WS-P26
User's Manual

2 In - 6 Out Speaker Management System

Vers 1.0

Introduction

WS-P26 is a cost-effective 2-IN/6-OUT digital speaker management system. Designed to be catered for any crossover configuration, it provides the suitable processing and control for live application use. It offers 2 analog inputs, and 6 analog outputs, managed by a powerful DSP Engine, in addition to 24 Bit AD/DA Converters. Each input channel provides a choice of EQ with a 5-band Parametric EQ, gain control, noise gate function and configurable delay. Each output offers up to 5-band of parametric equalization in to the crossover filters which themselves provide slopes from 6dB/Octave up to 48dB/Octave. Each output path also features peak limiter and driver alignment delay. The WS-P26 supports a full matrix mixing mode where inputs may be routed/mixed in any ratio to any output. For remote configuration and control the WS-P26 can be connected via USB or RS485 connections. The control remote PC software allows simultaneous control up to 32 units, setting all parameters and showing real time levels.

Explanation of Graphical Symbols

CAUTION
RISK OF ELECTRIC SHOCK
DO NOT OPEN

WARNING
TO REDUCE THE RISK OF FIRE OR ELECTRIC SHOCK DO NOT EXPOSE THIS EQUIPMENT TO RAIN OR MOISTURE

The lightning flash with arrowhead symbol within an equilateral triangle is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to humans.

The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying

Important safety instructions

- Read the information for use (User Manual).
- Please keep the User Manual in a safe place during the lifetime of the product. The User Manual forms an integral part of the product.
- Heed all warnings.
- Follow all instructions.
- Do not use this product near water (for example, in damp rooms or near a swimming pool).
- Clean only with dry cloth.
- Do not cover the heat sink. Install in accordance with the User Manual.
- Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus that produce heat.
- Protect the power cord from being walked on, pinched or damaged in any other way. Pay particular attention to plugs and the point where they exit from the Amplifier Unit.
- The product may only be used in accordance with the information provided in the User Manual. Before and during the usage of the amplifier please ensure that all recommendations, especially the safety recommendations in the User Manual, are adhered to. The Amplifier Unit is designed for the amplification of pulsed audio signals and the Amplifier Unit should only be connected to speakers with an average impedance that is not lower than the impedances specified in the User's Manual.
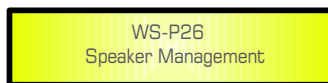
Described below are the functions of the front panel control buttons and encoders for the WS-P26.

- **Getting Started**

As soon as the WS-P26 is turned ON the device model name will appear in the LCD screen:

```
        WS-P26
   Speaker Management
```

and a status bar will show the progress of the WS-P26 initialization process:

```
        WS-P26
   ▐▌▐▌▐▌▐▌▐▌▐▌▐▌▐▌▐▌
```

The WS-P26 has three factory pre-set working modes: "2x2 Ways Xover + Sub" , "2x3 Ways Xover" and "6 Ways Xover" .
After the initialization, the WS-P26 will show on the LCD the first of the embedded preset working modes, or the last one selected prior to the unit being turned off.
First time activation will default to the first of the preset working modes.

```
        WS-P26
    2x3  WAY  XOVER
```
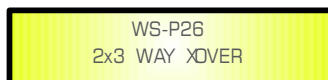
Encoders and ENTER, ESC buttons

The WS-P26 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 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.

UTILITY, A/B and 1/2/3/4/5/6 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, 4, 5 and 6, 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, 4, 5 and 6 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, 4 , 5 and 6 buttons are pushed and held for more than one second the Output Channels 1, 2, 3, 4 , 5 and 6 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, 4 , 5 and 6 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.

WS-P26 Menu and Sub-Menu Structures

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

```
WS-P26
2x3 WAY XOVER
```
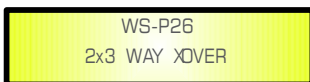
From this point, sub-menus are accessed using the UTILITY" , "A/B" , "1/2/3/4/5/6" , "ENTER" and "ESC" buttons and all parameters and values are navigated by the "NAV/PM1" , "PM2" and "PM3" encoders. Please refer to the following menu structures:

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:
       << System Setup >>

ESC
ENTER

System Setup
Setup: 2x2 WA+ SUB   *
Setup: 2x3 WAY XOVER
Setup: 6 WAY XOVER

1.2   SYSTEM UTILITY:
       <<   Delay Units   >>

ESC
ENTER

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

1.3   SYSTEM UTILITY:
       << Software Version >>

ESC
ENTER

Software Version
Version: V1.02   *

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

ENTER ↓ ↑ ESC

2.1   PROGRAM UTILITY:
       << Recall a Program >>

ESC
ENTER

Recall a Program
01: Preset 01
 :   :
48: Preset 48

2.2   PROGRAM UTILITY:
       << Save a Program >>

ESC
ENTER

Save a Program
01: Preset 01
 :   :
48: Preset 48

2.3   PROGRAM UTILITY:
       << Delete a Program >>

ESC
ENTER

Delete a Program
01: Preset 01
 :   :
48: Preset 48

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

ENTER ↓ ↑ ESC

3.1   INTERFACE UTILITY:
       Interface Setup

ESC
ENTER

Interface Setup
Source: USB
Source: RS485   *

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

ENTER ↓ ↑ ESC

4.1   SECURITY UTILITY:
       Show Parameter

ESC
ENTER

Parameter will
 be shown   *
 not be shown

4.2   SECURITY UTILITY:
       Lock Unit

ESC
ENTER

Lock Unit
Lock: Off   *
Lock: On

4.3   SECURITY UTILITY:
       User Password

ESC
ENTER

User Password
[   ]

4.4   SECURITY UTILITY:
       Enable Password

ESC
ENTER

Enable Password
Password: Enable
Password: Disable   *

(For the details about the Password Setting/Enable
and Unit Lock, , refer to the "   Utility Menus Use "
Section)

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

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

1. Input A/B   [Name]   Name
   Name=[Name]
   ↓ ESC
   ENTER
   -> Name = -   (For Editing the Device's Name,refer to the Details on the "Utility Menus USE" Section)

2. Input A/B   [Name]   NGate
   Noise Gate=off
   ↓ ESC
   ENTER
   ->Noise Gate=off/on

3. Input A/B   Gain
   Gain = + 0.0 dB
   ↓ ESC
   ENTER

   -> Gain = + 0.0 dB   PM1 N/A   -15 db
                                                   :
                                                +15 dB   Same as Pm2

4. Input A/B   Delay
   Delay =   0.000 ms
   ↓ ESC
   ENTER

   -> Delay =   0.000 ms   PM1 N/A   000.0000mS   000.0000mS
                                                    [1 ms steps]   [20.8 us steps]
                                                    399.0000mS   000.9984mS

5. Input A/B   [Name]   EQ Byp
   EQ Bypass= off
   ↓ ESC
   ENTER

   -> EQ Bypass= off   PM1 N/A   off   Same as Pm2
                                                :
                                               on

6. Input A/B   EQ-X(X from 1 to 5)
   Bypass= off   Type=Y(Y= Peaking_Eq,Hi-Shelv_Q,Lo-Shelv_q,All Pass_2)
   ↓ ESC
   ENTER

   -> Bypass= off   Type=Y   PM1 N/A   off   Peaking_Eq
                                                                   :   :
                                                                  on   Notch Filt

   Through the PM2, it is possible to Byp the single selected filter.
   Through the PM3, it is possible to select one of the 4 available
   filters' type.
   Once selected the filter Type and NOT in Byp mode, pressing
   again the ENTER button can be accessed the selected filter's editing page.

6.1 Input A/B   EQ-X(X from 1 to 5)
    Bypass= off
    ↓ ESC
    ENTER

6.1a. If selected a Peaking_Eq filter, then the filter can be set by   [Freq.] 20Hz   [amp.] +12dB   [Q] 0.3
      the following parameters   :   :   :
      Input A/BEQ-[x] (up to 5 filters available)   20kHz   -12dB   20.00
         [Freq]   [Gain]   [Q]
      -> 1000Hz 0.0dB   Q=1.00

6.1b. If selected a Hi-Shelv_Q (variable Q High Shelving) filter,   [Freq.] 20Hz   [amp.] +12dB   [Q] 0.3
      then the filter can be set by the following parameters   :   :   :
      Input A/BEQ-[x] (up to 5 filters available)   20kHz   -12dB   20.00
         [Freq]   [Gain]   [Q]
      -> 1000Hz 0dB   Q=1.00

6.1c. If selected a Lo-Shelv_Q (variable Q Low Shelving) filter,   [Freq.] 20Hz   [amp.] +12dB   [Q] 0.3
      then the filter can be set by the following parameters   :   :   :
      Input A/BEQ-[x] (up to 5 filters available)   20kHz   -12dB   20.00
         [Freq]   [Gain]   [Q]
      -> 1000Hz 0dB   Q=1.00

6.1d. If selected an All-Pass_2 (second order, variable Q All Pass) filter,   [Freq.] 20Hz   [amp.] -----dB   [Q] 0.3
      then the filter can be set by the following parameters   :   :   :
      Input A/BEQ-[x] (up to 5 filters available)   20kHz   -----dB   20.00
         [Freq]   [Gain]   [Q]
      -> 1000Hz ----dB   Q=1.00

MENU "1/2/3/4/5/6 Output Channels Editing" [Access by pushing the "1/2/3/4/5/6" buttons]

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

1. Out-[x]   [Name]   HPF
      YF =   20.0 H

    (Y = Bypass OR Filter Type/Order, where filter type can be Buttw_1st, Buttw_2nd, LRiley_2nd, Bessel_2nd, Buttw_3th, Buttw_4th, Lriley_4th, Bessel_4th, Lriley_6th, Lriley_8th,)

ENTER ↓↑ ESC

  -> YF =   20.0 Hz

	Freq Fast Selection	[Filt Type] Bypass	[Freq.] 20Hz
	ONLY in Freq Editing Mode	:	:
		Lriley_8th	20kHz

Through the PM2, it is possible to Bypass the filter or to select one of the 11 available filters' type/orders, and through the PM3 to set the HP cutting Frequency (quick fine tuning by 1Hz steps). Once selected the filter Type and pressing again the ENTER button can be accessed the selected filter's Fast Freq. Selection page.

2. Out-[x]   [Name]   LPF
      YF =   20.0 Hz

    (Y = Bypass OR Filter Type/Order, where filter type can be Buttw_1st, Buttw_2nd, LRiley_2nd, Bessel_2nd, Buttw_3th, Buttw_4th, Lriley_4th, Bessel_4th, Lriley_6th, Lriley_8th,)

ENTER ↓↑ ESC

  -> YF =   20.0 Hz

	Freq Fast Selection	[Filt Type] Bypass	[Freq.] 20Hz
	ONLY in Freq Editing Mode	:	:
		Lriley_8th	20kHz

Through the PM2, it is possible to Bypass the filter or to select one of the 11 available filters' type/orders, and through the PM3 to set the HP cutting Frequency (quick fine tuning by 1Hz steps). Once selected the filter Type and pressing again the ENTER button can be accessed the selected filter's Fast Freq. Selection page.

3. Out-[x]   [Name]   EQ Byp
      EQ Bypass =   Off

ENTER ↓↑ ESC

  -> EQ Bypass =   Off

	PM1 N/A	Off	Same as PM2
		:	
		On	

4. Out-[x]   [Name]   EQ-[x] (X from 1 to 5)
      Byp = Off   Type = Y (Y = Peaking_Eq, Hi-Shelv_Q, Lo-Shelv_Q, All Pass_2,)

ENTER ↓↑ ESC

  -> Byp = Off   Type = Y

	PM1 N/A	Off	Peaking_Eq
		:	:
		On	Notch Filt

Through the PM2, it is possible to Byp the single selected filter. Through the PM3, it is possible to select one of the 4 available filters' type. Once selected the filter Type and NOT in Byp mode, pressing again the ENTER button can be accessed the selected filter's editing page.

4.1 Out-[x]   EQ-[x] (X from 1 to 5)
   -> Byp = Off   Type = Y

4.1a. If selected a Peaking_Eq filter, then the filter can be set by the following parameters
      Out-[x]   EQ-[x] (up to 5 filters available)
         [Freq]   [Gain]   [Q]

-> 1000Hz 0dB Q=1.00	[Freq.] 20Hz	[Amp.] +12dB	[Q] 0.30
	:	:	:
	20kHz	-12dB	20.00

4.1d. If selected a Hi-Shelv_Q (variable Q High Shelving) filter, then the filter can be set by the following parameters
      Out-[x]   EQ-[x] (up to 5 filters available)
         [Freq]   [Gain]   [Q]

-> 1000Hz 0dB Q=1.00	[Freq.] 20Hz	[Amp.] +12dB	[Q] 0.30
	:	:	:
	20kHz	-12dB	20.00

4.1g. If selected a Lo-Shelv_Q (variable Q Low Shelving) filter,
 then the filter can be set by the following parameters
 Out-[x]   EQ-[x] (up to 5 filters available)
   [Freq] [Gain]   [Q]
   -> 1000Hz 0dB   Q=1.00

	[Freq.] 20Hz	[Amp.] +12dB	[Q] 0.30
	:	:	:
	20kHz	-12dB	20.00

4.1q. If selected an All-Pass_2 (second order, variable Q All Pass) filter,
 then the filter can be set by the following parameters
 Out-[x]   EQ-[x] (up to 5 filters available)
   [Freq] [Gain]   [Q]
   -> 1000Hz ----dB Q=1.00

	[Freq.] 20Hz	[Amp.] ----dB	[Q] 0.30
	:	:	:
	20kHz	----dB	20.00

5. Out-[x] [Name] Vu-Meter
   Vu-Meter = Level

ENTER ↓ ↑ ESC

-> Vu-Meter = Level   PM1 N/A   Level   Same as PM2
                                                                      Limiter Act.
                                                                      RMS Cmp Act.

6. Out-[x] [Name] Name
   Name = [Name]

ENTER ↓ ↑ ESC

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

7. Out-[x] [Name] Source
   Source = InA

ENTER ↓ ↑ ESC

-> Source = InA   PM1 N/A.   InA (Channel A)   Same as PM2
                                                    InB (Channel B)
                                                    InA+InB (Channel A+ Channel B)

8. Out-[x] [Name] Gain
   Gain = + 0.0 dB

ENTER ↓ ↑ ESC

-> Gain = + 0.0 dB   PM1 N/A   -15 db   Same as PM2
                                                      :
                                                     +15 dB

9. Out-[x] [Name] Limiter
   A: 5ms   R: 0.2s   +16dB

ENTER ↓ ↑ ESC

-> A: 5ms   R: 0.2s   +16dB   [Atk time] 5ms   [Rel time] 0.1s   [Amp.] -14.0 dB
                                    :   :   :
                                    200ms   3.0s   +16dB

10. Out-[x] [Name] Delay
    Delay =   0.000 ms

ENTER ↓ ↑ ESC

-> Delay =   0.000 ms   PM1 N/A   000.0000mS   000.0000mS
                                                      [1 ms steps]   [20.8 us steps]
                                                      399.0000mS   000.9984mS

11. Out-[x] [Name] Polarity
    Polarity = Normal

ENTER ↓ ↑ ESC

-> Polarity = Normal   PM1 N/A   Normal   Same as PM2
                                                        Invert

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 preceding the "ENTER" button use.

Once inside the Sub-Menus pages, the several options can be scrolled and using the PM2 or PM3 encoders and selected/confirmed pushing the "ENTER" button.

Note: In every Sub-Menu the option currently selected/running will have an asterisk " * " showing to the right of the description on the LCD screen.

Options that are not selected/running will be displayed with NO Asterisk.

Pushing the ENTER button on an unselected option will mean an asterisk will then appear and this option will now take over as the currently selected/running option.

System Utilities Sub-menu – this sub-menu allows to access several operations related to the WS-P26 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:

– **System Setup**: this page allows the selection of the operating mode of the WS-P26 :

```
          SYSTEM UTILITY
     –    System Setup    --
```

The operating mode can be chosen from a selection of 3 Xovers options :

2x2 **WAY** + **SUB** .... in this operating mode, the WS-P26 is performing a 2 Input to 6 Outputs X-Over, plus a SUB configuration, where the 2 Inputs are automatically assigned to the Outputs as follows:
  – Input A to Outputs 1/3 [Out1=Low-A and Out3=High-A]
  – Input B to Outputs 2/4 [Out2=Low-B and Out4=High-B]
  – Input A + Input B to Outputs 5/6 [Out5=Sub-A and Out6=Sub-B]

2x3 **WAY** .. **XOVER** .... in this operating mode, the WS-P26 is performing a 2 Input to 6 Outputs X-Over, where the 2 Inputs are automatically assigned to the Outputs as follows:
  – Input A to Outputs 1/3/5 [Out1=Low-A , Out3=Mid-A and Out5=High-A]
  – Input B to Outputs 2/4/6 [Out2=Low-B , Out4=Mid-B and Out6=High-B]

6 WAY....XOVER ....   in this operating mode, the WS-P26 is performing a Mono Input to 6 Outputs X-Over, where the Input A is automatically assigned to the Outputs as follow:
- Input A to Outputs 1/2/3/4/5/6 [Out1=Near-1, Out2=Near-2, Out3=Mid-1 and Out4=Mid-2, Out5=Far-1, Out6=Far-2]

By pressing ENTER on the System Setup page and rotating the "PM2" or "PM3" encoder, it is possible to select all the available X-Over preset modes.

When the "2x3 WAY XOVER" is selected, the "System Setup" page will appear as follows

```
         System Setup
  Setup: 2x3 WAY XOVER    *
```

To change the desired operating mode for the WS-P26, the screen must reflect the xover required and then simply pressing the "ENTER" button will bring up the following screen asking for confirmation to load the selected operating mode:

```
  New Xover
  [ENTER] to confirm
```

If confirmed by pressing ENTER the selected preset mode will load. While the device is configuring the Xover the following screen will be appear

```
  Please Wait .....
  Changing Xover
```

The new preset mode will now be shown with an asterisk.

- **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 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)     *
```

- **Software Version**: this page allows you to confirm the Software Version running on the WS-P26:

```
        SYSTEM UTILITY
   –    Software Version    --
```

The correct Software Version is "V1.02"

Program Utilities Sub-menu – this sub-menu allows you to access several options related to the WS-P26 operating mode and to manage the presets stored and recallable within the Unit:

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

By pressing the ENTER button and then using the "NAV/PM1" encoder 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 WS-P26 memory:

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

By pressing ENTER and rotating the "PM2" or "PM3" encoders, it is possible to scroll through all current available user presets.
If NO USER PRESETS are stored yet, the screen will show the following:

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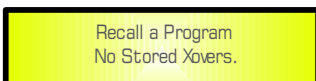
If presets have previously been stored by the user, anyone of them can be recalled:

```
       [ENTER] to Recall.
       01:  PRESET 1
```

By using the "PM2" or "PM3" 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 WS-P26 to begin to load this selected preset and the following transitory screen will appear:

```
    Loading New Program ......
       01:  PRESET 1
```
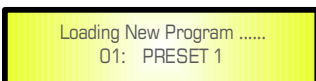
Once loaded the WS-P26 will exit to the "Recall a Program" screen automatically and the above screen will disappear:

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

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

– **Save a Program**:   this page allows you to store a new preset in the WS-P26's memory:

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

By pressing the ENTER button and rotating the "PM2" or "PM3" encoder, it is possible to scroll through the previously saved presets and the available empty locations (identified by "Empty Memory").
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
     10:  Empty Memory
```

When storing an edited configuration for the WS-P26, select the location for a preset from the 48 available by using the "PM2" or "PM3" encoders.
Once the desired location appears on the screen press ENTER again to reach the " Set Program Name " page.
In this page the User can enter a Preset Name (up to 16 Characters   ) by using the "PM2" or "PM3" encoder to choose a character and the "NAV/PM1" 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:

```
        Set Program Name.
     10:  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
     10:  Stage 1 2x2      ?
```
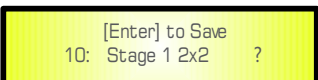
Pressing "ENTER" again, will store the preset in the selected location with the chosen name and the following transitory screen will appear on the LCD:

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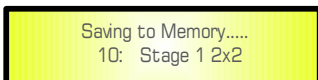
Once the preset is stored, the above screen will disappear returning to the following screen:

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

If during the Preset Storing process you want to overwrite an existing memory location select this location in the "Save a Program" page, then ENTER 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
   10:   Stage 1 2x2        ?
```
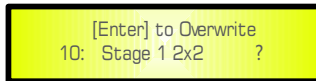
If you wish to proceed press "ENTER" again and the WS-P26 will go ahead with the "Set Program Name" page and the subsequent overwrite on completion of the previously described storing process..

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 WS-P26 memory:

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

By pressing the ENTER button and rotating the "PM2" or "PM3" encoder, it is possible to scroll through the previously saved presets and the available empty locations (identified by "Empty Memory").
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
   10:   Empty Memory
```

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

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

By using the "PM2" or "PM3" 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.
10:  Stage 1 2x2
```

Confirming the deletion by pressing "ENTER" again, will force the WS-P26 to erase the selected preset and the following transitory screen will appear:

```
Erasing Xover Memory......
10:   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 WS-P26 :

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

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

– **Interface Setup**:   this screen allows you to choose the remote control protocol for the WS-P26.

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

By pressing "ENTER" and then using the PM2 or PM3 encoders you can choose between the two possible interfaces (USB or RS485) for the WS-P26.
Pressing ENTER on a selected source will make an asterisk appear to the right of the description on the LCD as in the following example which shows the selected interface as USB.

```
Interface Setup
Source: USB          *
```

Security Sub-menu – this sub-menu allows the User to set the parameters shown, lock the WS-P26 and set a Password therefore limiting the unit's functions and controls to those who have access to the appropriate Password.

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

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

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

```
        SECURITY UTILITY
     –   Show Parameter      –
```

Press ENTER again and use the PM2 or PM3 encoders to scroll between the "be shown" and "not be shown" options. An asterisk will highlight which option is selected.
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     *
```
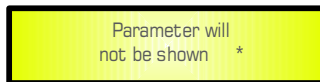
– **Lock Unit:** this sub-menu allows the user to lock the device so no parameters can be edited or modified.

```
        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 :  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 WS-P26 is locked.

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

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

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

```
          User Password
          [         ]
```

Using the PM2 or PM3 encoders to choose a character and the NAV/PM1" encoder to move between available locations you can enter a   6 Character   Password Name.
The current position of the cursor for the characters to be entered is shown by a "blinking underscore".
During this editing phase, the display is as follows if we were using "WS-P26" as the password:

```
          User Password
          [WS-P26]
```

The WS-P26 will exit the "Unit Lock" sub-menu and jump to the "User Password" sub-menu page screen:

```
          SECURITY UTILITY
    --    Insert Password    –
```

If the password entered in the "Confirm Password" page matches the one entered in the "Enter Password" page, the following screen will appear.

```
          Confirm Password
          [WS-P26]
```
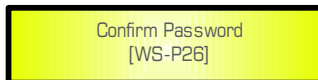
The Password is now configured and held in the device's memory.

The user can now decide to "lock" the WS-P26 by Password, inhibiting the access to ALL processor functions depending on the setting of the parameter "Password Enable/Disable, explained in the following paragraph

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

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

Press "ENTER" to gain access to the " Enable Password " screen:

```
          Enable Password
       Password: Disable    *
```
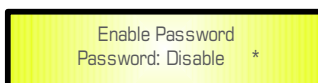
Once a Password has been entered into the WS-P26 through the steps described in the previous paragraph, it is possible to "Enable" or "Disable" the password function and therefore lock the WS-P26 restricting access to all functions.
When a password has been entered you will be able to select the "Enable" option from the menu and the unit will not be accessible for editing. In " Locked by Password Status" , all WS-P26 functions are inhibited to the User, including the use of the Mute A/B and MUTE 1/2/3/4/5/6 buttons.
The only access available is to the parameters of the input/output channels (accessible by pressing the edit button), ONLY to READ the values (no editing possible) if the "be shown" flag in the "Show Parameter" Sub-Menu has been selected.

Once "Locked by Password" the "keylock" icon will appear on the default LCD screen and no menu pages will be accessible, with the exception of the "User Password" option.

To regain access to the full operation of the WS-P26 ENTER to the "User Password" screen and press the UTILITY Button to access the following screen to enable the correct password to be entered:

```
            User Password
          [          ]
```

After the correct password has been entered, you will be able to access the full functionality of the WS-P26, the "lock Icon" will disappear from the "Default Screen" and automatically the "Enable Password" page will be back to the "Disable" condition:

```
          Enable Password
       Password: Disable    *
```
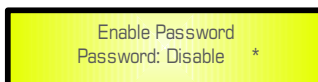
If no Password has been set within the WS-P26, as described in the previous paragraphs, the WS-P26 will not allow you to enable any Password, and the choice in the "Enable Password" will be limited to only the "Disable" option.

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 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 NAV/PM1 encoder, eg filter parameter settings.

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 is AUTOMATICALLY loaded during the encoders' use and stored as current value once left the page.

Note1: once the desired options have been selected using the 3 encoders, they are automatically saved as current and stored in the WS-P26 system status once leaving the page.

Note2: to exit this page, push the "ESC" button.

Audio Signal Input (A/B) Path Block Scheme
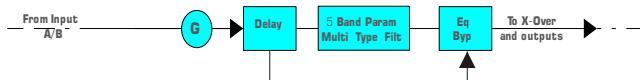
Gain page – from this screen it is possible to set the Input Channels Level from -15dB to +15dB, press ENTER an arrow will appear on the left of the screen "**->**" then use the "PM2" or "PM3" buttons.

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, named as Input1, to +0.0dB:

```
Input-A         Gain
Gain = +  0.0dB
```

Delay page – from this page it is possible to set the Input Channels Delay Time from 000.0000mS up to 399.0000mS, 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 20.8 microseconds.

The following is an example screen for the "Delay" page where the Delay Time of Input Channel A, named as Input1, is set to 49.1872mS:

```
Input-A         Delay
Delay = 49.1872mS
```

EQ Byp page – from this sub-menu it is possible to Bypass or to make active the 5 Bands Equalizer placed on the Input Signal Path.

```
Input-A    Input1      EQ
Bypass  =  Off
```

When Bypassed the 5 Bands Equalizer, its current setting will not be lost.
EQ: [x] sub-menu – from this sub-menu it is possible to set the Input Channels five available Multi-Type Filters.
Anyone of the 4 filters of the Eq can be selected choosing from the following list of filter types:

1. Peaking_Eq: Peaking (Bell) filters, adjustable as Center Frequency, Gain and Q
   The WS-P26 Peaking filters are at constant Q, so with Q not depending from the selected Gain value.
2. Hi-Shelv_Q: Symmetrical High Shelving filters with Variable Q.
   These Shelving filters present ½ level of the selected Gain/Attenuation at the selected cutting frequency, and a slope that is depending from the chosen Q value.
3. Lo-Shelv_Q: Symmetrical Low Shelving filters with Variable Q.
   These Shelving filters present ½ level of the selected Gain/Attenuation at the selected cutting frequency, and a slope that is depending from the chosen Q value.
4. All Pass_2: Filters allowing a FLAT Amplitude response and adding a 180 Degree Phase rotation at the selected Frequency.

More, the WS-P26 Is giving the possibility to "Bypass" any single filter of the 4 available in the Equalizer section; Once in the editing page of the single filter, a "Byp" field is available for making the single filter active or not

```
Input-A      Input1   EQ-X
Byp=Off  Type=Peaking_Eq
```

Pushing the Enter Button, the above window will allow the access to the "Byp" and "Type" fields.

```
Input-A      Input1   EQ-X
->Byp=Off  Type=Peaking_Eq
```

Using the PM2 encoder, the selected Filter can be activated or bypassed.
The WS-P26 allows the user to select anyone of the filter's type listed above and assign them independently using the 5 available filters.
In order to select the filter's type, it is necessary to use the PM3 encoder, rotate it "clockwise" or "counter-clockwise" to select the desired filter.
So, in order to define the filter type for the filter number 1 ("x"=1), it is necessary from the above screen, to select the filter, which name will appear on the screen.
If selected a Peaking_Eq filter, then the display will be as follow:

```
Input-A      Input1   EQ-1
Byp=Off  Type=Peaking_Eq
```

Once selected the desired Filter Type, its parameters can be accessed for editing just pressing again the ENTER Button.
Once pressed the ENTER Button, the editing page of the selected filter type will be accessed ONLY if the selected filter it is not set in Bypass mode.
Depending from the selected filter, the related parameters will be available for editing

Peaking_Eq Filter: Peaking filters are at constant Q, so with Q not depending from the selected Gain value

If we selected a Peaking_Eq filter within EQ-1, then the Q has to be set at a desired value of say 1.00 using the PM3 encoder, the GAIN at say +3dB using the PM2 encoder and the center Frequency at say 1.00KHz with the NAV/PM1 encoder; the EQ sub-menu screen will show the following:

```
Input-A    Input1      EQ-1
->1000kHz  +3.0dB   Q=1.00
```

Once in the Peaking_Eq Filter's edit screen, all the filter's parameters can be modified using the "NAV/PM1", "PM2" and "PM3" encoders for editing the Filter's Center Frequency, Gain and Q:
"Center Frequency": the selectable frequencies range is from 20Hz to 20kHz in steps of 1Hz and can be adjusted by rotating the "NAV/PM1" encoder.
"Gain": the selectable Gain range is from -12dB to +12dB in steps of 0.5 dB and can be adjusted by rotating the "PM2" encoder.
"Q": the selectable Q range is from 0.3 up to 20.0 in steps of 0.1 and can be adjusted by rotating the "PM3" encoder.
When in the Parameters Editing Page, pushing once more the ENTER Button, it is possible to access the page of the Frequency Fast Setting:

```
Input-A    Input1      EQ-1
->Edit  Freq  =  1000Hz
```

Here, the NAV/PM1" encoder will increment/decrement the Frequency value by step of one thousand Hz, the PM2 by steps of one hundred Hz and the PM3 by steps of one Hz.
Hi_Shelv_Q Filter: These Symmetrical Shelving filters present ½ level of the selected Gain/Attenuation at the selected cutting frequency, and a slope that is depending from the chosen Q value.
If we selected a High Shelving filter with variable Q within EQ-1, then the GAIN has to be set at a desired value of say +3dB using the PM2 encoder, the Q at 3.5 and the Lo Cut Frequency at say 1000Hz with the NAV/PM1 encoder; the EQ sub-menu screen will show the following:

```
Input-A    Input1      EQ-1
->1000kHz  +3.0dB   Q=3.5
```

Once in the Hi-Shelv_Q Filter's edit screen, all the filter's parameters can be modified using the "NAV/PM1", "PM2" and "PM3" encoders for editing the Filter's Low Cut Frequency, Gain and Q:
Lo_Shelv_Q Filter: These Symmetrical Shelving filters present ½ level of the selected Gain/Attenuation at the selected cutting frequency, and a slope depending from the chosen Q value.
If we selected a Low Shelving filter with variable Q within EQ-1, then the GAIN has to be set at a desired value of say +3dB using the PM2 encoder, the Q at 3.5 using the PM3 and the Hi Cut Frequency at say 1000Hz with the NAV/PM1 encoder; the EQ sub-menu screen will show the following:

```
Input-A    Input1      EQ-1
->1000kHz  +3.0dB   Q=3.5
```

Once in the Lo-Shelv_Q Filter's edit screen, all the filter's parameters can be modified using the "NAV/PM1", "PM2" and "PM3" encoders for editing the Filter's High Cut Frequency, Gain and Q:All Pass_2 Filter: Filters allowing a FLAT Amplitude response and adding a 180 Degree Phase rotation at the selected Frequency.

If we selected a All Pass_2 filter, with variable Q, within EQ-1, then Phase Rotation Frequency has to be set at a desired value of say 1000Hz with the NAV/PM1 encoder and the Q at 3.5 using the PM3 encoder; the EQ sub-menu screen will show the following:

```
Input-A    Input1       EQ-1
->1000kHz  ------dB   Q=3.5
```

Once in the All Pass_2 Filter's edit screen, all the filter's parameters can be modified using the "NAV/PM1" and "PM3" encoders for editing the Filter's Phase Rotation Frequency and Q:
Name page – from this screen it is possible to assign a 6 character name to the Input Channel.
The following is an example screen for a "Name" page labeled "Input1" for Input Channel 1:

```
Input-A    Name         Name
Name = Input1
```

To Edit press ENTER on the Name Page and the entering arrow will appear as in the example below:

```
Input-A    Name         Name
->Name = Input1
```

The first letter position will be blinking.
Select the Character position from the 6 available by rotating the "NAV/PM1" encoder, then by using the "PM2" or 'PM3" encoder it is possible to select the desired character.
Once you are happy with your name selection, press "ENTER" to confirm the edited Name. The new name will be stored. The following example shows "Input1" replacing our previous name of "Name":

```
Input-A    Name         Name
Name = Input1
```

Noise Gate On/Off page – from this screen it is possible to make the available Noise Gate on the Input path Active (ON) or NOT Active (OFF).
The following is an example screen for the Noise Gate Active on Input Channel 1:

```
Input-A    Name         NGate
Noise Gate = On
```

To Edit the Noise Gate's parameters it is necessary to proceed with the Pc Sw Remote Control. Therefrom, it is possible to set Threshold, Attack Time and Release Time of the Noise Gate.

From the "Default Screen", it is possible to access the "Output Channel" menu by pressing the "1" or "2" or "3" or "4" or "5" or "6"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 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 NAV/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 (1/2/3/4/5/6) Path Block Scheme
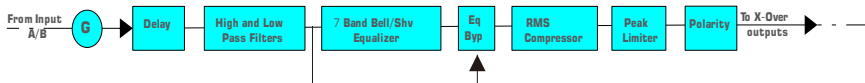
HPF sub-menu – from this sub-menu it is possible to set the Output Channels High Pass Filter.Once on the HPF page

```
Out-1    High      HPF
Bypass             F=12500Hz
```

Pressing the ENTER Button, the filter type fields and the Cutting frequency fields, become accessible for the filter's type selection and the Cutting Frequency "fine" setting

```
Out-1    High      HPF
->Bypass           F=12500Hz
```

The available shapes and orders for the High Pass Filter, that are accessible by rotating the "PM2" encoder, are listed below:

- **Bypass**   (High Pass Filter Bypassed)
- **Buttw_1st**   (Butterworth Filter 6dB/Oct Slope)
- **Buttw_2nd**   (Butterworth Filter 12dB/Oct Slope)
- **LRiley_2nd**   (Linkwitz/Riley Filter 12dB/Oct Slope)
- **Bessel_2nd**   (Bessel Filter 12dB/Oct Slope)
- **Buttw_3th**   (Butterworth Filter 18dB/Oct Slope)
- **Buttw_4th**   (Butterworth Filter 24dB/Oct Slope)
- **LRiley_4th**   (Linkwitz/Riley Filter 24dB/Oct Slope)
- **Bessel_4th**   (Bessel Filter 24dB/Oct Slope)
- **LRiley_6th**
- **LRiley_8th**

HPF sub-menu [Standard Filters]– from the sub-menu page, using the PM2 encoder, it is possible to set the HPF in Bypass or as one of the 8 Standard Filters: Buttw_1st, Buttw_2nd, LRiley_2nd, Bessel_2nd, Buttw_3th, Buttw_4th, LRiley_4th, Bessel_4th.

The following is an example of a HPF sub-menu screen with the filter set at 400Hz as 24dB Linkwitz/Riley on Output1... using the name "High" (see later for assigning a Name to the outputs):

```
Out-1    High      HPF
->LRiley_4th    F=400Hz
```

The filter's Frequency can be set already within this editing page using the PM3 encoder, but here is for Frequency "fine tuning" being the Frequency increment/decrement done by 1Hz steps.

For a quick Low Cut Frequency setting, need to press the ENTER Button for accessing the Low Cut Frequency Fast Setting Page.

```
Out-1    High      HPF
->Edit      Freq=400Hz
```

"Low Cut Frequency": the selectable frequencies range is from 20Hz to 20kHz.

Here, the NAV/PM1" encoder will increment/decrement the Frequency value by step of one thousand Hz, the PM2 by steps of one hundred Hz and the PM3 by steps of one Hz.

HPF sub-menu [Custom Filters]– from the sub-menu page, using the PM2 encoder, it is also possible to set the HPF as "Custom Filter", where this means that the HPF is builded as cascade of IInd Order Cells, which number is depending from the filter's order and where for each Cell can be set independently the Low Cut frequency and the Q.

More precisely, the available independent parameters for setting are the following:

1. Custom_2nd: builded using 1 IInd order Cell, where Low Cut Frequency and Q can be set
2. Custom_3rd: builded using 2 IInd order Cell, where Low Cut Frequency can be set on both the cascaded Cells and the Q on the second one
3. Custom_4th: builded using 2 IInd order Cell, where Low Cut Frequency and the Q be set on both the cascaded Cells.

The following is an example of a HPF sub-menu screen with the filter set at 400Hz as Custom_4th on Output1... using the name "High" (see later for assigning a Name to the outputs):
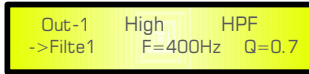
```
Out-1    High      HPF
->Custom_4th      F=400Hz
```

From this Page, to access the cascaded IInd order Cells, it is necessary to rotate the NAV/PM1 encoder Clockwise or Counterclockwise.

The number of accessible IInd order Cells is depending from the Custom Filter order: Custom_2nd will allow the editing of just one IInd order Cell, Custom_3rd and Custom_4th, the access to 2 IInd order Cells.
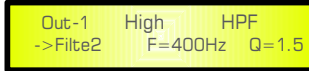
In the previous example, rotating Clockwise the NAV/PM1 encoder, we can access the Filt1 (Cell1) and Filt2 (Cell2) pages, for the Cells Low Cut Frequency and Q settings. When within the Filt1 editing Page, in example:

```
Out-1      High       HPF
->Filte1     F=400Hz   Q=0.7
```

And we can chose a different setting within the Filt2 page:

```
Out-1      High       HPF
->Filte2     F=400Hz   Q=1.5
```

The filter's Frequency can be set already within these editing pages using the PM2 encoder, but here is for Frequency "fine tuning" being the Frequency increment/decrement done by 1Hz steps.
For a quick Low Cut Frequency setting, need to press the ENTER Button for accessing the Low Cut Frequency Fast Setting Page.

```
Out-1      High       HPF
->Edit Freq   F=400Hz
```

"Low Cut Frequency": the selectable frequencies range is from 20Hz to 20kHz.
Here, the NAV/PM1" encoder will increment/decrement the Frequency value by step of one thousand Hz, the PM2 by steps of one hundred Hz and the PM3 by steps of one Hz.

LPF sub-menu – from this sub-menu it is possible to set the Output Channels Low Pass Filter. Once on the LPF page
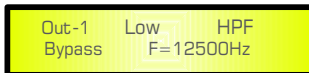
```
Out-1     Low        HPF
Bypass      F=12500Hz
```

Pressing the ENTER Button, the filter type fields and the Cutting frequency fields, become accessible for the filter's type selection and the Cutting Frequency "fine" setting

```
Out-1     Low        HPF
->Bypass      F=12500Hz
```
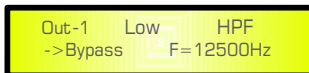
The available shapes and orders for the Low Pass Filter, that are accessible by rotating the "PM2" encoder, are listed below:

- **Bypass**   (Low Pass Filter Bypassed)
- **Buttw_1st**   (Butterworth Filter 6dB/Oct Slope)
- **Buttw_2nd**   (Butterworth Filter 12dB/Oct Slope)
- **LRiley_2nd**   (Linkwitz/Riley Filter 12dB/Oct Slope)
- **Bessel_2nd**   (Bessel Filter 12dB/Oct Slope)
- **Buttw_3th**   (Butterworth Filter 18dB/Oct Slope)
- **Buttw_4th**   (Butterworth Filter 24dB/Oct Slope)
- **LRiley_4th**   (Linkwitz/Riley Filter 24dB/Oct Slope)
- **Bessel_4th**   (Bessel Filter 24dB/Oct Slope)
- **LRiley_6th**
- **LRiley_8th**

LPF sub-menu [Standard Filters]– from the sub-menu page, using the PM2 encoder, it is possible to set the LPF in Bypass or as one of the 8 Standard Filters: Buttw_1st, Buttw_2nd, LRiley_2nd, Bessel_2nd, Buttw_3th, Buttw_4th, LRiley_4th, Bessel_4th.

The following is an example of a LPF sub-menu screen with the filter set at 400Hz as 24dB Linkwitz/Riley on Output1... using the name "Low" (see later for assigning a Name to the outputs):

```
Out-1    Low       HPF
->LRiley_4th     F=400Hz
```

The filter's Frequency can be set already within this editing page using the PM3 encoder, but here is for Frequency "fine tuning" being the Frequency increment/decrement done by 1Hz steps.

For a quick High Cut Frequency setting, need to press the ENTER Button for accessing the High Cut Frequency Fast Setting Page.

```
Out-1    Low       HPF
->Edit      Freq=400Hz
```

"High Cut Frequency": the selectable frequencies range is from 20Hz to 20kHz.

Here, the NAV/PM1" encoder will increment/decrement the Frequency value by step of one thousand Hz, the PM2 by steps of one hundred Hz and the PM3 by steps of one Hz.

LPF sub-menu [Custom Filters]– from the sub-menu page, using the PM2 encoder, it is also possible to set the LPF as "Custom Filter", where this means that the LPF is builded as cascade of IInd Order Cells, which number is depending from the filter's order and where for each Cell can be set independently the High Cut frequency and the Q.

More precisely, the available independent parameters for setting are the following:

1. Customm_2nd: builded using 1 IInd order Cell, where High Cut Frequency and Q can be set
2. Customm_3rd: builded using 2 IInd order Cell, where High Cut Frequency can be set on both the cascaded Cells and the Q on the second one
3. Customm_4th: builded using 2 IInd order Cell, where High Cut Frequency and the Q be set on both the cascaded Cells.

The following is an example of a LPF sub-menu screen with the filter set at 400Hz as Custom_4th on Output1... using the name "Low" (see later for assigning a Name to the outputs):

```
Out-1    Low       HPF
->Custom_4th      F=400Hz
```

From this Page, to access the cascaded IInd order Cells, it is necessary to rotate the NAV/PM1 encoder Clockwise or Counterclockwise.

The number of accessible IInd order Cells is depending from the Custom Filter order: Custom_2nd will allow the editing of just one IInd order Cell, Custom_3rd and Custom_4th, the access to 2 IInd order Cells.

In the previous example, rotating Clockwise the NAV/PM1 encoder, we can access the Filt1 (Cell1) and Filt2 (Cell2) pages, for the Cells High Cut Frequency and Q settings. When within the Filt1 editing Page, in example:
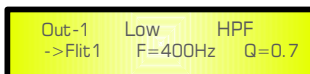
```
Out-1    Low       HPF
->Flit1    F=400Hz    Q=0.7
```

And we can chose a different setting within the Filt2 page:

```
Out-1    Low        HPF
->Flit2   F=400Hz   Q=1.5
```

The filter's Frequency can be set already within these editing pages using the PM2 encoder, but here is for Frequency "fine tuning" being the Frequency increment/decrement done by 1Hz steps.
For a quick High Cut Frequency setting, need to press the ENTER Button for accessing the High Cut Frequency Fast Setting Page.

```
Out-1    Low        HPF
->Edit   Freq=400Hz
```

"High Cut Frequency": the selectable frequencies range is from 20Hz to 20kHz.
Here, the NAV/PM1" encoder will increment/decrement the Frequency value by step of one thousand Hz, the PM2 by steps of one hundred Hz and the PM3 by steps of one Hz.
Note1: once the desired options have been selected using the 2 encoders, they are automatically saved as current and stored in the WS-P26 system status once leaving the page.
Note2: to exit this page, push the "ESC" button.
EQ Byp page – from this sub-menu it is possible to Bypass or to make active the 5 Bands Equalizer placed on the Output Signal Path.

```
Out-1    Name       Byp
->Edit   Bypass = Off
```

When Bypassed the 5 Bands Equalizer, its current setting will not be lost.
EQ: [x] sub-menu – from this sub-menu it is possible to set the Output Channels five available Multi-Type Filters.
Anyone of the 5 filters of the Eq can be selected choosing from the list of filter types shown already at the "Input Path" section [Peaking_Eq, Hi-Shelv_Q, Lo-Shelv_Q, All Pass_2]
More, the WS-P26 Is giving the possibility to "Bypass" any single filter of the 7 available in the Equalizer section; Once in the editing page of the single filter, a "Byp" field is available for making the single filter active or not

```
Out-1    Name       EQ-X
Byp= Off  Type=Peaking  Eq
```

Pushing the Enter Button, the above window will allow the access to the "Byp" and "Type" fields.

```
Out-1    Name        EQ-X
->Byp= Off  Type=Peaking  Eq
```

Using the PM2 encoder, the selected Filter can be activated or bypassed.
The WS-P26 allows the user to select anyone of the filter's type listed above and assign them independently using the 5 available filters.

In order to select the filter's type, it is necessary to use the PM3 encoder, rotate it "clockwise" or "counter-clockwise" to select the desired filter.

So, in order to define the filter type for the filter number 1 ("x"=1), it is necessary from the above screen, to select the filter, which name will appear on the screen.

If selected a Peaking_Eq filter, then the display will be as follow:

```
Out-1    Name      EQ-1
->Byp= Off  Type=Peaking  Eq
```

Once selected the desired Filter Type, its parameters can be accessed for editing just pressing again the ENTER Button.

Once pressed the ENTER Button, the editing page of the selected filter type will be accessed ONLY if the selected filter it is not set in Bypass mode.

Depending from the selected filter, the related parameters will be available for editing

Peaking_Eq Filter: Peaking filters are at constant Q, so with Q not depending from the selected Gain value If we selected a Peaking_Eq filter within EQ-1, then the Q has to be set at a desired value of say 1.00 using the PM3 encoder, the GAIN at say +3dB using the PM2 encoder and the center Frequency at say 1.00KHz with the NAV/PM1 encoder; the EQ sub-menu screen will show the following:

```
Out-1    Name      EQ-1
->1.00kHz  +3.0dB  Q=1.00
```

Once in the Peaking_Eq Filter's edit screen, all the filter's parameters can be modified using the "NAV/PM1", "PM2" and "PM3" encoders for editing the Filter's Center Frequency, Gain and Q:

"Center Frequency": the selectable frequencies range is from 20Hz to 20kHz in steps of 1Hz and can be adjusted by rotating the "NAV/PM1" encoder.

"Gain": the selectable Gain range is from -12dB to +12dB in steps of 0.5 dB and can be adjusted by rotating the "PM2" encoder.

"Q": the selectable Q range is from 0.3 up to 20.0 in steps of 0.1 and can be adjusted by rotating the "PM3" encoder.

When in the Parameters Editing Page, pushing once more the ENTER Button, it is possible to access the page of the Frequency Fast Setting:

```
Out-1    Name      EQ-1
->Edit  Freq=1000Hz
```

Here, the NAV/PM1" encoder will increment/decrement the Frequency value by step of one thousand Hz, the PM2 by steps of one hundred Hz and the PM3 by steps of one Hz.

Hi_Shelv_Q Filter: These Symmetrical Shelving filters present ½ level of the selected Gain/Attenuation at the selected cutting frequency, and a slope that is depending from the chosen Q value.

If we selected a High Shelving filter with variable Q within EQ-1, then the GAIN has to be set at a desired value of say +3dB using the PM2 encoder, the Q at 3.5 and the Lo Cut Frequency at say 1000Hz with the NAV/PM1 encoder; the EQ sub-menu screen will show the following:

```
Out-1    Name      EQ-1
->1000Hz  +3.0dB  Q=3.5
```

Once in the Hi-Shelv_Q Filter's edit screen, all the filter's parameters can be modified using the "NAV/PM1", "PM2" and "PM3" encoders for editing the Filter's Low Cut Frequency, Gain and Q:

Lo_Shelv_Q Filter: These Symmetrical Shelving filters present ½ level of the selected Gain/Attenuation at the selected cutting frequency, and a slope depending from the chosen Q value.
If we selected a Low Shelving filter with variable Q within EQ-1, then the GAIN has to be set at a desired value of say +3dB using the PM2 encoder, the Q at 3.5 using the PM3 and the Hi Cut Frequency at say 1000Hz with the NAV/PM1 encoder; the EQ sub-menu screen will show the following:

```
Out-1    Name       EQ-1
->1000Hz  +3.0dB  Q=3.5
```

Once in the Lo-Shelv_Q Filter's edit screen, all the filter's parameters can be modified using the "NAV/PM1", "PM2" and "PM3" encoders for editing the Filter's High Cut Frequency, Gain and Q:

All Pass_2 Filter: Filters allowing a FLAT Amplitude response and adding a 180 Degree Phase rotation at the selected Frequency.
If we selected a All Pass_2 filter, with variable Q, within EQ-1, then Phase Rotation Frequency has to be set at a desired value of say 1000Hz with the NAV/PM1 encoder and the Q at 3.5 using the PM3 encoder; the EQ sub-menu screen will show the following:

```
Out-1    Name       EQ-1
->1000Hz  -------dB  Q=3.5
```

Once in the All Pass_2 Filter's edit screen, all the filter's parameters can be modified using the "NAV/PM1" and "PM3" encoders for editing the Filter's Phase Rotation Frequency and Q:

Note1: once the desired options have been selected using the 3 encoders, they are automatically saved as current and stored in the WS-P26 system status once leaving the page.
Note2: to exit this page, push the "ESC" button.

Vu-Meter page – from this page it is possible to select what is shown on the Output LED meters, by using the "PM2" or "PM3" encoders.
The outputs' LED meters can show the Output signal LEVEL, the Output RMS Compressor's activity or the Output Peak Limiters' activity.
When the Output signal Level is selected, the LED meters will show, from bottom up, the Level of the signal:

```
Out-1  Name  Vu-Meter
-> Vu-Meter =  Level
```

When the RMS Compressor's activity is selected, the LED meters will show, from top down, the activity of the RMS Compressor Limiter on the output

```
Out-1   Name   Vu-Meter
-> Vu-Meter = RMS Cmp Act
```

When the Peak Limiter's activity is selected, the LED meters will show, from top down, the activity of the Peak Limiter on the output

```
Out-1   Name   Vu-Meter
-> Vu-Meter =  Limiter Act
```

Name page – from this screen it is possible to assign a 6 character name to the Output Channel. The following is an example screen for a "Name" page labeled "Low" for Output Channel 1:

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

To Edit press ENTER on the Name Page and the entering arrow will appear as in the example below:

```
Out-1  Low  Name
 ->Name = Low
```

The first letter position will be blinking.
Select the Character position from the 6 available by rotating the "NAV/PM1" encoder, then by using the "PM2" or 'PM3" encoder it is possible to select the desired character.
Once you are happy with your name selection, press "ENTER" to confirm the edited Name. The new name will be stored. The following example shows "Sub" replacing our previous name of "Low":

```
Out-1  Sub  Name
   Name = Sub
```

Source page – from this page it is possible to assign one of the following Inputs to any Output Channel:

   1.   Input A
   2.   Input B
   3.   Sum of Input A/2 + Input B/2

The following is an example screen for the "Source" where Input A is assigned to Output Channel 1:

```
Out-1  Name  Source
   Source = InA
```

After pressing ENTER an arrow will appear on the left of the screen "->" the Input can be selected by rotating either the "PM2" or "PM3" encoders.
Gain page – from this screen it is possible to set the Output Channels Level from -15dB to +15dB, press ENTER an arrow will appear on the left of the screen "->" then use the "PM2" or "PM3" buttons.
The value set on this screen will only affect the input level of the selected Channel 1/2/3/4/5/6.
The following is an example screen for the "Gain" page where the Gain of the Output Channel 1 is set to +0.0dB

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

Peak Limiter sub-menu – from this page it is possible to set the Output Channels Peak Limiter.
The following is an example screen for the Peak Limiter page where the Attack Time of the Peak Limiter is set at 5ms, the Release Time is set at 0.2Sec and the Peak Limiter Active Threshold is set at +15dB:

```
Out-1  Name  Limiter
A: 5ms  R: 0.2s  +15.0dB
```

Once pushing ENTER the Peak Limiter's parameters can be modified using the "NAV/PM1", "PM2" and "PM3" encoders for editing the Peak Limiter's Attack Time [A]., Release Time [R] and Active Threshold.

Once pushing ENTER the above screen will change as follows:

```
Out-1  Name  Limiter
->A: 5ms  R:0.2s  +15.0dB
```

The Attack Time [A] can be edited using the "NAV/PM1" encoder, the Release Time [R] the "PM2" encoder and the Peak Limiter Active Threshold the "PM3" encoder.

Delay page – from this page it is possible to set the Output Channels Delay Time from 000.0000mS up to 399.0000mS, 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 20.8 microseconds.
The following is an example screen for the "Delay" page where the Delay Time of Output Channel 1 is set to 49.1872mS:

```
Out-1  Name    Delay
-> Delay = 49.1872mS
```

Polarity page – from this page it is possible to set the Output Channels Polarity, by using the "PM2" or "PM3" encoders.
The polarity can be "Normal" or "Inverted" (which means rotated of 180 Degrees).
The following is an example of a "Polarity" screen where the Polarity of Output Channel 1 is set to "Normal"

```
Out-1  Name    Polarity
-> Polarity =  Normal
```

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 WS-P26 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 WS-P26 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    Limiter
A:  5ms  R: 0.2s  +5.0dB
```

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 WS-P26 and return the device to the original factory setting, is available to the user.

Note: Continuing with this process will mean the WS-P26 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 WS-P26 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 WS-P26:

```
              Please Wait......
              Memory Reset
```

3. Release the buttons and wait for the WS-P26 to re-initialize.

Once completed, the WS-P26 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 Presets Changing and Gain/Volume controls

The following is the HEX Code for controlling the WS-P26 recall presets and master volume control:

Preset Changing:

CMD_RECALL_PRESET: CMD=1BH

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	C3H	XX	1BH	NPreset	00H	00H	00H	00H	00H	00H	00H	F7H

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

The WS-P26'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	C3H	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	C3H	XX	1BH	**FFH**	00H	00H	00H	00H	00H	00H	00H	F7H

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, 6, 7).
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	C3H	XX	01H	Chn	00H	00H	00H	00H	00H	Phs	Vol	F7H

XX = 0,..,31 (**ID device**)
Chn=0,...,7: **Channel selected**, 0, 1=**In**1, **In**2; 2,...,7=**Out**1,..,**Out**6; **when Channel** 0, 1 **selected**, **then Vol**=**Input Gain**, **when Channel** 2, 3, 4, 5, 6, 7 **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 (-12**dB**/ +6**dB step** 0.1**dB**)

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	C3H	XX	01H	Chn	00H	00H	00H	00H	00H	Phs	Vol	F7H

WS-P26 Technical Specifications

The WS-P26 Digital Speaker Processor is based on a powerful analog and digital DSP platforms having the following specifications

Analog Input Signal:	ChA/ChB	Bal. Female XLR
Maximum Input Level:	+16dBu	
Analog Output Signal:	Ch1/Ch2/Ch3/Ch4/Ch5/Ch6	Bal. Male XLR
Maximum Output Level:	+16dBu	
Digital Processing (DSP):	SAM3716, 24bits (data) x 96 bits (coeff.)	
A/D-D/A Converters:	CS42528, 24bits	
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	