

# CONSOLIDATED VERSION

# VERSION CONSOLIDÉE



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**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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ELECTROTECHNICAL  
COMMISSION

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## CONTENTS

FOREWORD.....	6
1 Scope.....	8
2 Normative references.....	8
3 Symbols and abbreviations .....	8
3.1 List of letter symbols.....	8
3.2 List of subscripts .....	9
3.3 List of abbreviations.....	9
4 Graphical symbols .....	9
5 General terms related to converter circuits .....	9
5.1 conversion.....	10
5.2 converter connection .....	10
5.3 bridge (converter connection) .....	10
5.4 (converter) arm.....	10
5.5 by-pass path.....	10
5.6 commutation.....	11
5.7 commutating group .....	11
5.8 commutation inductance .....	11
5.9 pulse number $p$ .....	11
5.10 commutation number $q$ .....	11
5.11 capacitor commutated converter .....	11
5.12 controlled series capacitor converter .....	11
5.13 commutating voltage.....	12
5.14 controlled capacitor commutated converter .....	12
5.15 series capacitor converter .....	12
6 Converter units and valves.....	12
6.1 converter (unit) .....	12
6.2 (converter) bridge .....	12
6.3 valve .....	12
6.4 main valve .....	13
6.5 by-pass valve .....	13
6.6 thyristor module.....	13
6.7 reactor module .....	13
6.8 valve section .....	13
6.9 (valve) thyristor level.....	13
6.10 valve support.....	13
6.11 valve structure .....	13
6.12 <del>valve interface (electronics) (unit)</del> valve base electronics (VBE) .....	13
6.13 valve electronics.....	14
6.14 valve arrester .....	14
6.15 converter unit arrester .....	14
6.16 converter unit d.c. bus arrester .....	14
6.17 midpoint d.c. bus arrester .....	14
6.18 valve <del>(anode) (cathode)</del> reactor .....	14
6.19 converter transformer .....	14
6.20 by-pass switch.....	14
6.21 valve module .....	15

6.22	redundant levels .....	15
6.23	valve anode terminal.....	15
6.24	valve cathode terminal.....	15
7	Converter operating conditions.....	15
7.1	rectifier operation; rectification.....	15
7.2	inverter operation; inversion.....	15
7.3	forward direction; conducting direction (of a valve).....	15
7.4	reverse direction; non-conducting direction (of a valve).....	15
7.5	forward current.....	15
7.6	reverse current.....	15
7.7	forward voltage.....	15
7.8	reverse voltage.....	16
7.9	conducting state; on-state.....	16
7.10	valve voltage drop.....	16
7.11	non-conducting state; blocking state.....	16
7.12	firing.....	16
7.13	(valve) control pulse.....	16
7.14	(valve) firing pulse.....	16
7.15	converter blocking.....	16
7.16	converter deblocking.....	16
7.17	valve blocking.....	16
7.18	valve deblocking.....	17
7.19	phase control.....	17
7.20	(trigger) delay angle $\alpha$ .....	17
7.21	(trigger) advance angle $\beta$ .....	17
7.22	overlap angle $\mu$ .....	17
7.23	extinction angle $\gamma$ .....	17
7.24	hold-off interval.....	17
7.25	conduction interval.....	17
7.26	blocking interval; idle interval.....	17
7.27	forward blocking interval.....	18
7.28	reverse blocking interval.....	18
7.29	false firing.....	18
7.30	firing failure.....	18
7.31	commutation failure.....	18
7.32	short-circuit ratio (SCR).....	18
7.33	effective short-circuit ratio (ESCR).....	18
7.34	triggering; gating.....	18
7.35	operating state.....	18
7.36	blocked state.....	18
7.37	valve voltage.....	18
8	HVDC systems and substations.....	19
8.1	HVDC system.....	19
8.2	HVDC transmission system.....	19
8.3	unidirectional HVDC system.....	19
8.4	reversible bidirectional HVDC system.....	19
8.5	(HVDC) (system) pole.....	19
8.6	(HVDC) (system) bipole.....	19
8.7	bipolar (HVDC) system.....	19

8.8	( <b>asymmetric</b> ) monopolar (HVDC) system.....	20
8.9	HVDC substation .....	20
8.10	(HVDC) substation bipole.....	20
8.11	(HVDC) substation pole .....	20
8.12	HVDC transmission line .....	20
8.13	HVDC transmission line pole.....	20
8.14	earth electrode .....	21
8.15	earth electrode line .....	21
8.16	<b>symmetrical monopole</b> .....	21
8.17	<b>rigid DC current bipolar system</b> .....	21
8.18	<b>symmetrical monopolar (HVDC) system</b> .....	21
8.19	<b>earth return</b> .....	21
8.20	<b>metallic return</b> .....	21
8.21	<b>series converter configuration</b> .....	21
8.22	<b>unitary connection</b> .....	21
8.23	<b>isolated generating system</b> .....	22
8.24	<b>point of common coupling</b> .....	22
8.25	<b>point of common coupling – DC side</b> .....	22
9	HVDC substation equipment .....	22
9.1	<del>a-c</del> AC (harmonic) filter .....	22
9.2	<del>d-c</del> (DC) {smoothing} reactor.....	22
9.3	d.c. reactor arrester .....	22
9.4	<del>d-c</del> DC harmonic filter .....	22
9.5	d.c. damping circuit .....	22
9.6	d.c. surge capacitor .....	22
9.7	d.c. bus arrester .....	22
9.8	d.c. line arrester .....	23
9.9	HVDC substation earth .....	23
9.10	(d.c.) neutral bus capacitor .....	23
9.11	(d.c.) neutral bus arrester .....	23
9.12	metallic return transfer breaker (MRTB) .....	23
9.13	earth return transfer breaker (ERTB).....	23
9.14	<b>AC high frequency (HF) filter</b> .....	23
9.15	<b>DC high frequency (HF) filter</b> .....	23
9.16	<b>neutral bus switch (NBS)</b> .....	23
9.17	<b>neutral bus grounding switch (NBGS)</b> .....	23
10	Modes of control .....	24
10.1	control mode .....	24
10.2	<b>d.c.voltage control mode</b> .....	24
10.3	current control mode.....	24
10.4	<b>active power control mode</b> .....	24
10.5	reactive power control mode .....	24
10.6	frequency control mode .....	24
10.7	damping control mode .....	24
10.8	<b>AC voltage control mode</b> .....	24
10.9	<b>islanded network operation mode</b> .....	24
10.10	<b>SSTI damping control mode</b> .....	24
11	Control systems.....	25
11.1	(HVDC) control system .....	25

11.2	HVDC system control.....	25
11.3	(HVDC) master control.....	25
11.4	(HVDC system) bipole control .....	25
11.5	(HVDC system) pole control.....	25
11.6	(HVDC) substation control .....	25
11.7	converter unit control.....	25
11.8	valve control unit (VCU).....	26
11.9	integrated AC/DC system control .....	26
12	Control functions.....	26
12.1	equal delay angle control; individual phase control .....	26
12.2	equidistant firing control.....	27
12.3	$\alpha$ control .....	27
12.4	minimum $\alpha$ control.....	27
12.5	$\gamma$ control.....	27
12.6	minimum $\gamma$ control.....	27
12.7	control order .....	27
12.8	current margin .....	27
12.9	voltage dependent current order limit (VDCOL) .....	27
12.10	pole (current) balancing .....	27
	Bibliography.....	38
	Figure 1 – Graphical symbols .....	28
	Figure 2 – Bridge converter connection .....	29
	Figure 3 – Example of a converter unit .....	29
	Figure 4 – Commutation process at rectifier and inverter modes of operation.....	30
	Figure 5 – Illustrations of commutation in inverter operation.....	31
	Figure 6 – Typical valve voltage waveforms.....	32
	Figure 7 – Example of an HVDC substation .....	33
	Figure 8 – Example of bipolar two-terminal HVDC transmission system .....	34
	Figure 9 – Example of a multiterminal bipolar HVDC transmission system with parallel connected HVDC substations .....	34
	Figure 10 – Example of a multiterminal HVDC transmission system with series connected HVDC substations.....	35
	Figure 11 – A simplified steady-state voltage-current characteristic of a two-terminal HVDC system .....	35
	Figure 12 – Hierarchical structure of an HVDC control system .....	36
	Figure 13 – Capacitor commutated converter configurations .....	37

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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