

1. Product Info

Product Name: VHM-314 Mini Bluetooth Audio Receiver Decoder Board

Bluetooth 5.0 High-Fidelity Core: Driven by a high-performance Bluetooth-compatible wireless engine, supporting universal 5.0/4.1 protocols to achieve rapid automatic back-connection technology with your paired cellular devices.

Universal Dual-Input Power Scheme: Built with an integrated onboard Micro-USB or Type-C female hardware socket for standard 5V power supply links, alongside dedicated side-mount 3.7V-5V solder pads optimized for external lithium battery retrofits.

Lossless Compression Decoding Stack: Outfitted with a premium hardware decoding core (utilizing components like the TD5161A matrix), natively parsing high-bitrate WAV, APE, FLAC, and MP3 lossless containers.

Standard 3.5mm Stereo Audio Interface: Incorporates an onboard standard 3.5mm female audio port to output high-purity, crisp dual-channel stereo signals directly into standard headphones or external power amplifiers.

Ultra-Compact Square Footprint: The minimalist HW-770 layout houses dual solid-electrolyte filtering capacitors and an onboard serpentine trace antenna, serving as the ultimate low-cost component for car speaker retrofits and smart audio DIY projects.

2. Safety & Warnings

Observe Tight Supply Voltage Ceilings: The board is explicitly rated for an input voltage window spanning DC 3.7V to 5V. Exposing the positive lithium pad (BAT+) or the USB data bus pins to voltage rails exceeding 5.5V will trigger immediate capacitor breakdown and permanently smoke the underlying decoding silicon.

Never Cross-Connect Interface Polarities: Carefully check the surface markings before soldering raw wire tails onto the lower battery terminal tracks. Inverting your positive lithium line to the negative (BAT-) or ground eyelets will cause instantaneous reverse-polarity chip failure.

Absolute Prevention of Output Ground Loops: The 3.5mm horizontal headphone socket delivers a dedicated analog audio ground layout (AGND) separate from the raw power return line. When hard-wiring the audio lines straight into a secondary high-power car amplifier, using a shared noisy ground wire can generate loud background alternator whines or ground loop hums; installing an inline audio ground loop isolator is highly recommended.

Shield the RF Antenna Zone: The module relies on a fine copper serpentine trace antenna etched onto its lower boundary edge. When assembling your customized car speaker box or active speaker cabinet, keep all raw metal brackets, thick lithium cell batteries, and structural sheet-metal enclosures clear of this zone to avoid shortening the range limits.

Keep Away from Children: This miniature upgrade electronics component pack contains small surface-mount capacitors, a tiny quartz crystal oscillator, and exposed alloy solder pads. Store all uninstalled stock securely outside the reach of small children to prevent accidental safety hazards.

3. Instructions for Use

Step 1: Establish Your System Interface Connections

Review your specific multimedia application configuration constraints. Connect your power supply cables following these two explicit delivery paths:

For USB Setups: Insert a standard Type-C or Micro-USB cable running from a stable 5V wall adapter or car charger straight into the module's pre-mounted socket port.

For Battery Setups: Take a standard 3.7V lithium-ion cell pouch line and solder the positive lead wire directly onto the board's BAT+ pad, and link the negative wire onto the BAT- terminal eyelet.

Step 2: Route the Analog Acoustic Output Channel

Select your chosen downstream analog sound distribution method:

For Headphones: Insert your standard 3.5mm male headphone connector plug directly into the module's pre-mounted horizontal audio port socket.

For Power Amplifiers: Take a 3.5mm-to-RCA or 3.5mm-to-Aux converter cable, slide the jack into the board, and route the opposite line pins straight into the input ports of your downstream amplifier stage or car dashboard auxiliary dock.

Step 3: Power Up the Receiver Board and Observe Status

Turn on your primary power source station. The module will instantly initialize into active wireless matching mode, and the integrated on-board blue LED status indicator will flash quickly to signal that it is hunting for a master cell phone link.

Step 4: Execute Bluetooth Pairing and Syncing

Open your mobile phone or tablet computer's settings layout panel, activate the Bluetooth radio transceiver, and scan the local area network. Locate and select the device identity name corresponding to the module (commonly registered as "VHM-314"). Once the handshake finishes, the blue LED indicator light will stop flashing and remain steadily on.

Step 5: Launch Audio Playback and Monitor Telemetry

Open your preferred media streaming application on your smart device and start a high-bitrate song track. The module's hardware decoder will process the stream fluidly, transferring an ultra-low distortion, high signal-to-noise ratio stereo performance out through your speakers.

4. Maintenance & Storage

Clean the Board Substrate Surfaces: Over extensive continuous deployment loops inside dusty car

glove compartments or open audio hobby boxes, airborne lint, soot, or atmospheric tarnish can drop onto the component tracks. Isolate all current loops, and sweep the red card face clean periodically using a dry, clean anti-static nylon brush.

Verify Joint Solder Rigidity: Vehicle dashboards and portable audio installations are subject to ongoing heavy shock and mechanical motor resonance vibrations. Inspect your power cable solder joints and the 3.5mm jack seating clips every 150 operational hours to check for signs of wire fatigue or loose connections.

Moisture-Controlled Anti-Static Bag Storage: Keep all uninstalled spare decoder cards packed inside separate airtight anti-static organizing pouches. Keeping your high-conductivity copper inventory isolated from intense ambient humidity prevents the tarnish-free tracking eyelets from gathering oxidation spots.

5. Disposal & Recycling

Industrial Electronic Scrap Material Breakdown: This micro-sized wireless audio receiver breakout card represents an intricate assembly of hardware components. The base layout utilizes an FR-4 double-sided fiberglass plate tracking matrix, the audio processor core represents integrated silicon wafers, the filtering train employs surface-mount tantalum or solid electrolytic capacitors, and it features metal-plated connector jacks, classifying the entire set strictly as electronic waste (E-waste).

Clean Reclamation Guidelines: Do not discard broken or non-functional wireless decoding boards into regular municipal household domestic kitchen garbage bins. Please collect your electronic scrap parts and deliver them to your local specialized electronic waste sorting hub or an authorized hardware recycling yard to support clean precious metal extraction and protect the environment sustainably.

6. Technical Specifications

Product Engineering Classification: Micro-Volume Embedded Wireless Bluetooth Stereo Audio Receiver Decoder Module

Integrated Bluetooth Communication Framework: High-Speed Bluetooth-Compatible Core V5.0 / V4.1 Standards

Ingested Audio Codec Decoding Stack: WAV, WMA, APE, FLAC, and MP3 Lossless Container Parsing

Operational Signal-to-Noise Ratio (SNR): 90 dB High-Clarity Audio Level

Total Harmonic Distortion plus Noise (THD+N): -70 dB Low Distortion Baseline

Channel Isolation Crosstalk Rating: -86 dB High-Separation Vector Tracking

Dynamic Range Performance Index (DNR): 91 dB True Acoustic Range

Core Software Network Profiles Backed: A2DP, AVCTP, AVDTP, AVRCP, and HFP Cellular Standards

Physical Wireless Line of Sight Range (LOS): Up to and Exceeding 15 Meters Total Span

Primary Logic Driver Operating Voltages: Direct Support Across DC 3.7V to 5V Power Rails

System Output Connection Architecture: 1 x On-Board 3.5mm Stereo Horizontal Female Audio Jack Socket

On-Board Visual Status Diagnostic Hardware: Single Blue Multi-State LED Indicator Array

Interface Socket Model Configurations Available: Micro-USB Female Interface or Type-C Female Port Styles

Core Component Silicon Elements: Integrated Dual Solid Electrolytic Smoothing Capacitors, 24.000MHz Clock Crystal

Primary PCB Substrate Material Formula: High-Reliability Double-Sided Copper Clad Red FR-4 Panels

Manufacturing Machining Assembly Tolerances: Interface Port Alignment and Board CNC Edge Routing Controlled Within ± 0.03 mm

Environmental Thermal Operational Limits: Structural Logic Maintained Stable Safe Between -40 to 85 Degrees Celsius