INSTALLATION INSTRUCTIONS

780-80
CFL FRIENDLY J-BOX INFRARED RECEIVER

The 780-80 is a CFL (compact fluorescent light) friendly version of the 780-10 J-box series IR receivers. It is specifically designed to have great immunity to high frequency ballasted CFL and overhead fluorescent type infrared interference and to have exceptional IR reception range. In addition, the 780-80 will operate in direct sunlight!

It mounts easily into a single gang electrical J-box and is supplied with mounting screws and a dark red lens insert allowing the installer to use a Decorator-style wall cover plate.

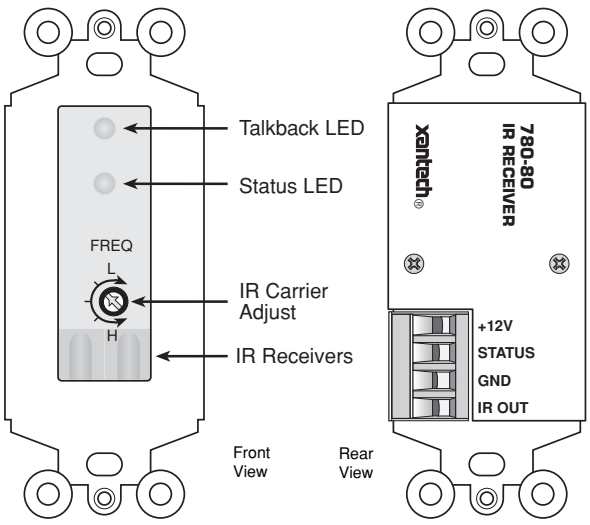

Fig. 1 *The 780-80*

FEATURES AND SPECIFICATIONS

- **IR carrier frequency reception bandwidth:** 30 to 60 kHz.
- **IR Carrier Adjust:** 32 to 56 kHz (allows output carrier frequency to be matched to a controlled component for optimum performance).
- **IR reception range:** Up to 70 feet on axis (range depends on device being controlled and levels of IR or EM interference).
- **Nominal reception angle:** 45 degrees off axis, unit vertical, 40 degrees off axis, unit horizontal with 50% range reduction.
- **Talk-back LED** (red)**:** Tests system for correct wiring as well as indicating infrared reception.
- **Status LED** (red)**:** For systemON/OFF indication (requires 12 VDC source @ 10 mA).
- **Connections:** 4-screw terminal block on unit.

  NOTE: ***The 780-80 will not operate in 2-wire Phantom Power mode.***
- **Cable requirements for long lengths:** 3 or 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.
- **Maximum current output:** 100 mA peak.
- Use Xantech Connecting Blocks for connection to emitters.
- **Power:** 12 volts DC @ 20 mA. 781RG Power Supply (not included) powers up to ten 780-80's.
- **Deep red lens** (included)**:** Fits decorator-style wall plate. (Replacement lens available. Order part #3016400).
- **Dimensions:** 1-3/4" W x 4-1/8" H x 1-1/8" D.

INSTALLATION

The 780-80 is intended to be wired to the IR INput terminals of Xantech Connecting Blocks or other Xantech devices.

- Use a 3 or 4-conductor cable (24 gauge up to 200', 22 gauge up to 600', 20 gauge up to 2000', 18 gauge up to 5000'), to run between the remote room and main room locations.
- Make connections to a Xantech connecting block, power supply and emitters as shown in **Fig. 2** - a typical basic system:

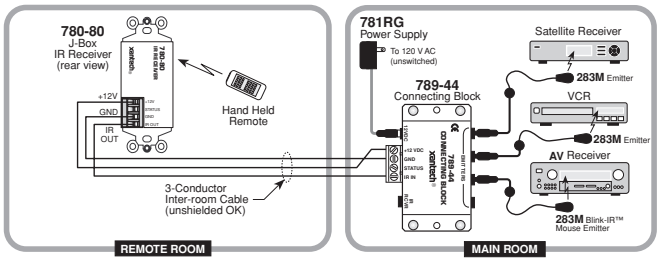

Fig.2 *780-80 Basic IR Repeater System*

- While it is possible to make wired connections without the connecting block, it is not recommended. The connecting block reduces installation time, helps to eliminate errors, allows easy troubleshooting and permits easy system upgrades later, if needed.
- Input connections must be made as illustrated. To extend the Emitter wires to a more distant location, you may splice in 2-conductor wire, in the wire gauges mentioned before, as needed.
- The 780-80 may be connected to any of the Xantech Connecting Blocks, Controllers, Interface modules, etc., that have +12VDC, IR IN and GND terminals, such as the CB12, 789-44, 791-44, 795-20, 796-20, 794 and 797 series, etc.
- 780-80's may be connected in parallel to these terminals in any combination with other Xantech 3 or 4-conductor IR receivers or keypads (12 IR receivers max).

A more advanced system, using 780-80's and a variety of other Xantech IR receivers connected to a 791-44 Amplified Connecting Block, is shown in **Fig. 3**.

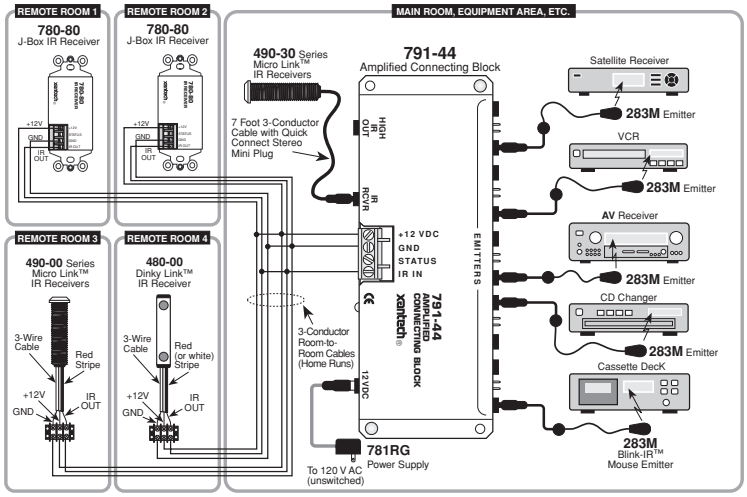

Fig.3 *780-80 IR Receivers in a Typical Multi-room System*

Adjusting the IR Carrier Frequency

The 780-80 is factory set to an IR carrier repeat frequency of 38 kHz. This will be correct for the majority of installations. However, some manufacturer's components that you wish to control may use different carrier frequencies (such as the RCA DSS satellite receivers that use 56 kHz). If such carrier frequencies fall within the range of 32 kHz to 56 kHz, you can adjust the 780-80 to match them for best range performance. The adjustment can be made through a small opening on the front. See **Fig. 4**.

To adjust, proceed as follows:

1. First, try the 780-80 in a repeater system. If it works well with good range, ***do not make any adjustments!***
2. If it does not work or has poor range (less than 15 feet), determine the IR carrier frequency of the product you wish to control. Contact the manufacturer of the product, if necessary, to determine this frequency.
3. Using a small blade type screwdriver (3/32" blade width max.), rotate the adjustment shaft until the slot lines up with the desired frequency. Refer to **Fig. 4**.

NOTE: The frequency markings shown in **Fig. 4** are approximate only. You may need to "fine tune" the adjustment for best performance.

4. If you have products in the same IR system that have different IR carrier frequencies, you will have to adjust the 780-80 to a midway position. For example, some may operate at 38 kHz and others at 56 kHz. In this case, set the adjustment to approximately 47 kHz, a midway position just to the right of the 48 kHz marking in **Fig. 4**.

   NOTE: Some products are more tolerant of compromised frequency settings than others. You may have to "fine tune" the adjustment to "favor" the least tolerant component for the best performance of all units in the system.

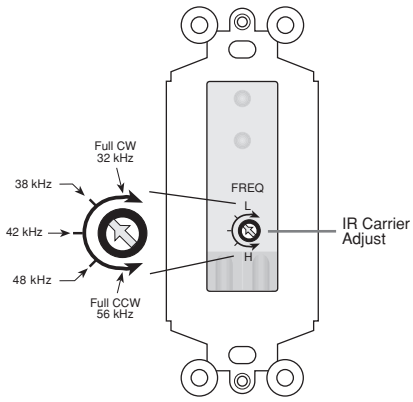

Fig. 4 *IR Carrier Frequency Adjust-*

Using the Status LED Indicator

The 780-80 includes a Status LED, located just below the Talkback LED (see **Fig. 1**). This permits multi-room systems to have visible power ON/OFF indicators in the remote rooms.

When used with a ZPR68 Six Zone-Eight Source Preamp, you would connect the terminal marked STATUS on the 780-80 to the terminal marked STATUS (or CO) on the ZPR68 IR Zone Input, as part of the normal 4-wire hookup. See **Fig. 5** below.

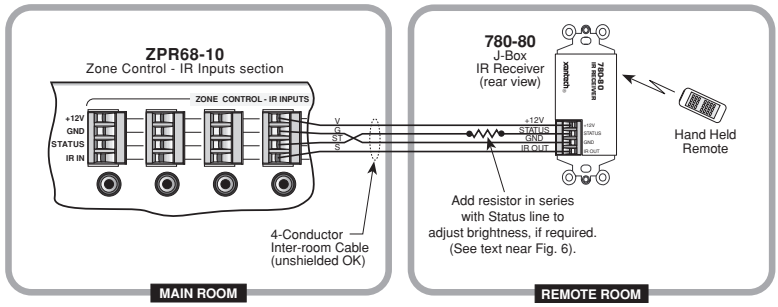

Fig.5

-In single zone systems, the Status LED could show the ON/OFF status of an A/V receiver.

- To do this, you would plug a 12V adapter, such as the Xantech 786-00 Power Supply, into the ***switched*** AC Outlet of the A/V receiver. The 12V leads are then connected between the STATUS and GNDterminals on the 789-44 ("+" to STATUS, "–" to GND). See **Fig. 6**.
- You may reduce the brightness of the Status LED by placing a resistor in series with the positive lead. Use a resistor value that achieves the desired brightness level (usually 1k Ohm to 3.3k Ohm, 1/8 watt).

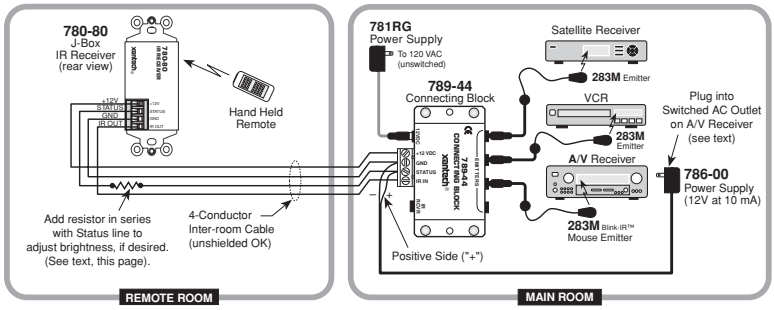

Fig.6

APPLICATION PRECAUTIONS

The 780-80 is designed with special circuitry so that is 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. ***Do not use more than one 780-80 in a given room or area!***

   If two or more 780-80's, (or other Xantech CFL friendly IR receiver) receive the same IR signal simultaneously, the system will not respond.

2. ***The 780-80*** *(or other Xantech CFL friendly IR receivers)* ***will not operate with Xantech products that use 679 and RC16 Programmer commands!***

   This includes models 670, 671, 676, 677, 680, 686 and RT16. For installations using these products, use standard Xantech IR Receivers, such as the 291, 480, 490, and 780-10 series.

3. ***The 780-80*** *(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 780-80 will not operate in 2-wire Phantom Power mode.***

TROUBLE SHOOTING

1. The 780-80 has been designed to have high rejection of many sources of interference, such as:
   - Compact Fluorescent, Neon or Halogen lights, Neon Art, and light dimmers.
   - Direct or reflected sunlight.
   - Infrared security sensors (active types).
   - RF radiation from TV sets that may be close to the 780-80 IR Receiver.

   However, in the presence of extremely intense interference from such sources, you may experience a reduction in range between the handheld remote control and the 780-80. This may result in a reduction from over 50 feet to 15 feet or so.

2. To improve the range under these conditions, you need to confirm the source of the interference. Do this by temporarily turning off TV sets, etc., reducing the exposure of the 780-80 IR Receiver to direct sunlight and turning off all lights, light dimmers and Infrared security systems. Then check to see if the range improves.

   When you have isolated the interfering source, it will be necessary to move either it or the 780-80 IR Receiver to improve operation.

3. If the red Talk-Back LED on the 780-80 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, OUTPUT and GND terminals are correctly connected to the respective +12V, IR IN (or 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 Xantech Model 179-99 Test IR to test for presence of signal when using the 282 and 284 series emitters.

4. 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 unit or the manufacturer for the exact location of the infrared "window".