Capacitor Rack, For Pole-Mounted, Three-Phase Capacitor Banks

Specification

1.0 SCOPE

This specification covers the requirements for a three-phase, nine (9) unit, pole mounted, distribution capacitor bank rack.

2.0 APPLICABLE PUBLICATIONS AND STANDARDS

The capacitor rack shall comply with the applicable provisions of the latest NEMA, IEEE, ANSI, and IEC standards relating to pole mounted capacitor banks. Applicable standards include, but are not limited to:

2.1. IEEE Std 18 – Standard for Shunt Power Capacitors

2.2. IEEE Std C57.12.31 – Standard for Pole-Mounted Equipment – Enclosure Integrity

3.0 PRODUCT REQUIREMENTS

3.1. General

The capacitor rack shall conform to the requirements of the standards referenced in Section 2.0 and the specifications herein, for use in the described application in Section 1.0.

3.2. Construction

3.2.1. The capacitor rack shall be designed to accommodate the following:

3.2.1.1. Nine (9) individual capacitor units sized from 100 to 300 kVAR each, conforming to ANSI and NEMA standard design

3.2.1.2. Outboard mounting provisions for

a) Three (3) single phase, 15 kV class capacitor vacuum switches

b) One (1) 1.5 kVA control power transformer (CPT) when installed on the 14.4 kV grounded-wye system.

c) One (1) 1,000 VA, two bushing control power transformer when installed on the 7.2 kV ungrounded delta system.

d) Four (4) distribution class surge arresters. Surge arrester mounting provisions shall place the arresters with 9” of phase-to-ground clearance and 18” of phase-to-phase clearance.

3.2.2. The capacitor rack shall be provided with all necessary mounting provisions and hardware for direct pole mounting. All hardware shall be stainless steel. The mounting provisions shall include sway arms.

3.2.3. Mounting provisions for the vacuum switches shall be on the front of the capacitor rack, with mounting provisions for the CPT on one of the narrow sides. The front of the rack is defined as the wide side of the rack that is farthest from the pole when installed.

3.2.4. The capacitor rack shall come with a weatherproof junction box mounted near the CPT, containing sufficient terminal points to accommodate the control wiring for the vacuum switches, line post sensors, and transformers according to drawing TDMIS 5131 for 14.4kV solidly-grounded wye configuration or TDMIS 5132 for 7.2kV ungrounded delta configuration. A single multiconductor cable, compatible with the controller defined in TDMIS-9121, shall be provided to connect the junction box to the controller.

3.2.5. There shall be four (4) point lifting provisions suitable for level lifting for installation and removal of a fully assembled rack with all capacitors, switches, CPT, and wiring installed.

3.2.6. Capacitor racks shall have permanent legs which allow a fully assembled rack with all capacitors, switches, transformer, and wiring to sit level on the ground.

3.2.7. Capacitor racks shall be made of aluminum or aluminum alloys only.

3.2.8. The capacitor rack shall be installed “in-line” on the pole, meaning the capacitor unit bushings shall be oriented parallel to the line conductors.

3.2.9. The capacitor rack shall have grounding provisions, including a frame grounding connector suitable for #4 or #6 AWG solid copper wire on the pole side of the rack.