

HELIOR

DC UPS (12V/30W) SPECIFICATION

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HELIOR UNINTERRUPTIBLE POWER SUPPLIES SPECIFICATION

Revision Summary

Rev	Date	Change List	Prepared by	Checked by	Approved by
A	2007-6-8	First Release	Donald	Larry Luo	
B	2007-9-5	Add 6.3 EMS report	Donald		

HELIOR UNINTERRUPTIBLE POWER SUPPLIES SPECIFICATION

1.0 Scope & Modes of Operation

1.1 Scope

This specification covers the requirements & quality assurance provisions for uninterruptible power supplies (UPS).

The UPS consists of battery charger, battery, and some of the controllers. The term UPS shall denote the hardware and firmware associated to provide high quality DC power for VoIP device and other critical loads.

The UPS automatically maintains continuity of electrical power within tolerances and time frames specified in this product specification.

1.2 Modes of Operation

In normal operation incoming AC power is fed to steady DC output via a charger, without discharging the battery. The battery can be charged from the utility whenever the UPS is ON or OFF.

In the event of a utility outage, the output is supplied directly from the battery until which is discharged or the utility returns, whichever occurs first.

2.0 Electrical Requirements

2.1 Input Summary Chart

Item	120V Units
Nominal input voltage	120V AC
Acceptable Input Voltage Range	85-270Vac
Acceptable Input frequency Range	45Hz~65Hz
Cold Start (0 to 100% load)	Yes
Input Protection	2Amps Fuse soldered on PCB
AC Input	IEC inlet

2.2 Output Summary Chart

Item	120V Units
Output power (max)	30W
Normal output power	26.4W(12V*2.2Amps)
Normal Voltage	12VDC
Output Voltage Range	10.5V(-0.2, +0.25V) to 13.8V(-0.35, +0.15)
Output Transfer Time	0 millisecond
Line Mode Efficiency	> 80%
Output Protection	Replaceable 10Ampes fuse (with fuse holder soldered on PCB)
DC Output	Connector (As 3.5 defined)

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3.3 Battery Summary Chart

Item	120V ac Units
Type/Rating	12V/9Ah*1pc
Battery manufacture	Ritar
Back-up Time (15.8W)	4hours 30 minutes
Battery Replacement	Easy end-user battery replacement; battery door with clearly carved replacement instructions.
Battery-low Alarm Level	11.5V ± 0.5V
Discharge Prevention	10.7V ± 0.5V
Overcharge Protection	>14.5V ± 0.25V charger stop <13.6V ± 0.25V charger recover
■ Charger	
Rated Voltage Level	13.7V ± 0.25V
Recharge Time (internal battery)	4 hours to 90% without load after complete discharge
Charge Current	2.5A when battery voltage low and no load
Cold Start Voltage	11.5V ± 0.5V
Battery Leakage	100µA maximum, 60uA typical
Hot Swappable Battery	Yes

3.4 Controls and Status Indicators

3.4.1 Status Indicators

ITEM	3-LEDs
- AC mode	Green LED Lighting
- Backup mode	Yellow LED Lighting
- Battery low	Yellow LED Flashing
- Battery replace	Red LED Flashing
- Battery missing	Red LED Lighting
- Fault	Red LED Lighting
- Battery self-test	Green LED flashing

3.4.2 Audible Alarm

ITEM	Buzzer
- Backup mode	Sounding every 5 seconds
- Battery low	Sounding every 1 second
- Battery replace	Sounding every 2 seconds
- Battery missing	Continuous sounding
- Fault	Continuous sounding

3.4.3 Mute function

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ITEM	Silence switch
- Switch on	Buzzer disable
- Switch off	Buzzer enable

3.4.4 Test mode definition

UPS can automatically proceed the battery test by itself every 30 days.

3.5 Communication Signals

- Pin 1 (Vo+) : +Voltage output
- Pin 2 (Vo-) : -Voltage output
- Pin 3 (SIG RTN) : Signal Return
- Pin 4 (ON BATT) : Low when operating from utility line. Open when operating from battery.
- Pin 5 (REPLACE BATT) : Low when battery is charged. Open when battery fails the Self Test.
- Pin 6 (BATT MISSING) : Low when battery is present. Open when battery is missing.
- Pin 7 (LOW BATT) : Low when battery is near full charge capacity. Open when operating from a battery with < 20% capacity.

3.6 Cold Start

Use the cold start feature to apply power to the UPS and connected equipment when the UPS is off and there is no utility power. The battery must be charged for the cold start feature to work. To utilize the cold start feature, use a small pointed object to press the recessed cold start button.

1. MECHANICAL

4.1 Enclosure

To allow wall mounted

4.2 Physical, Weight and Size

Item	120Vac Units
- Weight of unit	3.5kg
- Depth * Width * Height of unit	240*180*80
- Depth * Width * Height of brown box (Dimension for scored line)	510.6*260.8*373.3

4.3 Material (Case and Packing):

Case:

Item	REQUIREMENT
- Color	Gray ppt32
- Enclosure Quality	ABS V0

Other: Printed instruction manual per customer specification

4.4 Packing and Shipping

Packing shall be adequate to provide protection for the UPS against damage, breakage or loss during shipment and shall be of a type not destroyed by opening. The packing design shall also be capable of withstanding multiple shipments without breaking.

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4.4.1 4.4.1 Vibration Test (Packed unit)

The unit should be capable of withstanding the PEC Standard Vibration test (Referring the Standard of Mechanical Design).

4.4.2 Drop Test (Packed unit)

The unit should be capable of withstanding the ISTA Procedure 1A Drop test (Referring to ISTA-1A).

4.5 Cooling

The UPS works by nature cooling without any air intakes or fan.

5 ENVIRONMENTAL REQUIREMENTS

The UPS shall be capable of withstanding the following environmental conditions:

5.1 Operating environment

Item	
- Operating temperature	0°C to 40°C
- Operating humidity	0% to 90%
- Operating Elevation	0 to 3000m

5.2 Storage environment

Item	
- Storage temperature	-15°C to 45°C
- Storage Elevation	0 to 15,000 m

5.3 Noise Level

Not to exceed 40dBA in AC mode, measured 1 meter from any surface.

6 SAFETY & EMI STANDARD

6.1 Safety

- 120Vac	UL (Standard: UL60950)
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6.2 EMC

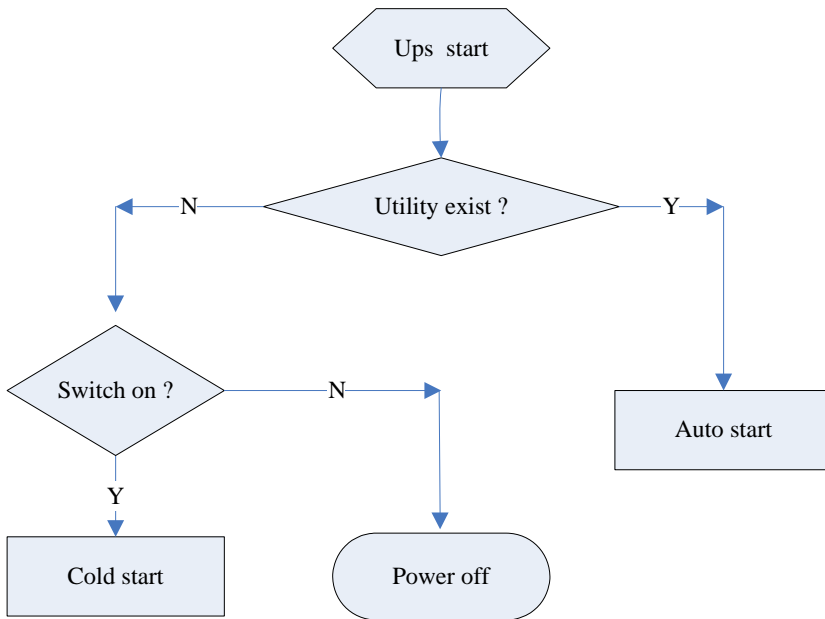
- 120Vac	FCC Part 15, EN55022 Class B
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7 FIRMWARE SPEC

7.1 Cold start

Cold start switch is used to cold start and turn off unit when there is no utility power. And the switch is invalidation when utility power is Ok (including line mode and battery self-test mode). Press cold start switch for 2~3 seconds to utilize this function.

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7.2 Battery self-test

Battery self-test is used to detect the battery status, it include battery missing detect and battery replace detect.

Battery missing detect logic:

During the battery missing detect, the charging floating voltage will drop to 11V. If battery voltage drops to 11.5V within 50 millisecond, UPS detects it as battery missing. Battery missing detect frequency is 1 time every 20 seconds.

Battery replace detect logic:

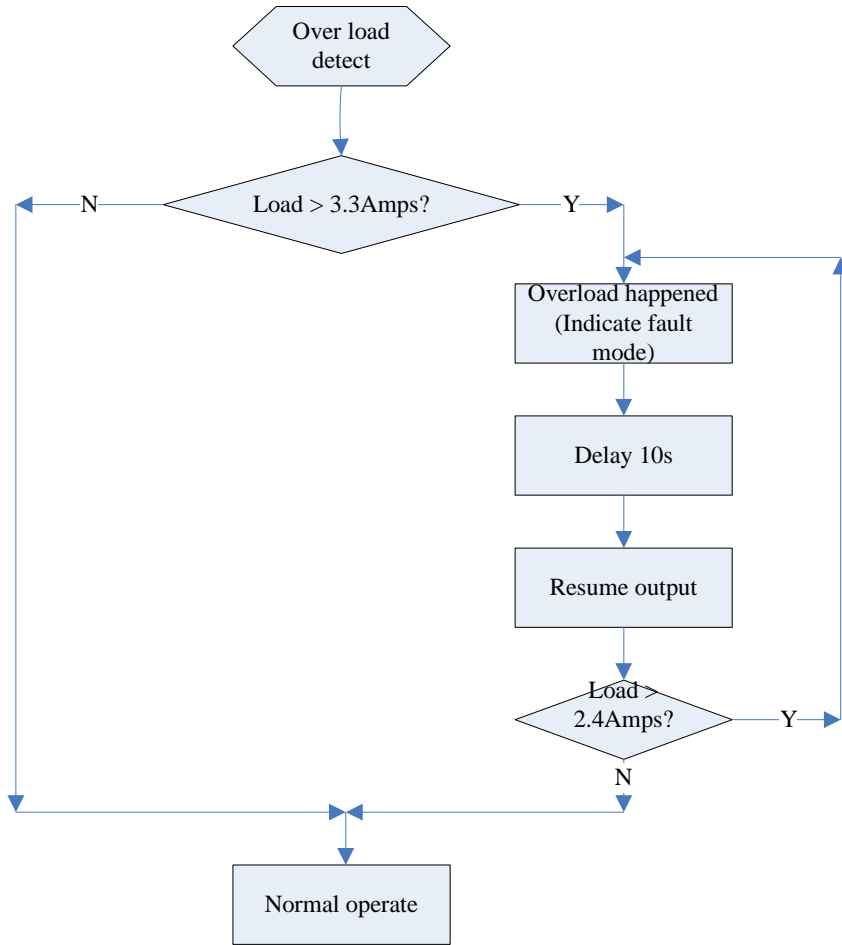
During the battery missing detect, the charging floating voltage will drop to 11V when battery voltage higher than 13V. If battery voltage drops to 11.5 V within 5 minutes, UPS detect it as battery replace alarm. Battery replace detect frequency is 1 time every 30 days.

7.3 Over load detect

MCU detects load all the time. When unit is overload, the unit cuts off output for 10 seconds and indicate fault mode (buzzer continue sounding and red LED lighting). And then resume output and detect output current again. If load is reduced to fewer than 2.4 Amps, the unit indicates normal. Or, the unit cuts off output for seconds again.

Over load condition:

1. Big over load: output current is over 3.3Amps
2. Small over load:



7.4 Fault mode

Fault mode is used to indicate that the unit can not use normal. There are 4 conditions can cause unit to fault mode

1. Over load
2. Fuse open
3. Battery missing
4. Over charge