

R2 Astromech R/C sound board – 40W version
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Sound Package Features

The astromech sound board package allows you to remote access a large number of droid sound effects using a standard R/C radio with an available aux channel.

NOTE: The package comes with all electronics tested and ready to be installed. You must install it into your droid.

The standard sound package includes all the necessary pieces to turn your droid into a living, talking machine! The package includes:

- 40W sound board with speaker outputs and volume control
- CD-quality sound effects flash card installed (upgradeable)
- Sound controller interface board
- R/C remote relay board w/ servo connector

A sufficient power supply should consist of a 12V rechargeable lead acid battery or 8 D cell batteries (connected in series). This battery setup is needed to power the amplifier.

Unit Operation

Hook up the R/C relay to an aux channel on your remote. We have tested the board on a Futaba 9CAP radio, Spektrum, JR 12X, or Futaba FASST system. The Futaba radios come with a nice spring-loaded toggle switch located on the left top of the radio. This switch provides a very nice interface to key in the sounds. The JR 12X has a trim switch on the left front that can be used to key in sounds.

Follow the R/C remote relay instructions for setting the threshold of the R/C switch. You want the R/C switch board to close its relay when the aux radio switch is being activated. Once you have programmed the threshold on the R/C relay that is all you have to do!

When you depress the radio switch and hold it, the LED on the sound controller board should light up. This will tell you if your R/C switch is working properly. If the LED does not light up then redo the threshold programming sequence on the R/C switch board.

Sound Playback

The droid sounds have been split into 2 directories – a droid sound directory and an accessory (music) directory. The droid sound directory consists of 11 emotion banks – each bank holds a set number of R2 sounds for that given emotion. The accessory directory holds 11 banks – each bank holds 1 sound or music selection (similar to a CD player).

The layout of the sounds in each directory are shown below. Feel free to print this out and laminate it. The cards will be useful for you to reference while operating your droid. We attach ours to our radio so we can use it as a cheat sheet while operating R2!

Droid sound directory:

Bank number	Number of presses	R2 sound bank	Number of sounds
1	2	Respond	12
2	3	Happy	10
3	4	Mad	7
4	5	Content	11
5	6	Warning	5
6	7	Hey	5
7	8	Actions	4
8	9	Question	4
9	10	Sad	4
10	11	I guess so	3
11	12	Holograms	3
		<i>Switch sound banks by holding switch for >= 1sec.</i>	

Accessory sound directory:

Bank number	Number of presses	Music sound bank
1	2	SW main theme
2	3	
3	4	
4	5	
5	6	
6	7	
7	8	
8	9	
9	10	
10	11	
11	12	

Selecting a droid sound:

Upon bootup, the sound board is automatically in the droid directory by default. Looking at the above chart, you can see in the droid directory there are 11 different “emotion” banks - starting with standard “responses”, then “happy” sounds, “mad”, “content”, etc. Likewise for the accessory directory, there is one music track in bank 1 and the others are currently empty – you can program in your own sounds later.

To select a certain droid bank, press and release the switch on your R/C radio the number of times seen above (i.e. to select bank 1 press and release the switch twice in succession). After you have keyed the switch 2x, the board will play out a droid “response” sound (Note there are 12 separate sounds in this bank). If you want to play out another droid response sound, simply key the switch one time. Continuing to key the switch once (after each sound is finished) will cycle through all the sounds in the currently selected bank. The sounds will roll over to the 1st sound and repeat after you have reached the end of the list (i.e. the 12th sound in this bank).

If you want to select a new bank of droid sounds (i.e. move to the “happy” bank of sounds), simply key in the new bank using the “number of presses” seen in the above chart. Follow the same directions as above to playback more than one sound in that bank after selecting the bank.

Selecting an accessory sound:

If you are currently in the droid sound directory, you can switch over to the accessory sound directory by pressing and holding your R/C switch for more than 1 sec. Upon releasing the switch, you will transfer to the accessory directory and be in the same bank number as you were in the old directory (i.e. the droid “respond” bank maps to accessory bank 1).

To play out a desired sound selection, follow the same instructions as before. Keying in the bank number of presses will select that sound/music track and begin playing it back.

If you are playing back a long sound/music track and need to stop a sound at any given time, press and hold your switch for ½ sec, then release it. This will reset the board and terminate any sound playing out. You will still be in the current bank, so you can restart the sound by keying your switch once or you can select a new bank as demonstrated above.

Speakers

You can hook up any 8 ohm speaker that you require. You can use any size speaker with the sound board. The speaker gets connected to the SP1 and SP2 lugs on the sound board’s terminal strip.

Programming other sounds

The sound board uses a standard compact flash card to store all of the sound media.

If you have a PC compact flash card reader/writer, you can custom program any sound bytes onto the flash card. Each sound is stored in raw wav file format. The valid sample rates are 22.050, or 44.1kHz. The files must be mono. They can be 16 bits for CD quality.

For storage onto the sound card, each wav file must be renamed to the desired sound number as it is stored on the board. Each bank in the droid directory has 12 potential entries. For example, the R2 response bank holds sounds from xxx.001 to xxx.012 (where “xxx” means any sound name). The accessory bank has entries from xxx.115 to xxx.125. The file xxx.115 corresponds to accessory bank 1, and xxx.125 corresponds to accessory bank 11.

To demonstrate this, you can simply copy any sound from the flash card to your computer, rename it to xxx.wav then listen or edit the file. With this procedure, you can now add, move, or change any of the sound bytes, music, or effects to the flash card to totally customize your sound setup! You can even buy a second flash card to store a second set of sound files, which can turn your sound board into a versatile sound playback system!

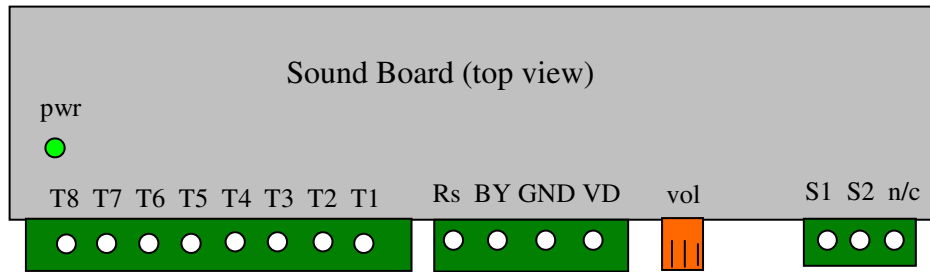
Finally, you can simply drag and drop the desired wav files (renamed with the .xxx extension) onto the flash card. Do not remove the .cfg file on the flash card, as this sets up the sound board for proper operation.

Hookup and Installation

The sound board controller is the small board that hooks into the black cased sound board. All wire connections are already made.

On the black sound board, there are speaker wires labeled S1 and S2. These need to be connected to your speaker.

Here is a diagram of the sound board (not to scale) showing all the connectors



Power supply connections:

The other connection is the power supply. The sound board will accept 10-24V DC. The wires coming off the board are labeled power. The lighter colored wire is positive, which is connected to the VD terminal. Ground is labeled GND.

Once you power on the unit, both boards come on at the same time along with the R/C relay switch.

Amplifier connections:

The amplifier is integrated into the sound board. All you have to do is connect wires to the speaker terminal SP1 and SP2. The volume control is also located on the black housing.

Installation Tips

Make sure that you have enough room to install the sound board and amplifier. Calculate the space you have and make a diagram of where the boards will fit best.

Do not cram the boards in a tight space. Give them a little room to breathe, as the amplifier will get hot when the volume is turned up. Treat it as you would a home stereo amplifier.

NOTE: Handle your board as you would any piece of delicate electronics! Do not get it wet and do not handle it without grounding yourself first! Even a static shock can destroy the delicate components on the board. I suggest when installing the board, insulate it with non-static foam, hot glue, or other material. Handle the board around its edges when moving it. We are not responsible for boards that are rendered useless by improper handling.

NOTICE: There is no warranty on kits!! It is your responsibility to install the board. Kits cannot be returned! This kit can consume a lot of current. Be careful if you plan to use a battery source that is capable of delivering a lot of current. Contact a professional if you need assistance. Hyperdyne Labs assumes no responsibility for the misuse of this kit.