



(12) **United States Patent**  
**Frost-Ruebling et al.**

(10) **Patent No.:** **US 8,170,402 B2**  
(45) **Date of Patent:** **\*May 1, 2012**

(54) **PORTABLE HIGH CAPACITY DIGITAL DATA STORAGE DEVICE**

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(73) Assignee: **Cinegest, Inc.**

(\*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 1435 days.

This patent is subject to a terminal disclaimer.

(21) Appl. No.: **11/453,669**

(22) Filed: **Jun. 15, 2006**

(65) **Prior Publication Data**  
US 2007/0236584 A1 Oct. 11, 2007

**Related U.S. Application Data**

(60) Provisional application No. 60/790,132, filed on Apr. 7, 2006.

- (51) **Int. Cl.**
- H04N 5/928** (2006.01)
  - H04N 5/76** (2006.01)
  - H04N 5/84** (2006.01)
  - H04N 5/222** (2006.01)
  - H04N 5/232** (2006.01)
  - H04N 7/173** (2011.01)
  - H04L 12/56** (2006.01)
  - H04Q 11/00** (2006.01)
  - G06K 5/00** (2006.01)
  - G06K 19/06** (2006.01)
  - G06F 1/00** (2006.01)
  - G06F 3/00** (2006.01)
  - G06F 9/34** (2006.01)
  - G06F 13/00** (2006.01)
  - G06F 13/14** (2006.01)
  - G06F 15/00** (2006.01)

(52) **U.S. Cl.** ..... **386/338**; 386/334; 235/380; 235/492; 345/473; 345/520; 348/211.3; 348/211.5; 348/231.99; 348/333.05; 348/722; 370/386; 370/389; 370/395.63; 370/400; 709/201; 710/10; 710/14; 710/16; 710/31; 711/103; 711/154; 711/158; 711/159; 711/165; 711/168; 711/203; 712/13; 712/15; 712/28; 713/323; 713/324; 725/92; 725/115

(58) **Field of Classification Search** ..... 386/96, 386/125, 126, E5.069, E9.013; 235/380, 235/492; 345/87, 473, 520; 348/211.3, 211.5, 348/231.99, 333.05, 722, E5.008, E5.043, 348/E5.051; 365/189.05, 189.02; 370/386, 370/389, 395.63, 400; 709/201; 710/10, 710/14, 16, 31; 711/154, 158, 165, 168, 711/103, 159, 203; 712/13, 15, 28, 104; 713/323, 324; 725/92, 115

See application file for complete search history.

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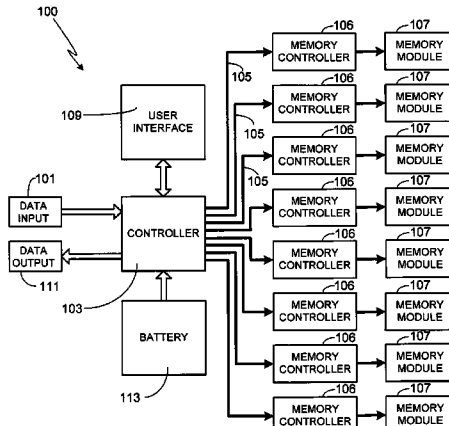
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(57)

**ABSTRACT**

A portable data storage device compatible with both standard and high definition digital video cameras is provided. The device includes at least one SDI I/O, and preferably at least one audio I/O and preferably at least one medium speed I/O

interface. A device controller takes the high speed serial data, packetizes it, and then sends it out to a plurality of memory modules. Preferably each memory module includes four NAND clusters, each NAND cluster consisting of a flash memory controller and two NAND flash memories. Interposed between the device controller and the memory modules are a plurality of memory controllers, each memory controller controlling a group of memory modules. A user interface is coupled to the device controller, the interface including a display capable of at least two user-selectable orientations, record/playback controls and a four-way directional control pad.

**25 Claims, 7 Drawing Sheets**

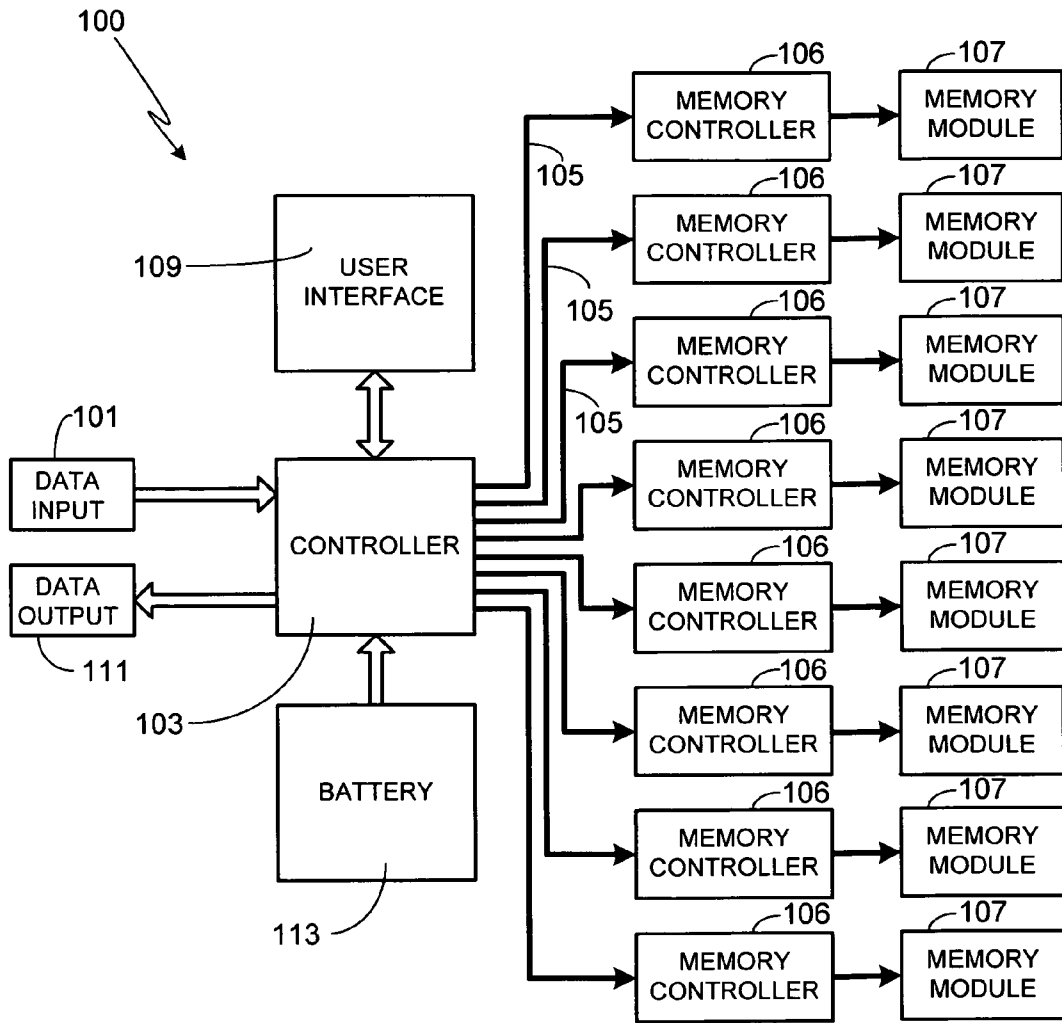


FIG. 1

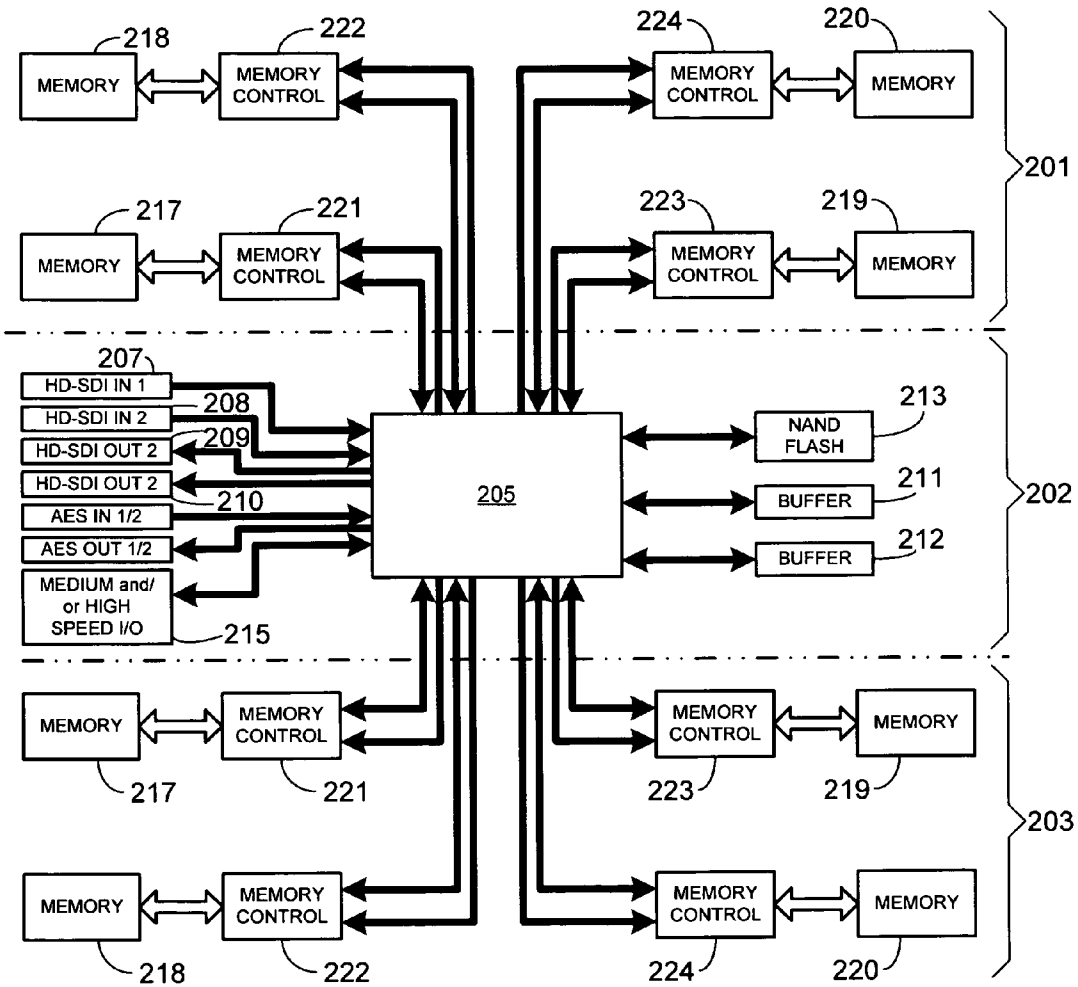


FIG. 2

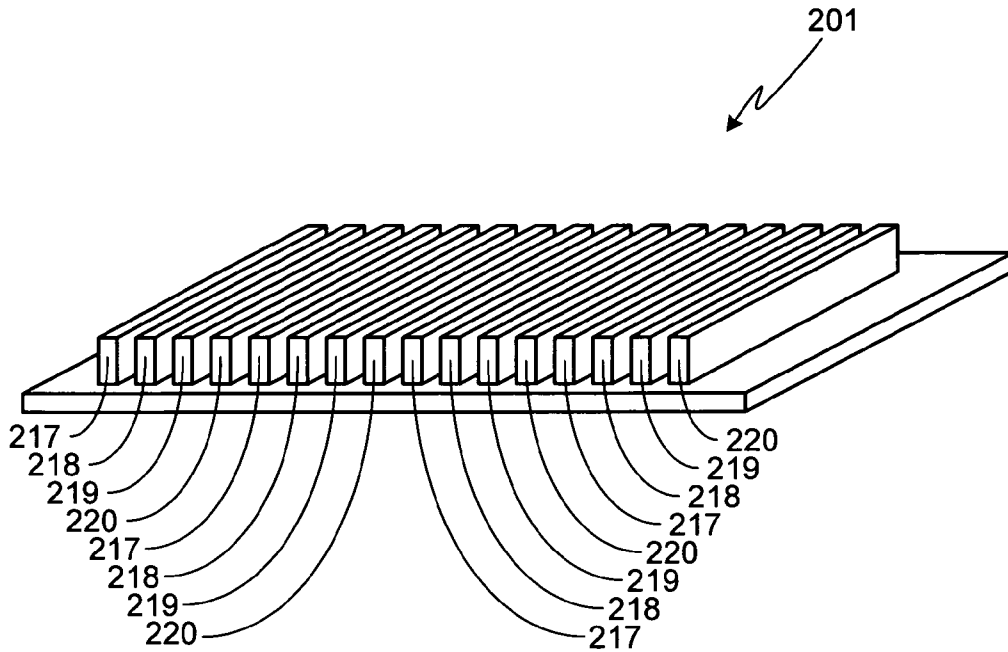


FIG. 3

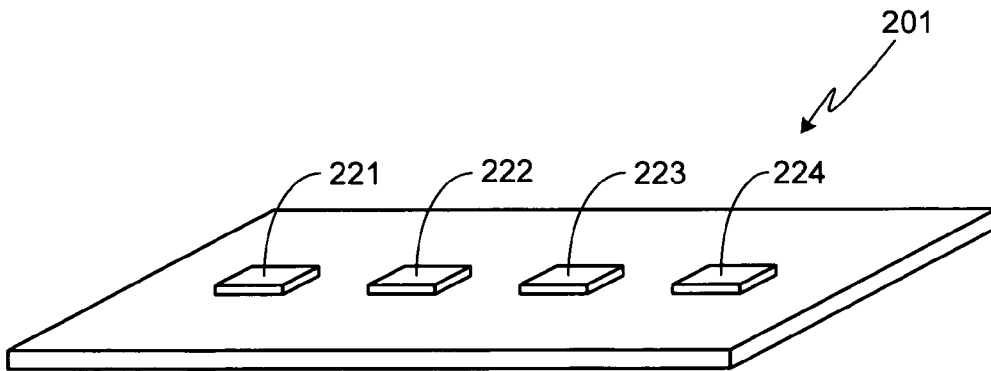


FIG. 4

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