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Edition 1.1 2019-01

CONSOLIDATED VERSION

VERSION CONSOLIDÉE

colour inside

Terminology for voltage-sourced converters (VSC) for high-voltage direct current (HVDC) systems

Terminologie relative aux convertisseurs de source de tension (VSC) des systèmes en courant continu à haute tension (CCHT)



IEC 62747:2014-07+AMD1:2019-01 CSV(en-fr)



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VERSION REDLINE

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

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TERMINOLOGY FOR VOLTAGE-SOURCED CONVERTERS (VSC) FOR HIGH-VOLTAGE DIRECT CURRENT (HVDC) SYSTEMS

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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 62747 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 publication has been drafted in accordance with the ISO/IEC Directives, Part 2.

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TERMINOLOGY FOR VOLTAGE-SOURCED CONVERTERS (VSC) FOR HIGH-VOLTAGE DIRECT CURRENT (HVDC) SYSTEMS

1 Scope

This International Standard defines terms for the subject of self-commutated voltage-sourced converters used for transmission of power by high voltage direct current (HVDC).

The standard is written mainly for the case of application of insulated gate bipolar transistors (IGBTs) in voltage sourced converters (VSC) but may also be used for guidance in the event that other types of semiconductor devices which can both be turned on and turned off by control action are used.

Line-commutated and current-sourced converters for high-voltage direct current (HVDC) power transmission systems are specifically excluded from this standard.

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 60027 (all parts), *Letter symbols to be used in electrical technology*

IEC 60617, *Graphical symbols for diagrams*

IEC 60633, *Terminology for high-voltage direct current (HVDC) transmission*

3 Symbols and abbreviations

3.1 List of letter symbols

Essential terms and definitions necessary for the understanding of this standard are given here; other terminology is as per relevant parts of IEC 60747, and as per IEC 60633 for certain specialized types of equipment which are found mainly on line-commutated HVDC schemes but may occasionally be included in VSC HVDC schemes.

The list covers only the most frequently used symbols (see Figure 1). IEC 60027 shall be used for a more complete list of the symbols which have been adopted for static converters. See also other standards listed in the normative references and the bibliography.

U_{d} direct voltage

U_{dc} converter d.c. voltage

U_{dpe} pole-to-earth direct voltage

U_{dpp} pole-to-pole direct voltage

U_{dppN} rated pole-to-pole direct voltage

U_{dpeN} rated pole-to-earth direct voltage

U_L line-to-line voltage on line side of interface transformer, r.m.s. value including harmonics

U_{Le} line-to-earth voltage on line side of interface transformer, r.m.s. value including harmonics

U_{LN} rated value of U_L

~~U_v line-to-line voltage on valve side of interface transformer, r.m.s. value including harmonics~~

~~U_{ve} line-to-earth voltage on valve side of interface transformer, r.m.s. value including harmonics~~

U_c line-to-line ~~converter~~ voltage on converter side of interface transformer, r.m.s. value including harmonics

~~NOTE U_c is equal to U_v minus the voltage drop across the phase and valve reactors. However, U_c has only a clear meaning during balanced conditions (steady state).~~

U_{ce} line-to-earth ~~converter~~ voltage on converter side of interface transformer, r.m.s. value including harmonics

~~U_{valve} voltage between terminals of a valve (any defined value)~~

U_{vtt} voltage between terminals of a valve (any defined value)

I_c current on converter side of interface transformer, r.m.s. value including harmonics

I_d direct current (any defined value)

I_{dN} rated direct current

I_L current on line side of interface transformer, r.m.s. value including harmonics

I_{LN} rated value of I_L

I_v current ~~on~~ through a valve ~~side of interface transformer, r.m.s. value including harmonics~~

~~I_{valve} current through a valve~~

3.2 List of subscripts

0 (zero) at no load

e earth

p pole

N rated value or at rated load

d direct current or voltage

L line side of interface transformer

c converter side of interface transformer

v through or across one valve ~~side of interface transformer~~

~~valve through or across one valve~~

max maximum