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**International Electrotechnical
Vocabulary—Part 551 :
Power electronics**

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Foreword

This translation has been made based on the original Japanese Industrial Standard established by the Minister of Economy, Trade and Industry through deliberations at the Japanese Industrial Standards Committee according to the proposal of establishing a Japanese Industrial Standard from The Institute of Electrical Engineers of Japan (IEEEJ)/Japanese Standards Association (JSA) with a draft being attached, based on the provision of Article 12 Clause 1 of the Industrial Standardization Law.

This Standard has been made based on **IEC 60050-551** : 1998 *International Electrotechnical Vocabulary—Part 551: Power electronics* and **IEC 60050-551-20** : 2001 *International Electrotechnical Vocabulary—Part 551-20: Power electronics—Harmonic analysis* for the purposes of making it easier to compare this Standard with International Standards; to prepare Japanese Industrial Standard conforming with International Standards; and to propose a draft of an International Standard which is based on Japanese Industrial Standard.

Attention is drawn to the possibility that some parts of this Standard may conflict with a patent right, application for a patent after opening to the public, utility model right or application for registration of utility model after opening to the public which have technical properties. The relevant Minister and the Japanese Industrial Standards Committee are not responsible for identifying the patent right, application for a patent after opening to the public, utility model right or application for registration of utility model after opening to the public which have the said technical properties.

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In the event of any doubts arising as to the contents,
the original JIS is to be the final authority.

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International Electrotechnical Vocabulary—Part 551 : Power electronics

Introduction This Japanese Industrial Standard has been prepared based on the second edition of **IEC 60050-551** *International Electrotechnical Vocabulary—Part 551: Power electronics* published in 1998 and the first edition of **IEC 60050-551-20** *International Electrotechnical Vocabulary—Part 551-20: Power electronics—Harmonic analysis* published in 2001 with some modifications of the technical contents.

The portions given sidelines or dotted underlines are the matters modified from the original International Standards. A list of modifications with the explanations is given in Annex 1 (informative).

1 Scope This part of **JIS C 60050** specifies electrotechnical terms related to power electronics and their definitions.

NOTE : The International Standards corresponding to this part of **JIS C 60050** are as follows.

In addition, symbols which denote the degree of correspondence in the contents between the relevant International Standards and **JIS** are IDT (identical), MOD (modified), and NEQ (not equivalent) according to **ISO/IEC Guide 21**.

IEC 60050-551:1998 *International Electrotechnical Vocabulary—Part 551: Power electronics* (MOD)

IEC 60050-551-20:2001 *International Electrotechnical Vocabulary—Part 551-20: Power electronics—Harmonic analysis* (MOD)

2 Division of terms The terms defined in this part of **JIS C 60050** are divided as shown in the following.

The numbers given correspond to **IEC 60050-551** and **IEC 60050-551-20**.

551-11 General

551-12 Types of electronic power converters

551-13 Electronic power switches and electronic AC power controllers

551-14 Essential components of power electronic equipment

551-15 Circuits and circuit elements of power electronic equipment

551-16 Operations within power electronic equipment

551-17 Essential properties of power electronic equipment

551-18 Characteristic curves of electronic power converters

551-19 Stabilized power supplies

551-20 Harmonic analysis

3 Terms and definitions For the purposes of this Standard, the following terms and definitions apply.

The English equivalents are shown for information.

NOTE : The words in parentheses “()”, corresponding to those in English equivalent terms, are omissible. Also, as a unique rule to Japanese Industrial Standard, the words in square brackets “[]” given in Japanese terms may be omitted unless the omission can lead to misunderstanding of the term.

551-11 General

No.	Term (Japanese character)	Reading	Definition	English equivalent (informative)
551-11-01	パワーエレクトロニクス	PAWÁ EREKUTORONIKUSU	the field of technologies covering power, electronics and control that deals with electronic power conversion and electronic power switching	power electronics
551-11-02	(電子) (電力) 変換	(DENSI) (DENRYOKU) HENKAN	change of one or more of the characteristics of an electric power system essentially without appreciable loss of power by means of electronic valve devices NOTE: Characteristics are, for example, voltage, current, frequency (including zero frequency), phase, number of phases, waveform.	(electronic) (power) conversion
551-11-03	電子 (電力) 開閉	DENSI (DENRYOKU) KAIHEI	switching an electric power circuit by means of electronic valve devices	electronic (power) switching
551-11-04	(電子) (電力) 抵抗値 制御	(DENSI) (DENRYOKU) TEIKÓTI SEIGYO	control using the continuous variation of the resistance of electronic devices NOTE: Control using the continuous variation of the resistance of electronic devices is outside the scope of power electronics as it accompanies substantial power loss.	(electronic) (power) resistance control
551-11-05	(電子) 交直 (電力) 変換	(DENSI) KÓTYOKU (DENRYOKU) HENKAN	electronic conversion from AC to DC or vice versa	(electronic) AC/DC (power) conversion
551-11-06	(電子) (電力) 順変換, 整流	(DENSI) (DENRYOKU) ZYUNHENKAN, SEIRYŪ	electronic conversion from AC to DC	(electronic) (power) rectification
551-11-07	(電子) (電力) 逆変換	(DENSI) (DENRYOKU) GYAKU HENKAN	electronic conversion from DC to AC	(electronic) (power) inversion

No.	Term (Japanese character)	Reading	Definition	English equivalent (informative)
551-11-08	(電子) 交流 (電力) 変換	(DENSU) KÔRYŪ (DENRYOKU) HENKAN	electronic conversion from AC to AC	(electronic) AC (power) conversion
551-11-09	(電子) 直流 (電力) 変換	(DENSU) TYOKURYŪ (DENRYOKU) HENKAN	electronic conversion from DC to DC	(electronic) DC (power) conversion
551-11-10	直接 (電力) 変換	TYOKUSETU (DENRYOKU) HENKAN	electronic conversion without a DC or AC link	direct (power) conversion
551-11-11	間接 (電力) 変換	KANSETU (DENRYOKU) HENKAN	electronic conversion with one or more DC or AC link(s)	indirect (power) conversion

551-12 Types of electronic power converters The diagram on figure 1 gives examples of basic electronic power converters.

No.	Term (Japanese character)	Reading	Definition	English equivalent (informative)
551-12-01	(電子) (電力) 変換装置, (電子) (パワー) コンバータ	(DENSU) (DENRYOKU) HENKAN SÔTI, (DENSU) (PAWA) KONBÂTA	an operative unit for electronic power conversion, comprising one or more converters, transformers, control equipment if necessary and auxiliaries if any (see figure 1)	(electronic) (power) converter, (electronic) (power) convertor NOTE: In English, the two spellings “converter” and “convertor” are in use, and both are correct. In this document, the spelling “converter” is used in order to avoid duplications.
551-12-01A	[電子] [電力] 変換器	[DENSU] [DENRYOKU] HENKANKI	an electronic apparatus for power conversion comprising one or more valve device assemblies, used in combination with, if necessary, transformers, control equipment and auxiliaries	converter

No.	Term (Japanese character)	Reading	Definition	English equivalent (informative)
551-12-02	交直変換装置	KÔTYOKU HENKAN SÔTI	an electronic converter for rectification or inversion or both	AC/DC converter
551-12-03	電圧形 [交直] 変換装置	DEN'ATUGATA [KÔTYOKU] HENKAN SÔTI	an electronic AC/DC converter having an essentially smooth voltage on the DC side provided e.g. by a low impedance path for the harmonic currents	voltage stiff AC/DC converter
551-12-04	電流形 [交直] 変換装置	DENRYÛGATA [KÔTYOKU] HENKAN SÔTI	an electronic AC/DC converter having an essentially smooth current on the DC side provided e.g. by means to reduce the harmonic currents	current stiff AC/DC converter
551-12-05	直接交直変換装置	TYOKUSETU KÔTYOKU HENKAN SÔTI	an electronic AC/DC converter without a DC or AC link	direct AC/DC converter
551-12-06	間接交直変換装置	KANSETU KÔTYOKU HENKAN SÔTI	an electronic AC/DC converter with a DC or AC link	indirect AC/DC converter
551-12-07	順変換装置, 整流装置	ZYUNHENKAN SÔTI, SEIRYÛ SÔTI	an AC/DC converter for rectification	rectifier
551-12-08	直接順変換装置	TYOKUSETU ZYUNHENKAN SÔTI	a rectifier without a DC or AC link	direct rectifier
551-12-09	間接順変換装置	KANSETU ZYUNHENKAN SÔTI	a rectifier with a DC or AC link	indirect rectifier
551-12-10	逆変換装置, インバータ	GYAKUHENKAN SÔTI, INBÂTA	an AC/DC converter for inversion	inverter, inverter NOTE: In English, the two spellings “invector” and “inverter” are in use, and both are correct. In this document, the spelling “inverter” is used in order to avoid duplications.

No.	Term (Japanese character)	Reading	Definition	English equivalent (informative)
551-12-11	電圧形逆変換装置, 電圧形インバータ	DEN'ATUGATA GYAKUHENKAN SÔTI, DEN'ATUGATA INBĀTA	a voltage stiff inverter	voltage source inverter, voltage fed inverter
551-12-12	電流形逆変換装置, 電流形インバータ	DENRYŪGATA GYAKUHENKAN SÔTI, DENRYŪGATA INBĀTA	a current stiff inverter	current source inverter, current fed inverter
551-12-13	直接逆変換装置	TYOKUSETU GYAKUHENKAN SÔTI	an inverter without a DC link	direct inverter
551-12-14	間接逆変換装置	KANSETU GYAKUHENKAN SÔTI	an inverter with a DC link	indirect inverter
551-12-15	無効電力補償装置	MUKÔDENRYOKU HOSYÔ SÔTI	a converter for reactive power compensation that generates or consumes reactive power without the flow of active power except for the power losses in the converter	reactive power converter
551-12-16	[電力用] アクティブ フィルタ, アクティブパワーフ ィルタ	[DENRYOKU YÔ] AKUTIBU HIRUTA, AKUTIBU PAWĀ HIRUTA	a converter for controlling harmonics or ripples in electronic circuit	electronic power filter, active power filter
551-12-17	交流変換装置	KÔRYŪ HENKAN SÔTI	a converter for AC conversion	AC converter
551-12-17A	他励変換装置	TAREI HANKAN SÔTI	a converter using external commutation	externally commutated converter NOTE: "Line commutated converter" may be used as an almost equivalent term.
551-12-17B	自励変換装置	ZIREI HENKAN SÔTI	a converter using self-commutation	self-commutated converter

No.	Term (Japanese character)	Reading	Definition	English equivalent (informative)
551-12-18	直接交流変換装置	TYOKUSETU KÔRYÛ HENKAN SÔTI	an AC converter without a DC link	direct AC converter
551-12-19	間接交流変換装置	KANSETU KÔRYÛ HENKAN SÔTI	an AC converter with a DC link	indirect AC converter
551-12-20	電流リンク形間接交流 変換装置	DENRYÛ RINKUGATA KANSETU KÔRYÛ HENKAN SÔTI	an AC converter with a current stiff DC link	indirect current link AC converter
551-12-21	電圧リンク形間接交流 変換装置	DEN'ATU RINKUGATA KANSETU KÔRYÛ HENKAN SÔTI	an AC converter with a voltage stiff DC link	indirect voltage link AC converter
551-12-22	周波数変換装置	SYÛHASÛ HENKAN SÔTI	an AC converter for changing the frequency NOTE: An AC converter for changing both the frequency and the voltage and possibly the number of phases is also called a frequency converter.	frequency converter
551-12-23	サイクロコンバータ	SAIKURO KONBÂTA	a direct frequency converter NOTES 1 By creating an alternating voltage by external commutation from successive waves of the higher frequency AC system the cycloconverter provides a lower output frequency. 2 By creating an alternating voltage by self-commutation from successive voltage samples of suitable frequency and duration the cycloconverter provides a higher or lower output frequency.	cycloconverter
551-12-24	相数変換装置	SÔSÛ HENKAN SÔTI	an AC converter for changing the number of phases	phase converter

No.	Term (Japanese character)	Reading	Definition	English equivalent (informative)
551-12-25	交流電圧変換装置	KÔRYÛ DEN'ATU HENKAN SÔTI	an AC converter for changing the voltage	AC voltage converter
551-12-26	共振形変換装置	KYÔSINGATA HENKAN SÔTI	a converter using (a) resonant circuit(s) to provide commutation or to reduce switching losses	resonant converter
551-12-27	直流変換装置	TYOKURYÛ HENKAN SÔTI	a converter for DC conversion	DC converter
551-12-28	直接直流変換装置, 直流チョップ	TYOKUSETU TYOKURYÛ HENKAN SÔTI, TYOKURYÛ TYOPPA	a DC converter without an AC link	direct DC converter, DC chopper
551-12-29	間接直流変換装置	KANSETU TYOKURYÛ HENKAN SÔTI	a DC converter with an AC link	indirect DC converter
551-12-30	フォワードコンバータ	HOWÂDO KONBÂTA	a DC converter where the energy is transferred from the source side to the load side during the conduction interval(s) of the controllable principal arm(s)	forward converter
551-12-31	フライバックコンバータ	HURAI BAKKU KONBÂTA	a DC converter where the energy is transferred from the source side to the load side during the idle interval(s) of the controllable principal arm(s) after being stored in an inductance	flyback converter
551-12-32	ブーストコンバータ, 昇圧チョップ	BÛSUTO KONBÂTA, SYÔATU TYOPPA	a direct DC converter providing an output voltage which is higher than the input voltage	boost converter, step-up converter
551-12-33	バックコンバータ, 降圧チョップ	BAKKU KONBÂTA, KÔATU TYOPPA	a direct DC converter providing an output voltage which is lower than the input voltage	buck converter, step-down converter
551-12-33A	バックブーストコンバータ, 昇降圧チョップ	BAKKU BÛSUTO KONBÂTA, SYÔKÔATU TYOPPA	a direct DC converter that is capable of both increasing and decreasing the voltage	buck-boost converter

No.	Term (Japanese character)	Reading	Definition	English equivalent (informative)
551-12-34	一象限変換装置	ISSYÔGEN HENKAN SÔTI	an AC/DC or DC converter with one possible direction of DC power flow	one-quadrant converter
551-12-35	二象限変換装置	NISYÔGEN HENKAN SÔTI	an AC/DC or DC converter with two possible directions of DC power flow associated with one direction of direct current and two directions of direct voltage or vice versa	two-quadrant converter
551-12-36	四象限変換装置	YONSYÔGEN HENKAN SÔTI	an AC/DC or DC converter with two directions of DC power flow, associated with two directions of direct voltage and two directions of direct current	four-quadrant converter
551-12-37	可逆変換装置	KAGYAKU HENKAN SÔTI	a converter in which the direction of the power flow is reversible	reversible converter
551-12-37A	双方向変換装置	SÔHÔKÔ HENKAN SÔTI	a converter with two possible directions of the power flow	bidirectional converter
551-12-38	単変換装置	TANHENKAN SÔTI	a current stiff reversible AC/DC converter with direct current in one direction	single converter
551-12-39	複変換装置	HUKUHENKAN SÔTI	a current stiff reversible AC/DC converter with direct current in both directions	double converter
551-12-40	[複変換装置の] 変換部	[HUKUHENKAN SÔTI NO] HENKAN BU	that part of a double converter in which the main direct current when viewed from the DC terminals always flows in the same direction	converter section of a double converter
551-12-41	多重 [接続] 変換装置	TAZYÔ [SETUZOKU] HENKAN SÔTI	a converter consisting of two or more converter units parallel connected or series connected or both, each of which is an operative converter of its own	multi-connected converter

No.	Term (Japanese character)	Reading	Definition	English equivalent (informative)
551-12-42	半導体変換装置	HANDÔTAI HENKAN SÔTI	an electronic power converter with semiconductor valve devices NOTE: Similar terms are used for converters in general or for specific kinds of converters and for converters with other or specific electronic valve devices, e.g. thyristor converter, transistor inverter.	semiconductor converter

551-13 Electronic power switches and electronic AC power controllers

No.	Term (Japanese character)	Reading	Definition	English equivalent (informative)
551-13-01	電子 (電力) スイッチ	DENSI (DENRYOKU) SUITTI	an operative unit for electronic power switching comprising at least one controllable valve device	electronic (power) switch
551-13-02	電子交流 (電力) スイッチ	DENSIKÔRYÔ (DENRYOKU) SUITTI	an electronic power switch capable of switching alternating current	electronic AC (power) switch
551-13-03	電子直流 (電力) スイッチ	DENSITYOKURYÔ (DENRYOKU) SUITTI	an electronic power switch capable of switching direct current	electronic DC (power) switch
551-13-04	[電子] 交流電力調整装置	[DENSI] KÔRYÔDENRYOKU TYÔSEI SÔTI	a direct AC converter which is able to adjust AC power by means of phase control, on-off control, etc. as well as acting as an electronic AC switch	electronic AC power controller
551-13-05	半導体スイッチ	HANDÔTAI SUITTI	an electronic power switch with semiconductor valve devices NOTE: Similar terms are used for electronic switches or power controllers with specific electronic valve devices, e.g. thyristor controller, transistor switch.	semiconductor switch

551-14 Essential components of power electronic equipment

No.	Term (Japanese character)	Reading	Definition	English equivalent (informative)
551-14-01	[電子] デバイス	[DENSI] DEBAISU	a device the function of which is based on charge carriers moving through a semiconductor, a high vacuum or a gas discharge	electronic device
551-14-02	[電子] [バルブ] デバイス	[DENSI] [BARUBU] DEBAISU	an indivisible electronic device for electronic power conversion or electronic power switching, comprising a single non-controllable or bistably controlled unidirectionally conducting current path without substantial power loss NOTES 1 Typical electronic valve devices are thyristors, power rectifier diodes, power switching bipolar and field effect transistors and insulated-gate bipolar transistors (IGBT). 2 Two or more electronic valve devices may be integrated on a common semiconductor chip (examples: a thyristor and a rectifier diode in a reverse conducting thyristor, a power switching field effect transistor with its inverse diode) or packaged in a common case (semiconductor power module). These combinations are to be considered as separate electronic valve devices.	electronic valve device
551-14-03	可制御 [バルブ] デバイス	KASEIGYO [BARUBU] DEBAISU	a valve device the current path of which is bistably controlled in its conducting direction	controllable valve device
551-14-04	非可制御 [バルブ] デバイス, [整流] ダイオード	HIKASEIGYO [BARUBU] DEBAISU, [SEIRYŪ] DAIÔDO	a reverse blocking valve device the current path of which conducts in its conducting direction without any control signal being applied	non-controllable valve device, rectifier diode

No.	Term (Japanese character)	Reading	Definition	English equivalent (informative)
551-14-05	逆阻止 [ノバルブ] デバイス	GYAKUSOSI [BARUBU] DEBAISU	a valve device which is capable of blocking a specified direct voltage applied in its non-conducting direction	reverse blocking valve device
551-14-06	非逆阻止 [ノバルブ] デバイス	HIGYAKUSOSI [BARUBU] DEBAISU	a controllable valve device which is not capable of substantially blocking any reverse voltage NOTE: In certain power electronic circuits such valve devices require means to suppress any reverse voltages, e.g. inverse parallel connected non-controllable valve devices (rectifier diodes).	non-reverse blocking valve device
551-14-07	ラッチ形 [ノバルブ] デバイス	RATTIGATA [BARUBU] DEBAISU	a controllable valve device which latches when it is turned on, that means it remains in the on state when the trigger signal has ended NOTES 1 Most latching valve devices can be turned off only by suppressing the current through the conducting path by external means. 2 A gate turn-off (GTO) thyristor is a latching valve device which can be turned off by a control signal. 3 A latching valve device may be reverse blocking or non-reverse blocking.	latching valve device
551-14-07A	非ラッチ形 [ノバルブ] デバイス	HIRATTIGATA [BARUBU] DEBAISU	a controllable valve device that needs to receive a control signal (on signal) continuously to keep it on after turning on and turns off when the signal is removed	non-latching valve device
551-14-08	オンオフ制御 [ノバルブ] デバイス	ON'OHU SEIGYO [BARUBU] DEBAISU	a controllable valve device which may be turned on and off by a control signal	switched valve device

No.	Term (Japanese character)	Reading	Definition	English equivalent (informative)
551-14-08A	オン制御 [バルブ] デバイス	ON SEIGYO [BARUBU] DEBAISU	a controllable valve device that can be controlled to turn on only and turns off when principal current becomes zero by the operation of the external main circuit	switched-on valve device
551-14-09	半導体 [バルブ] デバイス	HANDÓTAI [BARUBU] DEBAISU	an electronic valve device which is a semiconductor device NOTE: Power [semiconductor] device that is a product category of semiconductor device includes the ones other than semiconductor valve device.	semiconductor valve device
551-14-10	真空 [バルブ] デバイス	SINKŪ [BARUBU] DEBAISU	an electronic valve device in which the degree of vacuum is so high that the effects of ionization are negligible	high vacuum valve device
551-14-11	イオン [バルブ] デバイス, ガス [バルブ] デバイス	ION [BARUBU] DEBAISU, GASU [BARUBU] DEBAISU	an electronic valve device in which the effects of the ionization of a gas play an important role	ionic valve device, gas-filled valve device
551-14-12	[バルブデバイス] スタック	[BARUBU DEBAISU] SUTAKKU	a single structure of one or more electronic valve devices with its (their) associated mounting(s) and auxiliaries if any	valve device stack
551-14-13	[バルブデバイス] アセンブリ	[BARUBU DEBAISU] ASENBURI	an electrically and mechanically combined assembly of electronic valve devices or stacks, complete with all its connections and auxiliaries in its own mechanical structure NOTE: Similar terms are applied to stacks or assemblies comprising specific electronic valve devices, e.g. diode stack (rectifier diodes only), thyristor assembly (thyristors only or in combination with rectifier diodes).	valve device assembly

No.	Term (Japanese character)	Reading	Definition	English equivalent (informative)
551-14-14	転流リアクトル	TENRYŪ RIAKUTORU	a reactor included in the commutation circuit to bring the commutation inductance to the specified value	commutation reactor
551-14-15	転流コンデンサ	TENRYŪ KONDENSA	a capacitor included in the commutation circuit to supply commutating voltage	commutation capacitor
551-14-16	相間リアクトル	SÔKAN RIAKUTORU	an electromagnetic device enabling the operation in parallel of two or more phase displaced commutating groups through inductive coupling between the windings placed on the same core	interphase transformer
551-14-17	スナバ (回路)	SUNABA (KAIRO)	a subcircuit connected to one or more electronic valve devices in order to relieve it (them) of stress as for instance overvoltage transients, switching losses, high rate of rise of current or voltage, etc. NOTE: Specific terms as for instance RC snubber, parallel snubber, a.c. side snubber, etc. are in use.	snubber (circuit)
551-14-18	直流フィルタ	TYOKURYŪ HIRUTA	a filter on the DC side of a converter, designed to reduce the ripple in the associated system	DC filter
551-14-19	交流フィルタ	KÔRYŪ HIRUTA	a filter on the AC side of a converter, designed to reduce the circulation of harmonic currents in the associated system	AC filter

551-15 Circuits and circuit elements of power electronic equipment

No.	Term (Japanese character)	Reading	Definition	English equivalent (informative)
551-15-01	(バルブ) アーム	(BARUBU) ÂMU	a part of the circuit of an electronic power converter or switch bounded by any two AC or DC terminals and including one or more simultaneously conducting electronic valve devices connected together and other components if any	(valve) arm
551-15-02	主アーム	SYU ÂMU	a valve arm involved in the major transfer of power from one side of the converter or electronic switch to the other NOTE: Depending on the mode of operation a principal arm may act as an auxiliary arm or vice versa.	principal arm
551-15-03	アーム対	ÂMU TUI	two series connected valve arms with the same conducting direction NOTE: The common terminals in pairs of arms are called centre terminals, and the other terminals are called external terminals.	pair of arms
551-15-04	逆並列アーム対	GYAKUHEIRETU ÂMU TUI	two valve arms in parallel with opposite conducting directions	pair of antiparallel arms
551-15-05	補助アーム	HOZYO ÂMU	any valve arm other than a principal arm NOTE: Sometimes an auxiliary arm temporarily fulfills more than one of the following functions : by-pass arm, free-wheeling arm, turn-off arm or regenerative arm.	auxiliary arm
551-15-06	バイパスアーム	BAIPASU ÂMU	an auxiliary arm providing a conductive path which allows the current to circulate without an interchange of power between source and load	by-pass arm

No.	Term (Japanese character)	Reading	Definition	English equivalent (informative)
551-15-07	環流アーム	KANRYŪ ÂMU	a by-pass arm containing only non-controllable valve devices	free-wheeling arm
551-15-08	ターンオフアーム	TÂN'OHU ÂMU	an auxiliary arm which temporarily takes over the current directly from a conducting valve arm, consisting of one or more latching valve devices which cannot be turned off by a control signal	turn-off arm
551-15-09	回生アーム	KAISEI ÂMU	a valve arm which transfers a part of the power from the load side to the source side	regenerative arm
551-15-10	変換接続	HENKAN SETUZOKU	the electrical arrangement of valve arms and other components essential for the function of the main power circuit of a converter	converter connection
551-15-11	基本変換接続	KIHON HENKAN SETUZOKU	the electrical arrangement of principal arms in a converter	basic converter connection
551-15-12	(変換装置の) 単向接続	(HENKAN SÔTI NO) TANKÔ SETUZOKU	a converter connection such that the current through each of the phase terminals of the AC circuit is unidirectional	single-way connection (of a converter)
551-15-13	(変換装置の) 双向接続	(HENKAN SÔTI NO) SÔKÔ SETUZOKU	a converter connection such that the current through each of the phase terminals of the AC circuit is bidirectional	double-way connection (of a converter)
551-15-14	ブリッジ [接続]	BURIZZI [SETUZOKU]	a double-way connection of pairs of arms such that the centre terminals are the phase terminals of the AC circuit, and that the outer terminals of like polarity are connected together and are the DC terminals	bridge connection
551-15-15	均一 [アーム] 接続	KIN'ITU [ÂMU] SETUZOKU	a connection with either all principal arms controllable or all principal arms non-controllable	uniform connection
551-15-16	非可制御 [アーム] 接続	HIKASEIGYO [ÂMU] SETUZOKU	a uniform connection with all principal arms non-controllable	non-controllable connection

No.	Term (Japanese character)	Reading	Definition	English equivalent (informative)
551-15-17	全可制御 [ア-ム] 接続	ZENKASEIGYO [ÂMU] SETUZOKU	a uniform connection with all principal arms controllable	fully controllable connection
551-15-18	混合 [ア-ム] 接続	KONGÔ [ÂMU] SETUZOKU	a connection with both controllable and non-controllable principal arms	non-uniform connection
551-15-19	半数可制御 [ア-ム] 接続	HANSÛ KASEIGYO [ÂMU] SETUZOKU	a non-uniform connection with half the number of principal arms controllable	half-controllable connection
551-15-19A	レグ	REGU	arms comprising one phase of bridge connection or multilevel connection	leg
551-15-19B	マルチレベル接続	MARUTIREBERU SETUZOKU	an AC/DC converter connection where there are three or more different voltages at the AC terminals of the leg	multilevel connection
551-15-20	(転流群の) 多重接続	(TENRYÛ GUN NO) TAZYÛ SETUZOKU	a connection in which two or more identical commutating groups which do not commute simultaneously are connected through an interphase reactor or the like in such a way that their direct currents add	multiple connection (of commutating groups)
551-15-20A	(自励変換装置の) 多重接続	(ZIREI HENKAN SÔTI NO) TAZYÛ SETUZOKU	a converter connection comprising two or more self-commutated converters with appropriate phase relationship (including pulse phase)	multiconnection (of self-commutated converters)
551-15-21	昇降圧接続	SYÔKÔATU SETUZOKU	a series connection of two or more converter connections the direct voltages of which may be added or subtracted depending on the control of the individual connections	boost and buck connection
551-15-22	(直列接続の) 段	(TYOKURETU SETUZOKU NO) DAN	a part of a series connection of two or more converter connections consisting of one or more parallel connected converter connections	stage (of a series connection)