INCH-POUND
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# COMMERCIAL ITEM DESCRIPTION

## LOAD BANK, ELECTRICAL
## 160 kilowatts, 60 Hertz

The General Services Administration has authorized the use of this commercial item description for all federal agencies.

1. SCOPE. This Commercial Item Description (CID) describes an alternating current (AC), 160 kilowatt (kW), 60 Hertz (Hz) portable type, resistive load bank and accessories. The commercially available, portable, enclosed, forced air cooled, industrial load bank is used for electrical performance testing of tactical power generators and other 60 Hz generator and power supply systems used for ground-based power operations.

2. SALIENT CHARACTERISTICS

2.1 Safety and environmental. The equipment shall meet all safety and environmental requirements as specified in National Fire Protection Association (NFPA) 70 – National Electrical Code (NEC), ANSI/IEEE C2 – National Electrical Safety Code and the latest applicable National Electrical Manufacturer's Association (NEMA) standards except as stated herein. All resistive load element buses shall be over-current protected. Air flow failure shall cause the load bank to automatically drop all connected load before an over-temperature condition occurs.

2.2 Electrical power sources. The load bank shall be completely self-contained to include all controls, connection points, instrumentation, load elements and system protective devices. The operating power for internal circuits, instruments, and fan(s) shall be user selectable between being derived only from the power source under test, or from an external power source. All controls shall be located on a local control panel.

2.3 Operating temperature. The equipment shall meet its performance and accuracy requirements in an operating environment of -20 degrees F to +125 degrees F.

2.4 Non-operating temperature. The equipment shall meet its performance and accuracy requirements (see 2.8.1.1) after being in a non-operating environment (Storage Temperature) of -65 degrees F to +160 degrees F.

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2.5 Calibration and maintenance adjustments. The design of the system shall provide for readily accessible calibration adjustments and maintenance adjustments. The calibration adjustments, wherever possible, shall be accessible without removal of the instrument case or modules. These adjustments shall be provided by variable value components. The calibration by substitution of selected components or parts is unacceptable unless specifically approved. The calibration interval shall be a period of one year or greater based on an operating time of 2,000 hours.

2.6 Accessories. Accessories to be supplied by the manufacturer with each deliverable load bank shall include standard and optional accessories as provided by the manufacturer and listed in the manufacturer's catalog or data sheet. A written user's manual, a written programmer reference manual (if applicable), and a traceable calibration certificate shall also be provided with each load bank unit. The user manual(s) shall include complete details for the operation, troubleshooting and maintenance of the load bank and shall include interconnect drawings and electrical schematics for all power and control circuits and devices. A complete parts listing shall be delivered with each load bank and shall include, at a minimum, the original manufacturer's name, part number, rating, identification and quantity required.

2.7 Environmental requirements. The load bank shall be designed for indoor or sheltered use and indoor storage. The load bank shall be clearly marked "NOT FOR USE IN HAZARDOUS LOCATIONS".

2.8 Performance characteristics. The load bank shall be capable of continuous, resistive load testing of ground power generator sets by providing loads ranging from 0 to not less than 160 kW load at 240 and 480 volts AC, 3 phase, 4 wire, 60 Hz. The load bank shall also be capable of providing loads ranging from 0 to not less than 120 kW at 208 and 416 volts AC, 3 phase, 4 wire, 60 Hz.

2.8.1 Controls. The load bank shall include a local operator control panel containing all meters, switches, alarms, indicators and instructions necessary for the proper operation of the load bank. A latching, hinged cover assembly shall be provided to protect the control panel from damage when not in use.

2.8.1.1 Meters. The control panel of the load bank shall be equipped with individual meters for monitoring voltage (0-600 volts AC), frequency (45-65 Hz), and current (0-400 amps AC). Meter accuracy shall be within ±3%, full scale.

2.8.1.2 Phase selector switch. The load bank shall have a phase selector switch on the control panel for measuring the current of each phase of incoming power (A, B, C). Voltage measurements shall be selectable for line-to-line for each phase on incoming power.

2.8.2 AC input connections. The load bank input shall be equipped with portable power cables rated for extra hard usage and capable of continuously carrying the load bank's rated full load current. Input power cable length shall not be less than fifteen (15) feet per phase conductor with terminal lugs on the ends for connection to power supply studs. External control power or cooling fan power input cable shall be designed for 120 volts AC, 60 Hz, single phase, be provided with a properly rated input connector, be rated for extra hard usage and be not less than

15 feet in length. All input cables shall be highly flexible copper conductor and rated for 600 volts minimum. Input power cable storage shall be provided on the load bank.

2.8.3 Load elements. The load bank load elements shall be of the purely resistive type and shall be designed so that a load of any magnitude within the range of one to 160 kW may be absorbed. Load elements shall be protected from damage per NEC article 110-10 by the use of user resettable circuit breakers, user replaceable fuses, or automatically resetting thermal switches. All load elements shall be connectable to incoming power by means of electrical contactors. Load balance shall be within +/- 2.5% between phases.

2.8.4 Step loading. The load bank shall provide a means to apply incremental loading (step loading). The following load steps should be available (at a minimum): 1kw, 2kw, 5kw, 10kw, 20kw and 50kw. The use of multiple load steps of the same size is acceptable. Load steps of a different resolution may be acceptable, based upon Government review. The tolerance of each load step shall be no more than 5%. These loads shall be selectable individually or in combinations to provide loads up to and including 160 kW.

2.8.5 Shock loading. The load bank shall have a single master load switch for shock loading the unit under test at any load setting available described in paragraph 2.8.4. The single switch may also serve as a master load disconnect switch.

2.8.6 Grounding. Electrical grounding shall be accomplished in accordance with NFPA 70 - NEC, Section 250. An external ground terminal shall be provided so that a separate external user ground conductor connection may be added. This ground terminal shall be bonded to the main metal frame and chassis of the load bank, be clearly marked, easily accessible and within sight of the operator when standing at the control panel.

2.8.7 Over-temperature. The load bank shall contain adequate protection circuitry to automatically protect the load elements and controls and shall immediately cease operation in the event of a cooling failure or over-temperature condition.

2.8.8 Over-voltage. The load bank shall contain adequate protection circuitry to automatically cease operation to protect the load elements, controls and operator in the event of an over-voltage condition on the input power.

2.8.9 Load disconnect. The load bank shall have provision for the manual de-activation of load elements in the case of a failure of the automatic protection system. The load disconnect shall provide a single point for instantaneous load removal from the load bank.

2.8.10 Continuous operation. The load bank shall be capable of a continuous run at full load for up to four hours. The load bank shall be capable of cool down to ambient temperature within five minutes, with cooling fan on, under no load conditions, and be capable of performing multiple back to back full loads without damage to components. The load bank shall be capable of withstanding instantaneous input power disconnection with cooling fan stoppage at full load without damage to the load bank components.

2.9 Construction. The load bank shall be constructed to withstand the strains, jars, vibrations, and other conditions incident to shipping, storage, service and operation. Electrical components shall be designed to withstand transient voltage and current level sags and surges associated with load testing stand-alone generator sets. Enclosure finishes and other components shall employ best commercial design practices and be designed to withstand the high temperatures and exposures normally associated with load bank operations. Cooling air intake and exhaust openings shall be covered with screens or louvers to protect load elements from foreign object damage. Access to cooling fan(s), instrumentation wiring, contactors, load elements, protective devices and associated wiring shall be through removable or hinged panels.

2.9.1 Transportability. The load bank shall be provided with wheels having a diameter of five (+/- 1) inches on lockable casters, to allow easy movement over hard surfaces. The load bank shall be constructed to have the capability of being lifted and transported by forklift by means of forklift tine guides incorporated into the load bank enclosure. The load bank shall have provisions for sling lifting or eye lifting without sustaining damage.

2.9.2 Size. The load bank overall dimensions shall not exceed 60"L x 36"Wx 50"H, including handles and wheels.

2.9.3 Weight. The weight of the load bank shall not exceed 700 pounds (not including input power cables).

2.9.4 Fire prevention and safety. The enclosure of the load bank shall employ best commercial design practices to reduce the danger to personnel from fire and explosion. Suitable vents and drains shall be incorporated into the enclosure of the load bank to reduce the risk of hazards.

2.9.5 Workmanship and wiring. The load bank shall be manufactured with the best commercial practices and be free from defects. All wiring shall be neatly routed, terminated and identified.

3. REGULATORY REQUIREMENTS.

3.1 Recycled recovered materials. The contractor is encouraged to use recovered materials to the maximum extent practicable, in accordance with 23.403 of the Federal Acquisition Regulation (FAR).

3.2 Green Procurement Program. Green Procurement Program (GPP) is a mandatory federal acquisition program that focuses on the purchase and use of environmentally preferable products and services. GPP requirements apply to all acquisitions using appropriated funds, including services and new requirements. FAR 23.404(b) applies and states the GPP requires 100% of Environmental Protection Agency (EPA) designated product purchase that are included in the Comprehensive Procurement Guidelines list that contains recovered materials, unless the item cannot be acquired: a) competitively within a reasonable timeframe; b) meet appropriate performance standards, or c) at a reasonable price. The prime contractor is responsible for ensuring that all subcontractors comply with this requirement.

4. PRODUCT CONFORMANCE PROVISIONS.

4.1 Product conformance. The products provided shall meet the salient characteristics of this CID, conform to the producer's own drawings, specifications, standards, and quality assurance practices, and be the same product offered for sale to the Government or in the commercial market place. The Government reserves the right to require proof of such conformance.

4.2 Contractor certification. The contractor shall certify and maintain substantiating evidence that the product conforms to the producer's own drawings, specifications, standards, and quality assurance practices, and is the same product offered for sale in the commercial marketplace. The Government reserves the right to require proof of such conformance. Proof of conformance may include, but shall not be limited to the performance of operational tests, lab tests, modeling and simulation and delivery of reports and data from these tests.

4.3 Responsibility of inspection. Unless otherwise specified in the contract or CID, the contractor is responsible for the performance of all inspection, examination, and test requirements specified herein. Except as otherwise specified in the contract or CID, the contractor may use his own facilities or any other facilities suitable for the inspection requirements specified herein, unless disapproved by the Government. The Government reserves the right to set forth in this description where such inspections, examinations and tests are deemed necessary to assure supplies and services conform to prescribed requirements.

4.4 Examination of product. Each load bank shall be examined to verify compliance with the requirements herein prior to accomplishing any other tests listed in 4.5. A contractor-generated, Government-approved checklist shall be used to identify each requirement not verified by a test or analysis, and shall be used to document the inspection results. Particular attention shall be given to materials, workmanship, dimensions, surface finishes, protective coatings and sealants and their application, welding, fastening, and markings. Proper operation of each load bank function shall be verified. Each production load bank shall be inspected to a Government-approved reduced version of the checklist.

4.5 Operational test. Each load bank shall be operated at rated full load for not less than 10 minutes, after complete assembly and prior to shipment, to ensure all parts are functioning according to the manufacturer's requirements.

5. PACKAGING.

5.1 Preservation, packing, and marking shall be as specified in the contract or order.

6. NOTES.

6.1 Source of documents.

6.1.1 Department of Defense and Federal documents may be obtained at https://assist.daps.dla.mil/online or from the Document Automation and Production Service, Bldg 4D (DPM-DODSSP), 700 Robbins Avenue, Philadelphia PA 19111-5094.

6.1.2 NFPA documents may be obtained at http://www.nfpa.org/index.asp or from NFPA, Batterymarch Park, Quincy MA 02269-9101.

6.1.3 National Electrical Manufacturers Association (NEMA) standards may be obtained from National Electrical Manufacturers Association, 1300 North 17th Street, Suite 1752, Rosslyn, Virginia 22209. Electronic copies of NEMA standards may be obtained from http://www.nema.org/stds/ .

6.1.4 FAR and DFARS may be obtained from the Superintendent of Documents, P.O. Box 371954, Pittsburgh, PA 15250-7954. Electronic copies of the FAR may be obtained from http://www.arnet.gov/far Electronic copies of the DFARS may be obtained from http://www.acq.osd.mil/dpap/dars/dfars/index.htm .

6.1.5 ANSI/EIA standards may be obtained at http://www.ansi.org or http://www.eia.org or available from the Electronics Industry Association, Engineering Department, 2001 Pennsylvania Ave., N.W., Washington, D.C., 20006. Phone: 1-800-854-7179 (USA and Canada).

6.1.6 The National Electrical Safety Code (ANSI C2) may be obtained at http://www.webstore.ansi.org or from: ANSI, Attn: Customer Service Department, 25 W 43rd Street, 4th Floor, New York, NY, 10036

6.2 Ordering data. The contract or ordering data should specify the following:

a. CID document number, current version and date of CID.

b. Product Conformance provisions.

c. Packaging requirements

6.3 Key words.

Generator
Ground power supplies
Portable type

Custodian:
Air Force - 84

Review activity:
DLA - IS

Preparing activity:
Air Force - 84

Agent:
Air Force - 99

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