

# INSTALLATION INSTRUCTIONS

## VCIR-CFL™ MATCH MAKER™ SPEAKER VOLUME CONTROL WITH IR RECEIVER

The Model VCIR-CFL is an impedance matching stereo speaker volume control combined with a "CFL Friendly" 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 similar performance to that of the 480-80 CFL Dinky Link IR Receiver with the added feature of a STATUS LED for system ON/OFF indication.

**CAUTION:** *The VCIR-CFL is designed to control products that operate with 36 to 42 kHz IR Carriers only!*

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

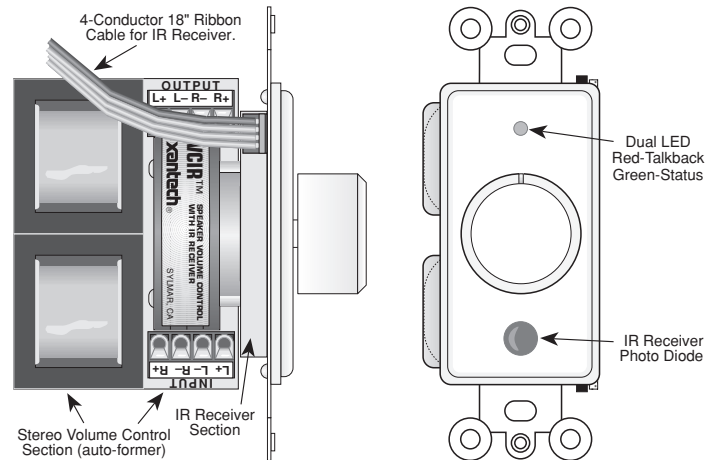


Fig. 1 The VCIR-CFL

### SPECIFICATIONS - VOLUME CONTROL SECTION

- **Type:** 2 channel TRI-FI™ 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" (41.3mm) W x 2-7/8" (73mm) H x 2-7/16" (62mm) D

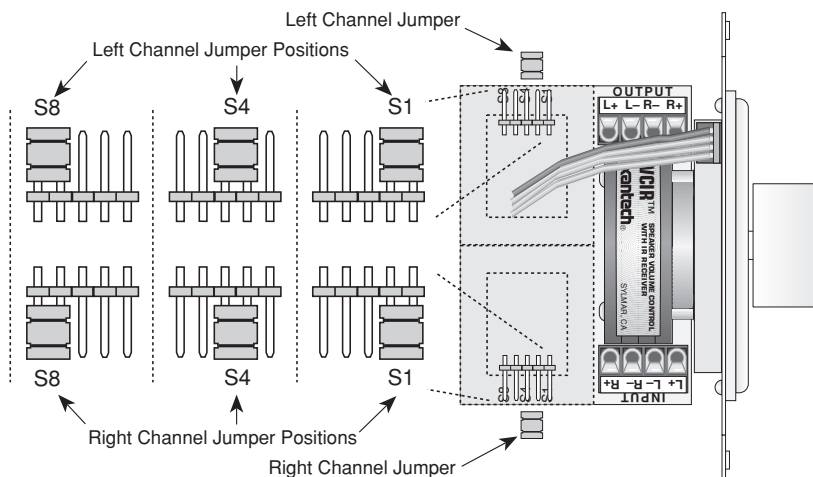
## SPECIFICATIONS - IR RECEIVER SECTION

- **Infrared carrier frequency bandwidth:** 36 kHz to 42 kHz.
- **IR reception range:** Up to 60 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 with 4th lead for Status.
- **NOTE: Unit will not work in Phantom mode!**
- Use Xantech Connecting Blocks for connection to emitters.
- **Power requirements:** 12 Volts DC  $\pm 2$  V @ 20 mA.
- Up to 10 VCIR-CFL'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				

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-CFL 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-CFL 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-CFL that feeds each room.

If using speakers of differing impedance, refer to:

**Procedure for Speakers Other Than 4 or 8 Ohms" and "Procedure for Speakers of Different Impedance Used in the Same System"** under Model 760-00 in the Xantech Applications Manual.

## INSTALLATION

The IR receiver leads for the VCIR-CFL 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** 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-CFL 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 to 10k Ohms, 1/8 watt).

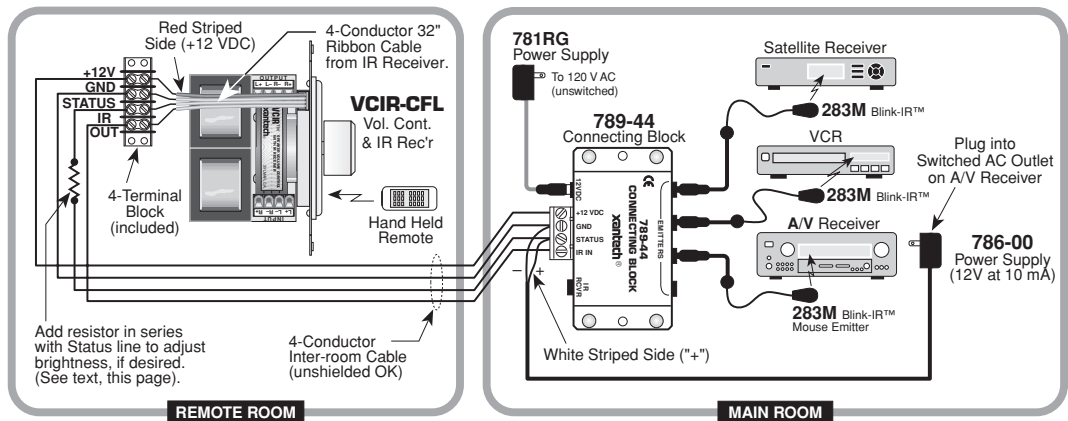
**Fig. 4** illustrates connection of 2 or more VCIR-CFL's to a ZPR68-10 in a multi-zone system. Here, the STATUS terminal on the zone drives the Status LED in the VCIR-CFL's to have a visible zone ON/OFF indicator in the remote rooms.

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

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

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-CFL to the speakers. The plug-in connectors and the printed circuit board of the VCIR-CFL are marked with the terminal identifications.

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



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

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

**NOTE:** Since the VCIR-CFL 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.

## MOUNTING

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

1. Even though the VCIR-CFL has high rejection of IR Interference from High Frequency Ballasted Overhead or Compact Fluorescents and direct or reflected sunlight, you should choose a wall location away from strong locations of such interference as they will have the effect of reducing the range of satisfactory operation.

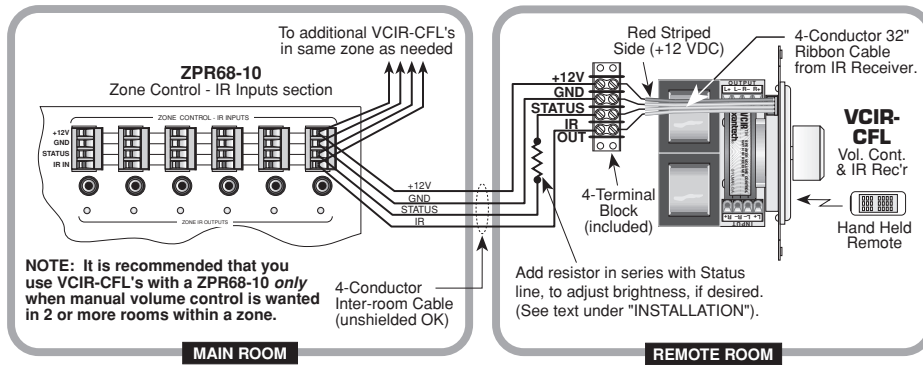


Fig. 4 VCIR-CFL Connections to a ZPR68-10 with STATUS

- Important:** Be sure to orient the unit so that the IR Receiver Photo Diode (the larger 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.
- The decorator-style **plastic insert plate** (supplied) is available in either white or ivory. It mounts with four plastic tabs and light adhesive, allowing it to be removed for refinishing to other colors, if desired. Remove by pressing on the tips of the tabs 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.
- Mount the unit using the hardware provided, referring to Fig. 6. The VCIR-CFL 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-CFL 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-CFL's and other low voltage devices, however, may be mounted together in multi-gang boxes.

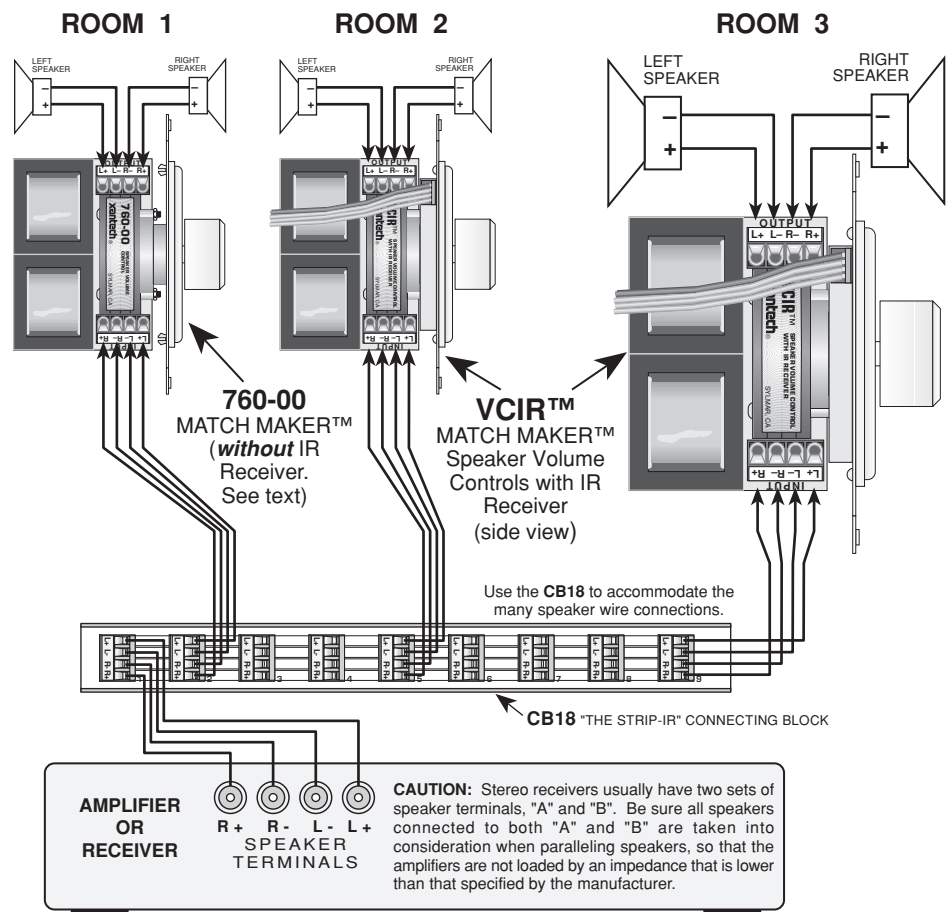


Fig. 5 A Typical 3-Room System

**CAUTION:** Stereo receivers usually have two sets of speaker terminals, "A" and "B". Be sure all speakers connected to both "A" and "B" are taken into consideration when paralleling speakers, so that the amplifiers are not loaded by an impedance that is lower than that specified by the manufacturer.

## APPLICATION PRECAUTIONS

The VCIR-CFL is designed with special circuitry so that it has great immunity to infrared interference caused by CFL (compact fluorescent light) and other types of high frequency electronically ballasted fluorescent lights. Because of this, the following precautions must be taken into consideration when using these special IR receivers:

**1. The VCIR-CFL is designed to control products that operate with 36 to 42 kHz IR Carriers only!**

If you have products that are outside this range, you may need to use a Xantech 780-80 CFL type instead, along with a 760-00 VC, for instance.

**2. Do not use more than one VCIR-CFL in a given room or area!**

If two or more VCIR-CFL's, (or other Xantech CFL friendly IR receiver) receive the same IR signal simultaneously, the system will not respond.

**3. The VCIR-CFL (or other Xantech CFL friendly IR receivers) do not have much improvement in operation over the standard Xantech IR Receivers in the presence of magnetically ballasted (60 Hz) fluorescent lighting.**

You may choose to use the CFL friendly units in most applications anyway, since they will have superior rejection to other types of IR interference that may exist in the same installation.

**4. The VCIR-CFL will not operate in 2-wire Phantom Power mode.**

## TROUBLE SHOOTING

**1. If the red Talk-Back LED on the VCIR-CFL does not blink when you are sending IR commands from a remote control, check the following:**

- Make sure the power supply is plugged securely into a live 120V AC wall outlet.
- Be sure the +12V, IR OUT and GND leads are correctly connected to the respective +12VDC, IR IN (signal) and GND terminals on the connecting block.
- Check to see that all the emitters you are using are good, by substituting known good emitters.
- Models 283 and 286 series emitters will flash when the remote signal is sent, when the system is operating correctly; Models 282 and 284 series will not. Use the Xantech "TEST-IR™" to test for presence of signal when using the 282 and 284 series emitters.

**2. If you are sure the emitters are OK, but the components do not respond, reposition the emitter(s). They may not be located directly over the component's infrared receiving "window". Consult the owner's manual of the component or the manufacturer for the exact location of the infrared "window".**

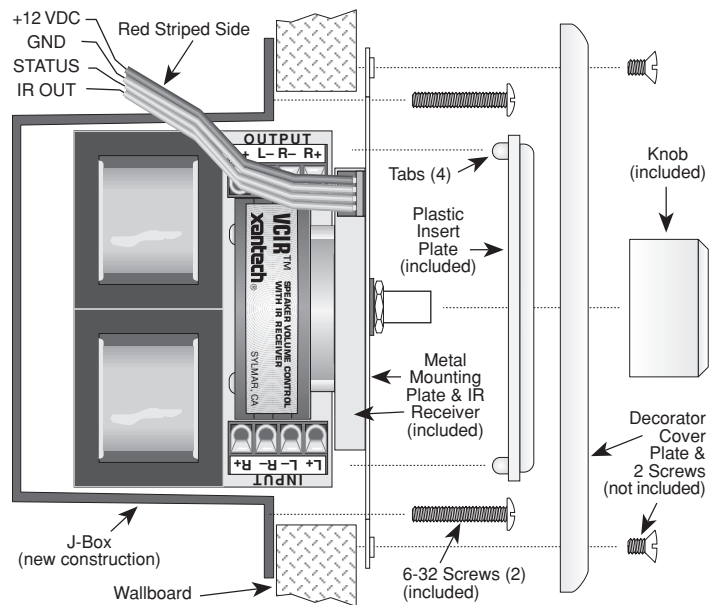


Fig. 6 VCIR-CFL Mounting Details