



Equipment Specification
Document No.: 4350.197
Originating Department: Distribution Engineering



Riser Pole Distribution Class Arrester for 4.16KV, 7.2/8.32KV, 13.2KV

1. Introduction

This is a general specification that covers the minimum requirements for distribution class surge arrester used in the distribution system in Puerto Rico. Further information will be provided by LUMA Energy at the time of order placement and will provide information on site specific conditions, quantity, and other requirements. This document includes the general electrical and mechanical characteristics of the material.

2. Special Requirements

Samples shall be furnished as requested by LUMA Energy. Vendors that have supplied this material to PREPA / LUMA on previous orders, will not have to furnish samples at bid opening. The material will be received at the LUMA's general warehouse (011) at Palo Seco, Puerto Rico. Shipping will include transportation and unloading at the indicated warehouse.

3. Quantity/Literature

Descriptive and technical literature must be supplied by vendor at time of bidding. This literature may include, but is not limited to details of material, drawings, documented testing, and instructions for use and installation. Failure to submit documents on time will cause bidder disqualification. For products described in this specification as requiring qualification, awards will be made only for such products that, prior to the time for opening of bids, had been tested and/or approved by LUMA. Evidence of LUMA Energy's approval of the equipment or material shall be supplied by vendor if requested by LUMA Energy.

4. Markings

- 4.1. Containers shall be marked outside with LUMA Energy's purchase order and item number.
- 4.2. Packaging labels and tags shall be waterproof.

5. Equal or Approved Equal to

For suggested manufacturers and models see Table 2.

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6. Packaging

All material and equipment shall be packaged and marked in such a way as to facilitate handling and protection from damage and that the receiving warehouse can readily identify it and send it, in one complete unit, to a field location without opening crates or boxes to sort items and/or parts.

7. Number Per Package (Logistics)

- 7.1. Standard package: one (1) unit per carton box or as requested by LUMA Energy.
- 7.2. Each arrester is shipped with terminal hardware assemble in an individual high strength cardboard carton box. Any optional bracket or hardware are provided unassembled.

8. Acceptance Criteria

- 8.1. Test required: certified by external laboratories.
- 8.2. Latest applicable codes, standards, and other regulations:
 - a. IEEE C62.11 - Standard for Metal-Oxide Surge Arresters for AC Power Circuits (>1 kV).
 - b. ANSI/NEMA
 - c. ASTM

9. Description

- 9.1. Riser Pole, heavy duty, distribution-class metal-oxide varistor (MOV), single piece silicone polymer housing arrester for 4.16KV, 7.32/8.34KV, 13.2KV, 60 hz, effectively grounded systems.
- 9.2. Riser pole arrester must be capable to withstands the following symmetrical RMS current:
 - a. High Current Symmetrical RMS (Amps) and Duration (Seconds): 20 KA / 0.2 sec.
 - b. Low Current Symmetrical RMS (Amps) and Duration (Seconds): 600 A / 1 sec.
- 9.3. All exposed metal parts of the arrester must be stainless steel 316 or bronze.
- 9.4. Minimum leakage distance from terminal to hanger or bracket as per Section 9.13 a (Insulation Characteristic).
- 9.5. Overall height must not exceed 12 in (30.48 cm).
- 9.6. The arrester must include a long insulated hanger/bracket with a minimum spacing between mounting holes of 6 in. (152 mm), minimum leakage distance of 9.25 in. (235 mm) and withstand 95 KVBL.
- 9.7. Arrester must include a hot dip galvanized crossarm mounting bracket.

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- 9.8. The arrester top and bottom terminals must include a solderless clamp type terminal capable of securely clamp aluminum or copper stranded conductors of sizes #6 to #2AWG.
- 9.9. The line terminal must be a 3/8 in (9.53 mm) stainless-steel stud with a stainless-steel wire clamp with silicone bronze nut and lock washer.
- 9.10. Ground terminals must include isolator with a 3/8 in (9.53 mm) stainless-steel stud with a stainless-steel wire clamp silicone bronze nut and lock washer.
- 9.11. The following minimum information must be permanently attached to or stamped as part of the arrester:
 - a. Name of the device.
 - b. Manufacturer’s name and trademark.
 - c. Manufacturer’s type and identification number.
 - d. Date manufactured.
- 9.12. The arrester must be free of radio influence voltage which may cause communication interference.
- 9.13. It must have approximately the following characteristics:
 - a. Insulation Characteristic:

System Voltage	Arrester Rating		Arrester BIL with Bracket (KVBIL)	Minimum Strike Distance with Bracket
	MOV	MCOV		
4.16KV	3KV	2.55KV	50	3.6 in.
7.2/8.32KV	6KV	5.1KV	105	6.8 in.
13.2KV	10KV	8.4KV	105	6.8 in.

Housing Insulation Withstand Voltages					
Arrester Rating		Minimum Creep Distance	1.2/50µs Impulse (KV Crest)	1 min. Dry (KV rms)	10 sec. Wet (KV rms)
MOV	MCOV				
3KV	2.55KV	8 in. (20.32 cm)	78	15	13
6KV	5.1KV	15.4 in. (39.12 cm)	91	21	20
10KV	8.4KV	15.4 in. (39.12 cm)	104	27	24

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b. Protective Characteristics:

System Voltage	Arrester Rating		0.5 μ s 10 KA Maximum Discharge Voltage (KV)	Max Switching Surge Protective Level (KV Crest)
	MOV	MCOV		
4.16KV	3KV	2.55KV	10.5	6.7
7.2/8.32KV	6KV	5.1KV	21	13.5
13.2KV	10KV	8.4KV	30.3	19.9

Max Discharge Voltages Using 8X20 μ s Current Wave (KV Crest)							
Arrester Rating		1,500A	3,000A	5,000A	10,000A	20,000A	40,000A
MOV	MCOV						
3KV	2.55KV	7.8	8.1	8.4	9.1	10.1	11.6
6KV	5.1KV	15.6	16.3	17.0	18.3	20.2	23.4
10KV	8.4KV	23.1	24.1	25.1	27	29.8	34.6

9.14. Must be designed to withstand forces developed by 160 miles per hour wind.

9.15. Arrester must show positive isolation and visual indication from the ground if it fails.

Table 2:

Warehouse Catalog #	Asset Suite #	System Voltage	Suggested Manufacturer	Model	Arrester Rating	
					MOV	MCOV
004-00309	53999	4.16KV	Hubbell Power System / Ohio Brass	221603-7224	3KV	2.55KV
004-00317	54000	7.2/8.32KV		221605-7224	6KV	5.1KV
004-00325	54001	13.2KV		221609-7224	10KV	8.4KV

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10 Inspection

The acceptance of any material or equipment shall in no way relieve the vendor from his responsibility to meet all the requirements of this specification, and it would not prevent subsequent rejection if such materials were found later to be defective.

— End of Specification —

Document History

Version	5
Date	07/21/2022
Author	Alex J. Rodríguez
Reviewer	Rafael Torres
Approver Manager	Ricardo Castro



Handwritten signatures in blue ink over three horizontal lines. The top signature is 'AJR', the middle is 'RT', and the bottom is 'RC'.

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Appendix

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Appendix 1: Table of Compliance

Line	Criteria	Description	Pass/Fail (P/F)	Comments
1	Specification	The Proponent complies with the corresponding specification document 4350.197.		
2	Industry Standards	The Proponent complies with the industry standards established in the specification document. (ANSI, NEMA, ASTM, IEEE)		
3	Type	Riser pole, heavy duty, outdoor distribution-class metal-oxide varistor (MOV)		
4	Material	Silicone polymer housing. Stainless Steel 316 or bronze exposed metal parts		
5	Product Requirement	Overall height must not exceed 12 in (30.48cm)		
6	Product Requirement	The arrester must include a long-insulated hanger with a minimum spacing between mounting holes of 6 in. (152 mm)		
7	Product Requirement	Insulated hanger or bracket must have a minimum leakage distance of 9.25 in. (235mm) and withstand 95 KV _{BIL}		
8	Product Requirement	Arrester must include a hot dip galvanized crossarm mounting bracket		
9	Product Requirement	The arrester top and bottom terminals must include a solderless clamp type terminal capable of securely clamp aluminum or copper stranded conductors of sizes #6 to #2 AWG		
10	Product Requirement	The line terminal must be a 3/8 in (9.53 mm) stainless-steel stud with a stainless-steel wire clamp with silicone bronze nut and lock washer		
11	Product Requirement	Ground terminals must include isolator with a 3/8 in (9.53 mm) stainless-steel stud with a stainless-steel wire clamp silicone bronze nut and lock washer		

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12	Product Requirement	The arrester has permanently attached or stamped the required minimum information shows on section 9.11 of specification.		
13	Product Requirement	The arrester complies with the insulation characteristics stipulated on Section 9.13 a of specification document 4350.197.		
14	Product Requirement	The arrester complies with the protective characteristics stipulated on Section 9.13 b of specification document.		
15	Warehouse Number:	Arrester Characteristic:		
16	004-00309	4.16KV, MOV 3KV, MCOV 2.55KV, Min. Leakage 8 in. (20.32 cm)		
17	004-00317	7.2 and 8.32KV, MOV 6KV, MCOV 5.1KV, Minimum Leakage 15.4 in. (39.12 cm)		
18	004-00325	13.2KV, MOV 10KV, MCOV 8.4KV, Minimum Leakage 15.4 in. (39.12 cm)		