Light Play Arduino firmware commands for use with iPad

Version 0.2 of the Light Play hardware can control 3 rainbow lights and 1 motor. The board has two inputs for resistive sensors.

Light Commands

set [all lights, light 1, light 2, light 3] **color to** [12-bit RGBW values]
off [all lights, light 1, light 2, light 3]
fade [all lights, light 1, light 2, light 3] **to** [12-bit RGBW values]
fade out [all lights, light 1, light 2, light 3]
set brightness [all lights, light 1, light 2, light 3] [8-bit value]
set fade speed [8-bit value]

Motor Commands

on thisway
on thatway
off
set motor speed [8-bit value]

Byte Codes

All light and motor commands are encoded in a single byte sent from Scratch to Arduino, according to the following scheme:

Command format

[u u u x x y y y]
upper bits set command type:
001 = motor commands
010 = light commands
011 = other

light commands

[0 1 0 x x y y y]

the *x* bits select which light:

- 0 0 = all lights
- 0 1 = light 1
- 1 0 = light 2
- 1 1 = light 3

the *y* bits select which light command:

- 0 0 0 = **set lightcolor to (RGBW values follow in next 8 bytes)**
- 0 0 1 = **turn off light**
- 0 1 0 = **fade lightcolor to (RGBW values follow in next 8 bytes)**
- 0 1 1 = **fade out light**
- 1 0 0 = **set brightness (divisor value follows in next byte)**
- 1 0 1 - **set fade speed (value in seconds follows in next byte)**

Motor commands

[0 0 1 x x y y y]

the *x* bits are set to zero (it's important to avoid sending byte 0x2B, which is ASCII '+', since this is used by the Adafruit BTLE UART to switch to command mode)

the *y* bits select which motor command:

0 0 0 = **turn on motor thisway**
0 0 1 = **turn on motor thatway**
0 1 0 = **motor off**
0 1 1 = **set motor speed (value follows in next byte)**

Other commands

reset state variables

[0 1 1 0 0 0 0 0]

stopfades

[0 1 1 x x 0 0 1] - **interrupt a light that is fading**

the *x* bits select which light:

0 0 = all lights
0 1 = light 1
1 0 = light 2
1 1 = light 3

Reporting

Arduino streams sensor values at ~ 20 Hz using the following protocol: Transmitted bytes in the range 0-100 contain the value of sensor0 on a 0-100 scale. Transmitted bytes in the range 101-201 contain the value of sensor1 on a 0-100 scale. Transmitted bytes 253,254,255 indicate fade done on channels 1,2,3 respectively.