INVITATION TO BID NO: 09-R-2208467

STATE OF ALABAMA

DEPTARTMENT OF FINANCE
DIVISION OF PURCHASING

INVITATION TO BID

REQ. AGENCY	: 012170 AL DEPT OF TRANS G O BUILDING SERV
AGENCY REQ. NO.	: G09-900583
T-NUMBER	:
DATE ISSUED	: 07/16/09
VENDOR NO.	:
VENDOR PHONE NO.	:
SNAP REQ. NO.	: 1415854
BUYER NAME	: RAY BRESSLER
BUYER PHONE NO.	: (334) 242-4670-
PURCHASING PHONE NO	: (334) 242-7250

FOR: INSTALLATION OF UPS/CENTRAL OFFICE

BID MUST BE RECEIVED BEFORE:
DATE: 08/05/09 TIME: 5:00 PM

BIDS WILL BE PUBLICLY OPENED:
DATE: 08/06/09 TIME: 10:00 AM

TO BE COMPLETED BY VENDOR

INFORMATION IN THIS SECTION SHOULD BE PROVIDED, AS APPROPRIATE. BID RESPONSE MUST BE IN INK OR TYPED WITH ORIGINAL SIGNATURE AND NOTARIZATION.

1. DELIVERY: CAN BE MADE _____ DAYS OR _____ WEEKS AFTER RECEIPT OF ORDER

2. TERMS: _____(DISCOUNTS ARE TAKEN WITHOUT REGARD TO DATE OF PAYMENT.)

3. PRICE VALID FOR ACCEPTANCE WITHIN _____ DAYS.

4. VENDOR QUOTATION REFERENCE NUMBER, IF ANY: _____
(THIS NUMBER WILL APPEAR ON THE PURCHASE ORDER.)

5. E-MAIL ADDRESS: _____

INTERNET WEBSITE: _____

6. GENERAL CONTRACTOR'S LICENSE NO: _____

TYPE OF G.C. LICENSE: _____

RETURN INVITATION TO BID:

US MAIL	COURIER
STATE OF ALABAMA DEPARTMENT OF FINANCE DIVISION OF PURCHASING P O BOX 302620 MONTGOMERY, AL 36130-2620	STATE OF ALABAMA DIVISION OF PURCHASING RSA UNION BUILDING 100 N. UNION ST., SUITE 192 MONTGOMERY, AL 36104

***** IMPORTANT NOTE: *****
BIDDERS MUST COMPLY WITH ALL "BID RESPONSE INSTRUCTIONS" ON PAGE 2, TO INCLUDE ITEM 7 - COPY REQUIREMENT.

SIGNATURE AND NOTARIZATION REQUIRED

I HAVE READ THE ENTIRE BID AND AGREE TO FURNISH EACH ITEM OFFERED AT THE PRICE QUOTED. I HERBY AFFIRM I HAVE NOT BEEN IN ANY AGREEMENT OR COLLUSION AMONG BIDDERS IN RESTRAINT OF FREEDOM OF COMPETITION BY AGREEMENT TO BID AT A FIXED PRICE OR TO REFRAIN FROM BIDDING.

SWORN TO AND SUBSCRIBED BEFORE ME THIS _____ DAY OF _____

_____
NOTARY PUBLIC

TERM EXP: _____

FEIN OR SSN	AUTHORIZED SIGNATURE (INK)
COMPANY NAME	TYPE/PRINT AUTHORIZED NAME
MAIL ADDRESS	TITLE
CITY, STATE, ZIP	TOLL FREE NUMBER
PHONE INCLUDING AREA CODE	FAX NUMBER

AUTHORITY:
THE DEPARTMENT OF FINANCE CODE OF ADMINISTRATIVE PROCEDURE, CHAPTER 355-4-1 EFFECTIVE DECEMBER 20, 2001 IS INCORPORATED BY REFERENCE AND MADE A PART OF T HIS DOCUMENT. TO RECEIVE A COPY CALL (334)242-7250, OR OUR WEBSITE WWW.PURCHASING.ALABAMA.GOV .

INFORMATION AND ASSISTANCE TO MINORITY BUSINESSES IN THE TECHNICAL COMPLETION OF REQUIRED FORMS MAY BE OBTAINED FROM THE OFFICE OF MINORITY BUSINESS ENTERPRISE, 1-800-447-4191.

BID (ITB) RESPONSE INSTRUCTIONS REV: 04/07/09

1. TO SUBMIT A RESPONSIVE BID, READ THESE INSTRUCTIONS, ALL TERMS, CONDITIONS AND SPECIFICATIONS.

2. BID ENVELOPES/PACKAGES/BOXES MUST BE IDENTIFIED ON FRONT, PREFERABLY LOWER LEFT CORNER AND BE VISIBLE WITH THE BID NUMBER AND OPENING DATE. EACH INDIVIDUAL BID (IDENTIFIED BY A UNIQUE BID NUMBER) MUST BE SUBMITTED IN A SEPERATE ENVELOPE. RESPONSES TO MULTIPLE BID NUMBERS SUBMITTED IN THE SAME ENVELOPE/COURIER PACKAGE, THAT ARE NOT IN SEPARATE ENVELOPES PROPERLY IDENTIFIED, WILL BE REJECTED. THE DIVISION OF PURCHASING DOES NOT ASSUME RESPONSIBILITY FOR LATE BIDS FOR ANY REASON INCLUDING THOSE DUE TO POSTAL, OR COURIER SERVICE. BID RESPONSES MUST BE IN THE DIVISION OF PURCHASING OFFICE PRIOR TO THE "RECEIVE DATE AND TIME" INDICATED ON THE BID.

3. BID RESPONSES (PAGE 1, PRICE SHEET AND ADDENDUMS (WHEN SIGNATURE IS REQUIRED)) MUST BE IN INK OR TYPED ON THIS DOCUMENT. OR EXACT FORMAT WITH SIGNATURES BEING HANDWRITTEN ORIGINALS IN INK (PERSON SIGNING BID, NOTARY, AND NOTARY EXPIRATION), OR THE BID WILL BE REJECTED. UNLESS INDICATED IN THE BID, ALL PRICE PAGES MUST BE COMPLETED AND RETURNED. IF AN ITEM IS NOT BEING BID, IDENTIFY IT AS NB (NO-BID). PAGES SHOULD BE SECURED. THE DIVISION OF PURCHASING DOES NOT ASSUME RESPONSIBILITY FOR MISSING PAGES. FAXED BID RESPONSES WILL NOT BE ACCEPTED.

4. THE UNIT PRICE ALWAYS GOVERNS REGARDLESS OF THE EXTENDED AMOUNT. A UNIT PRICE CHANGE ON A LINE MUST BE INITIALED BY THE PERSON SIGNING THE BID, OR THAT LINE WILL BE REJECTED. THIS INCLUDES A CROSS-OUT, STRIKE-OVER, INK-OVER, WHITE-OUT, ERASURE, OR ANY OTHER METHOD CHANGING THE PRICE.

5. A "NO BID" MUST BE RETURNED TO REMAIN ON A CLASS/SUBCLASS. RETURN PAGE 1 MARKED "NO-BID". IDENTIFY IT ON THE ENVELOPE AS A "NO-BID". FAILING TO RESPOND TO 3 ITB'S WITHIN THE SAME CLASS/ SUBCLASS WILL AUTOMATICALLY PURGE THE VENDOR FROM THAT CLASS/SUBCLASS. RESPONDING WITH 6 "NO-BIDS" WITHIN THE SAME CLASS/SUBCLASS WILL AUTOMATICALLY PURGE THE VENDOR FROM THAT CLASS/ SUBCLASS. A "NO-BID" RECEIVED LATE IS CONSIDERED A NO RESPONSE.

6. THE DIVISION OF PURCHASING IS NOT RESPONSIBLE FOR MISINTERPRETATION OF DATA FAXED FROM THIS OFFICE.

7. THE DIVISION OF PURCHASING REQUIRES AN ORIGINAL AND A MINIMUM OF ONE COMPLETE EXACT COPY (TO INCLUDE SIGNATURE AND NOTARY) OF THE INVITATION-TO-BID RESPONSE. THE ORIGINAL AND THE COPY SHOULD BE SUBMITTED TOGETHER AS A BID PACKAGE.

8. AN IMPROPERLY SUBMITTED BID, LATE BID, OR BID THAT IS CANCELLED ON OR BEFORE THE OPENING DATE WILL BE HELD FOR 90 DAYS AND THEN DESTROYED. THE BID MUST BE RETRIEVED DURUIG REGULAR WORK HOURS, MONDAY - FRIDAY, EXCEPT STATE HOLIDAYS. AFTER THE BID IS DESTROYED, THE DIVISION OF PURCHASING ASSUMES NO RESPONSIBILITY FOR THE DOCUMENT.

DISQUALIFIED/CANCELLED BID

BIDS THAT ARE IMPROPERLY SUBMITTED OR RECEIVED LATE WILL BE A RESPONSE FOR RECORD, BUT WILL NOT BE RETURNED OR A NOTIFICATION MAILED.

THE FOLLOWING IS A PARTIAL LIST WHEREBY A BID RESPONSE WILL BE DISQUALIFIED:

BID NUMBER NOT ON FACE OF ENVELOPE/COURIER PACKAGE/BOX
RESPONSES TO MULTIPLE BID NUMBERS IN SAME ENVELOPE NOT PROPERLY IDENTIFIED
BID RECEIVED LATE
BID NOT SIGNED/NOT ORIGINAL SIGNATURE
BID NOT NOTARIZED/NOT ORIGINAL SIGNATURE OF NOTARY AND/OR NO NOTARY EXPIRATION
NOTARIZED OWN SIGNATURE
REQUIRED INFORMATION NOT SUBMITTED WITH BID
FAILURE TO SUBMIT THE ORIGINAL BID AND A COMPLETE EXACT COPY WILL RESULT IN REJECTION OF THE BID RESPONSE
FAILURE TO MARK RESPONSES AS "ORIGINAL" AND/OR "COPY" COULD RESULT IN THE ENTIRE BID RESPONSE BEING REJECTED

CERTIFICATION PURSUANT TO ACT NO. 2006-557

ALABAMA LAW (SECTION 41-4-116,CODE OF ALABAMA 1975) PROVIDES THAT EVERY BID SUBMITTED AND CONTRACT EXECUTED SHALL CONTAIN A CERTIFICATION THAT THE VENDOR, CONTRACTOR, AND ALL OF ITS AFFILIATES THAT MAKE SALES FOR DELIVERY INTO ALABAMA OR LEASES FOR USE IN ALABAMA ARE REGISTERED, COLLECTING, AND REMITTING ALABAMA STATE AND LOCAL SALES, USE, AND/OR LEASE TAX ON ALL TAXABLE SALES AND LEASES INTO ALABAMA. BY SUBMITTING THIS BID, THE BIDDER IS HEARBY CERTIFYING THAT THEY ARE IN FULL COMPLIANCE WITH ACT NO. 2006-557, THEY ARE NOT BARRED FROM BIDDING OR ENTERING INTO A CONTRACT PURSUANT TO 41-4-116, AND ACKNOWLEDGES THAT THE AWARDING AUTHORITY MAY DECLARE THE CONTRACT VOID IF THE CERTIFICATION IS FALSE.

INTENT TO AWARD

EFFECTIVE MAY 1, 2008, THE STATE OF ALABAMA - DIVISION OF PURCHASING WILL ISSUE AN 'INTENT TO AWARD' BEFORE A FINAL AWARD IS MADE. THE 'INTENT TO AWARD' WILL CONTINUE FOR A PERIOD OF FIVE (5) CALENDAR DAYS, AFTER WHICH A PURCHASE ORDER WILL BE PRODUCED. UPON FINAL AWARD, ALL RIGHTS TO PROTEST ARE FORFEITED. A DETAILED EXPLANATION OF THIS PROCESS MAY BE REVIEWED IN THE ALABAMA ADMINISTRATIVE CODE - CHAPTER 355-4-1(14).

ALTERNATE BID RESPONSE

UNLESS STATED ELSEWHERE IN THIS INVITATION-TO-BID (ITB) THE STATE OF ALABAMA WILL ACCEPT AND EVALUATE ALTERNATE BID SUBMITTALS ON ANY ITB'S. ALTERNATE BID RESPONSES WILL BE EVALUATED ACCORDING TO THE REQUIREMENTS AS ALL OTHER RESPONSES TO THIS ITB.

INTERNET WEBSITE LINK'S

INTERNET AND/OR WEBSITE LINKS WILL NOT BE ACCEPTED IN BID RESPONSES AS A MEANS TO SUPPLY ANY REQUIREMENTS STATED IN THIS ITB (INVITATION-TO-BID).

PRODUCT DELIVERY, RECEIVING AND ACCEPTANCE

IN ACCORDANCE WITH THE UNIVERSAL COMMERCE CODE (CODE OF ALABAMA, TITLE 7), AFTER DELIVERY, THE STATE OF ALABAMA HAS THE RIGHT TO INSPECT ALL PRODUCTS BEFORE ACCEPTING. THE STATE WILL INSPECT PRODUCTS IN A REASONABLE TIMEFRAME. SIGNATURE ON A DELIVERY DOCUMENT DOES NOT CONSTITUTE ACEPTANCE BY THE STATE. THE STATE WILL ACCEPT PRODUCTS ONLY AFTER SATISFACTORY INSPECTION.

SALES TAX EXEMPTION

PURSUANT TO THE CODE OF ALABAMA, 1975, TITLE 40-23-4 (A) (11), THE STATE OF ALABAMA IS EXEMPT FROM PAYING SALES TAX. AN EXEMPTION LETTER WILL BE FURNISHED UPON REQUEST.

INVOICES

INQUIRIES CONCERNING PAYMENT AFTER INVOICES HAVE BEEN SUBMITTED ARE TO BE DIRECTED TO THE RECEIVING AGENCY, NOT THE DIVISION OF PURCHASING

BID RESPONSES AND BID RESULTS

UNEVALUATED BID RESPONSES (NOT BID RESULTS) ARE AVAILABLE ON OUR WEB SITE AT WWW.PURCHASING.ALABAMA.GOV. BID RESULTS WILL BE MADE AVAILABLE FOR REVIEW IN THE DIVISION OF PURCHASING OFFICE, BUT ONLY AFTER THE BID HAS BEEN AWARDED. WE DO NOT FAX OR MAIL COPIES OF BID RESULTS. IF A VENDOR WISHES TO REVIEW BID RESULTS IN OUR OFFICE, THEY SHOULD FAX THEIR REQUEST TO REVIEW THE BID TWO DAYS IN ADVANCE TO THE "BID REVIEW CLERK" AT (334) 242-4419. BE SURE TO REFERENCE THE BID NUMBER.

FOREIGN CORPORATION - CERTIFICATE OF AUTHORITY

ALABAMA LAW PROVIDES THAT A FOREIGN CORPORATION (AN OUT-OF-STATE COMPANY/FIRM) MAY NOT TRANSACT BUSINESS IN THE STATE OF ALABAMA UNTIL IT OBTAINS A CERTIFICATE OF AUTHORITY FROM THE SECRETARY OF STATE. SECTION 10-2B-15.01, CODE OF ALABAMA 1975. TO OBTAIN FORMS FOR A CERTIFICATE OF AUTHORITY, CONTACT THE SECRETARY OF STATE, CORPORATIONS DIVISION, (334) 242-5324. THE CERTIFICATE OF AUTHORITY DOES NOT KEEP THE VENDOR FROM SUBMITTING A BID.

BID IDENTIFICATION

REFERENCE PAGE 2, ITEM 2. DUE TO THE POSTAL SERVICE PUTTING BAR CODE LABELS ON ENVELOPES, IT CONCEALS THE BID NUMBER AND DATE IF THE VENDOR HAS WRITTEN THEM OTHER THAN THE LOWER LEFT CORNER, THEREFORE THE BID WOULD BE REJECTED FOR NOT BEING PROPERLY IDENTIFIED.

****

AWARD:
THE AWARD SHALL BE MADE TO THE LOWEST RESPONSIBLE BIDDER MEETING ALL SPECIFICATIONS.

ASSIGNMENT OF CONTRACT:
TO ASSIGN, SUBLET OR TRANSFER ANY CONTRACT RESULTING FROM THIS SOLICITATION, THE VENDOR'S WRITTEN REQUEST MUST BE APPROVED BY THE STATE PURCHASING DIRECTOR.

NON-APPROPRIATION OF FUNDS:
CONTINUATION OF ANY AGREEMENT BETWEEN THE STATE AND A BIDDER BEYOND A FISCAL YEAR IS CONTINGENT UPON CONTINUED LEGISLATIVE APPROPRIATION OF FUNDS FOR THE PURPOSE OF THIS BID AND ANY RESULTING AGREEMENT. NON-AVAILABILITY OF FUNDS AT ANY TIME SHALL CAUSE ANY AGREEMENT TO BECOME VOID AND UNENFORCEABLE AND NO LIQUIDATED DAMAGES SHALL ACCRUE TO THE STATE AS A RESULT. THE STATE WILL NOT INCUR LIABILITY BEYOND THE PAYMENT OF ACCRUED AGREEMENT PAYMENT.

PRORATION:
ANY PROVISION OF A CONTRACT RESULTING FROM THIS BID TO THE CONTRARY NOTWITHSTANDING, IN THE EVENT OF FAILURE OF THE STATE TO MAKE PAYMENT HEREUNDER AS A RESULT OF PARTIAL UNAVAILABILITY, AT THE TIME SUCH PAYMENT IS DUE, OF SUCH SUFFICIENT REVENUES OF THE STATE TO MAKE SUCH PAYMENT (PRORATION OF APPROPRIATED FUNDS FOR THE STATE HAVING BEEN DECLARED BY THE GOVERNOR PURSUANT TO SECTION 41-4-90 OF THE CODE OF ALABAMA 1975), THE CONTRACTOR SHALL HAVE THE OPTION, IN ADDITION TO THE OTHER REMEDIES OF THE CONTRACT, OF RENEGOTIATING THE CONTRACT (EXTENDING OR CHANGING PAYMENT TERMS OR AMOUNTS) OR TERMINATING THE CONTRACT.

QUALITY OF MATERIALS AND LABOR:
MATERIALS USED THAT ARE NOT OTHERWISE SPECIFIED SHALL BE THE KIND AND QUALITY CONSISTENT WITH THE TRADE PRACTICE FOR SUCH WORK AND SHALL COMPLY WITH ALL LOCAL CODES. ALL LABOR SHALL BE WELL EXPERIENCED IN THIS TYPE WORK AND IT SHALL BE COMPLETED IN A PROFESSIONAL MANNER.

REQUESTED INFORMATION:
ANY ADDITIONAL INFORMATION REQUESTED FROM A VENDOR MUST BE FURNISHED WITHIN TEN (10) DAYS FROM RECEIPT OF REQUEST.

PRICE SHEET

VENDOR NAME :

VENDOR NUMBER: -

ITB NO. : 09-R-2208467

INVITATION TO BID

OPEN DATE : 08/06/09 TIME: 10:00 AM

RETURN DATE: 08/05/09 TIME: 5:00 PM

LINE NO.	COMMODITY/SERVICE DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	EXTENDED AMOUNT
	UNLESS SPECIFIED OTHERWISE BELOW: SHIP TO: 012170 / 012M01 AL DEPT OF TRANS G O BUILDING SERV GO BLDG SERV 1409 COLISEUM BLVD. MONTGOMERY, AL 36110				
00001	COMMODITY CODE: 910-82-079104 ELECTRICAL INSTALLATION ONLY OF A NEW 150KVA UPS SYSTEM AT 1409 COLISEUM BLVD.(COMPUTER SERVICES) UPS TO BE INSTALLED PER SPECIFICATIONS (ATTACHED, SEE 3-1 PAGE 13) UPS SYSTEM AND ADDITIONS TO BE PROVIDED BY ANOTHER VENDOR. CONTACT INFORMATION: ROBERT HARRELL, FACILITIES MANAGER PHONE: 334-242-6060 ..... R E A D E N T I R E B I D E S P E C I A L L Y B I D I N S T R U C T I O N S O N P A G E T W O..... REMEMBER TO RETURN ORIGINAL BID AND ONE COMPLETE EXACT COPY	1	LOT	_____	_____

PAGE TOTAL _____

BID TOTAL _____

ALABAMA DEPARTMENT OF TRANSPORTATION
1409 Coliseum Boulevard, Montgomery, Alabama 36110

Bob Riley
Governor

Joe McInnes
Transportation Director

Requisition #: 1415854 &1415847

UNINTERRUPTIBLE POWER SUPPLY SPECIFICATION

PART I – GENERAL INFORMATION

1-1 SUMMARY

This specification describes a three- phase continuous duty, on-line, double conversion, solid-state uninterruptible power system, hereafter referred to as the UPS. The UPS shall operate in conjunction with existing building electrical system to provide power conditioning, back-up, and distribution for critical electrical loads. The UPS shall consist of the UPS module, battery backup, maintenance bypass/distribution cabinet, and other features as described in this specification.

1-2 UPS SYSTEM DESCRIPTION

A. UPS System Components and Manufacturer requirements. The UPS system shall consist of the following main components and requirements:

1. UPS module containing a Rectifier, Inverter, Battery Charger, Static Bypass, and associated Control and Monitor Panel. The UPS shall also contain (4) communication bays standard.

2. Battery string(s) in Line and Match Battery Cabinets.

3. Maintenance Bypass that is wall mounted and contains (3) breakers.

4. Software that enables graceful shutdown of the UPS.

5. Field agents that can be at the facility within (4) hours.

B. UPS Module Modes of Operation: The UPS Module shall operate as an on-line, fully automatic system in the following modes:

1. Normal: Utilizing commercial AC power, the critical load shall be continuously supplied by the Inverter. The Inverter shall power the load while regulating both voltage and frequency. The Rectifier shall derive power from the commercial AC source and shall supply DC power to the Inverter. Simultaneously, the Battery Charger shall charge the battery.

2. Battery: Upon failure of the commercial AC power, the critical load shall continue to be supplied by the Inverter, which shall obtain power from the batteries without any operator intervention. There shall be no interruption to the critical load upon failure or restoration of the commercial AC source.

3. Recharge: Upon restoration of the AC source, the Charger shall recharge the batteries and simultaneously the Rectifier shall provide power to the Inverter. This shall be an automatic function and shall cause no interruption to the critical load.

4. Bypass: If the UPS module must be taken out of the Normal mode for overload, load fault, or internal failures, the static bypass switch shall automatically transfer the critical load to the commercial AC power. Return from Bypass mode to Normal mode of operation shall be automatic. No-break transfer to and from Bypass mode shall be capable of being initiated manually from the front panel.

1-3 REFERENCES

A. UL 1778 (Underwriters Laboratories) – Standard for Uninterruptible Power Supply Equipment. Product safety requirements for the United States.
B. NEMA PE-1 (National Electrical Manufacturers Association) - Uninterruptible Power Systems standard.
C. IEEE 587 (ANSI C62.41) Category A & B (International Electrical and Electronics Engineers)-Recommended practices on surge voltages in low voltage power circuits.
D. FCC Rules and Regulations 47, part 15, Class A (Federal Communications Commission) - Radio Frequency Devices.

1-4 SUBMITTALS

A. The UPS shall be supplied with sufficient documentation, including the following manuals:

1. Installation and Operation Manual: One copy of the installation and operation manual shall be furnished. It shall possess sufficient detail and clarity to enable the owner's technicians or representatives to install and operate the UPS equipment. The manual shall include the following major items:

a) UPS Installation

b) Operating Procedures

c) Wiring Requirements and Recommendations

1-5 QUALIFICATIONS

A. A list of installed UPS systems of the same type as the manufacturer proposes to furnish for this application shall be supplied upon request.

B. The UPS manufacturer shall have ISO 9001 certification for engineering/ R&D, manufacturing facilities and service organization.

C. The UPS manufacturer shall maintain a staffed 7x24x365 call center for technical and emergency support.

D. A Field Agent supporting this unit must be able to be on site within (4) hours.

E. Spare Parts Support: Parts supplies shall be located in the field to provide 80% of all emergency needs. The factory shall serve as the central stocking facility where a dedicated supply of all parts shall be available within (24) hours.

F. Product Enhancement Program: The UPS manufacturer shall make available feature upgrade service offerings to all users as they are developed. These upgrades shall be available as optional field-installable kits.

1-6 ENVIRONMENTAL REQUIREMENTS

A. The UPS shall withstand any combination of the following external environmental conditions without operational degradation.

1. Operating Temperature: 0 degrees C to + 40 degrees C (32 degrees F to 104 degrees F) without de-rating (excluding batteries)

2. Relative humidity (operating and storage): 95% maximum non-condensing.

1-7 SAFETY

The UPS shall be certified by Underwriters Laboratories in accordance with UL 1778.

PART II – PRODUCTS

2-1 UPS MODULE STANDARD FEATURES

The UPS module shall consist of the following standard components:

A. Rectifier/Charger: The Rectifier/Charger shall convert incoming AC power to regulated DC output for supplying the inverter and for charging the battery. The Rectifier/Charger shall be a high-frequency PWM design, using Insulated Gate Bi-polar Transistors (IGBTs). The modular design of the UPS shall permit safe and fast removal and replacement of the Rectifier/Charger module. The Mean time to repair (MTTR) the module shall be no more than (30) minutes in order to return UPS to normal mode. The Rectifier/Charger module shall also provide the following:

1. The Rectifier shall be capable of drawing power from the utility with a power factor of 0.99 under nominal conditions.

2. The Rectifier shall feature protection circuitry that prevents the IGBTs from sourcing current in excess of their published ratings.

B. Inverter: The Inverter shall feature an IGBT pulse-width-modulation (PWM) design with high speed switching. The Inverter shall also have the following features:

1. The Inverter shall be capable of providing the specified quality output power while operating from any DC source voltage (Rectifier or Battery) within the specified DC operating range.

2. The modular design of the UPS shall permit safe and fast removal and replacement of the Inverter module. The Mean time to repair (MTTR) the module shall be no more than (30) minutes in order to return the UPS to normal mode.

3. The Inverter shall feature protection circuitry that prevents the IGBTs from sourcing current in excess of their published ratings.

C. Static Bypass: The Bypass shall serve as an alternative source of power for the critical load when an abnormal condition prevents operation in normal mode. The Bypass shall consist of a fully rated, naturally-commutated static switch for high-speed transfers. The Bypass shall feature the following transfer and operational characteristics.

1. Transfers to Bypass shall be automatically initiated for the following conditions:

a) Output overload period expired.
b) Critical bus voltage out of limits

c) Over temperature period expired.

d) Total battery discharge.

e) UPS failure.

2. Uninterrupted automatic re-transfer shall take place whenever the inverter is capable of assuming the critical load.

3. Uninterrupted manual transfers shall be initiated from the control panel. Uninterrupted manual transfers to bypass and from bypass shall be possible with the Inverter logic. During manual transfers to bypass mode, the inverter must verify proper bypass operations before transferring the critical load to the bypass.

4. All transfers to bypass shall be inhibited for the following conditions:

a) Bypass voltage out of limits (+/- 10% of nominal)

b) Bypass frequency out of limits (+/-3Hz, adjustable, factory set)

c) Bypass out of synchronization

d) Bypass phase rotation/installation error

5. Static transfer time: No break, complete in less than (4)ms.

6. The bypass shall be manually energized using the control panel or remotely through a building alarm input.

D. Monitoring and control components: The following components shall provide monitor and control capability:

1. Control panel with status indicators.

2. Alarm and metering display.

3. Building alarm monitoring.

4. Inverter and bypass contactor monitoring.

5. Communication ports.

E. Battery Management system: The UPS shall contain a battery management system which has the following features:

1. The battery management system shall provide battery time remaining while operating in normal mode and battery mode. Battery time available information shall be displayed real-time, even under changing load conditions. Upon commissioning, battery runtime information shall be available.

2. The battery management system shall automatically test the battery string(s) to ensure that the battery is capable of providing greater than 80% of its rated capacity. Testing the batteries shall not jeopardize the operation of the critical load. Upon detection of the battery string(s) not capable of providing 80%, the UPS system will alarm that the battery needs attention/replacement. The battery test shall be able to detect the following:

a) Open battery string

b) Shorted battery string

c) Battery capacity (runtime) less than 80% of "new" battery capacity

3. The UPS shall communicate battery test and monitoring data to the UPS manufacturer's remote monitoring site. Battery life remaining, capacity, and number of on-battery events shall be provided in a monthly report.

4. An optional temperature sensor shall be available to monitor the ambient temperature internal to the battery cabinet. If the ambient temperature increases, the UPS system charger shall automatically reduce the charging voltage to a level recommended by the battery manufacturer. If the ambient temperature is decreased, the UPS shall automatically increase the battery voltage to that recommended by the battery manufacturer.

F. Wiring Terminals: For 4-wire output configurations, the neutral output compression terminal shall be sized for 200% of UPS module rated current to accommodate higher neutral currents associated with non-linear loads. The UPS module shall contain mechanical compression terminals (adequately sized to accommodate 90 degrees Celsius wiring) for securing user wiring to the following locations:

1. Rectifier/Charger input connections (3-wire plus ground)

2. Bypass input connections (3-wire plus ground output configuration, or 4-wire plus ground for 4-wire plus ground output configuration)

3. DC link connections for battery cabinets (positive and negative)

4. AC output connections (3 or 4 wires plus ground)

2-2 UPS MODULE OPTIONS AND ACCESSORIES

The UPS module shall consist of the following options and accessories:

A. Wall Mounted Bypass and Distribution: An integrated maintenance bypass shall have (3) breakers.

1. All hardware and interconnecting cable for connection to UPS module.

2. Bypass switch to isolate UPS module from commercial AC input and critical load. Switch shall provide complete isolation of UPS for servicing and, if necessary, complete removal and replacement of UPS while still providing bypass power to critical load. Switch shall be 2-position, make-before-break, interlocked between UPS and bypass to prohibit improper operation.

B. Network Adapter and UPS Power Monitoring Software: Adapters shall provide a communications interface between the UPS module and compatible network

management systems. This capability shall allow the unit to be monitored remotely over an Ethernet network using a standard web browser.

C. Battery Cabinet: The battery cabinet shall feature valve regulated, high-rate discharge, lead-acid batteries which provide energy to support the critical load during a momentary loss of input power to the rectifier. The batteries shall be flame retardant in accordance with UL 94V2 requirements. The battery cabinet shall have the following features:

1. The battery cabinet shall be the same depth and height as the UPS module.

2. The battery cabinet shall feature a mechanical enclosure of like appearance to the UPS module and shall feature casters. Each battery cabinet shall require front access only for installation, service, and maintenance. The battery cabinet shall provide top and bottom cable entry.

3. Power wiring internal to each battery cabinet shall be factory provided. Each battery cabinet shall feature (10) battery trays which can be individually disconnected from the battery cabinet power wiring with quick disconnect devices. Each battery tray shall be firmly secured to the battery cabinet frame with fasteners. Each battery tray shall be removable from the front of the battery cabinet.

4. Each battery cabinet shall feature a DC rated circuit breaker. The circuit breaker within the battery cabinet shall only provide protection to the battery string within that battery cabinet. For battery configurations involving multiple battery cabinets, a battery string in one battery cabinet may be isolated from the DC link via its circuit breaker without removing other battery strings from the DC link and the UPS module.

5. The circuit breaker in each battery cabinet shall feature an A/B auxiliary switch. The UPS module shall be capable of monitoring and alarming an open battery cabinet circuit breaker condition.

6. The circuit breaker in each battery cabinet shall feature an under voltage release device. The UV device shall operate to trip the battery breaker(s) for an emergency power off command or battery disable command.

7. Power and Control wiring between the battery cabinet and the UPS shall be factory provided with compression type connectors between cabinets.

8. The batteries shall be configured with a 1/4"' spade type connector for attaching sense leads to each jar to facilitate the future addition of a battery monitoring system.

9. Expected battery life: 200 complete full load discharge cycles when operated and maintained within specifications.

10. Battery Voltage Characteristics; The UPS battery System shall have the following characteristics:

a) UPS module will automatically adjust the battery shutdown based upon loading and battery capacity.

(1) The UPS module shall automatically adjust the final discharge voltage between 1.67 and 1.75 Volts per cell

based on the existing load and the rate and length of discharge.

(2) The absolute minimum operational voltage is 1.67V per cell (adjustable)

b) Nominal Float Voltage: 2.25V per cell.

c) Equalizing Voltage: 2.38 V maximum per cell (adjustable)

D. Module Tie Cabinet. (OPTION) An external cabinet shall be available which shall allow connection of up to four (4) UPS modules to be connected for parallel operation. Module Tie Cabinet rating shall be in accordance with UPS module output ratings. This cabinet shall be utilized where individual UPS module output disconnect and isolation is desired, or when future expansion of a parallel system is planned. Cabinet shall also have the ability to house a (optional) bypass breaker. Cabinet shall be designed for remote installation using customer-supplied wiring and conduit, and shall be capable of free-standing or wall-mounted installation.

2-3 UNTERRUPTIBLE POWER SUPPY RATINGS AND OPERATING CHARACTERISTICS

A. UPS shall contain a power factor of 0.9. The UPS shall be rated at: 150kVA (maximum for a load power factor range of 0.9 lagging to 0.9 leading)

B. Rectifier/Charger input:

1. Nominal three phase input voltage: 480VAC 3-wire ground for 3-wire plus ground output configuration

2. Operating input voltage range: +10%, -15% of average nominal input voltage without battery discharge.

3. For 60Hz systems, operating input frequency range shall be 55-65Hz.

4. Input power factor 0.99 lagging.

5. Normal input current limit: The UPS shall have the following programmable input current limit settings while operating in normal mode:

a) Rectifier/charger input current limit shall be adjustable from100-115% of full-load current.

b) Battery input current limit shall be adjustable from 10%-15% of the UPS full load input current regardless of the actual load on the UPS.

6. On generator input current limit: The UPS shall have the following programmable input current limit settings while operating in normal mode on generator:

a) Rectifier/charger input current limit shall be adjustable from 100%-115% of full-load input current.

b) Battery recharge input current limit shall be adjustable from 10%-15% of the UPS full load input current regardless of the actual load on the UPS.

7. Input current total harmonic distortion (THD) shall be less than 4.5%.

8. Power walk-in: Ramp-up to full utility load adjustable from 3 seconds to 60 seconds.

C. Bypass input:

1. Synchronizing bypass voltage range shall be +/- 10% of average nominal input voltage.

2. Synchronizing bypass frequency range is centered on the nominal frequency.

3. Input surge withstand capability: The UPS shall be in compliance with IEEE 587 (ANSI C62.41, category A & B (6kV).

D. Rectifier/charger output:

1. Nominal DC voltage shall be variable between 432VDC to 480VDC for 480V input.

2. Voltage ripple shall be less than 0.5% (peak to peak).

3. Capacity: The rectifier/charger shall support a fully loaded inverter and recharge the battery to 90% of its full capacity within 10 times the discharge when input current limit is set at maximum.

4. Low Line Operation: The rectifier/charger shall be capable of sharing the DC load with the battery when the input voltage falls below the specified operation input voltage range, the "on" battery indicator shall enunciate operation in this mode.

5. Battery Equalize: Automatic and manual means must be provided for battery equalization.

6. DC sensing: Redundant DC voltage sensing methods shall be incorporated for providing battery over-voltage protection.

E. UPS output in normal mode

1. Nominal output voltage 480V, 3phase, 3-wire or 4-wire plus ground at the output of the Integrated Distribution and Bypass cabinet. Output wiring configuration is based upon input wiring configuration for systems without internal transformers.

2. Linear load harmonic distortion capability: Output voltage THD of less than 2% for 100% linear load.

3. Non-linear load harmonic distortion capability: Output voltage THD of less than 5% for 100% non-linear load when tested using the non-linear described in IEC 62040-3 connected line to neutral

4. Manual output voltage adjustment shall be +/-3% from nominal.

5. Frequency slew rate shall be 1Hz/second maximum (adjustable).

6. Phase angle control:

a) Balanced linear loads shall be +/-1 degree from nominal 120 degrees.

b) Unbalanced linear loads shall less than +/- 5 degrees from average phase voltage for 100% load unbalance.

7. Phase voltage control:

a) Balanced linear loads shall be +/-1% from average phase voltage.

b) Unbalanced linear loads shall be less than +/-5% for 100% load unbalanced.

8. Overload current capability (with nominal line and fully charged battery): The unit shall maintain voltage regulation for up to 110% of resistive/inductive load for 10 minutes, up to 125% for 30 seconds, and up to 150% for 10 seconds.

9. Fault clearing current capability: 150% phase-to-phase for 10 cycles; 300% phase-to-neutral for up to 10 cycles.

10. EMI Suppression: The UPS shall meet FCC rules and regulation 47, part 15, for Class A devices.

11. Electrostatic discharge (ESD): The UPS shall meet IEC 801-2 specifications. The UPS shall withstand a 25kV pulse without damage and with no disturbance or adverse effect to the critical load.

F. UPS in Parallel Configurations:

UPS modules shall be capable of being paralleled to increase system power levels or to provide redundant power. A total of (8) UPS module shall be capable of parallel operation, either for capacity or redundant systems. It shall be possible to parallel up to (4) UPS modules without a central bypass cabinet. The parallel system shall have intelligence to automatically recognize the need for capacity and/or redundancy. Parallel systems shall utilize autonomous UPS power modules that do not rely on any power or control interconnections for operations. The individual modules shall operate in a peer-to-peer manner to provide automatic load sharing, synchronization, and selective tripping capabilities. "Master-slave "configurations are not acceptable.

The parallel system shall utilize a communications network to provide system information and status, such as operating mode and meter data. This network shall provide individual module information as well as total system information, and individual module information shall be available from any module's front panel display. The loss of this system information network shall not cause the parallel units to transfer to bypass or drop the critical load.

2-4 MECHANICAL DESIGN

A. Enclosures: The UPS shall be housed in free-standing double front enclosures (safety shields behind doors). The enclosures shall be designed for computer room applications.

B. Ventilation: The UPS shall be designed for forced-air cooling. Air inlets shall be on the front of the unit. Air outlets shall be on the top. Eighteen inches of clearance over the

UPS outlets shall be required for proper air circulation. Air filters shall be commonly available sizes.

C. No back or side clearance or access shall be required for the system. The back and side enclosure covers shall be capable of being located directly adjacent to the wall.

D. Cable entry: Standard cable entry for the UPS cabinet shall be through either the enclosure bottom or top. A dedicated wireway shall be provided within the UPS cabinet for routing user input and output wiring.

E. Front access: All serviceable subassemblies shall be modular and capable of being replaced from the front of the UPS (front access only required). Side or rear access for installation, service, repair, or maintenance of the UPS system shall not be required.

F. Service area requirements: The system shall require no more than 36" of front service access room and shall not require side or rear access for service or installation.

2-5 CONTROLS AND INDICATORS

A. Microprocessor controlled circuitry: The UPS controls shall have the following design and operating characteristics:

1. Fully automatic operation of the UPS shall be provided through the use of microprocessor controlled Digital Signal Processing. DSP shall eliminate variances from component tolerance or drift, and provide consistent operational responses.

2. All operating and protection parameters shall be firmware controlled, thus eliminating a need for manual adjustments. The logic shall include system test capability to facilitate maintenance and troubleshooting. Printed circuit board replacement shall be possible without requiring calibration.

B. Digital Front Panel Display: the UPS control panel shall be a digital front panel display backlit LCD display. The LCD shall display UPS status, metering, battery status, alarm/event queue, active alarms, and UPS configurations. The front panel display shall show a system mimic diagram with an outlined power path, current operating mode and event logs.

C. Control Panel Indicators: The UPS control panel shall provide the following monitoring functions with indicator LED's:

1. NORMAL: this shall indicate that the commercial AC utility or generator source is supplying power to the rectifier and the inverter is supporting the critical load. A text message shall indicate if the bypass line is not within tolerance.

2. BYPASS: This shall indicate that the UPS has transferred the load to the bypass circuit.

3. BATTERY: This shall indicate that the commercial AC utility or generator source has failed and the battery is supplying power to the inverter, which is supporting the load. A text message shall indicate if the battery charge is low or if the battery is installed but disconnected.

4. ALARM: This shall indicate that the UPS detects an alarm condition, outlined in detail in the operator's manual.

D. Control Panel Controls: The UPS control panel shall provide the following functions from front panel push buttons:

1. EVENTS: Displays the list of Active System Events and a historical log of system events. Historical logs shall include a detailed time stamped list of the latest 500 events.

2. METERS: Displays performance meters for the system or critical load. When selected, the front display shall show individual screens of input parameters, output parameters, or bypass parameters including; voltage, current, and frequency. In addition, the battery shall show runtime remaining.

3. CONTROLS: Displays a System Control screen. Allows selection of operating mode, normal, bypass, charger on/off and power module on/off.

4. SETUP: Allows display contrast, date, and time information serial communication port configuration and display of firmware revision numbers.

5. RETURN: Confirms selection or returns to previous screen.

E. Interface panel: The UPS shall be equipped with an interface panel, located behind a protective cover, which provides the following signals and communication features in a Class 2 environment:

1. Alarm contact: A dry contact for annunciating a summary alarm shall be provided for customer use. This contact shall be Form "C" capable of supplying both N/O and N/C contacts. Contact ratings shall be 5A max at a voltage not to exceed 28VDC or 277VAC.

2. Communications interface; Circuitry shall be provided for one communication port for connection to automated service department diagnostic tools. This port may be used with simple ("dumb") terminals to gain remote access to all unit operation information.

3. Building alarms: two inputs shall be provided for monitoring the status of external dry contacts. Building alarms shall be set up through the UPS configuration mode function on the communication port.

4. External EPO contacts: Shall be provided to connect an external remote emergency power off switch to shutdown the UPS and de-energize the critical load.

5. Battery control contacts: Contacts shall be provided to connect the battery UVR and auxiliary signals from a battery breaker or battery disconnect switch.

6. External bypass indicator connection: A connection point shall be provided to acknowledge that an external maintenance bypass has been closed around the UPS, placing the critical load on utility power.

2-6 COMMUNICATIONS

A. Communications Bay: the UPS shall be equipped with field configurable communications bays that will accommodate (2) communication devices. The UPS shall include WEB/SNMP communication support as standard.

B. Monitoring:

1. The UPS shall have standard or optional communication feature to provide basic or advance UPS monitoring, notification, management, and emergency computer shutdown capabilities.

2. The UPS shall be able to be monitored locally or across a network. Monitoring of UPS status may also be performed through isolated dry contact form C relays. Simultaneous monitoring of multiple UPSs shall be possible from one central location. Communication via modem for monitoring shall also be possible.

3. Monitoring of the UPS shall also be possible through status indicators on the UPS or elsewhere in the same facility through a device that replicates these indicators.

The UPS should be able to integrate into any industry standard Building Management system (BMS) and/or Network Management System (NMS). The UPS must also be able to be monitored and managed via any standard internet browser (i.e. Internet Explorer and Netscape), PDA or cell phone.

All Optional hardware interfaces shall be "Hot-swappable" (UPS maintains power to critical applications while changing interfaces).

C. Shutdown:

1. There shall be a mechanism that provides graceful, orderly, unattended, sequential shutdown of one or multiple computers powered by one UPS. This shutdown shall be performed via in-network or out-of–network means. The order of shutdown shall be user-defined, allowing the maximization of runtime on battery for more critical systems.

2. Shutdown of AS/400 computers shall be possible through open-collector relay contacts or isolated, dry contact, Form-C relays.

3. The UPS shall also be capable of interfacing with an operating system's built-in shutdown routine, e.g. Windows NT. This shall be done through a cable connection to the optional serial port on the UPS.

D. Notification:

1. There shall be a mechanism to send alerts to key personnel via email traps. An alarm notification may also be sent by a network message.

2. Dial-out to a computer for alarm notification may be performed. The user may respond by dialing-in to retrieve alarm history and a summary of current meter status.

3. Management: A remote battery test may be performed via an Ethernet network. The UPS shall be tested through invoking a single command.

2-7 UPS MODULE PROTECTION

A. Rectifier/Charger and Bypass protection shall be provided through individual fusing of each phase.

B. Battery protection shall be provided by thermal-magnetic molded-case circuit breakers in each battery cabinet (if standard battery pack is provided) or external protective device for an external battery.

C. Output protection shall be provided by electronic current limiting circuitry and fuses in the Inverter circuit.

D. To comply with agency safety requirements, the UPS module shall not rely upon any disconnect devices outside of the UPS module to isolate the battery cabinet from the UPS module.

PART 3-EXECUTION

3-1 INSTALLATION

A. Install in accordance with manufacturer's instructions.

B. Customer will provide 150kVA UPS system only. No other materials or equipment will be provided by the customer.

C. Manufacturer will provide start up services only. Coordination will be the responsibility of the contractor.

D. Contractor will provide all conduit, conductors, terminations, interconnecting cables, and miscellaneous equipment/materials required to complete installation.

E. Contractor will provide all labor, permits, bonds, insurance, transportation, and storage as needed to complete installation.

3-2 COMMISSIONING

A. Factory start-up shall be provided on a 5x8 basis (7x24optional). Start-up service shall include one visit to perform all procedures and tests specified within UPS Installation and Operation manual. UPS manufacturer shall also offer the following optional services:

1. Pre-energize visit to inspect installation and provide guidance to installers as required.

2. Post-start-up visit for alarm notification configuration, operator training, generator testing, etc.

B. The following procedures and tests shall be performed by Field service personnel during the UPS start-up;

1. Visual Inspection:

a) Visually inspect all equipment for signs of damage or foreign materials.

b) Observe the type of ventilation, the cleanliness of the room, the use of proper signs, and any other safety related factors.

2. Mechanical Inspection:

a) Check all the power connections for tightness.

b) Check all the control wiring terminations and plugs for tightness or proper seating.

3. Electrical Pre-Check:

a) Check the DC bus for a possible short circuit.

b) Check input and Bypass power for proper voltages and phase rotation.

c) Check all lamp test functions.

4. Initial UPS Start-up:

a) Verify that all the alarms are in a "go" condition.

b) Energize the UPS module and verify the proper DC, walkup, and AC phase on.

c) Check the DC link holding voltage, AC output voltages, and output waveforms.

d) Check the final DC link voltage and Inverter AC output. Adjust if required.

e) Check for the proper synchronization.

f) Check for the voltage difference between the Inverter output and the Bypass source.

g) Perform full-load, step-load, and battery discharge tests using supplier furnished load bank.

5. Operational Training: Before leaving the site, the field agent shall familiarize responsible personnel with the operation of the UPS. The UPS equipment shall be available for demonstration of the modes of operation.

3-3 WARRANTY

All components of the UPS system (UPS module, bypass/distribution cabinet, batteries) shall be covered by a 7x24 (2) year full maintenance factory warranty and service protection package.

Two-Year limited factory warranty shall include 5x8 on-site repair/replacement coverage for the UPS (parts & labor).

Two-Year service protection package shall include 5x8 on-site repair/replacement labor for batteries; (1) on-site UPS performance check/preventive maintenance visit; 7x24 technical support coverage; and 7x24 remote monitoring service 9 with monthly reports for UPS and battery performance). Manufacturer shall also offer, as an option, 7x24 on-site service support with guaranteed response times of 8, 4, or 2 hours. Additional preventive maintenance visits shall be available as an option for both UPS and battery components.

Manufacturer shall also include Start-up services consisting of: 5x8 Start–up service of UPS and batteries, on-site user training, site audit, installation, and commissioning of monitoring service, and validation of (2) year limited factory warranty.

Manufacturer shall also offer an optional service plan to provide 7x24 on-site coverage (preventive and corrective) for UPS and batteries, guaranteed response time, remote monitoring, Web access to service site history, annual site audit, UPS and battery preventive maintenance visit, and discounts on upgrade and modification kits. Manufacturer shall also provide an optional battery service plan to provide parts and labor coverage for partial and full battery strings, either with preventive maintenance or replacement coverage.

END