

Voltage Regulator

The voltage on modern distribution circuits is becoming increasingly difficult to manage.

New distributed energy resources, such as solar and other distributed generation, combined with the growth of sophisticated loads creates voltage challenges on distribution network systems. Existing voltage control devices can't maintain a consistent voltage profile, especially when also trying to manage the intermittency of these resources and loads.

These new loads and intermittent resources tend to drive the voltage regulator operations beyond its designed capability. These increased operations reduce the typical voltage regulator life expectancy and increases the ongoing maintenance cost for reliable operation. This ongoing maintenance requirement, along with the reliability cost associated with unit performance contribute significantly to the total cost of ownership for voltage regulators.



GE's Solution to Voltage Regulation

GE's pole mounted voltage regulator was designed with all of these challenges in mind. One of the most robust designs available on the market, this unit is capable of performing under the most demanding situations. Our extensive design testing, which has been validated by KEMA, ensures that our voltage regulator and tap changer switch can comfortably operate in most operational scenarios. This is the only voltage regulator on the market that does not come with a required maintenance plan.

Features of GE's Pole Mounted Voltage Regulator

- Adheres to the latest IEEE C57.15 Standards - GE performs Short Circuit testing every year to validate performance.
- Low total ownership cost – Minimal maintenance.
 - Best in class Load Tap Changer (LTC) switch – 1MM+ mechanical operations.
 - Superior internal arrester provides less stress to the coil under lightning/impulse events which extends the life of the unit.
- Standard designs are offered for fast-cycle ordering.
- Meets IEEE requirements, with 3 operating taps, IEEE clamp type terminals, and remote mount controller.
- Newly designed control cabinet configurable for all control / communication options; meets NEMA 3R and UL50 requirements.
- Flexible design - Multiple tapped Voltage Regulator allowing for up to nine system voltages.
- Voltage regulators and adjustable sub-bases are Seismic Certified and can be installed in applications around the world.



Standard Specification

The GE Voltage Regulator is designed and manufactured in accordance with the latest applicable ANSI, ASTM, RUS, CSA, IEC, and NEMA standards. ANSI Type A and B construction provided based on rating.

Standard Features

External Construction

- Round, sealed tank design with durable weather-resistant powdercoat finish (ANSI No. 70 gray)
- Carbon steel tank material
- Three cover bushings (S, L, SL) with clamp-type terminal for No. 6 to 4/0 AWG conductors (150 amperes and below) and #2-800 MCM (above 150 amperes)
- Removable, sealed hand-hole cover
- 2 heavy duty lifting lugs on tank for safely lifting regulator
- 2 heavy duty lifting lugs on cover for removing interior without the need for disconnecting any connections internally
- 1 inch brass oil drain valve and sampling device
- 1 inch brass minimum oil sight gauge
- 1 inch upper filter press connection for reconditioning insulating fluid
- Pressure relief valve (10 psig vent pressure)
- Provisions for mounting lightning (shunt) surge arresters
- Provisions for grounding tank with clamp-type terminals for cable sizes No. 2 AWG to 250MCM and 500MCM on line and station type units
- Dial-type position indicator with drag hand and load bonus adjustment for additional current carrying ability
- Provisions for direct-to-pole mounting, 138kVA and below, up to 13.8kV
- Black diagrammatic anodized aluminum nameplate on tank and control cabinet
- Seismic certified galvanized adjustable sub-base, heights available from 15.5" to 42.5"
- ANSI Type II Inhibited 10 C mineral oil meets ASTM D-3487 requirements
- 15" radiator panels, 3 bank maximum
- 18" to 36" creep porcelain bushings, GE designed
- Oil filled bushings designed for high voltage applications
- 5 ft. control cable length, UL & CSA certified
- Universal, waterproof, and lockable heavy duty constructed NEMA 3R carbon steel control cabinet
- Control cabinet equipped with universal connector for accepting various control options without modification (motor capacitor located in the cabinet)

Internal Construction

- Switching mechanism to have a quick-break, slow-make operation and electrostatic shielding
- Oven-bonded, patterned, epoxy-coated insulation paper for core and coil assembly
- Heavy duty interior construction for superior short circuit withstands ability in accordance with ANSI C57 15 requirements
- Switching reactor and equalizer windings (when necessary) for balancing reactor voltage and limited rupture voltage/current

- 25°C oil level line
- Center-tapped, internally mounted, zinc-oxide series winding bypass arrester with very low failure rate provides superior distribution of voltage stresses and protects arrester from physical damage during transportation and service
- Self-contained voltage supply for motor and control devices
- Current transformer for monitoring and metering load current
- Heavy duty LTC switch options with expected life of 1 to 2 million operations

Options

- Stainless steel tank
- Galvanized steel tank (longer lead times apply)
- Zinc primer and Epoxy topcoat finish for corrosive environments
- Low loss designs available in all ratings
- 40X short-circuit design according ANSI C57.15
- NEMA 2 and 4 hole spade and clamp style terminals
- Alternate bushing terminals available
 - SEFCOR 2 and 4 hole (unplated and plated)
 - 1.00" threaded stud
 - H&J and Anderson terminals for horizontal/vertical take-off (up to 1000MCM)
- Black laser-etched nameplate (stainless)
- Temperature gauge (0 to 160°C)
- Heavy duty constructed stainless steel NEMA 3R and IP 54 control cabinet
- Cabinet with bottom entry control cable
- Alternate languages (French, Arabic, Spanish, etc.)
- Controller cables of varies lengths up to 50ft and available in CSA sheathed and non-sheathed
- Outlines available in standard or metric units
- Inclusion of electronic schematic, outline, and wiring diagram
- Adjustable control cabinet heater for condensation removal
- Bird guards for bushings and lightning arresters
- Tank ground for use with up to 4/0 cable or rod
- 45 degree position indicator head for pole mounted units

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