Abstract: An energy savings device for an inductive, resistive or a capacitive load, such as a fluorescent light fixture having a magnetic ballast or an electronic ballast, which is powered by an AC voltage waveform. The energy savings device includes a setting unit for setting a desired power operating level for the load. The energy savings device also includes a processor configured to receive a signal from the setting unit indicative of the desired power operating level for the load, to determine a phase delay to be provided to an output AC voltage waveform that is to be provided to the load, and to output a control signal as a result thereof. The energy savings device further includes an active element provided between a line that provides the input AC voltage waveform and the load, the active element receiving the control signal and turning off and on at predetermined times in accordance with the control signal, so as to create the output AC voltage waveform from the AC voltage waveform. The processor includes a synchronization circuit that synchronizes to the Green Safety ground line.
Declarations under Rule 4.17:
— as to applicant’s entitlement to apply for and be granted a patent (Rule 4.17(ii))
— as to the applicant’s entitlement to claim the priority of the earlier application (Rule 4.17(iii))

Published:
— with international search report

(88) Date of publication of the international search report:
14 May 2009
INTERNATIONAL SEARCH REPORT

A. CLASSIFICATION OF SUBJECT MATTER
IPC: H02H 3/00 (2006.01); G06F 15/18 (2006.01)

USPC: 361/42.1,3,5,6,7;340/825.2,532.3,2,3,42.3.43
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)
U.S.: 361/42.1,3,5,6,7; 340/825.2,532.3,2,3,42.3.43

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic database consulted during the international search (name of database and, where practicable, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

<table>
<thead>
<tr>
<th>Category</th>
<th>Citation of document, with indication, where appropriate, of the relevant passages</th>
<th>Relevant to claim No.</th>
</tr>
</thead>
</table>

Further documents are listed in the continuation of Box C.

See patent family annex.

Date of the actual completion of the international search
26 March 2008 (26.03.2008)

Name and mailing address of the ISA/US
Mail Stop PCT, Attn: ISA/US Commissioner for Patents
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Form PCT/ISA/210 (second sheet) (April 2007)
**INTERNATIONAL SEARCH REPORT**

### 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 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 any 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. [x] 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.: 1-11 and 18-24

**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.

Form PCT/ISA/210 (continuation of first sheet(2)) (April 2007)
BOX III. OBSERVATIONS WHERE UNITY OF INVENTION IS LACKING

Group I, claim(s) 1-11 and 18-24, drawn to drawn to an apparatus for driving a load device in an energy saving manner, classified in class/subclass 340/825.2.

Group II, claim(s) 12-17, drawn to a computer program product with computer code for controlling load level, classified in class/subclass 340/5.23.

This international Searching Authority considers that the international application does not comply with the requirements of unity of invention (Rules 13.1, 13.2 and 13.3) for the reason indicated below:

Inventions I and II are related as apparatus and product made. The inventions in this relationship are distinct if either or both of the following can be shown: (1) that the apparatus as claimed is not an obvious apparatus for making the product and the apparatus can be used for making a materially different product or (2) that the product as claimed can be made by another and materially different apparatus (MPEP § 806.05(g)). In this case the invention I relates to a hardware system such as a processor to control a load at desired levels according to feedback signals via user's command while the invention II, including claims 12-17, relates to a computer program/software product which sets desired power levels to a load by executing programming codes.