

INSTALLATION INSTRUCTIONS

VCIR™ MATCH MAKER™ SPEAKER VOLUME CONTROL WITH IR RECEIVER

The Model VCIR™ is an impedance matching stereo speaker volume control combined with an IR Receiver. It mounts in a single gang J-box. The volume control section has the same impedance matching capabilities as that of the Xantech Model 760-00 Match Maker volume control. The IR Receiver section has the same high performance characteristics of the 480 series Dinky Link IR Receivers with the added feature of a STATUS LED for system ON/OFF indication.

NOTE: The volume control section of the VCIR is manually controlled only. **The IR Receiver section is for control of other system components -- it cannot control the volume control section!**

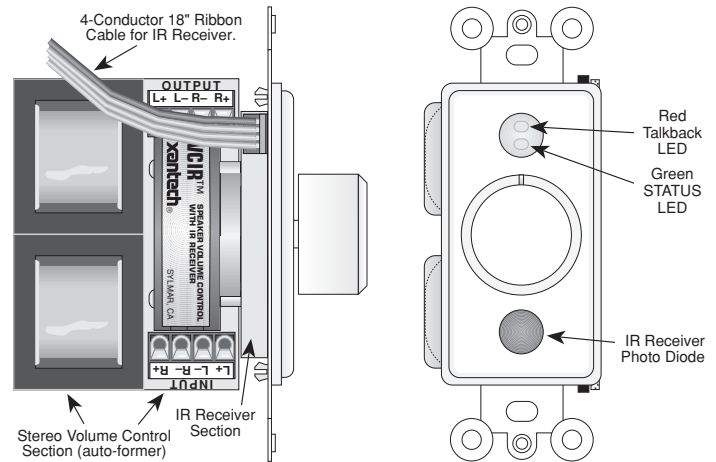


Fig. 1 The VCIR

SPECIFICATIONS - VOLUME CONTROL SECTION

- **Type:** 2 channel TRI-FIT™ wound precision autoformers, with independent gnds.
- **Terminals:** Plug-in type screw terminals.
- **Power Rating:** 25 Watts continuous, 150 Watts peak.
- **Freq. Response:** 20-20,000 Hz \pm 1dB at 1 watt.
- **Attenuation:** 11 steps at 3 to 6 dB per step - 35 dB max. (Max. CCW is OFF).
 - S1 setting: 0 dB @ Max. CW (pass-through position).
 - S4 setting: 9 dB @ Max. CW.
 - S8 setting: 13 dB @ Max. CW.
- **Impedance:** S1 setting: Pass-through position. i.e. 8 Ohms on OUTPUT reflects 8 Ohms to INPUT (Max. CW position).
 - S4 setting: 8 Ohms on OUTPUT reflects 32 Ohms to INPUT. Likewise, 4 Ohms on OUTPUT reflects 16 Ohms to INPUT (Max. CW position).
 - S8 setting: 8 Ohms on OUTPUT reflects 64 Ohms to INPUT. Likewise, 4 Ohms on OUTPUT reflects 32 Ohms to INPUT (Max. CW position).
- **Mounting:** Fits most new construction junction boxes - uses single space.

NOTE: It may be necessary to cut off the back portion of a J-box or use a "P" ring to have sufficient room. Be sure to check fit before choosing J-boxes!
- **Dimensions:** 1-5/8" W x 2-7/8" H x 2-7/16" D

SPECIFICATIONS - IR RECEIVER SECTION

- **Infrared carrier frequency bandwidth:** 30 - 100 kHz.
- **IR reception range:** Up to 30 feet on axis (range may be more or less depending on device being controlled and levels of IR or EM interference).
- **Reception angle:** Approx. 50% range reduction @ $\pm 45^\circ$ off axis horizontally.
- **Cable requirements:** When running long lengths use:
4-conductor/24 gauge solid or stranded wire up to 200', 22 gauge up to 600', 20 gauge up to 2000' and 18 gauge up to 5000' (unshielded OK).
- **Maximum cable length:** One mile with 18 gauge.
- **4-Terminal Block** (with double sided tape for mounting) included for easy extension of 18" ribbon lead. See **Fig. 6** for lead identifications.
- **Red talkback LED:** Tests system for correct wiring and indicates IR reception.
- **Green system ON/OFF status LED:** (draws 10 mA @ 12 VDC).
- SUN780 Sunscreen filters available separately. Order these to help with sunlight and stray IR problems. They fit easily over rear of photodiode opening.
- IR receiver works in normal 3-wire mode or 2-wire phantom power mode.
- Phantom mode requires 792-10 power module.
- Use Xantech Connecting Blocks for connection to emitters.
- **Power requirements:** 12 Volts DC ± 2 V @ 10 mA.
- Up to 20 VCIR's may be powered by one 781RG power supply.

SETTING THE IMPEDANCE MATCHING JUMPERS

Fig. 2 shows the location of the pins and the jumper locations on the pins for the three impedance multiplier positions. To set the jumpers correctly, refer to **Fig. 2** and the charts and procedures that follow.

The jumpers are located under the one side of the autoformers as shown in **Fig.2**. Their proper placement depends on the number of VCIR's and speakers used in the total installation. To set them for the best impedance matching condition, refer to the charts and procedures that follow.

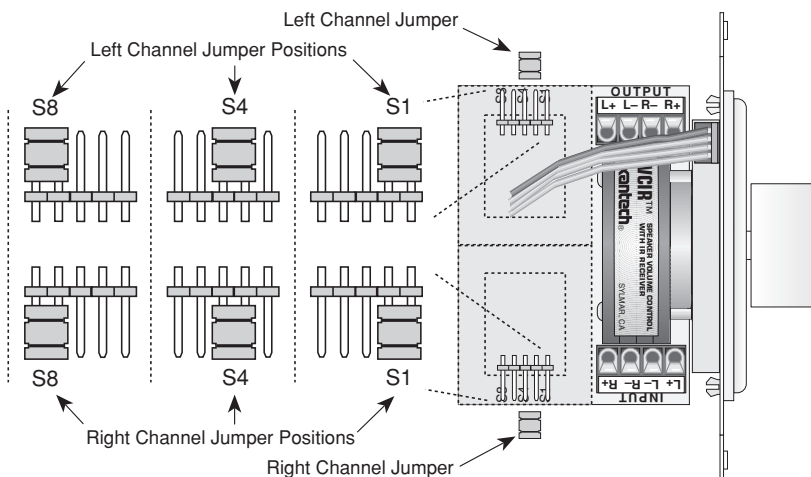


Fig. 2 Jumper Placement For Impedance Matching

WHEN USING 8 OHM SPEAKERS

Min. Amp. Impedance	Number of Speaker Pairs Used															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
4 Ohms	S1	S1	S4	S4	S4	S4	S4	S4	S8	S8	S8	S8	S8	S8	S8	S8
8 Ohms	S1	S4	S4	S4	S8	S8	S8	S8								

WHEN USING 4 OHM SPEAKERS

Min. Amp. Impedance	Number of Speaker Pairs Used							
	1	2	3	4	5	6	7	8
4 Ohms	S1	S4	S4	S4	S8	S8	S8	S8
8 Ohms	S4	S4	S8	S8				

Procedure for all 4 Ohm or all 8 Ohm Speakers:

1. Determine the rated speaker impedance (refer to the manufacturer's specifications - it must be the same for all speakers used in the system).
2. Determine the total number of stereo speaker pairs used in the installation.
3. Determine the minimum safe operating load impedance for the amplifier (refer to the manufacturer's specifications).
4. Find the correct jumper position from the above charts.
5. Place the jumpers in the same position on each VCIR used in the system.

Example 1:

Three pairs of 4 Ohm wall speakers are to be used with three VCIR's in a 3-room system, all driven by one amplifier rated for 8 Ohms minimum safe operating load impedance.

1. Refer to the chart "WHEN USING 4 OHM SPEAKERS".
2. Locate the number 3 in the top row.
3. On the 3rd row, opposite "8 Ohms" and below "3", note the letters "S8". These signify the required impedance multiplier.
4. The two jumpers therefore, one for each channel, need to be plugged onto the S8 pins on each VCIR in each room.

Example 2:

Seven pairs of 8 Ohm wall speakers are to be used with seven VCIR's in a 7-room system, all driven by one amplifier rated for 4 Ohms minimum safe operating load impedance.

1. Refer to the chart "WHEN USING 8 OHM SPEAKERS".
2. Locate the number 7 in the top row.
3. On the next row, opposite "4 Ohms" and just below "7", note the letters "S4". These signify the required impedance multiplier.
4. The two jumpers therefore, one for each channel, need to be plugged onto the S4 pins on each VCIR that feeds each room.

Procedure for Speakers Other Than 4 or 8 Ohms:

In this case, some calculation is required. You need to find the total paralleled impedance of the speakers first, then multiply it by 1, 4, or 8 until a value is reached that is higher than the minimum safe value specified for the amplifier.

Example:

Six pairs of 5 Ohm wall speakers are to be used with six VCIR's in a 6-room system, all driven by one amplifier rated for 4 Ohms minimum safe operating load impedance.

1. Calculate the total paralleled impedance by dividing 5 Ohms by 6. $5 \div 6 = 0.83$ Ohms.
2. Multiply 0.83 by 4 (for the S4 setting) = 3.32 Ohms.
Since this value is less than 4 Ohms, the S4 setting cannot be used.
3. Multiply 0.83 by 8 (for the S8 setting) = 6.64 Ohms.

Since this yields more than 4 Ohms, the S8 setting is the correct one to use.

NOTE: Always use the lowest "S" number consistent with the minimum safe load impedance required. Higher "S" values would be "safe" but would result in an unnecessary reduction in power level delivered to the speakers.

If using speakers of different impedance in the same system, refer to:

"Procedure for Speakers of Differing Impedance Used in the Same System"
under Model 760-00 in the Xantech Applications Manual.

INSTALLATION

The IR receiver leads for the VCIR are connected in the same way as for any of the other Xantech IR Receivers. The only exceptions are to identify the leads on the ribbon cable correctly and the use of the Status LED Indicator. Typical connections are shown in **Figs. 3. and 4.**

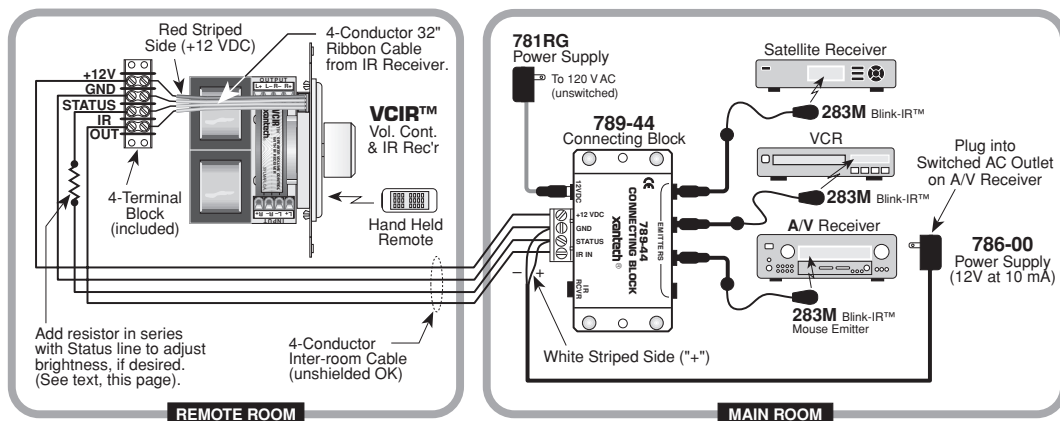


Fig. 3 Simple One-Zone IR Receiver Connections with STATUS

Fig. 3 shows connections to a connecting block in a simple single zone system. A 786-00 Power Supply provides 12 VDC to drive the Status LED in the VCIR to indicate the ON/OFF condition of the system A/V receiver.

You may reduce the brightness of the Status LED by placing a resistor in series with the STATUS lead. Use a resistor value that achieves the desired brightness level (usually 1k Ohm to 6.8k Ohms, 1/8 watt).

Fig. 4 illustrates connection of 2 or more VCIR's to a ZPR68-10 in a multi-zone system. Here, the STATUS terminal on the zone drives the Status LED in the VCIR's to have a visible zone ON/OFF indicator in the remote rooms.

The terminal marked STATUS on the ZPR68-10 connects to the Status leads on the VCIR's (in series with a resistor, if desired) as part of the normal 4-wire hookup.

Connect the additional VCIR's (if any) in the same manner as shown.

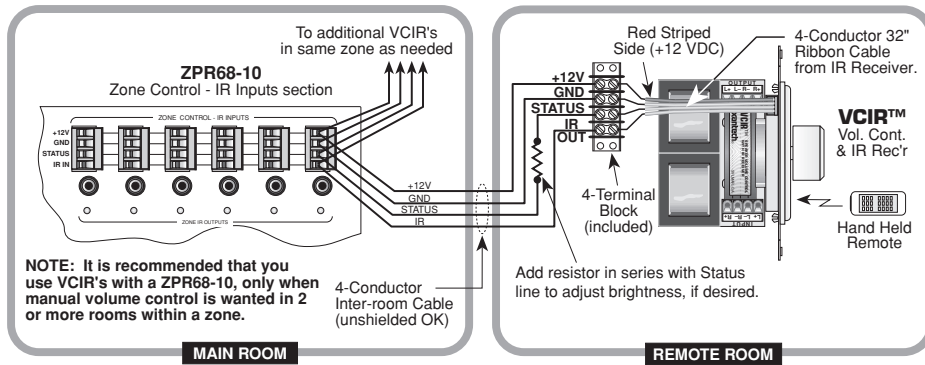


Fig. 4 VCIR Connections to a ZPR68-10 with STATUS

Connect the speaker volume control sections as shown in Fig. 5. Four-conductor speaker wire (two wires for each channel) is connected from each of the VCIR's to the power amplifier (home run from each room). Also, each channel (left and right) requires a pair of wires from the VCIR to the speakers. The plug-in connectors and the printed circuit board of the VCIR are marked with the terminal identifications.

CAUTION: Be sure the amplifier or receiver speaker terminals are connected to the INPUT terminals on the VCIR and the speakers are connected to the OUTPUT terminals on the VCIR as shown in Fig. 5!

The negative right input wire (INPUT R-) and the negative right output wire (OUTPUT R-) are connected together in the VCIR. Likewise, INPUT L- and OUTPUT L- are connected together. There are no common ground connections between the left and right channels in the VCIR, allowing bridged type amplifiers to be used, if desired.

NOTE: Since the VCIR and the 760-00 volume control sections are identical, you can intermix them in the same system as shown in Fig. 5. Simply use the 760-00's in rooms where you do not need IR control.

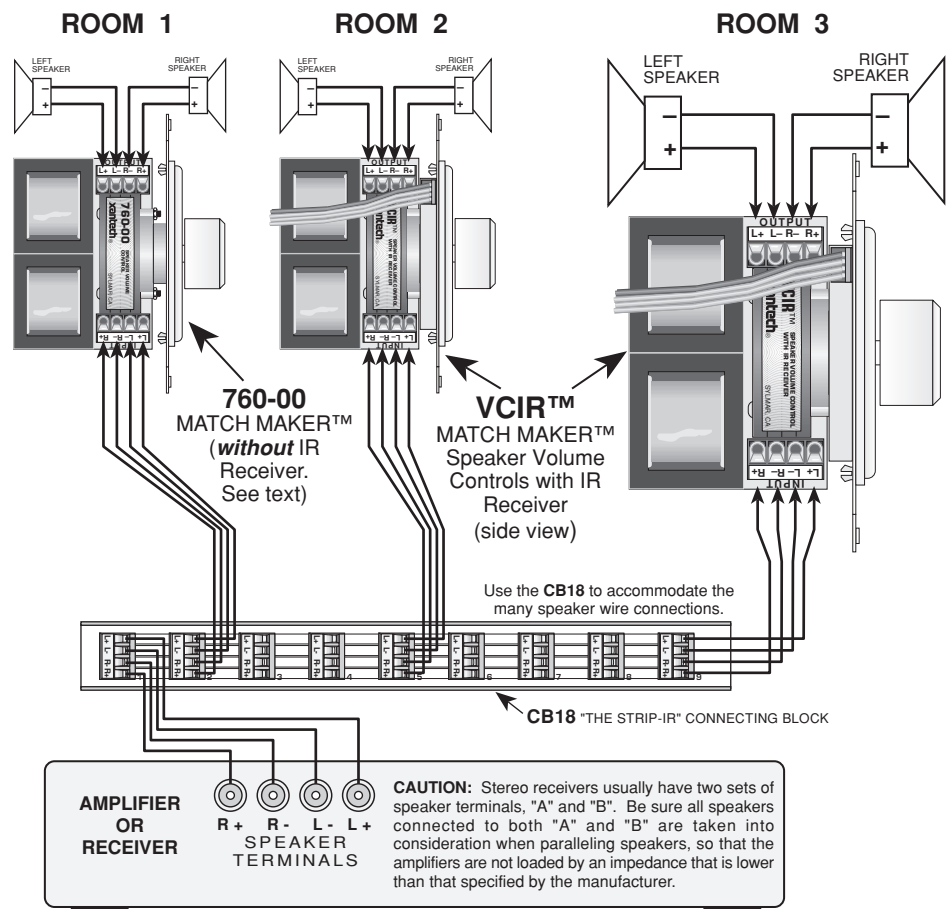


Fig. 5 A Typical 3-Room System

MOUNTING

The VCIR is intended to be wall-mounted in an electrical junction box and trimmed with a decorator-style plate (not included). Observe the following:

1. Consider **potential sources of IR interference** when choosing a wall location for the VCIR, just as you would for any other Xantech wall-mounted IR receiver. Keep it as far away as possible from dimmer controlled lighting, neon, fluorescents, etc. If compact (CFL) or high frequency ballasted fluorescents are involved, you may not be able to use the VCIR at all. In such cases, you may need to use a 780-80 CFL friendly in-wall IR receiver instead, mounted side-by-side with a 760-00 Match Maker Volume Control.
2. **Important:** Be sure to orient the unit so that the IR Receiver Photo Diode (the dark colored window) is **below** the knob as illustrated in **Fig. 1**. Since hand operated wall units are typically mounted 4 feet above the floor, this orientation prevents the knob from blocking the IR signal when sent from a sitting position.
3. The decorator-style **plastic insert plate** (supplied) is available in either white or ivory. Four plastic tabs allow it to be snapped into place onto the metal mounting plate. It is easily removed for refinishing to other colors, if desired, by squeezing the tips of the tabs inward while pulling outward on the insert plate. Be sure to remove the push-on knob first. Refer to **Fig. 6**. **Also, be sure not to paint over the two IR circular windows!** Cover with masking tape before painting.
4. Mount the unit using the hardware provided, referring to **Fig. 6**. The VCIR is attached to wall J-boxes using the two 6-32 pan-head screws supplied. Slots are provided in the metal mounting bracket so that adjustments to vertical alignment can be made.

CAUTION: THE ELECTRICAL JUNCTION BOX, IN WHICH THE VCIR IS MOUNTED, MUST BE DEDICATED TO LOW VOLTAGE A/V SYSTEM APPLICATIONS. MAKE SURE THAT NO AC MAINS WIRING PASSES THROUGH OR TERMINATES IN THIS BOX! Combinations of VCIR's and other low voltage devices, however, may be mounted together in multi-gang boxes.

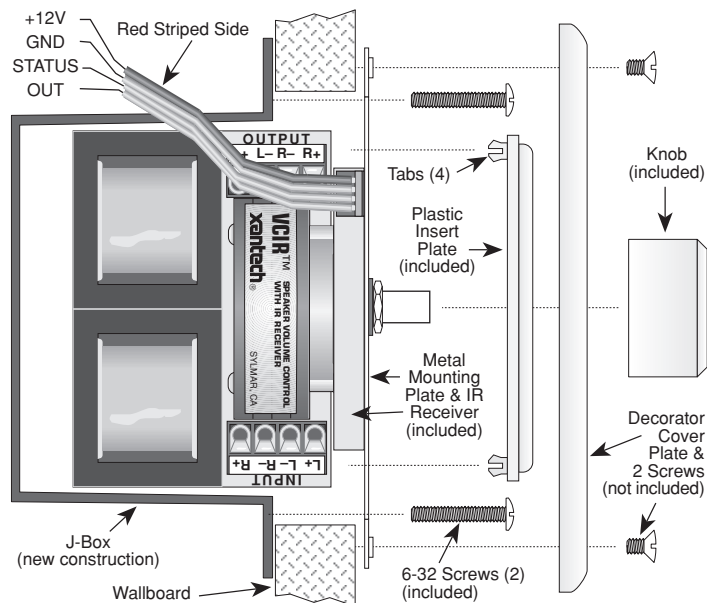


Fig. 6 VCIR Mounting Details