

## Principle of work

The battery provides the power source for the overall system, after connects the power source the 2.4G RF module enters the **standby mode**.

Wand operate in the 2.4G range, frequency-hopping mode. use of automatic matching same ID, after Wiimote and Wii use jump frequency completed validate same ID to connect at 79 channel to **Transmit data**. Wireless module frequency coverage: 2402-2480MHz, Channel: 79, data modulation mode: FSK, The maximum working distance 10m. Antenna type: snake.

Use TERAX company TOD3003 IC made 2.4 G wireless module of the whole circuit is the core, it integrated the RF circuit, the baseband control circuit, with peripheral controls in the I/O, BCM2042 module to provide the clock signal by a 12MHZ crystal to TOD3003, moreover in the module constructs 3.0V and 1.8V voltage regulator circuit gives the peripheral electric circuit to provide the power source.

The sound module use is Zero plus technology co. LTD ZPD20A4 and ZPD20B4 is the core makes the digital sound switching circuit, uses exterior 10MHZ frequency to provide the time clock signal.

G sensor uses IC SMB380 OR BMA150 to produce the dynamic signal.

CMOS sensor uses 50 million pixels CMOS holding the CMOS sensors to process the infrared signal for the core. Uses 8P51 IC to process the power key function. Presses down in the pressed key array the random key, or the power key may awaken the 2.4G RF module, by now 2.4G RF module to enter the channel pursue **mode**. After the 2.4G RF module awakens, 2.4G RF module examines the battery voltage, then controls LED1-4 through I/O to demonstrate the battery capacity. After the channel found, in 2.4G RF module's TOD3003 controls I/O LED to demonstrate the current connection the handle number (1-4), the 2.4G RF module first opens voltage regulation A and B through I2C and the SPI data bus, then carries on the data communication with CMOS sensor, G-sensor, Sound module. G-sensor through the SPI data bus passes the dynamic induction data and the temperature data to in the 8p51, after 8p51 processing the data, transmits separately data through the I2C data bus to the TOD3003 station amplifier part, then the station amplifier part transmits the data to the antenna. CMOS sensor will gather infrared video coordinates data after SPI data bus transmission to 8P51, 8P51 processing the data to 2.4G RF module, after 2.4G RF module processing the data, the wireless the station amplifier part, then will transmit the data through the antenna. The Wii main engine sound data transmits the wireless station amplifier part afterwards after the antenna receive, after TOD3003 interior filter transforms to the 8P51, 8P51 made digital sound data transmit to the sound module buy the I2C data bus, thus makes the sound. The I2C data bus simultaneously connects the Wii expansion port through this connection with other Wii peripheral game control device intercommunication, and provides the power source. Voltage regulation A is exterior voltage-stabilizer circuit, is the battery voltage which inputs stabilizes in the 3.3V manostat, then supply sound module, and motion plus module, Wii expansion port use. Voltage regulation B is the 2.4G RF module interior voltage-stabilizer circuit, is can the battery voltage which inputs stabilize in the 3.0V manostat, outputs behind the power source supply CMOS sensor, G-sensor and the 8p51 use. Motion plus module is provide operating position signal to I<sup>2</sup>C data bus, and through motion plus module I<sup>2</sup>C data bus connect to Wii expansion port. In motion plus module, gyroscope ISG-650 IDG-650 generate operating position signal to UPD78P0511, Through UPD78P0511 processing the operating position signal, data from UPD78P0511 to I<sup>2</sup>C data bus.