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Amplifier Description and Operation

- Amplifier Description
- Indicator LED's
- Signal Inputs & Outputs
- Amplifier Feature Description
- Setting the Amplifier

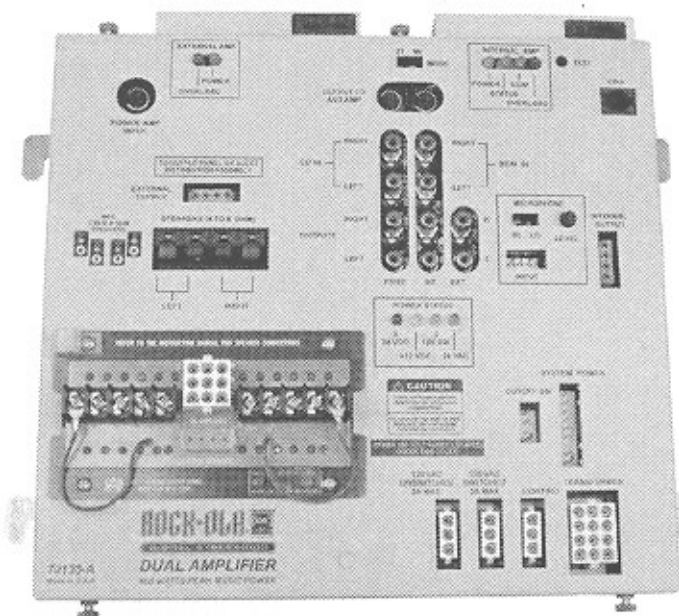


Figure 1D – Digital SyberSonic Dual Amplifier

Amplifier Description

Rock-Ola's Dual Digital SyberSonic Amplifier has been engineered for ease of connection and has options to meet virtually any location requirement. With audio efficiencies approaching 95%, this system produces volume levels equal to an amplifier twice its size and does so without producing a great amount of heat.

The system consists of a dual stereo (4 channel) pre-amplifier combined with two 2-channel power amplifiers.

The system may be operated as a single zone or a dual zone stereo system with separate volume controls for each zone. The amplifier sends its power to an audio output panel that couples speaker loads of $\frac{1}{2}$ to 4 Ohms.

If greater flexibility in speaker loads is needed or if the location is using 70-Volt CV speakers, an optional audio distribution assembly (P/N 70046-1A) may be installed.

Please Note: This section mentions Internal and External Amplifiers. "Internal" refers to the two channels controlled by the "INT" volume buttons and normally connected to the jukebox speakers. "External" refers to the 2 channels controlled by the "EXT" volume buttons used for external.

Specifications and Operating Features

- System is rated 900 Watts of peak music power at 4 Ohms. With audio efficiencies approaching 95%, this system produces volume levels equal to an amplifier twice its size and does so without producing a great amount of heat.
- Switchable Stereo/Mono Modes
- Separate 7 band equalizers for all four channels.
- 7 Band equalizer may be split for separate left and right channel settings.
- Loudness Contour control. Setting is split to provide separate Left and Right channel control.
- Left to Right Balance Control.
- Multiple volume control configurations.
- Built in Paging System input.
- Switch setting for microphone gain. Dial control for maximum microphone volume.
- Music Level While Paging settings. Settings are split to provide separate Left and Right channel control.
- "Always On" amplifier for special event audio and background music functions. (Only if phono is turned off with I.R. Remote Volume Control.)
- Automatic Volume Control. (AVC)

Plug-in RCA Type Connectors for:

AUX BGM Input with automatic switching and programmable minimum/maximum volume settings.

CD Output - line level directly from the CD player.

Int/Ext Output - 4 channel pre-amp outputs. Signal level is variable with volume control settings.

Indicator LED's

The Digital SyberSonic Amplifier has LED's to give a visual indication of its operating condition and status. The LED's and their functions are as follows:

Power - When lit, indicates the amplifier has power.

Status - Indicates when the paging system (microphone) is active.

Steady On - Normal operation. Paging system is available.

Flashing - Paging system is in use.

COM - Indicates when amplifier receives instructions from the jukeboxes CPU.

Always Off - Indicates a communication fault between the amplifier and CPU.

Single One Second Flash on Power Up - Processor is running.

Steady On - Normal operation. Setup instructions received and installed.

Intermittent Flashing - Amplifier is receiving instructions from Jukebox CPU.

Overload - When lit, indicates the amp is muted or a speaker overload condition exists.

Signal Inputs and Outputs

The Digital SyberSonic Amplifier has five (5) sets of RCA type jacks located at its upper right corner.

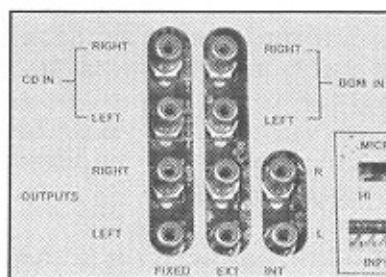


Figure 3D - RCA Jacks

Each set of connectors have separate functions, they are:

CD In - This connection is the analog audio signal that is being fed directly from the CD laser player into the amplifier.

CD Out - This connection is the unconditioned analog audio output from the CD laser player.

BGM In - This connection allows the input of a low level signal (maximum 1 volt) from another audio source (such as a tape player, TV or FM tuner) to be fed into the amplifier for aux background music amplification. This input must be activated via software control in the Auto Play menu under AUX BGM Input (Quick Find #42). The signal volume level can be limited via software control in the Auto Play menu under Background Vol (Quick Find program #43).

Note: *This amplifier is designed to automatically switch between the AUX BGM and CD inputs where the CD input always takes priority.*

WARNING



Do not connect the AUX BGM inputs to the speaker outputs of a receiver or power amp as this will damage the jukebox amplifier and void its warranty.

ADVERTENCIA

No conecte las entradas AUX BGM en las salidas del altavoz de un receptor o de un amplificador de potencia ya que esto puede dañar el amplificador de la rocola y anular su garantía.

AVERTISSEMENT

Ne reliez jamais les entrées AUX BGM aux sorties du haut-parleur d'un récepteur ou d'un amplificateur de puissance ; cela endommagerait l'amplificateur du juke-box et annulerait la garantie.

Int Out - This connection is a variable level output signal directly from the internal pre-amp. The signal level follows the internal volume control. Output signal may be limited via software control in the Set-up 1 menu under the Volume Range (Quick Find program #78).

Ext Out - This connection is a variable level output signal directly from the external pre-amp. The signal level follows the external volume control. Output signal may be limited via software control in the Set-up 1 menu under the Volume Range (Quick Find program #78).

Amplifier Feature Descriptions

Your Digital SyberSonic Amplifier is preset at the factory for optimum operation, however some adjustment may be required to achieve the best sound or operating features for your particular environment. For ease of use, amplifier features are set/adjusted via the jukeboxes keyboard. *Instructions are found in the section titled "Setting The Amplifier" later in this chapter.*

AVC Control - The Digital SyberSonic Amplifier uses software to limit the difference between loud and soft recordings (dynamic range). Automatic Volume Control (AVC) will retain the dynamic range of the recording, just reduce it. The effect is that the music sounds natural but songs with loud passages are only *slightly* louder. AVC also controls the BGM IN signal. **Note:** *This feature is on all the time and cannot be defeated.*

Equalizer - This changes speaker tone by decreasing the response (gain) of a particular frequency range. The internal and external amplifiers have separate settings.

Balance - This setting allows you to adjust the left to right balance of the speakers. Set the balance for internal and external amplifiers separately.

Music Level While Paging (MLWP) - This setting changes how much of the music is heard when using a microphone for paging while music is playing. The internal and external amplifiers have separate settings. The music level is a percentage of the current volume. Choices are 0% to 100% in increments of 10% and Off where Off defeats paging for that channel.

Page Decay - Sets the amount of time in seconds before the music resumes its normal volume after a page. The range is from 2 seconds to 10 seconds.

Loudness Contour - This setting allows you to turn on or off the loudness contour enhancement for the internal and external amplifiers separately. The Loudness Contour enhances bass output at lower volume levels.

Reset Internal/External Amp - This provides for rapid resetting of the amplifier features to their factory settings. The factory settings are as follows:
 Equalizer - +5, +5, +4, +3, +4, +5, +5
 Balance - Centered
 MLWP - 50%
 Loudness - On

The internal and external amplifiers are reset separately.

Volume Limits - The Digital SyberSonic amplifiers can have their volumes set to minimum and maximum levels. The internal and external amplifiers are set separately in both Normal Play and Background Music Modes. Additionally, each amplifiers maximum volume may be limited based on day of week and time of day.

Volume Bridging - There may be times when you do not want a location to have separate control of the internal and external amplifier. Or perhaps you want two areas to have separate volume controls. SyberSonic's advanced electronics system allows the "bridging" of its volume controls. When bridged, the tied amplifier/channel's volume will change regardless of which volume control button is pushed. Specific bridging information is in the "Setting the Amplifier" section.

Setting The Amplifier

The graphic equalizer, balance, and other features are adjusted via the jukebox keyboard with settings represented by a graphic shown on the keyboard display.

To set the amplifier features, access the SETUP MODE by ensuring the service switch is in its center position then "double click" the Red Scan/Cancel Button. Once in the Setup Mode, "program the amp" via the jukebox keyboard in the same way that all other programming is done. Section E of this manual contains specific instructions for accessing and using the

SETUP MODE. Section E also contains "flow charts" which give a graphical representation of the SETUP MODE functions. The following section will only give the Quick Find programming number and what to expect when changing/adjusting features.

Settings common to both the Internal and External Amps

Automatic Volume Control (AVC) -

AVC is controlled in software.

To change, from the setup mode, access quick find 231, then press Hits. Display will show:

AMP SETUP 231
AVC *current setting*

Press Hits to make the current setting flash. Press #1 until the desired setting is displayed. Press Hits to lock in your choice when finished press Reset several times.

Page Decay – To change, from the Setup Mode, access Quick Find 212 then press hits. Display will show:

AMP SETUP 212
Page Decay *current setting*

Press HITS to make the current setting flash then enter the number of decay seconds from 2 to 10. Once the desired time has been entered, press HITS to lock it in. Display will show:

AMP SETUP 212
Page Decay *new setting*

When finished, press the RESET button several times.

Internal Amp Settings

Internal Equalizer – Sets the internal amplifier 7 band graphic equalizer. (HINT: To hear the tone setting changes, play a song and set the volume before entering the Setup Mode.)

Setting 7 Band Equalizer – You may set the left and right channels simultaneously or each channel may be set individually.

EQ Join sets both channels. EQ L/R allows you to set the Left and Right channels separately. To set the equalizer, from the Setup Mode access Quick Find 213 then press HITS.

The display will show:

AMP SETUP 213
Int Tone *current setting*

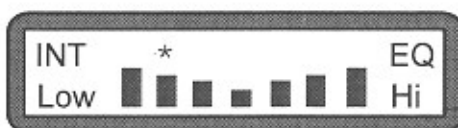
Press HITS to make "current setting" flash then press the #1 button to choose from EQ L/R or EQ Join. Press HITS to lock in your choice. Display will show:

AMP SETUP 213
Int Tone EQ *your choice*

If EQ Join is chosen the display will show:

AMP SETUP 213
Internal EQ

To change settings, press the HITS Button. The display will show a graphical representation of the current settings similar to the figure below.



Use the left or right Turn Pages button to move the asterisk to the desired frequency. Press the #1 key to raise the gain and the #2 key to lower it. The amplifier will respond to any changes instantly.

If EQ L/R is chosen the display will show:

AMP SETUP 213
Int Left EQ

To change the Left channel, press HITS and set the same as in the EQ Join instructions above. Press Reset once when finished.

To change the Right channel, press the Right Turn Pages button so the display shows:

AMP SETUP 213
Int Right EQ

Press the HITS button and set the same as in the EQ Join instructions above. When finished, press the RESET button several times.

Internal Balance - Access Quick Find 214 to view/change the balance for speakers connected to the internal amplifier. Use the left and right menu keys to change the balance. *NOTE: If Volume Control Bridging (QF 79) is set to Split, the*

balance control is defeated. When finished, press the RESET button several times.



Internal Music Level While Page (MLWP) – The left and right channels are set separately. Choices are 0% (music completely muted) to 100% (no muting) in increments of 10% and Off. (no paging for that channel)

For **left channel**, from the Setup Mode, access Quick Find 218 then press HITS. Display will show:



Press HITS to make the current setting flash then press #1 until the desired setting is displayed. Press HITS to lock in your choice. When finished, press the RESET button several times.

For **Right channel**, from the Setup Mode, access Quick Find 219 then press HITS. Display will show:



Press HITS to make the current setting flash then press #1 until the desired setting is displayed. Press HITS to lock in your choice. When finished, press the RESET button several times.

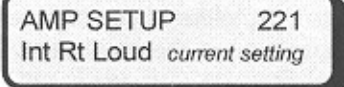
Internal Loudness – Left and Right channels are set separately.

For **Left channel**, from the Setup Mode, access Quick Find 220 then press HITS. Display will show:



Press HITS to make the current setting flash then press #1 until the desired setting is displayed. Press HITS to lock in your choice. When finished, press the RESET button several times.

For **Right channel**, from the Setup Mode, access Quick Find 221 then press HITS. Display will show:



Press HITS to make the current setting flash then press #1 until the desired setting is displayed. Press HITS to lock in your choice. When finished, press the RESET button several times.

Reset Internal Amp - Access Quick Find 217 and press Hits twice to restore the internal amplifier to its factory settings. Once completed, press the RESET button several times.

External Amp Settings

The External Amp (Auxiliary Amp) is set the same as the Internal Amp, therefore only the Quick Find numbers will be shown here. To set the External Amp, follow the Internal Amp instructions and substitute the appropriate Quick Find number.

External Equalizer - Access Quick Find 222 to view/change the equalizer/tone settings for the external amplifier.

External Balance - Access Quick Find 223 to view/change the balance for speakers connected to the external amplifier.

External Music Level While Page (MLWP) - Access Quick Find 227 for the Left channel or 228 for the Right channel and toggle to the desired setting.

External Loudness - Access Quick Find 229 for the Left channel or Quick Find 230 for the Right channel then toggle to Off or On.

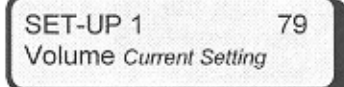
Reset External Amplifier - Access Quick Find 226 and press Hits twice to restore the external amplifier to its factory settings.

External AVC – Access Quick Find 232 to turn the external AVC on or off.

Other Settings

Volume Control Options - Choices are Normal, Split and Bridge.

Normal – The internal buttons control the standard amp and the external buttons control the optional auxiliary amplifier. To set, from the Setup Mode, access Quick Find 79 and press HITS. Display will show:



Press HITS. "Current Setting" will flash. Press #1 until "Normal" is displayed. Press HITS to lock in the setting.

SET-UP 1 79
Volume Normal

Once finished, press RESET several times.

Volume Split – If selected, the internal buttons control the left channel and the external buttons control the right channel.

WARNING



This feature cannot be used if the external amplifier is installed or if the external output jacks are used. The auxiliary amplifier and external output signals will not function.

ADVERTENCIA

Esta característica no se puede usar si el amplificador externo está instalado o si se están usando los jacks de salida externa. El amplificador auxiliar y las señales de salida externa no funcionarán.

AVERTISSEMENT

Si l'amplificateur externe est installé ou si les prises de sortie externes sont utilisées, vous ne pourrez accéder à cette fonctionnalité. L'amplificateur auxiliaire ne fonctionnera pas ; aucun signal de sortie ne pourra être transmis.

To set, from the Setup Mode, access Quick Find 79 and press HITS. Display will show:

SET-UP 1 79
Volume *Current Setting*

Press HITS. "Current Setting" will flash. Press #1 until "Split" is displayed. Press HITS to lock in the setting.

SET-UP 1 79
Volume Split

Once finished, press RESET several times.

Volume Bridge – When bridged, the tied amplifier/channel's volume will change regardless of which volume control button is pushed. Volume Bridge Options are:

Bridge Int - Ext B. Ties both the right and left external amplifier channels to the internal amplifier volume control. Normally used in installations where the jukebox and external speakers are located in the same room.

In this mode pushing either set of volume buttons will control the internal *and* external volume at the same time.

Bridge Int - Ext R. Ties the right external amplifier channel to the internal amplifier volume control. Normally used in an installation where the jukebox and an external speaker(s) are in one room with another external speaker(s) installed in another room or area.

In this mode pushing an internal volume button will change the volume for the jukebox *and* the external speaker(s) connected to the right external channel. Pushing an external volume button will change the volume for a speaker(s) connected to the left external channel that is another area or room.

Bridge Int - Ext L. Same as above except the channels are reversed.

Note: If an individual external channel is bridged to the internal amp, the external balance control is disabled.

Before setting the volume bridge you *must* first "balance" the internal and external speakers. To do so, simply play a song and set the Internal and External volumes to the desired levels.

Once the desired balance has been achieved, access the setup mode by ensuring the service switch is in its center position then "double click" the Red Scan/Cancel button.

To set, from the Setup Mode, access Quick Find 79 and press HITS. Display will show:

SET-UP 1 79
Volume *Current Setting*

Press HITS. "Current Setting" will flash. Press #1 until "Bridged" is displayed. Press HITS to lock in the setting. Display will show:

SET-UP 1 79
Bridge Int - Ext *Current Setting*

Press HITS to make "Ext *Current Setting*" flash then press #1 until the desired bridge option is displayed. Press HITS to lock it in. Display will show:

SET-UP 1 79
Bridge Int - Ext *Desired Setting*

Once finished, press RESET several times.

Volume Limits - Sets the minimum and maximum allowable volume for the internal and external amplifiers separately. A timed option is also available to limit the maximum volume during certain hours. **Note:** Background Music Volume limits are set in the Autoplay menu, Quick Find 43.

The volume limits cannot be set if Volume Control Option (Quick Find 79) is set to Split or Bridge. If the use of volume control splitting or bridging is desired, adjust the volume limits first, then set volume control option to the desired setting.

When setting volume limits, the jukebox will automatically pick up CD number 00 and play its first track so that you can hear the volume level.

Internal Amp System Min/Max limits, from the Setup Mode, access Quick Find 78 and press HITS. Display will show:

SET-UP 1 78
Volume Range *Current Setting*

Press the HITS button. "*Current Setting*" will flash. Press the #1 button until display shows "Volume Range On" then press the HITS button. Display will show:

SET-UP 1 78
Internal Limits

Press the HITS button again and the display will show:

SET-UP 1 78
System Min/Max

Press the HITS button and the display will show:

SET-UP 1 78
Min Vol *Current Setting*

Press HITS to make "*Current Setting*" flash then use the right Turn Pages button to increase the volume. (Range is 0-40) Once the desired level is

reached, press HITS to lock it in. Display will show:

SET-UP 1 78
Max Vol *Desired Setting*

Press the right Turn Pages button. Display will show:

SET-UP 1 78
Max Vol *Current Setting*

Press HITS to make "*Current Setting*" flash then use the right Turn Pages button to increase the volume. (Range is 0-40) Once the desired level is reached, press HITS to lock it in. Display will show:

SET-UP 1 78
Max Vol *Desired Setting*

When finished, press RESET several times.

External System Min/Max limits, from the Setup Mode, access Quick Find 78 and press HITS. Display will show:

SET-UP 1 78
Volume Range *Current Setting*

Press the HITS button. "*Current Setting*" will flash. Press the #1 button until display shows "Volume Range On" then press the HITS button. Display will show:

SET-UP 1 78
Internal Limits

Press the right Turn Pages button. Display will show:

SET-UP 1 78
External Limits

Press the HITS button and the display will show:

SET-UP 1 78
System Min/Max

Press the HITS button and the display will show:

SET-UP 1 78
Min Vol *Current Setting*

Press HITS to make "Current Setting" flash then use the right Turn Pages button to increase the volume. (Range is 0-40) Once the desired level is reached, press HITS to lock it in. Display will show:

SET-UP 1 78
Max Vol Current Setting

Press the right Turn Pages button. Display will show:

SET-UP 1 78
Max Vol Current Setting

Press HITS to make "Current Setting" flash then use the right Turn Pages button to increase the volume. (Range is 0-40) Once the desired level is reached, press HITS to lock it in. Display will show:

SET-UP 1 78
Max Vol Desired Setting

When finished, press RESET several times.

Internal Amp Timed Maximum Volume Settings. Up to seven "Timed" programs may be entered to allow for different settings for each day of the week. If the timed maximum will be the same every day then only one program is needed.

To program, from the Setup Mode, access Quick Find 78 and press HITS. Display will show:

SET-UP 1 78
Volume Range Current Setting

Press the HITS button. "Current Setting" will flash. Press the #1 button until display shows "Volume Range On" then press the HITS button. Display will show:

SET-UP 1 78
Internal Limits

Press the HITS button again and the display will show:

SET-UP 1 78
System Min/Max

Press the right Turn Pages button. Display will show:

SET-UP 1 78
Timed Maximum -01

If setting more than one program, use the right Turn Pages button to choose 2 through 7. Otherwise press HITS. Display will show:

SET-UP 1 78
Day Current Setting

Press HITS to make "Current Setting" flash then press #1 to choose desired day. (Note: if the timed maximum will be the same each day, choose "Every Day.") Press HITS to lock in your choice.

Press the right Turn Pages button. Display will show:

SET-UP 1 78
Start Time Current Setting

Press the HITS button to make "Current Setting" flash then using the 24-hour clock format, type in the desired start time. Press HITS to lock in your time.

Press the right Turn Pages button. Display will show:

SET-UP 1 78
Stop Time Current Setting

Press the HITS button to make "Current Setting" flash then, using the 24-hour clock format, type in the desired stop time. Press HITS to lock in your time.

Press the right Turn Pages button. Display will show:

SET-UP 1 78
Timed Max Current Setting

Press HITS button to make "Current Setting" flash then type in the Maximum allowable volume level. Press HITS to lock in the setting. When finished, press RESET several times.

External Timed Maximum Volume Settings. Up to seven "Timed" programs may be entered to allow for different settings for each day of the week. If the timed maximum will be the same every day then only one program is needed.

To program, from the Setup Mode, access Quick Find 78 and press HITS. Display will show:

SET-UP 1 78
Volume Range Current Setting

Press the HITS button. "Current Setting" will flash. Press the #1 button until display shows "Volume Range On" then press the HITS button. Display will show:

SET-UP 1 78
Internal Limits

Press the right Turn Pages button. Display will show:

SET-UP 1 78
External Limits

Press the right Turn Pages button. Display will show:

SET-UP 1 78
Timed Maximum -01

If setting more than one program, use the right Turn Pages button to choose 2 through 7. Otherwise press HITS. Display will show:

SET-UP 1 78
Day Current Setting

Press HITS to make "Current Setting" flash than press #1 to choose desired day. (Note: if the timed maximum will be the same each day, choose "Every Day.") Press HITS to lock in your choice.

Press the right Turn Pages button. Display will show:

SET-UP 1 78
Start Time Current Setting

Press the HITS button to make "Current Setting" flash then using the 24-hour clock format, type in the desired start time. Press HITS to lock in your time.

Press the right Turn Pages button. Display will show:

SET-UP 1 78
Stop Time Current Setting

Press the HITS button to make "Current Setting" flash then, using the 24-hour clock format, type in the desired stop time. Press HITS to lock in your time.

Press the right Turn Pages button. Display will show:

SET-UP 1 78
Timed Max Current Setting

Press HITS button to make "Current Setting" flash then type in the Maximum allowable volume level. Press HITS to lock in the setting. When finished, press RESET several times.