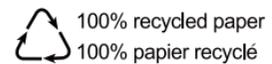




TM-200

UHF Dual Channel True Diversity Wireless Microphone



Installation and Operation

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Thank you for choosing a RELACART professional wireless microphone system. You have joined thousands of other satisfied customers. Our years of professional experience of design and manufacturing to ensure our products' quality, performance and reliability.

01 Safety Operation and Notice

1. Please read instructions for safety operation carefully before installation and operation. Please save your safety operation guide for future reference.
2. Do not scratch, bend, twist, stretch or heat the power cord as this may cause damage to the power cord, resulting in a fire or electric shock.
3. Do not open the device shell, otherwise it may cause electric shock. If you need to repair, maintain or repair, please contact your local agent.
4. Do not touch the power plug with wet hands as this may cause a fire or electric shock.
5. Do not attempt to modify this device. Failure to do so may result in personal injury or product malfunction.
6. Do not use this equipment near water.
7. If the power cord is damaged (such as a broken wire or bare core), obtain replacement parts from your dealer. Continued use of the equipment with a damaged power cord may result in fire or electric shock.
8. To move the device he power, unplug the power cord, and unplug all connecting cables as this may damage the cable, resulting in a fire or electric shock.
9. Before cleaning the device, unplug the power cord and unplug all connecting cables. Please clean it with a dry soft cloth.
10. If the device is not in use for a long time, turn off the power, it is best to unplug the socket.
11. With the power plug and appliance coupler as the disconnecting device, it should be kept easy to operate.
12. For the safe use of the equipment and adequate ventilation, the minimum clearance around the equipment should be maintained at a distance of 5 cm or more.
13. DO NOT cover the Ventilation holes, such as: newspaper / fabric / curtains and other items.
14. Equipment should not be placed on a bare flame source, such as: lit candles.
15. Battery should not be exposed to sunshine, roasted or other high temperature overheating environment.
16. Do not throw the waste battery, please put in the designated bins.
17. Water protection rating: IPX0
18. The device can be used normally in tropical / temperate climates.
19. This product is only suitable for safe use at the altitude of 2000m and below.
20. This symbol "⚡" indicates that dangerous voltage constituting a risk of electric shock is present within this unit.
21. All Relacart products will be afforded one year free maintenance except for man-made damage, such as:
 - the device is damaged by man-made factors.
 - the device is damaged by improper operation.
 - some components are damaged or loss after the self-disassembly.

02 System Performance Feature

TM-200 is a dual-channel true diversity wireless microphone. It can automatically select channel, eliminate dead spot and enhance anti-interference ability, It supports external synchronizer and bidirectional serial communication. It can be connected with central control panel or control panel. It is suitable for engineering, education and other important occasions.

Key Features:

- International EIA STANDARD 1U chassis, using a new simple and bright LED display.
- Super wide frequency range UHF 521.25MHz~936.85MHz, dual channel true diversity anti-interference, minimize dropping or off frequency phenomenon.
- "AFS" Automatic frequency selection function, Press the "AFS" (Auto Frequency Selection) button 3S and the receiver will auto-scan and lock on to an open, interference-free frequency.
- Press [IR] button to upload automatically the receiver frequency to the transmitter.
- Stable PLL (Phase Lock Loop frequency control) design ensures transmission reliability, "Noise Lock" squelch effectively blocks stray RF.
- The system is controlled by microcomputer to find noninterference frequency, making the whole system more stable.
- Each channel 32 selectable frequencies, dual-channel total 64 selectable frequencies.
- 134MHz bandwidth transmitter, available for four different frequency receiver, convenient for adjustment and management in KTV.
- The handheld microphone: novel design, LCD display screen, showing battery level, working channel and frequency. The tube is made by durable alloy, effectively protecting the circuit element and battery rack, and with ergonomic grip.
- Bright and easy-to-read LED display shows numeric channel and RF/AF signal strengths. Transmitter is with bright LCD display.
- Precise low-power circuit design, use two AA alkaline battery, battery life is one time longer as common.
- Can match T-1H handheld microphone, ET-50 bodypack transmitter, UD-2 desktop microphone.
- Designed for use on karaoke, DJ, universities, houses of worship. Stable, easy to install, most affordable unit.

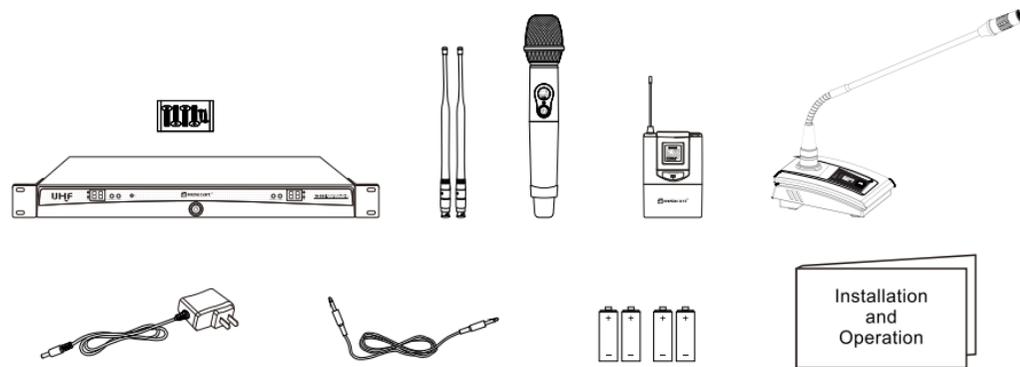
03 Receiver Installation Method

Installation:

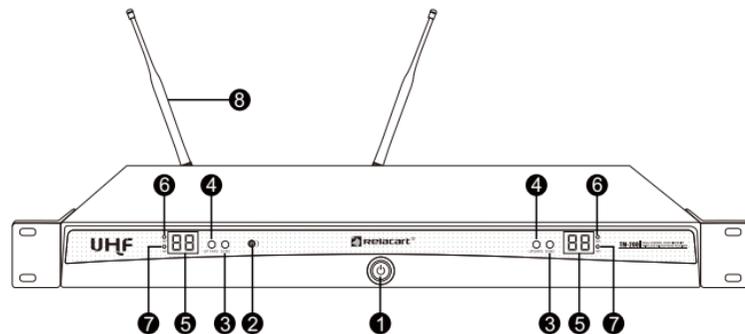
- ① For better operation the receiver should be at least 3ft (1m). above the ground and at least 3ft (1m). away from a wall or metal surface to minimize reflections.
- ② Attached a pair of UHF antennas to the antenna input jacks, the antenna are normally positioned in the shape of a " V " (both 45° from vertical) for best reception.
- ③ Keep antennas away from noise sources such as computer, digital equipment, motors, automobiles and neon lights, as well as away from large metal objects
- ④ Keep open space between the receiver and transmitter for better reception.
- ⑤ The transmitter should be at least 6ft (2m). from the receiver

04 Packing List

- ◆ Wireless microphone receiver *1
- ◆ Wireless transmitter *2
- ◆ BNC Antenna *2
- ◆ External power adapter * 1
- ◆ 1 meter audio cable *1
- ◆ 1.5V AA battery *4
- ◆ 1 U rack mount kit (screw) * 1 set
- ◆ Installation and operation * 1



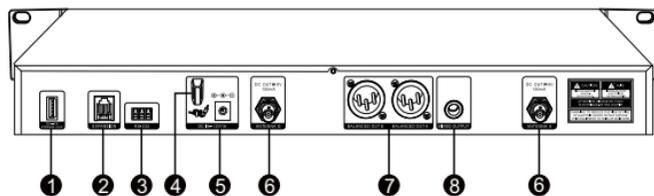
05 Receiver Front Panel Function Introduction



- 1** Power switch: Turn on the receiver of power supply, long press to turn off the receiver.
- 2** Infrared data transfer window (IR) : Transmit channel data from the receiver to the transmitter, so that they are in the same channel, in order to realize the synchronization.
- 3** "SYNC" Infrared data transmission button:
 1. Short press to transmit the channel data of the receiver to the transmitter (Error appears when the channel is not available).
 2. Long press "SYNC" to lock the front panel buttons, the LED Segment display **5** displays "LO".
 3. Long press again to unlock front panel buttons, the LED Segment display **5** flashes 3 times.

- 4** "UP*/AFS" Manually set channel / AFS button:
 1. Set the working channel manually, this button can change the channel totally 50 channels. (Go to channel 50, then start from channel 1, and stop pressing the button, the channel light flashes 3 times confirm this channel automatically).
 2. Automatically scan for search channels [AFS], press and hold this button for 3 seconds, the receiver will automatically search and lock on an open, interference free frequency.
- 5** LED Segment Displays: can display the working channel clearly.
- 6** RF indicator light: It indicates that the radio frequency signal of this channel is received. When the transmitter is on the same frequency as the receiver, this indicator will light.
- 7** AF audio signal indicator light: indicates that the audio signal from the transmitter of this channel is received.
- 8** 1/2 wavelength BNC antenna: Used to receive radio transmitter for transmission.

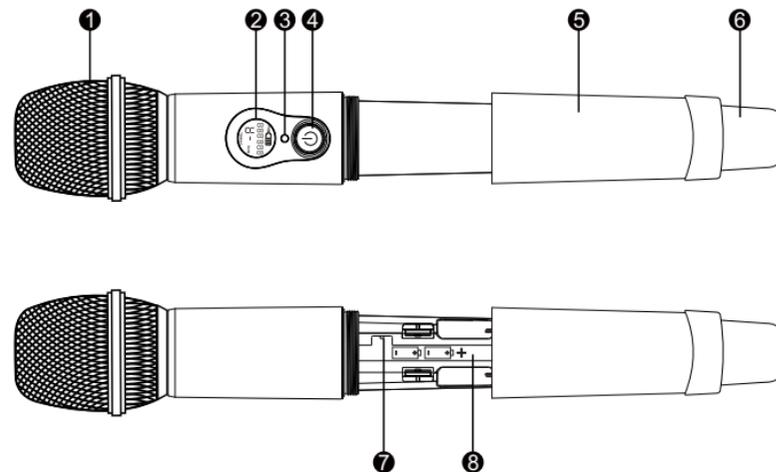
06 Receiver Rear Panel Function Introduction



- ❶ 5V/1A port: USB output 5V/1A port.
- ❷ Expansion port: for connecting external controlling box.
- ❸ RS-232 port: for connecting central control system.
- ❹ Anti-pull device: used to fix the connecting cable of the external power adapter.
- ❺ DC IN socket: connect to external power adapter.
- ❻ RF antenna diversity BNC input connector: suitable for connection of antenna A and antenna B, and supports DC 8V/150mA power output.
- ❼ Balanced audio output port (dual channel independent): The XLR port can be used to connect a standard 2 conductor shielded cable the receiver output to a balanced microphone level input on a mixer.
- ❽ Unbalanced audio output port (dual channel independent): The 6.3mm port can be connected to an aux- level input of a mixer or power amplifier.

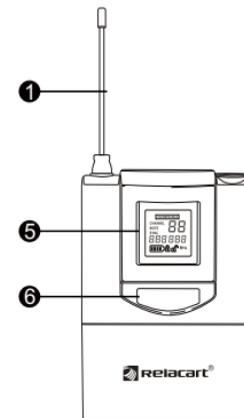
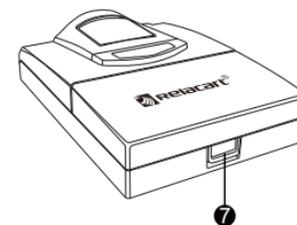
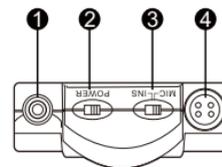
07 Transmitter Function Introduction

Handheld microphone (T-1H)



- ❶ Microphone Head: It is the important part to transfer sound into audio signal. The microphone head is separate to change other microphone head if needed.
- ❷ LCD display: display the frequency, channel, mute and battery life. Battery indicator displays a maximum of 4 bar segments. When it leaves 1 bar segment, the batteries should be replaced immediately.
- ❸ Infrared data receiving window (IR): Synchronization of transmitters via IR interface from receiver.
- ❹ Power Button/Mute Button: Press the power button to turn on the transmitter, press the power button 1.5 second enter the mute status, press one more time to close the mute function. Long press 3 seconds to turn off the transmitter.
- ❺ Battery cover: Unscrew it can reveal the battery compartment; When installing or replacing, the battery cover must be opened.
- ❻ Handheld transmitter tail cover: integrated antenna transmission output port.
- ❼ RF power switch: HI is 30 mW, LO is 5 mW.
- ❽ Battery compartment: Insert 2 fresh 1.5V AA batteries. (Alkaline type is recommended. Please remember to replace both batteries.)
Warn: Observe correct polarity as marked inside the battery compartment to avoid damage to the internal electric parts.

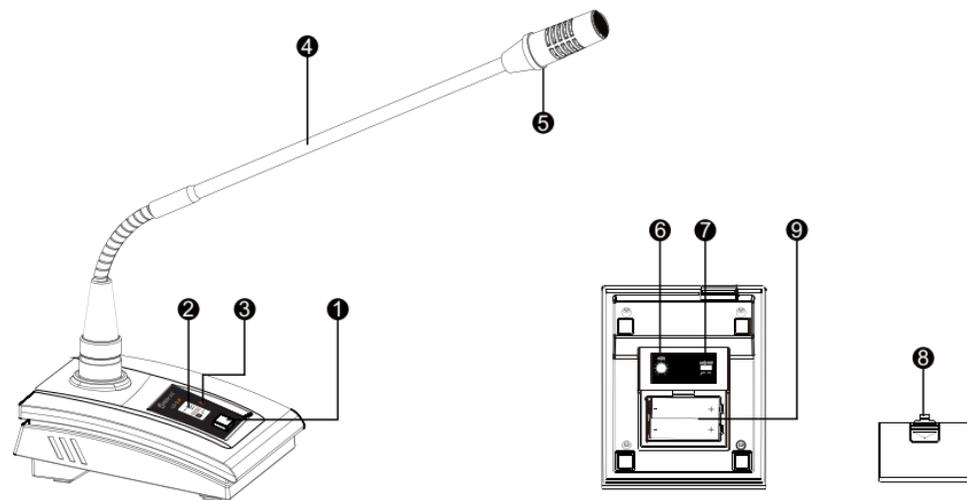
Bodypack transmitter (ET-50)



- ❶ Antenna: For transmitting a bodypack radio carrier.
- ❷ Power toggle switch: Toggle this switch to turn on or off power supply of the transmitter.
- ❸ AF/INS audio input selection switch: The transmitter can be connected with an audio input device (microphone or instrument connection cable) at the top part-the input socket. "MIC" is used for microphone input and "INS" is used to connect to guitar with instrument connection cable.
- ❹ 4-pin mini XLR plug: Connect to 4-pin lavalier microphone or instrument cable.
- ❺ LCD display: display the frequency, channel, lock and battery life. Battery indicator displays a maximum of 4 bar segments. When it leaves 1 bar segment, the batteries should be replaced immediately.
- ❻ Infrared data receiving window (IR): Synchronization of transmitters via IR interface from receiver.
- ❼ Battery Door Switch: Open the battery door by sliding the switch.
- ❽ Battery Compartment: Pull to open the battery door and insert 2 fresh 1.5V AA batteries. (Alkaline type is recommended. Please remember to replace both batteries.)

Warn: Observe correct polarity as marked inside the battery compartment to avoid damage to the internal electric parts.

Desktop gooseneck microphone (UD-2)

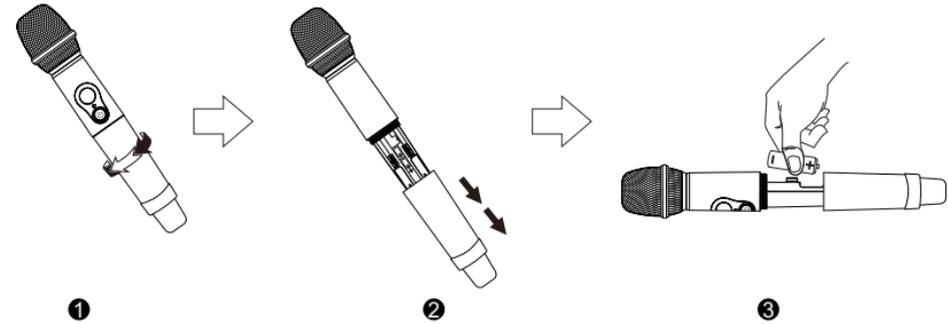


08 Transmitter Battery Installation

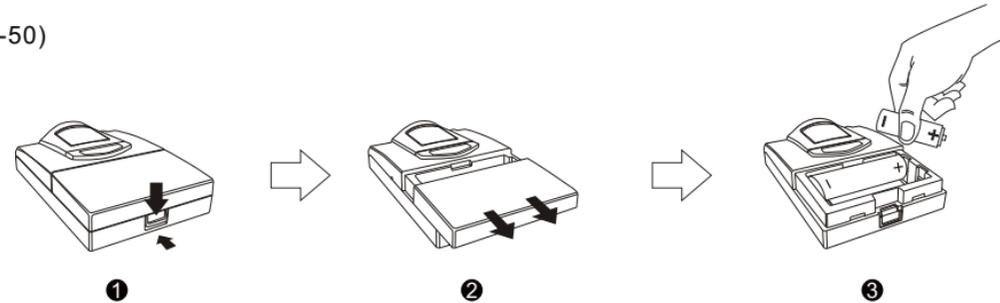
- 1 Power Button/Mute Button: Press the power button to turn on the transmitter, press the power button 1.5 second enter the mute status, press one more time to close the mute function. Long press 3 seconds to turn off the transmitter.
- 2 LCD display: Display the frequency, channel, lock and battery life. Battery indicator displays a maximum of 4 bar segments. When it leaves 1 bar segment, the batteries should be replaced immediately.
- 3 Infrared data receiving window (IR): Synchronization of transmitters via IR interface from receiver.
- 4 Microphone rod: bending gooseneck design, can flexibly put the pickup head to any position.
- 5 Speaking Aperture: When you open the microphone to speak, this instruction light bright.
- 6 Gain knob: adjust the input signal size.
- 7 Low cut switch: cut off the low-frequency signal below 150Hz.
- 8 Battery Door Switch: Open the battery door by sliding the switch.
- 9 Battery Compartment: Insert 2 fresh 1.5V AA batteries. (Alkaline type is recommended. Please remember to replace both batteries.)

Warn: Observe correct polarity as marked inside the battery compartment to avoid damage to the internal electric parts.

(T-1H)

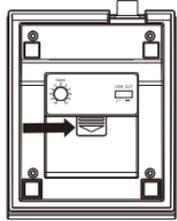


(ET-50)



09 User-friendly steps

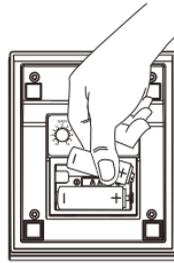
(UD-2)



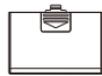
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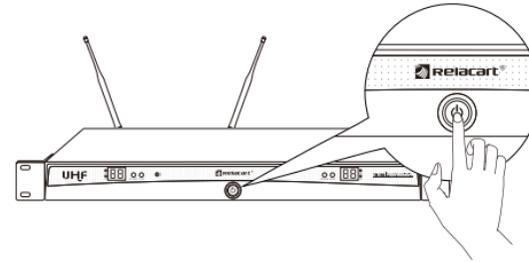
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③

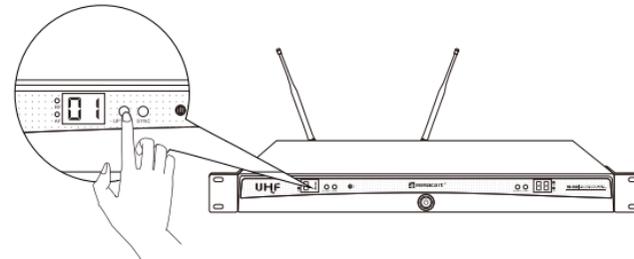


1. Press the power button to turn on the receiver, the display and the power indicator are all lit.

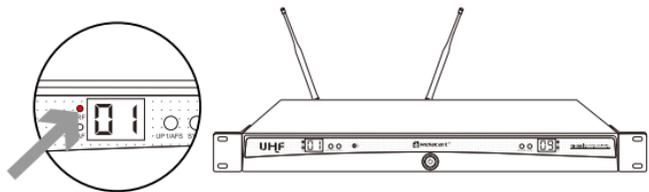


2. Manually set channel / auto search button:

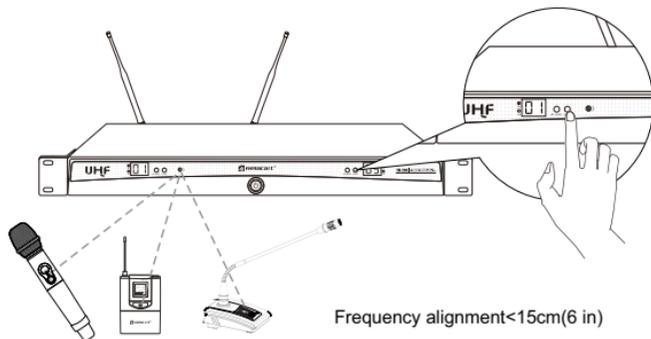
- ① Set the working channel manually, press "UP1/AFS" button to change the channel, after stopping the press, the channel light flashes for 3 seconds to automatically confirm.
- ② Search channel automatically, press and hold "UP1/AFS" button for 3 seconds, the receiver will automatically search and lock on the undisturbed channel in the actual working environment.



The searched channel automatically calculates a clean and undisturbed frequency, indicating that the radio frequency signal of this channel is received. When the transmitter is on the same frequency as the receiver, this indicator will light.

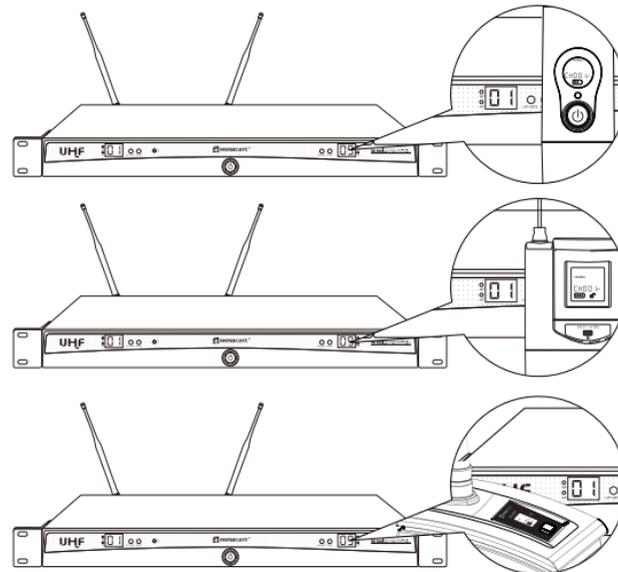


3. Transmitter's infrared window facing the infrared window of the receiver and press the "SYNC" button.



Frequency alignment <math>< 15\text{cm}</math> (6 in)

After the frequency of the transmitter and the receiver are synchronized, when speaking with the microphone, it indicates that the audio signal from the transmitter of this channel is received. When the transmitter and receiver are at the same frequency, this indicator will be on.



Channel display (the receiver and transmitter are at the same frequency)

10 Technical Specification

Single-receiver Systems Setup:

- ① Touch "UP1/ AFS" button to change the frequency manually. Or Press this button 3 seconds and the receiver will auto-scan and lock on to an open, interference-free frequency.
- ② Turn on the transmitter, to let the IR receiving window face to the receiver IR data transfer window, then press Channel 1 "SYNC" button, the transmitter will receive the channel data from the receiver, simultaneously the LCD displays the same channel as the receiver Channel 1 .
- ③ Touch "UP2 / AFS" button to change the frequency manually. Or Press this button 3 seconds and the receiver will auto-scan and lock on to an open, interference-free frequency.
- ④ Turn on the other transmitter, to let the IR receiving window face to the receiver IR data transfer window, then press Channel 2 "SYNC" button, the transmitter will receive the channel data from the receiver, simultaneously the LCD displays the same channel as the receiver Channel 2.

Multiple-receiver Systems Setup:

- ① Make certain that all the transmitters are turned off, then turn on all the receivers.
- ② Same as the operation of "Single-receiver Systems Setup" to set up interference-free frequency for each receiver.
- ③ Turn on one transmitter, to set up the frequency referring to "Single-receiver Systems Setup".
- ④ Repeat this operation, meanwhile, please note that when you set up one transmitter, other transmitters have to be kept away from this operation.

TM-200 Dual Channel Receiver

Main Frame Size:	EIA standard 1U
Receiving Channel:	Dual Channel
Frequency Stability:	±0.005% (-10° C ~ 50° C)
Carrier Frequency Range:	521.25MHz ~ 936.85MHz
Operating Range:	60M typical (in open space)
Frequency Response:	50Hz — 18KHz ±3dB
S/N:	>102dB (A-Weighted)
T.H.D:	<0.6%@1KHz
Receiving Mode:	FM Superheterodyne true diversity reception
RF Sensitivity:	5dBu , S/N>60dB at 25KHz deviation
Squelch:	10dB to 40dB, 5dB step
Frequency Sync:	IR Sync
Max. Output Level:	Maximum output + 11dBV
Adjustment Range of Audio Output Level:	-6dB to +18dB, 3dB step
Power Supply:	DC12V/1A
Current Consumption:	DV12V, 330mA
Dimension (mm):	410 (W) x 206 (D) x 43 (H)
Weight:	Approximately 1.8Kg

T-1H Handheld Microphone

Carrier Frequency Range:	521.25MHz ~ 936.85MHz
Oscillation:	PLL Synthesized
RF Output Power:	10mW/30mW
Carrier Deviation:	0.5KHz
Harmonic Radiation:	<45dBm
Bandwidth:	134MHz (It depends on the region)
Modulation Mode:	FM
Max. Deviation Range:	±45KHz
Microphone Element:	Dynamic/Condenser (removable)
Max. Input Level:	Maximum input -11dBV
Frequency Set-Up:	IR Sync
Battery:	AA x 2
Current Consumption:	110mA (Typical)
Battery Current/Life:	Approximately >8 hours
Microphone Lengths (mm):	50 (Φ) x 260 (L)
Weight:	Approximately 330g (w/o battery)

ET-50 Bodypack Transmitter

Carrier Frequency Range:	521.25MHz ~ 936.85MHz
Oscillation:	PLL Synthesized
RF Output Power:	5mW/30mW
Carrier Deviation:	0.5KHz
Harmonic Radiation:	≤45dB
Modulation Mode:	FM
Nominal/ Peak Deviation:	±45KHz
Max. Input Level:	Maximum input - 11dBv
Frequency Set-Up:	IR Sync
Battery:	AA x 2
Battery Current/Life:	Approximately 8 hours
Dimensions (mm):	95 (H) x 65 (W) x 25 (D)
Weight:	Approximately 80g (w/o battery)

UD-2 Desktop Gooseneck Microphone

Carrier Frequency Range:	521.25MHz ~ 936.85MHz
Oscillation:	PLL Synthesized
RF Output Power:	10mW / 25mW
Carrier Deviation	0.5KHz
Harmonic Radiation:	≤45dB
Modulation Mode:	FM
Nominal/ Peak deviation:	<45KHz
Gain Adjustment Range:	-10dB ~ +10dB
Frequency Set-Up:	IR Sync
Battery:	AA x 2
Battery Current/Life:	Approximately >8 hours
Dimensions (mm):	Microphone base: 141 x 115 x 48 Microphone tube: 430mm
Weight:	Approximately 1Kg (w/o battery)