



- (51) International Patent Classification:
H01R 24/58 (2011.01) *H05K 1/02* (2006.01)
H01R 12/71 (2011.01)
- (21) International Application Number:
PCT/US2012/028860
- (22) International Filing Date:
13 March 2012 (13.03.2012)
- (25) Filing Language: English
- (26) Publication Language: English
- (30) Priority Data:
13/051,908 18 March 2011 (18.03.2011) US
- (71) Applicant (for all designated States except US):
LEVITON MANUFACTURING CO., INC. [US/US];
201 North Service Road, Melville, New York 11747 (US).
- (72) Inventors; and
- (75) Inventors/Applicants (for US only): **POULSEN, Jeffrey Alan** [US/US]; Leviton Manufacturing Co., Inc., 2222 222nd Street SE, Bothell, WA 98021 (US). **SPARROW-HAWK, Brian L.** [US/US]; Leviton Manufacturing Co., Inc., 2222 222nd Street SE, Bothell, Washington 98021 (US). **ERICKSON, Jason** [US/US]; Leviton Manufacturing Co., Inc., 2222 222nd Street SE, Bothell, Washington 98021 (US). **TAYLOR, Bret** [US/US]; Leviton Manufacturing Co., Inc., 2222 222nd Street SE, Bothell, Washington 98021 (US). **BILY, Adam** [US/US]; 2421 N. 75th St., Seattle, Washington 98103 (US).

- (74) Agents: **ULRICH, Richard J.** et al.; Leviton Manufacturing Co., Inc., 201 North Service Road, Melville, New York 11747 (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, 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, MD, 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).

Declarations under Rule 4.17:

- as to the identity of the inventor (Rule 4.17(i))
- as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii))

[Continued on next page]

(54) Title: CONNECTOR MODULE AND PATCH PANEL

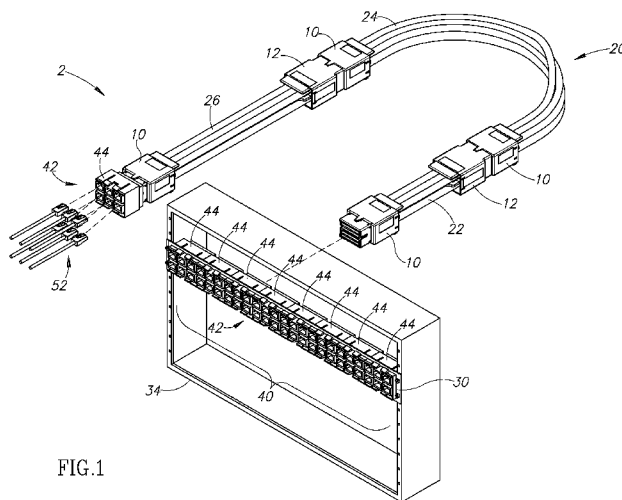


FIG.1

(57) Abstract: A substrate operable to construct a male-type connector, a female-type connector, and/or a multi-outlet module. The substrate has a plurality of circuits and an edge card male connector including contacts for each circuit. For each circuit, the substrate has a ground plane connected to one or more of the contacts for the circuit. The ground planes may be implemented as localized, electrically floating, isolated ground planes. The substrate may include multiple layers upon which portions of the circuits and ground planes may be disposed. The ground plane corresponding to each of the plurality of circuits may be located in close proximity to conductive elements of the circuit so as to provide a localized common ground to which energy can be conveyed from the conductive elements to thereby limit an amount of energy radiated outwardly from the conductive elements to surrounding conductors.





— *as to the applicant's entitlement to claim the priority of the earlier application (Rule 4.17(iii))* — *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))*

Published:

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

(88) Date of publication of the international search report:
29 November 2012

A. CLASSIFICATION OF SUBJECT MATTER***H01R 24/58(2011.01)i, H01R 12/71(2011.01)i, H05K 1/02(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)

H01R 24/58; H01R 12/04; H01R 13/66; H05K 9/00; H05K 1/11; H01R 24/00; H05K 7/06

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

Japanese utility models and applications for utility models

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

eKOMPASS(KIPO internal) & Keywords: connector, module, patch, panel

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 2010-0210142 A1 (JAMES L. MCGRATH et al.) 19 August 2010 See abstract, paragraphs [0065]~[0067], claims 1,4,7, and figures 15-18.	1-45
A	US 2007-0187141 A1 (VICTOR L. BARTHOLOMEW) 16 August 2007 See abstract, claim 1 and figures 1-4.	1-45
A	KR 10-2007-0004816 A (HUBBELL INCORPORATED) 09 January 2007 See abstract, pages 12,13, claims 1,11, and figures 1-7.	1-45

 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

11 OCTOBER 2012 (11.10.2012)

Date of mailing of the international search report

12 OCTOBER 2012 (12.10.2012)

Name and mailing address of the ISA/KR

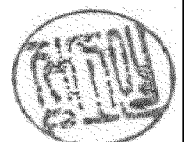
Korean Intellectual Property Office
189 Cheongsa-ro, Seo-gu, Daejeon Metropolitan
City, 302-701, Republic of Korea

Facsimile No. 82-42-472-7140

Authorized officer

JEONG, So Yeon

Telephone No. 82-42-481-5656



INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No.

PCT/US2012/028860

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 2010-0210142 A1	19.08.2010	EP 2224552 A2	01.09.2010
		US 2011-195592 A1	11.08.2011
		US 2011-195593 A1	11.08.2011
		US 8011950 B2	06.09.2011
US 2007-0187141 A1	16.08.2007	None	
KR 10-2007-0004816 A	09.01.2007	CN 100583573 C	20.01.2010
		CN 101023565 A	22.08.2007
		CN 101023565 C0	22.08.2007
		EP 1721368 A2	15.11.2006
		JP 2007-526584 A	13.09.2007
		US 2005-0195583 A1	08.09.2005
		US 2005-0201071 A1	15.09.2005
		US 2006-0256540 A1	16.11.2006
		US 7057899 B2	06.06.2006
		US 7301780 B2	27.11.2007
		WO 2005-084341 A2	15.09.2005
		WO 2005-084341 A3	15.09.2005