INSTALLATION INSTRUCTIONS

MODEL 291-95
HIDDEN LINK™ "PLASMA FRIENDLY" INFRARED RECEIVER

TABLE OF CONTENTS

Table of contents 1
INTRODUCTION 1
Features 1
Specifications 1
INSTALLATION 2
Placement 2
Application wiring 2
Advanced wiring configuration 3
3.5Mm mini plug pinout 3
TROUBLE SHOOTING 4

INTRODUCTION

The **291-95** is a small shelf-top infrared repeater assembly designed to reject interference from ***Plasma*** Displays from entering the IR signal line. The **291-95** is the first non fixed-installation version of Xantech's Plasma Series IR product line. These Small IR Receivers are intended to be placed on a shelf, ledge or mantel in close proximity of a ***Plasma*** or ***LCD*** Display. Its small package allows it to even be placed on the top ledge of most Plasma Displays. Besides showing great immunity to Plasma emissions, the 291-95 (as wells as all Xantech Plasma-Friendly Receivers) work well in the presence of Sunlight and Fluorescent lighting. Their *wide-bandwidth* reception allows it to be used with a much wider assortment of IR Controllable products than the competition assuring the 'job will get done' the first time around without un-wanted service calls.

FEATURES

- No physical installation required. Can be placed on shelf for quick/easy setup
- Quick-Connect 3.5mm Stereo Mini Plug on 7ft. (213.36cm) cable for direct plug-in to **Xantech** Connecting Blocks
- Works in normal 3-wire mode (12VDC, IR, GND)
- Red Talkback LED for System Verification
- Improved Fluorescent Light rejection (under most conditions) and rejection from LCD Displays
- Can be used in Direct Sunlight
- Built in RF Grid for EMI interference reduction
- Includes CB12 Connecting Block for easy connection and extension of 7' ribbon cable
- 7 units may be powered by one 781RG power supply
  Note: The 291-95 will not operate in 2-wire **Phantom Power** mode

SPECIFICATIONS

- Infrared modulation frequency bandwidth: 30 - 100 kHz
- Reception range: up to 55 feet (17M), depending on local conditions
- Reception angle: 55 degrees off axis for 50% range reduction
- Cable requirements: 3-conductor. Use 24 gauge up to 200' (61M), 22 gauge up to 600' (182.5M), 20 gauge up to 1000' (305M), 18 gauge up to 2000' (610KM) -- unshielded OK)
- Maximum current output: 100 mA
- Dimensions: 3 1/4" x 1" x 2" (83mm x 26mm x 51mm)
- Power requirements: 12 volts DC @ 20 mA

INSTALLATION

These units, equipped with a 7-foot cable and 3.5 mm stereo mini plug, are intended to be plugged directly into the "IR RCVR" or "AUX" jack on Xantech Connecting Blocks, such as the CB12(included), CB60, 789-44, 791-44, etc. The 291-95 should be used in installations where the connecting block is within reach of the 7-foot cable -- such as when installing the 291-95 in a cabinet where the controlled equipment is behind closed doors otherwise the included CB12 Connecting Block can be used to extend the distance.

PLACEMENT

Placement of the IR Receiver does matter when used in the presence of a Plasma Display. Ideally it should be placed at areas around the Display with the front of the receiver flush with the front of (or set back from) the Display. If the 291-95 needs to be placed in front of the display (such as on an adjacent side wall perpendicular to the display), make sure it is placed at a location at least 45 degrees off axis from the corners of the unit – see **Figure 1**. The presence of Direct Sunlight and Fluorescent Lighting should not effect the reception of this unit.

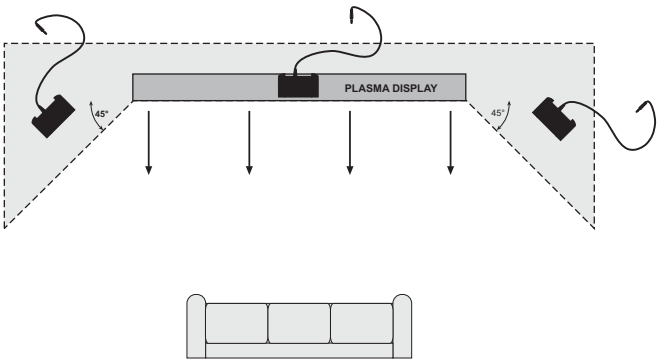

Figure 1 – 291-95 Placement

Note: Plasma interference can be reflected off of any item it comes into contact with within approx. 3 ft. from the front of the display. Keeping this in mind, make sure that the 291-95 is free of any obstruction that might reflect back into the receiving eye.
Note: While this unit shows strong rejection to standard 50/60Hz 'ballasted' fluorescent lighting, it is still prone to interference from CFL style Fluorescent lighting.

APPLICATION WIRING

A **typical system**, with a 291-95, 781RG Power Supply and 283M Emitter plugged into a 789-44 Connecting Block, is shown in **Figure 3**:

1. Plug in the 2.1mm Coaxial power plug of the 781RG Power Supply (not included) into the jack labeled 12VDC on the 789-44 Connecting Block.
2. Plug the AC end of the 781RG power Supply into an 'un-switched' 120v AC Line outlet.
3. Plug the 3.5mm stereo mini plug from the 291-95 into the IR RCVR input on the 789-44 Connecting Block
4. Plug in the Emitters 3.5mm mono mini plug such as any of the 282, 284, 283 and 286 series into the jacks labeled EMITTERS on the 789-44 and affix the opposite end to the IR Sensor Window of the controlled equipment.

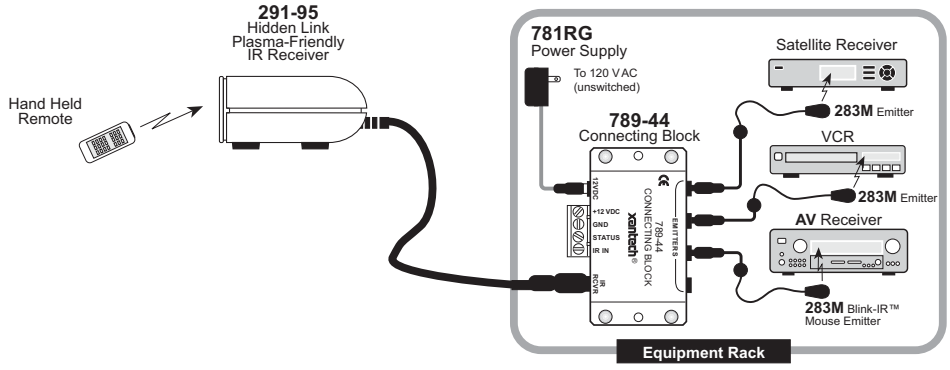

Figure 2 - Typical System Layout using 291-95, 789-44, 781RG, and 283M Emitters

ADVANCED WIRING CONFIGURATION

291-95 may also be used where the 7-foot lead is not long enough. In this case, simply use the CB12 Connecting Block as a "break-out" block. In **Figure 4,** a 291-95 is extended down to a 789-44 Connecting Block and combined with other Xantech IR Receivers.

1. Plug the 3.5mm stereo mini plug from the 291-95 into the IR RCVR input on the CB12 Connecting Block.
2. Using 3-Conductor wire (refer to **Specifications** section for proper Wire Gauge) connect the terminals labeled **V G S** of the CB12 to the terminals labeled **+12VDC, GND,** and **IR IN** on the 789-44 Connecting Block (or other).
3. Plug in the 2.1mm Coaxial power plug of the 781RG (or 782) Power Supply (not included) into the jack labeled PWR on the 789-44 Connecting Block.

CAUTION! Do not plug in a 781RG or any other Power Supply into the CB12 when using in a "break-out" configuration. This will put 2 supplies in parallel and possibly damage your equipment. If a 'local' emitter is needed on the CB12, see Step 5 below.

4. Plug in the Emitters 3.5mm mono mini plug such as any of the 282, 284, 283 and 286 series into the Emitter Outputs on the 789-44.

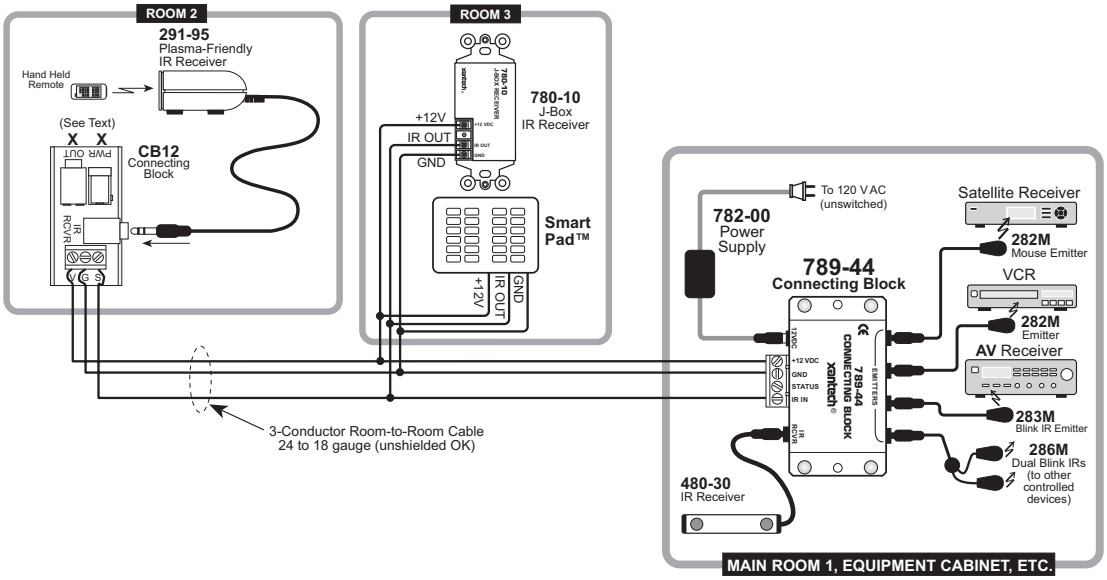

Figure 3 - Advanced Wiring Configuration using 291-95, CB12, 789-44, 781RG and multiple 286M's

5. If a local Emitter is needed on the CB12, you will need to place a 470 Ohm Resistor in Series with the Signal Output on the CB12. To wire in this fashion:
   a. Cut a standard Mouse Emitter (282M or 283M) approximately 12 inches from the 3.5mm Mono Mini Jack. You will now have 2 cables; one with a 3.5mm Mono Mini Jack and one with the Mouse Emitter.
   b. Wire the 2 leads of the Mono Mini Jack side to a terminal Strip.
   c. On the Terminal Strip, opposite the lead with the White Stripe (Signal) connect one side of the 470 Ohm Resistor.
   d. Wire the other side of the resistor to the lead with the White Stripe on the Mouse Emitter.
   e. Connect the Black Wire of the Mouse Emitter to the Terminal Strip opposite the Black Wire (GND) from the 3.5mm Mono Mini Jack.

   This will keep the proper load balance and prevent miscommunication with the Emitters on the 789-44 Connecting Block.

3.5MM MINI PLUG PINOUT

There might be times when the 291-95 needs to be wired directly to a Terminal Block. In that case you will need to cut off the 3.5mm jack and wire according to **Table 1**.

Table 1 - 291-95 Connector Pin-Out

PLUG	CABLE LEADS	CIRCUIT ITEM
TIP	WHITE	IR OUT
RING	BLACK	GROUND
SLEEVE	RED	+12V

CAUTION: With any of these systems, be sure the 781-RG Power Supply is plugged into an un-switched AC outlet. This maintains the 490 system in "stand-by" operation so that power-on commands can be sent to the controlled equipment.

TROUBLE SHOOTING

For a complete listing of Trouble Shooting techniques for IR based systems, please visit our Web Site at www.xantech.com and click on PRODUCTS and then select Application Advisories. Application Advisory AA-03 is a complete IR Trouble Shooting Guide.

For non-operation or intermittent control try the following:

1. The most common indication of IR interference is if the 291-95's TB LED is ON constantly or flickers often. This can be caused by numerous sources of Interference:
   a. RF Interference: Depending upon the surrounding environment and Wire Run Lengths, RF interference can cause the Talk Back LED to Flicker often or cause the LED to be on Constantly. Examples sources of RF Interference can be from TV Transformers, Dimmer Circuits, Large Power Supplies, High Current Electrical Lines, and PC Equipment.
      - Isolate the source of the interference by turning off suspected sources and seeing if proper IR control can be achieved. Try relocating the 291-95 to minimize effects from the interfering RF source.
      - If the RF source is coupling into the wire itself, try re-routing the wire isolating it from the interfering source or try the following:
        1. Increase the wire gauge for the IR Receiver
        2. Use a shield as a DRAIN connecting it to GND on the Connecting Block side ONLY.
        Note: Do not connect the Shield at both ends as this can cause Capacitive interference.
        3. **If using CAT5 Wire you must utilize all 8 conductors of the wire.** Use all 4 White Stripe wires for the GND connection, 2 Solid Wires for 12VDC and the last 2 Solid Wires for IR Signal. This will ensure that all lines are properly coupled to GND to minimize RF interference through the wire.
        4. Connect a GND wire from the Connecting block terminal to an electrical GND (See Figure 4 below).

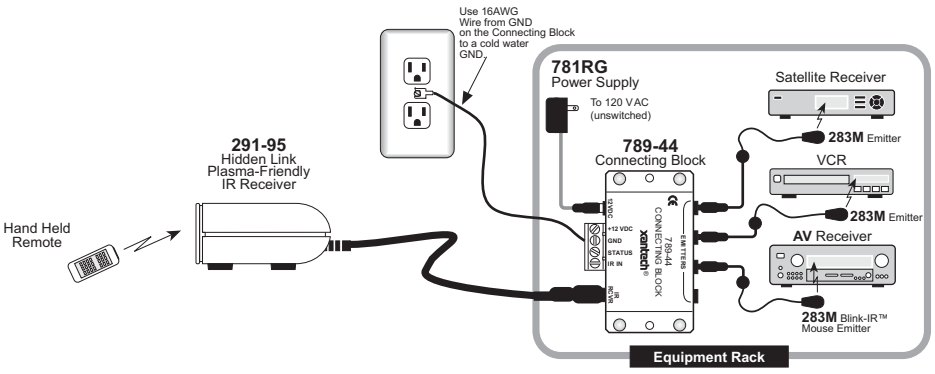

Figure 4 – Addition of System GND Wire for RF Interference Reduction

   b. As mentioned above in the section labeled PLACEMENT, PLASMA interference can be reflected off of any item within 3 ft. of the Plasma Display.
      - Check for reflected items and move the location of the 291-95 (or reflecting object) accordingly to minimize interference.
      -

Please visit www.xantech .com for a complete listing of IR Trouble Shooting Techniques!

XANTECH CORPORATION
13100 Telfair Avenue, Sylmar CA 91342-3829
phone 818.362.0353 • fax 818.362.9506

Part No. 08905030 Rev A 09-07-04