Volume Controls

Picking the right Volume Control for your application: Two basic types:

Transformer Type with Impedance matching capability. This covers more than 90 percent of all installs utilizing a basic manual Volume control. It adds flexibility to your system by allowing you to control the volume level in a dedicated room. It does not add gain to the system but actually attenuates or decreases the sound (you around turning the sound down). During setup you set the source volume to the optimum level then the volume control turns the sound down to almost inaudible levels. Most impedance matching volume controls do not turn the sound off completely unless they are equipped with an off switch (found on our model SVC205).

The Impedance matching feature allows for maximum flexibility when designing a system featuring multiple speakers direct from either an amplifier/receiver or from a Speaker selector connected to an Amplifier/Receiver. In all cases it important to select the best components for you particular application. OSD features multiple options in Volume Controls, Amplifiers and even Speaker Selectors.

We also offer two styles, a rotating knob and slider style version. Both styles are shipped with a white, ivory and almond matching color Decora insert, knob and outer plate (Slider control shipped with Slider knobs)

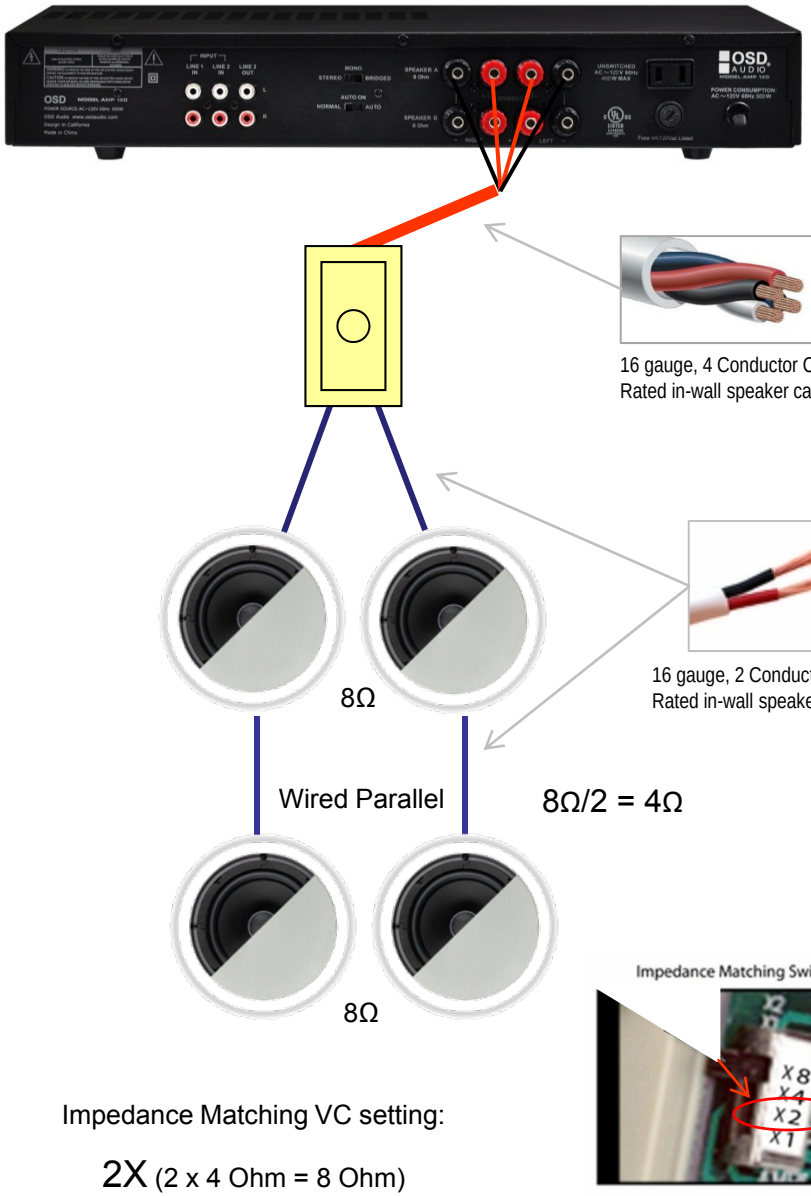
We also offer a Impedance matching model that features a two way A/B switch for either two speakers from a single source or a single speaker with dual source option.

Here is an example of Impedance matching application using a single Volume Control. The OSD AMP120 is 50 watt per channel 8 Ohm Amplifier that works best when connected with an 8 Ohm load. The SVC100 Volume control is used to connect the two pairs of 6.5” in-ceiling speakers both rated at 8 ohm. When wired in parallel the impedance becomes 4 Ohm (8Ω/2 = 4Ω). The Impedance matching VC jumper switch is set to 2X. This doubles the 4 ohm setting back to the 8 ohm that is optimum for the performance of the AMP120. Attempting to connect two pairs of 8 ohm speakers without the volume control would mean a 4 ohm load on an amplifier that would cause an eventual overload and shut down to protect itself.

Conversely if you selected one of our High Current Amplifiers like the AMP200 that is stable down to a 2 ohm load you could wire 3 pairs of 8 ohm speakers in parallel with no impedance matching needed. These High current Amps are built to handle these demanding loads (actual 2.6Ω from the 3 pairs) providing additional flexibility in your system design.

AMP200: 2 Channel 125 Watts (4 ohm)

AMP120: 2 Channel 50 Watts (8 ohm)



Impedance Matching VC setting:

2X (2 x 4 Ohm = 8 Ohm)

The essence of "series wiring" is really quite simple:

When speakers are connected in this fashion, load impedance increases – the more speakers, the higher the impedance. The most common reason for wanting to raise impedance is to lower acoustical output, as in the case of rear-fill or center-channel speakers. Speaker output declines because the amplifier's power output decreases as the load impedance increases. While you can connect any number of speakers in series, try to keep the total equivalent-load impedance for each channel below 16 ohms, since most amps are not designed to handle higher loads

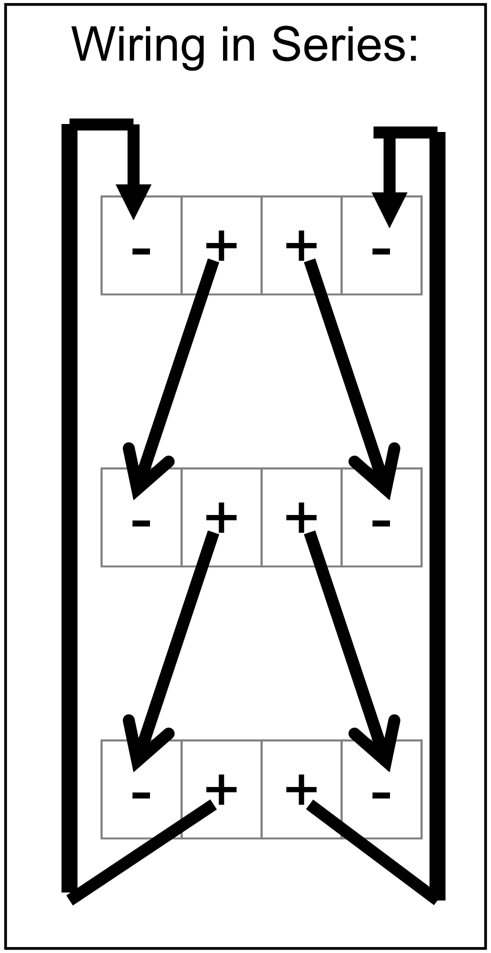
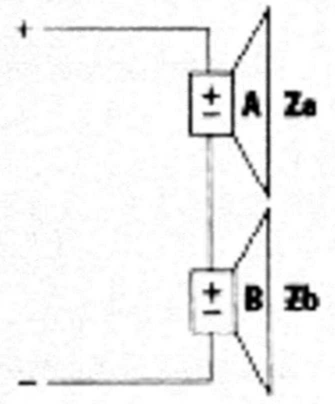
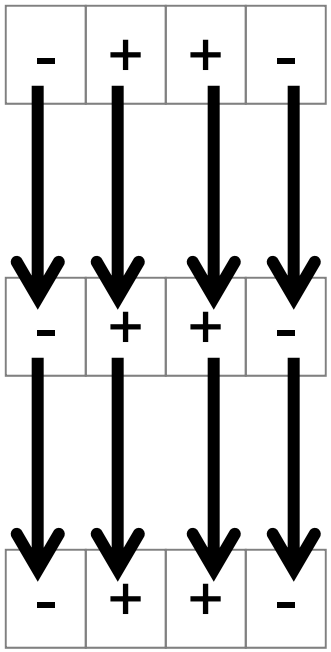


FIGURE 1: SPEAKERS WIRED IN SERIES



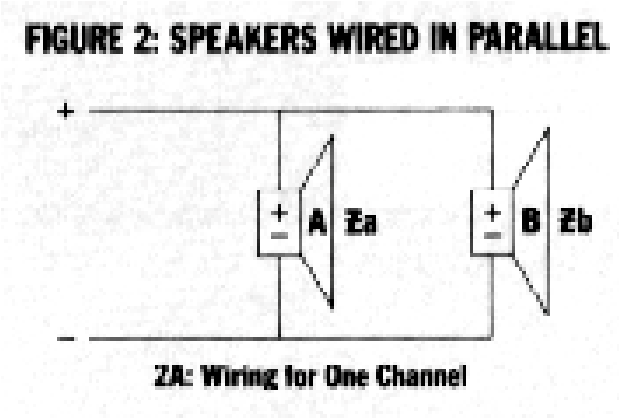
1A: Wiring for One Channel

Wiring in parallel:

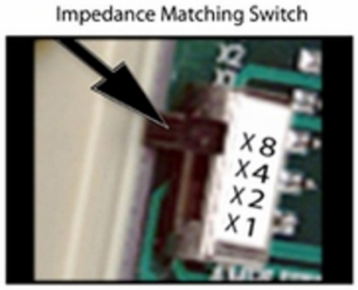


“Parallel wiring” has the opposite effect of “series wiring” – load impedance drops when speakers are wired in this fashion. And the more speakers you wire in, the lower the impedance. The most common reason for wanting to lower impedance is to raise acoustical output. Speaker output increases because the amplifier's power output rises as the load impedance decreases.

The number of speakers that can be connected in parallel is limited by the minimum load impedance that the amplifier is capable of driving and the power-handling capacity of the speakers. In most cases, load impedance should be held to a minimum of 2 ohms – provided the amplifier can handle impedances that low. Three pair of 8 Ohm speakers wired in parallel would equal 2 Ohm.



The Speaker Selector of choice when using Impedance matching Volume Controls; the OSD DSM series Dual Source 4/6/8 Zone Models because of manual protection switch

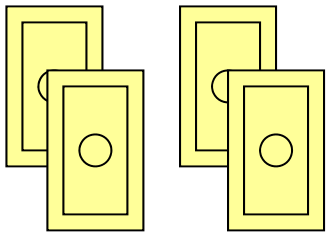


1) If you have 1 SVC100 hooked up to Zone 1 and another hooked up to zone 2, then the jumper settings for both should be 2X.

2) If four Zones are used on the DSM4 device with a single volume control on a single pair of speakers for each zone (4 total SVC100) then the jumper setting should be set to the 4x position on EACH SVC100.

Speaker Selector	#of VC	# speakers	Impedance setting
DSM4	4 each	4 each	4X
DSM6	6 each	6 each	8X
DSM8	8 each	8 each	8X

Note: If two speakers are connected to one of the four Volume Controls for the DSM4 then the Impedance setting will increase to 8X



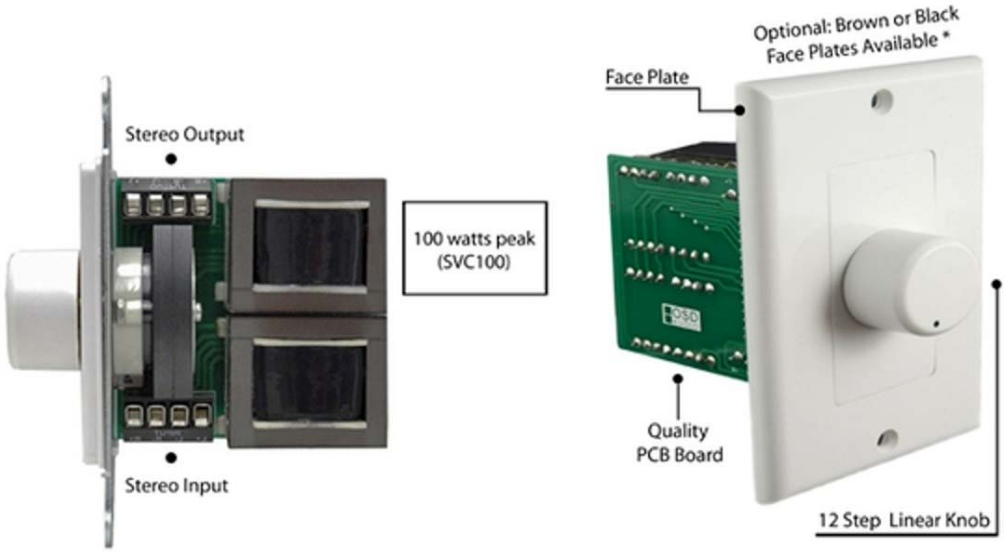
3) Note the DSM dual source speaker selectors are equipped with an manual on/off protection circuit switch. This is to be set in the “off” position when using Impedance matching volume controls

OSDetails

The following is grid showing Jumper settings when using 8Ω or 4Ω speakers or a combination of both when connecting to a 8Ω Receiver/Amplifier

The 8 Ohm

OSD AUDIO
Outstanding Speaker Design



8-Ohm Amplifiers

Number of 4Ω Speaker Pairs	Number of 8Ω Speaker Pairs: 1	2	3	4	5	6	7	8
	1x	2x	4x	4x	8x	8x	8x	8x
1	2x	4x	4x	8x	8x	8x	8x	
2	4x	8x	8x	8x	8x			
3	4x	8x	8x					
4	8x							
5								
6								
7								
8								

AMP120: 2 Channel 50 Watts (8 ohm)

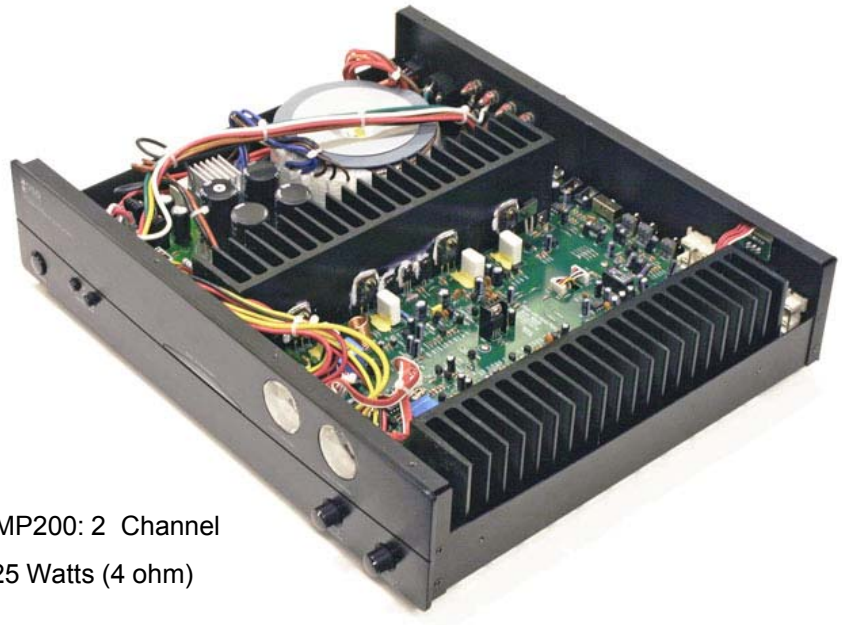
Note: Most Receivers/Amplifiers under $125.00 (like our AMP120) are typically 8 Ohm stable and have problems with low impedance loads. They are not built with a large enough power supply or have enough heat shrink to deliver more than the 8 ohm load. These are commonly referred to as “Chip Amps’.

The following is grid showing Jumper settings when using 8Ω or 4Ω speakers or a combination of both when connecting to a 4Ω Receiver/Amplifier

The 4 Ohm

4-Ohm Amplifiers

Number of 4Ω Speaker Pairs	Number of 8Ω Speaker Pairs: 1	2	3	4	5	6	7	8
	1x	1x	2x	2x	4x	4x	4x	4x
1	1x	2x	2x	4x	4x	4x	4x	8x
2	2x	4x	4x	4x	4x	8x	8x	
3	4x	4x	4x	8x	8x	8x		
4	4x	8x	8x	8x	8x			
5	8x	8x	8x	8x				
6	8x	8x	8x					
7	8x	8x						
8	8x							



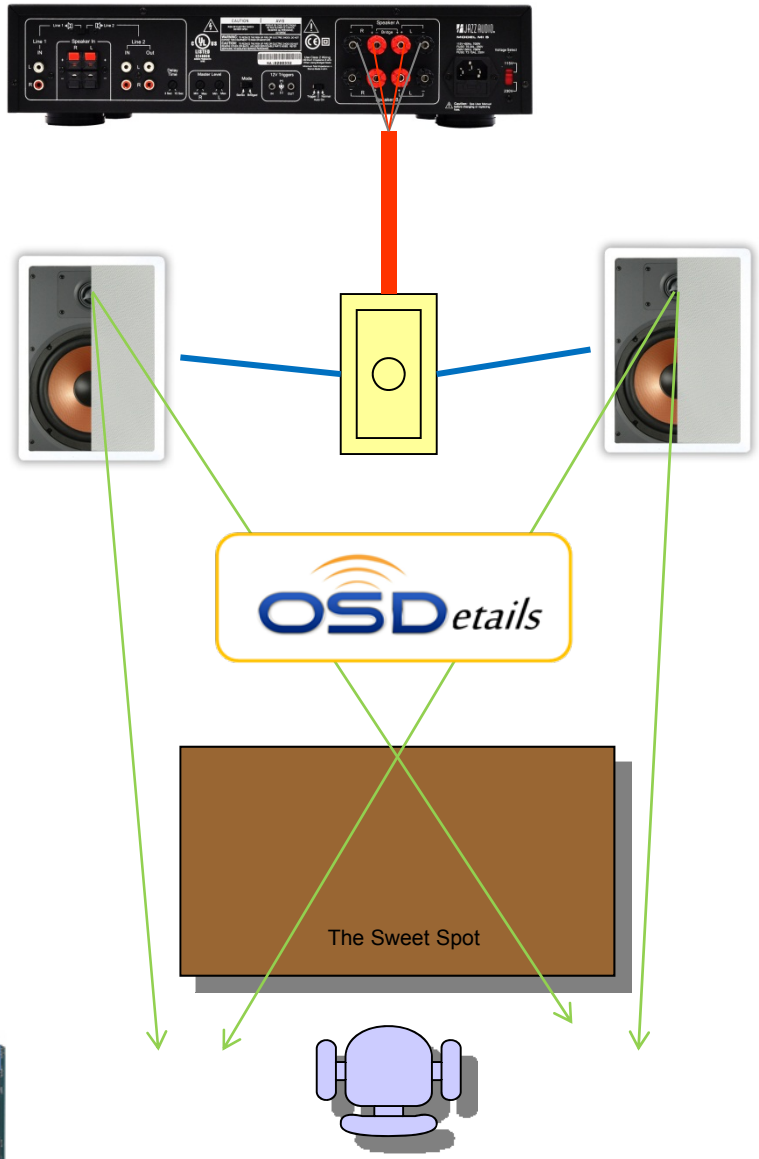
AMP200: 2 Channel
125 Watts (4 ohm)

ote: A **High Current Amplifier** is typically a more expensive Amplifier
sing all discrete Components and able to handle a 2 Ohm load…
xample, OSD-AMP200, notice the Large Toroid Power Supply and ample
eat Sink (this weights 35 lbs.) needed to produce low impedance loads.

Volume Controls: Basic Types continued

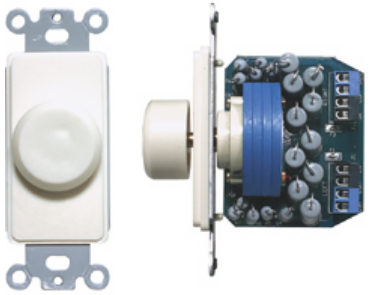
Audiophile Resistor Based Volume Controls;

Unlike the Transformer design these are not Impedance matched. In theory the Resistors tend to have broader frequency response with virtually no high or low end roll off. There are 11 resistors which equate to 11 clicks of attenuation around 36dB total. Unlike the Transformer types this is a “break before make design” which means no signal between clicks. Plus the last click completely disconnects the signal from the source. We at OSD stock this particular style for those customers looking to connect one or two volume controls to our High current series Amplifiers while driving higher quality speakers where listening is more critical. A good example would be a home office where the desk chair would typically be in the same location, the ideal listening position. The pivoting tweeters would be aimed at the center of the chair



An example of a critical listening application featuring a home Office setup

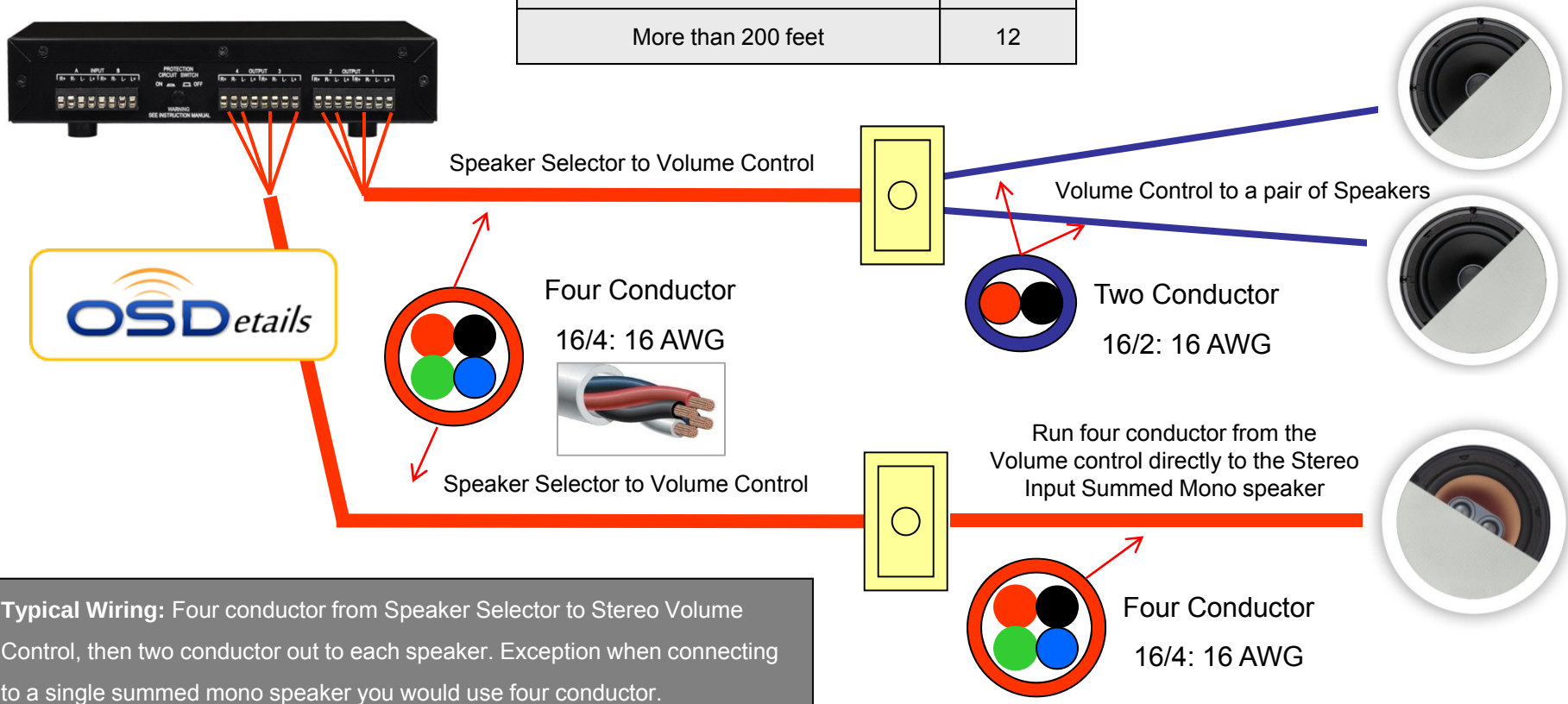
Note: We do not recommend using Resistor based volume controls with a speaker selector box



Choosing the right speaker wire:

Keep in mind that the gauge, or thickness of your speaker wire should depend on how far the wire has to travel from the receiver to the speaker. The lower the American Wire Gauge (AWG) number, the thicker the wire. Significant power losses can occur over the long runs, resulting in lower performance. While this probably won't be a problem in most single-room setups, it could be an issue for multi-room systems. Use the chart to the right as a guideline for wire gauge selection. Note all our VC will accept up to 14 gauge

Distance from speaker to amplifier	Gauge
Less than 80 feet	16
80 to 200 feet	14
More than 200 feet	12



Typical Wiring: Four conductor from Speaker Selector to Stereo Volume Control, then two conductor out to each speaker. Exception when connecting to a single summed mono speaker you would use four conductor.

Outdoor Volume Controls

OSD Audio being the number one on line site for Indoor/Outdoor speakers including Rocks, Patio and Garden Speakers offers a number of choices for outdoor Volume Controls. We offer three levels of Transformer and two Resistor based. They are identical to our interior Volume Controls but we add 100% weatherproof housing for each in either white or gray color match. The kit includes metal mounting plate and color matched plastic and fast connect terminals for easy installation . It can be either mounted on a wall or a ¾" PVC pipe.

Indoor Volume Controls: Both Impedance Matching and Resistor Based Types

Model	Description	Type	Rated Power		Steps - Clicks	Connection	Attenuation	On/Off	A/B	Plates-Inserts-Knobs Colors (included)	1X Setting	Accepts Wire gauge	Warranty	Note
			Peak	RMS										
SVC300	Impedance Matching	Decora Style-Knob	300w	100w	12	Make before break	54dB	No	No	White-Ivory-Almond	Yes	14 AWG	5 Year	Additional matching colored plates, inserts and knobs available both Black and Brown
SVC100	Impedance Matching	Decora Style-Knob	100w	50W	12	Make before break	42dB	No	No	White-Ivory-Almond	Yes	14 AWG	5 Year	Additional matching colored plates, inserts and knobs available both Black and Brown
SVC70	Impedance Matching	Decora Style-Knob	70w	35w	12	Make before break	42dB	No	No	White-Ivory-Almond	Yes	14 AWG	5 Year	Additional matching colored plates, inserts and knobs available both Black and Brown
VMS300	Impedance Matching	Decora Style-Slider	300w	150w	12	Make before break	42dB	No	No	White-Ivory-Almond	Yes	14 AWG	5 Year	Additional matching colored plates, inserts and knobs available both Black and Brown
VMS100	Impedance Matching	Decora Style-Slider	100w	50w	12	Make before break	42dB	No	No	White-Ivory-Almond	Yes	14 AWG	5 Year	Additional matching colored plates, inserts and knobs available both Black and Brown
VKR120	**Resistor Based**	**Decora Style-Knob**	**150w**	**100w**	**11**	**Break before Make**	**36dB**	**No**	**No**	**White-Ivory-Almond**	**Only**	**14 AWG**	5 Year	**Audiophile quality sound, both higher and lower frequency response, no saturation**
SVC405	Impedance Matching	Decora Style-Knob	300w	100w	12	Make before break	42dB	No	Yes	White-Ivory-Almond	Yes	14 AWG	5 Year	Bi-Directional; 1 Amplifer connected to two different speakers or a single speaker from dual source
SVC205	Impedance Matchimg	Decora Style-Knob	300w	100w	12	Make before break	42dB	Yes	No	White-Ivory-Almond	Yes	14 AWG	5 Year	Only Impredance matching volume control that can be turned off completely

Outdoor Volume Controls:Both Impedance Matching and Resistor Based Types

Model	Description	Type	Rated Power		Steps - Clicks	Connection	Attenuation	On/Off	A/B	Plates-Inserts-Knobs Colors (included)	1X Setting	Accepts Wire gauge	Warranty	Note
			Peak	RMS										
OVC300	Impedance Matching	Outdoor Volume Control	300w	150w	12	Make before break	54dB	No	No	Gray or White, ordered seperately	Yes	14 AWG	5-Year	Includes color matched weatherproof outer housing. Must specify gray or white, fits 3/4" PVC pipe
OVC100	Impedance Matching	Outdoor Volume Control	100w	50W	12	Make before break	42dB	No	No	Gray or White, ordered seperately	Yes	14 AWG	5-Year	Includes color matched weatherproof outer housing. Must specify gray or white, fits 3/4" PVC pipe
OVC70	Impedance Matching	Outdoor Volume Control	70w	35w	12	Make before break	42dB	No	No	Gray or White, ordered seperately	Yes	14 AWG	5-Year	Includes color matched weatherproof outer housing. Must specify gray or white, fits 3/4" PVC pipe
OVC305R	**Resitor Based**	**Outdoor Volume Control**	**150w**	**100w**	**11**	**Break before Make**	**36dB**	**No**	**No**	**Gray or White, ordered seperately**	**Only**	**14 AWG**	**5-Year**	**Audiophile quality sound, both higher and lower frequency response, no saturation**
OVC205R	**Resitor Based**	**Outdoor Volume Control**	**100w**	**50w**	**11**	**Break before Make**	**36dB**	**No**	**No**	**Gray or White, ordered seperately**	**Only**	**14 AWG**	**5-Year**	**Audiophile quality sound, both higher and lower frequency response, no saturation**