

# CONSOLIDATED VERSION

# VERSION CONSOLIDÉE



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

**Terminologie pour le transport d'énergie en courant continu à haute tension  
(CCHT)**



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

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INTERNATIONAL  
ELECTROTECHNICAL  
COMMISSION

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ICS 29.200

ISBN 978-2-8322-2833-3

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**TERMINOLOGY FOR HIGH-VOLTAGE DIRECT CURRENT (HVDC)  
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# TERMINOLOGY FOR HIGH-VOLTAGE DIRECT CURRENT (HVDC) TRANSMISSION

## 1 Scope

This International Standard defines terms for high-voltage direct current (HVDC) power transmission systems and for HVDC substations using electronic power converters for the conversion from a.c. to d.c. or vice versa.

This standard is applicable to HVDC substations with line commutated converters, most commonly based on three-phase bridge (double way) connections (see figure 2) in which unidirectional electronic valves, e.g. semiconductor valves, are used.

## 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 60050-551:~~1998~~, *International Electrotechnical Vocabulary – Part 551: Power electronics*

IEC 60146-1-1:~~1991~~, *General requirements and line commutated convertors – Part 1-1: Specifications of basic requirements*

IEC 60617-5:~~1996~~, *Graphical symbols for diagrams – Part 5: Semiconductors and electron tubes*

IEC 60617-6:~~1996~~, *Graphical symbols for diagrams – Part 6: Production and conversion of electrical energy*

## 3 Symbols and abbreviations

The list covers only the most frequently used symbols. For a more complete list of the symbols which have been adopted for static converters see IEC 60027 and other standards listed in the normative references and the bibliography.

### 3.1 List of letter symbols

$U_d$	direct voltage (any defined value)
$U_{d0}$	<del>conventional</del> nominal no-load direct voltage
$U_{di0}$	ideal no-load direct voltage
$U_{dN}$	rated direct voltage
$U_L$	line-to-line voltage on line side of converter transformer, r.m.s. value including harmonics
$U_{LN}$	rated value of $U_L$
$U_{v0}$	no-load phase-to-phase voltage on the valve side of transformer, r.m.s. value excluding harmonics