

# DALTON

Three Phase Input & Output UPS  
Online Transformer Based UPS  
IGBT Rectifier



## ES33 Series (10KVA-120KVA)

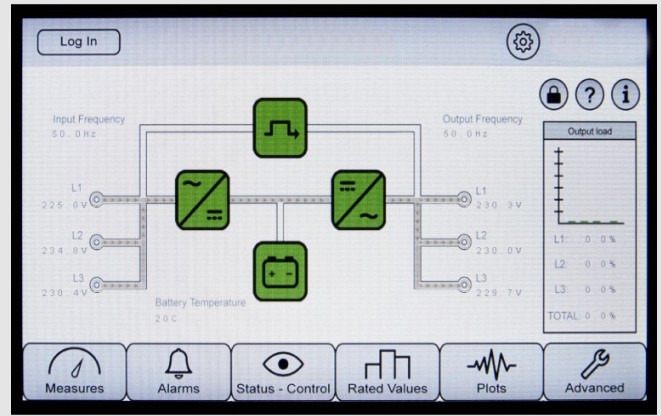


- Dalton ES33 transformer based has been designed for medical equipment, heating, ventilation and air conditioning equipment, safety and emergency systems, process control devices and machine tooling, critical infrastructures, small and medium data center monolithic power protection. double conversation 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. This UPS has high efficiency (> 94%) and input power factor (> 0.99). 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 .
- Built in output isolation transformer
- Online double conversion
- Output Power Factor 0.9
- 3 phases UPS allow 100% unbalance load
- Fully DSP+ARM Control technology
- DC cold start function
- Dual inputs
- Latest IGBT rectifier technology
- LCD touch screen 6" Inch
- ECO mode and EPO function.
- Intelligent RS232/RS485 communication port
- Advanced no-master-slave parallel technology (optional)
- Optional SNMP communication port

## ADVANCED GRAPHIC TOUCHSCREEN LCD

Dalton ES33 precise graphic backlit 6" touchscreen 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, controls and settings with comprehensive event logging up to 392 event memory record system (total 7000 alarms or warnings)



## OVERALL FRONTAGE MAINTENANCE SUPPORTED BY DESIGN

The ES33 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.

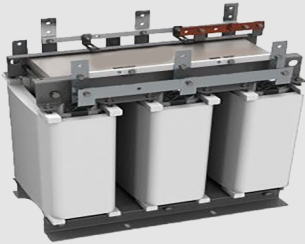
## INTELLIGENT BATTERY MANAGEMENT & PROTECTION

ES33 s a comprehensive and programmable management and monitoring system that protects the UPS battery string life. Batteries are prevented from overcharging and deep discharging.

- Low AC ripple.
- Interactive external battery circuit breaker position sensing,
- Two stage battery self test, a short test and an intensive test with adjustable test intervals
- Adjustable battery charger system for short and long runtimes
- Battery temperature compensation option
- Calculates true battery autonomy and remaining battery backup time during utility outage.
- During UPS startup, the SBM is programmed with specific battery information

## Isolation Transformer Built In

- Excellent operating efficiency with written efficiency guarantees
- Smart Input Filters enhances generator compatibility
- Innovative product technologies that boost efficiency, reliability and lengthen battery life



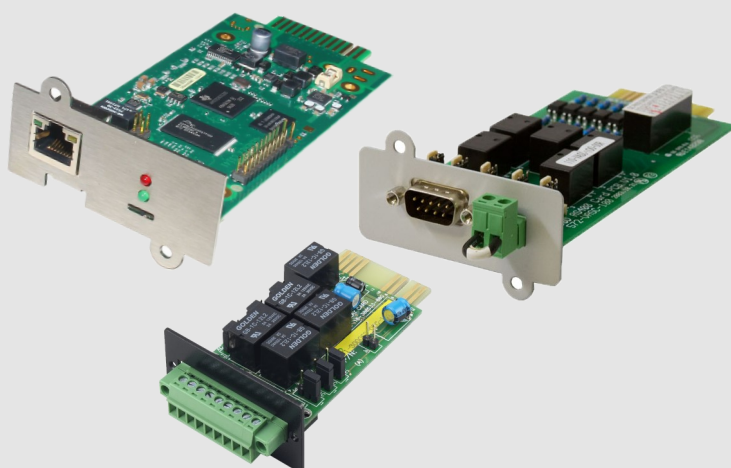
## ADVANCED IGBT TECHNOLOGY RECTIFIER AND INVERTER

The ES33 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, 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 traces static bypass power frequency



## ADVANCED COMMUNICATIONS

Dalton ES33 Data Protection software can communicate with the UPS over RS-232, USB or SNMP to receive status information and measurement values of the UPS. In case of a critical condition (time on battery, remaining battery autonomy time or low battery) for the load, the software starts a controlled shutdown. ES33 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.



# Technical Specifications

Model	ES3310	ES3320	ES3330	ES3340	ES3360	ES3380	ES33100	ES33120
Rating Power	10 KVA 9 KW	20 KVA 18 KW	30 KVA 27 KW	40 KVA 36 KW	60 KVA 54 KW	80 KVA 72 KW	100 KVA 90 KW	120 KVA 108 KW
<b>INPUT</b>								
Rated voltage	380 V / 400 V / 415 VAC							
Voltage range	346 V ~ 456 V ( full load ) 304 V ~ 346 V ( Voltage rating 10% )							
Rated frequency	50 / 60 Hz							
Frequency range	50 / 60 Hz ± 5 Hz							
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)							
<b>OUTPUT</b>								
Rated voltage	380 V / 400 V / 415 VAC							
Voltage regulation	± 1%							
Frequency	Synchronized with utility in mains mode; 50 / 60 Hz ± 0.1% in battery mode							
Waveform	Pure sinewave							
Crest factor	3:1							
Total harmonic distortion (THDV)	≤ 1% ( Resistive load); ≤ 3% ( non-linear load )							
Unbalanced load	100% - independent phase regulation							
Transfer time	0 ms							
Inverter overload capability	Load ≤ 105%, long time work: 105% < load ≤ 110%, transfer to bypass in 60 min 110% < load ≤ 125%, transfer to bypass in 10 min 125% < load ≤ 150%, transfer to bypass in 1 min 150% < load ≤ 200%, transfer to bypass in 200 ms 200% < load, inverter off (UPS shutdown) in 100 ms and transfer to bypass output							
Slight adjustment of inverter output voltage	± 5 V							
<b>BATTERIES</b>								
DC voltage	360 VDC ( Support 336 ~ 384VDC settable )							
Number of battery	30 pcs ( Support 28 ~ 32 pcs settable )							
Charging current	Charging rate (settable) × battery capacity (settable) × number of battery group (settable)							
Battery state display	Battery remaining capacity and backup time							
Battery self test	Settable periodic self-test; manually configurable test time and voltage							
<b>SYSTEM</b>								
Efficiency	Line mode ≥ 94%, ECO mode ≥ 98%							
Max. parallel numbers	Up to 6 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	6 inches LCD touchscreen							
<b>OTHERS</b>								
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	< 55 dB				< 60dB			
Dimensions (W×L×H) (mm)	450×790×1150				650×710×1450		700×780×1650	
Net weight (kg)	146	160	200	260	460	570	630	690

# DALTON

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