(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
12 March 2009 (12.03.2009)

PCT

(10) International Publication Number
WO 2009/032593 A3

(51) International Patent Classification:
G01F 1/68 (2006.01)

(21) International Application Number:
PCT/US2008/074203

(22) International Filing Date: 25 August 2008 (25.08.2008)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
11/897,058 29 August 2007 (29.08.2007) US

(71) Applicant *(for all designated States except US)*: **HONEYWELL INTERNATIONAL INC.** [US/US]; Law Department AB/2B, 101 Columbia Road, Morristown, NJ 07962 (US).

(72) Inventors; and
(75) Inventors/Applicants *(for US only)*: **RICKS, Lamar F.** [US/US]; 2314 Silver Hill Street, Lewis Center, Ohio 43035 (US). **BEY, Paul P.** [US/US]; 2264 Pony Place, Hillard, Ohio 43026 (US).

(74) Agent: **BEATUS, Carrie**; Honeywell International Inc., Law Department AB/2B, 101 Columbia Road, Morristown, New Jersey 07962 (US).

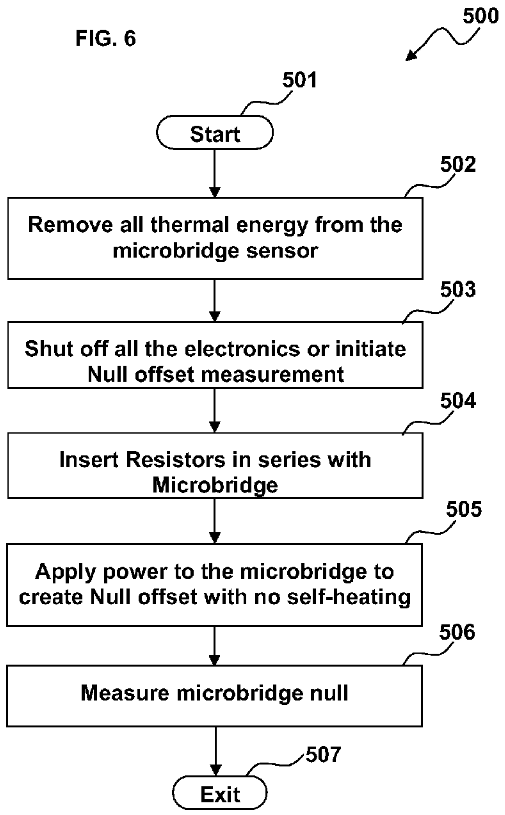
(81) **Designated States** *(unless otherwise indicated, for every kind of national protection available)*: AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, 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, PG, PH, PL, PT, RO, RS, RU, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, 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, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MT, NL,

[Continued on next page]

(54) Title: SELF DIAGNOSTIC MEASUREMENT METHOD TO DETECT MICROBRIDGE NULL DRIFT AND PERFORMANCE

FIG. 6



(57) Abstract: A self-diagnostic measurement method to detect microbridge null drift and performance. An ASIC can be designed to include a self-diagnostic feature that automatically occurs at start up or upon command in Normal Operation whereby the temperature compensated microbridge null can be measured in a state of very low thermal energy and allows for the tracking of microbridge null stability versus time. An Airflow Combi-Sensor ASIC (Heimdal) with its strategic partner ZMD can be developed and can be implemented in the form of a self-diagnostic feature that occurs when power is first applied to the ASIC or upon command. When the self-diagnostic is initiated, power is removed and after the electronics have settled, a small power can be applied to the microbridge to measure the bridge null with reduced sensitivity to flow due to self-heating.

WO 2009/032593 A3

NO, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:

— *with international search report*

— *before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments*

(88) Date of publication of the international search report:
30 April 2009

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US2008/074203

A. CLASSIFICATION OF SUBJECT MATTER

G01F 1/68(2006.01)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)
IPC : G01F1/68

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 since 1975
Japanese utility models and applications for utility models since 1975

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
eKIPASS (KIPO internal) & keyword: "heater" and "calibration"

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 5,076,099 A (HISAGANA, T. et al.) 31 Dec. 1991 See column 1. line 44 - column 4. line 29.	1-9
A	US 2007/0116083 A1 (ODA, S. et al.) 24 May 2007 See paragraph [110].	2-9
A	US 2006/0000273 A1 (KEPPNER, H. et al.) 05 Jan. 2006 See paragraph [38].	2-9
A	JP 2004-205376 A (NORITZ CORP.) 22 Jul. 2004 See the whole document.	1-9

☐ 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 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	Date of mailing of the international search report
10 MARCH 2009 (10.03.2009)	**10 MARCH 2009 (10.03.2009)**

Name and mailing address of the ISA/KR
Korean Intellectual Property Office
Government Complex-Daejeon, 139 Seonsa-ro, Seo-gu, Daejeon 302-701, Republic of Korea
Facsimile No. 82-42-472-7140

Authorized officer
KIM Dae Hwan
Telephone No. 82-42-481-8559

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US2008/074203

Box No. II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:

2. ☒ Claims Nos.: 10
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:
Claim 10 is not clear (PCT Article 6), since claim 14 to which claim 10 refers is not present in this international application.

3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box No. III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

1. ☐ As all required addtional search fees were timely paid by the applicant, this international search report covers all searchable claims.

2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.

3. ☐ As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:

4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest

☐ The additional search fees were accompanied by the applicant's protest and, where applicable, the payment of a protest fee.

☐ The additional search fees were accompanied by the applicant's protest but the applicable protest fee was not paid within the time limit specified in the invitation.

☐ No protest accompanied the payment of additional search fees.

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No.

PCT/US2008/074203

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 5076099 A	31.12.1991	AT 136643 T	15.04.1996
		DE 4024827 A1	14.02.1991
		DE 69026454 D1	15.05.1996
		EP 0421585 A2	10.04.1991
		EP 0421585 B1	10.04.1996
		GB 2235298 A	27.02.1991
		GB 9017322 D0	19.09.1990
		JP 03-067129 A	22.03.1991
US 2007-0116083 A1	24.05.2007	DE 102006054782 A1	05.07.2007
		JP 2007-139672 A	07.06.2007
		KR 2007-0053645 A	25.05.2007
US 2006-0000273 A1	05.01.2006	EP 1612523 A2	04.01.2006
		EP 1612523 A3	05.07.2006
		JP 2006-017723 A	19.01.2006
		US 7036369 B2	02.05.2006
JP 2004-205376 A	22.07.2004	JP 3778169 B2	24.05.2006