



Be careful



Environment: +10°C — +40°C



Waterproof



Up not more than 4 floors

IPX4

Splash proof

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BF-600/600+

Doppler FHR Detector

OPERATION MANUAL

(2.1 edition)



BESTMAN INSTRUMENT CO., LTD



In order to protect your right for repair service, please take a few moments to fill out the warranty card below:

Warranty Card

Product		
Model		
SN:		
Date of purchase		
Warranty period		
Customer	Name	
	Tel.	
	Fax	
	Add.	
Information source	<input type="checkbox"/> Internet <input type="checkbox"/> Exhibitions <input type="checkbox"/> Magazines <input type="checkbox"/> Recommended by salesperson <input type="checkbox"/> others	
Comments		



Thank you for purchasing our Doppler FHR Detector.

To ensure correct use of your Doppler, please read the manual thoroughly before use. Keep the manual handy for quick future reference. Thanks.



Declaration of Conformity
 “The product complies with the requirements of the MDD 93/42/EEC”

BESTMAN INSTRUMENT CO., LTD

CONTENTS

I .	Introduction...	1
II .	Specification	2
III .	Function	3
IV.	Equipment components	3
V.	Operation method	8
VI.	Doppler maintenance.....	11
VII.	Attention	12
VIII.	Shelf-life and Warranty.....	14
IX.	Trouble Shooting	15

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BF-600/600+

the local vicinity within 10m (e.g. high

frequency electronic devices ,such as a mobile or a cordless phones are working)

d. The Doppler is damaged.

Solution:



- a. Determine optimum position and after about 5-10 second, to get the accurate the **FHR**; turn off the unit and turn on again;
- b. Ensure proper connection fully.
- c. The unit must be relocated away from the interference source;
- d. Contact the agent to repair.

Bestman reserves the right to change the contents of this manual without notice. Considerable care was taken in preparing this manual. If, however, you have any questions about any part of the manual, or note mistakes or inaccuracies, please contact us at the address listed on the back cover.

1. **BF-600 / 600+** Doppler Fetal Heart Rate (FHR) Detectors apply with the ultrasonic Doppler principle to detect the fetal heart beat. The units are compact, lightweight, easy to operate and are stable in performance and have high dependability.
2. **BF-600 (fig 1)** : Can hear the fetal heart sound only; it does not have a **FHR** display function.
3. **BF-600 + (fig 2)** : With **LED** display; it can read out the **FHR** clearly while hearing the sound. It also has warning of abnormal FHR function. If left unused state more than 3 minutes, it will be turned off automatically.
4. This Doppler has a Ni-HM rechargeable battery inside, which can be used repeatedly after recharging.
5. Normative collocation: unit, charger, probe, operation manual, guarantee card, quality card
6. Accessory option: 5.0 MHz probe
7. This model has already passed the **EMC** test, can not disturb other instrument, but using mobile phone within 10 meters while this unit used

is strictly prohibit, or else, affected strictly.

II . Specification:

- ☛ Standard: EN61266:1995
- ☛ Safety Classification: BF  /Class II  Internal power
- ☛ Overall sensitivity: ≥ 90 dB
(overall test date (annexe 1)
- ☛ Target velocity and display range : 60-210 bpm (± 2 bpm)
- ☛ EMC testing data (annexe 2)
- ☛ Ultrasonic frequency: $2.0\text{MHz} \pm 10\%$
- ☛ Output power: $10 \text{ mW} / \text{cm}^2$
- ☛ Spatial-peak temp-peak acoustic pressure $\leq 0.1 \text{ MPa}$.
- ☛ Effective area of transducer: $3.0 \pm 0.5 \text{ cm}^2$
- ☛ Adapter input voltage: 230V AC
- ☛ Adapter input consumer (recharging) : $\leq 20 \text{ VA}$
- ☛ Adapter output voltage (no load) :
DC $24\text{V} \pm 1\text{V}$

Optimum position;

- e. Sensitivity of probe declined.

Solution:

- a. Recharge the unit;
- b. Ensure sufficient gel is used on the place between the probe and abdomen wall;
- c. Use gentle pressure on the patient's abdomen to ensure comfortable when use Doppler and also, make patient relax;
- d. Find out a better position;
- e. Contact the agent to replace the probe.

7. *Malfunction: Digital is not stable while BF-600+ are working.*

Possible cause:

- a. When dragging the probe on the abdomen wall to collect the FHR, there is a faulty signal to lead to the wrong display;
- b. More Gel should be put enough between the probe and abdomen ;
- c. There is an interference source in

- The rechargeable battery is near depletion of power.
- Not enough coupling gel between the probe and abdomen;
- Noise occurs when dragging the probe on the abdomen;
- Probe is damaged.

Solution:

- Recharge the unit;
- Ensure sufficient gel is used between the probe and abdomen;
- Gentle press on the abdomen;
- Contact the agent to buy new probe.

6. Malfunction: Sensitivity is not sufficient; too noisy to hear the FHR.

Possible cause:

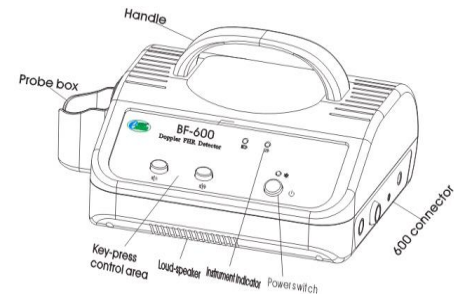
- The rechargeable battery is near depletion of power;
- Not sufficient coupling gel;
- Too much pressure is being applied to the pregnant woman's abdomen and muscles are not relaxed causing loud noise and interfere.
- The probe is not located in the

- ☛ Battery:14.4V Ni-HM rechargeable battery.
- ☛ Inside Audio output power : ≥ 1.8 W
- ☛ Coupling medium impedance: $1.5-1.6 (10^5 \text{g/cm}^2 \cdot \text{s})$.
- ☛ Doppler frequency: 0-8 KHz.
- ☛ Continuously working time:BF-600+: ≥ 4 hours; BF-600: ≥ 8 hours.
- ☛ Environment temperature : $10\sim 40^\circ\text{C}$
- ☛ Size: 220 (L) *130 (H) *190 (W) .

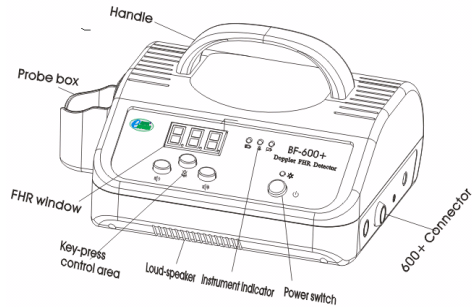
III. Function:

This Doppler can be used for detecting the FHR after twelve weeks.

IV. Equipment components

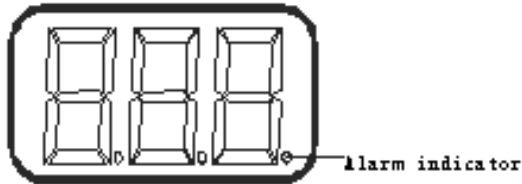


(BF-600 face view)
fig.1



(BF-600+ face view)

fig.2



(BF-600+ LCD window)

fig.3

1. FHR Display window (fig 3):

*BF-600+ has the FHR display window;
BF-600 No the FHR display.*

Solution:

- Repair the power socket by qualified electrician;
- Contact the agent to repair it;
- Contact the agent to buy adapter or battery.

4. *Malfunction: Turn on the power switch, working indicator becomes bright; but there's no sound while touching the surface of probe.*

Possible cause:

- Volume controller is adjusted too low to hear any sound;
- The rechargeable battery is nearly consume out of power; bad circuit;
- Probe is damaged;

Solution:

- Released the volume controller;
- Charge the unit for 8 to 12 hours;
- Return the unit to the supplier for repair.

5. *Malfunction: Uncomfortable noise is heard when using it to detect FHR.*

Possible cause:

Possible cause:

- a. No AC power available;
- b. The connection between the Doppler and adapter are not properly full;
- c. The adapter is damaged.

Solution:

- a. Check AC power socket by qualified electrician;
- b. Make sure the connection between adapter and the unit correctly;
- c. Contact the agent to change it.

3. Malfunction: Working indicator is bright while the unit works normally; but when charging the indicator is not bright, can not be charged and several days later, the unit can not work any

Possible cause:

- a. No power available or adapter is damaged;
- b. Adapter cannot work normally or bad connection;
- c. Circuit of the adapter is damaged or charging indicator not available;

(indicators and symbols show as :fig.4; fig.5; fig.6)

2. Charging indicator :

When built-in battery be charging, the red/green LCD indicator be bright, red color means battery is being charged swift. After 90% full, the LCD become green color, it means the Doppler can be working normally.

3. Alarm indicator:

When this LCD is bright, the alarm function is working; when the LCD goes dark and this function is closed.

4. Low power Indicator

When the battery power is not enough full to main the Doppler working, the LCD will fright. That means the machine should be recharged as soon as possible within about 30 minutes.

5. Volume decrease button:

Volume will decrease if press down this button.

6. Alarm allow button: (only BF-600+)

Turn on the power button and the

Doppler stay in the warning state (at the same time, the alarm indicator is bright), after press down this button one times, the allowing alarm function be cancelled, (at the same time, the alarm indicator is dark).

Notice: for BF-600+, the alarm allowing range is between 60-99 BPM and 170-210 BPM.

7. Volume increase button:

Volume will increase if press down this button.

BF-600/600+: due to use digital volume controller, so it have memory function. Press down the button 5, volume will decrease and stay at that sound level; press down the button 7, volume will increase and stay at that sound level.

8. Working indicator:

This indicator is bright when turned on and will go dark when turn off or no battery power.

9. Power switch button:

- ☛ Inspect the equipment and accessories for mechanical and functional damaged. the data should be recorded in the operating manual, If the device is not functioning properly ,the device has to be repaired.
- ☛ Verify that the device functions properly

IX. Trouble Shooting

1. *Malfunction: While the unit is working normally, working indicator fails to light up / no sound.*

Possible cause:

- a. The rechargeable battery nearly run out of power.
- b. The Doppler is damaged.

Solution:

- a. Recharge the unit;
- b. Contact the agent to change battery;

2. *Malfunction: Connect the adapter and turn on the power switch, working indicator is not bright as well as charging, indicator.*

VIII. Design–life and Warranty

1. Designed–life

The main parts of the Doppler are made of the precise electronic components, the machine designed life is 3 years, but except probe and battery and earphone (option).

2. Warranty:

The unit is backed by a one–year limited warranty. During the warranty period, which starts from the date of purchase, any defective parts will be repaired free of charge. ***Please note that you will be charged for the cost of shipping the unit from service office to your residence.***

3. Yearly safe check:

- ☛ The following safety checks should be performed at least every 24 months by a qualified person who has adequate training and the Doppler knowledge, as well as practical experience to perform these tests.
- ☛ Inspect the safety labels for legibility

To turn on by pressing down this button, press again to turn off.

10. Probe (ultrasonic transducer) socket:

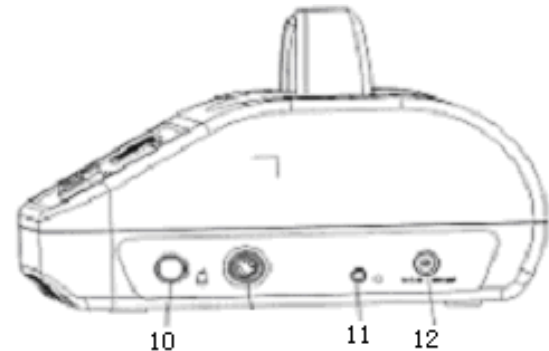
Through the socket, ultrasonic transducer (probe) can be connected with the mainframe.

11. Earphone jack:

Through the socket, an earphone can be connected to mainframe.

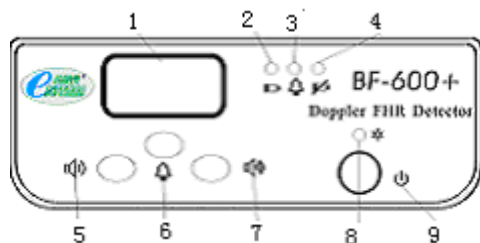
12. Charger connecting socket :

Through the socket, the built–in battery can be recharged by the adapter (charger).



(BF-600/600+ connect panel)

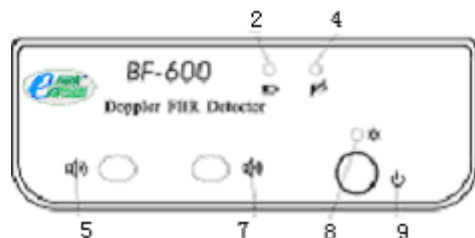
fig.4



(BF-600+ control panel)

fig.5

(Notice: BF-600 has no item 1, 3, 6)



(BF-600 control panel)

fig.6

V. Operation method:

1. Turn on/off

Turn on the switch, the working indicator will be bright and the Doppler will start

wave feedback into probe.

- *Do not use mobile phone or cordless telephone within 10 m while the unit is working, otherwise it interfere Doppler work normally.*
- *Charging time should be between 8-12 hours except first charging between 12-16 hours.(more than 12 hours).*
- *Turn off the unit after use to prolong the using time of the recharged battery.*
- *Industry alcohol or other chemical organic solvent are prohibited to clean the unit._only 75% medical alcohol is allowed to clean the probe or the main unit.*
- *An operating temperature should be between 10-40 ℃.*
- *Use only the specified AC adapters and batteries (supplied) for the unit. Others pose the risk of fire, electric shock or injury.*
- *Please use probe carefully as the probe damaged by customers is not covered under the free warranty.*

indicator “2” will be bright, normally. After about 8-12 hours, the built-in battery can be charged full, simultaneously, the charging indicator color will become from red to green.

Notice: For the first time charging should be more than 12-16 hours.

3. Preservation method:

Prevent any liquid from reaching the Doppler and do not immerse the unit and probe into any liquid / water.

Notice: If the Doppler outer shell is dirty, please use the neuter cleanser to clear it, strictly prohibit to use any other organic materials to clean it including industry alcohol.

VII. Attention

- ***CAUTION: Before using, take the probe off from the box and then turn on the Doppler. After used, first turn off the Doppler and then put probe into it. Otherwise, maybe arouse some noise because of the reflection of ultrasonic***

to work; the Doppler will stop working when the indicator light becomes dark.

2. How to look for the best detecting position:

Make sure the surface of the probe is in complete contact with the skin and put some of gel between skin and probe surface. Moving the probe slowly on a pregnancy abdomen, to find a place where the heart beat sound is stronger.

Attention:

- ☛ ***When the working indicator becomes darker, the Hear Beat sound maybe become quiet, the DOPPLER need to be recharged immediately.***
- ☛ ***Do not drag the probe on abdomen to avoid to cause some noises.***
- ☛ ***After use it, please turn off the power switch first, and wipe the coupling gel from the probe surface and fix the probe back into the box.***

3. How to adjust volume:

Press down the volume controller button (“5” or “7”) one times, the volume will

increase or decrease similarly, due to use a digital controller, so Hear Beat volume will increase or decrease gradually. After release the volume buttons, the sound level will keep at the same position until the controller be adjusted at next times.

4. How to affirm the fetal heart:

BF-600: After the fetal heart beat sound has first been heard, you can get the FHR by counting FHR for 10 seconds. (The interval and the counting FHR method are depending on the doctor's experience).

BF-600+: Once the heart beat sound has been heard, located in the position, do not read the displayed FHR contain immediately. Within 3-5 seconds or approximately 5-10 heart beats, The displayed FHR should be right or normal, (for getting a accurate FHR within a short interval, a right operating method is necessary, it depend on the operating doctor's experience)

5. How to clean and disinfect it after using:

Turn off the Doppler after use, and clean the gel off the probe, put the probe back to the box to protect it.

Notice: 75 % alcohol can be used to clean and disinfect the surface of the probe.

VI. Doppler maintenance.

1. Battery power is low:

BF-600+ : When battery power is lower, Doppler sensitivity will decline, and working indicator "4" will go dark, and FHR on the LED will glint or eventually fade out gradually, the LED will not display anything.

BF-600 : Working indicator "4"light will go dark until and eventually fade out; the Doppler sensitivity will decline, the FHR can not be clearly heard.

2. Right recharging method:

Connect the adapter plug into to a AC power supplier first, and then connect adapter DC plug into the Doppler charger connect socket. The charging

