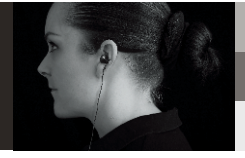
Relacart®

PM-320

Wireless In-ear Monitor System
UHF Wireless Microphone



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Installation and Operation

Contents

Thank you for choosing a RELACART professional wireless In-ear monitor 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

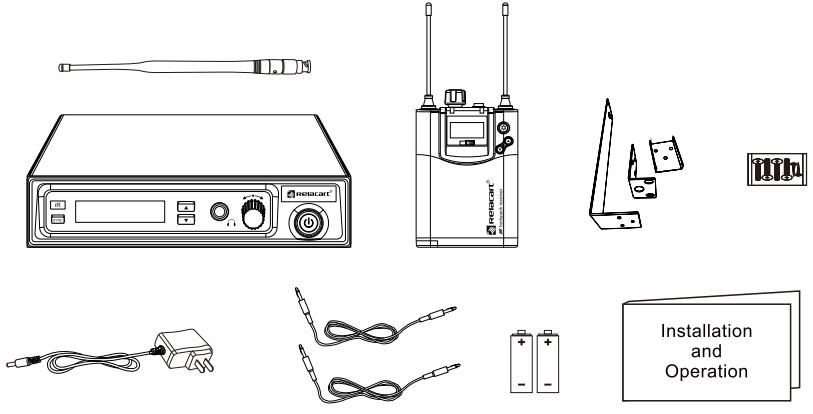
PM-320 is a wireless monitoring system for stage performances and audio broadcasting, and a wireless listening system for large simultaneous interpretation conferences. High-fidelity sound, advanced electronic processing technology instead of the traditional complicated and heavy monitoring equipment, eliminate the howling from the monitoring equipment, and make the performance reliable and perfect.

Key Features:

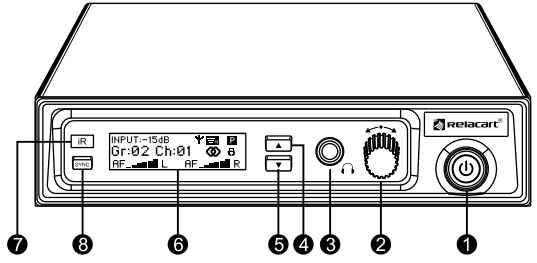
- Metal 1/2 EIA standard 1U case.
- The housing of PM-320R receiver is made of light-weight and tough alloy materials.
- Exquisite and simple OLED display.
- The receiver uses the UHF frequency band, and the CPU controls diversity reception to reduce dead spots and ensure stable reception.
- The bandwidth is 32MHz and there are 1280 adjustable frequencies. 1-10 Channel groups, more than 180 fixed frequencies for choose. Channel groups U1-U5 can set and save frequencies freely.
- Stereo and mono selection.
- Treble boost function, limit control function.
- The stable PLL phase-locked oscillation circuit, combined with the "noise lock" squelch can effectively block stray RF.
- With headphone monitoring output.
- With long transmission distance, it is suitable for various occasions.

03 Packing List

- Wireless receiver *1
- Transmitter * 1
- BNC Antenna *1
- Power adapter * 1
- 1.5V/AA battery * 2
- Stereo line * 2
- Rack mount kit (screw) * 1 set
- Installation and operation * 1

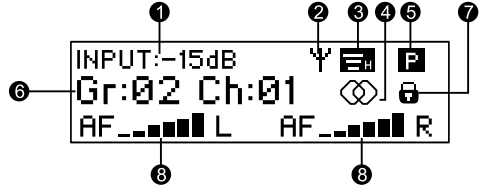


04 Transmitter Front Panel Function Introduction

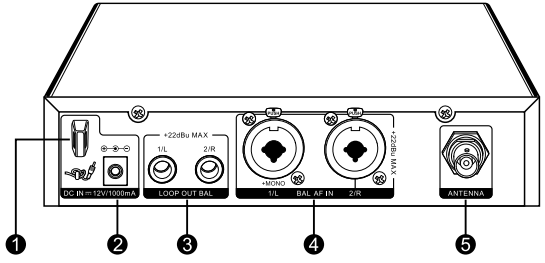


❶ Power switch (with indicator light) .
❷ Function operation knob: Turn this knob left and right to select the menu, press the knob to set the system operation menu.
❸ Headphone monitor jack, stereo output.
❹ “ ▲ ” Volume operation button: Increase the input volume gain.
❺ “ ▼ ” Volume operation button: Attenuate the input volume gain.
❻ OLED display: Display frequency, frequency group and channel, battery life, etc.
❼ Infrared data transmission (iR) window: Infrared pairing window, receiving the data signal transmitted by the receiver.
❽ Infrared data transmission data (SYNC) button: Press this button to transmit the channel and setting data of the transmitter to the receiver.

Transmitter display overview

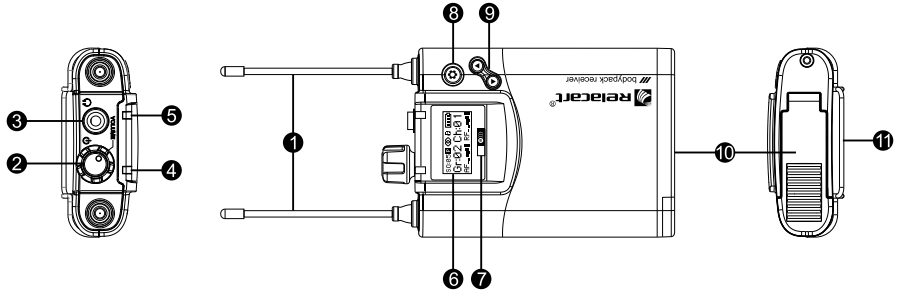


❶ Volume input: Display the set volume input parameters.
❷ Radio frequency display: The device is transmitting radio signals.
❸ Transmit power: Set transmit power. (" H " High transmit power, " L " low transmit power)
❹ Audio mode:
When mono is selected, it is displayed as " ⬭ " , Pilot function is automatically turned off.
When stereo is selected, it is displayed as " ⬭ " , Pilot function is automatically turned on.
❺ Control sound "P" : Control sound analysis has been enabled. When stereo is selected, the pilot analysis sound is turned on automatically, and when mono is selected, the pilot analysis sound is turned off automatically.
❻ "Display Mode" status display: A. Frequency: the set transmitting frequency.
B. Group, channel: set group and channel.
C. Name: set name freely.
❼ Key lock: The key lock is enabled on the transmitter.
❽ Audio frequency: Left (AF L) and right (AF R) audio channels, indicating the level of audio input.



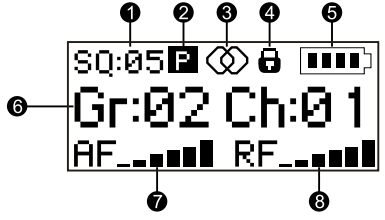
❶ Anti-pull device: Used to fix the connecting cable of the external power adapter DC 12V.
❷ DC IN socket: Connect to DC 12V external power adapter.
❸ A: 6.3 mm jack, the left side is the audio output (LOOP OUT BAL 1/L) .
B: 6.3 mm jack, the right side is the audio output (LOOP OUT BAL 2/R) .
❹ A: XLR-3/6.3 mm combo jack, on the left is the audio input (BAL AF IN 1/L) .
B: XLR-3/6.3 mm combo jack, on the right is the audio input (BAL AF IN 2/R) .
Note: In mono mode, the signal from the left audio input terminal (XLR-3/6.3 mm combo jack, BAL AF IN 1/L) will be sent.
❺ BNC antenna interface: For connecting the included antenna.

06 Receiver Function Introduction



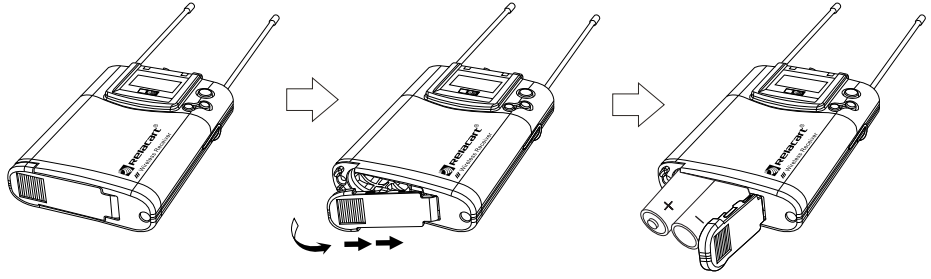
❶ Antennas A and B.
❷ Power switch/volume potentiometer.
❸ 3.5mm stereo headphone monitor jack.
❹ Antenna A indicator: When the battery level shows 1 bar, the antenna indicator changes from blue to red.
❺ Antenna B indicator: When the battery level shows 1 ba, the antenna indicator changes from blue to red.
❻ OLED display: Display frequency, frequency group channel, battery life, etc.
❼ Infrared data transmission window (iR) : Infrared frequency window, which transmits the channel data of the receiver to the transmitter, so that the frequency of the transmitter and the receiver are consistent.
❽ " ⚙ " SET button: Enter the menu/or confirm the menu settings.
❾ " ▲ / ▼ " button : Select function operation keys.
❿ Battery Compartment: Open the battery door by sliding the switch 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.
⓫ Belt Clip: Secures the receiver around the user's belt or on objects such as guitar straps.

Receiver display overview



❶ Squelch Threshold: Displays the set squelch threshold parameters.
❷ Pilot control tone.
❸ Audio mode:
When mono is selected, it is displayed as " ⬭ " , Pilot function is automatically turned off.
When stereo is selected, it is displayed as " ⬭ " , Pilot function is automatically turned on.
❹ Key lock: Key lock is enabled on the receiver.
❺ Battery status: 4 bars are fully charged, please replace with new ones in time when there is one bar left.
❻ "Display Mode" status display: A. Frequency: the set transmitting frequency.
B. Group, channel: set group and channel.
C. Name: freely set name.
❼ "AF" audio frequency: indicates the audio input level of the transmitter.
❽ "RF" radio signal level: the strength of the received radio signal.

07 Receiver Battery Installation



Toggle the switch according to the direction shown in the figure

❶ ❷ ❸

08 System Menu

PM-320T Transmitter

- Frequency List: Select the fixed frequency in the factory preset channel group 1-10 and the freely set frequency from U1 to U5.
- Input Level: 0 to -42dB, 3dB step.
- Mode: Set mono or stereo audio channel.
- Display: Display mode. (frequency, group/chanel, name)
- Monitor: 0 to 20 levels or mute.
- Name: Set a name.
- Tools: Enter the branch menu.
  - Tune: Set the channel and transmit frequency of “U1-U5” in the frequency library.
  - RF Power: Low or High.
  - Brightness: Display brightness. (low, medium, high)
  - Version: Display current software version.
  - Reset: If you reset the transmitter, only the settings of the control tone and frequency bank “U1-U5” remain unchanged.
  - Exit: Exit the branch menu setting and return to the main menu setting.
- Transmitter Lock: Turn the transmitter key lock on or off.
- RF Mute: Radio signal on or off.
- Language: Language selection. (Chinese or English)
- Exit: Exit the operation menu and return to the main interface.

PM-320R Receiver

- Squelch: 05 to 35dB, every 5dB step.
- Frequency List: select the fixed frequency in the factory preset channel group 1-10 and the freely set frequency from U1 to U5.
- AFS: Scan frequency to select the preset frequency that can be used in the channel or group.
- Balance: Left and right stereo balance settings. (L15 to L1-L=R-R1 to R15)
- Mode: Set mono/stereo.
- High Boost: Treble boost.
- Limiter: Off or -6dB to -18dB, every 6dB step.
- Name: Set a name.
- RX Lock: Turn the receiver key lock on or off.
- Tools: Enter the branch menu.
  - Display: Display mode. (frequency, group/channel, name)
  - Tune: Set the receiving frequency of “U1-U5” in the frequency library.
  - Sync: Synchronized frequency .
  - Volume Boost: 0 to 6dB, every 3dB step.
  - Brightness: Display brightness. (low, medium, high)
  - Version: Display current software version.
  - Reset: If you reset the receiver, only the settings of the control tone and frequency bank “U1-U5” remain unchanged.
  - Exit: Exit the branch menu setting and return to the main menu setting.
- Language: Language selection. (Chinese or English)
- Exit: Exit the operation menu and return to the main interface.

09 System Installation and Connection

System installation

1. In order to achieve the best operation of the equipment, the height of the receiver should be higher than 1 meter from the bottom and at least 1 meter from the wall surface.
2. Keep the antenna away from interference sources, such as computer equipment, digital equipment, televisions and cars, and also away from large-area metal objects.
3. Install the antenna on the antenna connector on the rear panel, and pull the antenna to a position at a 45° angle to the vertical.
4. Minimize obstacles as much as possible between the location of the receiver and the place where the transmitter is used.
5. When two transmitters are used at the same time, the distance between the transmitter and the receiver must be at least 2 meters.

System connection

1. Connect the output end of the DC12V/1000mA DC output power supply to the transmitter DC power input socket. To prevent the DC plug from accidentally detaching, first pass the wire through the fixing hole and then tighten it.

(Note: The input voltage of the AC power adapter must be selected to meet the power supply specification range of the area of use.)

2. There are two types of audio jacks on the rear panel of the transmitter, namely Φ6.3mm balanced output socket and XLR-3/6.3 mm combined balanced input jack.

① Use a suitable cable to connect the output of an external device (such as a mixer or a second PM-320TX) to the XLR-3/6.3 mm combined balanced input jack.

② Use a suitable cable to connect the input end of an external device (such as a mixer or a second PM-320TX) to the Φ6.3 mm balanced output jack.

(Note: After the signals of the input jacks BAL AF IN 1/L and BAL AF IN 2/R are separated, they continue to be transmitted to the output jacks LOOP OUT BAL 1/L and LOOP OUT BAL 2/R. Therefore, you can only transmit Use the output jack when the machine is switched on.)

3. Set the appropriate audio input level

The intensity of the audio input signal will be displayed on the AF level meter on the OLED display panel, and the intensity of the input audio signal will be adjusted appropriately. Therefore, the input intensity must be adjusted appropriately to obtain the best signal-to-noise ratio and dynamic range, and to avoid signal distortion.

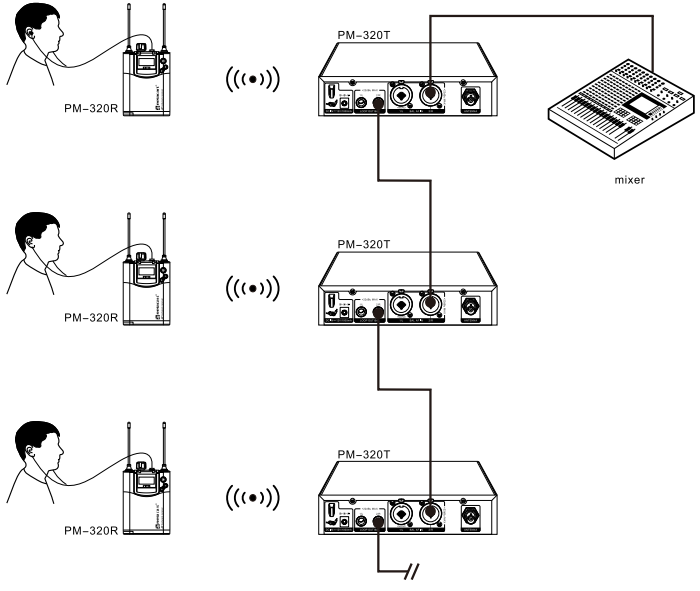
4. Headphone connection

Insert the monitor headphone connection plug into the 3.5mm headphone stereo socket, you can also connect general headphones or connect the output end to the audio input of other audio equipment.
Note: The headphone output socket is a stereo output. Note that the connected plug must be a stereo plug. If it is a mono headphone plug, one side of the output may be short-circuited and the headphone output circuit on the other side may be burned.

5. Multi-system mixed group connection mode

Some performers need to hear the signal of their own playing instrument and the mixed instrument. With the help of this device, each performer can hear this “combination” effect or their independent performance effect, and send a whole band from the mixer Mix the effect to the first transmitter (PM-320T) BAL AF IN 1/L and BAL AF IN 2/R input terminals, and then from the LOOP OUT BAL 1/L and LOOP OUT BAL 2/R output terminals, connect To the BAL AF IN 1/L and BAL AF IN 2/R inputs of a transmitter. Using this link, you can operate all transmitters, and create a mixer to listen to each performer through the auxiliary output of the mixer. Send these different combinations to each performer’s receiver (PM-320R).

10 System Equipment Connection Diagram



11 System Troubleshooting

PM-320T Stereo Transmitter

Symptom	Cause of issue	Solution
Turn on the power switch, but it cannot be turned on, and the power indicator light is off	The power cord is not plugged into the power outlet	Correctly connect the power cord and plug provided with the host, and power on the host
Sound receiving distance is too short	The wireless receiving antenna is not connected or not connected properly	Connect the antenna correctly
	There are obstacles in the transmission space	Move or avoid obstacles
No Stereo audio modulation	Stereo audio modulation menu set to mono modulation	Stereo Audio Modulation menu set to Stereo Modulation
	Source audio signal output is not stereo	Audio signal with stereo output

PM-320R Stereo Mini Receiver

Symptom	Cause of issue	Solution
Can not boot	Battery dead	Replacement battery
	The positive and negative poles of the battery are reversed	Connect the battery correctly
Headphones have no sound	Whether it works at the normal use distance	Use the Receiver at an appropriate distance
	Volume potentiometer is not turned on	Turn on the volume potentiometer
	Does not correspond to transmitter frequency	Adjust the receiver frequency to correspond to the transmitter frequency
No stereo audio	Stereo audio switch to mono	Stereo audio switch is set to stereo
	Transmitter without stereo audio modulation	Check transmitter

12 Technical Specification

PM-320T Stereo Transmitter

Main Frame Size:	1 / 2 EIA standard 1U
Frequency band:	554MHz~936 MHz
Maximum deviation:	±50KHz
Number of channel groups:	single channel
Modulation method:	FM MPX (stereo)
S/N ratio:	>100dB
T.H.D.:	<0.9% @ 1KHz
Frequency bandwidth:	32MHz
Comprehensive frequency response:	25Hz—15KHz ±3dB
Output power:	30mW—50mW
Current consumption:	140mA (typical)
Power supply mode:	DC 12V
Frequency stability:	±0.005% (-10~50°C)
Oscillation mode:	PLL phase lock frequency synthesis
Harmonic radiation:	more than 60dB lower than the main wave
Audio output:	φ6.3mm balanced socket x2
MPX control tone:	Frequency: 19KHz, Deviation: ±5KHz
Audio input :	Line level x 2, XLR and φ6.3mm co composite socket
Dimensions (mm) :	206 (W) x 44 (H) x 199 (D)
Weight:	About 955g

PM-320R Stereo Mini Receiver

Receiving method:	antenna diversity reception
Carrier frequency band:	554MHz~936 MHZ
Maximum deviation:	±48KHz
Number of channel groups:	single channel
Modulation method:	FM MPX (stereo)
S/N ratio:	>100dB
T.H.D.:	<0.9% @ 1KHz
Stereo separation:	≥55dB, at 1KHz
Frequency response:	25Hz—15KHz ±3dB
Battery:	AA x2
Current consumption:	165mA (typical)
Battery life:	> 8 hours
High frequency boost:	+8 dB at 10KHz
Limiter:	each step can be adjusted 6dB, can be turned off
Frequency stability:	±0.005% (0~50°C)
Oscillation mode:	PLL phase lock frequency synthesis
Working distance:	100 meters in general (open area)
Output socket:	φ3.5mm stereo headphone socket
Output power:	2x150mW at 1KHz (T.H.D.: 3%)

Sensitivity:	When the offset is equal to 25KHz, 6dBuV, S/N>60dB
Frequency bandwidth:	32MHz (1280 transmitting frequencies, tunable in units of 25 KHz)
Dimensions (mm):	90 (H) x 65 (W) x 23 (D)
Weight:	About 100g