



# MAC<sup>®</sup> 1600 ECG Analysis System

Quick Reference Guide



Clinical Systems  
Clinical Education Development



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## Notice

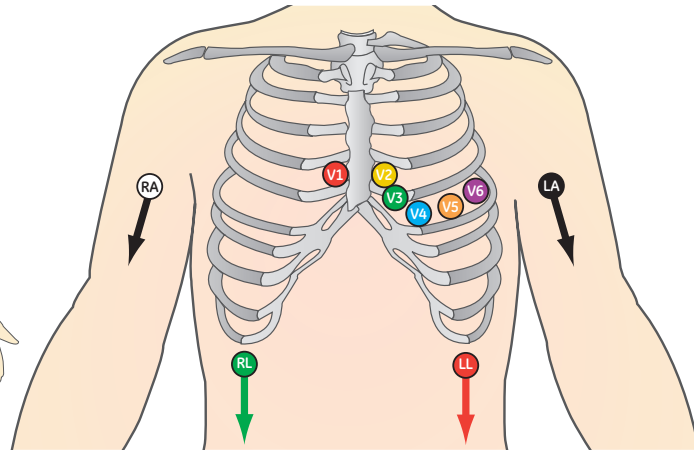
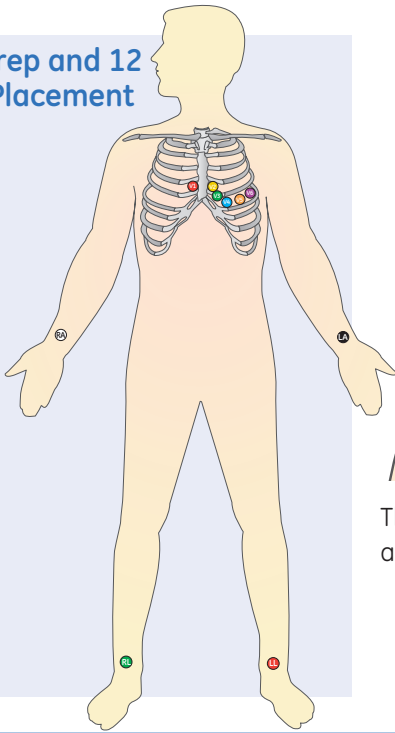
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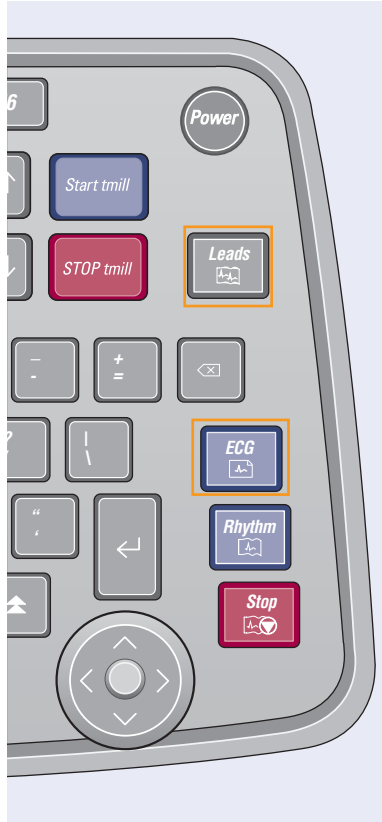
## Skin Prep and 12 Lead Placement



The quality of your ECG tracing is a direct result of skin prep and lead placement.

1. Shave hair from application site.
2. Gently rub area to remove dead skin cells.
3. Cleanse site with alcohol solution.
4. Dry skin completely.

Lead	Electrode Placement
V1	Fourth intercostal space next to the sternum on the right side.
V2	Fourth intercostal space next to the sternum on the left side.
V3	Midway between locations V2 and V4.
V4	At the mid-clavicular line in the fifth intercostal space.
V5	At the anterior axillary line on the same horizontal level as V4.
V6	At the mid-axillary line on the same horizontal level as V4 and V5.
RA and LA	Place on the corresponding right and left wrist. An alternate placement to reduce muscle artifact is midway between the elbow and the shoulder.
RL and LL	Place on the corresponding right and left ankle. An alternate placement to reduce muscle artifact is on the upper leg as closed to the torso as possible.



## Acquire an ECG

1. Prepare the patient.
2. Open the Resting ECG function in one of two ways:
  - Power on the unit or
  - From **Main Menu** select **Resting ECG (F1)**.
3. Verify waveform quality by:
  - Checking Hook-up Advisor. Green indicates a good quality waveform.
  - Cycle through the lead groups to visually verify lead quality by pressing the **Leads** key on the Keyboard.
4. Use the **(F)** keys to make adjustments to (if necessary):
  - **Speed (F2)**
  - **Gain (F3)**
  - **Filter (F4)**
5. Press **F1** to open the Patient Data window. Enter the patient information.
6. Press **Page Down (F4)** to access other Test Information windows.
7. Select **Save (F6)** to save and close the Patient Data window.
8. Press the **ECG key** on the keyboard to record and print an ECG.

9. If you have your system set to Preview before Analysis, press **Continue (F4)** to proceed to analyze and print an ECG or **Cancel (F3)** to cancel the analysis.
10. If finished, continue with Step 11, or continue with these options:
  - Press **Print (F2)** to print another copy
  - Select **Save (F3)** if the unit is not set to save the ECG automatically.
  - Select **Next Patient (F1)** to start a new patient or press the **ECG key** to take another ECG on the same patient.
  - Select **Transmit (F4)** to transmit that single record to the default transmit location.
11. When finished, do one of two things:
  - Proceed to **File Manager** to transmit records. (See **Transmit Stored Records**)
  - Turn the unit off and plug it into AC power.



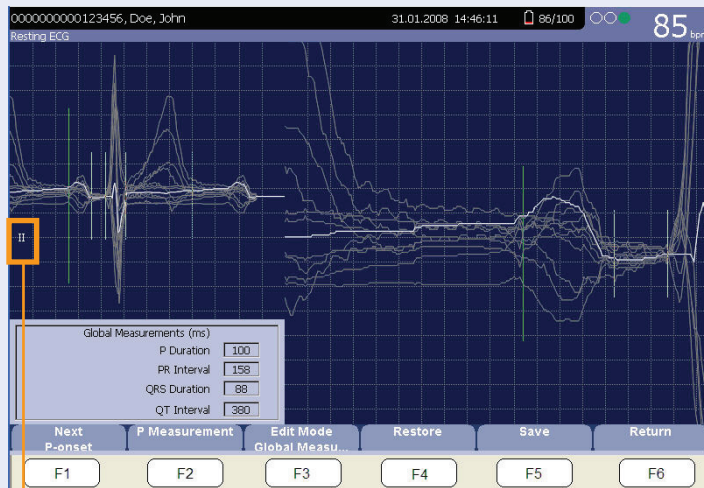
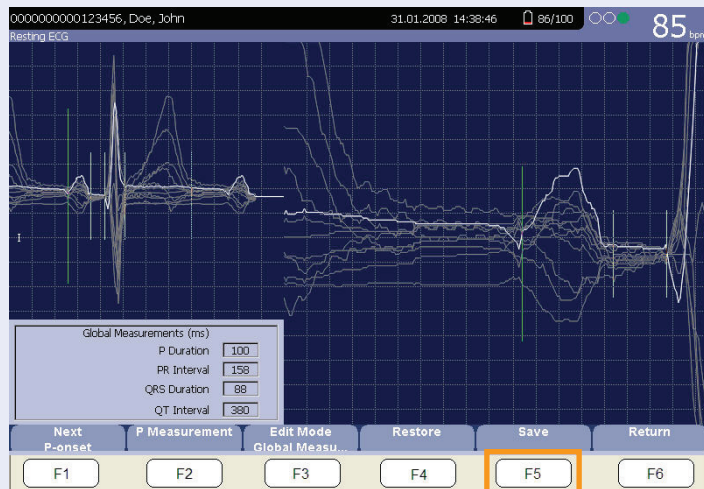
## Print Continuous Rhythm

1. Prepare the Patient.
2. Open the Resting ECG function in one of two ways:
  - Power on the unit or
  - From **Main Menu** select **Resting ECG (F1)**
3. Verify waveform quality by:
  - Checking Hook-up Advisor. Green indicates a good quality waveform.
  - Cycle through the lead groups to visually verify lead quality by pressing
4. Use the **(F)** keys to make adjustments to (if necessary):
  - **Speed (F2)**
  - **Gain (F3)**
  - **Filter (F4)**
5. Press **F1** to open the Patient Data window.
6. Press Page **Down (F4)** to access other Test Information windows
7. Select **Save (F6)** to save and close the Patient Data window.
8. Press the **Rhythm** key on the keyboard to print a continuous rhythm.
9. Press the **Stop** button to stop printing.



**NOTE!** Rhythm reports are not stored to File Manager.





Leads



Leads Key

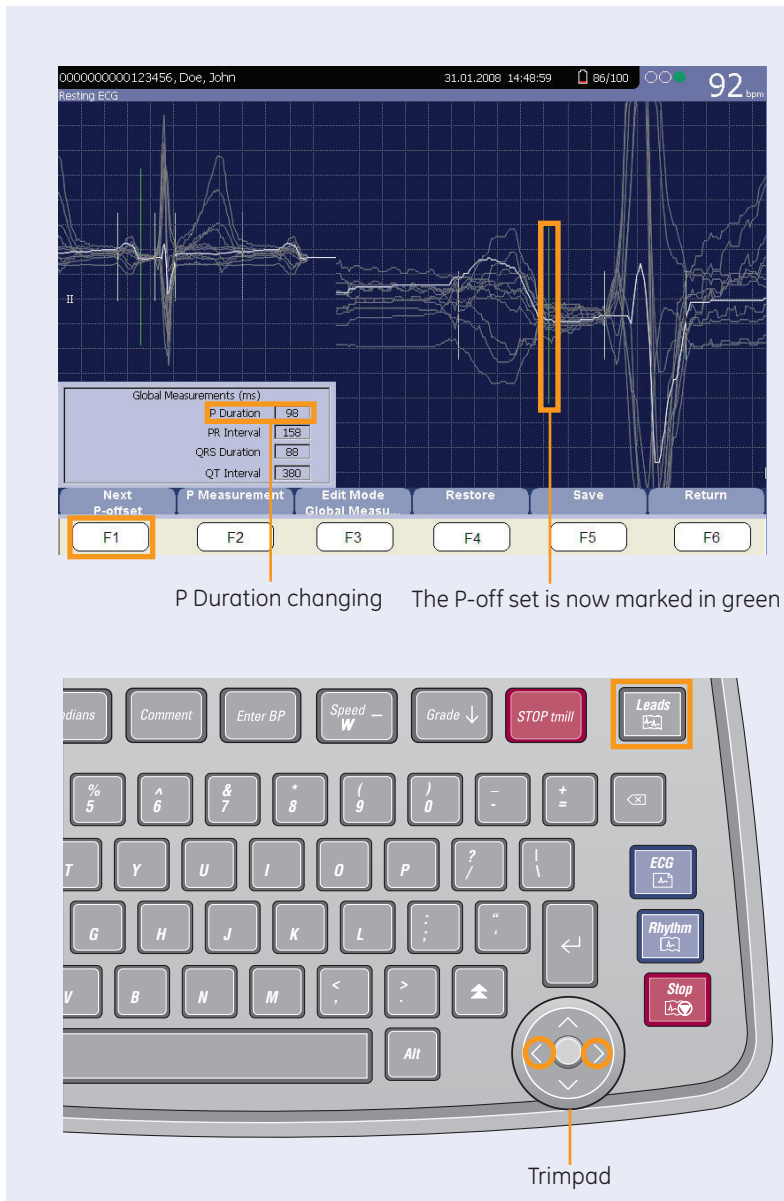
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## ECG Reanalysis



**NOTE!** Reanalysis is only functional if the option **MI12** (12SL Measurement and Interpretation) is activated and the **Reanalysis** function is enabled in **Resting ECG** setup.

1. After an ECG is acquired, the **Reanalyze (F5)** key is used to run the Reanalyze function.
2. Once in the Reanalysis screen, press the **Leads** key to cycle through the different leads and their corresponding waveform.
3. Evaluate the fiducial points for accuracy.



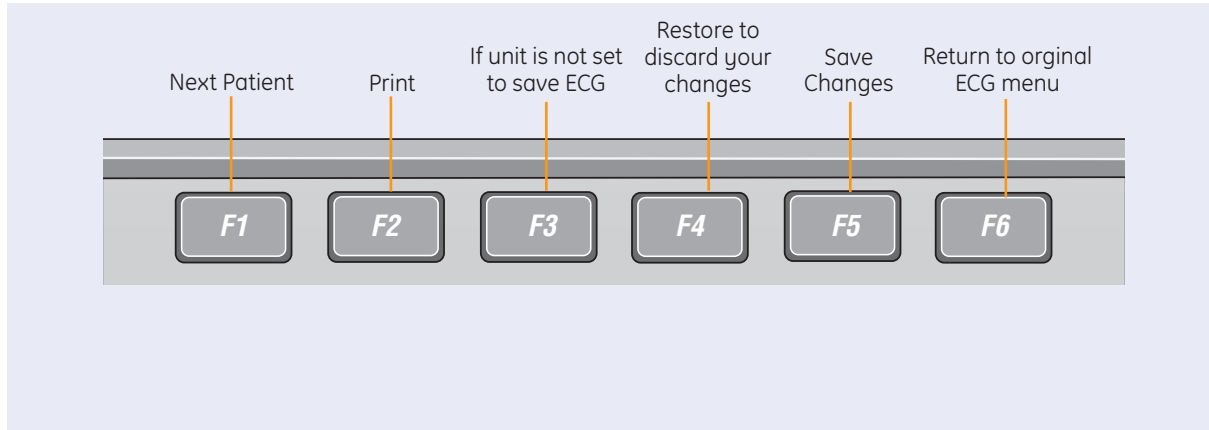
P Duration changing The P-off set is now marked in green

4. **F1** is used to cycle to the desired fiducial point. Choices include:

- P-onset,
- P-offset,
- QRS-onset,
- QRS-offset and
- T-offset.

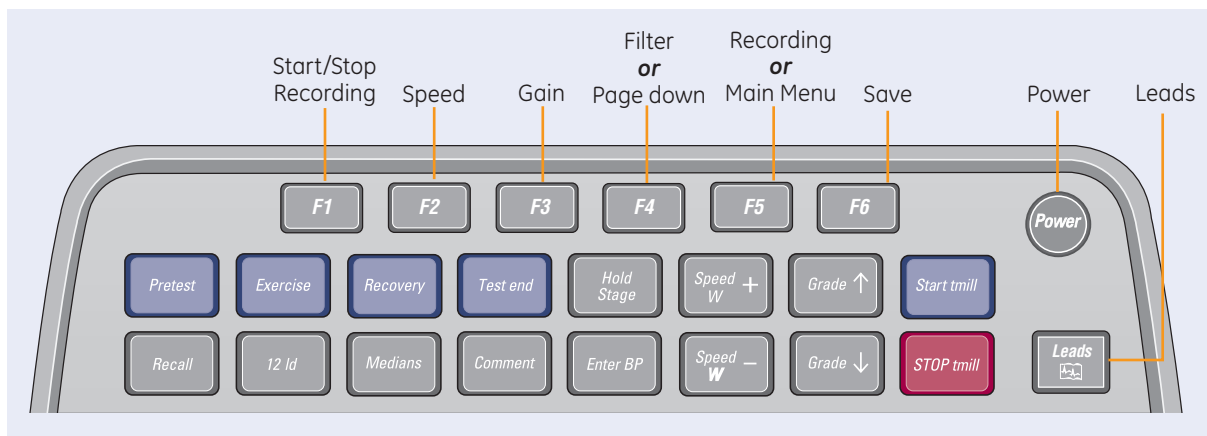
The selected fiducial point will be in green.

5. When the desired fiducial point is selected, use the trimpad's right and left arrows to adjust the fiducial point position. As you move the fiducial point the global measurements for that fiducial point will be updated.



6. After all the changes have been made, press **Save (F5)** to keep your changes or **Restore (F4)** to discard your changes.
7. Press **Return (F6)** to return to the original ECG menu options.
8. If finished, continue with Step 9, or continue with these options:
  - Press **Print (F2)** to print another copy
  - Select **Next Patient (F1)** to start a new patient or continue with the same patient.
  - Select **Save (F3)** if the unit is not set to save the ECG automatically.
  - Select **Transmit (F4)** to transmit that single record to the default transmit location.
9. When finished, do one of two things:
  - Proceed to **File Manager** to transmit records. (*See Transmit Stored Records*)
10. Turn the unit off and plug it into AC power.





## Acquire an Arrhythmia

1. Prepare the Patient.
2. Open the Arrhythmia function in one of two ways:
  - Power on the unit or
  - From **Main Menu** select **Arrhythmia (F2)**
3. The **Patient Data** window automatically opens. Enter the desired information.
4. Press **Page Down (F4)** to access other Test Information windows.
5. Select **Save (F6)** to save and close the Patient Data window.
6. Verify waveform quality by:
  - Checking Hook-up Advisor. Green indicates a good quality waveform.
  - Cycle through the lead groups to visually verify lead quality by pressing the **Leads** key on the Keypad. The lead group displayed on the screen will be the lead group that prints as the rhythm strip.
7. Use the (F) keys to make adjustments to (if necessary):
  - **Speed (F2)**
  - **Gain (F3)**
  - **Filter (F4)**
8. Press the **Start Recording (F1)**.
9. Press the **Stop Recording (F1)**.
10. Press **Confirm (F2)** to stop the recording or **Continue Recording (F5)** to continue to collect information.
11. After the recording is stopped, select the type of Arrhythmia report you wish the printout to include: Summary Report, Table Report, or Episode Report.
12. Select **Main Menu (F5)**.



Use arrow keys to highlight records

Use Enter key to select records

File Manager 09.11.2007 13:27:04 80/100

Internal Directory Listing - Compatible Files: 10 Selected Files: 0

Patient Name	Patient ID	Date	Time	Sent	U/C	Order Number
Done, John	000000000098765	09.11.2007	13:24:18	No	U	
Done, John	0000000000456789	09.11.2007	13:23:54	No	U	
Labels, Patty	0000000000056788	09.11.2007	13:23:22	No	U	
Smith, Mike	0000000006789990	09.11.2007	13:22:57	No	U	
Jones, Tom	0000000006789990	09.11.2007	13:22:28	No	U	
Candy, John	000000000045632	09.11.2007	13:21:55	No	U	
Myers, Michael	0000000000896543	09.11.2007	13:21:33	No	U	
Smith, David	000000000076543	09.11.2007	13:21:02	No	U	
Parker, Sarah Jessica	000000000085498	09.11.2007	13:20:38	No	U	
Anderson, Pam	0000000000786543	09.11.2007	13:19:06	No	U	

Edit Delete Print Transmit Export Return

F1 F2 F3 F4 F5 F6

Highlighted records are shaded in dark blue

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## File Manager

### Select Records

1. From **Main Menu** select the (F) key for **File Manager**.
2. From File Manager you can select records to:
  - Transmit
  - Print
  - Edit
  - Delete

### To Select All:

1. Press Select **All (F2)**. All records are selected.
2. Press the key (F) for the desired function, such as **Transmit (F4)**.

### To Select Individual Records:

1. Press **Select (F1)**.
2. Use the arrow keys on the the trimpad to highlight the record. Highlighted records are shaded in blue.



09.11.2007 13:28:18 80/100

File Manager

Internal Directory Listing - Compatible Files: 10 Selected Files: 1

Patient Name	Patient ID	Date	Time	Sent	U/C	Order Number
Doe, John	000000000098765	09.11.2007	13:24:18	No	U	
Doe, Jane	0000000000456789	09.11.2007	13:23:54	No	U	
Labelle, Patty	0000000000056788	09.11.2007	13:23:22	No	U	
Smith, Mike	0000000000789900	09.11.2007	13:22:57	No	U	
Jones, Tom	0000000000789990	09.11.2007	13:22:28	No	U	
Candy, John	0000000000345632	09.11.2007	13:21:55	No	U	
Myers, Michael	0000000000996543	09.11.2007	13:21:33	No	U	
Smith, David	0000000000076543	09.11.2007	13:21:02	No	U	
Parker, Sarah Jessica	0000000000065498	09.11.2007	13:20:38	No	U	
Anderson, Pam	00000000000786543	09.11.2007	13:19:06	No	U	

Edit Delete Print Transmit Export Return

F1 F2 F3 F4 F5 F6

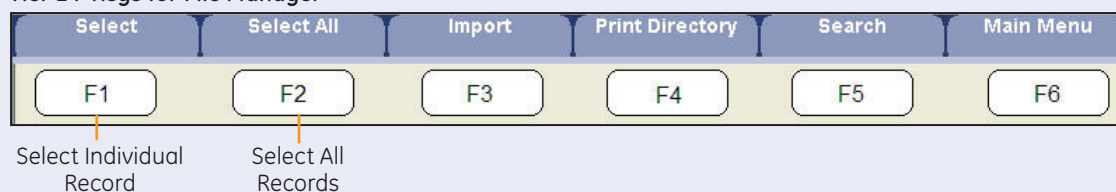
Selected records are shaded in gray

3. Press **Enter** to select the records. Selected records are then shaded in gray.
4. If needed, continue to select other records.
5. Press the **(F)** key for the desired function, such as **Transmit (F4)**.

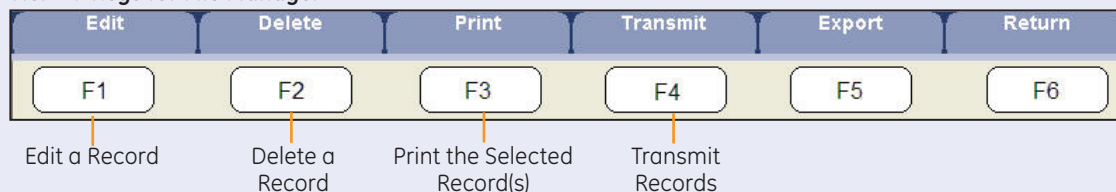
### Transmit Stored Records

1. From **Main Menu** press the **(F)** key for **File Manager**.
2. Press **Print Directory (F4)** to print a list of stored files
3. Press **Select All (F2)** to select all records to transmit or press **Select (F1)** to select individual records.
4. Press **Transmit (F4)** to transmit selected records.
5. One of two things will happen:
  - If only one location is defined, the file(s) will be transmitted to the default location.
  - If multiple locations are defined, select the desired location and press **Ok (F6)**.

## Tier 1 F Keys for File Manager



## Tier 2 F Keys for File Manager



## Print Stored ECG records

1. From Main Menu press the **(F)** key for **File Manager**.
2. Press **(F1)** to select individual records to print. Press **(F2)** to select all records.
3. Press **Print (F3)** to print the selected record(s).

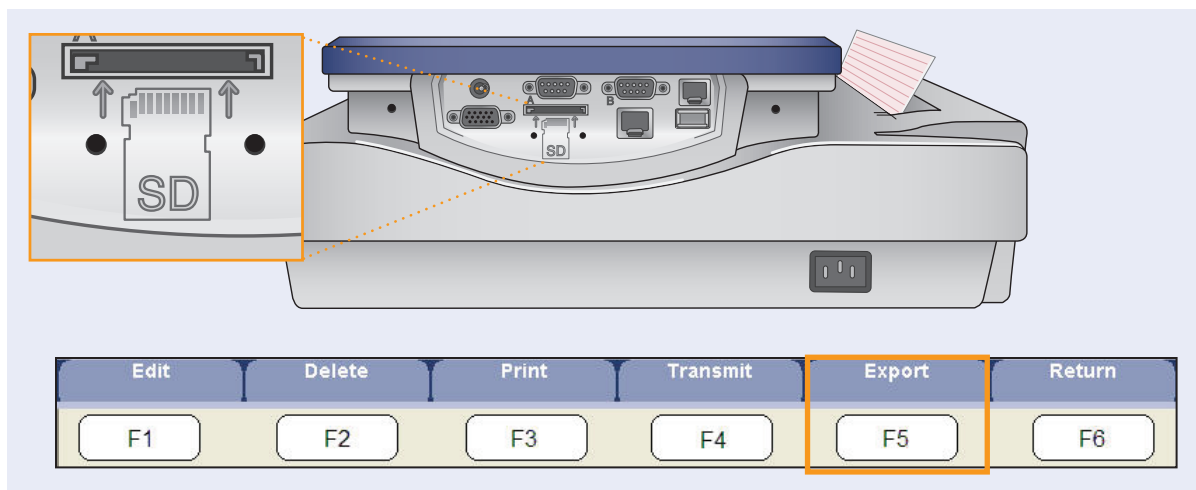
## Edit Stored ECG Records

1. From Main Menu press the **(F)** key for **File Manager**.
2. Press **(F1)** to select the individual record to edit. You may only select one record to edit at a time.

3. Press **Edit (F1)** to edit the selected record.
4. Use the arrow keys on the the Trimpad to to select the Patient Information to be edited.
5. Edit the data as required.
6. Press **Page Down (F4)** to access other Test Information Windows
7. Edit the data as required.
8. Press **Save (F6)** to save edited fields and close the data window.
9. Verify the record is still highlighted and press **Print (F3)** to print the edited record.

## Delete Stored ECG Records

1. From Main Menu press the **(F)** key for **File Manager**.
2. Press **F1** to select individual records to edit. Press **F2** to select all records.
3. Press **Delete (F2)**.
4. A message will appear verifying whether you want to delete the selected record(s).
5. Press **Yes (F6)** to delete the record(s). Press **No (F5)** to cancel the delete function.



## Exporting to SD Card

Select the record(s) to be exported.

1. Press **F1** to select individual records to edit. Press **F2** to select all records.



**NOTE!** You cannot export records that were imported to internal storage. Imported records have a Sent status of Recv.

2. If you are exporting to an SD card, insert the card into the MAC 1600 SD Card slot. Make sure the card has sufficient free space for the selected records and that it is not

write protected. If there is not sufficient space on the SD card to export the selected record a message will appear indicating such.

3. Press **Export (F5)**. One of two things happens.

- If a shared directory was defined, a window opens for you to select the destination. Go to step 4.
- If a shared directory was not defined, the selected records are exported to the SD card. A window opens to inform you of the export's progress. The window closes when the export is complete.

4. Select one of the following:

- To export to the SD card, select SD Card in the window.
- To export to the shared directory, select Shared Directory in the window.

5. Press **OK (F6)**.



**NOTE!** The selected records are exported to the selected destination. A window opens to inform you of the export's progress. The window closes when the export is complete.



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Innovation Drive  
Wauwatosa, WI 53223  
USA

[www.gehealthcare.com](http://www.gehealthcare.com)



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