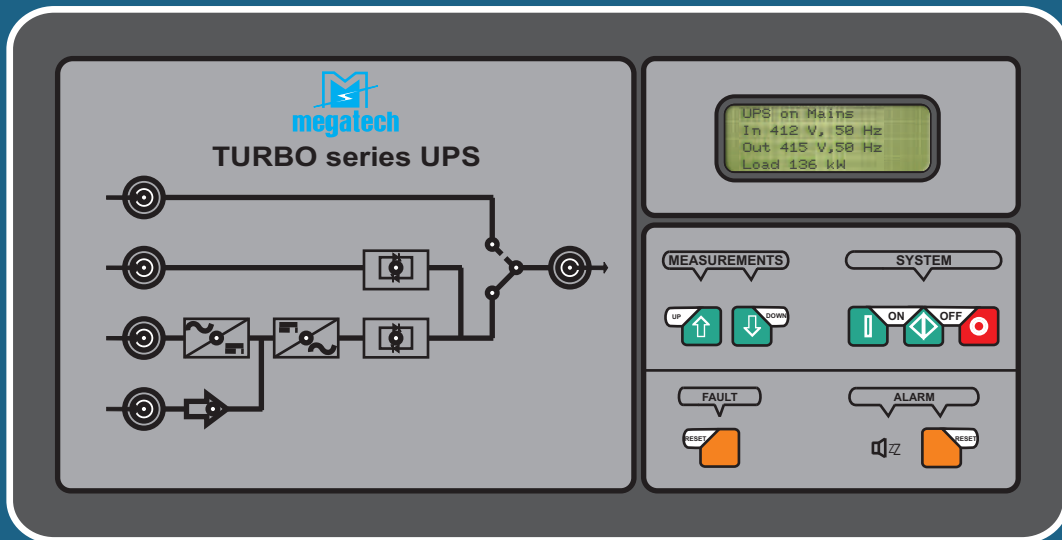




Turbo Series

Active Power Factor Corrected Online UPS



Time to look for specifications over brand



ISO 14001 : 2004

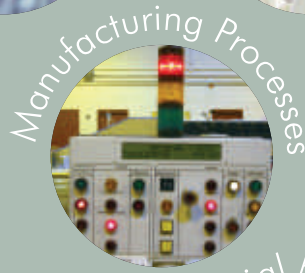


ISO 9001 : 2008



OHSAS 18001:2007

APPLICATIONS



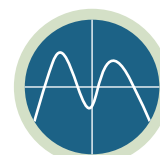
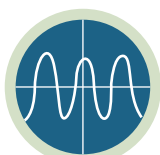
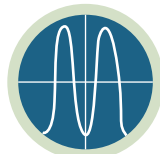
APPLICATIONS

Features

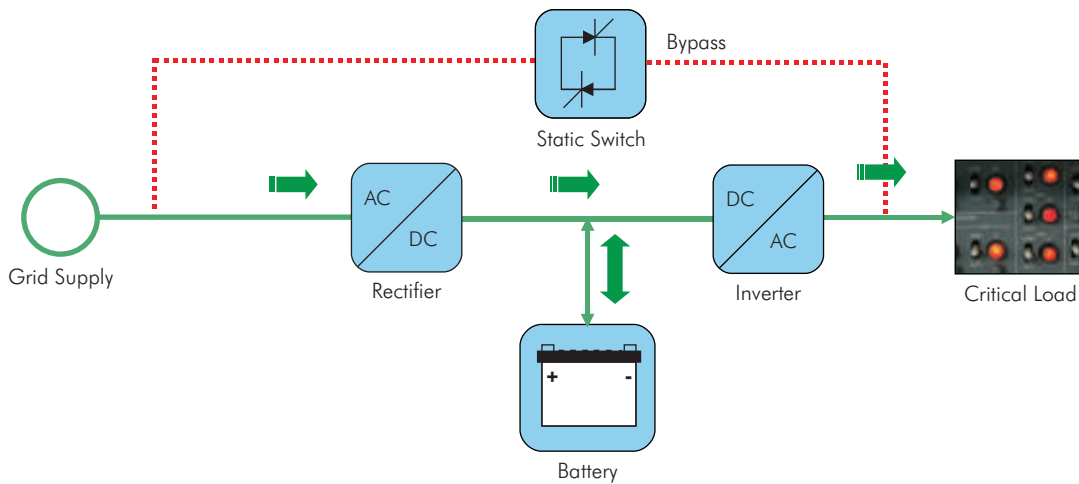
- Near Unity Power Factor at front end
- Advanced Technology DSP based IGBT design
- Wide Input range, robust design for harsh environment
- Multi-CPU and Software / Hardware integrated control
- DC start function, can be started without AC
- True Isolation design through Transformer
- Modular design, easy maintenance and minimal MTTR
- Built-in static switch
- Parallel operation
- Specifications can be customized

Protection Against Critical Load

The **Turbo Series** delivers power protection against all 9 power problems that threaten your equipment and valuable data



Basic UPS Topology



Double Conversion UPS

Advantages

- No transfer time
- Excellent input power factor
- Full protection
- Accepts extreme voltage distortion without going to battery

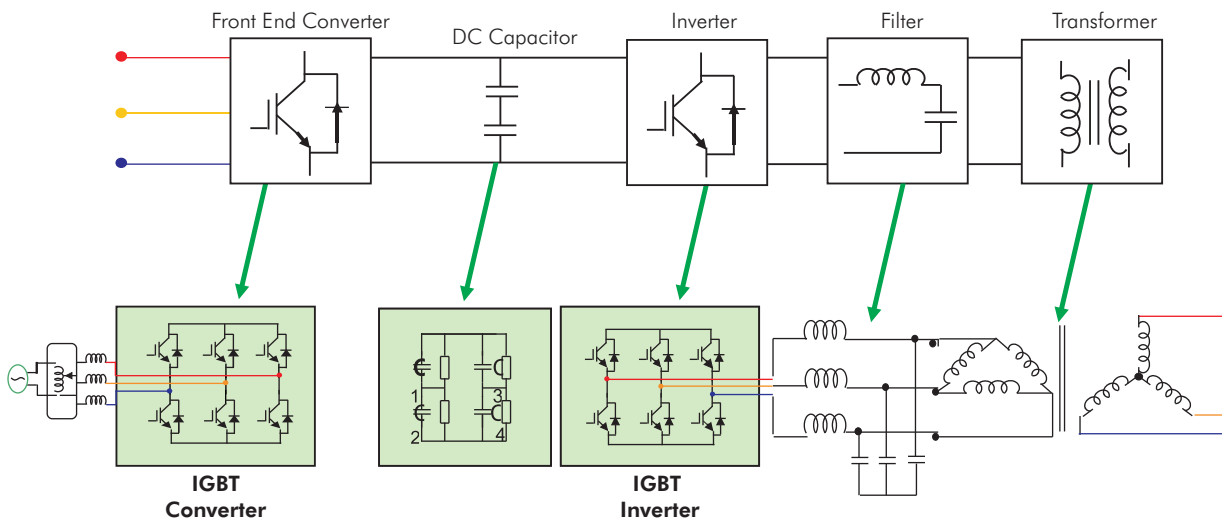
Features

- Unity power factor design
- DSP controlled
- Continuous power with 1 + 1 parallel operation
- Uses latest IGBT modules

Limitations

- Application over 30 KVA
- Three-phase output

Power Circuit Design

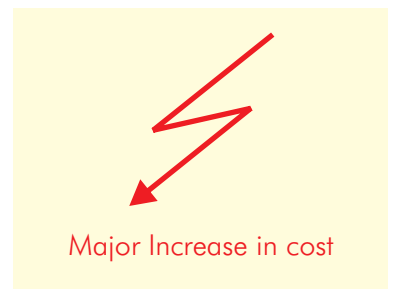




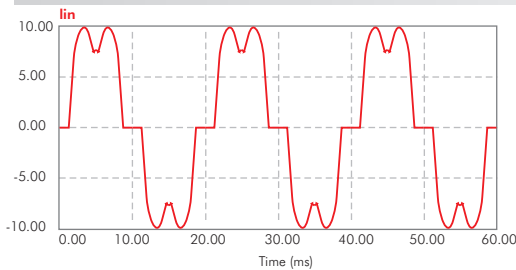
Unity Power Factor at Front End

Implication of Reactive and Harmonic Currents of Thyristor Rectifier

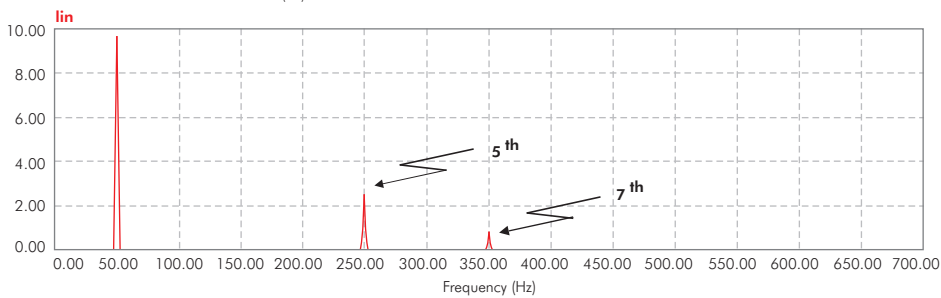
- All oversized installation equipment to handle Reactive and Harmonic current, namely
 - Distribution transformer
 - Cables
 - Switch gears and distribution boards
 - DG Set
- Lifetime increase in Transmission and Distribution loss
- Reduction in voltage stability margin
- Overheating and loss of life of equipment



Current Harmonics and Power Factor of 3Ø Thyristor Rectifier Current

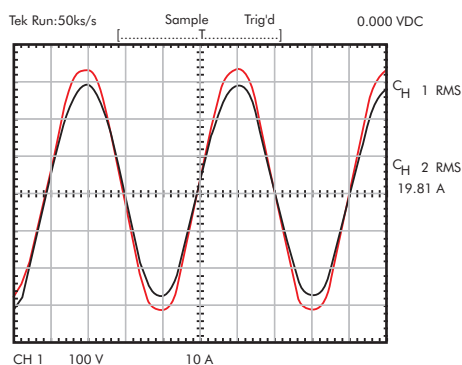


Power and Harmonics Analysis	
Power	40 KW
Input Power Factor	0.732
Input Current THDi	35.2%
3rd and 5th Harmonics	32.0%



Current Harmonics and Power Factor of IGBT Rectifier at Front End

Front End Converter Voltage and Current



Front End Power Flow Analysis

Power and Harmonics Analysis	
Power	40 KW
Input Power Factor	0.992
Input Current THDi	2.6%
3rd and 5th Harmonics	2.0%

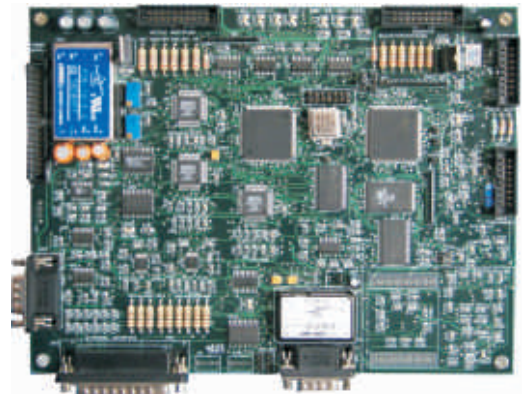
Harmonic spectrum of Grid Current





Fully DSP Controlled

- 25-ns Instruction Cycle Time
 - 40-MIPS performance for fast control algorithm
- Low Power 3.3-V Design
 - Less control power consumption
- On-Chip Memory
 - Reduction in external hardware
- Three-Phase Inverter Control PWM Module
 - Special module designed to implement high performance intelligent UPS
- 10-Bit Analog-to-Digital Converter (ADC)
 - To achieve maximum resolution and accuracy
- Serial Communications Interface
 - Provides RS 232 user interface
- Phase-Locked-Loop (PLL) based Clock Generation
 - For synchronous application and fast changeover



Latest Generation IGBT used for High Reliability

- Use of latest generation of IGBT ensures highest reliability and minimum losses
- Easy maintenance



UPS with Output Isolation Transformer

Fully Isolated Online UPS Architecture using Isolation Transformer at the Output of the UPS. It completely separates Input, Control and Output side of the UPS, providing ultimate power protection for connected equipment by providing an absolute Zero DC component. This guarantees absolute protection against DC damage for Inductive load such as motor based

devices, thus entirely eliminating UPS application limitation.

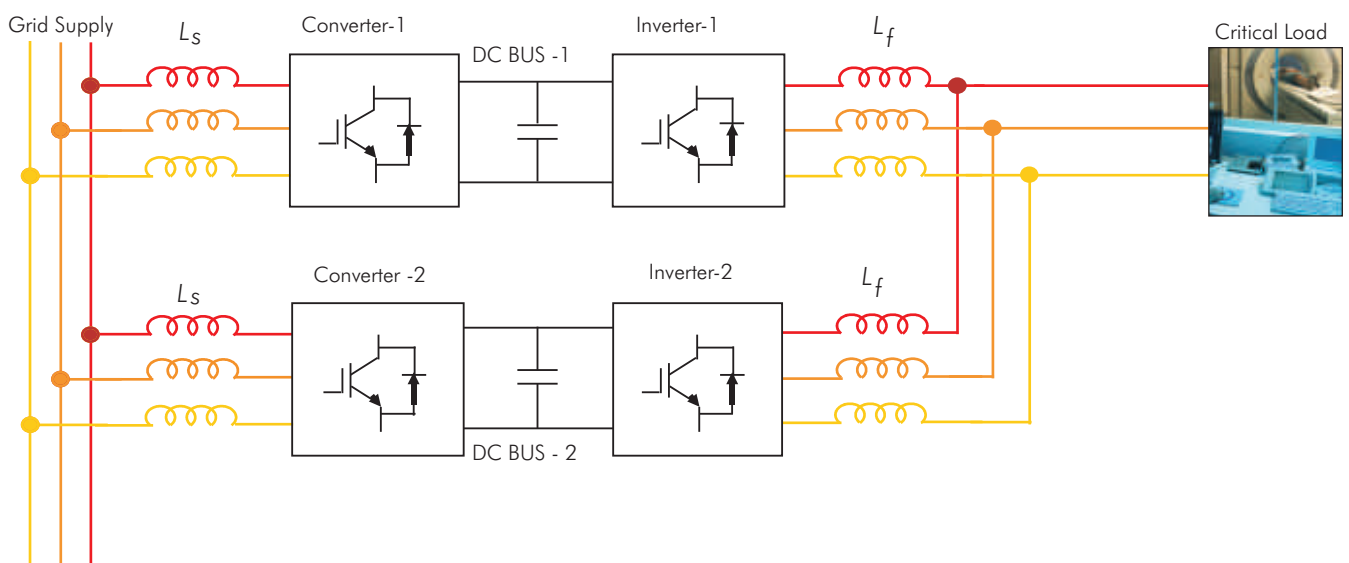
Further an Isolation transformer at the output of UPS provides a firm bonding between the UPS neutral and earth points achieving neutral to earth potential at value very close to Zero for reliable operation of computers and electronic systems.



Paralleling of UPS (1 + 1 Operation)

Benefits of Paralleling of UPS

- Flexibility to expand power capacities of the System
- Ensures loss of one UPS will not affect the overall supply
- Provides System redundancy
- Improves reliability of the System
- Extremely low MTTR for System repair and maintenance
- Achieve higher Mean Time between failure



Automatic Synchronised Static By-Pass

Uninterrupted Continuous Operation

In case of a momentary high overload, the **Turbo Series** UPS transfers the load to the mains, automatically and without interruption. This operation is based on constant monitoring of output voltage, and retransfer of the load to the UPS when the load drops below the rated KVA.

Specifications

(I) Input		
1	Voltage	415V, 3 Phase, 4 Wire
2	Voltage Variation	320V to 475V
3	Frequency	50Hz nominal
4	Frequency Variation	± 6%
5	Input Current THD	Better than 5% with Active IGBT based front-end converter at full load with grid voltage harmonic less than 2%
6	Power Factor	Near Unity with IGBT based Active front-end converter at UPS input
7	Efficiency	Better than 88% for 50% to 100% of output load with output isolation transformer
(II) Output		
1	Voltage	415V, 3 phase, 4 wire
2	Voltage Distortion	Less than 3% with linear load Less than 5% with non-linear load
3	Voltage Variation	± 1% for static balanced load ± 10% for unbalanced load
4	Rated Load	30 KVA / 50 KVA / 60 KVA / 80 KVA / 100 KVA / 120 KVA / 160 KVA / 200 KVA at 0.8 power factor (Ratings other than specified available on request)
5	Overload	110% for 10 min., 150% for 1 min.
6	Output Frequency	50Hz (mains synchronized) +/- 6% +/- 0.1% free running
(III) DC Link		
1	Battery Voltage	360 / 384V
(IV) Static Bypass		
(i)	Inverter to Bypass	(a) Inverter overload over lapped transfer (b) Manual command over lapped transfer (c) Inverter failure < 2 ms in sync mode
(ii)	Bypass to Inverter both Auto and Manual	Over lapped transfer
(V) Battery Charger		
1	Charging Mode	Constant current constant voltage
2	Charging Voltage	2.25 V per cell
3	Battery Charger Rating	10 % of system capacity (Eg. 3 KW for 30 KVA) (Higher capacity charger available on request)
(VI) Environment Conditions		
1	Operating Temperature	0 – 40°C for guaranteed performance
2	Audible Noise	< 60 dBA
3	Cooling	Forced air-cooling
(VII) Protection		
Input under voltage, Input over voltage, Output under voltage, Output over voltage, Battery over charging, Input in rush current protection by soft start as well as pre-charge circuit, Output over load, Battery under voltage, DC over voltage, Output Short Circuit		
(VIII) Metering		
Input voltage, Input current, Output voltage, Output current, Battery voltage, Battery current, Output frequency, Input frequency, Faults		
Status Indications		
Input Converter ON, Inverter ON, Static switch on Mains / Inverter, Battery ON		
User Operated Controls		
System ON / OFF, Display mode selection/ Alarm reset		
Networking & Monitoring Interface		
RS 232, SNMP (Optional)		
(IX) Paralleling 1 + 1 (optional)		
Output current will be equally shared with +/- 5% tolerance at full load		

* R&D being a continuous process, specifications are subject to change without prior notice

Admin Office



Sales & Service Office



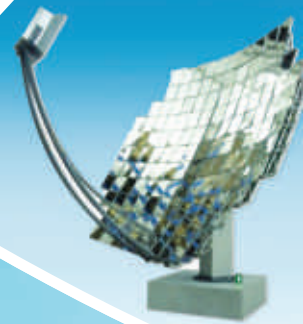
Manufacturing Unit



About Us

Megatech, a name synonymous with power electronics for more than 2 decades, occupies a central position in the enterprise segment of Online UPS. With the introduction of our **Turbo Series** Online UPS with Active Power Factor Correction through IGBT topology based on DSP architecture, we are one of the very few Indian companies to have successfully developed and commercialized this product line.

In addition to the Online UPS, Megatech also offers a wide range of power backup and power conditioning solutions to various verticals like Vertical Transportation, Telecom Towers, Gas Filling Stations etc. A foray into renewable energy with a Solar/Wind Hybrid system, Solar Parabola for water heating and other industrial applications, makes us one of the very few Indian companies offering comprehensive solutions to the energy challenges and green power initiatives.



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