US 20160174908A1

(19) **United States**

(12) **Patent Application Publication**

Nair et al.

(10) **Pub. No.: US 2016/0174908 A1**

(43) **Pub. Date: Jun. 23, 2016**

(54) **DEVICE AND METHOD FOR HIGHLIGHTING PATIENT DATA AND TRENDS**

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(21) Appl. No.: **14/735,887**

(22) Filed: **Jun. 10, 2015**

(30) **Foreign Application Priority Data**

Dec. 23, 2014 (IN) 6498/CHE/2014

Publication Classification

(51) **Int. Cl.**

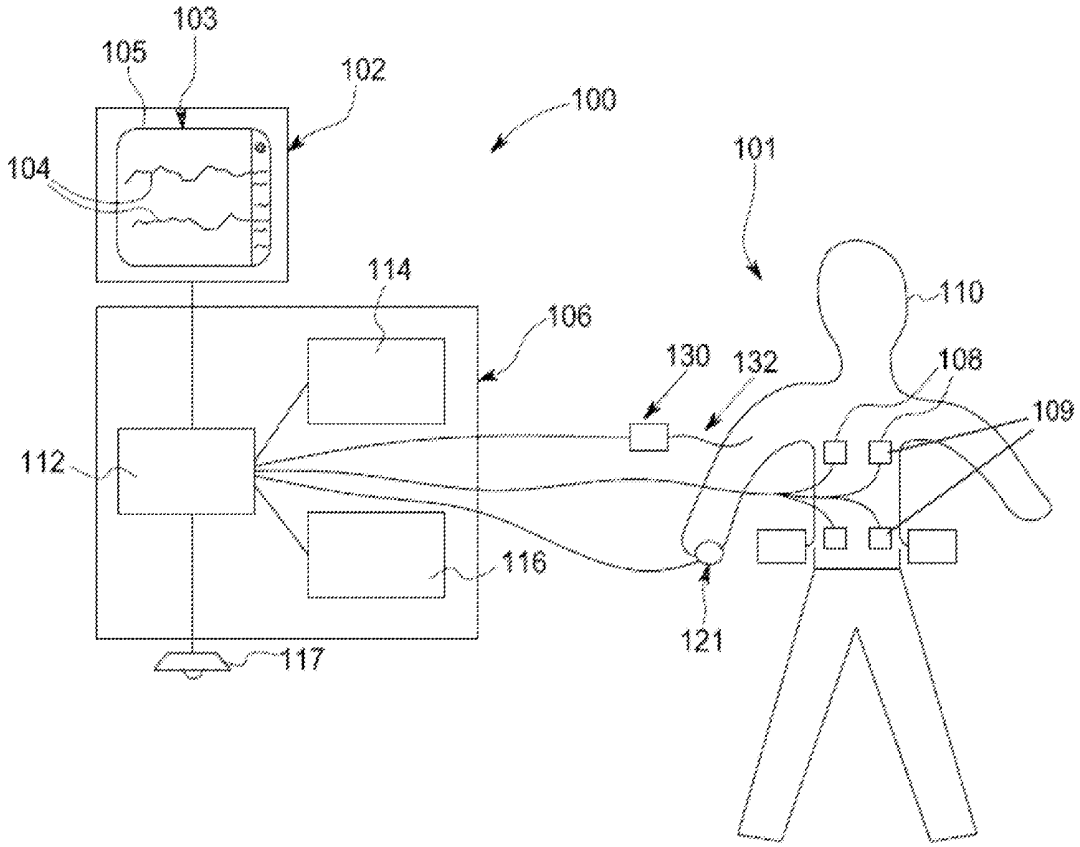
A61B 5/00	(2006.01)
A61B 5/04	(2006.01)
A61B 5/026	(2006.01)
A61B 5/1455	(2006.01)
A61B 5/0452	(2006.01)
A61B 5/0215	(2006.01)

(52) **U.S. Cl.**

CPC ***A61B 5/742*** (2013.01); ***A61B 5/0452*** (2013.01); ***A61B 5/0215*** (2013.01); ***A61B 5/026*** (2013.01); ***A61B 5/14551*** (2013.01); ***A61B 5/746*** (2013.01); ***A61B 5/04012*** (2013.01)

(57) **ABSTRACT**

A monitoring or diagnostic device including a display having a display screen on which incoming data from sensors attached to the item or object being monitored by the device is illustrated. The incoming data is represented on the display screen to enable an individual viewing the display screen to determine the current operating condition or parameters of the item or object, such as a patient. The device and display screen can also illustrate various alarm conditions or events, as determined by the device to draw the attention of the individual to those alarm conditions. To assist in this function, the device represents the incoming data from a sensor giving rise to the alarm condition or event, as well as additional incoming data from other sensors corresponding in some manner to the alarm condition, on the display screen in a visually different or distinct manner from the rest of the incoming data not relating to the alarm condition or event.



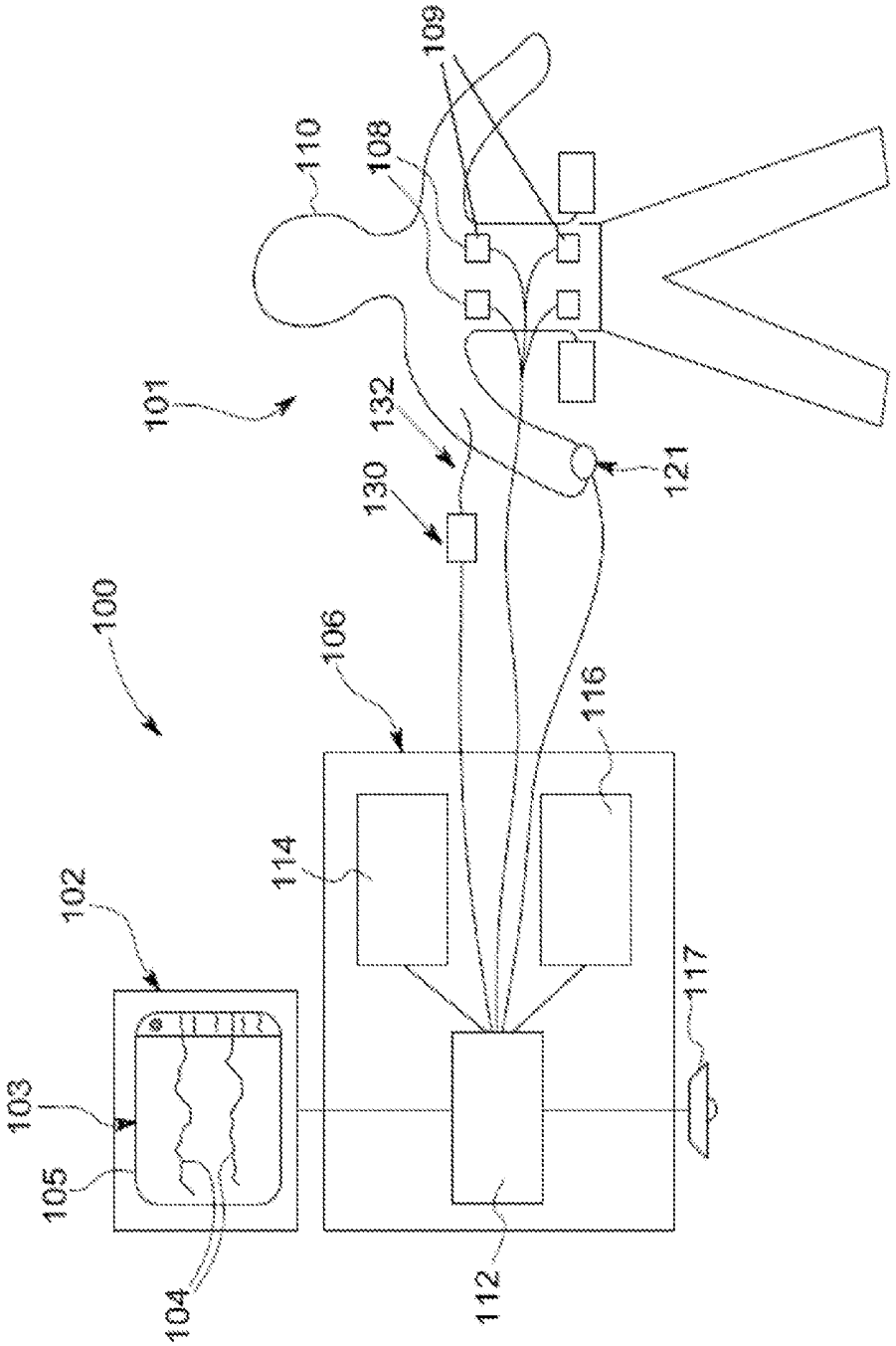

109
110
108
101
132
130
121
100
106
116
114
102
117
103
105
104
112

FIG. 1

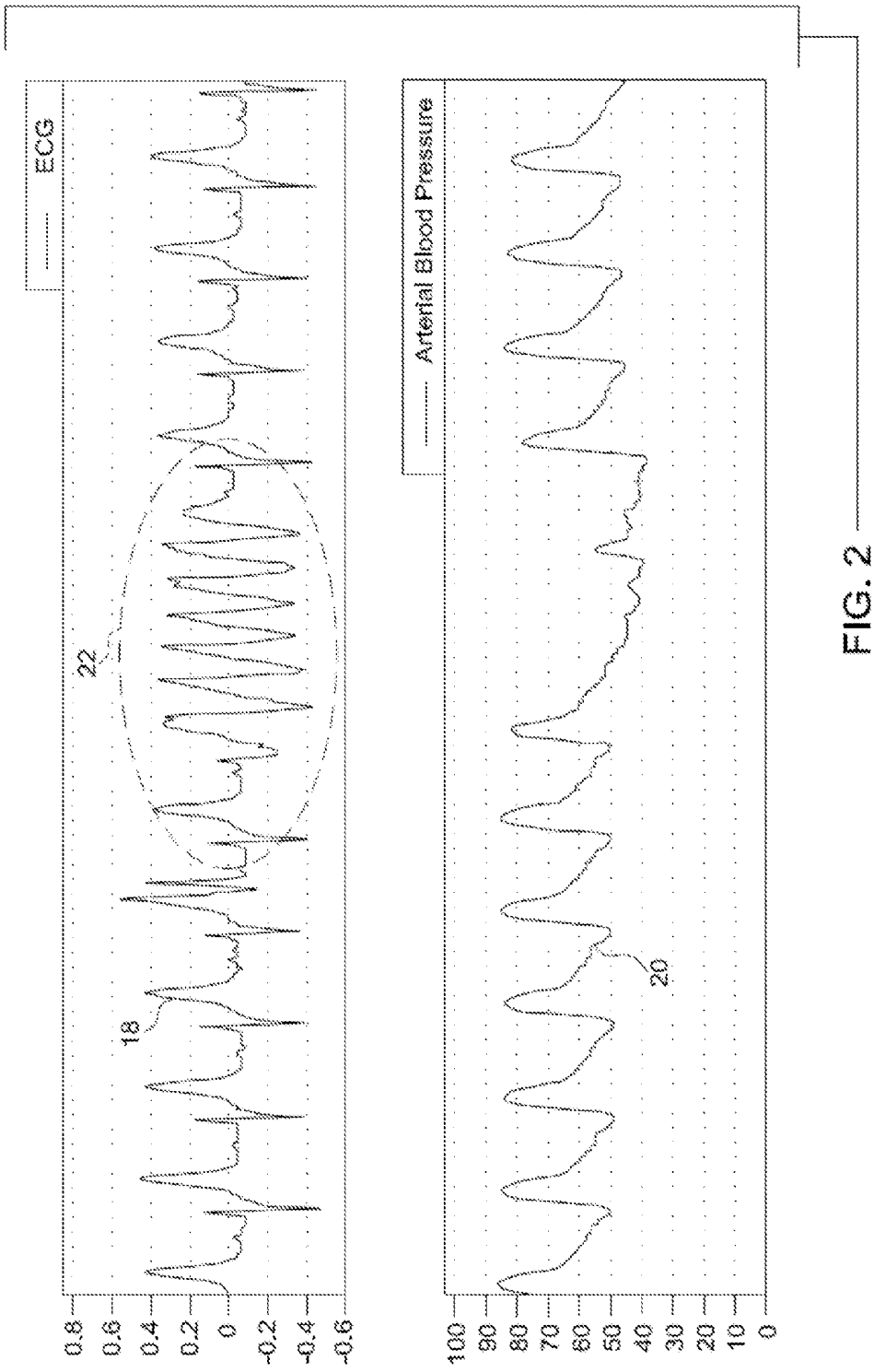

ECG
Arterial Blood Pressure
22
18
20
0.8
0.6
0.4
0.2
0
-0.2
-0.4
-0.6
100
90
80
70
60
50
40
30
20
10
0

FIG. 2

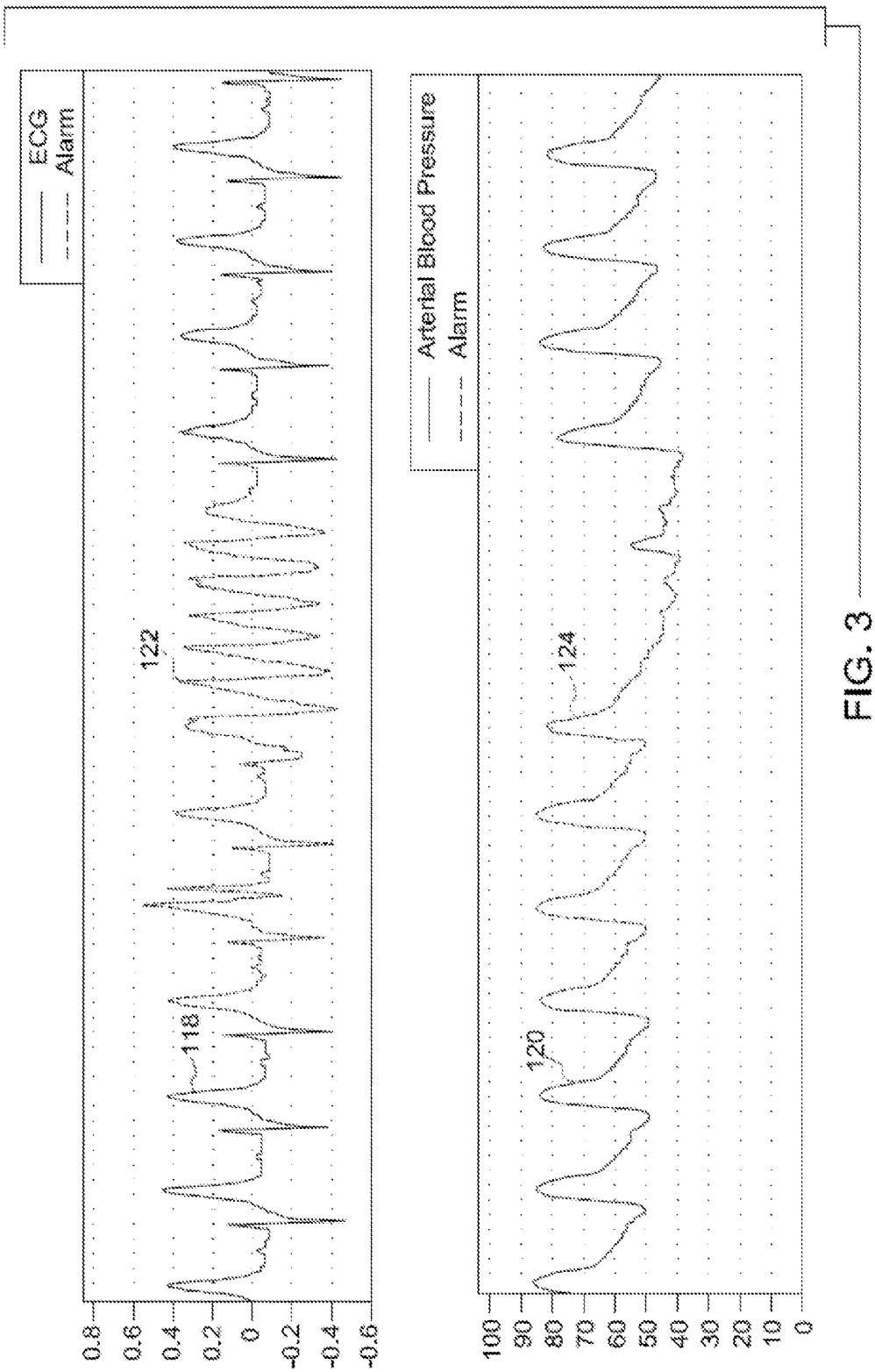

ECG
Alarm
0.8
0.6
0.4
0.2
0
-0.2
-0.4
-0.6
118
122
Arterial Blood Pressure
Alarm
100
90
80
70
60
50
40
30
20
10
0
120
124

FIG. 3

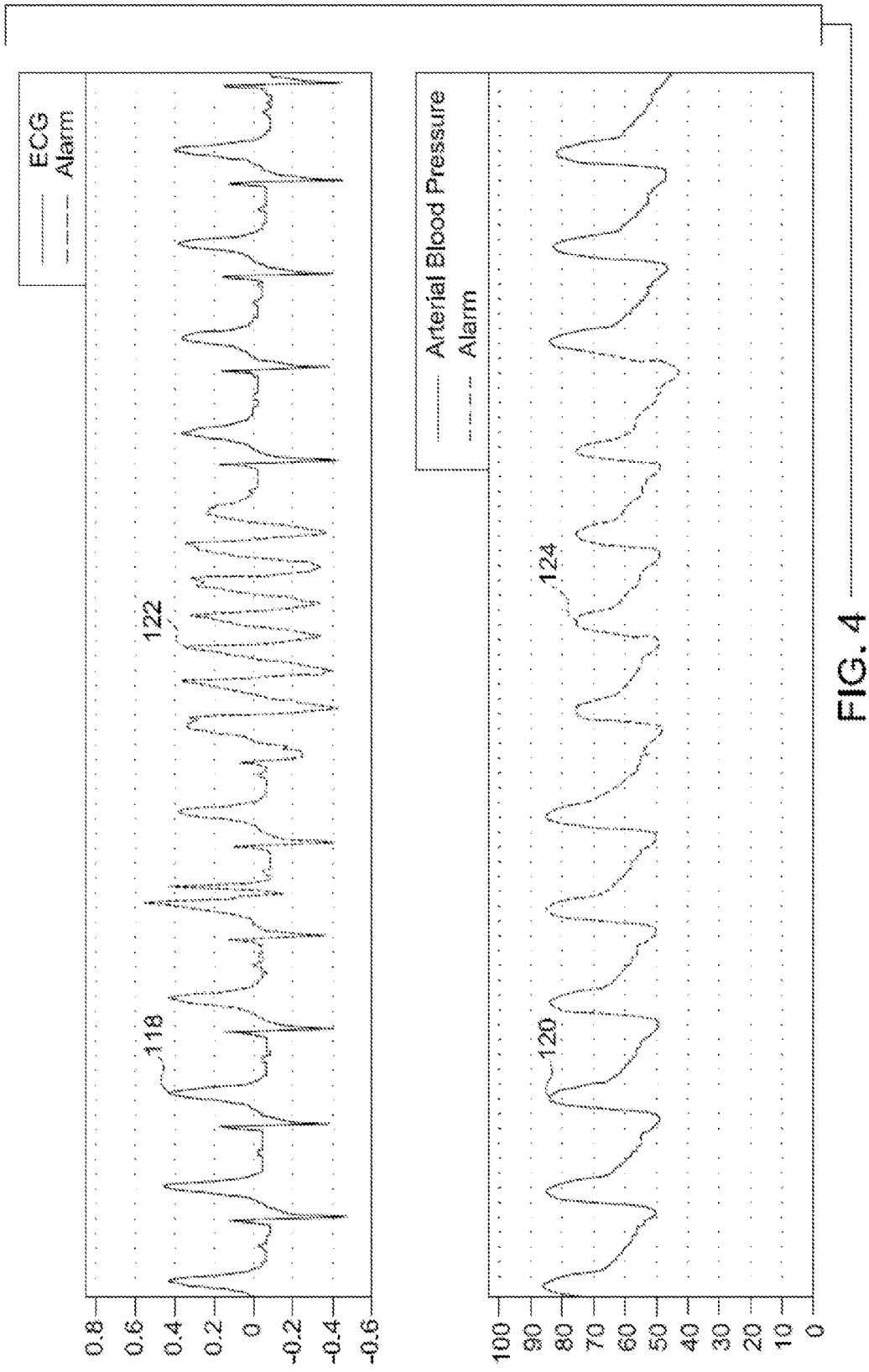

ECG
Alarm
118
122
0.8
0.6
0.4
0.2
0
-0.2
-0.4
-0.6
Arterial Blood Pressure
Alarm
120
124
100
90
80
70
60
50
40
30
20
10
0

FIG. 4

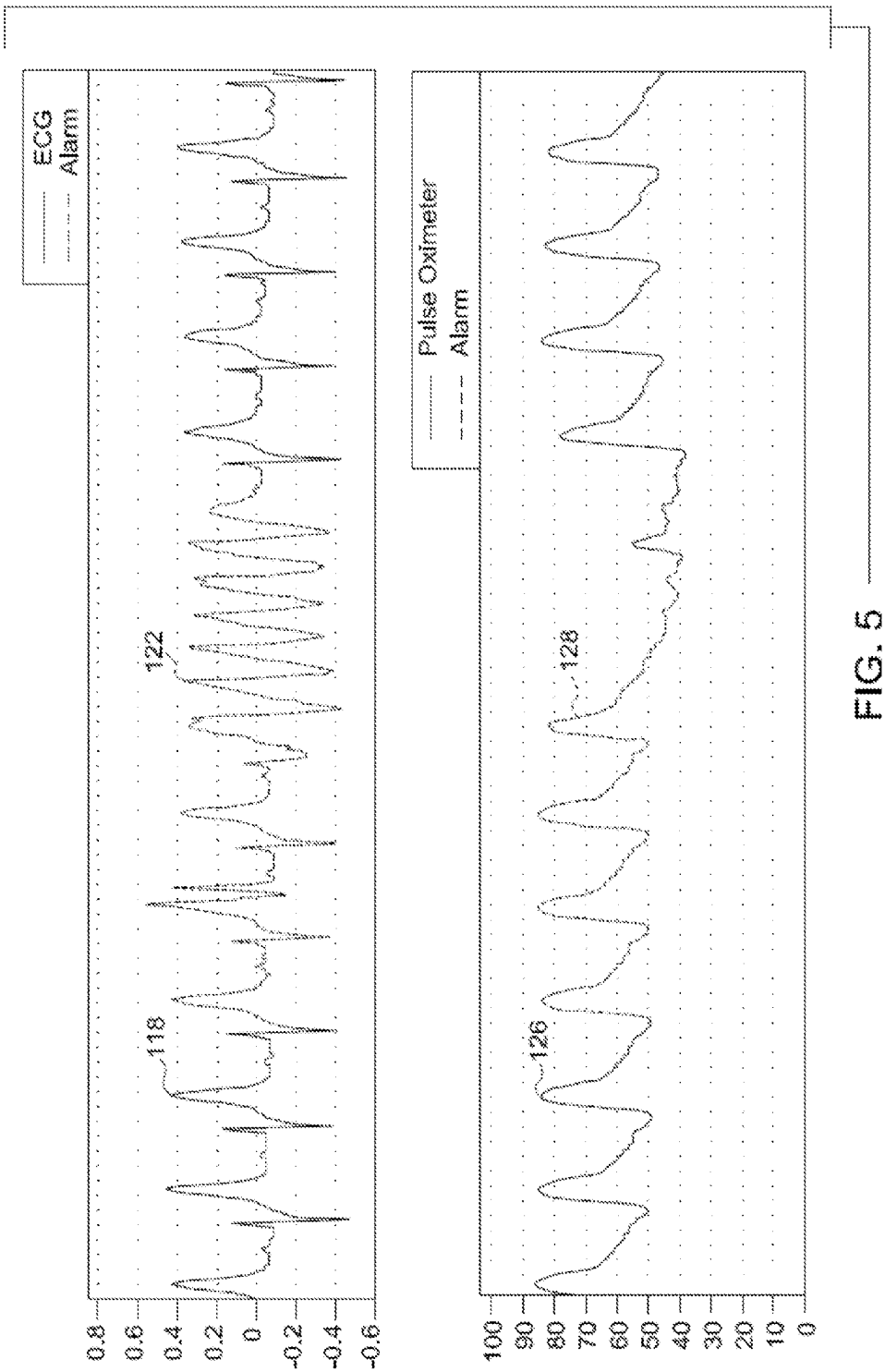

ECG
Alarm
0.8
0.6
0.4
0.2
0
-0.2
-0.4
-0.6
118
122
Pulse Oximeter
Alarm
100
90
80
70
60
50
40
30
20
10
0
126
128

FIG. 5

DEVICE AND METHOD FOR HIGHLIGHTING PATIENT DATA AND TRENDS

BACKGROUND OF THE INVENTION

[0001] The invention relates generally to monitors or displays connected to monitoring or diagnostic equipment for illustrating data about an object to which the equipment is connected, and more particularly to devices and methods for graphically displaying the data.

[0002] In monitoring or diagnostic devices that are currently utilized, the data obtained by the devices is often shown on a display connected to the device that provides a visual representation of the data in manner that can be readily assimilated by an individual viewing the data.

[0003] These types of devices are utilized in many different environments, such as in hospitals and other medical environments where patients are continuously monitored by these devices, as well as in various other manufacturing and industrial environments where the operation of various types of equipment is continuously monitored. In the example of those devices utilized in medical environments, the data obtained and displayed on the monitoring or diagnostic devices is often shown as a waveform or trends displayed on a screen of the device. For example, on a screen **102** associated with a bedside cardiac monitoring device **100** (FIG. **1**), remote cardiac monitoring device or other cardiac monitoring or diagnostic equipment the waveform, such as a monochromatic electrocardiogram (ECG) waveform **18** (FIG. **2**) or an arterial blood pressure (ABP) waveform **20** (FIG. **2**), is displayed as a single color line graph on a black background, or other similar type of graph, plotted over time. The clinicians observing the screen **102** and the waveforms **18**,**20** represented thereon derive the necessary information by viewing and analyzing the waveforms **18**,**20**.

[0004] In collecting and formatting the data from the patient for display in the waveforms **18**,**20** on the associated screen **102**, the monitoring device **100** also generate alarms based on sensed cardiac events based on the inbuilt algorithms and set limits regarding the data represented in the waveforms **18**,**20**. In many situations, the algorithm utilized within the monitoring device **100** is designed to graphically reflect the cardiac event **22**, e.g., arrhythmia, in the ECG waveform **18**, as well as in any other relevant waveform, such as the ABP waveform **20**, and generate a corresponding alarm. In most situations, the alarms corresponding to the arrhythmia events **22** represented in the data in the displayed waveforms **18**,**20** are various types of audio and/or visual indicators generated from the monitoring device **100**.

[0005] The visual alarm indicators normally include a flashing alarm icon on the screen **102** of the device **100** in or associated with bright, easily noticeable colors (usually red) adjacent to the waveform(s) **18**,**20** to indicate which waveform **18**,**20** or associated parameter has to be reviewed by the individual on an urgent basis. Most often these visual indicators of alarms are limited to highlighting numerical values which are abnormal or the name of any critical cardiac event, e.g. ASYSTOLE.

[0006] However, other diagnostic and monitoring devices have been developed that provide information in addition to the alarm condition and the numerical values and/or name of the critical cardiac event that created the alarm. Examples of these types of devices and methods are shown in US Patent Application Publication No. US2011/0138323, and U.S. Pat. Nos. 8,269,620 and 8,396,544.

[0007] However, while these devices provide displays and methods of operating the displays that are capable of organizing information relating to various cardiac alarm events or conditions for review by an individual, due to the large number of the alarm events which may be occurring at a given time, certain highly important clinical cardiac events could inadvertently be overlooked or missed. This is often referred to as alarm fatigue and results from the constant representation of the alarm events in a similar manner that can cause certain events to become "lost" in the flood of alarms and associated information represented on the display screen of the particular device. Thus, when studying the waveforms **18**,**20**, the individuals are using their past experience to detect any anomaly in the waveforms **18**,**20** in a manual fashion by directly observing the waveforms **18**,**20**. As such, when the waveforms **18**,**20** are viewed along with other alarms and information provided on the display, and in conjunction with any other potential distraction(s) in the immediate vicinity, there is the potential that significant clinical data present in one or more of the waveforms **18**,**20** can be missed.

[0008] Therefore, it is desirable to develop a monitoring or diagnostic device and display, as well as an associated method for displaying information relating to a particular alarm condition that provides the information about the alarm event or condition in a form that can be readily and easily assimilated by an observing individual and that reduces the potential for the alarm event to become lost in other alarm event data.

BRIEF DESCRIPTION OF THE INVENTION

[0009] In the present invention, a monitoring or diagnostic device includes a display screen on which data concerning item or object being monitored by the device is illustrated. The incoming data sensed by the device is represented on the display screen to enable an individual viewing the display screen to determine the current operating condition or parameters of the object, such as a patient. The device and display screen can also illustrate various alarm conditions or events, as determined by the device from the incoming data signals received by the device from sensors attached to the item being monitored. The alarm conditions or events are triggered by the comparison or application of preset value or parameter ranges for the incoming data signals and/or inbuilt algorithms stored within the device to the incoming data signals from the sensors. The stored ranges and/or algorithm can relate to various aspects or attributes of the incoming data signals from the sensors, including but not limited to predetermined maximum and minimum values for the data signals, frequency ranges for the incoming data, as well as correlations between one set of incoming data from one sensor and another set of incoming data from another sensor, such a temporal correspondence, among others. When an alarm event or condition is determined in this manner by the device, the device modifies the operation of the display concerning the sensed data that created the alarm event or condition to draw the attention of the monitoring individual to those particular data signals. To assist in this function, the device represents the data giving rise to the alarm condition or event on the display in a visually different or distinct manner from the rest of the data outside of the alarm condition or event, such as in a different color, to visually indicate or identify to the observing individual the data displayed on the screen that directly relates to the determined alarm condition or event. In this manner, the device and

display can quickly provide the individual with the required information concerning the alarm event in order for the individual to determine and address the condition which caused the alarm event to be triggered.

[0010] The device also alters the representations of other sensed parameters on the display that correspond, e.g., in time and duration, to the sensed alarm condition in a visually distinct manner as well, regardless of whether those other sensed parameters also give rise to an alarm event or condition. In this manner, the device can visually distinguish all incoming data signals relating to the sensed alarm condition or event from the remainder of the incoming data signals being displayed to enable the observing individual to quickly locate and view all data that may be relevant to the identified alarm condition or event.

[0011] It is to be understood that both the foregoing general description and the following detailed description are exemplary and explanatory and are intended to provide further explanation of the invention as claimed.

BRIEF DESCRIPTION OF THE DRAWINGS

[0012] FIG. **1** is a schematic view of a monitoring device in accordance with an exemplary embodiment of the invention.

[0013] FIG. **2** graphically illustrates ECG and ABP waveforms as represented on a display of a prior art monitoring device.

[0014] FIG. **3** graphically illustrates ECG and ABP waveforms as represented on a display of the monitoring device in accordance with an exemplary embodiment of the invention.

[0015] FIG. **4** graphically illustrates ECG and Pulse Oximieter waveforms as represented on a display of the monitoring device in accordance with an exemplary embodiment of the invention.

[0016] FIG. **5** graphically illustrates ECG and ABP waveforms as represented on a display of the monitoring device in accordance with an exemplary embodiment of the invention.

DETAILED DESCRIPTION OF THE INVENTION

[0017] FIG. **1** illustrates an exemplary embodiment of the invention which includes a monitoring or diagnostic device **100**, which can be any suitable type of monitoring device for monitoring various operating parameters of an object, machine, individual or other item **101** operably connected to the device **100**. The device **100** includes a display **102** of any suitable type, such as a touch screen display, having a screen **103** thereon on which the monitoring data signals **104** regarding the object **101** connected to the device **100** can be displayed. When formed as a touch screen, the display **102** can additionally function as a user interface **105** for use in controlling the operation of the device **100**, though the interface **105** can be formed as a separate component connected to the device **100**, if desired.

[0018] In the exemplary embodiment of FIG. **1**, the device **100** takes the form of a medical monitoring device **106** that has one or more leads or sensors **108**, such as ECG electrodes **109**, operably connected in any suitable manner between the medical monitoring device **106** and a patient **110** in order to monitor various vital statistics of the patient **110**. In addition to the electrodes **109**, the device **100** can employ additional sensors **108** used to monitor other parameters or statistics of the patient **110**, such as a pulse oximeter sensor **121** and/or an invasive pressure catheter **130** and invasive pressure transducer **132** to measure the blood flow and pressure of the patient **110** for comparison with the data obtained from the ECG electrodes **109**.

[0019] "Definitions" Means

[0020] The medical monitoring device **106** includes a central processing unit (CPU) **112** operably connected to the sensors **108** in order to receive and process data from the sensors **108** on the various vital statistics or parameters of specified bodily functions of the patient **110**, which in the exemplary embodiment of FIGS. **1-5** relates to cardiac functions, though other bodily functions or systems are also contemplated as being within the scope of the present invention. These parameters can then be transmitted from the CPU **112** to the display **102** for presentation in a specified manner on the screen **103** of the display **102** for review by an individual monitoring the patient **110** via the display **102**.

[0021] The device **100** also includes memory module **114**, which can take the form of any suitable computer-readable storage media, for example a RAM module, and an electronic storage medium, component or database **116**, each of which are operably connected to the CPU **112** in order to assist in the monitoring function of the device **100** using the data signals **104** supplied to the CPU **112** via the sensors **108**. The device **100** also includes an audio speaker **117** for enabling the device **100** to provide audible indications of various operating characteristics of the device **100**.

[0022] In addition, storage component **116** can include certain information regarding the predetermined normal or acceptable ranges for the operating parameters, vital statistics or physiological parameters for the patient **110** to which the device **100** is connected. These stored ranges can be utilized by the CPU **112** in conjunction with the incoming data signals **104** from the sensors **108** and the personal statistics of the patient **110** to determine the current vital statistics or physiological parameters of the patient **110** and whether those vital statistics or physiological parameters are outside of the predetermined normal ranges for those particular vital statistics or physiological parameters. The stored ranges for the incoming data signals **104** on the different physiological parameters and vital statistics received by the CPU **112** from the various sensors **108** can include ranges for minimum and maximum absolute values of the sensed parameters, minimum and maximum frequency ranges for the sensed physiological parameters, or any other suitable aspect of the incoming data signals **104** to be used in the determination of an alarm event or condition, such as an arrhythmia. If any sensed vital statistic or physiological parameter is outside of the stored predetermined normal ranges associated with that vital statistic or parameter, the CPU **112** determines that an alarm condition or event, such as a cardiac alarm condition or event, is occurring/has occurred, and can operate the display **100** in manner to be described to alert the individual monitoring the display **102** of the alarm condition or event, and to provide the individual with an identification of the incoming data signals **104** particularly relating to the cardiac alarm event. In addition, in association with a suitable inbuilt algorithm or other operating characteristic present within the device **100**, the CPU **112** can determine the relationship between any cardiac alarm condition or event as determined by abnormal signals received from one set of incoming data signals **104**, e.g., the data signals from the ECG sensors **109**, with the corresponding data signals **104** received over the same time frame from one or more additional sensors **108**, such as the invasive pressure catheter **130** or pulse oximeter sensor **121**, to iden-

tify the sections of each of the respective data signals **104** corresponding to the cardiac alarm condition/event sensed from one or more of the incoming data signals **104** from the ECG sensors **109**, catheter **130** and/or pulse oximieter sensor **121**.

[0023] In the exemplary embodiment of FIG. **3**, a waveform **118** for an ECG measurement and a waveform **120** for an ABP measurement are shown as illustrated together on the screen **103** of the display **102** as representing the monitoring data signals **104** received from the sensors **108**, i.e., from the ECG electrodes **109** and invasive pressure catheter **130**, respectively. The waveforms **118**,**120** are similar to the waveforms **18**,**20** of FIG. **2**, with the significant difference being that the data representing the corresponding sections **122**,**124** of the waveforms **118**,**120** that are outside of the normal ranges and causing an associated alarm condition as determined by CPU **112** and/or inbuilt algorithm of the device **100** are represented differently, e.g., in a visually distinct manner, than the remainder of the waveforms **118**,**120** showing data within or inside the predetermined ranges. This visually distinct manner for illustrating the sections **122**,**124** assists in marking the important sections **122**,**124** of the waveform/trend **118**, **120**, such as the portion of the data signal **104** from the particular sensor **108** indicating an alarm condition or event represented by the sections **122**,**124** and its duration. In the exemplary embodiment, the sections **122**,**124** are identified by a visually distinct manner of indication, such as overlaying or illustrating the sections **122**,**124** of the waveforms **118**,**120** with a different color than the remainder of the waveforms **118**,**120**, such as by providing the sections **122**, **124** on the display **102** in red in contrast to the normal white, yellow, blue, green or other color of the remainder of the waveforms **118**, **120**. However, any other suitable visually distinct manners of indication to visually separate the sections **122**,**124** from the remainder of the waveforms **118**,**120** are also contemplated, such as other color combination of the waveforms **118**,**120** and sections **122**,**124**, highlighting the background of the display **102** containing the sections **122**, **124**, bolding the waveforms **118**,**120** within the sections **122**, **124**, and/or animating the sections **122**,**124**, such as by intermittently flashing the sections **122**,**124**, relative to the remainder of the waveforms **118**,**120**, among others. The visually distinct highlight of the sections **122**,**124** on the waveforms **118**,**120** itself marks out the significant sections **122**,**124** of the waveform/trend data **104**, thus aiding the individual in the detection and further investigation of alarm events represented in the data **104**. This visual distinction for the waveform sections **122**,**124** as represented on the display **102** for the device **100** can additionally be extended to the illustration of the waveforms **118**,**120** and relevant sections **122**,**124** produced by any print devices (not shown) that are connected to the diagnostic device **100**, where the sections **122**,**124** are represented in the printed waveform data in the same or a different visually distinct manner from the data signals **104** shown on the display **102**, thereby achieving a similar function of easy detection and investigation of those sections **122**,**124** and their causes.

[0024] Further, in a device **100** that provides data on multiple aspects or types of vital functions of the patient **110** in a side-by-side manner on the display **102**, the visually distinct manner of indications made in each corresponding section **122**,**124** of the waveforms **118**,**120** can also help in studying and comparing related multiple waveform/trend data. For example, in the ECG and ABP data **104** illustrated in waveforms **118**,**120** of FIG. **3** with the clinically significant sections **122**,**124** clearly identified, the identification of sections **122**,**124** in the adjacent waveforms **118**,**120** assists the observing individual in determining any correlation between the data signals **104** in the sections **122**,**124** of each waveform **118**,**120**.

[0025] In addition, by being able to identify the clinically significant data signals **104** in the highlighted visually distinct sections **122**,**124** of the waveforms **118**,**120**, among other benefits the individual viewing the display **102** is able to see a clear demarcation of the alarm event, e.g., arrhythmia, across the various comparative data signals **104** in each of the waveforms **118**,**120** from the start to finish of the event, and is able to the study of the variations in the each of the waveforms/trends **118**,**120** during, before and after the alarm event. As a result, the highlighted sections **122**,**124** of each of the waveform/trend **118**,**120** can be used for further investigations and drill-downs into the causes of the event, as well as for inclusion in relevant electronic or printed documentation on the patient **110** and for further communications such as annotations, specialist referrals etc., regarding the further treatment of the patient **110**.

[0026] Referring now to FIG. **4**, in another exemplary embodiment, as previously disclosed the device **100** also provides a visually distinct manner of displaying the various sections **122**,**124** of the waveforms **118**,**120**, respectively, that correspond to an alarm, e.g., cardiac event as determined by data signals from one sensor(s) **108**, i.e., the ECG sensors **109**, but that do not also define a cardiac event as determined by data signals **104** from a separate sensor(s) **108**, i.e., the invasive pressure catheter **130**. For example, when the data signals from ECG sensors **109** are determined to represent a cardiac event in section **122** in waveform **118**, CPU **112** and/or algorithm will determine and display the section **124** of waveform **120** corresponding, e.g., having a temporal correlation, to the event/section **122** in a visually distinct manner as well, which may be the same or different than that used for the section **122**. However, if the data signals **104** from catheter **130** do not fall outside of the predetermined normal range for the blood pressure and/or flow parameters, such as when a cardiac event sensed by data signals **104** from sensors **109** is accompanied by a minimal hemodynamic response as determined by data signals **104** from the catheter **130**, the CPU **112** will still display section **124** of waveform **120** in a manner similar or corresponding to section **122** of waveform **118**. In this manner, the device **100** can still visually indicate or alert the observing individual to the abnormal data section **122** in waveform **118** with an indication of the corresponding normal data section **124** in waveform **120**, as well as any other associated waveforms on the display **103**, for monitoring and analysis purposes.

[0027] In still another exemplary embodiment shown in FIG. **5**, the ABP waveform **120** can be substituted by a pulse oximeter waveform **126**, which is displays blood pressure/flow data obtained from the pulse oximeter sensor **121**. The data signals **104** received from the pulse oximeter sensor **121** are utilized by the CPU **112** to generate the waveform **126**, as well as by the inbuilt algorithm to identify the section(s) **128** corresponding to any cardiac event measured by the ECG sensors **109** and illustrated in section **122** on the ECG waveform **118**, whether or not these sections **128** are also outside of predetermined normal parameter ranges for the pulse oximeter **121** data signal **104**.

[0028] In alternative embodiments, the enhanced visual identification provided to the sections **122**,**124** of the waveforms **118**,**120** shown on the display **102** can be utilized in conjunction with any other alarm notifications, such as audio or other visual notifications to further increase the efficiency and effectiveness of diagnostic systems in manufacturing, medical and other industries which include the diagnostic and/or monitoring devices **100**. Also, the device **100** can display any number or combination of incoming data signal representations or waveforms **118**,**120**,**126**, as desired, including but not limited to two or more waveforms **118**,**120**, **126**, such that the incoming data signals **104** represented by the waveforms **118**,**120**,**126** can be shown side-by-side for a direct comparison of the waveforms **118**,**120**,**126** and the sections **122**,**124**,**128** that may be present therein.

[0029] The written description uses examples to disclose the invention, including the best mode, and also to enable any person skilled in the art to practice the invention, including making and using any devices or systems and performing any incorporated methods. The patentable scope of the invention is defined by the claims, and may include other examples that occur to those skilled in the art. Such other examples are intended to be within the scope of the claims if they have structural elements that do not differ from the literal language of the claims, or if they include equivalent structural elements with insubstantial differences from the literal language of the claims.

We claim:

1. A monitoring device for providing information on data obtained from sensors operably connected to the device, the device comprising:

a) a central processing unit configured to receive incoming data signals from a first sensor concerning a first physiological parameter and from a second sensor concerning a second physiological parameter, and to compare the incoming data signals to predetermined ranges for the first and second physiological parameters to determine an alarm condition; and

b) a display operably connected to the central processing unit, the display including a display screen and configured to graphically represent the incoming data signals from both the first sensor and the second sensor relating to a determined alarm condition on the display screen in a visually distinct manner from a remainder of the incoming data signals from the first sensor and the second sensor.

2. The device of claim **1** wherein the visually distinct manner comprises graphically representing incoming data signals relating to the alarm condition in a first color and representing the remainder of the incoming data signals in a second color.

3. The device of claim **2** wherein the wherein the first color is selected from the group consisting of a background color for the incoming data signals relating to the alarm condition and a color of a graphical representation of the incoming data signals relating to the alarm condition.

4. The device of claim **1** wherein the predetermined range is a frequency range for the incoming data signals.

5. The device of claim **1** wherein the alarm condition is an arrhythmia.

6. The device of claim **1** wherein the central processing unit is configured to graphically represent the incoming data signals from both the first sensor and the second sensor relating to a determined alarm condition on the display screen in a visually distinct manner from a remainder of the incoming data signals from the first sensor and the second sensor when the alarm condition is determined from the incoming data signals from only the first sensor.

7. The device of claim **6** wherein the central processing unit is configured to graphically represent the incoming data signals from the second sensor relating to a determined alarm condition on the display screen in a visually distinct manner from a remainder of the incoming data signals from the second sensor based on a correlation between the determined alarm condition and the incoming data from the second sensor.

8. The device of claim **1** wherein the correlation is a temporal correlation between the determined alarm condition and the incoming data signal from the second sensor.

9. The device of claim **1** wherein the first sensor comprises an ECG sensor.

10. The device of claim **1** wherein the second sensor is a sensor for determining blood pressure or blood flow.

11. The device of claim **10** wherein the second sensor is selected from the group consisting of an invasive pressure catheter and a pulse oximieter.

12. A method for identifying incoming data signals illustrated on a display screen falling outside of a predetermined range for the incoming data signals, the method comprising the steps of:

a) providing a monitoring device including a central processing unit configured to receive incoming data signals from a first sensor concerning a first operating parameter and from a second sensor concerning a second operating parameter, and to compare the incoming data signals to predetermined ranges for the first and second parameters to determine an alarm condition, and a display operably connected to the central processing unit and including the display screen;

b) comparing the incoming data signals from the first and second sensors with the predetermined ranges for the incoming data signals to determine the alarm condition;

c) identifying the incoming data signals from the first and second sensors relating to a determined alarm condition on the display screen in a visually distinct manner from a remainder of the incoming data signals from the first and second sensors.

13. The method of claim **12** wherein the step of identifying the incoming data signals on the display screen comprises:

a) representing the incoming data signals relating to the determined alarm condition in a first color; and

b) representing the remainder of the incoming data signals in a second color.

14. The method of claim **13** wherein the step of representing the incoming data signals relating to the determined alarm condition comprises displaying an aspect of the incoming data signals relating to the determined alarm condition in the first color, the aspect selected from the group consisting of a background and a graph for the incoming data signals relating to the determined alarm condition.

15. The method of claim **14** wherein the alarm condition is determined only from incoming data signals from the first sensor.

16. The method of claim **14** wherein the step of identifying the incoming data signals relating to the determined alarm condition comprises:

a) identifying sections of the incoming data signals from the first sensor causing the determined alarm condition on the display screen in a visually distinct manner; and

b) identifying sections of the incoming data signals from the second sensor having a correlation the incoming data signals from the first sensor causing the determined alarm condition in a visually distinct manner.

17. The method of claim **16** wherein the correlation is a temporal correlation.

18. A medical monitoring device for providing information about patient operably connected to the device, the device comprising:

a) an electronic storage medium in which a predetermined range of values for parameters of the patient to be monitored is stored;

b) a central processing unit operably connected to the electronic storage medium and configured to receive incoming data signals concerning the parameters of the patient and to compare the incoming data signals to the predetermined ranges for the parameters to determine an alarm condition;

c) one or more sensors operably connected to the central processing unit and adapted to be connected to the patient to obtain and transmit the incoming data signals on the parameters to be monitored from the patient to the central processing unit; and

d) a display operably connected to the central processing unit, the display including a display screen and configured to graphically represent the incoming data signals in waveforms presented on the display screen wherein sections of the waveforms containing incoming data signals relating to a determined alarm condition are presented on the display screen in a visually distinct manner from the remainder of the waveforms.

19. The medical monitoring device of claim **18** wherein sections of all waveforms corresponding to a section of one waveform containing incoming data signals relating to a determined alarm condition are presented on the display screen in a visually distinct manner from the remainder of the waveforms.

20. The medical monitoring device of claim **19** wherein sections of all waveforms corresponding in time to a section of one waveform containing incoming data signals relating to a determined alarm condition are presented on the display screen in a visually distinct manner from the remainder of the waveforms.

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专利名称(译)	用于突出显示患者数据和趋势的装置和方法		
公开(公告)号	US20160174908A1	公开(公告)日	2016-06-23
申请号	US14/735887	申请日	2015-06-10
[标]申请(专利权)人(译)	通用电气公司		
申请(专利权)人(译)	通用电气公司		
当前申请(专利权)人(译)	通用电气公司		
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IPC分类号	A61B5/00 A61B5/04 A61B5/026 A61B5/1455 A61B5/0452 A61B5/0215		
CPC分类号	A61B5/742 A61B5/0452 A61B5/0215 A61B5/04012 A61B5/14551 A61B5/746 A61B5/026 A61B5/0205 G06F19/00 G16H40/63		
优先权	6498CHE2014 2014-12-23 IN		
外部链接	Espacenet USPTO		

摘要(译)

一种监视或诊断设备，包括具有显示屏的显示器，在该显示屏上示出了来自传感器的输入数据，该传感器连接到由该设备监视的物品或物体。输入数据在显示屏上显示，以使观看显示屏的个人能够确定当前操作条件或物品或物体的参数，例如患者。设备和显示屏还可以示出由设备确定的各种警报状况或事件，以引起个人对这些警报状况的注意。为了协助此功能，设备表示来自传感器的输入数据，该传感器引起警报状况或事件，以及来自其他传感器的额外输入数据，这些数据以某种方式对应于警报状况，在显示屏上视觉上不同或者与其他与警报状况或事件无关的输入数据的不同方式。