

ECG 200V

Digital Electrocardiograph



User's Manual



MEDIAID INC.
17517 Fabrica Way • Cerritos California 90703 USA
Tel.: 714-367-2848 • Fax: 714-367-2852
Web: www.mediaidinc.com
Email: info@mediaidinc.com

ECG010-200V

Preface:

Before Using ECG 200V

To ECG 200V Users

Thank you for purchasing our digital electrocardiograph ECG 200V. It is essential that you read through this manual before operating the instrument.

Important

1. Recording paper: Be sure to use high quality thermal printing paper.
2. Loading paper: Be sure that the paper feed works properly to prevent jamming.
3. Failure: For professional repair service, contact Mediaid Inc.
4. After use: Be sure to disconnect the machine from the patient cable and other cables.

Contents

Chapter 1 - Introduction

1.1 Introduction	1
1.2 Warranty.....	1
1.3 Precaution.....	1
1.4 Grounding and Power Connection	3

Chapter 2 - Features

2.1 Features.....	5
2.2 Panel	5

Chapter 3 - Operation

3.1 Paper Loading	7
3.2 Electrode Placement.....	8
3.2.1 Chest Electrodes	8
3.2.2 Limb Electrodes	8
3.2.3 Electrode Connection & Color Codes.....	9
3.3 Battery Operation	9
3.4 Operating Instructions	10
3.4.1 Keypad Controls	10
3.4.2 Sensitivity Selection	11
3.4.3 Paper Speed Selection	11
3.4.4 Filters.....	11
3.4.5 Manual & Automatic Modes.....	12
3.4.6 Recording Start – Stop.....	13
3.4.7 Power On – Off.....	13

Chapter 4 - Maintenance & Troubleshooting

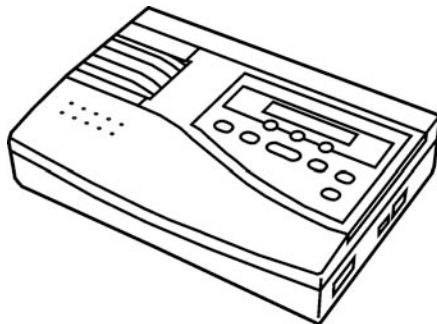
4.1 Maintenance	15
4.2 Troubleshooting	15
4.2.1 Automatic Power Down.....	15
4.2.2 AC Interference	16
4.2.3 EMG Interference	16
4.2.4 Baseline Drift.....	16

Chapter 5 - Specifications

5.1 Specifications	17
--------------------------	----

Chapter 1:

Introduction



1.1 Introduction

ECG 200V is a one-channel digital electrocardiograph. It is equipped with advanced wide range thermal-array printing system, single-chip 32 bit microprocessor, and internal memory. The instrument is characterized by high performance and reliability.

1.2 Warranty

1. Warranty covers a period of 18 months from the date of original purchase.
2. Within this period, we provide free service on any machine failure through our service center.
3. The consumer will be charged for repairs after the warranty period has expired.
4. Warranty does not cover failure resulting from neglect, abuse, accident, or natural disaster.
5. Spare parts for warranty service exclude accessories including power cable, recording paper, user's manual, and packaging.
6. Contact our service center for professional repairs.

1.3 Precautions

It is essential that you read the following to ensure proper operation of the equipment.

1. Make yourself familiar with the operating procedures of this machine prior to operating it.
2. Installation and maintenance of the instrument should be conducted as follows:
 - a. Install and keep the instrument away from water.
 - b. Do not install the instrument in a location where it will be susceptible to high humidity, poor ventilation, dust, or direct sunlight.
 - c. Protect the instrument from tilting as well as possible vibration or shock.
 - d. Do not install the instrument in a chemical storage or gas generation area.
 - e. Check the power source for proper voltage and frequency.
 - f. Ground the instrument during installation.
3. Preparation of the instrument prior to operation
 - a. Check that the instrument works properly
 - b. Check that the instrument is properly grounded and that cables are properly connected
 - c. When the instrument is used with other equipment, it is best to seek the advice of an electrician or qualified specialist.
4. Precaution during operation
 - a. Closely observe the patient and instrument. If any mechanical abnormality is present, discontinue use until the instrument can be tested to ensure patient safety.
 - b. Make sure the patient does not touch the instrument or any other electrical devices.
5. Precaution after operation
 - a. Turn off power to the unit.
 - b. Disconnect cables from the instrument.
 - c. Keep the instrument clean.
6. You are suggested to report a problem to a technician whenever it might occur.
7. Carry out periodic maintenance on the machine and related parts.
8. Do not make any modifications to the instrument.
9. Operating Environment:

Operation: 50-140°F (10-60°C), 30-85% Humidity (non-condensing)

Storage: 0-140°F (-20-60°C), 30-95% Humidity (non-condensing)

10. Please pay attention to the following description

DANGER: Possible explosion hazard if used in the presence of flammable anesthetics.

CAUTION: Electrical shock hazard. Do not remove cover. Refer to a professional for service. Grounding continuity should be checked periodically.

WARNING: For continuous protection against fire hazard, replace the fuse with the same type and rating.

1.4 Grounding and Power Connection

Make sure the instrument is properly grounded through a three prong outlet. When a proper outlet is unavailable, a grounding cable may be utilized to connect the grounding terminal to a ground lead. the sensor cord around the oximeter.

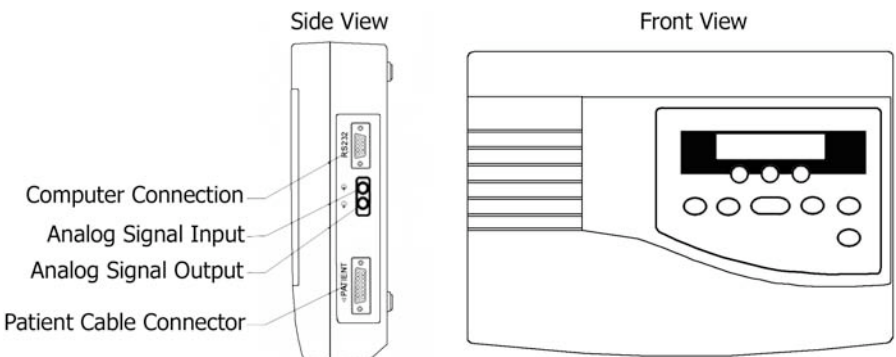
Chapter 2:

Features

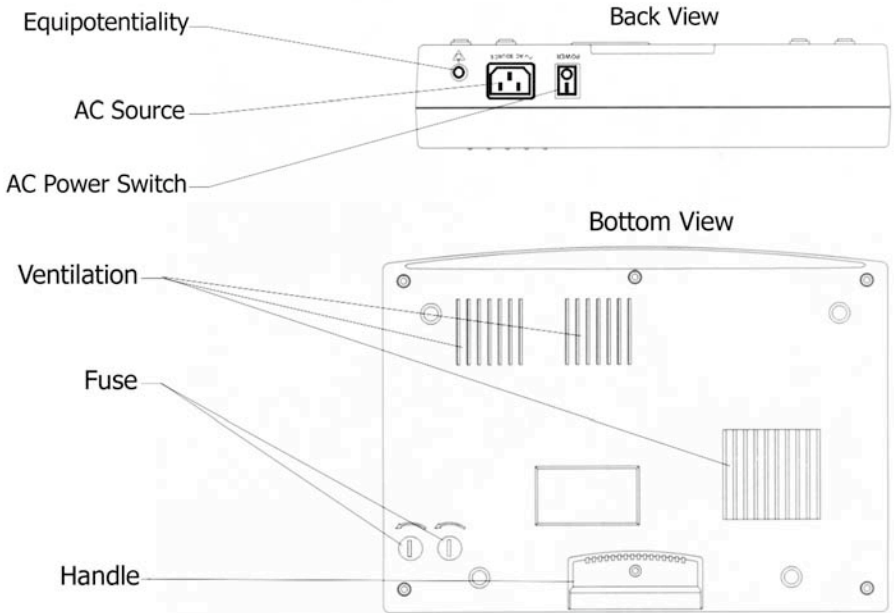
2.1 Features

- High Resolution Thermal Printing System is free from adjustment in operation as well as high frequency response and elimination of artificial errors which are common in needles recording system. It is capable of printing continuous one channel trace and annotations including lead mark and such parameters as sensitivity, paper speed, and filter operation status.
- High Resolution Digital Filter inhibits baseline drift without distorting ECG wave-form.
- One-touch Operation is able to enhance efficiency and relieve operating strain.
- Concept of floating input circuit meets IEC safety standard.
- Visual status due to light indicated touch-keys.
- Rechargeable battery supports more than 50 patient examinations.
- Under the automatic mode, pressing key “MODE” continuously can keep recording when abnormal lead is found.
- Modular design guarantees upgrade to 3-channels ECG and communication with computer database & network.

2.2 Panels



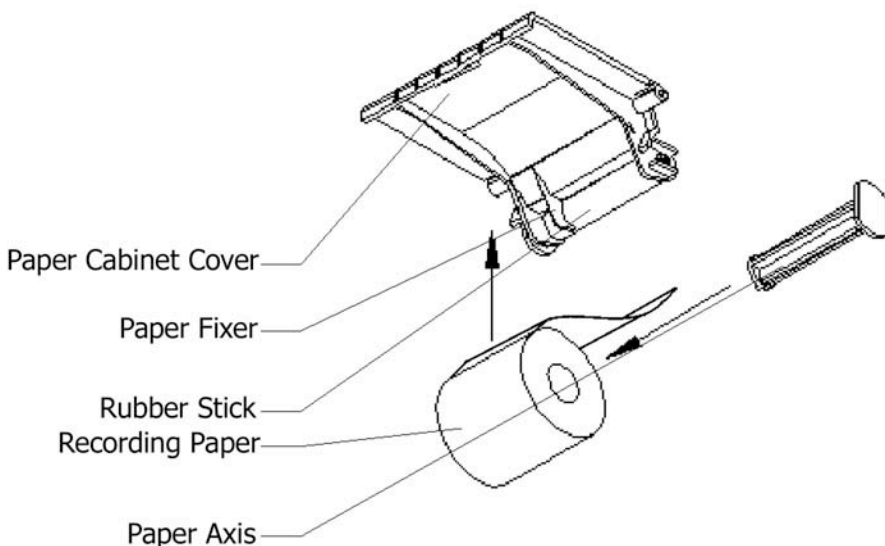
Features



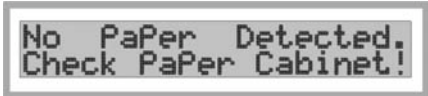
Chapter 3:

Operating the ECG 200V

3.1 Paper Loading



Be sure the paper fixer of paper cabinet works well to prevent paper from jamming.



No PaPer Detected.
Check PaPer Cabinet!

Message "No Paper Detected. Check Paper Cabinet" will be appear on LCD display when recording paper is empty or the paper magazine is not properly set. At this prompt, the operator shall set another roll of recording paper or shut the magazine securely.

Caution: Only the specified high sensitivity paper is recommended. Other kinds of paper may not render a clear print and may damage the printing mechanism.

3.2 Electrode Placement

Accurate placement is important to obtain a high quality ECG trace. The animal should be placed in the standard right lateral recumbency position.

Note: Set chest electrode first, then the limb electrode.

3.2.1 Chest Electrode

After cleaning with alcohol and applying ECG cream, attach the chest electrodes. If electrodes make contact, or ECG cream overlaps, an accurate reading will not be rendered.

Precordial leads are obtained by placing the vet clip electrodes as follows:

Code	Location
CV5 RL (rV2)	Right fifth intercostal space at edge of sternum
CV6 LL (V2)	Left sixth intercostals space at edge of sternum
CV6 LU (V4)	Left intercostals space at costochondral junction
D (V10)	Over dorsal spinous process of 7 th thoracic vertebrae

3.2.2 Limb Electrodes

Clean all the limb electrodes and the point of application with alcohol swab. Apply ECG cream to the electrode and apply firmly.

Color	Code	Location
Red	RA	Right Foreleg
Yellow	LA	Left Foreleg
Black	RL	Right Hindleg
Green	LL	Left Hindleg
White	V	Precordial

3.2.3 International / American Color Codes

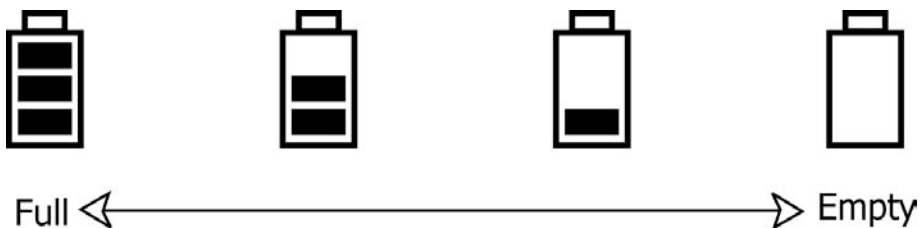
The color described for the ECG200V follows international color codes. If the American coding system is more familiar, you may wish to relabel the electrodes as follows:

International Color	American Color	Location
Red	White	Right Foreleg
Yellow	Black	Left Foreleg
Black	Green	Right Hindleg
Green	Red	Left Hindleg
White	Blue	Precordial

3.3 Battery Operation

ECG 200V is designed to be powered by the built-in battery whenever the AC power is not available. The battery is a sealed maintenance free rechargeable battery, which automatically recharges whenever the instrument is connected to AC power source. Charging time lasts about 10 hours. Never charge the battery for more than continuous 24 hours. For long periods storage, the battery should be recharged every 6 months.

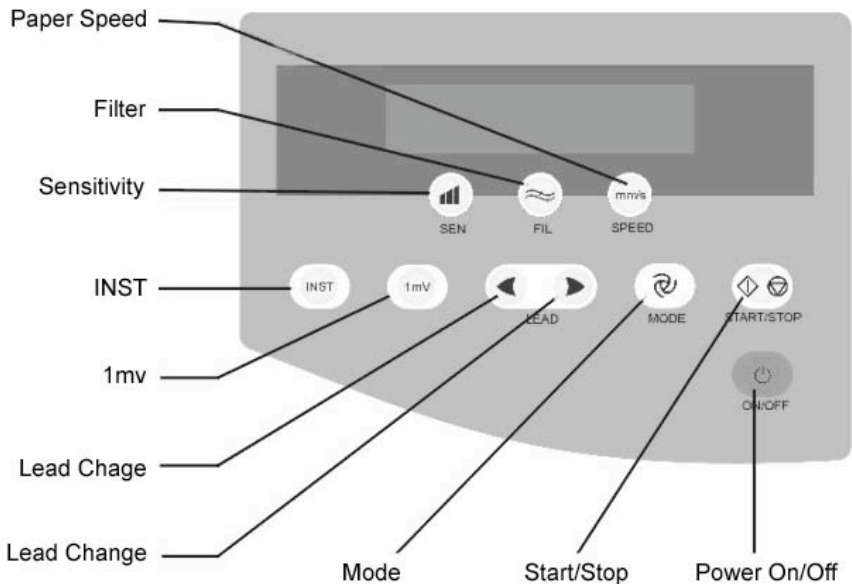
Note: Four different symbols indicate the status of the battery power on the LCD (Only displayed when AC Power is not used).



3.4 Operating Instructions

3.4.1 Keypad Controls

The keypad controls of the instrument are illustrated and described as follows.



All controls of the ECG 200V are located on the main panel, which features green in color and soft-touch control in function. The LCD located on the upper part of the panel acts to supply guide operating such as parameter selection. Operation parameters of the instrument remain the same till next change, whatever its status is.

Attention: Do not operate with sharp objects (such as a pen). Otherwise you will damage the keypad permanence.

When the ECG 200V is powered on, the instrument starts self-examination and displays on the LCD as follows:



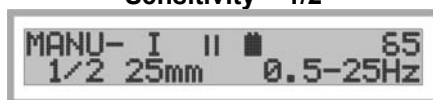
3.4.2 Sensitivity Selection



Sensitivity is to be selected by pressing the “SEN” (sensitivity) key (1/2=5mm/mV, 1=10mm/mV, 2=20mm/mv). Sensitivity selection is indicated on the LCD display.

Note: Sensitivity key is only effective under manual mode. The instrument will select sensitivity itself under automatic mode.

Sensitivity = 1/2



Sensitivity = 2



3.4.3 Paper Speed Selection



There are two recording speeds, 50mm/sec and 25mm/sec (standard speed). The speed can be changed by the “SET” key and then pressing up or down according to the LCD display.

3.4.4 Filters



Press the “FIL” button to choose the appropriate filter: inhibition of baseline drift, AC interference (HUM), or ECG interference (EMG). The filter status is displayed on the LCD display.

Inhibition of baseline drift, Filter HUM and Filter EMG 35Hz:



No filter:



Inhibition of baseline drift and Filter HUM:



Inhibition of baseline drift, Filter HUM and Filter EMG 25Hz:



3.4.5 Manual & Automatic Modes



MODE

This key toggles between manual and automatic lead selection. The status of the lead will appear on the LCD display.

Manual Mode



LEAD

Using the up and down buttons, the lead change will switch between I, II, III, aVR, aVL, aVF, V1, V2, V3, V4, V5, and V6.

Automatic Mode

The instrument records 12 leads automatically when in automatic mode. By pressing "MODE" continuously, it is possible to keep recording when an abnormal lead is found.

3.4.6 Recording Start – Stop



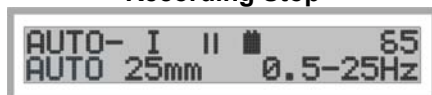
START/STOP

Pressing this key will start or stop recording.

Recording Start



Recording Stop



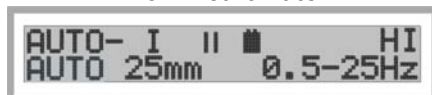
3.4.7 Power On – Off



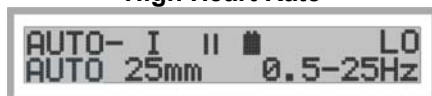
ON/OFF

When the master power switch in the back of the instrument is turned on, this button turns the machine on and off.

Low Heart Rate



High Heart Rate



Lead Overload



Chapter 4:

Maintenance & Troubleshooting

4.1 Maintenance

The ECG 200V is designed to operate maintenance free for its lifetime. There are no parts that can be replace or repaired by the consumer, so please do not attempt to open the instrument.

Paper scraps and dust may accumulate in the document feeder. This debris should be removed with a soft bristled brush or wiped away. You may use a damp cloth, but do not use alcohol or any other solvents or detergents. Be sure to turn off and disconnect all cables to the instrument before cleaning.

4.2 Troubleshooting

4.2.1 Automatic Power Down

When operating by battery, the ECG 200V will automatically shut off after five minutes of inactivity. The machine will also shut down when battery power is no longer sufficient.

The following steps are necessary following an automatic power down:

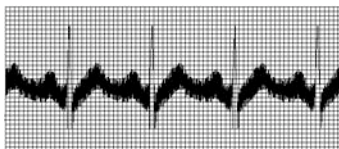
Turn the power switch off, then back on before resuming operation.

Check the battery capacity.

Check the AC power voltage.

Check for AC interference.

4.2.2 AC Interference



1. Keep the patient calm and comfortable.
2. Make sure the unit is properly grounded.
3. Check that electrodes are connected and the performance of the lead wire.
4. Prevent contact between the patient and physical surroundings.
5. Remove any objects that are not crucial to the examination process.
6. Check for electrical devices in the area, including the lighting and concealed wiring.

4.2.3 EMG Interference



1. Keep the patient calm and comfortable.
2. The operating environment should also be kept comfortable.

4.2.4 Baseline Drift



1. Keep the patient calm and comfortable.
2. Check the electrode connections and lead wire performance.
3. Check the connection between the patient cable and electrodes.
4. Make sure that the patient's skin and the electrodes are both clean.
5. If these steps do not correct the problem, use one of the instrument's preprogrammed filters.

Chapter 5:

Specifications

5.1 Specifications

Input Circuit	Floating - protection against defibrillator effect
Lead	Standard 12 Lead – automatic lead change
Patient Current Leakage	<10 μ A
Input Impedance	\geq 10M Ω
Calibrating Voltage	1mV \pm 3%
A/D Conversion	12 bit
Frequency Response	0.05Hz-150Hz (IEC)
Time Constant	>3.2 sec
CMRR	>80dB
	>100dB (with filter)
EMG Filter	35Hz (-3dB) / 25Hz (-3dB)
Sensitivity	1/2, 1, 2 (cm/mV), conversion deviation \leq 5%
Recording System	Thermal array
	8 dots/mm (vertical)
	16 dots/mm (horizontal @ 25mm/sec)
Paper Speed	25, 50 mm/sec \pm 3%
Recording Paper	50mm, 20m, high speed roll
Input Circuit Current	\leq 50nA
Safety Standard	IEC class 1, type CF
Power Supply	AC: 220V / 110V, 50Hz / 60Hz
	DC: 12V rechargeable battery
Skin Voltage Tolerance	\pm 300mV
Noise Level	<15 μ Vp-p
Dimensions	310 W x 230 H x 70 D (mm)
Dimensions of Packaging	400 W x 280 H x 160 D (mm)
Weight	2.75 kg
Screen Resolution	240 x 128 (CCFL LCD)

