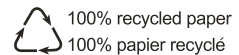




PM-160

Professional Wireless
In-Ear Monitor Systems



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Installation and Operation

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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.

FCC warning statement

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 74 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.

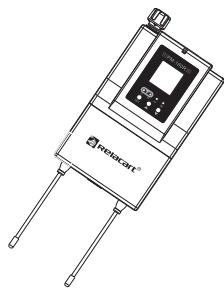
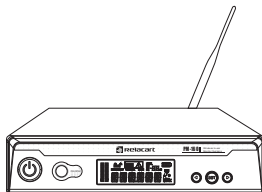
Caution: Any changes or modifications to this device not explicitly approved by manufacturer could void your authority to operate this equipment.

This device complies with part 74 of the FCC Rules. Operation is subject to the following two conditions:

(1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

01 Introduction

- ① EIA-standard metal materials half - rack transmitter chassis.
- ② All the receivers offer durable, ergonomic metal bodies, soft-touch controls.
- ③ UHF frequencies and Antenna Diversity reception for interference-resistant operation.
- ④ Bandwidth 16MHz, 32 pre-programmed frequencies available.
- ⑤ Selectable stereo or mono audio output.
- ⑥ High-visibility white LCD information display
- ⑦ PLL (Phase Lock Loop frequency control) design ensures transmission reliability, "Noise Lock" squelch effectively blocks stray RF.
- ⑧ Designed for use on performance, broadcast, big meeting as side-ear systems for synchronous translation.



02 Transmitter Installation and Connections

Installation:

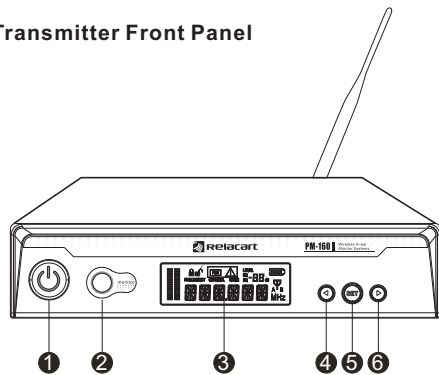
- ① For better operation the transmitter should be at least 3ft. (1m) above the ground and at least 3ft. away from a wall or metal surface to minimize reflections.
- ② Keep antennas away from noise sources such as computer, digital equipment, motors, automobiles and neon lights, as well as away from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

Connections:

- ① The switching power supply is designed to operate properly from any DC power source 12V, 500mA without user adjustment. Simply connect the transmitter to a standard DC power outlet, using only an IEC-type input cordset approved for the country use. Power to the unit is controlled by the front panel power switch.
- ② There are two audio inputs on the rear panel: 1/L and 2/R audio INPUTS. It is suitable for an XLR balanced audio input connector and a 1/4" (6.3mm) unbalanced phone jack input connector. The two audio inputs permit simultaneous feeds from two different outputs. Use the appropriate shielded audio cable for connections between the transmitter and the output(s) of the mixer or other audio output equipment.

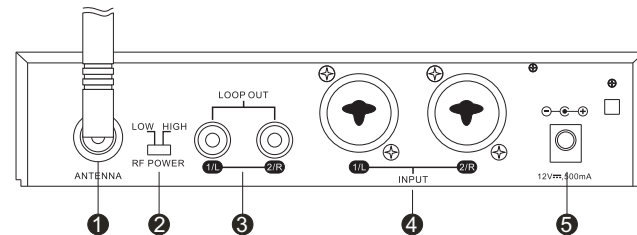
03 Transmitter Controls and Functions

Figure A: PM-160 Transmitter Front Panel



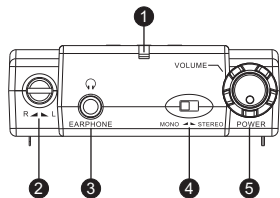
- ① Power Switch: Press power switch in 3 seconds and the transmitter readouts will light.
- ② Monitor: Earphone output jack.
- ③ LCD Window: Liquid Crystal Display indicates control setting and operational readings. See "System setup" on page X for details.
- ④ UP / DOWN Buttons: Press Up or Down arrow button, in conjunction with the Set button, to step through menus, select operating frequency and edit transmitter function choices.
- ⑤ SET Button: Use in conjunction with the Up / Down arrow buttons to step through menus, choose operating frequency and select transmitter function options.

Figure B: PM-160 Transmitter Rear Panel

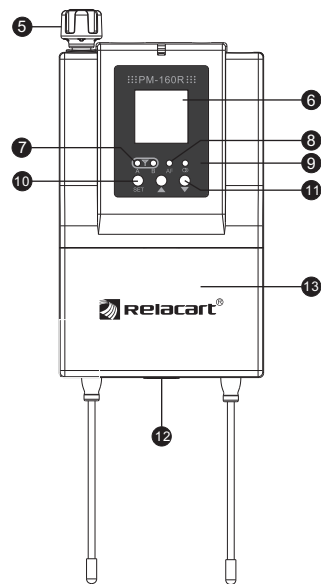


- ① Antenna Input Jack: BNC type antenna connector, attached the antenna directly.
- ② RF POWER Output: Two-position switch adjusts RF power output, with LOW of 30mW, HIGH of 100mW.
- ③ 1/L Unbalance LOOP OUT output jack: Unbalanced 1/4" (6.3mm) phone jack to be connected to another PM-160 transmitter's Balanced Input.
- ④ 2/R Unbalance LOOP OUT output jack: Unbalanced 1/4" (6.3mm) phone jack to be connected to another PM-160 transmitter's Balanced Input.
- ⑤ 1/L Balanced Input Jack: XLR type connector. A standard 2 conductor shielded cable can be used to connect the transmitter input to a balanced output on a mixer or integrated amplifier.
- ⑥ 2/R Balanced Input Jack: XLR type connector. A standard 2 conductor shielded cable can be used to connect the transmitter input to a balanced output on a mixer or integrated amplifier.
- ⑦ DC Power Output Jack: 12V / 500mA.

04 Receiver Controls and Functions



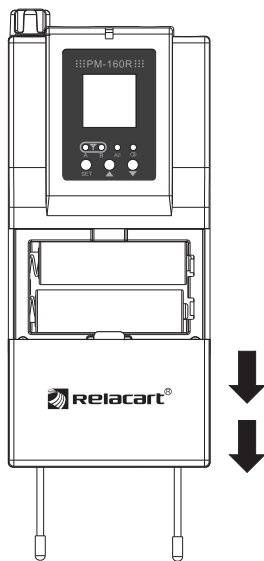
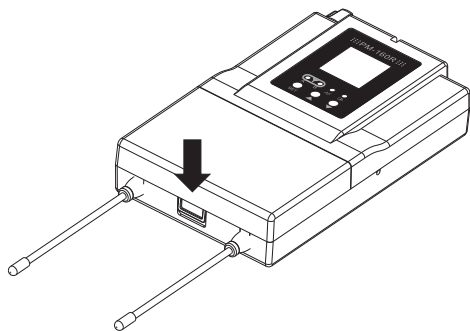
- ① Power indicator
 - ② Left and Right Channels Balanced Switch: To balance the volume of left and right channels for the earphone.
 - ③ Earphone Jack.
 - ④ Mono or Stereo Selector Switch: If selecting Stereo, indicator (⑧) lights.
 - ⑤ Power Switch.
- A: Power supply switch: Turn on this switch, the power indicator is in green.
B: Volume control: Once the receiver power is ON, adjust this switch to control the volume of earphone.



- ⑥ LCD Window: Liquid crystal display indicates operational frequency, channel and battery condition. The transmitter's "fuel gauge" battery indicator displays a maximum of 4 bar segments. When it leaves 1 bar segment, the batteries should be replaced immediately to ensure continued operation.
- ⑦ Antenna Diversity Receiving Signal Strength Indicator
- ⑧ AF Signal Indicator.
- ⑨ Stereo Indicator.
- ⑩ SET Button: Use in conjunction with the Up / Down arrow buttons to step through menus, choose operating frequency and select receiver function options.
- ⑪ UP / DOWN Buttons: Press Up or Down arrow button, in conjunction with the Set button, to step through menus, select operating frequency and edit receiver function choices.
- ⑫ Battery Door Switch: Open the battery door by liding the switch.
- ⑬ Battery Compartment: Insert 2fresh 1.5V AA batteries. (Alkaline type is recommended, always replace both batteries.) Observe correct polarity as marked inside the battery compartment

05 System Setup

Receiver Battery Installation



PM-160 Transmitter Setup

- ① Turn down the AF level of the associated mixer or amplifier.
- ② Turn on the transmitter, the LCD displays the preset data.
- ③ Change the frequency by manual: Press \langle / \rangle button to change the frequency, then "SET" to confirm the selected frequency.
- ④ To enter the menu mode: Press and hold the SET button 3 seconds to enter the edit mode, touch \langle / \rangle button once to select and set RENAME, SENSITI, LOCK, DISP, INPUT or LEVEL.
A, RENAME: Selecting "RENAME", then touch "SET" Button to enter edit mode (System consented name is PM-160), when the first number flashes, touch \langle / \rangle arrow button to choose any number (0-9) or letter (A-Z) or character. After the first number has been picked up, press "SET" button, then the second letter flashes, and repeat the first step operation till the sixth letter is programmed. Touch "SET" button to confirm the desired choice.
B, SENSITI (sensitivity): Selecting "SENSITI", then touch SET button to enter edit mode, touch \langle / \rangle button to select "HIGH" or "LOW". Touch "SET" button to confirm the desired choice.
C, LOCK: Selecting "LOCK", then touch SET Button to enter edit mode, touch \langle / \rangle arrow button to select "ON" or "OFF", if stopping on "ON", the system enters lock mode, the user can not use any button for any control; if stopping on "OFF", the user can do any control by any button. Press SET Button to confirm the desired choice.
D, DISP (display): Selecting "DISP", then touch SET Button to enter edit mode, touch \langle / \rangle arrow button to select "FREQUENCY" (frequency), "CHAN" (channel) or "NAME". If stopping on "FREQ", the LCD will display the operational frequency; if stopping on "CHAN", the LCD will display the operational channel; if stopping on "NAME", the LCD will display the user name; finally press SET Button to confirm the desired choice.
E, INPUT: Selecting "INPUT", then touch SET Button to enter edit mode, touch \langle / \rangle arrow button to select "MONO" or "STEREO". If stopping on "MONO", it is transmitting mono; if stopping on "STEREO", it is transmitting stereo. Touch SET Button to confirm the desired choice.
F, LEVEL (for the volume of earphone): Selecting "LEVEL", then touch SET button to enter edit mode, touch \langle / \rangle button to scroll through the available choice for the function. The squelch level is adjustable in 80 1dB steps, providing 0dB to -80dB range. Press SET Button to confirm the desired choice

PM-160R Receiver Setup

① Turn on the receiver, the LCD displays the preset data.

② Change the frequency by manual: Press \langle / \rangle button to change the frequency, then "SET" to confirm the selected frequency.

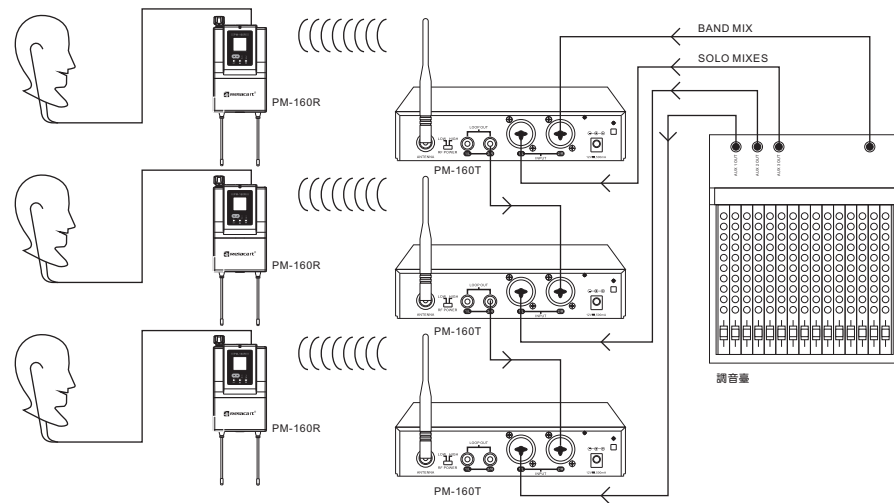
③ To enter the menu mode: Press and hold the SET button 3 seconds to enter the edit mode, touch \langle / \rangle button once to select and set SQ, LOC or P OFF.

A, SQ (squelch): Selecting "SQ", then touch SET Button to enter edit mode, the small data flashes to indicate edit, touch \langle / \rangle button to scroll through the available choice for the function. The squelch level is adjustable in ten 5dB steps, providing a 50dB range. Press SET Button to confirm the desired choice.

(SQUELCH of receiver has been preset before finishing production. If interference is a problem, first consider trying a different frequency. If it is not very necessary, please do not adjust the SQUELCH randomly. This will be bad for the system.)

B, LOC (lock): Selecting "LOC", then touch SET Button to enter edit mode, touch \langle / \rangle arrow button to select "ON" or "OFF", if stopping on "ON", the system enters lock mode, the user can not use any button for any control; if stopping on "OFF", the user can do any control by any button. Press SET Button to confirm the desired choice.

C, P OFF (power off): Selecting "P OFF", then touch SET Button to enter edit mode, touch \langle / \rangle arrow button to select "OPEN" or "CLOSE", if stopping on "OPEN", the unit will turn off automatically in 30 minutes if it is outside the communications service area (no signal available); if stopping on "CLOSE", the unit has to be turned off by manual. Press SET Button to confirm the desired choice.



05 Specifications

PM-160R Stereo Mini Receiver

Channels: Single Channel
Frequency Stability: $\pm 0.0005\%$, Phase Lock Loop frequency control
Carrier Frequency Range: UHF 618-936 MHz
Modulation Mode: FM stereo modulation
Operating Range: 80M typical (in open space)
Oscillation: PLL synthesized
Sensitivity: $6\text{dB}\mu\text{V}$, S/N>60dB at 25 deviation (mono)
Band Width: 16MHz
Max. Deviation Range: $\pm 68\text{KHz}$
S/N: >105dB
T.H.D.: <0.7% @ 1KHz
Frequency response: $45\text{Hz}\sim 18\text{KHz}\pm 1\text{dB}$
Stereo Separation: $\geq 45\text{dB}$ (at 1KHz)
Output Connector: 3.5mm (ϕ) stereo earphone connector
Output Power: 2 X 150mW at 1KHz (THD3%)
Battery: AA X 2
Current Consumption: 185mA typical
Battery Current / Life: Approximately 7 hours
Dimension (mm): 108(H) X 66(W) X 22(D)
Weight: 190g

PM-160 Stereo Transmitter

Main Frame Size: EIA STANDARD 1/2 U
Channels: Single Channel
Frequency Stability: $\pm 0.0005\%$, Phase Lock Loop frequency control
Carrier Frequency Range: UHF 618-936 MHz
Modulation Mode: FM stereo modulation
Output Power: 30mW – 100mW
Operating Range: 100M typical (in open space)
Oscillation: PLL synthesized
Spurious Rejection: <-60dBm
Maximum Deviation Range: $\pm 68\text{KHz}$
Band Width: 16MHz
S/N: >105dB
T.H.D.: <0.7% @ 1KHz
Frequency response: $45\text{Hz}\sim 18\text{KHz}\pm 1\text{dB}$
Audio Input: Line level X 2, XLR and 6.3mm ϕ compound jack
Audio Output: 6.3mm ϕ unbalanced jack X 2
Dimension (mm): 210(W) X 43(H) X 206(D)
Weight: 1.2kg