ENGINEERED SOUND

Symetrix

371 SPL Computer

USER'S GUIDE   Rev B.02

What's Inside

Symetrix 371 SPL Computer User's Guide

Before You Begin

| What Ships in the Box | Getting Help | Optional Accessories | Notational Conventions in this User Guide | Operator Safety Summary | Equipment Markings

What Ships in the Box

- ☑ The 371 unit

- ☑ One PS-3 (117 volt), PS-3E (230 volt), or PS-3J (100 volt) power supply

- ☑ This user's guide

- ☑ A warranty card

    You can register online at www.symetrixaudio.com.

Getting Help

If you have questions beyond the scope of this guide, contact our Technical Services Group in the following ways:

tel   (425) 787-3222

          6:00 am to 5:00 pm Monday through Friday, Pacific Time

fax   (425) 787-3211

email   Email tech@symetrixaudio.com

web   www.symetrixaudio.com

Optional Accessories

MODEL	ITEM	DESCRIPTION
RM-3	19 in. Rack Tray	1 U shelf
FP-3	Filler Panel	Covers unused half of rack tray when one 371 unit is mounted.
PY-3	Y Power Cable	Connects a 371 with any other 300 Series product.
RC-3	Remote Control	Controls program channel volume.

Contact your dealer or Symetrix for purchasing information.

Notational Conventions in this User Guide

NOTE	Identifies information that needs extra emphasis. Generally supplies extra information to help you to better use the 371.
CAUTION	Identifies information that, if ignored, may cause damage to the 371 unit or other equipment in your system.
WARNING	Identifies information that, if ignored, may be hazardous to your health or that of others.
CAPS	Controls, switches or other markings on the chassis of the 371.
Bold Face	Indicates menu option in the 371 LCD display.
Underline	Indicates where you will find additional information.

Symetrix 371 SPL Computer User's Guide

Before You Begin

| What Ships in the Box | Getting Help | Optional Accessories | Notational Conventions in this User Guide | Operator Safety Summary | Equipment Markings

Operator Safety Summary

Follow all warnings and instructions. Install in accordance with the manufacturer's instructions.

Power Source This product is intended to operate from a Symetrix PS-3 or PS-3E power supply.

Grounding The chassis of this product is grounded through the grounding conductor of the PS-3 or PS-3E power cord. To avoid electric shock, plug the power cord into a properly wired receptacle before making any connections to the product. A protective ground connection, by way of the grounding conductor in the power cord, is essential for safe operation. Do not defeat the safety purpose of the grounding plug. The three-pronged grounded plug is provided for your safety. When the provided plug does not fit your outlet, consult an electrician for replacement of the obsolete outlet.

Danger from Loss of Ground If the protective ground connection is lost, all accessible conductive parts, including knobs and controls that may appear to be insulated, can render an electric shock.
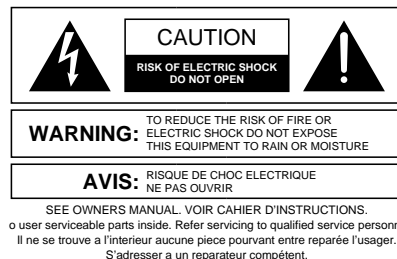
Proper Power Cord Use only the power cord and connector specified for the product and your operating locale. Use only a cord that is in good condition. Protect the power cord from being walked on or pinched, particularly at the plug, convenience receptacle, and the point where the cord exits from the apparatus.

Operating Location Do not operate this equipment under any of the following conditions: explosive atmospheres, in wet locations, in inclement weather, improper or unknown AC mains voltage, or if improperly fused. Do not install near any heat source such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat. Unplug this apparatus during lightning storms or when unused for long periods of time.

Stay Out of the Box To avoid personal injury (or worse), do not remove the product covers or panels. Do not operate the product without the covers and panels properly installed. Only use accessories specified by the manufacturer. Clean only with a damp cloth.

User-Serviceable Parts There are no user serviceable parts inside the 371. In case of failure, refer all servicing to the factory. Servicing is required when the 371 has been damaged in any way, such as when a power supply cord or plug is damaged, liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.

Equipment Markings

CAUTION
RISK OF ELECTRIC SHOCK
DO NOT OPEN

WARNING: TO REDUCE THE RISK OF FIRE OR ELECTRIC SHOCK DO NOT EXPOSE THIS EQUIPMENT TO RAIN OR MOISTURE

AVIS: RISQUE DE CHOC ELECTRIQUE NE PAS OUVRIR

SEE OWNERS MANUAL. VOIR CAHIER D'INSTRUCTIONS. o user serviceable parts inside. Refer servicing to qualified service personnel Il ne se trouve a l'interieur aucune piece pouvrant entre reparée l'usager. S'adresser a un reparateur compétent.

The lightning flash with arrowhead symbol within an equilateral triangle is intended to alert the user of the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons. The exclamation point within an equilateral triangle is intended to alert the user of the presence of important operating and maintenance (servicing) instructions in the literature accompanying the product (i.e., this user guide).

CAUTION
To prevent electric shock, do not use the polarized plug supplied with the unit with any extension cord, receptacle, or other outlet unless the prongs can be fully inserted.

Product Summary and Features

THE SYMETRIX 371 SPL COMPUTER automatically raises and lowers sound system levels in response to changes in ambient noise conditions. Designed for installations featuring foreground music and/or paging, it ensures that music and announcements are always clearly audible and distinct, but never too loud. Proprietary AmbiSense™ technology enables the 371 to continuously monitor changing ambient noise levels—not just during gaps in the audio program—so it can respond quickly to sudden changes.

APPLICATIONS

Restaurants

Retail Shops

Casinos

Offices

Transit Stations

Hospitals

Factories

Uses Microphone for Noise Sensing	Uses an external microphone to measure changes in the ambient noise level.
Continuously Monitors Ambient Noise Levels	AmbiSense technology responds to environmental noise changes in real-time—not just during gaps in audio program.
Headphone Monitoring	Monitor the sense signal using a separate front panel headphone output.
3 Operating Modes	**Active** Indicates continuous measurement of the ambient noise level.
	History Displays the lowest and highest SPL readings from when the unit was last reset.
	Bypass Bypasses the unit. Audio passes through at unity gain.
Signal Path	Accepts mono or stereo signals via Euroblock connectors.
Easy Calibration	Uses step-through menus on the front panel LCD. Calibration performed under typical installation conditions. No waiting for the quietest or noisiest ambient conditions.
Ratio Adjustment	Choose an adjustment ratio of SPL change vs. program level change.
Sense Signal Measuring	Display numeric reading and relative bargraph of the signal appearing at the sense terminals.
Gain Controls	Set minimum and maximum limits for SPL gain range. Gain range is −30 dB to +20 db.
Averaging Time	Choose integration time of the running average SPL.
Phantom Power	Sense input provides 15 V phantom power to microphone. Enable or disable in front panel LCD menu.
Ducker Control	Ducker input provides momentary reduction of program level (from 0 dB to −40 dB) and inhibits sense operation for the duration of the externally supplied line level ducking control signal.
Remote Control Option	Connect rotary potentiometer or Symetrix RC-3 for remote control of output level.

Checklist of Tasks for Hardware Connections, System Setup and Calibration

	REQUIRED	RECOMMENDED	OPTIONAL	TASK TO DO
HARDWARE CONNECTIONS	●			Connect page/program input source
	●			Connect 371 to output device
	●			Connect sense microphone
			◆	Connect input source for ducking
			◆	Connect remote volume control pot
			◆	Connect switch for external ducking control
	●			Connect to AC power supply
			◆	Connect headphones to hear what the 371 is sensing
SYSTEM SETUP	●			Choose **Operating Mode**
			◆	View calibration **Status**
			◆	Collect **History** of highest and lowest SPLs
		■		View **Sense** levels
	●			Enable **Phantom Power**
	●			Set **Sense Input Gain**
			◆	Specify **Output Trim**
	●			Set **MIN Limit**
		■		Specify **Averaging Time**
	●			Specify **Gain: Sense Ratio**
			◆	Set **Ducker Depth**
			◆	Set **Ducker Threshold**
		■		Lock or **Unlock Setup**
CALIBRATION	●			**Adjust to Maximum**: set the desired maximum 371 gain (0-20dB).

Making Hardware Connections
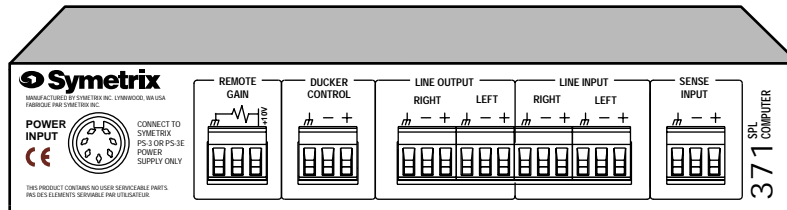
Overview of Rear Panel Connectors

CONNECTION	CONNECTOR TYPE	WHAT IT DOES
POWER INPUT	7-pin DIN female	Accepts power only from Symetrix PS-3 or PS-3E power supply.
REMOTE GAIN	Euroblock	Supplies 10 V, a ground, and a signal input for a remote gain trim control.
DUCKER CONTROL	Euroblock	Balanced input for the 371. 20 k ohm balanced bridging. If connecting unbalanced sources, see in this section Input and Output Connector Wiring.
LINE OUTPUT	Euroblock	These connectors deliver a differential balanced output at 200 ohm source impedance. If connecting unbalanced loads, see in this section Input and Output Connector Wiring.
LINE INPUT	Euroblock	Balanced input for the 371. 20 k ohm balanced bridging. If connecting unbalanced sources, see in this section Input and Output Connector Wiring.
SENSE INPUT	Euroblock	Accepts most standard dynamic and condenser microphones. Built-in mic preamp can supply 15 V phantom power and gain that ranges from 0 dB to 70 dB in 10 dB steps.

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Making Hardware Connections

Overview of Rear Panel Connectors | Sensing Microphone Considerations
| 371 Basic Connection | Connecting a Remote Volume Control
| Connecting a Switch for External Ducking Control | Input and Output Connector Wiring

Sensing Microphone Considerations

Type of Microphone

For most applications, an inexpensive low-impedance, omnidirectional microphone, such as a lavalier microphone works adequately.

Some installers have used boundary microphones with good success (they're unobtrusive).

Other installers have mounted microphone cartridges (available from Mouser Electronics in the U.S.) inside electrical boxes equipped with a single-holed cover.

In smaller rooms or acoustically live spaces, a directional microphone is a good choice, because you can use its position to favor the ambient sound and minimize pickup from the sound system loudspeakers.

If the sense mic is positioned a relatively long distance from the ambient noise source(s), a directional microphone may improve system performance.

NOTE - No matter what kind of microphone you choose, during calibration the 371 will adapt itself to the characteristics of that mic.

Location of Microphone

The sensing microphone needs to "hear" the ambient sound within the controlled space. It is vital that you place the microphone where it primarily picks up a majority of noise rather than the paging or music that is going through the system.

Do not locate the sensing microphone near a localized noise source that is not typical of the ambient noise level of the controlled zone, for example, the noise from a large machine of some sort, or maybe a kids play area, or a video game. If you do this the 371 will think that the zone is noisier than it really is.

The best sense mic placement ensures that the majority of the signal picked up by the sensing microphone is ambient noise. AmbiSense allows music or page pickup without any ill effects on its operation—up to about a 50:50 mix of music/page to ambient. In an extreme case where the sense microphone picks up 100% music/page (0% ambient noise), AmbiSense will not be able to extract enough information to use for gain control.

Capability of Sound System to Match the Maximum Required Level

Calibrate at a quiet-to-average time in the controlled space. It helps if you have an estimate (sound pressure level) of the maximum desired level. Check the sound system to see that it is capable of delivering that level.

Symetrix 371 SPL Computer User's Guide
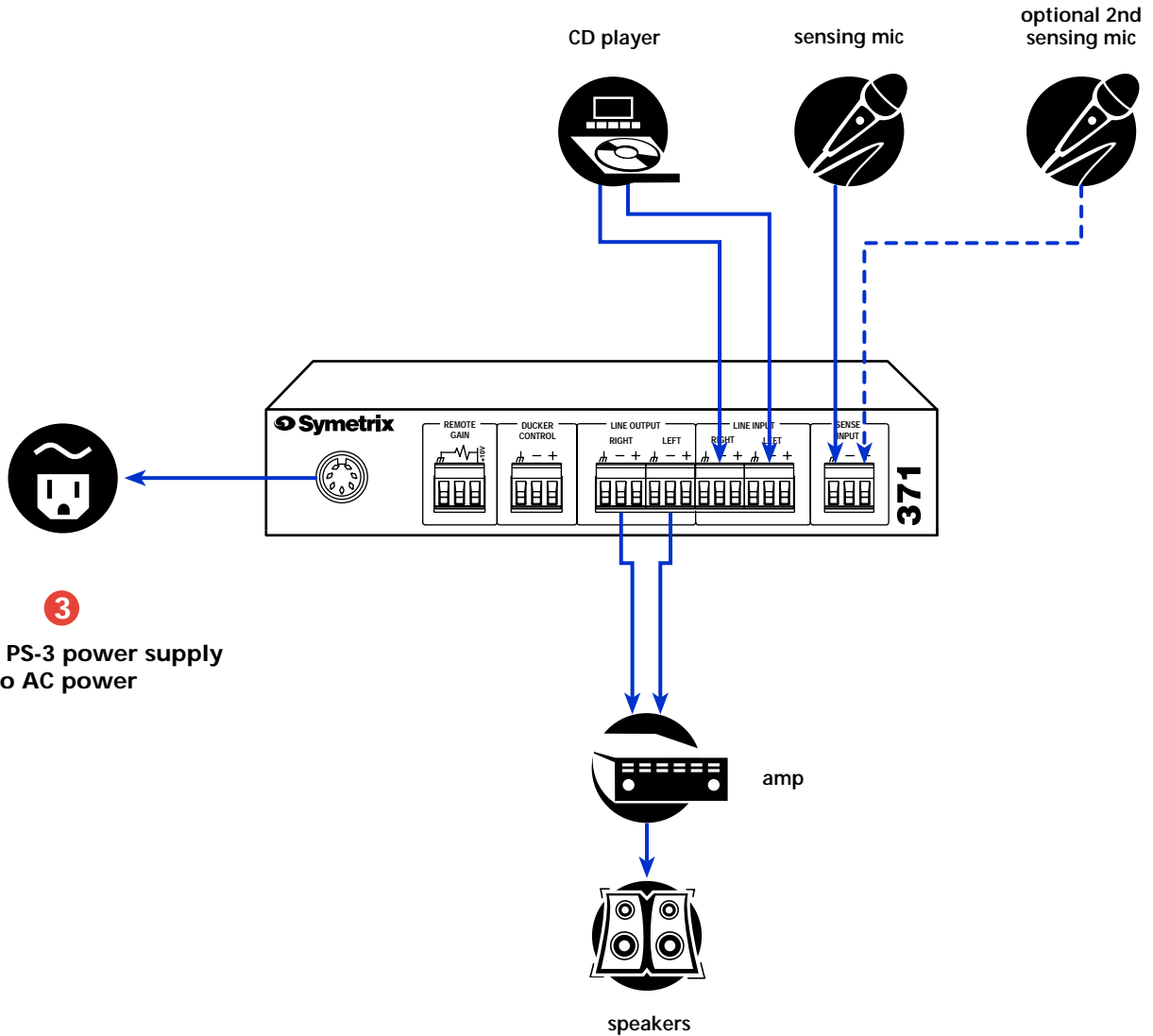# Making Hardware Connections

Overview of Rear Panel Connectors | Sensing Microphone Considerations
| 371 Basic Connection | Connecting a Remote Volume Control
| Connecting a Switch for External Ducking Control | Input and Output Connector
Wiring

371 Basic Connection

①

Connect your input devices.

CD player   sensing mic   optional 2nd
sensing mic

③

**Connect PS-3 power supply
to AC power**

amp

speakers

②

**Connect output to amplifiers, EQs,
speakers, etc.**

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Wiring

Connecting a Remote Volume Control

The 371 allows you to have remote gain control. You can connect a potentiometer or the Symetrix RC-3 Remote Control to the REMOTE GAIN Euroblock connectors.

Connect a potentiometer or another device which generates voltage between the 10 V output and ground of the 371. The value of the potentiometer isn't critical; anything between 10 k and 100 k (linear taper) will do. For best accuracy, use the supplied 10 V reference at Pin 1 of the connector to drive the high side of the potentiometer.

Enable Remote Control From the LCD menu

In order for the remote volume control to work, you must enable remote control.

To enable remote control:

1 From the LCD menu display, select the menu option **Output Trim.**

2 Turn ADJUST fully counterclockwise (below the setting for –10) to choose **Remote**.

   The actual gain according to the remote pot setting now displays.
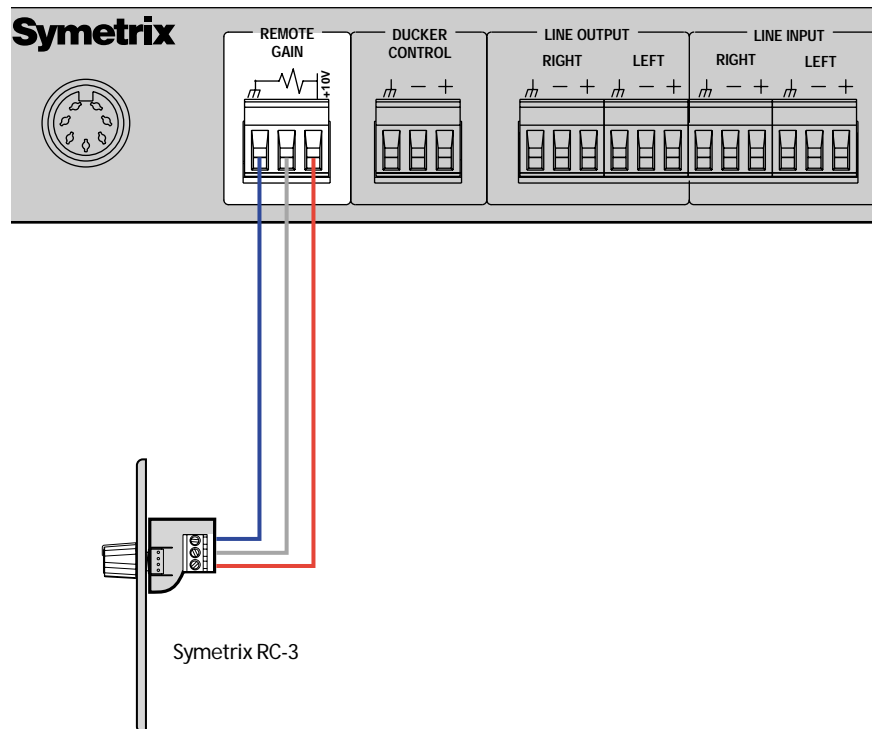
3 Press EXIT or NEXT to save setting.

Keep gain in –10 dB to +10 dB range for accurate opoeration. However, a remote pot can "dim" the audio down to –50 dB temporarily.

Cropped Rear Panel View of 371
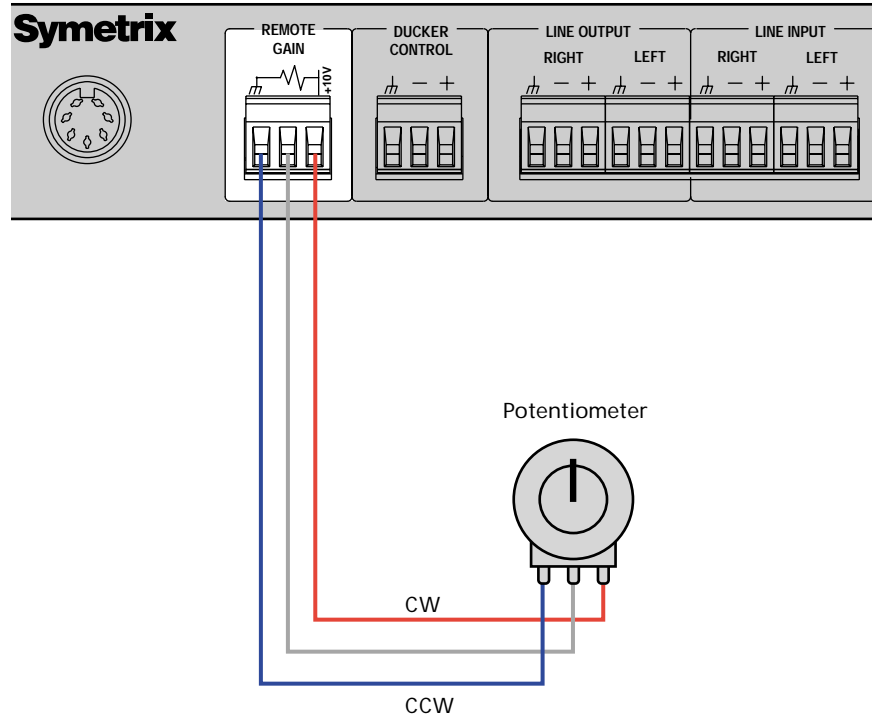
Cropped Rear Panel View of 371

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Making Hardware Connections

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| Connecting a Switch for External Ducking Control | Input and Output Connector
Wiring

External Ducking Control

The DUCKER CONTROL input is normally connected to a line level audio signal from any source you would like to use to trigger a momentary decrease in volume (ducking).

NOTE - The signal applied to the DUCKER CONTROL input does not get mixed with the program audio. In other words, the ducking input signal functions only as a control signal.

Alternatively, you can choose to attach to the DUCKER CONTROL a momentary switch or relay contact to manually control ducking.

Such a switch might be a push-to-talk switch contact within a microphone or a manual switch on a control panel. One isolated SPST (single pole single throw) normally open contact is required.

To enable ducking, you must also set parameters in the LCD menu.
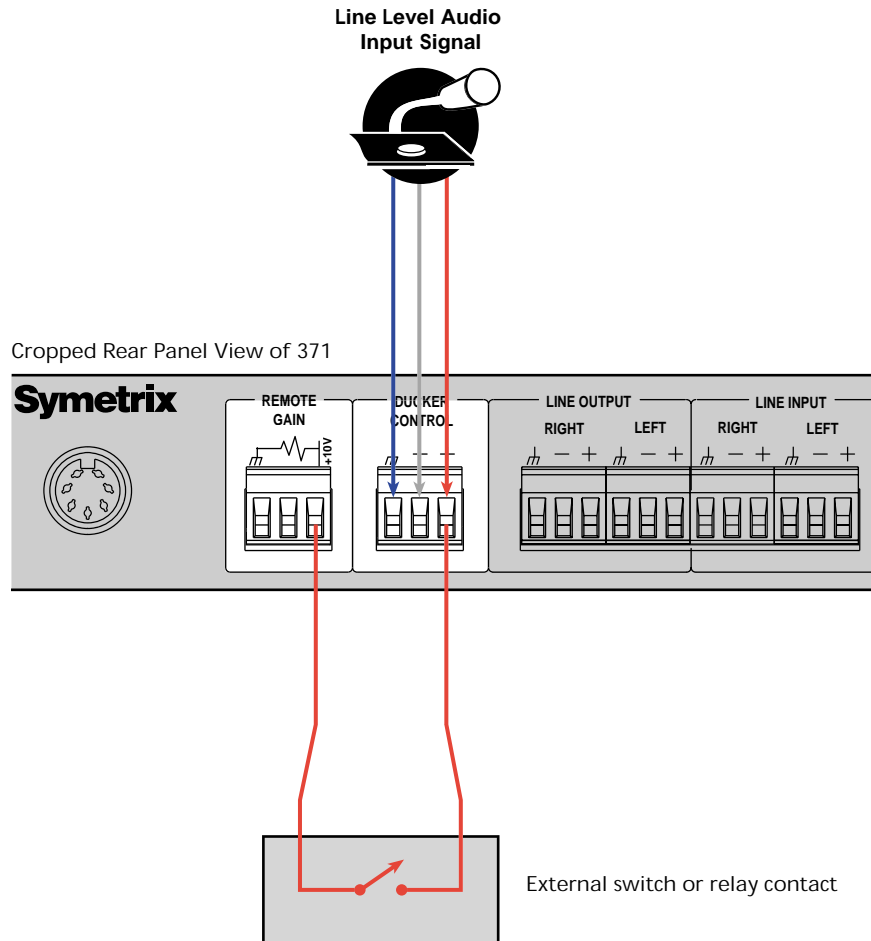
Set Ducking Parameters in LCD Setup Menu

- If you are using audio to control ducking set the **Ducker Threshold** between -30 dBu and +20 dBu. The correct setting is dependent up the average level of your incoming signal. Experiment until it sounds right to you.

- If you are using a switch to control ducking then set the **Ducker Threshold** somewhere between 0 and +10dBu.

- Set the **Ducker Depth** for the desired amount of signal attenuation when ducking is active.

Ducking takes place whenever the audio ducking signal exceeds the threshold or whenever the switch contacts are closed, depending upon which ducking method you have chosen.

Sensing is inhibited while ducking is in process, therefore gain remains fixed during the ducking event.

NOTE—

- If **Ducker Depth** is set to zero applying a ducking signal will freeze the gain.

Line Level Audio Input Signal

Cropped Rear Panel View of 371

External switch or relay contact

NOTE: Both switch contacts must be isolated from ground and other functions.

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Making Hardware Connections

Overview of Rear Panel Connectors | Sensing Microphone Considerations
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Wiring

Input and Output Connector Wiring

Input Connections

These connectors are designed for use with bare wire. Do not tin stranded wires before inserting them into the connectors.

For Unbalanced Connections

Connect the (–) input terminal to the source ground at the source.

Feeding unbalanced inputs directly from balanced outputs is not recommended due to the possibility of ground loops. You may want to use the Symetrix 307 isolation transformer to break the ground connection and eliminate the ground loop.
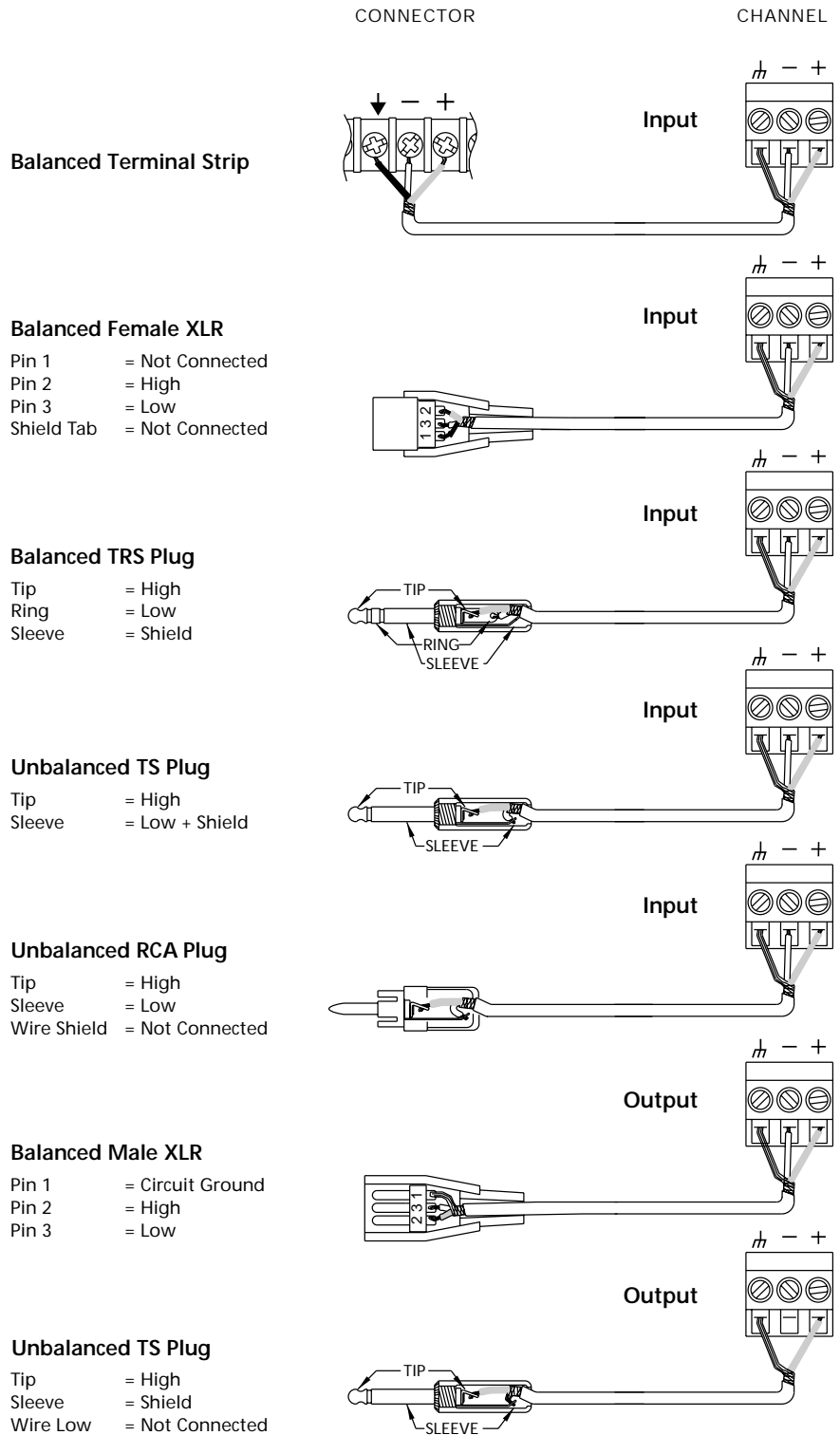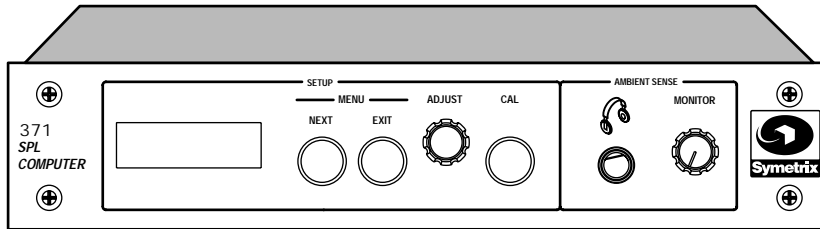
Output Connections

These connectors deliver a differential balanced output signal (mimics a grounded center tap transformer winding).

For Unbalanced Loads

With unbalanced loads, it is preferable to carry the low side of the input all the way back to the ground connection of the source.

Use the (+) output terminal and the ground terminal. Ignore (float) the (–) output terminal.

CONNECTOR   CHANNEL

Balanced Terminal Strip

Input

Balanced Female XLR

Pin 1	= Not Connected
Pin 2	= High
Pin 3	= Low
Shield Tab	= Not Connected

Input

Balanced TRS Plug

Tip	= High
Ring	= Low
Sleeve	= Shield

Input

Unbalanced TS Plug

| Tip | = High |
| Sleeve | = Low + Shield |

Input

Unbalanced RCA Plug

Tip	= High
Sleeve	= Low
Wire Shield	= Not Connected

Input

Balanced Male XLR

Pin 1	= Circuit Ground
Pin 2	= High
Pin 3	= Low

Output

Unbalanced TS Plug

Tip	= High
Sleeve	= Shield
Wire Low	= Not Connected

Output

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Overview of Front Panel

CONTROL	CONTROL TYPE	WHAT IT DOES
SETUP	LCD menu display	Two lines show levels and settings of selected menu option.
	NEXT	From normal operation, the first press enters the setup mode; subsequent presses step through the setup process and save settings.
	EXIT	Exits the setup mode and saves changes to settings. The unit reverts to normal operation.
	ADJUST	Turn to change the selected parameter.
	CAL	Press to have the 371 read the current ambient level and equate this reading to 0 db (unity) gain. Displays the relative ambient reading which it considers as normal. CAL is only active in normal operating mode and when setup is unlocked.
AMBIENT SENSE	Headphone jack	1/4 inch TRS jack suitable for headphone impedances of 60 ohms or higher, stereo or mono. Enables listening to the output of the sensing system. Helpful for troubleshooting or for figuring out what the 371 sense mic is actually 'hearing'. For more information, see System Setup>Description of Menu Options>Sense.
	MONITOR	Adjusts the volume level at the headphone jack.

How System Setup Works

Use the two push buttons, NEXT and EXIT, with the parameter adjustment knob, ADJUST, to gain access to menu setup options in the LCD display.

1 Press NEXT to enter the setup mode.

2 Turn ADJUST to select a specific value or choice.

3 Press NEXT again to gain access to another menu option. Subsequent presses of NEXT change menu options and save settings.

4 Press NEXT or EXIT to end the setup process, save any changes made, and return the unit to normal operation.

—or—

Allow 20 minutes of inactivity, after which the unit automatically returns to normal operation.

5 After setup is complete, calibrate the unit (See the section Calibration).

Checklist of Tasks

REQUIRED	RECOMMENDED	OPTIONAL	MENU OPTION IN LCD DISPLAY
●			Choose **Operating Mode**
		◆	View calibration **Status**
		◆	Collect **History** of highest and lowest SPLs
	■		View **Sense** levels
		◆	Enable **Phantom Power**
●			Set **Sense Input Gain**
		◆	Set **Output Trim**
●			Set **MIN Limit**
	■		Specify **Averaging Time**
●			Specify **Gain: Sense Ratio**
		◆	Set **Ducker Depth**
		◆	Set **Ducker Threshold**
	■		Lock or **Unlock Setup**

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Description of Menu Options

PRESS NEXT TO SELECT MENU FEATURE	TURN ADJUST TO SELECT VALUE OR CHOICE	DESCRIPTION
Startup Screen		Displays current gain applied by the unit. When the 371 senses a signal at the DUCKER INPUT, **Duck** displays.
● **Operating Mode**	Active	Select this mode if you want the 371 to vary the gain of this program channel to match the ambient noise level.
		How Sampling Works—The 371 takes SPL measurements every 10 ms through the sensing microphone.
	History	Select this mode if you only want the 371 to collect data about the highest and lowest ambient SPL in the installation zone(s).
		The 371 does not perform any gain control in this mode. You can determine the start of the history period or collection of data. See in this section **History** to reset or start the collection of the relative SPL history.
		Ducking can be made active in this mode if desired.
	Bypass	Select this mode when you want to leave the 371 physically connected in the signal path, only pass the signal unaltered, and never take SPL samples.
		This feature is useful if you encounter setup problems in an installation. You can temporarily disable the 371 until you have the time to correct the problem. Or when the action of the 371 is temporarily unwanted, for example, when an unusual event is taking place.
		You can view your control settings in this mode. Any changes you make to your control settings in this mode, will not take effect.
		The gain is always held at unity (0 dB) in this mode.
		Bypass mode is not a hard-wire bypass.

● REQUIRED   ■ RECOMMENDED   ◆ OPTIONAL

Description of Menu Options continued

PRESS NEXT TO SELECT MENU FEATURE	TURN ADJUST TO SELECT VALUE OR CHOICE	DESCRIPTION
◆ **Status**		Displays the current calibration status of the 371.
		Cal Ambient signal level measured at the last sense period.
		Min Minimum gain that the 371 is permitted to have.
		Max Maximum gain that the 371 is permitted to have.
◆ **History**	Reset to Zero	Displays numeric readings of the highest and lowest SPLs from whenever the 371 unit was calibrated or from when the setting was last reset. Resetting the 371 to Zero starts a new history period, where the 371 begins to collect the highest and lowest relative SPL readings.
◆ **Sense**		Displays bargraph of current ambient noise level.
◆ **Phantom Power**	ON +15 V, OFF	To turn on or off 15 V phantom power for the sense microphone. Enable only if your microphone requires it.
● **Sense Input Gain**	0, 10, 20, 30, 40, 50, 60, 70 dB	Select the amount of gain that is required for the sense microphone. For proper calibration, the internal preamp must produce a signal in the range of −45 dB to 20 dB. Refer to **Sense** for relative SPL readings.

● REQUIRED   ■ RECOMMENDED   ◆ OPTIONAL

Description of Menu Options continued

PRESS NEXT TO SELECT MENU FEATURE	TURN ADJUST TO SELECT VALUE OR CHOICE	DESCRIPTION
◆ Output Trim	–10 dB to +10 dB in 1 dB increments	To add to or subtract from the overall output gain.
	Remote	To control the output trim with a potentiometer or with the RC-3 Remote Control.
		Keep gain in –10 dB to +10 dB range for accurate operation. However, a remote pot can "dim" the audio down to –50 dB temporarily.
■ Set MIN Limit	–30 dB up to the actual setting of the maximum limint in 1 dB increments	To adjust the lowest gain setting that the 371 uses.
		This ensures a known minimum level from the sound system, even if the ambient drops to dead silence.
■ Averaging Time	1, 3, 10, 30 seconds 1.5, 5, 15 minutes	To adjust the reaction time at which the 371 adjusts to the ambient level.
		Longer running averages make the system respond more to the trend of the ambient level rather than the most recent events.
● Gain:Sense Ratio	0.5:1, 1:1, 1.5:1, 2:1 NOTE - The displayed ratio values are guide lines only and not absolute values. The AmbiSense algorithm may modify these ratios based upon the data it gathers during the calibration process.	Refers to the change in gain of the 371 versus the change in the ambient.
		0.5:1 changes gain 0.5 dB for every 1 dB change in the ambient. This makes the sound system louder in response to increases in the ambient, but never tries to out-shout the crowd.
		1:1 matches gain changes to the ambient noise level.
		1.5:1 changes gain 1.5 dB for every 1 dB increase in the ambient noise level.
		2:1 changes gain 2 dB for every 1 dB increase in the ambient noise level.
		NOTES -
		• At a 2:1 ratio with high ambient levels, the 371 can easily 'out shout' the crowd.
		• At lower ambient levels, the 371 might let the sound system get lost in the ambient. To avoid this, choose a higher (closer to 0 dB) minimum gain and/or a higher ratio.

● REQUIRED   ■ RECOMMENDED   ◆ OPTIONAL

Description of Menu Options continued

PRESS NEXT TO SELECT MENU FEATURE	TURN ADJUST TO SELECT VALUE OR CHOICE	DESCRIPTION
◆ Ducker Depth	0 dB to −40 dB	To set the ducking range.
		Upon ducking, the program outputs drop according to the value selected.
		External DUCKER CONTROL signal does not mix with internal program signal. The external control signal merely initiates ducking action.
◆ Ducker Threshold	+20 dB to −30 dB	To set the minimum signal level needed for the 371 to acknowledge ducking input.
		The 371 program outputs drop to the **Ducker Depth** if the DUCKER CONTROL input rises above the Ducker Threshold.
■ Setup Unlocked	Unlocked, Locked	Choose to protect front panel LCD menu settings from being altered.
		To lock, press and hold CAL while turning ADJUST. Once it's locked, pressing NEXT shows the current settings. Any attempt to alter settings results in the display of the message **Setup is Locked**.
		To unlock, press NEXT until the display reads **Setup is Locked**. Press and hold CAL while turning ADJUST. The front panel is now unlocked.

● REQUIRED   ■ RECOMMENDED   ◆ OPTIONAL

Symetrix 371 SPL Computer User's Guide
Calibration

What Does Calibration Do | What to Do Before Calibration | How to Calibrate
| What to Do if Calibration Fails | What You Should Not Do After Calibration

What Does Calibration Do?

The calibration process correlates the current ambient noise level to 0 dB (unity) gain. As the ambient SPL becomes less, the 371 lowers its gain. Conversely, when the SPL increases, the gain of the 371 increases.

Proper calibration is vital to the proper operation of the 371. The AmbiSense algorithm will not function correctly if the calibration procedures are not executed.

What To Do Before Calibration

Before calibration, setup the SENSE INPUT. System setup menu items that control the Sense Input are **Phantom Power** and **Sense Input Gain**.

THIS IS IMPORTANT!

- Calibrate when the ambient noise in the area being controlled is at a level typical of normal conditions.

- Use the highest paging or music input levels that you are likely to encounter during normal operation.

Adjust **Sense Input Gain** until **Sense** displays a bargraph showing a mid-level sense signal. Make sure you leave enough headroom so that increased ambient levels do not overdrive the sense input. For example, if you expect that ambient noise levels will rise 20 dB above the currently observed levels, adjust the **Sense Input Gain** to leave more than 20 dB of headroom under current conditions.

Only perform calibration when the setup for the 371 is unlocked (See System Setup>Description of Menu Options>Setup Unlocked). Pressing CAL when the setup is locked will do nothing.

How to Calibrate

1 On the front panel, press CAL.

The 371 sets software controlled gain to 0 dBu (unity). The LCD menu displays **Unity Gain ... Cal to proceed**.

2 Adjust the other components in the sound system (music level, power amp gain, etc.) for the desired program level during average conditions.

3 If you wish to continue with calibration then press CAL again. If you do not wish to continue with calibration then press EXIT and the calibration process will abort.

The 371 reads the ambient level on the SENSE INPUT. This level will be the unity reference (0 dB) for the 371.

4 When the LCD menu displays **Adjust to Maximum**, turn ADJUST to set the maximum gain for the program output.

The gain range is 0 dB to +20 dB in 1 dB steps.

5 Next, the LCD menu displays whether calibration succeeded or not.

6 When calibration is finished, the 371 displays the relative ambient SPL reading which it considers as normal.

What to Do If Calibration is Unsuccessful.

Calibration can fail if the **Sense Input Gain** is set too low (–45 dB) or too high (+20 dB). In the LCD setup menus, adjust **Sense Input Gain** for a proper gain setting.
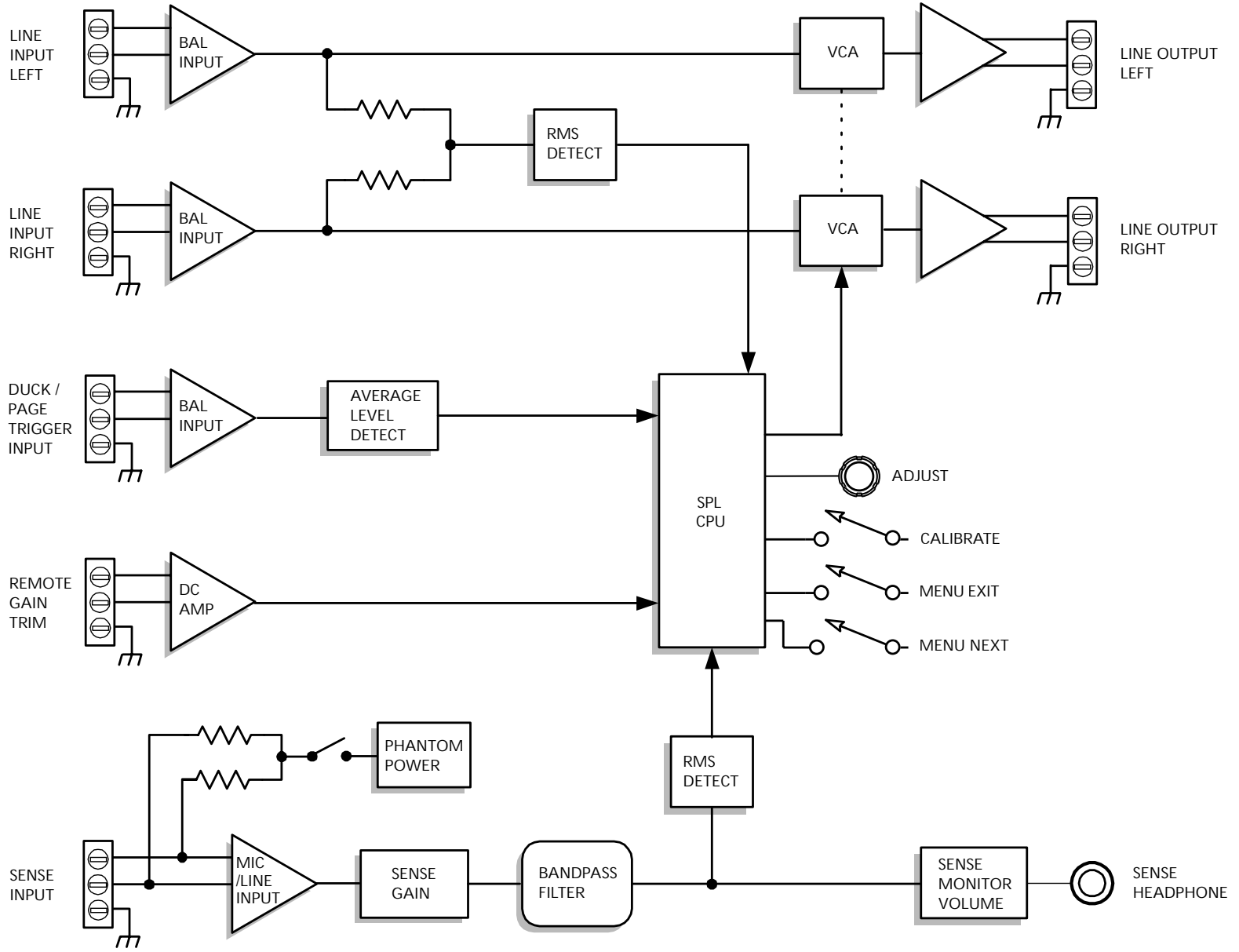
Check **Sense** for the current sense input level. The setting should be between –45 dB and +20 dB.

You can also check the SENSE INPUT by listening with headphones connected to AMBIENT SENSE MONITOR on the front panel to hear what the 371 is reading.

What You Should Not Do After Calibration

Do not adjust the level of any volume controls in the sound system signal path after the 371. Doing so will cause the AmbiSense technology to yield erroneous results. Controls that must remain fixed include amplifier input level controls, wall-mounted L-Pad style speaker attenuators, etc.

Also, do not insert compressors or limiters into the signal path after the 371. If you need to adjust amplifier input levels, re calibrate the 371 afterward to reset the data collected by the AmbiSense algorithm. If you need to trim the overall system level up or down after calibration, you can do this by adjusting the **Output Trim**.

SYMPTOM	PROBABLE CAUSE / WHAT TO DO

No output signal	Check to see that the LCD display is illuminated and the unit is plugged in. Check cables and connections to see if:
	    •Outputs are driving inputs and inputs are fed from outputs.
	    •Signal is coming from the source(s) and that it is getting to the 371.
	    •The signal chain after the 371 is functioning.

Unit will not calibrate	Check that input levels are normal. Use headphones to hear what the 371 reads. Check **Sense Input Gain** to to see if the setting is between −45 dB and +20 dB. Calibration will fail if it is below or above these levels. Check sensing microphone connections. Enable **Phantom Power** if you are using a microphone that requires it.
Music always plays too loud	Check levels in **Set MIN Limit**. Check if the level is set too high in the **Gain:Sense Ratio**. Check in calibration if the maximum limit in **Adjust to Maximum** is set too high.
Unit seems to have no effect	Check the ratio setting for **Gain:Sense Ratio**. At **0.5:1**, the gain changes are very subtle. Choose a larger value for more change. Check the bargraph in **Sense** to see if the sense level is always the same, because then the gain will always be the same. See if it's in HISTORY or BYPASS mode.
Unit does not control levels as expected.	Using headphones connected to the front panel headphone jack, listen to the sense signal to verify that the SENSE INPUT is receiving a signal that accurately represents ambient noise conditions. Listen for hums, buzzes, or interference that might be masking true ambient noise. Move sense mic if necessary. Adjust **Sense Input Gain** to proper level. Also, it may be possible that someone accidentally changed downstream level controls after the unit was last calibrated. This change causes AmbiSense to produce erroneous results. Correct this by recalibrating the unit. NOTES— • The accuracy of the 371 is only as good as the quality of your microphones. • The actual gain-sense ratio *may* differ from the setting chosen during set up and diplayed on the LCD. The displayed ratios are guidelines only. The AmbiSense algorithm may modify the actual ratios based upon the data it gathers during the calibration process as necessary.
Unit is at minimum gain all the time	Check if microphone is connected or turned on. Check signal at sense input.
Ducker doesn't work	**Ducker Threshold** set too high. **Ducker Depth** set to 0. Check connections to see if input signal is connected and turned on.

SYMPTOM	PROBABLE CAUSE / WHAT TO DO
Noise (hiss)	Check input signal levels and level control settings. Check gain settings on downstream equipment for presence of noise in input signal.
Hum or buzz in output	Check input connector wiring. Check for a ground loop problem. Inspect related system equipment grounding to see that all system components are on the *same* AC ground.
Distortion	Check input signals for distortion. Check if line input signal is too hot. Check if the sound system has sufficient power for the SPL that you are trying to attain. If using a high setting for **Adjust to Maximum** in calibration, you may be overloading the input to your amplifier; select a lower value. Ensure that something downstream isn't clipping.
No audio using remote volume controls	Check **Output Trim** to see if **Remote** is enabled.
371 is inoperative	Certain uncontrollable events (lightning, flood, nuclear blast, other catastrophic disturbances) can corrupt the 371's memory rendering it inoperable. To return the 371's memory to its factory default state: 1) Disconnect AC power. 2) Press and hold in the NEXT and EXIT buttons. 3) Re-connect AC power. 4) Release the NEXT and EXIT buttons. 5) Press and release EXIT three times. Now the LCD screen will display "EEPROM defaults restored" followed by the software version number. After doing this, all previous setup and calibration data will have been lost and must re-entered as if it were a brand new installation. 6) Give to you favorite charity generously.
Music/page is too loud.	Try re-calibrating making sure that music/page is playing continuously during the calibration process at it's normal or normal to high level.

Input/Output

Maximum Input Level	+20 dBu balanced, +20 dBu unbalanced
Program Input Impedance	>20 k ohms balanced, >10 k ohms unbalanced
Input Common Mode Rejection Ratio	>40 dB line inputs
Maximum Output Level	+26 dBu balanced (20 k ohm load)
	+22 dBm balanced (600 ohm load)
Output Impedance	200 ohms balanced, 100 ohms unbalanced

Performance Data

Program Frequency Response	20 Hz to 20 kHz, +0, −1 dB
Program Path THD+N	<0.025% (+4 dBu in, +4 dBu out)
Output Gain Range	+20, −30 dB
Sense Channel Frequency Response	−3 db at 300 Hz and 6000 Hz
	3-pole Butterworth
Sense Channel Gain	selectable, 0 dB to +70 dB
Additional Headphone Monitor Gain	28 dB maximum
Program Channel Output Noise	−95 dBu @ unity gain, typical
Output Trim Range	+/−10 dB

Connections

Line Inputs, Sense Input, Ducker Control, Remote Gain, Line Outputs	Euroblock
Power In	7-pin DIN
Headphone	1/4 in. TRS, will drive mono or stereo headphones

Physical

Size (H x W x D)	1/2 rack unit
	1.75 in. x 8.5 in. x 6.5 in., 4.445 cm x 21.59 cm x 15.875 cm
Shipping Weight	4.5 lbs / 2.03 kg

Electrical

Power Requirements	10 W maximum, Symetrix PS-3 or PS-3E only
PS-3	115 V, 60 Hz AC nominal
PS-3E	230 V, 50 Hz to 60 Hz AC nominal

In the interest of continuous product improvement, Symetrix Inc. reserves the right to alter, change, or modify these specifications without prior notice. For the latest specifications, visit symetrixaudio.com. Go to the product page for the 371 SPL Computer.

Architects and Engineers Specifications

The Ambient Level Controller (ALC) shall control the output level of the sound system in response to the observed acoustical noise level within the controlled space during system operation. These measurements shall be made continuously, not just during gaps in the audio program.

The ALC shall utilize microphones to sense the ambient noise level. The unit shall incorporate front-panel headphone output enabling the user to monitor the ambient sense signal system.

The ALC shall provide user-adjustable parameters to alter the way that it responds to changes in the ambient noise level. These parameters are: minimum and maximum gain through the device, noise sensing protocol, gain:sense ratio, ducker control, output trim, and averaging time. In addition, the ALC shall provide an active signal mode, bypass mode, and a history mode that collects and displays ambient noise history from the controlled space.

The ALC shall provide two independent line level balanced inputs and outputs that control two audio signals. The maximum input level shall be +20 dBu and the maximum output level shall be +26 dBu (+22 dBm into 600 ohms) balanced. The balanced input impedance shall be 20,000 ohms and the output source impedance shall be 200 ohms balanced, 100 ohms unbalanced. The gain control range shall be −30 dB to +20 dB. The frequency response shall be 20 Hz to 20 kHz +0/−1 dB with THD+N less than 0.25% at +4 dBu over the same range of frequencies. The output noise of the device shall be less than −95 dBu (20 kHz noise bandwidth, unity gain). The input and output configuration shall be active balanced.

In addition to the audio input/output connections, there shall be connections provided for a sense input and remote trim control.

A front panel power indicator shall be provided. A liquid crystal display shall be provided to communicate operating parameters and setup information with the user.

The ALC shall occupy half of the width of one rack space and shall be housed in a metal enclosure. It shall use an external, safety agency approved, power supply. The Ambient Level Controller shall be the Symetrix model 371 SPL Computer.

Following are the terms and limitations of the Symetrix warranty.

Warranty

Symetrix, Inc. expressly warrants to the original purchaser ("Buyer"), subject to the terms and conditions set forth below, that the Product will be free from defects in material and workmanship as a result of normal commercial use for one (1) year from the date of purchase.

Symetrix's warranty obligation is limited to the repair, replacement, or refund at Symetrix's sole discretion, of the part or parts of the Product which may thus prove defective in materials or workmanship within one year from date of purchase under normal use and which our examination discloses to our satisfaction to be thus defective, provided that Buyer gives Symetrix prompt notice of its warranty claim and satisfactory proof thereof.

Symetrix will make every reasonable effort to ensure that parts are available to support the repair of our products under warranty. In the event that a product or component part thereof becomes obsolete, unavailable or irreparable, Symetrix reserves the right to refund a prorated portion of the purchase price in full satisfaction of all warranty claims.

In order to serve you better we require that the Buyer shall, prior to shipping Product to Symetrix for warranty service, contact Symetrix and secure a Return Authorization Number that shall be included with the returned Product. This will facilitate our efforts to keep track of your Product and process your warranty repair as quickly as possible. Buyer will prepay all freight charges to ship the Product to Symetrix for warranty inspection and service. This warranty is subject to Symetrix's inspection of the Product at its facilities and, upon Symetrix's request, satisfactory proof of purchase (dated copy of original retail dealer's invoice.)

Symetrix reserves the right to effect repairs to the product with reconditioned components/parts. Products once repaired under warranty will be shipped to Buyer freight prepaid by Symetrix via United Parcel Service (surface) or any similar shipper, to any location designated by buyer within the Continental United States. At Buyer's request and expense Product will be returned via airfreight. Outside the continental United States, repaired or replaced products will be returned freight collect.

THIS WARRANTY IS EXPRESSLY IN LIEU OF ALL OTHER WARRANTIES EXPRESS OR IMPLIED, ARISING BY LAW OR OTHERWISE (INCLUDING, WITHOUT LIMITATION ANY OBLIGATIONS OF THE SELLER WITH RESPECT TO CONSEQUENTIAL DAMAGES) INCLUDING THE WARRANTIES OF MERCHANTABILITY AND FITNESS FOR USE AND OF ALL OTHER OBLIGATIONS OR LIABILITIES ON OUR PART, AND WE NEITHER ASSUME, NOR AUTHORIZE ANY OTHER PERSON TO ASSUME FOR US, ANY OTHER LIABILITY IN CONNECTION WITH THE SALE OF THE PRODUCT. THIS WARRANTY SHALL NOT APPLY TO THIS PRODUCT OR ANY PART THERE OF WHICH HAS BEEN SUBJECT TO ACCIDENT, NEGLIGENCE, ALTERATION, ABUSE, OR MISUSE. WE MAKE NO WARRANTY WHATSOEVER IN RESPECT TO ACCESSORIES OR PARTS NOT SUPPLIED BY US. THE TERM "ORIGINAL PURCHASER," AS USED IN THIS WARRANTY SHALL BE DEEMED TO MEAN THAT PERSON OR COMPANY THAT ORIGINALLY PURCHASED THE PRODUCT.

This Symetrix product has been designed and manufactured for use in professional/industrial systems and is not intended for other usage. This warranty only applies to Buyers using the Product in professional/industrial systems. With respect to others, including but not limited to consumers for personal, family, or household use, Symetrix expressly disclaims all warranties, including but not limited to warranties of merchantability and fitness for a particular purpose and the express warranties as otherwise provided herein.

Symetrix reserves the right to modify the design or make additions to, or improvements to, its product lines without making similar upgrades to Product purchased by Buyer. Symetrix does not authorize any third party, including any dealer or sales representative, to assume any liability, effect any repairs or modifications to the Product, or make any additional warranties or representation regarding the Product or Product information on behalf of Symetrix.

Symetrix's total liability on any claim, whether in contract, tort (including negligence) or otherwise arising out of, connected with, or resulting from the manufacture, sale, delivery, resale, repair, replacement or use of Product will not exceed the purchase price of the Product or any part thereof which gives rise to the claim. In no event will Symetrix be liable for any incidental or consequential damages including but not limited to damage for lost revenue, cost of capital, claims of customers for service interruptions or failure to supply, and costs and expenses incurred in connection with labor, overhead, transportation, installation or removal of products or substitute facilities or supply houses as a result of Product failure.

This limited warranty gives Buyer certain rights. Buyer may have additional rights under applicable law.

Where to Get Service

If outside of the USA

If you have determined that your 371 requires repair services and you live outside of the United States, please contact your local Symetrix dealer or distributor for instructions on how to obtain service.

If inside the USA

Symetrix will attempt to perform in-warranty or out-of-warranty service on any product it has manufactured for a period of five years from date of manufacture assuming all original equipment components are still available from their respective manufacturers. If you reside in the USA, then proceed as follows:

In-Warranty Repairs

Repairs made in-warranty will cost you only one-way freight charges. We'll prepay the return (surface) freight. Of course, if the repair is due to operator error, parts and labor will be charged. If there are charges for the repair costs, you will pay for the return freight. All charges will be COD unless you have made other arrangements (prepaid, Visa, or Mastercard).

Out-of-Warranty Repairs

If the warranty period has passed, you'll be billed for all necessary parts, labor, packaging materials, and freight charges.

To Have Your 371 Repaired (USA Customers Only)

1 Call our Technical Services Group for a return authorization (RA) number.

2 (425) 787-3222, Monday through Friday, 6:00 am to 5:00 pm Pacific Time.

   Have your serial number ready to give to the service representative.

3 Pack the unit in its original packaging materials.

4 Include your name, address, daytime telephone number, and a brief statement of the problem.

5 Write the RA number on the outside of the box.

6 Ship the unit to Symetrix, freight prepaid. **We do *not* accept freight collect shipments**.

Symetrix, Inc.
14926 35th Ave West
Lynnwood WA 98037, USA

If You Don't Have Factory Packaging Materials

If you send us your product in substandard packaging, we will charge you for factory shipping materials. If you don't have the factory packaging materials, do the following:

1 Select an oversized carton.

2 Wrap the unit in a plastic bag, and surround it with bubble-wrap.

3 Pack the box full of Styrofoam peanuts. Be sure there is enough clearance in the carton to protect the rack ears.

We will return the unit in Symetrix packaging.

Declaration of Conformity

We, Symetrix Inc.

14926 35th Ave. West, Lynnwood, Washington, USA,

declare under our sole responsibility that the product:

371 SPL Computer

to which this declaration relates, is in conformity with the following standards:

EN55103-1

Electromagnetic compatibility—Product family standard for audio, video, audio-visual and entertainment lighting control apparatus for professional use.
Part 1 Emission

EN 55103-2

Electromagnetic compatibility—Generic immunity standard
Part 1: Residential, commercial, and light industry.

PS-3E power supply complies with this code:

EN 60950

Safety requirements for mains operated electronic and related apparatus for household and similar general use.

The technical construction file is maintained at:

Symetrix, Inc.

14926 35th Avenue West

Lynnwood, WA 98037-2303

USA

The authorized representative located within the European Community is:

World Marketing Associates

P.O. Box 100

St. Austell, Cornwall, PL26 6YU, U.K.

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Authorized signature:

Dane Butcher, President, Symetrix, Inc.

Symetrix

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301	Low Distortion Compressor/Limiter
302	Dual Microphone Preamplifier
303	Interface Amplifier
304	Headphone Amplifier
305	Distribution Amplifier (1x4)
306	Preamp/Ducker
307	Dual Isolation Transformer
308	VCA Volume Control/Loudness EQ
371	SPL Computer
372	SPL Computer
402	Dual Output Delay
420	Stereo Power Amplifier
421M	AGC-Leveler
422	Stereo AGC-Leveler
440	Foreground Audio Controller
450	Dual Zone Priority Mixer
460	Presentation Audio Mixer
501	Peak-RMS Compressor/Limiter
501-01	Peak-RMS Compressor/Limiter
506E	Headphone Amplifier
527E	Voice Processor
528E	Voice Processor
531E	Graphic Equalizer
532E	Graphic Equalizer
533E	Graphic Equalizer
551E	5-Band Parametric EQ
552E	Dual 5-Band Parametric EQ
562E	Windowing Expander/Gate
565E	Dual Compressor/Limiter/Expander
571	SPL Computer
571S	SPL Computer Slave
581E	Distribution Amplifier (4x4)
606	Delay F/x Machine
610	Broadcast Audio Delay
628	Digital Voice Processor
9022	2x2 DSP Engine
HR-1	Headphone Remote for 304 and 506E
RC-1	628 Remote Control
RC-2	Remote Control
RC-3	Remote Control
RC-610	Remote Control