

INSTALLATION INSTRUCTIONS

RGC11 REMOTE GAIN CONTROL MODULE

The RGC11, **Fig. 1**, is an IR Remote Controlled Line Level Gain Control Module. It permits line level gain control of audio power amplifiers (instead of at speaker level), in multiroom installations, when highest sound quality is desired. It may also be used in any application where IR remote control of gain is desired, such as between the pre-out and main-in jacks of integrated amplifiers or receivers that were built without remote control. Gain control is accomplished by way of infrared commands originating from a Xantech RC68+ (or RC68) Programmer. The RC68+ commands are "taught" to learning devices and passed to the RGC11 IR "IN" and "G" terminals via Xantech IR Receivers, Keypads and Connecting Blocks.

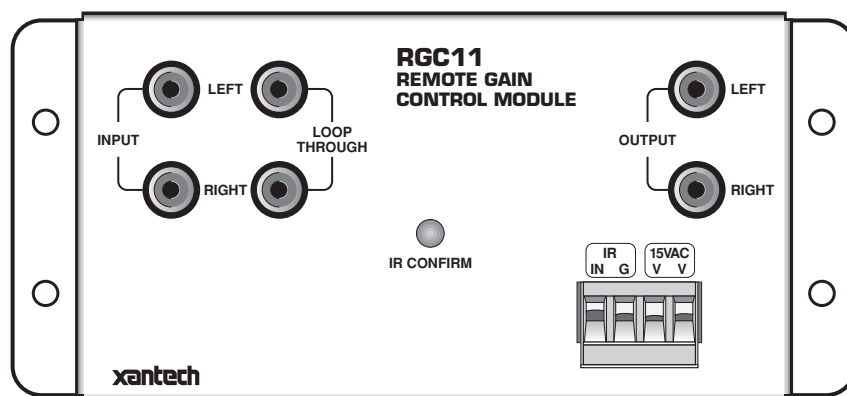


Fig. 1 The RGC11

FEATURES AND SPECIFICATIONS

- Requires RC68+ (or RC68) Programmer IR codes or the MIRV1 for operation.
- Responds to 16 IR commands: **Volume Up/Down Ramping, 12 Fixed Levels, Mute ON and Mute OFF.**
- IR Confirm LED lights steady when power is applied and blinks off with RGC11 IR commands only.
- Gold plated RCA type input & output jacks.
- Loop-through jacks (not buffered) for "daisy chaining" multiple RGC11's.
- Selectable IR code groups. Internal E² PROM can be set to different group codes, allowing different IR code combinations. This prevents mutual interaction in common IR systems when using more than one RGC11, or if RGC11's are included with other Xantech products using RC68+ codes.
- Factory preset Group Code number: **30**
- 4-terminal plug-in for IR input & power connections, **IR IN (= IR Signal), G (= GND), V V= 15VAC.** Accepts wire sizes from 24 to 12 gauge.
- Power Requirements: 15VAC @ 85 mA. (15V AC power supply included).
- Gain: Unity @ Max. V.C.
- Input Impedance: 45 k Ohms
- Output Impedance: 220 Ohms
- Freq. Response: 5 Hz to 70 kHz $\pm$ 3 dB.
- THD: < 0.01% @ 2V out.
- S/N Ratio: > 103 dB "A" WTD re 2V out.
- Flanges, plus supplied screws, permits easy mounting to flat surfaces..
- Dimensions: 5-7/8" x 2-3/4" x 1-5/8"

RC68+ or (RC68) PROGRAMMER / REMOTE CONTROL

The RC68+ Programmer (available separately) contains all the commands necessary to operate the RGC11.

- You will need it to program universal learning devices such as the Xantech URC-1 learning remote, the Xantech Smart Pads, the 590 Programmable Controller, the 710 Fone Link, etc., with commands that operate the RGC11.
- NOTE:** The RC68+ codes operate several other Xantech models as well, such as the RS41AV, CC12, ZPR68, etc. Therefore, **only the button descriptions that apply to the operation of the RGC11 are listed below.** All others should be ignored.

RC68+ BUTTONS THAT OPERATE THE RGC11

- IR Emitter Lens.**
- Instant Volume Presets.** These buttons allow random access or direct preset activation of any of 12 fixed preset levels on the RGC11. This is useful when setting up "audio scene" ambiance levels for rooms or partial mute actions.

The relationship of the RC68+ buttons to the level attenuation below max. volume is as follows:

RC68+ Button	RGC11 Level Attenuation - dB
A	> 100 dB (OFF, MIN. VOL)
B	57
C	52
ADJ-OFF	47
1	42
2	37
3	32
4	27
5	23
6	18
7	13
8	9
MAX VOLUME	0

- VOLUME Up/Down.** These buttons increase or decrease volume in 2 dB steps between 0 dB and -80 dB. When buttons are held down, the volume level will change continuously.
- MUTE ON/OFF.** Separate On / Off buttons give positive mute commands without knowing what the status is. This is very helpful in a remote room when all adjustments are made "blind" without any visual aids for status.

NOTE: Mute is released (turned off) with a VOLUME (3) or Preset Level button command, in addition to MUTE OFF (4).

CAUTION: While the RC68+ can be used as a handheld remote control, it is highly recommended it not be given to the final user for the following reasons:

- Since it includes adjustable code groups, the user may inadvertently alter the installer configurations.
 - Since the user requires IR commands from other brands of equipment to control the total system, in addition to those of the RGC11, all commands should be consolidated into one learning device, for easy use.
- Code Group Numbers.** The RGC11 is capable of being set to different IR code groups.

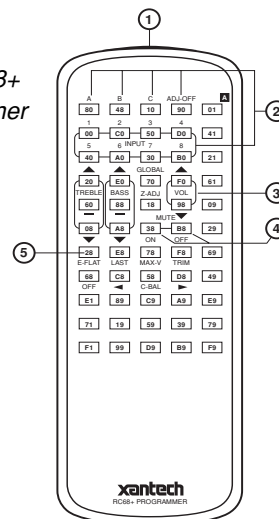
NOTE: When shipped from the factory, the RGC11 is set to code group number 30.

Be sure to set the RC68+ to the same number!

It may be necessary to change the RGC11 to a different code group if it is used in a common IR bus controlled system with other Xantech RGC11's, to avoid mutual interaction.

Refer to the RC68+ instructions for code group setting procedures.

Fig. 2 The RC68+ Programmer



INSTALLATION - COMMON IR BUS SYSTEMS

Fig. 3 illustrates a typical installation using three RGC11's along with other Xantech products in a 4-room **common IR bus** system. The principles shown should be used as a guide when planning your own specific installations. It is configured as follows:

1. For simplicity, only three RGC11's are shown. A practical limit would be six RGC11's "daisy-chained" using the "LOOP THROUGH" jacks as shown. This places a load of 7.5k Ohms ($45k \text{ Ohms} \div 6$) on the REC OUT jacks (or other driving source) of the main room receiver, etc. Use a Xantech AV-61 Distribution Amplifier when driving more than six. Each output of an AV-61 will drive as many as six RGC11's.

NOTE: The REC OUT jacks on the receiver, amp, etc., are used since they provide a fixed output independent of the main volume control.

2. A **common IR bus** connects the 780-80 "J" Box IR Receiver, the 480-00 "Dinky Link" IR Receiver, and two Smart Pad₃ keypads to each of the three RGC11's. In addition, it connects to a 789-44 Connecting Block for control of the source components.
3. Since a common IR bus is used, each of the RGC11's and its connected MIRV1 (where used) must use a different IR Code Group number, so that the volume level in each room can be adjusted independent of the others. To make code group changes, refer to the RC68+ (or RC68) Programmer Instructions.

NOTE: *When shipped from the factory, the RGC11 is set to code group number 30. If you use group 30 or change to a different number, be sure to always set the RC68+ to the same number.*

4. When a code group is chosen, "teach" volume commands from the RC68+ Programmer (see **Fig. 2**) into learning remote controls (and the keypad), dedicated to each room. You may use the Xantech URC-1 or URC-2 learning remote controllers for this purpose.

NOTE: *With a Common IR Bus system, you cannot carry the same remote control from room-to-room. You must use a dedicated remote for each room into which you have "taught" the specific RC68+ code group that operates the specific RGC11 that controls the volume for that room!*

If you wish to carry remotes that have the same codes from room-to-room, use a Dedicated IR Bus System as shown in **Fig. 4**.

5. A 490-30 "Micro Link" IR Receiver plugs into the 789-44 for local control of the source equipment (e.g. equipment behind closed doors, etc.).
6. A "STATUS" system is included. This permits the power "ON/OFF" status of the A/V receiver or amplifier system to be visible in each of the remote rooms. It also permits the power management capability of the SmartPad₃ to operate.
7. The "STATUS" indicator LEDs on the 780-80 "J" Box IR Receiver and the two SmartPad₃'s, are powered by a 786-00 Power Supply plugged into a "**SWITCHED**" AC outlet on the A/V receiver or amplifier system. When the switched outlet is "ON", +12 Volts from the 781C-00 passes through one of the 4 bus-conductors (STATUS line) to the LED indicators.

NOTE: A resistor can be placed in series with the STATUS terminal at each IR receiver (IR receivers only, if so equipped) for adjustment of the brightness of the Status LED. See the specific installation instructions for the IR receiver for details.

NOTE: *When connecting system devices, be sure to carefully match up the terminals according to their markings as follows: IR IN or OUT (IR Signal), ST (Status), G (GND) and V (+12 VDC).*

Power Supply Considerations

Use one 15V AC power supply (included) for each RGC11. Add up the individual currents for each of the other IR components in the system and choose the power supply accordingly. For instance, use the 781RG for current demands up to 200 mA. For higher demands up to 1 A, use the 782-00 power supply.

INSTALLATION - DEDICATED IR BUS SYSTEMS

Fig. 4 illustrates an installation where each remote room has a **Dedicated IR Bus** going to the RGC11 that controls it. The IR bus is not connected in common as it is in Fig. 3. This eliminates the need for dedicated remotes, **allowing you to carry the same remote(s) from room-to-room**. It is configured as follows:

1. Again, for simplicity, only three RGC11's are shown. A practical limit would be six RGC11's "daisy-chained" using the "LOOP THROUGH" jacks as shown. This places a load of 7.5k Ohms (45k Ohms ÷ 6) on the REC OUT jacks (or other driving source) of the main room receiver, etc. Use a Xantech AV-61 Distribution Amplifier when driving more than six. Each output of an AV-61 will drive as many as six RGC11's.
2. Each of the remote rooms has a Dedicated IR Bus that connects to its own RGC11 for independent volume control. Note that only the **S** (IR signal) and **G** (gnd) leads of the 4-conductor bus connect to the RGC11's **IR IN** & **G** terminals and the 793 Serial Combiner. The remaining leads, **ST** (status), **G** (gnd) and **V** (+12VDC) go on to the 789-44 for STATUS and +12VDC power.
3. In order to control the common source components in a Dedicated IR Bus system, it is necessary to use a 793-00 Serial Control Combiner, connected as shown in **Figs. 4 & 5**. The 793 provides diode isolation between the dedicated IR signal lines but allows common operation of the source equipment through the 789-44 Connecting Block, as shown.

Set the LOGIC POLARITY SELECTOR DIP switches on the 793 for "active high" operation - that is - all **even numbered** switches to "ON" - all **odd numbered** switches to "OFF".

4. The input and output ports on the 793 are 3.5mm mono mini jacks. Use matching mini plug cables with stripped ends when connecting. Polarity must be observed as shown in **Fig. 4 & 5**.

For systems using more than five RGC11's, you will need additional 793-00's. These can be easily "daisy chained" as shown in **Fig. 5**.

5. Since a Dedicated IR Bus system is used, each of the RGC11's can operate with the same IR Code Group number. In this case, the Code Group number, as received from the factory, should be used.

NOTE: When shipped from the factory, the RGC11 (and MIRV1's) are set to code group number 30. Be sure to set the RC68+ (or RC68) to the same number!

If a particular system requires a code group number change, refer to the RC68+ Programmer Instructions for code group setting procedures.

6. The desired volume commands from the RC68+ Programmer (see **Fig. 2**) need to be "taught" into learning remote controls and keypads used in the system. You may use the Xantech URC-1 or URC-2 learning remote controllers for this purpose.
7. A 490-30 "Micro Link" IR Receiver plugs into the 789-44 for local control of the source equipment.
8. As in **Fig. 3**, a "STATUS" system is included. See items 6 and 7 under: Installation - Common IR Bus.

NOTE: When connecting system devices, be sure to carefully match up the terminals according to their markings as follows:

IR IN or **OUT** (IR Signal), **ST** (Status), **G** (GND) and **V** (+12V DC).

Daisy-Chaining 793-00 Serial Control Combiners for Control of Common Components

Fig. 5 illustrates how two 793-00 Serial Control Combiners are "Daisy-Chained" to accommodate additional RGC11's in a dedicated IR Bus System. This process can be repeated as necessary to accommodate the number of RGC11's needed in the system. Simply plug the "B" CONTROL OUTPUTS port of the added 793 into the "A" CONTROL OUTPUTS port on the preceding 793 with a 3.5-to-3.5mm mono-mini cable as shown.

NOTE: Be sure that all ten LOGIC POLARITY SELECTOR DIP switches on each 793 are set correctly. In this case, set them for "active high" operation - that is - all **even numbered** switches to "ON" - all **odd numbered** switches to "OFF".

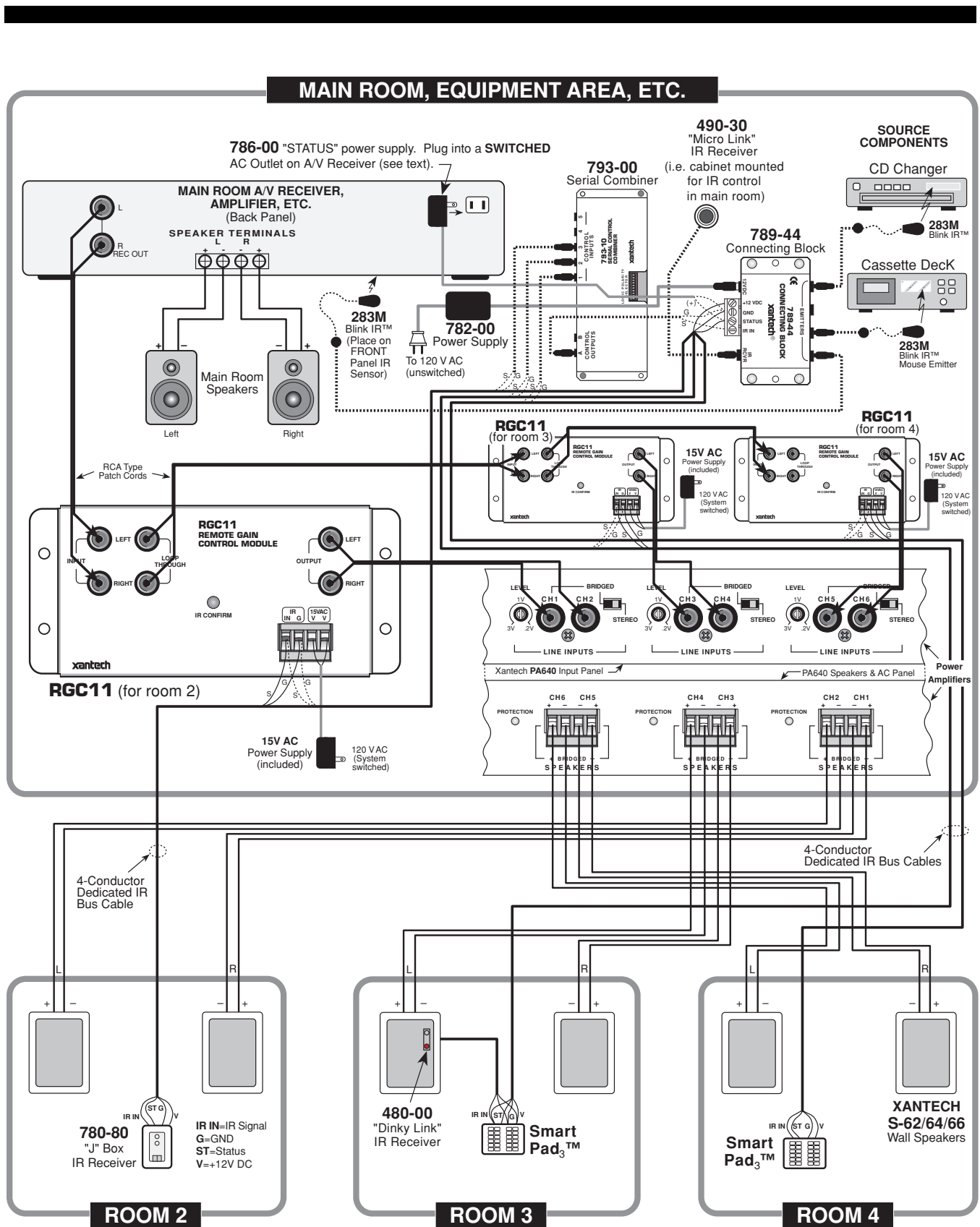


Fig. 4 A Dedicated IR Bus RGC11 System

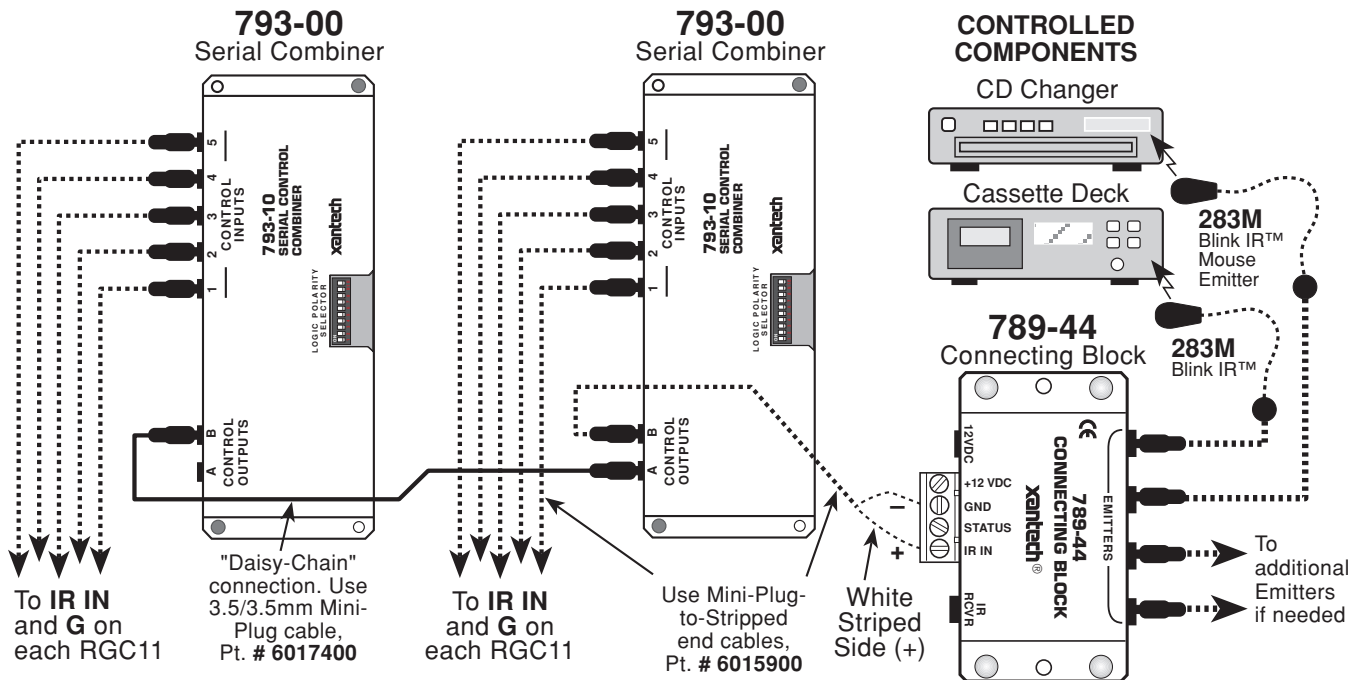


Fig. 5 Daisy-Chaining 793-00's in Multiple RGC11 Dedicated IR Bus Systems

ADDING REMOTE VOLUME TO A NON-REMOTE COMPONENT

The RGC11 is an ideal product to add IR remote volume control to a stereo receiver or integrated amplifier that was built without it. Fig. 6 illustrates such a system. It is configured as follows:

1. The RGC11 is connected between the PRE OUT and MAIN IN jacks on the back of the unit as shown.
2. In actual use, you would set the unit's front panel volume control to about 50% rotation and use the RGC11 for all subsequent volume adjustments.
3. A 789-44 Connecting Block is used so that other product can be controlled as well as the RGC11.
4. The power supply for the RGC11 is plugged into a switched AC outlet on the unit so that it will power ON and OFF with the main power switch.

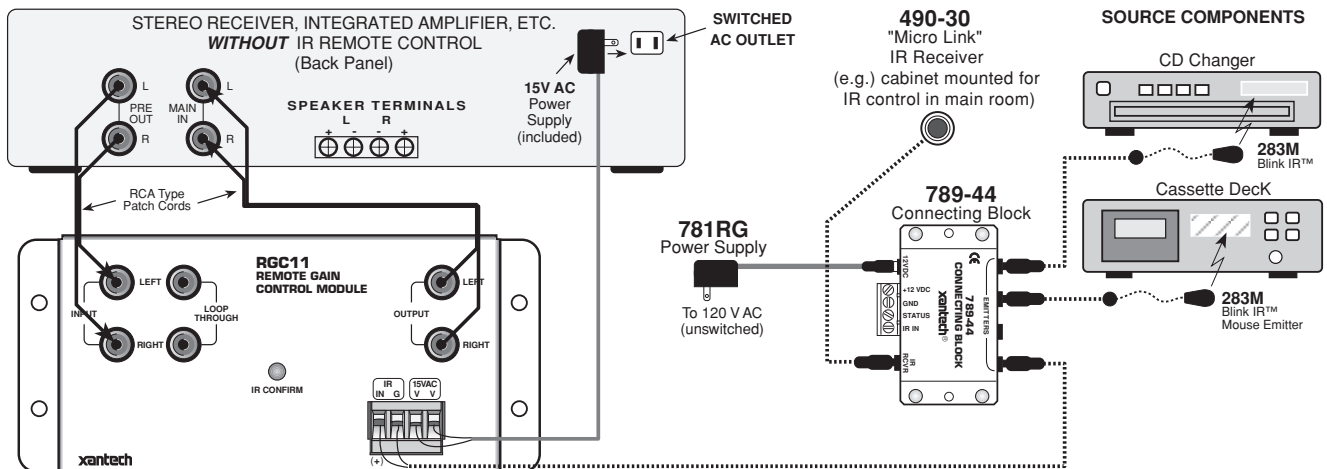


Fig. 6 Adding Remote Volume Control to a Non-Remote Component