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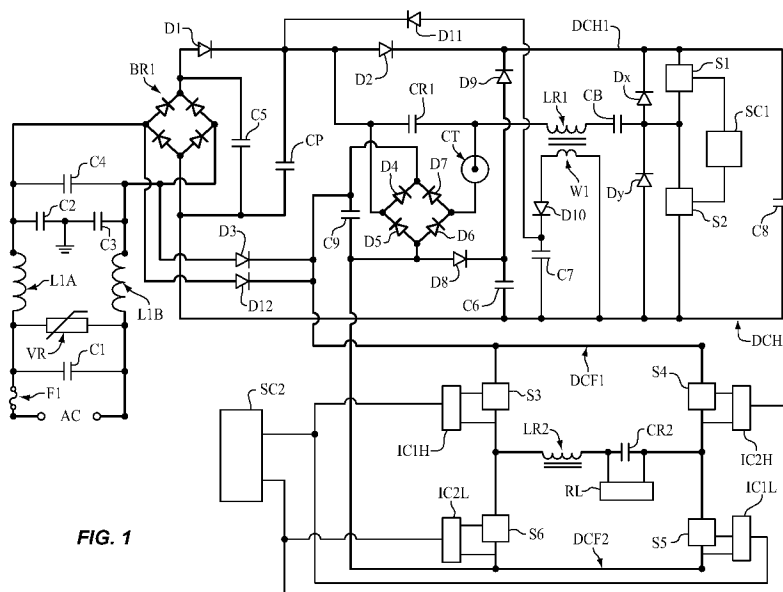


FIG. 1

(57) Abstract: The present High Intensity Discharge electronic lamp ballast uses a "set of controls" that can be performed by controlling energy delivery by the "line side converter" to the "lamp side inverter". This set of controls comprises: 1) open circuit voltage control, 2) breakdown voltage amplitude control, 3) glow-to-arc transition current control, 4) "initial arc development" current control, 5) "arc stabilization" current control, 6) lamp power control, 7) lamp rectification" current control, and 9) short circuit and lamp fault protections. One of the primary advantages of this "line side converter" energy delivery control method is that it doesn't need to vary the lamp operating frequency to achieve the above-noted controls.

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## INTERNATIONAL SEARCH REPORT

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<b>A. CLASSIFICATION OF SUBJECT MATTER</b> IPC(8) - H05B 37/02 (2009.01) USPC - 315/219 According to International Patent Classification (IPC) or to both national classification and IPC		
<b>B. FIELDS SEARCHED</b> Minimum documentation searched (classification system followed by classification symbols) IPC(8) - H05B 37/02 (2009.01) USPC - 315, 315/219; 313 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) PatBase, Google Patents, Google, MicroPatent, IP.com		
<b>C. DOCUMENTS CONSIDERED TO BE RELEVANT</b>		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 2002/0121866 A1 (ELLAMS) 05 September 2002 (05.09.2002) entire document	1-14, 17-19, 21-23, 26-32
Y	US 6,160,362 A (SHONE et al) 12 December 2000 (12.12.2000) entire document	1-14, 17-19, 21-22, 26-31
X	US 2003/0111968 A1 (TRESTMAN) 19 June 2003 (19.06.2003) entire document	15-16, 20, 24-25
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A	HU. Analysis and design of high-intensity-discharge lamp ballast for automotive headlamp. Masters Thesis. Virginia Polytechnic Institute and State University. 19 November 2001 (19.11.2001) [retrieved on 2009-05-04]. Retrieved from Internet <scholar.lib.vt.edu/theses/available/etd-11192001-150026/unrestricted/Thesis_Yongxuan_Hu.pdf>. entire document	1-32
<input type="checkbox"/> Further documents are listed in the continuation of Box C. <input type="checkbox"/>		
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Name and mailing address of the ISA/US Mail Stop PCT, Attn: ISA/US, Commissioner for Patents P.O. Box 1450, Alexandria, Virginia 22313-1450 Facsimile No. 571-273-3201		Authorized officer: Blaine R. Copenheaver PCT Helpdesk: 571-272-4300 PCT OSP: 571-272-7774