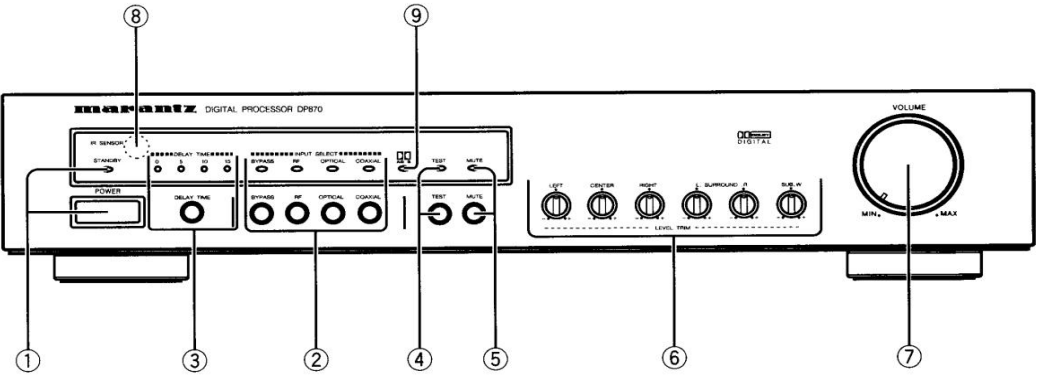
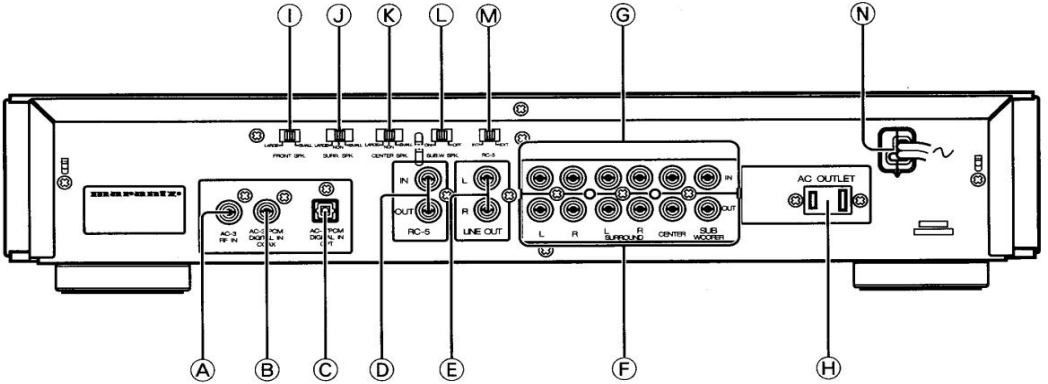


# **marantz®**

**Model DP870 User Guide**

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Digital Processor



**INTRODUCTION**


Thank you for purchasing the Marantz DP870 Dolby Digital Surround demodulator/decoder. This remarkable component has been engineered to provide you with many years of home theater enjoyment. Please take a few minutes to read this manual thoroughly before you connect and operate the DP870. As there are a number of connection and configuration options, you are encouraged to discuss your own particular home theater setup with your Marantz A/V specialist dealer.

**DESCRIPTION**

Dolby Digital (also known as AC-3) is a new technology that was originally developed to provide six separate channels of high quality discrete multi-channel sound for motion picture theaters. The Marantz DP870 Dolby Digital demodulator/decoder brings that same high quality sound into your home when used with a compatible laser disc player, as well as from future Dolby Digital sources such as DSS, Digital Video Disc (DVD) and High Definition Television (HDTV). The wide dynamic range of Dolby Digital enables the Marantz DP870 to reproduce soundtracks with their full fidelity and a realism that is not possible with conventional matrix surround systems.

**Depending on the specific equipment in your home theater setup, the DP870 can be connected in one of three configuration options:**

- Direct connection to A/V receivers such as the Marantz SR-96/SR870 that feature a SIX CHANNEL DIRECT INPUT.
- Connection between your existing A/V surround processor/pre-amp, such as the Marantz AV600 and your power amplifier(s) and sub woofer (for owners of separates-based home theater systems).
- Connection to the PRE-OUT/MAIN-IN jacks on the rear panel of your A/V receiver, provided that it is equipped with 5 pre-out/main-in jack pairs and a sub woofer output jack, such as the Marantz SR-92/SR-92mk2 and SR-82/SR-82mk2 models.

The DP870 is manufactured under license from Dolby Laboratories Licensing Corporation. "Dolby", "AC-3", and the double-D symbol  are trademarks of Dolby Laboratories Licensing Corporation.

**FEATURES**

- High quality Dolby Digital AC-3 DSP decoding chip, manufactured by Zoran.
- AC-3 RF input, for connection to compatible laser disc players such as the Marantz LV520 with an AC-3 RF output.
- Coax and Optical Digital AC-3/PCM inputs, for connection to other sources, such as DVD and/or DSS.
- Remote Control Sensor for use with compatible system remote controls.
- Individual channel level controls and internal test tone generator, for precise system setup.
- Master volume control and mute function.
- Adjustable delay time.
- Bypass feature.
- Rear panel speaker configuration switches that match the DP870 to a wide range speaker types and sizes.
- 6 discrete channel inputs and outputs with standard RCA jacks for easy connection between existing surround sound pre-amp/processors and power amplifiers.

**LOCATION AND FUNCTION OF PARTS AND CONTROLS**

**REAR PANEL (See page 3)**

**(A) AC-3 RF In Jack**

Connect the AC-3 RF Output jack of a compatible Laser Disc player to this jack.

**IMPORTANT NOTE :**

Do not connect a normal audio output terminal of a laser disc player, etc. to this AC-3 RF in jack.

**(B) AC-3/PCM Digital Data Stream Coax In Jack**

These terminals to the coax data stream AC-3 output of future AC-3/PCM digital products such as DVD, DSS and HDTV.

**(C) AC-3/PCM Digital Data Stream Optical In Jack**

These terminals are used for connection to the optical data stream AC-3 output of future AC-3/PCM digital products such as DVD, DSS and HDTV. To avoid dust contamination, leave the protective cap inserted unless the jack is in use.

**IMPORTANT NOTE :**

These input jacks are for AC-3/PCM digital signals only. Do not connect standard audio outputs to these AC-3/PCM digital Input Jacks.

**(D) RC-5 Remote Control Jacks**

These jacks enable you to use the DP870's internal infrared sensor as the master "remote eye" for other components, or to have the DP870 respond to remote commands received by an external sensor or another compatible RC-5 product.

- Connect the RC-5 IN jack to the RC-5 output jack of another component with an IR sensor, or to a remote sensor extension product.
- To permit the sensor in the DP870 to transmit remote command to another compatible component, connect the RC-5 OUT jack to the Remote Sensor IN jack of the second unit.

**(E) Line Out Jacks**

These jacks provide two channel audio output of Dolby Pro Logic encoded signal, when the unit is in the "BYPASS" mode. When the unit is in other mode, these jacks provide only Left and Right signal of decoded Dolby digital.

**(F) 6ch Output Jacks**

These jacks deliver the outputs of the AC-3 decoder or pass through the inputs from a conventional AV receiver when the DP870 is in the BYPASS mode. Depending on your application, they will be connected to the "6 Channel Direct" inputs of products such as the Marantz SR-96/SR870 or directly to external power amplifiers when used with products such as the Marantz AV600.

**(G) 6ch Input Jacks**

When the DP870 is used with an compatible AV product such as the Marantz AV600, a onboard surround decoder or any AV receiver with PREAMP OUT/MAIN INPUT jacks, connect these jacks to the outputs of the upstream product.

**(H) AC Outlet (Unswitched)**

This unswitched outlet will supply power to any device in your system as long as the DP870 is connected to AC power, even when the DP870's power switch is in the off position. The maximum power that can be connected to this outlet is 200 watts.

## FRONT PANEL (See Page 3)

### I Front SPK Switch

This switch determines if low frequency signals are sent to your front left/right speakers.

**Large:** Set the switch to this position when using traditional full range loudspeakers that are capable of handling sounds below 100 Hz.

**Small:** Set the switch to this position when using smaller bookshelf or "satellite" speakers that have limited low frequency range and are unable to reproduce sounds below 100 Hz. When the switch is in the "Small" position all sounds below 100 Hz. will be routed to the Subwoofer output jack. However, do not select this position if your system does not include a subwoofer.

### J Surr SPK Switch

This switch determines which signals are sent to your surround speakers.

**Large:** Set the switch to this position when using traditional full range loudspeakers that are capable of handling sounds below 100 Hz.

**None:** Set the switch to this position when no surround speakers are connected.

**Small:** Set the switch to this position when using smaller bookshelf or "satellite" speakers that have limited low frequency range and are unable to reproduce sounds below 100 Hz. When the switch is in the "Small" position all sounds below 100 Hz. will be routed to the Subwoofer output jack. When the switch is in this position low frequency sounds (below 100 Hz.) will be heard routed to either the subwoofer when the Sub Switch is in the "ON" position or to the front left/right speakers when the Sub Switch is in the "OFF" position, depending on the setting of the speaker switches for front and center.

### K Center SPK Switch

This switch determines which signals are sent to your center channel speaker.

**Large:** Set the switch to this position when using traditional full range loudspeakers that are capable of handling sounds below 100 Hz.

**None:** Set the switch to this position when a center channel speaker is not connected.

**Small:** Set the switch to this position when using smaller bookshelf or "satellite" speakers that have limited low frequency range and are unable to reproduce sounds below 100 Hz. When the switch is in the "Small" position all sounds below 100 Hz. will be routed to the Subwoofer output jack. When the switch is in this position low frequency sounds (below 100 Hz.) will be heard routed to either the subwoofer when the Sub Switch is in the "ON" position or to the front left/right speakers when the Sub Switch is in the "OFF" position, depending on the setting of the speaker switches for front.

### L Sub woofer switch

Set this switch to the "ON" position if you are using a separate subwoofer. Set it to "OFF" if a subwoofer is not being used. When this switch is in the "OFF" position you should use full range loudspeakers for the front left/right speakers, as all low frequency information will be sent to those outputs.

### M Remote Switch

If you are using the DP870 as a stand alone unit, set the switch to INTERNAL. If you are using it in conjunction with the remote control system of a compatible product that uses an RC-5 remote system set the switch to EXTERNAL.

### N Power cable

Connect the power cable to an unswitched AC power outlet. Plug into a household AC power outlet.

### 1 Power Switch

Press this switch once to turn it on. Press it again to turn the unit off.

The DP870 may be turned on remotely when it is connected to other compatible products via the Remote Control Jack and a D-Bus connection. Note that in order for the remote system to operate the unit must first be turned on once by pressing the Power Switch and leaving it in the "ON" position. It may then be placed in a "Standby" position using a remote control.

#### NOTE :

When the DP870 is in the "OFF" or "Standby" modes it is automatically placed in a "Bypass" position regardless of the input selector setting.

#### STANDBY indicator

This indicator lights up when the DP870 is in the STANDBY mode (Power off).

### 2 Input Selector Button and Indicators

Press any of these buttons to select the input source for the DP870. When the unit is in the "BYPASS" mode any external source connected to the input jacks will be passed through to the output without any modification.

An LED will illuminate above the selected input to confirm the chosen source.

### 3 Delay Time Button and Indicators

Press this button to set the delay time for the surround channels. Each press of the button changes the delay time by 5 milli seconds. The delay time range is from no delay to 15 milli seconds.

### 4 Test Button and Indicator

Press and hold this button for a few seconds to activate the test tone that is sent to each speaker except sub-woofer in a circular pattern for two (2) seconds for each channel. While the test signal is in use the output level may be adjusted using the front panel level trim controls. To cancel the test tone, press the "TEST" button again.

While the test signal is in use an indicator above the button will flash to remind you that the audio output has been momentarily changed.

The test signal will not operate when the DP870 is in the BYPASS mode.

When the Test button is pressed and hold for more than 2 seconds, the Test tone will be output by 5 seconds sequence.

### 5 Mute Button and Indicator

Press this button to momentarily silence the audio output of the DP870. Press it again to resume normal operation. An indicator light above the button will illuminate when the MUTE button is engaged to remind you that the unit is turned on, but silenced. The MUTE function will not work when the DP870 is in the BYPASS mode.

### 6 Level Trim Controls

These controls are used to adjust the audio output level of each individual channel. See page 9 for more information on using these controls.

### 7 Volume Control

This knob adjusts the master volume level of the DP870's output. Turn it clockwise to increase the volume and counterclockwise to decrease the volume.

When the DP870 is used in a system where the receiver (such as the Marantz SR-96) has a "6 Channel Direct" input, the volume should be set to the "12 O'clock" position.

### 8 Infrared Sensor Window

The sensor behind this area receives the infrared signals transmitted by a remote control unit. Aim the remote control unit to this sensor window for proper operation, and be certain that the window is not blocked or obscured by tinted cabinet doors.

### 9 AC-3 Indicator

This indicator will illuminate when the DP870 has locked to the output of a source unit and is properly decoding the AC-3 signal.

## SYSTEM SETUP & CALIBRATION

The DP870 delivers optimal performance when it is used with the Marantz SR-96, although it is also compatible with many other home theater system configurations. Please follow the instructions in this section that describe the equipment and speaker choices that most closely resemble that of your own system. Depending on the equipment in use, some of the switches and settings may require adjustment, while in other cases they may be left in their factory preset positions.

## SPEAKER SELECTION

The home theater system you already have installed should function provided that there are left, center and right front speakers, left and right rear/surround speakers and a subwoofer. For best results we recommend that the front speakers be of the same type, with identical or similar driver units. This will deliver smooth pans across the front sound stage as the action moves from side to side.

Your center channel speaker is very important as over 80% of the dialog from a typical motion picture emanates from the center channel.

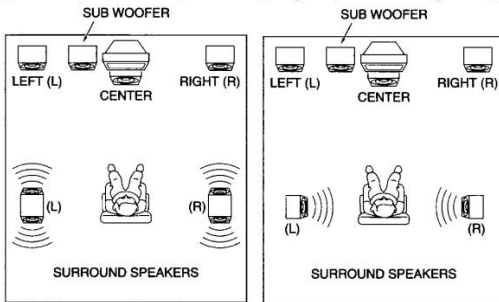
Rear channel speakers need to be identical to the front channel speakers, but they should be of high quality. One of the benefits of Dolby Digital AC-3 is that they surround channels are full range, while they were frequency limited in earlier "ProLogic" type systems.

Bass effects are an important part of home theater. For optimal enjoyment a subwoofer should be used as it is optimized for low frequency reproduction. If you have full range front speakers, however, they may be used in place of a subwoofer with proper setting of the rear panel switches.

Using the switches on the DP870, however, Using better quality surround speakers will enable you to more fully enjoy the sound quality the DP870 is able to deliver.

For the best advice on speaker selection consult your Marantz dealer.

### Speaker system configurations (diagram, as currently used)



If possible, mount the surround speakers on the walls to the sides of the viewing area, 2-3 feet above seated viewers, firing straight across at each other.

## SPEAKER SWITCH SETTING

Since the DP870 may be used with a wide variety of speaker types, it is important that you adjust the rear panel speaker switches before using the DP870. Setting these switches will tell the DP870 what type of speakers you are using so that the audio outputs will be directed to the proper speaker.

In general, a "Large" speaker is defined as a traditional full range speaker that includes a woofer and is capable of reproducing sounds below 100 Hz. For the purposes of this product, a "Small" speaker is one that is not capable of delivering sounds below 100 Hz. Most "satellite" type speakers fall into this category. Before setting the switches make note of the type of front, center and rear speakers that will be used. For further clarification of your speakers' type consult the speaker owner's manual and look on the "specifications" page to find the frequency range.

**When you have the information on your speakers, set the four switches as follows:**

### 1) Front Speakers

This switch determines the frequency range of the front left/right speakers. Select Large or Small depending on the type of speaker you will be using. The factory default setting is "Large".

**Large:** Select this position if you are using full range speakers that are capable of reproducing sounds below 100 Hz. In this position, the output to the front left/right output jacks is full range.

**Small:** Select this position if you have small, frequency limited satellite type speakers that do not reproduce sounds below 100 Hz. Do not select this position if your system does not include Sub woofer.

In this position, low frequency sounds are routed to the SUB WOOFER OUTPUT jacks.

### 2) Surround Speakers

This switch determines the frequency range of the rear surround speakers. Select Large, None or Small depending on the type of speakers you will be using. The factory default setting is "Small".

**Large:** Select this position if you are using traditional, large speakers that are capable of reproducing sounds below 100 Hz.

In this position, the output to the audio feed to the surround output jacks is full range.

**None:** Select this position if you will not be using any rear channel/surround speakers.

In this position the full range surround audio that would otherwise be routed to the surround channels will be mixed in with the FRONT LEFT and FRONT RIGHT audio.

**Small:** Select this position if you have small, frequency limited satellite type speakers that do not reproduce sounds below 100 Hz.

In this position, low frequency sounds are routed to either the SUB WOOFER OUTPUT or the FRONT LEFT and FRONT RIGHT jacks depending on the position of the FRONT, CENTER, and SUBWOOFER switches.

### 3) Center Speakers

This switch determines the frequency range for the center channel speaker. Select Large, None or Small depending on the type of center channel speaker installed. The factory default setting is "Small".

**Large:** Select this position if the center channel speaker is a large, full range model capable of reproducing sounds below 100 Hz.

In this position, the output to the audio feed to the Center Channel output jack is full range.

**None:** Select this position if you will not be using any rear channel/surround speakers.

In this position the full range signal audio that would otherwise be routed to the center channel will be mixed in with the FRONT LEFT and FRONT RIGHT audio.

**Small:** Select this position if you have small, frequency limited satellite type speakers that do not reproduce sounds below 100 Hz.

In this position, low frequency sounds are routed to either the SUB WOOFER OUTPUT or the FRONT LEFT and FRONT RIGHT jacks depending on the position of the FRONT and SUBWOOFER switches.

### 4) Sub woofer

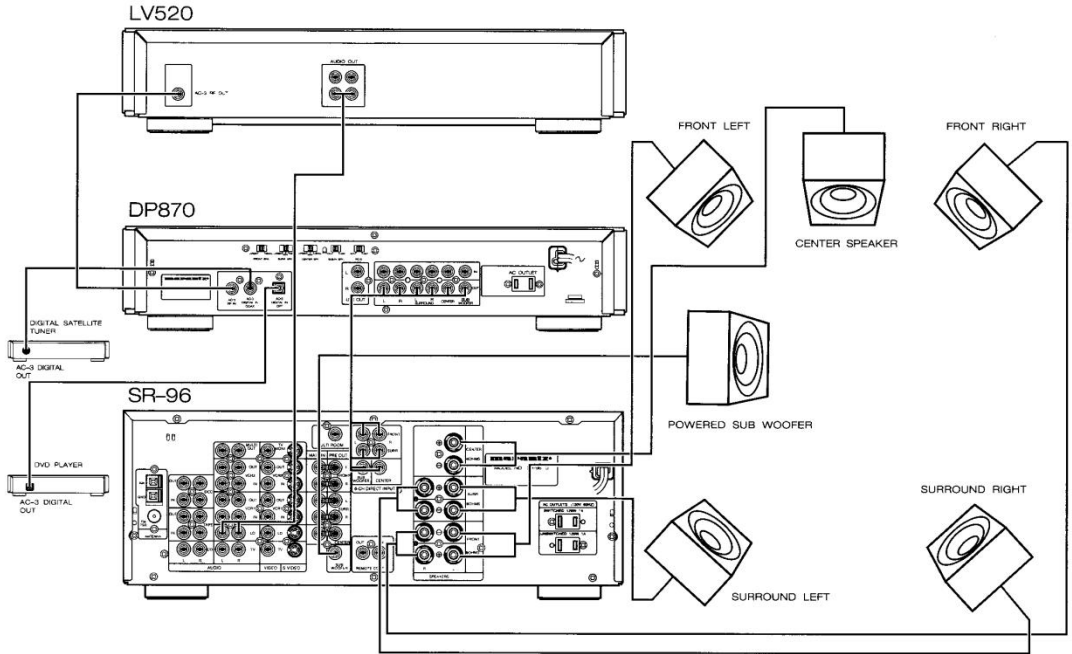
Set this switch to determine the routing of low frequency sounds for all channels. The factory default setting is "ON", to indicate that a subwoofer is present.

**On:** Select this position if the DP870 is connected to an amplifier or receiver equipped with a Subwoofer INPUT terminal, or if it directly connected to a powered subwoofer.

**Off:** Select this position if a Subwoofer will not be used. In this position the low frequency sounds (below 100 Hz) will routed to the FRONT LEFT, RIGHT and/or CENTER terminals, depending on the setting of the speaker switches for those channels.

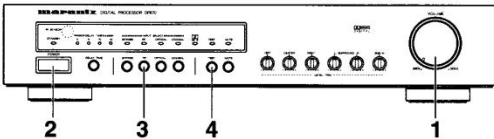
# USING THE DP870 WITH PRODUCT EQUIPPED WITH THE 6CH DIRECT INPUT (e.g. Marantz SR-96, SR870, or SR770, etc.)

## Connection diagram (LV520/DP870/SR-96)



1. Connect the AC-3 RF output of a compatible LV player to the DP870 AC-3 RF In Jack.
2. Connect the optical or coax AC-3 output of a DSS, DVD player or HDTV receiver to the respective input jack on the DP870.
3. Connect the Remote Control Out jack of the SR-96 to the RC-5 IN jack of the DP870.
4. Connect the Line Out jacks of the DP870 to the 6 Channel Direct inputs of the SR-96.
5. Set the REMOTE Switch on the DP870 to "EXTERNAL".
6. Set the Speaker Selection switches to their proper positions based on the type of speakers in use.

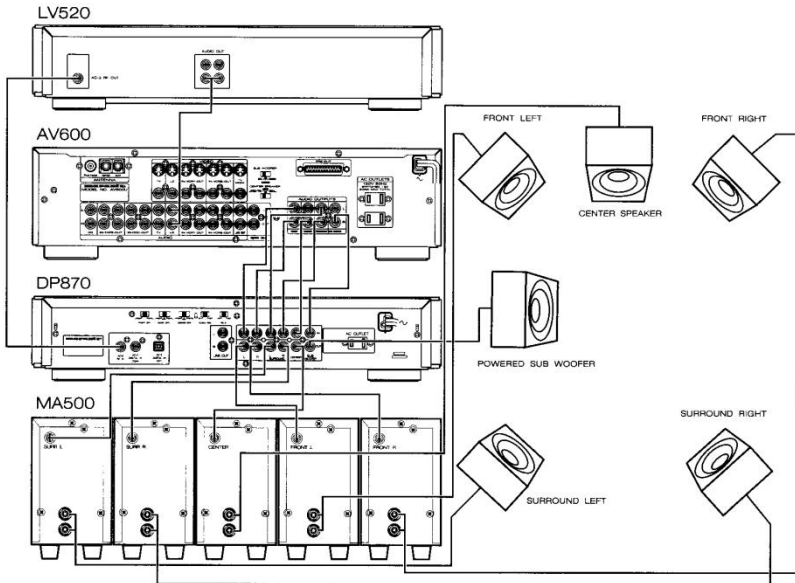
## Calibration with the Marantz SR-96



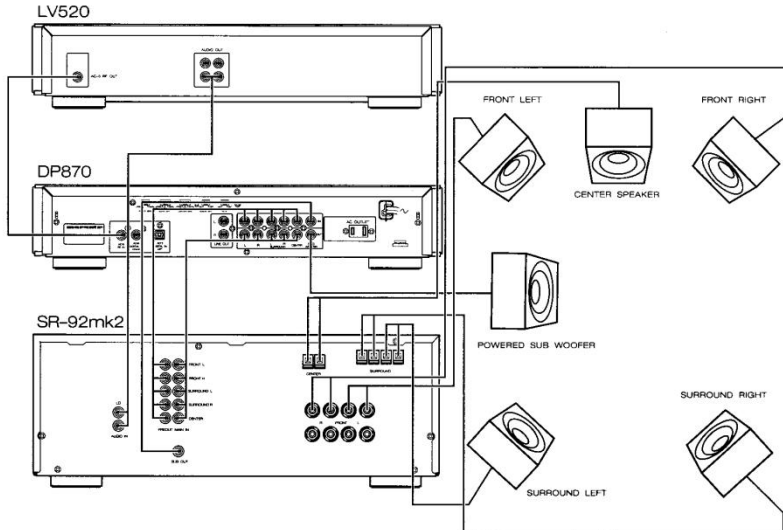
1. Set the main DP870 volume fully counter clockwise to the minimum position
2. Press the power switch to turn the power on.
3. Press the RF input selection button.
4. Press the Test button and hold it for a few seconds. This will start the test tone sequence.
5. Adjust the Main Volume to 12 o'clock position.
6. Press the 6ch Direct Input button on the SR-96.
7. Note that a test signal noise will be heard from the speakers. Verify that test signal circulates in a clockwise direction, stopping for five seconds at each speaker. If the sound is heard out of order, (i.e. moving from right to left, or appearing randomly and out of order at various speakers), turn the unit off and check the connection from the DP870 output jacks to the inputs of your AV receiver.
8. Adjust each channel's output using the CH SEL and CH LEVEL buttons on the SR-96 remote control until the sound level from each speaker appears equal. Each channel can be adjusted  $\pm 10\text{dB}$ .
  - It is also possible to adjust the level by using the Front panel Level Trim controls on the DP870, but we suggest the use of the SR-96 remote, as it makes it much easier to adjust the balance between the channels.
  - The SR-96 will memorize the output level settings used in the 6 Channel Direct mode differently from those used with other surround modes. The normal settings will be automatically restored when you switch the SR-96 to another surround mode.
9. When you have completed the adjustments press After the adjustment is done, press "Test" button once to stop the Test Tone.
10. During normal operation use the SR-96 volume control to adjust the volume level.
11. Adjust the subwoofer output to the appropriate level

**USING THE DP870 WITH PRODUCTS NOT  
EQUIPPED WITH A 6CH DIRECT INPUT  
(e.g. Marantz AV600, SR-92mk2, etc.)**

**Connection diagram (LV520/DP870/AV600/MA500)**



**Connection diagram (LV520/DP870/SR-92mk2)**



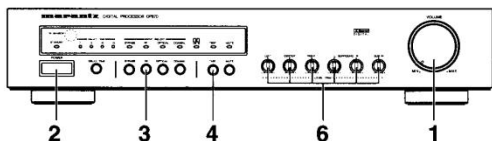
1. Connect the AC-3 RF output of a compatible LV player to the DP870 AC-3 RF In Jack.
2. Connect the optical or coax AC-3 output of a DSS, DVD player or HDTV receiver to the respective input jacks on the DP870.
3. Connect the Line Out jacks of the AV600 or SR-92mk2 to the Input jacks of the DP870.
4. Set the Speaker Selection switches to their proper positions based on the type of speakers in use.

5. Connect the Line Out jacks of the DP870 to the inputs of the MA500 or the Main In jacks of the SR-92mk2.
6. Connect the Subwoofer Output of the DP870 to the input of a powered subwoofer or a subwoofer amplifier.

**NOTE :**

The multiroom functions of the SR-92 will not operate when the unit is connected to the DP870.

## Calibration with the Marantz AV600



1. Set the main DP870 volume fully counter clockwise to the minimum position
2. Press the power switch to turn the power on.
3. Press the RF input selection button.
4. Press the Test button and hold it for a few seconds. This will start the test tone sequence.
5. Set the Main Volume to 12 o'clock position.

Note that a test signal noise will be heard from the speakers. Verify that test signal circulates in a clockwise direction, stopping for two seconds at each speaker except subwoofer. If the sound is heard out of order, (i.e. moving from right to left, or appearing out of order), turn the unit off and check the connection from the DP870 output jacks to the inputs of your amplifiers or the receiver's Main Inputs.

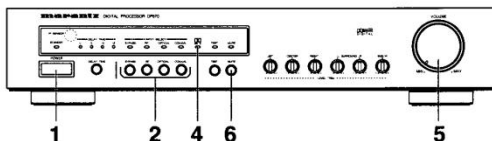
6. Adjust each channel by using front panel Level Trim controls on the DP870 until the sound level from each speaker is identical.
7. Adjust the subwoofer to appropriate level.
8. When you have completed the adjustments press the "Test" button once to stop the Test Tone.
9. During normal operation the volume will be adjusted using the main volume control of the DP870.

## DELAY TIME ADJUSTMENT

Delay time adjustment enables you to adjust the timing between signals at the front and rear channels. Since the use of the DP870 may bypass the delay settings in your receiver or preamp it is important to establish a proper delay setting for use in 6 channel operation.

1. Using the remote control or front panel controls appropriate to your receiver or pre-amp, make note of the delay time setting already in use for normal surround listening.
2. Press the front panel DELAY button until the delay time indicator illuminates to show a delay time that is closest to the setting used with your conventional surround system.

## NORMAL OPERATION



1. Turn the power on.
2. Select the appropriate input source. (i.e. "RF" for a laser disc player, "Coax" or "Optical" for data stream sources such as DSS, DVD or HDTV.
3. Start playback source equipment.
4. Note that the AC-3 indicator will illuminate to confirm that the unit is locked to the digital signal and is functioning properly.
5. Set the main volume using the DP870 volume knob, a remote control or the volume control on an external device such as the SR-96, as appropriate for your specific installation.
  - When the DP870 is used with the SR-96 or another product with a 6 Channel Direct Mode, make certain that the front panel is set to the 12 o'clock position. Use the volume control on the SR-96 or other device to control the volume.
  - When using the DP870 with other products control the volume using the DP870 front panel control.
6. To temporarily silence the DP870's audio output press the MUTE button. Press it again to return to normal volume levels.
7. The DP870 will respond to "TEST" and "STANDBY/POWER" commands issued by compatible Marantz and RC-5 system remote control units. Make certain that you have set the rear panel "Remote" switch so that the DP870 correctly responds to remote signals received internally by the DP870, or by an external sensor.

Complete control of additional DP870 functions, including Volume Up/Down is possible with the optional Marantz RC2000, available from your Marantz dealer.

### NOTE :

- In order to use a remote control to turn on the DP870 it is important that the front panel "POWER" switch be left "ON". Using the remote to turn the unit off will place the DP870 in a standby mode as long as it is connected to AC power.
8. To take the DP870 out of the audio path when it is used with products where it is installed between the preamp/receiver and power amplifiers (e.g. AV600 or SR-92) press the BYPASS button. Note that the DP870 will automatically revert to the BYPASS mode when the unit is in the Power Off or Standby modes. Use of the Bypass control is not required when the DP870 is used with products such as the SR-96 that feature a 6 Channel Direct input.



## SPECIFICATIONS

Output Level/Output Impedance	
MAIN L/R, CENTER, SURROUND L/R	
1 kHz, 0 dB INPUT	0~3.5 V/500 Ω
SUB WOOFER	
50 Hz, 0 dB INPUT	0~9.0 V/500 Ω
Input Impedance (RF, COAXIAL)	75 Ω
Frequency Response	
MAIN L/R, CENTER, SURROUND L/R (LARGE)	
20 Hz – 20 kHz	0±1 dB
Filter Characteristics	
MAIN L/R, CENTER, SURROUND L/R (SMALL)	
H.P.F.	fc=100 Hz, 12 dB/oct.
SUB WOOFER	
L.P.F.	fc=100 Hz, 24 dB/oct.
Total Harmonic Distortion	
MAIN L/R, CENTER, SURROUND L/R (1 kHz)	0.01% or less
SUB WOOFER (50Hz)	0.1% or less

Signal to Noise Ratio (IHF – A)	98 dB
Channel Separation (1 kHz)	80 dB
Power Supply	
U.S.A. model	AC 120 V, 60 Hz
Power Consumption	30 W
AC OUTLET	
UNSWITCHED	200 W max.
Dimensions	
Width	17.3 inch (439 mm)
Height	3.4 inch (86 mm)
Depth	11.9 inch (301 mm)
Weight	4.8 kg (10.6 lbs.)

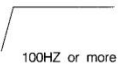
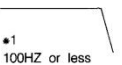
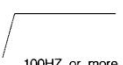
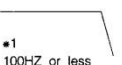
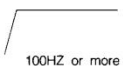
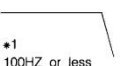
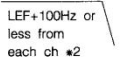
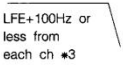
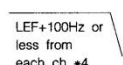
- Please note that all specifications are subject to change without notice.

## TROUBLESHOOTING

In the event of a malfunction please consult the table below to see if it suggests a remedy for the suspected problem. If the problem cannot be solved using these hints you should immediately unplug the unit from the AC power source and contact your nearest Marantz factory authorized Service Center, or the Marantz distributor in your country if you are outside the United States.

SYMPTOM	CAUSE	REMEDY
The unit fails to turn on when the POWER switch is pressed.	Power cord is not plugged in or is not completely inserted.	Firmly plug in the power cord.
No sound.	Incorrect input or output cord connections.	Connect the cords properly. If the problem persists, the cords may be defective.
	Improper input mode selection.	Select the proper input mode (RF, OPT or COAX).
	Improper input mode selection on the amplifier.	Select the 6 channel Direct mode on the SR-96.
Sound 'hums'	Incorrect cord connections.	Firmly connect the audio plugs. If the problem persists, the cords may be defective.
Sound output level to either or both of the rear surround speakers is lower than other speakers.	Sound output level to either or both of the rear surround speakers is decreased.	Increase the level.
No sound from the center speaker.	The setting of CENTER speaker is at the non position.	Select the SMALL or LARGE position.
Whole sound level is low, even though the volume is increased on the amplifier.	Volume level adjustment on this unit is low.	Increase the level.
Noise from nearby TV or tuner.	This unit is too close to the affected equipment.	Move this unit further away from the affected equipment.

**THE FOLLOWING TABLE SHOWS THE FREQUENCY RANGE THAT IS OUTPUT TO EACH CHANNEL ACCORDING TO THE SETTINGS FOR THE REAR PANEL SPEAKER MODE SWITCHES.**

		FRONT OUTPUT	SURROUND OUTPUT	CENTER OUTPUT	SUB-W OUTPUT
FRONT	LARGE	FULL			
	SMALL	 100HZ or more			 *1 100HZ or less
SURROUND	LARGE		FULL		
	SMALL		 100HZ or more		 *1 100HZ or less
	NONE	+SURROUND			
CENTER	LARGE			FULL	
	SMALL			 100HZ or more	 *1 100HZ or less
	NONE	+CENTER			
SUB.W	ON				 LEF+100Hz or less from each ch #2
	OFF	 LFE+100Hz or less from each ch #3		 LFE+100Hz or less from each ch #4	

\*1 WHEN SUB.W SWITCH IS SET AT ON POSITION.

\*2 WHEN SPK SWITCHES ARE SET AT SMALL POSITION.

\*3 WHEN FRONT SPK SWITCH IS SET AT LARGE POSITION, OTHER SPK SWITCHES ARE SET AT SMALL POSITION.

\*4 WHEN CENTER SPK SWITCH IS SET AT LARGE POSITION, OTHER SPK SWITCHES ARE SET AT SMALL POSITION.