GUAM POWER AUTHORITY
P.O. BOX 2977
AGANA, GUAM 96932

TRANSMISSION & DISTRIBUTION SPECIFICATION

SPECIFICATION NO. E-036

FOR

REMOTE SUPERVISORY, GROUP OPERATED DISTRIBUTION SWITCH 600 AMPS, THREE PHASE, OVERHEAD

EFFECTIVE DATE: 9/7/99	ISSUED:	APPROVED:

REMOTE SUPERVISORY, GROUP OPERATED DISTRIBUTION SWITCH 600 AMPS, THREE PHASE, OVERHEAD

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1.0 SCOPE

1.1 This specification covers GPA requirements for remote supervisory, group operated, 600-Amp, three-phase overhead switches to be used on the 13.8 kV 60 Hertz distribution system.

1.2 The switch is intended for use in tropical weather conditions with a corrosive sea air atmosphere, with wind strength of 155 MPH and subject to moderate and severe earthquakes.

2.0 APPLICABLE PUBLICATIONS

The equipment specified herein shall be designed, manufactured, assembled and tested in accordance with ANSI C37.30, ANSI 37.32, ANSI 37.33, and ANSI 37.34 including the latest revisions with respect to material, design and tests.

3.0 DEVIATIONS AND NON-CONFORMANCE REQUIREMENTS

3.1 Deviations from this specification or changes in the material or design after the purchase order has been placed must be approved by the GPA Engineering department and acknowledged by a Purchase Order Amendment issued by GPA.

3.2 Units received with deviations or non-conformances that are not acknowledged per Section 3.1 are subject to rejection. The Supplier of rejected units 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.

3.3 Notification of defective units discovered before or after installation that are believed to be inherent to manufacturing problems or workmanship shall be made and forwarded to the Supplier. The description of the item, documentation of the problem and the described 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 an extension is acknowledged and approved in writing by the GPA Manager of Engineering.

4.0 SUBMITTALS

4.1 Shop drawings indicating details of construction and the outline of all connectors shall be submitted to GPA Engineering for review and approval.

Information required includes:

a. Mounting dimensions
b. Connection diagrams
c. Weights

d. Nameplate

4.2 GPA shall be allowed two (2) weeks to review and approve drawings provided in Section 4.1 without affecting the shipping date. Delays in delivery due to drawings that are disapproved during this review period are the responsibility of the Supplier.

4.3 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.

4.4 Instruction books shall be furnished which shall contain the description of components, parts and accessories, detailed installation instructions, complete instructions covering operation and maintenance of equipment, complete replacement parts list.

4.5 At least one complete set of drawings and instruction books per switch shall be provided at the time of delivery.

5.0 CERTIFIED LABORATORY TEST REPORTS

Certified tests shall be conducted in accordance with applicable standards. The Supplier shall furnish two (2) copies of certified test reports for all tests covered by this specification to the GPA Manager of Engineering within two (2) weeks of delivery.

6.0 RATINGS

The switch rating requirements are as follows:

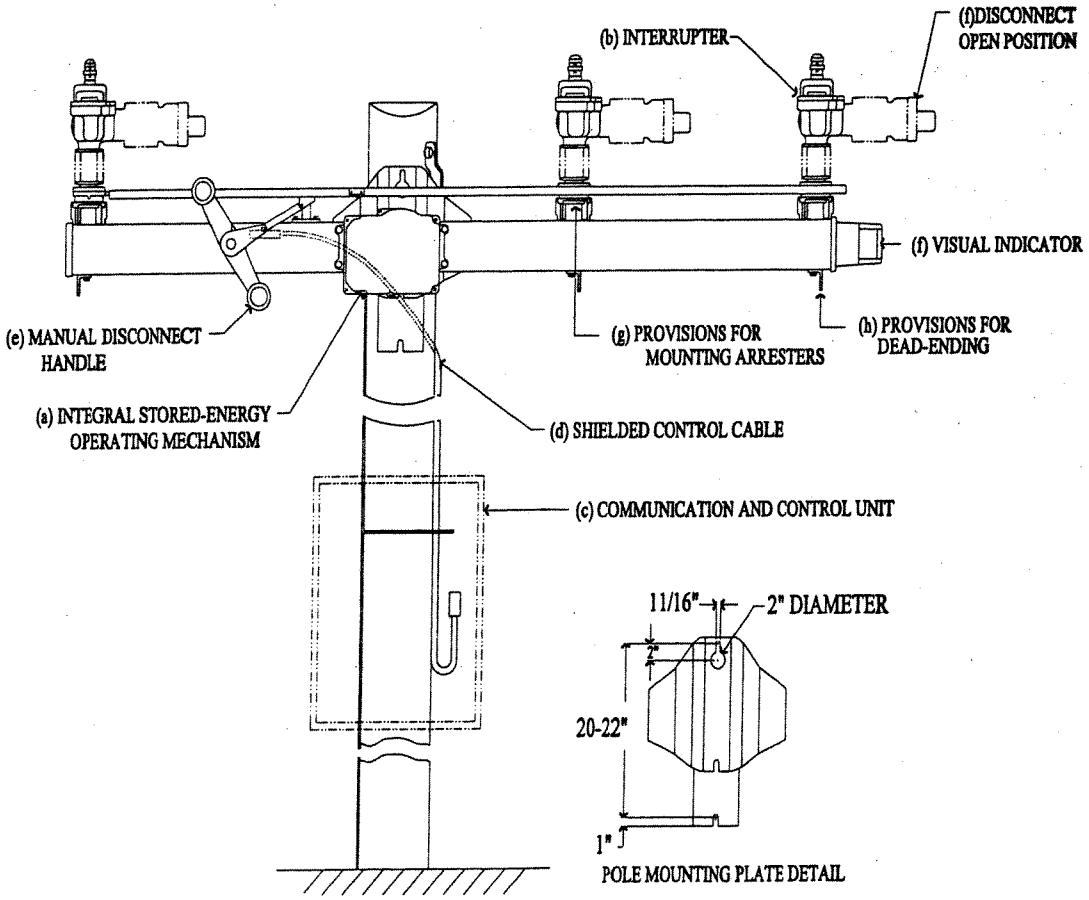
Nominal line to line voltage (kV)	14.4
Maximum line to line voltage (kV)	17
BIL (kV)	110
Continuous Current Rating (A)	600
Interrupting Current Rating (A)	600
Five-time duty cycle fault-closing rms Asymmetrical Amperes	20,000

7.0 DESIGN AND CONSTRUCTION

7.1 The switch shall be factory assembled on a one-piece base.

7.2 The switch shall include the following features as illustrated in Figure 1.

Figure 1



a. An integral stored-energy operating mechanism.

b. Sealed interrupters in a controlled sulfur hexa-flouride (SF_6) environment to accomplish circuit making and circuit breaking. Refilling of SF_6 gas is not required.

c. A communication and control unit (CCU).

d. A 35-foot shielded control cable for low-voltage electrical connection of the switch to the control unit.

e. An integral, hook-stick operated three-pole disconnect for visible air-gap isolation of switched-open circuits.

f. A visual indicator to allow clear identification (from ground level) of the interrupter's opened or closed position.

g. Provisions on each side of the switch for mounting lightning arresters.

h. Separate dead-ending provisions to allow convenient attachment of conductors independent of switch mounting.

7.3 The centerline-to-centerline distance of mounting holes for the switch base shall be 20-22 inches suited for installation on pre-drilled concrete poles.

7.4 Terminal pad connectors shall be provided and shall be capable of accommodating #2/0 AWG to 500 kcmil, 15 kV, bare, copper or aluminum primary conductor.

7.5 A 20 volt-ampere 120-volt 60 hertz voltage source for charging batteries to operate the motor, the controls and the RTU (eliminating the need to provide external low-voltage control power) shall be provided.

7.6 Communication and Control Unit (CCU)

7.6.1 Communication Transceiver

The CCU shall be equipped with provisions for the following transceivers:

a) MDS 2310, 900 MHZ Data Transceiver (include an antenna connector with a surge suppressor)

b) H&L Model 562 Fiberoptic Transceiver

7.6.2 Remote Terminal Unit (RTU)

The Remote Terminal Unit shall be a factory installed and wired Harris Dart unit with a DNP 3.0 protocol.

7.6.3 Switch Control Unit

The switch control unit shall include open/close push buttons, switch-position indicating lamps, local/remote toggle switch, and an operation counter.

7.6.4 Mounting

The mounting provisions for the CCU shall include 2 each Aluma-Form bands for installation on round concrete poles without the use of through bolts.

7.7 Voltage and Current Sensing

7.7.1 Three phase voltage sensors shall be available on one side of the switch for voltage monitoring and to provide continuous battery charging power for operating a complete automated-distribution switch installation.

7.7.2 Current sensing shall be available for all three poles.

7.8 Nameplate

The switch shall be provided with a permanent nameplate showing all of the required information, including the manufacturer's name, month and year of manufacture, and the maximum voltage and current ratings.

8.0 OPERATIONS

8.1 The switch interrupter shall be group-operated through a switch control unit capable of local and remote electrical and manual operations. The interrupter shall include an open/close indicator to indicate the position of the interrupter contacts.

8.2 The switches shall be suited for mounting upright with extra mounting pole clearance.

8.3 Provisions for gang operating the three-pole disconnect switch by using an extension hook stick shall be provided.

9.0 ACCESSORIES

Each switch set shall include the following accessories:

a.	3/8" Stainless Steel Banding Strap	50 Feet
b.	3/8" Stainless Steel Buckles	10 Each
c.	Conduit, ½" x 10' Rigid Aluminum	2 Each
d.	10" Nylon Tie Straps	10 Each

10.0 QUALITY CONTROL

The Supplier shall have a quality control program to ensure compliance with the requirements of this specification. The program shall be documented and available for GPA's review if requested.

Documentation of the quality control program shall indicate where in the production and manufacturing process the quality checks are taken, describe the purpose of the checks, and describe the nature of the check, i.e. if check is visual only or if electrical or mechanical testing is used.

11.0 PACKING AND SHIPPING

11.1 The switch shall be placed and crated with suitable material to prevent damage and injury during shipment and handling operations.

11.2 The switch shall be securely blocked to prevent shifting during transit.

11.3 The Supplier shall have adequate work and inspection instructions for handling, interim storage, preservation, packaging, and shipping to protect the quality of the switch and prevent damage, loss, deterioration and substitution of products.