DP100 Audio Delay Processor

Operators Manual

XTA Electronics Ltd.
The Design House,
Vale Business Park,
Worcester Road,
Stourport-on-Severn,
Worcs.   DY13 9BZ.
England
Tel: 01299 879977 (Intl. +44 1299 879977)
Fax: 01299 879969 (Intl. +44 1299 879969)
Web: http://www.xta.co.uk

.

If you have any comments or suggestions about this manual, please
contact XTA at the address above, or email manuals@xta.co.uk

Contents

Thanks

Thank you for choosing the XTA DP100 for your application. Please spare a little time to digest the contents of this manual (figuratively speaking), so that you obtain the best possible performance from this unit.

All XTA products are carefully engineered for world class performance and reliability.

If you would like further information on this or any other XTA product, please call us.

We look forward to helping in the near future.

XTA Electronics Ltd.

Safety Warnings

Please note the following information which is provided for your safety:

- Check correct operating voltage is set on the power supply before connecting mains power. This voltage is confirmed on the voltage label affixed to the rear of the unit. The voltage selector switch is located inside the DP100 - Refer adjustment to qualified personnel.

- Do not expose this unit to rain or moisture.

- Do not expose this unit to excessive heat.

- Replace all fuses with correct type only.

- Do not remove the covers from this unit. No user serviceable parts inside - refer all servicing to qualified personnel.

The mains power cord is fitted with a safety earth (ground) connection. Do not operate this unit with this connection removed.

Unpacking the DP100

After unpacking the unit please check carefully for damage. If damage is found, please notify the carrier concerned at once. Any claim must be instigated by you, the consignee. Please retain all packaging in case of future reshipment.

Introduction

The DP100 is a 2 input 4 output assignable audio delay featuring 3 band parametric equalisation for each output, 11 micro-second minimum delay increment, 80 memories, excellent dynamic range and compensation function for ambient temperature change.

XTA's proprietary *AudioCore* digital signal processing technology is the heart of the DP100 providing a more flexible solution to audio delay requirements **and** system engineering.

With analogue and digital inputs and outputs, plus optical I/O option, the DP100 will integrate into both current and future systems. This flexibility extends to the external control options, where a choice of MIDI or open architecture port is provided. Engineered for flexibility and performance, built for reliability - the DP100 sets the standard in professional audio delay.

Features

☐ A flexible 3 band parametric equaliser is provided for each output. Each section provides up to ±15dB of gain at any centre frequency 20Hz - 20kHz with a wide range of Q's.

☐ Comprehensive standard specification includes 80 memories, MIDI for external control & linking master / slave units, selectable operating level and security lock-out function.

☐ Delay measurement mode simplifies set-up by allowing delay time for the sound system to be calculated.

☐ 2 inputs and 4 fully assignable outputs allow the DP100 to be configured for almost any application.

☐ Operating modes comprise: **Mono** 1 in / 4 out, **Dual** 2 in / 4 out , **Stereo** (linked) 2 in / 4 out and **Split** 1 in / 1 out + 1 in / 3 out.

☐ The DP100 provides exceptional audio quality with a full 103dB dynamic range, high sampling rate and minimal filtering.

☐ Wide range digital control of level is provided for each output. This also allows **mute** to be applied to any output.

☐ Display is selectable between units of time, distance or video frames and a base delay can be added before all outputs allowing relative adjustments.

☐ 11 µS minimum delay increment for critical driver alignment applications.

☐ Maximum standard delay is 1.365 Secs. per output (**dual**) and 2.73 Secs. (**mono**). This is expandable up to 8.19 Secs (**dual**), 16.38 Secs (**mono**) to special order.

☐ AES / EBU digital inputs and outputs are available as an option, with optical I/O also available to special order.
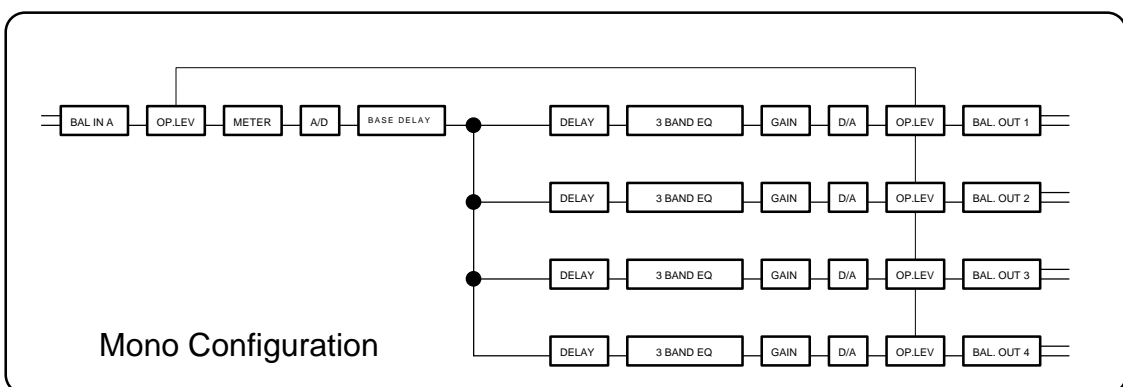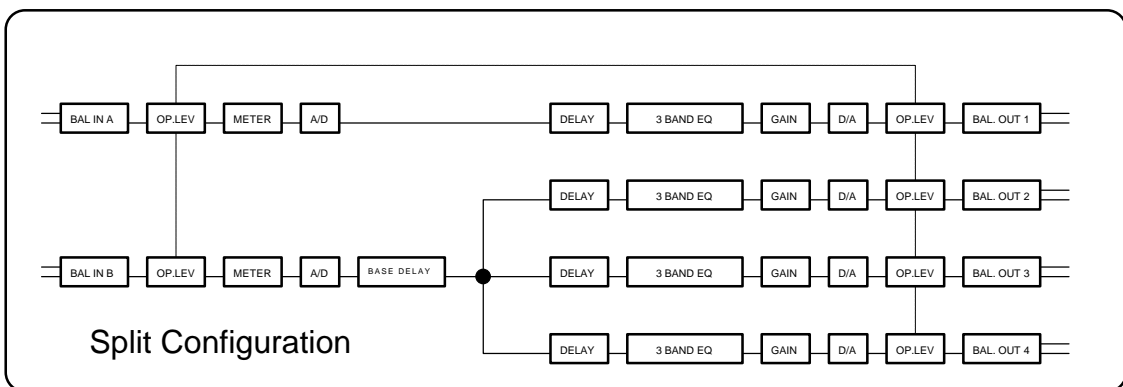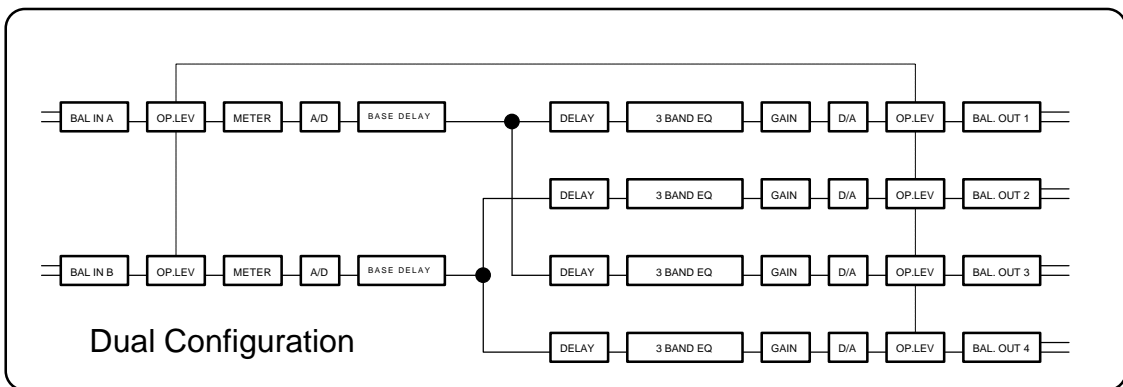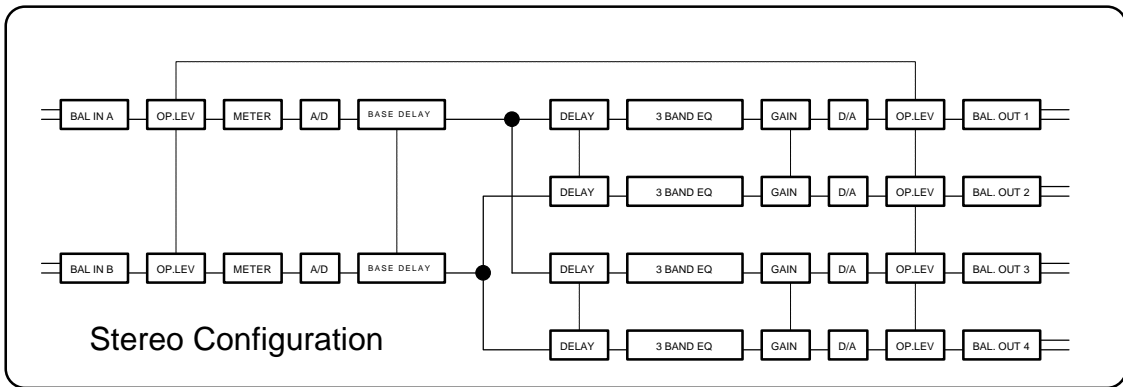
Front Panel Functions
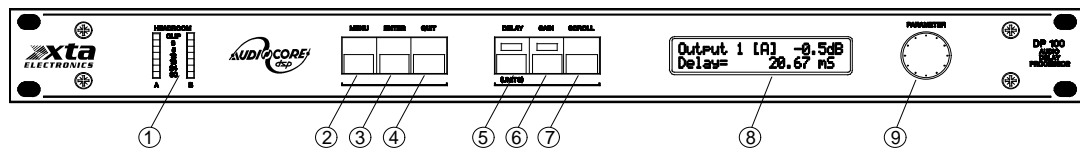
1. **Headroom Meter** - Displays available headroom before system clipping occurs. The bottom six LED's display between 30dB and 0dB of input headroom, with the orange 0dB LED set at 3dB below clipping. The top, red LED displays digital overflow and can therefore light without all other LED's becoming illuminated.

2. **Menu Key** - Selects last used menu choice to be previewed on the LCD display. Pressing a second time selects the next menu choice.

3. **Enter Key** - Allows the options for the current menu to be displayed and then the chosen option to be confirmed.

4. **Quit Key** - Returns unit to basic default operating mode from existing menu selection. This key also cancels Delay and Gain key selection.

5. **Delay Key** - Allows the delay time to be adjusted, via the parameter control, for the output currently shown in the LCD display. To avoid accidental adjustment, this function will cancel after 15 seconds. A red LED shows the status of this key. Holding the Delay key for 2 seconds changes the display units from Time in milliseconds to Distance in either feet or metres (menu selectable) or visa versa. In Output EQ mode, the Delay key selects between the three EQ parameters: Gain, Frequency and Q.

6. **Gain Key** - Allows gain to be adjusted, via the parameter control, for the output currently shown in the LCD display. 'Gain' is variable between 0dB and 40dB of attenuation plus 'mute'. This function also cancels after 15 seconds. In Output EQ mode, pressing the Gain key momentarily sets all three EQ sections for the selected output to 'Flat'. Releasing the key restores equalisation.

7. **Scroll Key** - In the normal 'default' operation this key selects the next output for previewing on the LCD display (and adjustment if required). It also selects the Temperature function if operating in Distance mode and Base Delay Offset function if this is enabled. If a menu is first selected, then confirmed using the Enter key, the Scroll key allows the options for the current menu choice to be previewed on the LCD display.

8. **LCD Display** - Shows menu options, output information and various parameters dependant on the menu selection. See operating section for detailed information.

9. **Parameter Control** - This rotary encoder allows the selected parameter to be adjusted. The control is velocity sensitive to combine fine resolution, when required, with the ability to make larger changes to delay time quickly.

Rear Panel Functions
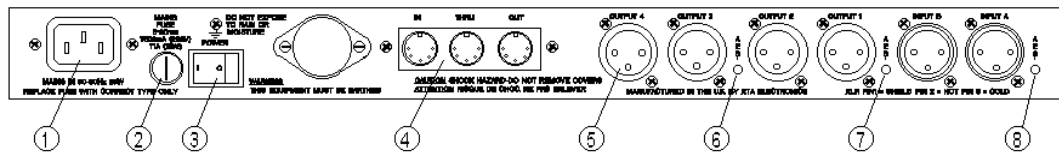
1. **Mains Power** - is connected via a standard IEC socket. A compatible power cord is supplied with the unit.

2. **Mains Fuse** - is located in a finger-proof fuseholder adjacent to the mains inlet. Always replace this fuse with the correct type as shown on the rear panel legend.

3. **Power Switch** - a double pole rocker switch isolates both live and neutral connections.

4. **MIDI** - In / Thru and Out connections are provided via standard 5 pin DIN sockets. See page 15 for more information.

5. **XLR Inputs and Outputs** - Separate 3 pin XLR connectors are provided for each audio input and output. All terminations are fully balanced where pin 2 = Hot, pin 3= Cold and pin 1 = Screen (shield). See page 17 for more information.

6. **Digital Output 3+4 Switch** - pressing this recessed switch will route the AES digital format of outputs 3 and 4 via output 3's XLR connector, if the AES/EBU option is fitted.

7. **Digital Output 1+2 Switch** - pressing this recessed switch will route the AES digital format of outputs 1 and 2 via output 1's XLR connector, if the AES/EBU option is fitted.

8. **Digital Input Switch** - pressing this recessed switch will change XLR Input A to a 2 channel AES digital format input, if the AES/EBU option is fitted.

DP100 Block Diagrams

Stereo Configuration

| BAL IN A | OP.LEV | METER | A/D | BASE DELAY |
| BAL IN B | OP.LEV | METER | A/D | BASE DELAY |

DELAY	3 BAND EQ	GAIN	D/A	OP.LEV	BAL. OUT 1
DELAY	3 BAND EQ	GAIN	D/A	OP.LEV	BAL. OUT 2
DELAY	3 BAND EQ	GAIN	D/A	OP.LEV	BAL. OUT 3
DELAY	3 BAND EQ	GAIN	D/A	OP.LEV	BAL. OUT 4

Dual Configuration

| BAL IN A | OP.LEV | METER | A/D | BASE DELAY |
| BAL IN B | OP.LEV | METER | A/D | BASE DELAY |

DELAY	3 BAND EQ	GAIN	D/A	OP.LEV	BAL. OUT 1
DELAY	3 BAND EQ	GAIN	D/A	OP.LEV	BAL. OUT 2
DELAY	3 BAND EQ	GAIN	D/A	OP.LEV	BAL. OUT 3
DELAY	3 BAND EQ	GAIN	D/A	OP.LEV	BAL. OUT 4

Split Configuration

| BAL IN A | OP.LEV | METER | A/D |
| BAL IN B | OP.LEV | METER | A/D | BASE DELAY |

DELAY	3 BAND EQ	GAIN	D/A	OP.LEV	BAL. OUT 1
DELAY	3 BAND EQ	GAIN	D/A	OP.LEV	BAL. OUT 2
DELAY	3 BAND EQ	GAIN	D/A	OP.LEV	BAL. OUT 3
DELAY	3 BAND EQ	GAIN	D/A	OP.LEV	BAL. OUT 4

Mono Configuration

| BAL IN A | OP.LEV | METER | A/D | BASE DELAY |

DELAY	3 BAND EQ	GAIN	D/A	OP.LEV	BAL. OUT 1
DELAY	3 BAND EQ	GAIN	D/A	OP.LEV	BAL. OUT 2
DELAY	3 BAND EQ	GAIN	D/A	OP.LEV	BAL. OUT 3
DELAY	3 BAND EQ	GAIN	D/A	OP.LEV	BAL. OUT 4

Operating The DP100

Menu Selections

The following menu selections are available. To view menu selections see instructions under preliminary set-up page 7.

Unit Configuration: Sets unit into **Dual** (2 in, 2 out), **Mono** (1 in, 4 out), **Split** (1 in, 1 out + 1 in, 3 out) or **Stereo** (2 in, 2 out synchronised). See page 5 for more information.

Maximum Input Level: Sets operating level to optimise dynamic range by increasing input level and decreasing output level. Selectable to **+3dBu**, **+8dBu**, **+15dBu** or **+20dBu**. See page 17 for more information.

Distance Units: Sets units for distance mode to **Feet**, **Metres** or **PAL** / **NTSC** video frames**.** See page 8 for more information.

Delay Measurement: Allows delay to be measured for the sound system enabling the correct delay time to be applied using the DP100. See page 12 for more information.

Memory Store: Allows up to 80 settings to be stored. (20 per configuration type). See page 11 for more information.

Memory Recall: Allows recall of all currently used memories, as selected via the parameter control. See page 12 for more information.

Security System: Allows a security number to be chosen via the parameter control and confirmed using the Enter key. With this function selected all controls are inoperative to avoid unauthorised adjustments.

Please keep a safe copy of the chosen security number. - This must be re-entered to 'un-lock' the security system. See page 14 for more information.

Interface Setup: Allows external interface to be set-up. This is via MIDI on the standard unit. The unit can be placed in **Off**, **Master**, **Slave** modes and a MIDI channel number assigned via the parameter control. The basic MIDI system uses 'program change' controls to automatically recall memories when in the **Slave** mode or to send a 'program change' control when a memory is manually recalled when in **Master** mode. See page 15 for more information.

Base Offset On/Off: Switches **On** or **Off** Base Offset Function. See pages 5 & 8 for more information.

AES Receive Mode: Selects the input source for the unit to be either Analogue, AES, Auto (the unit uses the analogue source unless there is a locked AES signal present) or Reference (the unit uses the analogue input and the internal sampling clock will lock to AES signal if it is present). Available only if the AES option is fitted.

AES Diagnostics: Shows the complete status of the input AES signal. Available only if the AES option is fitted.

Output EQ On / Off: Switches On or Off parametric Equalisation for all outputs. See page 9 for more information.

Output Equalisation: Allows a 3 band parametric equaliser for each output to be accessed and adjusted. See page 9 for more information.

Preliminary Setup

The following procedure should be followed when first installing the DP100.

1.   Select correct unit configuration via menu.

2.   Set maximum input level (operating level) via menu.

3.   Select required Distance units (feet / metres or PAL/NTSC frames) via menu.

4.   If Base Offset delay is required this should be set 'On' via menu.

To set the above options, press Menu to enter Menu Mode and scroll through menus until required choice is found, using menu or scroll keys or the parameter control.

When the required menu choice is found, press Enter key, then use the scroll key to view options. The currently used option will be marked by a '*' star. To confirm a new option press enter again whilst required option is selected.

Note: After 15 seconds the unit will return to normal 'default' mode. Repeat above instructions to return to menu mode.

Basic Delay Mode

This is the default mode for the unit and can be accessed at any time by pressing 'QUIT'. (press twice in Output Equalisation and Delay measurement modes).
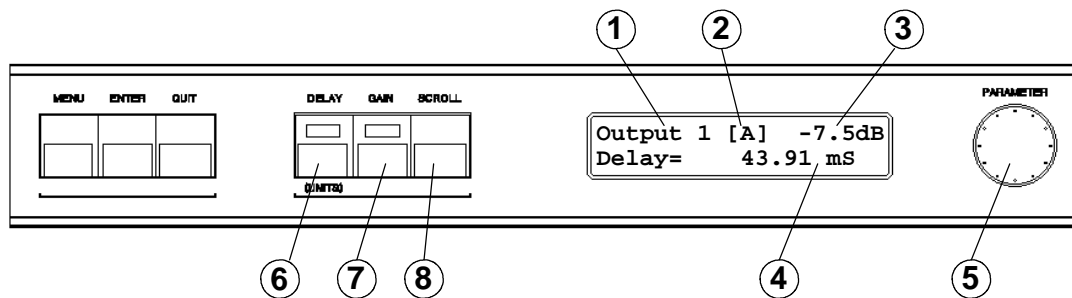
Important. If temperature compensation is required, the ambient temperature must be entered at the time of initial set-up. See Note. A. below.

1. **Output No.** - shows the output currently selected for adjustment.

2. **Input** - shows which input the selected output is assigned to.

3. **Output level** - shows the current output level for the selected output.

4. **Delay Time** - shows the current delay time in milliseconds for the selected output. If distance units are selected, display will read: Mt (metres), Ft (feet), PAL Frames or NTSC Frames.

5. **Parameter control** - allows the selected parameter to be adjusted.

6. **Delay Key** - Allows the delay time to be adjusted, via the parameter control, for the output currently shown in the LCD display. To avoid accidental adjustment, this function will cancel after 15 seconds. A red LED shows the status of this key. Holding the Delay key for 2 seconds changes the display units from Time in milliseconds to Distance in either feet or metres (menu selectable) or visa versa.

7. **Gain Key** - Allows gain to be adjusted, via the parameter control, for the output currently shown in the LCD display. 'Gain' is variable between 0dB and 40dB of attenuation plus 'mute'. This function also cancels after 15 seconds.

8. **Scroll Key** - scrolls to the next output for previewing on the LCD display (and adjustment if required). The display will also scroll through temperature function if operating in the distance mode and base delay offset function if it has been enabled.

Note A: If Distance mode is selected (by holding down the Delay key for 2 seconds) distance is controlled as delay time above and will be displayed in either feet or metres depending on menu selection. In this mode Temperature compensation is possible: Press scroll key to select temperature control, then press 'Delay' key and enter ambient temperature at the time of set-up via the parameter control. Before the next performance enter current ambient temperature - the time delay is automatically set to the correct value.

Note B: If Base Offset Delay is selected via menu, current offset value can be found using scroll key and adjusted using parameter control. This function allows a set amount of delay to be applied to all outputs assigned to particular input, allowing a multiple driver set-up to be time aligned and then delayed as a system, maintaining time alignment. With this function selected the delay time shown for each output is the total delay including any Base Offset Delay.

Output Equalisation Mode

Equalisation is provided by a versatile 3 band parametric equaliser for each output. Each identical section can be positioned at any frequency from 20Hz to 20kHz and features a wide range of Q's to produce response curves ranging from shelving to notch. 15dB of symmetrical Boost and Cut is provided with 0.2dB resolution. Frequency parameter features 1/24 octave resolution for precise control.

Press 'MENU' and select Output Equalisation using menu / scroll keys or parameter control. Press 'ENTER' to load selection.

Note. Output EQ On / Off option must be set for 'On' to access this mode. (Switch to 'Off' to bypass all 12 equaliser sections.)

Display now shows output number, select required output using 'SCROLL' key or parameter control then press 'ENTER' to display current EQ. information for that output.
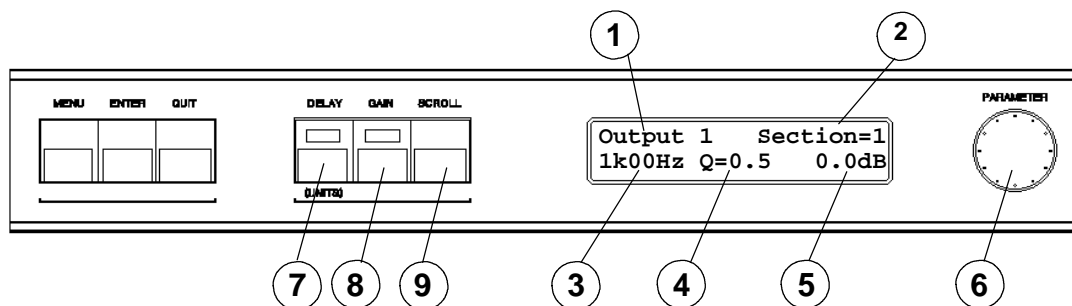
1. **Output No.** - shows the output currently selected for adjustment.

2. **Section No** - shows the parametric section currently selected (3 per output).

3. **Frequency** - displays centre frequency for the filter section currently selected. This is adjustable between 20Hz and 20kHz in 1/24 octave steps.

4. **Q** - displays 'Q' for the filter section currently selected. This is adjustable between 0.5 and 32.

5. **Gain** - displays gain for the filter section. This is adjustable ±15dB in 0.2dB steps.

6. **Parameter control** - allows the selected parameter to be adjusted.

7. **Delay Key** - Toggles between the three equalisation parameters: Frequency, Gain and Q. The parameter displayed next to the Parameter control is enabled for adjustment.

8. **Gain Key** - Whilst this key is pressed all three EQ sections for the selected output are set to 'flat'. Releasing the key restores equalisation.

9. **Scroll Key** - scrolls to the next filter section for previewing current parameters on the LCD display (and adjustment if required).

DP100 Equalisation Curves

The following response curves illustrate the wide range of control available using the DP100's output equalisers.

Figure 1. shows the symmetrical boost / cut response of a single section at various gains.

Figure 2. shows the range of filter Q's available.

Figure 3. shows filter sections set at 30Hz and 18kHz (and low Q) to produce shelving LF and HF filter responses.
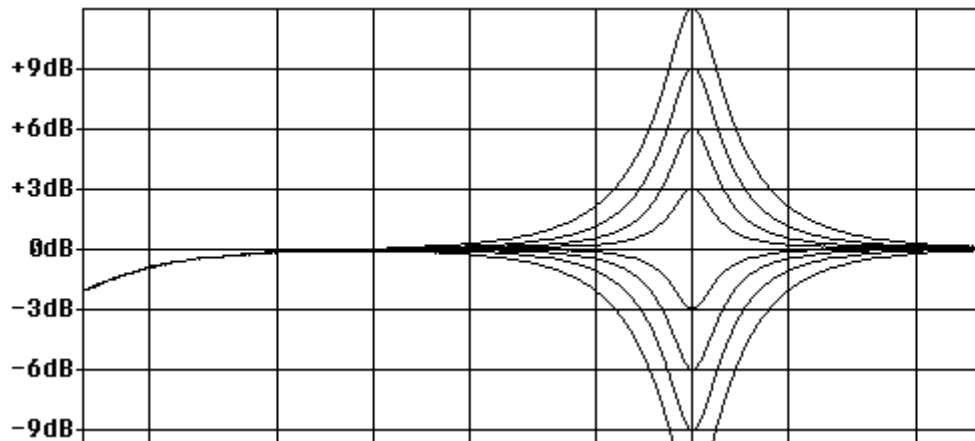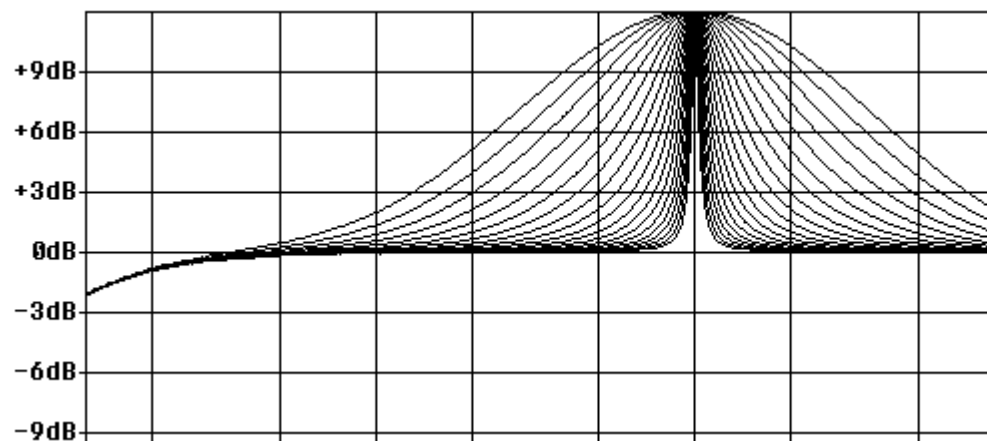

Fig. 1 Gain Curves @ Q= 3.2, Frequency= 1kHz

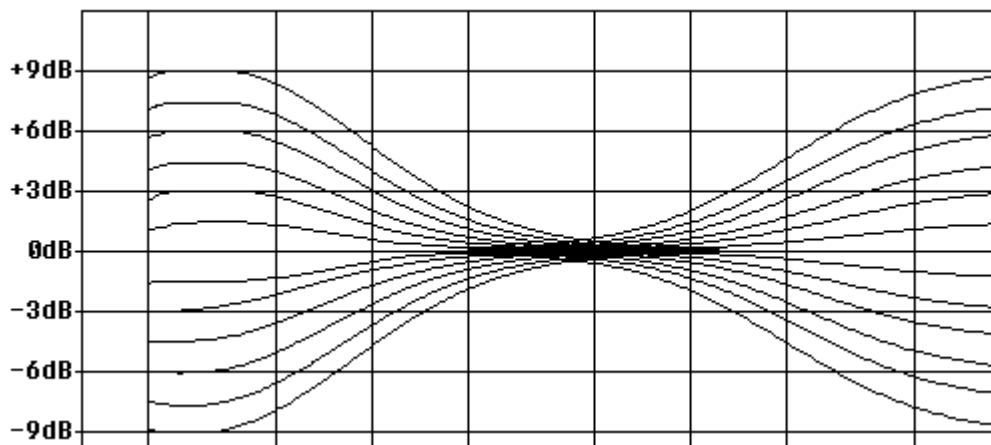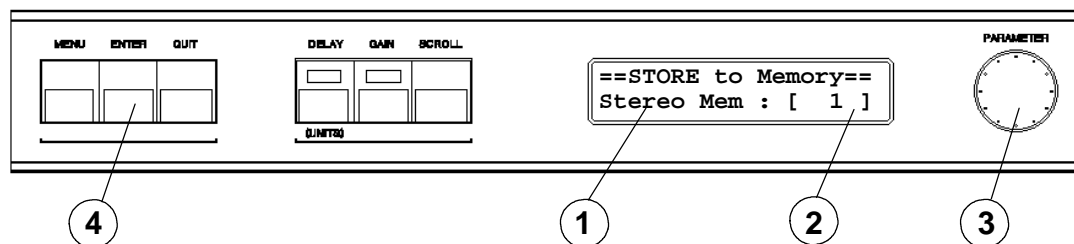Fig. 2 Q Curves @ Gain= +12dB, Frequency= 1kHz.

Fig 3. Gain Curves @ 30Hz and 18kHz, Q= 0.5.

Memory Store

Press 'MENU' and select Memory Store using menu / scroll keys or parameter control. Press 'ENTER' to load selection. If after 15 seconds no store has been implemented, the unit will return to the default mode.
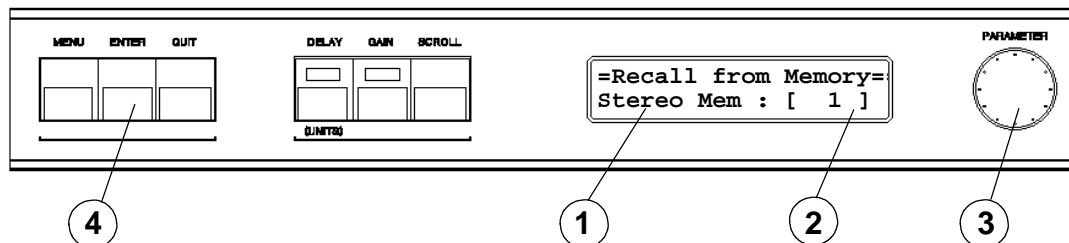

1. **Configuration** - shows the current configuration used for the stored memory: Dual, Mono, Split or Stereo.

2. **Memory No.** - shows the memory number selected for storing. The next available empty memory is automatically selected, but any memory number can be chosen using the parameter control. Previously used memories are identified by a '?'.

3. **Parameter Control** - used to select required memory.

4. **Enter key** - Pressing this key stores all current parameters into the chosen memory. Previously used memories, (identified by a '?' after Mem No), must be over-written by pressing 'ENTER' again. Once stored, display shows: "Parameters stored" and unit returns to default mode.

Note A: The 80 user memories are organised into four banks of 20, One bank for each DP100 configuration. This eliminates the possibility of recalling a different configuration than that currently in use.

Note B: All current parameters are stored in memory, including output gain, EQ on/off status and equalisation settings. If EQ status was 'Off' when stored, the last used equalisation setting is stored and can be accessed by selecting EQ status to 'On'.

Memory Recall

Press 'MENU' and select Memory Recall using menu / scroll keys or parameter control. Press 'ENTER' to load selection. If after 15 seconds no recall has been implemented, the unit will return to the default mode.

1. **Configuration** - shows the current configuration used for the recalled memory: Dual, Mono, Split or Stereo.

2. **Memory No.** - shows the memory number selected for recalling. Use the parameter control to select the required memory. Only memory numbers containing stored information will be displayed.

3. **Parameter Control** - used to select required memory.

4. **Enter key** - Press this key to recall the memory number shown on the display.

Note: To view equalisation parameters for a memory, first recall the required memory as above then enter 'Output Equalisation' via menu system.
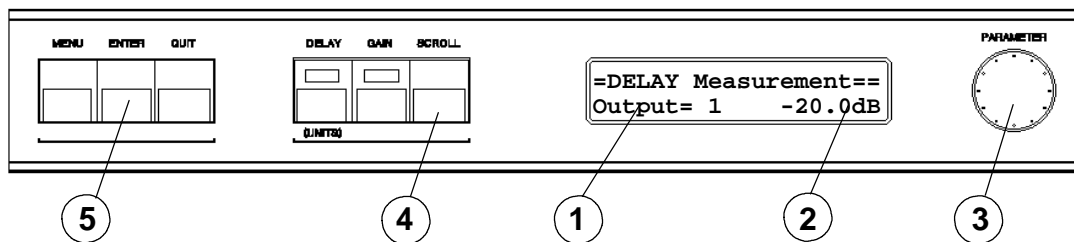
Delay Measurement Mode

This mode allows the delay time and distance between any loudspeaker and a chosen microphone position to be calculated and shown on the DP100's LCD display. This system replaces the use of a tape-measure or the 'trial and error' approach, allowing the required delay time to be determined quickly for each loudspeaker zone, and applied to the correct DP100 output.

To achieve this, the DP100 generates a repeated tone burst at one of three frequencies: 100Hz, 1kHz or 10kHz. This signal is sent via the selected DP100 output to a line level input for the chosen loudspeaker's electronics. A microphone placed at the required 'listening' position is connected via a suitable mic-amp to Input A of the DP100. Sufficient level must be available at this input to illuminate the 6dB LED on the level meter when a tone burst is present and the background noise floor must be low enough so that the 30dB LED stays off with no signal present.

When the return signal is detected, the DP100 will calculate and display the delay time and equivalent distance (metres or feet). If a signal of sufficient level is not detected for 2 seconds the unit will display a series of stars (****) indicating 'No Measurement Possible'.

Delay Measurement - Simplified Block Diagram
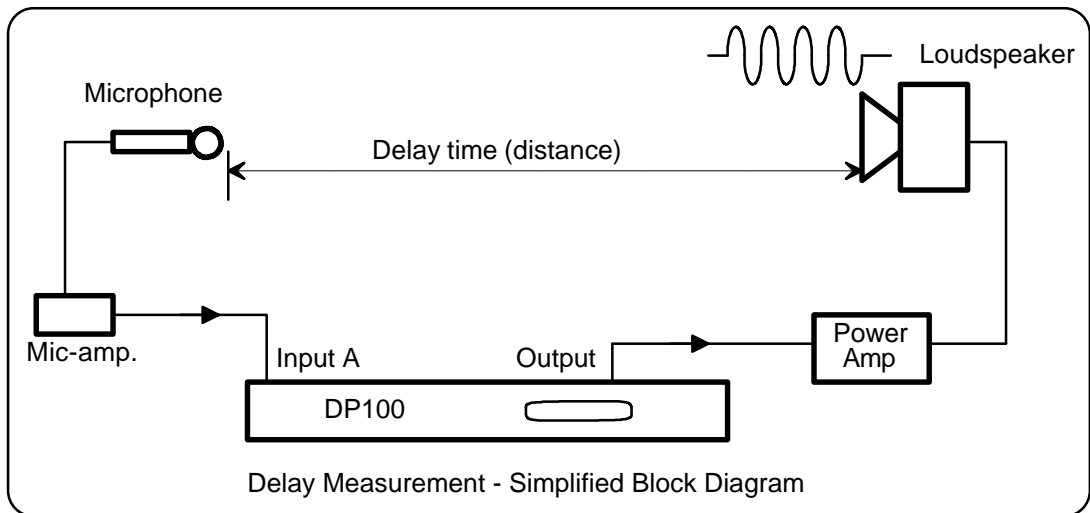
Press 'MENU' and select Delay Measurement using menu / scroll keys or parameter control. Press 'ENTER' to load selection.

```
=DELAY Measurement==
Output= 1   -20.0dB
```

1.  **Output No.** - shows the output currently selected for use. All other outputs are muted in this mode.

2.  **Output Level** - shows the current level in dB. for the selected output. This is adjustable between -10 & -40dB but is set for -20dB when the measurement mode is first entered, to reduce the risk of loudspeaker damage.

3.  **Parameter Control** - provides adjustment of output level for selected output.

4.  **Scroll key** - Allows the required output to be selected. (Once the measurement function has been initiated, pressing this key toggles the tone burst frequency between 100Hz, 1kHz and 10kHz).

5.  **Enter key** - Pressing this key initiates the measurement function.

**Note:** To avoid instant acoustic feedback and possible loudspeaker damage, the microphone must be disconnected from the DP100 input before quitting Delay Measurement Mode.

# Security System

Press 'MENU' and select Security System using menu / scroll keys or parameter control. Press 'ENTER' to load selection. Press 'ENTER' again to access security system information.
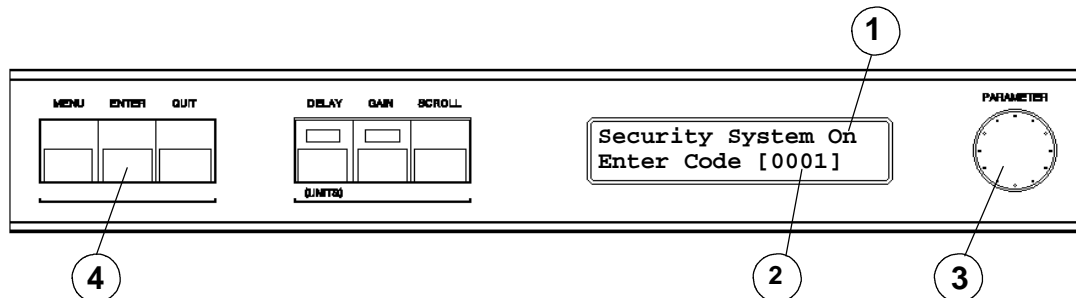


**IMPORTANT** - Please Note that once the security system is initiated only re-entering the correct code number will 'unlock' the DP100's functions. Please note Code Number !

1. **Security System Status** - shows on or off status for the security system.

2. **Security Code No.** - shows the code number currently selected. Any number between 0 & 9999 can be chosen via the parameter control.

3. **Parameter Control** - Allows the required security code number to be selected. This number must be written down and saved for future use.

4. **Enter key** - Once the required security number has been selected, pressing this key initiates the security mode.

**Note 1:** With the security system 'On' display units can still be changed from milliseconds to distance by pressing the 'DELAY' key for 2 seconds.

**Note 2:** To 'unlock' security system, enter security system via 'MENU' key, enter code number with parameter control and press 'ENTER'.

**Note 3:** If the security code number is inadvertently lost contact your local XTA sales office.

# MIDI Operation

The DP100 is supplied with a MIDI interface as standard. The unit can be placed in Off, Master and Slave modes

In 'Slave' mode the DP100 will monitor MIDI messages on the MIDI input connector and will respond to 'program change' commands from either another DP100 (set in 'Master' mode), or a separate MIDI events controller by recalling a DP100 memory corresponding to the 'program change' number. In this way, changes in delay time, gain and equalisation can be instantly implemented. MIDI channel numbers 1 to 16 plus 'All' (omni) are selectable.

In 'Master' mode the DP100 will send a MIDI 'program change' command via the MIDI output connector when a memory is recalled. The 'program change' number is the same as the DP100 memory number being recalled (i.e. 1 to 20), therefore if a Master DP100 is used to control a number of Slave DP100 units, the correct setting must be loaded into the <u>same memory number</u> on each unit. In 'Master' mode MIDI channel numbers 1 to 16 are selectable.

Press 'MENU' and select Interface Setup using menu / scroll keys or parameter control. Press 'ENTER' to load selection. Use parameter control to select between Slave, Master and Off modes and confirm by pressing 'ENTER' .
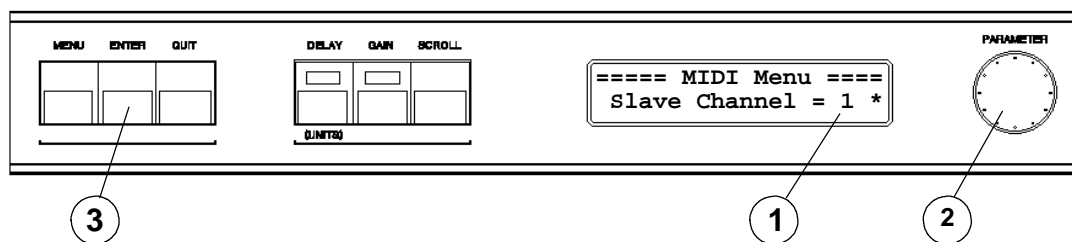


1.  **MIDI Channel Number** - shows Slave or Master MIDI channel number. The active channel number is identified by a '*'.

2.  **Parameter Control** - Allows the channel number to be adjusted.

3.  **Enter key** - Pressing this key confirms the channel number currently selected as active.

# Specifications

|  |  |
|---|---|
| **Inputs** | Two electronically balanced.− |
| Impedance | > 10k ohms. |
| CMRR | >65dB 50Hz - 10kHz. |
| | |
| **Outputs** | Four electronically balanced.− |
| Source Imp. | < 60ohms. |
| Min. Load | 600ohm. |
| Max. Level | +20dBm  into 600 ohm load. |
| | |
| **Frequency Resp.** | ±0.5dB 20Hz - 20kHz. |
| | |
| **Distortion** | < 0.02% @ 1kHz, +18dBm. |
| | |
| **Delay Range** | 2.6 mS to 1.365 S (Dual). 2.6 mS to 2.73 s (Mono). |
| | |
| **Min. Increment** | 11 µS (approx. 4mm @ 20º C). |
| | |
| **Output gain** | Adjustable 0dB to -40dB in 0.5dB steps and **mute**. |
| | |
| **Output Equalisation** | |
| Filters | 12 x digital parametric filter sections (3 per output). |
| Filter gain | ±15dB,  0.2dB steps. |
| Centre frequency | 20Hz - 20kHz, 1/24 octave steps. |
| Filter Q | 0.5 to 32. |
| | |
| **Operating level** | Headroom selectable +3dB, +8dB, +15dB & +20dB. |
| | |
| **Temp. Correction** | 0ºC to +40ºC in 1º steps. |
| | |
| **Display** | 2 x 20 character backlit LCD. |
| **Headroom meter** | 2 x 7 point, -30dB to clip. |
| **Internal Data Path** | 24 bits. |
| | |
| **Connectors** | |
| Inputs | 3 pin female XLR. |
| Outputs | 3 pin male XLR. |
| MIDI ☒ | In / Out / Thru  5 pin DIN. |
| Power | 3 pin IEC. |
| | |
| **Power** | 110 / 220 V ± 15% @ 50/60Hz. |
| **Consumption** | < 20 watts. |
| | |
| **Weight** | 3.5kg. Net  (4.5kg. Shipping) |
| **Size** | 1.75"(1U) * 19" * 11.8" (44 * 482 * 300mm) excluding connectors. |
| | |
| **Options** | −=Transformers available. |
| | Memory expansion. |
| | Relay bypass. |
| | Digital I/O. |
| | ☒ =Alternative interfaces. |

*Due to continuing product improvement the above specifications are subject to change.*

# Operating Notes

### Operating Level

With any audio signal processing equipment it is necessary to ensure adequate signal level is used through the device, to avoid sacrificing noise performance. The DP100 features a menu selectable choice of operating levels to reduce this problem, (see page 6). It is suggested that the operating level chosen should give adequate level to just light the 6dB LED on the headroom meter with maximum program level being used. Since the meter is deliberately set to 'over-read' by 3dB, this still provides 9dB of headroom before clipping occurs. With equalisation in use it may be necessary to further reduce the input level, as gain within the unit may cause digital clipping, indicated by the top red LED's lighting.

It should be noted that the figure quoted for the maximum input level options is the clipping point for that option ( <u>not a safe operating level</u> ). Always ensure that this clipping point is no lower than that for the following equipment in the signal chain, and allow extra margin if equalisation sections are boosted.

**Grounding.** The Screen (shield ) pins on all audio connectors are normally connected directly to the ground pin of the IEC mains inlet. The chassis is also directly connected to this pin. Never operate this unit without the mains safety ground connected. Signal ground (0V) is in turn connected to the chassis ground via a 10R resistor.

To avoid ground loops, cable shields should be connected to ground at one end only. The normal convention is that the shield is only connected at the output XLR. Provision is also made for separately isolating each input and output shield pin permanently within the DP100 by breaking the appropriate pcb track, where marked with a box and an 'X' next to each XLR connector using a small drill bit or cutter. See the following diagram for details.
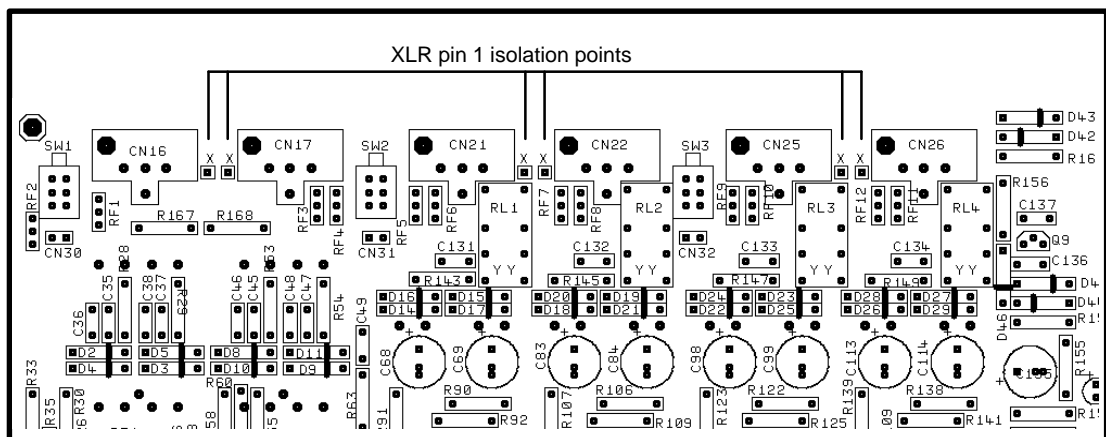
# Warranty

This product is warranted against defects in components and workmanship only, for a period of one year from the date of shipment to the end user.  During the warranty period,  XTA will, at it's option,  either repair or replace products which prove to be defective,  provided that the product is returned, shipping prepaid, to an authorised XTA service facility.

Defects caused by unauthorised modifications,   misuse,   negligence,   act of God or accident, or any use of this product that is not in accordance with the instructions provided by XTA,  are not covered by this warranty.

This warranty is exclusive and no other warranty is expressed or implied.  XTA is not liable for consequential damages.