

LEPU 乐普

Installation and user's manual

LFR30B INFRARED FOREHEAD THERMOMETER

Contents	2
Foreword	2
Chapter 1 Safety instructions	3
1.1 Warning	3
1.2 Note	3
1.3 Description of graphic symbols	4
1.4 Environmental protection	4
Chapter 2 Product description	5
2.1 Scope of application	5
2.2 Contraindication	5
2.3 Structural composition	5
2.4 Product photo	5
2.5 Display screen	5
2.6 Key parts	6
2.7 Packing list	6
Chapter 3 Why the infrared forehead thermometer is required	6
3.1 Quick	6
3.2 Accurate and reliable	6
3.3 Simple and easy to use	6
3.4 Safe and hygienic	7
Chapter 4 Product installation and use	7
4.1 Check	7
4.2 Install or replace batteries	7
4.3 Starting up	7
4.4 Placement	8
4.5 Mode switch	8
4.6 Sound switch settings	8
4.7 Body temperature measurement	9
4.8 Object temperature measurement	9
4.9 Memory query	10
4.10 Memory deletion	10
4.11 Low battery indicator	10
4.12 Shutdown	11
Chapter 5 Special instructions for safe use	11
Chapter 6 Calibration	12
Chapter 7 Troubleshooting	13
7.1 Measured temperature too high	13
7.2 Measured temperature too low	13
7.3 Ambient temperature out of range	13
7.4 Other error messages	14

Chapter 8 Cleaning and Maintenance	14
Chapter 9 Warranty service	15
Chapter 10 Product specification	16
10.1 Product safety specification	16
10.2 Product environment specification	16
10.3 Product hardware specification	16
10.4 Product measurement specification	16
Chapter 11 Product registration information	17
Chapter 12 Guide of EMC	18
Certificate of compliance	20
Warranty Card	20

Chapter 1 Safety Instructions

1.1 Warning

- Keep the thermometer out of reach by children under 12 years old alone.
- Do not use the thermometer for any other purpose than intended.
- The thermometer is not waterproof, do not immerse it in water or other liquids of any kind.
- Do not keep the thermometer in extreme environment.
- Please keep a distance of 0-5cm between the thermometer sensor and the eye and brow when measuring.
- If the infrared thermometer is kept in a place where the temperature is lower or higher than that of the place where it is used, please put it in the room where it is to be used 30 minutes in advance.
- If the thermometer itself or its scanning device is damaged, do not continue to use, do not repair the damaged thermometer without authorization, and do not insert any sharp objects into the scanning area or other openings of the thermometer.
- The thermometer measurement does not substitute for diagnosis by physicians.
- This infrared forehead thermometer does not apply to premature or underage infants.
- Do not allow children to take their own temperature without supervision.
- Do not remove the thermometer until you hear the beep.
- Please try to take the temperature in the same place; otherwise you may get different results.
- Do not hold the sensor when measuring to avoid the error code due to temperature instability.

1.2 Note:

- Please follow some instructions offered in Cleaning and Maintenance to clean the thermometer.
- Remove the battery when the thermometer will not be used for a long time.
- The thermometer contains high quality precision parts; do not drop the thermometer or expose it to shock or vibration; do not twist the thermometer or its sensor.
- Seek medical treatment in time in case of dysphoria, vomiting, diarrhea, dehydration, appetite or behavioral pattern changes of unknown reasons.

- Please note the storage and use conditions in the section of "Product Specifications".
- Protect the thermometer sensor from dirt and dust.

1.3 Description of graphic symbols

Symbol	Description	Symbol	Description
	Warning		Upward
	Avoid rain		Avoid sunlight
	Type BF application part		Fragile
	Sequence number		Production date
	Temperature limit		Humidity limit
	Disposal instructions for electronic devices		Consult the instruction manual
	Validity		Atmospheric pressure
	Manufacturer		

1.4 Environmental protection

The company designs and manufactures products for body temperature measurement according to the safety and environmental protection requirements. The equipment will not cause any harm to people or the environment if any outer cover of the product is not taken apart or the equipment is always used in a correct way. When materials that are potentially hazardous to the environment must be used, as permitted by laws and regulations, they must be handled in the right way.

Warning:

Do not dispose of the waste generated by the body temperature measurement products along with industrial or domestic waste. According to the local and national environmental regulations, the waste generated by ultrasonic equipment should be disposed of in the right way, and the equipment should be discarded when it reaches the service life. Reusable materials can be recycled by qualified waste firms to reduce environmental pollution. Please consult our service organization for matters concerned or dispose properly according to the local waste collection methods.

Chapter 2 Product Description

2.1 Scope of application

The product applies to showing the body temperature of the subject by measuring the thermal radiation on the forehead.

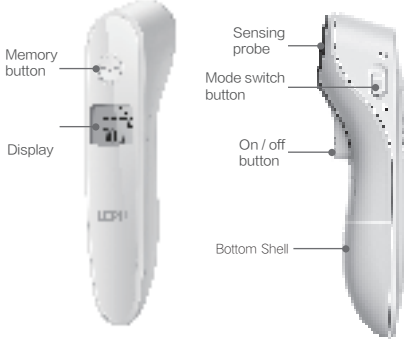
2.2 Contraindication

N/A

2.3 Structural composition

The infrared forehead thermometer is composed of a sensor, a button, a display screen, a battery cover and a body.

2.4 Product photo



2.5 Display screen



1. Object mode symbol	5. Unit symbol
2. Temperature display value	6. Mnemonic symbol
3. Sound switch symbol	7. Low battery symbol
4. Body mode symbol	8. Decimal point

2.6 Key parts

NO	Component name	Specification and model
1	Sensor	HMS-K1C1
2	MCU	HY1P5A

2.7 Packing list

Names of articles	Quantity
Instruction manual, including warranty card and certificate of conformity	1
2 batteries, AAA 1.5V	1
Main engine	1

* Product packaging should contain the items described above. In case of any shortage, please contact Shenzhen LEPU Intelligent Medical Equipment Co., Ltd. or the agent distributor in time.

Chapter 3 Why the Infrared Forehead Thermometer is Required?

3.1 Quick

With the innovative infrared technology, it can quickly measure the body temperature in non-contact mode.

3.2 Accurate and reliable

By measuring the heat energy emitted from the forehead and calculating the body temperature accordingly, accurate readings can be obtained as long as it is held within a range of 5cm when measuring.

3.3 Simple and easy to use

The infrared forehead thermometer is about inductive measurement. It can easily measure the body temperature, even for sleeping children. Compared with the rectal thermometer, a non-contact frontal thermometer can reduce the discomfort of children, and it is simpler and more practical than other thermometers in use.

3.4 Safe and hygienic

Contactless measurement can prevent the spread of bacteria; it is absolutely safe for children and adults;

Chapter 4 Product Installation and Use

4.1 Check

Please check the packing case carefully before unpacking. In case of any damage found, please contact the carrier immediately. Open the package correctly, take out the infrared forehead thermometer and other components from the case with care, and check them one by one against the packing list. When the equipment is moved to a different environment, the difference in temperature or humidity may lead to condensation to it, in which case no use is allowed before condensation disappears.

4.2 Install or replace batteries

The first step after unpacking is to install the battery. The battery holder is on the back of the infrared forehead thermometer. The battery installation steps are as follows:

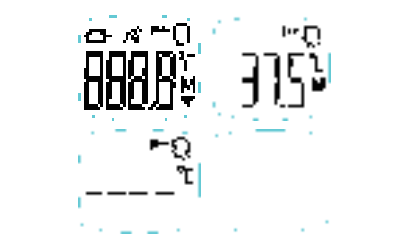
- (1) Open the battery cover.
- (2) Insert the battery and keep +, - poles of the battery in line with +, - poles of the battery holder.
- (3) Close the battery cover.

Note:

Please use 2 AAA alkaline batteries. Please use batteries if the same type, do not mix used and new batteries. Remove the battery when the thermometer will not be used for a long time. The symbol appearing on the screen indicates that the battery runs out; please replace the battery before measuring.

4.3 Starting up

Press the "ON/OFF" button, then the backlight of the display comes on, the LCD is shown in full screen and displays the latest group of memory values, the equipment enters the waiting state for measurement; at this time, the backlight goes out, the LED on the forehead keeps flashing, and the equipment gets ready for measurement. If there is no operation for about 60 seconds, the equipment will shut down automatically.

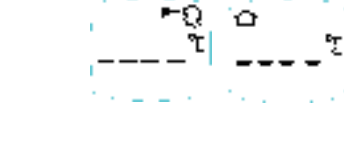


4.4 Placement

Place the thermometer between the eyebrows, at a distance within 5cm from the center of the forehead; In non-contact mode, the blue pilot light will point to the area you are aiming at. If the eyebrow area is covered by hair, sweat or dirt, please clean it in advance to improve the accuracy of the reading. Keep the thermometer and forehead still when measuring, as movement will negatively affect the temperature reading.

4.5 Mode switch

Toggle the slide switch to select the temperature measurement / calibration mode



4.6 Sound switch settings

In shutdown mode, press and hold the button "Memory", it first displays "M", which flashes along with the symbol "M", press and hold the memory button for more than 4 seconds, it displays "C", a human icon + sound icon; if the sound is on currently, a "bi" will be heard when entering this mode.

Note:

The equipment will shut down automatically if there is no button press for 60 seconds. It defaults to the current setting after rebooting, while it will save previous settings in case of power failure.

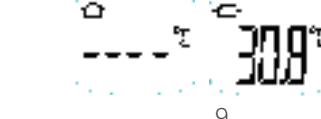
4.7 Body temperature measurement

Toggle the slide switch to the calibration mode, press the button "ON/OFF measurement" to turn on the forehead thermometer, align the thermometer sensor to the position between eyebrows within 5cm from the forehead, press the button "ON/OFF measurement", at this time, the distance focusing light comes on, quickly adjust the appropriate distance (preferably when the focusing light spot is within the pea grain size), when a "bi" is heard about 1S later (no "bi" heard if the sound is disabled), it means that the body temperature has been measured, with the result displayed on the LCD screen.



4.8 Object temperature measurement

After the calibration is completed, press the button "ON/OFF measurement" to turn on the thermometer, align the thermometer sensor to the object to be measured, press the button "ON/OFF measurement", at this time, the distance focusing light comes on, quickly adjust the appropriate distance (preferably when the focusing light spot is within the pea grain size), when a "bi" is heard about 1S later (no "bi" heard if the sound is disabled), it means that the surface temperature has been measured, with the result displayed on the LCD screen.



Note:

When the measured temperature is <40.0°C, the LCD backlight is green; when the measured temperature is ≥40.0°C, the LCD backlight is green red and gives a warning with sound of "Bi", "Bi", "Bi".

4.9 Memory query

Press the button "Memory" to start up the thermometer, the screen displays "M" and the symbol "M" flashes. Press the button "Memory" again to display the number of memory groups + M icon, and about 1 second later, show the display memory value + the symbol "M" flashes.



4.10 Memory deletion

In shutdown mode, press and hold the button "Memory", the screen displays 4 seconds later at first, and keep holding to clear the memory value 8 seconds later, at this time, it shows "CLR" + "M", which flashes with the sound of "Bi-Bi-Bi". After clearing, the equipment will shut down automatically.



4.11 Low battery indicator

When the battery voltage is below 2.00V, only the low-voltage symbol will appear after starting up, and it cannot be used for measurement before replacement of the battery.



4.12 Shutdown

The equipment will shut down automatically if there is no operation for 60 seconds.



Chapter 5 Special Instructions for Safe Use

You should know the normal body temperature of individuals when they are healthy, which will help you to accurately judge whether they have a fever. To get the normal body temperature, please take more measurements when they are healthy. The normal temperature of children can be as high as 37.7°C or as low as 36.1°C. Please confirm it with a standard electronic thermometer.

The human body can regulate the temperature to keep the normal body temperature within a certain fluctuation range, up to 1°C within a day. Besides, the internal temperature of the human body, i.e. the body core temperature, is different from the surface temperature of the skin, so we cannot simply define what temperature is "normal", as the body temperature is always in connection with the measurement site. The level of body temperature is also affected by ambient temperature, age, sleep time, hormonal readiness and physical activity.

Note:

Avoid taking the temperature until after 30 minutes has lapsed after 30 minutes in the room (the subject to be measured and the infrared forehead thermometer should be at the same ambient temperature for at least 30 minutes).

Keep the infrared forehead thermometer and forehead still when measuring, do not move the thermometer before the last beep is heard. Do not take the baby's temperature immediately after breastfeeding.

Wait a few minutes before taking the temperature after waking up. Do not eat, drink or do any other physical activity before or during the temperature measurement. If there is a hat on head, please take it off and wait for 10 minutes before taking the temperature. Please clean the dirt or hair on forehead before taking the temperature. Front bangs may cause readings to rise. Wait for 10 minutes before taking the temperature after cleaning the forehead. Please take the temperature in strict accordance with the instructions. Temperature readings may be affected by improper placement.

For the following circumstances, it is recommended to measure the same site three times, and take the highest one as the final.1) Newborn babies less than 100 days old. 2) Children under three years old, with low immunity and greatly affected by fever on health. 3) The user learns to use the infrared forehead thermometer for the first time, who has little knowledge about the operation and fails to get stable readings. If patients intend to take body temperature by their own, we recommend contact measurement.

Chapter 6 Calibration

The infrared forehead thermometer has been calibrated before delivery from the factory. If you have any doubt about its accuracy, please contact the after-sales service. We recommend technical inspection for the measurement every two years, and it is required to comply with the applicable national regulations of the local place. Technical inspection for the measurement may be carried out by the government agencies in charge or by authorized fee-paying maintenance services.

Chapter 7 Troubleshooting

The infrared forehead thermometer has been calibrated before delivery from the factory. If you have any doubt about its accuracy, please contact the after-sales service. We recommend technical inspection for the measurement every two years, and it is required to comply with the applicable national regulations of the local place. Technical inspection for the measurement may be carried out by the government agencies in charge or by authorized fee-paying maintenance services.

7.1 Measured temperature too high

Error message on screen	Meaning of show	Possible causes and solutions
	The ambient temperature is lower than 5°C	Move to another warm room
	The ambient temperature is higher than 40°C	Move to another cold room
	Measured body temperature is too high (above 43.0°C)	The result exceeds the measurement range limit
	Measured object temperature is too high (above 100°C)	The result exceeds the measurement range limit

7.2 Measured temperature too low

Error message on screen	Meaning of show	Possible causes and solutions
	Measured body temperature is too low (below 32.0°C)	The result exceeds the measurement range limit
	Measured object temperature is too low (below 0°C)	The result exceeds the measurement range limit

7.3 Ambient temperature out of range

Error message on screen	Meaning of show	Possible causes and solutions
	The ambient temperature is lower than 5°C	Move to another warm room
	The ambient temperature is higher than 40°C	Move to another cold room

7.4 Other error messages

Error message on screen	Meaning of show	Possible causes and solutions
	Esprion error	Please contact the after-sales service.
	Hardware error	Please contact the after-sales service.

Chapter 8 Cleaning and Maintenance

Clean with a dry soft cloth. If the engine is particularly dirty, wipe with a wet and wrung out cloth and then dry it with a dry cloth. Disinfect the product only when necessary; disinfection is recommended to carry out by wiping the product surface twice with disinfectant. Do not soak or use gas for disinfection. Use of medical alcohol is recommended.

After-sale service unit: Shenzhen LEPU Intelligent Medical Equipment Co., Ltd. Address of after-sale service unit: BLD 9, Baiwangxin in High-Tech Industrial Park, Songbai Road, Xili Street, Nanshan District, Shenzhen

After-sale service phone: 400-830-9392

Chapter 10 Product Specification

10.1 Product safety specification

Parameter	Specification
Shock protection type	Equipment supplied with internal power
Shock protection grade	Type BF
Operating mode	Continuous
Movement level	Transportable equipment
EMC group	Class B, Group 1

10.2 Product environment specification

Environment	Specification
Operating temperature	15°C ~40°C
Storage temperature	-20°C ~+55°C
Humidity range	Storage humidity: ≤ 85%, non-condensing
Working air pressure	70 kPa ~100 kPa
Storage air pressure	70 kPa ~100 kPa

10.3 Product hardware specification

Parameter	Specification
Product name	Infrared Forehead Thermometer
Product model	LFR30B
Size	About 166 (SL) mm × 26V (mm) × 48 (H) mm
Weight	About 85g (including battery)
Display screen	Segmented LCD display screen
Power supply	1.5 V (2 batteries, AAA)
Data Storage	Up to 32 sets of measurements can be stored
Product service life	5 years

10.4 Product measurement specification

Parameter	Specification
Measuring position	Forehead temperature (between eyebrows)
Measurement range	32.0°C ~42.9°C
Resolving power	0.1°C
Unit	°C
Accuracy	±0.3°C (34°C ~42.9°C) ±0.4°C (32°C ~33.9°C)

Chapter 11 Product Registration Information

Medical Device Registration Certificate No.: GD-X-2220192070111
Product Technical Requirement No.: GD-X-2220192070111
Production License No.: GDSYJXSCX No. 20173019
Type Approval Certificate for Measuring Instruments: CPA2019129-44
Registrant / manufacturer: Shenzhen LEPU Intelligent Medical Equipment Co., Ltd.
Address of registrant / manufacturer: North Floor 3, BLD 9, Baiwangxin High-Tech Industrial Park, Songbai Road, Xili Street, Nanshan District, Shenzhen
Manufacturing Date: See the package

Chapter 12 Guide of EMC

Guidance and manufacturer's declaration - electromagnetic immunity
This product is intended for use in the electromagnetic environment specified below. The customer or the user should ensure that it is used in such an environment.

Immunity Test	Compliance	Electromagnetic Environment - Guidance
Electromagnetic Immunity (EMC)	Class B	The product uses RF energy only for its internal function. Therefore, the emissions are very low and do not lead to causing any interference in nearby electronic equipment.

Guidance and manufacturer's declaration - electromagnetic emissions
This product is intended for use in the electromagnetic environment specified below. The customer or the user should ensure that it is used in such an environment.

Immunity Test	Compliance	Electromagnetic Environment - Guidance
Electromagnetic Immunity (EMC)	Class B	The product 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.

Guidance and manufacturer's declaration - electromagnetic immunity			
This product is intended for use in the electromagnetic environment specified below. The customer or the user should ensure that it is used in such an environment.			
Immunity Test	EC 60951 Testing level	Compliance level	Electromagnetic Environment guidance
Electrostatic discharge GB/T 17626.2	1 kV contact 1.5 kV air	1 kV contact 1.5 kV air	Floors are recommended to be wood, concrete or ceramic tiles. Floors are covered with anti-static materials. The relative humidity should be at least 30%.
Electrical fast transient pulse GB/T 17626.4	1.2kV for power supply lines 1.5kV for input/output lines	Not applicable	Not applicable
Surge GB/T 17626.5	1 kV differential mode 1.2 kV common mode	Not applicable	Not applicable
* 1.2/50 μs, 100 A, 100 V, 100 A, 100 V			

Note: 1. At 80 MHz and 800 MHz, the higher frequency range applies.
Note 2: These guidelines only apply in all situations. Electromagnetic propagation is affected by absorption and reflection from structures, objects and people.
a. Field strengths from fixed transmitters, such as base stations for mobile cellular telephones (land mobile radios, mobile radios, AM and FM radios) and other fixed transmitters, should be measured in the vicinity of the product. To assess the electromagnetic environment due to fixed RF transmitters, an electromagnetic survey should be conducted. If the measured field strength of the product is higher than the applied constant RF level above, the product shall be designed to work in normal operation. If abnormal performance is observed, additional measures may be necessary, such as re-orienting or relocating the product.
b. Over the frequency range 150 kHz to 80 MHz, field strengths should be less than 3V/m.
The product is intended for use in the electromagnetic environment controlled by the manufacturer. The customer or the user of the product must maintain electromagnetic interference through the minimum distance between the portable and mobile RF communications equipment (transmitter) and the product according to the following table.

Note: 1. At 80 MHz and 800 MHz, the higher frequency range applies.

Note: UT is the AC mains voltage prior to application of the test level.			
Guidance and manufacturer's declaration – electromagnetic immunity			
The product is intended for use in the electromagnetic environment specified below. The customer or the user should ensure that it is used in such an environment.			
Immunity Test	IEC 60601 test level	Compliance level	Electromagnetic Environment guidance

The maximum output power rating of the transmitter and the recommended separation distance d in meters (m) not listed in above table may be determined by the equation in the table corresponding transmitter frequency column, 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 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.

RF radiation GSM 1700-3	3 V/m 80 MHz ~ 2.5 GHz	3 V/m	$\alpha = 120^\circ$ $\sigma = 1.2/2000 \text{ A} \cdot \text{m} \cdot \text{m}^2$ $\sigma = 1.2/2000 \text{ A} \cdot \text{m} \cdot \text{m}^2$ $\sigma = 1.2/2000 \text{ A} \cdot \text{m} \cdot \text{m}^2$ Where: P = Maximum output power rating of the transmitter in watts (W) according to the transmitter manufacturer; d = the recommended identifier distance in meters (m) Field strength from fixed RF transmitters, as determined by an electromagnetic field survey, should be less than the compliance level in each frequency range. d. Interference may occur in the vicinity of equipment marked with the following symbol.
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Note 1: At 30 MHz, the test field strength is 3 V/m. The higher frequency ranges are similar.

Note: 1. At 80 MHz and 800 MHz, the higher frequency range applies.
Note 2: These guidelines only apply in all situations. Electromagnetic propagation is affected by absorption and reflection from structures, objects and people.
a. Field strengths from fixed transmitters, such as base stations for mobile cellular telephones (land mobile radios, mobile radios, AM and FM radios) and other fixed transmitters, should be measured in the vicinity of the product. To assess the electromagnetic environment due to fixed RF transmitters, an electromagnetic survey should be conducted. If the measured field strength of the product is higher than the applied constant RF level above, the product shall be designed to work in normal operation. If abnormal performance is observed, additional measures may be necessary, such as re-orienting or relocating the product.
b. Over the frequency range 150 kHz to 80 MHz, field strengths should be less than 3V/m.
The product is intended for use in the electromagnetic environment controlled by the manufacturer. The customer or the user of the product must maintain electromagnetic interference through the minimum distance between the portable and mobile RF communications equipment (transmitter) and the product according to the following table.

Note: 1. At 80 MHz and 800 MHz, the higher frequency range applies.

recommended below according to the maximum output power of the communications equipment.			
Maximum output power (W) of the transmitter	150 kHz–80 MHz d = 1.2P	80MHz–800MHz d = 1.2P	800MHz–2.5GHz d = 2.3P
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

The maximum output power rating of the transmitter and the recommended separation distance d in meters (m) not listed in above table may be determined by the equation in the table corresponding transmitter frequency column, where, P is the maximum output power rating of the transmitter in watts (W) according to the transmitter manufacturer.<