



- (51) **International Patent Classification:**
H04L 25/02 (2006.01) *G06F 13/38* (2006.01)
- (21) **International Application Number:**
PCT/US2013/048989
- (22) **International Filing Date:**
1 July 2013 (01.07.2013)
- (25) **Filing Language:** English
- (26) **Publication Language:** English
- (30) **Priority Data:**
61/666,197 29 June 2012 (29.06.2012) US
- (71) **Applicant:** QUALCOMM INCORPORATED [—/US];
5775 Morehouse Drive, San Diego, California 92121 (US).
- (72) **Inventors:** WILEY, George A.; 5775 Morehouse Drive,
San Diego, California 92121 (US). RASKIN, Glenn D.;
5775 Morehouse Drive, San Diego, California 92121 (US).
LEE, Chulkyu; 5775 Morehouse Drive, San Diego, Cali-
fornia 92121 (US).
- (74) **Agent:** LOZA, Julio; Loza & Loza, LLP, 305 North
Second Avenue #127, Upland, California 91786 (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, BN, 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, 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, PA, 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,
KM, 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))

(88) **Date of publication of the international search report:**
6 March 2014

(54) **Title:** N-PHASE POLARITY OUTPUT PIN MODE MULTIPLEXER

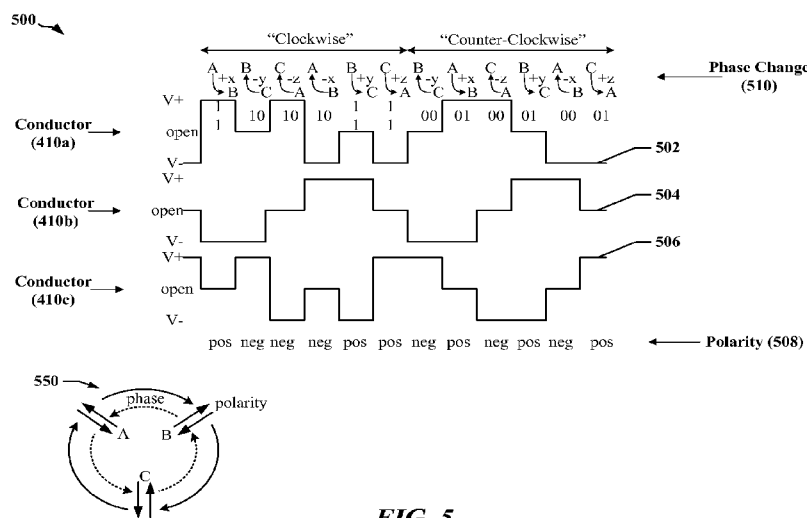


FIG. 5

(57) **Abstract:** System, methods and apparatus are described that facilitate transmission of data, particularly between two devices within an electronic apparatus. Data is selectively transmitted as N-phase polarity encoded symbols or as packets on differentially driven connectors. A desired operational mode for communicating between the two devices is determined, an encoder is selected to drive a plurality of connectors communicatively coupling the two devices, and a plurality of drivers is configured to receive encoded data from the encoder and drive the plurality of connectors. Switches may couple outputs of the selected encoder to the plurality of drivers. One or more outputs of another encoder may be caused or forced to enter a high impedance mode.



INTERNATIONAL SEARCH REPORT

International application No
PCT/US2013/048989

A. CLASSIFICATION OF SUBJECT MATTER
INV. H04L25/02 G06F13/38
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)
H04L
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, INSPEC, COMPENDEX

C. DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 2008/212709 A1 (WILEY GEORGE ALAN [US] WILEY GEORGE A [US]) 4 September 2008 (2008-09-04) figures 5, 8-9 paragraphs [0010] - [0011], [0036], [0041] - [0048], [0059] - [0060], [0065] - [0069], [0082] - [0083] -----	1-44
X	US 2009/225873 A1 (LEE CHULKYU [US] ET AL) 10 September 2009 (2009-09-10) paragraphs [0003] - [0004], [0031], [0043] ----- -/--	1,5-7, 12, 16-18, 23, 27-29, 34,38-40

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 16 January 2014	Date of mailing of the international search report 23/01/2014
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 Barrientos Lezcano

INTERNATIONAL SEARCH REPORT

International application No
PCT/US2013/048989

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 2005/041164 A1 (PHILIPS INTELLECTUAL PROPERTY [DE]; KONINKL PHILIPS ELECTRONICS NV [NL] 6 May 2005 (2005-05-06) page 1, line 1 - line 5 page 3, line 4 - page 4, line 16 page 4, line 32 - line 33 -----	1,5,12, 16,23, 27,34,38

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No PCT/US2013/048989

Patent document cited in search report	Publication date	Patent family member(s)	Publication date	
US 2008212709	A1	04-09-2008	AU 2008223016 A1	12-09-2008
			CA 2676079 A1	12-09-2008
			CN 101617494 A	30-12-2009
			EP 2130320 A2	09-12-2009
			JP 5043960 B2	10-10-2012
			JP 2010520715 A	10-06-2010
			KR 20090115977 A	10-11-2009
			US 2008212709 A1	04-09-2008
			US 2012155565 A1	21-06-2012
			US 2013215991 A1	22-08-2013
			WO 2008109478 A2	12-09-2008
US 2009225873	A1	10-09-2009	CN 101965708 A	02-02-2011
			EP 2263346 A1	22-12-2010
			JP 2011517159 A	26-05-2011
			KR 20100120234 A	12-11-2010
			TW 201004229 A	16-01-2010
			US 2009225873 A1	10-09-2009
			WO 2009111208 A1	11-09-2009
WO 2005041164	A1	06-05-2005	AT 474308 T	15-07-2010
			CN 1871635 A	29-11-2006
			EP 1678703 A1	12-07-2006
			JP 4874113 B2	15-02-2012
			JP 2007511118 A	26-04-2007
			US 2007164883 A1	19-07-2007
			WO 2005041164 A1	06-05-2005