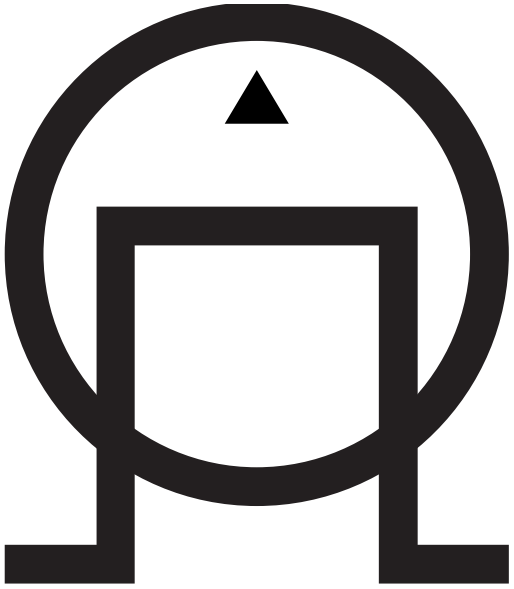

PRIMARE

SP31.7 Multi-Channel Processor User Guide

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Issue: SP31.7/2

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FCC Warning: This equipment generates and can radiate radio frequency energy and if not installed and used correctly in accordance with our instructions may cause interference to radio communications or radio and television reception. It has been type-tested and complies with the limits set out in Subpart J, Part 15 of FCC rules for a Class B computing device. These limits are intended to provide reasonable protection against such interference in home installations.

EEC: This product has been designed and type-tested to comply with the limits set out in EN55013 and EN55020.

This guide was produced by Human-Computer Interface Ltd, http://www.interface.co.uk

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Saving the configuration

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Introduction

Welcome to the Primare SP31.7 Multi-Channel Processor! This chapter introduces you to its key features, and explains how you can take advantage of its configurability to create a system perfectly suited to your requirements.

WELCOME TO THE SP31.7 MULTI-CHANNEL PROCESSOR

The SP31.7 provides a comprehensive range of features to make it ideal as the heart of an unparalleled music or home entertainment system:

Exceptional processing performance
The SP31.7 uses proprietary DSP circuitry developed by Primare, providing better analog performance than the current off-the-shelf circuits used in many other surround processors, resulting in a very high standard of multi-channel audio reproduction. The SP31.7 provides up to 192kHz/ 24 bit processing to accommodate all the current multi-channel audio formats and allow for expansion as new formats are introduced.

Flexible range of inputs
The SP31.7 provides a range of inputs flexible enough to cater for virtually any combination of sources including: seven analog RCA inputs, one analog XLR input, five coaxial digital inputs, two TOSlink optical digital inputs, and one AES/EBU digital input.

Video switching
The SP31.7 provides two component video inputs, three S-Video inputs and four composite video inputs, allowing you to switch up to nine audio-visual sources.

Digital Surround Processing
The SP31.7 can decode multi-channel sources encoded in the Dolby Pro Logic, Dolby Digital (AC-3), or DTS formats to provide eight discrete output channels for up to eight loudspeakers in a surround system. The SP31.7 provides a wide range of processing options to allow you to choose the ideal mode for each type of material, including Dolby Pro Logic II, an improved version of Dolby Pro Logic, and several new processing modes designed to provide superb results with eight-channel systems from Dolby Digital and DTS encoded materials.

Multi-channel analog input
In addition to decoding encoded multi-channel sources, the SP31.7 provides a discrete eight-channel analog input for a DVD audio or SACD player that provides a multi-channel output.

Full configurability
The SP31.7 is fully configurable from either the front panel or remote control, using a simple set of on-screen menus, to allow you to set it up with the exact combination of sources and outputs that you want to use for your own system. The SP31.7 is supplied already set up with a standard set of sources, designed to cater for the most usual combination of inputs and outputs in a typical system, but you can modify these or define your own sources with total flexibility.

Intuitive user interface
In keeping with the philosophy of the Primare range of systems, the SP31.7's powerful range of features can be controlled through a very simple and intuitive interface, designed so that it will not distract you from the pleasure of listening to music or watching movies on your system.

In fact almost all the features of the SP31.7 can be accessed through just two front panel controls and four push buttons; alternatively the same degree of control is provided through the C31 Remote Control supplied with the SP31.7.

Easy to set up

The SP31.7 is also exceptionally easy to set up for a perfectly balanced surround sound. Simply plug a microphone into the appropriate SP31.7 input, and position it at the listening position. The built-in calibration test will then balance the level of each output to give a correct sound image for your system and the room you are listening in.

USING THE SP31.7 WITH OTHER PRIMARE PRODUCTS

Although the SP31.7 is flexible enough to work with virtually any other equipment you have in your system, it is ideal for use with the other products in the Primare range, including the Primare A30.5 Multi-Channel Amplifier and the Primare V25 DVD Player. A particular benefit of using the SP31.7 with the Primare DVD Player is that you can control both units with the single remote control, to give you a fully integrated system with the simplest possible user interface.

TECHNICAL SPECIFICATION

General	
Analog inputs	1 XLR, 7 RCA (left and right).
Digital inputs	1 AES/EBU, 5 RCA, 2 TOSlink.
Video inputs	4 composite, 3 S-Video, 2 component.
Balanced analog outputs	Front (left and right).
Analog outputs	Front (left and right), center, subwoofer, surround (left and right), surround back (left and right).
Analog record output	2 RCA (left and right).
Digital outputs	1 TOSlink, 1 RCA.
Video outputs	2 composite, 2 S-Video, 1 component.

General *(continued)*	
Modes	Dolby Pro Logic Dolby Pro Logic II Dolby Digital 5.1 Dolby Digital Surround EX 6.1 Dolby Digital Matrix 6.1 DTS Neo:6 DTS 5.1 DTS ES 6.1 DTS ES 6.1 Discrete Surround EX 7.1
Video	NTSC/PAL, component, S-Video, and composite.
Analog data	
Bandwidth	1Hz – 100kHz, 1dB
THD	<0.005%, 20Hz – 20kHz
Signal-to-noise	-110dB
Frequency response	<10Hz – 100kHz, -1dB
Input impedance	15kΩ unbalanced, 10kΩ balanced
Output impedance	50Ω
Digital data	
Frequency response	20Hz – 20kHz, ± 2dB
THD+noise	0.005% @ 1kHz
Dimensions (WxDxH)	430 x 385 x 100mm
Weight	10kg

Using the SP31.7 Multi-Channel Processor

This chapter explains how to operate the SP31.7 Multi-Channel Processor, using either the front panel controls or the direct remote control commands.

FRONT PANEL CONTROLS

Almost all the functions of the SP31.7 Multi-Channel Processor can be accessed using the two front panel controls and four push buttons, and information about its operation is displayed on the front panel display:

(A) The **INPUT SELECTOR** selects an input, or operates the on-screen menus.

(B) The **MENU** button selects the on-screen menus.

(C) The **SELECT** button selects the current menu option.

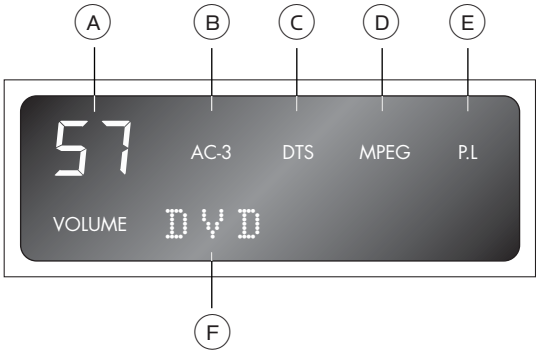
(D) The **LEVEL** button selects which setting you change with the **VOLUME** control.

(E) The **STANDBY** button switches the SP31.7 to standby.

(F) The **VOLUME** control changes the volume, changes a setting selected with the **LEVEL** button, or operates the on-screen menus.

FRONT PANEL DISPLAY

The following illustration shows the information on the front panel display:



(A) Volume setting.

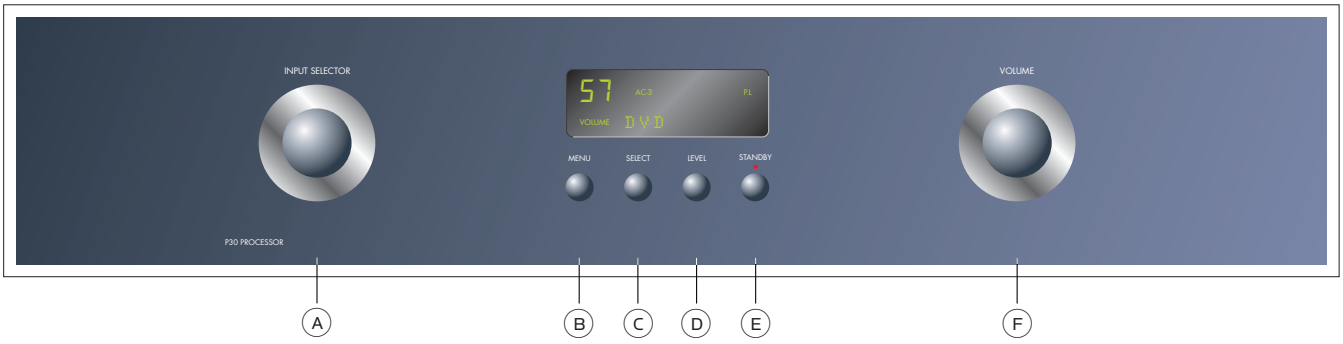
(B) **AC-3** indicates that a Dolby Digital input is present.

(C) **DTS** indicates that a DTS input is present.

(D) **MPEG** indicates that an MPEG input is present.

(E) **P.L** indicates that the digital input is two-channel Pro Logic.

(F) Currently selected input, Mute, or level setting.



To dim the front panel display

- Press the **DIM** button on the remote control.

The display will dim to a single bar. The normal display will reappear while you adjust any settings.

To restore the front panel display

- Press the **DIM** button again.

SWITCHING ON AND OFF

To switch on

- Use the switch under the left-hand edge of the front panel.

During normal operation you can leave the SP31.7 switched on and in standby.

To switch to standby

- Hold down the **STANDBY** button on the front panel or the **STBY** button on the remote control.

When the SP31.7 is in standby the red STANDBY indicator will be illuminated.

To switch on from standby

- Operate any of the front panel controls, or press any of the arrow keys on the remote control.

SELECTING A SOURCE

The SP31.7 Multi-Channel Processor allows you to define up to 16 sources. Each source can use one of the eight digital and eight analog inputs, and any source can be combined with one of the video inputs. Alternatively, a multi-channel source can be defined using analog inputs 5 to 8.

When the SP31.7 Multi-Channel Processor is first supplied the eight standard sources shown opposite are already set up for you.

You can simply disable any of these sources that you do not need; see *Removing sources*, page 19. You can also change any source to use different inputs, or configure your own sources with any name you choose and using any particular inputs as appropriate for the source.

Source	Audio	Video	Surround mode	Description
CD	Analog 1	None	Bypass	High quality CD player
DVD	Digital 2	S-Video 1	2-CH	DVD player
TapeD	Digital 3	None	PLII PL	Digital tape recorder or minidisc player
Laser	Digital 7	S-Video 2	PCM 2-CH	LaserDisc player
Tuner	Analog 2	None	Stereo	FM radio tuner
TV	Analog 3	Video 1	PLII PL	Television or monitor
TapeA	Analog 4	None	Stereo	Analog tape output
Sat	Analog 5	Video 2	PLII PL	Satellite receiver

To select a source

- Turn the **INPUT SELECTOR** control on the front panel until the name of the source is shown on the front panel display.

For example:

- Alternatively, press the ▲ or ▼ buttons on the remote control to step between sources.

The current source is also shown on the on-screen display:

CHANGING THE VOLUME

The SP31.7 allows you to vary the volume from 0 (silence) to 99 (maximum volume), where each step is equivalent to 0.5dB.

To change the volume

- Rotate the **VOLUME** control on the front panel, or press the ▶ or ◀ buttons on the remote control.

The current volume setting is shown on the front panel and on-screen displays:

To mute the sound

- Press the **MUTE** button on the remote control.

To restore the sound to its original volume

- Press the **MUTE** button again.

The sound is also restored to its original volume if you increase the volume.

CHANGING THE BALANCE, CENTER, SURROUND, SURROUND BACK, AND SUBWOOFER LEVELS

You can independently change the balance, center level, side levels, rear levels, and subwoofer level to alter the balance of sound in your surround system.

Changing the balance alters the level of both the left and right main loudspeakers to shift the position of the stereo image, keeping the overall level of the sound the same. The other adjustments change the level of the corresponding speaker(s) without affecting the remaining speakers in the surround system.

To change a level

- Press the **LEVEL** button on the front panel, or the **BAL/SETUP** button on the remote control, until the display shows the current value of the level you want to change.

For example:

- Use the **VOLUME** control on the front panel, or the ▶ and ◀ buttons on the remote control, to adjust the value of the level.

After a short delay the display will revert to volume.

The levels are selected in the sequence shown in the following table:

Display	Level	Range
L, Balanced, R	Balance	Balanced to -9.5dB to OFF
C	Center	-10.0dB to +10.0dB
SS	Surround	-10.0dB to +10.0dB
SB	Surround back	-10.0dB to +10.0dB
S	Subwoofer	-10.0dB to +10.0dB

Advanced use

This chapter explains how to make use of the more advanced features of the SP31.7 Multi-Channel Processor, including changing the surround mode and making recordings.

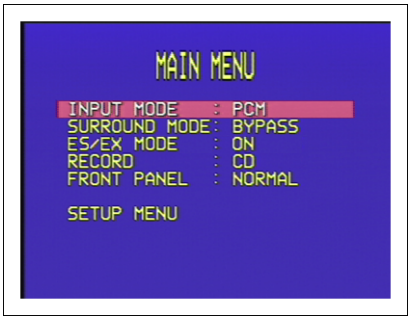
USING THE MAIN MENU

The advanced options described in this chapter are all available from the **MAIN MENU**, which you can display on the on-screen display using the remote control.

To display the main menu

- Press the **MENU** button on the front panel or remote control.

The **MAIN MENU** will be displayed on the on-screen display:



The **INPUT MODE** option is initially highlighted to show that it is selected.

To exit from the main menu

- Press the **MENU** button on the front panel or remote control.

USING THE MENUS

You can select a menu option, and change its value, using either the front panel controls or the remote control.

To select a menu option

Either:

- Turn the **INPUT SELECTOR** to highlight the menu option you want to select.

Or:

- Press the ▲ or ▼ buttons on the remote control to step between the menu options.

To change the currently highlighted option

Either:

- Turn the **VOLUME** control to step between the alternative values for the current menu option.

Or:

- Press the ◀ and ▶ buttons on the remote control to step between the alternative values for the current option.

Selecting some menu options displays a further menu of options which you can select and change in a similar way.

To exit from the current menu

- Press the **MENU** button on the front panel or remote control.

From the main menu this returns to normal operation of the SP31.7. From the submenus this exits to the previous menu.

CHOOSING THE SURROUND MODE

The surround mode determines how the sound is divided between the loudspeakers in your surround system. Each source is associated with a default surround mode, which will be used when you select that source, but you can choose a different surround mode for the source if you prefer.

For example, the standard surround mode for the TV source is PLII PL, since most TV broadcasts are Pro Logic encoded, but if you are watching a music concert you may prefer to choose the Stereo or Bypass surround modes, as these give a more natural sound when listening to music.

To change the surround mode

Either:

- Press the **MODE** button on the remote control to step between the available surround modes.

Or:

- Press the **MENU** button on the front panel or remote control to display the **MAIN MENU**.
- Use the **INPUT SELECTOR** on the front panel or the ▲ and ▼ buttons on the remote control to highlight the **SURROUND MODE** option.
- Use the **VOLUME** control on the front panel or the ◀ and ▶ buttons on the remote control to step between the available surround modes.

The menu option will flash while the SP31.7 Multi-Channel Processor is locking to the input.

The options available depend on the source you are listening to.

If you are listening to a conventional two-channel analog or digital source, such as a CD, the following options are available:

Option	Description
BYPASS	The inputs are fed directly to the output, with no decoding for the most faithful possible reproduction of stereo or multi-channel sources.
STEREO	Conventional stereo, using just the main left and right loudspeakers.
PRO LOGIC	Dolby's original Pro Logic decoder; PLII will almost always give better results.
PLII PL PLII C PLII M	Dolby's updated Pro Logic decoder provides 5.1 channel surround sound from any two-channel source, with stereo surround back channels and full frequency range. PLII C is ideal for movie soundtracks and PLII M is ideal for music sources.
PARTY	The same signal to the front left and right, surround left and right, and surround back left and right loudspeakers, if connected and enabled.
DTS NEO:6 C DTS NEO:6 M	DTS Neo:6 provides up to 6.1 channel surround sound from conventional stereo sources, and can be used with virtually any two-channel analog or digital stereo source such as CD, tape, or TV. DTS Neo:6 M is ideal for stereo music sources.

For Dolby Digital, DTS, or MPEG sources only the following option is available:

Option	Description
AUTO	Automatically detects an incoming digital signal and locks onto it.

The SP31.7 Multi-Channel Processor automatically detects a Dolby Digital input and displays **AC-3** on the front panel display. If the Dolby Digital input only contains two channels, **P.L** is also displayed.

To display information about the source

- Highlight the **INPUT MODE** option on the **MAIN MENU**.

- Press the **SELECT** button on the front panel or remote control to display the characteristics of the source signal.

MAKING RECORDINGS

The SP31.7 Multi-Channel Processor allows you to make a recording of a digital source to the two digital record outputs, or of an analog source to the analog record output. If the source also includes video, a copy of the video is made to the corresponding composite video or S-Video output.

To make a recording you simply select the source you want to record. Once set up, the recording is not affected by the source you are listening to, the volume setting, or the setting of any other parameters on the SP31.7.

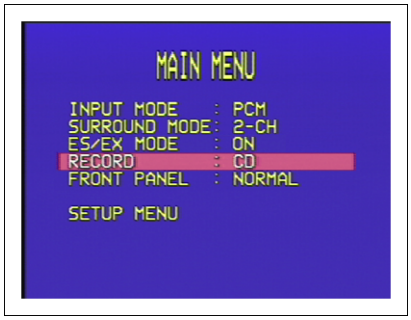
To set up a recording

Either:

- Press the **REC/S.T** button on the remote control to select the source you want to record from.

Or:

- Press the **MENU** button on the front panel or remote control to display the **MAIN MENU**.
- Use the **INPUT SELECTOR** on the front panel or the ▲ or ▼ buttons on the remote control to highlight the **RECORD** option.
- Use the **VOLUME** control on the front panel or the ◀ and ▶ buttons on the remote control to choose the source you want to record from:



Alternatively, select **NORMAL** to make the record outputs follow the currently selected source, or **OFF** to mute the record outputs.

LOCKING THE FRONT PANEL

If you always control the SP31.7 Multi-Channel Processor with the remote control, you may prefer to lock the front panel controls so they cannot be used.

To lock or unlock the front panel

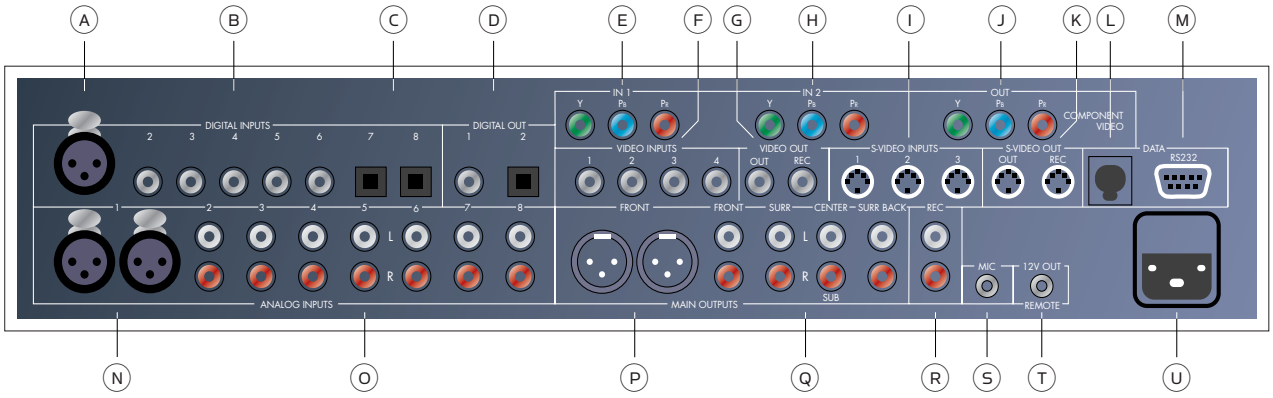
- On the **MAIN MENU** highlight the **FRONT PANEL** option.
- Change the menu option to **LOCKED** to lock the front panel, or **NORMAL** to unlock it:

The front panel will also be unlocked if you switch off the SP31.7 and switch it on again.

Connecting the SP31.7

This chapter explains how to connect the SP31.7 to the other components in your system, using the connections on the back panel.

BACK PANEL CONNECTIONS



A Digital AES/EBU input.

B Digital SPDIF inputs.

C Digital optical TOSlink inputs.

D Digital SPDIF and TOSlink outputs.

E Component video input 1.

F Composite video inputs.

G Composite video outputs.

H Component video input 2.

I S-Video inputs.

J Component video output.

K S-Video outputs.

L Data input.

M RS232 input.

N Analog XLR inputs.

O Analog RCA inputs.

P XLR front outputs.

Q RCA front, surround, center, sub, and surround back outputs.

R Analog record output.

S Microphone input.

T Remote output.

U Mains power input and fuse.

POWER CONNECTION

Warning: Before connecting power check that the required supply voltage, indicated on the back panel, corresponds to your local AC supply. If a different voltage is stated on the type plate do not connect the SP31.7 to the mains power, and seek advice from your dealer.

Connect the mains power using the enclosed mains cable.

Note: Always disconnect the SP31.7 and the other units in your system from the mains power before connecting or disconnecting any of the cables.

MAIN OUTPUTS

The main outputs provide eight discrete analog audio outputs for connecting to the power amplifiers and loudspeakers in the surround system. In addition, balanced outputs are available for the main left and right channels, for use with a power amplifier that provides balanced inputs.

AUDIO INPUTS

The SP31.7 provides a total of 16 audio inputs, eight digital and eight analog. Because the SP31.7 is configurable, you have total flexibility about which digital input you use for each of your digital sources, and which analog input you use for each of your analog sources. In addition, you can optionally use four pairs of analog inputs for a single, multi-channel source, such as DVD-A or SACD.

The SP31.7 is supplied with a suggested set of sources already set up, and you may choose to leave the inputs assigned in this way. However, if you prefer, you can re-assign the inputs to sources in any way you prefer to suit the equipment in your system, and the way you would like to wire it up.

Digital inputs
The SP31.7 Multi-Channel Processor provides one AES/EBU digital input, five SPDIF digital inputs, and two optical TOSlink digital inputs.

Analog inputs
The SP31.7 provides eight analog inputs; one XLR input for connection to a source providing balanced outputs, and seven line-level stereo RCA inputs.

VIDEO CONNECTIONS

The SP31.7 provides a choice of either component, S-Video, or composite video connections. If your source or monitor provides a choice of video connections we recommend using the component or S-Video connections, as these provide higher quality. However, we recommend you first connect up and calibrate your system using the composite connection.

Video inputs
The SP31.7 provides two component video, three S-Video, and four composite video inputs.

Video outputs
The SP31.7 provides one component video, two S-Video, and two composite video outputs. The on-screen display is only provided on the S-Video and composite outputs.

Connecting to a television or monitor
Connect the appropriate output to your television or monitor. If you are using video sources of more than one type you may need to make a connection from each video output to your monitor as the SP31.7 only performs conversion between S-Video and composite.

If your television includes a tuner output you can use the SP31.7 to perform switching between the television tuner and your other video sources such as DVD or LaserDisc. In this case connect the television tuner output to the video input corresponding to your TV source. If your television does not provide a tuner output you will need to switch the television between its internal tuner and the external video input.

RECORD OUTPUTS

The SP31.7 provides three record outputs, two digital and one analog.

Digital record outputs
Both SPDIF and optical TOSlink digital record outputs are provided.

Analog record outputs
One analog RCA record output is provided.

MICROPHONE, DATA AND RS232

The MIC input allows you to connect a microphone to the SP31.7, to allow you to run the **SET LEVELS** option which sets up the relative balance of each of the output channels for the optimum sound.

The DATA input allows you to connect the SP31.7 to an external interface. The RS232 input allows an authorized dealer to connect the SP31.7 to a computer, for service and future upgrades. For more information contact Primare or see the Primare Audio Web site at www.primaresystems.com.

CONNECTING TO THE PRIMARE A30.5 MULTI-CHANNEL AMPLIFIER

The Primare A30.5 Multi-Channel Amplifier is an ideal component for a surround system since it provides five discrete power amplifiers in a single case.

- Connect the front, rear, and center main outputs to the corresponding inputs on the multi-channel amplifier using high-quality phono cables.
- If your system includes a subwoofer, connect the sub main output to the audio input of the subwoofer.

CONNECTING TO THE PRIMARE V25 DVD PLAYER

The Primare V25 DVD Player is an ideal source for use with the Primare SP31.7, to give superb quality video and 5.1 channel digital surround.

- Connect the S-Video or component output (recommended), or composite output, from the DVD player to an appropriate video input on the SP31.7.
- Connect the digital audio output from the DVD player to digital input 2 on the SP31.7.
- Configure the V25 audio mode to Bitstream.

Setting up the speakers

This chapter explains how to set up the speakers, levels, and delays for the best possible sound with your surround sound configuration.

CONFIGURING THE SPEAKERS

The first step in configuring the speakers is to specify which particular combination of speakers you have in your system. The diagrams shown below give some suggested alternative layouts.

The SP31.7 can drive up to seven full-frequency loudspeakers and one subwoofer, but if your surround system does not include a full set of speakers, the SP31.7 will distribute the signals from these channels to the other channels as appropriate in your system.

For each channel you can also specify whether the speaker is large, in which case it can handle the bass below the crossover setting for that channel, or small, in which case the bass for that channel is handled by a subwoofer.

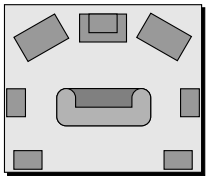
You can define four speaker layouts, labelled **GENERAL**, **DTS**, **DD**, and **OTHER**. These are selected automatically for the appropriate source material.

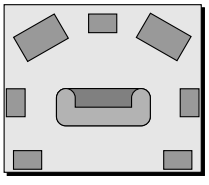
To specify the speaker configuration

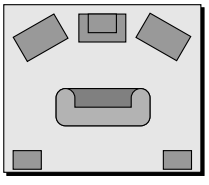
- Press the **MENU** button on the front panel or remote control to display the **MAIN MENU**.
- Use the **INPUT SELECTOR** on the front panel or the ▲ and ▼ buttons on the remote control to highlight the **SETUP MENU** option and press the **SELECT** button on the front panel or remote control to select it.

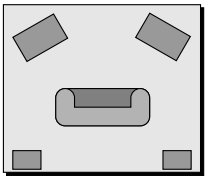
The **SETUP MENU** will be displayed:

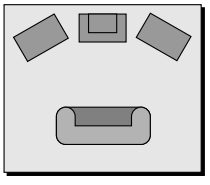
- Use the **INPUT SELECTOR** on the front panel or the ▲ and ▼ buttons on the remote control to highlight the **SPEAKER CONFIG** option and press the **SELECT** button on the front panel or remote control to select it.

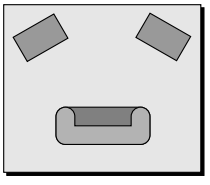

Full surround system with seven loudspeakers and a subwoofer


Seven-channel surround system with no subwoofer


Five-channel surround system with a subwoofer


Four-channel surround system


Three-channel system with a subwoofer


Conventional two-channel stereo system

The **SPEAKER CONFIG** menu will be displayed:

To define the GENERAL layout

First define the **GENERAL** layout; the other layouts will all be based on this.

- With **MODE** highlighted use the **VOLUME** control on the front panel or the ◀ and ▶ buttons on the remote control to select **GENERAL**.
- Use the **INPUT SELECTOR** on the front panel or the ▲ and ▼ buttons on the remote control to highlight each menu option in turn.
- Use the **VOLUME** control on the front panel or the ◀ and ▶ buttons on the remote control to select the appropriate value for each option.

If you select **SMALL** for a channel, frequencies below the **X-OVER** setting are sent to the speaker(s) specified by the **BASS MODE** option.

The options are explained in the following table:

Option	Description
SUBWOOFER	Select **OFF** or **ON** to specify whether the layout should include a subwoofer.
FRONT	Select **SMALL** or **LARGE** to specify whether the front speakers can handle bass.
CENTER	Select **NONE**, **SMALL**, or **LARGE** to specify whether there is a center speaker in the system, and whether it is small or large.
SURR	Select **NONE**, **SMALL**, or **LARGE** to specify information about the surround speakers.
SURR BACK	Select **NONE**, **1/SMALL**, **1/LARGE**, **2/SMALL**, or **2/LARGE** to specify the number and size of the surround back speakers.
BASS MODE	Specifies how to handle the bass from channels defined as **SMALL**. **TO SUB** sends it to the subwoofer, along with the LFE channel. **TO LARGE** divides it between the channels defined as **LARGE**. **TO BOTH** sends it to both the subwoofer and the channels defined as **LARGE**. **EXTRA** sends all bass information below the **X-OVER** setting to the subwoofer, along with the LFE channel.
X-OVER	Allows you to define the crossover frequency (40 — 200Hz) used for speakers defined as **SMALL**, and by the **BASS MODE EXTRA** setting.

- Press the **MENU** button on the front panel or remote control to return to the **SETUP MENU**.

To define other layouts

You can now optionally define layouts **DD**, **DTS**, and **OTHER** which modify the **GENERAL** layout when the source is Dolby Digital, DTS, or two-channel. For example, you can add a subwoofer to the **DD** layout for use with movie soundtracks.

SETTING THE SPEAKER DELAYS

The next step in setting up the loudspeakers is to set the speaker delays to ensure that the sound image is correctly focused.

Delaying the sound from a speaker by 1 millisecond is equivalent to moving the speaker one foot (0.3m) further away from the listener.

Because the center speaker is usually physically closer to the listener than the main left and right speakers you should add a delay to the center speaker to ensure that the sound from

all three front speakers reaches the listener at the same time. In the case of the rear speakers you will normally add a delay to increase the spaciousness of the sound.

To change the speaker delays

- Use the **INPUT SELECTOR** on the front panel or the ▲ and ▼ buttons on the remote control to highlight the **DELAY SETTINGS** option and press the **SELECT** button on the front panel or remote control to select it.

The **DELAY SETTINGS** menu will be displayed:

- Highlight each of the speakers in turn, using the **INPUT SELECTOR** on the front panel or the ▲ and ▼ buttons on the remote control, and use the **VOLUME** control on the front panel or the ◀ and ▶ buttons on the remote control to adjust the delay.

Adjust the value according to the distance of each speaker from the listening position. You can adjust the setting for each speaker to between 0 and 100 feet (0 and 30m). The SP31.7 will then automatically calculate the optimal delay settings.

- Press the **MENU** button on the front panel or remote control to return to the **SETUP MENU**.

SETTING THE SPEAKER LEVELS

You should next set the speaker levels, so that the sound from each speaker is equally loud at the listening position. The SP31.7 allows you to set the levels for the **GENERAL** layout in two alternative ways:

- The **AUTOMATIC** option (where fitted) allows you to connect a microphone to the SP31.7 to set the levels automatically for all the loudspeakers.
- The **MANUAL** option allows you to adjust each speaker to equalize the loudness at the listening position.

You can also manually define levels for the **DD**, **DTS**, and **OTHER** layouts which add to the **GENERAL** levels when the source is Dolby Digital, DTS, or two-channel.

To change the speaker levels automatically

Note: This option is not available in all markets.

- Connect the microphone to the **MIC** input on the back panel, and position it at the listening position.
- Use the **INPUT SELECTOR** on the front panel or the ▲ and ▼ buttons on the remote control to highlight **SET LEVELS** in the **SETUP MENU** and press the **SELECT** button on the front panel or remote control to select it.

The **SET LEVELS** menu will be displayed:

- Use the **INPUT SELECTOR** on the front panel or the ▲ and ▼ buttons on the remote control to highlight **OUTPUT LEVELS - AUTOMATIC** and press the **SELECT** button on the front panel or remote control to select it.

The following display confirms that calibration is in progress:

When the calibration is complete the **SET LEVELS** menu shows the level that has been set for each speaker:

To change the speaker levels manually

- Use the **INPUT SELECTOR** on the front panel or the ▲ and ▼ buttons on the remote control to highlight **OUTPUT LEVELS - MANUAL** in the **SET LEVELS** menu and press the **SELECT** button on the front panel or remote control to select it.

The **SET LEVELS** menu shows the current speaker levels:

- With **MODE** highlighted use the **VOLUME** control on the front panel or the ◀ and ▶ buttons on the remote control to select the layout you want to define.
- Use the **INPUT SELECTOR** on the front panel or the ▲ and ▼ buttons on the remote control to highlight each speaker in turn.

A white noise signal will be played through that speaker, and you can use the **VOLUME** control on the front panel or the ◀ and ▶ buttons on the remote control to adjust the level.

- When you have adjusted each speaker to balance the levels press the **MENU** button on the front panel or remote control to exit.

Setting the analogue input level

The SP31.7 allows you to adjust the input level to the analogue-to-digital converter to achieve the best possible signal-to-noise ratio.

If the ADC input level is set too high clipping will occur on loud signals, causing distortion. The SP31.7 detects this and displays a **Set ADC** warning on the front panel and on-screen displays.

To adjust the ADC input level

- Select an analogue input.
- Use the **INPUT SELECTOR** on the front panel or ▲ and ▼ buttons on the remote control to highlight **ADC INPUT LEVEL** and press the **SELECT** button on the front panel or remote control to select it.
- Use the **VOLUME** controls on the front panel or the ◀ and ▶ buttons on the remote control to reduce the level until the **SET ADC** warning stops flashing on the loudest passages.
- Press the **MENU** button on the front panel or remote control to return to the **SETUP MENU**.

Setting up the sources

This chapter gives details of the standard inputs that are defined when the SP31.7 is first supplied. It then explains how to modify the standard inputs, or define new inputs, to give you total flexibility in the way you set up the SP31.7 in your own system.

STANDARD SOURCES

The SP31.7 Multi-Channel Processor allows you to define up to 15 sources, referred to as **INPUT 1** to **INPUT 15**.

The SP31.7 Multi-Channel Processor is supplied with the standard sources shown in the table below already defined:

Source	Audio	Video	Surround mode	Description
CD	Analog 1	None	Bypass	High quality CD player
DVD	Digital 2	S-Video 1	2-CH	DVD player
TapeD	Digital 3	None	PLII PL	Digital tape recorder or minidisc player
Laser	Digital 7	S-Video 2	PCM 2-CH	LaserDisc player
Tuner	Analog 2	None	Stereo	FM radio tuner
TV	Analog 3	Video 1	PLII PL	Television or monitor
TapeA	Analog 4	None	Stereo	Analog tape output
Sat	Analog 5	Video 2	PLII PL	Satellite receiver

For each source you can define:

- A name for the source, to identify it on the front panel display.
- The analog or digital audio input used for the source.
- The video input used for the source, if the source includes video.
- The standard surround mode used for the source.
- For analog sources, an offset to balance the loudness when switching between sources.

If this standard set of sources meets your requirements, you will get excellent results by using them, and you can ignore the remainder of this chapter.

If these standard sources meet all your requirements, but include additional sources that you do not need, you may like to remove the unused sources to avoid having to step past them when selecting sources from the front panel or remote control. To do this, see the next section, *Removing sources*.

Alternatively, it may be that these standard sources generally meet your requirements, with one or two minor changes. For example, if your CD player does not provide a digital output you can modify the CD source so that it uses one of the analog inputs instead of the digital input as currently defined. To make changes to the existing sources see *Editing sources*, page 20.

Finally, you may prefer to create your own set of sources to suit the particular requirements of your system. To do this you should read all the remaining sections in this chapter.

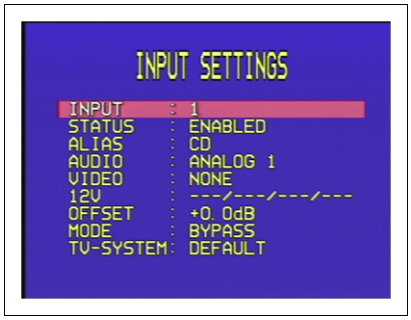
REMOVING SOURCES

Every source can be enabled or disabled. If a source is enabled it will appear in the sequence of sources when you select sources using the **INPUT SELECTOR** on the front panel or the ▲ and ▼ buttons on the remote control. If a source is disabled it cannot be selected, but the settings are retained in case you want to enable the source again at a later date.

To disable or enable sources

- Use the **INPUT SELECTOR** on the front panel or the ▲ and ▼ buttons on the remote control to highlight **INPUT SETTINGS** on the **SETUP MENU** and press the **SELECT** button on the front panel or remote control to select it.

The **INPUT SETTINGS** menu will be displayed:



- Use the **VOLUME** control on the front panel or the ◀ and ▶ buttons on the remote control to select the number of the input you want to enable or disable.
- Use the **INPUT SELECTOR** on the front panel or ▲ and ▼ buttons on the remote control to highlight **STATUS,** and press the **SELECT** button on the front panel or remote control to select **ENABLED** or **DISABLED** as required.

EDITING SOURCES

To edit an existing source

- Highlight **INPUT SETTINGS** in the **SETUP MENU** and press the **SELECT** button on the front panel or remote control to select it.
- Use the **VOLUME** control on the front panel or the ◀ and ▶ buttons on the remote control to select the input you want to edit.
- Use the **INPUT SELECTOR** on the front panel or the ▲ and ▼ buttons on the remote control to highlight the options for the inputs, and use the **VOLUME** control on the front panel or the ◀ and ▶ buttons on the remote control to modify them as required.

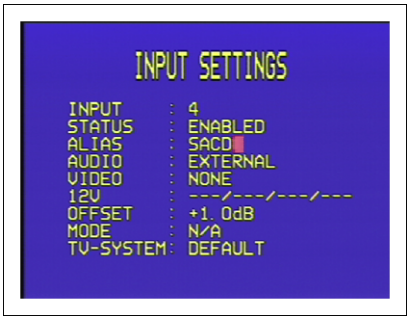
The options are explained in the following table:

Option	Description
STATUS	**ENABLED** or **DISABLED** to specify whether the source can be selected from the front panel or remote control.
ALIAS	A name of up to eight characters for the source; see *To edit the source alias* below.
AUDIO	The audio input used for the source: **ANALOG 1** to **ANALOG 8**, **DIGITAL 1** to **DIGITAL 8**, **EXTERNAL**, or **NONE**.
VIDEO	The video input used for the source: **VIDEO 1** to **VIDEO 4**, **S-VIDEO 1** to **S-VIDEO 3**, **COMPONENT1** to **COMPONENT2** or **NONE**.
12V	The state of up to four switches, to control external devices.
OFFSET	Allows you to vary the sensitivity of analog or external sources between - 10.0dB to + 10.0dB in 0.5dB steps.
MODE	The default surround mode for the source: **BYPASS**, **STEREO**, **2-CH**, **PRO LOGIC**, **PLII PL**, **PLII CINEMA**, **PLII MUSIC**, **PARTY**, **DTS NEO:6 CINEMA**, or **DTS NEO:6 MUSIC**. The options available depend on the audio mode.
TV-SYSTEM	Specifies the TV system for the video input: **NTSC**, **PAL**, or **DEFAULT**.

To edit the source alias

- Highlight **ALIAS** in the **INPUT SETTINGS** menu and press the **SELECT** button on the front panel or remote control to edit the alias.
- Select the character you want to edit using the **INPUT SELECTOR** on the front panel or the ▲ and ▼ buttons on the remote control.

The currently selected character is shown highlighted with a block:



- Use the **VOLUME** control on the front panel or the ◀ and ▶ buttons on the remote control to change the currently selected character.

Each key press steps the character through the sequence: space, upper-case letters, lower-case letters, digits, and symbols.

- Press the **MENU** button on the front panel or remote control when you have finished entering the alias.

To add a new source

- Proceed as for editing a source, but select an unused source as the starting point.

EXAMPLES OF SOURCES

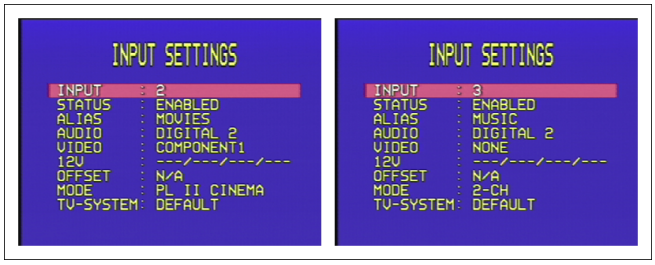
The following examples show how to set up sources to cater for more advanced applications.

Defining two sources that use the same input

Usually each source you define will correspond to a different input on the back panel. However, there are occasions when it is useful to be able to define two sources using the same input, and the SP31.7 allows you to do this.

The following example shows how to define two sources, with aliases **MOVIES** and **MUSIC**, designed for use with a DVD player. Choosing the **MOVIES** source selects the **PLII CINEMA** surround mode, which is ideal for movie soundtracks. Choosing the **MUSIC** source selects the **2-CH** surround mode, for the best possible reproduction of audio CDs.

The definition of each of the two sources are shown in the following screen displays:



Defining a multi-channel source

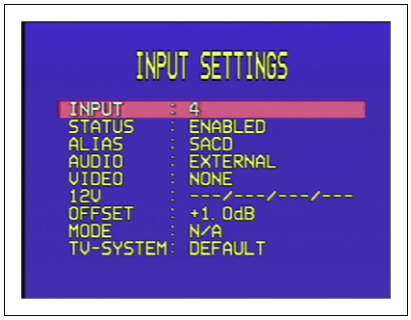
If you have a source that provides multi-channel analog outputs, such as a DVD Audio or SACD player, you can define a source that allows you to connect this to the SP31.7, bypassing the internal surround processor.

- Connect the multi-channel inputs to analog inputs 5, 6, 7, and 8 as shown in the following table:

Input	Left	Right
Analog 5	Front left	Front right
Analog 6	Surround left	Surround right
Analog 7	Center	Subwoofer
Analog 8	Surround back left	Surround back right

- Define a source with the **AUDIO** option set to **EXTERNAL** and the **VIDEO** option set to the video input used for the DVD Audio or SACD player.

You can use the **OFFSET** option to adjust the relative level of the multi-channel source compared with the other analog sources:



Configuring the display

The SP31.7 provides several options to allow you to choose how information is displayed on the front panel and on-screen displays. This chapter describes the options for doing this, and gives examples of each of the options.

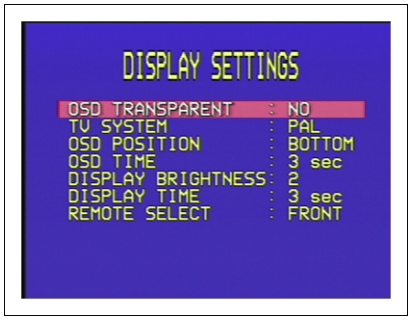
Configuring the on-screen display

You can choose to show information about the SP31.7 settings superimposed on the video image as an on-screen display, and the SP31.7 provides a range of options to allow you to configure the position, color, and duration of the on-screen display.

To change the on-screen display

- Highlight **DISPLAY SETTINGS** in the **SETUP MENU** and press the **SELECT** button on the front panel or remote control to select it.

The **DISPLAY SETTINGS** menu will be displayed:



The following options on the **DISPLAY SETTINGS** menu determine the on-screen display:

Option	Description
OSD TRANSPARENT	Set to **YES** to allow the video image to show through the background of the on-screen display, or **NO** to blank the video image when the on-screen display is displayed.
TV SYSTEM	Specifies the TV system to ensure the correct size and position of the on-screen displays. Can be set to **NTSC** or **PAL**.
OSD POSITION	Specifies the position of the on-screen display as one of the options **TOP** or **BOTTOM**.
OSD TIME	Set to 1-10 sec to determine how long the on-screen display stays on the screen, or **NONE** to disable the on-screen display.

Configuring the front panel display

The next two options on the **DISPLAY SETTINGS** menu allow you to choose the brightness of the front panel display, and the delay before the display dims in **DIM** mode.

The following options are provided:

Option	Description
DISPLAY BRIGHTNESS	1-4 to specify the brightness, or **OFF** to blank the front panel display.
DISPLAY TIME	**NONE** for no delay, or **1 sec** to **10 sec** for a specified time delay before dimming.

Configuring the remote control

The final option allows you to control the SP31.7 using an external control system:

Option	Description
REMOTE SELECT	Set to **FRONT** to control the SP31.7 using an infra-red remote control pointed at the front panel, or **REAR** to control it via an infra-red repeater connected to the RJ45 DATA socket on the back panel.

Saving the configuration

This chapter explains how to save the configuration of your SP31.7, and how to recall a saved configuration, or reset the SP31.7 to the factory settings.

INTRODUCTION

Once you have defined your own custom set of inputs, and have calibrated the speaker settings and other configuration options to suit your own requirements, you should save your settings permanently in the SP31.7. You can then return to your saved settings at any time using the **RECALL SETTINGS** option to undo any subsequent configuration changes.

If the SP31.7 was set up for you by an installer, the installer will have saved a set of installer settings. You can also return the SP31.7 to these settings using the **RECALL INSTALLER SETTINGS** option.

Finally a **RECALL FACTORY SETTINGS** option is provided, to return the SP31.7 to the default factory settings.

After saving or recalling settings always wait at least 10 seconds before switching off the unit using the mains switch.

To save your settings

- Highlight **MEMORY** in the **SETUP MENU** and press the **SELECT** button on the front panel or remote control to select it.

The **MEMORY MENU** will be displayed:

- Highlight **SAVE SETTINGS** and press the **SELECT** button on the front panel or remote control to select it.

After a short delay a message will confirm that the settings have been saved:

- Wait 10 seconds to allow the settings to be completely stored.
- Press the **MENU** button on the front panel or remote control to return to the **MEMORY MENU**.

To recall your settings

- Highlight **RECALL SETTINGS** in the **MEMORY MENU** and press the **SELECT** button on the front panel or remote control to select it.

The following screen then confirms that your settings have been recalled:

- Press the **MENU** button on the front panel or remote control to return to the **MEMORY MENU**.

To recall the installer or factory settings

Note: This will lose any inputs you have defined, or any calibration changes you have made. You should save your settings first if you have not already done so.

- Highlight **RECALL INSTALLER SETTINGS** or **RECALL FACTORY SETTINGS** in the **MEMORY MENU** and press the **SELECT** button on the front panel or remote control to select it.

After a short delay a screen will confirm that the appropriate settings have been recalled:

- Press the **MENU** button on the front panel or the remote control to return to the **MEMORY MENU**.

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