



GUAM  
POWER  
AUTHORITY  
AGANA, GUAM

Specification No. E-041

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Revision No. 1  
Date: 06/15/2012

PREPARED BY ENGINEERING DEPARTMENT

**GUAM POWER AUTHORITY**  
**P.O. Box 2977**  
**Agana, Guam 96932**

**TRANSMISSION & DISTRIBUTION SPECIFICATION**

**Specification No. E-041**

**For**

**STATION BATTERY BANK**

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### STATION BATTERY BANK

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### STATION BATTERY BANK

#### 1.0 SCOPE

This specification covers the requirements for furnishing, installing, checking, and testing of station battery bank and accessories.

#### 2.0 CONFORMANCE TO SPECIFICATION REQUIREMENTS

##### 2.1 Applicable Standards

The station battery bank shall meet the requirements of the IEEE, NEC, ANSI, and the Federal "Occupational Safety and Health Standards" specifications and guidelines including latest revisions with respect to material, design, and tests.

##### 2.2 Deviations and Non-Conformance Requirements

- 2.2.1 Deviations from this specification or changes in the material or design after the purchase order has been placed must be approved by the Guam Power Authority's Engineering Department and acknowledged by a Purchase Order Amendment.
- 2.2.2 Units received with deviations or non-conformance, which are not acknowledged as specified in sub-paragraph 2.2.1, are subject to rejection. The supplier of units rejected in this paragraph is responsible for any corrective action including but not limited to materials, labor, and transportation necessary to dispose of, or make the units conform to the specification.
- 2.2.3 Notification of defective units discovered before or after installation that are believed to be inherent to manufacturing problems or workmanship shall be forwarded to the supplier. The description of the item, documentation of the problem and the desired information, disposition and/or follow-up (as appropriate) that GPA expects from the supplier will be specified. The supplier's response shall be made within thirty (30) days unless otherwise noted or an extension is acknowledged and approved in writing by the Guam Power Authority's Engineering Department.

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### 3.0 DATA TO BE FURNISHED

The following data shall be provided:

- 3.1. Manufacturer's catalog data with size and type.
- 3.2. Physical arrangement drawings with elevation, plan view, and mounting details.
- 3.3. Wiring schematics and diagrams complete with interconnection requirements and capabilities.
- 3.4. Outline drawings with dimensions and other physical properties such as weight(s).
- 3.2 Six (6) complete sets of instruction books containing the following:
  - a. Instruction and data for ordering of all parts and accessories
  - b. Instructions covering installation, assembly, operation, and maintenance.
  - c. Copies of recommended spare parts lists.

### 4.0 DESIGN AND CONSTRUCTION

#### 4.1 Construction

- 4.1.1 Each battery cell shall be lead-calcium alloy grid with micro-porous plastic separator construction, and use gelled electrolyte-dryout resistant technology. Battery System shall be EnerSys PowerSafe DDm50-17 or approved equal.
- 4.1.2 Cell containers shall be sealed, clear, shock absorbing, heat resistant plastic, explosion proof with pressure relief valves and post seals to eliminate leaking, and certified to UBC Zone 4 requirements.

#### 4.2 Rating

The battery shall be rated in accordance with the following:

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Nominal System Voltage	125 Vdc
System Description	2-wire, ungrounded
Minimum Ambient Temperature	40 degrees F
Quantity of Cells	60
Specific Gravity of Electrolyte, Fully Charged, Corrected to 77 degrees F	1.220
Voltage, volts per cell	
Floating	2.20
Final	1.75
Maximum during equalizing or recharging following during discharge	2.33
Ampere Hour Rating	400 (Minimum)

### 4.3 Rack

- 4.3.1 Each battery shall be furnished with one two-tier structural steel battery rack, earthquake type for seismic zone 4.
- 4.3.2 Before application of paint, all surfaces shall be carefully cleaned of all dirt, moisture, rust, scale, lubricants, and other substances. Lubricants shall be removed by suitable solvents. Rust and scale shall be removed by sandblasting, power sanding, power grinding or power wire brushing.
- 4.3.3 All steel shall have two or more finish coats of acid resistant ANSI 61 gray paint or electrostatically applied epoxy coating finish.
- 4.3.4 Paint films which show sags, checks, blisters, teardrops or fat edges will not be accepted.
- 4.3.5 Battery supporting rails shall be covered with a protective vinyl runner plate not less than 1/16 inch thick.

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### 4.4 Accessories

Each battery shall be furnished with the following accessories:

Flame arrester vents.

Lead coated intercell connectors to provide not less than 1/2 inch between cells.

Lead coated intertier connectors.

Connector bolts with acid resistant nuts.

Solderless terminal lugs for one 250 MCM copper and one #4 AWG copper cable per polarity.

Cell lifting facility.

Vinyl coated assembly wrenches.

No-Ox-Id grease.

One portable acid electrolyte thermometer.

One portable acid electrolyte hydrometer syringe.

One set of numerals (one numeral per cell) suitable for permanent attachment to cells.

### 5.0 DRAWING APPROVAL

5.1 GPA shall be allowed one (1) week to review and approve drawings without affecting the shipping date.

5.2 Drawings returned to the Supplier as approved shall be considered authorization to proceed with the work. The approval of GPA shall in no way abrogate the requirements of this specification.

### 6.0 CERTIFIED REPRODUCIBLES

6.1 At least three (3) weeks prior to shipment of the equipment the Supplier shall furnish GPA with four complete sets of final certified reproducible drawings for each station battery bank purchased. Under no circumstances will "Typical Drawings" be accepted. This includes both schematic and wiring diagrams.

6.2 The following information shall be shown on each drawing submitted:

- a. GPA Purchase Order
- b. Supplier's Name
- c. Description of Drawing

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### 7.0 INSTRUCTION BOOKS

- 7.1 At least three (3) weeks prior to delivery the Supplier shall furnish GPA five sets of complete operating and instruction books for each station battery bank.
- 7.2 One additional instruction book shall be attached to each station battery bank.
- 7.3 Each manual or instruction book shall include the following:
- a. Both schematic and wiring drawings. No typical drawings are acceptable.
  - b. List of parts that were shipped loose from the battery charger and to be installed in the field.
  - c. A replacement parts list that includes part number identification.
  - d. A list of recommended spare parts and complete packing lists of accessory items.
  - e. Instruction manuals covering step-by-step installation and assembly with illustrative drawings. Each separate part shall be marked with or identification system to aid in erection.
  - f. Manual recommending proper storage procedures.
  - g. Operating and "troubleshooting" manual.
  - h. List of all special tools needed for installation and maintenance.

### 8.0 WARRANTY

The Supplier shall warrant the satisfactory and successful operation of the apparatus furnished under this specification at the rating, under the conditions, and for the service specified. The Supplier shall further warrant the apparatus against defects of design, material and workmanship. All workmanship and parts shall have a warranty of at least 1 year from the date of equipment commissioning.

The Supplier shall supply three sets of prints of the above requirements. In addition, a list indicating the drawing number and title of each drawing shall be provided.

### 9.0 TEST REPORTS

Four (4) copies of certified test reports shall be supplied to GPA.

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