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# (12) United States Patent Black et al.

## (54) METHOD OF POWERING UP A PLURALITY OF LOADS IN SEQUENCE

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(51) **Int. Cl.** *H02J 3/00* (2006.01) *G06F 1/00* (2006.01)

See application file for complete search history.

### (56) References Cited

#### U.S. PATENT DOCUMENTS

4,056,757 A		11/1977	Mauch et al.
4,593,349 A	*	6/1986	Chase et al 713/330
4,799,039 A		1/1989	Balcom et al.
5,119,014 A		6/1992	Kronberg
5,237,207 A		8/1993	Kwiatkowski et al.

# (10) Patent No.: US 7,566,987 B2 (45) Date of Patent: Jul. 28, 2009

5,734,230 A 3/1998 Edwards 5,910,689 A 6/1999 Ertz, III et al.

#### (Continued)

#### FOREIGN PATENT DOCUMENTS

EP 0220504 A2 5/1987

#### (Continued)

#### OTHER PUBLICATIONS

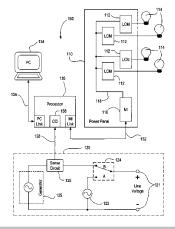
Lutron Application Note #106, Emergency Lighting Systems, 2003, Lutron Electronics, Co. Inc, 10 pages.

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#### (57) ABSTRACT

Power distribution systems that have a limited peak power capability or a high source impedance, such as site supply generators, are often susceptible to abnormal operation in response to the current drawn at power up from the loads connected to the power distribution system. The present invention provides a lighting control system operable to power up a plurality of the lighting loads in sequence to reduce stress on the power distribution system. The lighting loads are each turned on as part of a startup sequence at predetermined times after an output voltage of the power distribution system has stabilized. The lighting control system is operable to begin the startup sequence in response to receiving a control signal representative that the power distribution system has stabilized. The lighting loads are each controlled by a lighting control module, which is operable to wait for a predetermined amount of time for the startup sequence to begin before turning on the lighting loads.

## 25 Claims, 13 Drawing Sheets





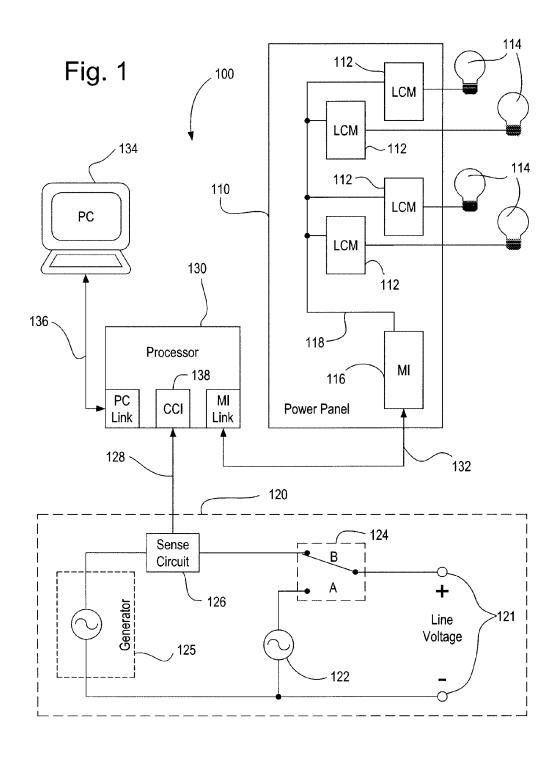
## US 7,566,987 B2

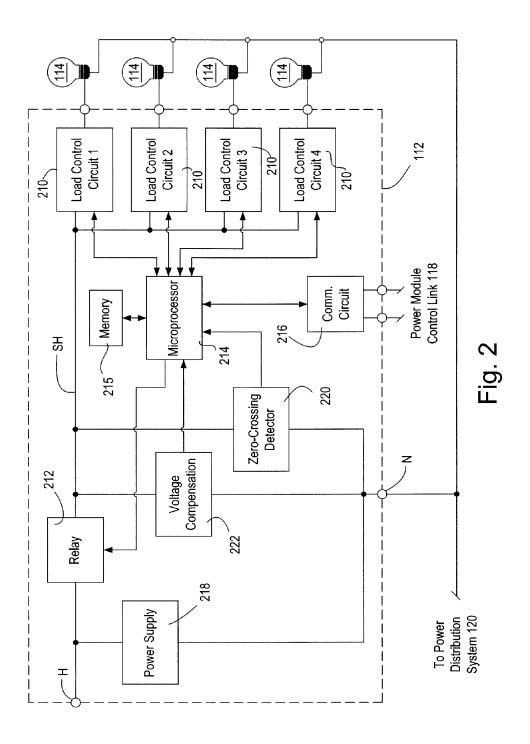
## Page 2

U.S.	PATENT	DOCUMENTS	2002/017564	1 A1	11/2002	Andersen
			2003/010598	4 A1	6/2003	Masuyama et al.
5,990,635 A	11/1999	Ference et al.	2004/012471	) A1	7/2004	Pfeiffer
6,091,205 A	7/2000	Newman, Jr. et al.	2005/005787	5 A1	3/2005	Kover, Jr. et al.
6,119,469 A	9/2000	Elwood	2005/013412			Lathrop et al.
6,252,753 B1	6/2001	Bhargava			0.2000	zamop wa.
6,380,692 B1	4/2002	Newman, Jr. et al.	F	OREIC	N PATE	NT DOCUMENTS
6,429,706 B1*	8/2002	Amin et al 327/143				
6.528.957 B1		Luchaco	EP		091 B1	1/1989
6,803,728 B2		Balasubramaniam et al.	EP	127	1745 A1	1/2003
, , , , , , , , , , , , , , , , , , ,			EP	154	4977 A2	6/2005
6,917,124 B2 *		Shetler et al 307/66	FR	221	7844	10/1974
6,927,547 B2	8/2005	Walko, Jr. et al.	WO W	O 92/0	4758	3/1992
7,259,524 B2	8/2007	Hausman, Jr. et al.	., .	0 12 0	.,,,,	3,1332
7,278,036 B2*	10/2007	Yuan 713/300	* cited by exa	miner		

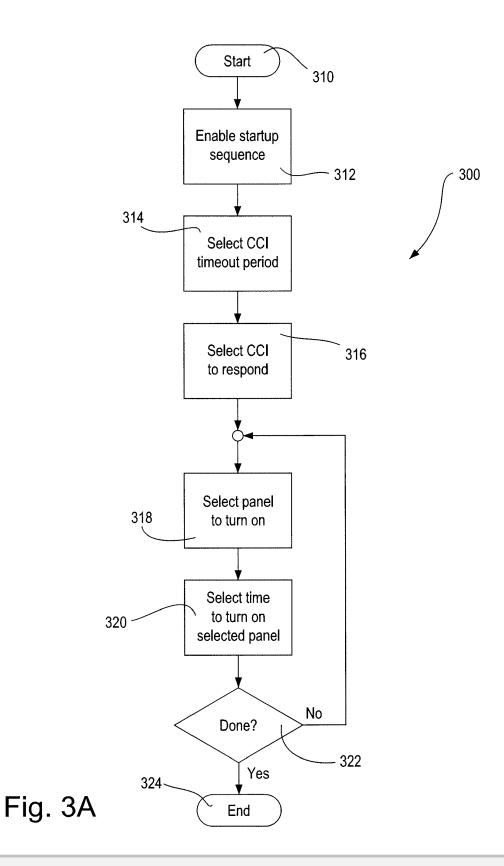


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