Envoy
User Guide

Audio Radio Microphone Systems are noted for their ease of use. If however you need advice or technical support at any time please contact Audio Ltd.

All products come with free lifetime technical support, and we are also always pleased to help users of our equipment, whatever the application.

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Contents

CHAPTER 1

Introduction

This chapter gives a general introduction to radio microphones, and shows how the products in the Envoy Range interrelate.

Audio Limited

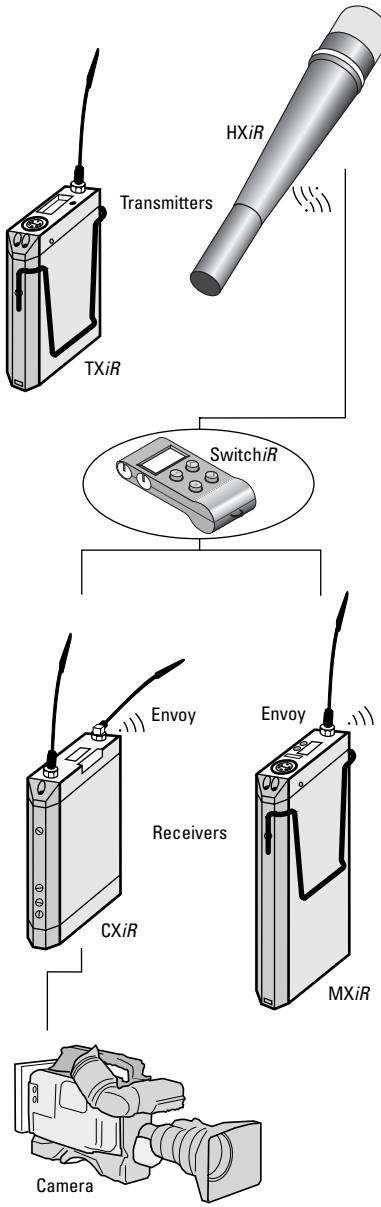
Audio Limited has been designing and manufacturing broadcast quality radio microphone systems since 1963, and over this period our products have become the choice of professional sound mixers around the world.

Our systems have acquired an acclaimed reputation for reliability and transparent sound quality through our commitment to designing products with maximum input from the customer.

All of the products designed by us are a result of listening to our customers.

The Envoy Range

The Envoy Range of radio microphone system components eliminates all mechanical switching by using infra-red remote control. This allows you to change settings, such as the frequency and audio level, and check the status of the units, such as the battery status and settings, even if they are not fully accessible, such as when mounted in a camera.


HX*iR*
Transmitters
TX*iR*
Switch*iR*
Envoy
Envoy
Receivers
CX*iR*
MX*iR*
Camera

Infra-red control is provided in the Envoy Range of receivers, and in the HX*iR* hand-held transmitter.

Switch*iR*

The infra-red controller for the Envoy receivers and the HX*iR* transmitter.

TX*iR*

A small, lightweight battery-powered pocket transmitter, for use with a range of lapel microphones.

HX*iR*

A multi-frequency infra-red controlled UHF hand-held transmitter designed for use with a range of high-quality interchangeable microphone capsules from the Schoeps Colettte range.

CX*iR*

A multi-frequency UHF infra-red controlled true diversity receiver designed to interface with the internal slot in several widely used camcorders. It can also be mounted externally, and used as a portable receiver for documentary and ENG purposes.

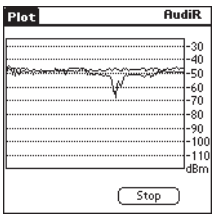
MX*iR*

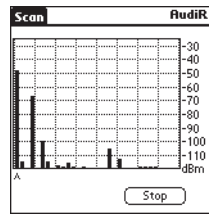
A multi-frequency UHF infra-red controlled non-diversity receiver with internal battery compartment for portable use in a wide range of applications.

The Envoy products are fully compatible with all existing RMS 2020 and RMS 2000 Series products.

Aud*iR*

The Envoy Range also includes Aud*iR*, an application designed to run on Palm OS compatible organisers. Aud*iR* allows you to display the status of any Envoy Range device on a single convenient **Status** screen, and change any of the settings. In addition, it provides a **Plot Signal** function, to plot the signal strength, and a **Scan** function, to display a frequency scan:





In effect the **Scan** function acts like a portable spectrum analyser dedicated to the receiver being addressed.

Diversity reception

When electromagnetic waves are radiated by a moving transmitter, the receiver picks up reflected signals from surrounding structures as well as the directly radiated signal. These reflected signals combine with the direct signal, and in the case where the combining signals are out of phase with each other, a drop-out or loss of signal results.

To eliminate this cancellation effect Audio Limited employ the true diversity technique in the CX*iR* receiver.

The CX*iR* receiver incorporates two separate receivers fed by separate antennae. A comparator circuit compares the RF levels from the two receivers ensuring that the receiver will always switch to the strongest signal. A noiseless switching circuit takes full advantage of the accurate level detection to allow switching as often as needed without noise or clicks. The result is a reliable, drop-out free, broadcast-quality audio signal indistinguishable from a line microphone.

Selecting frequencies

The Envoy Range provides a choice of 32 pre-programmed operating frequencies within a 24MHz block, in the 470MHz to 1000MHz range. This allows you to select a frequency appropriate to the location.

The Aud*iR* Palm OS application can be used in conjunction with the CX*iR* and MX*iR* receivers to accurately locate any unused channels in a particular location, thereby eliminating any guesswork.

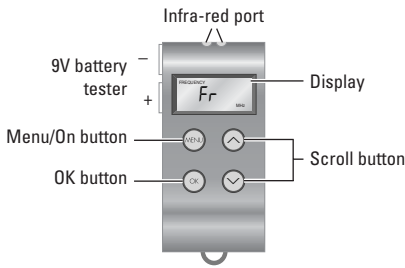
The Switch*iR* infra-red controller allows you to check and change the frequency on the CX*iR* and MX*iR* receivers, and the HX*iR* transmitter.

CHAPTER 2

Switch*iR* Infra-Red Controller

The Switch*iR* is a compact custom-designed infra-red controller for use with the Envoy Range. It provides functions to allow you to read the status of a device, or change its settings. In addition it includes a convenient built-in 9V battery tester:

Controls



Infra-red port

Point the infra-red port at the front of the Switch*iR* directly at the infra-red port of the transmitter or receiver, keeping the Switch*iR* within 30cm of the port.

Menu/On button

Turns on the Switch*iR*. The display will initially show the frequency screen:

∧/∨ Scroll buttons

Allow you to scroll through the menus, or the selections on the frequency, audio level, and LF cut screens.

OK button

Confirms the current selection.

Power saving feature

The Switch*iR* will switch off if no buttons are pressed within 30 seconds, to conserve battery life.

The Switch*iR* will also switch off automatically if the menu button is kept pressed for more than 50 seconds; for example while the Switch*iR* is in a pocket or bag.

Using Switch*iR*

Full instructions for using Switch*iR* with each of the products in the Envoy Range are given in the appropriate chapter of this guide.

The following table summarises the Switch*iR* functions, and describes the additional functions included in Switch*iR*.

Menu	Description
Fr	Press **OK** to read the transmitter or receiver frequency setting. Press **OK** again followed by ∧ or ∨ to select a new frequency, and press **OK** to transmit it to the unit.
AF	Press **OK** to read the receiver or transmitter audio level. Press **OK** again followed by ∧ or ∨ to select a new audio level and press **OK** to transmit it to the unit.
LF Cut	Press **OK** to read the transmitter's LF cut setting. Press **OK** again followed by ∧ or ∨ to switch the setting between on or off and press **OK** to transmit it to the unit.
Batt	Press **OK** to read the transmitter or receiver battery level. For receivers the receiver battery level alternates with a transmitter battery status indicator: H (high), L (low), or F (fail).
Int Batt	Displays the battery voltage of the Switch*iR* internal battery. If this falls below 5.00V the internal battery should be replaced.
9V Batt	Allows you to test a 9V 6LR61 type battery by holding it against the two metal terminals on the side of the Switch*iR*. A reverse polarity warning is displayed if the battery is connected the wrong way round.
Sn	Press **OK** to read the serial number of a receiver or transmitter and display it on the display. The serial number consists of a six-digit prefix followed by a two-digit suffix, and these are flashed alternately on the display.
User ID	Displays the unit's user ID. You can edit the user ID using the Aud*iR* application.

Menu	Description
iR disable	Press **OK** to disable the infra-red port on a transmitter or receiver until power is disconnected and reapplied.
Off	Press **OK** to turn a transmitter off. Not available for receivers.

Technical specification

Size	65 x 30 x 11mm (17mm at battery end)
Weight	40g including battery
Battery type	6V PX28L Lithium or equivalent

CE

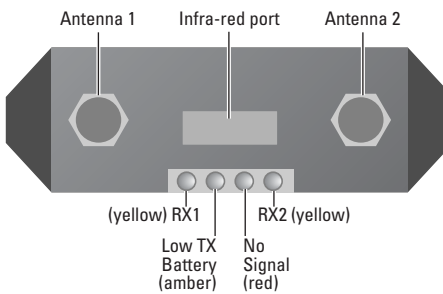
CHAPTER 3

CX*iR* Diversity Receiver

The CX*iR* is a multi-frequency UHF diversity receiver, designed with a range of modular adapters to allow it to be mounted internally in the latest camcorders from Sony, Philips, and Ikegami. Alternatively, a universal adapter fitted with the six-pin Lemo socket is available allowing the CX*iR* to be used externally with camcorders that do not provide a built-in wireless microphone receiver slot. Also, the CX*iR* can be used as a portable documentary or ENG receiver. All settings can be read or changed via infra-red control using the Switch*iR*.

Controls, displays, and connections

Top panel



Antenna 1/Antenna 2

SMA sockets to which the antennae are connected.

Infra-red port

Receives commands from, and transmits status information back to the Switch*iR* infra-red controller.

RX1/RX2 indicators (yellow)

Indicates which of the unit's two built-in receivers is active at any time.

Low TX Battery indicator (amber)

Indicates when the transmitter battery is low and needs replacing.

No Signal indicator (red)

Indicates that no carrier signal is being received from the transmitter, such as when the transmitter is switched off or set to an incorrect frequency.

Setting up the CX*iR*

To set up the CX*iR* in conjunction with a suitable transmitter, such as the HX*iR* or TX*iR*:

- Fit the receiver into the camera.
- Connect the RX1 and RX2 antennae.
- Set the audio input selector switch to the appropriate position on the camcorder.
- Select the operating frequency.
- Set the output level.
- Check the power status.

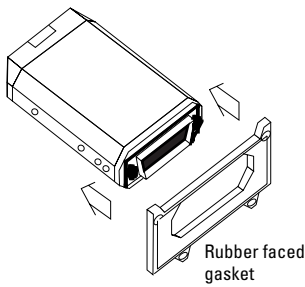
- Check that one of the RX1 and RX2 indicators (yellow) is illuminated, and that the No Signal indicator (red) is not illuminated.

These steps are explained below:

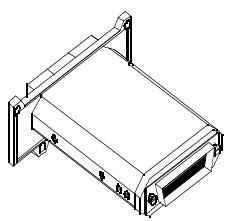
Mounting the receiver into the camera

To mount the CX*iR* receiver in the wireless microphone receiver slot on the camcorder:

- Remove the plate covering the receiver slot on the camcorder.
- Fit the appropriate cover plate on the CX*iR* receiver:



- Ensure that the plate is oriented correctly.
- Slide the cover plate gently towards the top of the receiver:



- Ensure the receiver has the correct interface connector for the camcorder you are using.
- Fit the receiver assembly into the slot and press it gently into place until it is firmly seated.
- Slide the cover plate into position and secure it into place with the screws provided.

Connecting the antennae

Connect the antennae to the SMA connectors marked RX1 and RX2. Connect the straight antenna to one socket and the right-angled antenna to the other socket.

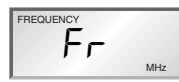
Selecting the operating frequency

You can check or change the operating frequency of the CX*iR* receiver via infra-red control using the Switch*iR*.

To check the CX*iR* frequency:

- Press **MENU**.

The display shows:



- Align the front of the Switch*iR* with the infra-red window on the receiver and press **OK**.

Optimum operating range is between 5 and 15cm.

The Switch*iR* will display the receiver frequency; for example:

To change the CX*iR* frequency:

- Press **OK** again.

The display will alternately flash between frequency and channel number.

For example:

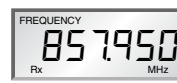
- Press ∧ or ∨ to scroll through the 32 frequencies read from the receiver until the required channel or frequency is displayed.

For example:

- Align the front of the Switch*iR* with the infra-red port on the receiver and press **OK**.

If the command was received correctly the display will show the new frequency.

For example:



Otherwise the display will show:

- Repeat the above steps if an error message is displayed, moving the Switch*iR* closer to the infra-red port.

Setting the output level

The CX*iR* should be set to the correct level as required by the camcorder. The output level is attenuated in 1dB steps over a 32dB range. The 0dB reference level is -25dBu.

To check the CX*iR* output level:

- Press **MENU**.
- Press ∧ once until the display shows:

- Align the front of the Switch*iR* with the infra-red port on the receiver and press **OK.**

The display will show the current output level setting; for example:

To change the receiver output level:

- Press the **OK** button.

The AF level display will flash.

- Press the ∧ or ∨ button to step between the available output level settings until the required output level is displayed.

For example:

- Align the front of the Switch*iR* with the infra-red port on the receiver and press **OK**.

If the command was received correctly the new level will be displayed.

For example:

Otherwise the display will show:

- Repeat the above steps if an error message is displayed, moving the Switch*iR* closer to the infra-red port.

Checking the DC power status

To check the status of the receiver's DC power:

- Press **MENU**.
- Press ∧ three times until the display shows:

- Align the front of the Switch*iR* with the infra-red port on the receiver and press **OK.**

The display will show the DC voltage:

If the associated transmitter is on while the DC status is being checked the display will alternate between the receiver's DC status and the received transmitter DC status.

For example:

The transmitter status is shown as one of the following options:

Option	Description
H (high)	Indicates good.
L (low)	Indicates low. Replace as soon as possible.
F (failed)	Transmitter will not function correctly.

Indicators during operation

The CX*iR* should switch between the RX1 and RX2 receivers for best reception, as indicated by the yellow RX1 and RX2 indicators on the top of the unit.

The red No Signal indicator will be lit if the corresponding HX*iR* or TX*iR* transmitter is not switched on, or is set to the incorrect frequency. The amber Low TX Battery indicator will be lit if the TX battery goes low.

External powering

A number of different cables and accessories are available from Audio Limited to allow the CX*iR* receiver to be externally powered.

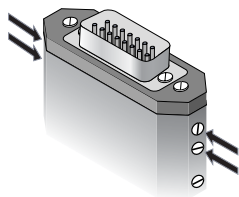
The **maximum** external DC supply must not exceed 18V. Exceeding this voltage will result in damage to the receiver.

Audio Limited recommend the use of their regulated cables to prevent damage to the CX*iR*.

Mounting options

The CX*iR* can be supplied already fitted with the appropriate adapter for a specific camcorder. Alternatively it can be supplied with a Lemo adapter for applications where the CX*iR* is to be used with a mixer, or a camcorder without an integral wireless microphone receiver slot. In this case the receiver can be mounted onto the camera with an appropriate bracket available from Audio Limited.

Adapters are available separately to allow you to modify a CX*iR* for use with a different camcorder. To change the adapter unscrew the four screws on the side of the unit at the base with a slotted screwdriver. Slide out the adapter and replace it with the appropriate replacement adapter:



Do not remove the screws at the base of the unit.

Technical specification

Frequency range	470MHz–1000MHz
Number of frequencies	32 pre-programmed
Switching bandwidth	24MHz
Sensitivity	-98dBm for 40dB SINAD
Frequency response	50Hz to 18kHz ±1dB
THD	<0.2% typical
Signal to noise ratio	96dB to over 104dB
External power	7-18V DC 150-55mA
Antenna connector	2xSMA
Output connector	6 pin LEMO™
Interchangeable module	15 pin D-type (Sony) 25 pin D-type (Ikegami) 44 pin D-type (Philips)
Size	98 x 60 x 18mm
Weight	150g
Operating temperature range	-20C°to +55°C
Compliant to	ETS 300422 EN 300445(CE) FCC

CE

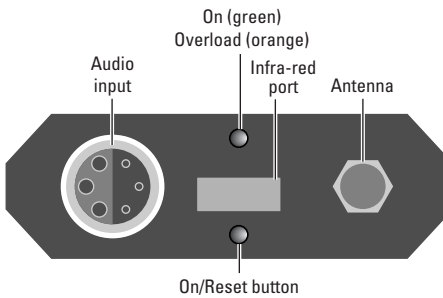
CHAPTER 4

TX*iR* Infra-Red Remote Control Pocket Transmitter

The TX*iR* is a small, lightweight battery-powered pocket transmitter for use with a wide range of lapel microphones. All settings can be read and changed via the infra-red control using the Switch*iR*.

Controls, display and connections

Top panel



Infra-red port

Receives commands from and transmits status information back to the Switch*iR* infra-red controller.

On/Overload indicator

The LED glows green while the TX*iR* is switched on, but will flash orange to indicate an overload in the presence of a high-level audio signal. At this point the low distortion limiter operates.

Yellow reset button

Resets the TX*iR* and turns it on again from sleep mode. Please use the tip of the antenna to press the button.

Battery compartment

Holds a 6LR61 type 9V alkaline battery.

Audio input

Allows a microphone or line-level input to be connected.

SMA antenna connector

SMA socket to which the antenna is connected.

LF cut using Switch*iR*

Gives approximately 6dB LF cut at 50Hz, to assist in the reduction of wind noise.

Gain setting using the Switch*iR*

Provides eight gain options when used with standard microphones. Position 9 gives maximum gain and each position decreases the gain by approximately 3 to 4dB, giving a total of 30dB of adjustment. Positions 1 and 0 provide line-level input.

The following table gives the equivalent settings for the TX2020:

TX*iR*	0	1	2	3	4	5	6	7	8	9
TX2020	8	9	0	1	2	3	4	5	6	7

Note: Positions 0 and 1 (8 and 9 on the TX2020) provide line-level input.

Setting up the TX*iR*

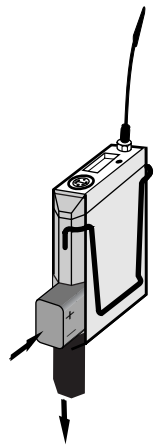
To set up the TX*iR*:

- Fit the battery.
- Connect the antenna.
- Switch on by plugging in the microphone or line input cable.
- Check or select the operating frequency.
- Check that the receiver's no signal indicator is not illuminated.
- Check or set the microphone gain.
- Check or set the low frequency cut filter.
- Check the battery status.

These steps are explained below:

Fitting the battery

Press and slide open the battery compartment door. Insert a 6LR61 type 9V alkaline battery with its contacts facing downwards observing the polarity as shown in the battery compartment. Push the battery down against the spring-loaded contacts and slide the battery compartment door closed, pushing against the spring-loaded contacts. Do not use excessive force:



An electronic resettable fuse protects the transmitter from reverse powering. A low transmitter battery indicator is provided on the CX*iR* receiver and on the TX*iR* transmitter.

Connecting the antenna

Connect the flexible antenna to the SMA connector.

Switching on

Insert the Lemo plug. After a brief red flash, the LED illuminates green. The LED flashes green when the battery voltage falls below 6.5V. The unit should not be used when the battery is low as poor operation may result. The Lemo socket also includes a link which disconnects power when the Lemo plug is removed.

Connecting the audio input

Connect the microphone or line-level input to the six-pin Lemo connector. Both positive and negative bias voltages are provided, enabling the majority of Lavalier microphones to be used with the TX*iR*.

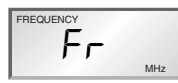
Selecting the operating frequency

You can check or change the operating frequency of the TX*iR* via the infra-red control using the Switch*iR*.

To check the frequency:

- Press **MENU**.

The display shows:



- Align the front of the Switch*iR* with the infra-red port on the TX*iR* and press **OK**.

The display shows the current frequency; for example:

To change the frequency:

- Press **OK**.

The display will alternately flash between showing the frequency and channel number.

For example:

- Press ∧ or ∨ to scroll through the 32 frequencies read from the transmitter until the desired frequency or channel is displayed.

For example:

- Point the Switch*iR* at the infra-red port on the TX*iR* and press **OK**.

If the command was received successfully the display will show the new set frequency.

For example:

Otherwise it will show:

- Repeat the above steps if an error message is displayed, moving the Switch*iR* closer to the infra-red port.

Setting the gain

The steps between 0-9 gain settings are approximately 3 to 4dB. Set the gain position so that the Overload indicator does not flash on during normal operation.

To check the gain setting:

- Press **MENU** followed by ∧.

The display will indicate:

- Align the front of the Switch*iR* with the infra-red port of the TX*iR* and press **OK**.

The display will show the current transmitter gain setting:

To change the gain setting:

- Press **OK** again.

The display will flash the level setting.

- Press ∧ or ∨ to step between gain settings 0-9 until the required gain setting is displayed.

For example:

- Align the front of the Switch*iR* with the infra-red port on the transmitter and press **OK**.

If the command was received correctly the display will show the new gain setting.

For example:

Otherwise the display shows:

- Repeat the previous steps if an error message is displayed, moving the Switch*iR* closer to the infra-red port.

Setting the low frequency cut filter

The LF cut filter gives an approximately 6dB cut at 50Hz to reduce handling and wind noise.

To check the status of the low frequency cut filter:

- Press **MENU**.
- Press ∧ twice until the display shows:

- Align the front of the Switch*iR* with the infra-red port on the transmitter and press **OK**.

The current LF cut filter setting is displayed; for example:

To change the filter setting:

- Press **OK** again.

The current setting will flash.

- Press ∧ or ∨ to toggle between **ON** or **OFF** until the required setting is displayed.
- Align the front of the Switch*iR* with the infra-red port on the transmitter and press **OK**.

If the command was received successfully the new setting will be displayed.

For example:

Otherwise the display will show:

- Repeat the previous steps if an error message is displayed, moving the Switch*iR* closer to the infra-red port.

Checking the battery status

- Press **MENU**.
- Press ∧ three times until the display shows:

- Align the front of the Switch*iR* with the infra-red port on the transmitter and press **OK**.

The display will show the current battery status:

The battery level can also be checked from the receiver; see the appropriate instructions for the receiver.

Infra-red disable

You can protect the TX*iR* from an accidental change of settings, such as in a live performance, by disabling the infra-red port on the transmitter. This will prevent all communication with the transmitter until the yellow reset button is pressed, or the battery is disconnected and reconnected via the microphone plug.

Disabling the infra-red port

- Press **MENU**.
- Press ∨ twice.

The display will show:

- Align the front of the Switch*iR* with the infra-red port on the transmitter and press **OK**.

If the command was received successfully the display will show:

Note: Once the infra-red port has been disabled, any subsequent interrogation of the transmitter will give an error display; this is not a fault.

Sleep mode

The TX*iR* can be put into sleep mode using the Switch*iR*. In the sleep mode the TX*iR* uses very little current and the Switch*iR* can still be used to read all settings.

When not in use the power should be switched off.

Putting the TX*iR* into sleep mode

- Press **MENU** followed by ∨.

The display will indicate:

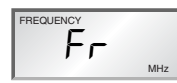
- Align the front of the Switch*iR* with the infra-red port on the transmitter and press **OK**.

The display will show:

To switch the transmitter on again:

- Press **MENU**.

The display shows:



- Align the front of the Switch*iR* with the infra-red port on the transmitter and press **OK**.

The display shows the current frequency; for example:

Alternatively, you can use the yellow reset button to turn the TX*iR* on again.

Technical specification

Frequency range	470MHz–1000MHz
Frequency stability	Better than ETS 300–422
Number of frequencies	32 pre-programmed
Switching bandwidth	Up to 24MHz
Output power	50mW nominal
Gain control range	28dB in 8 steps, plus 2 steps for 600Ω line input
Maximum input level	+8dB gain position 0, 600Ω
Frequency response	50Hz to 18kHz ±1dB
THD	<0.1% at working levels <0.3% at gain position 7 with -6dB input in overload
Battery	9V (IEC 6LR61) Alkaline
Battery life	Typically 6 hours
Size	89 x 60 x 21mm
Weight	135g
Operating temperature range	-20°C to +55°C
Compliant to	ETS 300422 EN 300445(CE) FCC

CE 0891

CHAPTER 5

HX*iR* Hand-Held Transmitter

The HX*iR* is a multi-frequency UHF hand-held transmitter for use with the RMS 2020 receivers, or receivers from the Envoy Range. It is also fully compatible with receivers from the RMS 2000 range. It provides 32 switchable frequencies, and is configured entirely by infra-red control using the Switch*iR*. The HX*iR* can be used with a range of microphone capsules from the Schoeps Colette series, and features a robust ergonomic design with a microphone suspension designed to minimise handling noise.

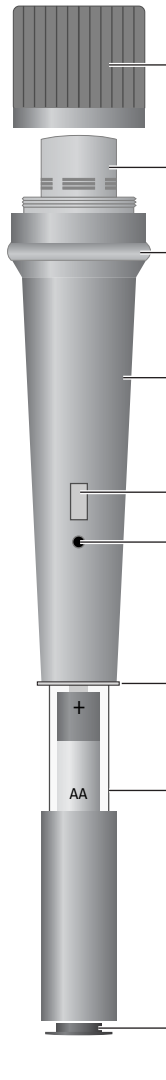
Controls, displays, and connections

Windshield

Can be unscrewed to access the microphone capsule.

Microphone capsule

Any capsule from the Schoeps Colette range can be used with the HX*iR* transmitter. There are 18 different capsules available, ranging from a hyper-cardioid to an omni pattern. Three capsules are also available from Audio Limited.


Windshield
Microphone capsule
Coloured identification ring
Transmitter body
Infra-red port
On button
On/Overload indicator
+
AA
Battery compartment with integral antenna
Coloured identification button

Identification ring and button

The HX*iR* is supplied with six colour identifying rings and buttons to aid recognition in multi-channel use. The ring is indented to prevent the HX*iR* from rolling when placed on a flat surface, such as a table.

Infra-red port

Receives commands from and transmits status information back to the Switch*iR* infra-red controller.

On button

Switches the microphone on.

To prevent the microphone from accidentally being switched off during use the HX*iR* can only be switched off by using the Switch*iR*, or by briefly disconnecting the battery.

On/Overload indicator

The ring above the battery compartment glows red while the HX*iR* is switched on, but will flash off to indicate an overload if the microphone experiences a loud signal.

Battery compartment

Holds one AA 1.5V (LR6 type) alkaline battery.

Antenna

The transmitter antenna is integrated into the battery compartment and therefore no external antenna is required.

Setting up the HX*iR*

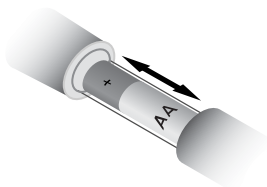
To set up the HX*iR*:

- Fit the battery.
- Switch on by pressing and holding the grey On button below the infra-red port for one second.
- Check or select the operating frequency.
- Check or set the gain.
- Check or set the low frequency cut filter.
- Check the battery status.

These steps are explained below:

Fitting the battery

Open the battery compartment by gripping the cover and sliding it gently away from the body of the HX*iR*. Fit the battery with the positive terminal uppermost and close the battery cover until it clicks shut.



Do not twist or turn the battery cover.

Removing the battery

The battery can easily be removed by pushing a small coin into the slot in the compartment beneath the battery.

Switching on

To switch on press and hold the grey On button below the infra-red port for one second until the ring above the battery compartment glows red.

When not in use the power should be switched off using the Switch*iR*, as described below. Alternatively the HX*iR* can be switched off by opening the battery compartment and briefly disconnecting the battery.

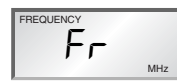
Selecting the operating frequency

You can check or change the operating frequency of the HX*iR* via infra-red control using the Switch*iR*.

To check the frequency:

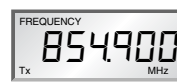
- Press **MENU**.

The display shows:



- Align the front of the Switch*iR* with the infra-red port on the HX*iR* and press **OK**.

The display shows the current frequency; for example:



To change the frequency:

- Press **OK**.

The display will alternately flash between showing the frequency and channel number.

For example:

- Press ∧ or ∨ to scroll through the 32 frequencies read from the transmitter until the desired frequency or channel is displayed.

For example:

- Point the Switch*iR* at the infra-red port on the HX*iR* and press **OK**.

If the command was received successfully the display will show the new set frequency.

For example:

Otherwise it will show:

- Repeat the above steps if an error message is displayed, moving the Switch*iR* closer to the infra-red port.

Setting the gain

The steps between 0-9 gain settings are approximately 3 to 4dB. Set the gain position so that the Overload indicator does not flash off during normal operation.

To check the gain setting:

- Press **MENU** followed by ∧.

The display will indicate:

- Align the front of the Switch*iR* with the infra-red port of the HX*iR* and press **OK**.

The display will show the current transmitter gain setting:

To change the gain setting:

- Press **OK** again.

The display will flash the level setting.

- Press ∧ or ∨ to step between gain settings 0-9 until the required gain setting is displayed.

For example:

- Align the front of the Switch*iR* with the infra-red port on the transmitter and press **OK**.

If the command was received correctly the display will show the new gain setting.

For example:

Otherwise the display shows:

- Repeat the previous steps if an error message is displayed, moving the Switch*iR* closer to the infra-red port.

Setting the low frequency cut filter

The LF cut filter gives an approximately 10dB cut at 50Hz to reduce handling and wind noise.

To check the status of the low frequency cut filter:

- Press **MENU**
- Press ∧ twice until the display shows:

- Align the front of the Switch*iR* with the infra-red port on the transmitter and press **OK**.

The current LF cut filter setting is displayed; for example:

To change the filter setting:

- Press **OK** again.

The current setting will flash.

- Press ∧ or ∨ to toggle between **ON** or **OFF** until the required setting is displayed.
- Align the front of the Switch*iR* with the infra-red port on the transmitter and press **OK**.

If the command was received successfully the new setting will be displayed.

For example:

Otherwise the display will show:

- Repeat the previous steps if an error message is displayed, moving the Switch*iR* closer to the infra-red port.

Checking the battery status

- Press **MENU**.
- Press ∧ three times until the display shows:

- Align the front of the Switch*iR* with the infra-red port on the transmitter and press **OK**.

The display will show the current battery status:

The battery level can also be checked from the receiver; see the appropriate instructions for the receiver.

Infra-red disable

You can protect the HX*iR* from an accidental change of settings, such as in a live performance, by disabling the infra-red port on the transmitter. This will prevent all communication to the transmitter until the battery is disconnected and reconnected.

Disabling the infra-red port

- Press **MENU**.
- Press ∨ twice.

The display will show:

- Align the front of the Switch*iR* with the infra-red port on the transmitter and press **OK**.

If the command was received successfully the display will show:

Note: Once the infra-red port has been disabled, any subsequent interrogation of the transmitter will give an Error display; this is not a fault.

Fitting the microphone capsule

The HX*iR* transmitter uses high quality interchangeable condensor capsules from the Schoeps Colette range. The HX*iR* is compatible with the full range of capsules and accessories in this range.

The capsule mounting has been specially designed by Rycote™ to minimise the handling noise.

To fit a capsule

- Unscrew the metal windscreen from the top of the transmitter.
- Screw the capsule into place taking care not to cross-thread the capsule or over-tighten it.
- Replace the windscreen.

Holding the HX*iR*

The HX*iR* should be held above the illuminated On/ Overload indicator ring. This will enable maximum power to be radiated from the integral antenna in the battery compartment. Holding the HX*iR* over the battery compartment will impair the range of the transmitter and should be avoided.

The frequency, gain, and LF status setting will be retained even if the battery is removed from the transmitter.

An external foam windshield is available from Audio Limited.

Technical specification

Frequency range	470MHz–1000MHz
Number of frequencies	32 pre-programmed
Switching bandwidth	24MHz
Output power	10mW nominal
Gain control range	40dB in 10 steps
Frequency response	50Hz to 18kHz ±1dB excluding capsule
THD	<0.2% typical
Battery	1.5V AA cell (IEC LR6) Alkaline
Battery life	Typically 2.5 hours with an alkaline battery, 7 hours with a lithium battery
Available capsules	A02S bright omni AC4 cardioid AC4A cardioid for vocal use
Length	235mm
Diameter	35/22mm reducing to 18mm at base
Weight	130g
Operating temperature range	-20°C to +55°C

Compliant to	ETS 300422 EN 300445(CE) FCC

CE 0885

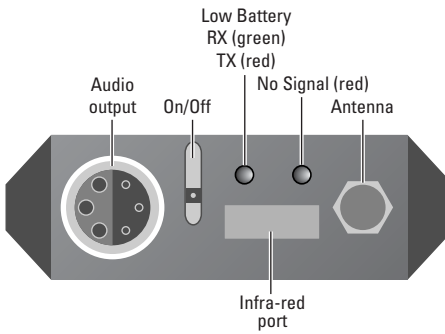
CHAPTER 6

MXiR Receiver

The MX*iR* is a multi-frequency UHF non-diversity receiver, with an integral battery compartment for portable use with a mixer or camcorder. All settings can be read or changed via infra-red control using the Switch*iR*.

Controls, displays, and connections

Top panel



Audio output

Provides balanced microphone level and adjustable headphone outputs.

On/Off

Switches the power on or off. The output cable includes a link which disconnects power when the Lemo plug is removed, in which case the switch can be left on.

Low Battery indicator

Illuminates red when the unit detects low battery power in the transmitter, and green when the unit detects low battery power in the receiver. The units should not be used when a Low Battery indicator is illuminated as poor operation may result.

No Signal indicator (red)

Illuminated when no carrier signal is being received, such as when the transmitter is switched off or set to an incorrect frequency.

Antenna

SMA socket to which the antenna is connected.

Infra-red port

Receives commands from and transmits status information back to the Switch*iR* infra-red controller.

Setting up the MX*iR*

To set up the MX*iR* in conjunction with a HX*iR* or TX*iR* transmitter:

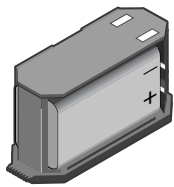
- Fit the battery, or connect the unit to external power.
- Connect the antenna.
- Connect the audio output cable.
- Switch on.
- Set the transmitter and receiver to the same operating frequency.
- Set the output level.
- Check the power status.

- Check that the No Signal indicator is not illuminated, and that the Low Battery indicator is not illuminated red or green.

These steps are explained below:

Fitting the battery

To open the battery compartment, press the release buttons at each end of the base of the unit and pull out the battery tray. Insert a 9V 6LR61 type alkaline battery, taking care to observe the polarity printed on the base of the battery compartment:



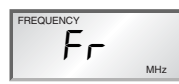
Replace the battery compartment, taking care to align it so that the contacts are aligned with the terminals inside the receiver, and press it into place until the release buttons click locked.

Selecting the frequency

To check the MX*iR* frequency:

- Press **MENU**.

The display shows:



- Align the front of the Switch*iR* with the infra-red port on the receiver and press **OK**.

The Switch*iR* will display the receiver frequency; for example:

To change the MX*iR* frequency:

- Press **OK** again.

The display will alternately flash between frequency and channel number.

For example:

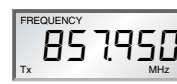
- Press ∧ or ∨ to scroll through the 32 frequencies read from the receiver until the required channel or frequency is displayed.

For example:

- Align the front of the Switch*iR* with the infra-red port on the receiver and press **OK**.

If the command was received correctly the display will show the new frequency.

For example:



Otherwise the display will show:

- Repeat the above steps if an error message is displayed, moving the Switch*iR* closer to the infra-red port.

Setting the output level

The MX*iR* should be set to the correct level as required by the other equipment. The output level can be attenuated in 1dB steps over a 32dB range. The 0dB reference level is -25dBu.

To check the MX*iR* output level:

- Press **MENU**.
- Press ∧ once until the display shows:

- Align the front of the Switch*iR* with the infra-red port on the receiver and press **OK.**

The display will show the current output level; for example:

To change the receiver output level:

- Press the **OK** button.

The AF level display will flash.

- Press the ∧ or ∨ button to step between the available output level settings until the required output level is displayed.

For example:

- Align the front of the Switch*iR* with the infra-red port on the receiver and press **OK**.

If the command was received correctly the new level will be displayed.

For example:

Otherwise the display will show:

- Repeat the above steps if an error message is displayed, moving the Switch*iR* closer to the infra-red port.

Headphone output level

The headphone output level operates in parallel with the microphone output level. If the headphone monitoring is utilised simultaneously with the microphone output connected, then care should be taken not to adjust the levels as the level control will effect both outputs.

The headphone output level is adjusted in the same manner as the microphone output level using the Switch*iR*.

Checking the power status

To check the status of the receiver's DC power:

- Press **MENU**.
- Press ∧ three times until the display shows:

- Align the front of the Switch*iR* with the infra-red port on the receiver and press **OK.**

The display will show the DC voltage:

If the associated transmitter is on while the DC status is being checked the display will alternate between the receiver's DC status and the received transmitter status.

For example:

The transmitter status is shown as one of the following options:

Option	Description
H (high)	Indicates good.
L (low)	Indicates low. Replace as soon as possible.
F (failed)	Transmitter will not function correctly.

Indicators during correct operation

The red No Signal indicator will be lit if the corresponding HX*iR* or TX*iR* transmitter is not switched on, or is set to the incorrect frequency.

External powering

A number of different cables and accessories are available from Audio Limited to allow the MX*iR* receiver to be externally powered, and also to allow the receiver to be interfaced with various devices.

Technical specification

Frequency range	470MHz–1000MHz
Number of frequencies	32 pre-programmed
Switching bandwidth	24MHz
Sensitivity	-98dBm for 40dB SINAD
Frequency response	50Hz to 18kHz ±1dB
THD	<0.2% typical
Signal to noise ratio	96dB to over 104dB
External power	7-12V DC
Battery	9V PP3 (IEC 6LR61) Alkaline
Antenna connector	SMA
Output connector	6 pin LEMO™
Size	110 x 60 x 18mm
Weight	170g
Operating temperature range	-20°C to +55°C
Compliant to	ETS 300422 EN 300445(CE) FCC

CE

CHAPTER 7

Audi*R* Infra-Red Controller

This chapter describes Aud*iR*, an application for the Envoy Range, designed for use with any Palm OS compatible organiser such as the Palm Vx. In addition to all the functions provided by the Switch*iR* infra-red controller, Aud*iR* also provides many advanced features, such as a frequency scan.

Installing Audi*R*

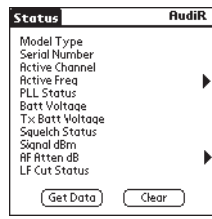
Aud*iR* is available for free download from the Audio Limited Web site at http://www.audioltd.com/.

After downloading and if necessary unzipping the file audir.prc, install the file by moving it to your **Files to Install** folder, and then HotSyncing your Palm organiser in the usual way.

Running Audi*R*

- Tap the Aud*iR* icon in the Applications Launcher:

The Aud*iR* **Status** screen will be displayed:



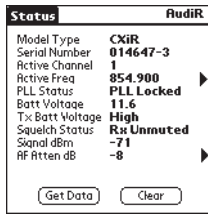
- Align the infra-red port on the Palm organiser with the infra-red port on the iR transmitter or receiver, and tap the **Get Data** button.

While the data is being received the following dialog box is displayed:

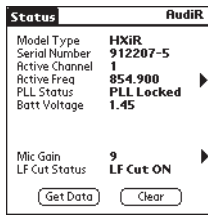
The **Status** screen will then show the status information.

For a receiver or transmitter this gives a model type, serial number, active channel, active frequency, PLL status, and battery voltage.

In addition, for a receiver it shows the transmitter battery voltage, squelch status, signal strength, and attenuation:



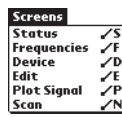
For a transmitter it also shows the microphone gain and LF cut status:



- Tap the ▶ to the right of the **Active Freq**, **AF Atten**, or **Mic Gain** lines as a shortcut for displaying the **Frequencies** or **Edit** screen.

Displaying an Aud*iR* screen

- Tap the screen on the Aud*iR* menu:



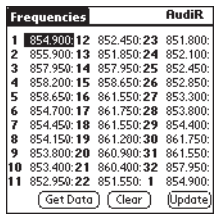
On each screen:

- Tap the **Clear** button to clear the data read from the transmitter or receiver.

- Tap the **Get Data** button to read the settings from the transmitter or receiver.

Frequencies

Displays a list of the frequencies and channel numbers available on the device being programmed, with the current frequency highlighted, and allows you to change the frequency:



- Tap the frequency you want to use, and tap **Update** to update the transmitter or receiver.

Device Info

Displays device specific information about the product being addressed:

Edit

Provides miscellaneous settings, depending on the device:

User Notes: Allows you to enter a 16-character user ID, which will be stored in the device for future reference. Only numeric user IDs can be displayed using the Switch*iR* **User Id** function.

AF Atten (receiver only): Allows you to adjust the AF attenuation from 0dB to -32dB.

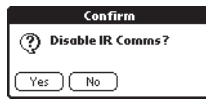
Mic Gain (transmitter only): Allows you to set the microphone gain between 0 and 9, where each step corresponds to approximately 3dB.

LF cut (transmitter only): Allows you to enable or disable the low frequency cut.

In each case click the **Update** button to send the new settings to the device.

Tx Off (transmitter only): Allows you to power off the transmitter.

IR Off: Allows you to disable the infra-red receiver. Displays the following confirmation dialog box:



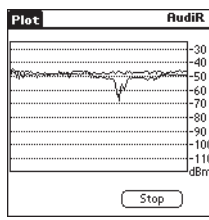
- Tap the **Yes** button to disable the iR communications or the **No** button to cancel.

Once the infra-red has been disabled any further use of the Switch*iR* will result in an error message.

If the infra-red has been disabled the only way to enable it is to interrupt the power to the device.

Plot

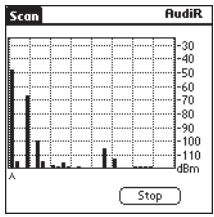
Shows a continuous plot of the signal strength for each of the two diversity receivers:



This allows you to see the effect of transmitter position on the received signal strength for evaluating the range and positioning receiver antennae to optimise system performance.

Scan

Plots a frequency scan to allow you to evaluate the amount of interference on the chosen frequency:



CHAPTER 8

Troubleshooting

This chapter provides step-by-step troubleshooting procedures for any combination of Envoy and iR System products.

Experience has shown that the majority of problems are due to bad batteries, faulty antennae, and faulty cables, as these items are most susceptible to damage. Please check these items first, and check that the LED indicators are correct, before proceeding further.

Fault: No indicators illuminated

- Check the supply to the receiver.
- Check the receiver has the correct adapter for the camera it is being used with, and that the CX*iR* is correctly orientated with the indicators facing the rear of the camera.
- If the receiver is fitted into the receiver slot of the camera, check that it is seated firmly in position.

Fault: No Signal indicator is on

- Check that the associated transmitter is switched on and set to the correct frequency.
- Check that the antennae are not faulty.

Fault: Low TX Battery indicator is on

- Check the condition of the battery in the transmitter. You can use the Switch*iR* to test the 6LR61 type 9V battery.

- If the CX*iR* receiver is being used with an HX2000 hand-held transmitter then this is not a fault as the HX2000 transmitter does not send a battery condition signal.
- Check that you are monitoring the transmitter that was supplied with the receiver. Due to the unique way in which the low transmitter battery signal is transmitted, the system is factory set as a matched pair, and therefore if the transmitters and receivers are mixed this could result in an incorrect indication.

Fault: Switching indicators for RX1, RX2 staying on one side

- Check the antennae on the receiver.

Fault: No audio

- Check that the No Signal indicator is off.
- Check that the transmitter gain position switch is set correctly, in the range 0-7 for an electret/dynamic microphone and 8-9 for the line-level input.
- Check the microphone on the transmitter.
- Check the output cable.
- Check the mixer/recorder settings.

Fault: Noise on audio

- Check that the input and output cable connectors are latched in position.
- Check for a break or loose connection on the microphone cable.
- Check the output cable.

- Check that another transmitter is not set to the same frequency.

Fault: Low range

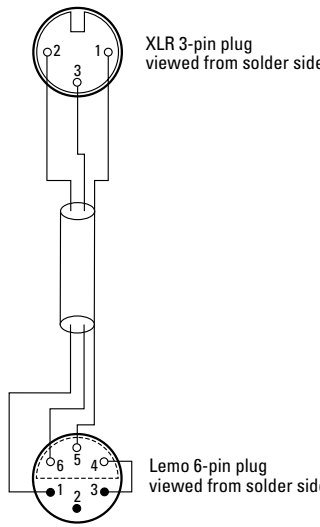
- Check the antennae on the receiver and the transmitter.
- Check for the presence of an interfering signal eg analogue television transmission by listening to the receiver with the associated transmitter switched off – you should hear the vision 'buzz'.
- Wideband interference will have the effect of reducing the range, but without the usual interfering effect such as noise.
- If possible, check the transmitter with another receiver set to the same frequency, and vice versa, to isolate the faulty unit.
- If several systems are being used simultaneously, ensure that the frequency combination has been chosen for intermodulation-free performance.

If the units are still not functioning correctly, please contact your local distributor or Audio Ltd for further assistance.

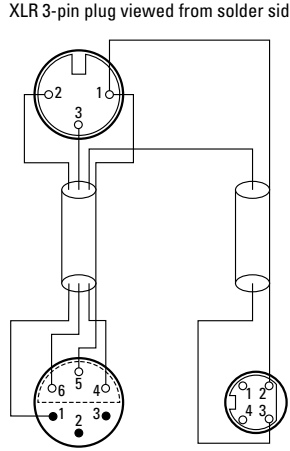
CHAPTER 9

Cable wiring diagrams

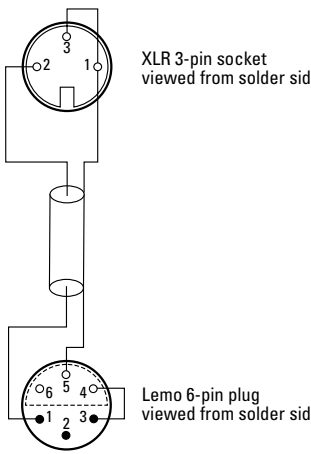
Receiver/RK 2 output cable (101-490)



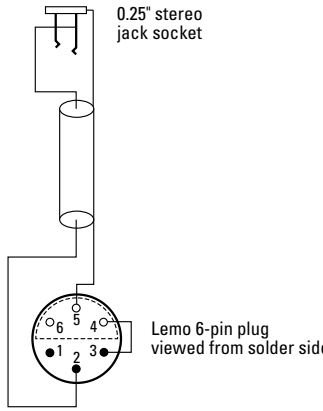
Receiver/RK 2 output and mixer power cable (900-017)



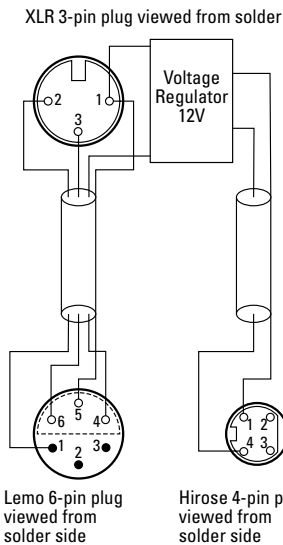
Transmitter line/microphone input cable (900-018)



Headphone output cable (900-063)

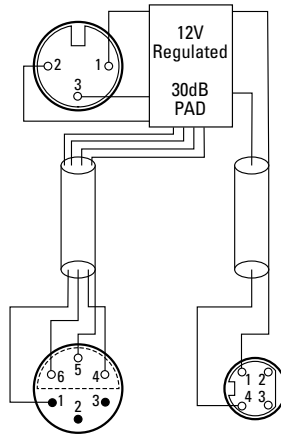


Receiver/RK 2 output and Betacam power cable (900-101)



Receiver output regulated DC and 30dB pad for Betacam (900-140)

XLR 3-pin plug viewed from solder side

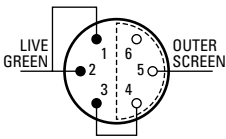


Lemo 6-pin plug viewed from solder side

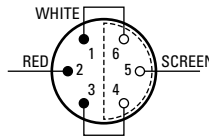
Hirose 4-pin plug viewed from solder side

Microphone wiring for TX*iR*

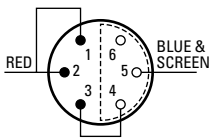
Beyer MCE5
inner screen n/c



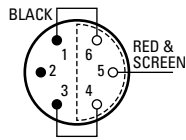
Sony ECM77, ECM55



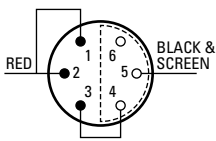
Sennheiser MKE2-R



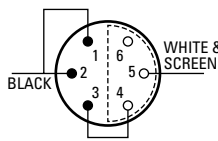
Tram TR50
-ve power



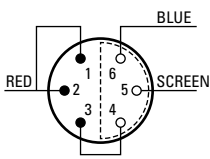
Tram TR50
+ve power



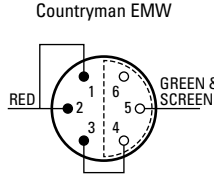
Sanken COS-11pt



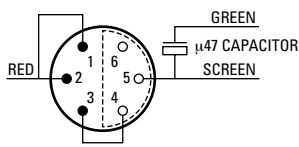
AKG CK 97-0



Countryman EMW



VT500, VT506



Plugs are viewed from the solder side

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EC Declaration of Conformity to R&TTE Directive 1999/5/EC

Manufacturer: Audio Ltd
Audio House
Progress Road
High Wycombe
HP12 4JD
U.K.

Product/Apparatus: Hand held radio microphone transmitter

Type Number: HX*iR*

Variants include: None

Declaration

I declare that above product conforms to all the applicable requirements of EU Directive 1999/5/EC and is CE-marked accordingly:

Article 3.1a: EN60950 used to show compliance with LDV, 73/23/EEC.

Article 3.1b: ETS 300 445 used to show compliance with EMC Directive, 89/336/EEC.

Article 3.2: Conformity was assessed via Annex IV, using a Technical Construction File examined by Notified Body 0885, Cambridge Test & Measurements Ltd. EN 300 422 used to show compliance

Signature: 

Name: Kishore Patel

Title: Managing Director

Date: 02.04.2001

EC Declaration of Conformity to R&TTE Directive 1999/5/EC

Manufacturer: Audio Ltd
Audio House
Progress Road
High Wycombe
HP12 4JD
U.K.

Product/Apparatus: Radio Microphone System

Type Number: Envoy System (CXiR & TXiR)

Variants include:

Declaration

I declare that above product conforms to all the applicable requirements of EU Directive 1999/5/EC and is CE-marked accordingly:

Article 3.1a: EN60065:1998 used to show compliance with LDV, 73/23/EEC.

Article 3.1b: ETS 301 489-09:2002 used to show compliance with EMC Directive, 89/336/EEC.

Article 3.1c: EN300-422-2:08-2000 was used to assess the Radio Performance of the Envoy Sysem.

Article 3.2: Conformity was assessed via Annex IV, using a Technical Construction File examined by Notified Body 0885, TRL Compliance Services Ltd. EN 300 422 used to show compliance

Signature: 

Name: Kishore Patel

Title: Managing Director

Date: 30.05.2003