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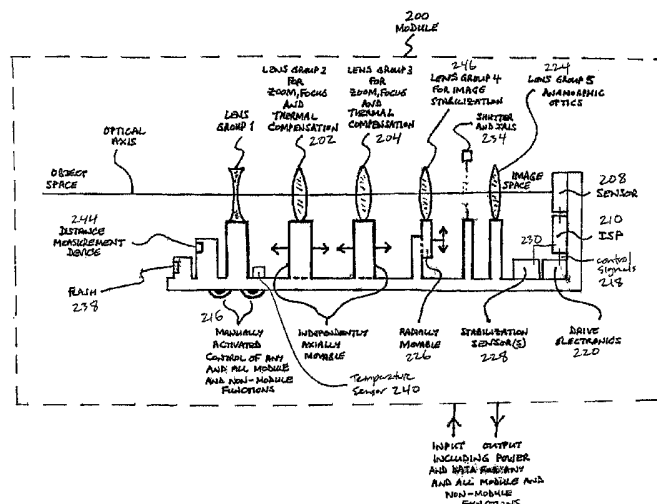
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(54) Title: METHOD AND APPARATUS FOR CONTROLLING A LENS, AND CAMERA MODULE INCORPORATING SAME



(57) Abstract: An efficient image capture system is disclosed that integrates functions to control a lens including one or more of focus or object distance, zoom, temperature compensation, and stabilization within an image signal processor (ISP) with appropriate algorithms. In particular, the integrated ISP circuitry may control the motion of the focus and zoom optics of an optical assembly, control stabilization, control the flash, provide enhanced functions and features for controlling the zoom and focus lenses to enable enhanced image capture sequences and/or tracking lens data, provide a set of algorithms within the ISP to alter the aspect ratio (both height and width of an image) of the image, for example to compensate for the addition of an anamorphic lens, and integrate an anamorphic lens into the module to alter an image's projected aspect ratio onto the focal plane array.

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INTERNATIONAL SEARCH REPORT

International application No.

PCT/US05/30159

A. CLASSIFICATION OF SUBJECT MATTER

IPC: G03B 17/02(2006.01);H04N 5/225(2006.01)

USPC: 396/79,541;348/340,375

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. : 396/72,76,77,79,80,535,,541; 348/164,240.3,240.99,340,367,370,371,373-376

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)

APS active adj column adj sensor; active adj pixel adj sensor; quantum adj dot; (single common) adj (chip integrated)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 2003/0223010 A1 (KAPLINSHY et al.) 04 December 2003 (04.12.2003), paragraph 0020 and Fig. 6.	5, 27 and 32
Y	US 6,642,955 B1 (MIDGLEY et al) 04November, 2003 (04.11.2003, ABSTRACT and Fig. 2.	14, 15 and 17
Y	US 6,407,439 B1 (HIER et al) 18 June 2002 (18.06.2002), column 3 lines 25-30	13
Y	US 2002/0003576 A1 (KONISHI et al) 10 January 2002 (10.01.2002), Fig. 1.	19, 22, 23, 34 and 35
Y	US 6,169,853 B1 (HASUSHITA et al) 02 January 2001 (02.01.2001), Figs. 1 and 12.	6, 28 and 33
Y	US 6,084,229 A (PACE et al) 04 July 2000 (04.07.2000), column 2 lines 35-40.	11 and 12
Y	US 6,009,340 A (HSIA) 28 December 1999 (28.12.1999), Fig. 1.	16 and 17



Further documents are listed in the continuation of Box C.



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C. (Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 5,895,129 A (OHTA) 20 April 1999 (20.04.1999), ABSTRACT and Fig. 1.	7
Y	US 5,282,042 A (YOSHIDA et al) 25 January 1994 (25.01.1994, Fig. 4.	8
Y	US 4,972,267 A (KANEKO et al) 20 November 1990 (20.11.1990), Fig. 1.	9
X --- Y	US 4,816,860 A IIDA et al) 28 March 1989 (28.03.1989, Figs. 1, 6, 9, column I lines7-58, and column 5 lines 9-20 and lines 50-58.	1-4, 10, 14, 17, 24-26 and 31 ----- 5-9, 11-13, 18-23, 27-30 and 32-35
Y	US 4,407,567 A (MICHELET et al) 04 October 1983 (04.10.1983), Fig. 7 and the ABSTRACT.	18