**Roboat Communication Protocol *V2.0***

***April 26, 2017***



**The protocol now contains 20 bytes, it extends for the MPC control.**

For MPC control, the protocol becomes in the following two cases:

Protocal sending from laptop to microcontroller:

**StartByte**

**RobotID**

**ModeCommand 0x31**

**Force1(float)**

**Force2(float)**

**Force3(float)**

**Force4(float)**

**StopByte**

Protocal sending from the microcontroller to the laptop:

**StartByte**

**RobotID**

**ModeCommand 0x32**

**Xposition(float)**

**Yposition(float)**

**Angle(float)**

**Angularvelocity(float)**

**StopByte**

Description:

|  |  |  |
| --- | --- | --- |
| Start Byte | 0xAA | |
| Stop Byte | 0xFC | |
| Robot ID | 0x00~0xFF | |
| Mode Command | 0x00 | Robot Stop |
| 0x01 | Robot starts moving, the default state is forward swimming |
| 0x02 | Initiate control parameters |
| 0x03 | Save control parameters |
| 0x04 | Forward swimming  Fourth Byte: 1~15 speeds |
| 0x05 | Backward swimming  Fourth Byte: 1~15 speeds |
| 0x06 | Left lateral movement  Fourth Byte: 1~15 speeds |
| 0x07 | Right lateral movement  Fourth Byte: 1~15 speeds |
| 0x08 | Turning clockwise in a spot  Fourth Byte: 1~15 speeds |
| 0x09 | Turning anticlockwise in a spot  Fourth Byte: 1~15 speeds |
| 0x10 | Turning right with a radius  Fourth Byte: 1~15 speeds |
| 0x11 | Turning left with a radius  Fourth Byte: 1~15 speeds |
| 0x12 | Left thruster speed configuration  Fourth Byte: 0x00: speed +  Fourth Byte: 0x01: speed- |
| 0x13 | Right thruster speed configuration  Fourth Byte: 0x00: speed +  Fourth Byte: 0x01: speed- |
| 0x14 | Front thruster speed configuration  Fourth Byte: 0x00: speed +  Fourth Byte: 0x01: speed- |
| 0x15 | Rear thruster speed configuration  Fourth Byte: 0x00: speed +  Fourth Byte: 0x01: speed- |
| 0x16 | Direction Control (With IMU)  5-8 Byte(float type): 0~360 degree |
|  | **0x31** | **MPC command from the laptop** |
|  | **0x32** | **Robot states sending to the laptop for MPC** |