



DSP4000

USER'S MANUAL 用户使用手册



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TABLE OF CONTENTS 目录:

1. Introduction 介绍	3
2. Features 特性	3
3. Front Panel Functions 前面板控制功能.....	5
4. Rear Panel Functions 后面板控制功能.....	7
5. Powering Up The DSP4000 启动电源	8
6. Operating the DSP4000 工作使用.....	8
6.1 Input menus: 输入菜单	8
6.2 Output Menus: 输出菜单	11
6.3 System Menus 系统菜单.....	14
7. Quick Reference 快速参考	21
7.1 Input/Ouput channels control:输入及输出通道控制.....	21
7.2 System control: 系统控制.....	22
8. PC Software Control 电脑软件控制	23
9. Specifications 参数	24

1. Introduction 介绍

DSP4000 是一台高级先进的 4输入 - 8 输出的数字信号音频处理器。它可配置立体声/ 4 路 2 分频, 立体声 3 分频, 立体 4 分频的架构。它采用最好的表现及高性能的零件, 取得最好的音频效果, 最低的失真及噪音。DSP4000 采用 32 比特 (扩展至 40 比特) 的数码处理器作为中心处理, 并采用浮点设计 这一个设计可以大大提升动态范围, 比24 比特的设计质量高出很多倍。这一个设计亦是今天音频处理器之中最高级的设计。

DSP4000 有用户友好的、容易使用的用户界面。它给(这些)输入/ 输出信号控制上提供最大值控制和灵活性。用户只需按下 Gain/Menu 键便可直接控制音量及其它参数。

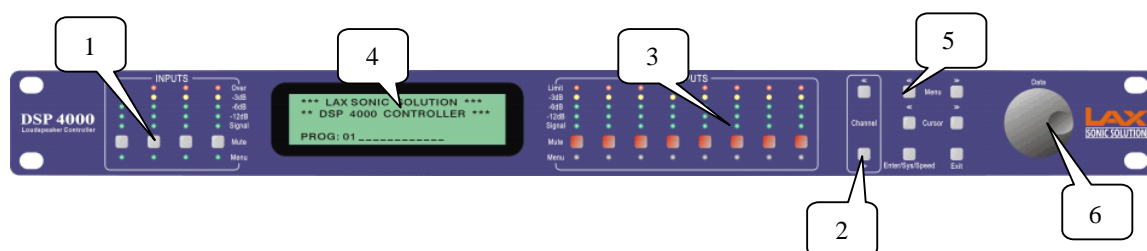
DSP4000 可以通过附带的软件通过计算机的 RS232 接口作为远程操控。

2. Features 特性

- 4 信号通道输入, 8 信号通道输出。4 - inputs and 8 - outputs allow the DSP4000 to be configured for almost any application.
- 采用高性能的 24 比特模模模拟转换器。High Performance 24-Bit Analog converters.
- 超级的音频信号处理质量。Superb audio signal quality.
- 中央处理器及数码处理均可以日后不断升级。DSP/CPU Algorithm/Firmware functions upgradable.
- 每一个输出通道设有 6 个参量均衡器, 均为+15dB 增益及-30dB 衰减, Q 值由 0.01 to 2.50。 8 parametric equalizers for each input. Each section provides up to +15dB boost and -30dB cut at any center frequency 20Hz - 20kHz with Q from 0.01 to 2.50.
- 每一个输入及输出通道均设有静音键开关 (带灯显示)。Mute functions for each input/output channel.

- 延时器可以选择时间或距离作为单位，方便计算。Delay units are selectable between time and distance.
- 可通过附送的计算机软件连接计算机作远程操制及修改参量。Remote Control via PC.
- 可储存在 30 个节目。Memory storage allows up to 30 different setup programs.
- 多种安全设置保护器材及各种设置。Multiple security levels preventing undesired setup changes.
- 每一个通道输出的压限均可以控制启动及释放时间。Adjustable attack & release time for each output.
- 附送计算机控制软件 PC Graphic User Interface (GUI) to control the unit.

3. Front Panel Functions 前面板控制功能

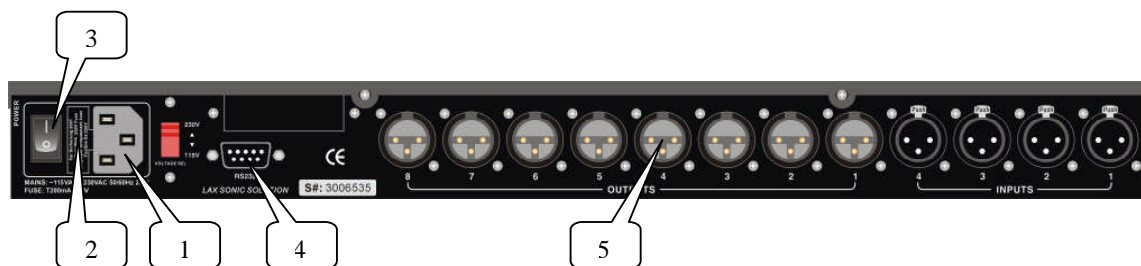


1. **静音键 Mute keys** - 每一个通道均设有静音键并有红色的指示灯显示状态，下面綠燈表示通道工作 mute/unmute input and output channels. When an input channel is muted, a red LED will come on for indication.
2. **Channel Select- Gain/Menu keys** - Selects the corresponding channel for the LCD menu display. 按下選手需要修改參數的通道
3. **Peak Level LED** - 峰值电平显示灯 Indicates the current peak level of the Signal: Signal, -12dB, -6dB, -3dB, Over/Limit. The Input **Over** LED references to the device's maximum headroom. The Output **Limit** LED references to the threshold of the limiter.
4. **LCD Display** - 显示所有有关本机信息 Shows all the necessary information to control the unit.
5. **Rotary Thumb Wheel** - 转动参量控制键- 转动转动参量控制键可修改有关系统参数, 本系统精度可至一周 Hz. 按下 speed 键可修改调教步进 1 Hz 至每 100 Hz 递增 Changes parameter data values. The wheel has travel velocity sensing which ease large incremental data modifications. For modifying delay and frequency (1 Hz resolution), pressing the **Speed** key simultaneously will increment/decrement the data value by 100X.
6. **功能上下键 Function up/down keys** - 通过这一个键可以控制现在的信道内系统菜单参数单. nus available for the current input/output channels or system menus being displayed.
Menu Control keys - 菜单控制键, 共有 6 个控制键, 如下 There are 6 menu keys: <<Menu (Menu Down),

Menu>> (Menu Up), **<<Cursor** (Cursor Down), **Cursor>>** (Cursor Up), **Enter/Sys/Speed** and **Exit**. The functions of each key is explained below:

- <<Menu:** 回上一个菜单。Previous menu screen.
- Menu>>:** 往下一个菜单。Next menu screen.
- <<Cursor:** 光标回上一个位置。Previous cursor in the menu screen.
- Cursor>>:** 光标往下一个位置。Next cursor in the menu Screen.
- Enter/Sys/Speed:** 主要包括 3 个功能:
- 1) **Enter:** 确定设置
直接按下 **Enter** 便可进入主菜单, 再按下 **<<Menu >>** 选择菜单及**<<Cursor>>** 选择并要修改项目再 转动 (5) 圆型参量控制键 便可修改参数. 最后再按下 **Enter/Sys/Speed** 键, 修改及设定便完成。**Enter** is used only in the **System Menu** to proceed with selected actions.
 - 2) **Sys** 进入系统菜单。
Sys enters the **System Menu** from the main menu.
 - 3) **Speed** 修改递增速度 1X 或 100X。
Modifies delay and frequency (1 Hz resolution mode) data values by 100X.
- Exit:** 退出菜单 Exit to **Main Menu**

4. Rear Panel Functions 后面板控制功能



1. **Main Power** 电源插座 - Connects via a standard IEC socket. A compatible power cord is supplied with the unit. The voltage input is either 115VAC or 230VAC and is clearly specified on the unit. Voltage requirement has to be stated upon ordering.
2. **Main Fuse** 保险丝- T200mA-250V. Slow blow type.
3. **Power Switch** 电源开关- Controls power On/Off.
4. **RS232** - a standard female DB9 socket. A straight through cable is required for PC connection. 计算机 **RS232** 连接端口。
5. **XLR Input and Outputs** 卡侬座输入及输出- Separate 3-pin XLR connectors are provided for each audio input and output. The device's output stage employs the balanced impedance topology. All I/O connectors have pin 1 as ground (shield), pin 2 as + and pin 3 as -.

5. Powering Up The DSP4000 启动电源

- 当你启动电源开关之后，在 LCD 显示屏之上便可以看到以下的开机数据显示。After powering up the unit, the following initialization screen is displayed on the LCD:

```
*** LAX SONIC SOLUTION ***  
** DSP 4000 CONTROLLER ***  
  
----- INITIALIZING -----
```

- 开始启动 DSP4000 大约需要 8 秒钟的时间，中央处理器便会下载处理器的有关数据（如图），The initialization process takes about 8 seconds and during that period the unit boots, downloads the CPU and DSP code & algorithms and displays the DSP4000 firmware version.
- 之后显示屏便会显示上一次关机候的节目号数。After the initialization process is finished the DSP4000 displays its start screen:

```
*** LAX SONIC SOLUTION ***  
** DSP 4000 CONTROLLER ***  
  
PROG: 01 XXXXXXXXXXXXX
```

- The screen shows the current program number and program name assigned to the unit. The program assigned is always the last program the user recalled or stored before powering down the unit.
- 现在 DSP4000 可以开始工作。Now the DSP4000 is now ready to operate.

6. Operating the DSP4000 工作使用

6. 1 Input menus: 输入菜单:

直接按下输入通道的 **Gain/Menu** 键便可直接进入该信号通道功能菜单。每一个输入通道均设有独立的菜单（信道 1 至信道 4），而每一个菜单内有 10 辅助菜单功能，具体如下： Each of DSP4000 input channels has a separate menu key (menu A to menu D). Each input channel has a total of 10 sub-menus that can be programmed and changed regardless of the other input/output channels (unless some inputs are linked together-see below).

输入信号通道连锁 Input Channel Linking – 为了方便用户操作，因此本机已设置了输入连锁功能，用户只需要按下一个输入菜单键(不要放开)而同一时间按下其它的输入通道菜单键，则有关该通道的 LED 会变成绿色，这时便可以同一时间修改多个通道的参数，这是为了方便用户在同一时间修改不同通道参数的时候应用。如果需要解除锁定，则只需在按一下不希望连锁定的信号通道菜单键或者系统键则有关锁定便即使立刻解除。

各通道输入辅助菜单如下： If the user presses one of the input menu keys, holds it down and press any other input menu keys then automatically all the sub-menus parameter values of the first input menu key pressed will be copied to all the other selected input channels. Once the input channels are linked together, the red LEDs of the linked channels remain on. Any change in a linked channel parameter value will be automatically duplicated to the conjugate linked channels. To cancel the linking, just press any **input/output menu key** or the **system key**.

The Input sub-menus are:

- 信号 SIGNAL:

```
IN_1:XXXXXX    MENU:Signal
LEVEL:-40.00dB
POL   :+
DELAY: 0 (000.000ms)
```

- 电平 Level - 输入信号增益可以修改由-40.00dB 至 +15.00dB 0.25dB 递增。input signal gain, can be adjusted between -40.00dB to +15.00dB in steps of 0.25dB.
- 相位 Polarity - 输入相位可作正相或反相改变。input signal polarity, can be normal (+) or inverted (-).
- 延时 Delay - 输入信号延时器的采样频率为 21 us 递增，可以显示毫秒 ms, 呎 ft, 米 m. 可在主菜单修改显示方式. 现在延时时间最大是 21,600 递增. 相等于 (450ms) DELAY - Delay in 21us steps. Can be displayed in ms, ft or m. The time unit of the delay can be changed in the **System** menu. The maximum delay permitted is 21,600 steps (450ms).
- EQ 均衡器: 每一个输入通道都共有 6 个均衡器可供使用。

```
IN_1:XXXXXX  MENU:EQ
EQ#   :1      BW:0.33oct
LEVEL:0.00dB   Q=4.36
FREQ  :1000Hz TYPE:Param
```

- 电平 Level 别 - 输入均衡器的增值可以设置在 -30dB 至 +15dB 0.25dB 递增。(sets the input equalizer gain (or attenuation) level. Can be adjusted between -30.00dB to +15.00dB in steps of 0.25dB.
- 频率选择 Frequency - 频率选择范围在 20Hz 至 20000kHz 任何一个频率时上，共有两组 100X 及 1X Hz 共选择。sets the input EQ center frequency. Can be adjusted between 20Hz to 20000kHz in steps of 1Hz. This data field is divided to two sections in order to make it easier to change. The upper field will change the frequency by hundreds and the lower by ones.
- 频率宽度 Bandwidth - Q 值可以设置由 0.02 倍频程至 2.50 倍频程 并且可以 0.02 倍频程递增。
- Channel Name 通道名称:

```
IN_A:XXXXXX  MENU:Ch-Name
NAME:XXXXXX
```

- 通道名称 Name - 容许用户为每一个输入通道给予一个特别的名称，最长为 6 个字。allows the user to give the current input channel a special and meaning name. The maximum length allowed is 6 characters.

6. 2 Output Menus 输出菜单:

直接按下输出通道的 **Gain/Menu** 键便可直接进入该信号通道功能菜单。每一个输出通道均设有独立的菜单及 6 个辅助菜单，用户可以修改内置的参数。（除非有一些输出通道已经设置了锁定保安功能）。Each output channel of the DSP4000 has a separate menu key (output 1 to output 8). Each output channel has a total of 6 sub-menus and can be programmed and changed regardless of the other input/output channels (unless some outputs are linked together-see bellow).

输出信号通道连锁 Output Channel Linking - 为了方便用户操作，本机已设置了输入连锁功能，如果用户按下输出菜单键及同时按下其它的输出通道菜单键，则有关该通道的 LED 会变成绿色,这时修改有关输出通道的参数，则其它连锁的输出通道也同时作出相同的参数修改，这是为了方便同时修改同样参数的时候应用。如果需要解除锁定，则只需在按一下输入信号通道菜单或者系统键，有关锁定便即使立刻解除。

输出辅助菜单如下：If the user presses one of the output menu keys, holds it down and press any other output menu keys then automatically all the sub-menus parameter values of the first output menu key pressed will be copied to all the other output channels. Once the output channels are linked together, the red LEDS of the linked channels remain on. Any change in a linked channel parameter value will be automatically duplicated to the conjugate selected linked channels. To cancel the linking, just press any **input/output menu key** or the **system key**.

The output sub-menus are:

- 信号 SIGNAL:

```
OUT_1:XXXXXX MENU: Signal
LEVEL:-38.75dB
POL:+
DELAY: 0 (000.000ms)
```

- Same as the input signal menu 与输入通道菜单相同。

- 均衡器 1 至 6 EQ1..6:

```
OUT_1: XXXXXX MENU:EQ
EQ#:1 BW:0.33oct
LEVEL: 0.00dB Q=4.36
FREQ: 1000Hz TYPE:Param
```

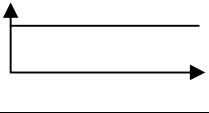
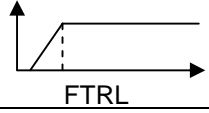
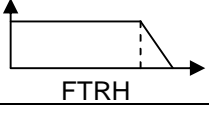
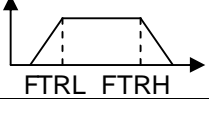
- Same as input EQ menus 与输入通道均衡器菜单相同
- X'Over - 分频器设置 Crossover parameters

```
OUT_1: XXXXXX MENU: Over
FTRL: Off FTRH: Off
FRQL: 1000Hz FRQL: 1000Hz
SLPL: 24dB SLPH: 24dB
```

- FTRL - 滤波共有 3 种国际标准的分频滤波器供选用 Filter Type of low frequency crossover point (high pass). Types can be Buttwrth (Butterworth), Link-Ri (Linkritz Riley) or Bessel.
- FRQL - 低端设置, 可选择任何 20- 20kHz 频率低频节止 Filter cut-off Frequency of low frequency crossover point (high pass). Ranges from 20 to 20,000Hz in either 1Hz steps or 1/36

octave steps. The frequency steps can be selected in the **System Menu**.

- SLPL - 滤波器斜度设置, 可选择 12/24/36/48 dB/octave. Filter Slope of low frequency crossover point (high pass). Ranges from 6 to 48dB/octave in 6dB/octave steps. If the selected Filter Type is Linkritz Riley, the available slopes are 12 / 24 / 36 / 48 dB/octave.
- FTRH - 后端滤波器设置, Filter Type of high frequency crossover point (low pass).
- FRQH - 低端设置, 可选择任何 20- 20kHz Filter cut-off Frequency of high frequency crossover point (low pass 低通).
- SLPH - 滤波器斜度设置, 可选择 12/24/36/48 Filter Slope of high frequency crossover point (low pass 或低通).

Filter 滤波 Configuration	Low crossover point (FTRL)	High crossover point (FTRH)	
None	Off	Off	
High pass	NOT Off	Off	
Low pass	Off	NOT Off	
Band pass	NOT Off	NOT Off	

- 压限器 LIMIT:

```
OUT_1: XXXXXX   MENU: Limit
THRESH: +20.0dB
ATTACK: 100ms
RELEASE: 32x
```

- 门限 Threshold - 设定输出的最高门限电平在-10dBu to +20 dBu 0.5dB 递增设定。 Determines the output signal absolute peak value. This parameter is adjustable between -10dBu to +20 dBu in step of 0.5dB.
- Attack 启动时间 - 设定压限器的启动时间在 0.1mS to 100Ms, 0.1ms 递增设定。 Has values between 0.1mS to 100mS. The step interval when time<1ms and 1ms when 1ms<time<100ms.
- Release 释放时间 – 可以选择根据启动时间设定释放时间 2x, 4x, 8x, 16x and 32x 。

Source - Input Source 输入声源, 可任意选择 1 至 4 个通道输入声源.

```
OUT_1: XXXXXX MENU: Source
1: On      4: Off
2: Off
3: Off
```

- 1,2,3,4 – Input channel source for the current output channel. Can be set to enable the input source (On) or disable it (Off). If more than one input source are enabled, they will be added together as the source for the current output channel.

Ch-Name - 通道名 Channel Name

```
OUT_1: XXXXXX MENU: Ch-Name
NAME: XXXXXX
```

Refer to the Input Menus for details

6. 3 系统菜单 System Menus

主统菜单可以更改参量。The system menus allow the user to control and change parameters that are related to the system behavior and general operation.

辅助菜单如下 The system sub-menus are:

- Recall - Program Recall 节目呼叫 RECALL:

```
SYSTEM-SETUP  MENU: Recall
PROG: 03
NAME: XXXXXXXX
CONFIRM: Yes <Enter>
```

- 节目号数 Program - 选择已经储存的节目其中一个，DSP4000 容许用户储存多达 30 个节目。(可选择订购 30 个节目)selects a pre-stored setup number to be recalled and assigned to the unit. The DSP400 enables the user to store and recall up to 8 different setups.
- 节目名称 Name - 用户可以设定节目名称，最长为 8 个字符，可透过圆形转动键选择字附输入名称。Automatically shows the setup name. These fields are read only; the user has no access to them. The name has a maximum length of 8 characters.
- 确定键 Confirm - 以上设置完成之后请按确定输入键完成有关设置。有关之设置便会显示在有关的节目之上。after selecting desired program number, in order to recall it from memory the user should set this field value to Yes and then press the **Enter key**. At this moment the new setup values are assigned to the unit and he LCD shows the home screen with the new program number and name.

节目储存 STORE:

DSP 4000 可以储存多达 30 个节目。

```
SYSTEM-SETUP  MENU: Store
PROG: 03
NAME: XXXXXXXX
CONFIRM: Yes <Enter>
```

- 节目 Program - 选择一个新的节目给储存。Selects a new program to be stored in memory.

- 名称 Name - 可以输入一个最长为八个字符的名称。Assign a new name for the current setup to be stored in memory. The name has a maximum length of 8 characters.
- 确定 Confirm - 以上设置完成后请按确定键完成有关设置。之后有关设置便会显示在节目上。In order to store the current setup in the selected address number, the user should set the value of this field to Yes and then press the **Enter key**. The current setup is stored, replacing the previous setup in memory. After setup is stored the LCD will display the home screen with the current program number and current program name.

- 系统设置 CONFIG:

```
SYSTEM-SETUP    MENU:Config
MODE: 2-Way
DEAFULT: No
CONFIRM: Yes <Enter>
```

- 工作模式 Mode – DSP4000 可以有多个工作模式供用户选择。
Mode of operation. The available modes are.
- 独立工作模式 Generic - 所有信号通道可以有独立的工作模式,即每一信号通道不会受其它信号通道的影响而可以独立工作。
All output channels work independently, each output channel can be programmed regardless the others and will not affect the others.
- 2 分频 2-WAY – 两组输出锁定工作 1,3 及 2,4 ,而其它 (5,6,7 and 8) 为独立工作模式。
- 3 分频 3-WAY – 3 组输出锁定工作: 输出 1 及 4, 输出 2 及 5, 输出 3 及 6. 而输出 7,8 则为独立工作模式。

- 4 分频 4 – WAY – 3 组输出所锁定工作: 输出 1 及 4, 输出 2 及 5, 输出 3 及 6 及输出 7 及 8。
- 预设 Default – 如果选择 Yes 正确, 预设的 Attack 启动时间及 Release Times 释放时间采用自动模式。
- 确定 Confirm – 设置为 Yes 给按下 **Enter Key** 输入键将会采用连锁工作模式。

DSP4000 工作模式图表 Modes of Operation:

MODE:	OUT 1	OUT 2	OUT 3	OUT 4	OUT 5	OUT 6	OUT 7	OUT 8
GENERAL 通用模式	任何 输入	任何 输入	任何 输入	任何 输入	任何 输入	任何 输入	任何 输入	任何 输入
2 – WAY 2 路分频	A-Lo 低	A-Hi 高	B-Lo 低	B-Hi 高	任何 输入	任何 输入	任何 输入	任何 输入
3 – WAY 3 路分频	A-Lo 低	A-Mid 中	A-Hi 高	B-Lo 低	B-Mid 中	B-Hi 高	任何 输入	任何 输入
4 – WAY 4 路分频	A-Sub 超低 频	A-Lo 低频	A-Mid 中频	A-Hi 高频	B-Sub 超低 频	B-Lo 低频	B-Mid 中频	B-Hi 高频

Copy - Copy channels

SYSTEM-SETUP MENU: Copy
SOURCE: In1
TARGET: In2

Copy Channels from the source to the target. When the Source and Targets are both Inputs and Outputs, all audio parameters will be

copied. When one of the Source or the Target is an input while the other is an output, only the Level, Polarity, Delay and EQ are copied.

- SOURCE - Channel to be copied from.
- TARGET - Channel to be copied to.

General - General system parameters 通用系统设置

```
SYSTEM-SETUP MENU: General
FREQ MODE: All Freq
DELAY UNIT: 01
DEVICE#    :1
```

- FREQ MODE - 频率模式, 可设置 每一频率或 36 递增, 以便调用。Selects the frequency control mode for EQ and crossover filters. Can be 36 steps/octave or All Frequencies (1 Hz resolution).
- DELAY UNIT - ms, ft or m. 延时单位设置.
- DEVICE# - 系统设置本机的地址, 以便计算机连接接。DEVICE from 1 to 16. This ID is useful when a network of more than 1 unit is present.

Security - Security Locks

The DSP4000 enables the user to secure the unit and prevent undesired changes in the setup. In order to switch between the security level the user must enter the correct password.

```
SYSTEM-SETUP MENU: Security
MENU: In-Signal
LOCK: No
PASSWORD: XXXX
```

- **MENU** - Selects the menu to be locked/unlocked. The options are:
 - In-Signal - Input Signal Menu (Level, Polarity, Delay).
 - In-EQ - Input EQ Menu.
 - In-Name - Input Channel Name Menu
 - Out-Signal - Output Signal Menu (Level, Polarity, Delay).
 - Out-EQ - Output EQ Menu.
 - Out-X'Over - Output Crossover Menu.
 - Out-Limit - Output Limit Menu.
 - Out-Source - Output Source Menu.
 - Out-Name - Output Channel Name Menu.
 - System - System Menu
- **LOCK** - Selects to lock (Yes) or unlock (No) the corresponding menu.
- **PASSWORD** – The password of the DSP4000 is 4 characters in length. The user can change it via the PC application software. The factory default of a new unit does not require a password.

计算机联机控制 PC LINK:

DSP4000 出厂时已经配置了供计算机控制使用连接的计算机软件，用户可以直接通过电脑控制 DSP4000 及把有关计算机设置好的节目上传及下传给 DSP4000 应用，并可以因计算机的容量增加节目的数量。而且将来更可以通过原厂的网站不断的为 DSP4000 更新内容及功能。

```
SYSTEM-SETUP  MENU:PC-Link
LINK:ON
CONFIRM:Yes <Enter>
STATUS:ENABLED
```

- 连锁 Link: ON 显示连接 – Enables 接通，通过 RS232 通信连接接口连接计算机。 OFF- disables 表示脱机。

- 确定建立 Confirm – 以上设定完成之后请按 Yes 键 及 **Enter key** 输入键以确定以上设置，之后 DSP4000 便可以等候计算机传送的指令。 Pressed then the communication channel is opens and waiting for commands from the PC.
- 状态 Status – 显示计算机联机的状态 Enables 表示接通， OFF-disables 表示脱机。
- 安全功能 SECURITY:

DSP4000 具有不同的安全功能可根据用户不同的使用要求以设置， 部分更需要用户输入密码才可以有权更改功能设置及参数。 Enables the user to secure the unit and prevent undesired changes in the setup. In order to switch between the security level the user must enter the correct password and then confirm.

```
SYSTEM-SETUP    MENU: Security
LEVEL: HIGH
PASSWORD: XXXX
CONFIRM: Yes <Enter>
```

- 安全水平 Level – 有以下几种不同的安全设置及用户选择:
 - 最低(没有)None - 表示没有设置安全水平，用户可以任意设置及修改有关机内的参数。
 - 标准设置 Standard - 容许用户能够修改某一部分的功能，系统主菜单及输出分频滤波器则可以读取而不能修改。
Allows the user **partial** control over the system. The system menus and output crossover filters become read only.
 - 高度安全设置 High - 用户只可以读取机内的所有参数，但不可以修改。
All menus become read only, that is, the user can only scroll between menus and sub-menus without the ability of changing parameter value.

- 输入密码 Password - 输入密码为 4 个字符，输入密码后用户不可以修改，如果用户忘记了密码，可以参考使用手册，便可以找回密码。The password of the DSP4000 is 4-character length and constant. The user cannot change it; so in case he forgets the password he can always refer to this manual and have it back.
- 预设的密码为:
- The password is **case sensitive**.
- 确定键 Confirm – 完成输入密码及安全设置后请按 Yes 及 **Enter key** 确定设置。

7. 快速参考数据 Quick Reference

7. 1 输入及输出通道控制 Input/Output channels control:

以下图表可使用户了解有关 DSP4000 的输入及输出参数设置。

Changing the 修改	Press 按下 MENU 菜单键	使用功能上 /下键, 到 达库在菜单 Goto SUB- MENU	FIELD (Use Up/Dn/ Left/Right) 使用上下左右 键而修改有关 参量	MIN 最小 值	MAX 最大值	RES 步进	UNITS 单位
In Gain 增益	Input N	Signal	LEVEL	-40	+15	0.25	Db
In Polarity 相位	Input N	Signal	POLARITY	Invert(-)/Direct(+)			
In Delay 延时	Input N	Signal	DELAY	0	24,000	1	Sample
In EQ P – Level 均衡 器 增益或衰减	Input N	EQ P	LEVEL	-30	+15	0.25	dB
In EQ P – Frequency 频率	Input N	EQ P	FREQUENCY	20	20,000	1	Hz
In EQ P – Bandwidth 频宽	Input N	EQ P	BANDWIDTH	0.01	2.50	0.01	Octave
In Channel Name 名称	Input N	Channel name	NAME 名称	6 characters 6 个字			
Out Gain	Out X	Signal	LEVEL	-40	+15	0.25	dB
Out Polarity	Out X	Signal	POLARITY	Invert(-)/Direct(+)			
Out Delay	Out X	Signal	DELAY	0	24,000	1	Sample
Out EQ Y – Level	Out X	EQ Y	LEVEL	-30	+15	0.25	dB
Out EQ Y – Freq	Out X	EQ Y	FREQUENCY	20	20,000	1	Hz
Out EQ Y – BW	Out X	EQ Y	BANDWIDTH	0.01	2.50	0.01	Octave
Source	Out X	Band	SOURCE	Any Input Combination			
Out Filter Band	Out X	Band	BAND	None/LP/HP/BP			
Crossover 1 Filter	Out X	Freq-1	FREQUENCY	20	20,000	1	Hz
Crossover 1 Filter	Out X	Freq-1	FILTER TYPE	Butterworth /Linkwitz-Riley/Bessel			
Crossover 1 Filter	Out X	Freq-1	SLOPE	6	24	6	dB/Octave
Crossover 2 Filter	Out X	Freq-2	FREQUENCY	20	20,000	1	Hz
Crossover 2 Filter	Out X	Freq-2	FILTER TYPE	Butterworth /Linkwitz-Riley/Bessel			
Crossover 2 Filter	Out X	Freq-2	SLOPE	6	24	6	dB/Octave
Out Limit Thresh	Out X	Limit	THRESHOLD	-10	+20	0.5	dB
Out Attack Time	Out X	Limit	ATTACK	0.1	100	0.1/1	ms
Out Release Time	Out X	Limit	RELEASE	2x/4x/8x/16x/32x Attack time			
Out Channel Name	Out X	Channel Name	NAME	6 characters 6 个字			

N – 代表输入通道 A, B, C or D.

P – 代表输入通道均衡器号数 1, 2, 3, 4, 5, 6, 7 or 8.

X – 代表输出通道号数 1, 2, 3, 4, 5, 6, 7 or 8.

Y – 代表输出通道均衡器号数 1, 2, 3 or 4.

7. 2 系统控制 System Control:

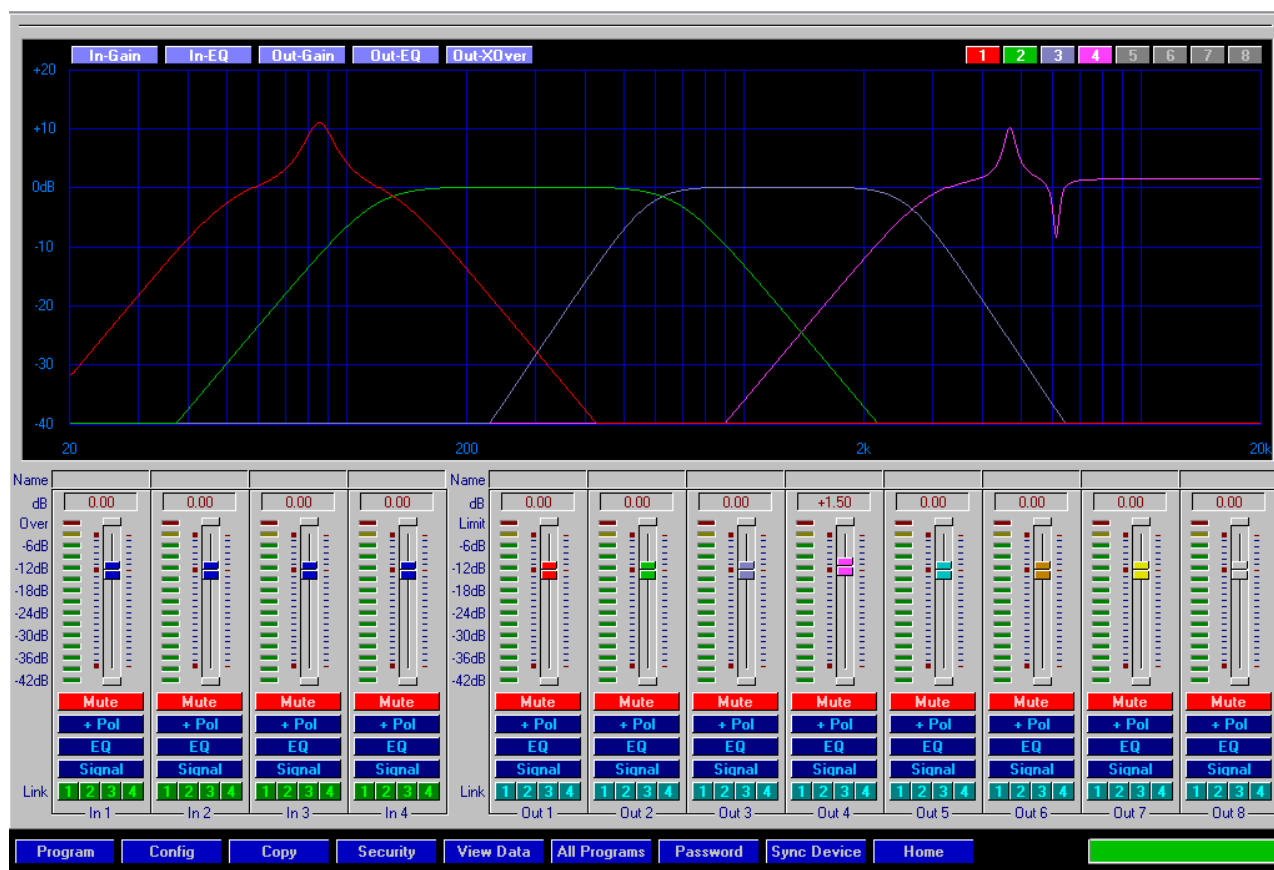
以下图表介绍有关系统控制及设置步骤。

The following table summarizes the steps needed in order to change system values.

Action... 工作	MENU 主菜单 (按下系统键 Press System Key)	SUB-MENU 辅助菜单 (使用功能上/ 下键) Use Function Up/Dn Keys)	FIELD (Use Up/Dn/ Left/Right key) 使用上下左右键作 修改	
Store new set-up 储存新的节目	SYSTEM 系统	STORE 贮存	1. PROGRAM	Program number (1-8)
			2. 节目	节目编号
			3. NAME 名称	Program Name 节目名称 8 characters)
			4. CONFIRM 确定	Set to YES & press ENTER 按 YES 及 ENTER 确定
Recall set-up from memory 由内存呼叫节目	SYSTEM 系统	RECALL 呼叫	1. PROGRAM 节目	Program number (1-8), for each address the program name is displayed automatically.
			2. CONFIRM 确定	Set to YES & press ENTER 按 YES 及 ENTER 确定
Changing Delay Units 更改延时单位	SYSTEM 系统	GENERAL 通用	1. DELAY 延时 UNITS 单位	MS 毫秒 or Ft .呎
			3. CONFIRM 确定	Set to YES & press ENTER 按 YES 及 ENTER 确定
Changing MIDI 修改 MIDI 通道	SYSTEM 系统	GENERAL 通用	1. MIDI CH 通道	MIDI channel number (1-16)
			2. CONFIRM 确定	Set to YES & press ENTER 按 YES 及 ENTER 确定
Open the Serial Port 开启计算机 团串联接口	SYSTEM 系统	PC LINK PC 计算机连 接	1. LINK 连接	PC Link ON or OFF
			2. CONFIRM 确定	Set to YES & press ENTER 按 YES 及 ENTER 确定
Change Unit Operation Mode 修改系统工作模式	SYSTEM 系统	CROSSOVER 分频器	1. MODE 模式	Generic, 2-Way, 3-Way, 4-Way
			2. CONFIRM 确定	Set to YES & press ENTER 按 YES 及 ENTER 确定
Changing Unit Security Level 更改保安水平	SYSTEM 系统	SECURITY 保安	1. LEVEL 设置	None, Standard or High 最低, 标准, 最高
			2. PASSWOED 密码	Password (4 characters). 输入密码
			3. CONFIRM 确定	连 Set to YES & press ENTER 按 YES 及 ENTER 确定

8 · PC Software Control

The DSP4000 随机我们已附帶了一套计算机应用软件，用户可以使用软件通过计算机的 RS232 接口与 DSP4000 直接联机，这个软件已经包含了控制 DSP4000 的功能及修改有关参数。具有十分容易使用的特点，而且接口清晰。Is shipped with a special PC Graphic User Interface (GUI) application. This application gives the user an option to control the DSP4000 unit from a remote PC via the RS232 serial communication link. The GUI application makes it much easier to control and change the unit; it is user friendly allows the user to get the whole picture on one screen. In addition the GUI application can acquire the DSP4000 parameters and its values at any time, then display it on the screen graphically making it easier to control and change.



9. Specifications

Input Channel (x4): 输入通道 (4 个)

Impedance 输入阻抗: 10kOhm

Type 类型: Electronically balanced 电子平行式

Connector 插座: XLR

Nominal Level 额定输入电平: +4dBu

Maximum Level 最高点平: +20dBu

ADC 模拟数码转换: 24-Bit, Sigma delta modulator.

Level 电平: -40 to +15dB (0.25dB/step)

Delay 延时: 0-0.5 sec

Polarity 相位: Normal 正相 / Reverse 反相

Output Channel (x8): 输出通道 (8 个)

Impedance 输出阻抗 : 50 Ohms

Type 类型: Electronically balanced

Connector 插座: XLR

Nominal Level 额定输出电平: +4dBu

Maximum Level 最高电平: +20dBu

DAC 数码模拟转换: 24-Bit

Level 电平: -40 to +15dB (0.25dB/step)

Delay 延时: 0-0.5 sec

Polarity 相位: Normal 正相 / Reverse 反相

EQ Section: 均衡器

Type 类型: Parametric 参量均衡

Level 电平: +15dB/-30 (0.25dB/step)

Frequency 频率响应: 20Hz to 20kHz (1Hz/step)

Bandwidth 频宽: 0.01 to 2.50 octaves (0.01/step)

Crossover Filter: 分频器滤波器

Slope 斜度: 6 / 12 / 18 / 24 / 48 dB/octave

Filter Type 滤波器类型: BUTTERWORTH/ LINKWITZ-RILEY / BESSEL

Configuration 架构: NONE 直线/ LP 低通 / HP 高通 / BP 频带通过

Limiter: 限幅器

Threshold 门限: -10 to +20 dBu (1dBu/step)

Attack time 起动时间: 0.1-100.00ms

Release Time 释放时间: 2x / 4x / 6x / 8x / 16x / 32x of the attack time.

System Performance: 系统性能

Frequency Response 频率响应: 20Hz - 20kHz, +/-0.25dB

Signal to Noise Ratio 信噪比: >110dB Typical (Unweighted)

Channel Separation 信道分离道: >80dB

Distortion 失真: <0.005%

Connectors: 接口

XLRs for analog I/O 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163, 164, 165, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, 190, 191, 192, 193, 194, 195, 196, 197, 198, 199, 200, 201, 202, 203, 204, 205, 206, 207, 208, 209, 210, 211, 212, 213, 214, 215, 216, 217, 218, 219, 220, 221, 222, 223, 224, 225, 226, 227, 228, 229, 230, 231, 232, 233, 234, 235, 236, 237, 238, 239, 240, 241, 242, 243, 244, 245, 246, 247, 248, 249, 250, 251, 252, 253, 254, 255, 256, 257, 258, 259, 260, 261, 262, 263, 264, 265, 266, 267, 268, 269, 270, 271, 272, 273, 274, 275, 276, 277, 278, 279, 280, 281, 282, 283, 284, 285, 286, 287, 288, 289, 290, 291, 292, 293, 294, 295, 296, 297, 298, 299, 300, 301, 302, 303, 304, 305, 306, 307, 308, 309, 310, 311, 312, 313, 314, 315, 316, 317, 318, 319, 320, 321, 322, 323, 324, 325, 326, 327, 328, 329, 330, 331, 332, 333, 334, 335, 336, 337, 338, 339, 340, 341, 342, 343, 344, 345, 346, 347, 348, 349, 350, 351, 352, 353, 354, 355, 356, 357, 358, 359, 360, 361, 362, 363, 364, 365, 366, 367, 368, 369, 370, 371, 372, 373, 374, 375, 376, 377, 378, 379, 380, 381, 382, 383, 384, 385, 386, 387, 388, 389, 390, 391, 392, 393, 394, 395, 396, 397, 398, 399, 400, 401, 402, 403, 404, 405, 406, 407, 408, 409, 410, 411, 412, 413, 414, 415, 416, 417, 418, 419, 420, 421, 422, 423, 424, 425, 426, 427, 428, 429, 430, 431, 432, 433, 434, 435, 436, 437, 438, 439, 440, 441, 442, 443, 444, 445, 446, 447, 448, 449, 450, 451, 452, 453, 454, 455, 456, 457, 458, 459, 460, 461, 462, 463, 464, 465, 466, 467, 468, 469, 470, 471, 472, 473, 474, 475, 476, 477, 478, 479, 480, 481, 482, 483, 484, 485, 486, 487, 488, 489, 490, 491, 492, 493, 494, 495, 496, 497, 498, 499, 500, 501, 502, 503, 504, 505, 506, 507, 508, 509, 510, 511, 512, 513, 514, 515, 516, 517, 518, 519, 520, 521, 522, 523, 524, 525, 526, 527, 528, 529, 530, 531, 532, 533, 534, 535, 536, 537, 538, 539, 540, 541, 542, 543, 544, 545, 546, 547, 548, 549, 550, 551, 552, 553, 554, 555, 556, 557, 558, 559, 560, 561, 562, 563, 564, 565, 566, 567, 568, 569, 570, 571, 572, 573, 574, 575, 576, 577, 578, 579, 580, 581, 582, 583, 584, 585, 586, 587, 588, 589, 590, 591, 592, 593, 594, 595, 596, 597, 598, 599, 600, 601, 602, 603, 604, 605, 606, 607, 608, 609, 610, 611, 612, 613, 614, 615, 616, 617, 618, 619, 620, 621, 622, 623, 624, 625, 626, 627, 628, 629, 630, 631, 632, 633, 634, 635, 636, 637, 638, 639, 640, 641, 642, 643, 644, 645, 646, 647, 648, 649, 650, 651, 652, 653, 654, 655, 656, 657, 658, 659, 660, 661, 662, 663, 664, 665, 666, 667, 668, 669, 670, 671, 672, 673, 674, 675, 676, 677, 678, 679, 680, 681, 682, 683, 684, 685, 686, 687, 688, 689, 690, 691, 692, 693, 694, 695, 696, 697, 698, 699, 700, 701, 702, 703, 704, 705, 706, 707, 708, 709, 710, 711, 712, 713, 714, 715, 716, 717, 718, 719, 720, 721, 722, 723, 724, 725, 726, 727, 728, 729, 730, 731, 732, 733, 734, 735, 736, 737, 738, 739, 740, 741, 742, 743, 744, 745, 746, 747, 748, 749, 750, 751, 752, 753, 754, 755, 756, 757, 758, 759, 760, 761, 762, 763, 764, 765, 766, 767, 768, 769, 770, 771, 772, 773, 774, 775, 776, 777, 778, 779, 780, 781, 782, 783, 784, 785, 786, 787, 788, 789, 790, 791, 792, 793, 794, 795, 796, 797, 798, 799, 800, 801, 802, 803, 804, 805, 806, 807, 808, 809, 810, 811, 812, 813, 814, 815, 816, 817, 818, 819, 820, 821, 822, 823, 824, 825, 826, 827, 828, 829, 830, 831, 832, 833, 834, 835, 836, 837, 838, 839, 840, 841, 842, 843, 844, 845, 846, 847, 848, 849, 850, 851, 852, 853, 854, 855, 856, 857, 858, 859, 860, 861, 862, 863, 864, 865, 866, 867, 868, 869, 870, 871, 872, 873, 874, 875, 876, 877, 878, 879, 880, 881, 882, 883, 884, 885, 886, 887, 888, 889, 890, 891, 892, 893, 894, 895, 896, 897, 898, 899, 900, 901, 902, 903, 904, 905, 906, 907, 908, 909, 910, 911, 912, 913, 914, 915, 916, 917, 918, 919, 920, 921, 922, 923, 924, 925, 926, 927, 928, 929, 930, 931, 932, 933, 934, 935, 936, 937, 938, 939, 940, 941, 942, 943, 944, 945, 946, 947, 948, 949, 950, 951, 952, 953, 954, 955, 956, 957, 958, 959, 960, 961, 962, 963, 964, 965, 966, 967, 968, 969, 970, 971, 972, 973, 974, 975, 976, 977, 978, 979, 980, 981, 982, 983, 984, 985, 986, 987, 988, 989, 990, 991, 992, 993, 994, 995, 996, 997, 998, 999, 1000

RS232 DB-9 Connector

Power Input Socket

General Info 一般信息

Power Input 工作电源: 110/220V AC, 50/60Hz, 20VA

Dimensions 尺寸: 19" x 8" x 1.75" (483mm x 200mm x 38mm)

Weight 重量: 8.6 lb (3.9kgs)