

Ohmic voltage sensing

Medium-voltage metal-clad switchgear and load interrupter switchgear



Defy switching transients with ohmic voltage sensing

Ohmic voltage sensing (OVS) for Eaton's medium-voltage metal-clad switchgear and load interrupter switchgear increases reliability over traditional core and coil voltage transformers (VTs) while saving significant space. By utilizing resistive voltage dividers (RVDs) in place of conventional VTs, Eaton has developed a modern approach to safely mitigate primary switching transients and resonance problems for applications requiring VTs.

Benefits

- Bolsters reliability
- Provides non-inductive coupling
- Eliminates primary switching transients and resonance problems
- Eliminates the space required for VT compartments
- Improves operational efficiency

Switching transients are some of the most harmful types of power anomalies. Often initiated by a sudden change of circuit conditions, the resulting overvoltage can damage even the most rugged system components.

Eaton has the solution to safeguard your systems.

Adapting solutions for today's challenges

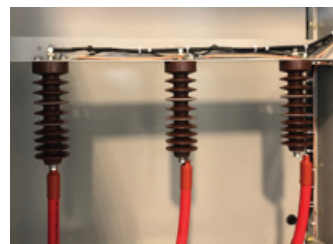
The core and coil design of traditional VTs can produce damaging transients when switching occurs, such as when a breaker is suddenly opened or closed. When switching transients are produced by the interaction of the switching device, transformer, load and system, it can damage the internal insulation and fail the transformer. Transients can also drive the transformer into over-excitation, overvoltage or ferro-resonance, all of which can lead to failure. While resistive voltage dividers have been routinely used in IEC equipment in lieu of conventional VTs for decades, Eaton saw this as an opportunity to continuously improve quality through design by applying them in ANSI/IEEE switchgear.

The difference with ohmic voltage sensing

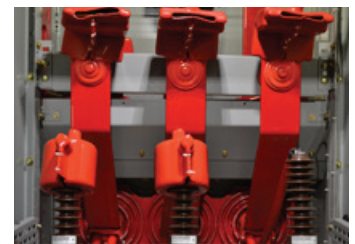
The Ohmic voltage sensing system—which consists of three sensors and a matching adaptor and amplifier—is not susceptible to the transients or ferro-resonance-sparked fuse failures possible in VTs. By removing the fuses, OVS eliminates this potential point of failure in the system, enhancing operational efficiency. The non-inductive resistors prevent interaction with primary switching devices and power system elements, resolving traditional VT problems such as over-excitation, ferro-resonance, internal winding resonance and insulation failures associated with conventional magnetic transformers.

EATON

Powering Business Worldwide



MVS



MVA

Consistent device setup

The application of the OVS system allows for meters and relays to be programmed using similar ratios to voltage transformers, with control power for the amplifier able to range between 24 V and 230 V, AC and DC. The OVS system is designed, tested and validated to be vendor agnostic for the selection of meter and relay components to ensure the varying needs for protection and controls can be met. In addition to providing the advantage of non-inductive coupling, in some applications, the RVDs reduce the space required by conventional VTs and their primary fuses.

Features

- Tested to IEEE C37.20.2:2015 Annex D
- Available for metal-clad, metal-enclosed and front-accessible medium-voltage switchgear new construction applications
- Added to UL file for 5/15 kV arc-resistant and non-arc-resistant switchgear
- No fuses required, eliminating the need for spare parts
- Voltage transformer conversion kit for existing Eaton medium-voltage switchgear across all voltage classes



Support every step of the way

Every application and its associated power system should be reviewed and analyzed to ensure appropriate mitigation against switching transients. Eaton's Electrical Engineering Services and Systems team offers a comprehensive portfolio of advanced power system studies including switching transient analyses that provide a focused and systematic approach to solving complex problems that can occur in a power system.

Additionally, the Ohmic voltage sensing system is available as a field retrofit solution to solve issues with ferro-resonance and transients if found in the system through a power systems study. Our engineers can support this process every step of the way—from determining the cause of the problem to ensuring the recommended equipment solution is installed and operating correctly.

Learn more about medium-voltage switchgear solutions at:
Metal-clad — [Eaton.com/mva](https://www.eaton.com/mva)
Metal-enclosed — [Eaton.com/mvs](https://www.eaton.com/mvs)
View design guides for power distribution products at:
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