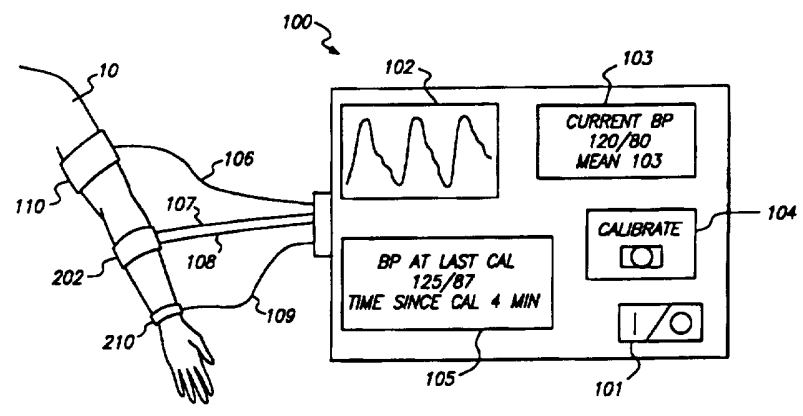




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<p>(21) International Application Number: PCT/US96/15820 (22) International Filing Date: 2 October 1996 (02.10.96) (30) Priority Data: 60/005,519 3 October 1995 (03.10.95) US 08/556,547 22 November 1995 (22.11.95) US (71) Applicant: VITAL INSITE, INC. [US/US]; 830 Dubuque Avenue, South San Francisco, CA 94080 (US). (72) Inventors: CARO, Richard, G.; Apartment T659, 461 Second Street, San Francisco, CA 94107 (US). SHER, Mark, H.; 1770 Broadway Street #505, San Francisco, CA 94109 (US). FLAHERTY, Bryan, P.; 327 Filbert Street, Half Moon Bay, CA 94109 (US). (74) Agents: TEST, Aldo, J. et al.; Flehr, Hohbach, Test, Albritton &amp; Herbert, Suite 3400, 4 Embarcadero Center, San Francisco, CA 94111-4187 (US).</p>	<p>(81) Designated States: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, HU, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, TJ, TM, TR, TT, UA, UG, UZ, VN, ARIPO patent (KE, LS, MW, SD, SZ, UG), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG).</p> <p><b>Published</b> <i>With international search report. Before the expiration of the time limit for amending the claims and to be republished in the event of the receipt of amendments.</i></p> <p>(88) Date of publication of the international search report: 9 May 1997 (09.05.97)</p>	

(54) Title: APPARATUS AND METHOD FOR MEASURING AN INDUCED PERTURBATION TO DETERMINE A PHYSIOLOGICAL PARAMETER



(57) Abstract

A monitor for determining a patient's physiological parameter includes a calibration device (110) configured to provide a calibration signal representative of the patient's physiological parameter. An exciter (202) is positioned over a blood vessel (220) of the patient for inducing a transmitted exciter waveform into the patient. A noninvasive sensor (210) is positioned over the blood vessel (220) where the noninvasive sensor (210) is configured to sense a hemoparameter and to generate a noninvasive sensor signal representative of the hemoparameter containing a component of a physiological parameter waveform and a component of a received exciter waveform. In this context, a hemoparameter is defined as any physiological parameter related to vessel blood such as pressure, flow, volume, velocity, blood vessel wall position and other related parameters. A processor (100) is configured to determine a relationship between a property of the received exciter waveform and a property of the physiological parameter. The processor (100) is connected to receive the calibration signal and the noninvasive sensor signal, and the processor is configured to process the calibration signal and the noninvasive sensor signal to determine the physiological parameter. In the preferred embodiment, the physiological parameter measured is blood pressure, however, the present invention can also be used to analyze and track other physiological parameters such as vascular wall compliance, strength of ventricular contractions, vascular resistance, fluid volume, cardiac output, myocardial contractility and other related parameters.

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# INTERNATIONAL SEARCH REPORT

International Application No  
PCT/US 96/15820

**A. CLASSIFICATION OF SUBJECT MATTER**  
IPC 6 A61B5/022

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)  
IPC 6 A61B

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 practical, search terms used)

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X A	US 3 095 872 A (TOLLES ET AL.) 2 July 1963 cited in the application  see figures 1,2 see column 3, line 32 - column 5, line 15 --- -/--	28  1-3,8,9, 12,21, 22,24, 35,36, 39,48, 50,51

Further documents are listed in the continuation of box C.

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Date of the actual completion of the international search

26 March 1997

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International Application No  
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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.
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