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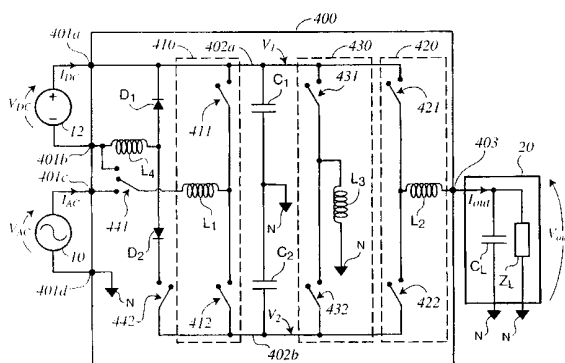
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For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: POWER CONVERTERS WITH AC AND DC OPERATING MODES AND METHODS OF OPERATION THEREOF



(57) Abstract: A power converter suitable for use in an uninterruptible power supply (UPS) includes first and second voltage busses, an input port having a first terminal coupled to one of the first and second voltage busses, a neutral bus and an output terminal. A first switching circuit selectively couples a second terminal of the input port to the first and second voltage busses. A second switching circuit selectively couples the first and second voltage busses to the output terminal. A third switching circuit selectively couples the first and second voltage busses to the neutral bus. Preferably, the first, second and third switching circuits are operative to produce an AC output voltage at the output terminal from a DC input voltage at the input port such that alternating ones of the first and second terminals of the first input port are referenced to the neutral bus for successive first and second half cycles of the AC output voltage. According to other embodiments, a DC voltage generating circuit is operative to produce respective first and second DC voltages on first and second voltage busses. A first switching circuit is operative to selectively couple the first and second voltage busses to the output terminal. A storage circuit connected to the output terminal includes a capacitive storage element, a rectifying circuit coupling the capacitive storage element to the output terminal, and a second switching circuit operative to selectively couple the capacitive storage element to the output terminal.

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INTERNATIONAL SEARCH REPORT

International Application No

PCT/US 01/05594

A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 H02J9/06 H02M5/458

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 H02J

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, WPI Data, PAJ

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 5 126 585 A (JOHN T. BOYS) 30 June 1992 (1992-06-30) abstract figures 2,5 column 8, line 5 - line 11 column 8, line 28 - line 37 ---	1,24
Y	US 5 253 157 A (ALEX J. SEVERINSKY) 12 October 1993 (1993-10-12) abstract figure 1 ---	1,24
A	PATENT ABSTRACTS OF JAPAN vol. 1998, no. 08, 30 June 1998 (1998-06-30) & JP 10 066351 A (MATSUSHITA ELECTRIC WORKS), 6 March 1998 (1998-03-06) abstract; figure 10 --- -/--	1,24



Further documents are listed in the continuation of box C.



Patent family members are listed in annex.

* Special categories of cited documents :

- *A* document defining the general state of the art which is not considered to be of particular relevance
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T later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

X document of particular relevance: the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

Y document of particular relevance: the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

* & * document member of the same patent family

Date of the actual completion of the international search

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INTERNATIONAL SEARCH REPORT

International Application No

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C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
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A	US 5 463 283 A (STEPHEN J. SANDERSON) 31 October 1995 (1995-10-31) abstract figure 1 ---	1,24
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A	WO 94 23482 A (EXIDE ELECTRONICS CORPORATION) 13 October 1994 (1994-10-13) page 6, line 27 -page 7, line 17 figures 2,3 ---	1,24
A	EP 0 420 628 A (WISCONSIN ALUMNI RESEARCH FOUNDATION) 3 April 1991 (1991-04-03) abstract figures 1,6 ---	1,24
X	PATENT ABSTRACTS OF JAPAN vol. 1995, no. 05, 30 June 1995 (1995-06-30) & JP 07 046861 A (SANKEN ELECTRIC), 14 February 1995 (1995-02-14) abstract ---	33-37
X	US 5 119 283 A (ROBERT L. STEIGERWALD ET AL.) 2 June 1992 (1992-06-02) figure 2 -----	33-37

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

Continuation of Box I.2

Claims Nos.: 33-37 (in part)

Claim 33, for which the applicant has chosen not to provide reference to any of the figures of the application, does not provide the search examiner with any conceptual limitation of the subject matter being claimed. The specification: "rectifyingly coupling first and second capacitors to the load to produce respective first and second DC voltages across respective ones of the first and second capacitors from an AC output voltage at the load" does not provide any clear concept for search". The claim 33 does not provide corresponding features to the independent claims 1 and 24 as at least the DC power source with a terminal connected one of two voltage busses is missing in claim 33. It is thus clear that claim 33 is not concerned with the same inventive matter as claims 1 and 24, but it is unclear to which other inventive matter claim 33 refers.

A possible interpretation of claim 33 is a full-bridge rectifier (four switches involved as stated) with two buffer capacitors. A such document is provided, and leaves no evident differences on the level of novelty with claim 33. Being a possible novelty anticipation of claim 33, no further search for claim 33 or the dependent claims 34-37 has been performed.

The applicant's attention is drawn to the fact that claims, or parts of claims, relating to inventions in respect of which no international search report has been established need not be the subject of an international preliminary examination (Rule 66.1(e) PCT). The applicant is advised that the EPO policy when acting as an International Preliminary Examining Authority is normally not to carry out a preliminary examination on matter which has not been searched. This is the case irrespective of whether or not the claims are amended following receipt of the search report or during any Chapter II procedure.

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/US 01/05594

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