

Bluetooth4.0 communication protocol

| General protocol             | 1                  | 2             | 3                | 4             | 5                | 6             | 7                | 8             | 9                | 10            | 11               | 12         | 13               | 14         | 15               | 16          | 17               | 18          | 19               | Analytical position |  |
|------------------------------|--------------------|---------------|------------------|---------------|------------------|---------------|------------------|---------------|------------------|---------------|------------------|------------|------------------|------------|------------------|-------------|------------------|-------------|------------------|---------------------|--|
|                              | Data packet header | Command bit_1 | Separator symbol | Command bit_2 | Separator symbol | Command bit_3 | Separator symbol | Command bit_4 | Separator symbol | Command bit_6 | Separator symbol | Data bit_8 | Separator symbol | Data bit_9 | Separator symbol | Data bit_10 | Separator symbol | Data bit_11 | Data Packet tail | Remarks             |  |
| stop                         | \$                 | 0             | ,                | 0             | ,                | 0             | ,                | 0             | ,                | 0             | ,                | 0          | ,                | 0          | ,                | 0           | ,                | 0           | ,                | #                   |  |
| run                          | \$                 | 1             | ,                | 0             | ,                | 0             | ,                | 0             | ,                | 0             | ,                | 0          | ,                | 0          | ,                | 0           | ,                | 0           | ,                | #                   |  |
| back                         | \$                 | 2             | ,                | 0             | ,                | 0             | ,                | 0             | ,                | 0             | ,                | 0          | ,                | 0          | ,                | 0           | ,                | 0           | ,                | #                   |  |
| turn left                    | \$                 | 3             | ,                | 0             | ,                | 0             | ,                | 0             | ,                | 0             | ,                | 0          | ,                | 0          | ,                | 0           | ,                | 0           | ,                | #                   |  |
| turn right                   | \$                 | 4             | ,                | 0             | ,                | 0             | ,                | 0             | ,                | 0             | ,                | 0          | ,                | 0          | ,                | 0           | ,                | 0           | ,                | #                   |  |
| spin left                    | \$                 | 0             | ,                | 1             | ,                | 0             | ,                | 0             | ,                | 0             | ,                | 0          | ,                | 0          | ,                | 0           | ,                | 0           | ,                | #                   |  |
| spin right                   | \$                 | 0             | ,                | 2             | ,                | 0             | ,                | 0             | ,                | 0             | ,                | 0          | ,                | 0          | ,                | 0           | ,                | 0           | ,                | #                   |  |
| whistle                      | \$                 | 0             | ,                | 0             | ,                | 1             | ,                | 0             | ,                | 0             | ,                | 0          | ,                | 0          | ,                | 0           | ,                | 0           | ,                | #                   |  |
| accelerate                   | \$                 | 0             | ,                | 0             | ,                | 0             | ,                | 1             | ,                | 0             | ,                | 0          | ,                | 0          | ,                | 0           | ,                | 0           | ,                | #                   |  |
| decelerate                   | \$                 | 0             | ,                | 0             | ,                | 0             | ,                | 2             | ,                | 0             | ,                | 0          | ,                | 0          | ,                | 0           | ,                | 0           | ,                | #                   |  |
| Front servo, turn left       | \$                 | 0             | ,                | 0             | ,                | 0             | ,                | 0             | ,                | 1             | ,                | 0          | ,                | 0          | ,                | 0           | ,                | 0           | ,                | #                   |  |
| Front servo, turn right      | \$                 | 0             | ,                | 0             | ,                | 0             | ,                | 0             | ,                | 2             | ,                | 0          | ,                | 0          | ,                | 0           | ,                | 0           | ,                | #                   |  |
| Vertical servo, turn up      | \$                 | 0             | ,                | 0             | ,                | 0             | ,                | 0             | ,                | 3             | ,                | 0          | ,                | 0          | ,                | 0           | ,                | 0           | ,                | #                   |  |
| Vertical servo, turn down    | \$                 | 0             | ,                | 0             | ,                | 0             | ,                | 0             | ,                | 4             | ,                | 0          | ,                | 0          | ,                | 0           | ,                | 0           | ,                | #                   |  |
| horizontal servo, turn left  | \$                 | 0             | ,                | 0             | ,                | 0             | ,                | 0             | ,                | 6             | ,                | 0          | ,                | 0          | ,                | 0           | ,                | 0           | ,                | #                   |  |
| horizontal servo, turn right | \$                 | 0             | ,                | 0             | ,                | 0             | ,                | 0             | ,                | 7             | ,                | 0          | ,                | 0          | ,                | 0           | ,                | 0           | ,                | #                   |  |
| horizontal servo reset       | \$                 | 0             | ,                | 0             | ,                | 0             | ,                | 0             | ,                | 8             | ,                | 0          | ,                | 0          | ,                | 0           | ,                | 0           | ,                | #                   |  |
| Vertical servo reset         | \$                 | 0             | ,                | 0             | ,                | 0             | ,                | 0             | ,                | 5             | ,                | 0          | ,                | 0          | ,                | 0           | ,                | 0           | ,                | #                   |  |
| Front servo reset            | \$                 | 0             | ,                | 0             | ,                | 0             | ,                | 0             | ,                | 0             | ,                | 0          | ,                | 0          | ,                | 0           | ,                | 1           | ,                | #                   |  |
| light                        | \$                 | 0             | ,                | 0             | ,                | 0             | ,                | 0             | ,                | 0             | ,                | 0          | ,                | 1          | ,                | 0           | ,                | 0           | ,                | #                   |  |
| outfire                      | \$                 | 0             | ,                | 0             | ,                | 0             | ,                | 0             | ,                | 0             | ,                | 0          | ,                | 0          | ,                | 1           | ,                | 0           | ,                | #                   |  |
| Front servo, reset           | \$                 | 0             | ,                | 0             | ,                | 0             | ,                | 0             | ,                | 0             | ,                | 0          | ,                | 0          | ,                | 0           | ,                | 1           | ,                | #                   |  |

Just for Raspberry Pi

Temporarily not supported  
0: none, 1: white, 2, red, 3: green, 4: blue, 5: cyan, 6 magenta 7, yellow 8, extinguish

| Read Sensor return value | ultrasonic                                 |             |                  |              | voltage |                  |              |       | Grayscale        |              |       |                  | tracking     |       |                  |              | infrared obstacle avoidance |                  |              |       | Light-seeking    |              |       |                  |
|--------------------------|--|-------------|------------------|--------------|---------|------------------|--------------|-------|------------------|--------------|-------|------------------|--------------|-------|------------------|--------------|-----------------------------|------------------|--------------|-------|------------------|--------------|-------|------------------|
|                          | Data packet header                         | Command bit | Separator symbol | Command word | value   | Separator symbol | Command word | value | Separator symbol | Command word | value | Separator symbol | Command word | value | Separator symbol | Command word | value                       | Separator symbol | Command word | value | Separator symbol | Command word | value | Data Packet tail |
| Remarks                  | \$   | 4WD         | ,                | CSB          | VALUE   | ,                | PV           | VALUE | ,                | GS           | VALUE | ,                | LF           | VALUE | ,                | HW           | VALUE                       | ,                | GM           | VALUE | ,                | L1R1         | VALUE | #                |
| Eg                       | \$4WD,CSB125,PV8.3,GS214,LF1011,HW01,GM10# |             |                  |              |         |                  |              |       |                  |              |       |                  |              |       |                  |              |                             |                  |              |       |                  |              |       |                  |

| manipulator reading | manipulatorJ1      |             |                  |              | manipulatorJ2 |                  |              |       | manipulatorJ3    |              |       |                  | manipulatorJ4 |       |                  |              | manipulatorJ5 |                  |              |       | manipulatorJ6    |              |       |                  |
|---------------------|--------------------|-------------|------------------|--------------|---------------|------------------|--------------|-------|------------------|--------------|-------|------------------|---------------|-------|------------------|--------------|---------------|------------------|--------------|-------|------------------|--------------|-------|------------------|
|                     | Data packet header | Command bit | Separator symbol | Command word | value         | Separator symbol | Command word | value | Separator symbol | Command word | value | Separator symbol | Command word  | value | Separator symbol | Command word | value         | Separator symbol | Command word | value | Separator symbol | Command word | value | Data Packet tail |
| Remarks             | \$                 | 4WD         | ,                | J1           | VALUE         | ,                | J2           | VALUE | ,                | J3           | VALUE | ,                | J4            | VALUE | ,                | J5           | VALUE         | ,                | J6           | VALUE | ,                | 0~180°       | VALUE | #                |

| Gyro reading | MPU6050            |             |                  |              | MPU6050 |                  |              |       | MPU6050          |              |       |                  | MPU6050      |       |                  |              | MPU6050 |                  |              |       |                  |              |       |                  |
|--------------|--------------------|-------------|------------------|--------------|---------|------------------|--------------|-------|------------------|--------------|-------|------------------|--------------|-------|------------------|--------------|---------|------------------|--------------|-------|------------------|--------------|-------|------------------|
|              | Data packet header | Command bit | Separator symbol | Command word | value   | Separator symbol | Command word | value | Separator symbol | Command word | value | Separator symbol | Command word | value | Separator symbol | Command word | value   | Separator symbol | Command word | value | Separator symbol | Command word | value | Data Packet tail |
| Remarks      | \$                 | 4WD         | ,                | MPUgx        | VALUE   | ,                | MPUgy        | VALUE | ,                | MPUgz        | VALUE | ,                | MPUax        | VALUE | ,                | MPUay        | VALUE   | ,                | MPUaz        | VALUE | ,                | VALUE        | VALUE | #                |

| manipulator reading | manipulatorJ1      |             |                  |              | manipulatorJ2 |                  |              |       | manipulatorJ3    |              |       |                  | manipulatorJ4 |       |                  |              | manipulatorJ5 |                  |              |       | manipulatorJ6    |              |       |                  |
|---------------------|--------------------|-------------|------------------|--------------|---------------|------------------|--------------|-------|------------------|--------------|-------|------------------|---------------|-------|------------------|--------------|---------------|------------------|--------------|-------|------------------|--------------|-------|------------------|
|                     | Data packet header | Command bit | Separator symbol | Command word | value         | Separator symbol | Command word | value | Separator symbol | Command word | value | Separator symbol | Command word  | value | Separator symbol | Command word | value         | Separator symbol | Command word | value | Separator symbol | Command word | value | Data Packet tail |
| Remarks             | \$                 | 4WD         | ,                | ServoJ1      | VALUE         | ,                | J2           | VALUE | ,                | J3           | VALUE | ,                | J4            | VALUE | ,                | J5           | VALUE         | ,                | J6           | VALUE | ,                | 0~180°       | VALUE | #                |

| control servo PTZ | PTZ Servo          |             |                  |              |       |                  |
|-------------------|--------------------|-------------|------------------|--------------|-------|------------------|
|                   | Data packet header | Command bit | Separator symbol | Command word | value | Data Packet tail |
| Remarks           | \$                 | 4WD         | ,                | PTZ          | VALUE | #                |

| control colorLED | R                  |             |                  |              | G     |                  |              |       | B                |              |       |                  |              |       |                  |
|------------------|--------------------|-------------|------------------|--------------|-------|------------------|--------------|-------|------------------|--------------|-------|------------------|--------------|-------|------------------|
|                  | Data packet header | Command bit | Separator symbol | Command word | value | Separator symbol | Command word | value | Separator symbol | Command word | value | Separator symbol | Command word | value | Data Packet tail |
| Remarks          | \$                 | 4WD         | ,                | CLR          | VALUE | ,                | CLG          | VALUE | ,                | CLB          | VALUE | ,                | VALUE        | VALUE | #                |

| Choose mode | choose mode   |             |                  |              |       |                  |
|-------------|---|-------------|------------------|--------------|-------|------------------|
|             | Data packet header  | Command bit | Separator symbol | Command word | value | Data Packet tail |
| Remarks     | \$  | 4WD         | ,                | MODE         | VALUE | #                |
| Eg          | 10: remote control mode<br>20: tracking mode<br>30: obstacle avoidance mode<br>40: color led<br>50: light-seeking mode<br>60: |             |                  |              |       |                  |