

(19) World Intellectual Property Organization
International Bureau



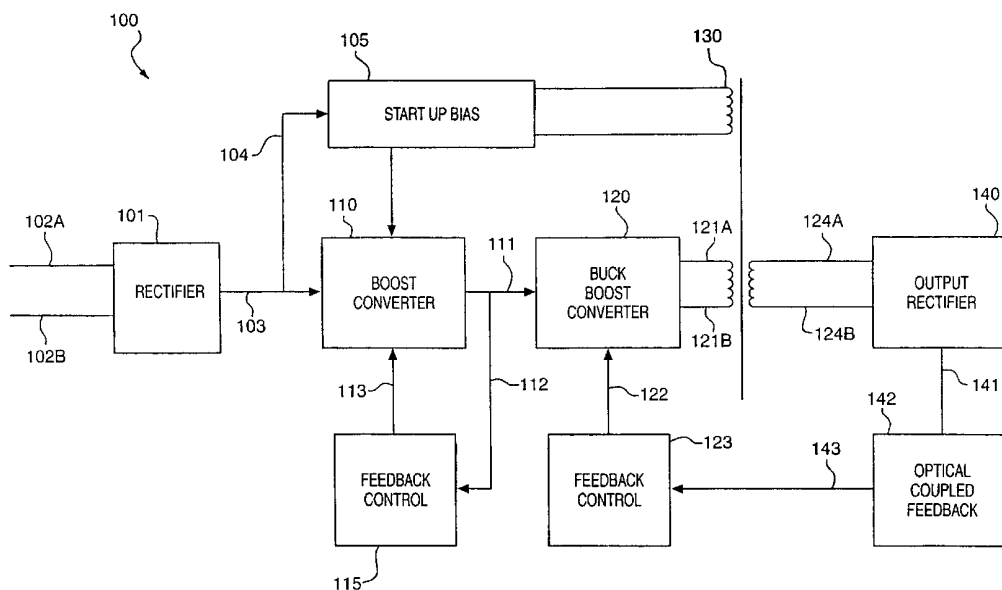
(43) International Publication Date
11 October 2001 (11.10.2001)

PCT

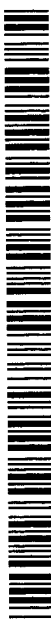
(10) International Publication Number
WO 01/76049 A3

- (51) International Patent Classification⁷: **G01F 1/84**, (74) Agent: **DUFT, Donald, M.**; Faegre & Benson LLP, 1900 Fifteenth Street, Boulder, CO 80302 (US).
H02M 1/10, 7/217
- (21) International Application Number: PCT/US01/40098 (81) Designated States (*national*): AU, BR, CA, CN, ID, IN, JP, KR, MX, PL, RU, SG.
- (22) International Filing Date: 12 February 2001 (12.02.2001)
- (25) Filing Language: English (84) Designated States (*regional*): European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR).
- (26) Publication Language: English
- (30) Priority Data: **Published:**
09/540,660 31 March 2000 (31.03.2000) US — with international search report
- (71) Applicant: **MICRO MOTION, INC.** [US/US]; 7070 Winchester Circle, Boulder, CO 80301 (US). (88) Date of publication of the international search report:
20 June 2002
- (72) Inventors: **MANSFIELD, William, M.**; 3975 Dale Drive, Lafayette, CO 80026 (US). **HARRIS, William, Jr.**; 1001 Schofield Road, Berthoud, CO 80513 (US).
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: UNIVERSAL INPUT TO DC OUTPUT CONVERSION CIRCUITRY



(57) Abstract: A circuit (100) supplying a DC output of a desired voltage from an input regardless of power received. In this circuit (100), a rectifier (101) converts an alternating current (AC) input to direct current (DC) or changes a DC input to a desired polarity. A boost converter (110) receives DC current having a first voltage from the rectifier (101) and outputs DC current having at least a minimal voltage. Finally, a buck boost converter (120) receives the DC current having the at least said minimal voltage and outputs DC having a desired voltage.



WO 01/76049 A3

INTERNATIONAL SEARCH REPORT

International Application No

PC1/US 01/40098

A. CLASSIFICATION OF SUBJECT MATTER
 IPC 7 G01F1/84 H02M1/10 H02M7/217

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 H02M

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

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 5 771 160 A (SEONG HWAN-HO) 23 June 1998 (1998-06-23) the whole document ---	1,2
X	US 6 002 103 A (THOMMES JAMES M) 14 December 1999 (1999-12-14) abstract column 3, line 63 -column 6, line 50 ---	1,2 3-5,7
X	US 5 481 449 A (KHERALUWALA MUSTANSIR H ET AL) 2 January 1996 (1996-01-02) the whole document ---	1,2 5
Y	US 5 077 486 A (MARSON GARY ET AL) 31 December 1991 (1991-12-31) abstract figures 1-3 column 12, line 44 -column 25, line 54 ---	3,4 1-5
A	---	---

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

E earlier document but published on or after the international filing date

L document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

O document referring to an oral disclosure, use, exhibition or other means

P document published prior to the international filing date but later than the priority date claimed

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

22 October 2001

Date of mailing of the international search report

29/10/2001

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2
 NL - 2280 HV Rijswijk
 Tel. (+31-70) 340-2040, Tx. 31 651 epo.nl.
 Fax: (+31-70) 340-3016

Authorized officer

Hurtado-Albir, J

INTERNATIONAL SEARCH REPORT

International Application No

PCT/US 01/40098

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 5 790 392 A (HAYS PAUL ET AL) 4 August 1998 (1998-08-04) abstract	7
A	----- US 5 636 106 A (BATARSEH ISSA E ET AL) 3 June 1997 (1997-06-03) abstract -----	1,2

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/US 01/40098

Patent document cited in search report	A	Publication date	Patent family member(s)	Publication date
US 5771160	A	23-06-1998	KR 153863 B1	15-12-1998
US 6002103	A	14-12-1999	US 5601741 A US 6239407 B1 CA 2160866 A1 JP 8214556 A	11-02-1997 29-05-2001 19-05-1996 20-08-1996
US 5481449	A	02-01-1996	NONE	
US 5077486	A	31-12-1991	NONE	
US 5790392	A	04-08-1998	AU 715652 B2 AU 1694297 A BR 9707155 A CA 2241795 A1 CN 1209914 A DE 69701449 D1 DE 69701449 T2 EP 0876700 A1 JP 2000504128 T PL 327930 A1 WO 9727658 A1	10-02-2000 20-08-1997 25-05-1999 31-07-1997 03-03-1999 20-04-2000 06-07-2000 11-11-1998 04-04-2000 04-01-1999 31-07-1997
US 5636106	A	03-06-1997	US 5434767 A	18-07-1995