User Manual

LAX®

DSP24

Described below are the functions of the front panel control buttons and encoders for the DSP24 .

● **Getting Started**

As soon as the DSP24 is turned ON the device model name will appear in the LCD screen:

DSP24
Speaker   Management

and a status bar will show the progress of the DSP24 initialization process:

DSP24
■■■■■■■■■■■■■

After the first time activation, the DSP24 will show on the LCD :

DSP24
Default   Preset

- ***Encoders and ENTER, ESC buttons***

The DSP24 is equipped with 3 Relative Encoders, "NAV/PM1", "PM2" and "PM3", These encoders allow you to navigate the user interface and edit sections of the processor.   They allow the user to navigate within the screen for the selection of sub-menus, pages and parameters and to select the set values to be assigned during the editing operations.

The "ENTER" and "ESC" buttons allow the user to confirm or NOT confirm the operations performed by the encoders, or exit the operations.

- ***UTILITY, A/B and 1/2/3/4 buttons***

The UTILITY button allows the User to enter the Sub-menus and set the general characteristics of the Processor.   The A and B buttons allow the User to enter the Editing Menus of the Processor's Input Channels and buttons 1, 2, 3 and 4 allow the User to enter the Editing Menus of the Processor's Output Channels.

The A and B buttons as well as the 1, 2, 3 and 4 buttons have double functions dependent on the push and hold time.

When the A and B buttons are pushed and held for more than one second Input Channels A or B are either muted or unmuted.   The red LED will illuminate when the Channel is muted.   When the "MUTE" LED is OFF, then the related Input Channel is UN-MUTED.

A momentary push of the A and B buttons enters the Editing Mode for the Input Channels (see later for the Input Channel Editing details).
The blue "EDIT" LED will now be ON.

When the 1, 2, 3 and 4 buttons are pushed and held for more than one second the Output Channels 1, 2, 3 and 4 are either muted or unmuted.   The red LED will illuminate when the Channel is muted.   When the "MUTE" LED is OFF, then the related Output Channel is UN-MUTED.

A momentary push of the 1, 2, 3 and 4 buttons enters the Editing Menu for the Output Channels (see later for the Output Channel Editing details).   The blue "EDIT" LED will now be ON.

- ***DSP24 Menu and Sub-Menu Structures***

As stated above, the start-up default screen is the following factory preset:

```
        DSP24
     Default   Preset
```

From this point, sub-menus are accessed and exited using the "UTILITY", "A/B", "1/2/3/4", "ENTER" and "ESC" buttons and all parameters and values are navigated by the "NAV/PM1", "PM2" and "PM3" encoders.   Please refer to the following menu structures:

MENU "UTILITY MENU" [Access by pushing the "UTILITY" button]

NAV/PM1 Encoder
[to navigate between menus]

PM2 or PM3 Encoder
[to chose option, then ENTER to load it;
(*) indicates the selected option]

1 UTILITY MENU:......
<< System Utilities >>

ENTER ↓ ↑ ESC

1.1   SYSTEM UTILITY:
   << Input Source >>

ESC ← → ENTER

Input Source
Source: Analog input
Source: Noise Gen

1.2   SYSTEM UTILITY:
   << Noise Generator >>
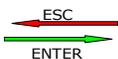
ESC ← → ENTER

Noise Generator
Type: Pink
Type: White
Lev: 0dB
:
Lev:-30dB

1.3   SYSTEM UTILITY:
   << Link Input L&R >>

ESC ← → ENTER
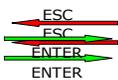
Link Input L&R
Link: Off
Link: On

1.4   SYSTEM UTILITY:
   << LINK CMP/LIM 1&2 >>

ESC ← → ENTER

LINK CMP/LIM 1&2
Link: off
Link: on

1.5   SYSTEM UTILITY:
   << LINK CMP/LIM 3&4 >>

ESC ← → ENTER

LINK CMP/LIM 3&4
Link: off
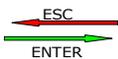Link: on

1.6
SYSTEM UTILITY:
<< Set Output 1 Cmp/Lim >>

ESC
ESC
ENTER
ENTER

Set Output 1 Cmp/Lim
Config : RMS Compressor
Config : Peak Limiter

1.7   SYSTEM UTILITY:
   << Set Output 2 Cmp/Lim >>

ESC ← → ENTER

Set Output 2 Cmp/Lim
Config : RMS Compressor
Config : Peak Limiter

1.8   SYSTEM UTILITY:
   << Set Output 3 Cmp/Lim >>

ESC ← → ENTER

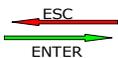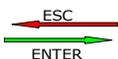Set Output 3 Cmp/Lim
Config : RMS Compressor
Config : Peak Limiter

1.9   SYSTEM UTILITY:
   << Set Output 4 Cmp/Lim >>

ESC ← → ENTER

Set Output 4 Cmp/Lim
Config : RMS Compressor
Config : Peak Limiter

1.10   SYSTEM UTILITY:
   << Delay Units >>

ESC ← → ENTER

Delay Units
Unit: Time(ms)
Unit: Distance (m)

1.11   SYSTEM UTILITY:
   << Set Default Value >>

ESC ← → ENTER

Set Default Value
[Enter] to confirm

1.12   SYSTEM UTILITY:
   << Firmware Version >>

ESC ← → ENTER

Firmware Version
Version: 1.0.6

2 UTILITY MENU:......
<< Program Utilities >>

ENTER ↓ ↑ ESC

2.1   PROGRAM UTILITY:
   << Recall a Preset >>

ESC ← → ENTER

Recall a Program
P01: Empty empty
: :
P48 Empty empty

2.2   PROGRAM UTILITY:
   << Save a Preset >>

ESC ← → ENTER

Save a Program
P01: Empty empty
: :
P48: Empty empty

2.3   PROGRAM UTILITY:
   << Delete a Preset >>

ESC ← → ENTER

Delete a Program
P01: Empty empty
: :
P48: Empty empty

3 UTILITY MENU:......
<<   Interface Utilities   >>

ENTER ↓↑ ESC

3.1   **INTERFACE UTILITY:**   ESC ←   **Interface Setup**
            Interface Setup   → ENTER   **Source: USB**
                                                                                          Source: RS485   **ID=1,...,32**

4 UTILITY MENU:......
<<   Security Utilities   >>

ENTER ↓↑ ESC

4.1   **SECURITY UTILITY:**   ESC ←   **Parameter will**
            Show Parameter   → ENTER   **be shown**
                                                                                          not be shown

4.2   **SECURITY UTILITY:**   ESC ←   **Lock Unit**
            Lock Unit   → ENTER   **Locked   Interface : Off**
                                                                                          Locked   Interface : On

4.3   **SECURITY UTILITY:**   ESC ←   **User   Password**
            User   Password   → ENTER   **[   ]**

4.4   **SECURITY UTILITY:**   ESC ←   **Enter   Password**
            Enable   Password   → ENTER   **[   ]**

MENU "Input A/B"   Input Channels Editing [Access by pushing the "A/B" button]

NAV/PM1 Enc.   **PM2 Enc.**   **PM3 Enc.**
[to chose values for the parameters, no need to confirm the chosen values,
which are automatically loaded during the encoders use]

1. **In-LR   Input 1   Name**
       Name = [Name]

ENTER ↓ ↑ ESC

    -> **Name =Input 1**   *(For Editing the Device's Name, refer to the Details on the "Utility Menus Use" Section)*

2. **In-LR   [Name]   N.Gate**
       Bypass=On

ENTER ↓ ↑ ESC

    -> **Bypass=On**   PM1/PM2 N/A.   Byp=On/Off   Thr=-90.0dBu ··· -60 dBu
                                                                 Rel=10ms ··· 1000ms   Atk=1ms ··· 1000ms

3. **In-LR   [Name]   Gain**
       Gain = + 0.0 dB

ENTER ↓ ↑ ESC

    -> **Gain = + 0.0 dB**   PM1/PM2 N/A.   **PM2 -18 dB**   **PM3 0.1dB**
                                                                 :   **:**
                                                               +12dB   **0.9dB**
                                                               Step 1dB   **Step 0.1dB**

4. **In-LR   [Name]   Phase**
       Phase=Normal

ENTER ↓ ↑ ESC

    -> **Phase=Normal**   PM1/PM2 N/A.   **Phase= Normal/Invert**

5. **In-LR   [Name]   Delay**
       Delay =   0.0000 ms

ENTER ↓ ↑ ESC

    -> **Delay =   0.0000 ms**   PM1/PM2 N/A.   **PM1 000.0000mS   0m**   **PM2 000.0000mS 0m**
                                                               [1 ms steps]   **[20.8 us steps]**
                                                               900.0000mS   306m   **000.9984mS 339m**

6. **In-LR   [Name]   RMS Cmp**
       Bypass=On

ENTER ↓ ↑ ESC

    -> **Bypass=On**   PM1/PM2 N/A.   Byp=On/Off
                                        PM1/PM2 N/A.   Threshold=+16dBu ··· -14dBu
                                        PM1/PM2 N/A.   Ratio =2:1 ··· 100:1   Knee=0% ··· 100%
                                        PM1/PM2 N/A.   Rel=0.1sec ··· 3.0sec   Atk=5ms ··· 200ms

7. **In-LR   [Name]   EQ Byp**
       Bypass=On

ENTER ↓ ↑ ESC

    -> **Bypass=On**   PM1/PM2 N/A.   Byp=On/Off

9. **In-LR   [Name]   PEQ-XX(01 to 11)**
       Byp=on/off   Type=Peaking_Eq

ENTER ↓ ↑ ESC

    -> **Byp=off   Type=Peaking_Eq** PM1/PM2 N/A.   Byp=On/Off

Type=Peaking_Eq/ Hi -Shelv Q/ Lo-Shelv Q/

Type=Peaking_Eq	PM1/PM2 N/A.	Freq=20Hz ⋯ 20000Hz	
	PM1/PM2 N/A.	Gain=-12dB ⋯ +12dB	Q=0.4 ⋯ 128
Type= Hi -Shelv Q	PM1/PM2 N/A.	Frequency=20Hz ⋯ 20000Hz	
	PM1/PM2 N/A.	Gain=-12dB ⋯ +12dB	Q=0.1 ⋯ 5.1
Type= Lo-Shelv Q	PM1/PM2 N/A.	Frequency=20Hz ⋯ 20000Hz	
	PM1 /PM2 N/A.	Gain=-12dB ⋯ +12dB	Q=0.1 ⋯ 5.1

10. In-LR   *[Name]*   **DLF**
Bypass=On

ENTER   ESC

-> Bypass=On   **PM1**/PM2 **N/A.**   **Byp=On/Off   %Boost=0…..100**

Frequency=20Hz ⋯ 20000Hz   Q=1.00 ⋯ 9.90

ENU "Output 1/2/3/4" Output Channels Editing [Access by pushing the "1/2/3/4" button]

NAV/PM1 Encoder
[to navigate between menus]

NAV/PM1 Enc.   **PM2 Enc.**   **PM3 Enc.**
[to chose values for the parameters, no need to confirm the chosen values,
which are automatically loaded during the encoders use]

output [1~4]

1. Output[x]   [Name]   Name
Name = [Name]

ENTER ↓↑ ESC

-> **Name = _**   *(For Editing the Device's Name, refer to the Details on the"Utility Menus Use" Section)*

2. Output[x]   [Name]   Routing
Source = Input L

ENTER ↓↑ ESC

-> **Source = Input L**   PM2 N/A   **Source**
InL (Channel L)
InR (Channel R)
InL+InR(Channel L+ Channel R)

3. Output[x]   [Name]   Gain
Gain = + 0.0 dB

ENTER ↓↑ ESC

-> **Gain = + 0.0 dB**   PM1/PM2 N/A   **-18 dB**   **0.1dB**
:   **:**
+18dB   **0.9dB**
Step 1dB   **Step 0.1dB**

4. Output[x]   [Name]   Phase
Phase=Normal

ENTER ↓↑ ESC

-> **Phase=Normal**   PM1/PM2 N/A.   **Phase= Normal/Invert**

5. Output[x]   [Name]   Delay
Delay =   0.0000 ms

ENTER ↓↑ ESC

-> **Delay =   0.0000 ms**   PM1/PM2 N/A   **000.0000mS**   **000.0000mS**
[1 ms steps]   **[20.8us steps]**
340.0000mS 115m   **000.9984Ms 000. 939m**

6. Output[x]   [Name]   RMS Cmp
Bypass=On

ENTER ↓↑ ESC

-> **Bypass=On**   PM1/PM2 N/A.   Byp=On/Off
          PM1/PM2 N/A.   Threshold=+16dBu ··· -14dBu
          PM1/PM2 N/A.   Ratio =2:1 ··· 100:1   Knee=0% ··· 100%
          PM1/PM2 N/A.   Rel=0.1sec ··· 3.0sec   Atk=5ms ··· 200ms

7. Output[x]   [Name]   HPF
20.0 Hz   Bypass

ENTER ↓↑ ESC

-> **20.0 Hz   Bypass**   PM1/PM2 N/A   *[Freq.]* **20Hz**   *[Type/Slope]*   **Bypass**
:   **:**
20kHz   **LR -48 dB /Oct**

Slope=Bypass/ BW -6 dB/Oct / BW -12 dB/Oct / LR -12 dB/Oct / BS -12 dB/Oct / BW -18 dB/Oct / BW -24 dB/Oct / LR -24 dB/Oct / BS -24 dB/Oct / BW -36 dB/Oct / LR-36 dB/Oct / BW -48 dB/Oct / LR-48 dB/Oct /

8. Output[x]   [Name]   LPF
20.0 Hz   Bypass

ENTER ↓↑ ESC

-> **20.0 Hz   Bypass**   PM1/PM2 N/A   *[Freq.]* **20Hz**   *[Type/Slope]*   **Bypass**
:   **:**
20kHz   **LR -48dB/Oct**

Slope=Bypass/ BW -6 dB/Oct / BW -12 dB/Oct / LR -12 dB/Oct / BS -12 dB/Oct / BW -18 dB/Oct / BW -24 dB/Oct / LR -24 dB/Oct / BS -24 dB/Oct / BW -36 dB/Oct / LR-36 dB/Oct / BW -48 dB/Oct / LR-48 dB/Oct /

9. Output*[x]* *[Name]* EQ Byp
     Bypass=On

           ENTER ⬇ ⬆ ESC

    -> **Bypass=On**   PM1/PM2 N/A.   Byp=On/Off

---

10. Output*[x]* *[Name]* PEQ-XX(00 to 07)
      Byp=on   Type=Peaking_Eq

           ENTER ⬇ ⬆ ESC

    -> **Byp=on   Type=Peaking_Eq**   PM2N/A.   Byp=On/Off
Type=Peaking_Eq/ Hi -Shelv Q/ Lo-Shelv Q/

Type=Peaking_Eq	PM1/PM2 N/A.	Frequency=20Hz ⋯ 20000Hz
	PM1/PM2 N/A.	Gain=-12dB ⋯ +12dB Q=0.4 ⋯ 128
Type= Hi -Shelv Q	PM1/PM2 N/A.	Frequency=20Hz ⋯ 20000Hz
	PM1/PM2 N/A.	Gain=-12dB ⋯ +12dB Q=0.1 ⋯ 5.1
Type= Lo-Shelv Q	PM1/PM2 N/A.	Frequency=20Hz ⋯ 20000Hz
	PM1 /PM2N/A.	Gain=-12dB ⋯ +12dB Q=0.1 ⋯ 5.1

11.Output*[x]* *[Name]*   Dyn Filt
Bypass=On

           ENTER ⬇ ⬆ ESC

    -> **Bypass=On**   **PM1**/PM2 **N/A.**   **Byp=On/Off   Att=0.0..... -6.0db**

                                                Frequency=20Hz ⋯ 20000Hz   Q=1.00 ⋯ 9.90

● **Menu "UTILITY" [access   by pushing the "UTILITY" button]**

From the "Default Screen", it is possible access the "UTILITY" menu pushing the "UTILITY" button and the Sub-Menus pages can be selected just rotating clockwise and counter-clockwise the "NAV/PM1" encoder.
Once selected the sub-menu page, using the "ENTER" button can be accessed the Sub-Menus pages, again "scrollable" using the "NAV/PM1" encoder and accessible for the parameters' editing pushing again the "ENTER" button.
Through the "ESC" button, it is any time possible to go back to the action and page operation preceding the "ENTER" button use.
Once inside the Sub-Menus pages, the several options can be scrolled by rotating the "PM2" or "PM3" encoders and selected/confirmed by pushing the "ENTER" button.

System Utilities Sub-menu – this sub-menu allows to access several operations related to the DSP24 Start Up and General Configuration:

```
          UTILITY MENU
  --      System Utilities      --
```
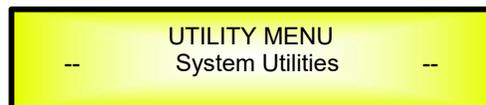
From the "System Utilities Sub-menu", pushing "ENTER" and then using the "NAV/PM1" encoder for scrolling will give access to the following pages:

– **Input Source:** the DSP24 is equipped with 2 Analog Inputs (Balanced Female XLR) and noise generator
  The "Input Source" page allows you to select the desired Input type:

```
          SYSTEM UTILITY
  --      Input Source       --
```

By pressing "ENTER" button on Input Source and then rotating the "PM2" or "PM3" encoders, it is possible to select the Main Inputs for the DSP24, allowing the User to choose between Analog or Noise Generator.
The selection can be confirmed by pressing the "ENTER" button.
The following screen shows that the Analog Input has been selected:

```
          Input Source
       Source = Analog input
```
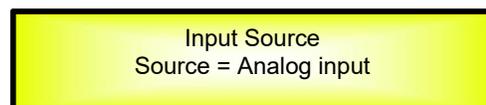
– **Noise Generator:** DSP24 equips with 2 types of noise generator: White Noise and Pink Noise.

```
        SYSTEM UTILITY
   --      Noise Generator      --
```
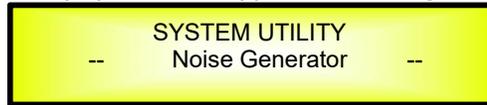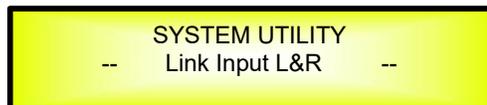
By pressing "ENTER" button and rotating the "PM2" encoder, it is possible to select between those 2 choice: "Pink" or "White". By rotating the "PM3" encoder, it is possible to set the value of level of white noise generator and pink noise generator, with whose range from 0dB to -30dB.
The following screen shows the selected pink noise with level of -20dB:

```
        Noise Generator
   Type=Pink        Lev=-20dB
```

Link Input L&R: In this page, user can choose Input Link, to making it more convenient for editing:

```
        SYSTEM UTILITY
   --      Link Input L&R      --
```

By pressing "ENTER" button and rotating the "PM2" or "PM3" encoder, it is possible to choose between "On" or "Off".
The following screen shows that "Link = On" has been selected:

```
        Link Input L&R
   Link = On
```

By pressing "ENTER" button, it will display a confirm page as the following screen shows:

```
   Link：   copy InL to InR
   [Enter]   to   confirm
```
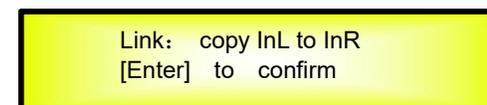
By pressing "ENTER" button one more time, it will display as following in the screen:

```
   Link：   copy InL to InR
   Please wait…………………
```

Wait for 1 sec until the setting is completed. Then the Input Link is activated.
When Link=On, if edit any one of the 2 channels, the other one would be under the same edit.

Link Cmp/Lim 1&2: In this page, user can choose Output 1&2 to enter into the stereo mode:

–

```
        SYSTEM UTILITY
   --      Link Cmp/Lim   1&2      --
```

By pressing ENTER and rotating the "PM2" or "PM3" encoder, it is possible to choose between "On" or "Off".
The following screen shows that "Link = On" has been selected:

```
Link Cmp/Lim   1&2
--      Link = On          --
```

By pressing "ENTER" button, it will display a confirm page as the following screen shows:

```
Link： activity Cmp/Lim
[Enter]   to   confirm
```

Link Cmp/Lim 3&4: In this page, user can choose Output 3&4 to enter into the stereo mode:

```
SYSTEM UTILITY
--      Link Cmp/Lim   3&4      --
```

By pressing ENTER and rotating the "PM2" or "PM3" encoder, it is possible to choose between "On" or "Off".
The following screen shows that "Link = On" has been selected:

```
Link Cmp/Lim   3&4
--      Link = On          --
```

By pressing "ENTER" button, it will display a confirm page as the following screen shows:

```
Link： activity Cmp/Lim
[Enter]   to   confirm
```

Set Output 1 Cmp/Lim: In this page, user can choose Output 1 to use Compressor or Limiter:
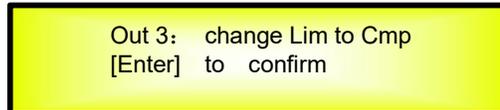
```
SYSTEM UTILITY
--      Set Output 1 Cmp/Lim      --
```

By pressing ENTER and rotating the "PM2" or "PM3" encoder, it is possible to choose between "RMS Compressor" or "Peak Limiter".
The following screen shows that "Config = RMS Compressor" has been selected:
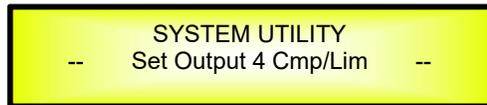
```
          Set Output 1 Cmp/Lim
    -- Config =RMS   Compressor    --
```

By pressing "ENTER" button, it will display a page to confirm if the Peak Limiter of Output 1 is changed to RMS Compressor as the following screen shows:

```
         Out 1：  change Lim to Cmp
         [Enter]  to  confirm
```

Set Output 2 Cmp/Lim: In this page, user can choose Output 2 to use Compressor or Limiter:

```
              SYSTEM UTILITY
    --     Set Output 2 Cmp/Lim      --
```

By pressing ENTER and rotating the "PM2" or "PM3" encoder, it is possible to choose between "RMS Compressor" or "Peak Limiter".
The following screen shows that "Config = RMS Compressor" has been selected:

```
          Set Output 2 Cmp/Lim
       -- Config =RMS Compressor --
```

By pressing "ENTER" button, it will display a page to confirm if the Peak Limiter of Output 2 is changed to RMS Compressor as the following screen shows:

```
         Out 2：  change Lim to Cmp
         [Enter]  to  confirm
```

Set Output 3 Cmp/Lim: In this page, user can choose Output 3 to use Compressor or Limiter:

```
              SYSTEM UTILITY
    --     Set Output 3 Cmp/Lim      --
```

By pressing "ENTER" button and rotating the "PM2" or "PM3" encoder, it is possible to choose between "RMS Compressor" or "Peak Limiter".
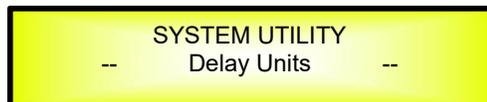The following screen shows that "Config = RMS Compressor" has been selected:

```
Set Output 3 Cmp/Lim
-- Config = RMS Compressor--
```

By pressing "ENTER" button, it will display a page to confirm if the Peak Limiter of Output 3 is changed to RMS Compressor as the following screen shows:

```
Out 3：    change Lim to Cmp
[Enter]   to   confirm
```

Set Output 4 Cmp/Lim: In this page, user can choose Output 4 to use Compressor or Limiter:

```
SYSTEM UTILITY
--      Set Output 4 Cmp/Lim      --
```

By pressing ENTER and rotating the "PM2" or "PM3" encoder, it is possible to choose between "RMS Compressor" or "Peak Limiter".
The following screen shows that "Config = RMS Compressor" has been selected:

```
Set Output 4 Cmp/Lim
-- Config = RMS Compressor --
```
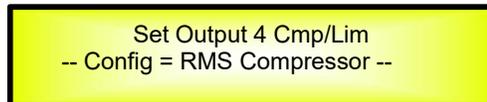
By pressing "ENTER" button, it will display a page to confirm if the Peak Limiter of Output 4 is changed to RMS Compressor as the following screen shows:
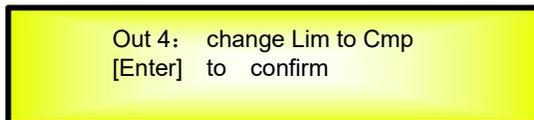
```
Out 4：    change Lim to Cmp
[Enter]   to   confirm
```

–
– **Delay Time/Distance:** this page allows you to select the measurement unit to be used for the Delays: **Time** (in milliseconds "ms") or **Distance** (in meters "m"):

```
SYSTEM UTILITY
--      Delay Units      --
```

By pressing "ENTER" button and rotating the "PM2" or "PM3" encoder, it is possible to select the measurement unit to be used for the delay, which will be confirmed by pushing the "ENTER" button.
The following screen shows the selected delay measurement is Time (milliseconds)

```
Delay Units
Unit  =  Time (ms)
```

Set Default Value: All setting for DSP24 can be set to default value:

```
SYSTEM UTILITY
--  Set Default Value  --
```

By pressing "ENTER" button, will show up the following screen of an interface to confirm to set the default value:

```
Set Default Value
[Enter] to confirm
```

By pressing "ENTER" button one more time, will show up the following screen:

```
Set Default Value
Wait : loading default….
```

Wait around 3 sec for the processor set to the default value.

–   **Firmware Version:** this page allows you to confirm the Firmware Version running on the DSP24:

```
SYSTEM UTILITY
--      Firmware Version      --
```

The correct Version is "V1.0.6"

Program Utilities Sub-menu – this sub-menu allows you to access several options related to the DSP24 operating mode and to manage the presets stored and recallable within the Unit:

```
UTILITY MENU
--      Program Utilities      --
```

By pressing the "ENTER" button, the following pages can be accessed:

– **Recall a Program:** this page allows the Loading of a preset program. You can store up to 48 presets in the DSP24 memory:

```
          PROGRAM UTILITY
    --    Recall a Program    --
```

By pressing ENTER and rotating the "NAV/PM1" encoders, it is possible to scroll through all current available presets.
If NO USER PRESETS are stored yet, the screen will show the following:

```
          Recall a Program
          No Stored Programs.
```
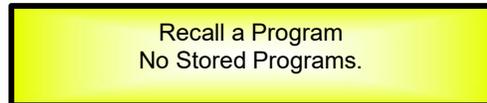
If presets have previously been stored by the user, anyone of them can be recalled:

```
          [ENTER] to recall.
          P01:    PRESET 1
```

By using the "NAV/PM1" encoder it is possible to scroll through the stored presets. Once the desired preset appears on the screen, select it by pressing the "ENTER" button and this will force the DSP24 to begin to load this selected preset and the following transitory screen will appear:

```
          Loading program ..
          P01:    PRESET 1
```

Once loaded the DSP24 will exit to the "Recall a Program" screen automatically and the above screen will disappear:

```
          PROGRAM UTILITY
    --    Recall a Program    --
```

Note: at any time it is possible to quit the recalling action by pressing the "ESC" button.

– **Save a Program:** this page allows you to store a new preset in the DSP24's memory:

```
          PROGRAM UTILITY
    --    Save a Program    --
```

By pressing the ENTER button and rotating the "NAV/PM1" encoder, it is possible to scroll through the previously saved presets or the available empty locations (identified by "Program empty").
If no user presets are stored, the "Save a Program" screen will show empty memory locations

for all 1-48 presets as shown in the example below for location 10:

```
Save a Program
P10:    Program empty
```

When storing an edited configuration for the DSP24 , select the location for a preset from the **48 available** by using the "NAV/PM1" encoders.
Once the desired location appears on the screen press "ENTER " button again to reach the "**Edit Program Name**" page.
In this page the User can enter a Preset Name (**up to 16 Characters**) by using the "PM3" encoder to choose a character and the "PM2" encoder to move between the 16 available locations for the character's positioning.
The current position of the cursor is shown by a "blinking underscore".

The following is an example of a screen while entering the preset name "Stage 1 2x2" in location 10:

```
Edit Program Name.
P10: Stage 1 2x2
```

To store the Preset Name press the "ENTER" button again.
The above action will take you to the "**Enter to Save**" page showing the selected location for the preset and the final edited name:

```
[Enter] to Save
P10: Stage 1 2x2
```

Pressing "ENTER" again, will store the preset in the selected location with the chosen name and the following transitory screen will appear on the LCD:

```
Saving to Memory.....
P10: Stage 1 2x2
```
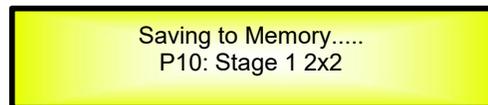
Once the preset is stored, the above screen will disappear returning to the following screen:

```
PROGRAM UTILITY
--      Save a Program          --
```

If during the Preset Storing process you want to overwrite an existing memory location select this location in the "**Set Program Name**" page, then press "ENTER " button and you will be asked if you want to overwrite this preset with the following "**[ENTER] to Overwrite**" screen displaying the currently stored preset and location:

```
                [Enter] to Overwrite
        P10:    Stage 1 2x2
```

If you wish to proceed press "ENTER" button again and the DSP24 will go ahead with the "**Set Program Name**" page and the subsequent overwrite on completion of the previously described storing process..

Note: at any time it is possible to quit the storing action by pressing the "ESC" button.

–   **Delete a Program:** this page allows you to delete a preset already stored in the DSP24 memory:

```
                PROGRAM UTILITY
        --      Delete a Program        --
```

By pressing the "ENTER" button and rotating the "NAV/PM1" encoder, it is possible to scroll through the previously saved presets and the available empty locations (identified by "Program empty").
If no user presets are stored, the "Delete a Program" screen will show empty memory locations for all 1-48 presets as shown in the example below for location 10:

```
                Delete a Program
                P10: Program empty
```

If Presets are available they will be shown in the "Delete a Program" page as follows:

```
                Delete a Program
                P10: Stage 1 2x2
```

By using the "NAV/PM1" encoder it is possible to select a preset to be deleted.

Pressing the "ENTER" button on a selected preset will bring up the "**[Enter] to Delete.**" page showing the selected preset.

For example, if we want to delete the preset 10, "Stage 1 2x2", the screen will be the following:

```
                [ENTER] to Delete.
                P10: Stage 1 2x2
```

Confirming the deletion by pressing "ENTER" again, will force the DSP24 to erase the selected preset and the following transitory screen will appear:

```
Deleting program.....
P10: Stage 1 2x2
```

Once the preset is deleted, the above screen will disappear returning to the following screen:

```
PROGRAM UTILITY
--    Delete a Program        --
```

Note: At any time it is possible to quit the deleting action by pressing the "ESC" button.

Interface Utilities Sub-menu – this sub-menu allows you to define the remote control interface [USB or RS485] to be used for controlling the DSP24:

```
UTILITY MENU
--      Interface Utilities        --
```

From "Interface Utilities", press "ENTER" button to access the Interface Setup.

– **Interface Setup:** this screen allows you to choose the communication source for the DSP24's.

```
INTERFACE UTILITY
--      Interface Setup        --
```

Press the "ENTER" button, by using the "PM2" or "PM3" encoder you can choose between the two possible interfaces (USB or RS485) for the DSP24.
If you select RS485 by "PM2" encoder, then select the ID by using "PM3" encoder, with its range from 01 to 32.

The following screen displaying the currently selected interface as USB:

```
Interface Setup
Source=USB
```

The following screen displaying the currently selected interface as RS485:

```
Interface Setup
Source=RS485
```

User can select the ID by using "PM2/PM3" encoder, at the below example screen display, user is going to select ID value in the RS485 interface:

```
Interface Setup
Remote    ID Num = 01
```

Security Sub-menu – this sub-menu allows the User to set the parameters shown, lock the DSP24 and set a Password therefore limiting the unit's functions and controls to those who have only access to the appropriate Password.

```
UTILITY MENU
--     Security Utilities     --
```

Press "ENTER" button and then use the "NAV/PM1" encoder to scroll between options.

- **Show Parameter:** Pressing "ENTER" button from the above menu will access the "Show Parameter" Sub Menu

```
SECURITY UTILITY
--     Show Parameter     --
```

Press "ENTER" button again and use the "PM2" or "PM3" encoder to select between "be shown" or "not be shown" options.
Choosing the "be shown" option means that once the unit is locked, you cannot access parameter editing features, but they will be displayed on the LCD screen.
Choosing the "not be shown" option means that once the unit is locked, the parameters will not be shown at all.   With this option, when trying to access a parameter, the following screen message will appear:

```
Parameter will
not be shown
```
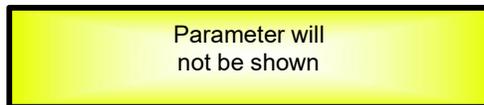
- **Lock Unit:**   this sub-menu allows the user to lock the device so no parameters can be edited or modified.

```
SECURITY UTILITY
--     Lock Unit     --
```

When the Unit is in an unlocked condition, all parameters will be available for editing.   When you select On, all parameters will be locked and are not available for editing.

```
Lock Unit
Lock Interface = On
```
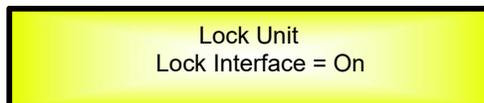
When you select lock from the menu, the unit will be locked and the lock menu automatically exited.   The screen will revert to the "Default" showing the current XOVER configuration and the preset selected and beside the preset's name a "keylock" icon indicating that the DSP24 is locked.

– **User Password:** from the "User Password" sub-menu:

```
              SECURITY UTILITY
       --    User   Password      --
```

Press "ENTER" button to access the "**User Password**" page:

```
                 User Password
             [                    ]
```
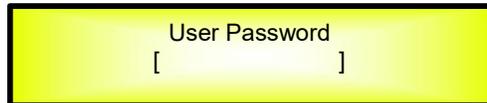
Use the "NAV/PM1" encoder to move between available locations, and the "PM2" or "PM3" encoder to choose a character. The current position of the cursor for the characters to be entered is shown by a "blinking underscore".

```
                 User Password
                   [_      ]
```
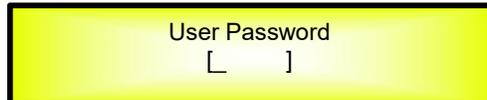
Input the original password "000000" for the DSP24, and press "ENTER" button, will access to the "**New Password**" Page. Use the "PM2" encoder to move between available locations, and rotate the "PM3" encoder to edit a 6-position new password.
The following screen is the example with the new password after edition is "111111"

```
                 New Password
                   [111111]
```
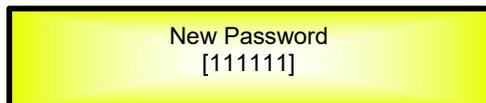
Press the ENTER button again, will access the "**Confirm password**" page, use the "NAV/PM1" encoder to move between available locations and rotate "PM2/PM3" encoder to choose a character, input the new password edited just now.
The following screen is the example with typing in new password "111111" edited just now.

```
                Confirm Password
                   [111111]
```
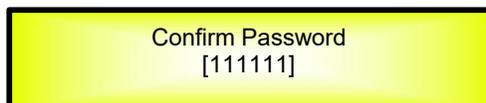
Press the "ENTER" button one more time, the new password will be set successfully.

– **Enable Password:** from the "Enable Password" sub-menu:

There's limitation to the editing function if the DSP24 is locked with password. All functions for this unit are banned, including MUTE A/B and MUTE 1/2/3/4 buttons.

```
              SECURITY UTILITY
       --     Enable Password    --
```

Press "ENTER" to gain access to the "**Enter Password**" screen:

```
            Enter Password
       [                    ]
```

Use the "NAV/PM1" encoder to move between available locations, and rotate "PM2/PM3" encoder to select characters. If the password of this DSP24 never modified, input the default password "000000", the unit will be locked. In this case, default screen will show a "Key" icon, user cannot enter into the sub-menu, unless he holds the password.

● **Menu "Input A/B" Input Channels Editing [access by pushing the "A/B" buttons]**

From the "Default Screen", it is possible to access the "Input A/B" menu by pushing the "A" or "B" button. Once the button is pressed, the related blue "EDIT" LED will turn ON. The Sub-Menu pages can now be scrolled through by rotating clockwise and counter-clockwise the "NAV/PM1" encoder.
For parameter editing it is necessary to press ENTER button and an arrow will appear on the left of the screen "**->**". Then use the "PM2" and "PM3" encoders for editing and setting the parameter values. On some parameters that have three independent values, you will also need to use the "NAV/PM1" encoder, eg filter parameter settings.

Note: All options can be done using the "NAV/PM1", "PM2", and "PM3" encoders and the current shown value of the selected option is AUTOMATICALLY loaded during the encoders' use and stored as the current value once leaving the page.
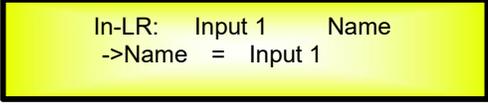
Audio Signal Input (A/B) Path Block Scheme
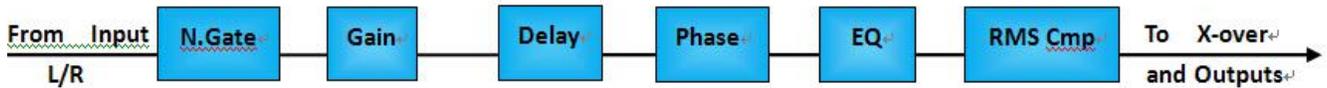
Name page – from this screen, it is possible to assign input channel a name with 6 characters
For example, name the Input A as "In L" in the Name Page:
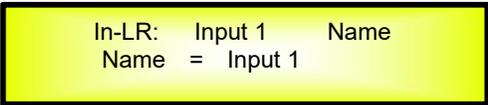
```
In-LR:    Input 1      Name
   Name   =   Input 1
```

By pressing "ENTER" button in the Name page, user can edit the name, and there will be an arrow, as the following screen shows:

```
In-LR:    Input 1      Name
->Name   =   Input 1
```

The first character will flash.
Select character from these 6 positions by rotating "NAV/PM1" encoder and choose the desired characters by rotating "PM2" or "PM3" encoder. Once the new name is defined, for example, "In L", confirm this new name by pressing ENTER… A new name will display on the screen, after replaced the old one.
The following screen is shown with the new name "In L", by replacing the previous one "Input 1"

```
In-LR::    InL      Name
   Name   =   In L
```
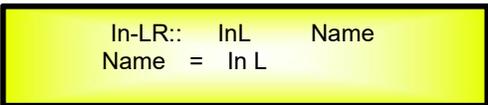
N.Gate page– from this page, it is possible to set the Input Channels Noise Gate. Noise gate can be set as "ON" or "OFF" status. The following screen is the selected "ON" status:

```
In-LR:     Name        N.Gate
   Bypass  =   On
```

By pressing "ENTER" button in this page, an arrow "->" will show up on the left of the screen, and enter into the setting interface 1 of the noise gate:

```
In-LR:     Name        N.Gate
   ->Byp=On   Thr=-80.0dBu
```

By using the "PM2" encoder, it is possible to set the noise gate as "ON" or "OFF". By using the "PM3" encoder, it is possible to select its attack threshold from -90dBu to -60dBu.

By rotating "NAV/PM1" encoder, user can enter into the setting interface 2 of the noise gate:

```
In-LR:     Name        N.Gate
   ->Rel=50ms   Atk=3ms
```

By using "PM2" encoder, user can set noise gate release time: from 10ms to 1000ms, and using "PM3" encoder to set noise gate attack time: from 1ms to 1000ms.

Gain page – from this screen it is possible to set the Input Channels Level from -18dB to +12dB, press "ENTER" button, an arrow will appear on the left of the screen "**->**"   then use the "PM2" or "PM3" to set parameters.
The value set on this screen will only affect the input level of the selected Channel A or B.
The following is an example screen for the "Gain" page that has set the Gain of Input Channel A to +0.0dB:

```
In-LR          Name          Gain
-> Gain   =    0.0dB
```

Phase page– from this page, it is possible to set input channels phase as "Normal" or "Invert".
The following is an example screen of "Normal" Phase：

```
In-LR:     Name        Phase
   Phase  =   Normal
```

By pressing "ENTER" button in this page, an arrow will appear on the left of the screen "**->**".
then use the "PM2" or "PM3" encoder for setting "Normal" or "Invert" Phase.

Delay page – from this page it is possible to set the Input Channels Delay Time from 000.0000mS up to 900.9984mS, by steps of 1mS or 20.8uS.
To set the Delay time press "ENTER" button, an arrow will appear on the left of the screen "**->**".
then use the "PM2" encoder to set the Delay Time in steps of 1mS and the "PM3" for setting the "fine" Delay Time in steps of 20.8uS.

The following is an example screen for the "Delay" page where the Delay Time of Input Channel A is set to 160.1872mS:

```
In-LR        Name        Delay
-> Delay   =   160.1872mS
```

RMS Cmp page– from this page, it is possible to set RMS Compressor for input channels. RMS Compressor can be set as "ON" or "OFF" status. The following is an example screen of "ON" status:

```
In-LR:     Name        RMS Cmp
     Bypass   =   On
```

By pressing "ENTER" button in this page, an arrow will appear on the left of the screen "**->**". Then enter into the setting interface 1 of RMS Compressor.

```
In-LR:     Name        RMS Cmp
     ->Bypass   =   On
```

RMS compressor status can be set as "ON" or "OFF" by using "PM2" or "PM3" encoder.

By rotating "NAV/PM1" encoder, user can enter into setting interface 2 of RMS Compressor:

```
In-LR:     Name        RMS Cmp
     ->Threshold   =   +16.0dBu
```

RMS Compressor attack threshold can be set with "PM2" or "PM3" encoder, with its range from -14dBu to +16dBu.

By rotating "NAV/PM1" encoder one more time, user can enter setting interface 3 of RMS Compressor:

```
In-LR:     Name        RMS Cmp
     ->Ratio =100:1   Knee =0%
```

RMS Compressor ratio can be set by "PM2" encoder, with its range rom 2:1 ~ 100:1. RMS Compressor knee can be set by "PM3" encoder, with its range from 0% ~ 100%.

By rotating "NAV/PM1" encoder once again, user can enter setting interface 4 of RMS Compressor:

```
In-LR:     Name        RMS Cmp
     ->Rel =0.1sec   Atk =5ms
```

RMS Compressor release time can be set by "PM2" encoder, with its selectable range from 0.1s ~ 3s, and its attack time can be set by "PM3" encoder from 5ms ~ 200ms.

EQ Byp page – in this page, it is possible to set EQ Bypass of input channels, with its selectable status of "ON" and "OFF". Following is the example screen as Bypass ON:

```
In-LR:    Name       EQ Byp
      Bypass  =  On
```

By pressing "ENTER" button in this page, an arrow will appear on the left of the screen "**->**", then enter setting interface of EQ Bypass:

```
In-LR:    Name       EQ Byp
  ->Bypass=On
```

By using "PM2" or "PM3" encoder, user can set the EQ Bypass as "ON" or "OFF".

EQ-[xx] (01to11) page – In this page, it is possible to set 11 available parametric equalization filters for input channels, with each parametric equalization filters can be selected as BELL, Shevling filter.

```
In-LR:    Name       EQ-01
  Byp=Off   Type=Peaking_Eq
```

When EQ Bypass is set as "OFF", by pressing ENTER in any parametric equalization page, an arrow will appear on the left of the screen "**->**", then enter setting interface 1 of parametric equalization filter:

```
In-LR:    Name       EQ-01
  ->Byp=Off   Type=Peaking_Eq
```

By using "PM2" encoder, it is possible to set the flat on or off for the current parametric equalization filter. By using "PM3" encoder, user can set the current parametric equalization filter's type, selectable as **Peaking_Eq/ Hi -Shelv Q/ Lo-Shelv Q/**

When the parametric equalization filter is selected as Peaking Eq, by rotaing "NAV/PM1" encoder again, user can enter the setting interface 2 of current input parametric equalization filter:

```
In-LR:    Name       EQ-01
  ->Freq =   20Hz
```

By using "PM2" or "PM3" encoder, it is possible to set current input PEQ filter's frequency from the range of 20Hz to 20kHz.

By rotaing "NAV/PM1" encoder again, user can enter the setting interface 3 of current input parametric equalization filter:

```
In-LR:    Name       EQ-01
  ->Gain=0.0dB       Q=0.40
```

By using "PM2" encoder, user can set the gain of current parametric equalization filter from -12.0dB to +12.0dB, and by using "PM3" encoder, it is possible to set the Q factor of current

parametric equalization filter from 0.10 to 128.

When the parametric equalization filter is selected as Hi-Shelv Q/ Lo-Shelv Q, by rotaing "NAV/PM1" encoder again, user can enter the setting interface 4 of current input parametric equalization filter:

```
In-LR:    Name        EQ-01
->Freq =   20Hz
```

By using "PM2" or "PM3" encoder, it is possible to set current input PEQ filter's frequency from the range of 20Hz to 20kHz.

By rotaing "NAV/PM1" encoder again, user can enter the setting interface 5 of current input parametric equalization filter:

```
In-LR:    Name        EQ-01
->Gain=0.0dB        Q=0.1
```

By using "PM2" encoder, user can set the gain of current parametric equalization filter from -12dB to +12dB, with the "PM3" encoder, user can set the current Q value of the current parametric equalization from 0.1 to 5.1

DLF   page –In this page, it is possible to bypass the dynamic filter for input channels, with bypass can be set as "On" or "Off". The following screen is an example when bypass is on:

```
In-LR:    Name        DLF
Bypass   =   On
```

By pressing the "ENTER" button in this page, an arrow will appear on the left of the screen "**->**", then enter setting interface of dynamic filter bypass. Use "PM2" encoder to set the dynamic filter bypass as "On" or "Off" and use the "PM3" encoder to set the ratio (%Boost = 0~100):

```
In-LR:    Name        DLF
->Bypass=On     %Boost = 0
```

By rotating the "NAV/PM1", it is possible to enter into the frequency point (20-20kHz) of the dynamic filter:

```
In-LR:    Name        DLF
->Freq = 5000Hz
```

By rotating the "NAV/PM1", it is possible to enter into the bandwith (Q= 1.00 ~ 9.90) of the dynamic filter:

```
In-LR:    Name        DLF
->Q = 4.00
```

By using "PM2/PM3" encoder, user can select the bandwith of the dynamic filters.

Note 1: If selected the desired options by using 3 encoders, the option would be set as a current one for the unit automatically, and will be stored in the DSP24 system when you exit the page.
Note 2: By pressing "ESC" button, you can exit the page any time.

- **Menu "Output 1/2/3/4" Output Channels Editing [access by pushing the "1/2/3/4" buttons]**

From the "Default Screen", it is possible to access the "Output 1/2/3/4" menu by pressing the "1" or "2" or "3" or "4" button. Once pressed, the related blue "EDIT" LED will turn ON.
The Sub-Menus pages can now be scrolled through by rotating clockwise and counter-clockwise the "NAV/PM1" encoder.
For parameter editing it is necessary to press "ENTER" button and an arrow will appear on the left of the screen "**->**".   Then use the "PM2" and "PM3" encoders for selecting and setting the parameter values.   On some parameters that have three independent values, you will also need to use the "PM1" encoder, for example for the filter's parameter setting.

Note: All parameter editing can be done using the "NAV/PM1", "PM2", and "PM3" encoders and the current shown value of the selected option is AUTOMATICALLY loaded during the encoders' use and stored as the current value once leaving the page.

Audio Signal Output (1/2/3/4) Path Block Scheme
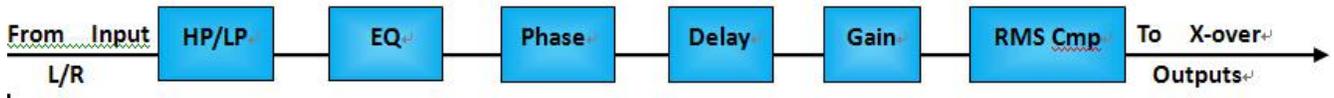
Name page – from this screen, it is possible to assign output channel a name with 6 characters
For example, name the Output 1 as "Low" in the Name Page:

```
Out-1:   Low    Name
Name   =   Low
```

By pressing "ENTER" button in the Name page, user can edit the name, and there will be an arrow, as the following screen shows:

```
Out1:    Low    Name
-> Name   =   Low
```

The first character will flash.
Select character from these 6 positions by using "PM2" encoder and choose the desired characters by rotating "PM3" encoder. Once the new name is defined, for example, "Sub", confirm this new name by pressing ENTER… A new name will display on the screen, after replaced the old one.
The following screen is shown with the new name "Sub", by replacing the previous one "Low"

```
Out1:    Sub    Name
Name   =   Sub
```
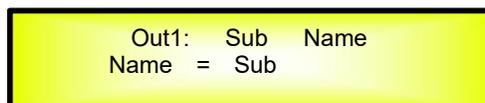
Routing page – in this page, it is possible to assign input to any output channel:
- Input L

- Input R
- InL + In R

Below is a screen display of "Source", presenting the example that to assign Input L to Output 1:

```
Out-1     Out-1     Routing
  Source  =   Input L
```

By pressing "ENTER" button, an arrow will appear on the left of the screen "**->**". By using the "PM2" or "PM3" encoder, user can select input.

Gain page – from this screen it is possible to set the Output Channels Level from -18dB to +18dB, press ENTER an arrow will appear on the left of the screen "**->**"   then use the "NAV/PM1" or "PM2" to set parameters.
The value set on this screen will only affect the output level of the selected Channel 1/2/3/4.
The following is an example screen for the "Gain" page that has set the Gain of Output Channel 1 to +0.0dB:

```
Out-1      Name        Gain
-> Gain  =  +   0.0dB
```

Phase page– from this page, it is possible to set output channels phase as "Normal" or "Invert". The following is an example screen of "Normal" Phase：

```
Out-1:   Name       Phase
  Phase  =   Normal
```

By pressing ENTER in this page, an arrow will appear on the left of the screen "**->**".   then use the "PM2" or "PM3" encoder for setting "Normal" or "Invert" Phase.

Delay page – from this page it is possible to set the Output Channels Delay Time from 000.0000mS up to 340.9984mS, by steps of 1mS or 20.8us.
To set the Delay time press ENTER, an arrow will appear on the left of the screen "**->**".   then use the "PM2" encoder to set the Delay Time in steps of 1mS and the "PM3" for setting the "fine" Delay Time in steps of 10.4 microseconds.
The following is an example screen for the "Delay" page where the Delay Time of Output Channel 1 is set to 160.1872mS:

```
Out-1      Name       Delay
-> Delay  =   160.1872mS
```

RMS Cmp page – from this page it is possible to set the Output Channels RMS Compressor. RMS

Compressor can be set as "ON" or "OFF". The following is an example screen for the Limiter page where it is ON:

```
Out-1      Name      RMS Cmp
     Bypass  =  On
```

By pressing ENTER in this page, an arrow will appear on the left of the screen "**->**", then enter into the setting interface 1 of compressor:

```
Out-1      Name      RMS Cmp
   ->Bypass  =  On
```

By using "PM2" or "PM3" encoder, it is possible to set the limiter as "ON" or "OFF".

By rotating "NAV/PM1" encoder, will enter into the setting interface 2 of compressor:

```
Out-1      Name      RMS Cmp
   ->Threshold  =  +16.0dBu
```

By using "PM2" and "PM3" encoder, user can set compressor attack threshold, with its range from -14dBu to +16dBu.

By rotating "NAV/PM1" encoder again, it will enter setting interface 3 of compressor:

```
Out-1      Name      RMS Cmp
   ->Ratio =100:1   Knee =0%
```

User can set compressor's Ratio from 2:1 ~ 100:1. With "PM3" encoder, it is possible to set compressor's knee from 0% to 100%.

By rotating "NAV/PM1" encoder again, it will enter setting interface 4 of compressor:

```
Out-1      Name      RMS Cmp
   ->Rel =0.1sec   Atk =5ms
```

User can set compressor's Release time from 0.1s to 3s. With "PM3" encoder, it is possible to set compressor's Attack time from 5ms to 200ms.

HPF page – in this page, it is possible to set the High-Pass filter of output channels:

```
Out-1:   Name      HPF
   F=  20Hz      Bypass
```

By pressing "ENTER" button in this page, an arrow will appear on the left of the screen "**->**", then enter into the setting interface 1 of High-Pass filter:

```
Out-1:   Name      HPF
   ->F=  20Hz      Bypass
```

By using "NAV/PM1" or "PM2" encoder, it is possible to set output channels' High-Pass filter frequency from 20Hz to 20kHz.

By rotating "PM3" encoder, it is possible to set the Low-Pass filter's shape and order of the output High-Pass filter.

```
Out-1       Name      HPF
->F = 20Hz     LR -48dB/Oct
```

Following is the available shape and order of the High-Pass filter: **Bypass/ BW -6 dB/Oct / BW -12 dB/Oct / LR -12 dB/Oct / BS -12 dB/Oct / BW -18 dB/Oct / BW -24 dB/Oct / LR -24 dB/Oct / BS -24 dB/Oct / BW -36 dB/Oct / LR-36 dB/Oct / BW -48 dB/Oct / LR-48 dB/Oct /**

LPF page – in this page, it is possible to set the Low-Pass filter of output channels:

```
Out-1:    Name      LPF
F=   20Hz       Bypass
```

By pressing ENTER in this page, an arrow will appear on the left of the screen "**->**", then enter into the setting interface 1 of Low-Pass filter:

```
Out-1       Name      LPF
->F = 20Hz      Bypass
```

By using "NAV/PM1" or "PM2" encoder, it is possible to set output channels' Low-Pass filter frequency from 20Hz to 20kHz.

By pressing "PM3" encoder, then enter into the setting interface 2 of Low-Pass filter:

```
Out-1       Name      LPF
->F = 20Hz     LR -48dB/Oct
```

By rotating "PM2" or "PM3" encoder, it is possible to set the Low-Pass filter's shape and order of the output Low-Pass filter.

Following is the available shape and order of the Low-Pass filter: **Bypass/ BW -6 dB/Oct / BW -12 dB/Oct / LR -12 dB/Oct / BS -12 dB/Oct / BW -18 dB/Oct / BW -24 dB/Oct / LR -24 dB/Oct / BS -24 dB/Oct / BW -36 dB/Oct / LR-36 dB/Oct / BW -48 dB/Oct / LR-48 dB/Oct /**

EQ Byp page – in this page, it is possible to set EQ Bypass of output channels, with its selectable status of "ON" and "OFF". Following is the example screen as Bypass ON:

```
Out-1:    Name       EQ Byp
Bypass  =   On
```

By pressing "ENTER" in this page, an arrow will appear on the left of the screen "**->**", then enter setting interface of EQ Bypass:

```
Out-1:    Name        EQ Byp
->Bypass=On
```

By using "PM2" or "PM3" encoder, user can set the EQ Bypass as "ON" or "OFF".

PEQ-[xx] (01to07) page – In this page, it is possible to set 7 available parametric equalization filters for output channels, with each parametric equalization filters can be selected as BELL, Shevling filter.

```
Out-1:    Name        EQ-01
Byp=Off   Type=Peaking_Eq
```

When EQ Bypass is set as "OFF", by pressing "ENTER" button in any parametric equalization page, an arrow will appear on the left of the screen "**->**", then enter setting interface 1 of parametric equalization filter:

```
Out-1:    Name        EQ-01
->Byp=Off   Type=Peaking_Eq
```

By using "PM2" encoder, it is possible to set the flat on or off for the current parametric equalization filter. By using "PM3" encoder, user can set the current parametric equalization filter's type, selectable as **Peaking_Eq/ Hi -Shelv Q/Lo-Shelv Q**

When the parametric equalization filter type is selected as Peaking_Eq, by rotaing "NAV/PM1" encoder again, user can enter the setting interface 2 of current output parametric equalization filter:

```
Out-1:    Name        EQ-01
->Freq =   20Hz
```

By using "PM2" or "PM3" encoder, it is possible to set current output PEQ filter's frequency from the range of 20Hz to 20kHz.

By rotaing "NAV/PM1" encoder again, user can enter the setting interface 3 of current input parametric equalization filter:

```
Out-1:    Name        EQ-01
->Gain=0.0dB        Q=0.40
```

By using "PM2" encoder, user can set the gain of current parametric equalization filter from -12dB to +12dB, and by using "PM3" encoder, it is possible to set the Q factor of current parametric equalization filter from 0.40 to 128.

When the parametric equalization filter type is selected as Hi-Shelv Q/ Lo-Shelv Q, by rotaing "NAV/PM1" encoder again, user can enter the setting interface 4 of current output parametric

equalization filter:

```
Out-1:    Name         EQ-01
->Freq =   20Hz
```

By using "PM2" or "PM3" encoder, it is possible to set current output PEQ filter's frequency from the range of 20Hz to 20kHz.

By rotaing "NAV/PM1" encoder again, user can enter the setting interface 5 of current input parametric equalization filter:

```
Out-1:    Name         EQ-01
->Gain=0.0dB         Q=0.1
```

By using "PM2" encoder, user can set the gain of current parametric equalization filter from -12dB to +12dB. With "PM3" encoder, it is possible to Q factor of PEQ from 0.1 to 5.1.

Dyn Filt page –In this page, it is possible to bypass the dynamic filter for output channels, with bypass can be set as "On" or "Off". The following screen is an example when bypass is on:

```
Out-1        Name         Dyn Filt
      Bypass   =   On
```

By pressing "ENTER" button in this page, an arrow will appear on the left of the screen "**->**", then enter setting interface of dynamic filter bypass:

```
Out-1        Name         Dyn Filt
->Bypass=On    Att=0.0 dB
```

By rotating "PM2" encoder to set the dynamic filter bypass as "On" or "Off". Use "PM3" encoder can set the attack value of the dynamic filter, from 0.0dB to -6.0dB.

By rotaing "NAV/PM1" encoder again, an arrow will appear on the left of the screen "**->**", user can select the frequency of the dynamic filters with its range from 20Hz to 20kHz:

```
Out-1:    Name         Dyn Filt
->Freq =   20Hz
```

By rotating "NAV/PM1" encoder again, an arrow will appear on the left of the screen "**->**", user can set the Q factor of the dynamic filters with "PM2/PM3" encoders from 1.00 to 9.9.

Note 1: After selected the desired choice with 3 encoders, the choice would be set as the current one for the unit automatically, and would be stored in the DSP24 system when user quits this page.
Note 2: By pressing "ESC" to quit this page.

Input and Output Channels Last Edited Parameter Return Function

Once you have escaped out of parameter editing within the individual Input or Output channels the DSP24 will remember this last editing action on that Channel. When you return for your next editing action pressing the EDIT button on that channel will immediately return you to the screen related to this last editing action.

This function makes fine tuning or modifying easier when it is necessary to make a number of adjustments to the same parameter in a short time sequence.

Input Channels and output Channels LINK Function

The DSP24 is able to perform a unique LINK MODE between Input Channels as well as a link between Output Channels to enable quick and immediate editing (you cannot link output to input channels).

To link channels when editing, you will need to select a "Master" channel that will be the one to be edited and have it's parameters displayed on the LCD screen. You can then select and link other channels (Slaves) that you wish to apply the same changes to.

To enter a link mode session, select the Master channel Edit mode, then link the Slaves by pressing their related Edit buttons.
All Linked channels will be selected ready for adjustment when their "Blue" LED is lit in the Editing mode.
Now all Slave channels and only those selected will modify their parameters accordingly as you edit the Master channel.
All other existing parameters will stay the same within the Slave Channels unless edited by this link with the Master channel.

Note: The LINK function is NOT a COPY function.

If we want to edit the limiter of the Output channels 1/2/4, we can enter the editing mode of Output Channel 1 by pressing the related Edit button and turning on the Blue LED below the Output Channel 1 LED meters. This assigns the "role" of Master and displays this channel's parameters on the LCD:

```
Out-1:    Name      RMS Cmp
->Rel =1:1sec   Atk =3ms
```

Then press the Edit button of Output Channels 2/4, turning on their related "Blue" LED's. Now all parameters edited on Output Channel 1, will also be applied to channels 2 and 4.
If we want to remove one of the linked channels from the Link, press the related Edit button.
Exiting the editing of the Master channel during a Link session will automatically terminate that session. The Link will also be automatically terminated if, during the editing of Output Channels you jump across to begin editing an Input channel or vice versa.

- **Factory Reset**

In the event of the password being lost or any other reason the user may require the unit to be reset to the original factory settings, a "Factory Reset" that will clear all settings of the DSP24 and return the device to the original factory setting, is available to the user.

Note: Continuing with this process will mean the DSP24 will re-initialize to the original factory settings and any previously stored information and changed parameters will be permanently lost.

–
– **Use the following procedure to perform the factory reset:**

1. While the DSP24 is switched OFF, simultaneously press the ENTER+ESC+UTILITY buttons on the front panel.
2. Maintain pressure on all three buttons as you turn the power switch to On and the following LCD screen appears on the DSP24 :

> Please Wait......
> Memory Reset

3. Release the buttons and wait for the DSP24 to re-initialize.

Once completed, the DSP24 will resume regular operation as though it was a new unit from the factory and no previously programmed parameters will be available for use.

- **USB/RS485 Remote Control protocol for Preset Changing and Gain/Volume controls**

The following is the HEX Code for controlling the DSP24 recall presets and master volume control:

Preset Changing:

<h3 style="text-align:center">CMD_RECALL_PRESET: CMD=1BH</h3>

A. The User has to send the following Command, including the number of the preset to load on the unit:

TX:

STX	ID_M	ID_N	CMD	D0	D1	D2	D3	D4	D5	D6	D7	ETX
F0H	C1H	XX	1BH	NPreset	00H	00H	00H	00H	00H	00H	00H	F7H

XX = 0,..,31 (ID device)
Npreset=0,...,23 Presetnumber

The DSP24's microcontroller will check if the Preset is initialized (available or not yet created...)

B. If YES, then the microcontroller will send back to the User (eg Crestron/AMX Remote Control..) the same frame used by the command

RX:

STX	ID_M	ID_N	CMD	D0	D1	D2	D3	D4	D5	D6	D7	ETX
F0H	C1H	XX	1BH	NPreset	00H	00H	00H	00H	00H	00H	00H	F7H

So in this case, if the user gets back EXACTLY what was sent, the preset is existing and loaded on the unit.

C. If the preset that the user wanted to load is NOT YET INITIALIZED (not yet created, so not available...). the microcontroller will notify that to the user, sending back the following frame:

RX:

STX	ID_M	ID_N	CMD	D0	D1	D2	D3	D4	D5	D6	D7	ETX
F0H	C1H	XX	1BH	**FFH**	00H	00H	00H	00H	00H	00H	00H	F7H

Input Gain and Output Volume Control:

UPDATE GAINS-PHASE: CMD=01H

A. The User has to send the following Command, including the value to be assigned to "Vol", for modifying the Input Gain (Chn = 0, 1) or the Output Volume (Chn = 2, 3, 4, 5).
Also the Output signal Phase can be modified:

TX:

STX	ID_M	ID_N	CMD	D0	D1	D2	D3	D4	D5	D6	D7	ETX
F0H	C1H	XX	01H	Chn	00H	00H	00H	00H	00H	Phs	Vol	F7H

XX = 0,..,31 (ID device)
Chn=0,...,4: Channel selected, 0, 1=In1, In2; =Out1,..,Out4; when Channel 0, 1 selected, then Vol=Input Gain, when Channel 2, 3, 4, selected, then Vol= Output Vol.
Phs= Phase only if the Chn>1; Value=0, 1 where 0=direct, 1=inverse (180')
Vol= Gains from 0 to 180 (-12dB/ +6dB step 0.1dB)

B. If the command has been properly executed and the Gain/Volume modified, then the microcontroller will send back to the User (eg Crestron/AMX Remote Control..) the same frame used by the command:

RX:

STX	ID_M	ID_N	CMD	D0	D1	D2	D3	D4	D5	D6	D7	ETX
F0H	C1H	XX	01H	Chn	00H	00H	00H	00H	00H	Phs	Vol	F7H

- **DSP24 Technical Specifications**

The DSP24 is based on a powerful analog and digital DSP platform having the following specifications

Analog Input Signal:	ChA/ChB	Bal. Female XLR
Maximum Input Level:	+12dBu	
Analog Output Signal:	Ch1/Ch2/Ch3/Ch4	Bal. Male XLR
Maximum Output Level:	+18dBu	
Sampling Frequency:	48kHz	
S/N:	106dBA	
THD+N:	0.005%	
Frequency Response (Bypass):	20Hz – 20kHz (+- 1 dB)	
Power Supply:	Switching Power Supply	
Remote Control:	USB, RS485	