



STR33 evo 100 - 800kVA 3/3

IGBT Rectifier
With transformer isolated inverter

FLEXIBILITY AND DEDICATED SOLUTIONS



FINANCE



TELECOMMUNICATION



ENERGY



MEDICAL



GOVERNMENT

VFI
type

UPS ONLINE



TOWER

PF=
1,0

POWER FACTOR



SERVICE

HIGHLIGHTS

- High efficiency (up to 95.5% in ON LINE mode)
- Rectifier IGBT based technology
- Rectifier IGBT based technology
- High overload capacity
- LCD display

The **STR33 evo** series from 100 to 600 kVA is the SATRON UPS solution for installations requiring high energy efficiency and maximum power availability.

STR33 evo Series provides maximum protection and power quality for data centres and industrial loads. The UPS has an IGBT-based rectifier, DSP (Digital Signal Processor) technology and provides true-line, double conversion power protection, (VFI SS 11- Voltage and Frequency Independent in accordance with IEC EN 62040-3).

DSP (Digital Signal Processor) control to provide maximum protection, power quality and green energy for any type of application including data centres, disaster recover sites, telecoms rooms, industrial processes and security applications. High efficiency stands for higher active power available if compared with legacy UPS thanks to output unitary power factor (up to +25% if compared unity with same UPS at P.F 0.8). Nominal power is granted with no downgrading independently from operating temperature in the range 10-40 °C. Furthermore, control circuits and specifically designed firmware grant outstanding ON LINE double conversion efficiency up to 95.5%, comparable with the best transformer-free UPS available on the market

MAXIMISED COST SAVINGS

The **STR33 evo** has the ability to monitor the mains input quality and to select the best operating mode based on the interference present (Smart Active mode) or circular redundancy (Parallel Energy Saving mode), which allows the UPS to regulate available capacity based on the immediate demands of the load, automatically switching to standby in the event of excess capacity. The **STR33 evo** also offers high levels of efficiency for partial loads, resulting in reduced operating costs

POWER CONTINUITY

For years, **SATRON** UPS has developed and supplied solutions for dealing with the different requirements and problems that inevitably arise in critical applications. **SATRON** UPS offers flexible, high-availability solutions that are able to adapt to different system structures and critical levels. **SATRON** UPS creates UPS systems that can tolerate a number of components or subsystem failures, while continuing to operate normally, providing power without interruption. This is achieved by careful design, installing redundant elements, eliminating common failure points, scheduling maintenance activities and controlling and supervising the system operating parameters and environment. The service team is ready to provide guidance and advice on projects

ZERO IMPACT SOURCE

The **STR33 evo** series features the added advantages of the Zero Impact Source formula offered by an IGBT based rectifier assembly. This eliminates problems connected with installation in networks with limited power capacity, where the UPS is supplied by a generator set or anywhere there are compatibility problems with loads generate current harmonics. **STR33 evo** series UPS have zero impact on the power supply source, whether it is a mains grid or generator set:

- Input current distortion
- Input power factor 0.99;
- Power walk-in function that ensures progressive rectifier start up;
- Start-up delay function, to restart the rectifiers when mains power is restored if there are several UPS in the system.

BATTERY CARE SYSTEM

STR33 evo series UPS include a range of features designed to prolong battery life and reduce their usage such as different recharging methods, deep discharge protection, current limitation and voltage compensation according with battery room temperature. Thanks to the STEP-UP/STEP-DOWN converter, that provides to recharge and discharge the battery, the current ripple in the battery is extremely reduced; this arrangement enhance the battery reliability since it is no longer connected to UPS DC bus. In the battery is extremely reduced; this arrangement enhance the battery reliability since it is no longer connected to UPS DC bus.

COMPLETE GALVANIC SEPARATION

STR33 evo UPS feature an output isolation transformer (delta zig/zag type) on the inverter as part of the inverter circuit inside the UPS cabinet, providing galvanic isolation between the load and the battery with improved versatility in system configuration, allowing:

- Complete UPS output galvanic isolation for critical infrastructures from the battery DC power source
- Two truly separated supply inputs (main and bypass), which can be taken from two different power sources (with different neutrals); this is particularly well suited to parallel systems in order to ensure selectivity between the two sources, thus improving the reliability of the entire installation
- No neutral input connection is required at the UPS rectifier input stage; this method is particularly favourable in order to prevent the transmission of common neutral disturbances via the neutral conductor
- No effects to the UPS output performance or reduced impact of the inverter power components whilst supplying specific loads; in addition the inverter transformer minimizes the impact of third

harmonic disturbances, prevents the effects of energy back feed into the inverter when supplying industrial load applications and can supply unbalanced loads

- High inverter short circuit current to clear faults which occur between phase and neutral on load side (up to three times nominal current)

Output transformer housed within the cabinet which allows for a significant reduction in the footprint and provides space saving

MAIN FEATURES

- High efficiency up to 99.4% (STANDBY ON Mode)
- Compact size: e.g.: only 0.85 m² for the **STR33 evo** 250 kVA
- Reduced weight for transformer based UPS
- Double load protection, both electronic and galvanic, towards the battery

The entire **STR33 evo** range is suitable for use in a wide range of applications. Thanks to the flexibility of configuration, available options and accessories, it is suitable for supplying any type of load, e.g. capacitive loads such as blade servers, rather than motor drivers or any other critical vertical application

SMART GRID READY

Being Smart Grid Ready, Master HP/ HE allows for the implementation of power accumulation solutions, and at the same time ensures extremely high levels of efficiency. It is also able to independently select the most efficient operating method based on the status of the grid. **STR33 evo** UPS are also able to electronically interface with the energy manager using the smart grid communication network

MAXIMUM RELIABILITY AND AVAILABILITY

- Distributed parallel configuration of up to 8 units per redundant (N+1) or power parallel system
- Centralized parallel system up to 7 units with centralized bypass system (MSB)
- Dual bus configuration: allows two or more non-parallel UPS devices to remain synchronised even during mains power failure by adding the UGS device. The UGS also enables a SATRON UPS to be synchronised with another power source that is independent and of a different power rating
- Dynamic Dual bus configuration: allows two groups of UPS with the PSJ device to be connected in parallel whilst operating, in the event of maintenance (with no interruption to the output), using a power coupling switch. Should one of the UPS in one of the parallel groups fail, it is automatically excluded. The PSJ connects the remaining UPS, to the other parallel group via an external bypass, in order to continue to guarantee load redundancy. Allows two groups of UPS to be connected in parallel whilst operating, in the event of maintenance (with no interruption to the output), using a power coupling switch. Should one of the UPS in one of the parallel groups fail, it is automatically excluded. The PSJ connects the remaining UPS, to the other parallel group via an external bypass, in order to continue to guarantee load redundancy
- Hot System Expansion (HSE): allows the addition of a further UPS into an existing system, without the need to switch off the existing UPS or transfer them to bypass mode. This guarantees maximum load protection, even during maintenance and system expansion
- Maximum levels of availability, even in the event of an interruption to the parallel bus cable: the system is "FAULT TOLERANT". It is not affected by connection cable faults and continues powering the load without disruption, signalling an alarm condition
- Efficiency Control System (ECS): a system to optimise the operating efficiency of parallel systems, according to the power required by the load. N+1 redundancy is guaranteed, with every UPS working in parallel at the best load level possible to achieve higher overall efficiency

CENTRALIZED BYPASS CABINET

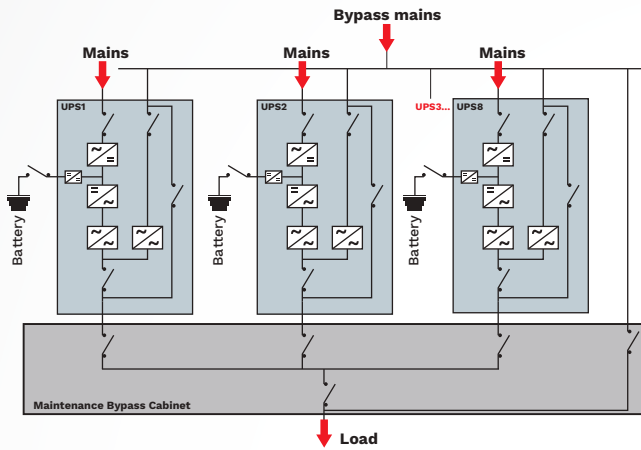
The SATRON UPS centralised bypass (named MSB) is available in four power ratings: 800, 1200, 2000 and 3000 kVA. Intermediate solutions within this range can be made, as well as solutions greater than 3000 kVA based on the requirements of the customer or application. The MSB centralised bypass can be integrated with the **STR33 evo** range; in fact it can be associated with up to 7 UPS modules in the range, obviously without static bypass and associated bypass line (named **STR33 evo NBP**). Based on requirements thus ensuring complete flexibility aimed at satisfying all power and power supply requirements. **SATRON** UPS provides the same flexibility as the Master HP for the battery bus, so that the UPS units can operate with both shared and separate batteries. The 800 kVA MSB is supplied with a comprehensive cabinet including bypass line input switch (SWBY), system output switch (SWOUT) and manual bypass (SWMB). The 1200 kVA model is supplied as standard without any switches but can be equipped with the same, suitably proportioned, switches provided for the 800 kVA models (SWBY, SWOUT, and SWMB). The more powerful models are supplied with no switches; the bulky sizes of disconnection devices at these power levels are such as to favour tailor-made engineering solutions as an additional part of the system attestation and distribution cabinets where the centralised bypass and **STR33 evo NBP** modules are fitted.



PARALLEL CONFIGURATION OF UP TO 8 UPS UNITS WITH DISTRIBUTED BYPASS

Parallel architecture to ensure redundancy of the power source.

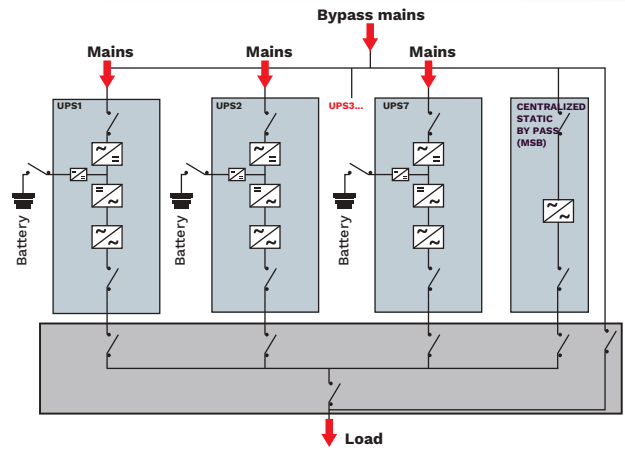
+ Flexibility and modularity and no single point of failure.



PARALLEL CONFIGURATION OF UP TO 7 UNITS WITH CENTRALISED BYPASS

Parallel architecture to ensure redundancy of the power source, with independent bypass management.

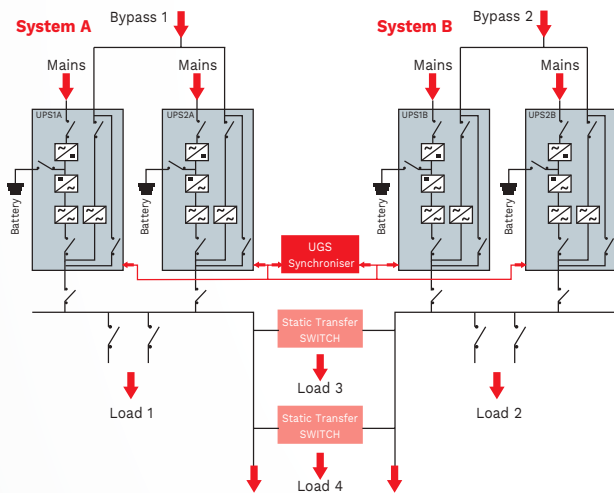
+ Selectivity of downstream faults in bypass operation



DUAL BUS CONFIGURATION

Solution to ensure redundancy through synchronization of two power buses and improving STS operation.

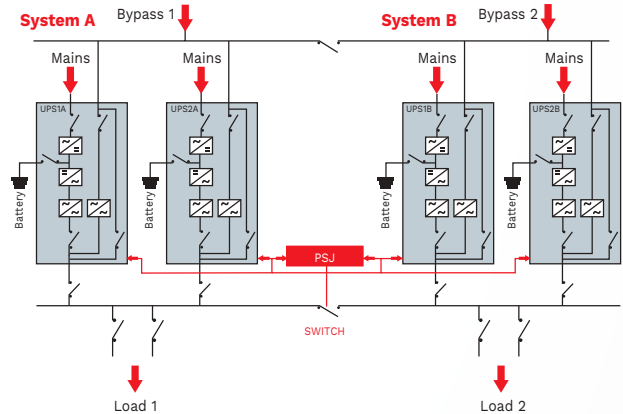
+ Downstream fault discrimination



DYNAMIC DUAL BUS CONFIGURATION

Solution to ensure redundancy of the power supply even during maintenance.

+ High availability and redundancy



OPTIONS

SOFTWARE

PowerShield³
PowerNetGuard

ACCESSORIES

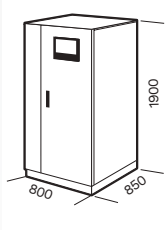
NETMAN 208
MULTICOM 302
MULTICOM 352
MULTICOM 411
MULTICOM 421
MULTI I/O
MULTIPANEL
MBB 400 A 4P

PRODUCT ACCESSORIES

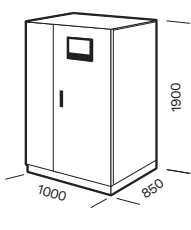
Bypass isolation transformer
Parallel kit
Synchronisation device (UGS)
Hot connection device (PSJ)
Top Cable Entry cabinet
IP rating IP21, IP31/IP42 on request
Battery temperature sensor
Cold start
ENERGYMANAGER
DC filter
Power Absorber (PWA)

DIMENSIONS

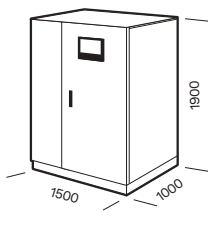
**STR 33 evo
100-120**



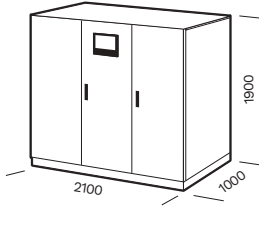
**STR33 evo
160-200-250**



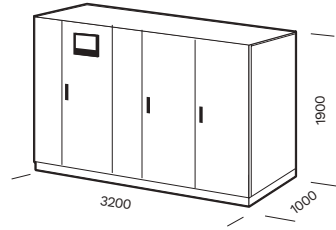
**STR33 evo
300-400**



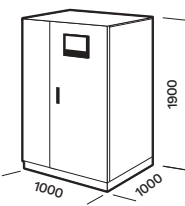
**STR33 evo
500-600**



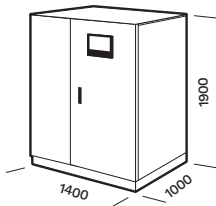
**STR33 evo
800**



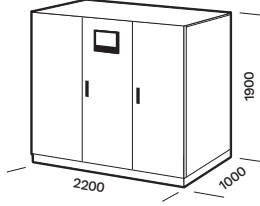
STR33 evo 800



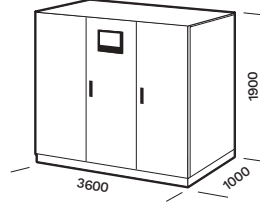
STR33 evo 1200



STR33 evo 1600-2000



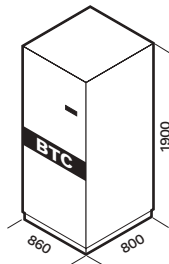
STR33 evo 3000



BATTERY CABINET

MODELS	BTC 1900 480V BB V6 3T BTC 1900 480V BB V7 3T BTC 1900 480V BB V8 3T BTC 1900 480V BB V9 3T BTC 1900 480V AB V9 3T
UPS MODELS	MHT 100-600 / MHE 100-800

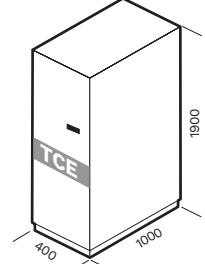
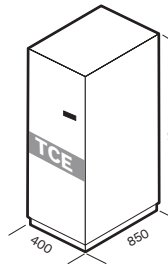
Dimensions
[mm]



CABINETS WITH TOP ACCESS FOR CABLES

MODELS	MHT TCE 100÷250	MHT TCE 300÷800
UPS MODELS	MHT 100-250 MHE 100-250	MHT 300-600 MHE 300-800*

Dimensions
[mm]

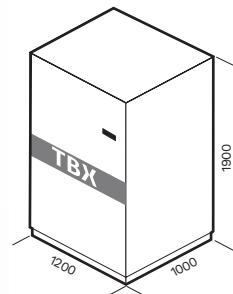
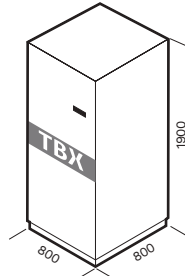
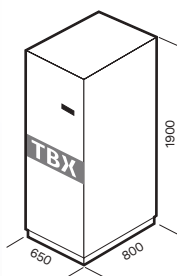


*2 pieces needed for STR33 EVO 800

THREE-PHASE ISOLATION TRANSFORMERS

MODELS	TBX ISO 100 T Dzn0 TBX ISO 160 T Dzn0	TBX ISO 200 T Dzn0 TBX ISO 250 T Dzn0	TBX ISO 300 T Dzn0 TBX ISO 600 T Dzn0
UPS MODELS	MHT 100-160 / MHE 100-160	MHT 200-250 / MHE 200-250	MHT 300-600 / MHE 300-600

Dimensions
[mm]



Note: TBX ISO 800 T Dzn0 for STR 33 EVO 800 available on request.

STR33 evo Online 100 to 600KVA 3/3 IGBT Rectifier-transformer based Output P.F:0.9

Model	STR33 evo									
Capacity (KVA)	100	120	160	200	250	300	400	500	600	
Input										
Rated voltage [V]	380 / 400 / 415 three-phase									
Voltage tolerance [V]	400 ±20% @ full load1									
Frequency [Hz]	45 - 65									
Power factor	>0.99									
Harmonic current distortion [THDi]	<3%									
Soft start	0 - 100% in 120 sec. (selectable)									
Frequency tolerance	±2% (selectable from ±1% to ±5% from front panel)									
Standard equipment provided	Back Feed protection; separable bypass lin									
Bypass										
Rated voltage [V]	380 / 400 / 415 three-phase + N									
Rated Frequency [Hz]	50 or 60 (selectable)									
Output										
Nominal power [kVA]	100	120	160	200	250	300	400	500	600	
Active power [kW]	90	108	144	180	225	270	360	450	540	
Number of phases	3 + N									
Rated voltage [V]	380 / 400 / 415 three-phase + N (selectable)									
Static stability	±1%									
Dynamic stability	±5% in 10 msec.									
Voltage distortion	<1% with linear load / <3% with non-linear load									
Crest factor [Ipeak/Irms]	3:1									
Frequency stability on battery	0.05%									
Frequency [Hz]	50 or 60 (selectable)									
Overload	110% for 60 min.; 125% for 10 min.; 150% for 1 min.									
Batteries										
Type	VRLA AGM / GEL; NiCd; Supercaps; Li-ion; Flywheels									
Ripple current	Zero									
Recharge voltage compensation	-0.11% x V x °C									
Rated battery voltage (Vdc)	480									
Mono-blocks/No. of Pb elements	240 (40 batteries)									
Recharge time	5h									
Overall Specifications										
Weight [kg]	700	750	835	970	1060	1500	1720	2440	2831	
Dimensions (WxDxH) [mm]	800x850x1900		1000x850x1900			1500x1000x1900		2100x1000x1900		
Remote signals	Dry contacts (configurable)									
Communications	Double RS232 + dry contacts + 2 slots for communications interface									
Ambient temperature	0 °C - +40 °C									
Battery Temperature	+20 °C - +25 °C									
Relative humidity	5-95% non-condensing									
Colour	Dark grey RAL 7016									
Noise level at 1 m [dBA]	63 - 68					70 - 72				
Protection Degree	IP20 (others on request)									
Double conversion efficiency	up to 94.5%									
Standards	European directives: L V 2014/35/EU low voltage Directive EMC 2014/30/EU electromagnetic compatibility Directive Standards: Safety IEC EN 62040-1; EMC IEC EN 62040-2; RoHS compliant Classification in accordance with IEC 62040-3 (Voltage frequency Indioendent) VFI - SS - 111									
Classification in accordance with IEC 62040-	(Voltage Frequency Independent) VFI - SS - 111									
Altitude	6000 max altitude									
Moving the UPS	Pallet jack									

STR33 EVO Online 100 to 800KVA 3/3 IGBT Rectifier-transformer based Output P.F:1

Model	STR33 evo									
Capacity (KVA)	100	120	160	200	250	300	400	500	600	800
Input										
Rated voltage [V]	380 / 400 / 415 three-phase									
Voltage tolerance [V]	400 ±20% @ full load1									
Frequency [Hz]	45 - 65									
Power factor	>0.99									
Harmonic current distortion [THDi]	<3%									
Soft start	0 - 100% in 120 sec. (selectable)									
Frequency tolerance	±2% (selectable from ±1% to ±5% from front panel)									
Standard equipment provided	Back Feed protection; separable bypass lin									
Rated voltage [V]	380 / 400 / 415 three-phase									
Voltage tolerance [V]										
Bypass										
Rated voltage [V]	380 / 400 / 415 three-phase + N									
Rated Frequency [Hz]	50 or 60 (selectable)									
Output										
Active power [kW]	100	120	160	200	250	300	400	500	600	800
Number of phases	100	120	160	200	250	300	400	500	600	800
Rated voltage [V]	3 + N									
Static stability	380 / 400 / 415 three-phase + N (selectable)									
Dynamic stability	±1%									
Voltage distortion	±5% in 10 msec.									
Crest factor [Ipeak/Irms]	<1% with linear load / <3% with non-linear load									
Frequency stability on battery	3:1									
Frequency [Hz]	0.05%									
Overload	50 or 60 (selectable)									
Active power [kW]	110% for 60 min.; 125% for 10 min.; 150% for 1 min.									
Number of phases	3 + N									
Rated voltage [V]	380 / 400 / 415 three-phase + N (selectable)									
Batteries										
Type	VRLA AGM / GEL; NiCd; Supercaps; Li-ion; Flywheels									
Ripple current	Zero									
Recharge voltage compensation	-0.11% x V x °C									
Rated battery voltage (Vdc)	480									
Mono-blocks/No. of Pb elements	240 (40 batteries)									
Recharge time	5h									
Overall Specifications										
Weight [kg]	850	850	1015	1070	1300	1680	2050	3026	3080	4004
Dimensions (WxDxH) [mm]	800x850x1900		1000x850x1900			1500x1000x1900		2100x1000x1900		3200x1000x1900
Remote signals	Dry contacts (configurable)									
Communications	Double RS232 + dry contacts + 2 slots for communications interface									
Ambient temperature	0 °C - +40 °C									
Battery Temperature	+20 °C - +25 °C									
Relative humidity	5-95% non-condensing									
Colour	Dark grey RAL 7016									
Noise level at 1 m [dBA]	63 - 68					70 - 72				
Protection Degree	IP20 (others on request)									
Double conversion efficiency	up to 94.5%									
Standards	European directives: L V 2014/35/EU low voltage Directive EMC 2014/30/EU electromagnetic compatibility Directive Standards: Safety IEC EN 62040-1; EMC IEC EN 62040-2; RoHS compliant Classification in accordance with IEC 62040-3 (Voltage frequency Independent) VFI - SS - 111									
Classification in accordance with IEC 62040-	(Voltage Frequency Independent) VFI - SS - 111									
Altitude	6000 max altitude									
Moving the UPS	Pallet jack									



SATRON Power Solutions
Approach your local SATRON Power Solutions representative for further support.
Contact details can be found on:
www.satronpower.com