	StreamTeck Wireless Physiological Transmitter and Central Monitoring Software

Name / Model	SmartCaring / T60
Distributor name	StreamTeck Scientific Inc.
Distributor address	No. 174, Huamei St., West Dist., Taichung City 403, Taiwan
Manufacturer name:	WelFare Technology Inc.
Manufacturer address	No. 130-8, Waixizhou, Shuishang Township, Chiayi County 608006, Taiwan
Manufacturing date	
Manufacturing lot No.	

StreamTeck Wireless Physiological Transmitter and Central Monitoring Software

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Model： T60

User Manual

StreamTeck Scientific Inc.

Contents

StreamTeck Wireless Physiological Transmitter and Central Monitoring Software

Caution! Please read the user manual and follow the instructions before use.

The information provided by the product is assisted by medical care personnel under professional judgment.

This product is not suitable for use as a basis for diagnosis.

● Product Description and Usage

Product composition: This product includes the wireless physiological transmitter, central monitoring software and other compatible hardware like computer, keyboard, mouse and monitor.

Product features: StreamtTeck central monitoring software is connected to a single or multiple wireless physiological transmitters through the computer's internet. The monitoring information is used to display, record, trace the physiological parameter. The software can alarm notification function, including alarm setting and centralized monitoring and management of a single or multiple beds, suitable for the nursing station of long-term care institutions or the general wards of medical institutions. The system provides continuous real-time display and storage of physiological parameters and vacancy bed detection and can trace back the stored data. The central monitoring software should be operated by professional medical and nursing staff. It can only be used as assistance for medical and nursing staff instead of clinical treatment and diagnosis.

Product applicable functions：

1. View the continuous monitoring physiological parameter, including heart rate, breathing rate, body temperature and bed occupation transmit by the wireless physiological transmitter.
2. Warning to medical units using the product (system visual warning).
3. Observe and review the patients' physiological data in detail.

● Detailed Product Specifications

Wireless Physiological Transmitter (T60)	
Material	ABS
Power	5V/2A
Operating time	Continuous-time
RF range	Wireless sensor: 60GHz ~ 64GHz Wireless transmission: 2.4/5GHz
Operating environment temperature	15~40℃
Operating environment humidity	30~80%, no condensation
Operation/storage/transportation pressure	700~1060 hPa
Storage/transportation environment temperature	0~50℃
Storage/transportation environment humidity	30~80%, no condensation
Size	190*190*60mm
Weight	250g
Medical Power Supply	
Brand	Adapter Tech. ATM012T-W050U
Output voltage	5V
Output current	2A
Input voltage range	100~240 VAC
Size	80.2*40.0*40.5±1mm (L*W*H)

Central monitoring software	Central monitoring software with compatible hardware including computer, keyboard, mouse and monitor
Install environment	Minimum demand
Processor	X86 3.0GHz four cores
Operating system/software	Construct with LAMP (Linux, Apache, MySQL, PHP)
RAM	More than 4G RAM
Hard drive space	RAID1 or RAID5，no less than 1TB
Internet require	A fixed IP and two-way 10MB bandwidth
Future	Function
The number of supported bed	Receive physiological parameters from 32 beds at most
Wireless communication	Receive physiological parameter data from T60
	Auto-connect and reconnect
System function management	Home page (login page)
	Back: Back to the login page
	Overview: List all the T60 devices in use
	"Overview" page list all the information of the T60 device and patient data, including floor, room, bed number, patient name, age, gender, group, real-time heart rate, breathing rate, body temperature and vacancy bed detection.
	Device setting: Add new T60 device to the device list, and setting corresponding location floor, room number and group, and can be removed from the device list.
	Group setting: Adding group and group description, and can be deleted from the group list.
	Account and user authority setting: Set account authority to be user or administrator. The account and password can be changed.
Patient basic information management	Patient data setting: Set patient medical record number, name, gender and birthday.
	Threshold setting for alarm events: Set alarm trigger threshold of heart rate, breathing rate and body temperature.
Physiological information tracking	Physiological data record
	Data search (base on year/ month/ date/ hour)
	Display history physiological data

System self-protection	If the system fails, restart itself and restore it to the original setting.
Authority management	Not login: Can not use SmartCaring
	Ward management: Execute and set all operation and system parameter
	Normal user: Set patient basic information and alarm trigger threshold
Patient basic information display	Floor, room, bed number, patient medical record number, name, gender, age, group
Alert status display	Physiological parameters exceed the threshold.
	T60 device disconnected hint.
	Bed vacancy and timer display.
	Patient motion display: T60 transmitter stop detecting and transmit the last data before patient motion
Alarm color	Red: Alarm (immediately call a doctor)
	Green: normal
	Orange: bed vacancy
Default alarm threshold	Heart rate: >120bpm <50bpm
	Breath rate: >25/per minute <8/per minute
	Body temperature: >37.5℃ <36℃
Alarm threshold setting	Heart rate/ breathing rate/ body temperature
	IEC 60417-5032 : Alternating Current.
	IEC 60417-5031 : Direct Current
	ISO 7010-M002: Follow instructions for use

● Usage Scenarios

This product is suitable for long-term care institutions and the nursing station in the general wards of medical institutions.

- Contraindications

1. Severe physical disability prevents safe and effective measurement.
2. Without the patient's consent.
3. Do not use for the fetus.

- Side Effect

According to Federal Communications Commission (FCC) requirements, the specific absorption rate (SAR) should be lower than 10w/m2. The passed measurement result of the product is 5.33w/m2 at a distance of 20cm. If the distance is less than 20cm, it may cause some electromagnetic wave damage to the human body, such as a mobile phone.

- Caution

1. The data gain by the wireless physiological transmitter and the central monitoring software can only be used as assistance instead of the clinical treatment and diagnosis.
2. Avoid the wireless physiological transmitter, central monitoring software and the product accessories from sunlight and high temperature and water.
3. Do not disassemble or repair the wireless physiological transmitter by yourself. It may affect the accuracy of the measurement result and the safety of the device.
4. This device complies with Part 15 of the FCC Rules and ISED's licence-exempt RSSs. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation
5. This device has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee

that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

6. Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.
7. This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.
8. This device complies with FCC and ISED radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20cm between the radiator & your body.
9. The wireless physiological transmitter complies with the electromagnetic compatibility (EMC) test standard but is still recommended to stay away from other microwave devices, RF devices, and radar devices, to avoid influencing the abovementioned devices.
10. Data may lose if the wireless physiological transmitter is powered off or abnormally turned off. Do not arbitrarily turn off the device. If the device is accidentally turned off, immediately reconnect the device to the power source.
11. The installation and the setting of the wireless physiological transmitter can only be carried out by manufacture trained and authorized personnel.
12. If the server PC of the central monitoring software is powered off or abnormally turned off, data may lose. Do not arbitrarily turn off the computer. If the computer is accidentally turned off, immediately turn it on and start the software.

13. For the installation and setting of the central monitoring software, please refer to the user manual, or operate by the staff of Streamteck Inc.
14. Remove the monitoring device on the software will remove the setting of the device. Please make sure and check that the bed related to the device no longer needs to be monitored.
15. It is important to choose a proper value when setting the threshold of the physiological parameters. The extreme or improper value may cause alarm invalidation.
16. The computer operating the central monitoring software can not be moved or run another software.
17. In case of serious incident that has occurred, please contact the manufacturer and local authorities immediately.
18. WARNING - Do not modify this equipment without authorization of the manufacturer.
19. Do not place the power cord where it is difficult to disconnect and may be stepped by other persons.
20. Disconnect device: disconnect the power cord to fully power off the device
21. CLASSIFICATION:
    Supply Class II adapter
    No applied part
    Continuous Operation
    Not AP or APG category
22. Disconnect this equipment from AC outlet before cleaning. Do not use liquid or spray detergents for cleaning.
23. CAUTION! This adapter Adaptor Tech/ ATM012T-W050U is a forming part of the device
24. Only use the power cord with following specification: 18AWG min., type SJT, 125V/10A, UL listed, 3m max, hospital grade if for USA market
25. Use a power cord that matches the voltage of the power outlet, which has been approved and complies with the safety standard of your particular country.
26. Do not dispose this device in the bin, dispose and recycle it according to national regulation

Industry Canada statement

This device complies with ISED's licence-exempt RSSs. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Le présent appareil est conforme aux CNR d' ISED applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes : (1) le dispositif ne doit pas produire de brouillage préjudiciable, et (2) ce dispositif doit accepter tout brouillage reçu, y compris un brouillage susceptible de provoquer un fonctionnement indésirable.

Caution :

(i) the device for operation in the band 5150-5250 MHz is only for indoor use to reduce the potential for harmful interference to co-channel mobile satellite systems;

Avertissement:

Le guide d'utilisation des dispositifs pour réseaux locaux doit inclure des instructions précises sur les restrictions susmentionnées, notamment :

(i) les dispositifs fonctionnant dans la bande 5150-5250 MHz sont réservés uniquement pour une utilisation à l'intérieur afin de réduire les risques de brouillage préjudiciable aux systèmes de satellites mobiles utilisant les mêmes canaux;

FOR MOBILE DEVICE USAGE (>20cm/low power)

Radiation Exposure Statement:

This equipment complies with ISED radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with greater than 20 cm between the radiator & your body.

Déclaration d'exposition aux radiations:

Cet équipement est conforme aux limites d'exposition aux rayonnements ISED établies pour un environnement non contrôlé. Cet équipement doit être installé et utilisé à plus de 20 cm entre le radiateur et votre corps.

Guidance and manufacturer's declaration – electromagnetic emissions		
The model T60 is intended for use in the electromagnetic environment specified below. The customer or the user of the model HA2402 SERIES should assure that it is used in such an environment.		
Emissions test	**Compliance**	**Electromagnetic environment – guidance**
RF emissions CISPR 11	Group 1	The model T60 uses RF energy only for its internal function. Therefore, its RF emissions are very low and are not likely to cause any interference in nearby electronic equipment.
RF emissions CISPR 11	Class B	The model T60 is suitable for use in all establishments, including domestic establishments and those directly connected to the public low-voltage power supply network that supplies buildings used for domestic purposes.
Harmonic emissions IEC 61000-3-2	Class A	
Voltage fluctuations/ flicker emissions IEC 61000-3-3	Not applicable	

Recommended separation distances between portable and mobile RF communications equipment and the model T60			
The model T60 is intended for use in an electromagnetic environment in which radiated RF disturbances are controlled. The customer or the user of the model T60 can help prevent electromagnetic interference by maintaining a minimum distance between portable and mobile RF communications equipment (transmitters) and the model T60 as recommended below, according to the maximum output power of the communications equipment.			
Rated maximum output power of transmitter W	**Separation distance according to frequency of transmitter** m		
	150 kHz to 80 MHz $d = 1{,}2\sqrt{P}$	**80 MHz to 800 MHz** $d = 1{,}2\sqrt{P}$	**800 MHz to 2,5 GHz** $d = 2{,}3\sqrt{P}$
0,01	0,12	0,12	0,23
0,1	0,38	0,38	0,73
1	1,2	1,2	2,3
10	3,8	3,8	7,3
100	12	12	23
For transmitters rated at a maximum output power not listed above, the recommended separation distance *d* in metres (m) can be estimated using the equation applicable to the frequency of the transmitter, where *P* is the maximum output power rating of the transmitter in watts (W) according to the transmitter manufacturer. NOTE 1 At 80 MHz and 800 MHz, the separation distance for the higher frequency range applies. NOTE 2 These guidelines may not apply in all situations. Electromagnetic propagation is affected by absorption and reflection from structures, objects and people.			

Guidance and manufacturer's declaration – electromagnetic immunity			
The model T60 is intended for use in the electromagnetic environment specified below. The customer or the user of the model T60 should assure that it is used in such an environment.			
Immunity test	**IEC 60601 test level**	**Compliance level**	**Electromagnetic environment – guidance**
Electrostatic discharge (ESD) IEC 61000-4-2	±6 kV contact ±8 kV air	±6 kV contact ±8 kV air	Floors should be wood, concrete or ceramic tile. If floors are covered with synthetic material, the relative humidity should be at least 30 %.
Electrical fast transient/burst IEC 61000-4-4	±2 kV for power supply lines ±1 kV for input/output lines	±2 kV for power supply lines ±1 kV for input/output lines	Mains power quality should be that of a typical commercial or hospital environment.
Surge IEC 61000-4-5	±1 kV line(s) to line(s) ±2 kV line(s) to earth	±1 kV line(s) to line(s) ±2 kV line(s) to earth	Mains power quality should be that of a typical commercial or hospital environment.
interruptions and voltage variations on power supply input lines IEC 61000-4-11	<5 % *U*T (>95 % dip in *U*T) for 0,5 cycle 40 % *U*T (60 % dip in *U*T) for 5 cycles 70 % *U*T (30 % dip in *U*T) for 25 cycles <5 % *U*T (>95 % dip in *U*T) for 5 sec	<5 % *U*T (>95 % dip in *U*T) for 0,5 cycle 40 % *U*T (60 % dip in *U*T) for 5 cycles 70 % *U*T (30 % dip in *U*T) for 25 cycles <5 % *U*T (>95 % dip in *U*T) for 5 sec	Mains power quality should be that of a typical commercial or hospital environment. If the user of the model HA2402 SERIES requires continued operation during power mains interruptions, it is recommended that the model HA2402 SERIES be powered from an uninterruptible power supply or a battery.
Power frequency (50/60 Hz) magnetic field IEC 61000-4-8	3 A/m	3 A/m	Power frequency magnetic fields should be at levels characteristic of a typical location in a typical commercial or hospital environment.
NOTE *U*T is the a.c. mains voltage prior to application of the test level.			

<table>
<tr><th colspan="4">Guidance and manufacturer's declaration – electromagnetic immunity</th></tr>
<tr><td colspan="4">The model HA2402 SERIES is intended for use in the electromagnetic environment specified below. The customer or the user of the model HA2402 SERIES should assure that it is used in such an environment.</td></tr>
<tr><th>Immunity test</th><th>IEC 60601 test level</th><th>Compliance level</th><th>Electromagnetic environment – guidance</th></tr>
<tr><td>Conducted RF
IEC 61000-4-6

Radiated RF
IEC 61000-4-3</td><td>3 Vrms
150 kHz to 80 MHz

3 V/m
80 MHz to 2,5 GHz</td><td>3 Vrms

3 V/m</td><td>Portable and mobile RF communications equipment should be used no closer to any part of the model T60, including cables, than the recommended separation distance calculated from the equation applicable to the frequency of the transmitter.

Recommended separation distance

$d = 1{,}2\sqrt{P}$

$d = 1{,}2\sqrt{P}$ 80 MHz to 800 MHz

$d = 2{,}3\sqrt{P}$ 800 MHz to 2,5 GHz

where P is the maximum output power rating of the transmitter in watts (W) according to the transmitter manufacturer and d is the recommended separation distance in metres (m).

Field strengths from fixed RF transmitters, as determined by an electromagnetic site survey, [a] should be less than the compliance level in each frequency range. [b]

Interference may occur in the vicinity of equipment marked with the following symbol:

  </td></tr>
<tr><td colspan="4">NOTE 1 At 80 MHz and 800 MHz, the higher frequency range applies.
NOTE 2 These guidelines may not apply in all situations. Electromagnetic propagation is affected by absorption and reflection from structures, objects and people.</td></tr>
<tr><td colspan="4">[a] Field strengths from fixed transmitters, such as base stations for radio (cellular/cordless) telephones and land mobile radios, amateur radio, AM and FM radio broadcast and TV broadcast cannot be predicted theoretically with accuracy. To assess the electromagnetic environment due to fixed RF transmitters, an electromagnetic site survey should be considered. If the measured field strength in the location in which the model T60 is used exceeds the applicable RF compliance level above, the model T60 should be observed to verify normal operation. If abnormal performance is observed, additional measures may be necessary, such as reorienting or relocating the model T60.
[b] Over the frequency range 150 kHz to 80 MHz, field strengths should be less than 3 V/m.</td></tr>
</table>

● Detail Instructions

The wireless physiological transmitters are installed and set by the engineer of StreamTeck Inc. The wireless sensor detects physiological signals, including heart rate, breathing rate and body temperature, in a non-contact manner of the static, lying patient. The physiological parameters can be transmitted to the central monitoring software at a nursing station in long-term institutions or the general wards of medical institutions via a wireless network for integration. The monitoring information is used to display, record, trace physiological parameters. The software is capable of alarm notification function, including alarm setting and centralized monitoring and management of a single or multiple beds, which is suitable for the nursing station of the long-term care institutions and the general wards of medical institutions. The system provides continuous real-time display and storage of physiological parameters and vacancy bed detection and can trace back the stored data. The central monitoring software should be operated by professional medical and nursing staff. It can only be used as assistance for medical and nursing staff instead of clinical treatment and diagnosis.

- Operation Steps

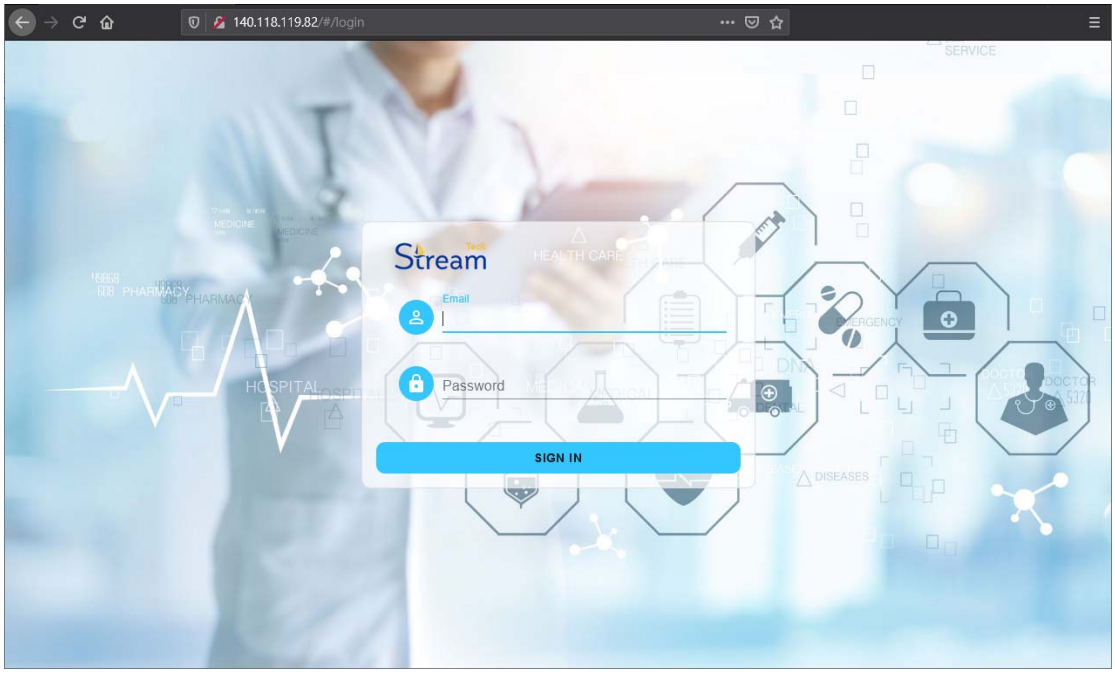
Wireless Physiological Transmitter

1. Install the wireless physiological transmitter at a distance of 50 cm above the hospital bed (show as the picture). After the device is set up, connect the device to the power supply.

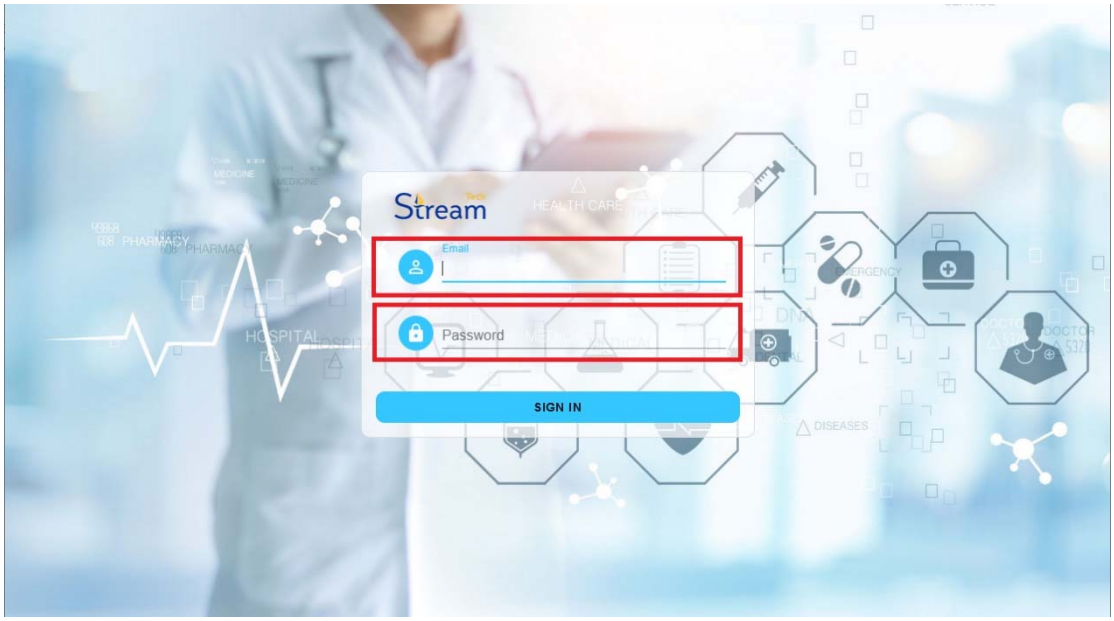
2. The device will detect the physiological signals via RF radio and infrared rays and transmit them to the receiver (server), the server computer at the nursing station of long-term care institution, nursing home or the general ward of a medical institution for monitoring.

Central Monitoring Software

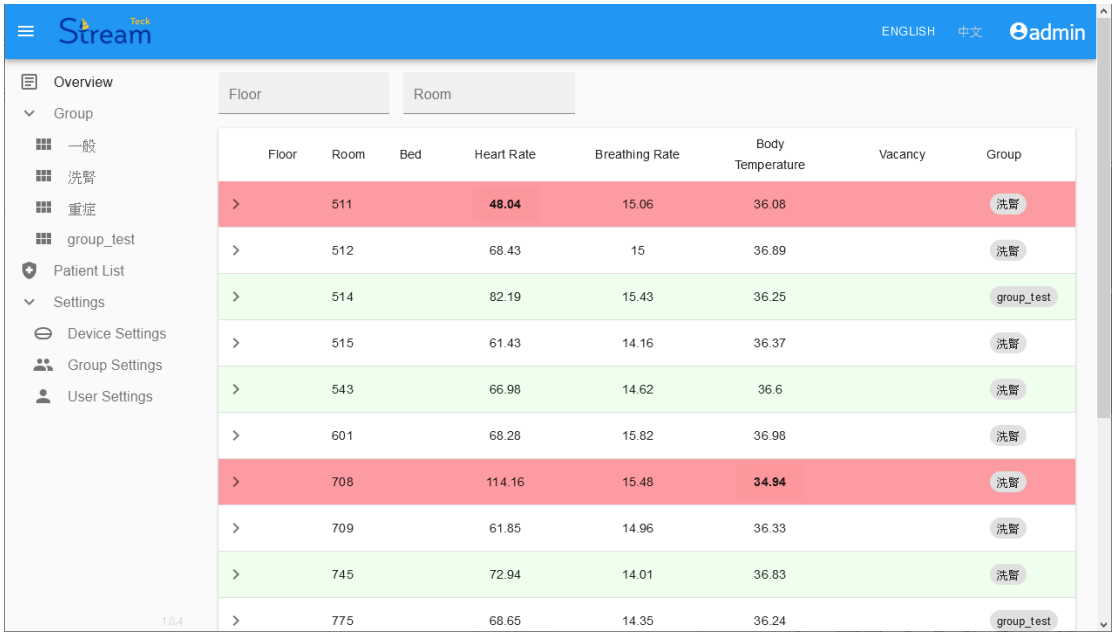
1. Open the browser, enter the central monitoring software URL and enter the homepage.



2. Enter account and password to log in.

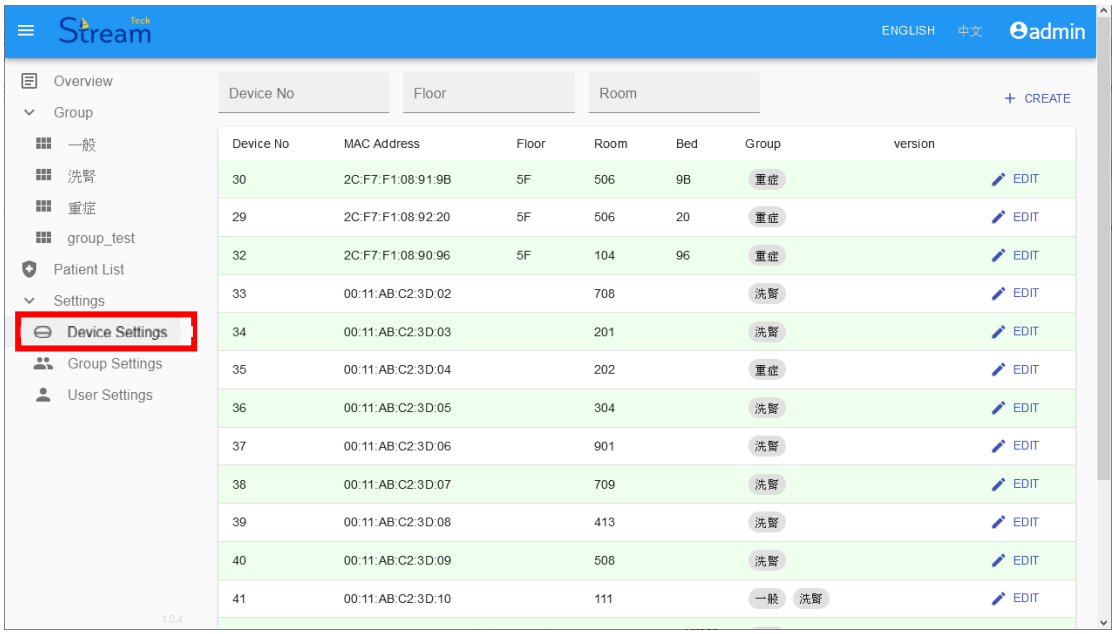


3. Enter the main screen of the monitoring system.

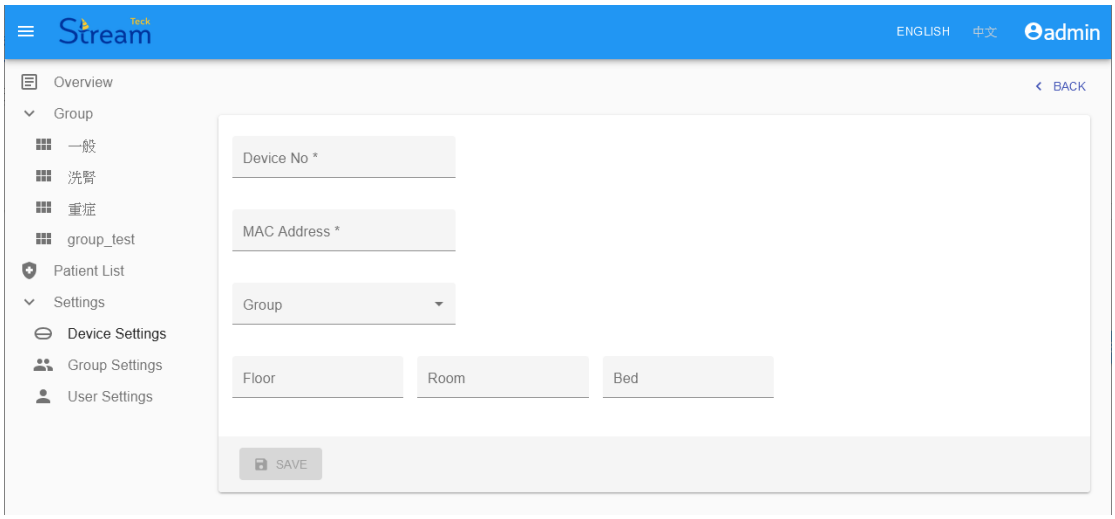


4. Device setting

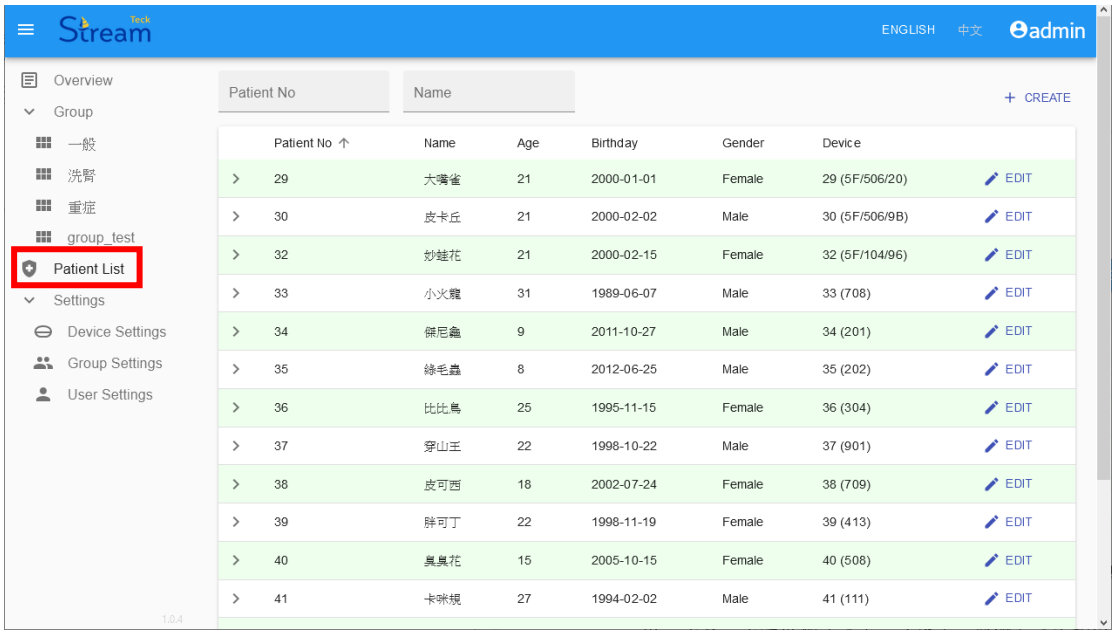
Press the left side button “device setting.”



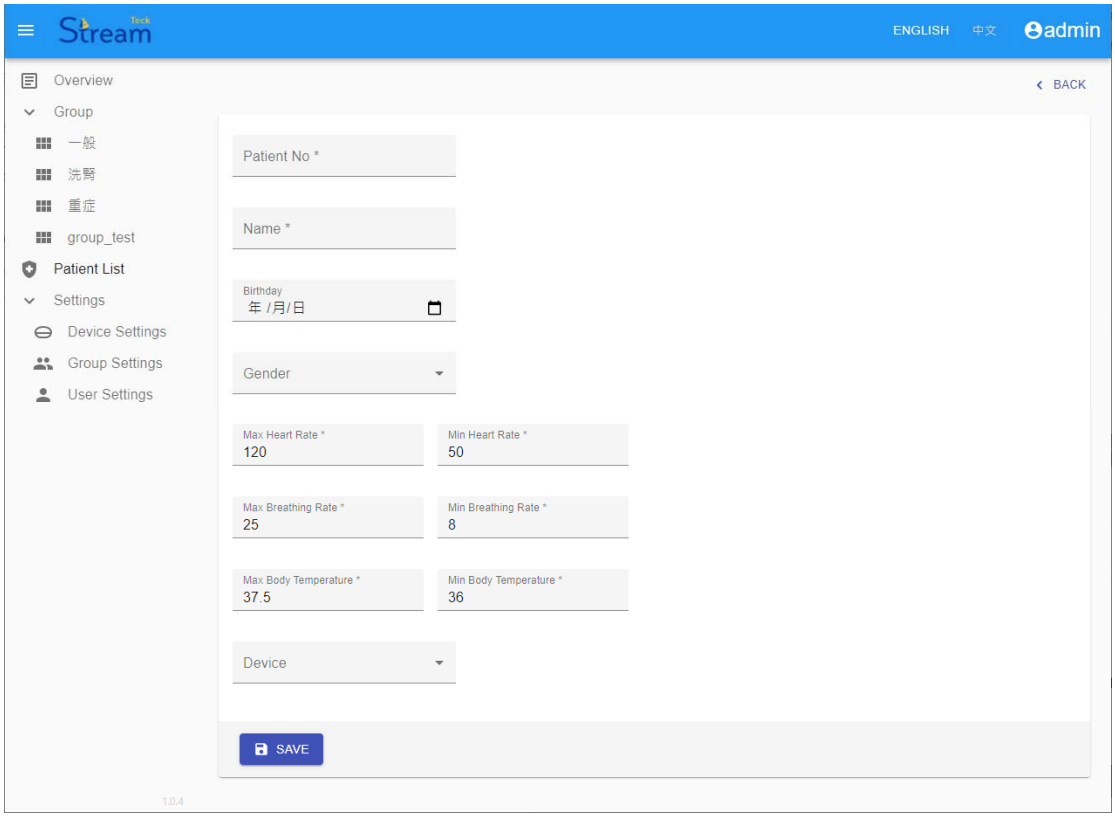
Press the “+create” button, jump to the next page, enter device number, MAC address and the location of the device, including the group, floor, room and bed number, then press “save,” go back to the previous page.



5. Patient data setting:
Press the left side button “Patient List.”



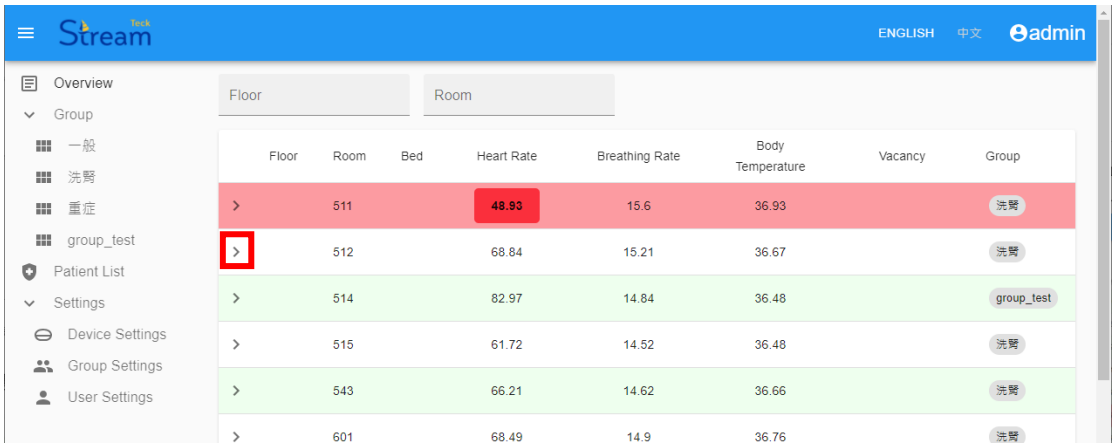
Press the “+create” button, jump to the next page, enter patient No., name, birthday, physiological alarm threshold (heart rate, breathing rate and body temperature), and the related device, then press “SAVE.”



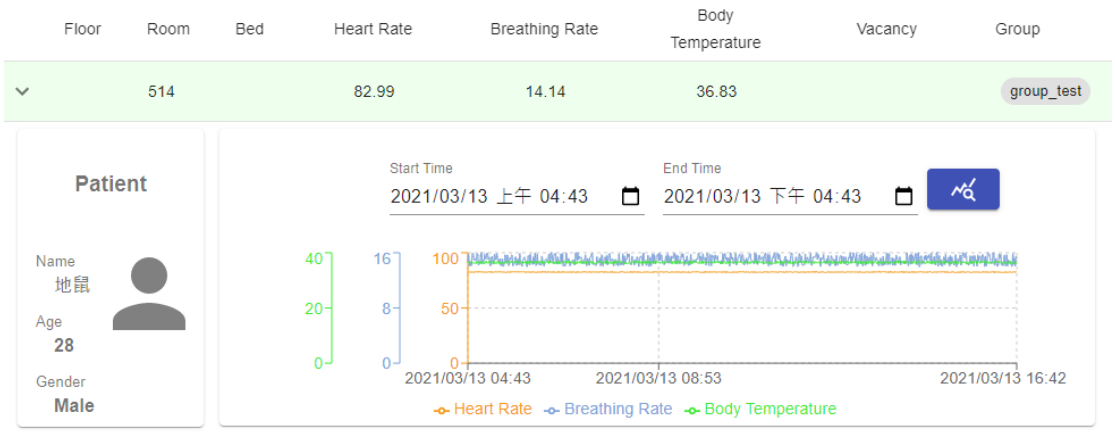
6. Group setting:
   Press the left side button “Group Setting.”

   Press the “+create” button, jump to the next page, enter the group name and the group description, then press “SAVE.”

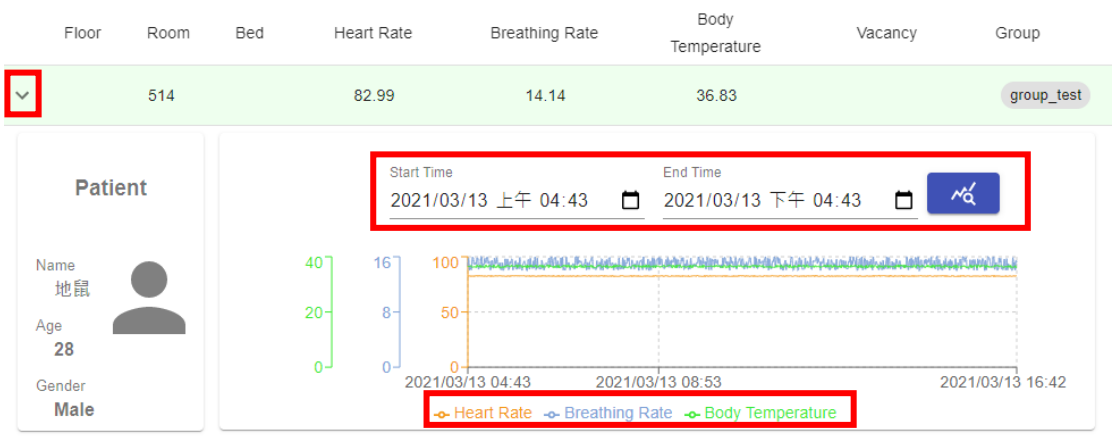
7. History physiological data record and trace
   Press “Overview” and see the monitoring data of all patients. Click “>” unfold the patient’s personal information.



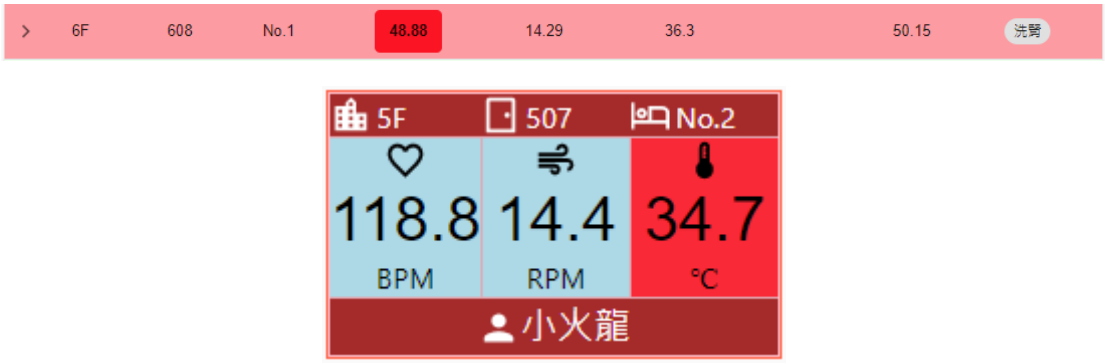
   The left side shows the patient’s personal information, including name, age and gender. The right side shows every history data of each physiological parameter.



   Choose “Start Time” and “End Time,” then press the button  to adjust the observation time. Click the below button like heart rate, breathing rate and body temperature to choose the physiological data you want to see. Press the left side button “V” to fold the history data.

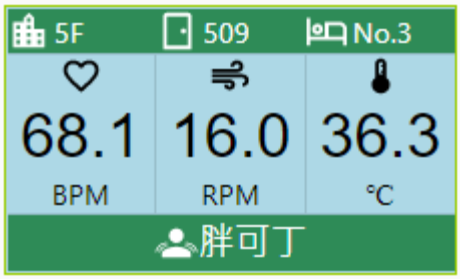


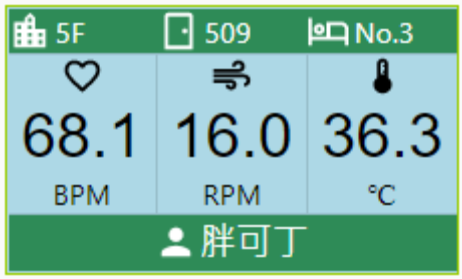
8. Alarm status: when detecting that the physiological is higher or lower the set threshold, the status bar will turn red, and the physiological parameter will flash a red warning.



If the patient is not in bed, the status bar turns orange.

The movement of the patient, like turning over, will affect physiological signal detection accuracy. Therefore, any motion of the patient will show on the central monitoring software, and the showing parameter number will be the last data before the patient moves.



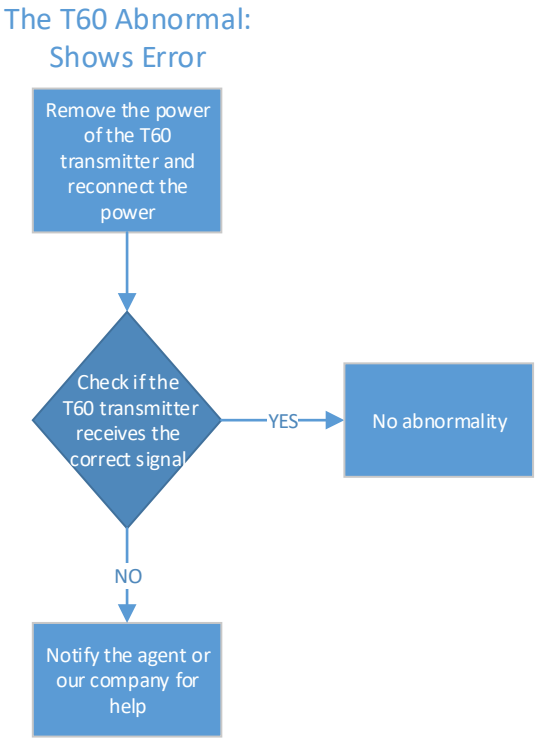


- Troubleshooting

Wireless Physiological Transmitter (T60)

If there is an unexpected situation or other concerns about the wireless physiological signal transmitter, please remove the power supply of the device and reconnect it after five seconds. If there is still a problem after reconnecting the power supply to the device, please record the current situation and notify the agent or our company for assistance.

1. Physiological signal measurement
   Abnormal state: heart rate, breathing rate, and body temperature of the central monitoring software show “Error” text.
   Handling: remove the power of the T60 transmitter and reconnect. Once the monitor still shows “Error” text, please notify the agent or our company for assistance.

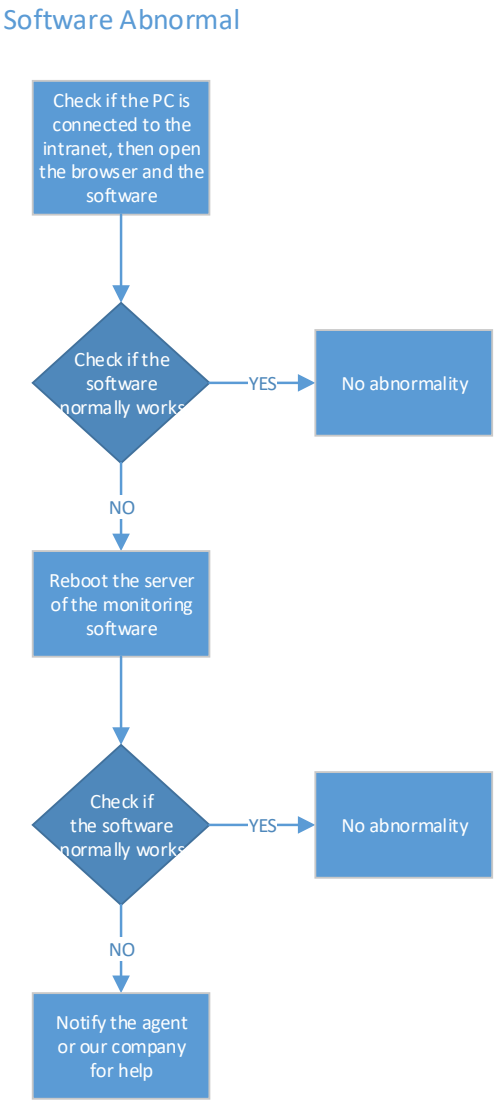


Central Monitoring Software

If there is an unexpected situation or other concerns about the central monitoring software, please close the software and re-start the software, or turn off and turn on the server computer and start the software. If there is still a problem, please record the current situation and notify the agent or our company for assistance.

When the software is abnormal, it may be a problem with the network or server of the computer using the software.

1. Check if the computer is connected to the intranet, then open Google chrome browser to connect the software URL. If you cannot connect to the management console correctly, please check the server status.
2. Check if the server is connected to the intranet, then reboot the server. If you cannot connect to the management console correctly, please notify the agent or our company for help.



- Regular Maintenance

Wireless physiological transmitter:
The wireless physiological transmitter is a fixed type. In order to ensure the safety of use, please regularly check whether the fixing crews and brackets are rusted and loose or not. Hence wipe the device with a damp fabric to clean up the dust. After a disaster such as an earthquake, please check the device is not loose.
Central monitoring software:
Regularly back up the patient's physiological signal history stored by the software to avoid data loss caused by the malfunction of the server computer.

- Authorized maintenance service

This product does not provide users with self-maintenance. If you need any maintenance, please contact the agent or our company.

Distributor name: StreamTeck Scientific Inc.

Distributor address: No. 174, Huamei St., West Dist., Taichung City 403, Taiwan

Manufacturer name: WelFare Technology Inc.

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Marketing time：

- Operational Principle

1. The principle and process of the wireless sensor detecting heart rate and breathing rate

【Symbol Description】

100：Wireless physiological signal transmitter

110：Processor

120：Storage media

121：Communication module

122：Signal processing module

130：Transceiver

31、32： Wireless signal

41、42： Reflected signal

51、52、53、54：Time period

S201、S202、S203、S204、S205、S206、S207、S208、S209、S210、S211、S212、S213、S214、S401、S402、S403、S404、S405、S406：Steps

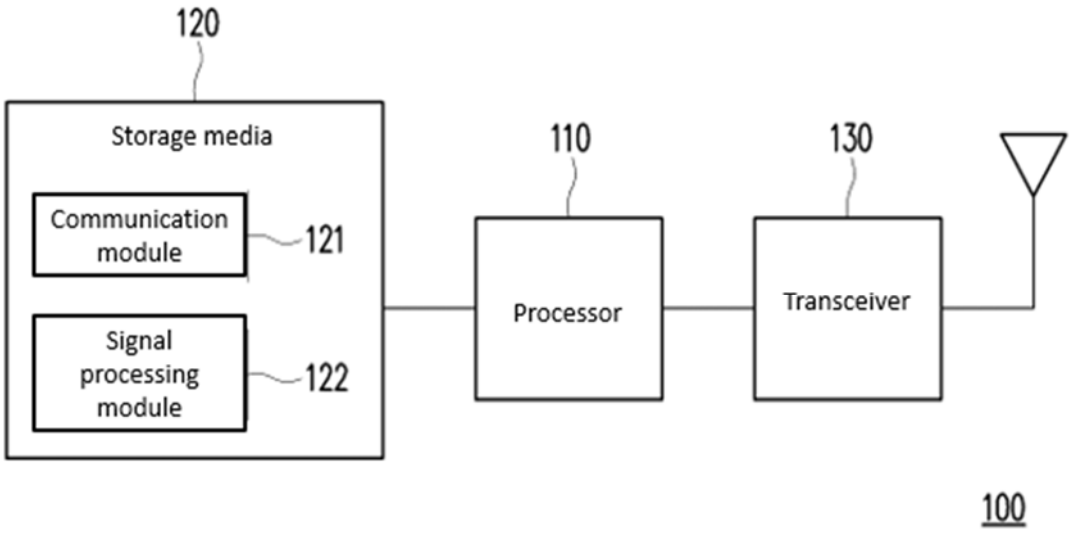


Fig. 1

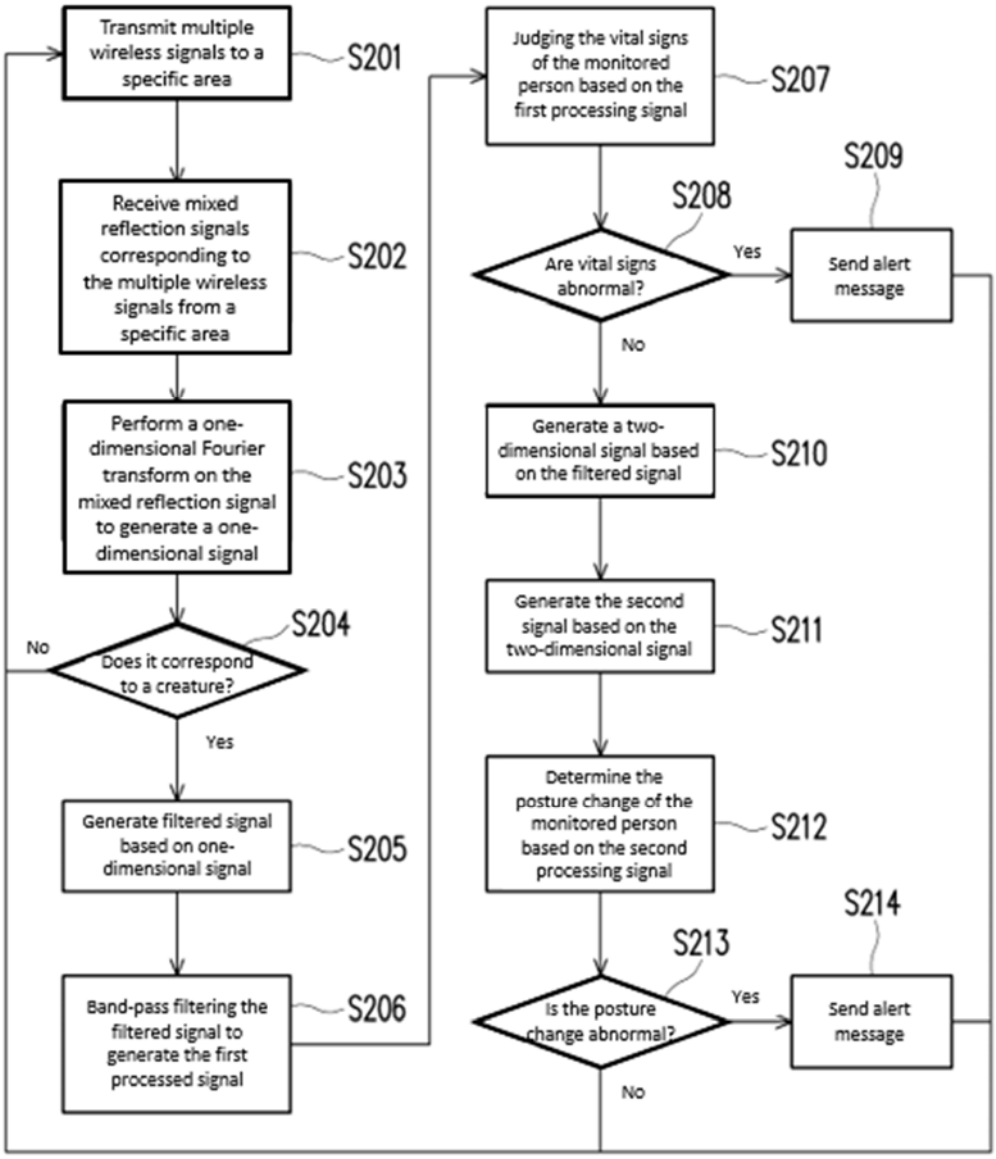

Transmit multiple wireless signals to a specific area
S201
Receive mixed reflection signals corresponding to the multiple wireless signals from a specific area
S202
Perform a one-dimensional Fourier transform on the mixed reflection signal to generate a one-dimensional signal
S203
Does it correspond to a creature?
S204
No
Yes
Generate filtered signal based on one-dimensional signal
S205
Band-pass filtering the filtered signal to generate the first processed signal
S206
Judging the vital signs of the monitored person based on the first processing signal
S207
Are vital signs abnormal?
S208
Yes
Send alert message
S209
No
Generate a two-dimensional signal based on the filtered signal
S210
Generate the second signal based on the two-dimensional signal
S211
Determine the posture change of the monitored person based on the second processing signal
S212
Is the posture change abnormal?
S213
Yes
Send alert message
S214
No

Fig. 2

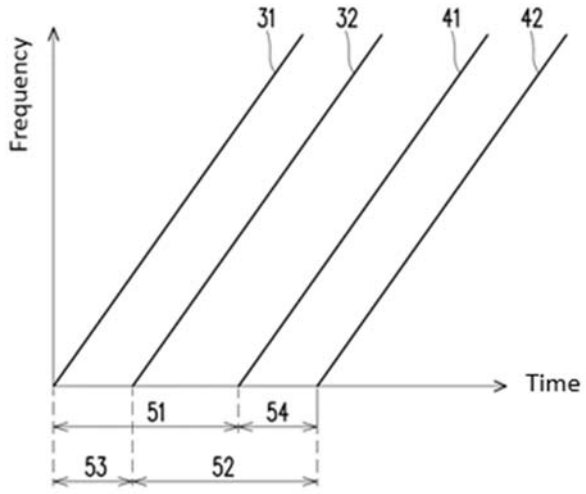

Frequency
31
32
41
42
Time
51
54
53
52

Fig. 3

【0001】 The monitoring device 100 (wireless physiological signal transmitter) in Fig. 1 is suitable for monitoring people's status in a specific area. The monitoring device 100 may include a processor 110, a storage medium 120, and a transceiver 130.

【0002】 The processor 110 such as a central processing unit (CPU), other programmable micro control units (MCUs) of the general-purpose or special-purpose, microprocessor, digital signal processor (DSP), programmable controller, application-specific integrated circuit (ASIC), graphics processing unit (GPU), image signal processor (ISP), an image processing unit (IPU), an arithmetic logic unit (ALU), a complex programmable logic device (CPLD), field-programmable gate array (FPGA) or other similar components or a combination of the above components. The processor 110 may be coupled to the storage media 120, the transceiver 130 and access and execute multiple modules and various application programs stored in the storage media 120.

【0003】 The storage media 120 such as any fixed or removable random access memory (RAM), read-only memory (ROM), flash memory, hard disk drive (HDD), solid-state drive (SSD) or similar components or a combination of the above components, and used to store multiple modules or various applications that can be executed by the processor 110. In this example, the storage media 120 can store multiple modules, including a communication module 121 and a signal processing module 122, the functions described later.

【0004】 In step S201, the communication module 121 can transmit multiple wireless signals to specific areas through the transceiver 130 at a plurality of different time points. The specific area is that the patient is stationary and lying on the bed.

【0005】 In step S202, the communication module 121 receives a mixed reflection signal corresponding to wireless signals' plurality from a specific area through the transceiver 130. The mixed reflection signal includes corresponding to wireless signals' plurality, respectively of multiple reflection signals. Fig. 3 illustrates a schematic diagram of multiple wireless signals and mixed reflection signals according to an instance of this invention. Suppose the plurality of wireless signal comprising a wireless signal 31 and a radio signal 32; the mixed reflection signal includes at least a reflection signal 41 corresponds to the wireless signal 31, and a reflection signal 42 corresponds to the wireless signal 32. In Fig. 3, the time period 51 represents the time it takes from transmitting the infinite signal 31 to receiving the reflected signal 41, the time period 52 represents the time it takes from transmitting the infinite signal 32 to receiving the reflected signal 42, the time period 53 represents the time difference between the transmission of the wireless signal 31 and the transmission of the wireless signal 32. Period 54 represents the time difference between receiving the reflected signal 41 and receiving the reflected signal 42.

【0006】 In Fig. 2, in step S203, the signal processing module 122 performs a one-dimensional Fourier transform on the mixed reflection signal to generate a one-dimensional signal. The one-dimensional signal includes points corresponding to at least one object of the reflected wireless signal cloud data.

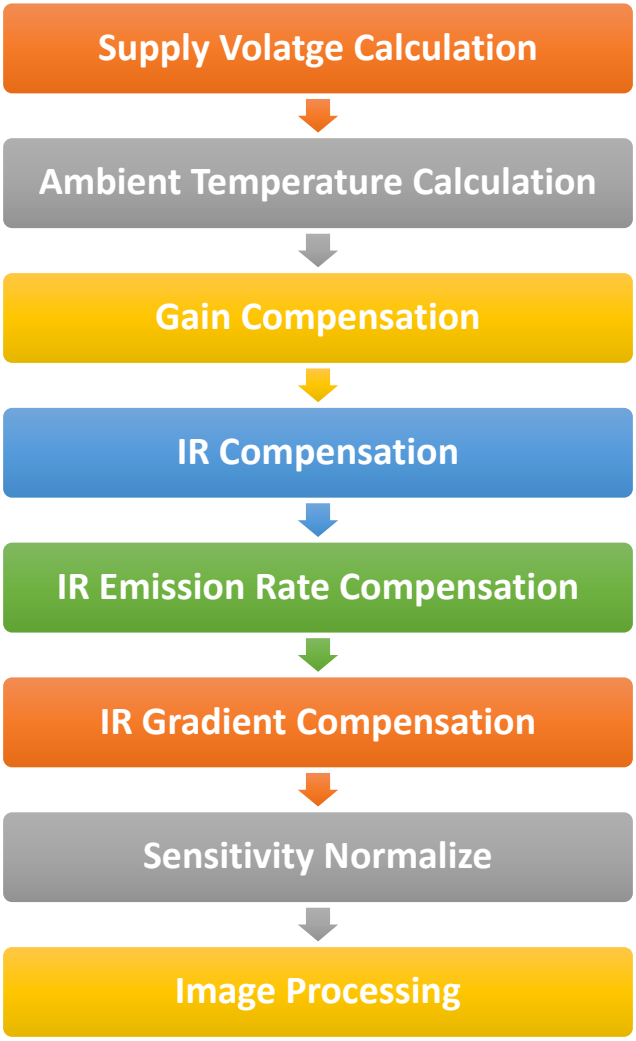
【0007】 In step S204, the signal processing module 122 can determine whether the one-dimensional signal corresponds to a living creature. If the one-dimensional signal corresponds to a biological signal, step S205 is entered. If the one-dimensional signal is not a biological signal, go back to step S201. For example, the signal processing module 122 can determine whether the mixed reflection signal contains the person's information to be monitored based on the value of each carrier in the one-dimensional signal. If multiple values of multiple carriers that can correspond to vital signs or posture changes in the one-dimensional signal are all zero, it means that the mixed reflection signal does not contain the information of the person to be monitored (or that multiple wireless signals have not scanned creatures in a specific area). Therefore, the signal processing module 122 can determine that the one-dimensional signal is not a signal corresponding to a creature. On the other hand, if at least one of the multiple values of multiple carriers that can correspond to the vital signs in the one-dimensional signal is not zero, it means that the mixed reflection signal contains information about the person to be monitored (or represents multiple wireless signals have scanned creatures in a specific area). Therefore, the signal processing module 122 can determine that the one-dimensional signal corresponds to a creature.

【0008】 In step S205, the signal processing module 122 generates a filtered signal based on the one-dimensional signal. Specifically, the signal processing module 122 determines that the specific carrier corresponds to a non-living creature according to the value of the specific carrier of the one-dimensional signal, and in response to the specific carrier corresponding to the non-living creature, convert the specific carrier from the one-dimensional Signal filtering to generate filtered signals.

【0009】 In step S206, the signal processing module 122 may perform band-pass filtering on the filtered signal to generate a first processed signal. The purpose of this step is to filter out signals that are not vital signs signals. Generally speaking, the human breathing signal frequency is approximately between 0.1 Hz and 0.6 Hz, and the frequency of the human heartbeat signal is approximately between 0.8 Hz and 4 Hz. Therefore, the signal processing module 122 can be configured to filter signals below 0.1 Hz and above 4 Hz, thereby generating the first processed signal.

In step S207, the signal processing module 122 can determine the monitored person's vital signs according to the first processed signal, where the vital signs include breathing rate and heart rate.

2. IR Sensor temprature algorithm



Professional installation instruction

1. Installation personal

   This product is designed for specific application and needs to be installed by a qualified personal who has RF and related rule knowledge. The general user shall not attempt to install or change the setting.

2. Installation location

   The product shall be installed at a location where the radiating antenna can be kept 20 cm from nearby person in normal operation condition to meet regulatory RF exposure requirement.

3. External antenna

   Use only the antennas which have been approved by the applicant. The non-approved antenna(s) may produce unwanted spurious or excessive RF transmitting power which may lead to the violation of FCC/IC limit and is prohibited.

4. Installation procedure

   Please refer to user's manual for the detail.

5. Warning

   Please carefully select the installation position and make sure that the final output power does not exceed the limit set force in relevant rules. The violation of the rule could lead to serious federal penalty.

Instructions d'installation professionnelle

1. Installation

   Ce produit est destine a un usage specifique et doit etre installe par un personnel qualifie maitrisant les radiofrequences et les regles s'y rapportant. L'installation et les reglages ne doivent pas etre modifies par l'utilisateur final.

2. Emplacement d'installation

   En usage normal, afin de respecter les exigences reglementaires concernant l'exposition aux radiofrequences, ce produit doit etre installe de facon a respecter une distance de 20 cm entre l'antenne emettrice et les personnes.

3. Antenn externe.

   Utiliser uniiquement les antennes approuvees par le fabricant. L'utilisation d'autres antennes peut conduire a un niveau de rayonnement essentiel ou non essentiel depassant les niveaux limites definis par FCC/IC, ce qui est interdit.

4. Procedure d'installation

   Consulter le manuel d'utilisation.

5. Avertissement

   Choisir avec soin la position d'installation et s'assurer que la puissance de sortie ne depasse pas les limites en vigueur. La violation de cette regle peut conduire a de serieuses penalites federales.