor	0.7 inductive to 0.7 capacitive									
Imbalance output voltage @ 100% Unbalanced load	< 1%									
Current limit	High overload, short-circuit: RMS voltage limit ; high crest-factor current: peak voltage limit									
STATIC BYPASS										
Type	Solid state									
Voltage	380V/400V/415V (3Ph + N)									
Frequency	50/60 Hz									
Activation criterion	Microprocessor control									
Transfer time	Zero									
Admissible overload	400% for 10 sec.									
Transfer to bypass	Immediate, for overload above 150%									
Retransfer	Automatic after alarm clear									
MANUAL BYPASS (MAINTENANCE)										
Type	Without interruption									
Voltage	380V/400V/415V (3Ph + N)									
Frequency	50/60 Hz									
Overall efficiency (Line mode)	90.5%	91.0%	92.0%	92.5%	93.0%	94.0%	93.0%	93.3%	92.8%	92.6%
PHYSICAL										
Dimensions, D x W x H (mm)	770 x 450 x 1100					805 x 590 x 1320			805 x 900 x 1500	
Net weight (without batteries) (kg)	86	94	110	122	162	231	255		550	

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the ultimate solutions

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