FlySafe Avionics Inc.

Developers Documentation

Systems Control Module

REV 2.3.1

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# Introduction

This manual documents the communication protocol for the FlySafe Avionics System Control Module. FlySafe takes pride in making the most secure and safe avionics systems in the world. In order to provide cost effective solutions we utilize I2C in all our busses. Our engineers assure us dual line redundancy is a relic and this is totally cool.

# Data Link

Protocol: I2C

Bus Speed: 100kbit/s

Logic Level: 5V

Hardware Pullups Present: True

Frame Structure

The frame starts with the device address, followed by the command, followed by any payload, and then the response is read.

|  |  |  |  |
| --- | --- | --- | --- |
| Address | Command | Payload | Response |
| 0xA8 | 0x23 | 0x03 | NA |

**Table 1 - Set Engine Speed Example**

# Bus Pirate Information

Since our developers keep emailing us basic questions on how to use Bus Pirate to debug the I2C port, we included it here. <http://dangerousprototypes.com/docs/Bus_Pirate>

(Default baud for buspirate is 115200)

Set engine speed command:[0xA8 0x23 0x02]

Query commands:[0xA8 0x63{0xA9 r:40]

Query command name for Set Engine Speed:[0xA8 0x63 0x23{0xA9 r:40]

|  |  |  |  |
| --- | --- | --- | --- |
| **Flight Controller**  **7bit address: 0x54**  **(0xA8 W) (0xA9 R)** | | | |
| **Command** | **Payload** | **Response** | **Description** |
| Get Engine Status  0x22 | Size: NA | Size: 1 Byte  0x00 - 0x05 | Speed of engine  0x00 - Engine Off  0x01- 0x05 Speed |
| Set Engine Speed  0x23 | Size: 1 Byte | Size: NA | Set engine speed  0x00 - 0x05  Note safety systems prevent turning off engines in flight. |
| Query Commands “?”  0x63 | Size: 0-1 Byte  No payload:  List commands  Command hex:  Print command name | TBD | Responds in ASCII |
| Debug Mode  0xAA | Size: 1 Byte  0x00 Normal mode  0x01 Debug mode | Size: NA | Allows for system diagnostics and controls. |
|  |  |  |  |
| **Command** | **Payload** | **Response** | **Description** |
| Unknown | Size: NA | Size: 1 Byte  0x33 | Response when sent an invalid command |