INNOVASIS

INNOVATIVE ENERGY SYSTEMS

3:3 PHASE

DATA CENTER · MEDICAL · INDUSTRY · TRANSPORTATION · EMERGENCY

MULTILINE SERIES

Three Phase Input & Output UPS from 10 - 120 kVA

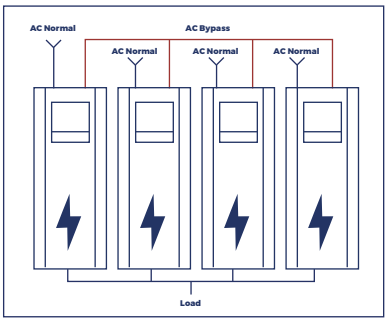
- Three LEVEL UPS — 3 LEVEL UPS
- VFI TYPE — UPS ONLINE
- TOWER
- 96% — HIGH EFFICIENCY
- Li - On Battery — Li - On READY

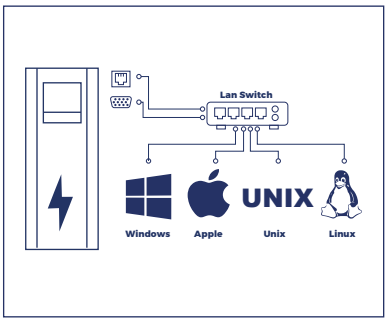
MULTILINE SERIES

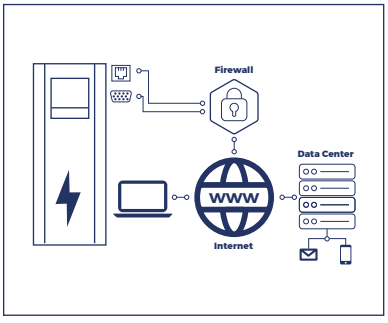
Compact, high performance three phase power protection with excellent efficiency and scalable runtime for any type of it load, tertiary application, lighting or bulding and other business critical applications.

The Multiline Series UPS brings the latest power conversion technology to the marketplace, using a three level design with a multi mode architecture with atest generation components. These UPS aim to be functional, safe, easy to install and use.

- Three Level Technology
- Output Power Factor 1 (kVA=kW)
- On Line-Double Conversion Technology (Class VFI-SS-111)
- IGBT PWM Rectifier & Inverter Technology
- Multi Processor Digital Control
- High Efficiency up to 96%
- Higher efficiency with eco-mode (up to 98%)
- Low Input Current THD (≤3%)
- High Input Power Factor (≥0.99)
- Low output voltage THD (≤2%)
- Short response time (≤2ms)
- Automatic soft-start
- Cold start
- Dual Input
- Advanced Battery Management
- DC/DC Charger/Booster
- Flexible battery count
- Wide Input Voltage Range
- Variable input low voltage depending on loading percentage (up to -36%)
- Short Circuit,Overload, Lightning and Surge Protection
- Paralellable Modules up to 8 units
- Intelligent redundancy management (n, n+1 and n+x)
- 256 Real Time Event Log with Detailed Parameters
- Static & Manual Bypass Operation
- Small Footprint and Easy Maintenance
- Data analyzing over user interface
- Advanced Communication Capabilities
- Remote monitoring and management software
- Perfect Generator Compatibility
- Programmable dry contacts







SELF LOAD POWER TEST

Only 4% incremental energy consumption. Full power test of Rectifier, Inverter, Bypass, Chokes, Capacitors, Cables and Fuses. Customer load safely supplied through maintenance bypass dummy load free.

SOFTWARE & CONNECTIVITY SOLUTIONS

- Local communication with RS232 and RS485
- 2 pcs configurable input contact
- Relay board with alarms
- GenSet contact
- EPO contact
- USB
- Remote Monitoring Panel
- Battery Temperature Sensor for Temperature compensated charging
- JBUS, PROFIBUS Local connection
- SNMP IT Manager monitoring
- Environment sensors for Data Centers (Humidity, Temperature, Smoke, etc.)
- GSM, Telnet, GPRS communication
- PC & Server shutdown
- Web page remote monitoring
- Building management system
- E-mail alarm reporting
- Remote monitoring 24/7 technical service

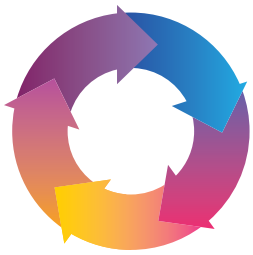
COMPLETE, COST EFFECTIVE SOLUTION

- Online double conversion mode with an real full power, according to IEC 62040: kW=kVA (unity power factor design) means 25% more active power available compared to legacy UPS.
- Dual input mains allow you to manage independent power sources.
- Increased system availability placing UPS in parallel for N+1 and
- N+X redundancy.
- Internal manual bypass for easy maintenance without power interruption.
- Up to 8 pcs parallelable.
- Multi language big LCD display.

EASY MAINTENANCE

TAILORED TO YOUR ENVIRONMENT

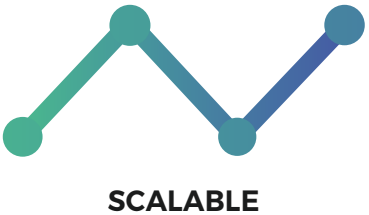
- Low noise level and higher fan life time with intelligent fan speed control.
- Flexible battery solutions.
- Compact, lightweight and easy to install.
- Frequency converter mode.
- Extended battery life with exclusive battery charging management for increased battery life.
- Ability to work during input phase sequence change (Optional)
- All in one: Optional 1/1, 1/3, 3/1 and 3/3 phase configurations.
- Adjustable battery quantity.



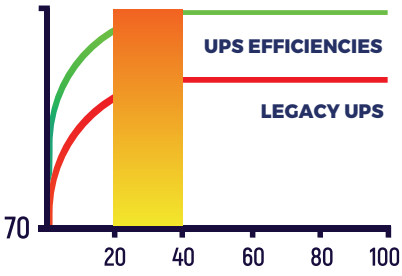
BACK-UP

LOWEST TOTAL COST OF OWNERSHIP

- Thanks to three level inverter design and a multi mode architecture that makes real time decisions between premium protection mode and premium efficiency mode brings efficiency up to 96% at 50% online load operation.
- 10% saving on energy losses compared to legacy UPS gives significant savings in energy.
- Significant reduction in energy loss.
- Reduced energy usage, air conditioning requirements and cooling operating costs.
- Energy Saver mode for global efficiency improvement on parallel systems.
- Up to 35 percent smaller than similar competitive solutions. Saves space with a reduced footprint.



SCALABLE



EASY MAINTENANCE

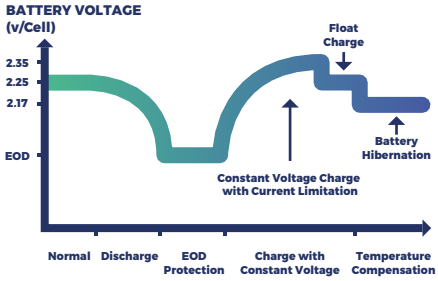
- Built-in manual bypass to eliminate maintenance related downtime.
- Proactive detection of fan failure and switch fault for early diagnosis on UPS malfunction.
- Plug and play card design to simplify the maintenance process.
- Easy service by the help of modular power board concept.
- MTTR is less than 30 minutes.
- Lower spareparts cost by using common boards for different ratings.

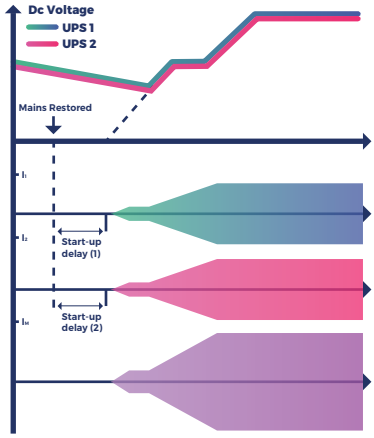
INTELLIGENT BATTERY MANAGEMENT SYSTEM

- Thanks to intelligent battery management system increase 35% battery life and maximizes battery performance, life time and reliability through intelligent charging.
- Temperature compensated battery charging monitors performing measurement of external and internal battery temperature and adjusting the charge current rate accordingly.

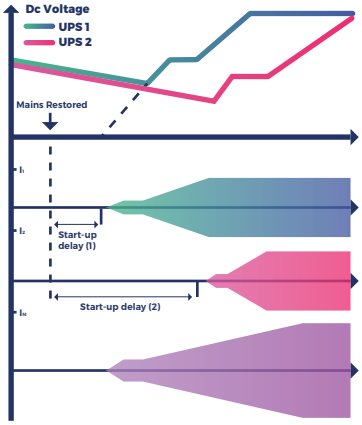
Intelligent battery management system can sustain battery lifespan and the capacity of battery backed up through the functions of;

- Monitoring & compensation battery remaining capacity displayed in percentage.
- Overcharge/discharge protection.
- Auto/manual battery test.
- Three charging modes ensure maximum battery availability.
- Constant current charging provides maximum rated current to the battery until the voltage rises to a pre-determined limit.
- A boost voltage is provided for a short term to reduce the battery recharge interval.
- Float charging maintains the battery at the recommend voltage.
- Adjustable battery charging time due to the level of the load to save from energy cost.





Dc voltage and AC current behaviour using the same value for delay time



Dc voltage and AC current behaviour using different value for delay time

HIGH PERFORMANCE RECTIFER CLEAN INPUT PERFORMANCE

- Thanks to the technology used, UPS solves installation problems in systems where the power supply has limited installed power, where the UPS is also powered by a generator or where there are compatibility problems with loads that generate harmonic currents; UPS has zero impact on its power source, being either the mains power supply or a generator. IGBT based rectifier and innovative control algorithm ensures an input Total Harmonic Distortion (THDi) of less than 3% and draws a pure sinusoidal waveform from the mains. This also provides UPS input power factor of ≥0.99.

Advantages

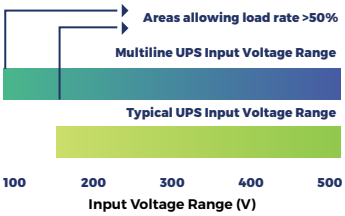
- Saving in the sizing of upfront equipment e.g. emergency generators, cablings and circuit breakers.
- No disturbances to nearby equipment; eliminate perturbation and outage on upfront electrical equipment, avoiding also any investigation and analysis cost due to malfunction In addition, UPS plays a filter and power factor correction role in the power network upstream of the UPS, as it eliminates harmonic components and the reactive power generated by the powered utilities.

PROGRAMMABLE SOFT START

Start up delay function, to restart the rectifiers when mains power is restored if there are several UPS in the system. The programmable soft start allows the rectifier to ramp up in a programmable time period (0-15 seconds) thus eliminating in-rush current.
This feature reduces the need of oversizing the input power system (gensets, feeder cables, and over current devices).

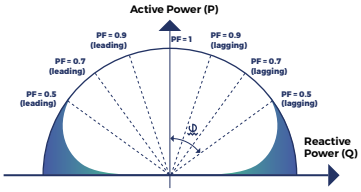
PERFECT GENERATOR COMPATIBILITY

User programmable features such as slew rate, phase angle rate of change and voltage rate of change allow the UPS to quickly sync to a genset during emergency back.Thanks to its robust IGBT rectifier it is enough to choose generator with power only 20% higher rated than the UPS.



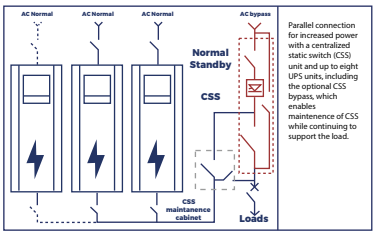
HIGH GRID ADAPTABILITY

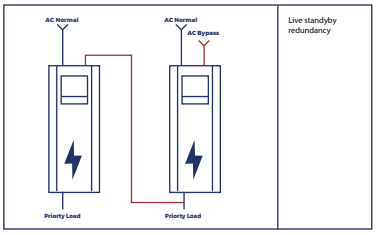
- 138-485 Vac wide input voltage range to minimize battery use: 305-485 Vac for 100% load; 108-305 Vac for 100%-40% load (derating linearly)
- 6 kV/5 kA lightning protection design, reducing lightning related failure rate.

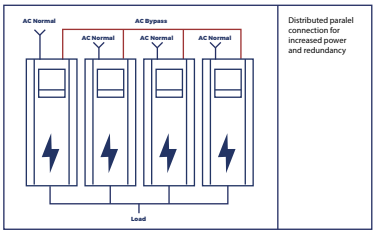


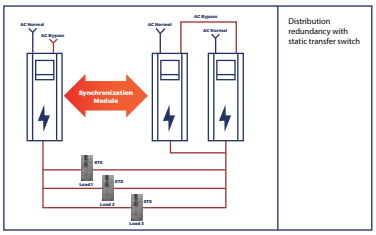
OUTPUT PERFORMANCE

High Output Power factor 1= Real Power (kW)
Real full power, according to IEC 62040: Output power factor of 1 (kW=kVA) rate provides 25% more active power compared to traditional UPS. Suitable for latest generation of servers (leading or unity power factor) without any reduction in active power from 1 leading to 1 lagging . Suitable also for leading power factor loads down to 0.9 without apparent power derating.









TOTAL HARMONIC DISTORTION (THD)

A distorted output voltage waveform affects the proper function of the load's equipment. The Multiline Series has very low output voltage THD, eve with connected 100% unbalanced or 100% non-linear loads.

TRANSIENT RESPONSE

Transient response is very fast due to to control algorithms which reduces the need to oversize the UPS for pulse load applications.

REDUNDANT PARALLEL FEATURES

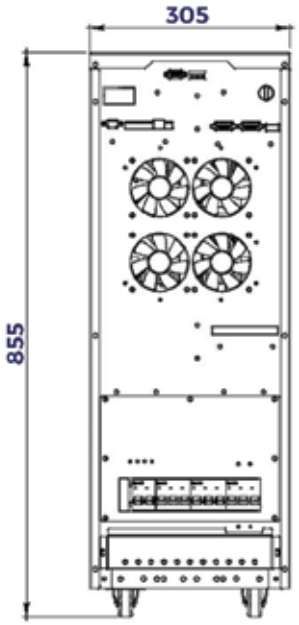
Thanks to unique control technology that can parallel UPS modules with true redundancy by eliminating any single point of failure, RPA provides a scalable paralleling technique that reduces operating footprint and increases system reliability by eliminating the need for external paralleling equipment and cabinets (centralized bypass and master control). One of the UPS modules in the system intelligently takes the leadership role, while the other UPS modules have access to all control parameters. If one UPS fails to operate, the load is automatically redistributed among the others. If the lead UPS fails to operate, then another UPS automatically takes on the leadership role.

Parallel Operation Features;

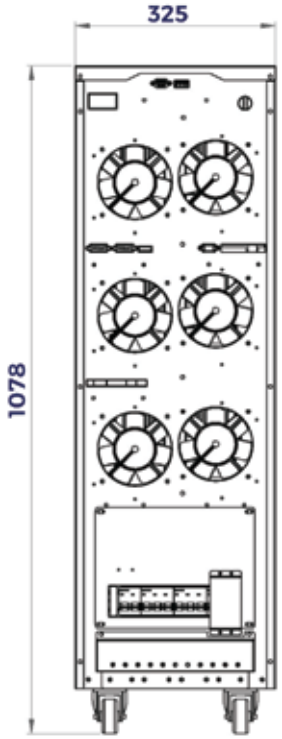
- Parallel connection with ring cable.
- Sequential Soft Start.
- Loop bus connection.
- Distributed Control Logic.
- Autosensing disconnected parallel cable.
- Redundant Communication.
- Easy power update without any interruption.
- Full synchronization of parallel units.
- Isolated parallel operation card.
- Static bypass for all units.
- No Single Points of Failure.

DETAILS

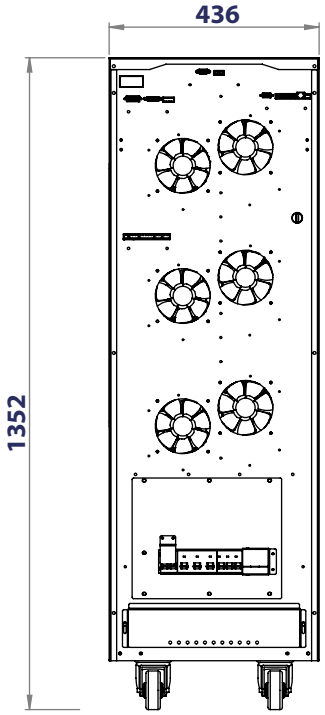
3.3.1 10 // 15 // 20 kVA U1 // U2 Model Size (mm)



3.3.2 30 kVA U1 - U2 // 40 kVA U2 Model Size (mm)

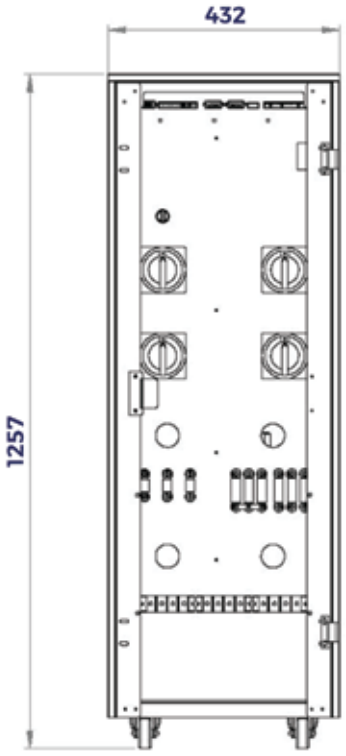


3.3.3 40 kVA U1 // 60 kVA U2 Model Size (mm)



3.4 60 kVA U1 Model Size (mm)

3.4 80 // 100 // 120 kVA U1//U2 Model Size (mm)



MULTILINE SERIES

MODEL	MTL 3310U1 MTL 3310U2	MTL 3315U1 MTL 3315U2	MTL 3320U1 MTL 3320U2	MTL 3330U1 MTL 3330U2	MTL 3340U1 MTL 3340U2	MTL 3360U1 MTL 3360U2	MTL 3380U1 MTL 3380U2	MTL 33100U1 MTL 33100U2	MTL 33120U1 MTL 33120U2
Nominal power (kVA)	10	15	20	30	40	60	80	100	120
General									
Technology	3-Level, Double conversation Online VFI-SS-111								
Waveform	Sinusoidal								
Architecture	Stand Alone or Optional Parallel								
Input									
Input Voltage	380, 400, 415 Vac 3Ph+N+PE								
Input Frequency	45-65 Hz								
Voltage Tolerance (%100 load)	(-20)% (+20)%								
Voltage Tolerance (%50 load)	(-36)% (+20)%								
Input Power Factor	≥0,99								
Input Current Harmonic	≤3%								
Output characteristics									
Output Voltage	380, 400, 415 Vac 3Ph+N+PE								
Output Voltage Tolerance	±1%								
Overall Efficiency* (AC-AC)	Up 96% (%50 load) // Up to %96 (%100 load)								
Ecomode Efficiency	Up to 98% (Optional)								
Nominal Output Frequency	50/ 60Hz +0,01 free run (Adjustable from LCD Panel) (Optional)								
Crest Factor	3:1								
Output Power Factor	1 (U1 model) / 0,9 (U2 model)								
THD of Output Voltage	≤2% (Linear load) & ≤5% (Non-linear load)								
Bypass characteristics									
Bypass	Built in Automatic and Maintenance Bypass								
Voltage Tolerance	±10%								
Transfer Time	0 ms								
Overload Capability	150% load 1 minute								
Batteries									
Battery Type	VRLA-AGM / (GEL - NiCd - Li-On Optional)								
Battery Test	Automatic or Manual								
Battery Charge Time	<6h-8h								
Communication and management									
LCD Display	Graphical lcd screen, Led bar status								
Communication Ports (Optional)	RS485, Genset, SNMP, GSM Modem, Relay Contacts, Input Contacts, Modbus and USB, Jbus, Profibus								
Battery Temperature Sensor Contact	Available								
Emergency Power Off (Epo)	Available								
Accessories (Optional)	Galvanic Isolation Transformer, Remote Monitoring Panel								
Charger Capacity									
U1 Model (max)	1-13A adjustable								
U2 Model (max)	1 -4 A adjustable (1-13A optional)					1 - 13A adjustable			
Higher capacity charge card option	Available								
Battery Quantity									
With Internal Battery (12V)	U1 & U2 20 - 32 pcs 7/9Ah	U1 & U2 32 pcs 7/9Ah	U1: 2x30 pcs 7/9Ah U2: 32 pcs 7/9Ah	U1 & U2 2x30 pcs 7/9Ah	U1: 2x30 pcs 18Ah U2: 2x30 pcs 7/9Ah	U1: N/A U2: 2x30 pcs 18Ah	N/A		
External Cabinet with 4A Charger Option	V1: 30 - 40 pcs (Default 30 pcs) U2 Model V2: 40 - 46 pcs (Default 40 pcs) U2 Model					N/A			
External Cabinet with 13A Charger Option	30 - 46 pcs (Default 30 pcs - Adjustable from LCD Panel)					40-46 pcs (Default 40 pcs - Adjustable from LCD Panel)			
Physical characteristics									
Dimensions H x W x D (mm)	855 x 305 x 735 (U1 & U2)		1078 x 325 x 895 (U1 30 kVA) 855 x 305 x 735 (U1&U2 20KVA - U2 30 kVA)		1330 420 x 1330 (U10 60 kVA) 1078 x 325 x 895 (U2 40 kVA) 1352 x 436 x 975 (U1 - 40 kVA & U2 60 kVA)		1257 x 432 x 918 (U1 & U2)		
Net Weight (kg)	48	51	65(U1)/54(U2)	71(U1)/65(U2)	90(U1)/71(U2)	115(U1)/95(U2)	125(U1)/115(U2)	135(U1)/125(U2)	140(U1)/130(U2)
Ambient conditions									
Operating temperature (°C)	0°C - 40°C								
StorageTempature	-15°C/+ 55°C								
Proposed Temp. to Extend Battery Life	20 - 25°C								
Relative Humidity (%)	< 95% not condensing								
Altittude	< 1500m								
Noise (at 1 meter)	<55 dBA		<58 dBA				<60 dBA		
Protection Class	IP20 (Higher IP Ratings are optional)								
Compliance									
Referance Product Standards	EN 62040-1 (Safety), EN 62040-2 (EMC), EN 62040-3 (Performance)								

*Depends on Input/Output voltage conditions and power

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