



ECG

By

Sarah Hussein
Sabrin Salem

Electrocardiograph (ECG)

It is a device that records the electrical signals of the heart during the process of systole and diastole of the heart muscle, which are captured from the surface of the body using screens and displayed on the display screen or printed on paper tapes.



Device Component

1. Main device

- LCD screen
- Keyboard
- Printer
- Battery
- Power socket
- Mainboard

2. Power cable

3. Earth cable

4. ECG cable

5. ECG electrodes (10 electrodes)

- 6 chest electrode
- 4 limb electrode

Note: There are two type of electrodes:

- *Disposable Electrodes.*
- *Reusable Electrodes.*

Electrodes placement

1. Chest electrodes

- V1 4th intercostal space to right the of the sternum.
- V2 4th intercostal space to the left of the sternum.
- V3 directly between the leads V2&V4.
- V4 5th intercostal space at midclavicular line .
- V5 level with V4 at left anterior axillary line.
- V6 level with V5 at left maxillary line.

2. Limb electrodes

- RA right arm
- LR left arm
- LL left leg
- RL right leg (earth)

ECG Leads

(10 electrodes means 12 leads system)

- **Bipolar leads :**

$$\begin{aligned} I &= VLA - VRA \\ II &= VLL - VRA \\ III &= VLL - VLA \end{aligned}$$

- **Unipolar leads:**

- Limb leads
- Chest leads

Device malfunctions:

1. Bad contact
 - Wrong placement of electrodes .
 - Leftover gel.
2. Battery failure.
3. keyboard malfunction
- 4- Malfunction of the ECG signal cable.
5. Malfunction of one of the control buttons.
- 6- Malfunction in the main power supply.
7. Printer malfunction .