

Chapter 10 Troubleshooting

10.1 Lead Fault

1. Data saturation or overflow happens.

Solution:

Ensure that all leads are in good contact, and wait for half a minute or the waveforms on the screen are stable, and then start printing.

2. Straight line displayed on the screen.

Solution:

- 1) Check if the metal piece of limb electrode contacts with the body properly; if not, adjust the position of the limb electrode, and adjust the tightness if necessary.
- 2) Check if the limb electrodes and chest electrodes are oxidized or faded, and clean the accessories or replace with new ones. Oxidation and aging cause conductive deterioration of the electrodes, resulting in poor signal transmission.
- 3) Treat the skin of the patient with alcohol; because dry skin causes skin resistance to become larger, which will impact the signal collecting.
- 4) Please clean the joints of lead wires, suction ball and limb clip, reinstall and tighten all joints. After long-term use, the joints will have dirt or become loose, resulting in poor signal transmission.
- 5) Check if the appearance of the lead wires has obvious fracture; if yes, replace

with new lead wire. If not, connect a proper lead wire to the device. If the waveforms are stable, the lead wires have problems and have to be replaced.

- 6) If there is no lead wires available, check if the lead wires conduct with a multimeter. First check if the inner conductors of the lead wires are conductive. Generally speaking, the acceptable resistance shall be about 10 k Ω . Then check if there is a short circuit between the outer shield and inner conductor. The resistance shall be infinity. If the lead wires have a problem, please contact our customer service to replace new lead wires.

3. The other reason for lead fault can be caused by failure in signal communication.

Please exclude other causes for lead fault problems first, and then contact our service department if necessary.

10.2 AC Interference

Apparent and regular trembling of ECG waveforms in the process of recording due to AC interference is shown as below.



Causes of baseline wander are varied, please do following checks one by one:

- 1) Make sure the acquisition box and electrodes are properly connected.
- 2) Make sure the electrodes and the patient skin have been covered with ECG gel.
- 3) Make sure the exam bed is properly grounded.
- 4) Make sure the patient is not in touch with the wall or the metal part of the bed.

- 5) Make sure the patient is not in touch with anybody else.
- 6) There shall be no large power electric equipment (such as X ray machine, ultrasound scanner etc.) operating nearby.
- 7) The patient shall not be wearing some jewelry like diamond.

 **CAUTION**

Set AC filter to ON if AC interference still exists after the above checks are completed.

10.3 EMG Interference

Irregular trembling of ECG waveforms due to EMG interference is shown as below.



Causes of baseline wander are varied, please do following checks one by one:

- 1) Make sure that the exam room is comfortable for examination.
- 2) Soothe the patient from irritation or excitement.
- 3) Make sure the exam bed is in suitable size.
- 4) Never have talks with the patient during ECG recording.
- 5) Make sure the limb electrode is too tight to make the patient uncomfortable.

 **CAUTION**

Set EMG filter to lower value if EMG interference still exists after the above checks are completed, and keep in mind that the recorded ECG waveforms, particularly R wave, will be somewhat attenuated.

10.4 Baseline Wander

Irregular movement of ECG baseline due to baseline drift is shown as below:



Causes of baseline wander are varied, please do following checks one by one:

- 1) Make sure the electrodes are in good contact with skin.
- 2) Make sure the connection between the patient cable and electrodes is normal.
- 3) Make sure the electrodes are clean and patient skin contacted with the electrodes has been well pretreated.
- 4) Make sure the electrodes and skin are covered with ECG gel.
- 5) Keep the patient silent and motionless, and keep the patient from hyperventilation.
- 6) Used electrodes shall not be utilized with new ones in patient examination.

 **CAUTION**

If the problem still can't be cleared, please turn up the baseline wander filter, keep in mind that the recorded ECG waveforms, particularly T wave and ST segment, will be somewhat distorted.

10.5 Battery is quickly charged and discharged

If the battery is often not fully charged, the performance will be deteriorated.

Solution:

It is recommended to charge the battery continuously until the battery is fully charged and activated for the first two times. Supply the machine with AC power as far as possible.

10.6 Wrong Analysis Result

For the case for some special populations (such as pregnant women, the user of vascular drugs, etc.) or mixed by obvious interference in the recording process, the analysis result of the resting ECG analysis of this ECG machine may be inaccurate. The possible reason may be as followings:

- 1) Poor contact between electrode and patient skin, caused by improper skin treatment and incorrect connection.
- 2) The patient has relatively large movement in the recording process.
- 3) Gender or age isn't entered;
- 4) If there is too much AC, EMG and breathing interference, the identification of P wave

and Q wave is not reliable sometimes; if there is baseline wander, the identification of ST segment and T wave is not reliable sometimes.

- 5) If QRS complex has low voltage, R-wave may be missed, and the electrical axis measurement and the identification of QRS dividing point can be unreliable. Or frequent ventricular contraction occurs or a variety of arrhythmias merge, the relevant detection parameters may be unreliable.

Solution:

- 1) Treat as *Applying the Electrodes* and wait until the waveforms are stable before reanalyzing.
- 2) Enter the patient gender and age correctly.
- 3) Exclude the interference as the methods described in *AC Interference*, *EMG Interference* and *Baseline Wander* before reanalyzing.

10.7 Files Uploading Failure

Network settings have problems.

Solution:

Please check the network connection and to re-set the network settings referring to *Connecting to Network*.

Appendix A Package and Accessories

A.1 Packing List

Item	Qty
iE 10	× 1 unit
Lead wire	× 1 set
Power adapter	× 1 piece
Electrodes	× 10 pieces
Chest Electrode	× 6 pieces
Limb Electrode	× 4 pieces
Certificate	× 1 sheet
User Manual	× 1 piece