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NORME INTERNATIONALE

colour inside

Thyristor valves for high voltage direct current (HVDC) power transmission – Part 1: Electrical testing

Valves à thyristors pour le transport d'énergie en courant continu à haute tension (CCHT) – Partie 1: Essais électriques

IEC 60700-1:2013+AMD1:2021-09 CSV(en-fr)

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

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THYRISTOR VALVES FOR HIGH VOLTAGE DIRECT CURRENT (HVDC) POWER TRANSMISSION –

Part 1: Electrical testing

FOREWORD

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This consolidated version of the official IEC Standard and its amendment has been prepared for user convenience.

IEC 60700-1 edition 2.1 contains the second edition (2015-07) [documents 22F/341/CDV and 22F/351A/RVC], its corrigendum 1 (2017-01) and its amendment 1 (2021-09) [documents 22F/604/CDV and 22F/628/RVC].

In this Redline version, a vertical line in the margin shows where the technical content is modified by amendment 1. Additions are in green text, deletions are in strikethrough red text. A separate Final version with all changes accepted is available in this publication.

International Standard IEC 60700-1 has been prepared by subcommittee 22F: Power electronics for electrical transmission and distribution systems, of IEC technical committee 22: Power electronic systems and equipment.

This second edition constitutes a technical revision.

This edition includes the following significant technical changes with respect to the previous edition.

a) Definitions of terms “redundant thyristor levels”, “thyristor level”, “valve section” have been changed for clarification.
b) The notes were added to test requirements of dielectric d.c. voltage tests for valve support, MVU, valve, specifying that before repeating the test with opposite polarity, the tested object may be short-circuited and earthed for several hours. The same procedure may be followed at the end of the d.c. voltage test.
c) Table 1 on thyristor level faults permitted during type tests was supplemented.
d) The alternative MVU dielectric test method was added.
e) It was specified that production tests may include routine tests as well as sample tests.
f) It was added into test requirements for periodic firing and extinction tests that a scaling factor for tests shall be applied when testing with valve sections.

This publication has been drafted in accordance with the ISO/IEC Directives, Part 2.

A list of all parts in the IEC 60700 series, published under the general title *Thyristor valves for high voltage direct current (HVDC) power transmission*, can be found on the IEC website.

The committee has decided that the contents of the base publication and its amendment will remain unchanged until the stability date indicated on the IEC web site under webstore.iec.ch in the data related to the specific publication. At this date, the publication will be

- reconfirmed,
- withdrawn,
- replaced by a revised edition, or
- amended.

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THYRISTOR VALVES FOR HIGH VOLTAGE DIRECT CURRENT (HVDC) POWER TRANSMISSION –

Part 1: Electrical testing

1 Scope

This part of IEC 60700 applies to thyristor valves with metal oxide surge arresters directly connected between the valve terminals, for use in a line commutated converter for high voltage d.c. power transmission or as part of a back-to-back link. It is restricted to electrical type and production tests.

The tests specified in this standard are based on air insulated valves. For other types of valves, the test requirements and acceptance criteria can be agreed.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

IEC 60060, *High-voltage test techniques*

IEC 60060-1, *High-voltage test techniques – Part 1: General definitions and test requirements*

IEC 60071-1, *Insulation co-ordination – Part 1: Definitions, principles and rules*

IEC 60099 (all parts), *Surge arresters*

IEC 60270, *High-voltage test techniques – Partial discharge measurements*

~~IEC 61803:1999, *Determination of power losses in high-voltage direct current (HVDC) converter stations*~~
~~IEC 61803:1999/AMD 1:2010[1]~~

IEC 61803:2020, *Determination of power losses in high-voltage direct current (HVDC) converter stations with line-commutated converters*

~~ISO/IEC Guide 25, *General requirements for the technical competence of testing laboratories*[2]~~

ISO/IEC 17025, *General requirements for the competence of testing and calibration laboratories*

3 Terms and definitions

For the purpose of this document, the following terms and definitions apply.

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~~[1] There exists a consolidated edition 1.1 (2011) that comprises IEC 61803:1999 and its Amendment 1:2010.~~

~~[2] Withdrawn.~~