

# FELSTON



# DD540

## DIGITAL AUDIO DELAY

### Owner's Manual

# IMPORTANT INFORMATION

## PLEASE READ THIS BEFORE OPERATING THE UNIT

1. To ensure the best performance, read this manual carefully. Keep it in a safe place for future reference.
2. Install this unit in a well-ventilated, cool, dry, clean place. There should be a space of at least 4" (10cm) above, behind and to the sides of the unit. Lack of ventilation can cause the unit to malfunction.
3. Do not place anything on top of this unit, such as other components, as they could damage the finish of the unit. In addition, objects placed on top of the unit could obstruct the heat dissipation, causing the unit to malfunction.
4. Do not expose the unit to sudden temperature changes from cold to hot. Do not locate the unit in a environment with high humidity (e.g. a room with a humidifier), as this can cause condensation inside the unit which may cause an electrical shock, fire, damage to the unit and/or personal injury.
5. Do not plug this unit into a wall socket until all the connections are completed.
6. When disconnecting the power lead from the wall socket, hold the plug. Do not pull on the power lead.
7. Do not use force on any of the buttons or the cables attached to the unit.
8. Do not clean this unit with chemical solvents, as this can damage the unit's finish. Use only a clean, dry cloth.
9. Only use the power adaptor supplied with this unit. Using another power supply is dangerous and may cause fire and/or damage to the unit, and/or personal injury. The manufacturer of the unit will not be held responsible for any damage or injury caused in this way.
10. Only use in a wall socket providing the AC voltage specified. Using an AC voltage outside the specified range is dangerous and may cause fire and/or damage to the unit, and/or personal injury. The manufacturer of the unit will not be held responsible for any damage or injury caused in this way.
11. To prevent damage by lightning, disconnect the power lead from the wall socket during an electrical storm.
12. Take care not to drop any liquid or foreign objects into the unit.

13. Do not open the unit, the power adaptor, or try to modify them in any way. There are no user-serviceable parts inside the unit or power supply. Opening the unit or power supply, or carrying out any modifications will invalidate your warranty, as well as being potentially dangerous. Always contact your supplier or the manufacturer for service requirements.
14. When you are not using the unit for a long period of time, disconnect the power adaptor from the wall socket.
15. Should a problem occur, please read the *Troubleshooting* section covering common operating errors before deciding the unit is faulty.

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation.

This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation.

If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna
- Increase the separation between the equipment and AV amplifier
- Connect the equipment to an outlet on a circuit different from that to which the AV amplifier is connected
- Consult the dealer or an experienced radio/TV technician for help



This unit is in conformity with the EMC directive and low-voltage directive.

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# Introduction

Lip sync error, i.e. where sound and picture are slightly out of synchronization, is a common problem particularly with modern displays. There are a number of causes. For instance, the video processing performed by sophisticated plasma screens, LCD displays and digital projectors. This gives superb picture quality, however the processing can take a few frames of video to complete, meaning the picture is displayed a fraction of a second after the sound.

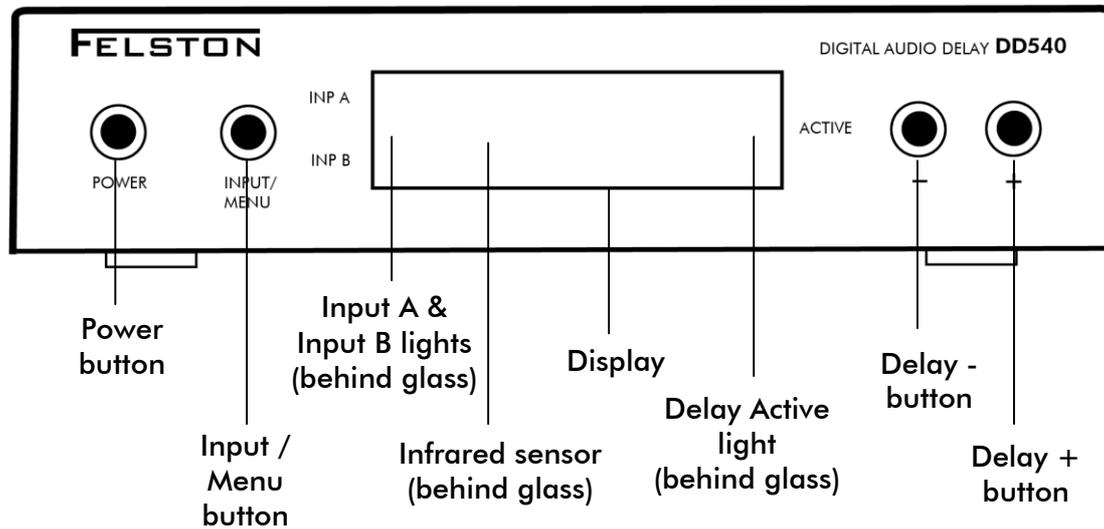
On top of this, television broadcasts can also suffer from lip sync error before they even reach your display. Again typically the video lags behind the audio by a small amount. There are other sources of the problem too. In the worst cases two or more of the causes combine to produce a very obvious and frustrating synchronization error.

The Felston DD540 digital audio delay provides a solution to this for any user with an AV amplifier and sources that include a digital audio output (DVD players, certain digi-boxes etc.) Up to two sources can be connected simultaneously. By providing a means of delaying the audio signal before it reaches your AV amplifier, the DD540 puts sound and picture back in perfect sync once more.

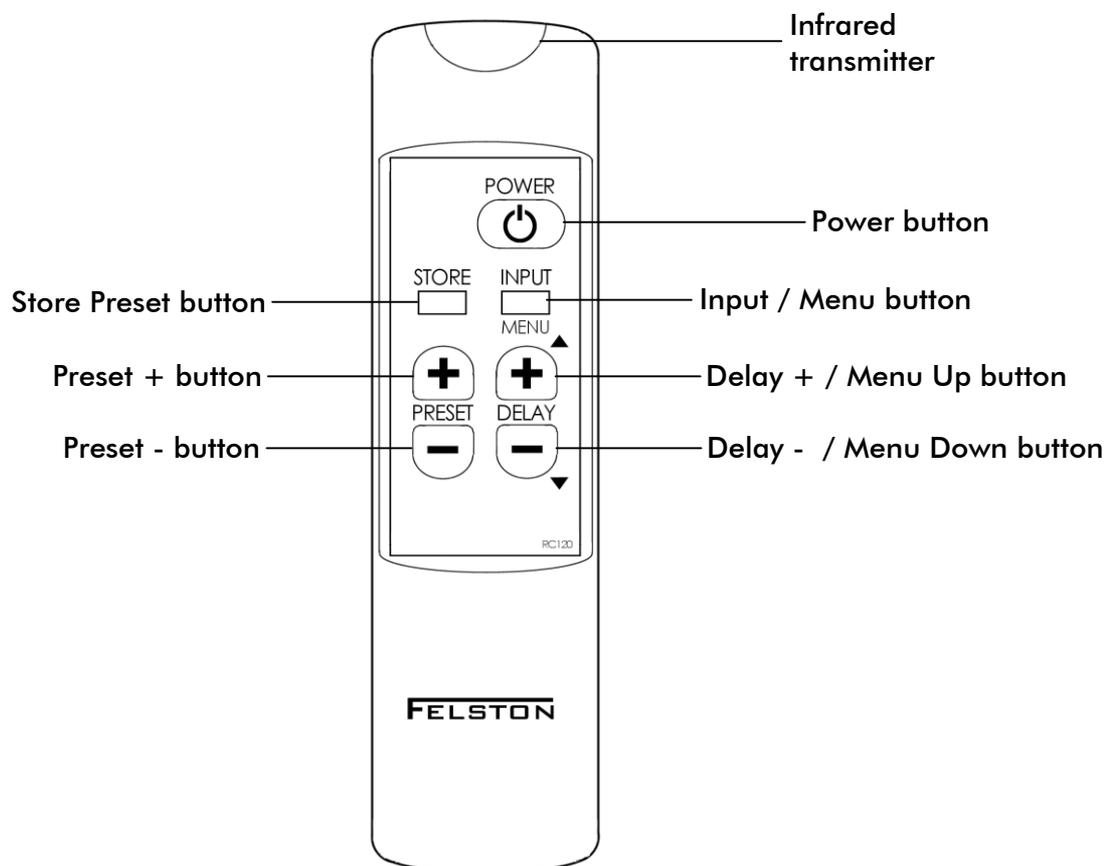
The amount of lip sync error present depends partly on the components in your AV system. In addition, in the case of broadcast television, the error can vary between programs or even across scenes. So it is vital that the amount of delay applied to the audio signal is quick and easy to adjust. The DD540 provides this via its intuitive user interface that is fully accessible from its remote control. Ease of use is further enhanced by features such as automatic input selection, separate delays held for each input, and a set of presets to store the most common delays you require. In all, the DD540 means that lip sync error need no longer disrupt your viewing experience.

# Controls

## Front Panel



## Remote Control



# Getting Started

## Check Package Contents

- DD540 digital audio delay unit
- Power adaptor
- Remote control
- 2 x AAA batteries
- Owner's manual – this document

### **PLEASE KEEP ALL THE ORIGINAL PACKAGING!**

If the unit requires repair it should be returned in its original packaging to ensure protection.

## Install Batteries in Remote Control

1. Carefully slide the battery cover on the back of the remote control downwards until it comes free. Put the cover to one side.
2. Insert the batteries supplied in the directions indicated by the drawings inside the battery compartment.
3. Replace the battery cover.

When you need to replace the batteries in the remote control, use alkaline AAA/MN2400/LR03 1.5V batteries. Do not use rechargeable batteries, as they do not produce the voltage required for the remote control to operate reliably.

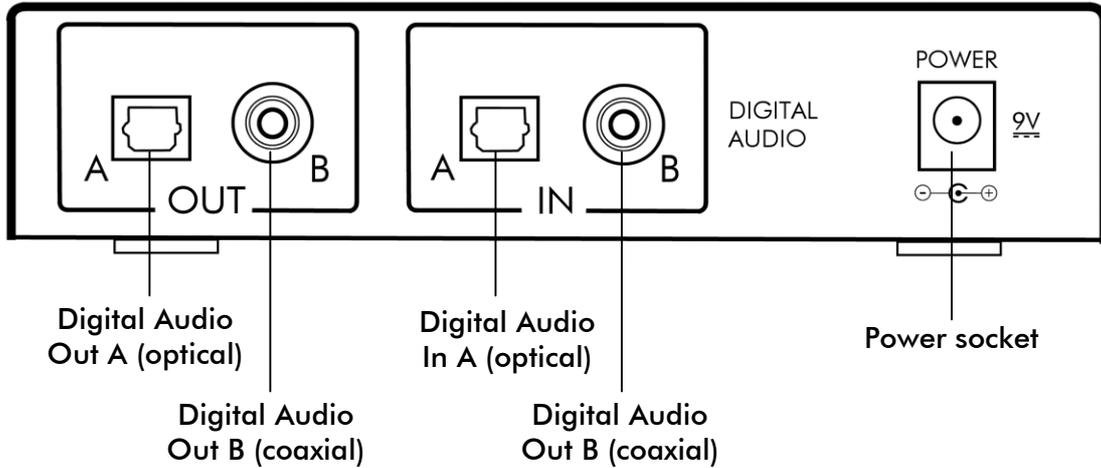
## Integration with Learning Remote Controls

The DD540 includes features to allow extensive integration with your AV system if you use a learning remote control. For more information and related downloads, please visit our website:

<http://www.felston.com/dd540/remotes>

# Connecting the DD540

## Rear Panel

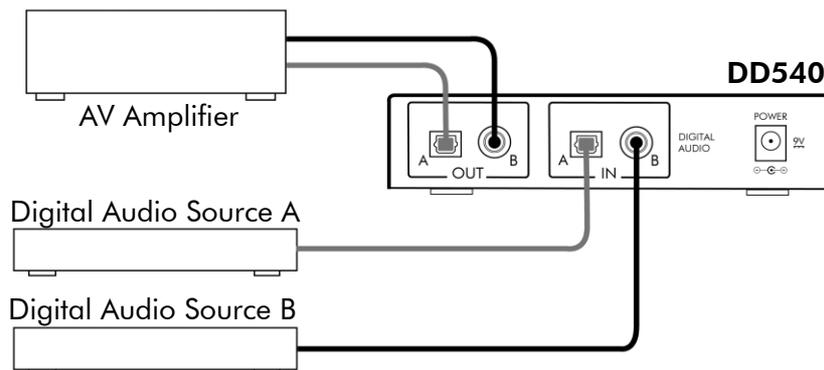


## Typical Connections

The DD540 has two output configurations, giving flexibility when connecting to different types of AV amplifiers. If your amplifier has both optical and coaxial digital audio input sockets available then use output configuration 1. Otherwise, use output configuration 2.

Follow the instructions in the relevant section below.

## Output Configuration 1



## Connections

Connect the digital audio output from the source(s) to the In A and/or In B sockets of the DD540. Use optical or coaxial cable as required. If you are using coaxial cable, take care to connect

to the *digital audio output* of the source – it may be labeled “digital audio”, “SPDIF”, “coax audio” or similar, and should have either an orange- or black-colored insert in its socket.

Next, if you have a source connected to socket In A of the DD540, connect Out A of the DD540 to the AV amplifier’s digital audio input socket that corresponds to that source.

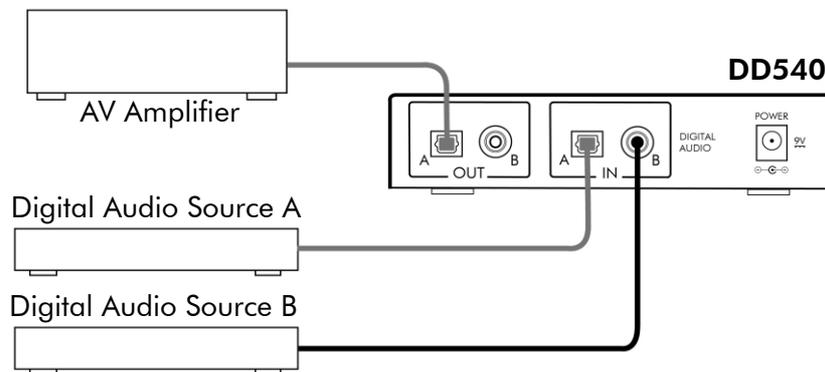
If you have a source connected to socket In B of the DD540, connect Out B of the DD540 to the AV amplifier’s digital audio input socket that corresponds to that source.

## Unit Settings

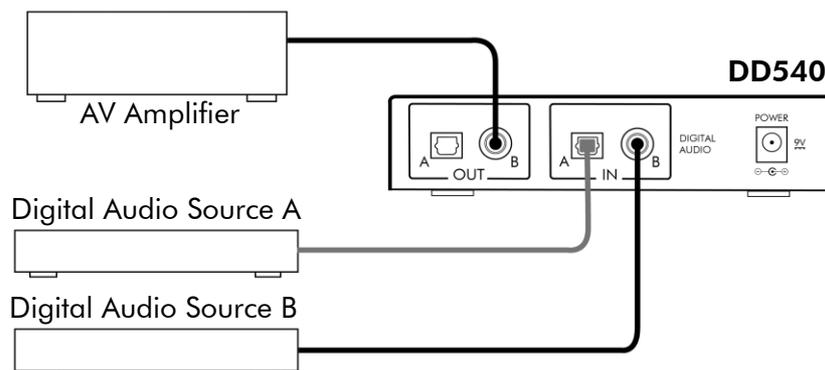
When power is applied to the DD540, the unit’s output configuration is indicated briefly on the display, either **CF1** or **CF2**. Ensure that **CF1** is displayed. If not, change the setting to **CF1** as described in section *Menu Options* on page 13.

## Output Configuration 2

*Example: Connections for AV amplifier with only optical digital audio input*



*Example: Connections for AV amplifier with only coaxial digital audio input*



## Connections

Connect the digital audio output from the source(s) to the In A and/or In B sockets of the DD540 using optical or coaxial cable as required. If you are using coaxial cable, take care to connect to the *digital audio output* socket of the source – it may be labeled “digital audio”, “SPDIF”, “coax audio” or similar, and should have either an orange- or black-colored insert in its socket.

Connect the AV amplifier’s digital audio input socket to either the Out A or Out B socket of the DD540.

## Unit Settings

When power is applied to the DD540, the output configuration is indicated briefly on the display, either **CF1** or **CF2**. Check that **CF2** is displayed. If not, change the setting to **CF2** as described in section *Menu Options* on page 13.

**CF2**

## Power

Whichever output configuration is used, when the connections to the Digital Audio In and Digital Audio Out sockets are complete, plug the power adaptor’s connector into the power socket of the DD540. Finally plug the power adaptor into a wall socket.

When power is connected to the DD540, the display will briefly show **CF1** or **CF2** to indicate that the unit is set for output configuration 1 or 2. After a couple of seconds, the DD540 will enter standby mode.

# Operation

## Standby Mode

Standby mode is indicated by a single light – Input A or Input B – being lit while the rest of the display remains blank. In standby mode, the digital audio signal on the active input passes through the DD540 without any delay applied. The active input is either selected automatically or can be chosen by remote control, without leaving standby mode. See *Selecting the Input* on page 12 for more details.

## Switching the DD540 On

From standby mode, press the **POWER** button (on the front panel or remote control). The unit will switch on and digits will appear on the display. You may return to standby mode at any time by pressing **POWER** again.

## Setting the Amount of Delay

The amount of delay applied is shown on the display. 120

The Delay Active light is lit whenever the current input has a signal present and is being delayed.

The delay can be set to any time between 0 and 680 milliseconds. To increase the amount of delay, press **DELAY +**. By holding down this button, the delay will increase quickly until you release it.

To decrease the amount of delay, use **DELAY -**.

Release the buttons and the new delay will be set. There will be a brief pause in the sound while the new delay is set.

The delay is set independently for both inputs. If the input changes then the delay will revert to the setting that was last used for the new input. This feature is useful where different sources require different delays.

## Selecting the Input

The DD540 outputs the delayed signal (or undelayed signal, if in standby) received on one of its two inputs, In A or In B. The active input is indicated by the Input A and Input B lights – whichever is lit is the active input.

The DD540 is able to detect automatically which of its inputs has a signal present and make it active without any user action. Alternatively, the input may be selected manually; this can be useful if both inputs have a signal present at the same time.

To change input setting, press and release **INPUT/MENU**.

The current setting will appear, either **InA** (Input A), **Inb** (Input B), or **Aut** (Automatic input selection).

*Aut*

To change it, press and release **INPUT/MENU** again until the required setting is reached.

*InA*

The input setting will remain selected until it is next changed, even if power is lost to the DD540. Return the input setting to **Aut** whenever possible for easiest operation.

Note, the input setting may also be changed while in standby mode; again, press and release **INPUT/MENU**.

**Remember to also change input selection on your AV amplifier when the input source to the DD540 changes.**

*(This does not apply if using output configuration 2, where the same input on the AV amplifier is used for both sources.)*

## Presets

The DD540 allows storage of up to 12 frequently used delays for easy recall, 6 for each input. Each of these delays is held in a *preset* – PA1 to PA6 (for Input A) and PB1 to PB6 (for Input B).

Presets are stored and recalled using buttons on the remote control. Presets are retained even if power to the DD540 is lost.

## Storing a Delay in a Preset

1. Set the delay that you wish to store for the active input
2. Press **STORE** on the remote control
3. The most recent preset used with the active input will appear and start flashing
4. Select the preset to hold the delay by using **PRESET +** and **PRESET -** on the remote control
5. Press **STORE** once more

120

PA2

PA3

The preset will stop flashing, indicating that the delay is stored in the preset.

PA3

After a couple of seconds, the delay will reappear on the display.

120

## Recalling a Delay from a Preset

1. Press **PRESET +** or **PRESET -** on the remote control. The most recent preset number for the active input will appear.
2. Use **PRESET +** and **PRESET -** to select the preset you require.
3. Release the buttons. After a couple of seconds, the delay stored in the preset will be displayed.

P64

P65

60

## Menu Options

There are two settings that can be accessed via the DD540's menu: display brightness and output configuration. To enter the menu, *press and hold* **INPUT/MENU** for approximately 5 seconds.

The display will show the current brightness setting. To change this, see below. To skip to output configuration, press and release **INPUT/MENU** again.

br5

## Display Brightness

With the brightness level displayed, change brightness using the **DELAY +/MENU UP** and **DELAY -/MENU DOWN** buttons. Five levels of brightness are available, with br5 being the most intense.

br 3

When the required brightness level is selected, release the buttons for approximately 5 seconds to exit the menu. Alternatively, press and release **INPUT/MENU** to advance to the output configuration setting.

## Output Configuration

The current configuration will be displayed, either CF1 (configuration 1) or CF2 (configuration 2).

CF 1

To change setting, use the **DELAY +/MENU UP** and **DELAY -/MENU DOWN** buttons. Release for approximately 5 seconds to exit the menu and store the setting.

CF 2

The output configuration setting controls which of the Out A and B sockets output the delayed signal (or undelayed if in standby):

**Configuration 1**

Active Input	Output at Out A	Output at Out B
In A	Delayed A	No output
In B	No output	Delayed B

**Configuration 2**

Active Input	Output at Out A	Output at Out B
In A	Delayed A	Delayed A
In B	Delayed B	Delayed B

## Returns and Repairs

If, after checking the *Troubleshooting* section on page 15, you believe there is a fault with the unit then you should contact your dealer. If a return to the dealer is required, be sure to include the unit along with all accessories and documentation, preferably in its original packaging to ensure safe transit.

# Troubleshooting

***No indicator lights are lit and the display is blank.***

Check the power lead is securely plugged into the back of the DD540. Check the power adaptor is plugged into a working, powered wall socket.

***The DD540 is on. It responds to the buttons on its front panel, but there is no response from the remote control.***

Ensure you are pointing the remote control's infrared transmitter squarely at the front of the DD540. Check there is nothing obscuring the display of the DD540. Check the batteries in the remote control are installed correctly; replace them with new ones if required.

***The DD540 is on but there is no sound heard from the AV amplifier.***

Check the digital audio source is operating.

Check the correct input is selected on the DD540. Check the correct input is selected on the AV amplifier.

Check that the cable connections between the source and the DD540, and between the DD540 and the AV amplifier, are secure. Try alternative cables that are known to be working.

Check the DD540's output configuration is correct for the cable connections in place. Refer to *Typical Connections* on page 8 and also *Output Configuration* on page 14.

Does the digital audio signal from the source have a sample rate of more than 96kHz? The DD540 can handle up to 96kHz. If the frequency is higher, reduce the sample rate of the source.

If there is still no remedy after the above approaches, try this test: Disconnect the source from the DD540. Disconnect the AV amplifier from the DD540. Connect the source to the AV amplifier directly using the same sockets that were used with the DD540. If there is no sound, the issue is with the source or AV amplifier. Refer to their documentation for more information.

# Specifications

## Audio Delay Capabilities

- 0 – 680ms in 1ms steps (32 – 48kHz sample rate)
- 0 – 340ms in 1ms steps (96kHz sample rate)
- 12 user-programmable presets (6 per input)

## Digital Audio Signal Compatibility

S/PDIF, Dolby Digital/EX/DTS/ES/PCM with sample rates of: 32kHz, 44.1kHz (CD), 48kHz (standard DVD), 96kHz

## Connections

- Digital Audio In RCA phono socket (75Ω, 0.5Vpk-pk)
- Digital Audio In optical socket
- Digital Audio Out RCA phono socket (75Ω, 0.5Vpk-pk)
- Digital Audio Out optical socket
- DC power supply socket

## Power Requirements

9V DC (+ve center), 300mA from power adaptor supplied

Power adaptor requires 110-120V/230-240V AC, 50/60Hz.  
Refer to specification printed on power adaptor for details.

## Power Consumption

3 Watts

## Dimensions of Main Unit (WxDxH)

Size: 5.7" (145mm) x 4.1" (105mm) x 1.4" (35mm)

Weight: 9.9oz (280g) approx.