

New voltage regulator safe-to-bypass functionality and features designed to meet 2018 IEEE Standard changes

Eaton's Cooper Power series voltage regulator product line offers new standard and optional features, including a significant safety enhancement and improvements to meet the 2018 IEEE standard.



VDiff Voltage 0.03
Meas Tap Position 0
Safe To Bypass

*A Vdiff Voltage at or below 0.3 V indicates NEUTRAL.

Safe-to-bypass functionality

Removing an energized step-voltage regulator from service has always presented safety concerns. As a manufacturer, Eaton recommends four neutral indicators are always confirmed (NEUTRAL light, control position indication, regulator position indicator and differential voltage measurement) to ensure a voltage regulator is in NEUTRAL before bypassing. Of these indicators, the differential voltage measurement is most reliable.

In the past, measuring the differential voltage was least likely to be performed due to a need for special equipment and a lack of access to the bushings because wildlife guards cover the terminals.

The Internal Differential Potential Transformer (IDPT), offered exclusively as an option on Eaton's Cooper Power series voltage regulators for many years, will now be a standard feature. The IDPT, paired with the CL-7 control's **Safe-To-Bypass** feature, provides an effortless method for measuring the voltage difference between the "S" and "L" bushings. A **Safe-To-Bypass** indication shows on the control LCD display ensuring it is safe to perform a bypass operation.

The IDPT also provides:

- Accurate control tap-position indication using the **Enhanced Tap Position Tracking** feature
- Accurate source voltage for reverse-power voltage regulation

IEEE C57.15-2017/IEC 60076-21 ED 2.0 standard updates

Eaton is committed to offering products meeting or exceeding current industry standards. Changes to the voltage regulator dual logo standard impacts Eaton's product offering. The updated standard details optional features, new requirements, and more rigorous design tests.

New optional feature:

- **Universal Interface** – A new industry standard control cable interface connection to the voltage regulator apparatus

Performance enhancements:

- **Higher short circuit requirement for 250 kVA and above:** Advances the step-voltage regulator from a distribution-type transformer to a robust substation-type power transformer
- **Enhanced design type tests:** The robust tests apply to arcing and vacuum tap changer voltage regulators. They include tap-changer, control, dielectric, short circuit, tank integrity and sound levels tests. The new requirements apply to all global voltage regulator manufactures.
- **Control and tap-changer compatibility tests:** Ensures all control manufacturers rigorously test control compatibility to ensure proper tap-changer operation

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