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(54) **Sensor interface circuitry having adjustable gain and Q, and method for adjusting sensor interface circuitry gain and Q**

(57) A sensor interface filter (50) having adjustable gain and Q is provided. The sensor interface (50) includes a first operational amplifier (12) coupled to gain circuitry (26), a gain stage (27), and a resistor (18). The gain circuitry (26) and gain stage (27) are electrically coupled to each other. The gain stage (26) includes a gain stage switch (30), and is coupled to control circuitry (51). The control circuitry (51) controls the state of the gain stage switch (30) to vary the number of feedback current paths providing feedback to the inverting input (11) of the first operational amplifier (12), altering the gain provided by the first operational amplifier (12). The sensor interface (50) further includes a second operational amplifier (52) coupled to filter circuitry (41) and feedback switches (54,56). The feedback switches (54,56) are coupled to the control circuitry (51), which controls the state of the feedback switches (54,56) to vary the gain provided by the second operational amplifier (52) and the filter Q of the sensor interface (50). A method is also provided.

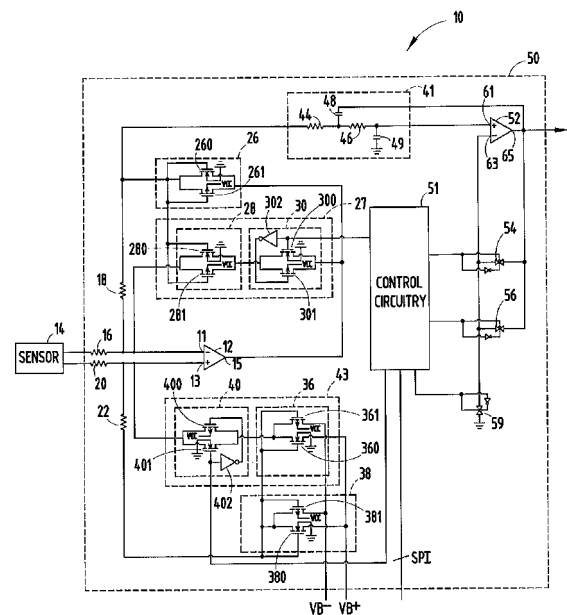


FIG. 2

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EUROPEAN SEARCH REPORT

Application Number
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DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
A	US 2004/239421 A1 (WANG WEN-CHI [TW] ET AL) 2 December 2004 (2004-12-02) * abstract * * figures 3-7 * * paragraphs [0006] - [0008] * * paragraphs [0017] - [0030] * * claims 1-14 *	1-22	INV. G01L23/22
A	US 2005/116769 A1 (TEI KORYO [JP] ET AL) 2 June 2005 (2005-06-02) * abstract * * figures 1-8 * * column 1, line 67 - column 9, line 28; claims 1,2 *	1-22	
A	US 4 463 722 A (KOBAYASHI TATSUO [JP]) 7 August 1984 (1984-08-07) * abstract * * figures 1-3 * * claims 1-7 *	1-22	
A	JP 58 074872 A (HITACHI LTD) 6 May 1983 (1983-05-06) * abstract *	1-22	
The present search report has been drawn up for all claims			TECHNICAL FIELDS SEARCHED (IPC) G01L
Place of search The Hague		Date of completion of the search 12 January 2011	Examiner Daman, Marcel
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document		T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document	

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**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

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12-01-2011

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 2004239421 A1	02-12-2004	NONE	
US 2005116769 A1	02-06-2005	NONE	
US 4463722 A	07-08-1984	JP 59065225 A	13-04-1984
JP 58074872 A	06-05-1983	NONE	