# F1000 Proportional Feedback System

**Version 2E**

## Introduction

The ***F1000*** Proportional Feedback System brings powerful new functionality to to EEG feedback. Version 2E adds the ability to generate new setup files and specify filter frequencies.

## System Requirements and Installation

Version 2E requires a computer with a Pentium or AMD processor of at least 133 Mz. To use the setup file generator the computer must be running Windows 95/98/ME.

This version is installed as part of the ***F1000*** Version 10.50 System Software.

## Features in the Proportional System

1. Proportional feedback with dual thresholds.
2. New improved sounds.
3. EMG warning during EEG feedback.
4. Setup File Generator.

## Proportional Feedback

If you have used the Tansey, MAT, or SPEC4 screens in the current software, you have been using proportional feedback. With these screens feedback sound starts at a low level when the signal exceeds threshold and increases in volume and fullness as the signal continues to increase. At some point the sound ceases to change and remains constant for increasing signals. The threshold at which this occurs is built into the software and is not displayed.

The new feedback screens in this update provide control and display of these feedback thresholds.

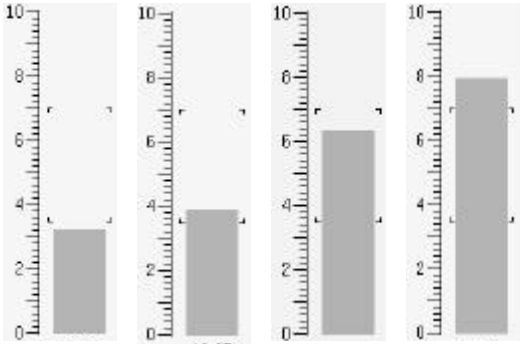

Fig 1 Fig 2 Fig 3 Fig 4

Notice the two thresholds in Figure 1. The lower threshold at 3.5 uV is the level at which feedback sound starts. The upper threshold at 7 uV sets the upper limit of proportional feedback. The area between the thresholds is the range over which proportional information is fed back. In Figure 1 the signal is below the lower threshold and there will be no sound. In Figure 2 the signal is slightly above the lower threshold so the sound will be on but of a low volume and will be responding to changes in the signal. In Figure 3 the signal is near, but below the upper threshold. The sound volume will be high and responding to changes in the signal. Finally, in Figure 4, the signal is above the upper threshold. sound will be at maximum volume and will not respond to a changing signal.

Notice that the distance between the thresholds determines how sensitive the sound is to changing signal level. If the thresholds are far apart, the sound change will be very gradual. If they are close together the sound will change rapidly with only small signal changes. There is always a tradeoff between range of response and sensitivity.

## Adjusting the thresholds

The lower threshold is adjusted using the same keys as in the other feedback screens. The **Up/Down arrows** on the numeric key pad make small adjustments, while the **PgUp/PgDn** keys provide larger changes. One difference is that the upper threshold moves proportionally with the lower keeping the feedback sensitivity constant. The upper threshold can be moved independently using the **Home/End** keys.

### Sounds available

There are 3 sounds used in this update. More will be available in the final release.

1. A **warbling** type sound which simply becomes louder with increasing signal. This sound is used to indicate activity which is to be avoided as much as possible during training. It conveys the message that this frequency band gets in the way of attending to the primary band of interest. It is not intended to be an aversive sound. At present this sound is assigned to the left (Filter A) feedback bar.
2. A pleasant **harmonic chord** which becomes more full with increasing signal. It is actually made up of four separate synthesizer voices which flow in and out as a function of signal level. This is used to provide meaningful feedback on the frequency band of interest. The sound is pleasant over it's entire range and is intended to provide a sense of awareness of the frequency band. At present this sound is assigned to the right (Filter B) feedback bar.
3. A **buzzing** sound which becomes louder with increasing signal. This is used to warn of inappropriate EMG activity which may affect proper feedback of the higher EEG frequencies. This sound is assigned to the EMG bar at the bottom of the screen.

### Visual Display

Setup files **PROP1, PROP2, ENHENH1P**, etc. provide the basic bar graph display. In addition they allow the display of temperature channel 1 and EDR.

The setup files **PROP1A, PROP2A,** etc add an ellipse type display similar to the **Inh/Enh** screen, but cannot display temperature or EDR. However, there are major differences in function.

1. The color of the central part of the ellipse has two color components. The proportional output of FilterA (warble sound) adds red to the color of the ellipse. The proportional output of FilterB (harmonic sound) adds green to the color of the ellipse. The colors are additive so that an equal amount of red and green produce yellow.
2. The ellipse has a border used to warn of excessive EMG activity. The proportional output of the EMG (buzzer sound) controls the color of the border. As the EMG increases the border becomes purple.
3. In addition to controlling the border color, EMG activity will proportionally subtract from the FilterB level thus reducing the green component of the ellipse. This corrects for a portion of the effect of the EMG on signals in the upper beta range.
4. Turning off the thresholds on a bar graph will also remove its influence on the ellipse.
5. A digital score based upon the amount of red and green in the ellipse can be displayed. The score is increased at a rate proportional to green minus red. The score counter is automatically set to zero when the session is started. Counting continues even when the counter is not displayed, but stops if the ellipse is turned off.

**Using proportional feedback**

Proportional feedback requires a slightly different approach to setting thresholds than the more conventional Off/On (binary) approach. Since the information contained in binary feedback is conveyed by the percent time sound is on, thresholds are usually set to provide sound 50% of the time. Too high a threshold will leave sound off most of the time..too low will leave sound on most of the time. Either condition leaves the subject with little feedback on efforts to change the EEG.

With proportional feedback, information can be conveyed by both presence and nature of the sound. When the signal is below the lower threshold and there is no sound, the subject tends to ignore the particular frequency band. When the signal is between the thresholds, continuous feedback of the band is present and the subject is more likely to attend to it.

We suggest setting the **warble sound thresholds** so that the lower excursions of the frequency band cause the sound to go off. If the upper threshold is set fairly high the sound will come on gently, prevent a startle response, and give the subject a soft indication. Our message to the subject is that there is nothing basically wrong with producing the particular frequency band, but that it interferes with something else at the moment. The sound actually conveys this message. This is quite different from the popular “inhibit” approach.

The **harmonic sound thresholds** should be set to provide almost 100% feedback. It is OK for the sound to occasionally go off during very low signals. The upper threshold should be set so that large bursts of the frequency of interest just reach the upper threshold. This provided continuous feedback of the subjects efforts to understand and control this portion of the EEG. Our message to the subject is to listen to the feedback and allow themselves to “connect” with it. If we would like them to increase the signal, the instruction is to pay particular attention to the sound associated with the higher levels.

The **EMG warning sound threshold** should be set so that that it sounds rarely and only when the there is enough EMG to interfere with feedback. The EMG is derived from an FFT based 32-50 Hz filter. Due to the FFT filtering, it exhibits a noticeably delayed response.

The **Warn** indicator at the bottom right of the screen accumulates the number of seconds during which the EMG exceeds the lower threshold since the beginning of the session.

The **Score Counter** provides an arbitrary “score” which is based upon the degree of pure green displayed by the ellipse. Keep in mind that this score is based upon the assumption that the goal is to increase the signal in the green channel and reduce the signal in the red channel. The score has no intrinsic meaning and is only useful for training based upon the operant conditioning model.

## Key Chart (Prop1,2,3,4,5)

| | |
|---|---|
| **Del** | **Multibar Display Master OFF/ON** |
| **Num5** | **Sound OFF/ON. Thresholds appear when sound is on** |
| **Up Arrow** | **Thresholds Up in small increments** |
| **Down Arrow** | **Thresholds Down in small increments** |
| **Page Up** | **Thresholds Up in large increments** |
| **Page Dn** | **Thresholds Down in large increments** |
| **Home** | **Upper Threshold Up (Only upper threshold is affected)** |
| **End** | **Upper Threshold Down (Only upper threshold is affected)** |

## Notes:

## 1. Use <alt> for Filter B, <shft> for EMG

## Refer to the manual for instructions on controlling the temperature/EDR displays. Sound is currently not available on these functions.

************************************************************

## Key Chart (Prop1A,2A,3,4A,5A)

| | |
|---|---|
| **Del** | **Ellipse Display Master OFF/ON** |
| **Num5** | **Sound OFF/ON. Thresholds appear when sound is on** |
| **Up Arrow** | **Thresholds Up in small increments** |
| **Down Arrow** | **Thresholds Down in small increments** |
| **Page Up** | **Thresholds Up in large increments** |
| **Page Dn** | **Thresholds Down in large increments** |
| **Home** | **Upper Threshold Up (Only upper threshold is affected)** |
| **End** | **Upper Threshold Down (Only upper threshold is affected)** |
| **Num *** | **Score Counter OFF/ON** |
| **Num /** | **Zero Score Counter** |

## Notes:

## 1. Use <alt> for Filter B, <shft> for EMG

## Setup File PROP1, PROP1A

| | Filter A | | | | Filter B(alt) | | | |
|---|---|---|---|---|---|---|---|---|
| **Key (Use ShftCtrl)** | **Filter Band Pass(Hz)** | | **Sound** | **Chan** | **Filter Band Pass(Hz)** | | **Sound** | **Chan** |
| **F1** | **4.0** | **6.0** | **Warble** | **1** | **13.0** | **15.0** | **Harmonic** | **1** |
| **F2** | **4.0** | **8.0** | | **1** | **13.0** | **15.0** | | **1** |
| **F3** | **7.0** | **10.0** | | **1** | **13.0** | **15.0** | | **1** |
| **F4** | **8.0** | **10.0** | | **1** | **13.0** | **15.0** | | **1** |
| **F5** | **4.0** | **6.0** | | **1** | **15.0** | **18.0** | | **1** |
| **F6** | **4.0** | **8.0** | | **1** | **15.0** | **18.0** | | **1** |
| **F7** | **7.0** | **10.0** | | **1** | **15.0** | **18.0** | | **1** |
| **F8** | **8.0** | **10.0** | | **1** | **15.0** | **18.0** | | **1** |
| **F9** | **4.0** | **6.0** | | **1** | **18.0** | **28.0** | | **1** |
| **F10** | **4.0** | **8.0** | | **1** | **18.0** | **28.0** | | **1** |
| **F11** | **7.0** | **10.0** | | **1** | **18.0** | **28.0** | | **1** |
| **F12** | **8.0** | **10.0** | | **1** | **18.0** | **28.0** | | **1** |

Notes:

1. This setup contains frequencies similiar to the Inh/Enh screen. It is useful where the objective is to enhance attention to the higher frequencies and avoid the lower.

## Setup File PROP2, PROP2A

| | Filter A | | | | Filter B(alt) | | | |
|---|---|---|---|---|---|---|---|---|
| **Key (Use ShftCtrl)** | **Filter Band Pass(Hz)** | | **Sound** | **Chan** | **Filter Band Pass(Hz)** | | **Sound** | **Chan** |
| **F1** | **2.0** | **4.0** | **Warble** | **1** | **12.0** | **16.0** | **Harmonic** | **1** |
| **F2** | **2.0** | **6.0** | | **1** | **12.0** | **16.0** | | **1** |
| **F3** | **4.0** | **6.0** | | **1** | **12.0** | **16.0** | | **1** |
| **F4** | **8.0** | **10.0** | | **1** | **12.0** | **16.0** | | **1** |
| **F5** | **2.0** | **4.0** | | **1** | **13.0** | **15.0** | | **1** |
| **F6** | **2.0** | **6.0** | | **1** | **13.0** | **15.0** | | **1** |
| **F7** | **4.0** | **6.0** | | **1** | **13.0** | **15.0** | | **1** |
| **F8** | **8.0** | **10.0** | | **1** | **13.0** | **15.0** | | **1** |
| **F9** | **2.0** | **4.0** | | **1** | **16.0** | **25.0** | | **1** |
| **F10** | **2.0** | **6.0** | | **1** | **16.0** | **25.0** | | **1** |
| **F11** | **4.0** | **6.0** | | **1** | **16.0** | **25.0** | | **1** |
| **F12** | **8.0** | **10.0** | | **1** | **16.0** | **25.0** | | **1** |

Notes:

1. This setup is similiar to PROP1 and contains alternate frequency combinations.. It is useful where the objective is to enhance attention to the higher frequencies and avoid the lower.

## Setup File PROP3, PROP3A

| | Filter A | | | | Filter B(alt) | | | |
|---|---|---|---|---|---|---|---|---|
| **Key (Use ShftCtrl)** | **Filter Band Pass(Hz)** | | **Sound** | **Channel** | **Filter Band Pass(Hz)** | | **Sound** | **Channel** |
| **F1** | **8.0** | **10.0** | **Warble** | **1** | **3.0** | **4.0** | **Harmonic** | **1** |
| **F2** | **8.0** | **10.0** | | **1** | **4.0** | **6.0** | | **1** |
| **F3** | **8.0** | **10.0** | | **1** | **5.0** | **6.0** | | **1** |
| **F4** | **8.0** | **10.0** | | **1** | **6.5** | **7.5** | | **1** |
| **F5** | **15.0** | **18.0** | | **1** | **3.0** | **4.0** | | **1** |
| **F6** | **15.0** | **18.0** | | **1** | **4.0** | **6.0** | | **1** |
| **F7** | **15.0** | **18.0** | | **1** | **5.0** | **6.0** | | **1** |
| **F8** | **15.0** | **18.0** | | **1** | **6.5** | **7.5** | | **1** |
| **F9** | **18.0** | **25.0** | | **1** | **3.0** | **4.0** | | **1** |
| **F10** | **18.0** | **25.0** | | **1** | **4.0** | **6.0** | | **1** |
| **F11** | **18.0** | **25.0** | | **1** | **5.0** | **6.0** | | **1** |
| **F12** | **18.0** | **25.0** | | **1** | **6.5** | **7.5** | | **1** |

Notes:

1. The setup calls attention to lower frequencies, while avoiding the higher ones.
2. Some of these combinations are useful in enhancing relaxation and reducing rumination.

**WARNING: As with any deep relaxation training, a subject should not be allowed to engage in any activity where alertness is required such as driving an automobile.**

## Setup File PROP4, PROP4A

| | Filter A | | | | Filter B(alt) | | | |
|---|---|---|---|---|---|---|---|---|
| **Key (Use ShftCtrl)** | **Filter Band Pass(Hz)** | | **Sound** | **Chan** | **Filter Band Pass(Hz)** | | **Sound** | **Chan** |
| **F1** | **7.0** | **10.0** | **Warble** | **1** | **3.0** | **4.0** | **Harmonic** | **1** |
| **F2** | **7.0** | **10.0** | | **1** | **4.0** | **6.0** | | **1** |
| **F3** | **7.0** | **10.0** | | **1** | **5.0** | **6.0** | | **1** |
| **F4** | **7.0** | **10.0** | | **1** | **11.0** | **13.0** | | **1** |
| **F5** | **7.0** | **10.0** | | **1** | **13.0** | **15.0** | | **1** |
| **F6** | **7.0** | **10.0** | | **1** | **15.0** | **17.0** | | **1** |
| **F7** | **7.0** | **10.0** | | **1** | **17.0** | **19.0** | | **1** |
| **F8** | **7.0** | **10.0** | | **1** | **19.0** | **21.0** | | **1** |
| **F9** | **7.0** | **10.0** | | **1** | **22.5** | **25.5** | | **1** |
| **F10** | **7.0** | **10.0** | | **1** | **26.5** | **29.5** | | **1** |
| **F11** | **7.0** | **10.0** | | **1** | **15.0** | **18.0** | | **1** |
| **F12** | **7.0** | **10.0** | | **1** | **18.0** | **28.0** | | **1** |

Notes:

1. The purpose of this setup is to explore the concept of narrow band feedback. The idea is to avoid the 7-10 Hz range where so much high level activity seems to occur, and focus on the more subtle mind states that may be associated with narrow bands across the spectrum.
2. This approach is experimental. There is no research on these frequencies.

## Setup File PROP5, PROP5A

| | Filter A | | | | Filter B(alt) | | | |
|---|---|---|---|---|---|---|---|---|
| **Key (Use ShftCtrl)** | **Filter Band Pass(Hz)** | | **Sound** | **Chan** | **Filter Band Pass(Hz)** | | **Sound** | **Chan** |
| **F1** | **8.0** | **10.0** | **Warble** | **1** | **3.0** | **4.0** | **Harmonic** | **1** |
| **F2** | **8.0** | **10.0** | | **1** | **4.0** | **6.0** | | **1** |
| **F3** | **8.0** | **10.0** | | **1** | **5.0** | **6.0** | | **1** |
| **F4** | **8.0** | **10.0** | | **1** | **11.0** | **13.0** | | **1** |
| **F5** | **8.0** | **10.0** | | **1** | **13.0** | **15.0** | | **1** |
| **F6** | **8.0** | **10.0** | | **1** | **15.0** | **17.0** | | **1** |
| **F7** | **8.0** | **10.0** | | **1** | **17.0** | **19.0** | | **1** |
| **F8** | **8.0** | **10.0** | | **1** | **19.0** | **21.0** | | **1** |
| **F9** | **8.0** | **10.0** | | **1** | **22.5** | **25.5** | | **1** |
| **F10** | **8.0** | **10.0** | | **1** | **26.5** | **29.5** | | **1** |
| **F11** | **8.0** | **10.0** | | **1** | **15.0** | **18.0** | | **1** |
| **F12** | **8.0** | **10.0** | | **1** | **18.0** | **28.0** | | **1** |

Notes:

1. The purpose of this setup is to explore the concept of narrow band feedback. The idea is to avoid the 8-10 Hz range where so much high level activity seems to occur, and focus on the more subtle mind states that may be associated with narrow bands across the spectrum.
2. This is essentially the same as Prop4 with the exception that filter A is set to 8-10 Hz.
3. This approach is experimental. There is no research on these frequencies.

## Setup File ENHENH1P

| | Filter A | | | | Filter B(alt) | | | |
|---|---|---|---|---|---|---|---|---|
| **Key (Use ShftCtrl)** | **Filter Band Pass(Hz)** | | **Sound** | **Chan** | **Filter Band Pass(Hz)** | | **Sound** | **Chan** |
| **F1** | **4.0** | **8.0** | **Low Pitch** | **1** | **8.0** | **12.0** | **High Pitch** | **1** |
| **F2** | **6.0** | **8.0** | | **1** | **8.0** | **12.0** | | **1** |
| **F3** | **4.0** | **8.0** | | **1** | **13.0** | **15.0** | | **1** |
| **F4** | **6.0** | **8.0** | | **1** | **13.0** | **15.0** | | **1** |
| **F5** | **8.0** | **12.0** | | **1** | **13.0** | **15.0** | | **1** |
| **F6** | **13.0** | **15.0** | | **1** | **15.0** | **21.0** | | **1** |
| **F7-F12** | **Unused** | | | | | | | |

Notes:

1. This is a proportional feedback implementation of the **enhenh** setup file.
2. The following changes have been made in the normal functions of the control keys to make it easier to conduct alpha-theta sessions:
    - The **"5"** key on the numeric keypad switches sound off/on for both filters.
    - The **Home** and **End** keys control the spacing between the lower and upper thresholds for both filters. This keeps the proportional sensitivity the same for each filter.

## Setup File PROP6, PROP6A

| | Filter A | | | | Filter B(alt) | | | |
|---|---|---|---|---|---|---|---|---|
| **Key (Use ShftCtrl)** | **Filter Band Pass(Hz)** | | **Sound** | **Chan** | **Filter Band Pass(Hz)** | | **Sound** | **Chan** |
| **F1** | **1.0** | **4.0** | **Warble** | **1** | **12.0** | **14.0** | **Harmonic** | **1** |
| **F2** | **2.0** | **4.0** | | **1** | **12.0** | **14.0** | | **1** |
| **F3** | **2.0** | **6.0** | | **1** | **12.0** | **14.0** | | **1** |
| **F4** | **8.0** | **10.0** | | **1** | **12.0** | **14.0** | | **1** |
| **F5** | **1.0** | **4.0** | | **1** | **15.0** | **18.0** | | **1** |
| **F6** | **2.0** | **4.0** | | **1** | **15.0** | **18.0** | | **1** |
| **F7** | **2.0** | **6.0** | | **1** | **15.0** | **18.0** | | **1** |
| **F8** | **8.0** | **10.0** | | **1** | **15.0** | **18.0** | | **1** |
| **F9** | **1.0** | **4.0** | | **1** | **18.0** | **28.0** | | **1** |
| **F10** | **2.0** | **4.0** | | **1** | **18.0** | **28.0** | | **1** |
| **F11** | **2.0** | **6.0** | | **1** | **18.0** | **28.0** | | **1** |
| **F12** | **8.0** | **10.0** | | **1** | **18.0** | **28.0** | | **1** |

Notes:

1. This setup is similiar to PROP1 and contains alternate frequency combinations.. It is useful where the objective is to enhance attention to the higher frequencies and avoid the lower.

# *F1000* Setup File Editor

### Introduction

The ***F1000*** **Setup File Editor** provides a way for the user to specify custom filter sets for the F1000. Keep in mind that the simplicity and ease of use of the ***F1000*** is in part been due to leaving such responsibility to us. The implications of EEG filter specifications are many, complex, controversial. The following instructions do not attempt to suggest filter combinations for any particular use. The operation of the editor has been made as simple and intuitive as possible, but some may find it difficult. In short if you don't understand the meaning of a feature, you should probably not be using it!

### Features and Limitations

1. The editor will only function with setup files which use the new proportional feedback screens. This includes all setups starting with "prop", the enhenh1p setup, and the HEG setups. Only compatible files will appear on the editors file menu. Setup files which use the older "bong" screen cannot be edited.
2. A setup file supplied with the ***F1000*** software is refered to as an ***F1000*** **Master File**. An edited Master File must be saved under a new name to preserve the original for compatibility with other ***F1000*** users.
3. A setup file which was created by the editor is refered to as a **User Generated File.** These files can be edited and save under the same name.
4. The editor allows the user to specify a new set of filters with up to 12 combinations in each file.
5. The editor provides a way to specify which displays will appear on the screen when the setup is started.
6. The editor currently does not provide for a printout of the new filter chart. This is in the works and will be available on the next update. In the meantime there is a blank chart provided to make it easy to plan and document the filter information.
7. The editor requires the use of a mouse. No attempt has been made to provide keyboard shortcuts.

## Starting the Editor

1. From the Windows Desktop double click the **F1000Set** icon.
2. Select **Files** | **Open** and select a setup file from the list**.**
3. The top border of the window will show the name of the file and indicate whether it is an ***F1000*** **Master File** or **User Generated File**.
4. The **Author** and **Description** areas will be blank for ***F1000*** **Master Files**. These entries are available for the user to document an edited file. If you intend to share your new setup file with others, we strongly suggest you identify yourself in the Author area and give some sort of descripton of the purpose of the setup.

### Using the Filter Editor

1. Enter the Filter Editor by selecting the **Edit Filters** button.
2. The left half of the chart edits the information for **Analog Filter A**. This refers to the red bar on the feedback screen which produces the warble sound.

3. The right half of the chart is a repeat of the left and edits the information for **Analog Filter B**. This refers to the green bar on the feedback screen which produces the harmonic sound.
4. The **Ch** columns refer to the electrode channel used for the specified filter. At present this is always channel 1 and cannot be edited.
5. The **LF** and **HF** columns refer to the low and high frequency limit of the specified filter. If the frequencies and not within working limits for the ***F1000*** filter, an asterisk will appear in front of the filter frequency. This can happen if the two frequencies are too close together or the low frequency is greater than the high frequency. To specify a **narrow band filter** preceed the filters center frequency with the letter n in either the LF or HF column (for example n7 for a 7Hz narrow band filter). Then select a different cell on the chart. The editor will calculate the narrowest available filter.
6. The **Label 1** and **Label 2** columns refer to text labels that will appear under the bar graph on the feedback screen. Labels 1 & 2 are located directly under the bar with Label 1 on top. These are a convenient way to label the frequency band in use as well as a descriptive label such as “Alpha”. Each label will handle a maximum of 7 characters.
7. **Thr1** and **Thr2** refer to the initial value of the feedback thresholds. Thr1 is the lower threshold and Thr2 is the upper threshold. The threshold values are in microvolts. If the threshold values are inappropriate and asterisk will appear in front of the values.
8. The spin control **Number of Filters** sets the total number of filter combinations available in the setup file. This allows setups with a small number of filters to be specified.
9. The spin control **Default Filter** specifies which filter will be active when the setup is started.
10. The **Cancel** button returns to the main screen loses any changes.
11. The **OK** button retains changes and returns to the main screen . If any information on the filter chart is flagged by an asterisk, you will receive an error message and be returned to the screen. You must either fix the error or select Cancel to leave the screen.

**Using the Startup Editor**

1. Enter the Startup Editor by selecting the **Edit Startup** button.
2. This screen provides a way to select which displays are immediately shown when the setup is started. Only displays that are available in the particular setup file can be selected. If the display is not available it is grayed.
3. Several of the edit boxes have a **Master** selection followed by a listing of components. For instance, the Temperature box has a Master, Circle, Ruler, and Digit. The components checked determine which ones will appear when the Master key is pressed (in this case F9) or at startup if the Master is checked. This is hard to describe, but easy to understand with a little experimentation.
4. An **HBar** refers to a lone horizontal bar such as the EMG inhibit.
5. A **Vbar** refers to a lone vertical bar. None exist on any of the current screens.
6. A **MultiVBar** refers to a multiple vertical bar graph window such as the proportional EEG displays. All bars are activated with the window.
7. **Ellipse** is the oval used in the prop1a etc. type screens. Digit is the score counter in the ellipse.
8. **Raw logging** can be specified to be automatically on at the start of the session. If off is selected raw logging can still be turned on as usual.

9. The **Status** edit box provides a way to control what displays appear at the bottom of the screen. Uncheck the box if the display is not needed to prevent clutter.
10. **HEG** is only of use if you have the Thinking Cap HEG option.

### Saving the Edited Setup

1. From the main screen select **Files|Save**.
2. In the familiar Windows file menu type a new name for the file. The name must be a maximum of 8 characters. If the file you have been editing is a ***F1000*** **Master File** it cannot be saved under the same name. If it is a **User Generated File** you will receive a warning, but it can be resaved.

### Deleting a User Generated Setup File

1. Select **Files** | **Open** and select a setup file from the list**.**
2. Select **Files** | **Delete**.

### Suggestions for Use

Start by choosing an ***F1000*** **Master File** having the screen displays you would like to use. Edit the filter chart to get the new filter combinations desired. Set the initial thresholds for the values you customarily use. Set the combination of displays to appear on startup using the startup editor. Save the new setup file under a convenient name.

Now start the F1000 and select the new setup file. Verify that all is working as planned.

## Setup File

| | Filter A | | | | Filter B(alt) | | | |
|---|---|---|---|---|---|---|---|---|
| **Key (Use ShftCtrl)** | **Filter Band Pass(Hz)** | | **Sound** | **Chan** | **Filter Band Pass(Hz)** | | **Sound** | **Chan** |
| **F1** | | | **Warble** | **1** | | | **Harmonic** | **1** |
| **F2** | | | | **1** | | | | **1** |
| **F3** | | | | **1** | | | | **1** |
| **F4** | | | | **1** | | | | **1** |
| **F5** | | | | **1** | | | | **1** |
| **F6** | | | | **1** | | | | **1** |
| **F7** | | | | **1** | | | | **1** |
| **F8** | | | | **1** | | | | **1** |
| **F9** | | | | **1** | | | | **1** |
| **F10** | | | | **1** | | | | **1** |
| **F11** | | | | **1** | | | | **1** |
| **F12** | | | | **1** | | | | **1** |