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(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.

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[Continued on next page]

(54) **Title:** CONTROLLER

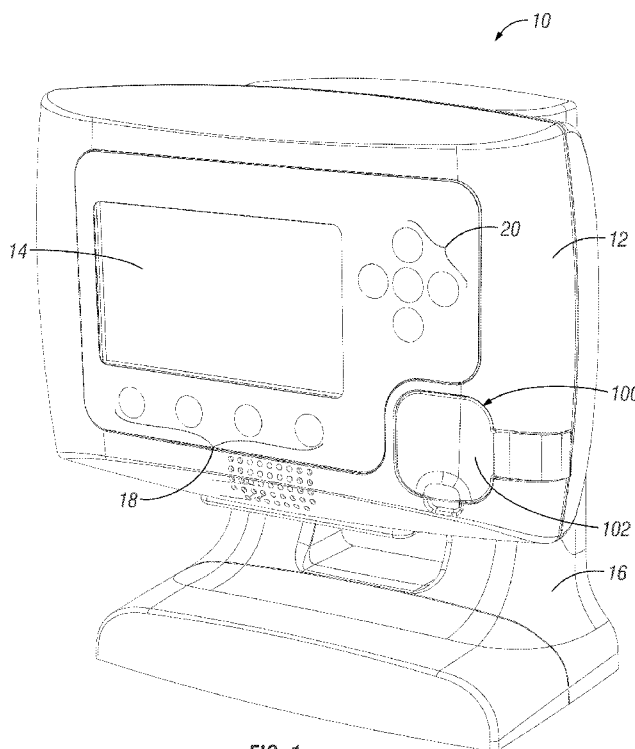


FIG. 1

(57) **Abstract:** A controlling and monitoring control application associated with one or more work operations of one or more utility devices is disclosed. The controller is programmed for controlling one or more external work operations associated with one or more utility devices. An I/O board is connected in communication with the primary controller having a module with a plurality of device-specific control applications associated with one or more device-specific work operations. The housing of the controller includes one or more cable access points for plugging a cable into the controller. The cable access points are sealed to prevent water from entering into the housing. A mounting bracket assembly provides flexibility for mounting the controller at various orientations and/or positions. The controller also includes a DC control circuit for controlling backlight luminance over the entire dimming ratio.



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, ML, MR, NE, SN, TD, TG).

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## INTERNATIONAL SEARCH REPORT

International application No.

PCT/US 12/38636

A. CLASSIFICATION OF SUBJECT MATTER  
IPC(8) - G06Q 10/00, G06Q 50/00 (2012.01)  
USPC - 705/2

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): G06Q 10/00, G06Q 50/00 (2012.01)  
USPC: 705/2Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched  
USPC: 705/3, 5, 6, 402; 379/106.02, 220.01, 265.02, 266.01 (keyword search - view terms below)Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)  
PubWEST(PGPB,USPT,EPAB,JPAB): Google Scholar; Google Patent, controller, control panel, warewasher, laundry, spa, pool, application, operating system, lamp, dimmer, DC, circuit, hospitality, hotel, healthcare

## 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 2004/0143368 A1 (MAY et al.) 22 July 2004 (22.07.2004) entire document, especially Abstract; para [0022]-[0032], [0034], [0043]-[0049], [0069], [0071], [0097]	1-10, 13-15, 19-32, 35-37, 40, 42, 43 ----- 11, 12, 16-18, 33, 34, 38, 39, 41
X - Y	US 6,987,787 B1 (MICK) 17 January 2006 (17.01.2006) entire document, especially Abstract; col. 1, ln 25-31, col. 2, ln 13-32, col. 3, ln 15-36, col. 4, ln 10-30	23-26 ----- 17, 18, 38, 39
Y	US 2006/0021154 A1 (HA) 02 February 2006 (02.02.2006) entire document, especially Abstract; para [0053], [0054]	11, 33
Y	US 6,502,265 B2 (BLAIR et al.) 07 January 2003 (07.01.2003) entire document, especially Abstract; col. 5, ln 55-60	12, 16, 34, 41
A	US 2010/0170303 A1 (GOHL et al) 08 July 2010 (08.07.2010) entire document	1-43
A	US 2008/0004904 A1 (TRAN) 03 January 2008 (03.01.2008) entire document	23-26
A	US 6,112,224 A (PEIFER et al.) 29 August 2000 (29.08.2000) entire document	1-43

☐ 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

"&amp;" document member of the same patent family

Date of the actual completion of the international search

09 September 2012 (09.09.2012)

Date of mailing of the international search report

18 SEP 2012

Name and mailing address of the ISA/US

Mail Stop PCT, Attn: ISA/US, Commissioner for Patents  
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## INTERNATIONAL SEARCH REPORT

International application No.

PCT/US 12/38636

**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:  
- Please see Continuation Box -

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.

**INTERNATIONAL SEARCH REPORT**  
Information on patent family members

International application No.  
PCT/US 12/38636

Continuation Box - Box No. III continued:

There is a lack of unifying novel inventive concept underlying the following groups of claims:

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 1-22, 27-42), drawn to a controller for monitoring and/or controlling hospitality or healthcare services.

- Group II (claims 23-26), drawn to a circuit for controlling backlight dimming of a display.

The inventions listed as Groups I and II 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:

The special technical feature of Group I is controlling services, which is not present in Group II that has a special technical feature of controlling LCD backlight dimming.

Accordingly, unity of invention is lacking under PCT Rule 13.1.