CHICAGO DIGITAL POWER

POWER FORM 365

UPO 33

online UPS

20Kva-160Kva

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20Kva-160Kva

IEMS

Integrated Energy Monitoring System (IEMS)

UPS online

UPO 33 PF365 series

Online Three Phase Double Conversion

The UPO33 series is an intelligent line of three phase UPS designed with control and 100% digital DSC/DSP micro processing monitoring technology. Which brings more reliability by maintaining constant and exact firmware updates as part of the support service structure. It's simplicity and practicality distinguishes the unit by reducing the quantity of physical components that usually are included in this generation UPS's creating an efficient, innovative and complete unit.

The UPO33 makes the difference:

- ***60,000,000,000 control operations per second,*** through the ***DSC (Digital Signal Controller) and DSP (Digital Signal Processor) control.***
- ***PF365 Monitoring software*** with communication flexibility via cellular, satellite, Zigbee, www and WiFi networks.
- Designed to operate in extreme temperature environments, thanks to its ***innovative components*** that won't allow more than 65° degree internal temperature on full load capacity in comparison with other manufacturers units.
- ***High protection capacity with strong*** surge protectors that defend the unit against severe storms.
- More protection with less components as a ***difference with other competitors units.***
- Programmable control via internet to ***adjust to your energy and environment needs.***
- Innovative ***smart battery charger*** that monitors the temperature, adjusts the current, thus reducing the number of charges and damage to the battery.
- ***Eco-friendly alternative*** with constant flow of energy through the bypass.
- ***ECO mode:*** power supply permanent monitoring through the efficient DCS processor that allows the unit to transfer to ECO/Bypass mode when the supply is perfectly stable. The ECO mode generates energy savings reaching a 97% UPS efficiency. If the power supply becomes unstable the UPS will protect the load with its powerful inverter.

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UPO33 PF365

Reliable, simple and safe

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Significant features of this series

Tailor made adjustments

It's versatile design allows a tailor made response for critical situations when the energy supply is unstable in frequency and voltage. For **extended backup time** requirements the charger is capable of powering several battery banks and adjust according to your needs.

Highly reliable system

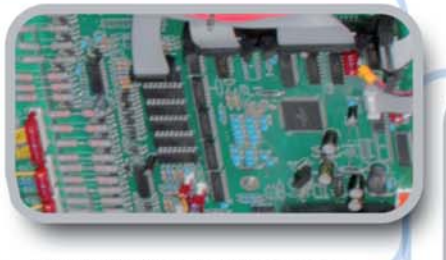
The UPO 33 PF365 series is a **preventive alternative rather than a reactive** one which turns it into a highly reliable system. Acting in timely manner to protect severe damage to the system through its multiple sensors that protect the power and control factors which alerts the DSC/DSP microprocessors any risk of damage (refer to figure 2).

To ensure a higher reliability the design is composed of an automatic **Thermo magnetic Breaker** (optional) that functions as a protection switch when the system is in manual bypass mode (refer to figure 2).

On other note, the integration of a **Dual Power Input Thermo magnetic Breaker** allows independent protection and functions as a way to disconnect the bypass input when the UPS unit has a dual input: one for the rectifier and another for the bypass (refer to figure 2).

The **Emergency Off Switch** allows the user the option to remotely disconnect and shut off the UPS in case of an emergency (refer to figure 3).

Additionally, most of the measuring and monitoring parameters of the UPS can be seen through the unit's **interactive display** and also from a connected PC or from anywhere in the world via an internet connection with the UPS's supported HTTP or SNMP protocols. (The internet connection is optional)



DSC/DSP microprocessor

Fig.1

Interactive Display

Fig.3

Thermo magnetic Breakers

Fig.2

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DSC/ DSP digital microprocessor technology

The DSC (Digital Signal Controller) technology combines the flexibility and the micro controller's peripherals with the extraordinary mathematics power of the ***DSP (Digital Signal Processor),*** which becomes the most powerful alternative today for high performance and digital control precision.

Remote Monitoring and Control

The software protections are 100% embedded on the micro processor, which computes 60 million operations per second. This guarantees an extraordinary speed of the security system and the UPS control through communication devices such as RS232, SNMP (optional) and the innovative ***cellular modem.***

Three phase Operating Monitoring Parameters

- ***Output Currents***
  - Inverter
  - Bypass
  - Batteries
- ***Power***
  - Active
  - Reactive
  - Apparent
- ***Voltage***
  - GND-Neutral
  - Redundant batteries
  - Fuses
  - Control sources with 4 independent sensors
  - SCR of the bypass system
  - Output
- ***Frequency***
  - Input
  - Bypass system
  - Output
- ***Temperature***
  - Transformer
  - IGBT and semiconductors
  - Internal DSC microprocessor

UPO 33 *PF365*

Monitoring via the UPS's interactive display, from a PC connected to the unit or from anywhere in the world.

Intelligent Energy Monitoring System

The monitoring system gathers more than ***230,000 pieces of data per second*** that are mathematically processed to obtain the TRUE RMS values and calculate the average values to measure among others: ***Maximum or minimum instant peaks, time intervals, frequencies and analyze derivatives or integrals.***

With this monitoring system it's possible to ***control all operating parameters of the UPS*** and take the right protection measures when any parameter steps outside the normal value.

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Integrated monitoring with software protections

The UPO33-PF365 system is comprised by high tech software that stores the last 400 alarm data occurred in the UPS time dated (with a hundredth of a second precision). Additionally, with every alarm data the UPS stores information that helps give a more accurate troubleshooting diagnostic.

	Indicators/ Software protections	
OPERATION	*Critical overload*	Load is above the safe limits so the UPS shuts down to protect itself.
	Fans	Possible fan failure.
	Self-testing	The self test detected a possible internal fault.
	DC Over voltage	High voltage caused possibly by the rectifier or a feedback from the inverter.
	DC Overflow	Indicates that the voltage feedback signals from the rectifier or batteries surpass the expected maximum levels.
	BYP Fuse, phase A B or C	Fault in one or several bypass fuses.
	Parallel Error	On parallel N+1 when the UPS is out of synchronism or the communication between microprocessors is lost the unit shuts down transferring the load to the other UPS. This can fault can be easily solved when the communication between units is restored.
BYPASS	*Bypass SCR failure*	Inverted phases in the bypass's power supply.
	Bypass sequence failure	Inverted phases in the power supply for the bypass.
	Intolerable Bypass	The voltage or voltages in the phases are outside the secure range to supply the load.
	Bypass mode	Indicates that the static switch of the unit is on Bypass mode.
	BYP frequency (high or low)	The frequency of the Bypass supply is over or under the normal limits.
	Bypass out of UL	The voltage of the Bypass supply is outside the +10%, -15% range.
BATTERIES	*Discharging batteries*	The batteries are discharging.
	Charger on	The charger is working with its normal voltages.
	Drained battery	Null battery capacity, they must be recharged.
	Check batteries	Possible battery fault.
	Low battery alert	The battery charge is low, the backup time is short.
TEMP	*Transformer temperature*	The transformers temperature is above the tolerable temperature.
	IGBT temperature	The temperature of the heat dissipater in the power IGBT's is above the tolerable temperature.
	SCR temperature	The temperature of the heat dissipater in the power SCR is above the tolerable temperature.

**The UPO33 PF365 gathers around of 230,000 pieces of data per second*

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Monitoring software functions

Geographical monitoring

This systems are capable of geographic visualization monitoring, pinpointing the specific places where the UPS units are located.

Interactive graphs

The Power Form 365 system offers a wide range of graphing possibilities to the user, by only graphing the selected parameters that can be chosen out of 165 monitoring variables of the 3 phases of the UPS.

Selective reports

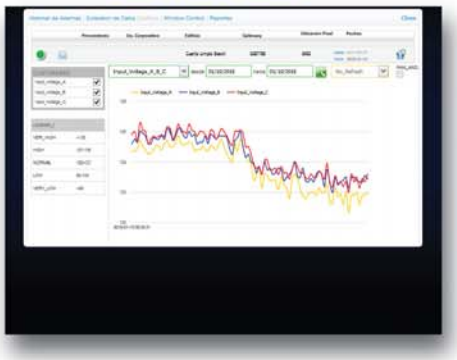
The user can select the desired parameters and values to be included on the report, which can be exported to .pdf, .xls and .txt formats.

Sent alarms

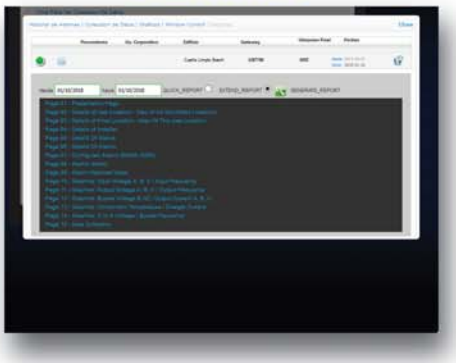
The Power Form 365 system has a system for sending alarms via E.mail and mobile devices in real time.

Geographical monitoring

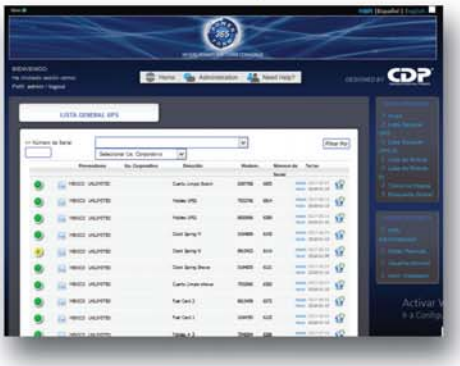
Interactive graphs



Selective reports



Selective reports



Sent alarms

Integrated Hardware Protected Monitoring

This protections can be configured by software and the UPS has a record that stores the last 400 time dated alarm notifications (with a hundredth of a second accuracy), as well as the storage of important information that help with troubleshooting.

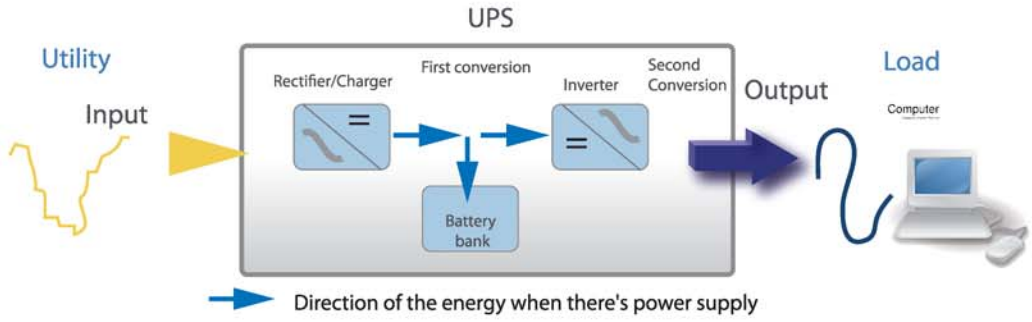
Indicators/ Hardware protections	
Input breaker	Input protection that disconnects the power supply for the rectifier and cuts all power for the UPS input.
Output breaker	UPS output protection that controls and cuts all power at the UPS output while being in normal mode. It prevents the UPS to be energized on manual bypass mode.
Battery breaker	Protection for internal or external batteries and a way to disconnect the battery supply to the unit.
Manual bypass breaker (automatic switch optional)	This device switches the load to the bypass system uninterrupted. It protects the system when the UPS is on manual bypass and optionally it can be controlled automatically motorized to guarantee more reliability.
Bypass input breaker (Optional for Dual input UPS)	Independent protection that disconnects the bypass input when it's a Dual Input UPS, one for the rectifier and other for the bypass.
Silver fuses to limit bypass current	Quick semiconductor protections for the three phases when the UPS is on bypass mode.
Silver fuses to limit DC current	Quick semiconductor protections for the DC power that supplies the inverter.
Supply fuses	Redundant control power supply fuses.
Fan fuses	Heat dissipater for the transformers, semiconductors and environment.
Remote Emergency Power Off (EPO) switch	Is a remote switch supplied by the user that allows the shutdown of the unit in case of emergency.
High power alarm	Indicates a situation in the UPS that must be attended.

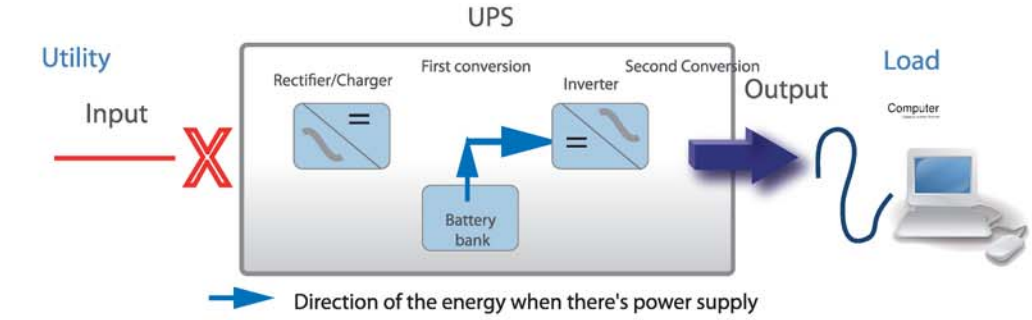
Operating mode

The UPO 33 supplies the critical load always through the inverter so that the load doesn't interacts with the utility supply.

The advantage is that the load receives a very reliable supply because the energy that the load uses is directly manufactured by the UPS.

The UPS's reliability depends on the technology, component quality, topology, laboratory testing and the simplicity in its design.





Display

1- Emergency Power Off (EPO)
2- On/Off button
3- Function Indicators:
Input - Bypass - Charge - Battery
Inverter - Output
4- Touch panel

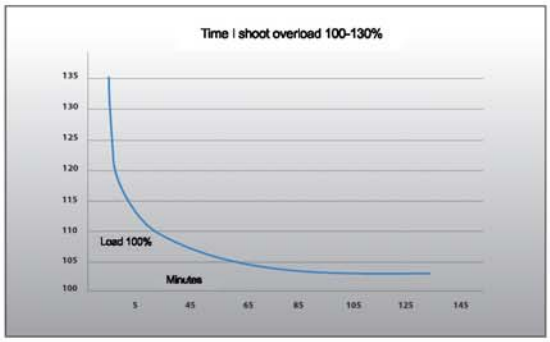
ELECTRONIC PROTECTIONS

Overload and short circuit

The microprocessor and the auxiliary sensor permanently monitor the internal currents as well as the external ones and depending the magnitude of the overload or short the protection interval through the electronic Trigger in the UPS modules are activated. The protection are comprised by 4 systems of electronic protection described as follows:

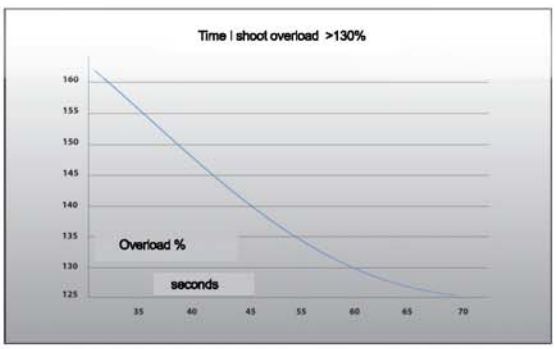
ELECTRONIC PROTECTION FOR MODERATE OVERLOADS BETWEEN 100 AND 130%

Depending on the magnitude of the overload the microprocessor activates an internal timer that shuts down the UPS inverter between 10 minutes and 2.5 hours. The system is designed to timely recover after the overload passes and the temperature of the components is normalized.



ELECTRONIC PROTECTION FOR OVERLOADS HIGHER THAN 130%

Depending on the magnitude of the overload, the microprocessor triggers an internal timer that shuts down the UPS inverter between 35 to 70 seconds. The system is designed to automatically recover after the overload passes and the temperature of the components is normalized.



ULTRAFAST ELECTRONIC PROTECTION FOR OVERLOADS HIGHER THAN 160%

The response speed of this protection is around 130 million of a second in which the inverter shuts down quickly in order to protect the unit from a imminent short or an extremely high current. As well as the previous protections the UPS recovers automatically after the problem gets fixed.

ULTRAFAST ELECTRONIC PROTECTION FOR OVERLOADS HIGHER THAN 200%

The response speed of this protection is around 3 million of a second in which the inverter shuts down to protect it from a short or an extremely high current. Because the severity of the presence of such a high current the protection sensors do not automatically restore the unit so in this case it is required a manual start up.

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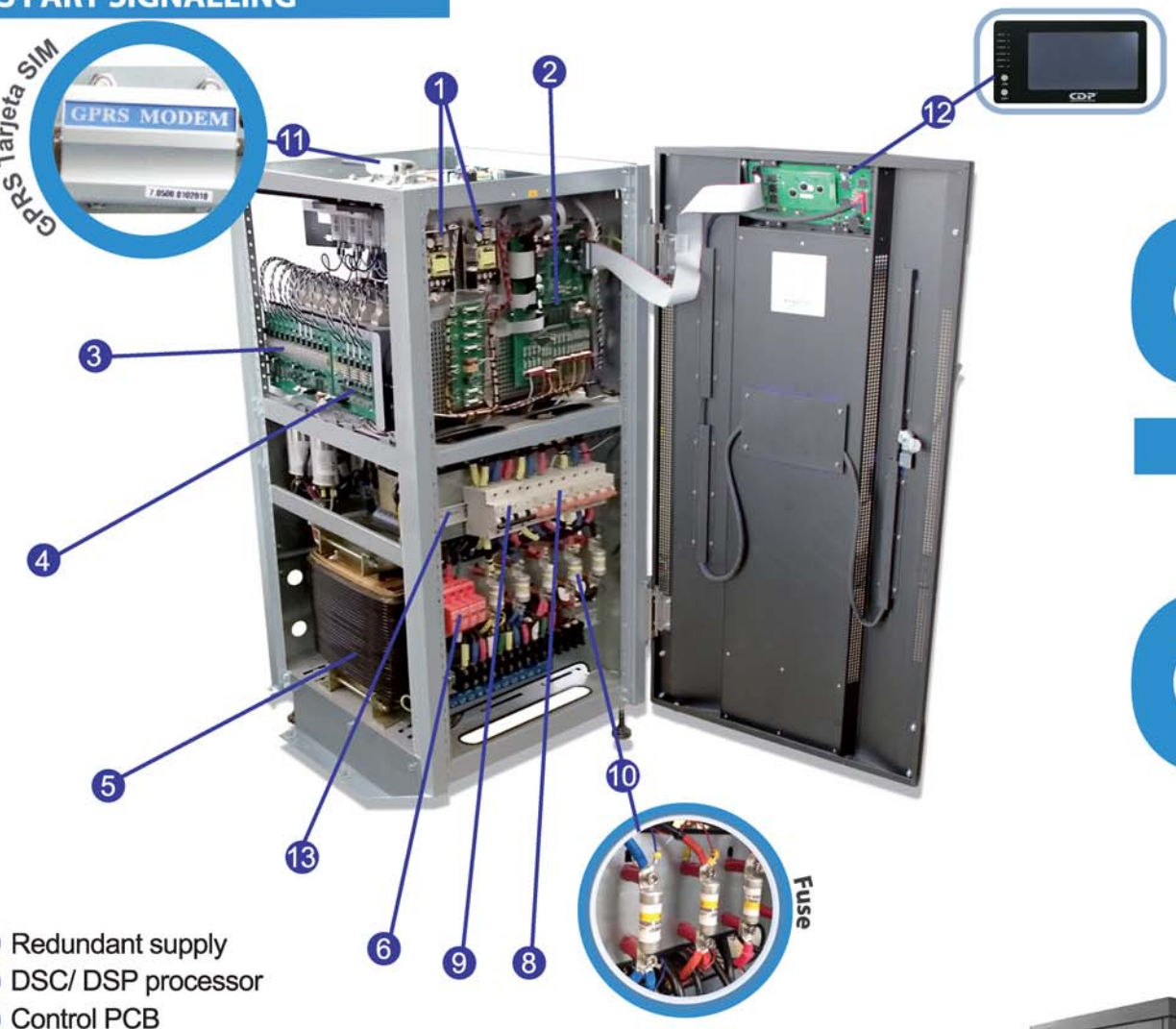
UPS PART SIGNALLING



UPO

1. Redundant supply
2. DSC/ DSP processor
3. Control PCB
4. Static Bypass PCB
5. Insolating transformer
6. Surge protection and TVSS transients protection
7. Cooling fans
8. Protection breakers
9. Rectifier input breaker
10. Silver fuses with instant connection
11. Cellular modem for network monitoring
12. Interactive display with working diagram
13. Slot for Dual Input Breaker (optional)

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Model	UPO33-20	UPO33-30	UPO33-40	UPO33-60	UPO33-80	UPO33-100	UPO33-120	UPO33-160
Capacity	18kW	27kW*	36kW	54kW*	72kW	90kW*	108kW	144kW
AC/DC efficiency	Over 92%							
ECO mode efficiency	Over 97%							
Transfer time	0 ms without cuts							
Technology	True online double conversion with IGBT inverter							
Input								
Voltage	208 phase to phase +/- 25% (480 and other voltages on request)							
Connection	Three phase 5 wires (3 phases + neutral + ground)							
Frequency	60Hz +/- 10%							
Filters	EMI, RFI							
Dual Input	Optional							
Phases	Immune to phase rotation							
Output								
Voltage	208 phase to phase +/- 1% balanced loads +/-10% (480 and other voltages on request)							
Frequency	60Hz +/- 0,10%							
Wave form	Sine wave through high frequency PWM modulation							
Connection	Three phase 5 wire (3 phases + neutral+ ground)							
THD Voltage Harmonic Distortion	<2% linear load <5% non linear load							
Crest factor	3:1							
Power factor	0,9*							
Overload recovery	Auto transfer to the UPS							
Inverter	IGBT							
Isolating transformer	Inverter							
Voltage regulation	+/- 1% balanced load +/5 unbalanced load							
Overload capacity	125% for 12 min 150% for 1 min							
Batteries								
Type	Sealed, free maintenance , VRLA (Valve Regulated Lead Acid) technology							
Backup time with full load	4 min	7 min	5 min	5 min	5 min	4 min	7 min	5 min
Typical backup time	4 hours at 90%							
Battery management	Self-test, transfer point, battery and adjustable alarm							
Battery protection	Breaker protection. Set to turn off when the battery is low. Battery test. Smart charger.							
Charger	Soft start at full load. Current limiter for charging batteries.							
Protections								
Hardware protections	Input and output breaker, batteries, bypass. DC fuses, fan fuses with temperature sensor , ON/OFF alarm switch							
Bypass	Solid state breaker, manual breaker for maintenance. External bypass optional							
Emergency switch	Local and remote EPO							
Monitoring and communications								
Frontal panel	LCD Display with 4 rows and 20 columns to analyze parameters . Touchscreen optional							
Alarms	Audible and visual alarms for abnormal conditions, self-diagnosis							
Communications	RS232 serial port SNMP-RJ45 Modbus for remote monitoring (optional). GPRS module for remote monitoring via cellular network							
Environment								
Temperature	De 0° a 40° C							
Humidity	0% to 95% non condensation							
Noise	<60 dB @ 1,5 mts							
BTU Generated	7506	11260	15013	22519	27296	34120	40944	54592
Operating environment								
UPS (LxAxP) mm	540x1125x622	540x1125x622	664x1548x865	664x1548x865	1203x1900x1023	1203x1900x1023	1203x1900x1023	1652x1900x1235
Battery bank (LxAxP) mm	270x1122x774	270x1122x774	432x1548x900	432x1548x900	830x1900x988	830x1900x988	830x1900x988	830x1900x988
Weight UPS (Kg)	230 Kg	278 Kg	417.5 Kg	510 Kg	1,089 Kg	1,136 Kg	1,319 Kg	1,960 Kg
Battery bank Weight (Kg)	155 Kg	287.5 Kg	321 Kg	460 Kg	690 Kg	710 Kg	1010 Kg	1046 Kg

* Calculated at room < / = 30 ° C / 86 ° F Efficiency

Product specifications are subject to change without notice

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