UPC-28

UPC-28 Two Audio Channel Infrared Emitter & Accessories.

INSTRUCTION MANUAL

One Year Limited Warranty

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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.

The UPC-28 consists of: IRC-28 Emitter Panel, IRP-20 DC Power Pack, and Mounting Brackets. The IRC-28 is UL listed for compliance with IEC 60065 audio/video and similar electronic apparatus. UL file E307263

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IMPORTANT SAFETY INSTRUCTIONS

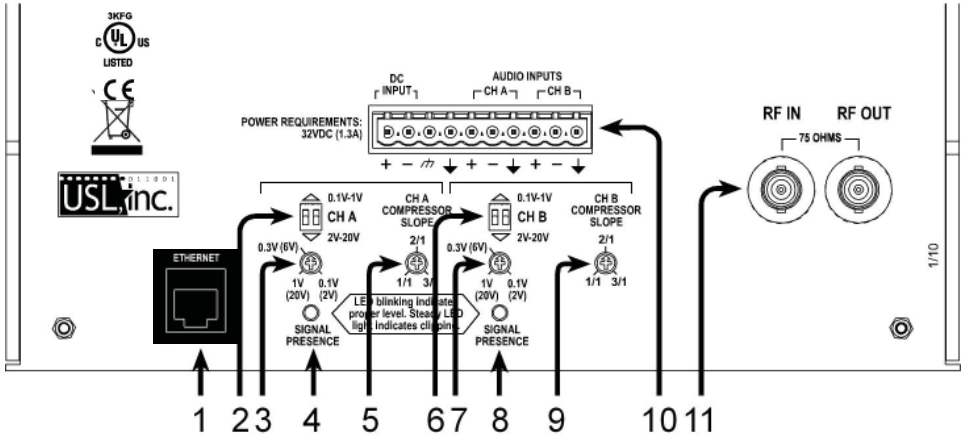
1) Read these instructions.
2) Keep these instructions.
3) Heed all warnings.
4) Follow all instructions.
5) Do not use this apparatus near water.
6) Clean only with dry cloth.
7) Do not block any ventilation openings. Install in accordance with the manufacturer's instructions.
8) Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.
9) Do not defeat the safety purpose of the polarized or grounding-type plug. A polarized plug has two blades with one wider than the other. A grounding type plug has two blades and a third grounding prong. The wide blade or the third prong are provided for your safety. If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.
10) Protect the power cord from being walked on or pinched particularly at plugs, convenience receptacles, and the point where they exit from the apparatus.
11) Only use attachments/accessories specified by the manufacturer.

12) Use only with the cart, stand, tripod, bracket, or table specified by the manufacturer, or sold with the apparatus. When a cart is used, use caution when moving the cart/apparatus combination to avoid injury from tip-over.
13) Unplug this apparatus during lightning storms or when unused for long periods of time.
14) Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as power-supply cord or plug is damaged, liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.

WARNING
To reduce the risk of fire or electric shock, do not expose this appliance to rain or moisture.

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.



1 Ethernet Connector (IRC-28C Only)
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 improves 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: Chassis Ground Terminal.
The DC power supply connects the AC safety ground to its negative output. No connection is required to this terminal.
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 7)

UPC-28 Installation

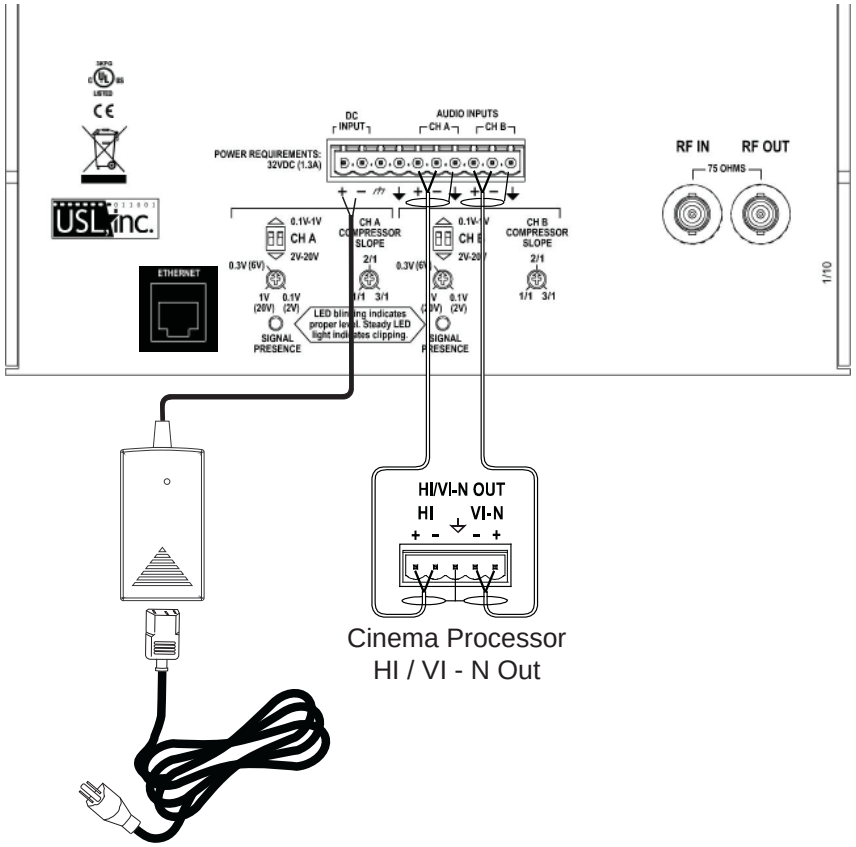
Unpack the carton and verify that all materials are present.

There should be:

- ☐ One system manual
- ☐ One IRC-28 Emitter Panel
- ☐ One IRP-20 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, two conductor audio cable for connection of the IRC-28 to the program source.
- ☐ Eighteen gauge or larger; two 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.



Initial Configuration and Test

It is easier to configure and test the IRC-28 before it is installed. The configuration and test procedures are listed below.

1. Connect the power supply to the IRC-28. Note the + and - terminal marking near the terminal strip. Connect the positive (red) wire to the positive terminal.

2. Connect the HI audio to the channel A terminals of the IRC-28. 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.

3. 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

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, preferrably more. The rear panel is used as a heat sink and must be allowed to dissipate heat. The emitter will cover up to 6,500 square feet (77 x 84 feet). The emitter is typically mounted near the projector window. The panel should be “aimed” towards the screen. This typically results in the panel being vertical and parallel to the rear wall of the auditorium. Aiming the panel towards the screen provides additional auditorium coverage from screen reflection.

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.**

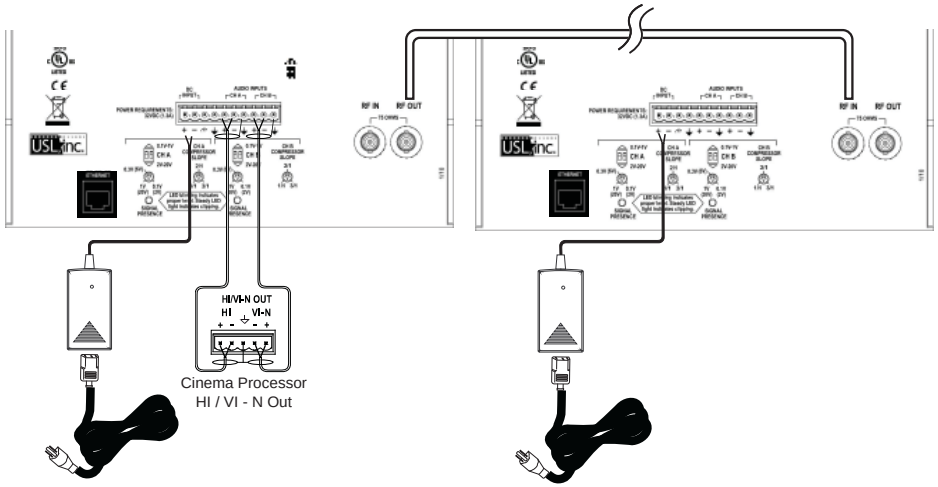
Length (feet)	AWG	Length (meters)	mm^2
60	18	20	0.82
100	16	30	1.31
150	14	50	2.08
200	12	60	3.31

Extend the audio and DC power wiring as required.

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

Installation Using Two UPC-28s

Two or more IRC-28 panels may be cascaded to provide adequate coverage for a very large auditorium. In such a case, one IRC-28 panel becomes the master source with normal audio input(s), and level settings. 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. If no channels are active (no audio for 30 minutes), all transmissions cease, saving power and increasing the IR LED life.



Mount additional slave panels adjacent to the master panel. Long coaxial cable runs may introduce sufficient phase delay to cause signals to cancel instead of add.

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