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(54) Title: SCALABLE SINGLE-STAGE DIFFERENTIAL POWER CONVERTER

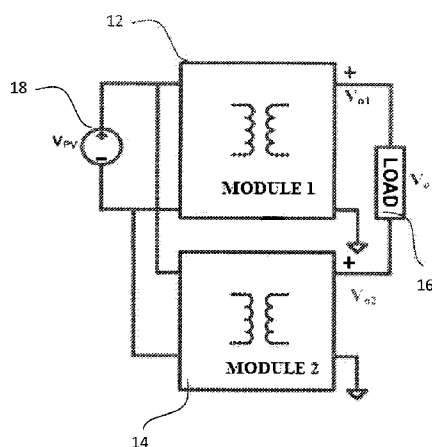


FIG. 1A

(57) Abstract: An embodiment of the invention is a scalable single stage differential power converter. The inverter can be implemented in signal, split and multi-phases. A multiphase converter can be achieved with only three modules. Integrated magnetics used in preferred embodiments of the invention mitigate the DC component of the steady-state dynamics and can be extended to AC ripple mitigation. Control architectures in preferred embodiments can mitigate higher order harmonics in steady state dynamics. Embodiments of the invention also provide scalability for voltage and current source topologies.



INTERNATIONAL SEARCH REPORT

International application No.
PCT/US2012/043812**A. CLASSIFICATION OF SUBJECT MATTER*****H02M 1/12(2006.01)i, H02M 1/14(2006.01)i, H02M 7/5387(2007.01)i***

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)

H02M 1/12; H02M 3/335; H02M 7/217

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

Korean utility models and applications for utility models

Japanese utility models and applications for utility models

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

eKOMPASS(KIPO internal) & Keywords: differential converter, harmonics, bi-directional, integrated-transformer

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	Mazumder, S.K. et al., "A low-cost single-stage isolated differential Cuk inverter for fuel-cell application" PESC 2008, IEEE. pp.4426-4431.	16,33,50
A	See abstract, page 4426 - page 4428 and figures 1-3	1-15,17-32,34-49,51
X	S Cuk, RW Erickson, "A conceptually new high-frequency switched-mode power amplifier technique eliminates current ripple", Proc. 5th Nat. Solid-State Power Conversion Conference, 1978.	17,34,51
A	See abstract, chapter 4 and figures 13-19.	1-16,18-33,35-50
A	WO 02-061928 A3 (ADVANCED POWER CONVERSION LTD) 08 August 2002 See abstract, claims 1-11, and figures 1-8.	1-51
A	US 05442539A A (CUK; SLOBODAN et al.) 15 August 1995 See abstract, claims 1-6 and figures 1-10.	1-51



Further documents are listed in the continuation of Box C.



See patent family annex.

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INTERNATIONAL SEARCH REPORT

Information on patent family members

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Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO 02-061928 A3	08.08.2002	AU 2002-228291 A8 GB 2371928 A	12.08.2002 07.08.2002
US 05442539A A	15.08.1995	None	