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

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
8 October 2009 (08.10.2009)

PCT

(10) International Publication Number
WO 2009/123743 A3

(51) International Patent Classification:
G01L 9/12 (2006.01)

(21) International Application Number:
PCT/US2009/002075

(22) International Filing Date:
2 April 2009 (02.04.2009)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
12/080,532 3 April 2008 (03.04.2008) US

(71) Applicant *(for all designated States except US)*: **ROSEMOUNT INC.** [US/US]; 12001 Technology Drive, Eden Prairie, MN 55344-3695 (US).

(72) Inventor; and

(75) Inventor/Applicant *(for US only)*: **BRODEN, David, A.** [US/US]; C/o Rosemount Inc., 12001 Technology Drive, Eden Prairie, MN 55344-3695 (US).

(74) Agents: **KOMAREC, Stephen, M.** et al.; Kinney & Lange, P.a., Kinney & Lange Building, 312 South Third Street, Minneapolis, MN 55415-1002 (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, MK, MT, NL, NO, PL, PT, RO, SE, SI, SK, TR),

[Continued on next page]

(54) Title: INDUSTRIAL PRESSURE SENSOR HAVING ENHANCED DIELECTRIC FILL FLUID

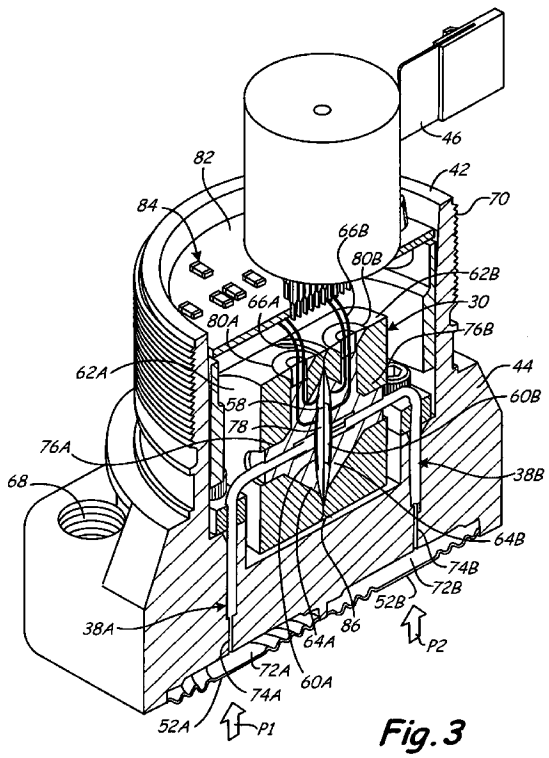

Fig. 3

(57) Abstract: A capacitive pressure sensor (30) for an industrial process transmitter (12) comprises a housing (62A & 62B), a sensing diaphragm (58), an electrode (60A or 60B) and a fill fluid. The housing (62A & 62B) includes an interior cavity (78) and a channel extending from an exterior of the housing (62A & 62B) to the cavity (78). The sensing diaphragm (58) is disposed within the interior cavity (78) opposite the electrode (60A or 60B). The fill fluid occupies the interior cavity (78) such that a pressure from the channel is conveyed to the sensing diaphragm (58) to adjust a capacitance between the electrode (60A or 60B) and the sensing diaphragm (58). The fill fluid has a dielectric constant higher than about 3.5. In various embodiments, the pressure sensor (30) has a diameter less than approximately 3.175 centimeters (~1.25 inches).

WO 2009/123743 A3

OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

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

Published:

— *with international search report (Art. 21(3))*

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US2009/002075

A. CLASSIFICATION OF SUBJECT MATTER
IPC(8) - G01L 9/12 (2009.01)
USPC - 73/718
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(8) - G01L 1/00, 7/00, 9/00, 9/12, 13/06, 19/00 (2009.01)
USPC - 73/715, 716, 718, 723, 753, 861.52

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)
PatBase

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 6,295,875 B1 (FRICK et al) 02 October 2001 (02.10.2001) entire document	1-27
Y	US 4,754,365 A (KAZAHAYA) 28 June 1988 (28.06.1988) entire document	1-27
Y	US 4,184,189 A (DAVIS et al) 15 January 1980 (15.01.1980) entire document	2,3, 21
Y	US 4,996,627 A (ZIAS et al) 26 February 1991 (26.02.1991) entire document	4,21-27

☐ Further documents are listed in the continuation of Box C. ☐

* 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	Date of mailing of the international search report
26 May 2009	04 JUN 2009

Name and mailing address of the ISA/US	Authorized officer:
Mail Stop PCT, Attn: ISA/US, Commissioner for Patents P.O. Box 1450, Alexandria, Virginia 22313-1450 Facsimile No. 571-273-3201	Blaine R. Copenheaver PCT Helpdesk: 571-272-4300 PCT OSP: 571-272-7774

Form PCT/ISA/210 (second sheet) (April 2005)