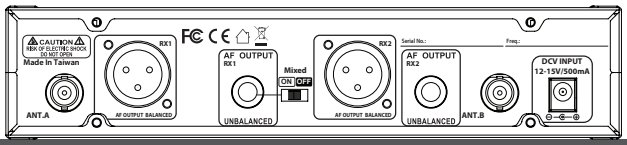

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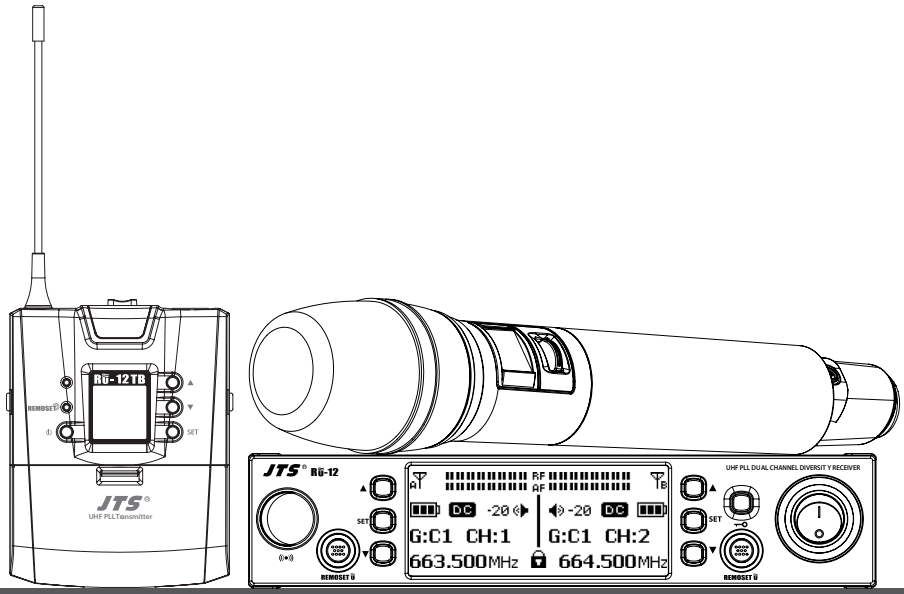

UHF PLL

RÜ-12 / RÜ-12TH / RÜ-12TB

Instruction Manual

With JTS **REMOSET Ü** Ultrasonic Synchronizing Technology

One year product warranty

Product Model		Equipment serial number	
Customer name		Contact number	
Address			
Purchase date			
Selling store stamp	Be sure to put store stamp and fill in purchase date for the warranty to be effective!		

Warranty description

1. Be sure to put the warranty label indicating purchase date on the bottom of equipment to ensure your interest in maintenance and service.
2. Product warranty, starting on the purchase date indicated on "warranty label", will last for one year; if the equipment does not have "warranty label", the warranty period is 15 months from the manufacturing date. If a microphone is broken but not sent back with the equipment, the warranty period is 15 months from the manufacturing date of the microphone.
3. Within the warranty period, if the equipment is broken under normal use as instructed in manual, please contact the original selling store for repair.
4. When the product is returned for repair, to facilitate proper determination of cause of malfunction and of whether repair fee is needed, please ship back the equipment and microphone together.
5. Within the warranty period, our company provides repair service at no cost except for the following conditions that parts and repair may be charged:
   a.Damages due to natural disaster or irresistible outside forces.
   b.Damages due to drop, water, moisture, corrosion, foreign objects, missing components.
   c.The warranty does not cover consumable parts. (such as microphone capsule, ball grille etc.)
   d.Those without "warranty label" on equipment or with "warranty label" being damaged and failing to identify warranty period.
6. Please keep the warranty properly. No replacement will be made if the warranty is missing.

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1. Notes for system operations

- Before connecting the power, check that the power requirement shown on the unit is the same as the power output on the adaptor supplied.
- Do not leave the unit at where the humidity and temperature are high.
- Dry your hands before operating the system.
- Keep the unit away from fire and heat source.
- Turn the volume to minimum at both the mixer and amplifier before setting up the system.

2. Features

- 6 groups are provided as default. Every group contains up to 22 default channels.
- There are in total 1,440 channels to choose from.
- 36MHz bandwidth.
- The patented REMOSET Ũ ultrasonic pairing for synchronized setting of all parameters
- Channel scan
- Adjustable receiving sensitivity
- Digital volume control
- Automatic microphone power off

3. Specifications

3-1 UHF PLL dual-channel diversity receiver

Model	Rū-12
Frequency Oscillation Mode	Phase-locked loop (PLL)
Carrier Frequency Range	470~960 MHz
Remoset Frequency	Ultrasonic
Diversity	Antenna diversity
Bandwidth	36MHz
Signal/Noise Ratio	>105dB(A)
Total Harmonic Distortion (Thd)	<0.6%@1KHz
Receiving Sensitivity	-95dBm，S/N>80dB
Image Rejection Ratio	>80 dB
Frequency Response	50Hz~16KHz±2dB
Antenna Type	1/2λ BNC detachable
Antenna Booster Power	DC12~15V/100mA
Function Display By	LCD
Contents Of Display	Group, channel, frequency, battery level, antenna A/B, muting level, AF indication, RF indication, channel scanning, output level attenuation, volume indication
Control Functions	Power, group, channel, frequency, muting level, button lock, volume, output attenuation (XLR), channel scan (on/off)
Audio Frequency Output Level	Ref：±22.5KHz Dev@1KHz Tone
	ψ6.3 Phone Jack：-10dBV
	XLR Jack：-4dBV(Line)、-24dBV(MIC)
Audio Frequency Output Impedance	600Ω
Muting	Noise muting and tone code locking
Output Port	2 x balanced XLR jack 2 x unbalanced ϕ6.3 jack
Power Supply	12~15V DC / 500mA
Dimension (Mm)	212.3mm (W) x 38.3mm (H) x 144mm (L)

3-2 UHF PLL hand-held transmitter

Model	RU-12TH
Frequency Oscillation Mode	Phase-locked loop (PLL)
Carrier Wave Frequency Range	470~960 MHz
Remoset Frequency	Ultrasonic
RF Power Output	10mW/50mW(as per local regulations)
RF Stability	<±10KHz@Fc
Modulation Frequency Shift	±48KHz
Harmonic Radiation	<-50dBc
Functions	Mute, auto off, sensitivity adjustment, low power indication
Display By	LCD+LED
Controls	Power, mute, group, channel, frequency, sensitivity adjustment, auto off, button lock
Battery	AA alkali battery or MiNH rechargeable battery x 2
Charging	Yes
Dimension	51mm (W) x 269mm (H) x 26mm (L)

3-3 UHF PLL body-pack transmitter

Model	RU-12TB
Frequency Oscillation Mode	Phase-locked loop (PLL)
Carrier Wave Frequency Range	470~960MHz
Remoset Frequency	Ultrasonic
RF Power Output	10mW/50mW(as per local regulations)
RF Stability	<±10KHz@Fc
Modulation Frequency Shift	±48KHz
Harmonic Radiation	<-50dBc
Functions	Mute, auto off, input level attenuation, sensitivity adjustment, low power indication
Display By	LCD+LED
Input Port	4 pin Mini XLR
Controls	Power, mute, group, channel, frequency, sensitivity adjustment, input level attenuation, auto off
Battery	AA alkali battery or MiNH rechargeable battery x 2
Charging	Yes
Dimension	62mm (W) x 97mm (H) x 20mm (L)

3-4 Optional condenser microphone

Lavaliere microphone

Model	CM-501	CM-201i	CM-125i
Connector	4-pin mini XLR	4-pin mini	4-pin mini XLR
Frequency Response	100~15,000 Hz	XLR60~15,000 Hz	50~18,000 Hz
Polar Pattern	Cardioid	Omni-directivity	
Sensitivity (at 1000Hz)	-60 ± 3dB	-60 ± 3dB	-53 ± 3dB
Impedance	2.2K Ω		4.4K Ω
Max. SPL for 1% THD	130dB		
Dimension (mm)	Ø10.1mm (W) x 26.4mm (H)	Ø5mm (W) x 9mm (H)	Ø4mm (W) x 11mm (H)
Net Weight	21.5g	20.7g	7g (cable not included)

Headset microphone

Model	CM-214i	CM-214Ui	CM-214ULi
Connector	801C4 (4P Mini XLR)	4P Mini XLR	801C3 (3P Mini XLR) 801C4 (4P Mini XLR) 801CS (3.5 stereo plug)
Option Connector	801C3 (3P Mini XLR) 801CS (3.5 stereo plug) 801CR		801CR
Frequency Response	60~15,000 Hz	30~18,000 Hz	100 ~ 18,000Hz
Polar Pattern	Omni-directional	Cardioid	
Sensitivity (at 1000Hz)	-60±3 dB	-68±3 dB	-65±3 dB
Impedance	1.8kΩ	680Ω	1.8kΩ
Max. SPL for 1% THD	130dB		120dB
Dimension(mm)	125mm(W) x 134mm(H)x 157mm(D)	205mm(W)x 134mm(H)x 157mm(D)	125mm(W)x 134mm(H)x 157mm(D)
Net Weight	32.9g	38.4g	18g (cable excluded)

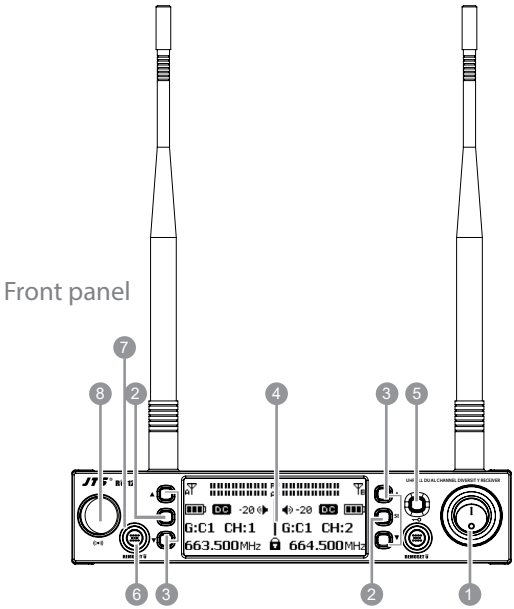
Model	CM-235i	CX-504
Connector	801C4 (4P Mini XLR)	4P Mini XLR
Frequency Response	50~18,000 Hz	30~18,000 Hz
Polar Pattern	Omni-directional	Cardioid
Sensitivity (at 1000Hz)	-53 ± 3dB	-68 ± 3dB
Impedance	1.8kΩ	680Ω
Max. SPL for 1% THD	130dB	130dB
Dimension(mm)	155mm(W)x 134mm(H)x 157mm(D)	285mm(W)x 55mm(H)x 111.3mm(D)
Net Weight	17g (cable excluded)	56.3g

Ear-hook microphone

Model No	CM-801 / CM-804i	CM-8015 / CM-825i
Connector	801C4 (4P Mini XLR)	801C4 (4P Mini XLR)
Option Connector	801C3 (3P Mini XLR) 801CS (3.5 stereo plug) 801CR	801C3 (3P Mini XLR) 801CS (3.5 stereo plug) 801CR
Frequency Response	60~15,000 Hz	50~18,000 Hz
Polar Pattern	Omni-directional	Omni-directional
Sensitivity (at 1000Hz)	-64±3 dB	-53±3 dB
Impedance	1.8kΩ	1.8kΩ
Max. SPL for 1% THD	130dB	130dB

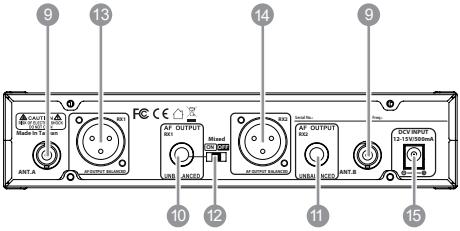
4. Description of parts

4-1 UHF PLL dual-channel diversity receiver // RU-12



1. Power: | means "ON" and O means "OFF"
2. SET: this is for function settings. Push and hold for 2 seconds to enter the setting mode. Push "SET" repeatedly to search for the function you wish to set.
3. ▲/▼In the setting mode, push▲/▼to change the function parameter
   In the non-setting mode: push▲/▼to adjust volume
4. LCD display
5. Lock :push and hold "Lock" for 2 seconds to lock the buttons in order to prevent pushing any button by accident.
6. Remoset u : this allows user to synchronize the transmitter after modifying a parameter. Push " REMOSET U " to synchronize the settings to the transmitter.
7. Remoset indicator : this shows the current pairing status. It flashes rapidly when data is being transmitted and the flashing stops when the synchronization is completed. However, the flashing slows down if synchronization fails after a period of time of pairing attempt.
8. Ultrasonic transmission unit: it transmits digital pairing data at ultrasonic frequency. When setting, direct the ultrasonic receiving element of the microphone to the ultrasonic transmitting unit of the receivers. The effective range is 30º on both sides with the optimized distance at 30cm.

Rear panel



⑨ Female BNC antenna port: the 50Ω BNC antenna is connected here. It also provides a booster power of 12~15 DC / 100mA for an external antenna booster.

⑩ Male XLR (RX1): RX1 balanced audio output jack

⑪ Male XLR (RX2): RX2 balanced audio output jack

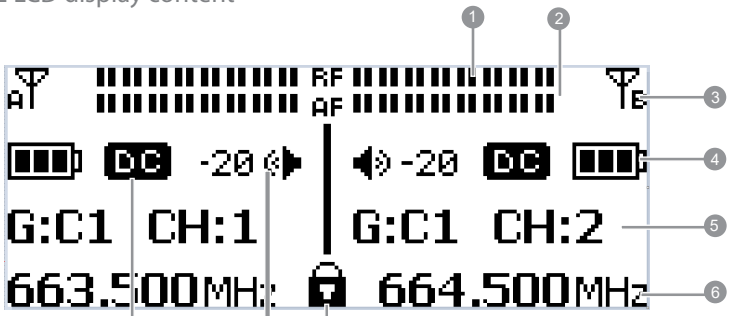
⑫ Mixing: it allows the unbalanced audio signals from RX1 and RX2 to be mixed to RX1.

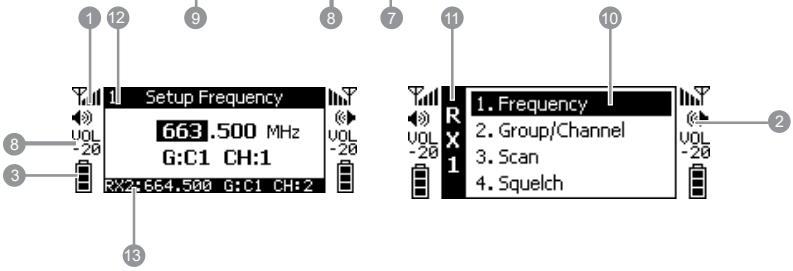
⑬ 6.3mm phone jack (RX1): RX1 unbalanced audio output jack

⑭ 6.3mm phone jack (RX2): RX2 unbalanced audio output jack

⑮ DC power socket: for 12~15V DC / 500mA power supply

RU-12 LCD display content



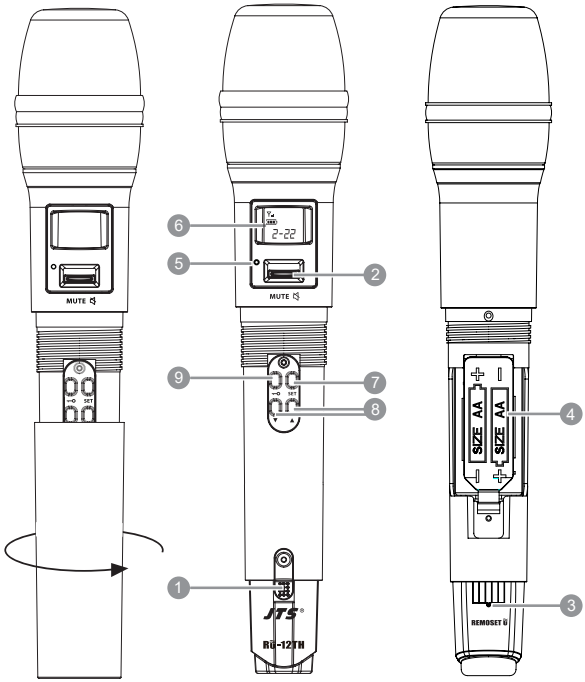


Content Displayed under the Non-Setting Mode:

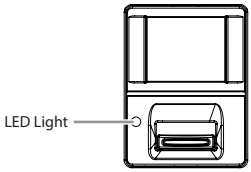
1. RF : Radio Frequency Signal Intensity
2. AF : Audio Signal Intensity
3. A B :Antenna Selection A/B The Receiver is mute.(MUTE)
4. : Transmitter Battery Level
5. G:C1 CH:1 :Frequency (Group/Channel)
6. 663.500MHz : Frequency
7. : Key Lock (Key Lock ON)
8. -20 : Volume
9. DC : Digital Code is ON. (DigiCode ON)
10. Setup Menu
11. RX1: Set the Receiver's Channel 1. RX2: Set the Receiver's Channel 2.
12. 1: Set the Receiver's Channel 1. 2: Set the Receiver's Channel 2.
13. Display the settings of the same item for another Receiver's Channel.

4-2 UHF PLL hand-held transmitter // RU-12TH

1. Power: push to turn the transmitter on. When the transmitter is on, push and hold for 2 seconds to turn it off.
2. Mute: while the transmitter is on, switch Mute up to talk and down to mute. If the transmitter is off, switch the Mute up to turn the unit on. The transmitter turns itself off automatically after 1, 10 or 30 minutes of muting depending on setting.
3. Ultrasonic receiving unit: it receives pairing signals from the ultrasonic transmission unit at the receiver end.
4. Battery holder: it holds UM3, AA 1.5V battery or rechargeable battery x 2.
5. LED indicator: it shows the transmitter's status, including battery level, mute and pairing indication.
6. LCD display: it shows the parameter settings in the transmitter.
7. SET: it allows parameter settings, including frequency, group, channel, sensitivity, transmission power, auto off countdown and machine code.
8. ▲/▼: these are used with "SET" to change the parameter settings.
9. ⊸: push and hold the "LOCK" button for 2 seconds to lock the buttons. Push and hold again for 2 seconds to unlock.



Light Signal Indicator



Green: The Battery Level is sufficient ＞2V.

Flash Green: The Microphone is mute.

Red: The Battery Level is insufficient ≦2V.

Alternate Flash Red/Green:

The Microphone is mute.

(The Battery Level is not insufficient.)

Blue: The light signal flashes for 5 seconds, indicating that frequency matching is successful.

Flash Blue: Data Receiving Error

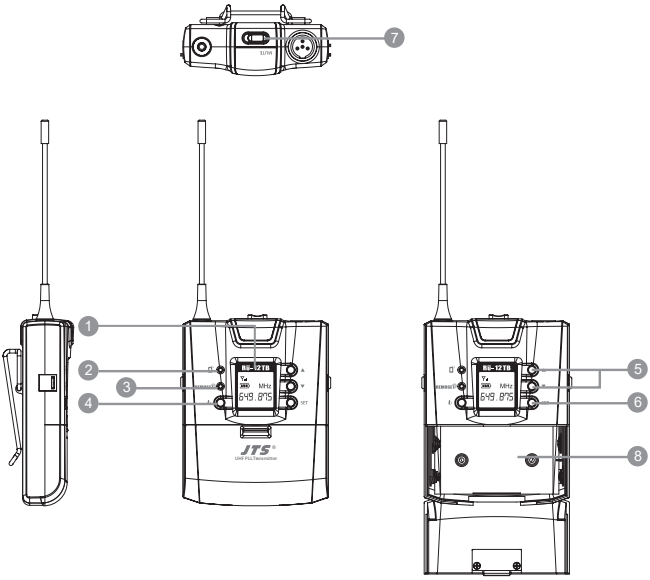
Others

The charging function is supported. The Transmitter will be shut down automatically when charged. When Battery Level<1.8V, the Transmitter will force itself to activate the shutdown process. When it is turned off, if the Mute Switch is in the mute section, turning up the switch can directly trigger the power on.

4-3 UHF PLL body-pack Transmitter // RU-12TB

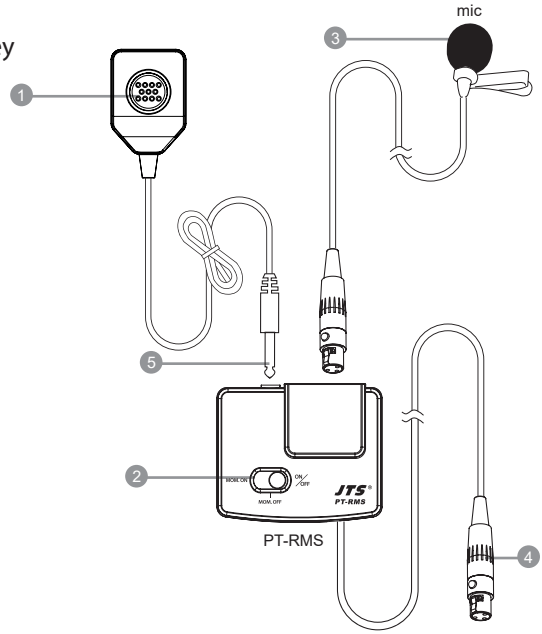
Functions of the Panel

1. The LCD shows the parameters and settings of the Transmitter.
2. The Ultrasound Receiving Hole
3. REMOSET Indicator Light: Blue Light: The light flashes for 5 seconds, indicating that frequency matching is successful. Flash Blue: Data Receiving Error
4. Power Key:
   (1)ON: Simply press the Power Key.
   OFF: Press and hold the Power Key for 2 seconds, until the display shows that the power is off.
   (2)Click the Power Key in the Setup Menu to return to the home screen.
5. ▲、▼: Up/Down arrow keys for upward/downward selection.
6. SET: Set and save.
7. Mute Switch/LED Display: (1) The green light will flash when the power is on.(2) The red light will flash at low voltage.(3) Mute the Transmitter is muted when switched to the "MUTE" position, and the Green Light Signal will flash.(4) When the Transmitter is "MUTE" + at low voltage, the red/green lights will flash alternately.
8. Battery Slot



4-4 In Line Mute Controller Option

1. Microphone Mute Key
2. Operating Mode Control Key
3. Microphone
4. 4P mini XLR
5. Ø 2.5mm Signal Wire

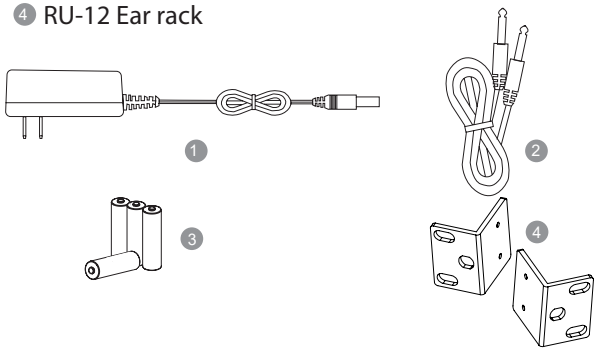


4-5 Accessories

1. AC/DC adaptor
   Switching Power Supply(100V~240V , 50~60Hz)
   AC IN: AC100~240V/50~60Hz
   DC OUT: DC12V/0.5A Option
2. AF output cable (with Φ6.3 plug at both ends)

3. AA alkaline battery

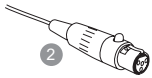
4. RU-12 Ear rack

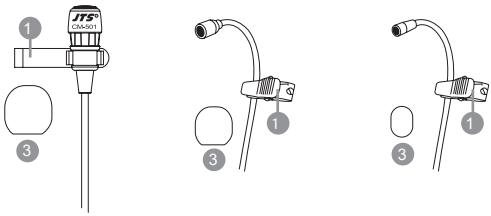


4-6 Optional Condenser Microphone

Lavaliere Microphone // CM-501 CM-201i CM-125i

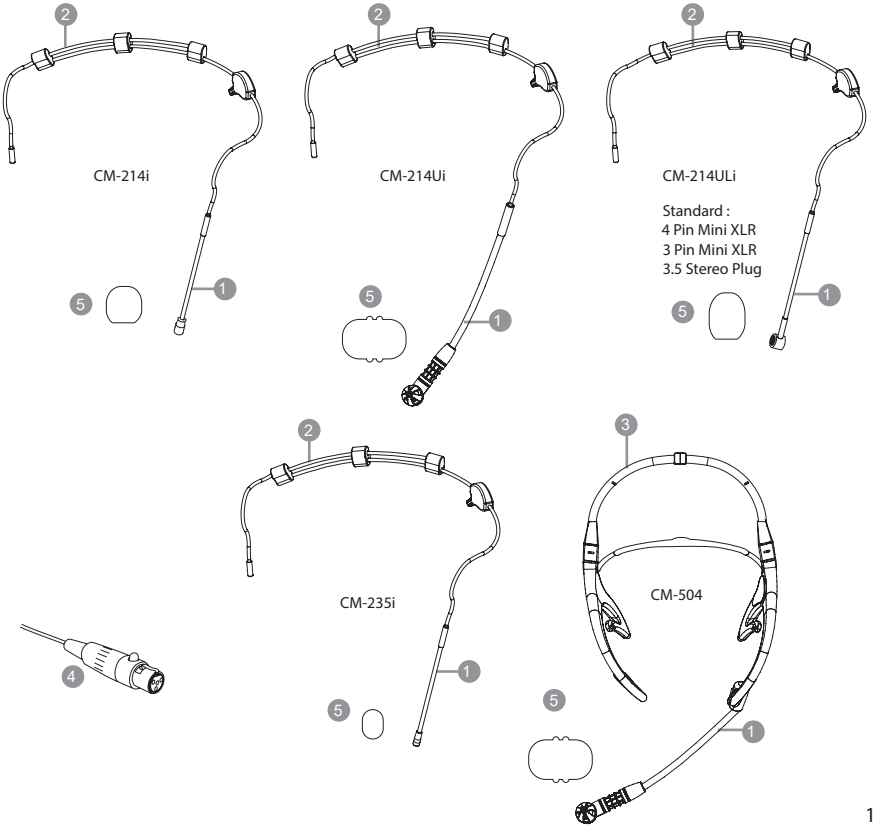
1. Clip
2. 4 Pin Mini XLR
3. Windscreen





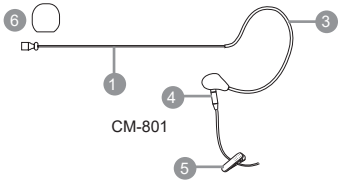
Headset Microphone // CM-214i CM-214Ui CM-214ULi CM-235i CX-504

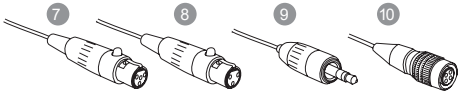
1. Gooseneck
2. Adjustable headband
3. Headband
4. 4 Pin Mini XLR
5. Windscreen

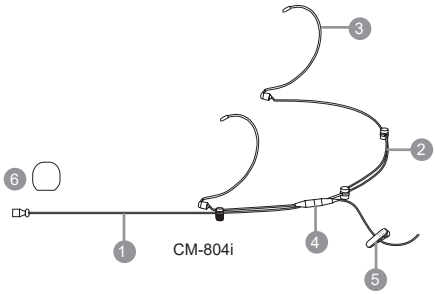


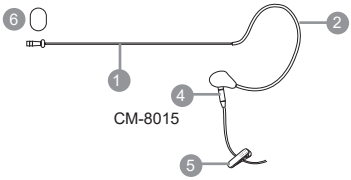
Ear-hook Microphone // CM-801 CM-804i CM-8015 CM-825i

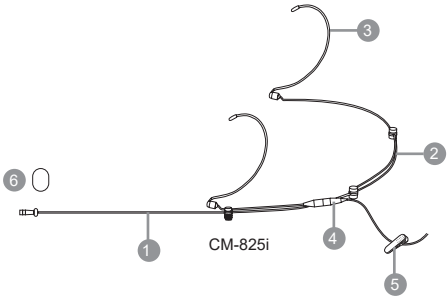
1. Boom
2. Adjustable Headband
3. Adjustable ear hook
4. Detchable Cable
5. Cable Clip
6. Windscreen
7. 4 Pin Mini XLR
8. 3 Pin Mini XLR Option
9. 3.5 Stereo Plug Option
10. 4Pin Hirose connecter Option











5. Connecting

5-1 How to connect the receiver

1. Connect the audio output of receiver to mixer or amplifier

   1.1 **Rü-12**：

   (1) The XLR output jack or 6.3mm unbalance output jack can be selected individually to connect the AF output to a mixer or amplifier for volume control.

   (2) Switch the "Mixed" on the back to ON. This allows to mix the RX1 and RX2 signals to RX1's 6.3mm non-balance output jack and then to a mixer or amplifier for volume control.

2. Connect the power

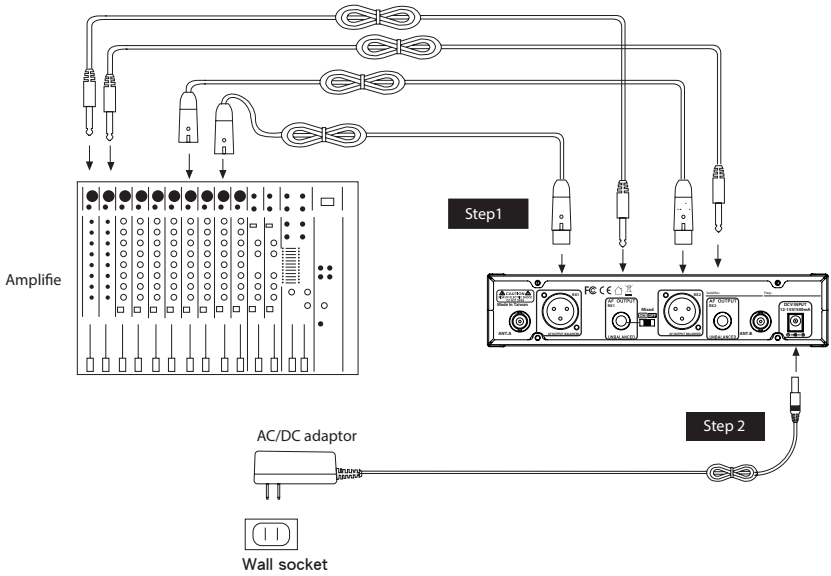
   2.1. Connect the AC/DC adapter:

   Check that the DC current and voltage ratings of the adapter match the label on the unit. Connect the DC terminal to the "DC input" port on the unit, and the AC end to an AC socket.

   2.2. Set the parameters:

   Turn the power on and set the parameters of receiver according to the setting instructions.

⚠ Caution! Secure the power cable on the fastening hook of anti-pulling clip in order to prevent the power cable from falling.



5-2 Transmitter installation // RÜ-12TH

The Mute button on the hand-held unit also triggers the power-on. That's why the unit is on as soon as the batteries are replaced. Therefore, if you do not wish to turn on after changing the batteries, keep the Mute switch on mute.

1. Unscrew the outer tube of the transmitter (Figure 1).
2. Place 2 AA batteries in the battery holder while make sure they are in the correct polarities (Figure 2).
3. Screw the outer tube on (Figure 3).
4. To turn the unit on:
   a. Push the power button to turn on (Figure 4a), or
   b. Push the Mute switch up also to turn the unit on (Figure 4b).
5. Set the transmitter parameters according to the instructions.

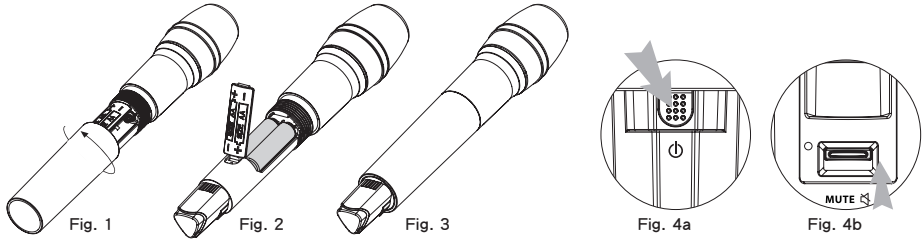


Fig. 1 Fig. 2 Fig. 3 Fig. 4a Fig. 4b

RÜ-12TB

1. Slide the battery holder cover downwards (Figure 1).
2. Place 2 AA batteries in the battery holder while make sure they are in the correct polarities (Figure 2).
3. Slide the battery holder cover upwards to close (Figure 3)
4. According to the type of microphone, insert the 4-pin mini XLR jack in MIC IN to complete the installation (Figure 4).
5. Push the Power button to turn the unit on (Figure 5).
6. Set the transmitter parameters according to the instructions.

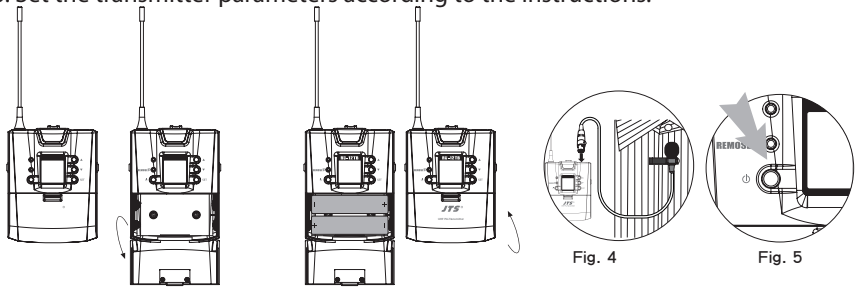


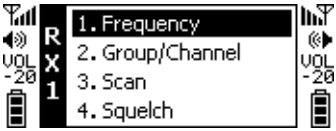
Fig. 1 Fig. 2 Fig. 3 Fig. 4 Fig. 5

6. Instructions for use

6-1 How to use // Rü-12

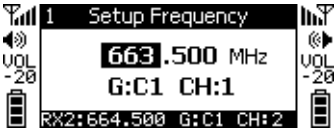
Press and hold the SETUP key for 2 seconds to enter the Setup Menu. Press ▲ and ▼ keys to select the item to be set, and press SETUP again to enter the settings.

※ Press ⊸ to return to the previous item. Note that the set value will not be saved.



◎Frequency Setting

Adjust the left 3 digits of the Frequency. Press ▲ and ▼ keys to change by "+/-" 1 MHz each time. Press the SETUP key after adjustment is completed. Adjust the right 3 digits of the Frequency. Press ▲ and ▼ keys to change by"+/-" 0.025MHz each time. After the setup is completed, press the SETUP key to save the set value.

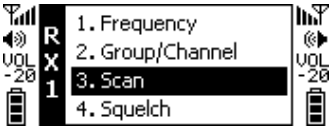


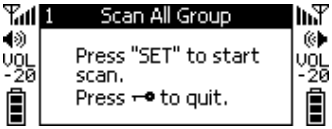
◎Default Group

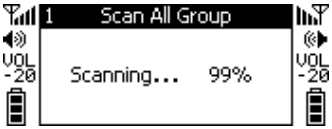
Press ▲ and ▼ keys to select Group "G:" ; Press the SET-UP key adjustment is completed. Press ▲ and ▼ keys to adjust Channel "CH:" After adjustment is completed, press the SETUP key to save the set value.

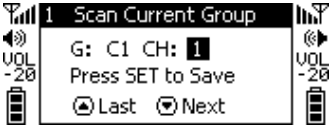
◎The Scanning Function

Scan All Groups. Press the SETUP key to start scanning. After the scan is completed, the "Scan Results List" screen will be displayed automatically. Users can also click on the menu to enter the "Scan Results List" directly.



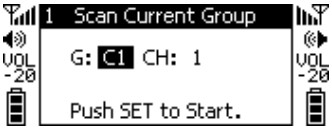




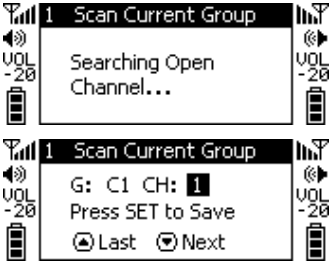


"Scan Results List": Press the SETUP key to enter the menu screen and view the scan results. Select the available channels, and press the SETUP key to save the settings.

Scanning the current Group: Upon entry into the screen, press ▲ and ▼ keys to select the group to be scanned, and press SETUP to start scanning. Press ▲ to search for the previous available Channel.

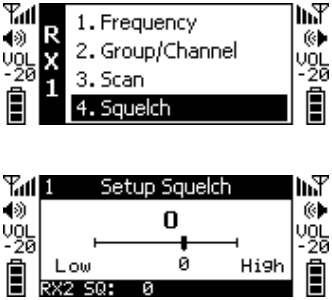


Press ▼ to search for the next available Channel. Press the SETUP key to save the settings.



◎Receiver Sensitivity

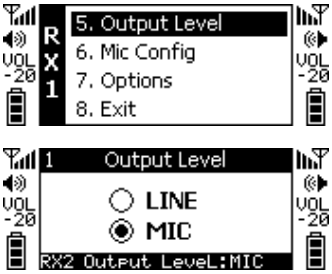
+10 ~ -5: The higher the value, the lower the Receiver Sensitivity; the lower the value, the higher the Receiver Sensitivity. Default Value is 0.



◎Output Attenuation

Press ▲to set the balanced output level for Line to Line output.

Press ▼ to set the balanced output level for Mic to Mic output.

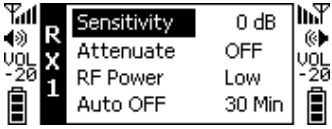


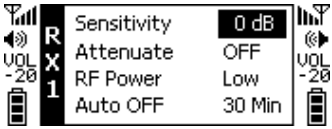
◎Microphone Options: Press ▲ and ▼ to select the item to be adjusted. Press SETUP, and then press ▲ and ▼ to select the settings to be adjusted, and then press SETUP to return to the item selection.

Sensitivity

Scope of Adjustment:

-15dB~+15dB；Default Value is 0.

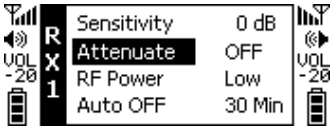


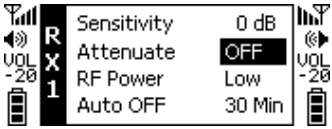


Input Attenuation

ON	Audio input is attenuated by 20dB. (Depending on whether the transmitter has this function)
OFF	Not Attenuated (Default Value)

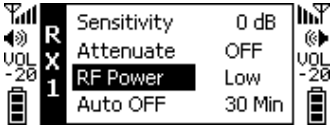
This function only applies to the Waist-Mounted Transmitter RU-12TB.

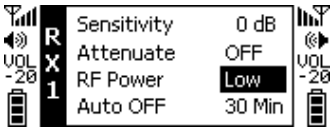




Radio Frequency Power

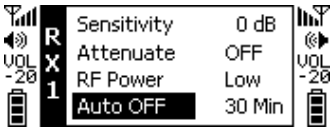
High	High Transmitting Power 50mW
Low	Low Transmitting Power 10mW(Default Value)

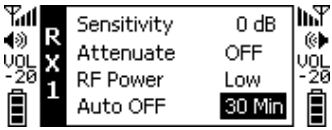




Automatic shutdown (when the Microphone is muted)

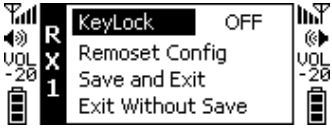
OFF	This function is turned off.
1 min	Automatic shutdown after 1 minute
10min	Automatic shutdown after 10 minutes
30min	Automatic shutdown after 30 minutes

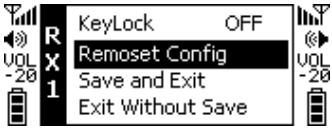


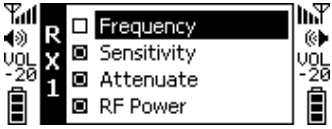


Synchronization Options

Press ▲ and ▼ to select **REMOSET** and synchronize transmission of the setup items, and then press the SETUP key to perform the selection action.





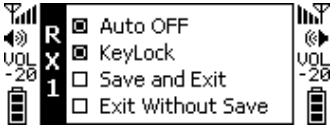


- ☐ Frequency
- ☐ Sensitivity
- ☐ Input Attenuation (RU-12TB only)
- ☐ Radio Frequency Power
- ☐ Automatic shut-down
- ☐ Digital Audio Code
- ☐ Key Lock
- ☐ Save and Exit
- ☐ Return

◎Key Lock

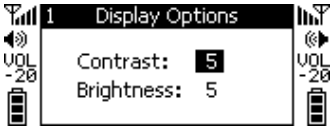
(Digital anti-interference function)

ON	Key Pad Lock ON
OFF	Key Pad Lock OFF



◎System Settings

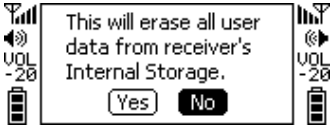
◎Display Settings



Contrast	0~9 (Default Value5)
Brightness	0~9 (Default Value5)

◎Language

Yes	Reset to the set values original manufacturer settings
No	Return to the previous option



◎Reset to original manufacturer settings

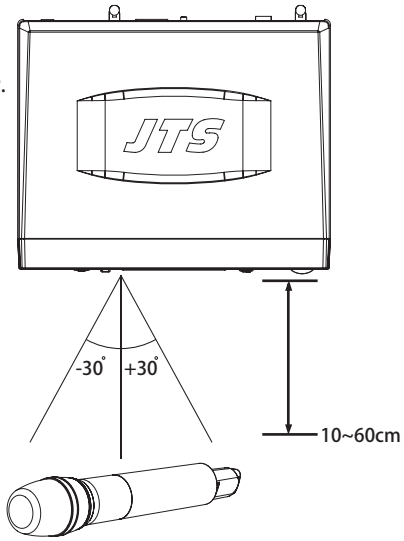
◎Exit the Setup Screen.

Press the SETUP key to exit the setup screen and return to the home screen.

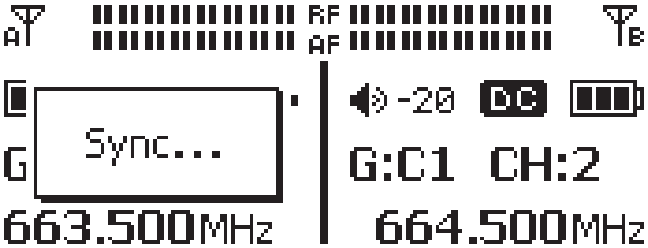
Pairing REMOSET

Once the parameters are set, push the " REMOSET " button and the digital pairing data will be sent to the transmitter via ultrasonic transmitter for parameter synchronization. The indicator will flash rapidly while the data are being transmitted. When the synchronization is completed, the receiver will receive the corresponding data and the indicator will stop flashing. If the signal is not received for a certain period of time, the indicator will flash slowly to inform pairing failure (the slowly flashing indicator can be reset by pushing any button).

Note: The best pairing distance is 10~60cm, ±30º.



Note2: Only one Microphone can be synchronized at a time. When RX1 is synchronized, RX2 cannot be synchronized. RX2 must wait until RX1 is disconnected from synchronization.



Others

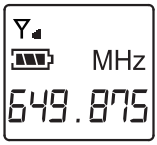
The LCD screen will display the Transmitter Battery Level simultaneously. If the Battery Level ≦ 2V, the battery's outer frame will flash and the backlight will become Red as a warning. (Model RU-12)

Parameter Setup

Press the SET key for 2 seconds to enter the setup mode. Press the SET button repeatedly to enter different setting items in order. Press ▲/▼ to set the parameters. Press SET again to save and exit the settings.

◎FREQ Frequency Setup

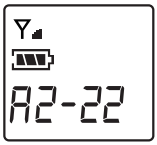
1MHz as a unit	Press ▲/▼ to set the Frequency
0.025MHz as a unit	Press ▲/▼ to set the Frequency



◎Group/Channel Settings

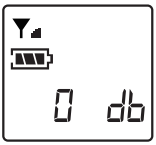
G Group	Select Default Group1~6
CH Channel	Select Default Channel, up to 23

Note: A:Frequency Band 1 , B:Frequency Band 2 , C:Frequency Band 3



◎Sensitivity: Microphone Input Sensitivity

Normal Sensitivity	GAIN：+15dB GAIN：+14dB GAIN：≀ GAIN：+2dB GAIN：+1dB GAIN：0dB((Default Value) GAIN：-1dB GAIN：-2dB GAIN：≀ GAIN：-14dB GAIN：-15dB

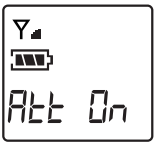


The chart shows that Sensitivity is currently set to Gain 0dB (Default Value).

◎ATT. Audio Input attenuation

At oFF	Audio input is not attenuated.
At on	Audio input is attenuated by 20dB.

This function only applies to RU-12TB.



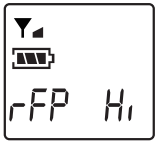
The chart shows that the audio input is currently attenuated by 20 dB.

◎RFP Microphone Radio Frequency Power

The Transmitter contains two sections for Radio Frequency Power output adjustments (depending on local regulations).

rFP Lo	10mW(Default Value)
rFP Hi	50mW

Radio Frequency Power:Low

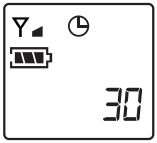


Radio Frequency Power:High

◎AUTO-OFF: The Microphone's Automatic Shutdown Time (in the MUTED state)

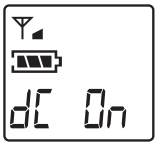
OFF	Turn off this function.
1	Automatic shutdown after 1 minute
10	Automatic shutdown after 10 minutes
30	Automatic shutdown after 30 minutes

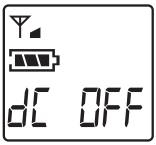
Note: The Default Value is set to 10 minutes.



◎Digital Audio Code(Digital anti-interference function)

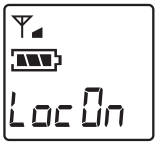
ON	Turn on the Digital Audio Code
OFF	Turn off the Digital Audio Code(If the receiver's digital code function is enabled, the receiver will be muted.)

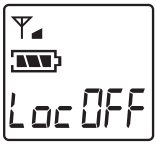




◎Key Lock

Loc on	Lock ON (Locked)
Loc oFF	Lock OFF (UnLocked)





Others

The charging function is supported. The Transmitter will be shut down automatically when charged. When Battery Level<1.8V, the Transmitter will force itself to activate the shutdown process.

7. Notes for the product

(1) For the best signal receiving quality, always keep the receiver within 3m of the transmitter.

(2) The receiver and transmitter shall be away from other metal objects, preferably 50cm or farther.

(3) Do not point the microphone directly to a speaker, or there will be feedbacks.

It is recommended to hold the transmitter (microphone) at the middle section for the best pickup.

(4) In case that the transmitter will not be in use for an extended period of time, the batteries shall be removed from the battery holder to prevent damage to the transmitter due to leak of battery electrolyte solution.

(5) For the best power performance, it is recommended to change both batteries or use the products of the same manufacturer when they are to be changed.