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Document Title:

Three-Phase, Multiple Way, Submersible Vacuum Load-Break Switchgear

Document Type:	Engineering Type	Document No.:
Specification	**Material Specification**	**4300.50.045**

Department:	Version:	Effective Date:
Distribution Engineering	**03**	Sep 18, 2025

For others, specify here

Shared document with: N/A

Select the Departments impacted by the document (If apply)

For others, specify here

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Related/Referenced Documents

N/A

Version History

Version	Date	Revision
1	Feb. 04, 2022	Initial Release
2	Nov. 09, 2022	General format modifications and table of compliance added (TOC).
3	Sep. 18, 2025	General format modifications. Vacuum fault interrupter function removed (not used, indicated by Underground personnel). Document name modified. Document number changed from 4350.045 (Legacy Number) to 4300.50.045 (New Engineering Records Nomenclature Number).

Item Version History

Warehouse Catalog #	Asset Suite #	Version	Date
038-01529	56915	6	09/18/2025

1. Introduction

This is a general specification that covers the minimum requirements for three-phase submersible vacuum interrupters 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 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 LUMA's general warehouse (011) at Palo Seco, Puerto Rico. Shipping will include transportation and unloading at the indicated warehouse.

3. Literature

3.1. Descriptive and technical literature must be supplied by the vendor at time of bidding. This literature must include, but is not limited to, details of material, drawings, documented testing, and instructions for use and installation. **The literature must be an official document from and certified by the manufacturer.** Failure to submit documents on time and duly certified by the manufacturer will cause bidder disqualification.

3.2. If required by LUMA, final drawings and documentation shall be submitted by the vendor before the manufacturing and shipping process for approval.

4. Compatible with

For compatible manufacturer and model see Table 1. 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. Individual package(s) shall be clearly marked with manufacturer name and item information (part number, serial number, quantity, etc.).

5.3. Packaging labels and tags shall be waterproof.

6. Packaging

6.1. 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.

6.2. A list of all parts included in the container and/or package must be provided at delivery time so the receiving personnel can verify that everything requested is present, avoiding any delay in the receiving process.

6.3. All additional parts, including the remote switch operators, must be enclosed inside the wood crates.

6.4. All the bushings must be packaged with weather and dust protective covers.

7. Number Per Package (Logistics)

Standard package: One (1) unit per package, including the switches operators with their corresponding cables, or as requested by LUMA.

8. Acceptance Criteria

8.1. Product shall be manufactured in accordance with the latest issue below (section 8.2). When conflicts occur between purchaser's specifications and the latest issue below, the purchaser's specification shall prevail.

8.2. All characteristics, definitions, and terminology, except as specifically covered in this specification, shall be in accordance with the latest revision of the ANSI, ASTM, AWS, NEMA, and any other applicable codes, standards, and other regulations, in addition to the following standards:

a. IEEE C37.71: For three-phase manually operated subsurface and vault load-interrupting switches for alternating-current systems.

b. IEEE 386: Requirements for separable insulated connector systems for power distribution systems above 600 V.

8.3. If any other standards 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. This vacuum interrupter switchgear, here after called the unit, is used to sectionalize loop underground systems and perform source transfers in the distribution system.

9.2. The unit shall be a tree-phase, 60 Hz, multiple-way, load-break, SF6 insulated vacuum interrupter switchgear.

9.3. The unit shall be shipped with all the accessories needed to be operated, including the SF6 gas.

9.4. Shall be constructed to be installed and operated inside underground manholes or vaults subject to wet and flooded conditions and corrosive environments (near coastal areas).

9.5. The enclosure and accessories shall be made of stainless steel 316 or 316L (stainless steel 304 or 304L could be accepted as an alternate option).

9.6. The unit shall have a welded hermetically sealed tank and cover.

9.7. The unit shall be of such a size that allows the installation through a manhole cover entrance hole of 42" (106.68 cm) diameter.

9.8. The unit weight shall be light enough to be installed on the floor and walls without much difficulty.

9.9. The unit shall have a pressure gauge to monitor internal gas pressure.

9.10. The unit shall have four (4) three-phase circuits ways, all of them switched.

9.11. Electrical Characteristics

a. Continuous Current per Way: 600 Amps

b. Asymmetrical Momentary Current: 20 kAmps

c. Operating Voltage: 15 kV

d. Basic Insulation Level: 95 kVBIL

9.12. The bushings shall be dead-front type for use with separable connectors conforming to IEEE 386.

9.13. There shall be a parking stand near each bushing.

9.14. A stainless steel or aluminum nameplate and one-line schematic are required, placed at the top of the tank. The information shall be legible for the life of the unit.

9.15. The nameplate shall include the following information as minimum:

a. Manufacturer

b. Model Number

c. Serial Number

d. Manufacturing Date (MM/YYYY)

e. Rated Voltage

f. Basic Insulation Level (kVBIL)

g. Rated Current

h. Momentary Current Rating (Asymmetrical)

i. Total Weight

j. SF6 Weight / Pressure

9.16. Switch Operator

a. There shall be one switch operator for each way.

b. The switch shall have the capacity to be locally and remotely operated by means of a 20 ft (6.1 m) long stainless-steel cable from the interrupter to a fixed remote switch operator, one per switched way, and shall be furnished with the equipment.

c. The switch shall have a locking hasp for pad-locking to prevent unauthorized operation.

d. All metallic parts, except internal parts, shall be stainless steel 316 or 316L (304 or 304L could be accepted as an alternate option).

e. Operation of the switch within the manhole or from the remote location by hand shall be safe from any electrical shock to the operator, particularly from ground potential, should insulation breakdown occur in the system.

10. Inspection

10.1. Upon inspection of incoming equipment/material, the purchaser reserves the right to refuse product shipments and to determine the acceptability or rejection of the product received. The supplier shall be liable for all costs incurred for a product that is rejected.

10.2. 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 or out of compliance.

11. Proposal Information

11.1. Submitted proposals must include:

a. Technical information, drawings, and tests.

b. Table of Compliance completed by the bidder with reference (see Appendix 1).

12. Table 1: Warehouse and Asset Suite Identification Number

Warehouse Catalog #	Asset Suite #	Ways	Voltage Class (kV)	kVBIL	Current Rating (A)	Compatible Manufacturer & Model
038-01529	56915	4	15	95	600	Trayer (G104 with 702-C20 switches operators and cables)

—End of Specification —

Appendix

Appendix 1: Table of Compliance

Line	Description	Pass/Fail (P / F)	Comments
1	Compliance with the document 4300.50.045		
2	Industry standards: IEEE (C37.71 and 386). If different ones are used, information showing compatibility with the required ones is required.		
3	Tech. info., tests, and drawings provided.		
4	3Ø, 60Hz, Multiple Way, Submersible Vacuum Load-Break Switchgear, SF6 insulated		
5	Shipped with all the accessories needed to be operated, including the SF6 gas.		
6	Suitable for underground manholes or vaults subject to wet and flooded conditions and corrosive environments (near coastal areas).		
7	Tank & Accessories: SS 316 (SS 304 could be accepted as an alternate option).		
8	Must fit through a 42" diameter opening.		
9	Designed to be installed on the floor and walls.		
10	Pressure Gauge included.		
11	Four-Ways arrangement. All of them switched.		
12	Continuous Current: 600A		
13	Asymmetric Momentary Current: 20kA		
14	Operating Voltage: 15kV		
15	Basic Insulation Level: 95kVBIL		
16	Bushings conforming IEEE 386. Protection caps included.		
17	Parking stands near each bushing.		
18	Nameplate as per Sections 9.14 and 9.15.		
19	Four Switches Operators included (one for each way) with pad-lock provision.		
20	Switches metallic parts in SS 316 (SS 304 could be accepted as an alternate option).		
21	20' long SS cable from the unit to the switch included for remote operation. One per Switch Way.		

NOTE: This table is only a checklist for reference. The compliance must be with the complete document. Filling out the table with "PASS" won't be accepted as a compliance without the technical information required to certify it.

4300.50.045 Submersible Vacuum Switch (9-18-25)

Final Audit Report 2025-09-18

Created:	2025-09-18
By:	Miguel Rios (miguel.rioslopez@lumapr.com)
Status:	Signed
Transaction ID:	CBJCHBCAABAAWMnVizOEs0eFLDd1VyuYa1Q-bl4BM0wg

"4300.50.045 Submersible Vacuum Switch (9-18-25)" History

Document created by Miguel Rios (miguel.rioslopez@lumapr.com)
2025-09-18 - 7:05:20 PM GMT

Document emailed to Miguel Rios (miguel.rioslopez@lumapr.com) for signature
2025-09-18 - 7:05:25 PM GMT

Document e-signed by Miguel Rios (miguel.rioslopez@lumapr.com)
Signature Date: 2025-09-18 - 7:06:01 PM GMT - Time Source: server

Document emailed to Rodolfo Flores (rodolfo.floresortiz@lumapr.com) for signature
2025-09-18 - 7:06:02 PM GMT

Email viewed by Rodolfo Flores (rodolfo.floresortiz@lumapr.com)
2025-09-18 - 7:06:18 PM GMT

Document e-signed by Rodolfo Flores (rodolfo.floresortiz@lumapr.com)
Signature Date: 2025-09-18 - 7:07:23 PM GMT - Time Source: server

Document emailed to Ricardo Castro (ricardo.castro@lumapr.com) for signature
2025-09-18 - 7:07:24 PM GMT

Email viewed by Ricardo Castro (ricardo.castro@lumapr.com)
2025-09-18 - 8:06:14 PM GMT

Document e-signed by Ricardo Castro (ricardo.castro@lumapr.com)
Signature Date: 2025-09-18 - 8:16:55 PM GMT - Time Source: server

Agreement completed.
2025-09-18 - 8:16:55 PM GMT