

# UPC-23

Infrared Transmitter & Accessories

# INSTRUCTION MANUAL



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# UPC-23

## INFRARED HEADPHONE TRANSMISSION SYSTEMS

The Ultra★Phonic Infrared Headphone Transmission System is designed to provide intelligible, clear sound for your hearing-impaired customers.

The UPC-23 consists of:  
 IRC-23 Emitter Panel  
 IRP-20 Power Pack  
 Mounting Brackets

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# IRC-23 EMITTER PANEL FEATURES

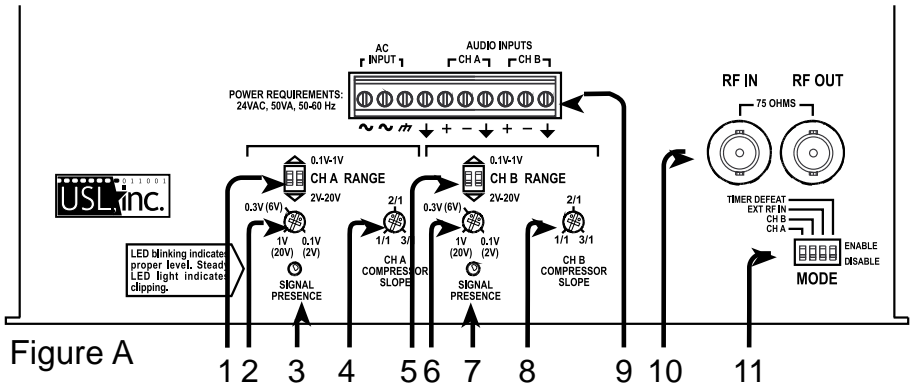


Figure A

- 1 and 5. Input audio level range switches for channels A & B.  
With both switch keys in the “up” position, the input range is 0.1 to 1.0 Volts rms. In the down position, the range is 2 to 20 Volts rms.
- 2 and 6. Input audio level adjustments for channels A & B.
3. and 7. LED audio level indicators for channels A & B.
- 4 and 8. Compressor slope adjustments for channels A & B.  
Increasing compressor slope improves intelligibility of low level dialog.
9. Main Connector; consisting of the following:
  - a. Pins 1 & 2: AC Power Input Terminals.  
Connects to the AC terminals of the 24VAC Power Pack supplied with the IRC-23
  - b. Pin 3: AC Ground Terminal.  
It can be connected to the ground terminal of the 24V AC Power Pack if required by local building codes.
  - c. Pin 4: Audio System Ground.  
May be connected to shield of shielded-pair input cable. If other end of audio cable shield is connected to a chassis ground, this terminal may be left open.
  - d. Pin 5 & 6, 8 & 9: Channel A & B Audio Input Terminals.  
Channel A is modulated on a 2.3MHz FM carrier. Channel B is modulated on a 2.8 MHz FM carrier. Either or both channels are transmitted by the IR panel.  
Balanced, differential input. One side of each may be grounded for single ended input.
  - e. Pin 7 & 10: Audio system ground

## 10. BNC RF Connectors.

RF connectors provide connection to external emitter panel via coaxial cable.

## 11. Mode Selector Switch.

The first three keys control the input to the IR radiation panel. Channel A and/or channel B may be connected to the panel by the first two switch keys. The RF from an external IRC-23 panel may be selected by switch key number three. Switch key number four defeats the automatic time-out of the power to the IR panel (if not defeated, the power to the radiation panel is automatically cut off if audio is not present for 30 minutes).

# UPC-23 INSTALLATION

Unpack the carton and verify that all materials are present.

There should be:

- One system manual
- One IRC-23 Emitter Panel
- One IRP-20 ac Power Pack
- One Mounting Bracket composed of 1 ea. IRBS-20 & IRBE-20
- Two 10-32 x 5/8 machine screws for attaching the emitter panel to the mounting bracket.

You will need to supply the following materials:

- A small jeweler's type flat blade screwdriver or trim pot alignment tool for adjusting the input audio levels.
- A medium flat blade screwdriver for attaching the mounting bracket.
- Shielded audio cable for connection of the IRC-23 to the program source.
- Eighteen gauge or greater; two or three conductor "zip" cord to connect the AC power pack to the emitter panel.
- Tools and hardware to attach the mounting bracket to the wall
- One IRH-23 receiver.

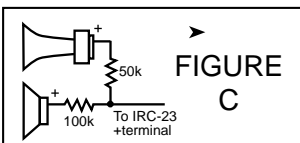
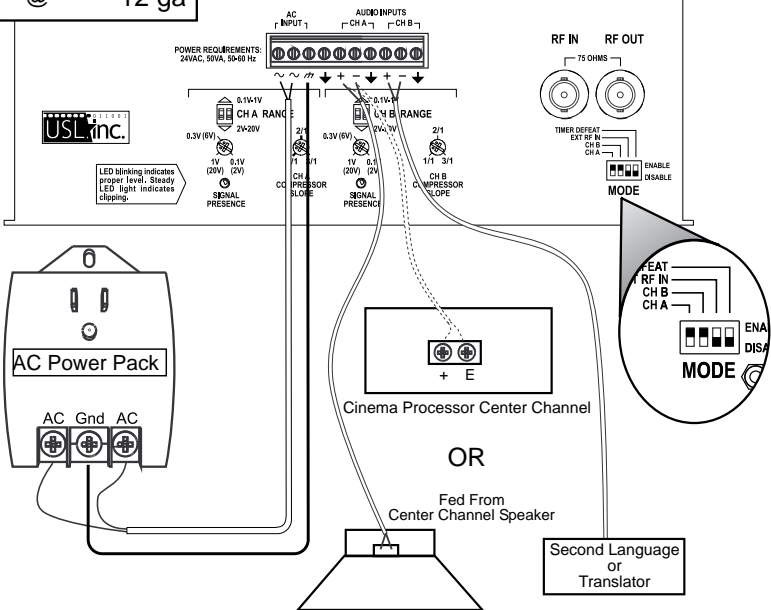
Figure B

TABLE 1

Maximum lengths and gauge sizes for connector cord from IRP-20 AC Power Pack to the IRC-23 AC panel terminals #1 & 2.

60'	@	18 ga
100'	@	16 ga
150'	@	14 ga
200'	@	12 ga

**MODEL IRC 23  
EMITTER/MODULATOR  
2.3/2.8 MHz**



## CONNECT THE AUDIO INPUT LINE(S)

Two separate audio channels are provided. Channel A is normally used for the main language channel and channel B can be used for a second language. Connect the center channel speaker terminals to the + and - (ground) audio input terminals of the IRC-23 as shown in fig. B. If the center channel is bi-amped, you must then construct a resistor network as shown in fig. C that sums the high and low frequency signals, then connect the output of the network to the IRC-23 audio input. Alternately, you may connect the IRC-23 input to the output of a sound processor or monitor.

## CONNECT THE 24VAC INPUT TO THE IRC-23

Connect the AC output of the IRP-20 power pack to the AC input terminals of the IRC-23 as shown in fig. B. Connection of the ground terminal of the power pack to the AC ground terminal of the IRC-23 is recommended and required by some building codes. Use standard 18 gauge or heavier zip cord as indicated by table 1. Make sure there are no loose wire strands that could touch any nearby metal and short the power pack.



Be careful not to short the power supply.

Connect the power pack (IRP-20) to a 115VAC 50/60Hz outlet.

## AUTOMATIC POWER-OFF FEATURE

In order to conserve power and to extend the life of internal components, the power for the IR panel of the IRC-23 automatically shuts off when the audio channels have been silent for 30 minutes. Power is restored instantly when audio resumes. This feature may be defeated by enabling mode switch number four.

## ADJUSTING AUDIO LEVELS

1. Set the Range Switches (1 & 5 in fig. A), to the appropriate positions: 2-20 Vrms range for a speaker terminal source or 0.1-1.0Vrms for processor output.
2. Use either a test tone film or program material as the sound source for setting levels. Adjust the level control pots, (2 & 6 in fig. A) to set the proper levels.
3. For a reference test tone, adjust the pot so that the LED level indicator just barely glows. For program material, adjust the level so the LED flashes on audio peaks only.
4. Adjust the compressor slope controls (4 & 8 in fig. A), as desired for the application. A setting of 1:1 (counterclockwise), gives a linear dynamic response. A setting of 2:1 provides more amplification for lower level dialog passages making the dialog more understandable for those with a hearing loss. The 3:1 setting tends to bring all sounds to the same level.

### q Mounting the IRC-23 at the front of the auditorium

(See Figures D and F) Attach the supplied mounting bracket to the wall surface and use the supplied screws to attach the bracket to the emitter. Allow free airflow around the emitter and be sure to have at least four inches clearance from all surfaces, preferably more if at all possible. The rear panel is used as a heat sink and the heat must be allowed to dissipate. The unit should be mounted to the side of the screen/stage area, 12 to 15 feet above the audience's heads and pointed downward and into the seating area (Fig F).

### q Mounting the IRC-23 at the rear of the auditorium

(See Figures E and G) Attach the supplied mounting bracket to the wall surface and use the supplied screws to attach the bracket to the emitter. Allow free airflow around the emitter and be sure to have at least four inches clearance from all surfaces, preferably more if at all possible. The rear panel is used as a heat sink and the heat must be allowed to dissipate. The emitter will cover a maximum of 6500 square feet (77' X 84') and has a primary 50° ( $\pm 25^\circ$ ) vertical and horizontal coverage angle, usually adequate for a 600-seat theatre. Within 30 feet of the emitter the horizontal dispersion angle of emission increases to over 140°. Within 18 feet of the emitter the vertical dispersion angle of emission increases to 180°. The emitter can be mounted 12 to 15 feet above the audience's heads. The unit should be pointed downward into the seated area (Fig. G).

**CAUTION:** The rear panel may get quite warm to the touch. This is normal.

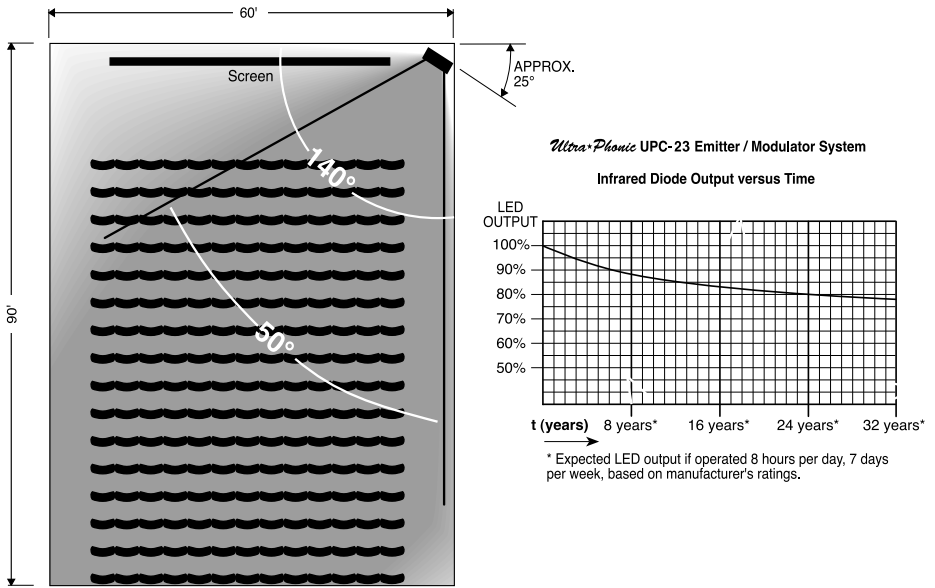


Fig. D - Front mounted emitter-top view

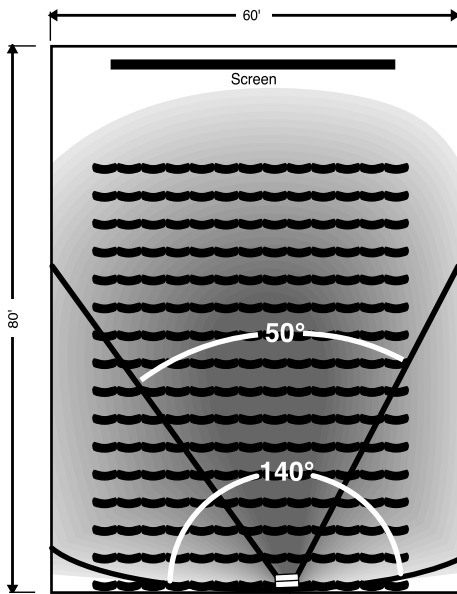


Fig. E - Rear mounted emitter-top view

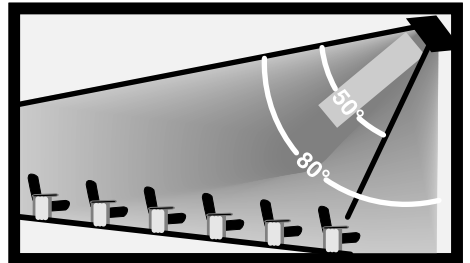


Fig. F - Front mounted emitter - side view

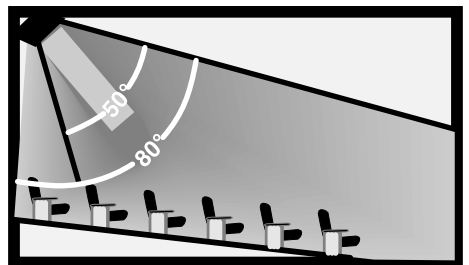


Fig. G - Rear mounted emitter - side view

# INSTALLATION USING TWO IRC-23s

As shown in figure H, two or more IRC-23 panels may be used to provide adequate coverage for a very large auditorium. In such a case, one IRC-23 panel becomes the master source with normal audio input(s), level settings and mode switch positions. An RF feed from the master to a slave panel is carried by a 75Ω coaxial cable. Power from a separate IRP-20 power pack must be connected to the slave panel. The coaxial cable is connected to the “RF OUT” BNC connector of the master and to the “RF IN” BNC connector of the slave panel. The mode switch of the master should be set for single channel “A”, single channel “B” or two channel operation as shown. The mode switch of the slave panel should be set as shown; feeding only the external RF to the IR panel.

Figure H

