TU-series

PLL Wireless Microphone System

Item ref: 171.043UK, 171.044UK - TU4
Item ref: 171.033UK, 171.034UK - TU2
Item ref: 171.031UK, 171.032UK - TU1

User Manual

Version 1.1

Caution: Please read this manual carefully before operating
Damage caused by misuse is not covered by the warranty

Introduction

Thank you for choosing the Citronic TU-series wireless system. This professional wireless set provides high quality microphones with a PLL UHF radio system for freedom of movement without compromising audio quality. Please read this manual before using this equipment in order to avoid damage through incorrect operation and to get the best performance from your purchase.

Package Contents

- TU-series PLL UHF wireless receiver
- 2 x BNC UHF antennas
- 2 x BNC antenna cables (for front panel mounting)
- Rack mounting hardware (TU1 only)
- Handheld transmitter or bodypack transmitter with neckband and lavalier mic per channel.
- Mains power adapter
- 6.3mm mono jack lead
- 2 x 1.5V AA battery per transmitter

If you find any accessory is missing or the product has arrived with any problems, contact your retailer.

These products contain no user-serviceable parts inside. Do not attempt to try to fix or modify these items yourself as this will invalidate the warranty. We recommend you keep the original package and proof of purchase for any possible replacement or returned demand.

Warning

To prevent the risk of fire or electric shock, do not expose any of the components to rain or moisture.
If liquids are spilled on any component, stop using immediately, allow unit to dry out and have checked by qualified personnel before further use.
Avoid impact or heavy vibration to any of the components, dropping the microphone can cause capsule failure. No user serviceable parts inside transmitter or receiver - refer servicing to qualified service personnel.

Safety

- Ensure that the correct power adaptor (12-18Vdc) is used with adequate current rating (500mA or 1000mA minimum as indicated) and that the mains voltage is as stated on the adaptor.
- Avoid ingress of water or particles into the transmitters or receiver.
- Use alkaline or NiMH batteries in the transmitters and remove if unused for long periods.
- Observe the correct polarity when replacing batteries.

Placement

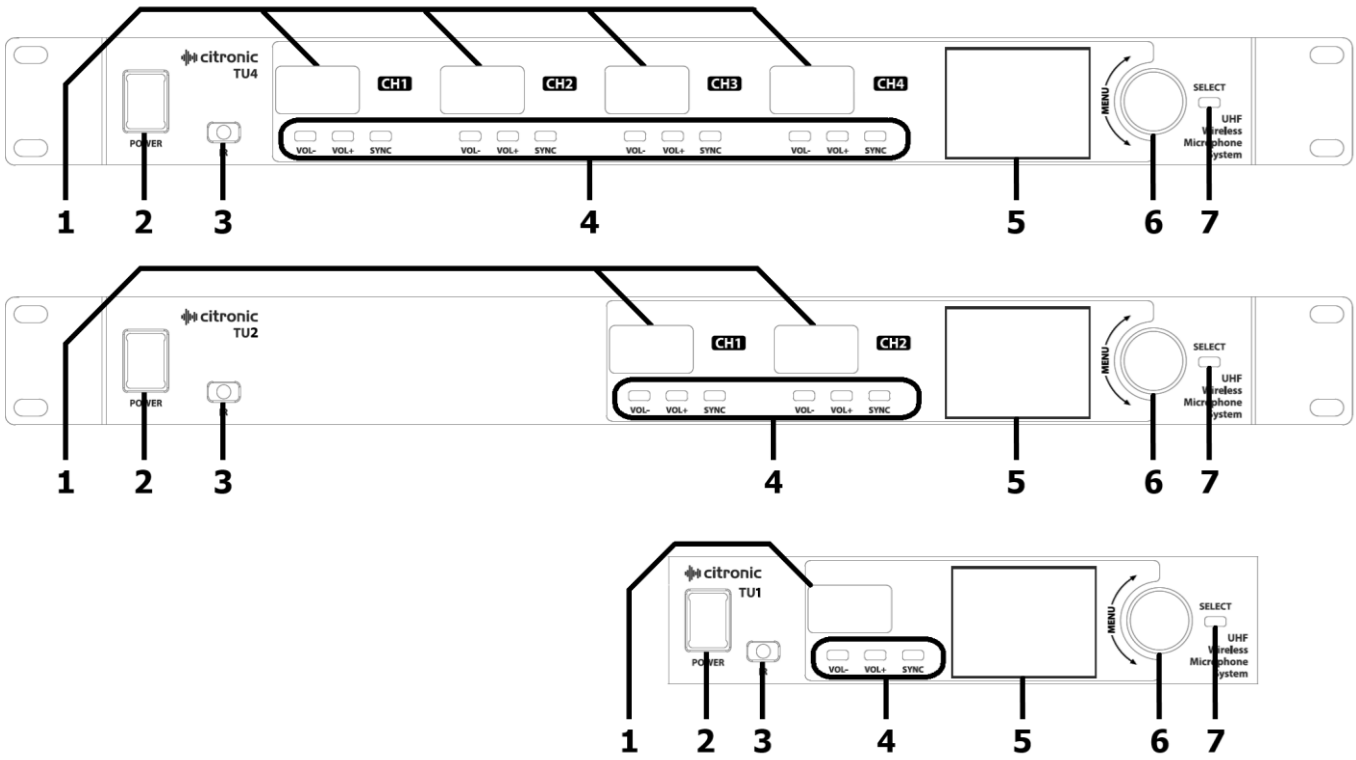
- Keep all components out of direct sunlight and away from heat sources.
- Do not place heavy objects on top of the receiver or transmitters.
- If rack-mounting, do not place heavy equipment above the receiver.
- Keep the transmitters and receiver away from damp or dusty environments.

Cleaning

- Use a soft cloth with a neutral detergent to clean the body of the handheld transmitter and receiver.
- Lightly damp sterile wipes may be used on the microphone grille for hygiene purposes.
- To avoid damage, do not use solvents to clean the components.

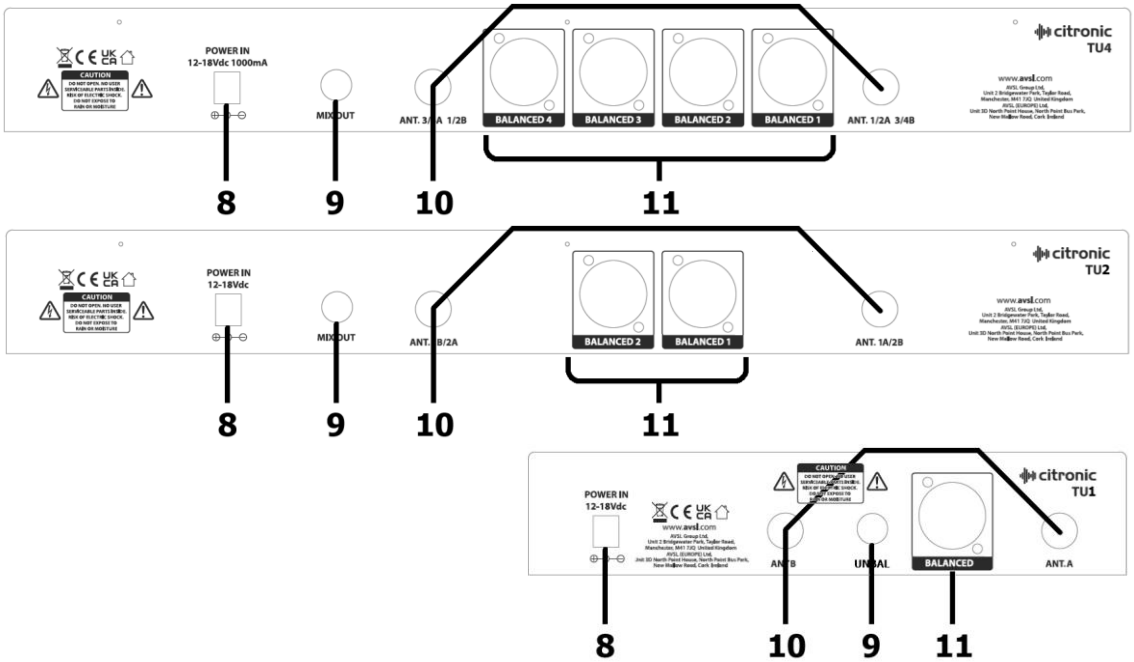
Spares: Handheld 171.046UK, Bodypack 171.047UK, Neckband 171.048UK, Lavalier 171.049UK

Receiver Front Panel



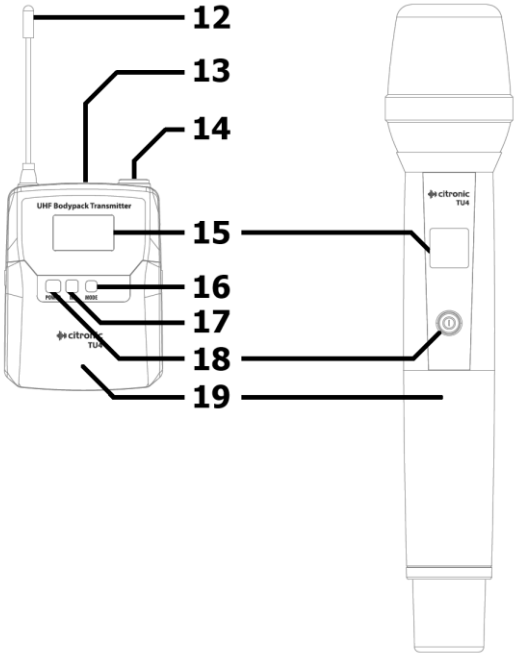
1. Individual channel displays
2. Power on/off button
3. IR sync sender
4. Channel VOLUME & SYNC buttons
5. Main display
6. Rotary encoder
7. SELECT button

Receiver Rear Panel



8. DC power input jack
9. MIX OUT (unbalanced) 6.3mm jack
10. UHF antenna connectors (BNC)
11. Individual channel outputs (balanced XLR)

Transmitters



12. Antenna
13. MUTE button
14. Mini XLR mic input socket
15. Transmitter display
16. MODE button
17. IR sync receiver
18. POWER button
19. Battery compartment

Note: If replacement transmitters are required, these must be genuine Citronic TU transmitters, which transmit the correct pilot tone to sync with the receiver. Transmitters which have the same carrier frequency but not the correct pilot tone will not work with the TU-series receiver.

Setting Up

For handheld transmitters, insert the supplied AA batteries by carefully unscrewing the lower part of the housing to reveal the battery compartment inside the microphone body, connect the batteries (ensuring that + and - are the right way around for each cell) and carefully replace the lower cover.

For bodypack transmitters, squeeze and flip forward the front cover to reveal the battery compartment and insert AA batteries, observing correct polarity. Connect the mini XLR connector from the neckband or lavalier microphone to the input on top of the beltpack transmitter.

Position the receiver within the best available line of sight to the transmitters.
Connect both antennas to the BNC connectors on the rear panel or alternatively, if rack-mounted, attach to the front rack ears, using the BNC extension leads supplied.

A choice of a single unbalanced output on 6.3mm jack or individual balanced XLR outputs is available on the rear panel of the receiver. Connect jack or XLR (optional) leads to the relative output connector(s), turn down the volume of any equipment (mixer, amplifier etc.) that the signal will be fed into and then connect the jack or XLRs to the equipment.

Connect the DC jack of the supplied power adapter to the receiver and the plug-top to an available mains outlet, ensuring that it provides the correct voltage.

Operation

Turn down mic levels (3) on the receiver unit, then press and hold the power button (2) to power up.

Warning! - take care not to point microphones towards speakers – this can cause damaging feedback (loud whistle or howling noise) – try to aim microphones away from the speaker cabinets.

Hold the power button (18) on each transmitter in turn to power up (the display will light up)
The receiver channel display for that microphone will now show RF, AF, battery and volume status.
Each transmitter should be at least 3m away from the receiver and 1m apart from other transmitters.

Increase the volume control on the sound system and then each channel volume until the sound from each microphone can be heard through the sound equipment. Volume for each channel on the receiver is controlled by **VOL-** / **VOL+** buttons (4), then adjust to the required volume level.
Bodypacks have a MODE button (16) to select Line, Low, Medium, or High audio level (**LINE L M H**)
It is also important to check that the bodypack is not set to **MUTE** by the top mounted button (13)

Out of the box, the TU-series system will already have the transmitters and receiver paired.
If there is any interference during testing, the system may need to be re-tuned as described below.

Carrier frequencies

The TU wireless system has different options for tuning to various carrier frequencies via the menu-driven user interface on the receiver unit.

TU systems can operate on the license-free CH.70 band (863.1-864.9MHz) or the regulated CH.65 band (823-832MHz). Using CH.70 frequencies is license-exempt in UK and EU regions, whereas CH.65 is set aside for use with a PMSE license, available from www.ofcom.org.uk

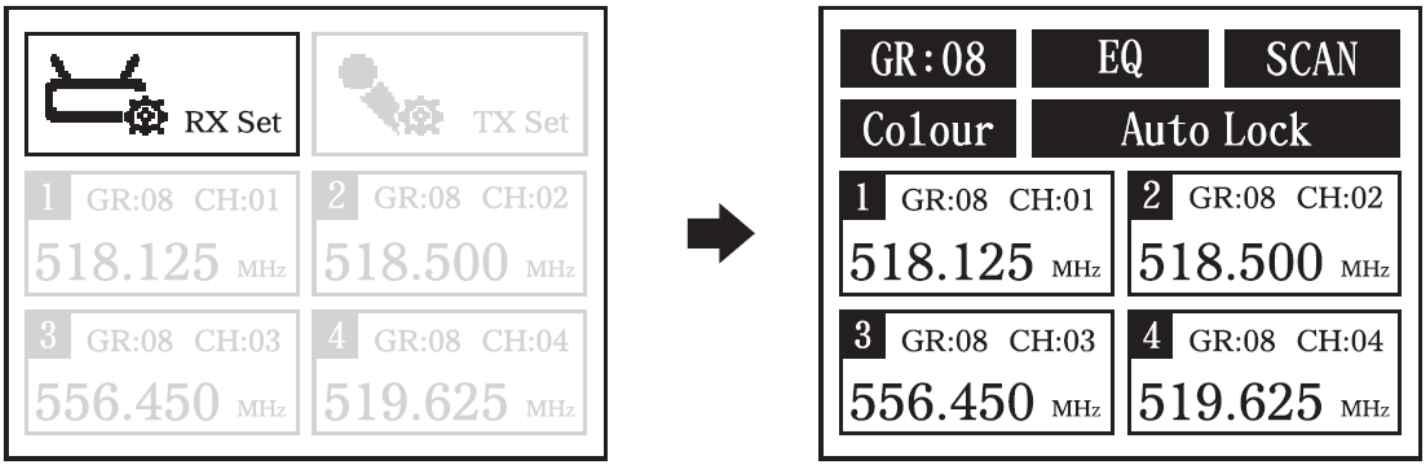
Receiver menu & tuning

TU-series systems operates on pre-set carrier frequencies that are arranged in groups to ensure that they operate together with minimal interference. These are arranged as follows:

G	CH1	CH2	CH3	CH4	CH5	CH6	CH7	CH8	CH9	CH10	CH11	CH12	CH13	CH14	CH15	CH16
1	863.425	864.975	864.300	863.025	823.100	827.700	826.100	828.400								
2	864.950	863.975	864.525	863.150	823.875	830.350	827.975	829.625								
3	864.100	863.100	863.700	823.000	826.575	827.975	831.800	828.525								
4	823.100	823.500	824.100	824.900	826.100	827.700	829.900	864.700	825.275	826.575	828.400	830.950				
5	823.200	823.600	824.200	825.000	826.200	827.800	830.000	864.800	825.375	826.675	828.500	831.050				
6	823.000	864.100	826.125	863.125	827.975	831.800	824.900	863.700	829.625	830.350	823.875	825.425	828.525			
7	823.000	823.875	824.500	827.125	829.625	831.800	823.375	824.900	825.425	826.125	826.575	827.975	828.525	830.350	864.05	
8	823.000	864.950	824.500	827.125	831.800	863.975	824.900	864.625	826.575	827.975	829.625	830.350	863.150	864.900	825.425	826.125

To begin selecting the frequencies for each microphone, switch off all transmitters and power up the receiver(s). Working from the main display (5), press the **SELECT** button (7) until the **Rx Set** option is highlighted and press the encoder to open the Receiver settings menu. Press the encoder again to select the first block on the top left side, which is the Group option (shown as **GR:08** below).

(example shown is TU4, but also applies for TU2 and TU1 systems with 2 or 1 channels respectively)

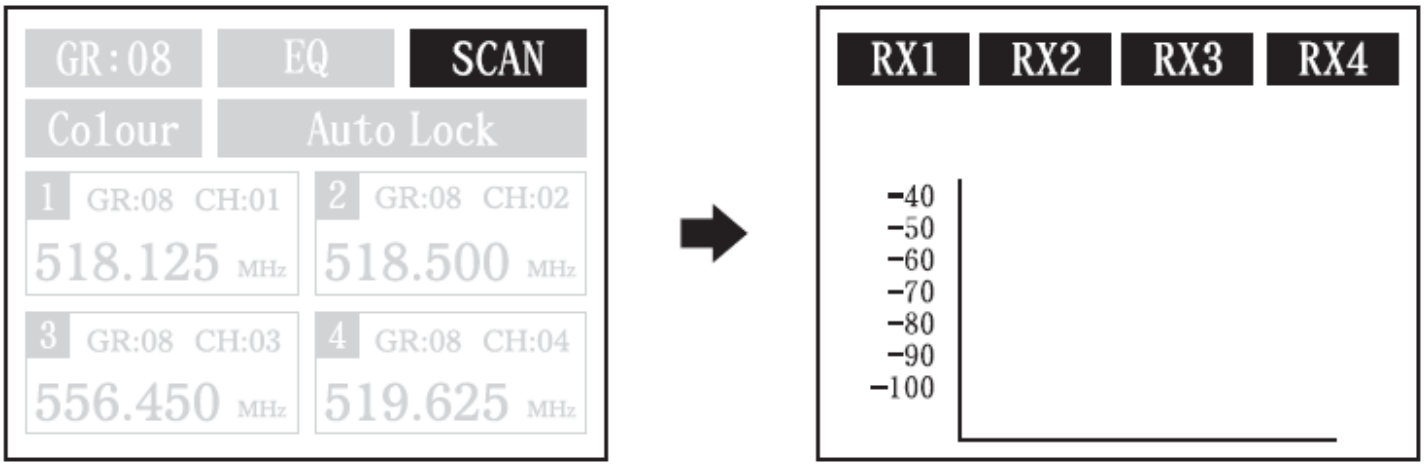


Rotate the encoder to select the required group for the receiver (each mic channel will show its carrier frequencies changing per group) and press the encoder to select the group. When the Group has been selected, pressing the encoder steps through each of the microphone channels in turn and turning the encoder on these will select the preset frequency (CH.**) for that microphone from the available channels within the group (i.e. channels that are not being occupied by other microphones)

In addition to the 8 preset groups, a user group (GR: U) is also available for users to select a custom carrier frequency set, and instead of stepping through available preset channels, pressing the encoder after selecting GR: U will allow the user to course and fine tune each microphone carrier frequency in increments of 0.025MHz (within the duplex gap and license-exempt UHF bands).

When all microphone channel frequencies are set for a single (or the first) receiver, each transmitter will need to be synchronised to its individual channel in turn. To do this, power up the transmitter by holding the power button (18) until the display is lit and hold it with the IR sync receiver (17) facing the IR sync sender (3) on the receiver about 15cm away and press the SYNC button for the required channel (4). The transmitter will then adopt the settings for that channel.
With multiple TU systems, different channels must be selected within a group for each microphone. Another helpful method for setting the carrier frequencies with multiple receivers is to use the SCAN function, which identifies occupied frequencies and avoids conflict between carrier frequencies.
To access this function, press the **SELECT** button and then press the encoder to select **Rx Set** menu and press **SELECT** again twice to highlight **SCAN**. Pressing the encoder on SCAN opens a menu to scan the carrier bands for each microphone receiver channel **RX1**, **RX1/2, or RX1/2/3/4**.

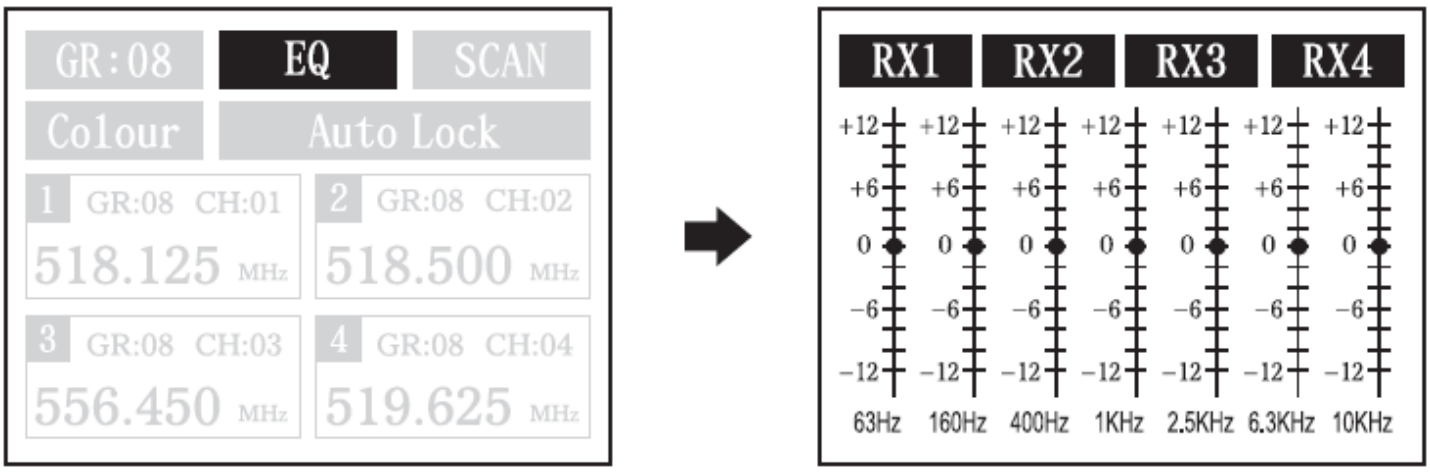
Press the encoder to scan **RX1** and when finished, the receiver channel will set to a suitable carrier frequency. Power up the microphone or bodypack for Channel 1 and point the IR receiver to the sender to sync and press SYNC on Channel 1 on the main receiver unit. For TU2 and TU4 receivers, keep this transmitter powered up and press **SELECT** to step to **RX2** and repeat the process for all microphone channels. If setting up more than one TU-series receiver for use in one area, keep all transmitters on the first unit powered up, then perform the same scan on the next receiver.



Following this process and using both license-exempt (CH70) and duplex gap (CH65) bands will provide carriers for up to 16 channels in the same vicinity (depending upon the UHF environment).

EQ settings

In addition to the carrier frequency setting, the TU-series receiver has a 7-band EQ feature for each microphone channel.



Press **SELECT**, then the encoder to access the receiver menu, then **SELECT** and the encoder again to access the **EQ** section. This will show the receiver channel(s) **RX1, RX1/2, RX1/2/3/4** and 7 sliders for EQ frequencies with **RX1** highlighted initially.
Pressing the encoder steps through the sliders from 63Hz (low bass) up through to 10kHz (high treble) and turning the encoder on any of these sliders with boost up to 12dB or cut down to -12dB for that audio frequency band to shape a tonal profile.

This can be useful for avoiding problem frequencies (e.g. booming or squealing) or helping a microphone be more prominent or less obtrusive in a mix. For TU2 and TU4 receivers, when the EQ is set for **RX1**, press SELECT to move over to **RX2** and repeat the process for this channel and then **RX3** and **RX4**.

Colour settings

The backlight colour for transmitters and each microphone channel on the receiver can be set to help identify which is which on a busy stage. Press **SELECT** and then the encoder to enter the receiver menu, then press SELECT 3 times to highlight **Colour** and press the encoder again. Now, turning the encoder will jump through the colours for CH.1, and for TU2 and TU4 systems, pressing the encoder will step onto the next channel for the colour to be adjusted for all channels.

When the channels are set to the required colours, press **SELECT** to exit the Colour menu and press again to exit the receiver menu. The backlight colours for each channel on the receiver will have changed according to the settings. Only when the transmitters are set to sync to each channel on the receiver again will the backlight for each of these be set to the same as shown on the receiver.

Autolock

The TU system has a safety feature to avoid any accidental or unauthorised adjustment to the TU receiver. Press **SELECT** and then the encoder to enter the receiver menu, then press **SELECT** a further 4 times and then the encoder to enter the Autolock menu. The menu has 2 options selectable using the rotary encoder and pressing to confirm **ON** or **OFF**. Pressing to confirm **ON** will set the Autolock on and then press **SELECT** to exit the receiver menu. 30 seconds after exiting the receiver menu, a lock symbol will appear above **RX Set**. means that the TU receiver menu cannot be accessed, nor can the receiver be switched off accidentally. (this is delayed 30s before re-locking).

To make any changes (including powering down) requires the encoder to be held down for 5 seconds (if the lock does not respond to holding down the encoder, it may be necessary to switch off the unit and then hold the encoder for 5 seconds)

Transmitter menu

Pressing **SELECT** twice and then the encoder enters the **TX Set** menu.

Backlight has 2 options for **ON** or **60S**, rotate the encoder to select **ON** to keep the transmitter backlight on continuously or select **60S** for it to switch off after 60 seconds automatically when no buttons are pressed on the transmitter. This setting will only take effect on the transmitter after it has been synchronized with its receiver channel again and powered off then on again.

MIC Power has 2 settings for **Low** or **High**, again selectable using the encoder. **Low** sets a lower RF transmitter power to conserve the battery with shorter range. **High** delivers higher RF transmission for longer range but will drain the battery faster.

For either of the above settings to take effect, each transmitter needs to be synchronised by pointing the IR receiver to the IR sender on the main unit and pressing **SYNC** on its receiver channel**.**
When the wireless system is not being used, it is good practice to power down the transmitter. Turn down the volume of the mixer or amp and then switch off the receiver.

Unplug signal leads from the receiver and mixer or amplifier when moving or packing away. If the system is not to be used for long periods of time, remove the batteries from the transmitters and unplug the power adapter from the receiver and the mains outlet. Folding away or removing the antennas can also help avoid damage when the system is not in use.

Specifications

Power supply	12-18Vdc, 1000mA (mains adaptor supplied) (500mA for TU1)
Batteries	2 x AA per transmitter
Carrier frequencies	823-832 / 863-865MHz
Wireless range	Up to 60m
Antenna connection	BNC
Dimensions: receiver	482 x 185 x 44mm (TU4, TU2), 205 x 185 x 44mm (TU1)
Weight: receiver	1.513kg (TU4), 1.500 (TU2), 0.935kg (TU1)
Dimensions: handheld transmitter	258 x 47mmØ
Weight: handheld transmitter	354g (no battery)
Dimensions: bodypack	90 x 60 x 25mm
Weight: bodypack	74g (no battery)
Dimensions: neckband microphone	180 x 140 x 60mm
Weight: neckband microphone	28g
Dimensions: lavalier microphone	27 x 12mmØ
Weight: lavalier microphone	23g

Troubleshooting

No power or backlight to displays on the receiver	Ensure power adapter is connected to mains and working properly
	Ensure receiver power is switched on
Displays are lit but no RF or AF bars showing	Ensure transmitter is powered on
	Check that transmitter is not out of reception range
	Check that transmitter batteries are good/charged
	Check the tuning and MIC Power status of the receiver
RF bar is showing but no AF and no sound	Check that transmitter is not muted or level turned down
	Ensure transmitter has good/charged batteries
	Ensure there is no other nearby transmitter with the same frequency
RF and AF bars are showing but no sound from mic	Make sure the receiver is connected properly to the sound system
	Ensure that receiver and amplifier/mixer channel volumes are turned up
Microphone output is very loud or distorted	Press VOL- on receiver
	Reduce gain on mixer/amplifier
	Ensure that the jack mix output is not fed to a mic input
	Check that the bodypack transmitter mode is not set too high
Microphone output is very low	Press VOL+ on receiver
	Increase gain of mixer/amplifier input
	Ensure that an XLR output is not fed to a line input
	Check that the bodypack transmitter mode is not set too low

Disposal: The "Crossed Wheelie Bin" symbol on the product means that the product is classed as Electrical or Electronic equipment and should not be disposed with other household or commercial waste at the end of its useful life. The goods must be disposed of according to your local council guidelines.

Hereby, AVSL Group Ltd. declares that the radio equipment type 171.031UK, 171.032UK, 171.033UK, 171.034UK, 171.043UK and 171.044UK is in compliance with Directive 2014/53/EU

The full text of the EU declaration of conformity for 171.031UK is available at the following internet address: http://www.avsl.com/assets/exportdoc/1/7/171031UK%20CE.pdf
The full text of the EU declaration of conformity for 171.032UK is available at the following internet address: http://www.avsl.com/assets/exportdoc/1/7/171032UK%20CE.pdf
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