

**RADIO MICROPHONE SYSTEMS**

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# Envoy User Guide

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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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# Introduction

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**This chapter gives a general introduction to radio microphones, and shows how the Envoy and iR Series products interrelate.**

## Audio Limited

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

Audio Limited's 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 products designed by Audio Limited are a result of listening to our customers.

## The Envoy Range

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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.

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

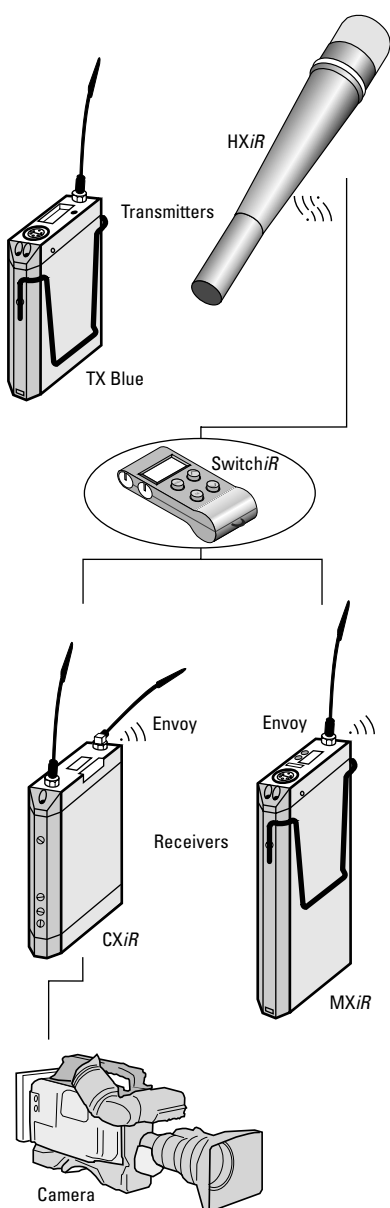
The illustration opposite shows the products in the Envoy Range.

### **Switch*iR***

The infra-red controller for the Envoy receivers and transmitters.

### **TX Blue**

A multi-frequency synthesised UHF pocket transmitter, for use on location with a range of microphones.



### **HXiR**

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

### **CXiR**

A multi-frequency UHF infra-red controlled 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.

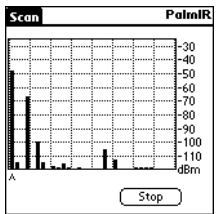
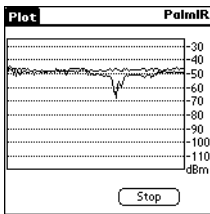
### **MXiR**

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.**

**AudiR**

The Envoy Range also includes *AudiR*, an application designed to run on Palm OS compatible organisers. *AudiR* 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

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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 *CXiR* receiver.

The *CXiR* 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

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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 *AudiR* Palm OS application can be used in conjunction with the *CXiR* and *MXiR* receivers to accurately locate any unused channels in a particular location, thereby eliminating any guesswork.

The *SwitchiR* infra-red controller allows you to check and change the frequency on the *CXiR* and *MXiR* receivers, and the *HXiR* transmitter.

# SwitchiR Infra-Red Controller

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**The SwitchiR is a compact infra-red controller designed 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:**



## Using SwitchiR

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Full instructions for using SwitchiR with each of the products in the iR Series are given in the appropriate chapter of this guide.

The following table summarises the SwitchiR functions, and describes the additional functions included in SwitchiR

## SwitchiR Infa-red Controller

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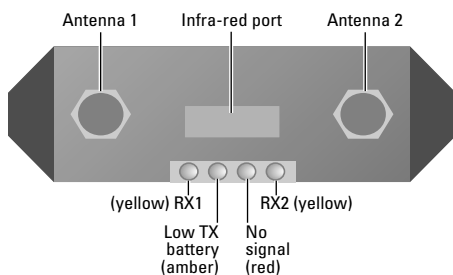
Menu	Description
Fr	Press <b>OK</b> to read the transmitter or receiver frequency setting. Press <b>OK</b> again followed by $\wedge$ or $\vee$ to select a new frequency, and press <b>OK</b> to transmit to the unit.
AF	Press <b>OK</b> to read the receiver or transmitter audio level. Press <b>OK</b> again followed by $\wedge$ or $\vee$ to select a new audio level and press <b>OK</b> to transmit it to the unit.
LF Cut	Press <b>OK</b> to read the transmitter's LF cut setting. Press <b>OK</b> again followed by $\wedge$ or $\vee$ to switch the setting between on or off and press <b>OK</b> to transmit it to the unit.
Batt	Press <b>OK</b> 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 SwitchiR 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 SwitchiR. A reverse polarity warning is displayed if the battery is connected the wrong way round.
Sn	Press <b>OK</b> 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 <i>AudiR</i> application.
iR disable	Press <b>OK</b> to disable the infra-red port on a transmitter or receiver until power is disconnected and reapplied.
Off	Press <b>OK</b> to turn a transmitter off. Not available for receivers.

# CXiR Diversity Receiver

The *CXiR* 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 *CXiR* to be used externally with camcorders that do not provide a built-in wireless microphone receiver slot. Also, the *CXiR* can be used as a portable documentary or ENG receiver. All settings can be read or changed via infra-red control using the *SwitchiR*.

## 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 *SwitchiR* 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 CXiR

To set up the *CXiR* in conjunction with a suitable transmitter, such as the *HXiR* or *TX Blue*:

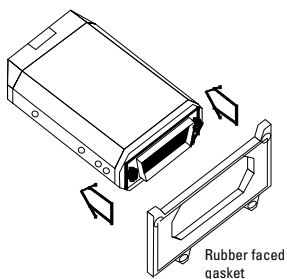
- Fit the receiver into the camera.
- Connect the RX1 and RX2 antennae.
- Set the audio input selector switch to the appropriate position on the camcorder.
- Select the operating frequency.
- Set the output level.
- Check the power status.
- Check that one of the RX1 and RX2 indicators (yellow) is illuminated, and that the no signal indicator (red) is not illuminated.

These steps are explained below:

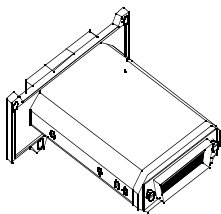
### Mounting the receiver into the camera

To mount the *CXiR* 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 *CXiR* 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.

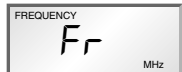
### Selecting the operating frequency

You can check or change the operating frequency of the CXiR receiver via infra-red control using the SwitchiR.

To check the CXiR frequency:

- Press **MENU**.

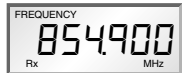
The display shows:



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

Optimum operating range is between 5 and 15cm.

The SwitchiR will display the receiver frequency; for example:



To change the CXiR frequency:

- Press **OK** again.

The display will alternately flash between frequency and channel number.

For example:



- Press **^** or **v** to scroll through the 32 frequencies read from the receiver until the required channel or frequency is displayed.

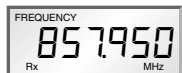
For example:



- Align the front of the SwitchiR 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, with the Switch*iR* closer to the receiver.

### 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 **v** 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, with the Switch*iR* closer to the receiver.

### 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 Blue transmitter is not switched on, or is set to the incorrect frequency. The amber 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.

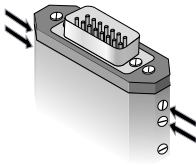
Audio Limited recommend the use of their regulated cables to prevent damage to the *CXiR*.

### **Mounting options**

The *CXiR* 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 *CXiR* 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 *CXiR* 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

<b>Frequency range</b>	470MHz–1000MHz
<b>Number of frequencies</b>	32 pre-programmed
<b>Switching bandwidth</b>	24MHz
<b>Sensitivity</b>	-98dBm for 40dB SINAD
<b>Frequency response</b>	50Hz to 18kHz $\pm$ 1dB
<b>THD</b>	<0.2% typical
<b>Signal to noise ratio</b>	96dB to over 104dB
<b>External power</b>	7-18V DC 150-55mA
<b>Antenna connector</b>	2xSMA
<b>Output connector</b>	6 pin LEMO TM
<b>Interchangeable module</b>	15 pin D-type (Sony) 25 pin D-type (Ikegami) 44 pin D-type (Philips)
<b>Size</b>	98 x 60 x 18mm
<b>Weight</b>	150g
<b>Operating range</b>	-20C° to +55°C
<b>Compliant to</b>	ETS 300 422 EN 300 445(CE) FCC

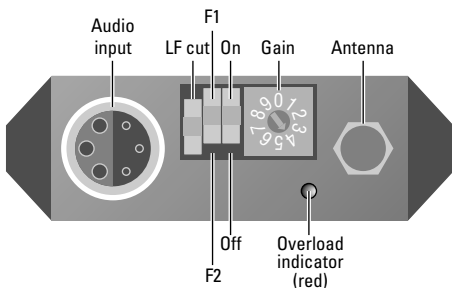


# TX Blue Pocket Transmitter

The TX Blue transmitter is a small, lightweight, battery-powered pocket transmitter for use with a wide range of lapel microphones.

Controls, displays, and connections

## Top panel



### Audio input

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

### LF cut

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

### F1/F2

Selects between the two banks of 16 frequencies; see *Selecting the operating frequency*, page 13.

### On/Off

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

### Gain

Provides eight gain options when used with standard microphones. 0 gives minimum gain, and each position increases the gain by approximately 4dB giving a total of 30dB of adjustment. Position 8 and 9 provide line-level input to 600Ω impedance.

### Overload indicator (red)

Indicates that the low distortion overload limiter is operating.

## Setting up the TX Blue

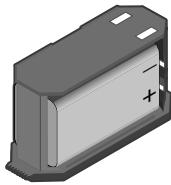
To set up the TX Blue in conjunction with a *CXiR*:

- Fit the battery.
- Set the transmitter and receiver to the same operating frequency.
- Connect the antenna.
- Switch on.
- Connect the microphone.
- Check that the receiver's red, no signal indicator is not illuminated.
- Set the microphone gain.

These steps are explained below:

### Fitting the battery

To open the battery compartment press the release buttons at each end of the battery tray and slide out the tray. Insert a 9V 6LR61 type alkaline battery, observing the polarity as shown on the inside of the tray, and replace the tray. Do not use excessive force:



An electronic resettable fuse protects the transmitter from reverse powering. A low transmitter battery indicator is provided on the *CXiR* Receiver.

### External powering

The transmitter can also be externally powered by a number of different cables available from Audio Limited. The external DC power **must not** exceed 12V or damage will occur.

### Selecting the operating frequency

Select the operating frequency you want to use from the label on the side of the TX Blue. Set the F1/F2 switch to F1 (first column of frequencies) or F2 (second column of frequencies). Rotate the switch inside the TX Blue battery compartment using a small screwdriver to select the frequency, 1 to 16.

Switch the TX Blue off and back on again to enable the change in frequency.

### Connecting the antenna

Connect the flexible antenna to the SMA connector.

### 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 electret lavalier microphones to be used with the TX Blue.

A number of different input cables are available from Audio Limited to allow dynamic, T-powered, and 48V phantom powered microphones to be used with the transmitter.

### Setting the microphone gain

The microphone gain control should be adjusted to suit your particular requirements. Select the gain position such that the overload indicators do not illuminate during normal speech.

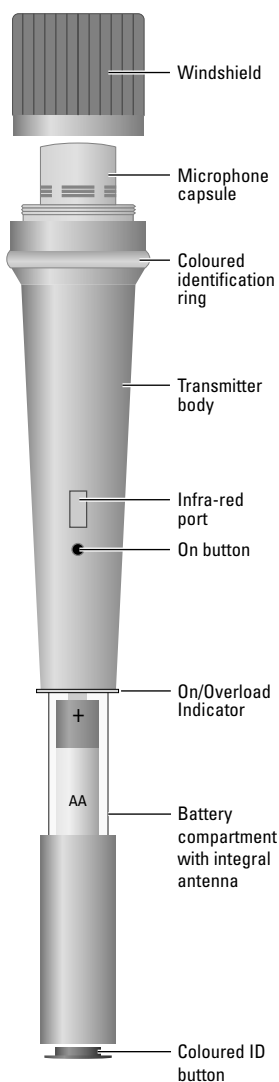
## Technical specification

<b>Frequency range</b>	470MHz–1000MHz
<b>Frequency stability</b>	Better than ETS 300–422
<b>Number of frequencies</b>	32 pre-programmed
<b>Output power</b>	50mW nominal
<b>Gain control range</b>	30dB in 8 steps, plus 2 steps for 600Ω line input
<b>Maximum input level</b>	-6dBm (position 7) +6dBm (position 8, 600Ω)
<b>Frequency response</b>	50Hz to 15kHz ±1dB
<b>THD</b>	<0.1% at working levels <0.3% at gain position 7 with -6dB input in overload
<b>Battery</b>	1 x 9V 6LR61 Alkaline
<b>Battery life</b>	More than 6 hours
<b>Size</b>	87 x 60 x 21mm
<b>Weight</b>	115g
<b>Operating range</b>	-20°C to +55°C
<b>CE 0885</b> 	

# HXiR Hand-Held Transmitter

The HXiR is a multi-frequency UHF hand-held transmitter for use with the RMS 2020 receivers, or receivers from the Envoy Range. It is also compatible with receivers from the RMS 2000 range. It provides 32 switchable frequencies, and is configured entirely by infra-red control using the SwitchiR. The HXiR 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 HXiR transmitter. There are 18 different capsules available, ranging from a hyper-cardioid to an omni pattern. Three capsules are also available from Audio Limited.

### **Identification ring and button**

The HXiR is supplied with six colour identifying rings and buttons to aid recognition in multi-channel use. The ring is indented to prevent the HXiR 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 HXiR 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 HXiR 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 HXiR

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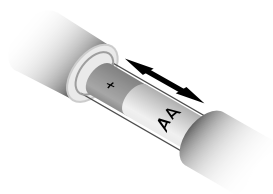
To set up the HXiR:

- Fit the battery.
- Switch on by pressing and holding the grey 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 HXiR. 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.**

### 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 HXiR can be switched off by opening the battery compartment and briefly disconnecting the battery.

### Select the operating frequency

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

To check the frequency:

- Press **MENU**.

The display shows:



## HXiR Hand-Held Transmitter

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- Align the front of the Switch*iR* with the infra-red port on the HXi*R* 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 **v** to scroll through the 32 frequencies read from the transmitter until the desired frequency or channel is displayed.

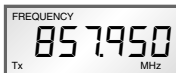
For example:



- Point the Switch*iR* at the infra-red port on the HXi*R* 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, with the Switch*iR* closer to the receiver.

### 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 HXi*R* and press **OK**.

## HXiR Hand-Held Transmitter

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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 **v** 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:



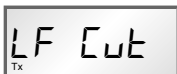
- Repeat the above steps if an error message is displayed, with the Switch*iR* closer to the receiver.

### 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 **v** to toggle between **ON** or **OFF** until the required setting is displayed.

## HXiR Hand-Held Transmitter

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- 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 above steps if an error message is displayed, with the Switch*iR* closer to the receiver.

### To check 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.

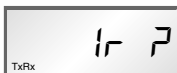
### Infra-red disable

You can protect the HXiR 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.

To disable the infra-red port:

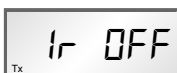
- Press **MENU**.
- Press **v** twice.

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:



## Fitting the microphone capsule

---

The HXiR transmitter uses high quality interchangeable condenser capsules from the Schoeps Colette range.

The HXiR 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 HXiR

---

The HXiR should be held above the illuminated indicator ring. This will enable maximum power to be radiated from the integral antenna in the battery compartment.

Holding the HXiR 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.

HXiR Hand-Held  
Transmitter

## Technical specification

<b>Frequency range</b>	470MHz–1000MHz
<b>Number of frequencies</b>	32 pre-programmed
<b>Switching bandwidth</b>	24MHz
<b>Output power</b>	10mW nominal
<b>Gain control range</b>	40dB in 10 steps
<b>Frequency response</b>	50Hz to 18kHz $\pm$ 1dB excluding capsule
<b>THD</b>	<0.2% typical
<b>Battery</b>	1.5V AA cell IEC LR6 Alkaline
<b>Battery life</b>	Typically 2.5 hours with an alkaline battery, 7 hours with a lithium battery
<b>Integral antenna capsules</b>	A02S bright omni AC4 cardioid ACA cardioid for vocal use
<b>Length</b>	235mm
<b>Diameter</b>	35/22mm reducing to 18mm at base
<b>Weight</b>	130g
<b>Operating range</b>	-20°C to +55°C
<b>Compliant to</b>	ETS 300 422 EN 300 445(CE) FCC

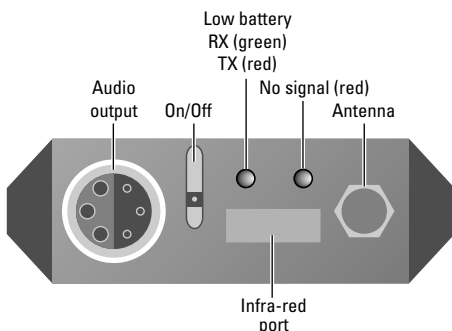
CE 0885

# MXiR Receiver

The **MXiR** 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 **SwitchiR**.

## 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

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 **SwitchiR** infra-red controller.

## Setting up the MXiR

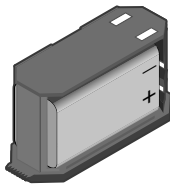
To set up the *MXiR* in conjunction with a *HXiR* or TX Blue transmitter:

- 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 slide open the base. 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 *MXiR* frequency:

- Press **MENU**.

The display shows:



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

The *SwitchiR* will display the receiver frequency; for example:



To change the *MXiR* frequency:

- Press **OK** again.

The display will alternately flash between frequency and channel number.

For example:



- Press **^** or **v** to scroll through the 32 frequencies read from the receiver until the required channel or frequency is displayed.

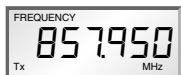
For example:



- Align the front of the *SwitchiR* 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, with the *SwitchiR* closer to the receiver.

### Setting the output level

The *MXiR* 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.

To check the *MXiR* output level:

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



- Align the front of the *SwitchiR* 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 **v** 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, with the Switch*iR* closer to the receiver.

### 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 with 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 HXiR or TX Blue 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 MXiR receiver to be externally powered, and also to allow the receiver to be interfaced with various devices.

## Technical specification

<b>Frequency range</b>	470MHz–1000MHz
<b>Number of frequencies</b>	32 pre-programmed
<b>Switching bandwidth</b>	24MHz
<b>Sensitivity</b>	-98dBm for 40dB SINAD
<b>Frequency response</b>	50Hz to 18kHz $\pm$ 1dB
<b>THD</b>	<0.2% typical
<b>Signal to noise ratio</b>	96dB to over 104dB
<b>External power</b>	7-12V DC
<b>Battery</b>	9V PP3 IEC 6LR61 Alkaline
<b>Antenna connector</b>	SMA
<b>Output connector</b>	6 pin LEMO TM
<b>Size</b>	110 x 60 x 18mm
<b>Weight</b>	170g
<b>Operating Range</b>	-20°C to +55°C
<b>Compliant to</b>	ETS 300 422 EN 300445(CE) FCC



# AudiR Infra-Red Controller

---

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

## Installing AudiR

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

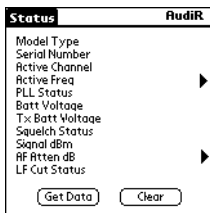
After downloading and if necessary unzipping the file *audir.prc*, install the file by moving it to your **Files to Install** folder, and then HotSyncing your Palm organiser in the usual way.

## Running AudiR

- Tap the *AudiR* icon in the Applications Launcher:



The *AudiR* **Status** screen will be displayed:



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

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



## AudiR Infra-Red Controller

---

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:

Status	AudiR
Model Type	CXiR
Serial Number	014647-3
Active Channel	1
Active Freq	854.900 ▶
PLL Status	PLL Locked
Batt Voltage	11.6
Tx Batt Voltage	High
Squelch Status	Rx Unmuted
Signal dBm	-71
AF Atten dB	-8 ▶
<input type="button" value="Get Data"/> <input type="button" value="Clear"/>	

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

Status	AudiR
Model Type	HXiR
Serial Number	912207-5
Active Channel	1
Active Freq	854.900 ▶
PLL Status	PLL Locked
Batt Voltage	.95
Mic Gain	9 ▶
LF Cut Status	LF Cut ON ▶
<input type="button" value="Get Data"/> <input type="button" value="Clear"/>	

- 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.

### To display a *AudiR* screen

- Tap the screen on the *AudiR* menu:

Screens	
Status	✓S
Frequencies	✓F
Device	✓D
Edit	✓E
Plot Signal	✓P
Scan	✓N

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:

Frequencies		AudiR	
1	854.900:12	852.450:23	851.800:
2	855.900:13	851.850:24	852.100:
3	857.950:14	857.950:25	852.450:
4	858.200:15	858.650:26	852.850:
5	858.650:16	861.550:27	853.300:
6	854.700:17	861.750:28	853.800:
7	854.450:18	861.550:29	854.400:
8	854.150:19	861.200:30	861.750:
9	853.800:20	860.900:31	861.550:
10	853.400:21	860.400:32	857.950:
11	852.950:22	851.550: 1	854.900:

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

## Device

Displays device specific information about the product being addressed:

Device Info		AudiR	
Model Type	CXiR		
Firmware Ver	FWRX 1.4		
Type Approvals	ETS300422 FCCID		

## Edit

Provides miscellaneous settings, depending on the device:

Edit		AudiR	
User Notes	Property of BBC	<input type="button" value="Update"/>	
AF Atten dB	-8	<input type="button" value="▲"/> <input type="button" value="▼"/>	<input type="button" value="Update"/>
			<input type="button" value="IR Off"/>
		<input type="button" value="Get Data"/>	<input type="button" value="Clear"/>

**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 Attenuation** (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:



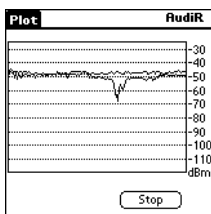
- Tap the **Yes** button to disable the iR communications or the **No** button to cancel.

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 signal

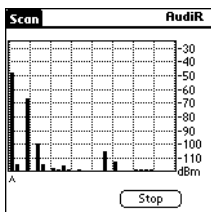
Shows a continuous plot of the signal strength for each of the two diversity receivers:



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:



# 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.

## CXiR

---

If no LEDs are illuminated:

- Check *CXiR* is seated properly in the camera slot.
- Check that the mic switch on the camera is switched on.
- If the adapter has been changed, check that the new adapter is oriented correctly.
- If an error message is shown on the *SwitchiR*, try again holding the *SwitchiR* closer to the IR window on the *CXiR*. If an error message appears again, there may be no infra-red communication. Disconnect the power to *CXiR* and try again as IR might have been disabled.

## TX Blue

---

- Check that the transmitter overload indicator flashes when plugging in the mic.
- Check that the frequencies on the transmitter and receiver match.
- If the frequency has been changed check that the transmitter and receiver were both turned off and then back on to enable the change.

## HXiR

---

- If an error message is shown on the *SwitchiR*, try again holding the *SwitchiR* closer to the IR window on the *HXiR*. If an error message appears again, there may be no infra-red communication, remove the battery from *HXiR* and re-insert to interrupt power to *HXiR* and try again as IR might have been disabled.

- Ensure that the HXiR has been selected to the same frequency as the receiver.
- If the LED is not illuminated, check that the internal battery is good.

### MXiR

---

- If no indicators are illuminated, check that the battery is good and correctly inserted. Is the battery tray correctly orientated?
- If externally powered, is the correct lead in use?

### No audio output

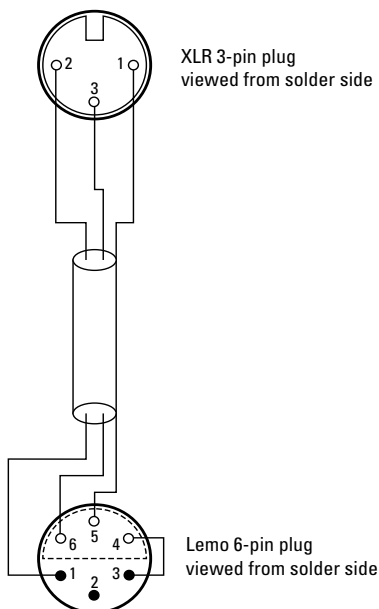
---

Assuming all indicators are functioning correctly:

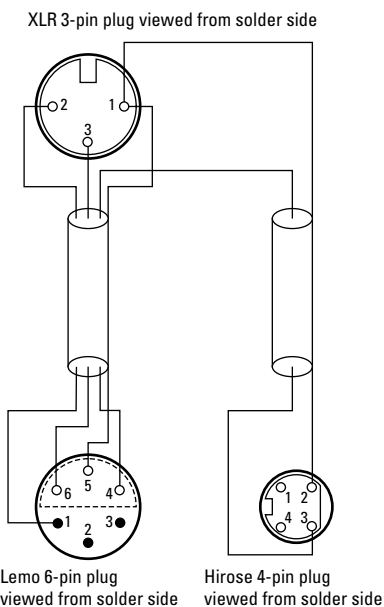
- Check that the mic gain setting is in the correct position for the application (positions 8 and 9 on the mic gain setting are for line input only).
- Check that the microphone is working. Shout into the mic at mic gain setting 7 and check that the overload indicator flashes.
- Check the output cables.

# Cable wiring diagrams

## Receiver/RK 2 output cable (101-490)

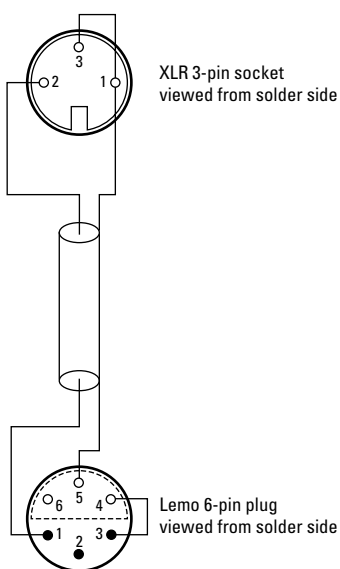


## Receiver/RK 2 output and mixer power cable (900-017)



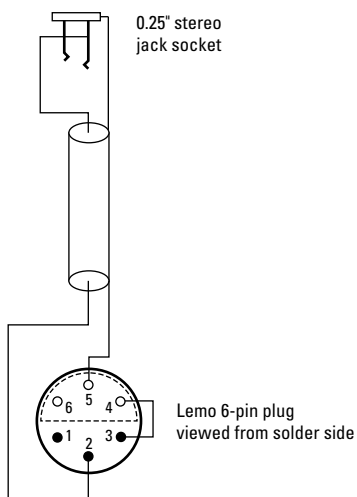
## Transmitter line/microphone input cable (900-018)

---

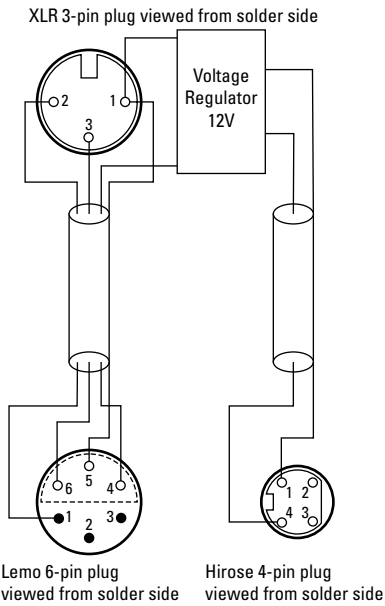


## Headphone output cable (900-063)

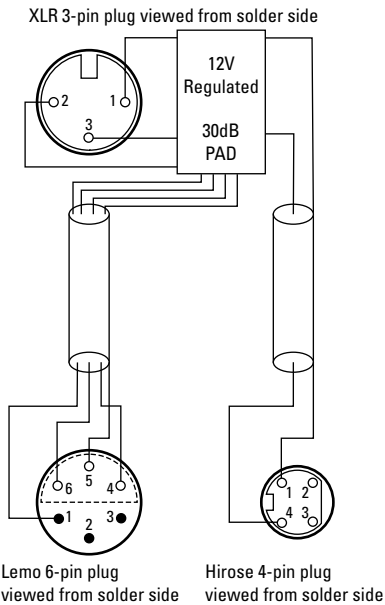
---



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

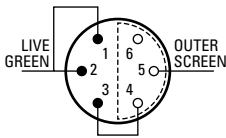


## Receiver output regulated DC and 30dB pad for Betacam (900-101)

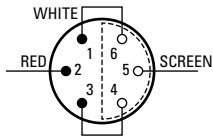


# Microphone wiring for TX Blue

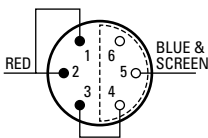
Beyer MCE5  
inner screen n/c



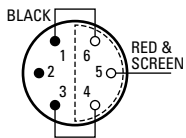
Sony ECM77, ECM55



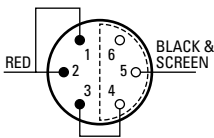
Sennheiser MKE2-R



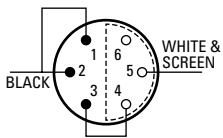
Tram TR50  
-ve power



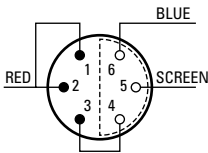
Tram TR50  
+ve power



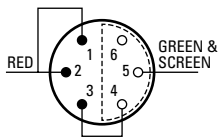
Sanken COS-11pt



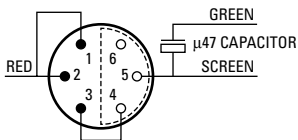
AKG CK 97-0



Countryman EMW



VT500, VT506



Plugs are viewed from the solder side

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