Film-Tech

UPC-28

UPC-28 Two Audio Channel Infrared Emitter & Accessories.

UPC-28C Two Audio Channels plus Closed Captioning Infrared Emitter & Acessories.

INSTRUCTION MANUAL

One Year Limited Warranty

★ ★ ★ ★ ★

USL, Inc. warrants that each product manufactured by it will be free from defects in material and workmanship under normal usage for a period of one (1) year after its purchase new from an authorized dealer. Our obligation under this warranty is limited to repairing or replacing any product or component which we are satisfied does not conform with the foregoing warranty and which is returned to our factory, freight paid, or serviced by one of our authorized contractors. The forgoing warranty is exclusive and in lieu of all other warranties, whether expressed or implied. Such warranty shall not apply to any product or component (A) repaired or altered by anyone other than USL, Inc. or an authorized service contractor; (B) tampered with or altered in any way or subjected to misuse, negligence or accident or (C) which has been improperly connected installed or adjusted other than in accordance with USL, Inc.'s instruction.

UPC-28 Two Audio Channel Infrared Emitter

**UPC-28C** Two Audio Channels plus Closed Captioning Infrared Emitter

The UPC-28(C) consists of: IRC-28(C) Emitter Panel, IRP-20 DC Power Pack, and Mounting Brackets

Table of Contents

Introduction

The IRC-28 transmits two channels of audio over infrared. Channel A is transmitted at 2.3MHz. Channel B is transmitted at 2.8MHz. Both carriers are frequency modulated. Channel A is normally used to carry the Hearing Impaired audio, while channel B is normally used to carry the Visually Impaired - Narrative audio. The IRC-28C includes the two audio channels plus closed captioning. The IRC-28C transmits captions in up to three languages. The Ethernet interface to the Digital Cinema Server works with both SMPTE and Doremi captioning protocols.

Figure A
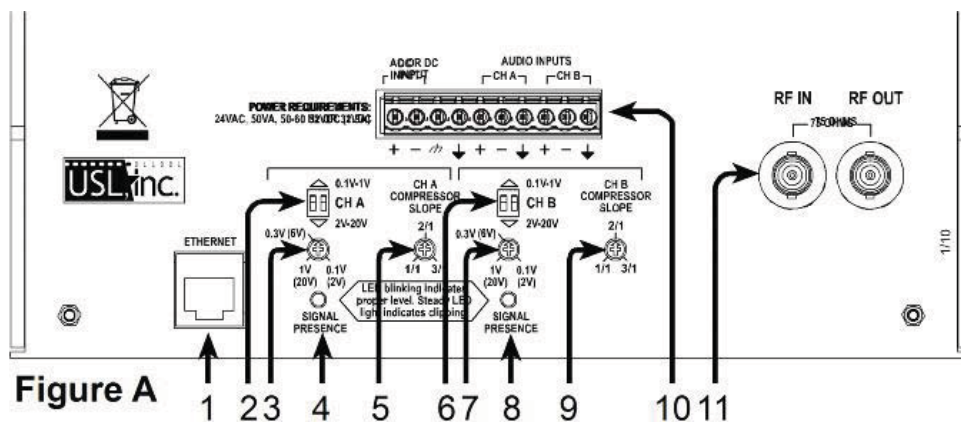
1 Ethernet Connector

2 and 6. 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.

3 and 7. Input audio level adjustments for channels A & B.

4. and 8. LED audio level indicators for channels A & B.

5 and 9. Compressor slope adjustments for channels A & B.
       Increasing compressor slope inproves intelligibility of low level dialog.

10. Main Connector; consisting of the following:
       a. Pins 1 & 2: DC Power Input Terminals.
             Connects to the DC terminals of the 32VDC Power Pack supplied with the IRC-28. Red wire connects to + terminal (pin 1) connection.
       b. Pin 3: AC Ground Terminal.
             It can be connected to a ground if required by local building codes.
       c. Pin 4: Audio System Ground.

Connect to shield of shielded-pair input cable.
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 unbalanced sources. Ground at source is recommended.
e. Pin 7 & 10: Audio system ground
11. BNC RF Connectors.
RF connectors provide connection to additional emitter panels in multi-panel installations. (see page 10)
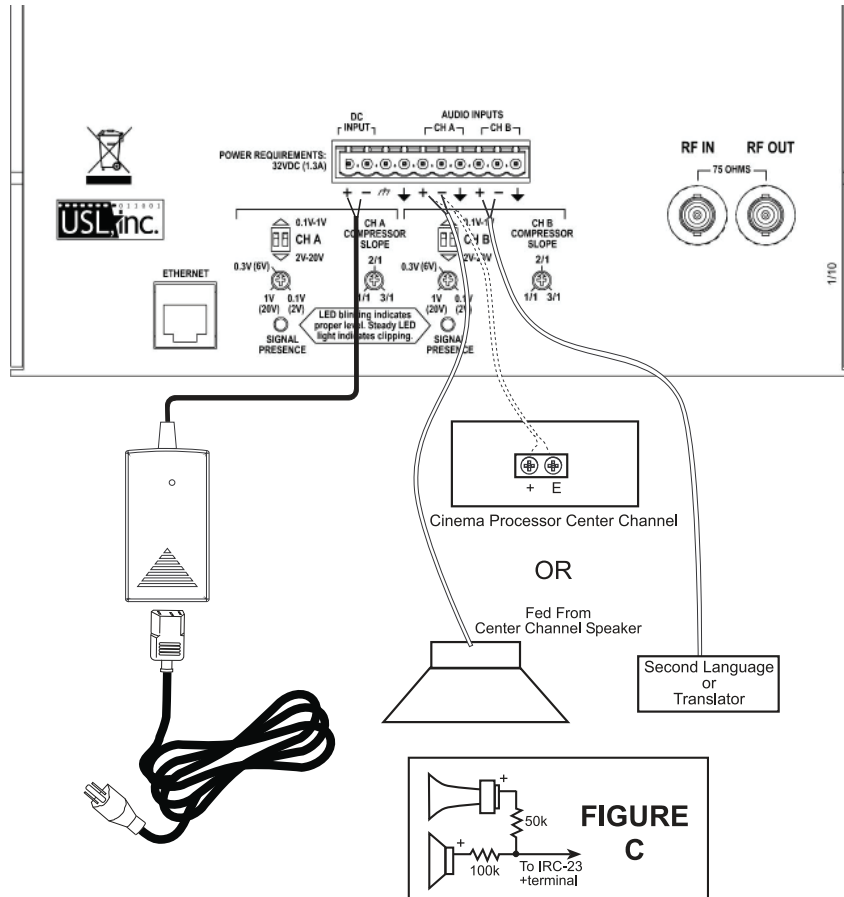
UPC-28 INSTALLATION
Unpack the carton and verify that all materials are present.

There should be:

☐   One system manual

☐   One IRC-28C Emitter Panel

☐   One IRP-20C DC 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-28 to the program source.

☐   Eighteen gauge or greater; two or three conductor "zip" cord to connect the DC power pack to the emitter panel.

☐   Tools and hardware to attach the mounting bracket to the wall

☐   One IRH-28 receiver.

Cinema Processor Center Channel

OR

Fed From
Center Channel Speaker

Second Language
or
Translator

FIGURE C

50k

100k   To IRC-23
+terminal

Initial Configuration and Test

It is easier to configure and test the IRC-28(C) before it is installed. The configuration and test procedures are listed below. Connect the power supply to the IRC-28(C). Note the + and - terminal marking near the terminal strip. Connect the positive (red) wire to the positive terminal.

IRC-28C Captioning Systems Only
1. Use an Ethernet crossover cable to connect a computer to the Ethernet jack on the IRC-28C. Set the computer's network configuration as below:
  - IP address: 169.254.1.123
  - Gateway: 169.254.1.1
  - Subnet Mask: 255.255.0.0

2. Apply power to the IRC-28C. On the computer, open a web browser and enter the IP address 169.254.1.1 . A web page entitled USL Caption Encoder should show up on the web browser.

3. Go to the web page 169.254.1.1/status.html. A status page should appear.

4. Click the link to the Configuration Page. A login dialog box will appear. The login name is admin and the password is ultra.

5. On the configuration page, set the IP address of the Digital Cinema Server for this auditorium.

6. Set the timeline offset to 0. If needed, this can be adjusted later to improve synchronization between the audio/video and the captions.

7. Choose the caption protocol (SMPTE or Doremi).

8. Set the IR Caption Carrier as desired. Normally, the caption carrier is set to only transmit when the IRC-28C has a network connection to the DCS. It will shut down if the DCS is shut down.

9. The IRC-28C does not have an RS232 output, so set the RS232 output to none.

10. Set the delay to offline text as desired. With SMPTE protocol, this is the number of seconds from when the DCS tells the IRC-28C to stop sending captions until the IRC-28C starts sending "default text." With the Doremi protocol, this is the number of seconds from the last caption data until the default text is displayed. A value of 600 seconds is typical. An extremely short delay may result in some default text flashing up between reels on some servers.

11. Set the default text that will be displayed on caption receivers. This is typically a welcome or promotional message.

12. Set the caption language priorities. With SMPTE protocol, the IRC-28C will search through the languages available with the movie and use the first three it finds according to this priority list. With the Doremi protocol, the IRC-28C transmits the first three languages available from the server. The server should be configured to make these the desired languages. The language priorities on the IRC-28C configuration page have no effect if the Doremi protocol is used. <u>Do not use the same language in more than one priority level.</u>

13. Click the save button to save the DCS settings.

14. Enter the optional auditorium data and press Save User Data to save it. The system does not use this data, but displays it to aid users in identifying the system.

15. If checked, uncheck Enable DHCP. Fill in the IP address, Gateway and Sub-net Mask the IRC-28C is to use. The DNS fields may be left unchanged. Click Save IP Config and Reboot to save the new information.

16. Connect the IRC-28C and your computer to the DCS network (using standard Ethernet cables). Set your computer to an appropriate IP address for use on the network.

17. Set the web browser to the IP address you set the IRC-28C to. You should see the USL Caption Encoder page. Add /status.html to the IP address (ie, 192.168.1.157/status.html). You should see a status page that shows the last 10 actions by the IRC-28C. You should see it connect to the DCS, get an RPL URL, fetch the RPL, parse the RPL, fetch the timed text file, parse it, and then be ready for output. Starting the playout should result in the display of captions on a caption receiver.

All Systems

1. Connect the HI audio to the channel A terminals of the IRC-28(C). Connect the VI-N audio to the channel B terminals. Two conductor shielded twisted pair cable is suggested for each audio channel. Connect the two conductors to the + and - terminals of the appropriate channel. Connect the shield to the adjacent ground terminal. If an audio source is unbalanced, connect the - lead to the shield at the audio source.

2. Run programming with HI and VI-N audio. Set the compression slope to 2:1. Adjust the appropriate DIP switches and input level controls to cause the audio level LEDs to flash during normal programming, but not stay lit continuously. Try listening to each channel on IR headphones. If necessary, adjust compression to bring up low levels or reduce noise.

Mounting the IRC-28 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 air-flow 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.

Mounting the IRC-28 at the rear of the auditorium

(See Figures E and G) Attach the supplied mounting bracket to the wall sur-face 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 maxi-mum of 6500 square feet (77' X 84') and has a primary 50° (± 25°) 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 in-creases 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.

Installation
Once the IRC-28(C) has been configured, installation consists of extending wir-ing to the final installation point and mounting the panel. Since the system has already been configured, installation becomes a matter of wiring it up and mounting it. Note that if the DC power cable needs to be extended, wire sizes in the table below are recommended. In addition, **be very careful to maintain the voltage polarity.**

Length (feet)	AWG	Length (meters)	mm²
60	18	20	0.82
100	16	30	1.31
150	14	50	2.08
200	12	60	3.31

Fig. D   - Front mounted emitter-top view

Ultra★Phonic UPC-23 Emitter / Modulator System

Infrared Diode Output versus Time

* Expected LED output if operated 8 hours per day, 7 days
  per week, based on manufacturer's ratings.
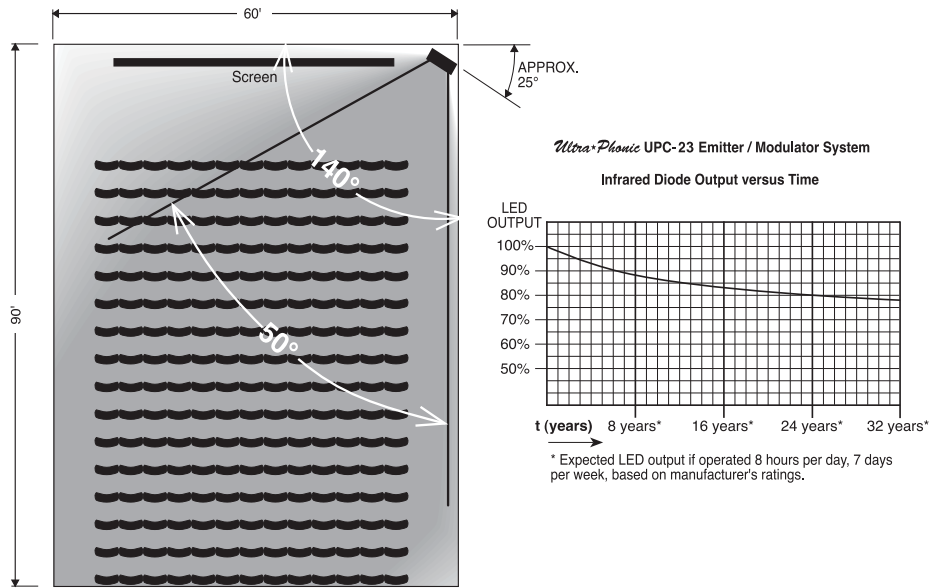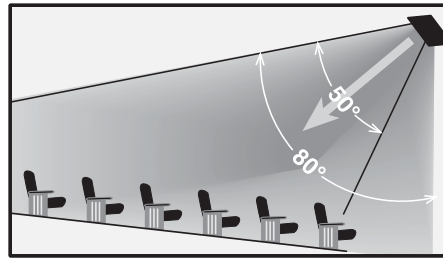

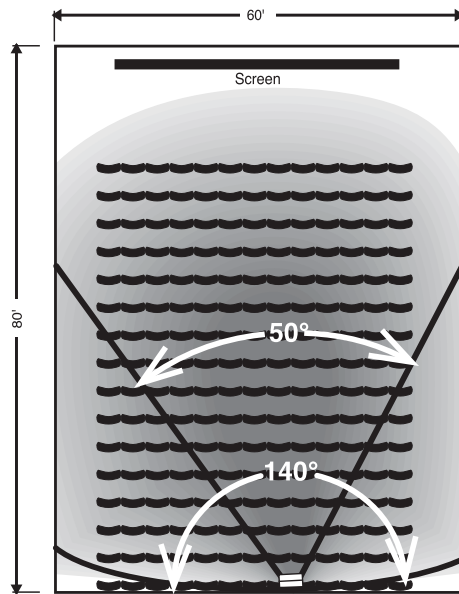Fig. F   - Front mounted emitter - side view

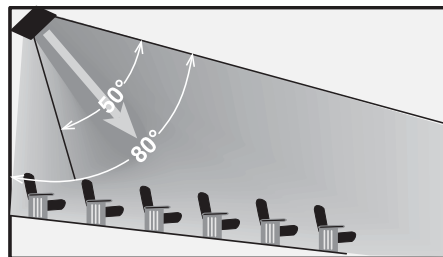Fig. E   - Rear mounted emitter-top view

Fig. G - Rear mounted emitter - side view

INSTALLATION USING TWO IRC-28s

Two or more IRC-28(C) panels may be cascaded to provide adequate coverage for a very large auditorium. In such a case, one IRC-28(C) panel becomes the master source with normal audio input(s), level settings, and Ethernet connection (IRC-28C only). An RF feed from the master to a slave panel is carried by a 75 ohm coaxial cable (RG-59/U or similar) to the first slave panel (RF Out of the master drives RF In of the slave). The first slave panel then drives the second slave panel, etc. Each panel must be driven by its own power supply. When a channel on the master panel shuts down due to lack of audio, transmission of that channel also ceases on all slave panels. The full power of the master and slave panels is devoted to active audio channels (and captions if available). If no channels are active (no audio for 30 minutes), all transmissions cease, saving power and increasing the IR LED life.
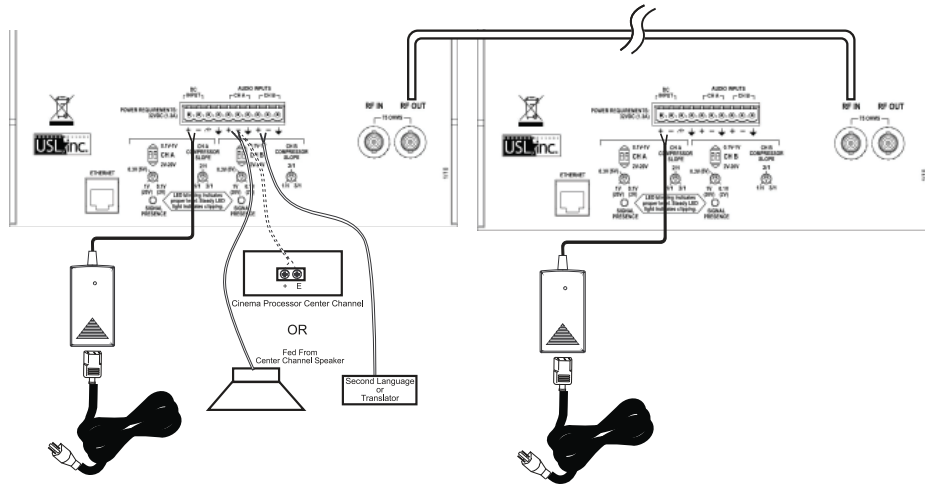
181 Bonetti Drive
San Luis Obispo, CA 93401
ph: 805-549-0161
fax: 805-549-0163
e-mail:usl@uslinc.com
Website: www.uslinc.com

June 2010