Hovercraft protocol

Table of content

Document Purpose

In this document, there will be explanation about communication between different parts of hovercraft will be discussed as well as the communicational between PC to hovercraft.

Change history

25/03 : The first version of the document containing the prototype of communication protocol is created. This document will be presented in the test and integration meeting on 26/03 to get some feedbacks.

Hovercraft protocol

Fan forward speed: 3bits 111 = 7 110=6 101=5 …
With 3 bits, we can cover form 0 to 7

Fan hovering speed: 2bits 11 = 3 10 = 2 01 = 1 00=off
With 2 bits, we can cover from 0 to 3

Ruder Direction: 2bits 11= Left 10= Right 01=Straight forward
With 2 bits, we can cover left, right, and straight

Hovercraft Speed: 4bits 1111= 15 1110=14 1101=13 …
with 4 bits, we can cover the speed of 0 to 16 (I think this would be the maximum speed...)

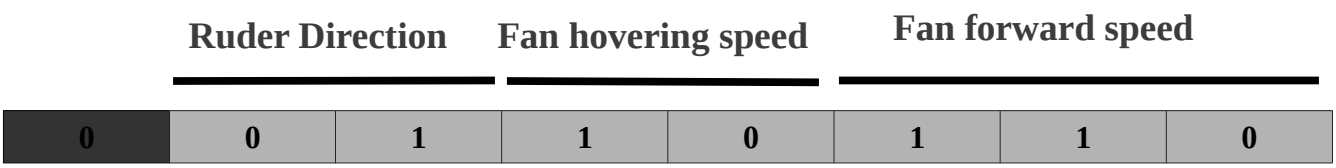
Hovercraft Pressure: 2bits 11= high 10= normal 01= low 00=off
with 2 bits, we can cover 4 levels (high, normal, low, off)

Battery level: 2 bits 11= 3 (full) … 000= 0 (empty)

First Scenario:

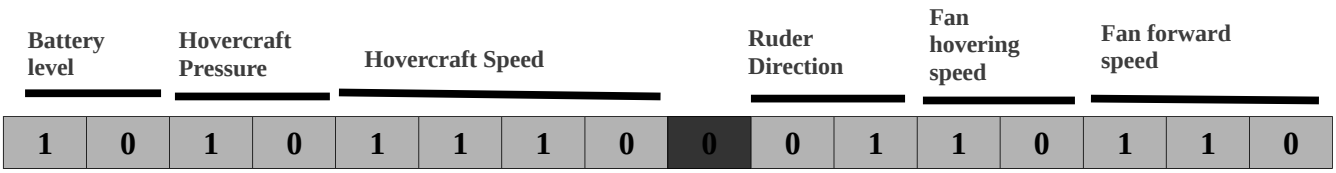
Fan forward speed: off
Fan hovering speed: off
Ruder direction: left

1) The number 58 is sent by PC part (The number range is **0 – 255**)
2) On hovercraft, one binary is received (**58** or in binary **00110110**)
   The binary would be considered as following picture:



3) The following information will be discovered by parsing the binary:
   1. The fan forward speed is : 6
   2. Fan hovering speed is: 2 (normal)
   3. Ruder direction: 1 (straight forward)

4) The following binaries will be sent back to the PC as a result:



Hovercraft protocol 0.2

Description:
One binary containing the message type and it's value will be received on PC or Hovercraft receive. The binary contains 8 bits. The 4-bits with more value in the binary will be the message type and the 4-bits with less value will be the message value. For example:

The following binary is sent from PC to Hovercraft

00001100 (12 in Dec)
The message is Fan Forward Speed 0000
The value is 1100

0000	Fan Forward Speed
0001	Fan Hovering Speed
0010	Ruder Direction
0011	Hovercraft Speed measured by sensors on hovercraft.
0100	Hovercraft Pressure
0101	Battery Level
0110	Connection Request? :-)
0111	
1000	
1001	
1010	
1011	
1100	
1101	
1110	
1111	