Three Phase Input & Output Heavy Duty UPS
True Galvanic Isolation Transformer Design
Online Double Conversion

TS33 Series

(10KVA-300KVA)

- Dalton embedded with isolation transformer TS33 series will eliminate common mode noise no need to install expensive dedicated circuits it provide reliable galvanically isolated power to critical equipment designed for medical loads , Industrial loads, heating, ventilation and air conditioning equipment, safety and emergency systems, process control devices and machine tooling, critical infrastructures, small and medium data center monolithic power protection. double conversation technology with a very advanced design criteria improves the performance of components, minimizes the quantity of raw material used on the magnetic and reduces the number of semiconductors thus reducing servicing time and ownership costs. The inverter transformer prevents the direct feed-through of the battery potential into the critical load and allows a very high rejection ratio of the power supply disturbances .

- True galvanic isolation transformer design
- Online double conversion pure sine wave
- LCD touch screen 7'' Inch
- 3 phases UPS allow 100% unbalance load
- Fully DSP+ARM Control technology
- Accept dual-mains input
- DC cold start function
- Complete front-access for installation
- Reverse phase frequency operation and supports non-neutral input
- Powerful designed heavy duty UPS
- Adjustable battery number
- ECO mode and EPO function
- Intelligent RS232/RS485 communication port
- Parallel operation up to 4 units (optional)
- SNMP communication port (optional)
- Intelligent battery management to prolong battery lifecycle
- Control designed to withstand all kinds of loads
- Generator-friendly design & compatibility

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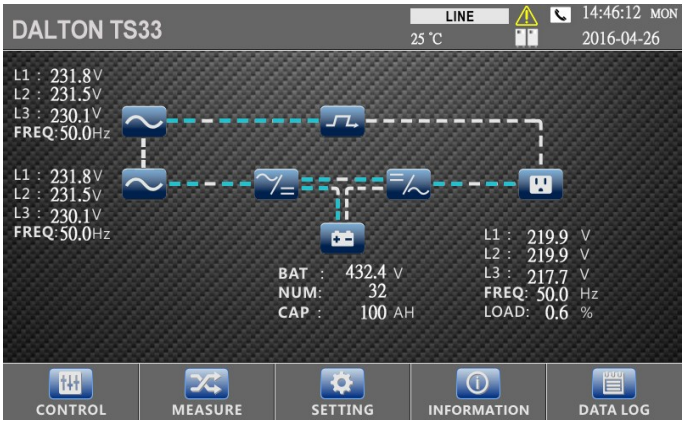
ADVANCED GRAPHIC TOUCHSCREEN LCD

Dalton TS33 precise graphic backlit display providing real time status and parameter readings via its own DSP controller.
The EF home screen shows all modular elements of the UPS in a clear and precise manner as well as an overview of the system operation.
An easy to navigate control pad allows for a complete and comprehensive overview of measurements.
The control panel is equipped with a 7" LCD Touch screen which provides measurements, power history and alarms in multiple languages.
You can also implement it by adding other languages if necessary.
The graphical user interface is designed with 2 levels of access (user and maintenance) to allow multiple users to access or modify only specific parameters.
From the LCD display you can read and download all the event logs to analyse the UPS status and keep the UPS correctly.
You can also a graphic personalization on demand.

COMPLETE GALVANIC SEPARATION BUILT IN

Dalton TS33 output isolation transformer is highly reliable and has strong surge resistance and anti-short-circuit features and provides the maximum protection for the connected key loads.

Isolation transformer reducing noise and fault current thereby ensuring the proper working of heavy and sensitive loads such as (MEDICAL & INDUSTRIAL) equipment.
Isolated transformers make use of Faraday shields to get rid of noise and leakage currents.



OVERALL FRONTAGE MAINTENANCE SUPPORTED BY DESIGN

The TS33 Series has the most advanced built in management and maintenance system (MMS).
It uses advanced front maintenance design.
Convenient for installation and maintenance.
It considers operability of site maintenance for structure design,
The MMS has dynamic self-diagnostics and analyses all the internal sub assemblies, providing the engineer with recommendations on what settings need adjustment and calibration.

Fast PCB replacement with all settings and adjustments are easily uploaded via the engineer's laptop.
The MMS system built into the UPS reduces the mean time to repair (MTTR) by almost half compared to other UPS systems.
Four service meters track critical areas within the UPS alerting that maintenance is required.

INTELLIGENT BATTERY MANAGEMENT & PROTECTION

Calculates true battery autonomy and remaining battery backup time during utility outage.

- Measures the volts per cell of the battery system and compensates for temperature and load.
- During UPS startup, the SBM is programmed with specific battery information.
- Programmable features allow the user to select the frequency and type of battery tests that are performed. Frequency range can be from once per week to annually.
- Test type range can be from deep cycle to 3-min discharge
- All tests logged in the UPS events menu and any failure is reported on the UPS front alarm panel.
- All tests done automatically with the UPS online.
- Manual tests can be performed at any time.
- Remote programming and configuration is available through the TS Series UPS protection software.
- Four service meters track critical areas within the UPS alerting that maintenance is required.

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ADVANCED IGBT TECHNOLOGY RECTIFIER AND INVERTER

The TS33 Series is designed with internal DSP architecture.
With separate DSP for Rectifier, Inverter and display.
With the use of a CAN Bus System.
Other modules can be added easily to update or configure the system for multiple use design.
The modular DSP design future proofs your UPS:

- Latest features can be easily upgraded.
- Multiple applications for Lifts, Medical, Industrial, Solar IGBT rectifier and inverter module.

Rectifier of this series UPS uses IGBT three phases rectifier bridge with full digital control, and it can transfer the voltage of three phases of main power to continuous DC voltage.
Design power is inverter with full load and supplies maximum:

- charging current for battery.
- Rectifier has the function of power factor calibration, which can reduce the harmonic distortion of main power to 5% and less. It can ensure that no matter how is the load,

The rectifier cannot cause voltage distortion of main power and can avoid overheat of cable caused by overcurrent of harmonic wave.
Between inverter output and static bypass power supply is realized by controlling circuit through inverter.
When static bypass power frequency is within allowed synchronization range Inverter control circuit always let the inverter output frequency trances static bypass power frequency.

Accessory dry contact programmable
This card provides six output dry contacts and six input contacts. The dry contacts are programmable and upon request, can be customized.

RS485 port

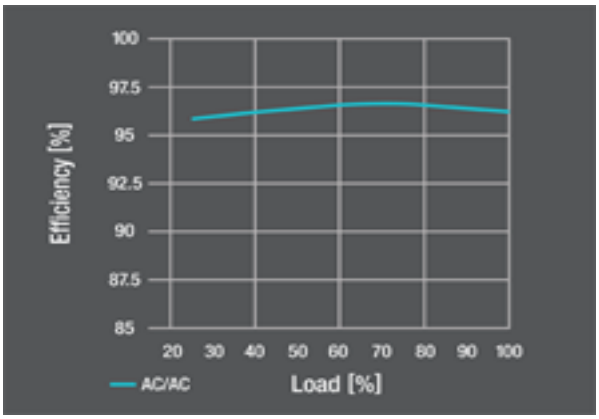
RS485 ports with JBUS MODBUS protocol.

2nd slot accessory cards
This slot can accommodate a relay Board or SNMP interface.

SNMP interface
Ethernet network adapter with TCP/IP, HTTP and SNMP protocols. The Simple Network Management Protocol, is a universal protocol communication standard used to monitor any device on the network with a simple control language.

EFFECIENCY

As UPS systems are often viewed as one of the biggest culprits regarding energy loss in power distribution, it makes sense to consider efficiency, along with reliability, as a primary factor in the selection of a UPS.
European Commission, has developed a Code of Conduct (CoC) for energy efficiency of AC UPS.
This initiative is aiming to reduce energy consumption by maximizing equipment efficiency.



ADVANCED COMMUNICATIONS

Dalton TS33 Series comes with internal and external SNMP options with full environmental features.

The UPS has a specially designed USB memory stick to record the internal history of the system, providing an easy solution for analysing performance and operation. This also provides an easy way to send the information of the UPS faults to the Dalton Technical team for analysis if there are any concerns with the UPS operation.
Four fully programmable dry port relays as standard upgradable to twelve, with over 65 selectable alarms.
Dedicated communication port for service engineer diagnosis and adjustment via laptop or notepad.
Emergency Power Off (EPO) connection for external switching control.
External temperature input monitoring.

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Technical Specifications

Model	TS3310	TS3320	TS3330	TS3340	TS3360	TS3380	TS33100	TS33120	TS33160	TS33200	TS33250	TS33300
Rating Power	10 KVA 8 KW	20 KVA 16 KW	30 KVA 24 KW	40 KVA 32 KW	60 KVA 48 KW	80 KVA 64 KW	100 KVA 80 KW	120 KVA 96 KW	160 KVA 128 KW	200 KVA 160 KW	250 KVA 200 KW	300 KVA 240 KW
INPUT												
Nominal voltage	3 x 380Vac/400Vac/415Vac (3Ph + N)											
Acceptable voltage range	285Vac ~ 485Vac											
Frequency range	50/60 Hz ± 10 %											
Power factor	≥ 0.99											
Total harmonic distortion (THDI)	≤ 2%											
Input current-limiting	1.1 times of rated current (0.1 ~ 1.1 settable)											
Rectifier delay start	10 s (1 ~ 300 settable)											
Bypass voltage range	± 20% (settable)											
OUTPUT												
Rated voltage	380Vac/400Vac/415Vac											
Voltage variation	±1% Vac											
Frequency	Synchronized with utility in mains mode; 50 / 60 Hz ± 0.1% in battery mode											
Waveform	Pure Sinewave											
Power factor	0.8											
Crest factor	3:1											
Total harmonic distortion (THDV)	<2% (Linear Load) - <5% (Non-linear Load)											
Unbalanced load	100% - independent phase regulation											
Transfer time	0 ms											
Inverter overload capability	150% for 1 hour; 180% for 30sec; >200% for 200ms											
Maintenance Bypass	Without interruption											
BATTERIES												
DC voltage	384 VDC (Based on 32pcs batteries)											
Number of battery	12VDC x 32 pcs (29~32 pcs adjustable)											
Charging current	Default 10A; Maximum 54A											
Charging Method	CC/CV											
Precision	±1%											
Battery self test	Settable periodic self-test; manually configurable test time and voltage											
SYSTEM												
Efficiency	Line mode ≥ 94%, ECO mode ≥ 98%											
Max. parallel numbers	Up to 4 units parallel											
Protections	Short-circuit, overload, over temperature, overvoltage, under voltage, battery low voltage and fan failure											
Communications	RS232 / RS485 / dry contacts (standard), SNMP (optional)											
IP rating	IP 20											
Positioning	Min. 20cm rear space for fan ventilation											
Display	7'' inches LCD touchscreen											
OTHERS												
Operating temperature	0 ~ 40°C											
Storage temperature	- 25°C ~ 55°C (without battery)											
Humidity	0 ~ 95% (non-condensing)											
Altitude (AMSL)	< 1000 m without power reduction, > 1000 m with reduction of 0.5% per 100 m											
Noise level at 1 m	< 40 dB			< 45dB		< 50dB		< 55dB				
Operating temperature	**0 ~ 40°C**											
Dimensions (D×W×H) (mm)	656 x 405 x 817		656 x 405 x 941	821 x 432 x 1159		975 x 554 x 1286		975 x 635 x 1326	1051 x 705 x 1646		1015 x 600x 2000	
Net weight (kg)	120	145	195	280	365	475	580	650	760	790	876	935

DALTON

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