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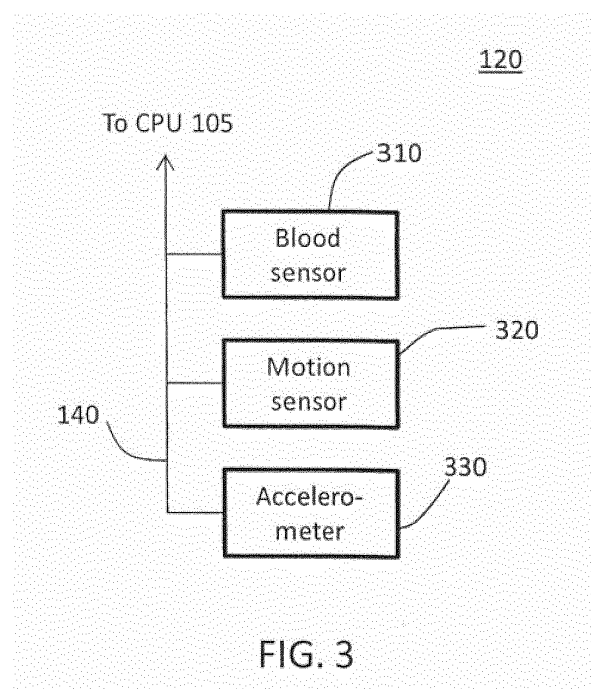
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(54) **Heart rate monitor**

(57) A heart rate monitor is disclosed comprising two main components: a user system in form of a wristwatch type device including a plurality of sensors, and a second device, such as a smart phone, that receives and processes the transmitted sensor signals. The user system includes an optical blood concentration sensing system (310) for detecting the heart rate, a motion sensor (320)

to sense changes in the position of the user system with respect to the skin in order to compensate for noise, and an accelerometer (330) to provide information about the motion of the user system with respect to the user's heart. A heart rate Kalman filter is configured to compute a heart rate on the basis of signals obtained from the plurality of sensors.





EUROPEAN SEARCH REPORT

Application Number
EP 13 15 0414

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Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
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The present search report has been drawn up for all claims			
Place of search Munich		Date of completion of the search 20 May 2014	Examiner Küster, Gunilla
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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DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	S. Seyedtabaii ET AL: "Kalman Filter Based Adaptive Reduction of Motion Artifact from Photoplethysmographic Signal", World Academy of Science, Engineering and Technology, 26 January 2008 (2008-01-26), pages 165-168, XP055118729, Retrieved from the Internet: URL:http://citeseerx.ist.psu.edu/viewdoc/download;jsessionid=E75BDF87DD689A7459AEBEF EA788E56F?doi=10.1.1.193.626&rep=rep1&type=pdf [retrieved on 2014-05-19] * the whole document *	1,2,12	
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The present search report has been drawn up for all claims			
Place of search Munich		Date of completion of the search 20 May 2014	Examiner Küster, Gunilla
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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This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
The members are as contained in the European Patent Office EDP file on
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For more details about this annex : see Official Journal of the European Patent Office, No. 12/82

专利名称(译)	心率监测器		
公开(公告)号	EP2612594A3	公开(公告)日	2014-07-02
申请号	EP2013150414	申请日	2013-01-07
[标]申请(专利权)人(译)	史考斯克工业有限公司		
申请(专利权)人(译)	Scosche产品INDUSTRIES, INC.		
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[标]发明人	BUCHHEIM JAMES HENNIG ARNE		
发明人	BUCHHEIM, JAMES HENNIG, ARNE		
IPC分类号	A61B5/024 A61B5/00		
CPC分类号	A61B5/11 A61B5/0004 A61B5/0022 A61B5/0075 A61B5/0082 A61B5/0205 A61B5/02416 A61B5/02438 A61B5/681 A61B5/6824 A61B5/6844 A61B5/721 A61B5/7221 A61B5/725 A61B5/7278 A61B2560/0443 A61B2562/0219		
优先权	61/583532 2012-01-05 US		
其他公开文献	EP2612594A2		
外部链接	Espacenet		

摘要(译)

公开了一种心率监测器，其包括两个主要部件：包括多个传感器的手表型设备形式的用户系统，以及接收和处理所传送的传感器信号的第二设备，例如智能手机。用户系统包括用于检测心率的光学血液浓度感测系统（310），感测用户系统相对于皮肤的位置的变化以补偿噪声的运动传感器（320），以及加速度计（330）以提供关于用户系统相对于用户的心脏的运动的运动的信息。心率卡尔曼滤波器被配置为基于从多个传感器获得的信号来计算心率。

