

UPO33 PF365 UPS online

Three-phase double conversion online



CHARACTERISTICS

- **60,000,000 operations controlled** per second through Control DSC (Digital Signal Controller) and DSP (Digital Signal Processor).
- **PF365 monitoring software** with communication flexibility via cellular, satellite, Zigbee, www and WiFi Networks networks.
- Designed to operate under environments with extreme temperatures, thanks to its **innovative components** whose internal temperature will not exceed 65 ° C at the maximum of its capacity unlike equipment from other manufacturers.
- **High advanced protection capacity** through surge suppressors that protect the UPS from lightning and lightning.
- Greater protection based on **fewer components monitored** by software and hardware compared to other UPS brands.
- **It adjusts to your needs** for energy supply and the environment in a programmable and controlled way via internet.
- Innovation in **intelligent battery charger** that monitors its temperature and adjusts the current to reduce the number of recharges and battery damage.
- **Ecological alternative** through the constant energy flow of the Bypass.
- **ECO mode:** permanent monitoring of the power supply through efficient processor (DCS), allows transfer to ECO / Bypass mode when the electricity is perfectly stable. It saves energy because with **the ECO mode you get up to 97% efficiency in the UPS.**

If the power supply shows instabilities, the UPS will protect the normally connected load through its powerful inverter.



The UPO33 series is an intelligent three-phase UPS series designed with 100% microprocessed control and monitoring technology with digital DSC / DSP, which provides greater reliability by maintaining timely and constant updates of the firmware as part of the support in the service structure. Likewise, it is distinguished by its simplicity and practicality by reducing the number of physical components commonly owned by the UPS of this generation, **making it an integral, efficient and innovative team in its range.**

Significant aspects in our equipment

► **Tailored adjustments**

The versatility of its design allows customized adjustments in critical situations where the power is very poor in the voltage and frequency ranges. For **extended backup time requirements**, the charger is capable of powering several battery banks and is adjustable according to needs.

► **Highly Reliable System**

The UPO 33 PF365 series is a system of high reliability to be a **preventive and non-reactive alternative**; since it prevents in a timely manner severe damage in the whole system through its multiple sensors that protect the control and power factors informing the DSC / DSP microprocessor in case of risk [see figure 1].

To guarantee greater reliability, its design consists of a **Motorized Thermomagnetic Breaker** (optional) that serves as a protection switch to the system when the UPS is in manual bypass [see figure 2].



On the other hand, the integration of a **Thermomagnetic Input Breaker with Dual Power**, It allows to protect independently and serves as a means of disconnection for the bypass input when the UPS is double input, one for the rectifier and one for the bypass. (see figure 2). Through the **Emergency Shutdown Switch**, It is possible to have a remote disconnection means supplied by the user that allows remote shutdown of the UPS in emergency situations. [See figure 3].

Additionally, most of the measurement and monitoring parameters of the UPS can be seen on the **interactive display** of the unit, from a computer connected to the UPS or from anywhere in the world if you have the Internet connection that the UPS supports. means of HTTP or SNMP protocols (Internet connection is optional).

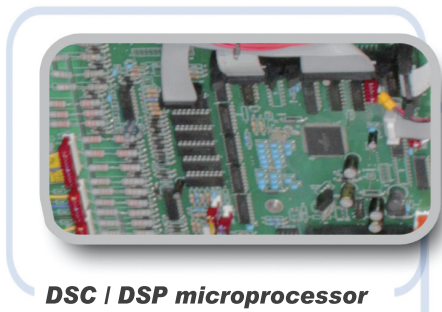


Figure 1



Figure 3

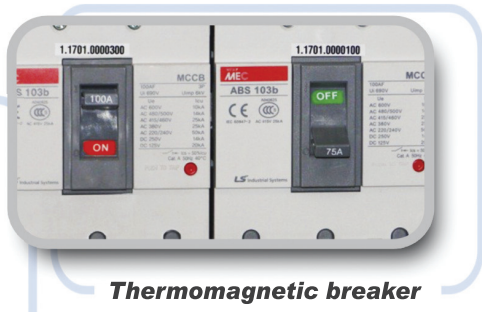


Figure 2

Digital DSC / DSP microprocessor technology

DSC (Digital Signal Controller) technology combines the flexibility and peripherals of micro controllers with the extraordinary mathematical power of the **DSP (Digital Signal Processor)**, which is the most powerful alternative that exists today for precision digital control and high performance.

Monitoring and Remote Control

The **software protections** are implemented 100% in the microprocessor program, which is executed at a speed of 60 million instructions per second, which guarantees an extraordinary speed of the UPS security and control system through the RS232 communication devices, , SNMP (optional) and the innovation of a **cellular modem**.



● **Output current**

- Investor.
- Bypass.
- Batteries.

● **Power**

- Active.
- Reactive
- Apparent

● **Voltage**

- Neutral earth.
- Batteries redundantly.
- Fuses.
- Control sources with 4 independent sensors.
- SCR of the Bypass system.
- Departures

● **Frequency**

- Input
- Bypass System
- Exit

● **Temperature**

- Transformers
- IGBT and semiconductors
- Internal microprocessor DSC type

UPO 33 PF365

Intelligent Energy Monitoring System



The **monitoring system** collects more than **230,000 data per second**; which are mathematically processed to calculate TRUE RMS type values and to calculate average values to measure: **maximum or minimum instantaneous peaks, time intervals, frequencies, analyze derivatives or integrals**, among others.

Through the monitoring system; it is possible to **control all the operating parameters of the UPS** and execute protection measures when any parameter exceeds normal operating values.

Monitoring carried out through the interactive display of the UPS, from a computer connected to the unit or from anywhere in the world

Integral Monitoring with Software Protections

The **UPO33 PF 365** System is made up of an advanced technology software that performs a historical compilation that stores the last 400 alarms to the UPS with the time and date of occurrence [accuracy close to one hundredth of a second]. Additionally, with each alarm, the UPS stores additional information that helps in the diagnosis of problems.

Indicators / Software protections		
OPERATION	▶ Critical overload	Load greater than the safety limits of the unit and therefore the UPS It has been turned off to protect itself.
	▶ Fans	Possible failure in the fans that requires attention
	▶ Self-diagnosis	The self-diagnosis system has detected a possible internal failure and requires attention
	▶ DC overvoltage	High voltage possibly caused by the rectifier or by a reverse feedback from the inverter
	▶ Overflow DC	Indicates that the voltage feedback signals from the rectifier or from the batteries have past the maximum levels expected
	▶ Phase A, B or C bypass fuse	Indicators of failure in one or more of the bypass fuses
	▶ Parallax Failure	Applies for UPS assemblies in parallel redundancy. When the UPS goes out synchronism or the microprocessors lose communication between them, it switches off leaving the loads connected to the other UPS. This failure recovers quickly as soon as Restores communication between both UPS
BYPASS	▶ Fault SCR Bypass	Inverted sequence in the three-phase network that feeds the bypass
	▶ Bypass sequence failure	The three-phase network sequence that is feeding the bypass in the UPS has the inverted sequence
	▶ Intolerable Bypass	The voltage or bypass sequence has voltages out of range and are not insurance to feed the loads
	▶ UPS in Bypass	Indicates that the static switch of the UPS is in Bypass mode
	▶ BYP frequency (high or low)	The frequency in the Bypass is above or below normal limits
	▶ Bypass Out of UL	The voltage in the Bypass is outside the range of + 10%, - 15%
BATTERIES	▶ Batteries in unloading	It reports that the batteries are being discharged
	▶ Charger on	Charger available and operating normally at the specified voltages
	▶ Exhausted Battery	Null battery capacity, therefore they must be recharged
	▶ Check Batteries	Possible failure in batteries that requires attention
	▶ Low Battery Alert	The energy stored in the batteries is very low and the UPS has a short time available autonomy.
TEMP	▶ Temperature Trafos	The temperature of the transformer is above the tolerable temperature
	▶ IGBTs temperature	The temperature of the heatsink of the power semiconductors IGBT's on top of the tolerable temperature
	▶ SCRs temperature	The temperature of the SCR's power semiconductor heatsink is above the tolerable temperature

* UPO33 PF 365 collects around 230,000 data per second

Monitoring Software Functions



Geographic Monitoring

Through this system it is possible to carry out the monitoring through a geographic visualization locating the specific points of the regions where the UPS is located.

Emission of interactive graphics

The Power Form 365 system offers the user the possibility to graph only those parameters of interest; and in this way to be able to graphically visualize the values of eligible parameters from among 165 samplings to be monitored in the 3 phases of the UPS.

Issuance of selective reports

The elaboration of reports is made through the choice of those parameters whose values are of interest. The emission of reports is exportable towards other type formats; .pdf, .xls and .txt.

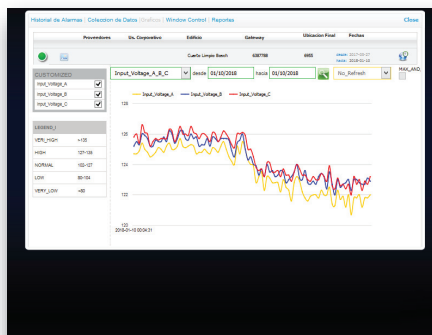
Sent alarms

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

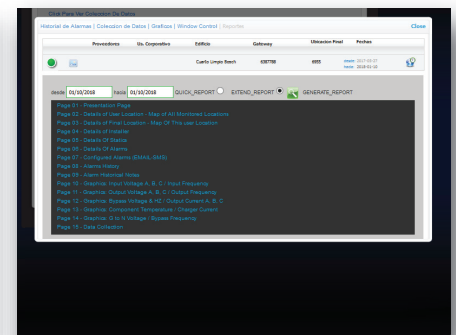
Geographic Monitoring



Interactive graphics



Selective reports



Selective reports

Sent alarms

Comprehensive monitoring with hardware protections

These protections are configurable by Software and the UPS has a history that stores the last 400 alarms to the UPS, with the time and date of occurrence (with accuracy close to one hundredth of a second), additionally, with each alarm, the UPS stores information complementary that helps in the tasks of diagnosis of problems.

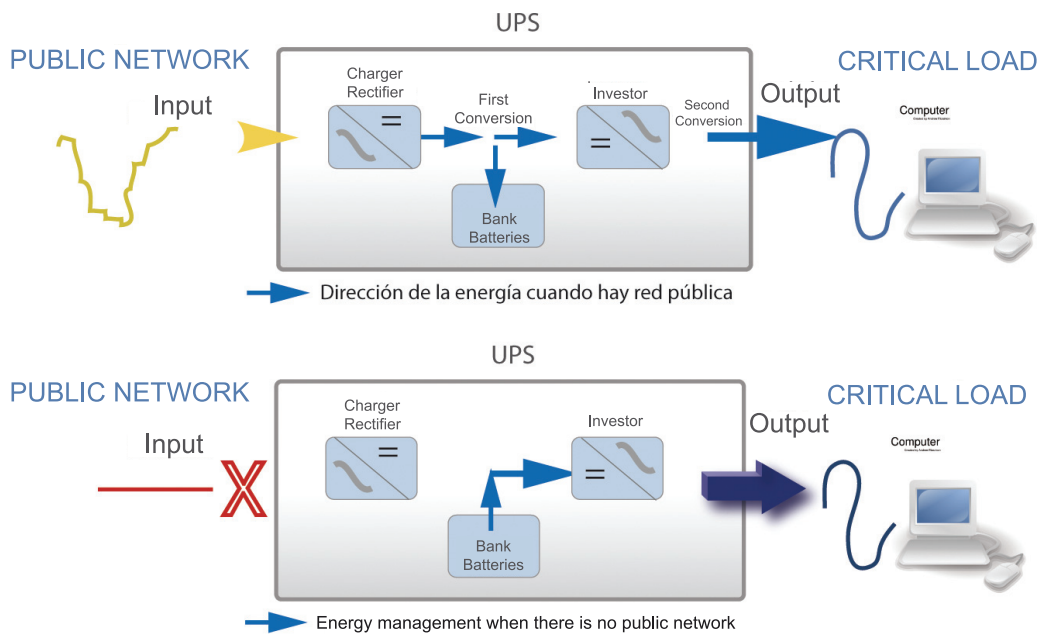
Indicators / Hardware Protections	
▶ Thermomagnetic breaker of entry.	Inlet protection and means of disconnection of the electric fluid for The Rectifier that allows de-energizing the UPS input completely.
▶ Thermomagnetic breaker of departure	UPS output protection and control to de-energize the UPS output completely in normal mode. Prevents the UPS from being energized being in manual bypass mode.
▶ Thermomagnetic breaker of batteries	Protection for internal or external batteries and disconnection means for this energy source.
▶ Thermomagnetic breaker manual bypass (optional motorized automatic)	It is a switch to pass the load uninterrupted to the system bypass Serves as system protection when the UPS is in bypass manual, optionally supplied with motorized controls that Automatically control to ensure greater reliability.
▶ Thermomagnetic breaker bypass input (optional, for UPS type DUAL INPUT)	Independent protection and disconnection means for the entrance of the bypass when the UPS is double input, one for the rectifier and the another for the bypass.
▶ Silver fuses fast action limiters of current for bypass	Fast protections of semiconductors for the 3 phases when the UPS is in bypass mode.
▶ Silver fuses fast action limiters of current for DC	Fast protections of semiconductors for the DC that feeds the investor.
▶ Fuses for sources	Fuses for redundant control power supplies
▶ Fuses for fans	Fuses for the protection of the heat dissipation fans of transformers, semiconductors and environment.
▶ Switch Off Emergency remote (EPO)	It is a means of local and / or remote disconnection provided by the user which allows the machine to be turned off remotely, commonly in situations of emergency.
▶ Sound alarm High power	It indicates that there is something new in the UPS that must be attended.

▶ Operating mode

The UPO33 always supplies power to the load through the inverter in such a way that the load does not interact with the public network.

The advantage is that it ensures that the load has a very reliable power, as the power supplied to the load is "manufactured" directly by the UPS.

The reliability of the UPS depends on the technology, quality of the materials, form of assembly, laboratory tests and simplicity of design.



▶ Display (indicators)



- 1- Emergency Shutdown (EPO)
- 2- On / Off button
- 3- Function indicators:
Input - Bypass - Charge - Battery - Inverter - Output
- 4- Panel Touch

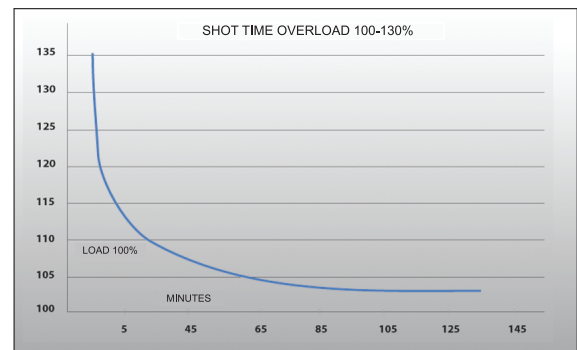
ELECTRONIC PROTECTIONS

▶ **Overload and short circuit**

The microprocessor and auxiliary sensors permanently monitor the internal and output currents of the UPS and according to the magnitude of the overload or Short Circuit, protection times or electronic triggering of the modules that make up the UPS are activated. They have 4 electronic protection systems that act as described below:

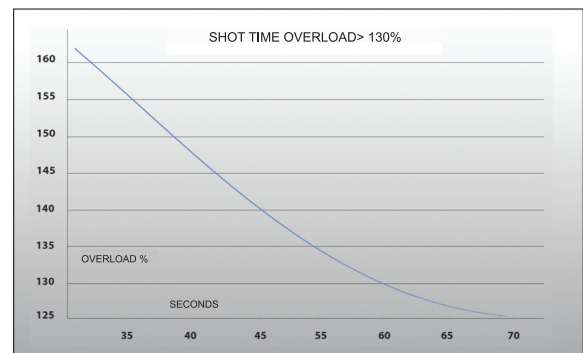
Electronic protection for overloads Moderate between 110 100 and 130%

Depending on the magnitude of the overload, the microprocessor activates an internal timer that shuts off the inverter of the UPS with a duration that can be between 10 minutes and two and a half hours depending on the magnitude of the overload. The system is designed to recover automatically after the overload is solved in the circuit and after a reasonable period of time that allows the thermal recovery of the components of the UPS



Electronic protection for overloads Rates higher than 130%

Depending on the magnitude of the overload, the microprocessor activates an internal timer that shuts off the inverter of the UPS with a duration that can be between 35 seconds and 70 seconds, depending on the magnitude of the overload. The system is designed to recover automatically after the overload is solved in the circuit and after a prudential time that allows the thermal recovery of the components of the UPS.



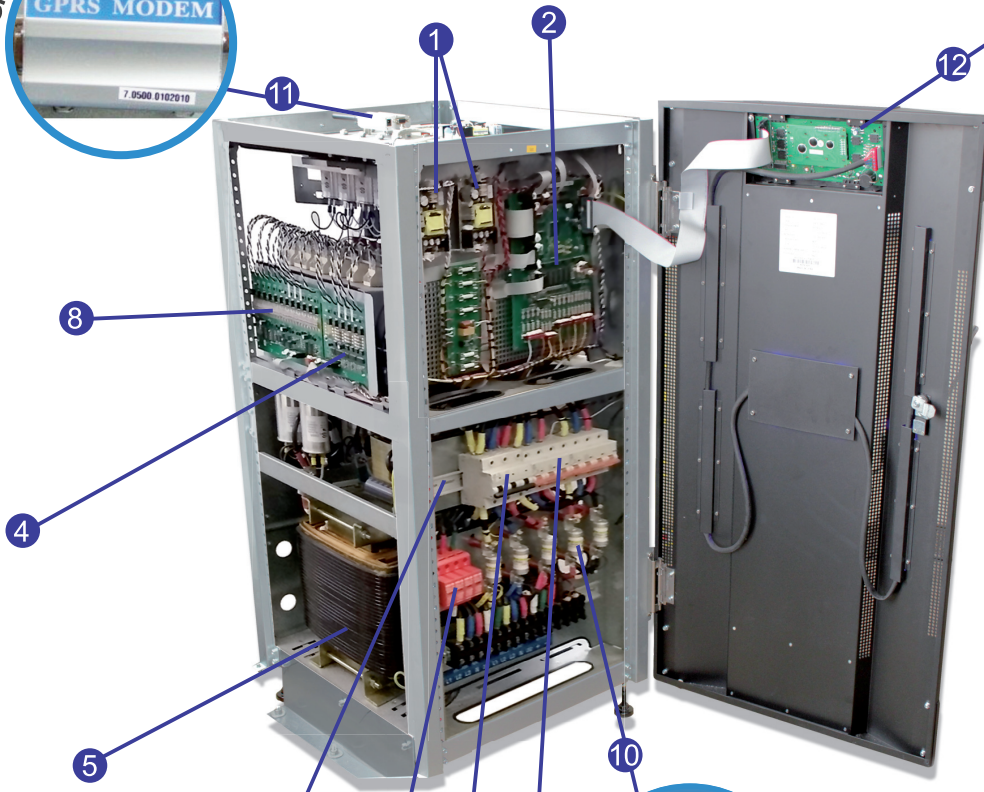
Ultra-fast electronic protection for overloads of over 160%

This protection with a response speed of about 130 millionths of a second, shuts off the inverter very fast to protect it from an imminent short circuit or an extremely high current. As with the above protections, the UPS recovers to normal operation automatically after the cause of the problem in the electrical circuit disappears.

Ultra-fast electronic protection for overloads exceeding 200%

This protection with a response speed of about 3 millionths of a second, instantly shuts off the inverter to protect it from a short circuit or an extremely high current. Given the seriousness of the presence of such a high current in the circuits, this protection sensor does not recover automatically and requires a manual ignition on the part of the staff that serves the UPS.

UPS PARTS SIGNALING



- 1 Redundant source
- 2 DSC / DSP processor
- 3 Protection breakers
- 4 Rectifier card - inverter
- 5 Isolation transformer
- 6 Suppressor of spikes and transients TVSS
- 7 Cooling fans
- 8 Static bypass controller card
- 9 Input and rectifier breakers
- 10 Silver fuses with instant connection
- 11 Cellular modem for network monitoring
- 12 Interactive display with operation diagram
- 13 Space for Dual Input Breaker (optional)



Modelo	UPO33-80
Capacity	72kW
AC / DC efficiency	More than 92%
Efficiency ECO Mode	More than 97%
Transfer	0ms without cut
Design technology	True online (double conversion) with investor based on IGBT's
Input	
Voltage	208 line to line +/- 25% (480 or other voltages per request)
Connection	Three-phase three-wire (3 phases + neutral + ground)
Frequency	60Hz +/- 10%
Filters	EMI, RFI
Dual Input	Optional
Phases	Immune to phase rotation
Output	
Voltage	208 line to line +/- 1% with adjustable balanced load (480 or other voltages per request)
Frequency	60Hz +/- 0,10%
Wave type	Sinusoidal wave generated by inverter under high frequency PWM modulation logic
Connection	Three-phase three-wire (3 phases + neutral + ground)
THD Voltage Harmonic Distortion	<2% for linear load <5% for non-linear load
Crest factor	3:1
Power factor	0,9*
Overload recovery	Self-transfer to UPS
Investor	IGBT
Isolation transformer	Investor
Voltage regulation	+/- 1% for balanced load and +/- 5% for unbalanced load
Overload capacity	125% for 12 minutes 150% for 1 minute
Batteries	
Type	Sealed, maintenance free. VRLA Technology (Valve Regulated Lead Acid)
Autonomy at 80% of the load	7 min
Full load autonomy	5 min
Typical recharge time	4 hours 90%
Battery management	Self-test, transfer point, battery and adjustable alarm
Protection of batteries	Protection by breaker. Function 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	Thermomagnetic breaker for the input, output, batteries, bypass. Fast-acting fuses in DC, fans, redundant source, temperature sensors, on-off switch, audible alarms
Bypass	Static solid state, automatic and manual with uninterrupted operation for maintenance tasks External bypass (optional)
Emergency switch	EPO local and / or remote
Monitoring and communications	
Front panel	LCD display of 4 rows to 20 columns for reading electrical parameters. Touchscreen Mimic LED's
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
Operating environment	
Temperature	De 0° a 40° C
RH	From 0% to 95% without condensation
Noise	<60 dB @ 1,5 meters away
BTU Generated	27296
Physical	
UPS (LxAxP) mm	1203x1900x1023
Battery cabinet (LxAxP) mm	830x1900x988
Weight UPS (Kg)	1,089 Kg
Weight battery cabinet with batteries (Kg)	690 Kg

* Efficiency calculated at room temperature <= at 30 ° C / 86 ° F ** The backup time of the UPS may vary depending on the ambient temperature (calculated from 20 to 23 ° C)