Contents

FNK0097：Freenove Omni Wheel Car Kit for Raspberry Pi Pico

Supported Communication

Communication	Bluetooth Device Name
Bluetooth	BT05

Communication Command Format

The communication command format is as follows:
"A#10#20#30#40#50#\n".
Where the first character of each command is the command character, used to distinguish the general category of the command, such as "A".
The character "#" is the delimiter between the command character and the parameters, used to split the string.
Each command ends with a newline character "#\n", which is used to separate each command.

When parsing commands, one should first split the commands with “\n”, then split the command character and parameters of each command with “#”. If there is any remaining content after splitting with “\n”, it should be concatenated into the parsing of the subsequent commands.

Each command consists of a command character and parameters, with one command character and a variable number of parameters, ranging from 0 to n, depending on the specific command.

Command Characters of FNK0097

```
#define ENTER                   '\n'
#define INTERVAL_CHAR           '#'
#define CMD_MOTOR_Bluetooth     'A'
#define CMD_LED_Bluetooth       'C'
#define CMD_BUZZER_Bluetooth    'D'
#define CMD_ULTRASONIC_Bluetooth 'E'
#define CMD_STATE_Bluetooth     'M'
#define CMD_CIRCLE_Bluetooth    'B'
#define CMD_BATTERY _Bluetooth  'F'
```

Communication Protocol of FNK0097

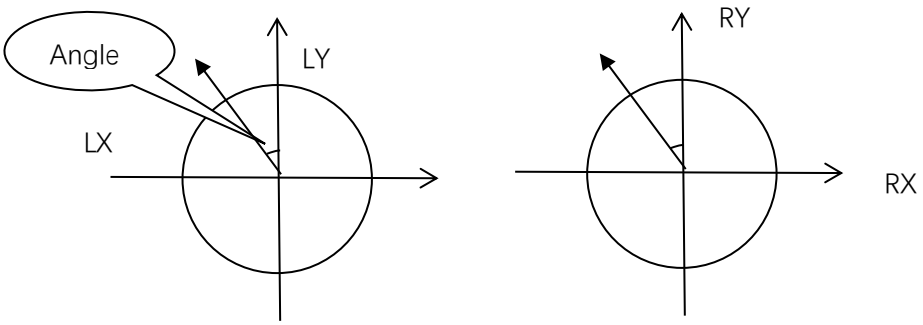
```
CMD_MOTOR_Bluetooth = "A"
```

This command controls the car’s basic movements.

Format: A#Parameter1#Parameter2#Parameter3#Parameter4\n, where:

- Parameter1 represents the angle between the joystick direction and the Y-axis, with a range of 0-180 for the negative semi-axis and 0-(-180) for the positive semi-axis.
- Parameter2 represents the length of the joystick, with a range of 0-100.
- Parameter3 represents the angle of the second joystick, with a similar range as Parameter1.
- Parameter4 represents the length of the second joystick, with a range similar to Parameter2.

App Commands	Actions
CMD_M_MOTOR#0#100#0#0\n	Car moves forward (at a speed of 100)
CMD_M_MOTOR#180#100#0#0\n	Car moves backward (at a speed of 100)
CMD_M_MOTOR#0#0#90#100\n	Car turns left (at a speed of 100)
CMD_M_MOTOR#0#0#-90#100\n	Car turns right (at a speed of 100)
CMD_M_MOTOR#0#0#0#0\n	Car stops
CMD_M_MOTOR#90#100#0#0\n	Car moves left (at a speed of 100)
CMD_M_MOTOR#-90#100#0#0\n	Car moves right (at a speed of 100)
CMD_M_MOTOR#45#100#0#0\n	Car moves diagonally forward to the left (at a speed of 100)
CMD_M_MOTOR#-45#100#0#0\n	Car moves diagonally forward to the right (at a speed of 100)
CMD_M_MOTOR#135#100#0#0\n	Car moves diagonally backward to the left (at a speed of 100)
CMD_M_MOTOR#-135#100#0#0\n	Car moves diagonally backward to the right (at a speed of 100)



CMD_LED_Bluetooth = "C"

This command is to change the LED modes.

App Commands	Modes
C#0\n	OFF
C#1\n	RGB control (manually, with RGB input)
C#2\n	Pursuit Mode (with RGB input)
C#3\n	Blink Mode (with RGB input)
C#4\n	Breathing Mode (with RGB input)
C#5\n	Rainbow Breathing Mode (RGB parameters are invalid)

CMD_BUZZER_Bluetooth = "D"

This command controls the buzzer.

The frequency of the buzzer is fixed at 2000.

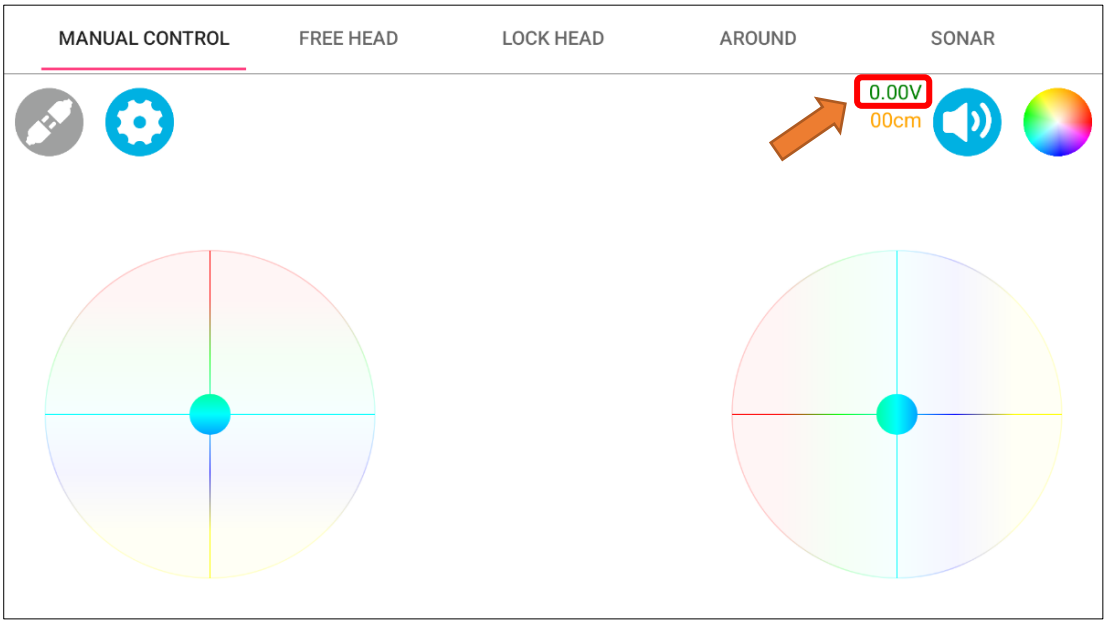
App Command	Action
D#2000\n	Activate buzzer
D#0\n	Deactivate buzzer

CMD_POWER_Bluetooth = "F"

This command checks the battery power.

The slave device proactively sends data to the master device in the format: P#Battery Voltage\n (Example: P#8.12\n). In the APP, this voltage value will be displayed, with the unit being millivolts (mv).

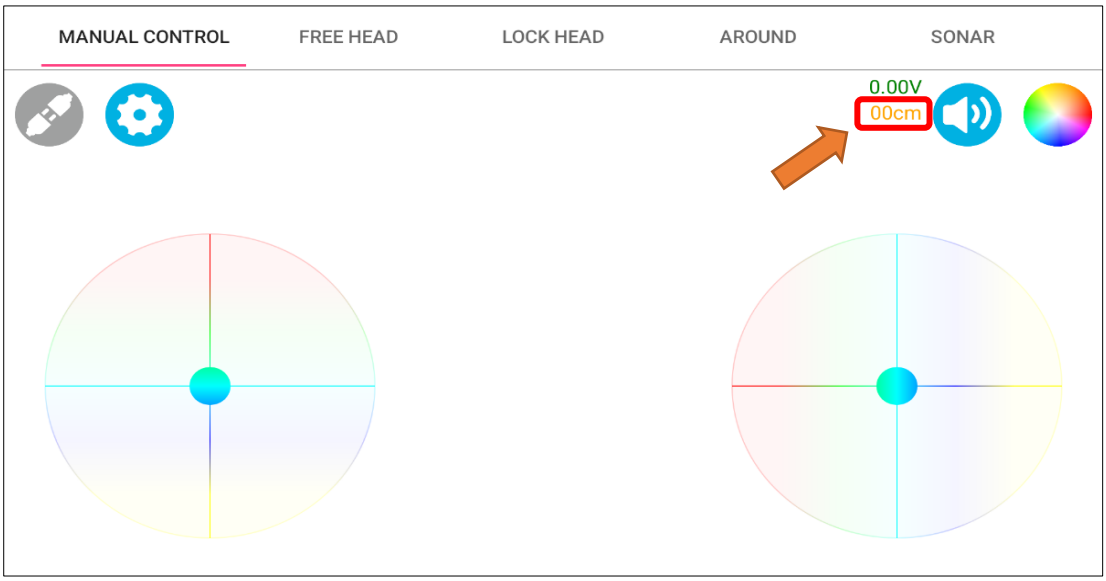
APP Command	Display on APP
P#8123\n	8.123V



CMD_ULTRASONIC_Bluetooth = "E"

The slave device proactively sends data to the master device in the format: E#Distance Value\n (Example: E#22\n). In the APP, this distance value will be displayed, with the unit being centimeters (cm).

APP Command	Display on APP
E#22\n	22cm



CMD_STATE_Bluetooth = "M"

This command changes the car's mode.

Format: M#Mode No.#\n (Example: M#0#\n)

APP Command Table

APP Commands	Modes
M#0#\n	Manual Control
M#1#\n	Free Head Mode
M#2#\n	Lock Head Mode
M#3#\n	Around Mode
M#4#\n	Sonar Mode

CMD_CIRCLE_Bluetooth = "B"

Thi command changes the parameters of Around Mode.

Format: B#circle direction#circle radus#\n (Example: B#0#100#\n)

APP Command Table:

APP Commands	Modes
B#0#100#\n	Clockwise, with a circle radius of 100 cm.
B#1#100#\n	Counterclockwise, with a circle radius of 100 cm.

Please note: The circle radius can be changed according to requirements, with 100 cm used as an example in the table.