

(19) World Intellectual Property
Organization
International Bureau



(43) International Publication Date
21 July 2005 (21.07.2005)

PCT

(10) International Publication Number
WO 2005/066757 A3

(51) International Patent Classification⁷: **G07F 7/10**

(21) International Application Number:
PCT/US2005/000097

(22) International Filing Date: 3 January 2005 (03.01.2005)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
10/750,176 31 December 2003 (31.12.2003) US

(71) Applicant (for all designated States except US): **SYMBOL TECHNOLOGIES, INC.** [US/US]; One Symbol Plaza, Holtsville, NY 11742-1300 (US).

(72) Inventors; and

(75) Inventors/Applicants (for US only): **JAYANETTI, Ruwan** [LK/LK]; 97/6, Edirisingha Road, Mirihana, Nugugoda (LK). **FERNANDO, Llavanya** [US/US]; 1310 Rimrock Drive, San Jose, CA 95120 (US).

(74) Agents: **INGRASSIA, Vincent, B.** et al.; 7150 E. Camelback Road, Suite 325, Scottsdale, AZ 85251 (US).

(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM,

AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SM, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, 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, HU, IE, IS, IT, LT, LU, MC, NL, 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:
29 September 2005

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: TOUCH SCREEN APPARATUS AND METHOD THEREFORE

(57) Abstract: Methods and apparatus are provided for an apparatus for inputting data. The apparatus comprises a detection circuit for providing a first reference voltage to a first and a second electrode of a first conductive layer of a resistive touch screen and providing a second reference voltage to a first and a second electrode of a second conductive layer of the resistive touch screen. The detection circuit maintains the first and second reference voltages under quiescent conditions and when the first and second conductive layers couple together. The method includes applying substantially equal voltages to the first and second electrodes of the first conductive layer of the resistive touch screen. Substantially equal voltages are applied to the first and second electrodes of the second conductive layer of the resistive touch screen. Approximately zero current is conducted in the first and second conductive layers under quiescent conditions.

WO 2005/066757 A3

INTERNATIONAL SEARCH REPORT

International Application No
PC/032005/000097

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 G07F7/10

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 G06F G07F

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, PAJ, WPI Data, INSPEC, IBM-TDB

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 6 061 051 A (CHAN ET AL) 9 May 2000 (2000-05-09) column 1, line 32 - column 2, line 10; figure 1 column 9, line 9 - line 15	1-22
A	WOLFE A: "A case study in low-power system-level design" 2 October 1995 (1995-10-02), COMPUTER DESIGN: VLSI IN COMPUTERS AND PROCESSORS, 1995. ICCD '95. PROCEEDINGS., 1995 IEEE INTERNATIONAL CONFERENCE ON AUSTIN, TX, USA 2-4 OCT. 1995, LOS ALAMITOS, CA, USA, IEEE COMPUT. SOC, US, PAGE(S) 332-338, XP010197331 ISBN: 0-8186-7165-3 page 332, column 2, line 24 - page 333, column 1, line 20	1-22

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 5 August 2005	Date of mailing of the international search report 17/08/2005
---	---

Name and mailing address of the ISA European Patent Office, P.O. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Tx. 31 651 epo nl, Fax: (+31-70) 340-3016	Authorized officer Schofield, C
--	---

INTERNATIONAL SEARCH REPORT

International Application No
PCT/US2005/000097

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT		
Category	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 6 630 896 B1 (NATHAN ROBERT H) 7 October 2003 (2003-10-07) column 1, line 31 - column 2, line 17 column 2, line 29 - line 48 -----	1-22
A	HOROWITZ P., HILL W.: "The Art of Electronics, Second Edition" 2001, CAMBRIDGE UNIVERSITY PRESS, CAMBRIDGE, UK, XPO02339423 page 184, column 1, line 7 - column 2, line 18; figures 4.16,4.17 -----	1-22
A	PATENT ABSTRACTS OF JAPAN vol. 1995, no. 03, 28 April 1995 (1995-04-28) -& JP 06 348390 A (NITSUKO CORP), 22 December 1994 (1994-12-22) abstract; figure 4 -----	1-22
A	US 6 278 444 B1 (WILSON GEOFFREY D ET AL) 21 August 2001 (2001-08-21) column 2, line 37 - line 46 column 3, line 64 - column 4, line 6 column 5, line 8 - line 67 column 6, line 30 - line 48 figures 1-5 -----	1-22
A	US 2002/101407 A1 (BERELOVICH ALEX ET AL) 1 August 2002 (2002-08-01) paragraph '0004! - paragraph '0009! paragraph '0017! - paragraph '0018! figures 1-4 -----	1-22
A	US 6 501 529 B1 (KURIHARA MIKIO ET AL) 31 December 2002 (2002-12-31) column 9, line 18 - line 37 figure 11 -----	1-22
A	US 4 623 757 A (MARINO ET AL) 18 November 1986 (1986-11-18) column 2, line 16 - line 20 column 2, line 60 - column 3, line 5 column 6, line 9 - line 28 column 7, line 36 - line 66 column 9, line 11 - line 37 -----	1-22

International Application No
PCT/US2005/000097

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 6061051	A	09-05-2000 NONE	
US 6630896	B1	07-10-2003 NONE	
JP 06348390	A	22-12-1994 NONE	
US 6278444	B1	21-08-2001 EP 0982677 A2	01-03-2000
US 2002101407	A1	01-08-2002 NONE	
US 6501529	B1	31-12-2002 JP 2001075074 A	23-03-2001
US 4623757	A	18-11-1986 EP 0203188 A1	03-12-1986
		JP 62501525 T	18-06-1987
		WO 8603320 A1	05-06-1986