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IEEE Standard Requirements for Tap Changers

IEEE Power & Energy Society

Sponsored by the
Transformers Committee

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(Revision of
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Approved 29 March 2012

IEEE-SA Standards Board

Abstract: This standard covers electrical and mechanical performance and test requirements for tap changers installed in voltage regulating power and distribution transformers of all voltage and kVA ratings. It covers load tap changers (LTCs), also known as on-load tap changers (OLTCs), which can change taps while the transformer is energized and carrying load; and it covers de-energized tap changers (DETCs), also known as off-circuit tap changers, which may be operated only while the transformer is not energized. For load tap changers, this standard covers both resistor and reactor types. It also covers certain aspects of the attendant tap changer motor-drive mechanism. It does not cover the tap changer control system (manual or automatic).

Keywords: de-energized tap changers, IEEE C57.131, load tap changers, off-circuit tap changers, on-load tap changers, reactance type, reactor type, regulating transformers, resistance type, resistor type, step voltage, tap changers, taps, through current, voltage regulators

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Introduction

This introduction is not part of IEEE Std C57.131-2012, IEEE Standard Requirements for Tap Changers.

The introduction to IEEE Std C57.131-1995 is reproduced below, and it still applies today:

> In the interest of furthering international standardization for load tap changers, portions of this standard have been reproduced by permission of the International Electrotechnical Commission (IEC), which retains the copyright.
>
> This document is a new standard that has been developed by the Load Tap Changer Performance Requirements Working Group of the Transformers Committee. Its main intent is to provide standard performance and test requirements for both resistance and reactance type load tap changers. In many respects this standard parallels the IEC-214 (1989), Standard for On-Load Tap Changers, which covers resistance-type load tap changers in great detail, but reactance type load tap changers in lesser detail. This IEEE standard complements the IEC standard insofar as it provides additional performance and test requirements for reactance-type load tap changers, while essentially adopting, although sometimes with modification, the IEC requirements for resistance type load tap changers.

Since IEEE Std C57.131-1995 was published, IEC-214 (1989) has been revised and now has the designation, 60214-1. Many of the changes in the IEC document were also made in this revision of IEEE Std C57.131.

In addition to changes inspired by changes in IEC 60214-1, various working group members have proposed needed modifications to IEEE Std C57.131. The resulting changes fall into these areas:

- There were changes and additions to definitions and terminology.
- The scope was modified to include de-energized (off-circuit) tap changers.
- Typographical errors in figures and tables were corrected.
- Changes were made to some of the test requirements.

Contents

IEEE Standard Requirements for Tap Changers

1. Overview

1.1 Scope

This standard covers electrical and mechanical performance and test requirements for load tap changers and de-energized tap changers, installed in power transformers and voltage regulating transformers and immersed in transformer mineral oil, but may also be used for other insulating fluids insofar as conditions are applicable.

1.2 Application

This standard applies mainly to tap changers immersed in transformer oil but may also be used for gas-insulated tap changers and tap changers with other insulating liquids, when the conditions indicated in this standard are applicable. It applies to tap changers mounted inside the main transformer tank and immersed in the insulating liquid of the transformer. It also applies to tap changers mounted in a container outside the main transformer tank.