

u s e r g u i d e

**Meridian 565 Digital Surround Processor**

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# Introduction

**T**he Meridian 565 Digital Surround Processor is unique in being the first completely digital surround-sound processor, and it defines the standard for both music and cinema performance. To achieve this we have combined the latest techniques in high-precision analogue electronics and digital signal processing with a careful analysis of all types of recorded music. The result is a system that produces impressively realistic and exciting reproduction of music and cinema sound with support for all the current two-channel and multi-channel audio formats. These include PCM, Dolby Digital (AC-3), DTS, and MPEG, as well as support for several proprietary processing modes. MLP (Meridian Lossless Packing) format is also available as an optional extra.

**This *User Guide* explains how to operate the digital surround processor to give the best results from your music and cinema sources.**

**For information about installing and setting up the digital surround processor refer to the accompanying *Meridian 565 Digital Surround Processor Installation Guide*.**

# The Meridian 500 Series

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The 565 Digital Surround Processor is part of the Meridian 500 Series of advanced digital, analogue, and video components designed to meet the demand for absolute quality, ease of use, and lasting value.

The flexibility of the Meridian 500 Series is such that you can assemble a system as simple or as complex as you need, perfectly suited to your requirements, and with the ability to add to it or alter it at a later date should your requirements change.

Each Meridian 500 Series component is housed in a matching slim-line case. Front panel controls provide access to the most important functions, and the full range of functions is available from the Meridian System Remote using a simple and intuitive control interface.

## 500 Series communications

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The Meridian 500 Series includes a sophisticated communications link, to ensure that any configuration of units will work together as a fully integrated system.

The 500 Series communications system allows you to control any combination of units using a single remote, and ensures that your commands from the remote are interpreted unambiguously. The communications system also allows you to extend your hi-fi system into two or three rooms, with the ability to control the sources in one room from the controller in another room.

## Professional features

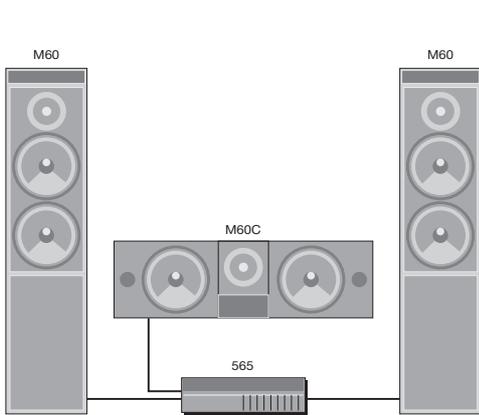
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The 500 Series also includes features for professional users, including RS232 computer control and balanced connections.

The following pages give examples of eight suggested configurations to illustrate the flexibility of the Meridian 500 Series.

# Sample configurations

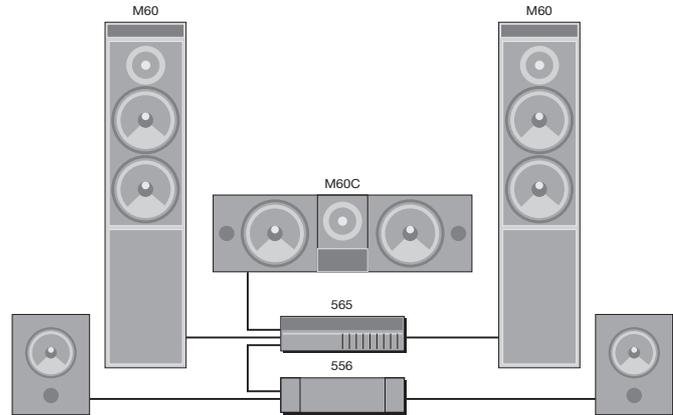
## Three-channel stereo system



The first step you can take in exploring the benefits of surround sound is to add a centre speaker to the left and right speakers of a conventional stereo system. An ideal choice is the Meridian M60C Active Loudspeaker, which can be connected directly to the 565.

The digital surround processor takes advantage of the additional speaker to create a more realistic and stable three-dimensional image of the original recorded sound for outstanding music and cinema reproduction.

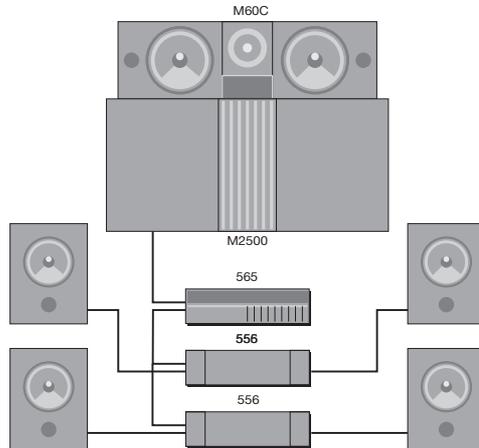
## Five-channel surround system



The next step in creating a surround system for cinema and music reproduction is to add a pair of rear channel surround speakers, to provide cinema effects and add spatial information to music reproduction.

An ideal starting point is a pair of wall-mounting or bookshelf speakers powered by a Meridian 556 Stereo Power Amplifier.

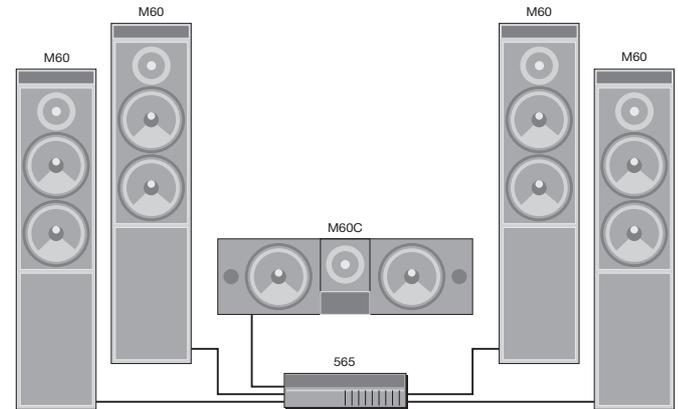
## THX system



A THX system is designed to recreate the original cinema sound in your home. It uses a mono subwoofer to enhance the bass from the main left and right speakers.

If your main speakers have a good bass response you can choose to use the subwoofer only for the cinema presets, for a more natural reproduction of music.

## Meridian Analogue Theatre



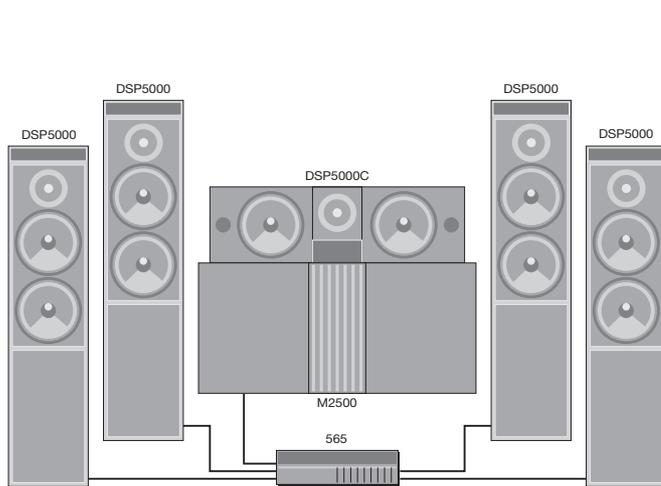
The ultimate analogue surround system consists of two pairs of Meridian M60 Active Loudspeakers, in conjunction with a Meridian M60C Active Loudspeaker. These speakers can be connected directly to the 565 to provide a complete five-speaker surround system.

The 500 Compact Disc Transport provides an ideal addition to the system for music listening.

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## Meridian Digital Theatre™

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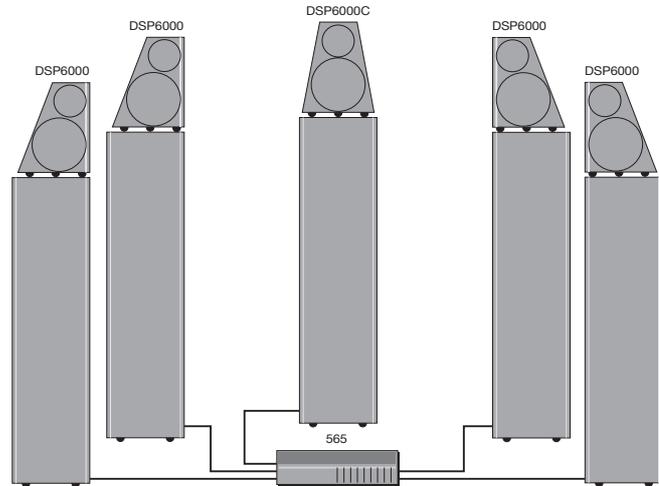
The Meridian Digital Theatre is a completely digital system which provides audiophile-quality surround sound for music and film. Two pairs of DSP5000 Digital Loudspeakers are complemented by a DSP5000C Digital Centre Loudspeaker and an M2500 Active Subwoofer.

A 562 Digital Control Unit can be added to cater for additional analogue and digital sources.

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## Meridian Digital Theatre using DSP6000 Digital Loudspeakers

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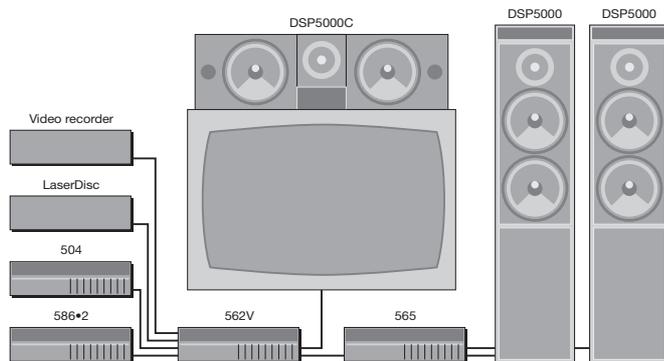
The ultimate Meridian Digital Theatre uses a 565 in conjunction with four or six DSP6000 Digital Loudspeakers and a DSP6000C Digital Centre Loudspeaker.

Each speaker accepts a digital input from the 565, and uses twin digital-signal processors for remarkably distortion-free performance and a breathtakingly realistic sound.

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## A complete multimedia surround system

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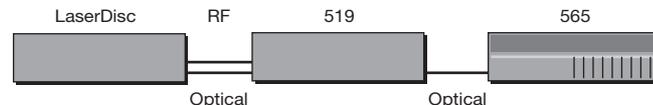
The 562 Digital Control Unit is the ideal control unit for use with the digital surround processor for a complete multimedia system.

It provides direct digital inputs for digital sources, such as the 586 DVD Player and LaserDisc sound, together with precision Delta-Sigma analogue-to-digital conversion, for conventional analogue sources such as the 504 FM Tuner or video sound. It also includes video switching for composite and S-VHS signals, such as from a satellite receiver, LaserDisc player, or video recorder.

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## An AC-3 LaserDisc system

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The digital surround processor can be upgraded to provide fully digital decoding of 5.1 channel AC-3 sources, to give the highest-possible sound quality available, combined with comprehensive support for the flexible AC-3 decoding options and user features.

The Meridian 519 Demodulator converts the AC-3 signal provided on the RF LaserDisc output, and provides an optical output to connect to the digital surround processor. When no AC-3 signal is present it passes the LaserDisc optical output directly to the 565.

The 565 automatically selects an AC-3 preset when an AC-3 signal is present.

# Specification and accessories

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## Specification

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### **Digital inputs**

Cable inputs: 75 $\Omega$ . IEC958 and data compatible.

Optical input: TosLink to EIAJ, IEC958 and data compatible.

### **Analogue input**

Input signal for full digital level: 2Vrms.  
Input impedance: 12k $\Omega$ .

Analogue/digital conversion: 1 stereo 16-bit Delta-Sigma converter running with 64-times oversampling at 44.1kHz.

### **Digital outputs**

Sampling frequency as input for digital input sources: internal conversion 44.1kHz  $\pm$ 50ppm.

Cable outputs 1–8: IEC958, 75 $\Omega$ .

### **Processing**

All digital using twin Motorola digital signal processors running at 60MHz.

7.1 version: Z3 card based on an additional Motorola DSP running at 88MHz.

### **Precision**

Digital input-output up to 22 bits.  
Internal precision maintained using 24- and 48-bit arithmetic.

### **Analogue outputs**

Outputs: 1–8, output voltage variable between 0 and 3.5V rms. Output impedance 47 $\Omega$ .

Digital/analogue conversion: eight 18-bit Delta-Sigma converters.

Distortion: <0.1% input to output up to digital full-scale.

Noise and hum: <-90dBFS.

### **Video input**

75 $\Omega$  composite video (1.5V p-p) NTSC, PAL, SECAM.

### **Video output**

75 $\Omega$  composite video (1.5V p-p).  
Format and signal level: as input.

### **Dimensions**

321mm x 88mm x 332mm  
(12.7" x 3.5" x 13.1") (W x H x D).

### **Weight**

5kg (10lb).

Meridian Audio reserves the right to amend product specifications at any time.

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## Available accessories

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The following accessories are available from your dealer:

- Meridian System Remote.
- Power cord Europe.
- Power cord Canada and USA.

The Meridian System Remote provides access to all the facilities available from the digital surround processor, including those available from the front panel controls. In addition, it allows you to control any other 500 Series units in your system.

If you have problems ordering these items you can order them direct from Meridian Audio Limited, who can also supply a range of cables suitable for connecting the digital surround processor to other equipment.

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## PCM, 7.1, and MLP versions

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The 565 Digital Surround Processor is available in two versions; a PCM version, which decodes Stereo, Trifield, Ambisonic, and Dolby Surround materials, and a 7.1 version, which also supports Dolby Digital (AC-3), DTS, and MPEG. Support for MLP (Meridian Lossless Packing) format is also available as an optional extra.

Each version can be upgraded to a higher version at any time. For more information about obtaining the upgrade please contact your Meridian dealer.

To take advantage of Dolby Digital on LaserDisc you also need the Meridian 519 Demodulator, which converts the LaserDisc RF output to a bitstream which can be fed to the 565. The 519 Demodulator automatically senses the presence of a Dolby Digital signal, and can select the LaserDisc PCM or DTS digital audio output when these are not available.

# DSP presets

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The digital surround processor provides an extremely comprehensive range of options for decoding both analogue and digital audio signals and processing them for multi-channel reproduction.

The digital surround processor provides several digital signal processing options, called DSP presets, and these are designed to provide the best results with a range of different types of music and film material.

In addition to selecting built-in DSP presets, the digital surround processor allows you to create your own presets based on the standard ones. For example, you may want to add more delay to the rear speakers to create a more spacious sound. You can store your modified preset with a name of your choice, and recall it for use at a later date.

This section gives information about each of the built-in DSP presets, and gives recommendations for the best preset to choose for different types of material.

## Multi-channel digital sources

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The 565 Digital Surround Processor supports the three alternative multi-channel digital formats currently available, which encode up to 8 different channels onto a digital signal: Dolby Digital (AC-3), DTS, and MPEG Audio. It also supports Meridian's own MLP format.

### Dolby Digital

Dolby Digital, previously called AC-3, is the preferred sound format for DVD video and is widely used on LaserDisc soundtracks. It is also the audio standard for US digital television.

### DTS

DTS uses a carefully designed audio compression technique to encode five channels of audio onto a digital signal. The DTS format is used to encode multi-channel film soundtracks on LaserDiscs and DVD video discs.

In addition, a high data-rate version of DTS can be used to compress five channels of CD-quality audio into the same space as two channels of unencoded sound, allowing a DTS music CD to provide over an hour of five-channel music, at a quality indistinguishable from conventional CD.

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## **MPEG Surround**

MPEG Surround is the preferred audio format for DVD in PAL territories, and along with Dolby Digital is a contender as the standard for music and performance videos on DVD worldwide. In addition, it is widely available in US satellite broadcasts.

## **THX versions**

THX versions of Dolby Digital, MPEG Surround, and DTS are provided to give a better match between the original soundtrack and typical domestic listening conditions.

## **Music versions**

Music versions of Dolby Digital, MPEG Surround, and DTS are provided with a lower LFE level, to match the bass levels in music CDs.

## **MLP (MLP version only)**

MLP (Meridian Lossless Packing) is the standard format for music on DVD. It allows multiple audio channels, of up to 192kHz 24-bit quality, to be stored on a DVD without losing any information. It can also be used to store four-channel audio on a standard CD without any loss of quality.

## **Multi-channel sources encoded onto two channels**

---

Several systems have been developed for encoding multi-channel sources onto a standard two-channel analogue signal so that they can be reproduced by a conventional stereo system, or decoded with special equipment for multi-channel reproduction. The 565 Digital Surround Processor provides decoding of the two most important of these, Ambisonic and Dolby Surround. Although the channel separation cannot be as good as with the digital multi-channel formats, the 565 produces excellent results with these formats.

## **Pro Logic**

The Pro Logic preset is recommended for decoding Dolby Surround encoded video and LaserDisc soundtracks, and films on television. Such materials are usually identified by a Dolby Surround symbol on the packaging, or displayed on the film before the programme.

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## TV Logic

**TV Logic** provides user-adjustable steering, and is recommended for use with TV broadcasts that are not surround encoded, where **Pro Logic** may give reduced intelligibility.

## THX Cinema

**THX Cinema** enhances **Pro Logic** to replicate the sound of a dubbing stage or theatre, whether or not the other equipment in your system is THX approved.

## Ambisonic

**Ambisonic** decodes material specifically encoded for surround sound reproduction, using a two-channel stereo-compatible encoding. Recordings encoded in Ambisonic format are available on CD from several sources including Nimbus Records and York Ambisonic. Some radio broadcasts are also broadcast in Ambisonic format.

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## Conventional stereo sources

The digital surround processor can also accept a conventional two-channel source, such as music on compact disc or a video soundtrack, and by analysing the information in the signal separate the two-channel recording into multiple channels to give better reproduction and a more stable spatial image.

Four alternative DSP presets are provided for reproducing material originally designed for a conventional stereo pair of speakers, and which preset you choose largely depends on your own personal preferences.

All four presets use similar procedures to extract the surround component of the original recording, which is delivered to the rear surround speakers, and side surround speakers if present.

## Music

**Music** uses a special technique developed by Meridian to divide the sound between the left, right, and centre speakers and give a wide, spacious sound. We recommend this option for large-scale music, such as orchestral and choral music.

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## Trifield

**Trifield** uses a different processing technique to give a stable, three-dimensional image, with the ability to adjust the width of the image. Because of its precision we recommend this option for solo, chamber, or vocal music.

## Super Stereo

**Super Stereo** provides a form of Ambisonic decoding suitable for material that is not specially encoded. We recommend this option for multi-miked or multi-tracked music, such as rock music.

## Music Logic

**Music Logic** provides user-adjustable steering to give an exciting sound with many types of music. We recommend this option for studio-produced music, ie material not produced using natural soundfield recording.

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## Special DSP presets

The digital surround processor also includes the following special DSP presets, for specific applications:

### Mono and Academy

The **Mono** and **Academy** presets are designed for reproducing mono materials through a centre speaker, so that any high-frequency hiss or clicks are centrally localised.

**Mono** is designed for mono recordings, and multi-language LaserDiscs and video soundtracks.

**Academy** is designed for early black and white film soundtracks. It includes equalisation designed to correct for a high-frequency balance in some old black and white films.

### Stereo and Direct

**Stereo** and **Direct** are provided for comparison with the other DSP presets. **Direct** uses just the main left and right speakers for traditional two-speaker stereo reproduction. **Stereo**, in addition, uses any subwoofers in the layout to enhance the bass or to protect small speakers.

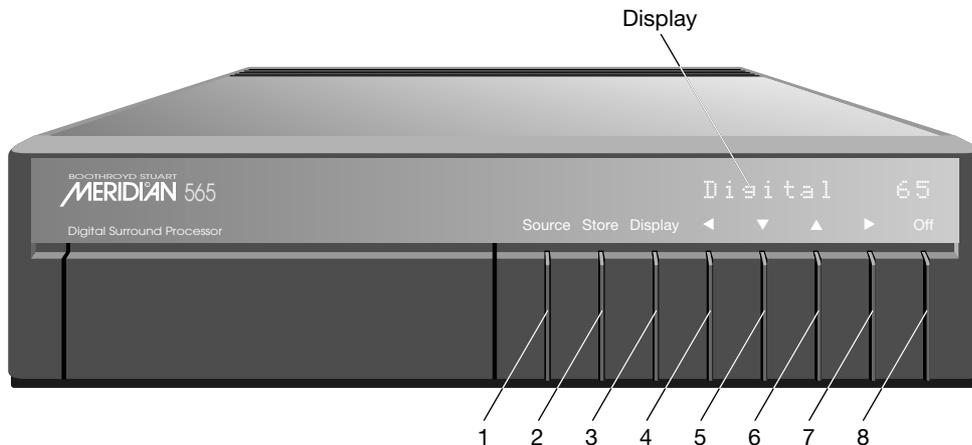
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# Using the digital surround processor

**T**his chapter provides a summary of the functions of the digital surround processor to identify the controls which you use to operate the unit.

It also provides step-by-step instructions for operating the digital surround processor, using either the front panel or the Meridian System Remote.

# Front panel



- 1 Source**  
Selects the source.
- 2 Store**  
Changes the DSP preset selected for a source.
- 3 Display**  
Changes the information displayed on the front panel.
- 4 ◀ (menu left)**  
Selects the previous DSP parameter.
- 5 ▼ (menu down)**  
Decreases the currently-displayed parameter.
- 6 ▲ (menu up)**  
Increases the currently-displayed parameter.
- 7 ▶ (menu right)**  
Selects the next DSP parameter.
- 8 Off**  
Switches to standby.

# Switching on and off

---

When not playing, the digital surround processor should be left in the standby state. This uses a negligible amount of electricity, but ensures that the components of the digital surround processor operate at maximum efficiency from the moment you start.

If you are not going to use the digital surround processor for several days you should switch the unit completely off at the rear panel, and disconnect it from the AC power supply.

## To switch on from standby

---

- Press **Source** (front panel), or select a source by pressing the appropriate source key on the remote; eg **CD**.

If the digital surround processor is part of a Meridian system it will automatically switch on any other unit in the system, such as the CD player and Meridian DSP Loudspeakers.

## To switch to standby

---

- Press **Off** on the front panel or the remote.

The display will show:



If you have other Meridian 500 Series equipment or Meridian DSP Loudspeakers connected to the digital surround processor these units will also switch to standby.

# Selecting a source

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## To select a source

---

- Press **Source** (front panel) until the display shows the source you require, or press the appropriate source key on the remote; eg **CD**.

The display shows the source and volume setting.

For example, if you select the CD source the display will show:



Then after a short delay the display shows the currently selected DSP preset:

For example:



By default the following 12 sources are available:

CD, Radio, LP, TV, Tape 1, Tape 2, CDR, Cable, DVD, VCR1, VCR2, and LDisc.

The input and DSP preset associated with each source depends on how the digital surround processor has been set up; for more information refer to the *Meridian 565 Digital Surround Processor Installation Guide*.

# Adjusting the volume

---

The digital surround processor adjusts the volume in precise steps of 1dB, where 9dB is equivalent to doubling the loudness. The current volume setting is displayed in dB on the front panel display, and can be varied in the range 1 to 99dB. When you first connect power to the digital surround processor the volume is set to 65, which is similar to the mid-way position of the rotary volume control on a conventional preamplifier.

A setting of 87 corresponds to THX reference gain, the level at which film soundtracks are mixed. For normal to high level listening you should expect to use volume levels in the range 60 to 90.

## To change the volume

---

- Press the red ▲ or ▼ keys on the remote.

As you adjust the volume setting the display shows the current volume level.

For example:

A rectangular digital display with a dark background and light-colored text. The word "Music" is on the left and the number "70" is on the right.

## To mute the sound

---

- Press **Mute** (remote).

The display will show:

A rectangular digital display with a dark background and light-colored text. The word "Mute" is centered on the display.

## To restore the sound

---

- Press **Mute** again.

Alternatively, the sound will be restored if you adjust the volume.

# Changing the DSP preset

Each source has a set of DSP presets associated with it, one for each of the alternative audio formats: two-channel (PCM), Dolby Digital, DTS, MPEG, and MLP.

When you choose a source an appropriate DSP preset is selected for the incoming audio format.

For example, if you have selected the CD source and are playing a conventional CD, the **Trifield** DSP preset will initially be selected. You may then wish to choose a different DSP preset, such as **Music** or **Ambisonic**.

You can also change the default DSP preset associated with the source; See *Changing the DSP preset for a source*, page 30.

## To change the DSP preset

- Press **▶** or **◀** until the display shows the current DSP preset; for example:
- Press **▲** or **▼** to step between the different DSP presets.

If you are using a Meridian DSP Loudspeaker, display the current preset by pressing **Function ▶** or **Function ◀**, and change the preset by pressing **Function ▲** or **Function ▼**.

You will be able to choose any of the predefined DSP presets, or any user-defined presets you have stored.

The following table gives the sequence of DSP presets for each audio format, followed where appropriate by the abbreviated name used on the display:

<i>Audio format</i>	<i>Presets</i>
Two-channel (PCM)	Direct, Music, Trifield, Ambisonic (Ambisonic), Super Stereo (Super), Stereo, Music Logic (MusLogic), Pro Logic (ProLogic), THX Cinema (THX), Mono, Academy, TV Logic
Dolby Digital	Dolby Digital (Digital), Dolby Digital THX (Dig THX)
DTS	DTS, DTS THX, DTS Music (DTS Mus)
MPEG	MPEG, MPEG THX, MPEG Music (MPEG Mus)
MLP (MLP version only)	MLP

In each case these will be followed by any user-defined presets you have stored for the appropriate audio format.

# Changing the display

The digital surround processor displays information about the current settings on the twelve-character front panel display. In addition, it can display the same information superimposed on a video image. For more information about setting up the on-screen display refer to the *Meridian 565 Digital Surround Processor Installation Guide*.

## To change the display

- Press **Display**.

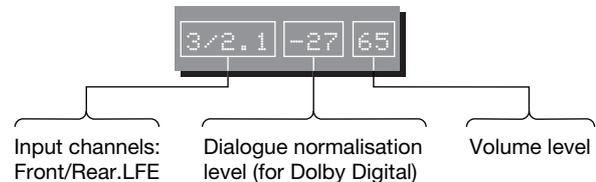
Each time you press **Display** the display will step between the options shown in the table opposite.

In addition, the following symbols on the front panel display indicate which of the DSP processing modes are operating:

<i>Symbol</i>	<i>What it means</i>
	Dolby processing is operating.
	THX processing is operating.

<i>Display option</i>	<i>Example</i>
DSP preset and volume	
DSP preset and THX gain	
Source and volume	
Audio stream	
Blank	

The audio stream display option shows the following three pieces of information about the audio stream:





---

# Customising the digital surround processor

In addition to being able to change the source, volume, and DSP preset, the digital surround processor provides a sophisticated range of more advanced adjustments for each DSP preset, to allow you to tailor the sound.

This chapter explains how to change these parameters, and gives detailed instructions for adjusting the parameters that are common to most of the DSP presets.

For information about the parameters specific to individual presets see *DSP presets*, page 33.

# Locking and unlocking the menus

---

To simplify the normal operation of the digital surround processor, and to protect the settings from accidental changes, you can lock the menus so that the parameters cannot be accessed.

To display or change the DSP presets, or to define your own presets, you first need to unlock the digital surround processor menus.

## To lock the menus

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- Press **Off** to put the 565 in standby.

The display shows:



- Press and hold down **Store** for a few seconds until the display shows:



## To unlock the menus

---

- Repeat the above sequence so that the display shows:



# Changing the DSP parameters

---

Each DSP preset provides a series of parameters that you can vary to customise the behaviour of the preset to your specific requirements. For example, most presets provide **Balance** and **Depth** parameters which alter the characteristics of the sound.

For each of the built-in DSP presets these parameters are set to standard values, designed to give the best sound in typical listening conditions and with most source materials. Each time you select a different DSP preset the parameters are reset to these standard values, even if you have previously altered them.

To save the changes you have made to one or more DSP parameters you can create a new user-defined DSP preset, with a name of your choice. User-defined presets appear in the list of DSP presets after the built-in ones. For more information about doing this see *Defining your own presets*, page 31.

## Standard parameters

---

All DSP presets (except **Mono** and **Direct**) provide the standard parameters shown on the next page.

Individual DSP presets provide additional parameters, to allow you to adjust specific features provided by that preset. For full details refer to *DSP presets*, page 33.

## To change a DSP parameter

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- Make sure the menus are unlocked; see *To unlock the menus*, page 22.
- Press **▶** or **◀** until the display shows the name of the parameter you want to change.

For example:



Treble +1.5

- Press **▲** or **▼** to change the value of the parameter.

As you change the value you will be able to hear the effect on the sound, and the display will show the current value.

After a short delay the display will revert to the normal display of DSP preset and volume.

## Using a Meridian DSP Loudspeaker

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If you are using a Meridian DSP Loudspeaker select the parameter you want to change by pressing **Function ▶** or **Function ◀** on the remote, and change the parameter by pressing **Function ▲** or **Function ▼** on the remote.

# Standard parameters

---

<i>Parameter</i>	<i>Range</i>	<i>Default</i>	<i>What it changes</i>
Treble * †	-10dB to +10dB	+0dB	The slope of the frequency response.
Bass * †	-5dB to +5dB	+0dB	The bass response.
Phase *	+ or -	+	The phase of all loudspeakers.
Balance	<10 to 10>	<0>	The L-R balance.
Centre	-3dB to +3dB	+0dB	The level of the centre.
Depth	-2.5ms to +5ms	+0.0	The relative delay of the centre.
Rear	-30dB to +10dB	+0dB	The relative level of the rears.
Sides	-30dB to +10dB	+0dB	The relative level of the sides.
R Delay	15ms to 30ms	0.0	The relative delay of the rears.
S Delay	15ms to 30ms	0.0	The relative delay of the sides.
LipSync	0ms to 30ms	0.0	The sync. delay.
OSD *	Off, Low, Med, High	Low	The position of the on-screen display.

\* These parameters apply to all DSP presets.

† Note that these parameters appear on the speakers if you are using DSP loudspeakers.

# Changing treble, bass, or phase

---

The digital surround processor provides sophisticated treble and bass controls, to allow you to adjust the broad balance of the system to correct for the acoustics of your listening room, or for a misbalanced recording.

The controls are more subtle than conventional tone controls, and take advantage of digital signal processing techniques to provide a more natural adjustment of the frequency response.

You can also change the absolute phase of the signal, to compensate for recordings which are out of phase.

In each case all the outputs of the digital surround processor are given the same frequency adjustment, to ensure a correct surround effect.

If you have a Meridian DSP Loudspeaker these menus appear on the speaker menus. For more information see the speaker user guide.

## To change the treble

---

- Press ► or ◀ until the display shows the current treble; for example:



Treble +1.5

- Press ▲ or ▼ to change the treble.

The treble control tilts the frequency of the response over the entire frequency range to make the sound brighter or dimmer. It can be adjusted between  $\pm 10\text{dB}$  in 0.5dB steps. Normally settings between +1.0 and -2.0 will give the most natural results.

## To change the bass

---

- Press ► or ◀ until the display shows the current bass setting; for example:



Bass +0.5

The bass control allows you to adjust the bass response in the room by  $\pm 5\text{dB}$  in 0.5dB steps. Normally settings between +3.0 and -2.0 will give the most natural results.

- Press ▲ or ▼ to change the bass.

## To change the absolute phase

---

- Press ► or ◀ until the display shows the current phase; for example:



Phase +

- Press ▲ or ▼ to change the phase.

# Changing the listening position

A conventional stereo system provides a single balance control, which changes the relative loudness of the two speakers. The 565 Digital Surround Processor provides a more sophisticated adjustment which corresponds to moving the listening position to the left or right.

You can also change the level of the centre, side, or rear loudspeakers relative to the main speakers.

## To move the listening position to the left or right

- Press ► or ◀ until the display shows the current balance; for example:



- Press ▲ or ▼ to move the listening position.

The display shows the direction and position of the listening position.

For example:

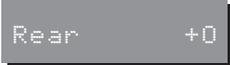


The arrow indicates the direction, and the number indicates the position where 0 is central, 8 is line with corresponding main speaker, and 10 is fully to one side.

Note that this adjustment is not available for the **Mono** or **Academy** presets.

## To change the relative level of the rear or side loudspeakers

- Press ► or ◀ until the display shows the speaker(s) you want to adjust.



For example:

- Press ▲ or ▼ to change the relative level of the speakers, in dB.

You can change the relative loudness of the rear loudspeakers from -30dB (about one-eighth of the loudness) to +10dB (about double the loudness).

For example, to double the loudness of the loudspeakers:

- Adjust their level until the display shows:



Note that this adjustment is not available for the **Direct**, **Stereo**, **Mono**, or **Academy** presets.

# Changing the integration of the centre

---

If you have a centre loudspeaker you can adjust its relative loudness, to provide the best integration of the centre with the main left and right speakers.

You can also adjust the relative delay of the centre speaker to give the best perspective between the three front speakers.

Note that these adjustments are not available for the **Direct**, **Stereo**, **Mono**, or **Academy** presets.

## To change the relative level of the centre speaker

---

- Press ► or ◀ until the display shows the current centre level; for example:

A screenshot of a digital display showing the text "Centre" followed by "+0". The text is in a monospaced font on a dark background.

- Press ▲ or ▼ to change the relative level of the centre speaker.

You can change the relative level by  $\pm 3\text{dB}$ .

## To change the relative delay of the centre speaker

---

- Press ► or ◀ until the display shows the current centre depth; for example:

A screenshot of a digital display showing the text "Depth" followed by "+0.0". The text is in a monospaced font on a dark background.

- Press ▲ or ▼ to change the relative depth of the centre speaker.

You can change the depth between  $-2.5\text{ms}$ , which corresponds to moving the centre speaker  $2\frac{1}{2}$  feet nearer to the listening position, and  $+5\text{ms}$ , which corresponds to moving it 5 feet further away from the listening position.

# Changing the spaciousness of the sound

---

You can adjust the spaciousness of the sound by altering the delay on the rear and side channels.

The **Dolby Digital**, **Music**, **Trifield**, and **Ambisonic** presets allow you to vary these delays down to 0ms.

Note that these adjustments are not available for the **Direct**, **Stereo**, **Mono**, or **Academy** presets.

## To change the relative delay of the rear or side speakers

---

- Press **▶** or **◀** until the display shows the speaker(s) you want to adjust.

For example:



R Delay 15

- Press **▲** or **▼** to change the relative delay of the speakers.

You can change the rear delay between 15ms, which is equivalent to moving the rear speakers 15 feet away, and 30ms, which is equivalent to moving the rear speakers 30 feet away.

If you have side speakers an additional S Delay option allows you to adjust the delay on the side speakers between 15ms and 30ms. Note that for best results you should never set the S Delay to be less than the R Delay.

# Changing the lip sync and on-screen display

## To adjust the lip sync

The LipSync parameter is a unique feature of the digital surround processor which allows you to adjust the delay between the sound and the video image by up to one video frame.

Most movies are mixed for a viewing distance of 30 feet, and when viewed from 12 feet or less the sound arrives too early, giving a disconcerting effect. Using the LipSync parameter you can add an overall delay to the sound to accommodate your closer home viewing distance.

Many TV broadcasts delay the picture by half a frame, and can benefit from a LipSync setting of 12ms.

● Press ► or ◀ until the display shows:

A rectangular on-screen display showing the text "LipSync" followed by the number "0".

● Press ▲ or ▼ to change the delay in milliseconds.

You can adjust the delay between 0 and 30ms, where 30ms corresponds to sitting 30 feet further away from the screen.

## To change the position of the on-screen display

For each DSP preset you can specify the position of the on-screen display (OSD), or blank the on-screen display altogether.

For example, you may prefer to have the on-screen display at the top of the screen when watching videos, but at the bottom of the screen when listening to music.

● Press ► or ◀ until the display shows the current OSD position.

A rectangular on-screen display showing the text "OSD" followed by the word "Low".

For example:

● Press ▲ or ▼ to change the position.

You can choose between Off, Low, Med, or High.

# Changing the DSP preset for a source

Each source has an appropriate DSP preset associated with it for each music format. For example, for a standard stereo (PCM) signal the CD source uses **Trifield** and the TV source uses **TV Logic**.

This section explains how to change the DSP preset associated with any source.

## To change the DSP preset for a source

- Make sure the menus are unlocked; see *To unlock the menus*, page 22.
- Select the source you want to change, by pressing the **Source** key on the front panel or the appropriate source button on the remote; eg **CD**.
- If necessary, select a signal in the appropriate format. For example, to change the DSP preset used for DTS compact discs, play a DTS CD.
- Press **▶** or **◀** to display the DSP preset currently associated with that source.

For example:



Music

- Press **▲** or **▼** until the display shows the new DSP preset you want to store.

For example:



Trifield

- Press **Store** to save the new association.

The display shows the source and preset you have stored; for example:



CD=Trifield

After a short delay the display will revert to the normal display of DSP preset and volume.

# Defining your own presets

---

The 565 Digital Surround Processor allows you to design up to 16 DSP presets of your own and save them permanently, with names of your choice, so you can use them alongside the built-in DSP presets.

## To save the preset settings

---

- Make sure the menus are unlocked; see *To unlock the menus*, page 22.
- Press ► or ◀ until the DSP preset associated with the current source is displayed.
- Press ▲ or ▼ to select the preset you want to modify.
- Change the preset parameters to the values you want to store; see *To change a DSP parameter*, page 23.
- Press **Store** twice.

The display shows the next available user-defined preset.

For example:



User 5

- If you want to overwrite an existing user-defined preset press ▲ or ▼ to select the preset you want to overwrite.

For example:



Football

- Press **Store**.

The settings are stored in the new or existing preset you selected.

You can now edit the name of the preset if you wish.

A flashing cursor shows the letter you are editing:



User 5

If you have an on-screen display it shows:



- Press **▶** or **◀** to select the character position you want to edit.
- Press **▲** or **▼** to change the character.

Each press steps through the sequence A to Z, a to z, 0 to 9, full stop, and blank.

You can also select a blank directly by pressing **Clear** on the remote, or **Function Clear** if you are using a Meridian DSP Loudspeaker.

For example, you could change the name to:

- When you have entered the name you want to use press **Store**.

The display shows:

## To clear a user-defined preset

- Make sure the menus are unlocked; see *To unlock the menus*, page 22.
- Press **▶** or **◀** until the DSP preset associated with the current source is displayed.
- Press **▲** or **▼** to select the preset you want to clear.
- Press and hold down **Clear** (remote) for several seconds.

The display shows:

---

# DSP presets

**T**his chapter gives technical information about each of the DSP presets built in to the digital surround processor.

It explains the processing performed by each DSP preset, and gives details of the types of material you should use with each preset.

It also gives details of the special DSP parameters available for each preset.

# Logic DSP presets

---

The digital surround processor provides five DSP presets specifically designed for reproducing stereo film soundtracks. Three of these presets, **Pro Logic**, **THX Cinema**, and **TV Logic**, are designed for Dolby Surround encoded material. Most films, and many TV programmes and series, are encoded using Dolby Surround, and it is increasingly being used to encode music.

The 565 Digital Surround Processor follows the Meridian philosophy of performing all the signal processing digitally, and the Dolby Surround decoding operates purely in a digital mode. This gives it a far higher performance and a better subjective sound than other analogue-based decoders.

The remaining two Logic presets, **Mono** and **Academy**, are designed for films with mono soundtracks.

## Pro Logic

---

Dolby Surround is an encoding system based on a phase-amplitude matrix whose output can be decoded by a very simple passive matrix. Such a decoder gives quite a poor separation.

The Pro Logic system uses psychoacoustically optimised directional enhancement to increase the separation in both left-right and front-back directions. It does this by continuously calculating the position and degree of the currently-dominant sound. This sound is then steered to a greater or lesser extent to that position in the arriving sound. This technique is very successful for cinema and other dramatic programmes.

Further refinements in the Pro Logic decoder include the filtering and delay of the rear surround signal to reduce any tendency for the surround signals to divert attention or become dominant. The Pro Logic decoder also uses a modified digital Dolby noise-reduction process in the surround signal. Since Dolby Surround material is encoded with this in mind the noise-reduction is permanently operating in this mode.

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## THX Cinema

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The **THX Cinema** DSP preset provides Pro Logic decoding, followed by additional signal processing refinements developed by Lucasfilm Ltd.

The THX extensions to Pro Logic decoding are designed to provide a better match between the sound of the movie theatre and a home cinema in the following ways:

- The front channels are re-equalised to correct for the higher treble often found in film soundtracks.
- The surround channels are frequency-corrected using a timbre-matching process so that sounds moving front-back are more convincing.
- The surround channels are decorrelated to break up any artificial localisation of the rear signals due to the speakers being nearby. In the 561 Digital Surround Controller this decorrelation is optimised to give spacious surround sound that has no artefacts disturbing to music or other sensitive sounds in the mix.
- The time synchronisation between loudspeakers is adjusted to compensate for the fact that the speakers in a home system tend to be a lot closer to the listener than in a movie theatre.

THX can also be used with the 5.1 Movie DSP presets; see *Dolby Digital THX, DTS THX, and MPEG THX*, page 42.

## Pro Logic and THX Cinema DSP preset parameters

---

<i>Parameter</i>	<i>Options</i>	<i>What it changes</i>
Mono Rear	Steered Rear, Steered Side, Steered All, Mono All, Mono Rear, Mono Side	Which of the surround channels are generated by steering. Mono gives conventional Pro Logic surrounds. Steered gives stereo surrounds.

## TV Logic

---

**TV Logic** is a logic preset, with user-adjustable steering, that can give higher intelligibility and a more appropriate spatial presentation for studio-based TV material.

---

## TV Logic DSP preset parameters

---

<i>Parameter</i>	<i>Options</i>	<i>What it changes</i>
Roll	Off, Low, Med, High	The degree of left-right steering.
Yaw	Off, Low, Med, High	The degree of front-rear steering.
Mono Rear	Steered Rear, Steered Side, Steered All, Mono All, Mono Rear, Mono Side	Which of the surround channels are generated by steering.

---

## Mono and Academy

---

In the **Mono** and **Academy** DSP presets you can choose to listen to:

- Only one of two input channels, for use when different languages or material are carried on each channel.
- A combined version of the two input channels, for use if the material was originally mono and has been conveyed on a two-channel carrier.

If there is a centre speaker, the combined or selected signal is played only through this to centrally localise high-frequency hiss and clicks.

The **Academy** DSP preset includes an equalisation (recommended by Lucasfilm Ltd) to correct for a high-frequency balance in some old mono films.

---

## Mono and Academy DSP preset parameters

---

<i>Parameter</i>	<i>Options</i>	<i>What it changes</i>
Input	Auto L+R, Left, Right, L+R	The channel selected.

# Music DSP presets

---

The digital surround processor provides seven alternative music DSP presets designed for the reproduction of well recorded material, originally intended for replay over a traditional stereo pair of loudspeakers.

In addition, it provides DSP presets for reproducing music in the digitally encoded DTS, MPEG, and MLP formats.

<i>Audio format</i>	<i>Presets</i>
Conventional stereo (PCM)	Direct, Music, Trifield, Ambisonic, Super Stereo, Stereo, Music Logic
DTS	DTS Music
MPEG	MPEG Music
MLP (Meridian Lossless Packing)	MLP

## Music

---

The **Music** DSP preset extracts the mono and surround components of the original recording. These components provide an alternative representation of the original sound, and this representation is sometimes used for recording systems or in broadcasts such as FM radio.

The mono element is equalised using a proprietary Meridian technique to match the tone colour of the centre speaker, and to compensate for the fact that the frequency response of human hearing changes with direction.

The **Music** DSP preset is recommended for recordings made with spaced omnidirectional microphones, or using a mono-surround technique.

## Trifield

---

As for the **Music** DSP preset, the **Trifield** preset extracts the mono and surround components of the original recording. It then calculates the signals for the front left, centre, and right speakers, using the phase and amplitude differences between the three front channels, to redistribute the sounds on a frequency-dependent basis.

---

This gives a significant improvement over traditional stereo, which converts the differences between the microphone signals into amplitude differences in the speaker signals. This version of the Trifield algorithm is virtually impossible to implement without digital signal processing.

**Trifield** is recommended for well-made recordings and stereo television broadcasts that are not Dolby Surround encoded. An advantage over the **Music** DSP preset is that the front stereo image is more focused, and the width of the image can be adjusted.

## Music and Trifield DSP preset parameters

---

<i>Parameter</i>	<i>Options</i>	<i>What it changes</i>
Centre	Flat, EQ1–3	The timbre of the centre loudspeaker.
Width *	0–1.5	The width of the image.
Surr. Rear	Surr. Rear, Surr. Side, Surr. All	Switches the surround signal between the side and rear speakers.
R Filter	Off, 1kHz, 3kHz, 7kHz	The cutoff of high frequencies from the rear surrounds.
S Filter	Off, 1kHz, 3kHz, 7kHz	The cutoff of high frequencies from the side surrounds.

\* **Trifield** only.

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## Ambisonic

---

The **Ambisonic** DSP preset is designed for replaying material encoded in UHJ format, the two-channel stereo-compatible encoding found on Ambisonically-recorded discs and broadcasts. This material is specifically encoded for surround reproduction and can give breathtakingly realistic sound when replayed using the digital surround processor.

Ambisonic surround sound is quite unlike conventional stereo. A special microphone technique picks up the sound of the original performance in all three dimensions, allowing an archive to be made which describes the sound field exactly at that position. The microphone signals are then encoded using a phase-amplitude matrix to allow the effect to be conveyed on two-channel carriers (like FM radio, LP, or CD).

The digital surround processor uses accurately matched, frequency-dependent, phase-amplitude matrices to decode the signal and construct the signals for each speaker feed.

The fundamental difference between Ambisonic surround sound and conventional stereo is that the signals from all the speakers combine to produce a coherent sound field at the listening position, giving the illusion that you are sitting inside the

recording space whether you are at the exact central seat or well off to one side.

Of all the signal-processing options, **Ambisonic** is the one that requires the greatest attention to speaker choice and positioning.

---

## Super Stereo

---

**Super Stereo** synthesises a signal from a conventional stereo recording or broadcast so that it can be decoded using the Ambisonic decoder. The result is especially effective for two particular types of recordings:

- Those using true coincident microphone techniques.
- Multi-tracked or multi-miked recordings.

---

## Ambisonic and Super Stereo DSP preset parameters

---

<i>Parameter</i>	<i>Options</i>	<i>What it changes</i>
Width *	0 to 1	The width of the image.
Position †	A, C, E, G, I, K, M	The seating position; the letters are like rows in a hall.
5 Channels	7, 6, 5, 4	The number of speakers.
R Filter	Off, 3kHz, 7kHz, 9kHz	The cutoff of high frequencies from the rear surrounds.
S Filter	Off, 3kHz, 7kHz, 9kHz	The cutoff of high frequencies from the side surrounds.

\* **Super Stereo** only.

† **Ambisonic** only.

---

## Music Logic

---

**Music Logic** is a music DSP preset with user-adjustable steering, designed to provide an exciting experience with many types of studio-produced music.

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## Music Logic DSP preset parameters

---

<i>Parameter</i>	<i>Options</i>	<i>What it changes</i>
Roll	Off, Low, Med, High	The degree of left-right steering.
Yaw	Off, Low, Med, High	The degree of front-rear steering.
Mono Rear	Steered Rear, Steered Side, Steered All, Mono All, Mono Rear, Mono Side	Which of the surround channels are generated by steering.

---

## DTS Music

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**DTS Music** is a special version of the **DTS** preset designed with a lower LFE level of -10dB to match the bass levels applied to DTS music CDs.

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## MPEG Music

---

**MPEG Music** is a special version of the **MPEG** preset designed for listening to MPEG encoded music CDs.

## Stereo and Direct

---

The **Stereo** preset passes the left and right input signals directly to the left and right main speakers. Any mono or front left and right subwoofers continue to be used.

With the **Direct** preset only the left and right main speakers are used.

There are no special DSP preset parameters.

## MLP (MLP version only)

---

**MLP** (Meridian Lossless Packing) is an audio format that increases the amount of information that can be recorded on a CD or DVD, without any loss of quality.

For details of the **DTS Music**, **MPEG Music**, and **MLP** DSP preset parameters see *5.1 Movie DSP preset parameters*, page 43.

## 5.1 Movie DSP presets

---

The discrete digital formats can encode up to eight separate channels, which can be decoded to provide separate signals to the eight speakers in a surround configuration.

### Dolby Digital

---

Dolby Digital is a totally digital format capable of encoding five full frequency-range channels, together with one restricted frequency-range channel used for extreme bass.

The digital surround processor's **Dolby Digital** preset is capable of decoding the range of different options provided by Dolby Digital. In addition, it provides bass power management to protect systems from the potentially high bass levels that Dolby Digital can produce.

### DTS

---

DTS is unusual among the compressed surround formats in that it can deliver high quality music at high bit rates.

CDs and LaserDiscs are currently available which provide a DTS signal in place of the normal digital audio. DVD may also feature DTS soundtracks.

### MPEG

---

MPEG surround is the preferred audio format for DVD in PAL territories.

### Dolby Digital THX, DTS THX, and MPEG THX

---

As with the standard **THX Cinema** DSP preset, **Dolby Digital THX**, **DTS THX**, and **MPEG THX** re-equalise the signals to suit domestic listening conditions, and apply frequency-response correction and decorrelation to the surround channels to make the surround sound more realistic, and can be used whether or not your other equipment is THX approved.

---

## 5.1 Movie DSP preset parameters

---

<i>Parameter</i>	<i>Options</i>	<i>What it changes</i>
Surr. Rear	Surr. Rear, Surr. Side, Surr. All	Switches the surround signal between the side and rear speakers.
LFE	0 to -30dB	The relative level of the LFE bass channel.
Max SPL *	105 to 120dB SPL	The peak-level limit for an LFE subwoofer.
Limit *	-15 to -5dBFS	The peak-level limit of the total bass signal added to the main speakers.
Compress †	Off, Low, Med, Top, Max, Mix	The dynamic range control; see opposite.

\* See *Using peak-level limiting*, page 44.

† **Dolby Digital** and **Dolby Digital THX** only.

---

## Using dynamic range control

---

Because Dolby Digital is a digital format it allows dynamic range control without the distortion involved in analogue methods. The **Compress** parameter can be set to one of the following options:

<i>Option</i>	<i>Description</i>
Off	No compression.
Low	Provides moderate bottom-up compression. This raises quiet sounds above the background noise, which is ideal for demonstration and quiet listening.
Med	Provides moderate amounts of both bottom-up and top-down compression.
Top	Provides a moderate amount of top-down compression. This reduces loud sounds.
Max	Provides full bottom-up and top-down compression. Quiet sounds are raised to be audible and loud passages are minimised to avoid disturbance, which is useful for late-night listening.
Mix	Bypasses dialogue normalisation and references the sound pressure level in the studio where the material was mixed.

---

## Using peak-level limiting

---

The **Max SPL** or **Limit** parameters allow you to set up peak-level limiting for bass signals, and the setting applies to all the discrete digital DSP presets.

If your loudspeaker layout includes one or more subwoofers the parameter is named **Max SPL**, and it sets the peak-level limit for the LFE channel.

If your loudspeaker layout contains no subwoofer the parameter is named **Limit**, and it sets the peak-level limit of the bass signal added to the main loudspeakers. For loudspeaker layouts using Meridian DSP loudspeakers as the main left and right, or centre speakers, the **Limit** value is fixed at -11dBFS and the parameter does not appear in the menu.

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# **Service and guarantee**

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## Service

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The Meridian 500 Series of hi-fi components have been carefully designed to give years of untroubled service. There are no user-serviceable parts inside the case, nor do the units require any form of maintenance.

In the unlikely event that your 565 fails to function correctly, it should be returned, in its original packaging, to your Meridian dealer.

In case of difficulty within the UK or USA please contact the appropriate sales and service address shown on page ii.

In case of difficulty outside the UK or USA, contact the importing agent for the territory. A list of Meridian agents abroad is available from Meridian Audio.

No responsibility can be accepted for the 565 whilst in transit to the factory or an agent, and customers are therefore advised to insure the unit. When seeking service under guarantee, proof of the date of purchase will be required.

## Guarantee

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The 565 Digital Surround Processor is guaranteed against defects in material and workmanship for 2 years from the date of purchase.

The guarantee is void if the 565 Digital Surround Processor has been subject to misuse, accident, or negligence, or has been tampered with or modified in any way without the written authorisation of Meridian Audio Limited. Note that connecting anything other than the correct network lead to the COMMS sockets may cause damage to the 565 Digital Surround Processor which will not be covered by this guarantee. Attempted servicing by unauthorised people may also invalidate this guarantee. Labour and carriage charges are not covered unless by local agreement.

Outside the UK, local warranty liability is restricted to equipment purchased within the territory. Our agents abroad are only under contractual obligation to service under guarantee equipment sold through them. They are entitled to make a non-refundable charge for any service carried out on other equipment.

This guarantee does not limit your statutory rights within the United Kingdom.

# Glossary

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## Absolute phase

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A control which changes the phase of the signals to all the speakers.

## AC-3

---

An alternative name for the Dolby Digital format.

## Ambisonic

---

A music encoding and decoding system designed to recreate the original soundfield using an array of loudspeakers.

## Aspect ratio

---

The overall shape of the speaker layout.

## Compress

---

A DSP parameter providing dynamic range control for Dolby Digital sources.

## Controller

---

The product in a Meridian system that uses the infra-red signals from the remote to control the system. The controller is normally chosen automatically, but the installer can override this.

## Dolby Digital

---

A digital surround-sound which provides five full-frequency range channels (left, centre, right, left surround, and right surround) and an additional Low Frequency Effects (LFE) channel which is band limited to 120Hz.

## Dolby Surround

---

The encoding system used for the majority of movies on video and many TV broadcasts. Dolby Surround encoded material can be replayed with a surround decoder connected to an array of loudspeakers which normally include at least left, centre, right, and rear surround.

## DTS

---

Digital Theatre Systems originally produced digital audio tracks for motion pictures. A version of this format adapted for consumer video and audio products is referred to as DTS Entertainment. Like Dolby Digital it provides five full-frequency range channels (left, centre, right, left surround, and right surround) and an additional Low Frequency Effects (LFE) channel.

## DVD

---

Digital Video Disc or Digital Versatile Disc, a CD-sized disc with nearly 30 times the storage capacity of CD. It is capable of storing digital video, high-quality multi-channel audio, or computer data.

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## Layout

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Refers to a particular arrangement of speakers and subwoofers. You can select different layouts for the cinema, music, and 5.1 DSP presets.

## LFE

---

The Low Frequency Effects (LFE) channel which enhances movie soundtracks with sound effects and ambient sounds. It is band limited to 120Hz in a Dolby Digital system.

## LFE sub

---

A subwoofer which, in addition to any bass which it handles from the main channels, plays the full 120Hz bandwidth LFE signal in Dolby Digital, DTS, and MPEG presets.

## Limit

---

A DSP parameter that sets the peak-level limit of the bass signal added to the main loudspeakers.

## Max SPL

---

A DSP parameter that sets the peak-level limit for the LFE channel.

## Menus

---

The flexible system for choosing options and configuring settings in Meridian products. On the 565 the menus are controlled by the ◀, ▶, ▲, and ▼ keys on the front panel or the MSR.

## MLP

---

MLP (Meridian Lossless Packing) is an audio format that increases the amount of information that can be recorded on a CD or DVD, without any loss of quality.

## Mono sub

---

A subwoofer which handles all the bass for the system. A THX standard subwoofer has a crossover at 80Hz.

## Mono surrounds

---

Surrounds which have a common signal steered to them. This may then be decorrelated by the THX process to give more spaciousness.

## MPEG

---

MPEG Surround is a digital encoding system developed by the Motion Picture Expert Group. Like Dolby Digital it provides five full-frequency range channels and an additional Low Frequency Effects (LFE) channel.

## MSR

---

The Meridian System Remote, or handset.

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## OSD

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On-Screen Display, which the 565 can superimpose on a composite video signal to give information about the state of the system, and to help during configuration.

## PCM

---

Pulse Code Modulation, the method used to encode music digitally, as used on audio CDs.

## Preset

---

A DSP decoding option in the 565. You can create user-defined presets based on the built-in presets, and with specific parameter values; see *Defining your own presets*, page 31.

## Source

---

An input to the system, such as CD or TV. The Meridian 500 and 800 Series provide 12 named sources, corresponding to the names of the 12 source keys on the MSR. In the 565 you can choose the logo displayed for each source, and the input used for it.

## SPL

---

Sound Pressure Level, a physical measurement of the level of sound at a particular location which can be obtained using an SPL meter.

## Steered surrounds

---

Surrounds which have individual signals steered to them by the digital surround processor's steering matrix.

## Surround

---

A sound reproducing system with more than two loudspeakers, and usually with speakers behind or to the side of the listener.

## THX

---

Additional processing that follows Dolby Pro Logic Surround decoding to give a more faithful reproduction of cinema sound in the home.

## Trifield

---

A music decoding system designed to extract centre and surround signals from a conventional two-channel stereo source.

---

## Type

---

A standard configuration of the digital surround processor. Selecting a Type resets any configuration and calibration changes.

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