



Document Title:
Elbow Arrester, 15/25 kV Class, MOV

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Related/Referenced Documents

N/A

Version History

Version	Date	Revision Comments
1	Aug. 18, 2022	Initial Release.
2	Jun. 27, 2024	Format corrections, TOC update, Section 4 modified, and sections order rearranged.
3	Jul. 02, 2024	Section 8 updated.
4	Jul. 17, 2024	Engineers license number was added



Item Version History

Warehouse Catalog #	Asset Suite #	Version	Date
004-00358	54004	4	7/17/2024
004-00374	54006	4	7/17/2024
004-00291	53998	7	7/17/2024
004-83338	83338	4	7/17/2024



1. Introduction

This is a general specification that covers the minimum requirements for Elbow Arrester to be 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 equipment/material.

2. Special Requirements

Samples shall be furnished as requested by LUMA Energy. Vendors that have supplied this equipment/material to LUMA on previous orders, will not have to furnish samples at bid opening. The equipment/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. Literature

Descriptive and technical literature must be supplied by the 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. If required by LUMA, final drawings shall be submitted by the vendor before the manufacturing and shipping process for approval.

4. Compatible with

For compatible manufacturer and model see Table 2. These models are examples of the equipment/material described in this document and do not represent a preference. LUMA will evaluate equally any model not listed here during any acquisition event.

5. Markings

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

6. Packaging

All equipment/material 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)

Standard Package: One (1) unit per box or as requested by LUMA.

8. Acceptance Criteria

- 8.1. Test required: certified by external qualified laboratories.
 - a. High Current Short Duration: Two (2) discharges of 40 kA crest.
 - b. Low Current Long Duration: Twenty (20) surges of 75 A / 2,000 microsecond duration.
 - c. Duty Cycle Test: Twenty-two (22) operations of 5 kA crest / 8 x 20 microsecond duration while energized at voltage rating for the initial 20 operations and at maximum continuous operating voltage (MCOV) for the final two (2) operations.
- 8.2. Product shall be manufactured in accordance with the latest issue below (section 8.3). When conflicts occur between purchaser's specifications and the latest issue below, the purchaser's specification shall prevail.
- 8.3. Latest applicable codes, standards, and other regulations:
 - a. IEEE 386-2016: For separable insulated connector systems for power distribution systems rated 2.5 kV through 35 kV.
 - b. IEEE C62.11: For metal-oxide surge arresters for ac power circuits (>1 kV).
- 8.4. If any other standard different from the ones indicated in this document are used, the supplier must provide information showing compatibility with the required ones.

9. Description

- 9.1. Elbow surge arrester, Metal Oxide Varistor (MOV), is used to provide high-voltage lightning and switching surge protection of transformers, cable, equipment, and other components typically located on underground 15 kV power distribution systems.
- 9.2. Housing shall be made of rubber or ethylene propylene diene terpolymer (EPDM).
- 9.3. Shall be an insulated, fully shielded, fully submersible, dead front device in an elbow configuration to be used on effectively ground 60 Hz systems.
- 9.4. A 36" (91.44 cm) #4 AWG ground lead shall be provided with each unit.
- 9.5. The elbow connector interface shall fit standard 15 kV transformers and dead front switching units.

- 9.6. Shall be suitable to fit 15 kV, 200 A load break or dead break components and 600 A dead break components in a standard transformer and switching unit bushing that conform to ANSI/IEEE 386.
- 9.7. The arrester shall be applied with a maximum continuous operating voltage (MCOV) of 2.55 kV for the 3 kV rating, 5.1 kV for the 6 kV rating, and 8.4 kV for the 10 kV rating in coordination with overhead arresters to prevent voltage wave doubling in the underground system.
- 9.8. Shall be compact design to fit within existing transformer and switching unit cabinetry.
- 9.9. The following minimum information shall be permanently attached to or made an integral stamped part of the arrester:
 - a. Device name
 - b. Manufacturer's name and trademark
 - c. Manufacturer type and identification number
 - d. Manufacture date and/or serial number
 - e. Arrester maximum continuous operating voltage (MCOV) and duty cycle rating.
- 9.10. Shall have the following approximate characteristics in compliance with ANSI/IEEE 386 and ANSI/IEEE C62.11:
 - a. Table 1: Protective Characteristics

Max Discharge Voltages Using 5 kA, 8X20µs Current Wave (kV Crest)					
Arrester Rating		1,500A	5,000A	10,000A	20,000A
MOV	MCOV				
3kV	2.55kV	8.06	8.74	9.36	10.4
6kV	5.1kV	16.12	17.47	18.72	20.80
10kV	8.4kV	28.21	30.57	32.76	36.40

10. Inspection

The acceptance of any equipment/material 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 equipment/materials were found later to be defective.

11. Proposal Information

- 11.1. Submitted proposals must include:
 - a. Technical information.
 - b. Table of Compliance completed by the bidder with reference (see Appendix 1).



12. Table 2: Warehouse and Asset Suite Identification Number

Item (Voltage Rating)	Warehouse Catalog #	Asset Suite #	Compatible Manufacturer & Model
Voltage Class: 15 kV & Current Rating: 200 A			
3 kV	004-00358	54004	Elastimold (167ESA-3)
6 kV	004-00374	54006	Elastimold (167ESA-6)
10 kV	004-00291	53998	Elastimold (167ESA-10)
Voltage Class 15/25 kV & Current Rating: 600 A			
10 kV	004-83338	83338	Elastimold (K655ESA-10)

— End of Specification —



Document Title: Elbow Arrester, 15/25 kV Class,

MOV

Document No.: 4350.238

Department: Distribution

Appendix

Appendix 1:

Line	Description	Pass/Fail (P / F)	Comments
1	The Proponent complies with the corresponding specification document (4350.238).		
2	The Proponent complies with the industry standards established in the specification document (ANSI/IEEE).		
3	Tech. info., tests & drawings provided.		
4	<ul style="list-style-type: none"> • Rubber or EPDM • Fully Shielded & Watertight 		
5	Elbow with Metal Oxide Varistor (MOV)		
6	<ul style="list-style-type: none"> • 15 kV for 200 A models • 15/25 kV for 600 A model 		
7	<ul style="list-style-type: none"> • 004-00358: 3 kV, 200 A • 004-00374: 6 kV, 200 A • 004-00291: 10 kV, 200 A • 004-83338: 10 kV, 600 A 		
8	Suitable to fit 15 kV, 200 A load break or dead break components and 600 A dead break components in a standard transformer and switching unit bushing conforming IEEE 386.		
9	Compact design to fit in existing transformers and switching unit cabinetry.		

NOTE: This table is only a check list for reference. The compliance shall be with the complete document. Marking a PASS in the table won't be accepted as a compliance without the technical information required to certify it.











4350.238 Elbow Arrester 15kV, 200 & 600A (July 2024)

Final Audit Report

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