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**Technical requirements and test methods for tap-changer for
ultra high voltage transformers**

特高压变压器用分接开关技术要求与试验方法

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Table of Contents

Preface	III
1 Scope	1
2 Normative References	1
3 Terms and Definitions	1
4 Basic Requirements	1
5 Parameter Requirements	2
6 Technical requirements for non-excitation tap changers	3
7 No-load tap changer test 6.	11
8 Technical requirements for on-load tap changers	11
9 On-load tap changer test	14
10 Marking, Packaging, Transport and Storage 25.....	27
Appendix A (Informative) Arrangement of Forward and Reverse Adjustment Contacts for Unloaded Tap Changers in UHV AC Autotransformers.....	27
Appendix B (Normative) Seismic Test Method for Tap Changers of UHV AC Transformers	30

Foreword

This document complies with the provisions of GB/T 1.1-2020 "Standardization Work Guidelines Part 1: Structure and Drafting Rules of Standardization Documents". Drafting.

Please note that some content in this document may involve patents. The issuing organization of this document assumes no responsibility for identifying patents.

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Technical requirements for tap changers used in ultra-high voltage transformers With test methods

1 Scope

This document specifies the basic requirements, parameter requirements, technical requirements, marking, packaging, and transportation of tap changers for 1000kV AC transformers.

It covers topics such as storage and describes the corresponding experimental methods.

This document applies to the design and acceptance of tap changers for 1000kV AC transformers (including autotransformers and step-up transformers).

2 Normative references

GB/T 2900.95

GB/T 4208

GB/T 4797.4

GB/T 10230.1-2019

GB/T 10230.2

GB/T 17623

GB/T 42558.1

GB 50260

3 Terms and Definitions

The terms and definitions defined in GB/T 2900.95 and GB/T 10230.1-2019 apply to this document.

4.1 Environmental Requirements

4.1.1 The operating temperature range for on-load tap changers in transformer oil is -25°C to 105°C , and the ambient temperature range is -25°C ~ 40°C . The operating temperature range for the no-load tap changer in transformer oil is -40°C to 105°C , and the ambient temperature range is -40°C . 40°C .

4.1.2 The electric mechanism should be able to operate normally under outdoor condensation and precipitation conditions.

4.1.3 The sunlight radiation in the operating environment of the tap changer shall comply with the relevant provisions of GB/T 4797.4.

4.1.4 The seismic fortification intensity of the tap changer should be consistent with that of its corresponding transformer.

4.2 Usage Requirements

4.2.1 The tap changer is installed in the voltage regulating and compensation transformer of the UHV step-up transformer or UHV autotransformer, with an inclination of [insert angle here] relative to the ground. It should not exceed 2%.

4.2.2 The tap changer can adopt the neutral point forward and reverse voltage adjustment method. The contact arrangement is shown in Appendix A.

4.2.3 The tap changer should have both manual and electric adjustment functions.

4.2.4 Tap changers installed after the voltage regulating compensation transformer of UHV step-up transformers or UHV autotransformers are non-excitation tap changers.

The deviation between the resistance value of the transformer and the design value should not exceed 2%, and the on-load tap changer and transformer should not malfunction during operation.

4.3 Special Requirements

Other special environmental and usage requirements should be specified when ordering.

5.1 Parameters of tap changers for UHV autotransformers

The parameters of the tap changer for the UHV autotransformer should meet the requirements of Table 1.

Table 1. Parameter Table of Tap Changers for UHV Autotransformers

Parameter	Unit	No-load tap changer characteristic value	On-load tap changer characteristic value
Serial Number			

7 Rated insulation level

Rated withstand test voltage (square Root value) kV	230	230	Lightning full-wave impulse voltage (peak value) kV	550	550

9 Short-circuit current withstand capability

Thermal stability current (RMS value) (3s) kA	30	24	Dynamic steady-state current (peak value) (0.25s) kA	75	60

12 Conditions for core lifting maintenance - -

Running for more than 6 years or More than 100,000 repetitions

13 Partial discharge pC 10 10

14 Temperature rise limit K in contact oil under temperature rise test current 15 15 Note. "-" indicates no content.