IRMTX750

Infra Red Modulator & Radiator

Installation and Maintenance Manual

Revision 2 - January 2011

Please Read Carefully Before Commencing Installation

Introduction

The Infra~Hear range of infrared assistive listening products are designed to meet the demands of members of the public who need to receive programme information in accordance with the EA (Equality Act 2010) and as such is defined as an auxiliary aid.

Infra~Hear Modulators and slave radiators are placed in the space, and transmit audio as FM infra red light to be decoded by special receivers, such as the IR~RX.

The IR~RX can be used on its own with the inbuilt telecoil to transmit audio to hearing aid wearers equipped with the “T” position switch on their hearing aid (in compliance with IEC 118-1) or with suitable headphones plugged into the unit.

Suitability

The IR~RX with headphones is suitable for use as a museum tour-guide system or to provide assistance for non hearing aid users, it is not sold as a medical aid, and the services of a professional Audiologist should be sought on these applications. When used as a neck loop for a prescribed hearing aid user the system can be used in all locations where information needs to be imparted.

System Design

A basic Infra~Hear system will comprise a minimum of one radiator/modulator and a number of IR~RX receivers; operation is completely automatic at the transmitter end and if correctly installed and commissioned the user needs no interaction. Larger areas may require slave radiators to increase coverage, do not use multiple modulators in overlapping covered areas as this will lead to beat frequencies and poor audio quality.

Operation

The Infra~Hear modulators are fully automatic in operation; once commissioned the unit should not be adjusted by the user.

Interference

The Infra~Hear system uses Band IV modulation as defined in BSEN61603-2 and occupies channel H1, and as such is largely immune to interference from traditional sources such as high efficiency lighting and plasma displays.

Maintenance.

It is a recommendation of The Equalities Act that a maintenance procedure is in place for assistive listening systems, our recommended maintenance schedule should be as follows.

Monthly:	Using an infrared receiver (such as the IR-RX) listen to the area covered and check the audio is being heard and is not distorted.
Quarterly:	Check all inputs are working individually to the modulator, and test quality using the IR~RX receiver.
Yearly:	Engineer Call to check system inputs and loop field strength at neck loop receivers with a calibrated field strength meter, such as the ETFSM.

Important Safety Information

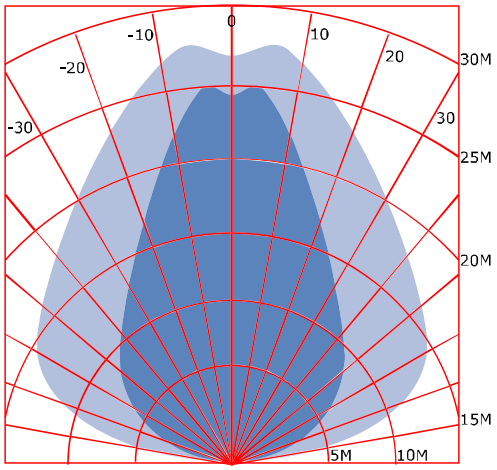
This Equipment must only be installed and maintained by suitably skilled and competent person.
This Equipment is defined as Class 2 in EN60065 (Low Voltage Directive) and DOES NOT need to be EARTHED.

CAUTION	INDOOR USE ONLY
WARNING	SHOCK HAZARD- ISOLATE BEFORE OPENING
WARNING	TO REDUCE THE RISK OF FIRE OR ELECTRIC SHOCK, DO NOT EXPOSE THIS UNIT TO RAIN OR MOISTURE
WARNING	NO USER SERVICEABLE PARTS

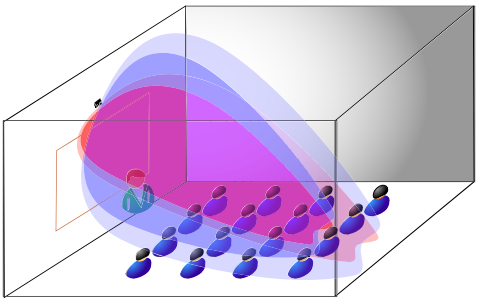
Use only with the supplied PSU, this is 9v AC; if other sources of power are required this can be either 9V AC or 24V DC The DC supply should not exceed 26V

Positioning the Unit

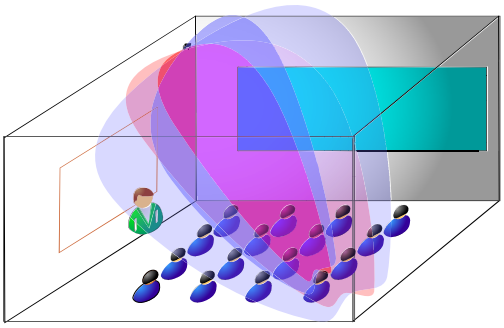
The radiation pattern of the IRMTX750 is a cone 30 degrees horizontal and vertical, however as you get close to the unit you get useful radiation almost to the horizontal limit, see the polar plot below.



Although the prime coverage is line of sight, the reflections from most hard surfaces mean that as long as the radiators are high up you get main and reflected coverage in most cases. Blackout curtains and some red and purple paints will affect the coverage, so it is wise to temporarily mount the units before choosing the final locations.

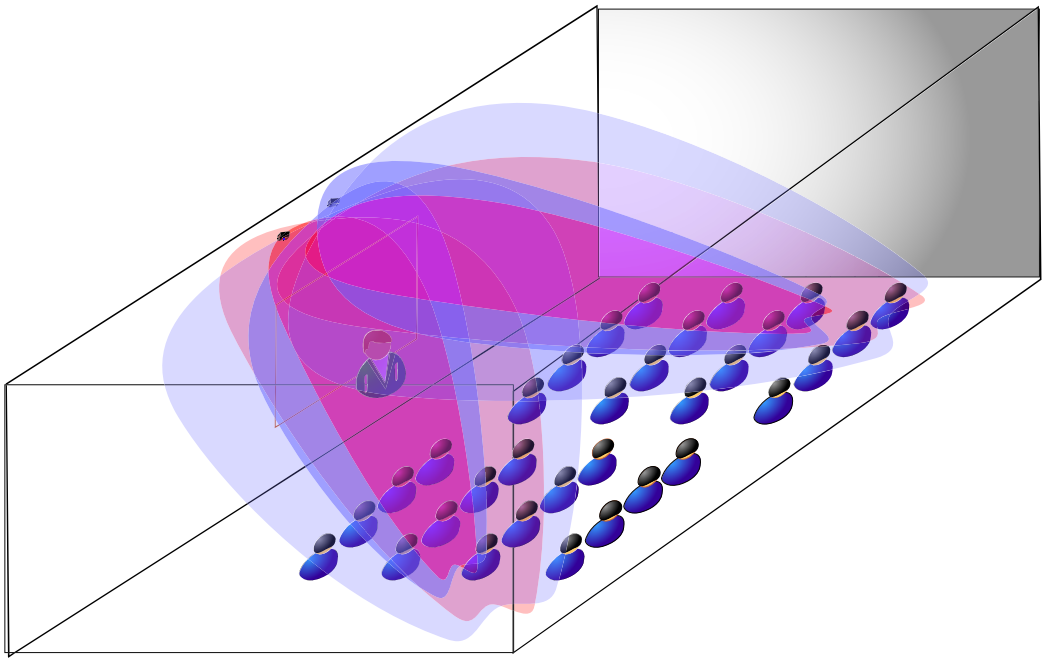


IR radiation does not reflect of most glass surfaces, and therefore should be placed pointing away from windows as follows:



Larger areas can be covered by using the IRSTX750 slave radiator, this connects to the RF out socket on the IRMTX750, and 75Ω micro-coax should be used for the connection. The distance between

modulator and radiator should be minimised- for long thin rooms best results occur stacking the master and slaves, while in wide short rooms, placing the units in the middle pointing away from each other yields good results.

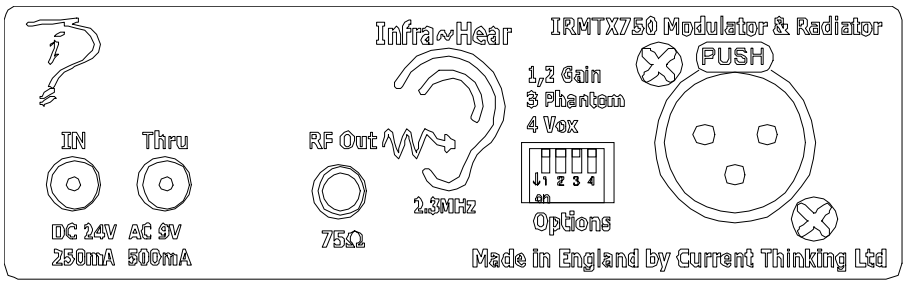


While we offer guidance on the sighting of units, it is always best to verify with a test installation, as surface finishes can affect performance.

Mounting the Unit

Mounting the Modulator or Slave on the wall is by the three screws on the supplied bracket. The units weigh 750g, so care should be taken to securely mount the unit on stud walling. Orientation of the radiators is not important and the control surface can be top, bottom or either side. The bracket allows 120 degree horizontal and 30 degree vertical adjustment giving a simple means of optimising coverage.

Indications and Controls



Indicators

Operating	A blue LED on the front face indicates the unit is operating, if the VOX operating mode is selected the BLUE led will extinguish.

Controls

DIP Switch	Sets the Level of the input, phantom power and VOX operation.

Input connector

The IRMTX750 has an industry standard XLR connector fitted to the control face of the unit, the sensitivity of this input is controlled by the first two switches on the DIP selector. Switch 3 selects 12V phantom power (for electret type microphones) and switch 4 selects VOX operation (the unit will power down until audio is heard in the room to conserve power.

Balanced Microphone

The balanced microphone input is presented on a three way two part screw terminal connection, and is designed to accept the microphone cables directly.

The input provides a balanced 12V phantom supply to power electret type microphones such as the ETCM/W and works with most professional microphones, unbalanced dynamic microphones should not be used with loop systems as the will cause magnetic feedback problems.

Standard Elecret Microphone

Low sensitivity Dynamic Microphone

High Output Electret Microphone (ETSBM)

Balanced Line Input

The balanced line input can accept signals from –10dBV (tape level) to +4dBV (professional mixing desk level).

Normal Line Level Operation (0dBV)

Low Level Line Operation (100mV)

Connections

Unbalanced XLR	*Balanced XLR*
Pin 1 Ground	***Pin 1 Ground***
Pin 3 link to 0V	***Pin 3 Cold***
Pin 2 Signal	***Pin 2 Hot***

Commissioning

Before powering up the modulator, check all signal wiring, and ensure the DIP switch is correctly set.

Apply power and using a sound source (either a loudspeaker playing sound at 65dBA at the normal speaker position or the AV input signal that would normally feed the system)

Using a receiver and headphones (such as the IR~RX) survey the area to be covered and note on the plans any areas of interference or poor coverage.

The bracket on the radiators can be adjusted to optimise coverage within the space, the required coverage depends on the brief, but should normally cover at least 90% of the used seating area, seating not covered should be marked on a room plan and prominently displayed so users can choose seating that is covered.

In some instances additional radiators may be required to achieve the contract brief.

Some contracts will require more detailed data such as frequency response and distortion measurements, these can be taken by placing the signal generator into the modulator, and wiring the analyser to the headphone socket on the IR~RX receiver.

Technical Specification

Inputs

Audio inputs	1 off balanced mic or balanced line selectable.
Type	3 PIN XLR
Phantom	12V 2mA
Sensitivity	-50dBV Microphone, -10dBV balanced line.

Mains Input **(supplied adaptor)**

Voltage	230V ~ 50/60 Hz
Current	250mA Nominal

Indication & Controls

LED indicator	1 off Operating
User Controls	4 way DIP Switch.

Audio Processing

AGC	Variable ratio 1:1 to limit 20:1.
Attack	10mS
Release	Automatic from 500mS to 1500mS
Dynamic Range	>60dB
THD	<0.25%

Output

Optical	875nM 750mW
Modulation	2.3MHz +- 50KHz
Slave	75Ω 3.5mm Jack

Dimensions

Extents	Height	140mm
	Width	160mm
	Depth	80mm
Weight	750g