Fetal Moniter

FC-700
OPERATION MANUAL

bionet

Terms of Warranty

- This product is manufactured and passed through strict quality control and inspection.
- Compensation standard concerning repair, replacement, refund of the product complies with "Consumer's protection law" noticed by Economic Planning Dept.
- FC-700 is warranted by Bionet Co.,Ltd to be free from defects in material and workmanship for two years from date of purchase.
- Warranty repair or replacement will be made by Bionet Service Center at no charge during warranty period if properly used under normal condition in accordance with the instructions for use.
- In the event of a malfunction or failure during warranty period, customer should inform Bionet Co.,Ltd of the model name, serial number, date of purchase and explanation of failure about the defective equipment.

Definition of Warning, Caution, Note

• For a special emphasis on agreement, terms are defined as listed below in operation manual. Users should operate the equipment according to all the Warning and Caution instructions.

• Manufacturer or Sales agency takes no responsibility for any kind of damage or breakdown that is caused by misuse and failure to maintain the equipment.

Warning

Be informed that it may cause serious injury or death to the patient, property damage, material losses against the " Warning" sign.

Caution

Be informed that it may cause no harm in life but lead to injury against the " Caution" sign.

Note

Be informed that " Note" sign is used for notifying some important contents relating to installations, use, maintenance for users, but not dangerous.

General Precaution on Environment

• Do not keep or operate the equipment in the environment listed below.

	Avoid placing in an area exposed to moist. Do not touch the equipment with wet hand .		Avoid exposure to direct sunlight
	Avoid placing in an area where there is a high variation of temperature. Operating temperature ranges from 10(C to 40(C. Operating humidity ranges from 30% to 85%.		Avoid in the vicinity of Electric heater
	Avoid placing in an area where there is an excessive humidity rise or ventilation problem.		Avoid placing in an area where there is an excessive shock or vibration.
	Avoid placing in an area where chemicals are stored or where there is danger of gas leakage.		Avoid being inserted dust and especially metal material into the equipment
	Do not disjoint or disassemble the equipment. Bionet Co.Ltd takes no responsibility for it		Power off when the equipment is not fully installed. Otherwise, equipment could be damaged.

General Precaution on Electric Safety

Check the items listed below before operating the equipment.

- Be sure that power supply line is appropriate to use.
  (Power Adaptor Input : 100 - 240V AC, 50 - 60HZ, 1.2A, Output : 18V, 2.5A).
- Be sure that the entire connection cable of the system is properly and firmly fixed.

Note

The equipment should not be placed in the vicinity of electric generator, X-ray, broadcasting apparatus to eliminate the electric noise during operation. Otherwise, it may cause incorrect result.Self-power line is important for FC-700. To use same power source with other electric instruments may cause incorrect result.

Note

FC-700 is classified as listed below ;
- This equipment conforms to Class I, Type-BF.
- Do not use the equipment in the vicinity of flammable anesthetics and solvents.
- The equipment conforms to Class I according to IEC/EN 60601-1
  (Safety of Electric Medical Equipment)
- This equipment conforms to Level B according to IEC/EN 60601-1-2
  (Electromagnetic Compatibility Requirements)

Note

Accessory equipment connected to the analog and digital interfaces must be certified according to the respective IEC standards (e.g. IEC 950 for data processing equipment and IEC 601-1 for medical equipment).
Furthermore all configuration shall comply with the system standard EN 60601-1-1:1993.
If in doubt, consult the technical service department or your local representative.

Safety Symbols

The International Electrotechnical Commission (IEC) has established a set of symbols for medical electronic equipment which classify a connection or warn of any potential hazards. The classifications and symbols are shown below.

Save these instructions.

Symbols	contents
	Isolated patient connection. (IEC 601-1-Type BF)
	Device part switched off.
	Device part switched on.
	Conductor provides a connection between equipment and the potential equalization busbar of the electrical installation
	External Signal IN/OUT Port
The following symbols are used inside the system :	

Table of Contents

Chapter 1. General Information

1) Product Overview

FC-700 is the fetal monitor that measures the fetal heart rate and uterine contraction. FC-700 irradiates ultrasound wave to the abdomen of a pregnant woman, and detects the Doppler frequency signal reflected from the heart of the fetus. FC-700 analyzes this signal and displays the heart rate by LED. Also, FC-700 provides the sound from the heart of fetus.
FC-700 measures the uterine contraction of a pregnant woman by pressure sensors and displays the numerical values.
And FC-700 records the heart rate of the fetus, fetal movement and the values of uterine contraction.

2) Product Features

- FC-700 records the heart rate of the fetus, fetal movement and the uterine contraction of a pregnant woman, and basic information of the equipment with wide A4 Size paper.
- FC-700 can use general fax paper as well as thermal paper for fetal monitor.
- FC-700 has automatic NST function which records FHR, UC and fetal movement only for the established time.

3) Product Configuration

FC-700 system consists of the following. Unpack the package and check the followings are included. Also, be sure to check any damage to the main body and accessories.

FC-700 main body	Ultrasound Doppler Probe (1 EA)
UC Probe (1EA)	Event Mark Jack (1EA)
Print Paper (1EA)	Power Adaptor (1EA)
Power Cord (1EA)	Ultrasound Gel (1EA)
Probe Belt (2EA)	Operation Manual (1EA)
Stand (1EA)	Basket (1EA)

Main Body configuration

Top view
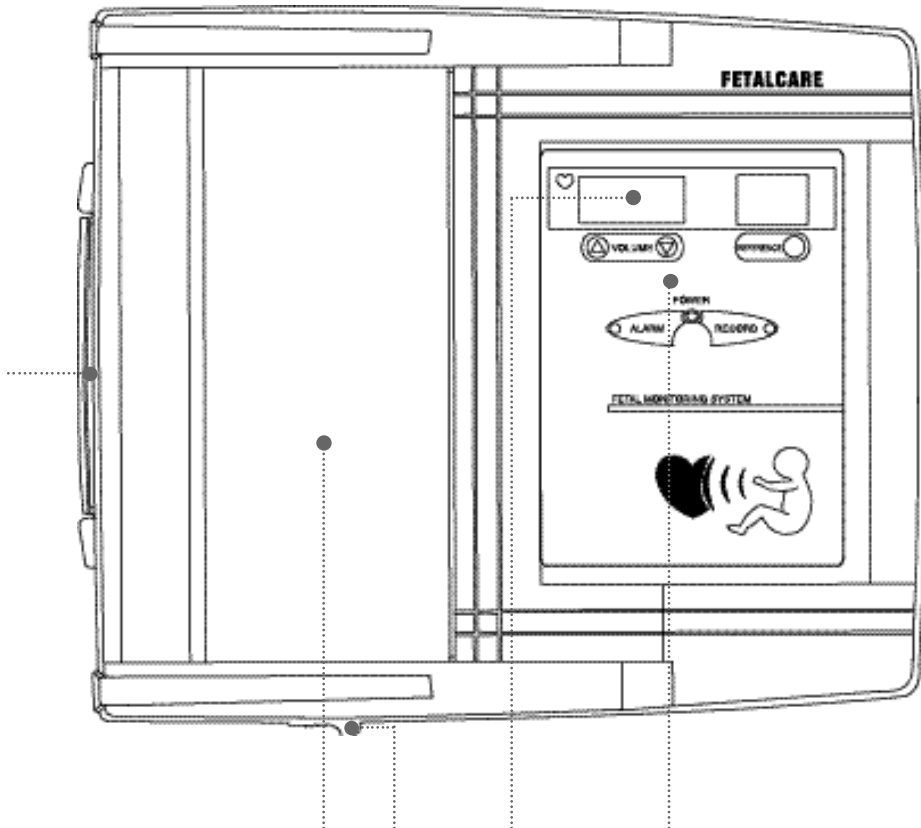
Hand Grip
Printer door
Printer door release button
Display LED
Control panell

Front view
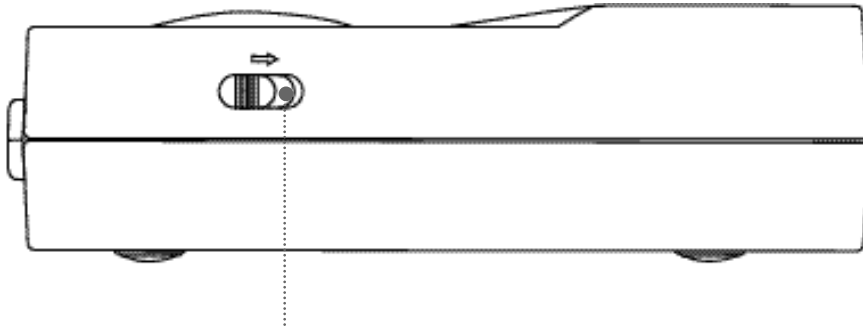
Printer door release button

Rear view
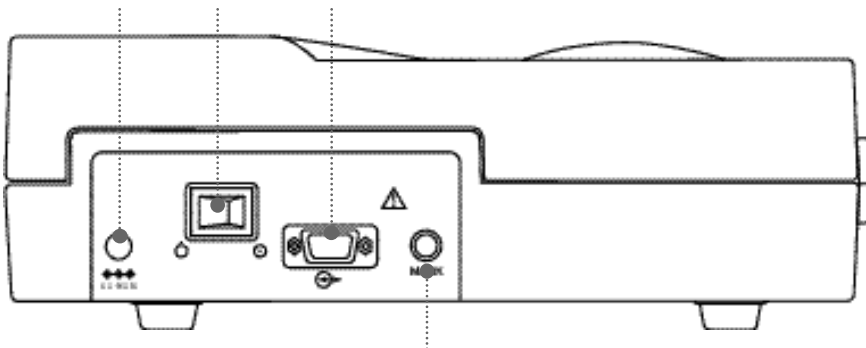
Power adaptor connection port
Power on/off switch
RS-232C serial port
Mark Jack connection port

Left side view
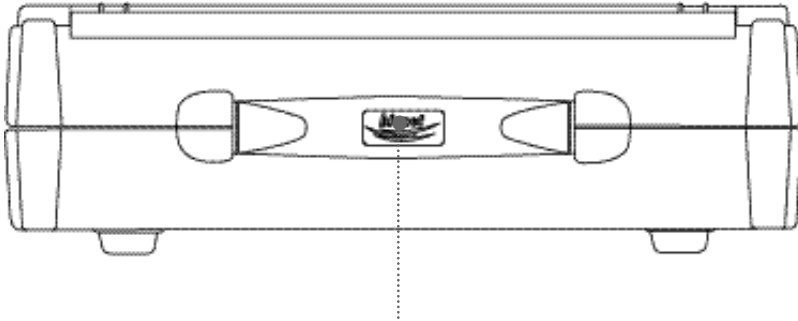
Hand Grip

Right side view
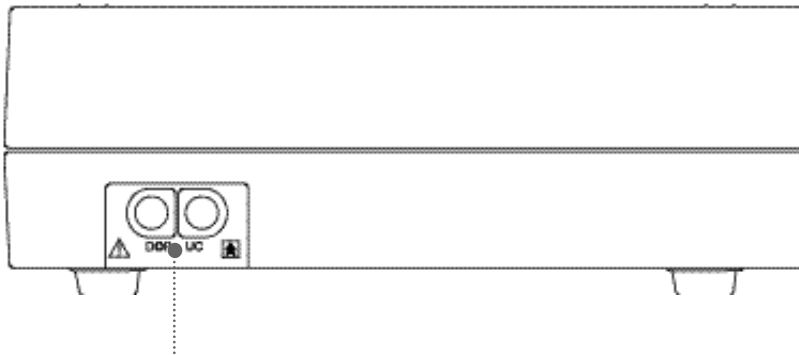
Doppler, UC Probe connection port

> **Warning**
>
> To avoid an expected electric shock, do not open the equipment cover or disassemble the equipment. Refer servicing to qualified personnel of Bionet Co., Ltd.

Control Panel
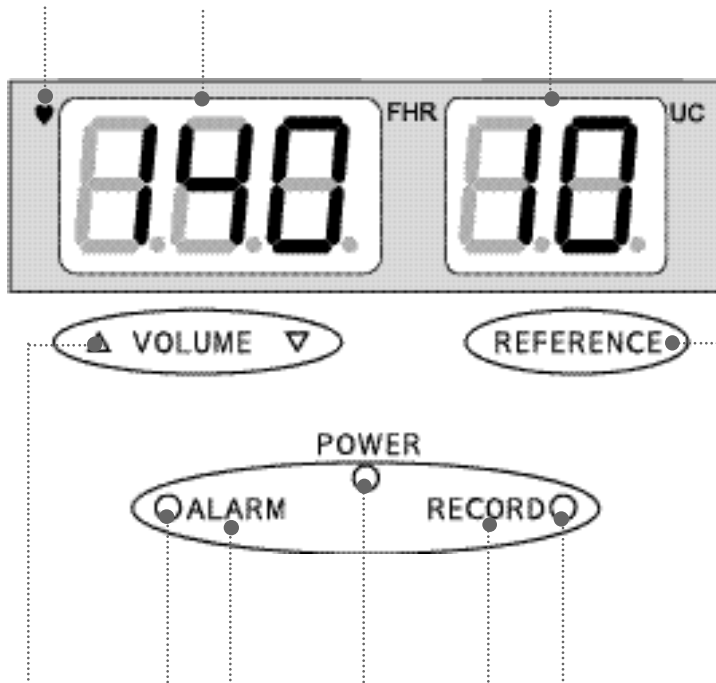
Heart rhythm symbol (Green : stable, Red : unstable).

Heart rate of the fetus (bpm).

UC measurement value.

Volume up/down key. During the use of the Menu for setup, this key is used to change the setting value.

LED of the alarm on/off

Alarm on/off key. During the use of the Menu for setup, this key is used to set the function of the time and date.

LED of the power on/off

Print on/off Key. When setup mode, store the setting value. When out of print, paper feeding function.

LED of the print on/off

Key setting UC value as reference value(10). When setup mode, printing related functions setup.

4) Explanation of Sections of Output Sheets
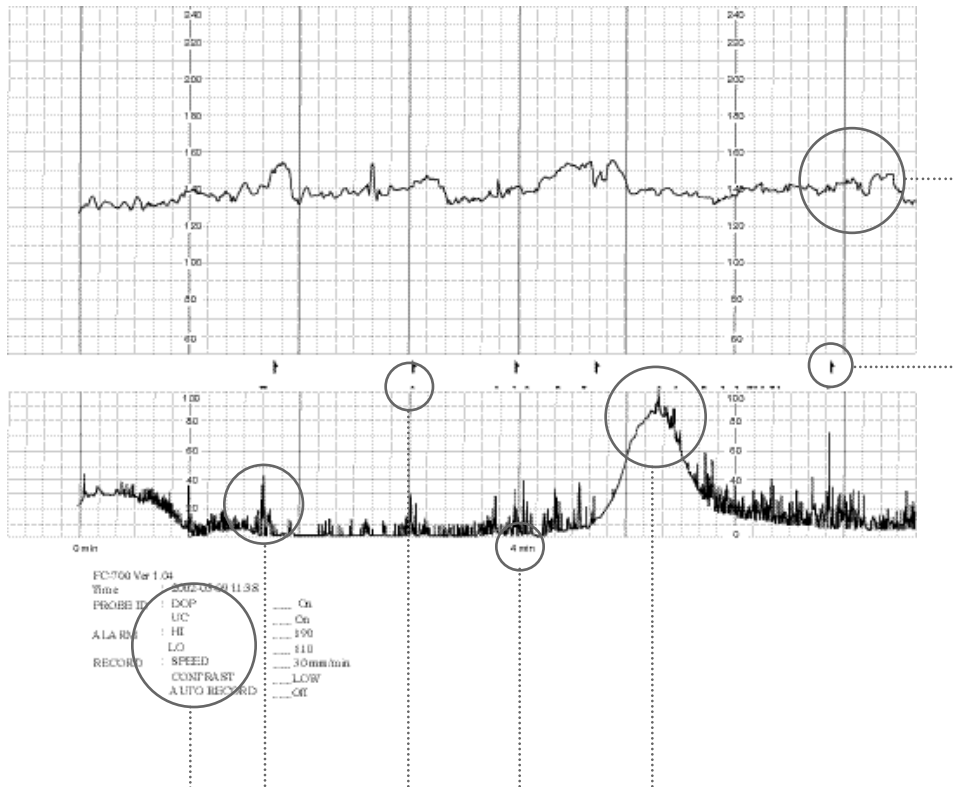
1. Fetal heart rate per minute
2. Fetal movement point that is indicated when Event Marker is pressed
3. Uterine contraction
4. Information on the recording condition
5. Fetal movement point when an automatic fetal movement is detected
6. Recording time
7. Strength and intervals of automatic fetal movements when they are detected

5) Production Installation

Attention in Installation

Pay attention to the following in installing FC-700:

Use it at the temperature between 10 and 40 degrees centigrade and at the humidity between 30 and 85 percent.

Check plug-in and treat the Probe Cable carefully.

Don't put several plugs in an outlet.

Install the main body at the flat place.

Avoid using a plug making a noise in plug-in.

All the setup will be recorded at the interior memory even when it is switched off and then on.

Be careful, as it is easy to break by the shock.

Install it away from dust or inflammable things in consideration of the temperature and humidity.

Power Supply

Use free voltage of AC between 100 and 250V(50 - 60Hz, 1.2A). If a plug is put in an outlet, the "POWER" LED at operation panel will be turned on green. Within the equipment is a battery to change the date and time even when it is switched off. Use a Type CR2032 3V Lithium Battery.

Note
Don't throw away batteries carelessly to protect environment, but ask the hospital for the designated places to dump batteries according to proper procedure.

Plug-in

Put the plug in an outlet of 110V or 220V and connect one side of power cable to the power adaptor. If you put the plug of power adaptor in the terminal of power adaptor of the main body of FC-700 and then switch it on, the equipment will work.

If the power supply is normal, LED at the operation panel indicating Power On/Off will be turned on green.

Connection of the Probe Cable

Connect the Probe Cable to the Probe Cable terminal at the right side of the main body.
Connect the Doppler Probe to the "DOP" terminal and the UC Probe to the "UC" terminal.
Connect Mark Jack to the "MARK" terminal at the backside of the main body.

Setting of Recording Paper

If you release the button to open the printer cover at the front of FC-700 to the right, it will open. Put recording paper with the recording part on the upper side adjusting the paper roll parallel to the print direction and then close the cover.

Chapter 2. How to Use FC-700

1) General Usage

Put the plug of FC-700 in an outlet and switch it on.

Check setup values if they are set as wished.

Change the setup values, as you want.

Put the Doppler Probe and the UC Probe on a pregnant woman using a belt.

Give her Mark Jack to press when she feels fetal movements.

Press "REFERENCE" Key to set the UC value at a zero.

Control the volume to hear fetal heart beat well.

If the accurate heart rate is indicated, press the Record Key to start printing it.

2) Function of Key

KEY

· Press / to control the volume(0~7)
· Change the setup values at theseup mode

· Press it for a short time for initization with the UC value at 10.
· Press it for a long time for the recording setup mode.
· When in setup mode, move to next menu.

VOLUME

REFERENCE

POWER

ALARM

RECORD

· Press it for a short time for On/Off of Alarm
· Press it for a long time for the alarm setup mode
· Cancel the setup in case of setup mode

· Press it for a short time for Start/Stop of recording
· Press it for a long time for the rapid output of recording paper
· At the setup mode, the setup will be stored.

LAMP

- POWER: If it is switched on, the lamp will be turned on green.
- ALARM: If the alarm is on, the lamp will be turned on red.
- RECORD: During printing, the lamp will be turned on green.
-    (Heart Rhythm): The lamp will be turned on and off green when the signal is stable according to heart beat and red when it is unstable.

3) FHR Measurement

To measure FHR (Fetal Heart Rate), use an ultrasonic Doppler effect to catch the fetal heart beat, and then compute the real-time heart rate per minute to record. To minimize the reduction of ultrasonic waves in the air, apply a sufficient amount of ultrasonic gel on the surface of Doppler Probe to eliminate its air layer.

Connection of the Probe

Connect the Doppler Probe to the "DOP" terminal at its right side.

Basic operation according to connecting Probe

If the Doppler Probe is not connected to the main body, there is no indication at the FHR indication section. If the Doppler Probe is connected to the main body, on the FHR indication section appears "---" which indicates that the preparation for measurement has been finished. If a line of the Doppler Probe is down or the Probe is disconnected from the main body, a warning signal of "Ding-dong~" is made. This signal disappears when the Probe is connected again or any of keys on the operation panel is pressed.

FHR Measurement

Put the belt to fix the Doppler Probe beneath the waist of a pregnant woman.

Apply a sufficient amount of ultrasonic gel on the Doppler Probe to remove bubbles between her abdomen and the surface of Doppler Probe.

Feel her abdomen and find the back part of a fetus to put the Doppler Probe on. When the fetus is in a lateral positin, put the Probe on the part as follows:
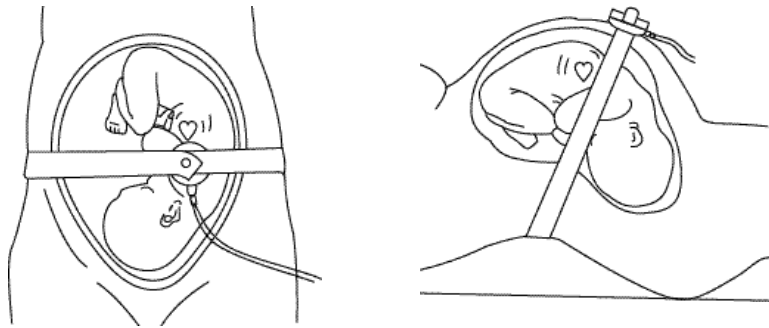
[Doppler Probe]

Note

When the Doppler Probe is put not on the back but on the breast part of a fetus, accurate ultrasonic waves can't be caught from the fetal heart and the fetal heat beat can be frequently missed.

After moving the Doppler Probe little by little to find the section where the fetal heart beat sounds relatively loud and clear and the heart rhythm lamp flickers according to the fetal heart beat, control the volume so that the heart beat can have a proper (sound)loudness.

Put the button at the upper part of the Doppler Probe into a hole of the belt to fix the Probe.

Note

Fix the Probe Cable toward the head part of a pregnant woman in order to prevent it from being damaged, and for moving to some degree comparatively.

It takes two or three seconds calculating and indicating FHR. When the stable FHR is indicated, start to record it.

4) UC Measurement

UC (Uterine Contraction) can be measured with an externally attached pressure sensor. If the UC Probe is put on the abdomen of a pregnant woman, it measures a relative pressure changing according to the uterine contraction and records uterine contraction.

Probe Connection

Connect the UC Probe to the "UC" terminal at its right side.

Basic Actions According to the Connection of the UC Probe

If the UC Probe is not connected to the equipment, there is no indication at the UC indication section. If the UC Probe is connected to the equipment, there appears a value of "10" which indicates that the preparation for measurement has been finished. If a line of the UC Probe is down or the Probe is disconnected from the main body, a warning signal of "Ding-dong~" is made. This signal stops when the Probe is connected again or any of keys on the operation panel is pressed.

UC Measurement

Put the belt beneath the back part of a pregnant woman to fix the Probe.

Put the UC Probe on the Fundus (approximately 10 centimeters away from the navel upward) or on the part that a lump is firstly made at her abdomen.

Put the button projected from the upper part of the UC Probe into a hole of the belt to fix the Probe. Control the belt to set the UC value between 20 and 90.

Press the REFERENCE Key on the operation panel to set the standard value at 10.

If the stable UC value is indicated on the UC indication section, start to record it.
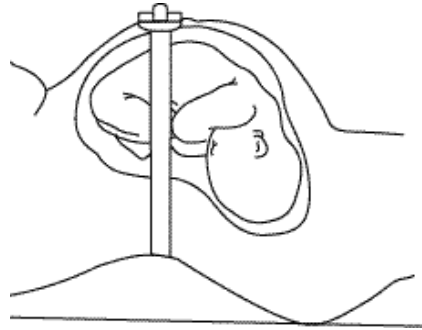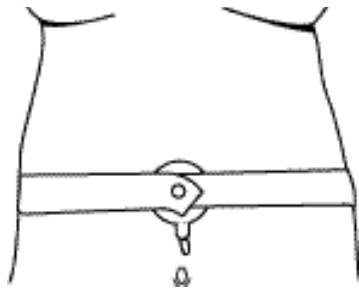
[UC Probe]

Note

If the UC Probe is connected to the equipment but not used, unreliable value may be indicated on the UC indication section.

5) Measurement of Fetal Movements

How to Use Event Marker

Even Marker relys on the recognition of a pregnant woman to record a fetal movement point: when she feels a fetal movement, press a button on Event Marker. When Event Marker is pressed during recording, the fetal movement point is indicated with an arrow mark on recording paper with a signal of "Beep~".

How to Use the Automatic Fetal Movement Measurement

The automatic fetal movement measurement extracts information propotional to strength and intervals of fetal movements from the received ultrasonic Doppler signal and records it with a uterine contraction graph at recording paper. If it exceeds the established critical loudness value of fetal movements, record the fetal movement point with a dot between the FHR graph and the UC graph. It can be used as follows:

1. Set the "FM" menu at '1' at the recording setup mode to enable the automatic fetal movement measurement function to work. (See Paragraph 2 of Chapter 3 "Recording Setup")
2. Set the "thr" menu at the value between 5 and 95 for the critical strength value of fetal movements at the factory setup mode. If the maximum strength of fetal movement is regarded as 100, record the fetal movement point with a dot between FHR and UC when it exceeds the setup. (See Paragraph 3 of Chapter 3 "Factory Setup")
3. When "thr" menu is at '0', doesn't mark with a dot.
4. Set the "FM" item at '0' at the recording setup mode in order not to use the automatic fetal measurement function.

6) Recording

The recording functions include AUTO NST (Non-Stress Test) and monitoring. The AUTO NST function that records FHR, UC, and fetal movements for the period of established time and stops automatically is effective in the non-contraction test. The monitoring function enables a user to operate Start/Stop of recording.

Order to Use the Auto NST Function

A. Set the "Prd" menu at one value of '10, 20, 30, 40, 50, and 60' at the recording setup mode to set automatic recording time. The unit is a minute. (See Paragraph 2 of Section 3 'Recording Setup')
B. Put the Doppler and UC Probe on a pregnant woman in the way of 3) and 4), and press the Record Key when the fetal heart beat is identical to the FHR value.
C. Implement recording for the period of time established at the "Prd" menu. During recording, left time is indicated as "t20" at the FHR indication section at 5-minute intervals for a second.
D. After the period of established time, recording stops automatically, "End" is indicated, and an alarm of "Ding-dong~" is made. Press any of keys on the operation panel to make "End" disappear and to stop an alarm.
E. Press the Recording Key during recording to stop recording.
F. Press the Record Key for a long time to output a recording paper rapidly.

Order to Use the Monitoring Function

Set the "Prd" item at '0' at the recording setup mode.
Put the Doppler and UC Probe on a pregnant woman in the way of 3) and 4), and press the Record key when the fetal heart beat is identical to the FHR value.
Press the Record key again to stop recording.
Press the Record Key for a long time to output a recording paper rapidly.

7) FHR Alarm

If FHR beyond the established upper or lowest limit of normal FHR exceeds the established delay time, an alarm is made.

Order to Use the FHR Alarm Function

Use the Volume Up/Down Key to set the value of "H" menu which means the upper limit of FHR and that of "L" menu which means the lowest limit of FHR as you wish at the alarm setup mode. Be careful to set the value of "H" higher than that of "L". (See Paragraph 1 of Chapter 3 Alarm/Time Setup)

If abnormal FHR is maintained for some time at the factory setup mode, set the "t" menu at one value of "10, 20, 30, 40, 50, and 60" to determine whether or not to raise an alarm. The unit is a second. (See Paragraph 3 of Chapter 3 "Factory Setup")

Check if the ALARM lamp is on. If it is off, it means that the FHR alarm function is off; so press the Alarm key to turn on the ALARM lamp.

FHR beyond the upper or lowest limit of FHR alarm exceeds the established duration, a signal of "Beep, beep, beep~" is made.

To stop the signal, press the Alarm key and let the FHR alarm function off. Then, the ALARM lamp will be off, indicating that the FHR alarm function is off.

8) Volume Control

The fetal heat beat sound measured with the Doppler Probe is outputted through the built-in speaker, (within the equipment) and its loudness is controlled with the Volume Up/Down Key. The volume is at eight levels from 0 to 7.

Press the Volume Up/Down Key once to indicate the currently established value of volume at the FHR indication section for two seconds.

Press the Volume Up/Down Key within two seconds to change the value of volume which will then apply to the volume of speaker.

Don't press any key for two second to store the value of volume indicated at the FHR indication window and then return it to the basic state.

The stored value of volume can be applied even when the equipment is switched off and then on.

9) Equipment State Alarm

The following circumstances raise a signal of "Ding-dong~" to ask a user to pay attention:

The contacter of Doppler Probe in use is disconnected from the main body (Er1)

Out of paper during recording (Er2)

The switch is firstly on

Set-up values are changed and stored

In cases of   and   among the above circumstances, a signal of "Ding-dong~" will be continued until pressing any of keys on the operation panel. (See Paragraph 3 of Chapter 4 : Error Message)

Chapter 3. Setup Modes

The setup modes include those of alarm/time, recording, and factory. The factory setup is a part having great effect on the performance of the equipment if the set-up value is easily changed; so it is somewhat hard for a user to access.

1) Alarm/Time Setup

It is a mode to set the upper and lowest limits of normal FHR, date, and time in terms of the FHR alarm function.

How to Operate the Alarm/Time Setup Mode

Press the Alarm key for over two seconds to change into the alarm/time setup mode.
Press the Reference key to move to the next item.
Press the VOLUME   /   key to change the set-up value.
Press the Record key to store the set-up value and then return it to the basic state.
Press the Alarm key to cancel the set-up value and then return it to the basic state.

How to Set the FHR Alarm

Press the Alarm key for over two seconds to set the upper limit of FHR alarm. Then the following appears which indicates that the current FHR upper limit is set at 190.

To change the set-up value, press the Volume key. To store the set-up value, press the Record key. Then, this value is stored and it returns to the basic state with a signal of "Ding-dong".

To set the lowest limit of FHR alarm, press the Alarm key for over two seconds and then the Reference key to indicate the following. It indicates that the current lowest value of FHR alarm is set at 110.

To change the set-up value, press the Volume Up/Down Key. To store the set-up value, press the Record key. Then, this value is stored and then it returns to the basic state with a signal of "Ding-dong".

How to Set the Date and Time

To set the year, press the Alarm key for over two seconds and then the Reference key to indicate the following. It indicates that the current year is 2002.

Use the Volume Up/Down Key to change the year. Press the Record Key to store the changed value and then return it to the basic state after a signal of "Ding-dong".

To set the month, press the Alarm key for over two seconds and then the Reference key to indicate the following. It indicates that the current month is May.

Use the Volume Up/Down Key to change the month. Press the Record Key to store the changed value and then return it to the basic state after a signal of "Ding-dong".
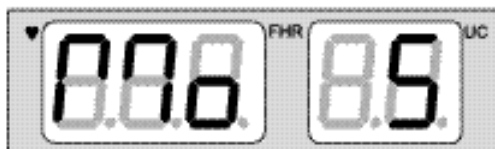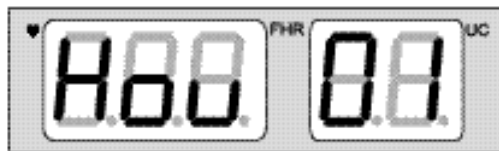
To set the date, press the Alarm key for over two seconds and then the Reference key to indicate the following. It indicates that it is the 7th day now.

Use the Volume Up/Down Key to change the set-up date. Press the Record Key to store the changed value and then return it to the basic state after a signal of "Ding-dong".

To set the hour, press the Alarm key for over two seconds and then Reference key to indicate the following. It indicates "1 o'clock" now.

Use the Volume Up/Down Key to change the set-up hour. Press the Record Key to store the changed value and then return it to the basic state after a signal of "Ding-dong".

To set the minute, press the Alarm key for over two seconds and then the Reference key to indicate the following. It indicates "11 minutes" now.

Use the Volume Up/Down Key to change the set-up minute. Press the Record Key to store the changed value and then return it to the basic state after a signal of "Ding-dong".

2) Recording Setup

It is a mode to control the setup values of printing speed, grid indication, contrast, automatic NST function, and automatic fetal movement detection.

How to Operate the Recording Setup Mode

Press the Reference key for over two seconds to change into the recording setup mode.
Press the Reference key for a short time at the recording setup mode to move to the next item.
Press the VOLUME / key to change the set-up value.
Press the Record key to store the set-up value and then return it to the basic state.
Press the Alarm key to cancel the set-up value and then return it the basic state.

How to Set the printing Speed, Grid Indication, and Contrast

To set the printing speed, press the Reference key for over two seconds and then for a short time to indicate the following. It indicates that the (output is at a speed of 3 centimeters a minute now.) printing speed is 3 cm/min now.

The output speed can be set at one of 1, 2, and 3 cm/min, and may be changed with the Volume Up/Down Key.

Thermal paper for a facsimile can be used for FC-700 besides those supplied. To use those for a facsimile, press the Reference key for over two seconds and then for a short time to indicate the following.

Select 0 for sheets supplied by this company and 1 for those for a facsimile, and use the Volume Up/Down Key to change it. If the set-up value is 1, Grid is printed at a sheet for a facsimile with a signal.

Note

When use a paper just for fetal monitor, set-up value must be "0".

To control the contrast of graph, press the Reference key for over two seconds and then for a short time to indicate the following.

Select 1 for a medium and 2 for the darker state, and use the Volume Up/Down Key to change it.

How to Set AUTO NST

To set the AUTO NST function, press the Reference key for over two seconds and then for a short time to indicate the following.

As for "0", press the Record key at the basic state to print it and press it again to stop printing. Select '10' for 10-minute constant recording, '20' for 20-minute, '30' for 30-minute, '40' for 40-minute, '50' for 50 minute, and '60' for 60-minute, and recording will stop automatically after the set-up time. Press the Record key during recording to stop recording.

How to Set the Automatic Fetal Movement Detection Function

To set the automatic fetal movement detection function, press the Reference key for over two seconds and then for a short time to indicate the following.
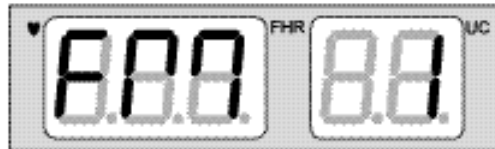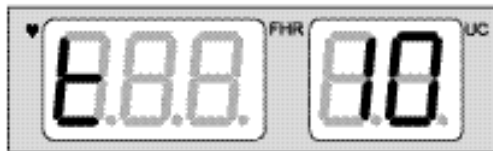

'0' turns off the automatic fetal movement detection function; and '1'turns it on.

3) Factory Setup

## How to Set the FHR Alarm Delay

To set the FHR alarm delay, switch it off (and then press the Volume Down key) and switch it on again pressing the Volume Up key. Then, the following appears which indicates that the alarm delay time ('t') is set at ten minutes.

The set-up value of alarm delay is at six levels-10, 20, 30, 40, 50, and 60-and its unit is a second. When the alarm is on, FHR exceeds the established alarm delay; thus, an alarm of "Beep, beep, beep~" is made when it is beyond the upper/lowest limit of FHR alarm. The factory value is set at 20. Press the Volume Up/Down Key to change the set-up value. Press the Record key to store the set-up value. Then, this value is stored and then returns to the basic state with a signal of "Ding-dong".

How to Set the Automatic Fetal Movement Indication

To set the automatic fetal movement indication, switch it off, and then switch it on again with the Volume Down key pressed. Then, the following is indicated.
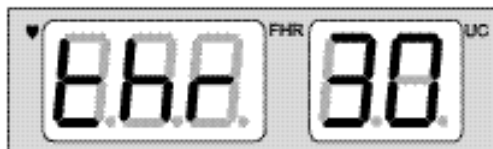
The set-up value of automatic fetal movement indication can be between 0, 5,...,90, and 95, and its unit is percent (%). When the Doppler signal exceeds the set-up value during operation, marks with a dot indicating the fetal movement point between FHR and UC. When the set-up value is 0, doesn't mark with a dot. To change the set-up value, press the Volume Up/Down Key. To store the set-up value, press the Record key. Then, this value is stored and then it returns to the basic state with a signal of "Ding-dong".

Chapter 4. Trouble shooting

1) Maintenance and Cleaning

You can keep FC-700 clean in many different ways. Use the following recommendations to avoid the damage or stain to the machine.
If the material (not approved material) that may cause damage to the product is used, the product is not guaranteed even within the period of guarantee is not expired.

Caution

Check the main unit and probes thoroughly after cleaning.Do not use the old and damaged equipment.

To keep the machine clean, apply alcohol on a soft cloth and scrub the body and the measuring probes once a month. Do not use lacquer, thinner, ethylene, or the oxidizing substance.

Keep the cable from dust or stain. Wipe the cable with a soaked cloth that is wet with warm water (40°C/ 104 F), and with the clinical alcohol once a week.

Do not soak the machine or the probe cable into any liquid or detergent. Keep the machine or the probe cable away from any liquid.

2) Regular Inspection

Perform the periodical safety inspection on FC-700 once a year. For the inspection details, see the service manual provided by Bionet.

3) Error Message

A. If the Doppler probe comes off from the connector during monitoring, information sound ("Ding-Dong") rings and the error message(Er1) is displayed. To solve this problem, connect the Doppler probe or press the VOLUME UP/DOWN key simultaneously.

B. If the paper is used up during printing, information sound ("Ding-Dong") rings and the error message(Er2) is displayed. To solve this problem, insert the paper or press the VOLUME UP/DOWN key simultaneously.

Chapter 5. Specifications

Environmental Specifications

Temperature Range

Operating : 10 to 40°C

Storage : -10 to 60°C

Relative Humidity Range

Operating : 30 ~ 85%

Storage : 20 ~ 95%

Atmospheric Pressure Range

Operating : 70 ~ 106kPa

Storage : 70 ~ 106kPa

Power Specifications

Power Adaptor ;

MW160KA1803F01

Ault Electronics Company Ltd.

Input 100~240V, 50~60Hz, 1.2A

output 18V, 2.5A

Power Fail Protection

Battery : CR 2032 3V Lithium battery

Performance Specifications

FHR Measurement

Input signal : Ultrasound Pulsed Doppler

Ultrasound Frequency : 1.0 MHz

Ultrasound Power : <10mW/cm2

FHR Detection Method: Auto Correlation

Measurement Range : 50 ~ 240 beats per minutes(BPM)

FHR Accuracy : $\pm$ 1 bpm over normal FHR range

UC Measurement

Input Source : External Transducer with strain gauge

Frequency Response : DC ~ 0.5 Hz

Reference(Zero) Control : One touch switch
Measurement Range : 0 ~ 99 units

Fetal Movement Measurement
Detection Source : Ultrasound Pulsed Doppler
Recording Method:
  Spike-like waveform on UC channel denotes relative intensity and duration of Fetal Movement.
  Dot marks between FHR and UC channels when FM intensity exceeds selected threshold.

Recorder
Recorder Method : Thermal Array Type
Resolution: 8(vertical)/10(horizental) dot/mm
Print Speed : 1, 2, 3 cm/min
Paper Feeding Function
Paper Grid : On/Off
Print Contrast : 1, 2
Auto Print Period : 0, 10, 20, 30, 40, 50, 60
Fetal movement: On/Off

Display
7-Segment LED
2 Channels (FHR, UC)

Indicators
Heart Rhythm (Green : Stable, Red : Unstable)
Alarm On/Off State
Print On/Off State
AC Power (Green LED)

Sound
Doppler Sound with Volume Control (8 steps)
Alarms Sound :

Information Sound : Dop Probe off, Paper off, Watch Dog, Set-up Data
　　　　　　　　 Storage
NST End.

Set-up
Alarm Upper/Lower Limit Value
Alarm check delay time
Print Speed
Paper Grid
Print Contrast
Auto Print Period(NST time)
Time / Date
Fetal Movement On/OFF
Fetal Movement Detection Threshold

Function
Event Mark Function

External Link
RS232C : Program Down Load, Central (Option)

Product Warranty

Product Name	Fetal Care
Model Name	FC-700
Approval No.	
Approval Date	
Serial No.	
Warranty Period	One yearfrom date of purchase
Date of Purchase	

Customer	Hospital :
	Address :
	Name :
	Tel :

Sales Agency	
Manufacturer	

Thank you for purchasing FC-700.

This product is manufactured and passed through strict quality control and inspection.

Compensation standard concerning repair, replacement, refund of the product complies with "Consumer's protection law" noticed by Economic Planning Dept

Bionet Co.,Ltd

Model Name : FC-700