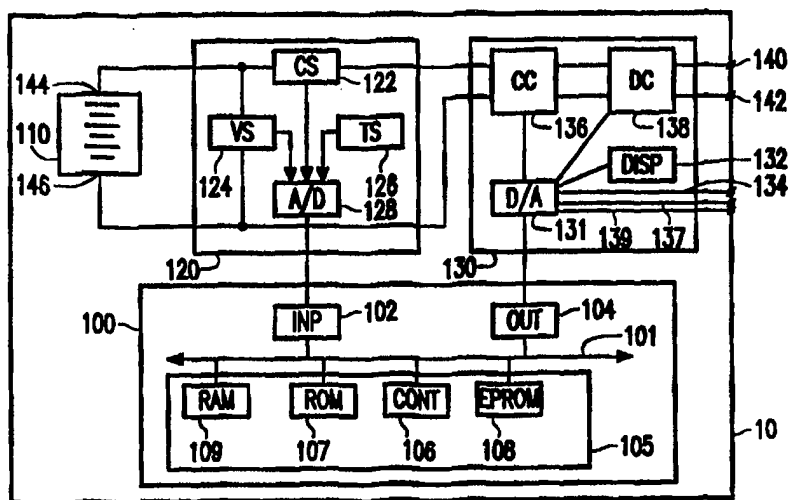




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(21) International Application Number: PCT/IB97/01418 (22) International Filing Date: 10 November 1997 (10.11.97) (30) Priority Data: 96203228.0 21 November 1996 (21.11.96) EP (34) Countries for which the regional or international application was filed: NL et al. (71) Applicant: PHILIPS ELECTRONICS N.V. [NL/NL]; Groenewoudseweg 1, NL-5621 BA Eindhoven (NL). (71) Applicant (for SE only): PHILIPS NORDEN AB [SE/SE]; Kottbygatan 7, Kista, S-164 85 Stockholm (SE). (72) Inventors: NOTTEN, Petrus, Henricus, Laurentius; Prof. Holstlaan 6, NL-5656 AA Eindhoven (NL). BERGVELD, Hendrik, Johannes; Prof. Holstlaan 6, NL-5656 AA Eindhoven (NL). KRUIJT, Wanda, Susanne; Prof. Holstlaan 6, NL-5656 AA Eindhoven (NL). (74) Agent: KOPPEN, Jan; Internationaal Octrooibureau B.V., P.O. Box 220, NL-5600 AE Eindhoven (NL).		(81) Designated States: JP, European patent (AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE). Published <i>With international search report.</i> <i>Before the expiration of the time limit for amending the claims and to be republished in the event of the receipt of amendments.</i> (88) Date of publication of the international search report: 23 July 1998 (23.07.98)

(54) Title: BATTERY MANAGEMENT SYSTEM AND BATTERY SIMULATOR



(57) Abstract

A battery management system (100) comprises input means (102) for receiving input signals, such as current or voltage, which represent a physical quantity of a battery. In operation, processing means (105) of the battery management system (100) calculate a physical quantity of the battery, such as the State of Charge, based on the input signals by using an electrochemical/physical model of the battery. The model includes a representation of a main electrochemical storage reaction, whose behaviour is calculated in dependence on a battery temperature. The processing means (105) calculates the battery temperature based on a temperature model of a temperature development in the battery. The battery management system (100) comprises output means (104) for outputting an output signal which is derived from a state of the electrochemical storage reaction. The battery management system (100) is, advantageously, used in a smart battery (10) or a battery charger/discharger (200). The model is, advantageously, also used in a battery simulator.

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INTERNATIONAL SEARCH REPORT

International application No.

PCT/IB 97/01418

A. CLASSIFICATION OF SUBJECT MATTER

IPC6: G01R 31/36, H01M 10/48

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)

IPC6: G01R, H01M, H02J

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

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

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C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	WO 9610858 A1 (DURACELL INC.), 11 April 1996 (11.04.96), page 1, line 1 - page 5, line 17 --	1-15
A	US 5565759 A (ROBERT A.DUNSTAN), 15 October 1996 (15.10.96), column 3, line 54 - column 4, line 24 --	1-15
A	US 5572110 A (ROBERT A.DUNSTAN), 5 November 1996 (05.11.96), column 3, line 53 - column 4, line 15 -- -----	1-15

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Information on patent family members

29/04/98

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PCT/IB 97/01418

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