UNINTERRUPTIBLE POWER SUPPLY

GENERAL SPECIFICATION

Frontier Power 1000

CROSS TECHNOLOGY ENGINEERING CO., LTD.

MAIN OFFICE : #RM B 221 Dongil
Techno-Town,Kwanyang-dong,Dongan-Ku,
Anyang City, Kyonggi Do,Korea

PHONE : 82 -31- 453-9410
FAX : 82 -31- 453-9277
E-mail : F3000@unitel.co.kr
cross@crossups.com

MAIN CHARACTERISTICS

1. The latest technological semi-conductor component **IGBT** (Insulated Gate Bipolar Transistor) employed.

2. **Conditioned sine wave power supply** with instantaneous high frequency controlled Pulse Width Modulation.

3. Elimination of the audible noise by raising the switching frequency of inverter **over 20 KHz**.

4. **Compact & light weight** construction.

4. Elimination of noise & cross current by facilitating the semi-conductor component for static bypass transfer switch.

6. **Improved input power factor** with the switch able charger.

7. Best fitting for the application in **Banking & Computer systems and Terminals**.

8. **EMI filter** for input & output employed.

9. The Quality Assurance ISO 9001 / KS A 9001 approved.

CONTENTS

1. FOREWORD

This specification applies to the design, manufacturing, testing, and delivery of the F/C system. Which continuously supplies the Conditioned power to the critical load, independent from the commercial power condition.

2. APPLICATION STANDARDS

- Korean Industrial Standard (KS)
- National Electrical Manufacturer's Association (NEMA)
- American National Standard Institute (ANSI)
- International Electromechanical Committee (IEC)
- Manufacturer's standard

3. ENVIRONMENTAL CONDITIONS

The F/C shall meet the specified performance under the following conditions :

Ambient temperature :	20 C to 30 C	Recommended operation
	0 C to 40 C	Extreme excursion`
Relative humidity :	0 to 90%	Non-condensing
Altitude :	Below 1000m above sea level	
Cooling method :	Forced air cooling	

4. SYSTEM COMPOSITION & DESCRIPTION

4.1 COMPOSITION

The UPS will consist of the following major equipment:

Rectifier
Charger
Inverter
Output Transformer
Static Switch
Power Supply (Control)
Digital Display Panel

4.2 SYSTEM DESCRIPTION

4.2.1. Rectifier

The solid state rectifier shall be phase controlled with constant
Voltage /constant current electronic control circuitry. It will be capable of accepting the AC input voltage as specified herein and
delivering DC power within specified limits to the inverter.

4.2.2 Charger

This unit shall automatically recharge the battery after the discharge
according to the battery capacity.

4.2.3. Inverter

This unit shall contain IGBT (Insulated Gate Bipolar Transistor) module, heat dissipation board, and other relevant component. The high frequency switching and the sine wave Pulse Width Modulation are utilized in this unit. The inverter will revert the DC power obtained from the rectifier to PWM AC output, and then the AC filter will make it very similar to the balanced sine wave AC voltage to supply the critical load.

4.2.4. Output transformer

A dry type isolating power transformer will be used at the output of the inverter for isolation. The dry type isolating transformer will have class H insulation and will be so located within the equipment to insure that the hottest spot will not exceed the rated insulation temperature and to insure a low center of gravity.

4.2.5. Static Switch

The unit shall be placed at both the commercial power line and the inverter in order to transfer the power source from the inverter to the commercial power line without any interruption in case of the inverter problem or the over-load. Also, in order to avoid the cross current arises from the phase difference, it shall be composed only with semi-conductor components, not the mixture of semi-conductor components and the mechanical contractor.

4.2.6. Power Supply (Control)

The power supply control unit shall employee DC/DC converter system with high performance switching with the power from the main battery in order to avoid the abnormal operation of the equipment when starting and ending of operation. It shall maintain its optimum operation though the internal voltage transient and power outage.

4.2.7. Digital Display

This unit shall be placed at upper part in the front panel of the equipment for the control and reading easiness, and shall contain the followings;

- The measurement of AC input voltage
- The measurement of AC output voltage, current, and frequency
- Battery voltage
- Input power condition
- Bypass operating condition
- Inverter operating condition
- Fault : internal failure
- Alarm

5. OPERATION MODE

5.1. NORMAL

The rectifier and charger will get the AC commercial power and converter it to DC, and then, send it to inverter for the reverse to AC and to battery for charging. The filtered AC power from inverter will be supplied to the load without interruption.

5.2. POWER FAILURE

When commercial power fails, the battery starts to let out the Reserved DC power to inverter and it continues to feed the load During the power outage for the defined time period.

5.3 POWER RECOVERY

When the commercial power is recovered, the battery stops to feed And starts to recharge. At the same time, the commercial power passes through the normal routine.

5.4. INTERNAL FAILURE & OVER-LOAD

The output voltage and frequency of inverter are synchronized with the commercial power supply at all times. Thus, in case of internal failure or over-load, the static switch transfers power to bypass feed and the synchronized power is constantly fed to the load.

6. ELECTRICAL CHARACTERISTICS

	Frontier Power 1000
Power Capacity(KVA)	KVA
Topology	Full True on-line C.V.C.F (i IGBT)
Isolation by pass transformer	Provides a galvanic isolation while operating on the emergency bypass line
Recharge time (normal)	8 hours
Typical transfer time with load	O sec(On line type)
Common mode EMI/RFI noise attenuation range over 100Khz to 30mHz range	60-80db
Input Specification	
Nominal input voltage	1 phase 220
Nominal input frequency	60Hz
Input voltage range	20%
Input frequency range	6%
Output Specification	
Nominal output voltage	1 phase 220/
Output voltage regulation(adjustment)	5 %
Output voltage stability	1 %
Total voltage harmonic distortion	〈 2% at full load(Linear load)
Load crest factor supported(c.f)	up to 5 : 1
Power factor tolerance	Loads with 0.5 to 1.0 power factor
Efficiency inverter at full load	〉93 %
Audible noise(front 1.5m away)	55 dB
Overload capacity	125% 10 min,700 % for 600 millisecond
Internal power distribution unit(PDU)	4 plugs
External power distribution unit (PDU)	Yes(Terminal unit)
Feature	
Intelligent automatic bypass (Emergency by pass 1)	Yes (Auto static solid state 4msec transfer)
Manual bypass(Emergency by pass 2)	Yes(Manual by pass)
Indicators, Interface & control	
LED Display	Load level, Battery level, Input fail, Low battery, Over load, Trouble, AC input, Battery, AC output, By pass
Others	
DC Characteristics	168-216 v
Intelligent battery recharging	Yes(Intelligent battery management)
Battery type	MF Type
Individual pack voltage & current monitoring	Self diagnostic, replace battery warning indicator
Expansion capacity	MF65AH 16CELL
Runtime with supplied packs (full/half load)	
Electric module weight	
Warrant(PowerPlan)	2 years
On site service	Optional

7. MATERIAL AND CONSTRUCTION

7.1. This unit shall be designed for indoor use and shall be easily accessible for service and maintenance. Also,thegood ventilation shall be considered.

7.2. All the electrical component in this unit shall have acceptable electrical insulation characteristics.

7.3. The front display panel including the control switches shall be manufactured as a single unit in accordance with the additional drawing and shall be fixed to the front upper corner of the equipment for control and reading easiness.

7.4. The major power circuitry shall be basically equipped with the protection devices such as circuit breakers, protective fuses, and auto recharging current regulation circuitry.

7.5. The terminal for input, output, and battery, shall have sufficient capacity and shall be firmly fixed to the real lower side of the equipment.

7.6. Every cable and wire used in the main circuitry and control circuitry shall have sufficient insulation and capacity and the pressed lug shall be used for the terminal connection.

7.7. The thickness of the cubicle base frame shall be at least 2.3 mm, and the front and rear door 1.2 mm of the cold rolling sheet metal. The spray enamel coating is required in addition to the oxidation-free base coating.

8. TESTS

8.1. Power Supply Variation Test

8.2. Output Voltage Stability Test

8.3. Output Voltage Distortion Test

8.4. Display and Alarm Operation Inspection

8.5. Output Frequency Stability Test

8.6. Load Test & Total Efficiency Measurement

8.7. Measurement Accuracy Test

8.8. Insulation Test

8.9. Audible Noise Test

9. ADDITIONAL

9.1. The product shall be warranted against all defects in workmanship and material under normal use for a period of ***1*** year from the date of initial operation of our serviceman to the original
user. The warranty shall not apply if the product has been subject
to physical abuse, improper installation, unauthorized service, or
modification. **CROSS T**ECHNICAL **E**NG.,**C**O., LTD. shall not be liable for any damage rising from the use or misuse of the product.

9.2. The name plate which states the name of manufacturer, production date, serial number, and the rating, shall be affixed to the equipment.

9.3. The EMI filter for the noise elimination shall be employed in the input and output line.
(SYSTEM BLOCK DIAGRAM)