(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) **EP 3 001 398 B1**

(12) **EUROPEAN PATENT SPECIFICATION**

(45) Date of publication and mention of the grant of the patent:
08.08.2018 Bulletin 2018/32

(21) Application number: **13896167.7**

(22) Date of filing: **10.12.2013**

(51) Int Cl.:
G08C 17/02 *(2006.01)* ***H04W 84/18*** *(2009.01)*
A61B 5/00 *(2006.01)* ***G06F 19/00*** *(2018.01)*
H04Q 9/00 *(2006.01)*

(86) International application number:
PCT/CN2013/088930

(87) International publication number:
WO 2015/058442 (30.04.2015 Gazette 2015/17)

(54) **SELECTIVE DATA TRANSMISSION METHOD AND SYSTEM BASED ON CENTRAL MONITORING SYSTEM**

SELEKTIVES DATENÜBERTRAGUNGSVERFAHREN UND SYSTEM AUF DER GRUNDLAGE EINES ZENTRALEN ÜBERWACHUNGSSYSTEMS

PROCÉDÉ ET SYSTÈME DE TRANSMISSION DE DONNÉES SÉLECTIVE BASÉS SUR UN SYSTÈME DE SURVEILLANCE CENTRAL

(84) Designated Contracting States:
AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR

(30) Priority: **21.10.2013 CN 201310496654**

(43) Date of publication of application:
30.03.2016 Bulletin 2016/13

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Description

FIELD OF THE INVENTION

[0001] The present invention relates to a data transmission processing method and a system, and more particularly, to a selective data transmission method and a system based on a central monitoring system.

BACKGROUND OF THE INVENTION

[0002] A traditional pregnant-woman central monitoring system consists of a central station and a monitor in a networking manner. The monitor is responsible for collecting such parameters as fetal heart rate, uterine pressure, fetal movement, maternal eletrocardiogram, blood oxygen, non-invasive blood pressure, pulse, respiration, body temperature and the like. The monitor transmits data to the central station via a wired or wireless network. The central station displays the number and waveforms of multiple monitors on the same screen. The central station supports such functions as alarm, storage, review, printing, marking, sufferer information management, archive management and the like. The central station can be equipped with multiple observation stations, and supports distributed application. After the appearance of a wireless transducer technology, application modes of a wireless sensor + a central station (the wireless sensor directly transmits data to the central station, hereinafter referred to as a central monitoring mode), a wireless sensor + a monitor + a central station (the wireless sensor firstly transmits data to the monitor, and then the monitor transmits the data to the central station, hereinafter referred to as a bedside monitoring mode) are generated. The mode of wireless sensor + central station is applied to a pregnant woman in good health conditions. After the sensor is bound to the pregnant woman, the pregnant woman can walk freely, and medical care personnel does not need to conduct bedside monitoring on the pregnant woman in an intensive care unit, and only needs to directly monitor at the central station. The mode of wireless sensor + monitor + central station is applied to a pregnant woman in poor health conditions. The medical care personnel needs to conduct bedside monitoring on the pregnant woman in the intensive care unit, and meanwhile needs to monitor at the central station. However, the health condition of the pregnant woman during the monitoring process is changed dynamically. An abnormality situation may possibly occur to a pregnant woman in a well health condition originally, and a pregnant woman originally in an abnormal condition may recover well. The present monitoring mode cannot change conveniently and intelligently according to the health conditions of the pregnant woman, and thus has defects.

[0003] Since the present monitoring mode cannot be changed, i.e., the wireless sensor can only work in two modes (i.e., wireless sensor + central station, and wireless sensor + monitor + central station, wherein the two modes cannot be switched), the wireless sensor can only work in a single mode, and the data transmitted out by the wireless sensor cannot select a receiver, the working manner is single, and mode switching cannot be conducted; therefore, it is inconvenient for users to use.

[0004] US 2012/331138 discloses medical monitoring technology and, more particularly, relates to a medical monitoring method and device integrating central monitoring function.

SUMMARY OF THE INVENTION

[0005] In order to solve the problems in the prior art that the wireless sensor has single working manner, and cannot switch modes, the present invention provides a selective data transmission method based on a central monitoring system.

[0006] The present invention provides a selective data transmission method according to claim 1.

[0007] As a further improvement of the present invention, the bedside monitoring mode step further includes generating a warning signal to trigger the wireless sensor to provide an alarm.

[0008] As a further improvement of the present invention, before the step A, the method further includes the following two steps of:

a wireless sensor configuration step: the following configuration information is saved in the wireless sensor: a wireless sensor device number, an IP address and a port number of the central station, as well an IP address and a port number of the monitor; wherein the wireless sensor device number is configured to control data parameters of the wireless sensor to be displayed in a sub-window corresponding to the device number on the central station; the IP address and the port number of the central station are configured to establish a TCP connection between the wireless sensor and the central station; the IP address and the port number of the monitor are configured to establish a TCP connection between the wireless sensor and the monitor; and the configuration information is read after the wireless sensor is electrified and enabled; and

a step of establishing a TCP connection between the wireless sensor and the central station: the wireless sensor sends a connection request to the IP address and the port number of the central station, and establishes a TCP connection, wherein the wireless sensor communicates with the central station using a client/server mode, the wireless sensor being a client, and the central station being a server.

[0009] As a further improvement of the present invention, the central station includes all wireless sensor device numbers and monitor device numbers, wherein the method further comprises the steps of the central station intercepts a TCP port number, receives a connection re-

quest from the wireless sensor and the monitor, and establishes a TCP connection; the central station establishes an independent TCP communication channel for each new connection request, so that the central station is capable of receiving the network data of multiple sets of wireless sensors and multiple sets of monitors simultaneously; and the wireless sensor and the monitor communicate with the central station using a client/server mode, the wireless sensor being a client, and the central station being a server.

[0010] As a further improvement of the present invention, wherein the data collected by the wireless sensor comprises physiological parameters, in the step B, the wireless sensor sends the collected physiological parameters to the designated receiving end; if the central station does not receive the physiological parameter sent by the wireless sensor within a predetermined time, the central station will alarm for prompting; if the central station receives the physiological parameters sent by the wireless sensor within the predetermined time, the central station compares the received physiological parameters with a preset normal standard; if the physiological parameters exceed the preset normal standard, the central station sends a bedside monitoring instruction; otherwise, the central station sends a central monitoring instruction.

[0011] The present invention also provides a selective data transmission system according to claim 6.

[0012] As a further improvement of the present invention, the bedside monitoring mode unit is further configured to generating a warning signal to trigger the wireless sensor provide an alarm.

[0013] In one embodiment, the device further includes:

a wireless sensor configuration module: configured to save following configuration information in the wireless sensor: a wireless sensor device number, an IP address and a port number of the central station, as well an IP address and a port number of the monitor; wherein the wireless sensor device number is configured to control data parameters of the wireless sensor to be displayed in a sub-window corresponding to the device number on the central station; the IP address and the port number of the central station are configured to establish a TCP connection between the wireless sensor and the central station; the IP address and the port number of the monitor are configured to establish a TCP connection between the wireless sensor and the monitor; and the configuration information is read after the wireless sensor is electrified and enabled; and

a module configures to establish a TCP connection between the wireless sensor and the central station; wherein the wireless sensor is configured to send a connection request to the IP address and the port number of the central station and establish a TCP connection, wherein the wireless sensor is further configured to communicate with the central station using a client/server mode, the wireless sensor being a client, and the central station being a server.

[0014] As a further improvement of the present invention, the central station includes all wireless sensor device number and monitor device numbers, wherein the central station is configured to intercept a TCP port number, receive a connection request from the wireless sensor and the monitor, and establish a TCP connection; and the central station is further configured to establish an independent TCP communication channel for each new connection request, so that the central station is capable of receiving the network data of multiple sets of wireless sensors and multiple sets of monitors simultaneously; and the wireless sensor and the monitor are configured to communicate with the central station using a client/server mode, the wireless sensor being a client, and the central station being a server.

[0015] As a further improvement of the present invention, wherein the data collected by the collection module of the wireless sensor comprises physiological parameters, wherein the sending module of the wireless sensor in configured to send the collected physiological parameters to the designated receiving end; wherein the central station is configured to: if the central station does not receive the physiological parameters sent by the sending module of the wireless sensor within a predetermined time, generate an alarm for prompting; and if the central station receives the physiological parameters sent by the sending module of the wireless sensor within the predetermined time, compare the received physiological parameters with a preset normal standard; and wherein the central station is further configured to: if the physiological parameters exceed the preset normal standard, send a bedside monitoring instruction; otherwise, send a central monitoring instruction.

[0016] The present invention has the advantages that: The method and the system according to the present invention realize selective transmission of data through transmitting the data to a selected receiving end, and the working modes can be switched; therefore, the wireless sensor can work in various mode, working nodes can be switched; therefore, the wireless sensor can work under various modes, the data transmitted by the wireless sensor can select a receiver, and the working modes are diversified and can be switched, thus facilitating a user to use.

BRIEF DESCRIPTION OF THE DRAWINGS

[0017]

Fig. 1 is a flow chart of a method of the present invention;

Fig. 2 is a working flow chart of a wireless sensor of the present invention;

Fig. 3 is a working flow chart of a monitor of the present invention; and

Fig. 4 is a working flow chart of a central station of

the present invention.

DETAILED DESCRIPTIONOF THE PREFERRED EMBODIMENTS

[0018] As shown in Fig. 1, the present invention discloses a selective data transmission method based on a selective data transmission method, wherein the selective data transmission method includes a wireless sensor, and the wireless sensor executes the following steps of:

S1. collecting data; S2. sending the data to a designated receiving end, the designated receiving end being a central station or a monitor; S3. selecting a receiving end according to an instruction of the central station, and taking the receiving end as the designated receiving end; S4. establishing a wireless connection with the designated receiving end; and S4.then returning to execute step S1.

[0019] As shown in Fig. 2, and as one embodiment of the present invention, before the step S1, the method further includes the following two steps of:

a first step-wireless sensor configuration step: the following configuration information is saved in the wireless sensor: a wireless sensor device number, an IP address and a port number of the central station, as well an IP address and a port number of the monitor; wherein the wireless sensor device number is configured to control data parameters of the wireless sensor to be displayed in a sub-window corresponding to the device number on the central station; the IP address and the port number of the central station are configured to establish a TCP connection between the wireless sensor and the central station; the IP address and the port number of the monitor are configured to establish a TCP connection between the wireless sensor and the monitor; and the configuration information is read after the wireless sensor is electrified and enabled; and the wireless sensor device number is a positive integer between 1 and 100;

a second step-step of establishing a TCP connection between the wireless sensor and the central station; the wireless sensor sends a connection request to the IP address and the port number of the central station, and establishes a TCP connection, wherein the wireless sensor communicates with the central station using a client/server mode, the wireless sensor being a client, and the central station being a server.

a third step is a specific embodiment of step S1, wherein in the third step, sufferer data is collected, and physiological parameters are calculated. The wireless sensor includes an ultrasound sensor, a pressure sensor, an electro-cadiography sensor, a non-invasive blood pressure sensor, a blood oxygen sensor, a body temperature sensor and sensors of other types.

[0020] A fourth step is a specific embodiment of step S2, wherein in the fourth step, the data is sent to a designated receiving end, and the wireless sensor packs the physiological parameters in each second, wherein the data packet includes the following fields: wireless sensor device number-physiological parameter type code-physiological parameter, wherein the wireless sensor device number is obtained in step 1, and the physiological parameter type code is configured to mark the type of the physiological parameter, for example, 100 represents a fetal heart rate, 200 represents a uterine pressure, the physiological parameter is obtained in the third step, then the data packet is sent to the designated receiving end through a TCP/IP protocol.

[0021] A fifth step is a specific embodiment of step S3, wherein in step S3, the central station is a controller; a bedside monitoring instruction of the central station is judged whether to be received in the fifth step; if yes, then a bedside monitoring mode step is executed; otherwise, a central monitoring mode step is executed; and a specific method for judging whether a bedside monitoring instruction of the central station is received in the fifth step is as follows: checking whether a bedside monitoring instruction data packet exists in a UDP received data buffer zone of a wireless sensor network module, the bedside monitoring instruction data packet containing the following fields: wireless sensor device number-instruction type code, an instruction type code 1 representing a bedside monitoring instruction. If the bedside monitoring instruction data packet exists, the data packet is parsed according to a protocol, and the following fields are obtained: wireless sensor device number and instruction type code; if the wireless sensor device number of the data packet is equal to the device number of the sensor, and the instruction type code is equal the bedside monitoring instruction, then the bedside monitoring instruction is received; otherwise, the bedside monitoring instruction is not received. The bedside monitoring mode step includes the following steps of:

generating a warning signal to trigger the wireless sensor to provide an alarm; for example, acousto-optic alarm is executed, wherein a buzzer sounds periodically and a pilot lamp flashes periodically to remind that a pregnant woman needs to return an intensive care unit for receiving reinforced monitoring at a bedside machine and the central station;

establishing a wireless connection with the monitor, and taking the monitor as the designated receiving end, wherein the wireless sensor sends a connection request to the IP address and the port number of the monitor, and establishes a TCP connection, wherein the wireless sensor communicates with the monitor using a client/server mode, the wireless sensor being a client, and the monitor being a server; and disconnects the TCP connection with the central station

after the wireless sensor establishes the TCP connection with the monitor; and
returning to execute the third step.

[0022] The central monitoring mode step includes the following steps of: judging whether a central monitoring instruction of the central station is received; if yes, then executing the following step; otherwise, returning to execute the third step;
a specific method for the wireless sensor judges whether receiving the central monitoring instruction of the central station is as follows: checking whether a central monitoring instruction data packet exists in the UDP received data buffer zone of the wireless sensor network module, the central monitoring instruction data packet containing the following fields: wireless sensor device number-instruction type code, an instruction type code 2 representing a central monitoring instruction. If the central monitoring instruction data packet exists, the data packet is parsed according to a protocol, and the following fields are obtained: wireless sensor device number and instruction type code; if the wireless sensor device number of the data packet is equal to the device number of the sensor, and the instruction type code is equal to the central monitoring instruction, then the central monitoring instruction of the central station is received; otherwise, the central monitoring instruction of the central station is not received.

[0023] If the central monitoring instruction of the central station is received, then the following steps are executed:

establishing a wireless connection with the central station, and taking the central station as the designated receiving end, i.e., the wireless sensor sends a connection request to the IP address and the port number of the central station, and
establishes a TCP connection; the wireless sensor communicates with the central station using a client/server mode, the wireless sensor being a client, and the central station being a server; the wireless sensor disconnects the TCP connection with the monitor after establishing the TCP connection with the central station; and
returning to execute the third step;
in the step S2, if the designated receiving end is the monitor, then after the wireless sensor sends the data to the monitor, the monitor transmits the received data to the central station.

[0024] Fig. 2 is one embodiment of the present invention, wherein the embodiment is mainly applied to sufferer monitoring.

[0025] As shown in Fig. 3, the working flow of a monitor of the present invention is as follows:
step 11: enabling the monitor to obtain configurations, and then executing step 12.

[0026] In step 11, such information as a monitor device number, the IP address and the port number of a central station and the like are saved in a monitor configuration module. The monitor device number is a positive integer between 101 and 200, being configured to control data parameters of the monitor to be displayed in a sub-window corresponding to the device number on the central station; the IP address and the port number of the central station are configured to establish a TCP connection between the monitor and the central station. The configuration information is read from the monitor configuration module after the wireless sensor is electrified and enabled. Then step 12 is executed.

[0027] Step 12: the monitor establishes a TCP connection with the central station, and then step 13 is executed.

[0028] In step 12, the monitor sends a connection request to the IP address and an interception port number of the central station, and establishes a TCP connection; the monitor communicates with the central station using a client/server mode, the monitor being a client, and the central station being a server. Then step 13 is executed.

[0029] Step 13: the monitor establishes a TCP connection with a wireless sensor, and then step 14 is executed.

[0030] In step 13, the monitor intercepts the TCP port number, accepts a connection request from the wireless sensor, and establishes a TCP connection; the wireless sensor communicates with the monitor using a client/server mode, the wireless sensor being a client, and the monitor being a server. Then step 14 is executed. Step 14:the monitor receives a wireless sensor data packet and parses data; then step 15 is executed.

[0031] In step 14, if the monitor receives the data packet sent by the wireless sensor, the monitor parses the data packet according to a protocol and obtains the following fields: wireless sensor device number-physiological parameter type code-physiological parameter, then step 15 is executed.

[0032] Step 15: the monitor displays the physiological parameters on a screen, and then step 16 is executed.

[0033] In step 15, the monitor displays a physiological parameter type on the screen according to the physiological parameter type code of the data packet, for example, the type code 100 displays as "fetal heart rate", then the physiological parameter is displayed below the "fetal heart rate". Then step 16 is executed.

[0034] Step 16: the monitor packs the data again and sends the data to the central station. In step 16, the monitor packs the physiological parameters again in each second, wherein the data packet includes the following fields: monitor device number-physiological parameter type code-physiological parameter, wherein the monitor device number is obtained in step 11, the physiological parameter type code and the physiological parameter are obtained in step 14, and then the data packet is sent to the central station through a TCP/IP protocol.

[0035] As shown in Fig. 4, the working flow of the central station according to the present invention is as follows:
step 21: the central station is enabled to obtain configurations, and then step 22 is executed.

[0036] In step 21, all the device numbers are saved in a central station configuration module, including all the wireless sensor device numbers and monitor device numbers as well as the normal standards of various physiological parameters. The device number is a positive integer, being configured to control the data parameters of the wireless sensor or the monitor to be displayed in a sub-window corresponding to the device number on the central station; the wireless sensor device number ranges from 1 to 100, and the monitor device number ranges from 101 to 200. After the central station is electrified and enabled, the above information is read from the central station configuration module, and a screen window is initialized to distribute a sub-window for each device number which is configured to display the physiological parameter corresponding to the device number. Then step 22 is executed.

[0037] Step 22: the monitor establishes a TCP connection with the wireless sensor and/or monitor, and then step 23 is executed.

[0038] In step 22, the central station intercepts a TCP port number, receives a connection request from the wireless sensor and the monitor, and establishes a TCP connection; and the central station establishes an independent TCP communication channel for each new connection request, so that the central station is capable of receiving the network data of multiple sets of wireless sensors and multiple sets of monitors simultaneously; and the wireless sensor and the monitor communicate with the central station using a client/server mode, the wireless sensor being a client, and the central station being a server. Then step 23 is executed.

[0039] Step 23: the monitor receives a wireless sensor data packet and a monitor data packet, parses the data, and then step 24 is executed.

[0040] In step 23, if the central station receives the data packet sent by the wireless sensor or the monitor, the central station parses the data packet according to a protocol. For the wireless sensor data packet, the following fields can be obtained via parsing: wireless sensor device number-physiological parameter type code-physiological parameter. For the monitor data packet, the following fields can be obtained via parsing: monitor device number-physiological parameter type code-physiological parameter. Then step 24 is executed.

[0041] Step 24: the central station displays the physiological parameter in a corresponding window according to the device number of the data packet, and then step 5 is executed.

[0042] In step 24, the central station finds the sub-window on the screen corresponding to the device number according to the device number of the data packet, and then displays the physiological parameter type on the sub-window according to the physiological parameter type code of the data packet; for example, a type code 100 displays as "fetal heart rate", then the physiological parameter is displayed below the "fetal heart rate". Then step 25 is executed.

[0043] Step 25: the central station judges whether the physiological parameters from the wireless sensor exceed a preset normal standard.

[0044] In step 25, a user may preset the normal standards of various physiological parameters in advance in the central station, for example, a normal range of the fetal heart rate is 120-160, and an ultralimit duration is 30s; if the fetal heart rate is less than 120 for more than 30s continuously, or the fetal heart rate is greater than 160 for 30s continuously, then the fetal heart rate is considered to exceed the preset normal standard. The normal standards of various physiological parameters are all obtained in step 21. The central station finds the data packet from the wireless sensor according to the device number of the data packet, wherein the characteristic of the data packet is that the device number is a positive integer between 1 and 100.The central station compares the physiological parameter obtained via parsing the data packet with the preset normal standard; if the physiological parameter exceeds the preset normal standard, then step 26 is executed; otherwise, step 27 is executed.

[0045] Step 26: the central station sends a bedside monitoring instruction to the wireless sensor, and then step 23 is executed.

[0046] In step 26, the central station generates a bedside monitoring instruction data packet, and sends the bedside monitoring instruction data packet to the wireless sensor through a UDP protocol via a broadcast mode. Then step 23 is executed. The bedside monitoring instruction data packet contains the following fields: wireless sensor device number-instruction type code, an instruction type code 1 represents a bedside monitoring instruction.

[0047] Step 27: The central station checks whether a user sets the wireless sensor in the bedside monitoring mode.

[0048] In step 27, the central station checks whether the monitoring mode of the wireless sensor is modified by the user. If checking that the user sets the monitoring mode option of the wireless sensor as the bedside monitoring mode, then step 26 is executed; otherwise, step 28 is executed.

[0049] Step 28: the central station checks whether the user sets the wireless sensor in the central monitoring mode.

[0050] In step 28, the central station checks whether the monitoring mode of the wireless sensor is modified by the user. If checking that the user sets the monitoring mode option of the wireless sensor as the central monitoring mode, then step 29 is executed; otherwise, step 23 is executed.

[0051] Step 29: the central station sends a central monitoring instruction to the wireless sensor, and then step 23 is executed.

[0052] In step 29, the central station generates a central monitoring instruction data packet, and sends the central monitoring instruction data packet to the wireless sensor through a UDP protocol via a broadcast mode.

Then step 23 is executed. The central monitoring instruction data packet contains the following fields: wireless sensor device number-instruction type code, an instruction type code 2 represents a central monitoring instruction.

[0053] In the present invention and as another embodiment of the present invention, in step S1, the wireless sensor collects positioning data information; in step S2, the wireless sensor sends the positioning data information to the central station; in step S3, the wireless sensor selects a receiving end according to an instruction, and takes the receiving end as the designated receiving end; in step S4, a wireless connection with a designated receiving end is established. For example, there are three regions (A, B, C) in a hospital, wherein B is an infected area, then when a sufferer carries the wireless sensor to enter B, the wireless sensor collects the positioning data information, and transmits the positioning data information to the central station; the central station when determining that the sufferer is in the infected area, sends an instruction to the wireless sensor to command the wireless sensor to establish a wireless sensor with the monitor at this moment, and remind the sufferer to leave B and return beside the monitor to enter the bedside monitoring mode.

[0054] The present invention also provides a selective data transmission system based on a central monitoring system, including a wireless sensor, wherein the wireless sensor includes the following modules of:

a collection module: configured to collect data;
a sending module: configured to send the data to a designated receiving end;
a receiving end selection module: configured to select a receiving end according to an instruction of the central station, and take the receiving end as the designated receiving end;
a wireless connection module: configured to establish a wireless connection with the designated receiving end; and
a return execution module: configured to return to execute the collection module.

[0055] In the receiving end selection module, an instruction of a controller is received, a receiving end is selected according to the instruction of the controller, and the receiving end is taken as a designated receiving end.

[0056] In the receiving end selection module, the controller is a central station; whether a bedside monitoring instruction of the central station is judged whether to be received in the receiving end selection module; if yes, then a bedside monitoring mode unit is executed; otherwise, a central monitoring mode unit is executed;
the bedside monitoring mode unit including:

an alarm unit: configured to generate a warning signal to trigger the wireless sensor to provide an alarm;
a wireless connection monitor: configured to establish a wireless connection with the monitor, and take the monitor as the designated receiving end; and
a return execution unit: configured to return to execute the collection module;
the central monitoring mode unit including:

judging whether a central monitoring instruction of the central station is received; if yes, then executing a wireless connection central station module; otherwise, returning to execute the collection module;
the wireless connection central station module: configured to establish a wireless connection with the central station, and take the central station as the designated receiving end; and
a return execution module: configured to return to execute the collection module;

in the step sending module, if the designated receiving end is the monitor, then after the wireless sensor sends the data to the monitor, the monitor transmits the received data to the central station.
the wireless sensor further includes:

a wireless sensor configuration module: configured to save following configuration information in the wireless sensor: a wireless sensor device number, an IP address and a port number of the central station, as well an IP address and a port number of the monitor; wherein the wireless sensor device number is configured to control data parameters of the wireless sensor to be displayed in a sub-window corresponding to the device number on the central station; the IP address and the port number of the central station are configured to establish a TCP connection between the wireless sensor and the central station; the IP address and the port number of the monitor are configured to establish a TCP connection between the wireless sensor and the monitor; and the configuration information is read after the wireless sensor is electrified and enabled; and
a module of establishing a TCP connection between the wireless sensor and the central station: the wireless sensor sends a connection request to the IP address and the port number of the central station, and establishes a TCP connection, wherein the wireless sensor communicates with the central station using a client/server mode, the wireless sensor being a client, and the central station being a server.

The selective data transmission method further includes a central station, wherein the central station includes all wireless sensor device numbers and monitor device numbers, the central station intercepts a TCP port number, receives a connection request from the wireless

sensor and the monitor, and establishes a TCP connection; and the central station establishes an independent TCP communication channel for each new connection request, so that the central station is capable of receiving the network data of multiple sets of wireless sensors and multiple sets of monitors simultaneously; and the wireless sensor and the monitor communicate with the central station using a client/server mode, the wireless sensor being a client, and the central station being a server.

[0057] Fig. 2 to Fig. 4 are implementation manners of the present invention in medical field. The implementation manners realize to access the wireless sensor and the monitor into the central station for central monitoring at the same time; the wireless sensor may also be accessed into the monitor for bedside monitoring; the applications of wireless sensor + central station and wireless sensor + monitor + central station are integrated into one; moreover, the application modes can be switched dynamically. The wireless sensor is responsible for collecting the physiological parameters of the sufferer, and then sending the physiological parameters to the monitor or the central station through a wireless network, so that the wireless sensor can be accessed to the monitor or the central station. The central station can receive the data packets from the monitor and the wireless sensor at the same time, and display the physiological parameters in the corresponding windows, so that the central station can be accessed to the monitor and the wireless sensor. Moreover, the central station can judge whether the physiological parameters from the wireless sensor exceed a preset normal standard (or, a doctor may also judge manually whether the normal value is exceeded through the physiological parameter from the wireless sensor exceeds the normal standard); if the normal value is exceeded, then a bedside monitoring instruction may be sent to the wireless sensor, to remind that a pregnant woman needs to return an intensive care unit for receiving reinforced monitoring at a bedside machine and the central station; after the health situation of the pregnant woman recovers well, the medical care personnel can send a central monitoring instruction to the wireless sensor through the central station, so as to switch to the application mode of wireless sensor + central station.

[0058] The method and the system according to the present invention has the advantageous effects that: 1. for the pregnant woman in a poor health condition, the medical care personnel may set the wireless sensor as to be accessed to the monitor to realize bedside tight monitoring of the sufferer; meanwhile, the monitor is accessed to the central station, so that the sickness of the pregnant woman can be monitored in real time at the central station, thus ensuring the security of the sufferer through dual monitoring. 2. For a pregnant woman in health condition, the medical care personnel can set the wireless sensor as to be accessed to the central station without a bedside machine for monitoring, and only the monitoring of the central station is needed, which reduces the workload of the medical care personnel, and improves the monitoring comfort of the pregnant woman. 3. In the central monitoring mode, if the health condition of the pregnant woman is abnormal, the central station can automatically remind that the pregnant woman needs to return the intensive care unit, and receive reinforced monitoring at the bedside machine and the central station, so that the security of the sufferer is ensured. 4. In the bedside monitoring mode, if the health condition of the pregnant woman recovers well, the medical care personnel can change the mode into the central station through the central station, which reduces the workload of the medical care personnel and improves the monitoring comfort of the pregnant woman.

[0059] The present invention has the advantageous effects that the method and the system realize selective data transmission through transmitting the data to a selected receiving end, which not only can be applied to the field of medical monitoring, but also can be applied to such fields as security prevention, data backup and the like; working nodes can be switched; therefore, the wireless sensor can work under various modes; the data transmitted by the wireless sensor can select a receiver, and the working modes are diversified and can be switched, thus facilitating a user to use.

[0060] The above-mentioned contents are further descriptions to the present invention with reference to the specific preferred embodiments, and it cannot be deemed that the specific implementation of the present invention are only limited to these descriptions. Those having ordinary skills in the art of the present invention may also make many simple deductions or replacements without departing from the conceive of the present invention which shall all fall within the protection scope of the present invention.

Claims

1. A selective data transmission method based on a central monitoring system comprising a central station, at least one monitor, and at least one wireless sensor, wherein the method comprises the following steps of:

   A) the wireless sensor collecting data;
   B) the wireless sensor sending the data to a designated receiving end, the designated receiving end being the central station or a monitor;
   C) the wireless sensor selecting a receiving end according to an instruction of the central station, and taking the receiving end as the designated receiving end;
   D) the wireless sensor establishing a wireless connection with the designated receiving end; and
   E) the wireless sensor returning to execute step A);

wherein judging whether a bedside monitoring instruction of the central station is received in step C); if yes, then executing a bedside monitoring mode step; otherwise, executing a central monitoring mode step;
wherein the bedside monitoring mode step comprising the following steps of:

C1) the wireless sensor establishing a wireless connection with the monitor, and taking the monitor as the designated receiving end; and
C2) the wireless sensor returning to execute step A);

the central monitoring mode step comprising the following steps of:
judging whether a central monitoring instruction of the central station is received in step C); if yes, then executing CC1) step; otherwise, returning to execute step A);

CC1) the wireless sensor establishing a wireless connection with the central station, and taking the central station as the designated receiving end; and
CC2) the wireless sensor returning to execute step A);

wherein in the step B), if the designated receiving end is the monitor, then after the wireless sensor sends the data to the monitor, the monitor transmits the received data to the central station.

2. The selective data transmission method according to claim 1, wherein the bedside monitoring mode step further comprises generating a warning signal to trigger the wireless sensor to provide an alarm.

3. The selective data transmission method according to claim 2, wherein before the step A), the method further comprises the following two steps of:

a wireless sensor configuration step: following configuration information is saved in the wireless sensor: a wireless sensor device number, an IP address and a port number of the central station, as well an IP address and a port number of the monitor, wherein the wireless sensor device number is configured to control data parameters of the wireless sensor to be displayed in a sub-window corresponding to the device number on the central station; the IP address and the port number of the central station are configured to establish a TCP connection between the wireless sensor and the central station; the IP address and the port number of the monitor are configured to establish a TCP connection between the wireless sensor and the monitor; and the configuration information is read after the wireless sensor is electrified and enabled; and
a step of establishing a TCP connection between the wireless sensor and the central station: the wireless sensor sends a connection request to the IP address and the port number of the central station, and establishes a TCP connection, wherein the wireless sensor communicates with the central station using a client/server mode, the wireless sensor being a client, and the central station being a server.

4. The selective data transmission method according to claim 3, wherein the central station comprises all wireless sensor device numbers and monitor device numbers, wherein the method further comprises the steps of:

the central station intercepts a TCP port number, receives a connection request from the wireless sensor and the monitor, and establishes a TCP connection;
the central station establishes an independent TCP communication channel for each new connection request, so that the central station is capable of receiving the network data of multiple sets of wireless sensors and multiple sets of monitors simultaneously; and
the wireless sensor and the monitor communicate with the central station using a client/server mode, the wireless sensor being a client, and the central station being a server.

5. The selective data transmission method according to claims 1 to 4, wherein the data collected by the wireless sensor comprises physiological parameters, wherein in the step B), the wireless sensor sends the collected physiological parameters to the designated receiving end; if the central station does not receive the physiological parameters sent by the wireless sensor within a predetermined time, the central station will alarm for prompting; if the central station receives the physiological parameters sent by the wireless sensor within the predetermined time, the central station compares the received physiological parameters with a preset normal standard; if the physiological parameters exceed the preset normal standard, the central station sends a bedside monitoring instruction; otherwise, the central station sends a central monitoring instruction.

6. A selective data transmission system based on a central monitoring system, comprising a central station, at least one monitor, and at least one wireless sensor, wherein the wireless sensor comprises the following modules:

a collection module configured to collect data;
a sending module configured to send the data to a designated receiving end, the designated receiving end being a central station or a monitor;
a receiving end selection module configured to select a receiving end according to an instruction of the central station, and take the receiving end as the designated receiving end;
a wireless connection module configured to establish a wireless connection with the designated receiving end; and
a return execution module configured to return to execute the collection module;

wherein the wireless sensor further comprises a bedside monitoring mode unit and a central monitoring mode unit and the wireless sensor is configured to:
judge whether a bedside monitoring instruction of the central station is received in the receiving end selection module; if yes, then execute the bedside monitoring mode unit; otherwise, execute the central monitoring mode unit; and
wherein the bedside monitoring mode unit comprises:

a wireless connection monitor configured to establish the wireless connection with the monitor, and take the monitor as the designated receiving end; and
a return execution unit configured to return to execute the collection module;
wherein the central monitoring mode unit comprises a wireless connection central station module configured to establish a wireless connection with the central station, and take the central station as the designated receiving end; and
a return execution module configured to return to execute the collection module;

wherein the central monitoring mode unit is configured to
judge whether a central monitoring instruction of the central station is received; if yes, then execute the wireless connection central station module; otherwise, returning to execute the collection module;
wherein the monitor of the selective data transmission system is further configured to, in the case where the designated receiving end is the monitor and after the wireless sensor sends the data to the monitor, transmit the received data to the central station.

7. The selective data transmission system according to claim 6, wherein the bedside monitoring mode unit is further configured to generate a warning signal to trigger the wireless sensor to provide an alarm.

8. The selective data transmission system according to claim 7, wherein the wireless sensor further comprises:

a wireless sensor configuration module configured to save following configuration information in the wireless sensor: a wireless sensor device number, an IP address and a port number of the central station, as well an IP address and a port number of the monitor; wherein the wireless sensor device number is configured to control data parameters of the wireless sensor to be displayed in a sub-window corresponding to the device number on the central station; the IP address and the port number of the central station are configured to establish a TCP connection between the wireless sensor and the central station; the IP address and the port number of the monitor are configured to establish a TCP connection between the wireless sensor and the monitor; and the configuration information is read after the wireless sensor is electrified and enabled; and
a module configured to establish a TCP connection between the wireless sensor and the central station; wherein the wireless sensor is configured to send a connection request to the IP address and the port number of the central station and establish a TCP connection, wherein the wireless sensor is further configured to communicate with the central station using a client/server mode, the wireless sensor being a client and the central station being a server.

9. The selective data transmission system according to claim 8, wherein the central station comprises all wireless sensor device numbers and monitor device numbers, wherein the central station is configured to intercept a TCP port number, receive a connection request from the wireless sensor and the monitor, and establish a TCP connection; and the central station is further configured to establish an independent TCP communication channel for each new connection request, so that the central station is capable of receiving the network data of multiple sets of wireless sensors and multiple sets of monitors simultaneously; and the wireless sensor and the monitor are configured to communicate with the central station using a client/server mode, the wireless sensor being a client and the central station being a server.

10. The selective data transmission system according to any one of claims 6 to 9, wherein the data collected by the collection module of the wireless sensor comprises physiological parameters, wherein the sending module of the wireless sensor is configured to send the collected physiological parameters to the designated receiving end;

wherein the central station is configured to:

if the central station does not receive the physiological parameters sent by the sending module of the wireless sensor within a predetermined time, generate an alarm for prompting; and
if the central station receives the physiological parameters sent by the sending module of the wireless sensor within the predetermined time, compare the received physiological parameters with a preset normal standard; and
wherein the central station is further configured to:
if the physiological parameters exceed the preset normal standard, send a bedside monitoring instruction; otherwise, send a central monitoring instruction.

Patentansprüche

1. Selektives Datenübertragungsverfahren basierend auf einem zentralen Überwachungssystem, umfassend eine Zentralstation, mindestens einen Monitor und mindestens einen drahtlosen Sensor, wobei das Verfahren folgende Schritte ausführt:

A) Sammeln von Daten mittels des drahltosen Sensors;
B) mittels des drahltosen Sensors Senden der Daten an ein bestimmtes Empfangsende, wobei das bezeichnete Empfangsende die Zentralstation oder der Monitor ist;
C) mittels des drahtlosen Sensors Auswählen eines Empfangsendes gemäß einer Anweisung der Zentralstation und Aufnehmen des Empfangsendes als das designierte Empfangsende;
D) mittels des drahtlosen Sensors Herstellen einer drahtlosen Verbindung mit dem bezeichneten Empfangsende; und
E) mittels des drahtlosen Sensors Zurückkehren zur Ausführung von Schritt A);

Bestimmen, ob in Schritt C) ein Endüberwachungsbefehl der Zentralstation empfangen wird; wenn ja, dann Ausführen eines Endüberwachungsmodusschritts; andernfalls Ausführen eines zentralen Überwachungsmodusschritts;
wobei der Endüberwachungsmodusschritt die folgenden Schritte umfasst:

C1) mittels des drahtlosen Sensors Herstellen einer drahtlosen Verbindung mit dem Monitor und Aufnehmen des Monitors als das designierte Empfangsende; und
C2) mittels des drahtlosen Sensors Zurückkehren zur Ausführung von Schritt A);

der Schritt des zentralen Überwachungsmodus umfasst die folgenden Schritte:
Bestimmen, ob in Schritt C) ein zentraler Überwachungsbefehl der zentralen Station empfangen wird; wenn ja, Ausführen von CC1) Schritt; andernfalls Rückkehr zum Ausführen von Schritt A);

CC1) mittels des drahtlosen Sensors Herstellen einer drahtlosen Verbindung mit der Zentralstation und Verwenden der Zentralstation als das designierte Empfangsende; und
CC2) mittels des drahtlosen Sensors Zurückkehren, um Schritt A) auszuführen;

wobei, wenn in Schritt B) das designierte Empfangsende der Monitor ist, sendet der Monitor, nachdem der drahtlose Sensor die Daten an den Monitor gesendet hat, die empfangenen Daten an die Zentralstation.

2. Selektives Datenübertragungsverfahren nach Anspruch 1, wobei der Endüberwachungsmodusschritt ferner das Erzeugen eines Warnsignals umfasst, um den drahtlosen Sensoralarm zu machen.

3. Selektives Datenübertragungsverfahren nach Anspruch 2, wobei vor dem Schritt A) das Verfahren ferner die folgenden zwei Schritte umfasst:
einen drahtlosen Sensorkonfigurationsschritt: Folgende Konfigurationsinformationen werden in dem drahtlosen Sensor gespeichert:

eine drahtlose Sensorvorrichtungsnummer, a IP-Adresse und eine Portnummer der Zentralstation sowie eine IP-Adresse und eine Portnummer des Monitors, wobei die drahtlose Sensorgerätenummer aufgebaut ist, um Datenparameter des drahtlosen Sensors zu steuern, die entsprechend der Gerätenummer auf der Zentralstation in einem Unterfenster angezeigt werden sollen; die IP-Adresse und die Port-Nummer der Zentralstation sind aufgebaut, um eine TCP-Verbindung zwischen dem drahtlosen Sensor und der Zentralstation herzustellen; die IP-Adresse und die Port-Nummer des Monitors sind so aufgebaut, dass eine TCP-Verbindung zwischen dem drahtlosen Sensor und dem Monitor hergestellt wird; und die Konfigurationsinformationen werden ausgelesen, nachdem der drahtlose Sensor mit Energie versorgt und aktiviert wurde; und
einen Schritt zum Herstellen einer TCP-Verbindung zwischen dem drahtlosen Sensor und der Zentralstation: der drahtlose Sensor sendet eine Verbindungsanforderung an die IP-Adresse und die Portnummer der Zentralstation und baut eine TCP-Verbindung auf, wobei der drahtlose Sensor mit der Zentralstation kommuniziert, die

einen Client / Server-Modus verwendet, wobei der drahtlose Sensor ein Client ist und die Zentralstation ein Server ist.

4. Selektives Datenübertragungsverfahren nach Anspruch 3, wobei die Zentralstation alle Funksensor-Gerätenummern und Monitor-Gerätenummern umfasst, woei das Verfahren ferner die folgenden Schritte umfasst:

die Zentralstation fängt eine TCP-Port-Nummer ab, erhält vom drahtlosen Sensor und vom Monitor eine Verbindungsanfrage und richtet eine TCP-Verbindung ein;
die Zentralstation richtet einen unabhängigen TCP-Kommunikationskanal für jede neue Verbindungsanforderung ein, so dass die Zentralstation in der Lage ist, die Netzwerkdaten mehrerer Sätze von drahtlosen Sensoren und mehrere Sätze von Monitoren gleichzeitig zu empfangen; und
der drahtlose Sensor und der Monitor kommunizieren mit der zentralen Station unter Verwendung eines Client / Server-Modus, wobei der drahtlose Sensor ein Client ist und die zentrale Station ein Server ist.

5. Selektives Datenübertragungsverfahren nach den Ansprüchen 1 bis 4, wobei die vom drahtlosen Sensor gesammelten Daten physiologische Parameter umfassen, wobei in dem Schritt B) der drahtlose Sensor die gesammelten physiologischen Parameter an das designierte Empfangsende sendet; wenn die Zentralstation die vom drahtlosen Sensor innerhalb einer vorbestimmten Zeit gesendeten physiologischen Parameter nicht empfängt, alarmiert die Zentralstation auf Aufforderung; wenn die Zentralstation die von dem drahtlosen Sensor innerhalb der vorbestimmten Zeit gesendeten physiologischen Parameter empfängt, vergleicht die Zentralstation die empfangenen physiologischen Parameter mit einem voreingestellten normalen Standard; wenn die physiologischen Parameter den voreingestellten normalen Standard überschreiten, sendet die Zentralstation eine Endüberwachungsinstruktion; andernfalls sendet die Zentralstation eine zentrale Überwachungsinstruktion.

6. Selektives Datenübertragungssystem basierend auf einem zentralen Überwachungssystem, umfassend eine Zentralstation, mindestens einen Monitor und mindestens einen drahtlosen Sensor, wobei der drahtlose Sensor die folgenden Module umfasst:

ein Erfassungsmodul konfiguriert zum Sammeln von Daten;
ein Sendemodul konfiguriert zum Senden der Daten an ein designiertes empfangendes Ende, wobei das designierte empfangende Ende eine zentrale Station oder ein Monitor ist;
ein Empfangsende-Auswahlmodul konfiguriert, um ein Empfangsende gemäß einer Anweisung der Zentralstation auszuwählen und das Empfangsende als das festgelegte Empfangsende zu nehmen;
ein drahtloses Verbindungsmodul konfiguriert, um eine drahtlose Verbindung mit dem designierten Empfangsende herzustellen; und
ein Rückkehrausführungsmodul konfiguriert, um zum Tätigwerden des Sammlungsmoduls zurückzukehren;
wobei der drahtlose Sensor weiter eine Endüberwachungsbetriebsarteinheit und eine zentrale Überwachungsmoduseinheit umfasst und wobei der drahtlose Sensor konfiguriert ist:

zu beurteilen, ob eine Endüberwachungsanweisung der Zentralstation in dem Empfangsendauswahlmodul empfangen wird; wenn ja, Ausführen der Endüberwachungsbetriebsarteinheit; andernfalls Ausführen der zentralen Überwachungsmoduseinheit; und
wobei die Endüberwachungsbetriebsarteinheit umfasst:

einen drahtlosen Verbindungsmonitor konfiguriert, um eine drahtlose Verbindung mit dem Monitor herzustellen, und den Monitor als das designierte Empfangsende zu nehmen; und
eine Rückkehrausführungseinheit konfiguriert, um zum Tätigwerden des Sammlungsmoduls zurückzukehren;

wobei die zentrale Überwachungsbetriebsarteinheit das Funkverbindungs-Zentralstationsmodul umfasst, welches konfiguriert ist, um eine drahtlose Verbindung mit der Zentralstation herzustellen, und die Zentralstation als das zugewiesene Empfangsende zu nehmen; und ein Rückkehrausführungsmodul konfiguriert, um zum Tätigwerden des Sammlungsmoduls zurückzukehren;
wobei die zentrale Überwachungsbetriebsarteinheit konfiguriert ist, um zu beurteilen, ob eine zentrale Überwachungsanweisung der Zentralstation empfangen wird; wenn ja, dann Ausführen eines Funkverbindungs-Zentralstationsmoduls; andernfalls Rückkehr zum Ausführen des Sammlungsmoduls;
wobei der Monitor des selektiven Datenübertragungssystems ferner konfiguriert ist, in dem Fall, in welchem das bezeichnete

Empfangsende der Monitor ist, nachdem der drahtlose Sensor die Daten an den Monitor gesendet hat, die empfangenen Daten an die Zentralstation zu senden.

7. Selektives Datenübertragungssystem nach Anspruch 6, wobei die Endüberwachungsmoduseinheit ferner konfiguriert ist, ein Warnsignal zu erzeugen, um den drahtlosen Sensoralarm zur Verfügung zu stellen.

8. Selektives Datenübertragungssystem nach Anspruch 7, wobei der drahtlose Sensor ferner umfasst:

ein drahtloses Sensorkonfigurationsmodul, das konfiguriert ist, um folgende Konfigurationsinformationen in dem drahtlosen Sensor zu speichern: eine drahtlose Sensorvorrichtungsnummer, eine IP-Adresse und eine Portnummer der Zentralstation sowie eine IP-Adresse und eine Portnummer des Monitors;
wobei die drahtlose Sensorvorrichtungsnummer aufgebaut ist, um Datenparameter des drahtlosen Sensors zu steuern, die in einem Unterfenster anzuzeigen sind, das der Vorrichtungsnummer auf der Zentralstation entspricht; die IP-Adresse und die Port-Nummer der Zentralstation sind aufgebaut, um eine TCP-Verbindung zwischen dem drahtlosen Sensor und der Zentralstation herzustellen; die IP-Adresse und die Port-Nummer des Monitors sind so aufgebaut, dass eine TCP-Verbindung zwischen dem drahtlosen Sensor und dem Monitor hergestellt wird; und die Konfigurationsinformationen werden gelesen, nachdem der drahtlose Sensor mit Energie versorgt und aktiviert wurde; und
ein Modul zum Herstellen einer TCP-Verbindung zwischen dem drahtlosen Sensor und der Zentralstation; wobei der drahtlose Sensor konfiguriert ist, eine Verbindungsanforderung an die IP-Adresse und die Portnummer der Zentralstation zu senden und eine TCP-Verbindung aufzubauen, wobei der drahtlose Sensor ferner konfiguriert ist, mit der Zentralstation zu kommunizieren, die einen Client / Server-Modus verwendet, wobei der drahtlose Sensor ein Client ist und die Zentralstation ein Server ist.

9. Selektives Datenübertragungssystem nach Anspruch 8, wobei die Zentralstation alle drahtlose Sensorvorrichtungsnummer und Überwachungsvorrichtungsnummer umfasst, wobei die Zentralstation konfiguriert ist, eine TCP-Anschlussnummer abzufangen, eine Verbindungsanforderung von dem drahtlosen Sensor und dem Monitor zu empfangen und eine TCP-Verbindung einzurichten; und die Zentralstation ist ferner konfiguriert, einen unabhängigen TCP-Kommunikationskanal für jede neue Verbindungsanforderung einzurichten, so dass die Zentralstation in der Lage ist, die Netzwerkdaten mehrerer Sätze von drahtlosen Sensoren und mehrere Sätze von Monitoren gleichzeitig zu empfangen; und der drahtlose Sensor und der Monitor sind konfiguriert, mit der zentralen Station unter Verwendung eines Client / Server-Modus zu kommunizieren, wobei der drahtlose Sensor ein Client ist und die zentrale Station ein Server ist.

10. Selektives Datenübertragungssystem nach einem der Ansprüche 6 bis 9, , wobei die vom drahtlosen Sensor gesammelten Daten physiologische Parameter umfassen, wobei das drahtlose Modul konfiguriert ist, die gesendeten physiologischen Parameter an das designierte Empfangsende zu senden;
wobei die Zentralstation konfiguriert ist:

wenn die Zentralstation den von dem drahtlosen Sensor innerhalb einer vorbestimmten Zeit gesendeten physiologischen Parameter nicht empfängt, alarmiert die Zentralstation auf Aufforderung; und
wenn die Zentralstation die von dem drahtlosen Sensor innerhalb der vorbestimmten Zeit gesendeten physiologischen Parameter empfängt, vergleicht die Zentralstation die empfangenen physiologischen Parameter mit einem voreingestellten normalen Standard; und
wobei die Zentralstation ferner konfiguriert ist:
wenn die physiologischen Parameter den voreingestellten normalen Standard überschreiten, sendet die Zentralstation eine Endüberwachungsinstruktion; andernfalls sendet die Zentralstation eine zentrale Überwachungsinstruktion.

Revendications

1. Procédé de transmission de données sélective basé sur un système de surveillance centrale comprenant une station centrale, au moins un dispositif de surveillance et au moins un capteur sans fil, dans lequel le procédé comprend les étapes suivantes ;

A) le capteur sans fil collecte les données ;
B) le capteur sans fil envoie les données à une extrémité de réception désignée, l'extrémité de réception désignée étant la station centrale ou un dispositif de surveillance ;
C) le capteur sans fil sélectionne une extrémité de réception selon une instruction de la station centrale et prend l'extrémité de réception comme l'extrémité de réception désignée ;
D) le capteur sans fil établit une connexion sans fil avec l'extrémité de réception désignée ; et
E) le capteur sans fil retourne pour exécuter

l'étape A) ;

dans laquelle juger si oui ou non une instruction de surveillance de chevet de la station centrale est reçue dans l'étape C) ; si oui, alors exécuter une étape de mode de surveillance de chevet ; dans le cas contraire, exécuter une étape de mode de surveillance centrale ;
dans lequel l'étape de mode de surveillance de chevet comprend les étapes suivantes :

C1) le capteur sans fil établit une connexion sans fil avec le dispositif de surveillance et prend le dispositif de surveillance comme l'extrémité de réception désignée ; et
C2) le capteur sans fil retourne pour exécuter l'étape A) ;

l'étape de mode de surveillance centrale comprenant les étapes suivantes :
juger si oui ou non une instruction de surveillance centrale de la station centrale est reçue dans l'étape C) ; si oui, alors exécuter l'étape CC1); dans le cas contraire, retourne pour exécuter l'étape A) ;

CC1) le capteur sans fil établit une connexion sans fil avec la station centrale et prend la station centrale comme l'extrémité de réception désignée ; et
CC2) le capteur sans fil retourne pour exécuter l'étape A) ;

dans lequel dans l'étape B) si l'extrémité de réception désignée est le dispositif de surveillance, alors après que le capteur sans fil envoie les données au dispositif de surveillance, le dispositif de surveillance transmet les données reçues à la station centrale.

2. Procédé de transmission de données sélective selon la revendication 1, dans lequel l'étape de mode de surveillance de chevet comprend en outre la génération d'un signal d'avertissement pour déclencher le capteur sans fil pour fournir une alarme.

3. Procédé de transmission de données sélective selon la revendication 2, dans lequel avant l'étape A), le procédé comprend en outre les deux étapes suivantes :

une étape de configuration de capteur sans fil : les informations de configuration suivantes sont sauvegardées dans le capteur sans fil : un numéro de dispositif du capteur sans fil, une adresse IP et un numéro de port de la station centrale, ainsi qu'une adresse IP et un numéro de port du dispositif de surveillance, dans lequel le numéro de dispositif du capteur sans fil est configuré pour commander les paramètres des données du capteur sans fil pour être affichée dans une sous-fenêtre correspondant au numéro de dispositif sur la station centrale ;
l'adresse IP et le numéro de port de la station centrale sont configurés pour établir une connexion TCP entre le capteur sans fil et la station centrale ;
l'adresse IP et le numéro de port du dispositif de surveillance sont configurés pour établir une connexion TCP entre le capteur sans fil et le dispositif de surveillance ; et les informations de configuration sont lues après que le capteur sans fil est électrifié et activé ; et
une étape d'établissement d'une connexion TCP entre le capteur sans fil et la station centrale : le capteur sans fil envoie une demande de connexion à l'adresse IP et au numéro de port de la station centrale et établit une connexion TCP, dans lequel le capteur sans fil communique avec la station centrale à l'aide d'un mode client/serveur, le capteur sans fil étant un client et la station centrale étant un serveur.

4. Procédé de transmission de données sélective selon la revendication 3, dans lequel la station centrale comprend tous les numéros de dispositif du capteur sans fil et les numéros de dispositif du dispositif de surveillance, dans lequel le procédé comprend en outre les étapes suivantes :

la station centrale intercepte un numéro de port TCP, reçoit une demande de connexion provenant du capteur sans fil et du dispositif de surveillance et établit une connexion TCP ;
la station centrale établit un canal de communication TCP indépendant pour chaque nouvelle demande de connexion, de manière à ce que la station centrale soit apte à recevoir les données du réseau de plusieurs ensembles de capteurs sans fil et de plusieurs ensembles de dispositifs de surveillance simultanément ; et
le capteur sans fil et le dispositif de surveillance communiquent avec la station centrale à l'aide d'un mode client/serveur, le capteur sans fil étant un client et la station centrale étant un serveur.

5. Procédé de transmission de données sélective selon les revendications 1 à 4, dans lequel les données collectées par le capteur sans fil comprennent des paramètres physiologiques, dans lequel dans l'étape B), le capteur sans fil envoie les paramètres physiologiques collectés à l'extrémité de réception désignée ; si la station centrale ne reçoit pas les paramètres physiologiques envoyés par le capteur sans fil dans un laps de temps prédéfini, la station centrale alertera pour invite ; si la station centrale reçoit les paramètres physiologiques envoyés par le

capteur sans fil dans le laps de temps prédéfini, la station centrale compare les paramètres physiologiques reçus avec un standard normal préréglé ; si les paramètres physiologiques dépassent le standard normal préréglé, la station centrale envoie une instruction de surveillance de chevet ; dans le cas contraire, la station centrale envoie une instruction de surveillance centrale.

6. Système de transmission de données sélective basé sur un système de surveillance centrale comprenant une station centrale, au moins un dispositif de surveillance et au moins un capteur sans fil, dans lequel le capteur sans fil comprend les modules suivants ;
un module de collecte configuré pour collecter des données ;
un module d'envoi configuré pour envoyer les données à une extrémité de réception désignée, l'extrémité de réception désignée étant une station centrale ou un dispositif de surveillance ;
un module de sélection d'extrémités de réception configuré pour sélectionner une extrémité de réception selon une instruction de la station centrale et prendre l'extrémité de réception comme l'extrémité de réception désignée ;
un module de connexion sans fil configuré pour établir une connexion sans fil avec l'extrémité de réception désignée ; et
un module d'exécution de retour configuré pour revenir pour exécuter le module de collecte ;
dans lequel le capteur sans fil comprend en outre une unité de mode de surveillance de chevet et une unité de mode de surveillance centrale et le capteur sans fil est configuré pour :

juger si oui ou non une instruction de surveillance de chevet de la station centrale est reçue dans le module de sélection de l'extrémité de réception ; si oui, alors exécuter l'unité de mode de surveillance de chevet ; dans le cas contraire, exécuter l'unité de mode de surveillance centrale ;
dans lequel l'unité de mode de surveillance de chevet comprend :

un dispositif de surveillance de capteur sans fil configuré pour établir une connexion sans fil avec le dispositif de surveillance et prendre le dispositif de surveillance comme l'extrémité de réception désignée ; et
une unité d'exécution de retour configurée pour revenir pour exécuter le module de collecte ;

dans lequel l'unité de mode de surveillance centrale comprend un module de station centrale de connexion sans fil configuré pour établir une connexion sans fil avec la station centrale et prendre la station centrale comme l'extrémité de réception désignée ; et un module d'exécution de retour configuré pour revenir pour exécuter le module de collecte ;
dans lequel l'unité de mode de surveillance centrale est configurée pour juger si oui ou non une instruction de surveillance centrale de la station centrale est reçue ; si oui, alors exécuter le module de station centrale de connexion sans fil ; dans le cas contraire, retourne pour exécuter le module de collecte ;
dans lequel le dispositif de surveillance du système de transmission de données sélective est configuré en outre pour, dans le cas où l'extrémité de réception désignée est le dispositif de surveillance et après que le capteur sans fil envoie les données au dispositif de surveillance, transmettre les données reçues à la station centrale.

7. Système de transmission de données sélective selon la revendication 6, dans lequel l'unité de mode de surveillance de chevet est configurée en outre pour générer un signal d'avertissement pour déclencher le capteur sans fil pour fournir une alarme.

8. Système de transmission de données sélective selon la revendication 7, dans lequel le capteur sans fil comprend en outre :

un module de configuration de capteur sans fil configuré pour sauvegarder les informations de configuration suivantes dans le capteur sans fil : un numéro de dispositif du capteur sans fil, une adresse IP et un numéro de port de la station centrale, ainsi qu'une adresse IP et un numéro de port du dispositif de surveillance, dans lequel le numéro de dispositif du capteur sans fil est configuré pour commander les paramètres des données du capteur sans fil pour être affichée dans une sous-fenêtre correspondant au numéro de dispositif sur la station centrale ; l'adresse IP et le numéro de port de la station centrale sont configurés pour établir une connexion TCP entre le capteur sans fil et la station centrale ; l'adresse IP et le numéro de port du dispositif de surveillance sont configurés pour établir une connexion TCP entre le capteur sans fil et le dispositif de surveillance ; et les informations de configuration sont lues après que le capteur sans fil est électrifié et activé ; et
un module configuré pour établir une connexion TCP entre le capteur sans fil et la station centrale : dans lequel le capteur sans fil est configuré pour envoyer une demande de connexion à l'adresse IP et au numéro de port de la station centrale et établir une connexion TCP, dans lequel le capteur sans fil est configuré en outre

pour communique avec la station centrale à l'aide d'un mode client/serveur, le capteur sans fil étant un client et la station centrale étant un serveur.

9. Système de transmission de données sélective selon la revendication 8, dans lequel la station centrale comprend tous les numéros de dispositif du capteur sans fil et les numéros de dispositif du dispositif de surveillance, dans lequel la station centrale est configurée pour intercepter un numéro de port TCP, recevoir une demande de connexion à partir du capteur sans fil et du dispositif de surveillance et établir une connexion TCP ; et la station centrale est configurée en outre pour établir un canal de communication TCP indépendant pour chaque nouvelle demande de connexion, de manière à ce que la station centrale soit apte à recevoir les données du réseau de plusieurs ensembles de capteurs sans fil et de plusieurs ensembles de dispositifs de surveillance simultanément ; et le capteur sans fil et le dispositif de surveillance sont configurés pour communiquer avec la station centrale à l'aide d'un mode client/serveur, le capteur sans fil étant un client et la station centrale étant un serveur.

10. Système de transmission sélective des données selon l'une quelconque des revendications 6 à 9, dans lequel les données collectées par le module de collecte du capteur sans fil comprennent les paramètres physiologiques, dans lequel le module d'envoi du capteur sans fil est configuré pour envoyer les paramètres physiologiques collectés à l'extrémité de réception désignée ; dans lequel la station centrale est configurée pour :

si la station centrale ne reçoit pas les paramètres physiologiques envoyés par le module d'envoi du capteur sans fil dans un laps de temps prédéfini, générer une alarme pour invite ; et
si la station centrale reçoit les paramètres physiologiques envoyés le module d'envoi du capteur sans fil dans le laps de temps prédéfini, comparer les paramètres physiologiques reçus avec un standard normal préréglé ; et
dans lequel la station centrale est configuré en outre pour :
si les paramètres physiologiques dépassent le standard normal préréglé, envoyer une instruction de surveillance de chevet ; dans le cas contraire, envoyer une instruction de surveillance centrale.

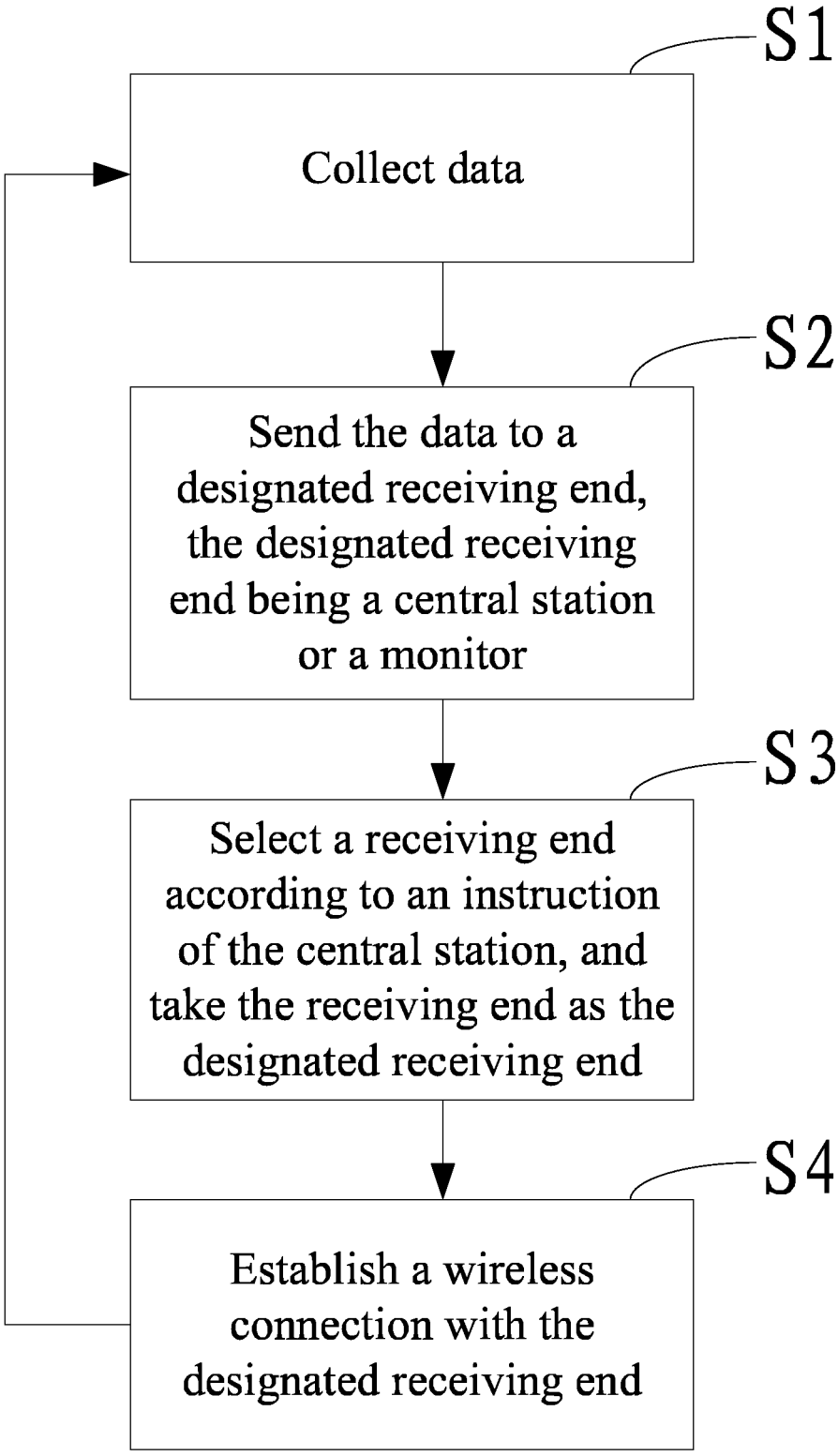
S1
Collect data
S2
Send the data to a designated receiving end, the designated receiving end being a central station or a monitor
S3
Select a receiving end according to an instruction of the central station, and take the receiving end as the designated receiving end
S4
Establish a wireless connection with the designated receiving end

Fig. 1

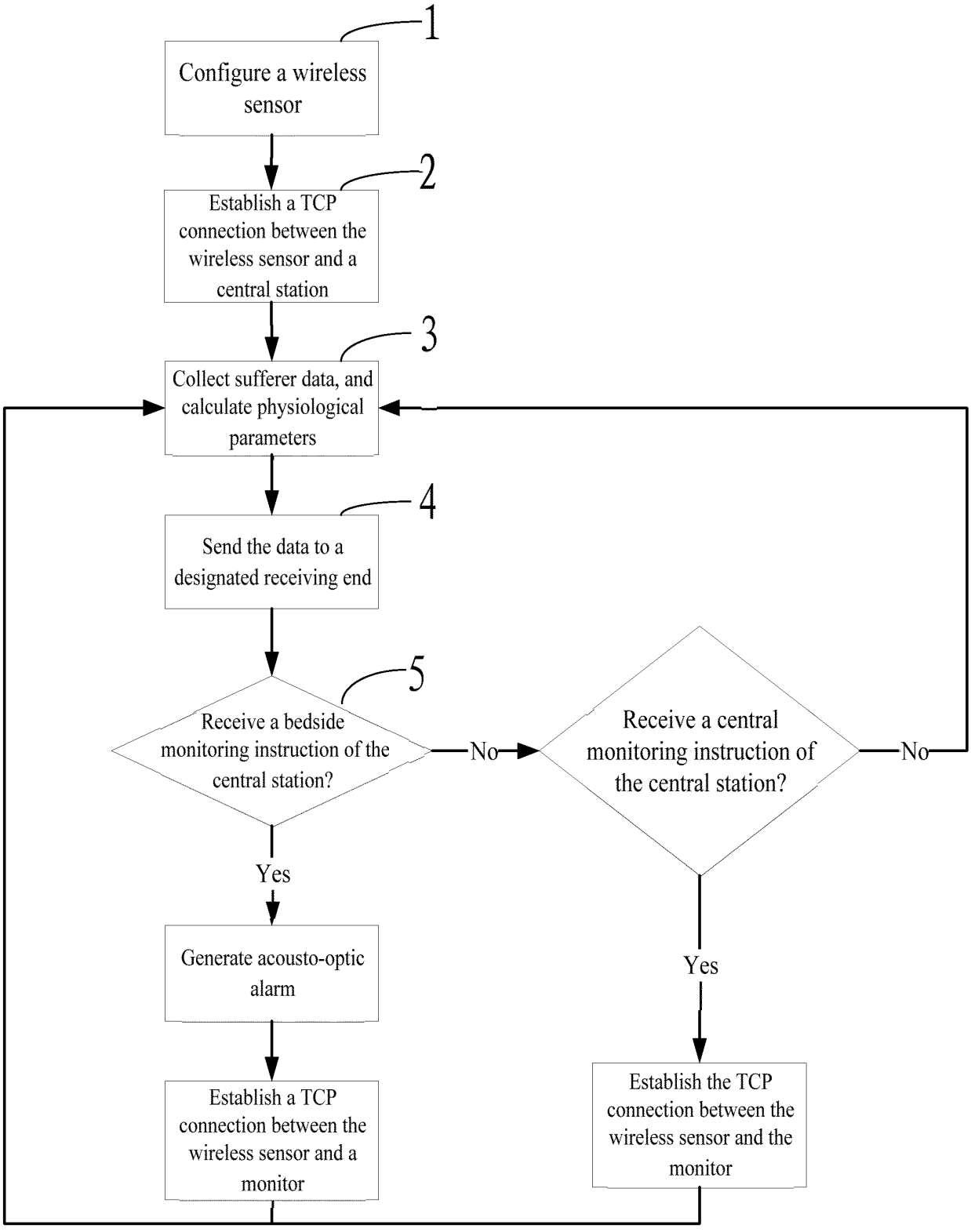
1
Configure a wireless sensor
2
Establish a TCP connection between the wireless sensor and a central station
3
Collect sufferer data, and calculate physiological parameters
4
Send the data to a designated receiving end
5
Receive a bedside monitoring instruction of the central station?
No
Receive a central monitoring instruction of the central station?
No
Yes
Generate acousto-optic alarm
Establish a TCP connection between the wireless sensor and a monitor
Yes
Establish the TCP connection between the wireless sensor and the monitor

Fig. 2

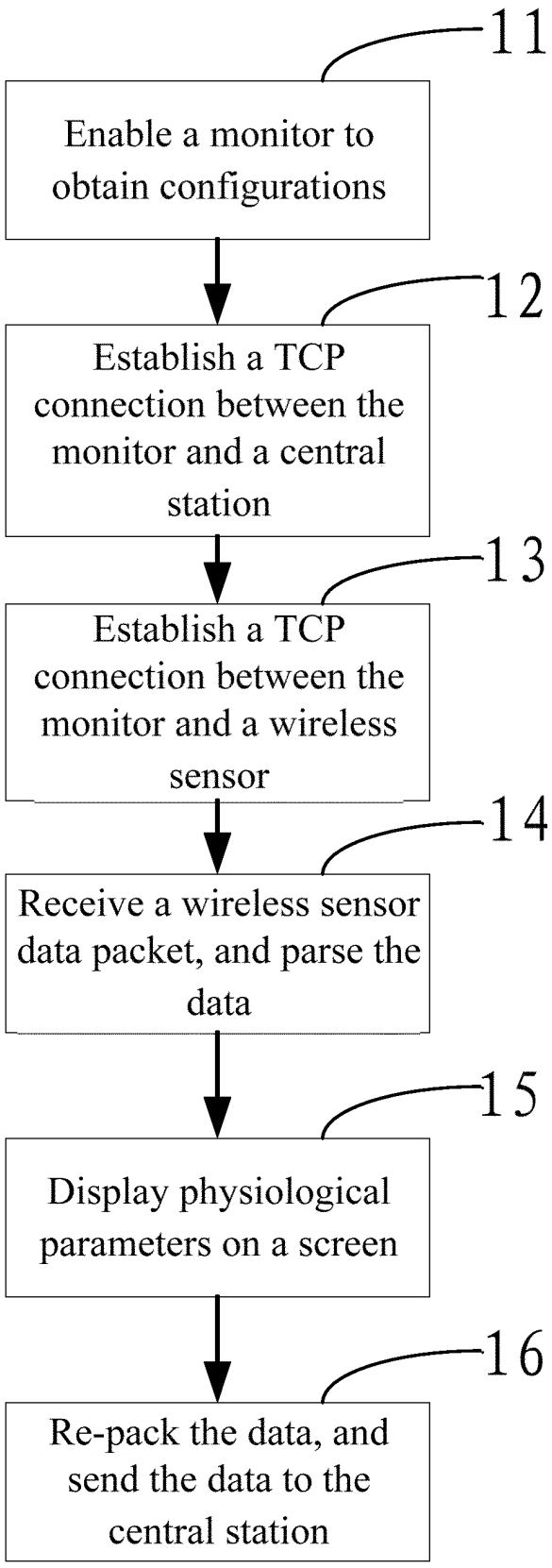
11
Enable a monitor to obtain configurations
12
Establish a TCP connection between the monitor and a central station
13
Establish a TCP connection between the monitor and a wireless sensor
14
Receive a wireless sensor data packet, and parse the data
15
Display physiological parameters on a screen
16
Re-pack the data, and send the data to the central station

Fig. 3

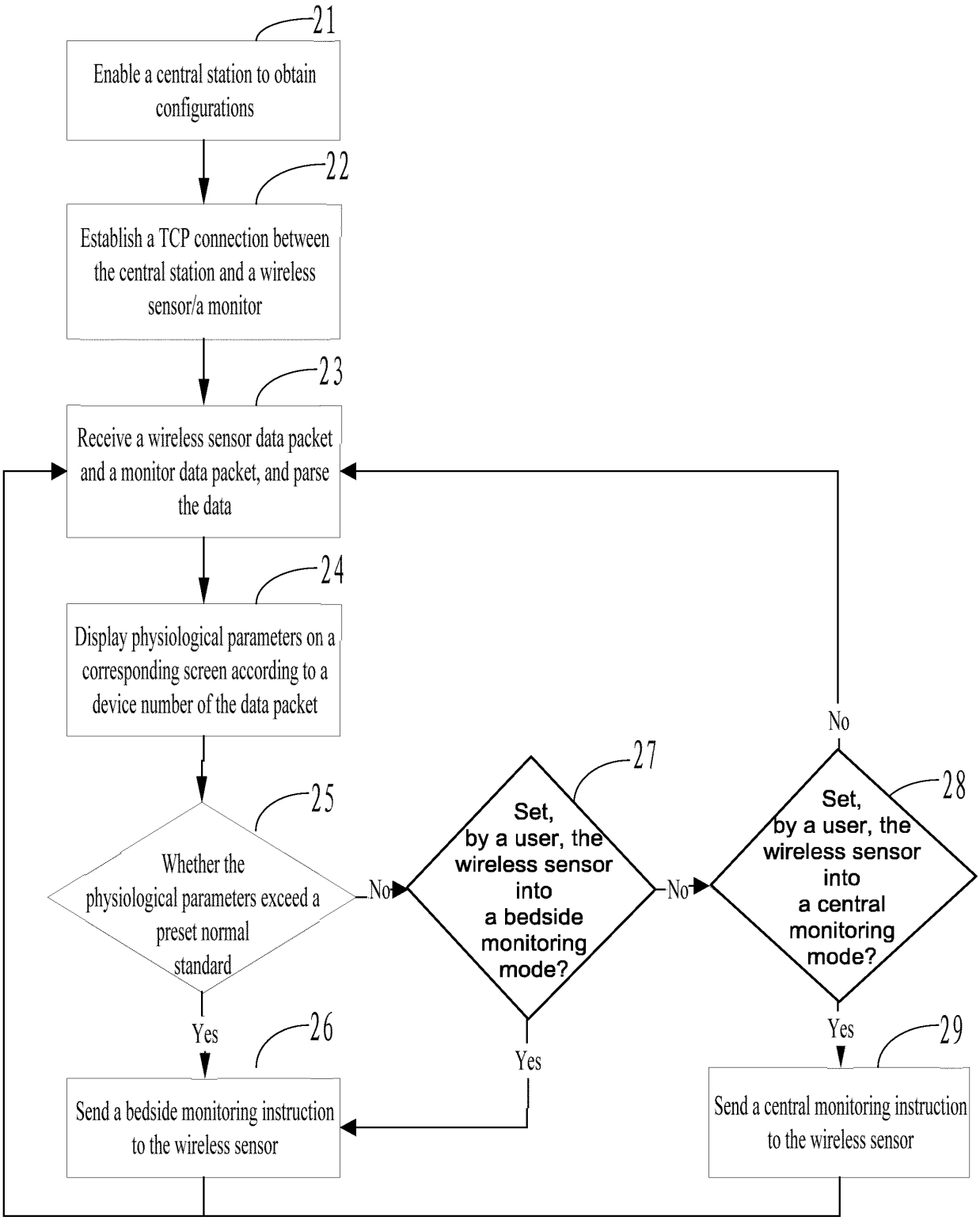
21
Enable a central station to obtain configurations
22
Establish a TCP connection between the central station and a wireless sensor/a monitor
23
Receive a wireless sensor data packet and a monitor data packet, and parse the data
24
Display physiological parameters on a corresponding screen according to a device number of the data packet
25
Whether the physiological parameters exceed a preset normal standard
No
27
Set, by a user, the wireless sensor into a bedside monitoring mode?
No
28
Set, by a user, the wireless sensor into a central monitoring mode?
No
Yes
26
Send a bedside monitoring instruction to the wireless sensor
Yes
Yes
29
Send a central monitoring instruction to the wireless sensor

Fig. 4

REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

- US 2012331138 A **[0004]**

专利名称(译)	基于中央监控系统的选择性数据传输方法和系统		
公开(公告)号	EP3001398B1	公开(公告)日	2018-08-08
申请号	EP2013896167	申请日	2013-12-10
[标]申请(专利权)人(译)	深圳市理邦精密仪器股份有限公司		
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IPC分类号	G08C17/02 H04W84/18 A61B5/00 G06F19/00 H04Q9/00		
CPC分类号	A61B5/0022 G06F19/3418 G16H40/67 H04Q9/00 H04Q2209/40 H04Q2209/823 A61B5/0002 H04Q2209/10		
优先权	201310496654.3 2013-10-21 CN		
其他公开文献	EP3001398A4 EP3001398A1		
外部链接	Espacenet		

摘要(译)

本发明提供了一种选择性数据传输方法和基于中央监控系统的系统。选择性数据传输方法包括无线传感器，其中无线传感器执行以下步骤：A。收集数据; B.将数据发送到指定的接收端; C.根据指令选择接收端，并将接收端作为指定接收端; D.与指定的接收端建立无线连接。本发明的有益效果是，该方法和系统通过将数据传输到选定的接收端实现选择性数据传输，不仅可以应用于医疗监控领域，还可以应用于安全等领域。预防，数据备份等;工作节点可以切换。

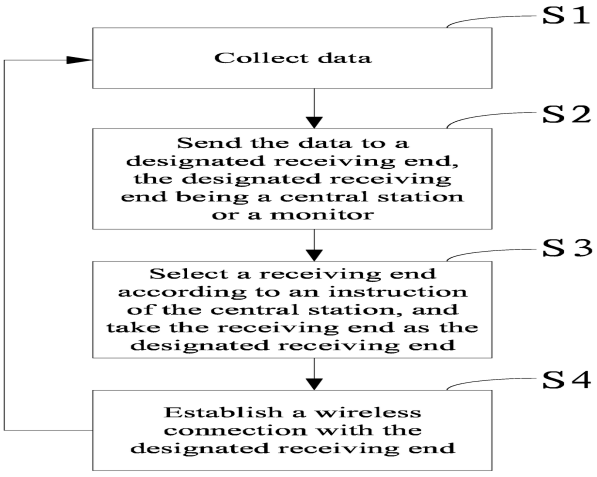

Fig. 1