

SCP-AV User Manual

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1. Main usage

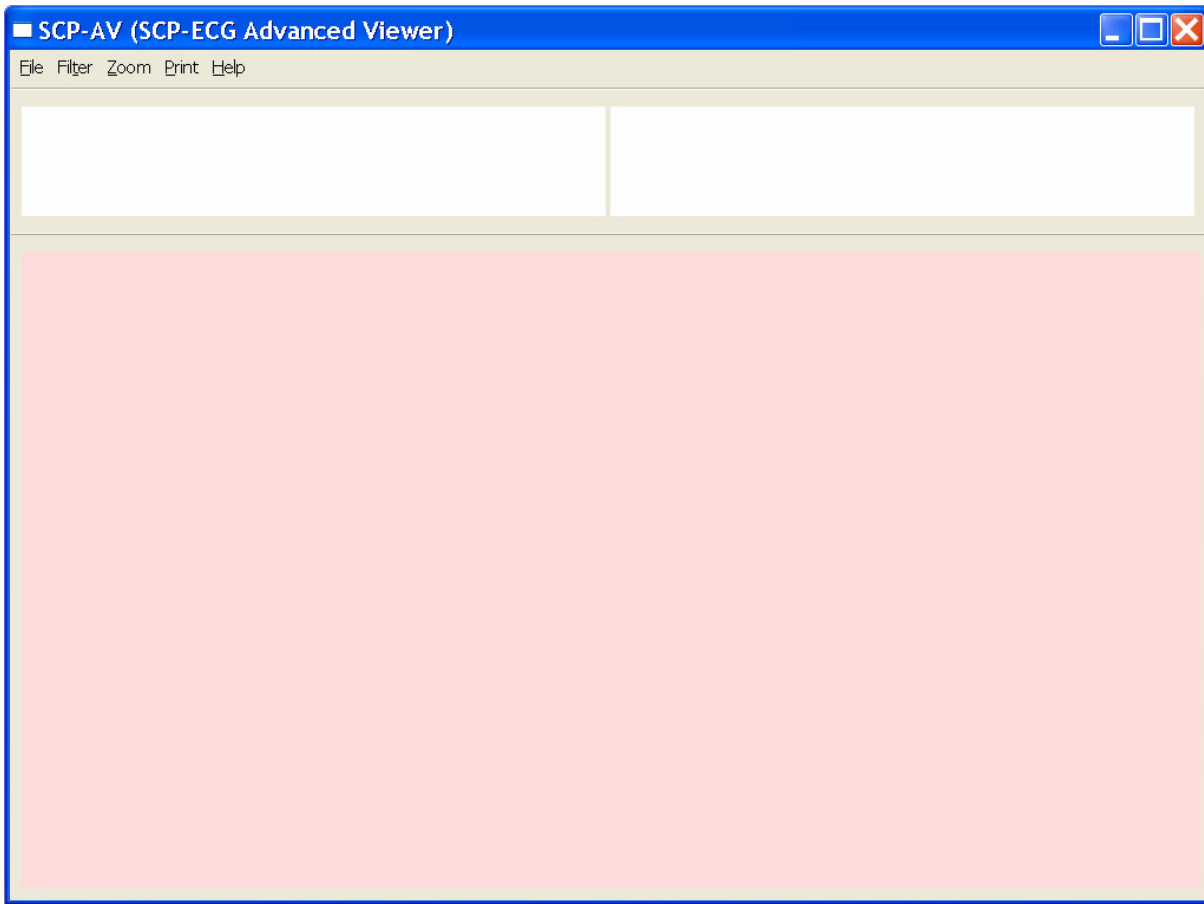
This document assumes you have already installed the program.

The program may be run either with parameters or not. Use of parameters will be explained later.

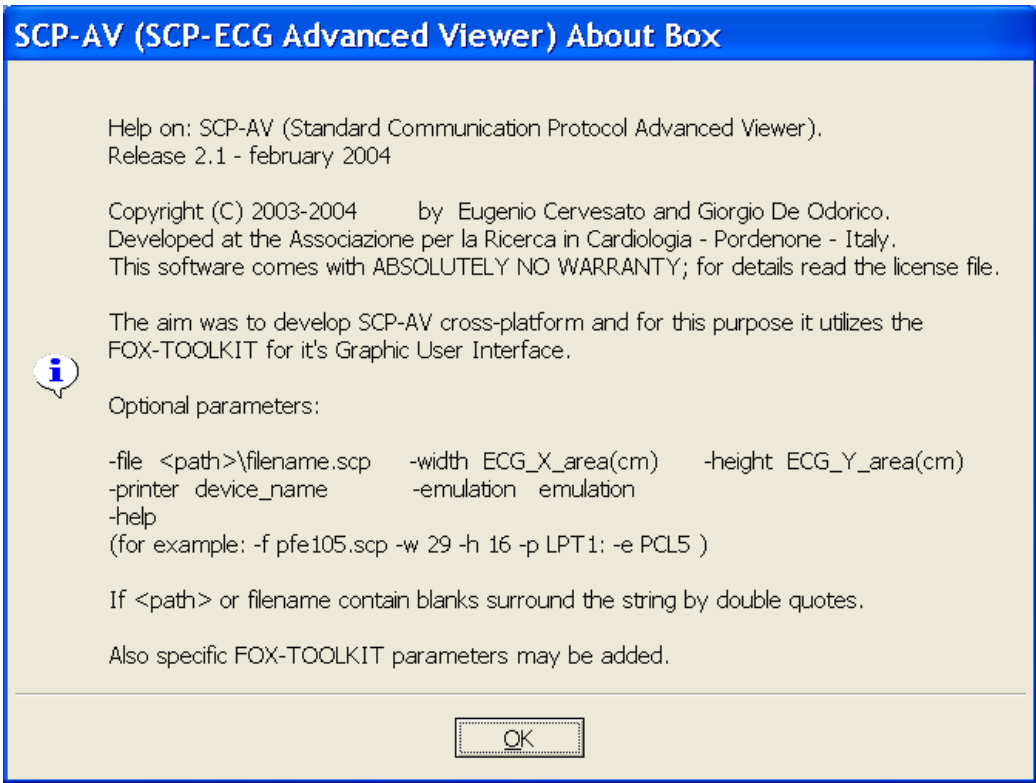
To run it with:

- X-windows or WINDOWS explorer: simply double click on the icon 'scp-av'
- command shell: set the program working directory and type 'scp-av' in WINDOWS or './scp-av' in LINUX, followed by <return>.

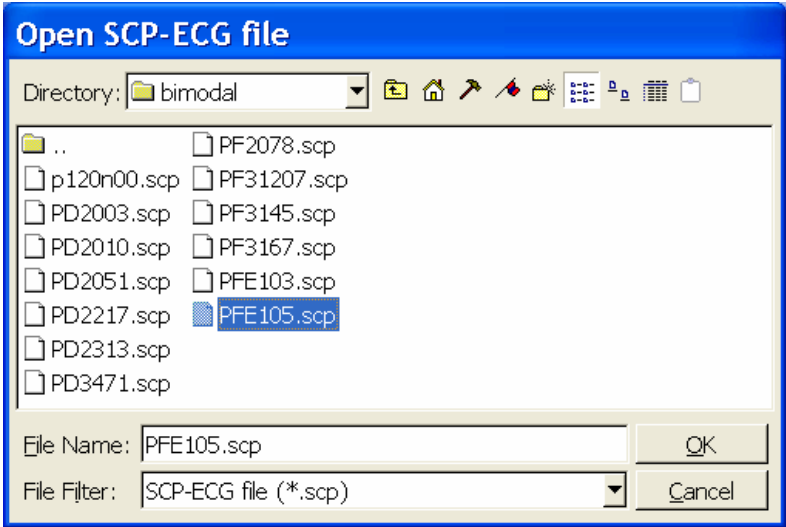
The main application window appears on the screen (see Figure). If don't, please consult the 'Readme' file for tricks.



SCP-AV handles both mouse and keyboard events. The following 'About Box' may be displayed pressing the key 'F1' or clicking on the menu 'Help' and then 'About ...'

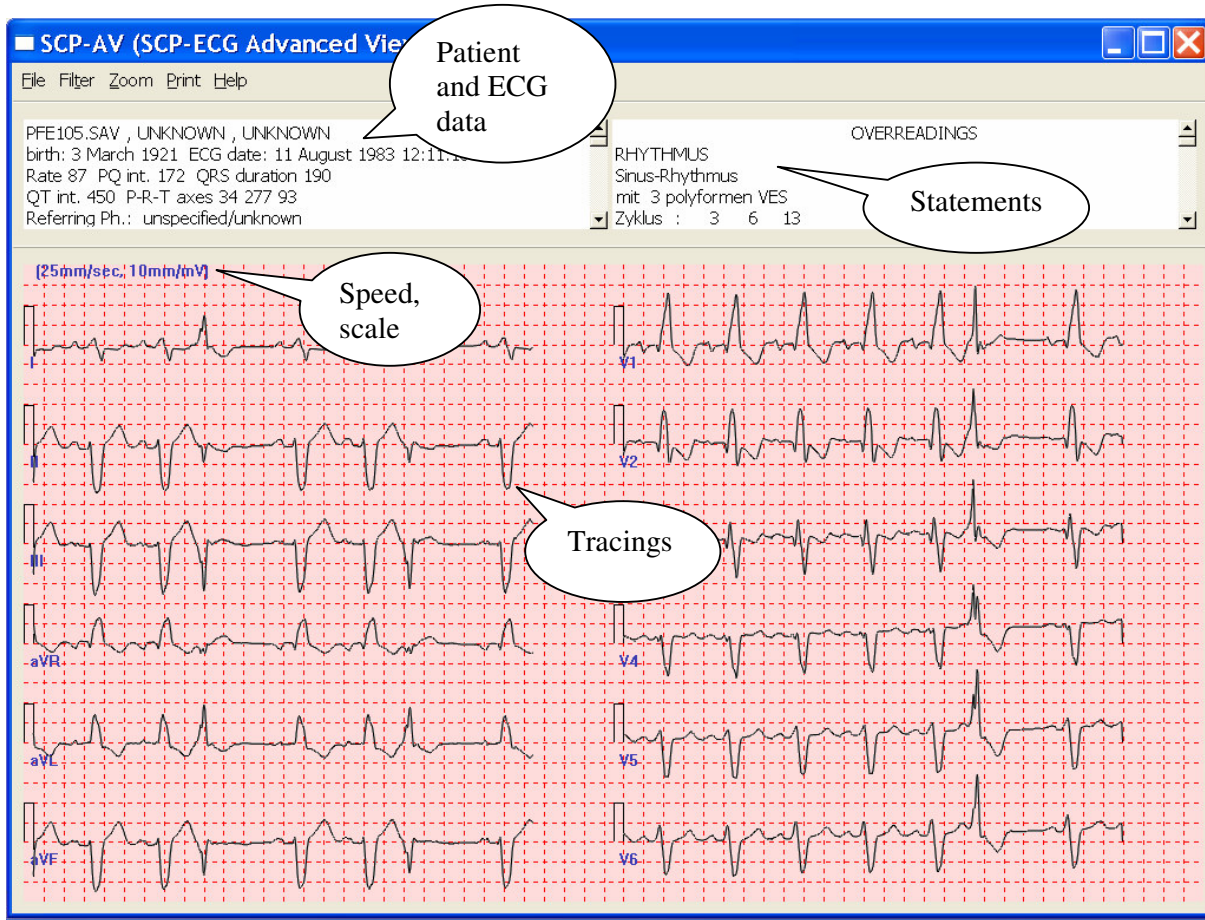


To start working click on the menu 'File' and then 'Open'. Two folders are included in the distribution: 'bimodal' and 'redundancy'. They contain sample files taken from the URL: www.openecg.net/ECGsamples.zip, in high compression and low compression respectively. The following figure illustrates the dialog:



As a limitation, no backward compatibility is guaranteed. The program has been fine tuned with SCP-ECG 2.0 and 1.3 sample files!

After selecting the file to open, if all works fine ..., the main window will be populated with tracings and data. See the following figure for details:



The top part of the window is divided in two areas: Patient and ECG data on the left and the interpretative statements on the right. Both are scroll controls.

Immediately below the paper speed and the scale amplitude are specified. The program tries to show the tracings in real dimensions. To adapt the window to screen dimensions two parameters are available in the starting-up command line, it will be explained later.

Tracings are shown in a 6x2 format (I, II, III, aVR, aVL, aVF starting from time=0 and V1...V6 starting from time=5 seconds, for 5 seconds.

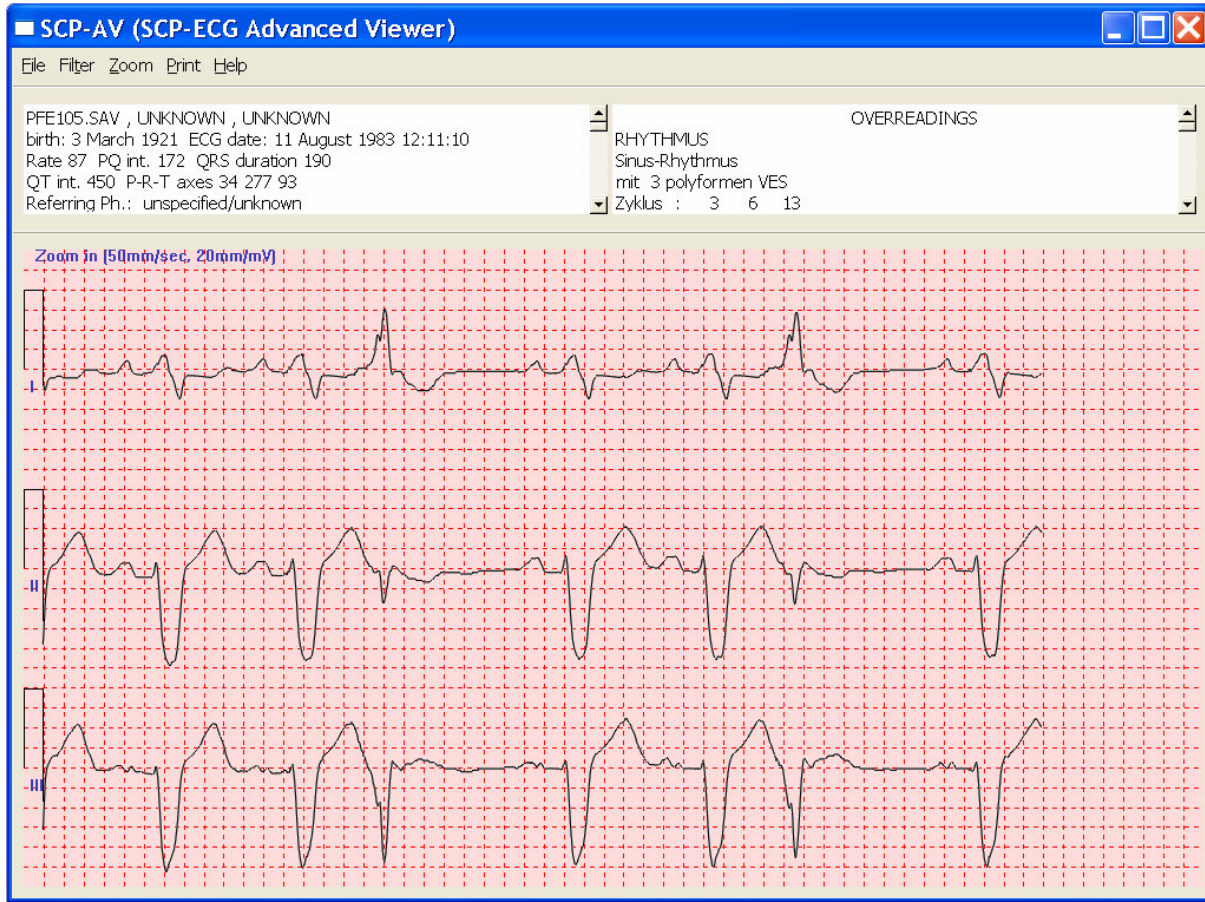
Isoelectric is automatically aligned with a grid line facilitating measures. Grid lines are spaced 0.5 cm both horizontally and vertically.

A very efficient anti-aliasing algorithm is implemented. Have you noted it? QRS does not show a crude bitmap but instead the tracing seems to cross pixel boundaries with a soft transition (disclaimer: I noticed that the PDF format alters the figure; the algorithm should be evaluated on the live window). This algorithm has been clinically validated in 1992-1993 (see: A new approach to ECG tracing storage allowing full integration with clinical database. E Cervesato, GL Nicolosi, GL Rellini, D Zanuttini. Proceedings of Computers in Cardiology 1993, London, UK, September 5-8, 1993; p. 559-562).

The graphical layout has been highly appreciated by our cardiologists, because they can read the ECG in a very similar way as with the original device printout.

2. Zoom

A zoom in function is available. Select it pressing the key '+' or clicking on the menu 'Zoom' and then on 'I II III'. The tracings are shown at the double paper speed and at the double scale amplitude. See the following Figure for details:



Other 3-leads pages may be obtained by pressing the 'Page Down' / 'Page Up' keys or clicking on the other submenus from 'Zoom'.

The same way, two pages with full 10 seconds tracings can be obtained.

To return to 12-leads press the '-' key or activate the menu 'Zoom' / 'All leads'.

3. Printing

To activate the menu 'Print' two parameters are available in the starting-up command line, it will be explained later. Actually, the built-in print functions allow connecting to DeskJet and LaserJet printers, equipped with the HP PCL3 and HP PCL5 emulations respectively.

4. Extra filtering

Use the menu 'Filter' to enable/disable an extra low-pass filtering that may be performed after signal reconstruction outside the protected zones. If enabled (default) this smooths some transients otherwise still present if disabled. After changing this option, please reopen the file to be effective.

5. Special functions

The menu 'File' contains 'Save raw-data' that can be used to produce ASCII output (*.dat) for the 8 standard leads (I,II,V1-V6), 5000 samples each, interlaced, 2 byte/sample.

The File/Open dialog contains the File Filter 'raw-data file (*.dat)' that can be used to open an ASCII input file (maybe one saved with 'Save raw-data' or the original decompressed one).

Appendix: parameters

Optional parameters may be included in the starting-up command line:

-file <path>\filename.scp
to specify an initial file to open. If <path> contains blanks use "" to delimit the whole string.

-width ECG_X_area(cm) **-height** ECG_Y_area(cm)
to adapt the main window dimensions to screen dimensions. The trick here is to exactly measure the width and the height of the canvas of the window (area where the tracings appear) with a ruler placed on the screen.

-printer device_name **-emulation** emulation
the first to specify the physical or logical device where the printer is connected. In WINDOWS it may be the port (LPT1:). As a valid alternative a temp file name may be set, in which case SCP-AV will store the image of the printing in that file. It's user responsibility to send later the unchanged file to the correct printer.
Emulation may be either PCL3 or PCL5. No other emulations are supported (you can always use the screen capture capability of the OS to create a bitmap and send it to the printer ...)

-help
to show the About box at starting-up.

Tokens may be specified in a reduced form.

As an example: you may run SCP-AV with the strings:
' scp-av -f bimodal\pfe105.scp -w 29 -h 16 -p LPT1: -e PCL5 ' under WINDOWS, if you have a LaserJet printer connected to the parallel port, or
' ./scp-av -f bimodal/PFE105.scp -w 29 -h 16 -p print.tmp -e PCL3 ' under LINUX, to store the output to the 'print.tmp' file. Send later the file to the DeskJet printer with the command
' lpr -Pprinter_queue print.tmp ', where printer_queue identifies your printer queue.

Under Red Hat 8.0 professional Linux running Gnome I was able to set parameters also by creating a Launcher (right click on a free area of the bottom edge panel, where you usually find the icons of the preferred programs, select 'Add to Panel' and then 'Launcher'). In the command field insert the full command, with complete path, and parameters as suggested before.

Also specific FOX-TOOLKIT parameters may be added (see specific documentation included in the library distribution).