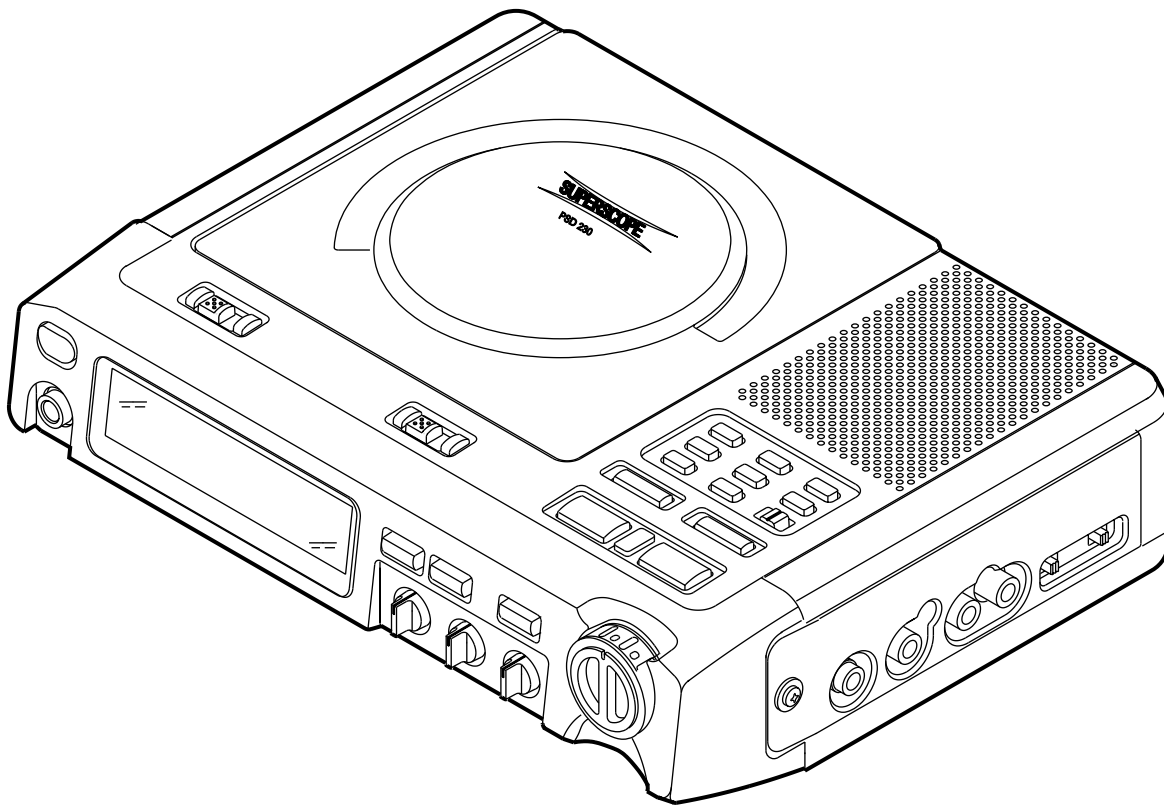


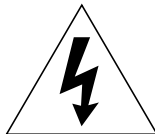
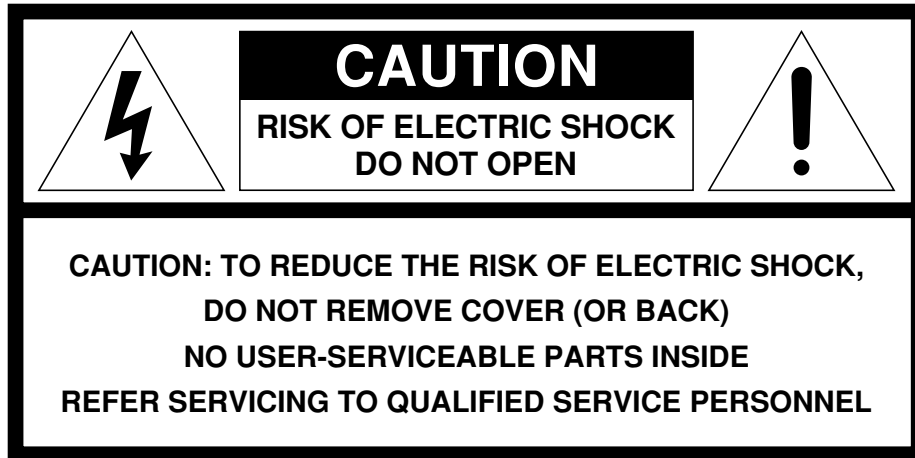
SUPERSCOPE®

**PSD220
&
PSD230**

**Performing Arts Portable
CD Players**



Owners Manual



The lightning flash with arrowhead symbol, within an equilateral triangle, is intended to alert the user to 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 to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

WARNING

**TO REDUCE THE RISK OF FIRE OR ELECTRIC SHOCK,
DO NOT EXPOSE THIS APPLIANCE TO RAIN OR MOISTURE.**

LASER SAFETY

This unit employs a laser. Only a qualified service person should remove the cover or attempt to service this device, due to possible eye injury.

**CAUTION : USE OF CONTROLS OR ADJUSTMENTS
OR PERFORMANCE OF PROCEDURE
OTHER THAN THOSE SPECIFIED HEREIN
MAY RESULT IN HAZARDOUS RADIATION
EXPOSURE.**

SAFETY INSTRUCTIONS

READ BEFORE OPERATING EQUIPMENT

This product was designed and manufactured to meet strict quality and safety standards. There are, however, some installation and operation precautions which you should be particularly aware of.

1. Read Instructions — All the safety and operating instructions should be read before the appliance is operated.
2. Retain Instructions — The safety and operating instructions should be retained for future reference.
3. Heed Warnings — All warnings on the appliance and in the operating instructions should be adhered to.
4. Follow Instructions — All operating and use instructions should be followed.
5. Water and Moisture — The appliance should not be used near water — for example, near a bathtub, wash-bowl, kitchen sink, laundry tub, in a wet basement, or near a swimming pool, etc.
6. Heat — The appliance should be situated away from heat sources such as radiators, heat registers, stoves, or other appliances (including amplifiers) that produce heat.
7. Power Sources — The appliance should be connected to a power supply only of the type described in the operating instructions or as marked on the appliance.
8. Cleaning — The appliance should be cleaned only as recommended by the manufacturer.
9. Nonuse Periods — The power cord of the appliance should be unplugged from the outlet when left unused for a long period of time.
10. Object and Liquid Entry — Care should be taken so that objects do not fall and liquids are not spilled into the enclosure through openings.
11. Damage Requiring Service — The appliance should be serviced by qualified service personnel when:
 - A. The power-supply cord or the plug has been damaged; or
 - B. Objects have fallen, or liquid has spilled into the appliance; or
 - C. The appliance has been exposed to rain; or
 - D. The appliance does not appear to operate normally or exhibits a marked change in performance; or
 - E. The appliance has been dropped, or the enclosure damaged.
12. Servicing — The user should not attempt to service the appliance beyond that described in the operating instructions. All other servicing should be referred to qualified service personnel.

NOTE:

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to

try to correct the interference by one or more of the following measures:

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

NOTE: Changes or modifications may cause this unit to fail to comply with Part 15 of the FCC Rules and may void the user's authority to operate the equipment.

This Class B digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulations.

Cet appareil numérique de la Classe B respecte toutes les exigences du Règlement sur le matériel brouilleur du Canada.

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FEATURES

- **Tempo Control**

The speed of the CD can be increased and decreased by up to 50% without changing the key (musical pitch).

- **Tuning Control (PSD230)**

The key (musical pitch) of the CD can be adjusted so that the CD player can be tuned to a musical instrument rather than the musical instrument having to be tuned to the CD player.

- **Key Control (PSD230)**

The key (musical pitch) of the CD can be raised or lowered by up to 1 octave.

- **Voice Reduction (PSD230)**

The PSD230 includes a special processor that can reduce the volume level of the vocal track on a CD.

- **Mic/Line Mixing (PSD230)**

The PSD230 includes an input for a microphone or music instrument (line level) source that can be mixed together with the CD sound for practice purposes.

- **10 Second Anti-Shock Protection**

The PSD220/230 provide a 10 second anti-shock buffer to prevent skips and jumps in the audio when the unit is moved or shaken while playing.

- **CD-RW Playback**

The PSD220/230 has been specially designed to read and playback finalized CD-RW (ReWritable) discs.

- **CD-TEXT Display (PSD230)**

The PSD230 includes a built-in CD-TEXT decoder so that CDs that contain CD-TEXT information regarding the disc title, artist name, etc., can be displayed.

- **3-Band EQ**

The PSD220/230 include a 3-band EQ so that the bass (low frequency), mid (middle frequency), or treble (high frequency) portion of the CD sound can be adjusted.

- **Single Track Play**

The PSD220/230 is equipped with a single-track play feature that will play only one track at a time without having to create a custom play program.

- **Cue-to-Music**

During the single track play mode, the PSD220/230 will cue (pause) a selected track at the beginning of the audio, rather than the true start of the track.

- **Foot Pedal Input**

An optional foot pedal (model FT200) can be connected and used to start and stop the CD for music practice or transcription purposes.

- **Built-In Full Range Speaker**

The built-in speaker allows listening to or practicing with a CD without having to connect to other equipment for amplification.

About CD-TEXT (PSD230)

CD-TEXT is a new type of music CD feature that includes the recording of character information of the performer names, album name, track names, etc., in addition to the audio information contained in music CD. The character information is recorded in an area which has not been utilized by previous music CDs. This means that the CD-TEXT discs can be played back in the same way as ordinary music CD discs on any CD-TEXT compatible player such as the PSD230.

- * The PSD230 detects the CD-TEXT compatibility of each disc automatically.



The display can show the character information including the album name, track names, performer names, verse writer names, music composer names, arranger names, message and music genre. However, the content of the character information is variable depending on discs.

- * For detailed operating procedures for displaying the character information in the CD-TEXT, read the description on page 9 of this manual.

The PSD230 can display up to 10 characters at a time. If the character information in a disc is longer, the characters are scrolled from the left to the right on the display.

- * Scrolling refers to a method of displaying characters by moving them. The PSD230 is capable of smooth scrolling by feeding characters one by one.

About CD-RW Playback

The PSD220/230 can play back CD-RW (ReWritable) discs as well as ordinary music CD and CD-R (Recordable) discs.

- * The CD-R and CD-RW discs should contain properly-recorded TOC information so that they can be played back. With the CD recorder system, writing the TOC information in a disc is referred to as finalizing the disc. A disc cannot be recognized as a CD disc and played back unless it has been finalized properly. For details, please read the instruction manual provided with a CD recorder.
- * TOC stands for Table Of Contents and contains information such as the total number of tracks and total playing time of the disc.
- * The PSD220/230 can only play discs recorded in the CD-DA format designed for music reproduction. Do not attempt to play a disc containing data, such as a CD-ROM for PCs, on this unit.
- * As the playback of a CD-RW disc necessitates partial change of the player setup, it may take longer to read the TOC information compared to a music CD or CD-R disc.
- * Because CD-RW discs have lower reflectivity than CDs and CD-R discs, dirt on the surface of a CD-RW disc can generate noise, make the CD-RW disc unplayable, or cause misoperation. If any of these symptoms occur, wipe the surface of the CD-RW disc as indicated on page 16.

CONTROLS, CONNECTORS, AND INDICATORS

- ① **POWER ►**
Slide to turn POWER ON and slide again to turn POWER OFF.
- ② **OPEN ►**
Slide to open the disc cover.
 - Be sure to stop the disc before opening the disc cover.
 - A grip bar has been added to the front of the CD door in case it does not open fully.
- ③ **►/|| (PLAY/PAUSE)**
Press to start playback.
Press during playback to pause playback temporarily.
Press during pause to restart playback.
- ④ **■ (STOP)**
Press to stop playback.
Press during a setting operation to cancel it.
Press once during the stop mode to cancel the Program or Repeat modes.
Press twice during stop mode to charge the optional rechargeable battery.
- ⑤ **◀◀ / ◀, ▶▶ / ▶▶**
Press during playback to select the previous or next track.
Press before playback to select the track from which to start playback.
Press during programming to select the track number.
Press and hold during playback for audible fast reverse or fast forward search.
- ⑥ **PROGRAM**
Press to set or check the contents of a program.
- ⑦ **SINGLE**
Pressing this button will place the CD player in the single track play mode and "TRACK" indicator in the display will begin to flash.
Press during single track play mode to return to the normal play mode.
 - A complete definition of this function is on page 13.
- ⑧ **REPEAT**
Press to switch the repeat mode.
Press during A-B repeat mode to return to the normal play mode.
- ⑨ **A-B**
Press to perform A-B repeat.
Press during A-B repeat to change the B point.
- ⑩ **TEMPO "+", "-"**
Pressing these buttons will change the playback speed (tempo) of the CD by up to +/- 50% without changing the key (musical pitch).
Pressing the "+" button increases the tempo in 1% increments.
Press and hold the "+" button to quickly increase the tempo.
Pressing the "-" button decreases the tempo in 1% increments.
Press and hold the "-" button to quickly decrease the tempo.
Press both "+" and "-" at the same time to return the tempo back to 0% (normal tempo).
 - A complete definition of this function is on page 15.
- ⑪ **KEY "+", "-" (PSD230)**
Pressing these buttons will change the key (musical pitch) of the CD by up to +/- 1 octave without changing the tempo.
Pressing these buttons while the tempo is changed, or after the TEMPO buttons are pressed, will change the tuning (fine key control) of the CD by up to +/- 2% without changing the tempo.
The following applies to changing the key:
The "+" button raises the key in 12 1/2 cent increments. Press and hold the "+" button to quickly increase the key.
The "-" key lowers the key in 12 1/2 cent increments. Press and hold the "-" button to quickly decrease the key.
Press both "+" and "-" at the same time to reset the key to 0.00 (normal key).
The following apply to changing the tuning:
Pressing the "+" button increases the key in 0.1% increments. Press and hold the "+" button to quickly increase the key.
Pressing the "-" button decreases the key in 0.1% increments. Press and hold the "-" button to quickly decrease the key.
 - A complete definition of these functions is on page 15.
- ⑫ **LOCK**
Slide the LOCK switch to the on position (►) to lock the setting of all the switches in the recessed portion of the top panel.
- ⑬ **IR**
Receives remote control signals from a compatible wireless remote control.
- ⑭ **HEADPHONE**
Output for a set of headphones.
- ⑮ **DISPLAY**
Shows the current status of the unit as described in the DISPLAY INDICATORS section (page 9).
- ⑯ **BASS, MID, and TREBLE**
Turn these knobs to adjust the tone of the CD. Turning each control toward "+" boosts the corresponding frequency range and toward "-" attenuates it.
TREBLE : Controls the tone of the high frequencies. (6 kHz)
MID : Controls the tone of the mid frequencies. (2 kHz)
BASS : Controls the tone of the low frequencies. (300 Hz)
- ⑰ **VOL**
Turn to adjust the output volume of the HEADPHONES jack and built-in speaker.
- ⑱ **TIME**
Press to switch the time display.
- ⑲ **SCROLL (PSD230)**
Press this button to sequence through the available CD-TEXT information on a CD. The message "NO TEXT" will appear if this button is pressed when the current CD does not contain any CD-TEXT information.
- ⑳ **LIGHT**
Press this button to illuminate the LCD display when it is difficult to see. A single press of the LIGHT button will illuminate the LCD display for 3 seconds and then turn off. If the LIGHT button is held down for more than 1 second, the LCD display will stay illuminated until the LIGHT button is pressed again.
- ㉑ **FOOT PEDAL IN**
An optional foot pedal (model FT200) can be input to this jack to provide start/stop control.
- ㉒ **DIGITAL OUT**
The digital data is taken directly off the CD and output to this jack.
- ㉓ **LINE OUT**
These jacks output the sound of the CD, along with any enhancements made to the sound, to another analog amplification device (amplifier, powered speakers, stereo system, etc.), a recording device (tape deck, CD recorder, etc.), or a mixer.
- ㉔ **VOICE REDUCTION (PSD230)**
When this switch is ON, the vocal track of the CD will be reduced. The performance of this system depends on how the CD was recorded.
- ㉕ **SPEAKER**
This switch selects if the built-in speaker is on or off.
- ㉖ **LEVEL (PSD230)**
This control determines the amount of signal from the MIC/LINE IN that is mixed with the CD.
- ㉗ **MIX/SPLIT (PSD230)**
This switch determines how a signal from the MIC/LINE IN is mixed with the sound from the CD. The MIX position will mix (combine) the input signal with both the left and right channels of the CD playing back. The SPLIT position will separate the input signal and the CD playing back by sending the input signal to the right channel and both channels of the CD to the left channel.
- ㉘ **MIC/LINE IN (PSD230)**
A microphone or music instrument (line level) can be plugged into this jack using either a XLR or 1/4" plug.

29 LINE/MIC (PSD230)

This switch determines the input level of the MIC/LINE IN. The LINE position is for a line level source such as a music instrument, tape deck, etc. The MIC position is for a microphone level signal such as a handheld dynamic microphone.

30 CHARGE

This red LED indicates the status of the optional rechargeable battery (model RB430). When this LED is flashing, the battery is charging. When the LED is solid, the battery is fully charged.

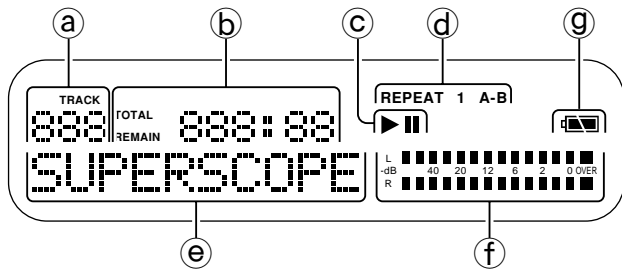
31 DC IN

Plug the included AC adapter (model AD200) into this jack.

32 Battery Compartment

Holds 3 "D" size batteries.

DISPLAY INDICATORS

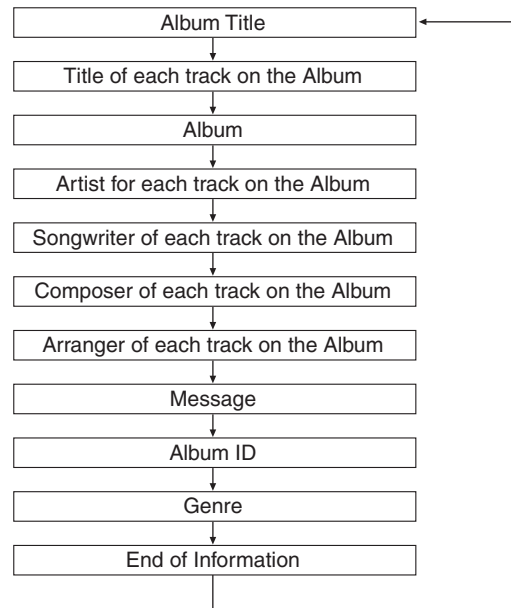


- a** TRACK number indicator (1 through 99), displays the track numbers on the CD. When in the program mode, the number of tracks programmed is displayed. TRACK indicator will flash in the single track play and program entry modes.
- b** TIME indicator displays the playing time of the CD in 4 digits representing minutes and seconds. This display typically represents elapsed time of the track being played. When the REM indicator is displayed, the time shown represents the remaining time of the track being played. When the TOTAL REM indicator is displayed, this represents the total remaining time of the CD or of the program being played. In the stop mode, the total playing time of the CD is displayed.
- c** PLAY/PAUSE indicator shows if the unit is in the play or play-pause mode. PLAY and PAUSE indicators will flash in the single track play mode.
- d** REPEAT indicator is displayed when the CD player is in the repeat mode. REPEAT 1 indicator is displayed when the CD player is in the single track repeat mode. REPEAT A-B indicator is displayed when the CD is in the A-B repeat mode.
- e** 10-character matrix displays the CD-Text information (PSD230) and other operational information.
- f** Level indicators display the playback signal levels of the CD player. The level meters on the PSD22/230 are VU meters, which mean that they display the average of the total CD signal.
- g** Battery indicator displays the status of the battery. See the Battery Life Indicator section on page 10 for a complete description of each mode of this indicator.

THE DISPLAY OF CD-TEXT INFORMATION (PSD230)

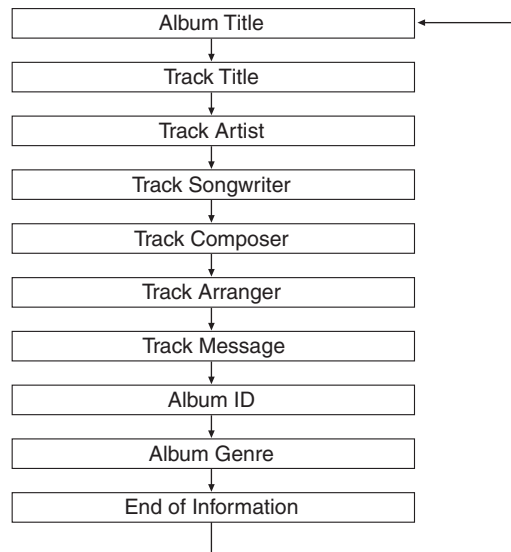
Stop Mode

The following information (if available) is displayed every time the SCROLL button is pressed while the unit is stopped.



Play Mode

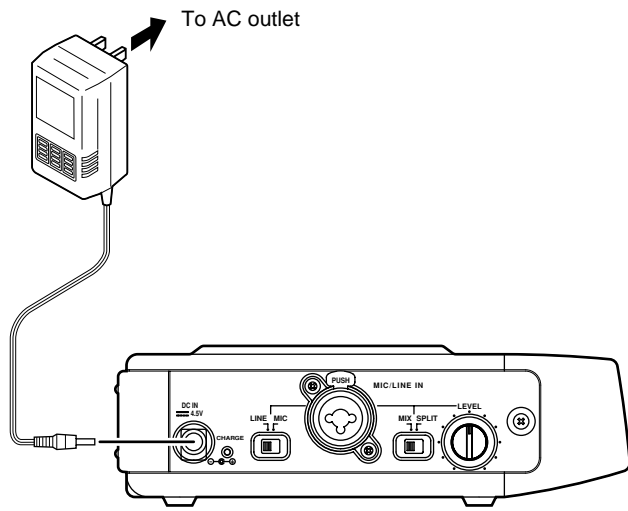
The following information (if available) is displayed every time the SCROLL button is pressed while the unit is playing.



POWER SUPPLY

AC Adapter Operation

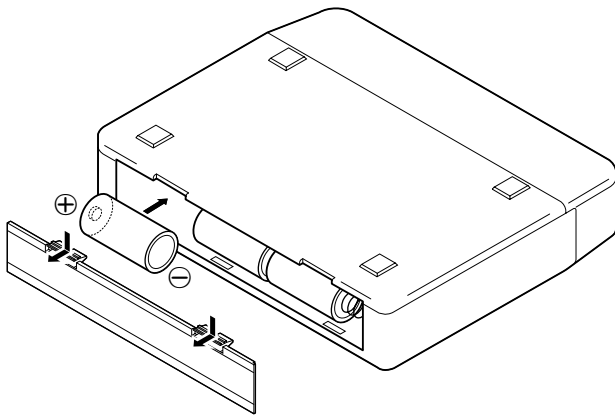
Connect the supplied AC adapter (model AD200) to the DC IN of the PSD220/230. Then connect the other end of the AC adapter to a wall power outlet.



ENGLISH

Battery Operation

Open the battery case and insert three alkaline batteries (SIZE "D"), making sure to observe the correct polarity (+ and -) indications. The battery power condition is shown on the top right corner of the display. See the Battery Life Indicator section on this page for more details.



Notes

- Remove the batteries when the PSD220/230 is not going to be used for a long period of time.

CAUTION

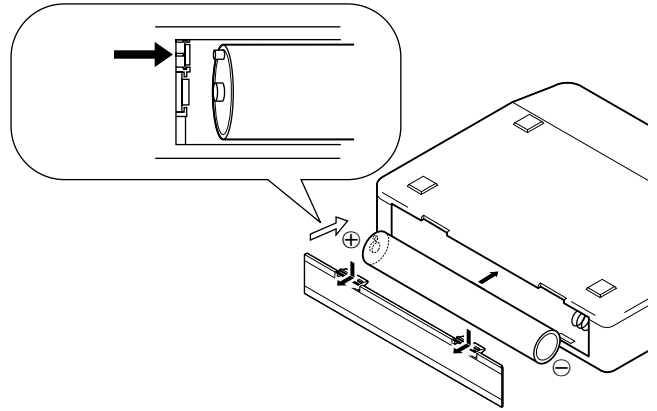
Discard used batteries according to the battery manufacturer's instructions.

Rechargeable Ni-Cad Battery Pack (optional)

The PSD220/230 can operate using an optional Ni-Cad rechargeable battery pack (model RB430).

Refer to the following illustration to install the battery pack.

Be sure the battery pack is fully charged before use.



To charge the battery pack

- Make sure the Ni-Cad battery pack is loaded as shown above.
- Connect the AC adapter to a wall power outlet (see AC Adapter Operation section on this page).
- Turn the power on using the POWER switch.
- Press the STOP button twice so that the "CHARGE" message is displayed and the CHARGE LED on the side panel flashes.
- When the CHARGE LED becomes steadily lit, the battery is fully charged.

Notes

- A full charge takes approximately 6 hours.

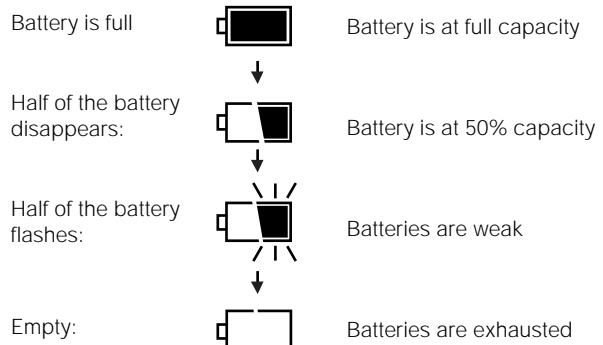
Battery Life

Battery type	Playback
Alkaline batteries	about 2.0 hours
Optional Ni-Cad battery	about 3.0 hours

Notes

- Battery life will vary depending on the conditions under which the unit is operated (environmental temperature, humidity, speaker usage, etc.).

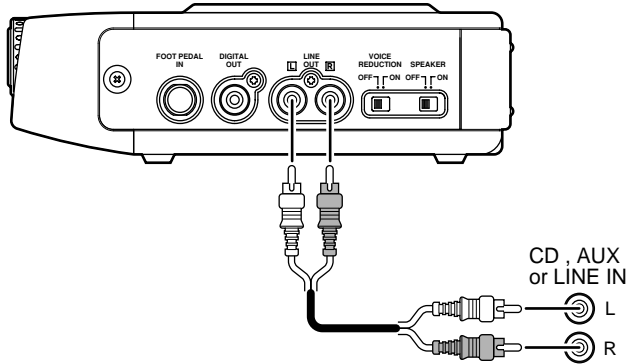
Battery Life Indicator



CONNECTIONS

Connection to an Analog Component

The PSD220/230 provides a LINE OUT so that the sound of the CD, along with any enhancements made to the sound, can be sent to another analog amplification device (amplifier, powered speakers, stereo system, etc.), a recording device (tape deck, CD recorder, etc.), or a mixer.



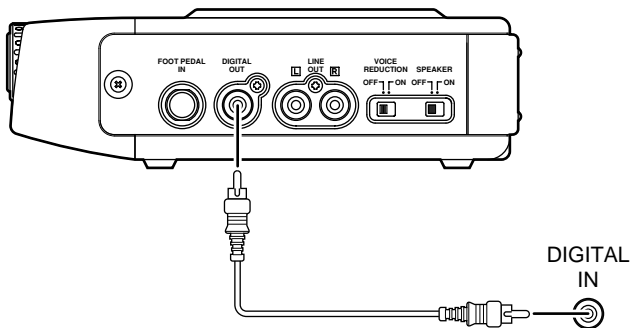
1. Minimize the volume of the analog component you plan to connect with the PSD220/230.
2. Connect, via a stereo RCA patch cable, the LINE OUT of the PSD220/230 to the CD, AUX, or LINE IN of the analog component.

Notes

- The VOLUME control knob on the PSD220/230 does not effect the level of the LINE OUT signal.

Connection to a Digital Component

The PSD220/230 provides a DIGITAL OUT so that the digital data from the CD can be sent to another digital component (digital recorder, mixer, speakers, etc.).

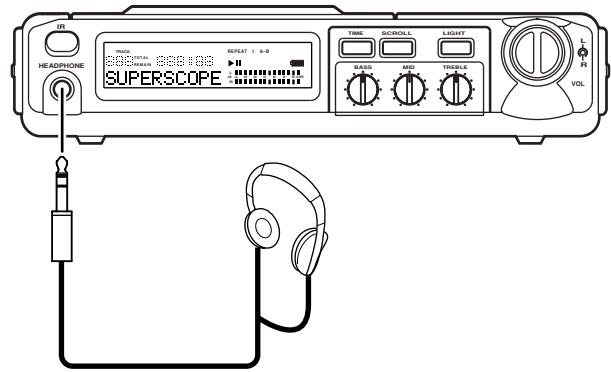


1. Connect, via a digital RCA (or Coaxial) patch cable, the DIGITAL OUT of the PSD220/230 to the DIGITAL IN of the digital component.

Notes

- The DIGITAL OUT signal of the PSD220/230 is a direct output of the data on the CD and is not effected by sound enhancement features such as TEMPO control, KEY control, VOICE REDUCTION, and the EQ controls.
- On the PSD230, an input microphone or line level signal is not mixed with the DIGITAL OUT signal.
- The VOLUME control knob on the PSD220/230 does not effect the level of the DIGITAL OUT signal.
- The format of the DIGITAL OUT is SPDIF (IEC-958-II).

Connection of Headphones



1. Plug commercially available headphones into the HEADPHONE jack.

Notes

- The PSD220/230 HEADPHONE jack accepts a 1/4" plug. Many headphone's in the market have a 1/8" plug. An adapter plug that will convert 1/8" to 1/4" is available at most audio/video specialty stores.

Caution for headphone listening:

- **Traffic safety**
Never wear headphones during riding a bicycle, motorbike or automobile. Even during walking, increasing the headphone volume too high is dangerous because this isolates you from the ambient sound. Be specially careful on railroad or pedestrian crossings.
- **Protection of the ears**
Listening to the headphones for long hours at a high volume may affect your sense of audition. To protect your ears, do not maintain high headphone volume.

Connection of a Microphone or Line Level Source (PSD230)

The PSD230 provides an XLR / 1/4" MIC/LINE IN jack that can be used to input a microphone (dynamic type) or a line (music instrument) level signal for purposes of mixing with the CD.

1. Select the type of input you are planning to use via the input level switch located to the left of the MIC/LINE IN jack. The MIC position is for a microphone level signal and the LINE position is for a line level signal.
 - Most electric guitars output a microphone level signal.
2. Connect the output of the microphone or line level source to the MIC/LINE IN jack of the PSD220/230.
3. Use the MIX/SPLIT control to decide how the input microphone or line level signal is mixed with the CD. The MIX position will mix (combine) the input signal with both the left and right channels of the CD playing back. The SPLIT position will separate the input signal and the CD playing back by sending the input signal to the right channel and both channels of the CD to the left channel.
4. Use the LEVEL control to determine how much of the input signal you want to mix with the CD. The VOLUME control knob determines the overall output level through the headphones and built-in speaker, while the LEVEL control determines the volume level of the input signal compared to the CD sound.

Controlling the Volume

The VOLUME control knob adjusts the sound level of the headphone jack and the built-in speaker, and does not effect the level of the LINE OUT and DIGITAL OUT signals.

PLAYBACK OF A CD

To play an audio CD (▶)

1. Open the disc cover by sliding the **OPEN** switch.
2. Place an audio CD with the label side up.
Push the center section of the CD lightly to set it in position.
3. Close the disc cover by pushing it down.
4. Press the ▶/|| button to start playback.
The display shows the current track number and its elapsed playing time.

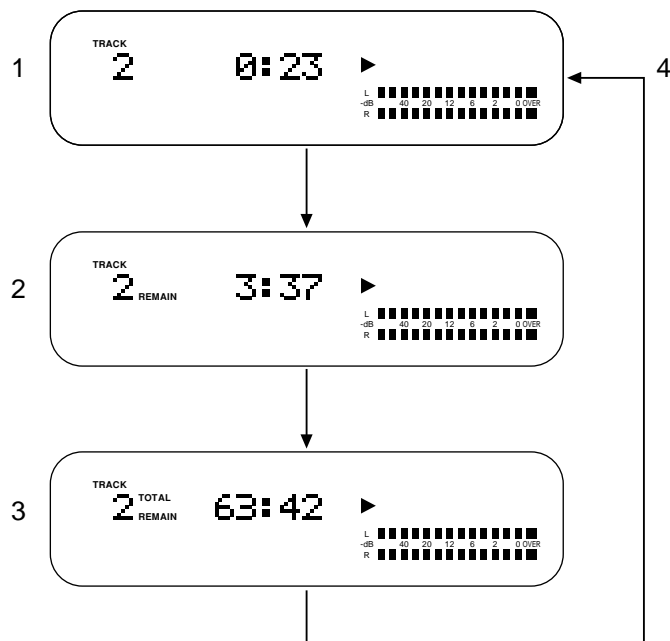


Notes

- Playback will stop after the last track in the disc is played.

To switch the time display (TIME)

1. The initial time display shows the elapsed playing time of the track being played.
2. Press the **TIME** button once to view the remaining playing time of the track being played.
3. Press the **TIME** button again to view the remaining playing time of the disc.
4. Press the **TIME** button once again to return to the time display of the elapsed playing time of the track being played.



To pause playback temporarily (||)

1. During playback, press the ▶/|| button.
Playback is interrupted and the || appears on the LCD display.
2. To restart playback, press ▶/|| again.

To audibly search within a track (◀◀ / |◀◀, ▶▶ / ▶▶)

1. During playback, press and hold the ◀◀ / |◀◀ or ▶▶ / ▶▶ button.
2. Audible searching will continue until the ◀◀ / |◀◀ or ▶▶ / ▶▶ button is released.

Notes

- Audible searching will continue if held past the beginning or end of a track.
- For a faster search (but not audible), hold ◀◀ / |◀◀ or ▶▶ / ▶▶ while playback is paused.

To return to the beginning of the current track (◀◀ / |◀◀)

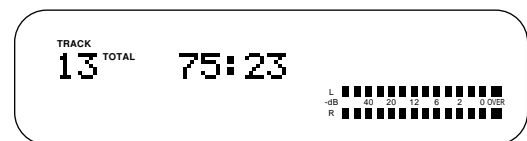
1. Press the ◀◀ / |◀◀ button during playback.
Playback is interrupted and restarts from the beginning of the current track.

To select another track during playback (◀◀ / |◀◀, ▶▶ / ▶▶)

1. Repeatedly press the ◀◀ / |◀◀ or ▶▶ / ▶▶ button until the display shows the track number you want to play.
Playback is interrupted and restarts from the beginning of the selected track.

To stop playback (■)

1. Press the ■ button.
Playback stops and the display shows the total number of tracks in the CD and their total playing time.



Repeat All, Repeat 1

1. Press the **REPEAT** button once. The REPEAT indicator will light in the display and the disc or program will be played repeatedly. (After the last track on the disc has been played, the first track is played again.)
2. Press the **REPEAT** button again. "1" is displayed next to the REPEAT indicator, and the current track will be played repeatedly.
3. Press the **REPEAT** button again to return to the normal play mode.

A-B Repeat

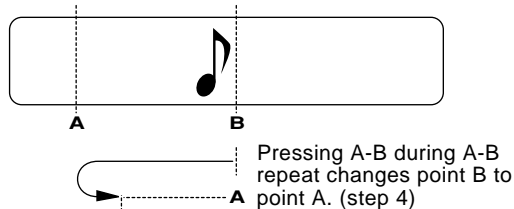
1. Start playback.
2. Press the **A-B** button at the beginning of the part you want to repeat. "REPEAT A-" lights in the display.



3. Press the **A-B** button again at the end of the part you want to repeat to start the A-B repeat. "REPEAT A-B" lights in the display.



4. Press the **A-B** button again to change the end point (point B) to the new start point (new point A). "REPEAT" will light and "A-" will flash until the new start point (old point B) is reached by the playing CD. Once reached, "A-" will then steadily light to indicate that the new start (A) point is now set.



5. Press the **A-B** button again to set the new end point (new point B) and re-start A-B repeat. "REPEAT A-B" lights in the display.
6. To continue to re-mark the A-B repeat points, repeat steps 4 and 5.
7. Press the **REPEAT** button to return to the normal play mode.

Notes

- A-B repeat across more than one track is not possible. (If the next track starts after having set point A in a track, A-B repeat is canceled automatically.)

Single Track Play & Cue-to-Music

The single track play feature will play only one track at a time without having to create a custom play program. Also, while single track play is active the cue-to-music feature will activate, which will cause the PSD220/230 to cue (pause) the selected playback track to the first note of the music rather than the true beginning of the track.

1. Press the **SINGLE** button to activate the single track play and cue-to-music modes. The "TRACK" indicator in the display will flash.
2. Select the track to be played back by pressing the ◀◀/|◀◀ and ▶▶/▶▶ buttons.
3. The PSD220/230 will then cue (pause) at the beginning of the music in the selected track and the "II" indicator in the display will flash.
4. Press the ▶/|| button to start playback. The "▶" indicator in the display will flash during playback.
5. Once the track has finished, the PSD220/230 will cue the next track and wait for playback to be started again by pressing the **PLAY/PAUSE** button.
6. The single track play and cue-to-music mode can be switched off at any time by pressing the **SINGLE** button.

Notes

- Single track play can be switched on and off at any time.

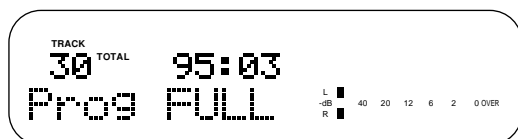
Programming Playback Tracks

This procedure allows you to program selected tracks for playback in the order you desire.

1. By pressing the **PROGRAM** button while in the stop mode, the CD player will enter the programming mode. "Program" appears on the display, and the track indicator begins to flash.
2. By pressing the **◀/1◀** and **▶/2▶** buttons, select the tracks to be programmed. When the desired track number has been selected, leave the CD player untouched for approximately 1.5 seconds and the selected track will be stored in the program. Continue this procedure until all desired tracks (30 tracks maximum) have been programmed.
3. By pressing the **PLAY/PAUSE** button, the CD player will exit the program entry mode and enter the program play mode. The CD player will then begin to play in the order selected during the programming.
4. When the **STOP** button is pressed, the CD player will stop playing but the program will remain in memory.
5. When the **STOP** button is pressed while the CD player is in the stop mode, the memorized program will be cleared.

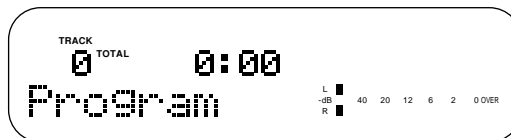
Notes

- The display shows "Prog FULL" when you attempt to program the 31st track.

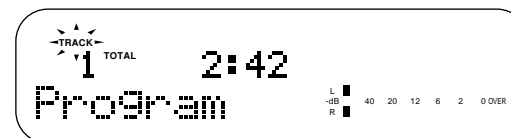


- The **PROGRAM** and **STOP** buttons can also be used to exit the program entry mode.
- Tracks can be added to an already stored program by re-entering the program entry mode and following all the above steps.

Press the **PROGRAM** button once

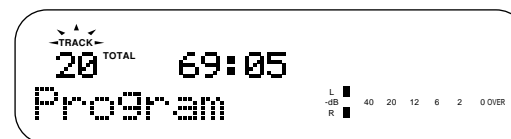


Select **TRACK**



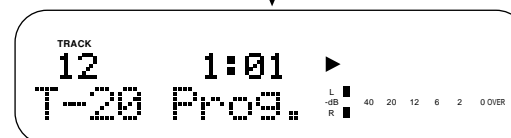
PROGRAMED TRACK

Select **TRACK**



Display after programming 20 tracks

Press **▶/||**



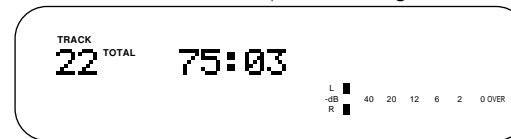
Program playback

Press **■** once



Total Program

Press **■** again



Program is cleared

TEMPO Control

The PSD220/230 is equipped with the ability to change the CD playback speed by up to -33% to +50% without changing the key (musical pitch) of the sound from the CD.

The "+" button increases the speed in steps of 1%.
 The "-" button decreases the speed in steps of 1%.
 Holding down either the "+" or "-" buttons for more than 1 second causes the speed to change rapidly.
 Pressing both the "+" and "-" buttons at the same time will return the TEMPO to the 0% position (normal speed).

Display

Pressing the "+" key		Pressing the "-" key	
TEMPO	0%	TEMPO	0%
⋮	+1%	⋮	-1%
⋮	+2%	⋮	-2%
⋮	+3%	⋮	-3%
⋮	⋮	⋮	⋮
TEMPO	+50%	TEMPO	-33%

Notes

- If the "+" or "-" buttons are pressed while another display (such as the CD-TEXT) is shown, the current position of the **TEMPO** control is displayed first. Once one of the "+" or "-" are pressed a second time, the position then changes.
- If the **KEY** has been changed, **TEMPO** control is not available. Restore **KEY** control to the 0.00 position in order to use **TEMPO** control.
- Pressing the **STOP** button during the stop mode will reset the Tempo to 0%.

TUNING Control (PSD230)

The PSD230 allows the CD output to be tuned to a musical instrument that is used for practicing instead of traditionally tuning the instrument to the music practice source.

The tuning system allows the key (musical pitch) of the CD output to be changed by up to 2%. Access to the tuning system is only available while the tempo is changed or after the **TEMPO** buttons are pressed and the "TEMPO" message is displayed. The "KEY +" and "KEY -" buttons are used to change the tuning value.

The "+" button raises the key in 0.1% increments and is displayed as a whole number with a "+" sign. For example, to raise the key of the CD by 1.5%, the display should show "+15".
 The "-" button lowers the key in 0.1% increments and is displayed as a whole number with a "-" sign. For example, to lower the key of the CD by 0.8%, the display should show "- 8".

Notes

- If the CD is tuned, **KEY** control is not available. Restore the tuning control to the "+ 0" position in order to use **KEY** control.

KEY Control (PSD230)

The PSD230 is equipped with the ability to change the key (or musical pitch) of the sound of the CD by up to ±1 octave.

The key control system works on the following musical principles:

100 cents=1 half step
 2 half steps=1 whole step
 6 whole steps=1 octave

The "+" button raises the key in steps of 12.5 cents and is displayed as a percent of the next half step up, rounded to the nearest tenth. For example, to raise the key of the CD by 2 1/2 half steps, the display should show "2.50".

The "-" button lowers the key in steps of 12.5 cents and is displayed as a percent of the next half step down, rounded to the nearest tenth. For example, to lower the key of the CD by 3 1/4 half steps, the display should show "-3.25".

Holding down either the "+" or "-" key for more than 1 second causes the key to change rapidly as long as the key is held down.

Pressing both the "+" and "-" buttons at the same time will return the **KEY** to the 0.00 position (normal key).

Display

Pressing the "+" key		Pressing the "-" key	
KEY	0.00	KEY	0.00
⋮	+0.13	⋮	-0.13
⋮	+0.25	⋮	-0.25
⋮	+0.38	⋮	-0.38
⋮	+0.50	⋮	-0.50
⋮	+0.63	⋮	-0.63
⋮	+0.75	⋮	-0.75
⋮	+0.88	⋮	-0.88
⋮	+1.00	⋮	-1.00
⋮	+1.13	⋮	-1.13
⋮	⋮	⋮	⋮
KEY	+12.00	KEY	-12.00

Notes

- If the "+" or "-" buttons are pressed while another display (such as CD-TEXT) is shown, the current position of the **KEY** control is displayed first. Once one of the "+" or "-" keys are pressed a second time, the position then changes.
- If the **TEMPO** or **TUNING** has been changed, **KEY** control is not available. Restore **TEMPO** and **TUNING** to the 0% position in order to use **KEY** control.
- Pressing the **STOP** button during the stop mode will reset the Key to the 0.00 position.

TROUBLESHOOTING

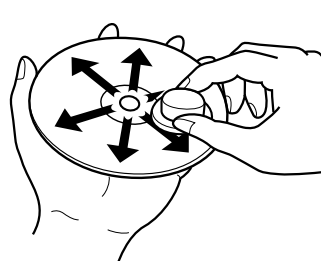
In case of trouble with your PSD220/230, first check the following table. If the trouble cannot be fixed by following the treatment indicated for each symptom or if the symptom of your trouble is not listed in the table, please consult your dealer.

Symptom	Check	Treatment
Power cannot be turned on.	Are batteries inserted correctly?	Insert batteries in correctly.
	Are batteries exhausted?	Replace batteries.
	Is the AC adapter connected properly?	Connect the AC adapter properly.
CD playback is impossible or stops in the middle.	Is the disc cover closed properly?	Close the disc cover tightly.
	Is there condensation on the laser lens?	Wait until the condensation enaporates.
	Is the CD placed properly?	Place the CD with the label side up.
	Is the CD scratched or damaged?	Use another CD.
	Is the CD dirty?	Clean the CD.
Playback does not start from the first track.	Is the program function activated?	Clear the program.
Audio is not output.	Are connection plugs inserted properly?	Check the connections.
	Is the volume set to minimum position?	Adjust the volume to an optimum level.
	Is the headphone plug dirty?	Clean the headphone plug.
	Is the PSD220/230 located near strongly magnetized equipment?	Move the PSD220/230 away from strongly magnetized equipment.
The VOLUME control is ineffective.	The VOLUME control affects only the HEADPHONE and SPEAKER output.	Plug headphones into the HEADPHONE jack. Set the SPEAKER switch ON.
MIC/LINE input sounds distorted.	Is the LINE/MIC switch set correctly?	Set the LINE/MIC switch correctly.
No sound is output from the built-in speaker.	Is the SPEAKER switch in the ON position?	Set the SPEAKER switch ON.
Digital recording device not reading track marks.	Is the recording device set to automatically increment tracks?	Set the recording device to automatically increment tracks.
	Is the recording device set to read digital track marks?	Set the recording device to read digital track marks or set the device to increment track marks based on sound level detection.

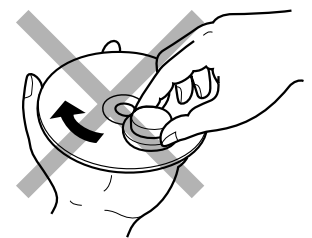
CARE AND MAINTENANCE

- The mechanical parts of this unit incorporate automatic lubricating bearings and do not need lubrication or greasing.
- Do not use detergent to clean this unit, if may damage the housing.
- Do not leave the unit, batteries, or CDs in a place where the temperature may be very high. For example, under direct sunlight or near heating equipment.
- Do not place the unit, batteries, or CDs in a damp place or place where they may be moisture.
- Never attempt to clean the lens components.
- When the unit is moved from a cold to warm place, operation may be impossible due to condensation on the laser lens. However, this is not a malfunction. Do not attempt to clean the lens but wait for a while until the unit is accustomed to the new environment.
- Use a soft, slightly moistened chamois or similar cloth to clean the unit.

- A CD should always be held by the edge or the center and returned to the CD case after use.
- When cleaning a CD, use a soft dry cloth and wipe in a straight line from the center to the edge.
- Do not use detergent, it will damage the disc.



Wipe in a radial direction.



Do not wipe in circumferential direction.

SPECIFICATIONS

General

Playback System	Compact Disc - Digital Audio
Number of Channels	2
Compatible Discs	CD-DA, CD-R, CD-RW - 8 cm & 12 cm
Sampling frequency	44.1 kHz
Quantization	16-bit linear/channel
Tempo Control	$\pm 50\%$, $\pm 0.5\%$
Tuning Control - PSD230	$\pm 2\%$, $\pm 0.1\%$
Key Control - PSD230	± 1 octave, $\pm 0.1\%$

Audio Characteristics

Frequency range	20 Hz ~ 20,000 Hz, ± 3 dB
Wow & flutter	Precision of quartz
Dynamic range	> 68 dB
S/N ratio	> 68 dB
Channel separation @ 1 kHz	> 50 dB
THD - Total Harmonic Distortion @ 1 kHz	< 0.1 %

Input/Output

Mic/Line Input Level (XLR+1/4) - PSD230	1 mV/500 mV RMS
Analog output level (RCA)	500 mV RMS
Digital output level (RCA)	0.5 Vp-p (75 Ω)
Speaker output power	400 mW (Dist.10 %)

Power requirement

Input	6 V, 1200 mA
Power consumption	6.8 W
Alkaline Battery Life	approx. 3.0 hours
Optional Ni-Cad Battery Life	approx. 4.0 hours

Dimensions

Width	9.8" (248 mm)
Height	2.1" (54 mm)
Depth	7.2" (183 mm)
Net weight	2.4 lbs. (1.1 kg)
Operating temperature	+41 °F ~ +95 °F (+5 °C ~ +35 °C)
Operating humidity	5 ~ 90 % (without dew)

Included Accessories

AC adapter	AD200
Stereo RCA patch cable	~3 ft. (~1 m)

Optional Accessories

Rechargeable Ni-Cad battery	RB430
Miniature Wearable IR Remote Control	RC300
Start/Stop Foot Pedal	FT200
Carrying Case	CA200

Due to our continuing efforts to improve our products, the specifications and appearance of this product are subject to change without notice.

WARRANTY

One Year Limited Warranty:

Your Superscope PSD220/230 is warranted against manufacturer defects in material and workmanship for one year parts and 90 days labor.

Non-transferable warranty:

This warranty may be enforced only by the original purchaser.

The following are not covered under warranty:

1. Damage, deterioration, malfunction or failure to meet performance specifications resulting from:
 - accident, acts of nature, misuse, abuse, neglect or unauthorized product modification.
 - improper installation, removal or maintenance, or failure to follow supplied instructions.
 - repair or attempted repair by a non-Superscope authorized agent.
 - any shipment (claims must be presented to the carrier).
 - any cause other than a defect in manufacturing.
2. Cleaning, check-ups with no fault found.
3. Any product on which the serial number has been defaced, modified or removed.
4. Accessories, including but not limited to, cables and adaptors.
5. Product purchased outside of the United States, its possessions or territories.

The following are covered under warranty:

All labor and material expenses for items covered by the warranty.

To obtain service:

1. If your unit needs service, contact Superscope at (630) 820-4800. A service representative will advise you of how to obtain service. Please do not return the unit directly to Superscope Technologies, unless specified by our service representative.
2. You must pay any shipping charges if it is necessary to ship the product for service. If the necessary repairs are covered by the warranty, we will pay return shipping charges to your location anywhere in the United States.
3. Whenever warranty service is required, you must present the original dated sales receipt, or other proof of purchase.

Limitation of implied warranties

All implied warranties, including warranties of merchantability and fitness for a particular purpose, are limited in duration to the length of this warranty.

Exclusion of damages

Liability for any defective product is limited to repair or replacement of the product at Superscope's option. Superscope shall not be liable for damage to other products caused by any defects in Superscope products, damages based on inconvenience or loss of use of the product, or any other damages, whether incidental, consequential, or otherwise.

Some States do not allow limitations on how long an implied warranty lasts and/or do not allow the exclusion or limitation of incidental or consequential damages, so the above limitations and exclusions may not apply to you.

How State law relates to the warranty

This warranty gives you specific legal rights, and you may have other rights which may vary from State to State.

This warranty is enforceable only in the United States and its possessions or territories.



Superscope Technologies, inc.

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