

261300S01 MEDIUM-VOLTAGE SWITCHGEAR

All 15 KV interrupter switches shall be load break and provided as follows:

1. ABOVE GROUND Provide S&C Electric Company pad mounted gas switch or approved equal.
2. INTERIOR Provide fused S&C Electric Company air switch or approved equal.
3. UNDERGROUND Provide S&C Electric Company SF-6 switch or approved equal.
 - 3.1. SF6 gas switch, under cover or pad mounted.
 1. The switchgear shall consist of a gas-tight tank containing SF6 gas and load-interrupter switches with visible open gaps and integral visible grounds. Load-interrupter switch terminals shall be equipped with bushings rated 600 amperes continuous to provide for elbow connection. Manual operating mechanisms and viewing windows shall be located on the opposite side of the tank from the bushings and bushing wells so that operating personnel shall not be required to perform any routine operations in close proximity to high voltage elbows and cables.

3.2. Ratings The ratings for the integrated switchgear shall be as designated below.

1. Frequency, Hz: 60
2. Short-Circuit Rating Amperes, RMS Symmetrical: 12,500
3. kV, Maximum: 15.5
4. kV, BIL: 95
5. Main Bus Continuous, Amperes: 600
6. Three-Pole Load-Interrupter Switches Continuous, Amperes: 600
7. Load Dropping, Amperes: 600
8. Fault-Closing, Duty-Cycle
9. Three-Time, Amperes RMS Symmetrical : 12,500
10. Three-Time, Amperes, Peak : 32,000
11. 10-Time, Amperes RMS Symmetrical: 12,500
12. 10-Time, Amperes, Peak : 32,000

3.3. Compliance with Standards and Codes

The switchgear shall conform to or exceed the applicable requirements of the following standards and codes:

1. Comply with ANSI C57.12.28, where applicable.
2. Comply with The applicable portions of ANSI C37.71, ANSI C37.72, ANSI C37.73, IEC 56, and IEC 265-1 (Class A), where applicable.

3.4. Construction

261300S01 MEDIUM-VOLTAGE SWITCHGEAR

Dated: 02/2018

**Applies to: All projects
University of Kentucky**

Page 1 of 4

261300S01 MEDIUM-VOLTAGE SWITCHGEAR

1. SF6 -Gas Insulation.
2. The SF6 gas shall conform to ASTM D2472.
3. The switchgear shall be filled with SF6 gas to a pressure of 7 psig at 68° F.
4. The switchgear shall withstand system voltage at a gas pressure of 0 psig at 68° F.
5. A gas-fill valve shall be provided.
6. A temperature-compensated pressure gauge shall be provided that is color coded to show the operating range. The gauge shall be mounted inside the gas-tight tank (visible through a large viewing window) to provide consistent pressure readings regardless of the temperature or altitude at the installation site.

7. Gas-Tight Tank

3.4.7.1. The tank shall be submersible and able to withstand up to 10 feet of water over the base.

3.4.7.2. The tank shall be of welded construction and shall be made of Type 304 L stainless steel.

8. Viewing Windows

3.4.8.1. Each load-interrupter switch shall be provided with a large viewing window at least 6 inches by 12 inches to allow visual verification of the switch-blade position (open, closed, and grounded) while shining a flashlight on the blades.

3.4.8.2. A cover shall be provided for each viewing window to prevent operating personnel from viewing the flash, which may occur during switching operations.

3.5. High-Voltage Bus

1. Bus and interconnections shall withstand the stresses associated with short-circuit currents up through the maximum rating of the switchgear.

3.6. Provisions for Grounding

1. One ground-connection pad shall be provided on the gas-tight tank of the switchgear.
2. The ground-connection pad shall be constructed of stainless steel and welded to the gastight tank, and shall have a short-circuit rating equal to that of the switchgear.

3.7. Terminations

1. Terminals for load-interrupter switches shall have 600- ampere bushings.
2. Bushings and bushing wells shall be located on one side of the gear to reduce the required operating clearance.

261300S01 MEDIUM-VOLTAGE SWITCHGEAR

3.8. Basic Components

1. Load-Interrupter Switches. The three-phase, gang-operated load-interrupter switches shall have a three-time and ten-time duty-cycle fault-closing rating as specified under "Ratings." This rating defines the ability to close the switch the designated number of times against a three-phase fault with asymmetrical (peak) current in at least one phase equal to the rated value, with the switch remaining operable and able to carry and interrupt rated current. Certified test abstracts establishing such ratings shall be furnished upon request.
2. The switch shall be provided with an integral ground position that is readily visible through the viewing window to eliminate the need for cable handling and exposure to high voltage to ground the equipment.
3. The ground position shall have a three-time and ten-time duty-cycle fault-closing rating.
4. The switch shall be provided with an open position that is readily visible through the viewing window to eliminate the need for cable handling and exposure to high voltage to establish a visible gap.
5. The open gaps of the switch shall be sized to allow cable testing through a feed thru bushing or the back of the elbow.

3.9. Operating Mechanisms

1. Load-interrupter switches and fault interrupters shall be operated by means of a quick-make, quick-break mechanism.
2. The manual handle shall charge the operating mechanism for opening, closing, and grounding of the switches and fault interrupters.
3. A single, integrated operating mechanism shall fully operate each fault interrupter or load interrupter switch in a continuous movement, so that additional operations are not required to establish open or ground positions.
4. Operating mechanisms shall be equipped with an operation selector to prevent inadvertent operation from the closed position directly to the grounded position, or from the grounded position directly to the closed position. The operation selector shall require physical movement to the proper position to permit the next operation.
5. Operating shafts shall be pad-lockable in any position to prevent operation.
6. The operation selector shall be pad-lockable to prevent operation to the grounded position.
7. The operating mechanism shall indicate switch position which shall be clearly visible from the normal operating position.

3.10. Switchgear Style

Under Cover Style. The switch shall be suitable for mounting in an underground, flush-with-grade concrete vault.

3.11. Labeling

261300S01 MEDIUM-VOLTAGE SWITCHGEAR

1. Hazard-Alerting Signs
2. Each unit of switchgear shall be provided with a “Danger—Keep Away—Hazardous Voltage—Will Shock, Burn, or Cause Death” sign.
3. Nameplates, Ratings Labels, and Connection Diagrams
4. Each unit of switchgear shall be provided with a ratings label indicating the following: voltage rating; main bus continuous rating; short-circuit rating; fault-interrupter ratings including interrupting and duty-cycle fault-closing; and load-interrupter switch ratings including duty-cycle fault-closing and short-time.

3.12. Components

1. Main Bus: Copper: full length of switchgear.
2. Ground Bus: Copper
3. On each phase of all utilized circuits of a new or existing switch, a fault indicator shall be required. The fault indicator shall be rated at 1200 amps with inrush restraint, current reset and snap action clamp for cable with O.D. of 1.6". The approved fault indicator is the A.B.Chance fault indicator catalog number 1CRD1200SIR or equal. The fault indicator shall be installed and positioned to be read easily at safe distance.

3.13. Source Quality Control

1. Before shipment of equipment, perform the following tests and prepare test reports:
2. Production tests on completed switchgear assembly according to IEEE C37.20.2.
3. Prepare equipment for shipment.
4. Provide suitable crating, blocking, and supports so equipment will withstand expected domestic shipping and handling shocks and vibration.
5. Weatherproof equipment for shipment. Close connection openings to prevent entrance of foreign material during shipment and storage.

3.14. Acceptable manufacturers:

S&C Electric Company under cover style switches.