



- (51) **International Patent Classification:**
H02M 1/10 (2006.01)
- (21) **International Application Number:**
PCT/BR2012/000153
- (22) **International Filing Date:**
24 May 2012 (24.05.2012)
- (25) **Filing Language:** English
- (26) **Publication Language:** English
- (30) **Priority Data:**
PI1102466-6 26 May 2011 (26.05.2011) BR
- (71) **Applicant (for all designated States except US):** WHIRLPOOL S.A. [BR/BR]; Av. das Nações Unidas, 12.995, 32º andar, Brooklin Novo, 04578-000, São Paulo, SP (BR).
- (72) **Inventors; and**
- (75) **Inventors/Applicants (for US only):** ZANELATO, Marcelo [BR/BR]; Rua Erna Bachtold 88, 89217-435 Joinville - SC (BR). DE SOUZA, Marcos Roberto [BR/BR]; Rua Pardal, 91, apto 401, Costa e Silva, 89220-080 Joinville - SC (BR). PINI, Silvia, Helena [BR/BR]; Rua Rui Barbosa, 1451 Apt 04/C, Costa e Silva, Joinville, SC (BR).
- (74) **Agent:** DANNEMANN, SIEMSEN, BIGLER & IPAN-EM MOREIRA; Rua Marquês de Olinda, 70, Caixa Postal 2141, 22251-040-Rio de Janeiro - RJ (BR).

- (81) **Designated States (unless otherwise indicated, for every kind of national protection available):** AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BR, BW, BY, BZ, CA, CH, CL, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TH, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.
- (84) **Designated States (unless otherwise indicated, for every kind of regional protection available):** ARIPO (BW, GH, GM, KE, LR, LS, MW, MZ, NA, RW, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, RU, TJ, TM), European (AL, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MK, MT, NL, NO, PL, PT, RO, RS, SE, SI, SK, SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:

- with international search report (Art. 21(3))
- before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments (Rule 48.2(h))

[Continued on next page]

(54) **Title:** METHOD AND SYSTEM FOR CONTROLLING INPUT VOLTAGE IN ELECTRIC CHARGES

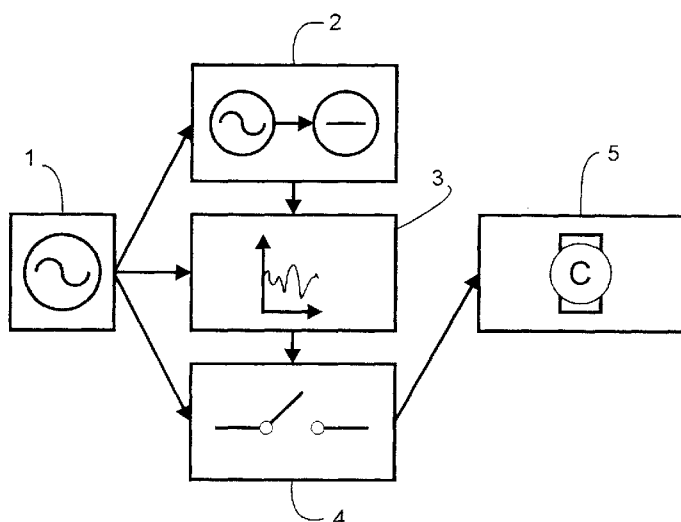


FIG. 3

(57) **Abstract:** The present invention relates to a method and a system for controlling input voltage (1) for electric charges (5) that have a selective organization of electric components for more than one input voltage (1), preferably for induction motors used on cooling compressors, by means of a set of output switches (4). The detection may be made either directly by means of a processing unit (3) or indirectly by means of a network sensor (6) capable of supplying information to the processing unit (3). In another embodiment of this invention, there is addition of a protection sensor (7), as well as control reference values (8) capable of supplying information to the processing unit (3) for better protection of the electric charges (5).



(88) Date of publication of the international search report:
17 January 2013

INTERNATIONAL SEARCH REPORT

International application No

PCT/BR2012/000153

A. CLASSIFICATION OF SUBJECT MATTER

INV. H02M1/10

ADD.

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 H02H

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 practicable, 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	EP 1 603 223 A1 (LG ELECTRONICS INC [KR]) 7 December 2005 (2005-12-07)	1-4,7-10
Y	abstract figures 4,5a,5b paragraphs [0001], [0020] paragraph [0030] - paragraph [0044] -----	5,6,11, 12
X	EP 0 477 883 A2 (GOLD STAR CO [KR]) 1 April 1992 (1992-04-01) abstract figures 2,3,4 column 2, line 41 - column 4, line 49 -----	1,2,4,7, 8,10
X	US 5 229 577 A (MATSUURA TOMOYUKI [JP] ET AL) 20 July 1993 (1993-07-20)	1,2,7,8
Y	abstract; figures 1,3,4,5,6,7,8,9 column 6, line 8 - column 8, line 44 ----- -/--	5,6,11, 12



Further documents are listed in the continuation of Box C.



See patent family 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 application or patent 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

8 November 2012

Date of mailing of the international search report

19/11/2012

Name and mailing address of the ISA/

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

Authorized officer

Lorenzo Barreiro, M

INTERNATIONAL SEARCH REPORT

International application No

PCT/BR2012/000153

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 4 415 964 A (SCHARFE JR JAMES A [US]) 15 November 1983 (1983-11-15) cited in the application the whole document -----	1,2,4,7, 8,10

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/BR2012/000153

Patent document cited in search report		Publication date		Patent family member(s)		Publication date
EP 1603223	A1	07-12-2005	CN	1702942 A		30-11-2005
			EP	1603223 A1		07-12-2005
			JP	2005341796 A		08-12-2005
			KR	20050112810 A		01-12-2005
			US	2005269979 A1		08-12-2005

EP 0477883	A2	01-04-1992	BR	9104219 A		02-06-1992
			EP	0477883 A2		01-04-1992
			JP	4261367 A		17-09-1992

US 5229577	A	20-07-1993	CA	2023369 A1		18-02-1991
			DE	4026138 A1		21-02-1991
			FR	2651338 A1		01-03-1991
			GB	2235597 A		06-03-1991
			JP	3075805 A		29-03-1991
			US	5229577 A		20-07-1993

US 4415964	A	15-11-1983	NONE			
