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(54) Title: WIRELESS COMMUNICATIONS CAPABLE POWER DISTRIBUTION UNIT AND TECHNIQUES FOR COMMUNICATING THEREWITH

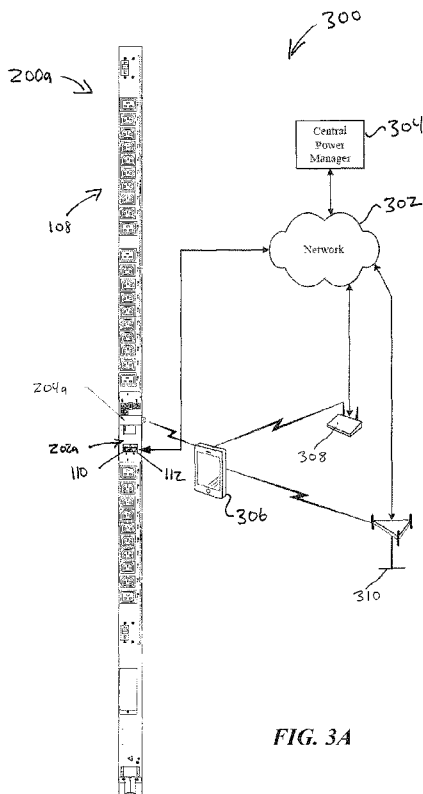


FIG. 3A

(57) Abstract: Methods, systems, and devices for wireless communication between a PDU and one or more devices within a limited communications range are described. A power distribution unit may be provided with a wireless communications module that may operate to communicate with user devices within a relatively close proximity. The wireless communications module may provide information reporting and may, in some examples, provide a user of the user device with configuration and other command capabilities.



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).

— *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))*

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INTERNATIONAL SEARCH REPORT

International application No.

PCT/US 14/30060

A. CLASSIFICATION OF SUBJECT MATTER

IPC(8) - G06F 1/28 (2014.01)

CPC - H02J 4/00

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)
CPC: H02J 4/00; IPC(8): G06F 1/28 (2014.01)Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched
IPC(8): G06F 1/28 (2014.01); USPC: 713/340; CPC: H02J 17/00, H04W 8/005, H04W 84/18
(keyword limited; terms below)Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
PatBase (PatBase); PubWEST (USPT, PGPB, EPAB, JPAB); Google Scholar; Science Direct
Search Terms: wireless, controller, power, outlet, bluetooth, distribution, outlet, pdu, voltage, authorization, barcode, discoverable, phase, appliance, wifi, wlan, WIMAX, bluetooth, 3G, 4G, lte, LTEA.

C. DOCUMENTS CONSIDERED TO BE RELEVANT

| Category* | Citation of document, with indication, where appropriate, of the relevant passages | Relevant to claim No. |
|-------------|--|--|
| X — Y | US 2011/0062780 A1 (VERGES et al.) 17 March 2011 (17.03.2011), entire document, especially; FIG 1, 2, para [0002], [0007], [0040]-[0043], [0046], [0053], [0056], [0061], [0062]. | 1-4, 6, 7, 9, 20, 21, 25, 26 ----- 5, 8, 22-24, 27, 28 |
| X — Y | US 2012/0054527 A1 (PFEIFER et al.) 01 March 2012 (01.03.2012), entire document, especially; para [0038], [0050]-[0052], [0054], [0065], [0072], [0075], [0076], [0079], [0080], [0092]-[0098], [0106]-[0110], [0112], [0118], [0125]. | 10-14 ----- 8, 15-19 |
| Y | US 2006/0181398 A1 (MARTICH et al.) 17 August 2006 (17.08.2006), entire document, especially; para [0015], [0064]-[0068]. | 5, 8 |
| Y | US 2012/0324242 A1 (KIRSCH) 20 December 2012 (20.12.2012), entire document, especially; para [0408], [0409], [0418], [0420], [0453], [0484]. | 15-19 |
| Y | US 2011/0070834 A1 (GRIFFIN et al.) 24 March 2011 (24.03.2011), entire document, especially; para [0013], [0026], [0029], [0031], [0048], [0050]. | 17, 22-24, 27, 28 |

 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

12 September 2014 (12.09.2014)

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10 OCT 2014

Name and mailing address of the ISA/US

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INTERNATIONAL SEARCH REPORT

14/030060 10.10.2014
International application No.

PCT/US 14/30060

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.:
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:

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:
This application contains the following inventions or groups of inventions which are not so linked as to form a single general inventive concept under PCT Rule 13.1. In order for all inventions to be examined, the appropriate additional examination fees must be paid.

Group I: claims 1-9 and 20-28: drawn to a power distribution apparatus comprising a housing having a power input and a plurality of power outputs, communication module coupled to a network connection interface and a wireless communications interface, processor, wherein the communications module is configured to facilitate communications between the network processor and a wireless user.

Group II: claims 10-13: drawn to a method or computer readable medium comprising receiving by a wireless controller an indication that a discoverability button has been pressed, accessing by the wireless controller PDU discoverability information and broadcasting by the wireless controller the PDU discoverability information for a predetermined period of time.

--see extra sheet--

1. As all required additional 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 additional fees, this Authority did not invite payment of additional fees.
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.

Continuation of:

Box No. III Observations where unity of invention is lacking

Group III requires a hardware address for a wireless module integrated into a PDU with a mobile device, and receiving, with the mobile device, the power-related information for the PDU, transmitting a wireless request to receive authorization to wirelessly connect to the wireless module of the PDU, wherein the wireless request includes the hardware address; receiving, with the mobile device, the power-related information for the PDU, wherein the power-related information identifies one or more phases of voltage distributed by the PDU to one or more power outlets; and displaying, to a screen of the mobile device, at the power-related information for the PDU, not found in the other groups.

The inventions listed as Groups I-III do not relate to a single general inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2, they lack the same or corresponding special technical features for the following reasons:

Special technical features:

Group I requires a housing having a power input and a plurality of power output, a communication module that is configured to facilitate communication between a network processor and a wireless user device via the wireless controller when the wireless controller is communicatively coupled to the wireless communications interface, not found in the other groups.

Group II requires a discoverability button and broadcasting by the wireless controller, a PDU discoverability information for a predetermined period of time, not found in the other groups.

Group III requires a hardware address for a wireless module integrated into a PDU with a mobile device, and receiving, with the mobile device, the power-related information for the PDU, transmitting a wireless request to receive authorization to wirelessly connect to the wireless module of the PDU, wherein the wireless request includes the hardware address; receiving, with the mobile device, the power-related information for the PDU, wherein the power-related information identifies one or more phases of voltage distributed by the PDU to one or more power outlets; and displaying, to a screen of the mobile device, at the power-related information for the PDU, not found in the other groups.

Shared Features:

The only technical features shared by Groups I-III that would otherwise unify the groups are a PDU or power distribution apparatus of a plurality of power outputs having a wireless module/communication forming a network connection for providing communication.

However, these shared technical features do not represent a contribution over prior art, because the shared technical features are disclosed by US 2013/0031399 A1 to Watson 31 January 2013 (31.01.2013), which discloses a PDU or power distribution apparatus of a plurality of power outputs (Abstract, para [0007], [0022]) having a wireless module/communication forming a network connection for providing communication (para [0027], [0028]).

As the shared technical features were known in the art at the time of the invention, they cannot be considered special technical features that would otherwise unify the groups.

Groups I-III therefore lack unity under PCT Rule 13 because they do not share a same or corresponding special technical feature.