



Frequently Asked Questions

Control 50 Series Subwoofer-Satellite Systems

Rev 090820RK



Mixing and Matching

Can I use a couple of Control 42 in-ceiling satellite speakers along with a pair of Control 52 on-wall satellites, all with the Control 50S/T subwoofer? Could I use a Control 40CS/T as the subwoofer?

Yes, Control 40CS/T, 50S/T, 42C and 52 speakers can be intermixed in any combination as long as you end up with a system having 1 subwoofer and either 2 or 4 satellite speakers. This is very convenient for meeting the architectural and/or visual requirements of a wide variety of venues.

70V vs. Low-Z

Does the system work in both 70V and low impedance modes?

Yes, a rotary switch on the Control 50S/T's input cup switches between low impedance and the multi-tap 70V tap settings (max is 80 Watts).

Configurations

How many Control 52 satellite speakers can I use in a system?

The system should include either two or four satellite speakers. The system is not designed for one or three satellite speakers, and if more than four satellite speakers are needed, then use multiple subwoofer-satellite systems. The crossover network built into the Control 50S/T subwoofer contains two high-pass filters, each set to work properly with the impedance and sensitivity of two satellite speakers. As listed on the connection label, when using two Control 52 (or Control 42 in-ceiling) satellite speakers, they get connected to the subwoofer's SAT 1 & 2 connectors. When using four satellite speakers, they get connected to all four of the SAT connectors (SAT 1, 2, 3, and 4).

Impedance

In the low-impedance setting, what is the impedance of a Control 50 sub/sat system?

It depends on how many satellite speakers you're using in the system. The subwoofer by itself is 8 ohms. The subwoofer with two satellites is also 8 ohms. The subwoofer with four satellites is 4 ohms.

Tap Ratings

What is the power draw on a 70V (or 100V) distributed speaker line for a full subwoofer-satellite system at the various tap settings? What size 70V/100V amplifier do I need for driving the systems?

The 70V/100V tap ratings (80W, 40W, 20W, plus 10W at 70V only) indicate the power draw of the subwoofer itself. With two Control 52 (or Control 42 in-ceiling) satellite speakers, the system draws the same power as listed for the subwoofer by itself. [Of course, the satellites draw some power from the amp, but the bandwidth of the two measurements utilize different frequency bands, so the average power draw within their particular bandwidths is the same.]

When using four satellite speakers, the total power draw of the system increases by 30% over that shown for the subwoofer itself on the subwoofer's tap listing. Therefore, the 80W tap setting draws 104 Watts; the 40W tap setting draws 52 Watts; the 20W tap setting draws 26 Watts; and the 10W tap setting draws 13 Watts. When using a system with four satellite speakers on a 70V/100V distributed speaker line, provide 70V/100V amplification that is appropriate for this power draw.

Room Size

What is the maximum square footage that a Control 50 System with 4 satellite speakers would be expected to cover for business music applications?

Of course, the area any speaker system covers depends on many factors, including how loud the music needs to be, how high the speakers are mounted, what the aspect ratio is of the room, what the materials are of the room structure, etc. However, as a general guideline, a single Control 50 System can cover a floor space of up to 100 square meters (1100 square feet) for most business music applications.

Performance Targets -- Rough performance targets of 82 dB continuous music capability (continuous pink noise of 86 dB, with peaks of 92 dB) and a maximum variation level (the difference in sound level from place to place within the room) of about ± 2.5 dB is usually sufficient for most business music applications.

Coverage -- With the speakers mounted at a height of 3 meters (10 ft), a Control 50 Series System covers a floor space of about 100 square meters (1080 square feet) to this spec.

Placement and Aiming Angles for Various Room Aspect Ratios – For a room that is basically square (10 x 10 meters – 33 x 33 ft), placing the Control 52 speakers in the corners aimed down at about 20° produces an average of 82 dB for music (86 for pink noise, peaks of 92 dB) and a level variation of ±2.5 dB within the room. For a room with a width/depth aspect ratio of 1.5 (12 x 8 meters; 42 x 25 ft), placing the speaker in the corners aimed at a 10° down angle covers the room to the same spec. For longer rooms such as 20 x 5 meters (65 x 16 ft), placing the speakers evenly along one side at 10° down angle similarly provides the same sound level and variation spec.

Adjusting for Different Targets -- For venues requiring higher sound level targets, the speakers must be closer to the listeners so the coverage area for each Control 50 system would be smaller. For lower SPL targets, the room might be able to be slightly larger than 100 sq m (1100 sq ft); however the variation within the room also increases as the room gets larger. If the ceiling is lower so the Control 52 speakers are at a lower height than 3 m (10 ft), then the maximum room size is smaller because each speaker covers a smaller floor space area. Similarly, if the speakers are installed higher, then the area covered can be greater. EASE files are available for Control 52 to plot the coverage for any room layout and size.

Subwoofer Coverage -- The subwoofer coverage will not be as consistent within the room as that of the satellite speakers because for any system having a single subwoofer, the subwoofer sound level is always louder close to the subwoofer than it is farther away from the subwoofer due to the inverse square law of physics. The greatest subwoofer variation occurs with the subwoofer placed in a corner because the distance to the far part of the room is greatest. There will be less variation with the subwoofer located near (but not exact at) the center of a side wall. The least variation occurs with the subwoofer in the center of the room (using the attachment points on the subwoofer's back panel or other safe method – do not use the wall bracket to install to a ceiling. The installer is responsible for safe installation). Subwoofer coverage can be made more consistent by adding a second subwoofer on the far side of the room; however, this can lead to too much bass so it is advisable to design equalization into such systems so the bass level can be adjusted appropriately.

Room Modes -- Room modes (build-ups of reflections and cancellations of low frequencies) occur regularly in small rooms, resulting in hot spots and cold spots related to the dimensions of the room. Multiple subwoofers placed asymmetrically (not exactly mirror imaged) within the room can help to minimize room modes, making the bass response more consistent from place to place within the space. However, this can lead to too much bass so it is advisable to design equalization into such systems so the bass level can be adjusted appropriately.

What if I need to cover a larger area?

If a lower sound level and more variation within the space are acceptable, then you can use a single system to cover a larger area. If not, then use multiple Control 50 Series subwoofer-satellite systems to cover the area. If operated low-impedance, both systems can be driven from a single 2-ohm capable amplifier channel, or from two 4-ohm capable amp channels. If operated 70V or 100V, the two systems can be paralleled onto a single full-range 70V or 100V distributed speaker line.

Subwoofer Placement for Tonal Balance:

Where is the best place to locate the subwoofer for the best tonal balance between it and the satellite speakers?

The location of the subwoofer in relation to wall, floor or ceiling affects the tonal balance of the system. In systems having two satellite speakers, proper balance of sound is usually attained by installing the subwoofer via its wall-mount bracket at the center of a wall (instead of mounting it at a 2-boundary area such as a wall-floor junction). For systems with four satellite speakers – such as the Control 50PACK System -- mounting the subwoofer in the center of a wall produces good basic bass levels. Locating the subwoofer at a two-boundary junction, such as a wall-floor or wall-wall junction, provides stronger bass. A corner location provides the strongest bass for maximum bass impact, although it may be too much bass, depending on the room. In addition to subwoofer placement, external electronic equalization such as from tone controls or DSP can be utilized to adjust the tonal balance further.

Satellites

Is it OK to use the satellite speaker by itself, without the subwoofer, for applications where I don't need bass response?

It is OK to use the Control 52 only if the signal driving them has been high-passed. The crossover network in the Control 50 system is built into the Control 50S/T (or Control 40CS/T) subwoofer -- there is no high-pass filter built into the Control 52 satellite speakers. The driver in the Control 52 can be damaged if driven with frequencies below 140 Hz. Therefore, when using Control 52's by themselves, the signal must be high-passed at 140 Hz electronically. See the spec sheet for more information.

Intermixing on a Distributed System

Can I connect a Control 50 subwoofer-satellite system onto the same 70V or 100V distributed speaker line as I'm using for full-range speakers?

Yes, you can connect the Control 50 Series system onto the same 70V or 100V distributed speaker line as full-range speakers, as long as you set the tap selector to one of the 70V or 100V tap settings (ie, not on the 8 ohm setting). Consider the power draw from the Control 50 Series system (including the information from the "Tap Ratings" section above) for determining the size of the power amplifier required to drive the distributed speaker line.

Frequency Response

What is the frequency response of a Control 50 Series system?

The usable frequency response (at the -10 dB down points) is 32 Hz to 20 kHz. Without EQ, the system is flat (± 3 dB) from 50 Hz to 17 kHz.

