US-902D / Mh-920 / Mh-930 / Mh-850 / Mh-750 / Mh-8800i
PT-920B(mi) / PT-850B(mi)

59506-038-08

JTS® PROFESSIONAL CO., LTD.
No. 148, 9th Industry Road, Ta-Li Industrial Park,
Taichung City, Taiwan, R.O.C.
Tel: 886-4-24938803 Fax: 886-4-24914890
E-mail: jts@jts.com.tw
www.jts.com.tw

JTS PROFESSIONAL CO., LTD.

Instruction Manual

US-902D

DUAL CHANNEL PLL DIVERSITY WIRELESS SYSTEM

Thank you for choosing the JTS wireless system. In order to obtain the best efficiency from the system, you are recommended to take few minutes to read this instruction manual carefully.

INDEX

1. Important Caution 1
2. Features 1
3. Specification 2
   3-1 Overall System 2
   3-2 Receiver 2
   3-3 Handheld Transmitter 3
   3-4 Body-pack Transmitter 4
   3-5 Optional Condenser Microphone 4
4. Part Identification & Accessories 7
   4-1 Receiver 7
   4-2 Handheld Transmitter 8
   4-3 Body-pack Transmitter 10
   4-4 Optional Condenser Microphone 10
   4-5 Accessories 14
5. Preparing Procedures & Basic Operation 15
   5-1 Receiver 15
   5-2 Handheld Transmitter 18
   5-3 Body-pack Transmitter 21
   5-4 Installation of Condenser Microphones 22
6. System Operation 24
7. Recommendation 26
8. Important Notice 26

1. Important Caution

- Always makes all connections before plugging the unit into an AC power outlet.
- Do not leave the device in a place neither with high temperature nor high humidity.
- Always do not handle the power cord with wet hands!
- Keep the devices away from fire and heat sources.

2. Features

- Operated in UHF band where there is less RF interference than the VHF band.
- PLL synthesized technology is deployed.
- The diversity reception ensures the stable transmission and reception.
- Adjustable squelch control can effectively reduce the noise.
- Tuned antennas can benefit the stable RF reception.
- Built-in Tone key Squelch & Noise Mute detection are available to restrain the interference signal.
- Rugged metal housing can pass through the difficult environment.
- Equipped with balanced XLR and unbalanced for great convenience.
- Body-pack transmitter provides phantom power for condenser lavaliere and headset microphones.

3. Specification

3-1 Overall System

RF Frequency Range	502~960 MHz
Oscillation Type	PLL Synthesized Control OSC
Channels	16 Channels
Audio Frequency Response	50~18,000Hz
Band-width	24 MHz
Operation Range	100M

3-2 Receiver

Receiver Model	US-902D
Frequency Preparation	PLL Synthesized Control
Carrier Frequency Range	502~960 MHz
S/N Ratio	> 105dB
T.H.D.	<0.6%@1KHz
Display	LCD
Display Contents	Channel, Antenna A/B, RF/AF Level Meter
Controls	Power On/Off, Channel Up/Down, Squelch Level, Audio Level
Audio Output Level	-12dB
AF Output Impedance	600Ω
Squelch	Pilot Tone, Noise and Mute
Operation Voltage	12-18 VDC, 300mA
Output Connector	2 Balanced XLR Sockets 1 Unbalanced Ø6.3mm Phone jack
Dimension(m/m)	420mm(W)* 45mm(H)* 232mm(D)

3-3 Handheld Transmitter

Model No.	Mh-920 / Mh-930	Mh-850 / Mh-750
Frequency Preparation	PLL Synthesized Control	PLL Synthesized Control
Carrier Frequency Range	502~960 MHz	502~960 MHz
RF Outputs	10mW	10mW
Stability	±10KHz	±10KHz
Frequency Deviation	±48KHz	±48KHz
LCD / LED Display	Channel	Low Battery, Power On/Off
Controls	Power On/Off, Channel Up/Down Lock-on Mode	Power On/Off, Channel Selecting
Spurious Emissions	<-50 dBC	<-50 dBC
Audio Frequency Response	50~16,000 Hz	50~16,000 Hz
Battery	UM3, AA 1.5V*2	UM3, AA 1.5V*2

Model No.	Mh-8800 i
Frequency Preparation	PLL Synthesized Control
Carrier Frequency Range	502~960 MHz
RF Outputs	10mW
Stability	±10KHz
Frequency Deviation	±48KHz
LCD Display	Channel, Battery Fuel Gauge, Sensitivity
Controls	Power On/Off, Mode Setting, AF Level, Channel Up/Down, Lock-on Mode
Spurious Emissions	<-60 dBC
Audio Frequency Response	50~16,000 Hz
Battery	UM3, AA 1.5V*2

3-4 Body-pack Transmitter

Model No.	PT-920 / PT-920Bmi	PT-850B / PT-850Bmi
Frequency Preparation	PLL Synthesized Control	PLL Synthesized Control
Carrier Frequency Range	502~960 MHz	502~960 MHz
RF Outputs	10mW	10mW
Stability	±10KHz	±10KHz
Frequency Deviation	±48KHz	±48KHz
LCD / LED Display	Channel, Battery Fuel Gauge	Power On/Off, Low battery
Controls	Power On/Off, AF Level, Channel Up/Down, Lock-on Mode	Power On/Off, AF Level, Channel Selecting
Spurious Emissions	<-50 dBC	<-50 dBC
Audio Frequency Response	40~18,000 Hz	40~18,000 Hz
Battery	UM3, AA 1.5V*2	UM3, AA 1.5V*2

3-5 Optional Condenser Microphone

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

Model No.	CM-501	CM-201i	CM-125i
Connector	4P Mini XLR	4P Mini XLR	4P Mini XLR
Frequency Response	100~15,000 Hz	60~15,000 Hz	50~18,000 Hz
Polar Pattern	Cardioid	Omni-directional	Omni-directional
Sensitivity (at 1000Hz)	-60±3 dB	-60±3 dB	-53±3 dB
Impedance	2.2kΩ	2.2kΩ	4.4kΩ
Max. SPL for 1% THD	130dB	130dB	130dB
Dimension(mm)	Ø10.1mm(W) * 26.4mm(H)	Ø5mm(W) * 9mm(H)	Ø4mm(W) * 11mm(H)
Net Weight	21.5g	20.7g	7g (cable excluded)

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

Model No.	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	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	130dB	120dB
Dimension(mm)	125mm(W) * 134mm(H) * 157mm(D)	205mm(W) * 134mm(H) * 157mm(D)	125mm(W) * 134mm(H) * 157mm(D)
Net Weight	32.9g	38.4g	18g (cable excluded)

Model No.	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±3 dB	-68±3 dB
Impedance	1.8kΩ	680Ω
Max. SPL for 1% THD	130dB	130dB
Dimension(mm)	155mm(W) * 134mm(H) * 157mm(D)	285mm(W) * 55mm(H) * 111.3mm(D)
Net Weight	17g (cable excluded)	56.3g

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

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

Compatible Instrument Microphone // CX-500 CX-500F CX-520 CX-508W CX-516W

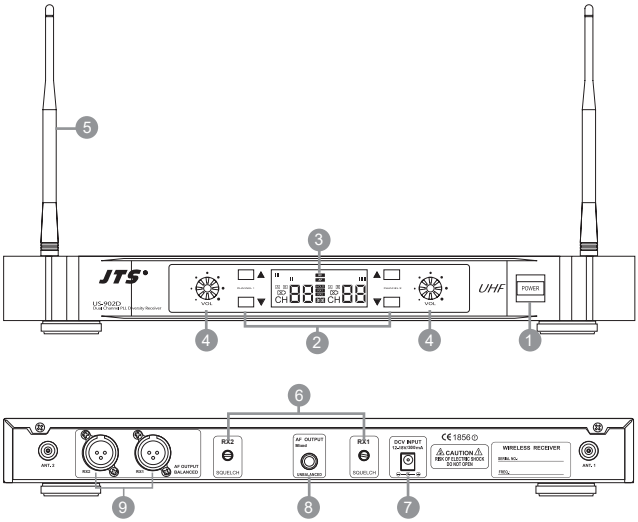
Model No.	CX-500	CX-500F	CX-520
Connector	4P Mini XLR	4P Mini XLR	4P Mini XLR
Frequency Response	20~20,000 Hz	20~20,000 Hz	50~16,500 Hz
Polar Pattern	Omni-directional	Omni-directional	Supercardioid
Sensitivity (at 1000Hz)	-58±3dB	-58±3dB	-78±3dB
Impedance	1.5kΩ	1.5kΩ	600Ω
Max. SPL for 1% THD	130 dB	130 dB	148 dB
Good For	Violin	Flutes	Harmonica

Model No.	CX-508W	CX-516W
Connector	4P Mini XLR	4P Mini XLR
Frequency Response	50~18,000 Hz	30~18,000 Hz
Polar Pattern	Cardioid	Cardioid
Sensitivity (at 1000Hz)	-67±3 dB	-67±3 dB
Impedance	220Ω	220Ω
Max. SPL for 1% THD	130 dB	130 dB
Good For	Winds	Accordion

4. Parts Identification & Accessories

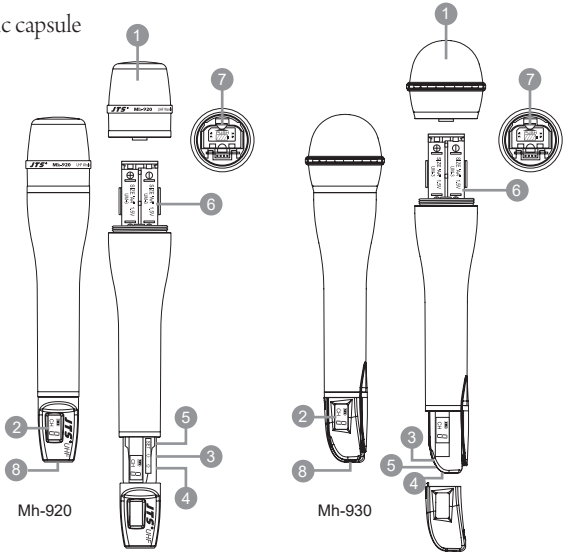
4-1 Dual Channel PLL Diversity Receiver // US-902D

1. Power Switch
2. Channel Selector (Up/Down)
3. LCD panel
4. Volume control
5. Antenna
6. Squelch level adjustor
7. DCV Input (12-18V DC/300mA)
8. Unbalanced Ø6.3mm jack socket
9. Balanced XLR socket



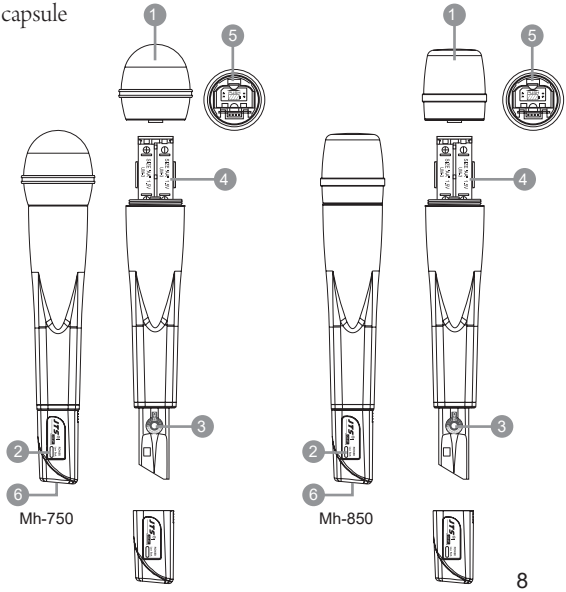
4-2 Handheld Transmitter // Mh-920 / Mh-930

1. Interchangeable dynamic capsule
2. LCD display
3. Down button
4. UP button
5. Set button
6. Battery tray
7. Battery tray button
8. Power On/Off switch



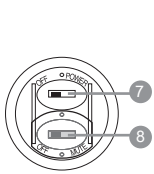
Mh-750 / Mh-850

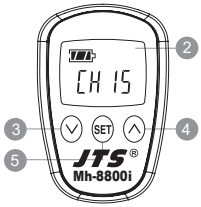
1. Interchangeable dynamic capsule
2. LED display
3. Channel selector
4. Battery tray
5. Battery tray button
6. Power On/Off switch

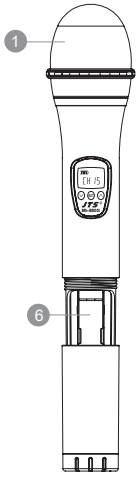


Mh-8800i

1. Interchangeable dynamic capsule
2. LCD display
3. Down button
4. UP button
5. Set button
6. Battery tray
7. Power On/Off switch
8. Mute On/Off switch



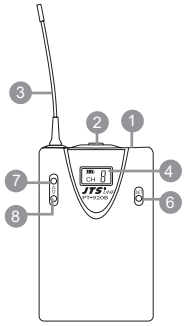




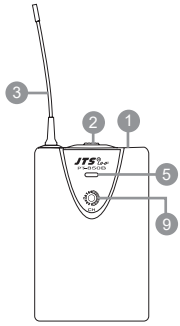
Mh-8800i

4-3 Body-pack Transmitter // PT-920B(mi) / PT-850B(mi)

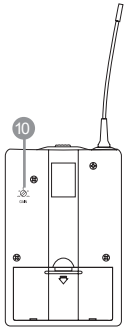
1. Mic. input
2. Power On/off switch
3. Antenna
4. LCD display
5. LED display
6. Set button
7. Up button
8. Down button
9. Channel selector
10. AF level control
11. Gain adjust
12. Battery tray
13. Battery tray cover
14. Carry case
15. Belt-loop



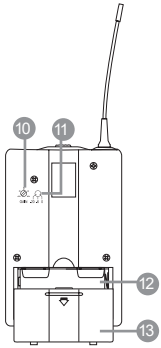
PT-920B
PT-920Bmi



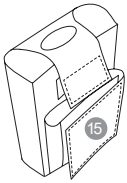
PT-850B
PT-850Bmi



PT-920B
PT-850B



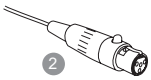
PT-920Bmi
PT-850Bmi



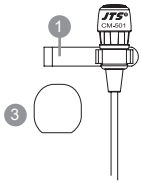
4-4 Optional Condenser Microphone

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

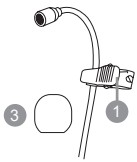
1. Clip
2. 4 Pin Mini XLR
3. Windscreen



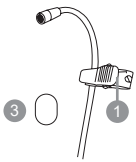
CM-501



CM-201i

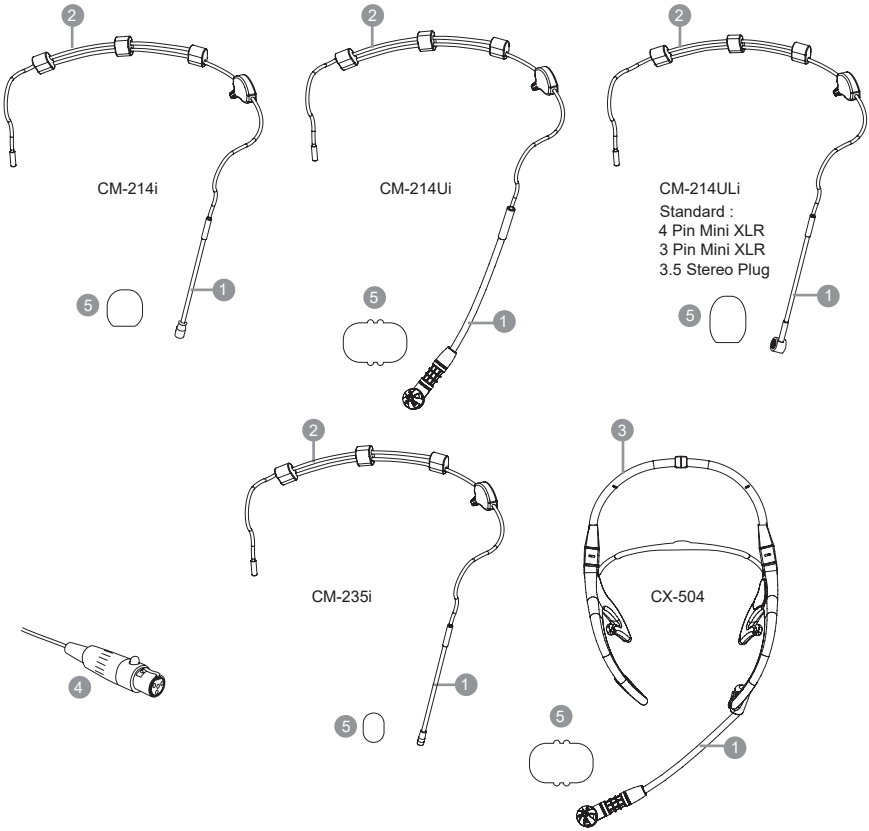


CM-125i



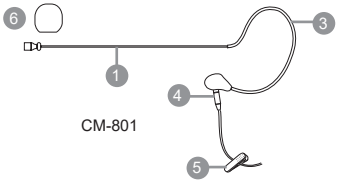
Headset Microphone // CM-214i / CM-214Ui / CM-214ULi / CM-235i / CX-504

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

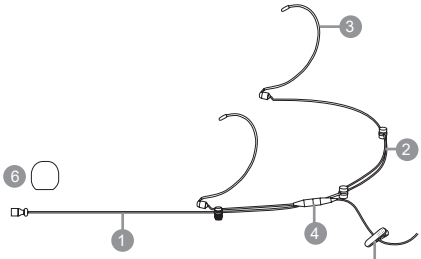


Ear-hook Microphone // CM-801 CM-804i CM-8015 CM-825i

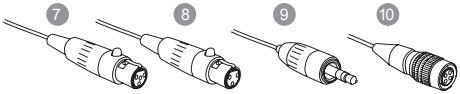
1. Boom
2. Adjustable Headband
3. Adjustable ear hook
4. Detchable Cable
5. Cable Clip
6. Windscreen
7. 4 Pin Mini XLR
8. 3 Pin Mini XLR Option
9. 3.5 Stereo Plug Option
10. 4Pin Hirose connecter Option

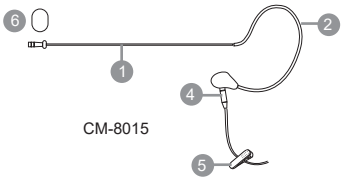


CM-801

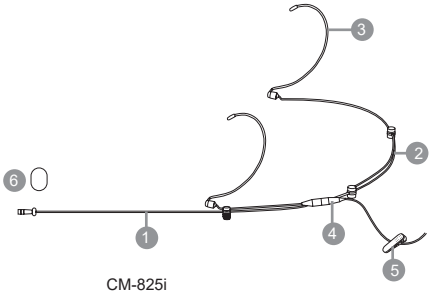


CM-804i





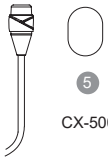
CM-8015



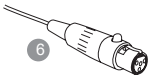
CM-825i

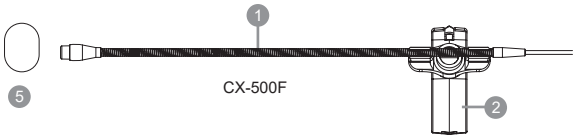
Compatible Instrument Microphone // CX-500 CX-500F CX-520 / CX-508W CX-516W

1. Gooseneck
2. Clip
3. Bracket
4. Volume Control
5. Windscreen
6. 4 Pin Mini XLR

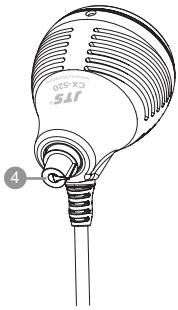


CX-500

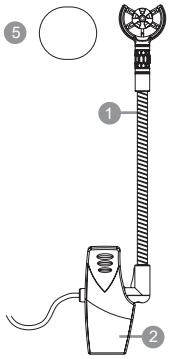




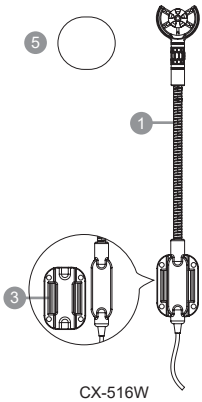
CX-500F



CX-520



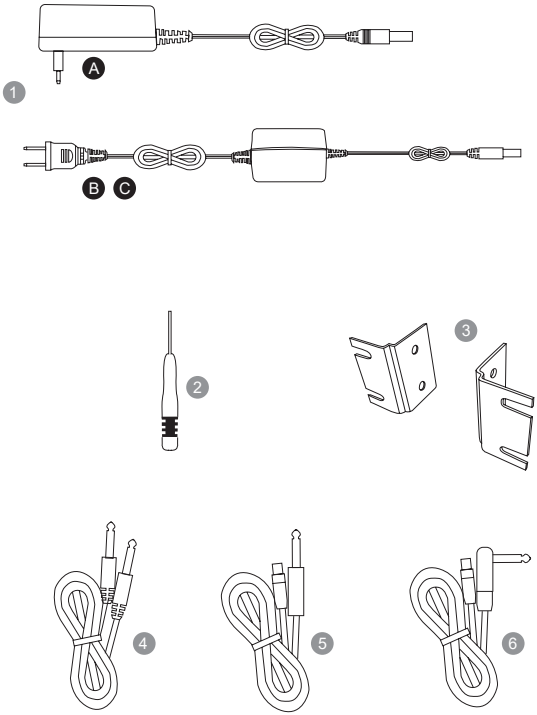
CX-508W



CX-516W

4-5 Accessories

1. AC/DC adaptor
   - Ⓐ Switching Power Supply(100V~240V , 50~60Hz)
   - Ⓑ Linear Power Supply (220V , 50Hz)
   - Ⓒ Linear Power Supply (220V , 60Hz)
2. Screwdriver
3. RM-12 Rack mount kit Option
4. AF output cable (with Ø6.3 plug at both ends)
5. GC-80/GC-100 Guitar Cable Option
6. GC-80L/GC-100L Guitar Cable Option

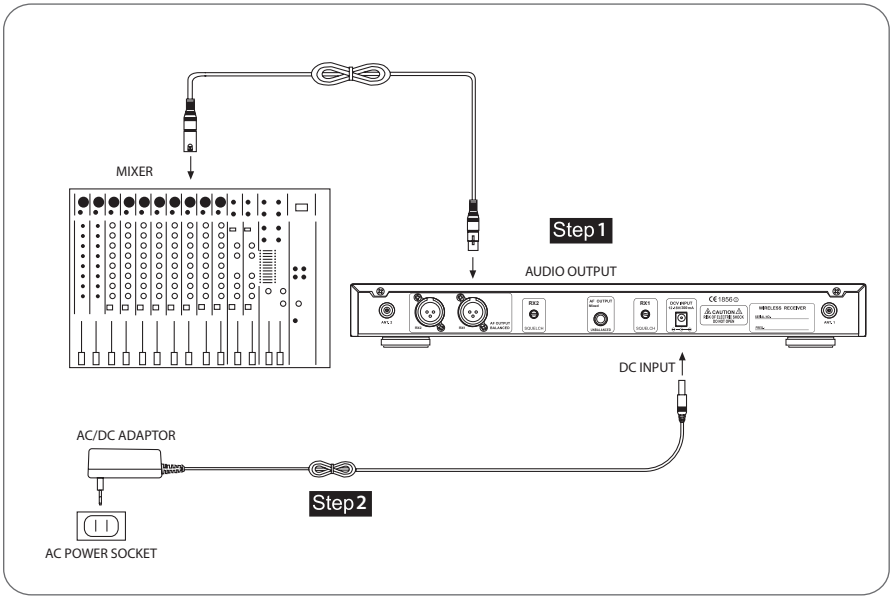


5. Preparing Procedures & Basic Operation

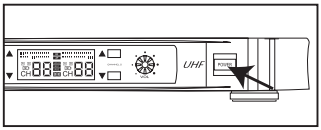
5-1 Receiver

(1) Audio Output Connector
Connect one end of the AF output cable to the AF output socket in the rear panel, then plug another end to the "MIC IN" input socket of a mixer or amplifier. (Step 1)
It is equipped with balanced XLR output and unbalanced Φ6.3mm output, choose the proper way for use.

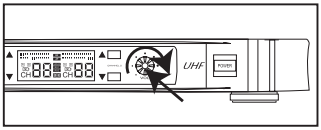
(2) Power output connector
Plug in one end of AC/DC adaptor cable to DC input socket in the rear panel of receiver, and plug another end into an AC outlet. (Step 2)



(3) Turn the receiver on by pressing the Power button on the front panel

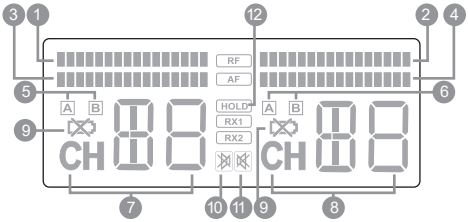


(4) Adjust the volume control to a proper level.



(5) LCD Panel

1. RF incoming signal level of RX1
2. RF incoming signal level of RX2
3. AF incoming signal level of RX1
4. AF incoming signal level of RX2
5. Diversity of RX1 (Antenna A or B active)
6. Diversity of RX2 (Antenna A or B active)
7. Channel display of RX1
8. Channel display of RX2
9. Batt. status of transmitter
10. Mute status of RX1
11. Mute status of RX2
12. Setting lock-on mod

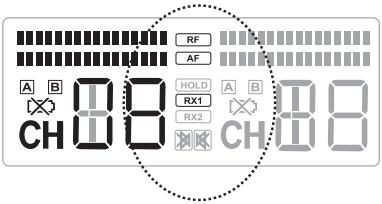


(6) Basic Operation

US-902D

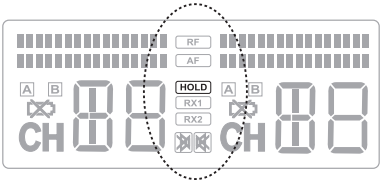
1. Selecting channel

Press the ▲Up or ▼Down button till the **RX1** starts flashing, and again press the ▲Up / ▼Down button to select a suitable channel from the pre-set 16 channels. Later the **RX1** stop flashing, the receiver will store the channel automatically meanwhile presenting the channel number. Repeat the action for **RX2**.



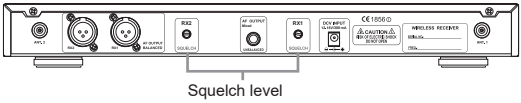
2. Setting Lock-On

Hold both ▲Up and ▼Down buttons till the **HOLD** starts flashing, the Lock-On mode is done. To release the Lock-On mode hold both ▲Up and ▼Down bottons for 2 secs.



3. Adjusting Squelch level

With the Squelch level control in the rear panel, you can adjust the squelch at a suitable level. The higer the SQ level, the shorter the operation will be.



5-2 Handheld Transmitter

Battery Insertion // Mh-920 / Mh-930 / Mh-850 / Mh-750

(1) Loosen the microphone head counter-clockwise. (Figure 1)

(2) Hold on to both battery tray buttons to release it. (Figure 2)

(3) Insert 2 pieces of UM-3 1.5 V batteries, remember to match correct polarity. (Step 1 of Figure 3)

(4) Directly push the battery tray back. (Step 2 of Figure 3)

(5) Aim the connectors exactly for screwing on the microphone head clockwise. (Figure 4)

(6) The on/off switch is located on the bottom of the microphone

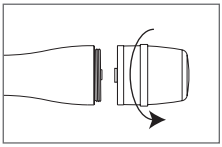


Figure 1

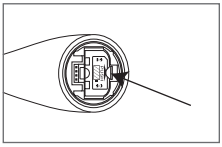


Figure 2

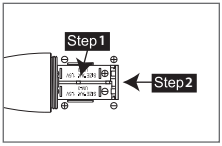


Figure 3

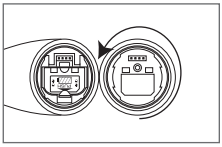
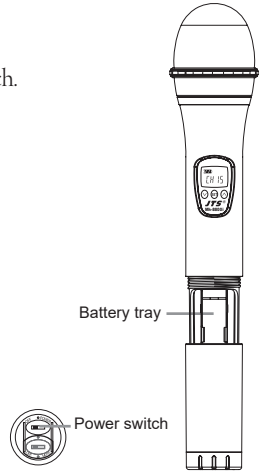


Figure 4

Battery Insertion // Mh-8800i

(1) Insert 2 pcs 1.5V batteries into the battery tray.

(2)After putting into the battery, switch on the power switch.



Mh-8800i

Caution

To avoid battery leakage or explosion

(1) Remove batteries when the wireless microphones will not be used for a long time.

(2) When you need to replace the batteries, replace both batteries at the same time with new ones.

(3) Don't use different type of batteries together!

Channel Select // Mh-920 / Mh-930

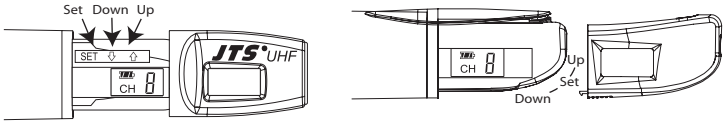
(1) LCD panel

1 Channel

2 Battery indictor

(2) Channel Selection

1. Press the SET button to select between frequency and sensitivity.
2. Press the ▲UP or▼ DOWN button to adjust the channel
3. Press ▲UP or ▼DOWN the "CH" will flash. Then re-press ▲UP or▼ DOWN button to select the channel from 1-16.
4. Hold UP to DOWN button 2 seconds, the channel will be increased or decreased.
5. In 5 seconds channel will be stored upon above procedure done.



(3) Sensitivity adjusting

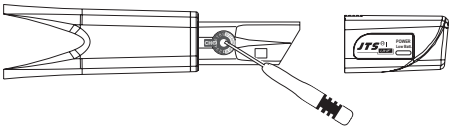
1. Press the SET button twice to select sensitivity. Lasting for 3 seconds at the first press, then 1 second for the second press, and the display appears SenSit
2. Use ▲UP or ▼DOWN buttons to adjust changes.
3. Finally press SET button again to store your changes.

(4) UP button to sctivate "Lock mode"

Hold on to UP button for 3 seconds to activate "Lock mode", press again to unlock. (Prevent accidental programming or switching off)

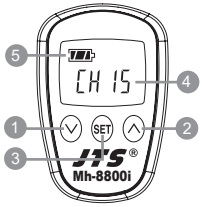
Channel Select // Mh-850 / Mh-750

(1) Use the supplied screwdriver to select a desired channel for the transmitters. The transmitters are preprogrammed with 16 channels.
(2) Make sure the channel of receiver matches that of the transmitter.



Channel Select // Mh-8800i

(1) LCD Operation
1. Down button
2. Up button
3. Set button
4. Channel
5. Battery indictor

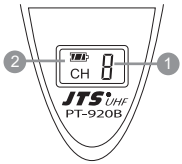


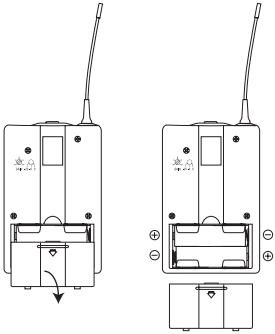
(2) Mh-8800i
Hold "Set Button" till the SETUP shows, then the channel number will start flashing.
Press▲Up or▼Down to select a desired channel from the pre-set 16 channels.
Press "Set Button" to store the channel.

5-3 Body-pack Transmitter // PT-920B(mi) / PT-850B(mi)

(1) PT-920B(mi) LCD panel

1. Main display
2. Battery indictor

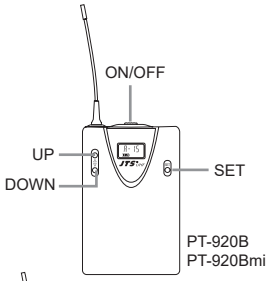




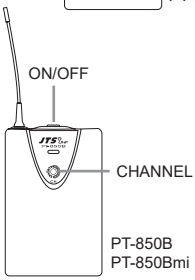
(2) Basic operation

1. Slide the battery tray cover in the direction of the arrow to open it, insert two 1.5V batteries according the correct polarity, and return the cover.

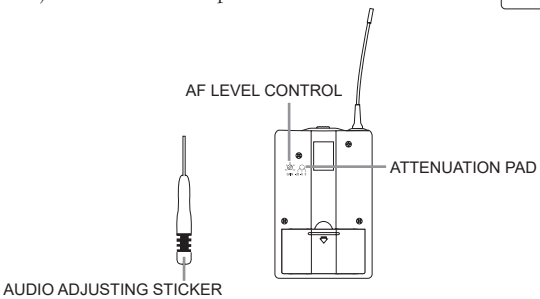
2. Switch the transmitter On.
   The On/Off switch is located on the top of the transmitter.



3. Channel selecting
   PT-920B(mi)
   Hold "Set Button" till the channel number start flashing. Press ▲Up or ▼Down to select a desired channel from the pre-set 16 channels.
   PT-850B(mi)
   Use the supplied screwdriver to select a desired channel for the receiver and transmitters.
   Both receiver and transmitters are preprogrammed with 16 channels.



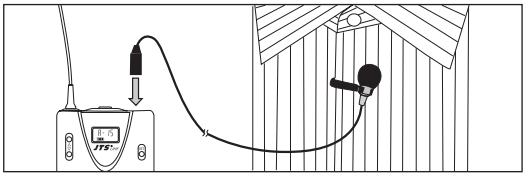
4. Sensitivity adjusting
   There is a gain control adjustor in the up-left of its back, you can adjust the level in 3 steps from 0 dB to 30 dB.



5-4 Installation of Condenser Microphones

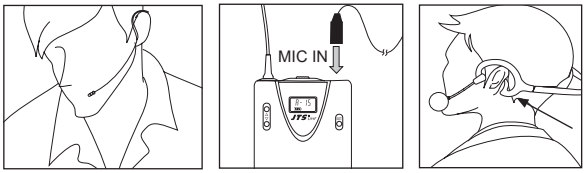
(1) Lavaliere microphone

Attach lavaliere microphone to a tie, lapel, where is suitable for sound pick-up. Plug the connector into input socket on the body-pack transmitter.



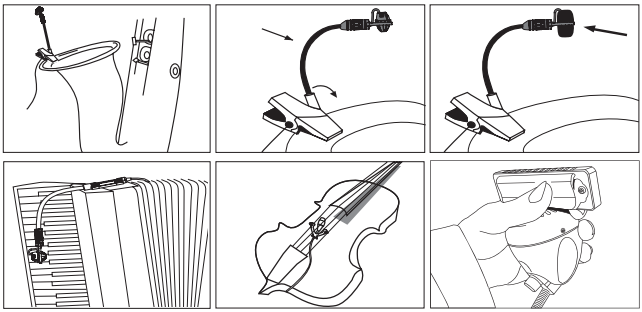
(2) Headset microphone

Put the headband behind your head, and fix the temples on your ears as shows, then adjust the gooseneck to have best miking. Plug the connector into input socket on the body-pack transmitter.



(3) Instrument Microphones

The system is compatible with JTS various instrument microphones.
For detail please refer to user's manuals of these microphones.



(4) Ear-hook Microphone

1. Lightweight Dual Ear Hook Microphone

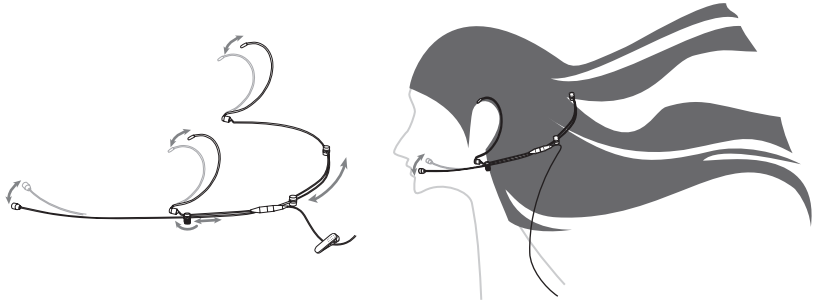
Try on whether the headset is fit.

Adjust the headband to a suitable width.

Tighten or loosen the curve of the ear-hook by twisting the loop or expanding it.

Curve and bend the boom to fit your face.

Attach the detachable cable to a suitable place by a cable clip.



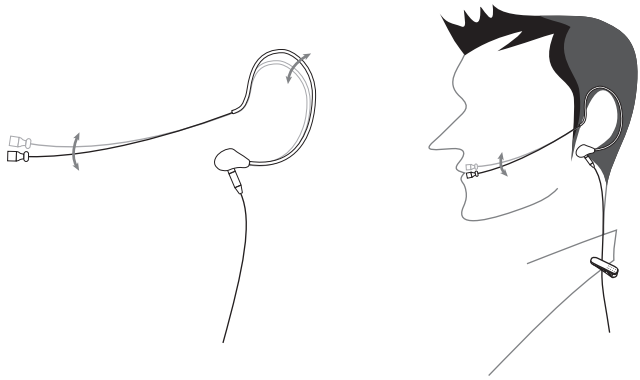
2. Lightweight Single Ear Hook Microphone

Try on whether the original curve is tight or loose.

Re-try and push the fixed curve against your earlobe.

Curve and Bend the boom to fit your face.

Attach the detachable cable to a suitable place by a cable clip.



6. System Operation

Be sure to mute the audio signal of mixer or amplifier before turning on the receiver or transmitter.

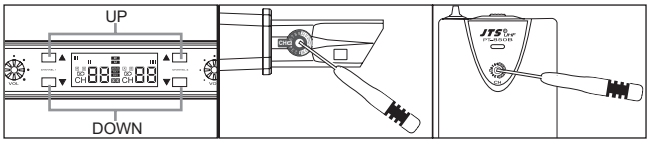
6-1 Power on

Turn AF level on the receiver completely counter-clockwise to the minimum level, and press the power On/Off switch on the front panel of receiver. As soon as you turn power on of receiver, the power LCD lights on, meanwhile the RF signal and AF level indicate the transmission status, and receiver is ready for operating.

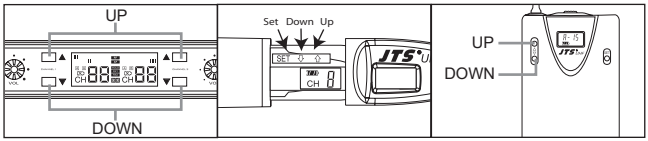
Always it's a good idea to keep "open space" between transmitter and receiver, that is able to improve RF reception.

6-2 Match channel between receiverr and transmitter

(1) Press the ▲Up / ▼Down button to select the channel for the receiver. Use the supplied screwdriver to select a desired channel for handheld transmitter or body-pack transmitter. Both receiver and transmitter are preprogrammed with 16 channels.



(2) Press the ▲Up / ▼Down button to select the channel for the receiver, handheld treansmitter or body-pack transmitter. Both receiver and transmitter are preprogrammed with 16 channels.



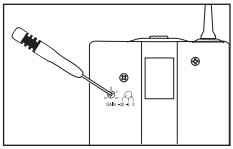
(3) Then with the ▲Up / ▼Down button to select the channel of receiver the same as the transmitter, please make sure the receiver channel matches that of the transmitter.

(4) When 2 or more transmitters and receivers are being use in the same location, they must be set up to use different channels. If existing channel is being interfered, please change to another channel non-interference.

6-3 Using the Body-pack transmitter

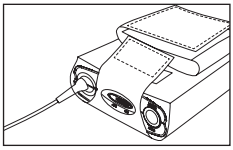
(1) On the rear panel of PT-920B(Bmi) / PT-850B(Bmi) body-back transmitter, equipped the AF level control. Use the supplied plastic stick to adjust a proper level.

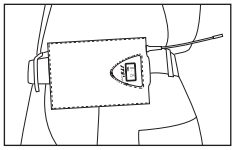
(2) The carry case allows the PT-920B(Bmi) / PT-850B(Bmi) to be attached on performer's belt, place the antenna towards the back of his body. The Velcro tag ensures tight fixing and less hindrance during performance. Wind the Velcro tag around the belt and fix it.



(3)Wearing the Body-pack transmitter

The carry case allows body-pack transmitter to be attached on performer's belt, place the antenna towards the back of his body. The Velcro tag around the belt and fix it.





7. Recommendation

(1) In order to achieve the optimum reception condition and also extend the operating distance, please leave a "open space" between the receiver and transmitter.
(2) Keep the devices away from the metal objects or any interference sources, at least 50 cm.
(3) To avoid the feed-back effect, don't leave the mic. to aim at the speakers directly.
(4) For best pick-up pattern, please hold the middle of the mic. body.
(5) Remove batteries from the battery compartment when the transmitter will not be used for a long time.
(6)When you need to replace the batteries, please replace both batteries at the same time with new ones.

8. Important Notice

(1) JTS offers wireless systems in a selection of bands that conform to the different government regulations of specific nations or geographic regions. These regulations help limit radio frequency (RF) interference among different wireless devices and prevent interference with local public communications channels, such as television and emergency broadcasts.

(2) For information on bands available in your area, consult your local dealer or phone JTS. More information is also available at JTS's website (www.jts.com.tw).

(3) This Radio apparatus may be capable of operating on some frequencies not authorized in your region. Please contact your national authority to obtain information on authorized frequencies and RF power levels for wireless microphone products.