Working specification of Handle Remote Controller

1. Working frequencies of remote control uses 2.4GHz ISM BAND and communicate with robot cleaner through 11 frequency channels as follows

   2469MHz, 2425MHz, 2451MHz, 2464MHz, 2403MHz, 2430MHz, 2406MHz, 2422MHz, 2473MHz, 2455MHz, 2479MHz

2. 2 AA batteries are used to supply the power, which is connected to internal IC, and protected by battery power inversely inserted by “BATTERY REVERSE PROTECT.”

3. “MAIN PROCESSOR” receives key inputs by using MATRIX method and transmits outputs corresponding key inputs through “RF MODULE”

4. “SENSOR” ,that is acceleration sensor, reads sensor value according to level of tilting from “MAIN PROCESSOR” and transfer equivalent data as tilting through “RF MODULE”

5. “LOW BATTERY DETECT” is VOLTAGE DETECTOR that monitors battery voltage and informs voltage status of batteries to “MAIN PROCESSOR”

6. “DISPLAY” is LED screen that shows press status of keys pressed and RF transmitting status.

Working specification of main body (robot cleaner)

1. Working frequencies of main body uses 2.4GHz ISM BAND and communicate with robot cleaner through 11 frequency channels as follows

   2469MHz, 2425MHz, 2451MHz, 2464MHz, 2403MHz, 2430MHz, 2406MHz, 2422MHz, 2473MHz, 2455MHz, 2479MHz.

2. Robot cleaner basically performs certain patterns and mapping with operating wheel motors, brush motors, suction motor based on several sensor information according to internal SOFTWARE ALGORISM.

3. Data transmitted by “RF MODULE” is processed by “MAIN PROCESSOR” and each corresponding functions work and control and perform, by internal SOFTWARE ALGORISM, units as follows

- DISPLAY

- MOTOR POWER(ON/OFF)

- SENSOR SIGNAL.

- MOTORS (WHEEL, BRUSH, FAN)

- ANALOG SIGNAL TO SPEAKER.

- EXTERNAL FLASH MEMORY

- CHARGER TO BATTERY

4. It uses LiFePO4(Lithium iron phosphate) battery as main power and is NORMAL VOLTAGE 12.8VDC, MAX VOALTAGE 14.6VDC

5. Through “5V DC-DC CONVERTER”, battery power is supplied to following internal circuit.

- LOGIC IC

- ENCODER

- LED DISPLAY

- SENSOR

- AUDIO AMP’ & SPEAKER

6. 5V power is supplied to “3.3VDC LDO” and 3.3V power is supplied to following internal circuit.

- MAIN PROCESSOR

- LOGIC IC

- KEY SWITCH

- FLASH MEMORY

- SENSOR

- RF MODULE

7. Through “MOTOR POWER CONTROL”, battery power is supplied to motors (WHEEL, BRUSH, FAN)

8. “MAIN POWER SWITCH” is physical switch and it can cut off or supply power to whole circuit by “MAIN POWER CONTROL”

9. External “18VDC ADAPTER” power is voltage for charging battery and charges at least 95% of battery capacity through “BATTERY CHARGE DRIVER” controlled by “MAIN PROCESSOR”.

10. FLASH MEMORY saves several status information and setting value of robot cleaner and additionally saves distinct PHYSICAL ADDRESS for synchronization (MATCHING) of remote control.

11. Internal motors (WHEEL, BRUSH, FAN) control RPM and speed according to PWM(Pulse Width Modulation) signal based on data processed by input signal like sensor value of MAIN PROCESSOR

12. Display has a 8x8 MATRIX structure from MAIN PROCESSOR and it is printed out in order for a short time.

13. “FRONT & BOTTOM OBSTACLE SENSOR” controls motors as internal algorithm judging if obstacle exists or not after getting signal reflected from obstacle, which pulse signal out of MAIN PROCESSOR changed to, through ADC(Analog to Digital Convertor)

14. “KEY SWITCH” is function to input signals regarding power ON/OFF(Display power and motors power), mode selection, start/stop to MAIN PROCESSOR