



Shenzhen Jiusheng Technology Co., Ltd.
SE24065-Module

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Application Description

Shenzhen Jiusheng Technology Co., Ltd.
Tel: 0755-33919819



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1. Module Overview

This module is a highly integrated 433.92MHz wireless remote control PCBA, specifically designed for smart health and personal care devices. It integrates RF transmission, lithium battery charge management, LED driving, vibration motor driving, and a rich set of key input interfaces. Intuitive control is achieved through five multi-function buttons, with all operational statuses indicated via dedicated LED lights.

Multi-function Control: Integrates EMS intensity adjustment, heating level switching, RGB LED color control, vibration control, and mode switching.

Clear LED Indication: Uses dedicated LED lights to display battery power, EMS intensity level (0-20), current working mode, and heating status.

User-friendly Interaction: Clear button multiplexing logic for intuitive operation.

Low Power Design: Supports automatic sleep mode after 30 seconds of inactivity.

Integrated Charging: Built-in charging management circuit for direct connection to a lithium battery.

2. Function and Button Description

The module has 5 physical buttons with the following functions:

- **Power Button (PWR)**

Short Press (<1s): Turns the vibration motor function ON or OFF. Each short press toggles the vibration state.

Long Press (>3s): Turns the module ON or OFF. Press and hold to power on from an off state; press and hold to power off from an on state.

- **Mode Button (MODE)**

Short Press (<1s): Cycles through the working modes. The module supports 6 preset modes (e.g., Mode 1 to 6). Each press switches to the next mode, and the corresponding dedicated "Mode Indicator LED" will illuminate.

Long Press (>2s): Turns the heating function ON or OFF. The heating function is independent of the EMS mode and cycles through three levels (Low, Medium, High -> Off).

- **LED Button**

Short Press (<1s): Cycles through the RGB LED colors (e.g., Red, Green, Blue, Purple, Yellow, White, etc.). This function is typically used for ambient lighting or status indication.

- **Intensity Plus Button (+)**

Short Press (<1s): Increases the EMS output intensity level. The level increases from 0 to 20, remaining at 20 upon further presses. The two-digit display shows the current level.

- **Intensity Minus Button (-)**

Short Press (<1s): Decreases the EMS output intensity level. The level decreases from 20 to 0, remaining at 0 upon further presses. The two-digit display shows the current level.

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SE24065-Module

3. LED Indicator Description

The module's status is indicated by the following LED groups:

Battery Power Indicators: A series of LEDs (e.g., 5 LEDs) dynamically indicate the remaining power of the built-in lithium battery. Charging status is indicated by a specific pattern (e.g., scrolling).

6 Mode Indicator LEDs: Six dedicated LEDs correspond to the 6 different working modes. The LED for the currently active mode is lit.

Two-digit 7-Segment Display: Displays the current **EMS Intensity Level (0-20)**.

3 Heating Level Indicator LEDs: Indicate the heating status.

1 LED ON: Low-level heating.

2 LEDs ON: Medium-level heating.

3 LEDs ON: High-level heating.

All OFF: Heating is off.

4. Workflow and Auto-Sleep

Power On: Connect the battery or press and hold the **PWR button** for more than 3 seconds. The module boots up, and relevant status LEDs illuminate.

Normal Operation: The user interacts via the function buttons. All statuses are updated via the corresponding LED indicators.

Auto-Sleep: When the module has **no button operation for 30 seconds**, it will automatically turn off all LED indicators and enter a low-power sleep state. The RF, motor, and other peripheral circuits are shut down, maintaining only button detection.

Wake from Sleep: In the sleep state, **short pressing any button** (except for the long-press power-off function) will immediately wake the module, restoring all LED indicators to the state before sleep.

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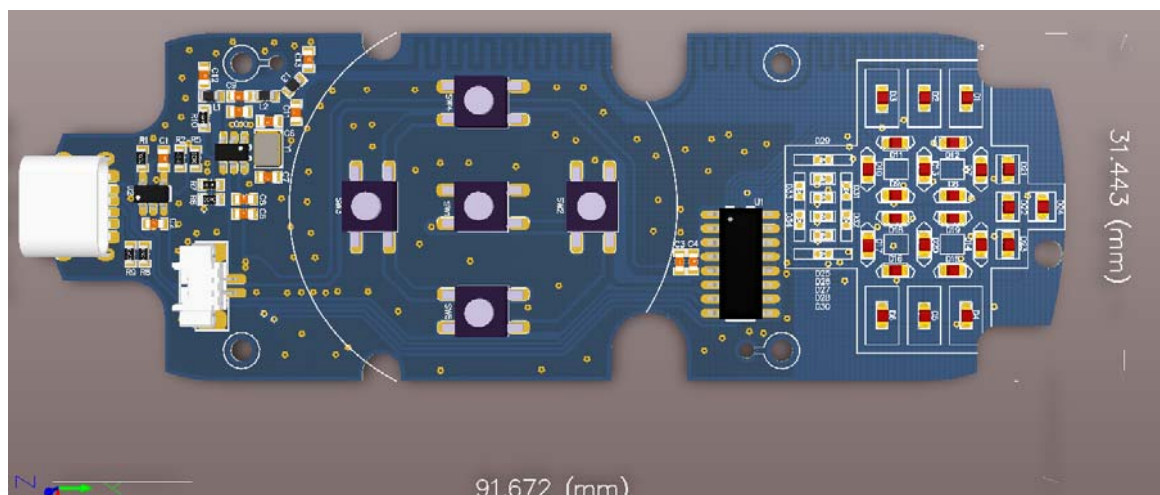
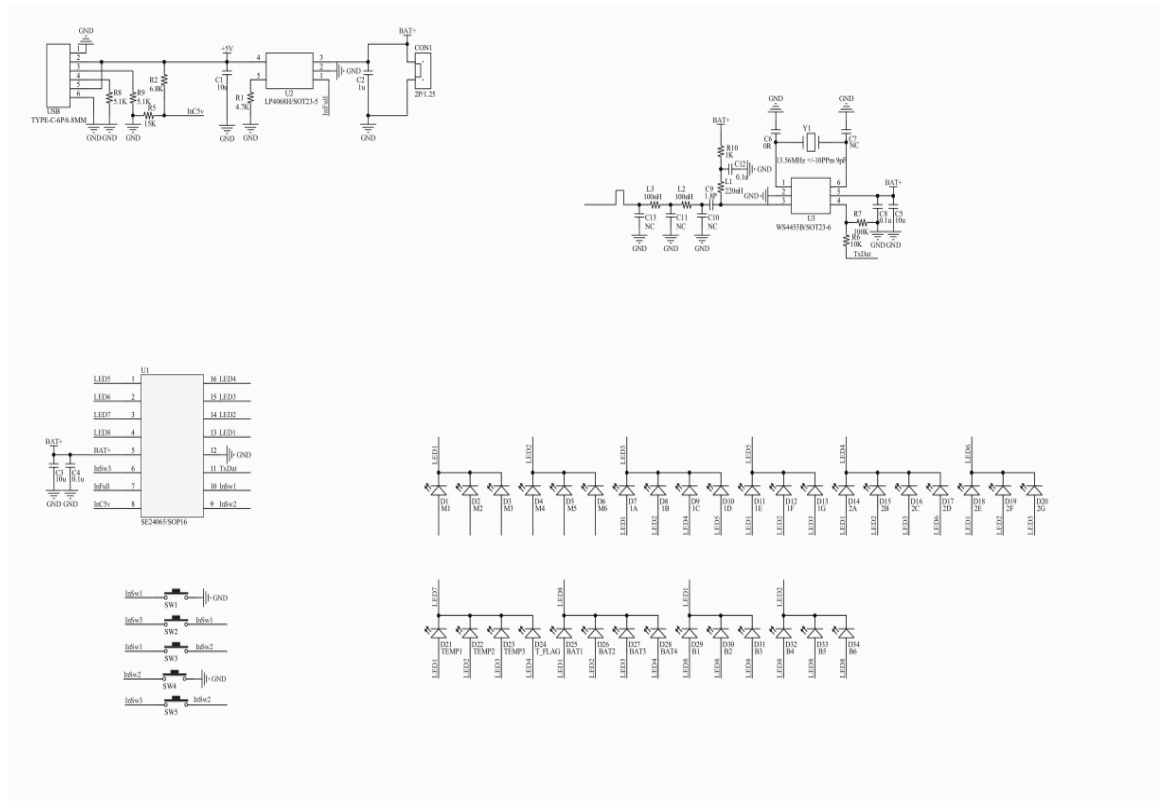
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5. Module Circuitry and Physical Layout:



Size:92mm*31.4mm*1.0mm

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6. Electrical Parameters:

- **Operating Voltage:** 3.3V – 4.2V (Converted from the lithium battery by an internal LDO).
- **Charging Specification:** Input 5V/1A (Max), charging cut-off voltage 4.2V.
- **Operating Current:**
 - Sleep State: $< 50 \mu\text{A}$
 - Display ON State: Approx. 10–25mA
 - Transmission State: Approx. 20–35mA
 - Vibration Motor Active: Additional 50–100mA
- **RF Parameters:**
 - Frequency: 433.92MHz $\pm$ 200kHz
 - Transmission Power: $\leq +10\text{dBm}$
 - Modulation: ASK/OOK

7. Precautions (PCBA Level)

- **Antenna Installation:** The antenna component (e.g., spring antenna) must be correctly soldered. Otherwise, the remote control distance will be significantly reduced and the RF chip may be damaged.
- **ESD Protection:** This module contains CMOS integrated circuits. Proper anti-static measures must be taken during handling and soldering.
- **Battery Protection:** Ensure the external lithium battery includes a protection circuit board to prevent overcharge, over-discharge, and short circuits.
- **Heat Dissipation Design:** If integrated into an enclosure, ensure the heating function related circuits have an appropriate heat dissipation path.
- **First Power-On:** It is recommended to first connect the charger for a full battery charge to ensure stable system initialization.

This device complies with Part 15 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

This device has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This device generates, uses and can

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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 device does cause harmful interference to radio or television reception, which can be determined by turning the device 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 device and receiver.
- Connect the device into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment

RF warning for portable device:

The device has been evaluated to meet general RF exposure requirement. The device can be used in portable exposure condition without restriction.

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