

Section 261300.00

Medium Voltage Metal Enclosed Load Interrupter Switchgear

PART 1 - GENERAL

1.1 DESCRIPTION OF WORK

A. Furnish and install a high voltage load interrupter metal enclosed switchgear, single section or multiple section line-up either indoor or outdoor construction as described and as indicated on drawings and specified herein. This equipment shall conform to NEMA, ANSI and IEEE standards.

B. The completed metal enclosed switchgear shall have the following electrical ratings:

Maximum Design Voltage	15kV
System Voltage	12.470kV
BIL	95kV
Main Bus Rating	600A

C. The manufacturer of the switchgear shall be the same as the designer manufacturer of the load break switch. The enclosures, fuses, switches and operators shall be coordinated to assure a fully integrated system assembly.

PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

A. Subject to compliance with requirements, provide unit substations of one of the following (for each type of unit substation):

1. Square D Co.
2. General Electric Co. / S&C
3. Westinghouse/Cutler-Hammer/Eaton
4. Siemens/ITE

2.2 SWITCHGEAR EQUIPMENT

A. Construction

1. Each switch bay shall be a separate constructed cubicle assembled to form a rigid structure. To assist installation and maintenance of bus and cables, the top cover shall be removable. Each individual unit shall be braced to prevent distortion. All metal enclosed switchgear shall be fully front accessible only.
2. Provisions shall allow for convenient extension of both the main bus and the ground bus to adjacent bays which may be added in the future. The main crossover bus is to be furnished and supported from the top of the enclosure on NEMA glass polyester insulators. The ground bus shall run continuously through the entire line-up and shall be securely connected to the steel frame of each bay.
3. The metal enclosed gear shall be fully assembled and tested at the factory prior to shipment. Large line-ups shall be split to permit normal shipping and handling as well as for ease of rejoining at the job site.

B. Load Interrupter Switches

1. Switches shall be quick-make, quick-break with the speed of opening or closing entirely independent of the operator. The load interrupted switches shall be three pole, two position, with a stored energy spring mechanism to provide quick switch operation independent of the handle speed. The interrupter will be designed for in air operation of the flipper blade/arc chute type for ease of inspection and maintenance. Designs which have completely enclosed interrupters or rely on the presence or absence of a gas are not acceptable.
2. Switch operating handle shall be permanently mounted and ready for immediate use. The spring sleeve permits the handle to fold down when the switch is in the open position. Provisions shall be available for padlocking the switch in either the open or closed position. Switch is to have 600A or 1200A continuous and interrupting rating as indicated on plans.
3. A viewing window shall be installed in the switch enclosure and located to enable visible inspection of the switch poles from outside the enclosure, and so place that opening the fuse access door is not required to observe the blown fuse indicator on any fused switch.
4. Door access control shall be provided as follows:
 - a. Doors giving access to fused interrupter switches shall be mechanical interlocked to prevent:
 - b. Opening the door if the interrupter switch on the line side of the power fuse is closed, and closing the interrupter switch if the door is open.
 - c. Doors having access to interrupter switches and not requiring key or mechanical interlocking shall be provided with snap locks.
 - d. Interrupter switches equipped with stored energy mechanisms shall have mechanical interlocks to prevent access to the switch compartment unless the stored energy mechanism is in the discharged or blocked position.
 - e. All other doors (or hinged bolted panels) giving access to high voltage components or bus work shall be provided with snap locks.
 - f. Access to the enclosure shall be from the front only. There shall be no access to high-voltage parts through side or rear walls of the metal enclosed switchgear assembly.
 - g. There shall be no access to high voltage parts by means of removable panels.
5. Doors giving access to power fuses and/or potential transformer fuses shall have a built-in container to store spare fuse refill units.
6. Louvers shall be provided at the top and the bottom and the front and rear of each bay.

C. Fuses

1. The high voltage fuses and non-disconnecting fuse mountings shall be accessible only through a separate door mechanically interlocked with the load break switch, to insure the switch is in the open position when the fuses are accessible. Switch designs with full height use access doors shall have a solid barrier covering the area of the main cross bus and/or line side of the switch. Metal screen barriers are not acceptable. No energized parts shall be within normal reach of the opened doorway. Four single full length inter-phase barriers shall isolate the three phases of the switch from each other and from the enclosures.
2. Fuses shall be boric acid type with provisions for refill units complete with muffler exhaust. Three spare fuse refill units will be supplied for each switch/fuse assembly.
3. Fuses shall be affixed in position with provisions for removal and replacement from the front of the gear without the use of special tools.
4. Fuses shall be equal to S&C #SM5.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Install switchgear as indicated, in accordance with manufacturer's written instructions, and with recognized industry practices; complying with applicable requirements of NEC, NEMA's Stds Pub/No. PB 2.1, and NECA's "Standard of Installation."
- B. Tighten connectors and terminals, including screws and bolts, in accordance with equipment manufacturer's published torque tightening values for equipment connectors. Where manufacturer's torquing requirements are not indicated, tighten connectors and terminals to comply with tightening torques specified in UL Stds 486 A and B, and the National Electrical Code.
- C. Provide fuses, of sizes indicated.

3.2 FIELD QUALITY CONTROL

- A. Prior to energization of circuitry, check all accessible connections to manufacturer's torque tightening specifications.
- B. Prior to energization, check with ground resistance tester phase-to-phase and phase-to-ground insulation resistance levels to ensure requirements are fulfilled.
- C. Prior to energization, check switchgear for electrical continuity of circuits, and for short-circuits.

3.3 Grounding

- A. Provide equipment grounding connections for switchgear as indicated. Tighten connections to comply with tightening torques specified in UL Std 486A to assure permanent and effective grounds.

3.4 Identification

- A. Each device of the switchgear assembly shall have a nameplate as hereinafter specified to identify its size and purpose. In addition, each cubicle shall be similarly identified.
- B. Provide 1" x 2-1/2" laminated plastic nameplate engraved with white character on a background for each device of the assembly.
- C. Provide a one line circuit diagram (mimic bus) constructed of pale blue colored plastic strips 1/2" x 1/16" permanently applied (mechanically) to the outside of the switchgear.

End of Section 261300.00