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(54) Title: EMERGENCY LIGHTING SYSTEMS AND METHODS FOR SOLID STATE LIGHTING APPARATUS

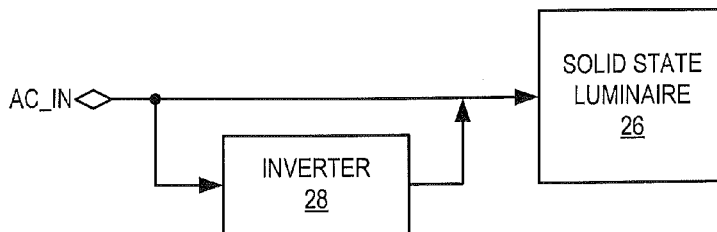


FIGURE 2

(57) Abstract: An emergency lighting module for providing emergency power to a solid state luminaire. The emergency lighting module includes a first input configured to receive a DC input voltage from the solid state luminaire, a second input configured to receive a status signal indicative of the status of an AC line voltage, and a first output configured to supply a DC output voltage to the solid state luminaire. The emergency lighting module is configured to supply the DC output voltage to the solid state luminaire in response to a reduction of the AC line voltage.

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INTERNATIONAL SEARCH REPORT

International application No.

PCT/US12/68984

A. CLASSIFICATION OF SUBJECT MATTER

IPC(8) - F21V 25/00 (2013.01)

USPC - 315/113

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): F21V 25/00 (2013.01)

USPC: 315/113; 315/294; 307/39

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)

MicroPatent (US-G, US-A, EP-A, EP-B, WO, JP-bib, DE-C,B, DE-A, DE-T, DE-U, GB-A, FR-A); IP.com; Google/Google Scholar; IEEE

Search Terms Used: emergency lighting solid state luminaire dim alternating current

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 2011/0109164 A1 (MOHAMMED SUHURA, S et al.) May 12, 2011, figure 1, paragraphs [0054, 0060-0064]	1-3, 5 ----- 19-20
X ----- Y	US 2010/0135000 A1 (SMITH, III, C et al.) June 3, 2010, figure 3, paragraphs [0017-0018]	1, 4, 6, 42, 44 ----- 7-18, 22, 43
X ----- Y	US 2010/0277070 A1 (BUTTERIS, J et al.) November 4, 2010, figures 1, 2, paragraphs [0024-0027]	21, 27-29 ----- 7-17, 20, 22-26, 30-32, 43
Y	US 2011/0121754 A1 (SHTEYNBERG, A et al.) May 26, 2011, paragraphs [0087-0095, 0102, 0123]	10-14, 30-32
Y	US 2010/0237840 A1 (WALTER, W et al.) September 23, 2010, paragraph [0002-0004, 0015-0020, 0028-0031, 0040-0044, 0056-0063, 0071-0072]	15-20, 23-25
Y	US 6509657 B1 (WONG, H et al.) January 21, 2003, column 5, lines 11-25	26

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

26 April 2013 (05.04.2013)

Date of mailing of the international search report

10 MAY 2013

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INTERNATIONAL SEARCH REPORT

International application No.

PCT/US12/68984

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:
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.:
Claims 1-32 and 42-44

- 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.

-Continued from Box III:

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 fee must be paid.

Group I: Claims 1-32 and 42-44 are directed toward an emergency lighting module for providing emergency power to a solid state luminaire, the emergency lighting module comprising a first input configured to receive a DC input voltage from the solid state luminaire; a second input configured to receive a status signal indicative of the status of an AC line voltage; and a first output configured to supply a DC output voltage to the solid state luminaire; wherein the emergency lighting module is configured to supply the DC output voltage to the solid state luminaire in response to a reduction of the AC line voltage.

Group II: Claims 33-36 are directed toward a method of testing a solid state luminaire including a test switch, using an emergency lighting module including a battery, the method comprising monitoring the test switch for actuation; in response to actuation of the test switch, determining if the test switch was actuated for more than a threshold time; in response to the actuation of the test switch for more than the threshold of time, operating the solid state luminaire on battery power for a test period in excess of one hour without requiring continued actuation of the test switch during the test period; and supplying a dimming signal to the solid state luminaire during the test period.

Group III: Claims 37-41 are directed toward an emergency lighting module for providing emergency power to a solid state luminaire, the emergency lighting module comprising a microcontroller; an AC detector coupled to the microcontroller and configured to detect a presence of an AC line signal, wherein the emergency lighting module is configured to supply a DC voltage and a dimming control signal to the luminaire in response to reduction of the AC line voltage; a test switch coupled to the microcontroller, wherein the microcontroller is configured to test operation of the emergency lighting controller in response to actuation of the test switch; and a wireless interface coupled to the test switch and configured to enable wireless actuation of the test switch.

The common features of Groups I, II, and III are at least an emergency lighting module and a supplying a dimming signal. These common features are disclosed by US 5,734,230 A to Edwards et al. (hereinafter Edwards). Edwards discloses an emergency lighting module (fail-safe lighting system, abstract) and a supplying a dimming signal (supplying dimming signal to control illumination, column 4, lines 22-56).

Since the common technical features are previously disclosed by the Edwards reference, these common features are not special and so Groups I, II, and III lack unity.