Electric Airplane controlled with Mobile Application

June 14, 2019

Contents

I Introduction **4**

II Components **5**

III Construction **5**

1 Hardware **5**

1.1 Body . . . 5
1.1.1 Chasis . . . 5
1.1.2 Main Frame . . . 5
1.1.3 Wings . . . 5
1.1.4 Tail . . . 5
1.1.5 Ailerons, Elevators and Rudder . . . 5
1.1.6 Wheels . . . 5
1.2 Power . . . 5
1.2.1 Battery . . . 5
1.2.2 Cables and Connectors . . . 5
1.2.3 Electronic Speed Controller . . . 5
1.2.4 5 V & 3.3 V Supplies . . . 5
1.2.5 Charger . . . 5
1.3 Motors . . . 5
1.3.1 Main Power Motors . . . 5
1.3.2 Servo Motors . . . 5
1.4 Microcontrollers . . . 5
1.4.1 NodeMCU . . . 5
1.4.2 Arduino Mega . . . 5
1.5 Sensors . . . 5
1.5.1 Angle . . . 5
1.5.2 Position . . . 5
1.5.3 Voltage . . . 5
1.5.4 Temperature . . . 5
1.5.5 Pressure . . . 5
1.5.6 Hudmity . . . 5
1.5.7 Distance . . . 5
1.5.8 Current . . . 5
1.5.9 Light . . . 5
1.5.10 Camera . . . 5
1.6 Communication . . . 5
1.6.1 Serial . . . 5
1.6.2 I2C . . . 5

2 Software **5**
2.1 Testing Components 5
2.2 Communication 5
2.3 Coding Telemetrics & Diagnostics Web Application 5
2.4 Programing the Main Microcontroller 5
2.5 Programing Other Microcontrollers 5
2.6 Security 5
2.6.1 General 5
2.6.2 Checksum 5

IV Problems **5**

V Documentation **5**

3 Preparing Yourself **5**
3.1 Sunglasses 5
3.2 Apk (one time) 5

4 Preparing the Airplane **5**
4.1 Charging 5
4.2 Checking the Weather Conditions 5
4.3 Checking Airplane's Moving Parts 5
4.4 Powering and Connecting 5

5 Controling the Airplane **5**
5.1 Accellerating 5
5.2 Taking Off 5
5.3 FLYING 5
5.4 Landing 5
5.5 Braking 5

6 Parking the Airplane **5**

VI Troubleshooting/Debugging **5**

VII Conclution **5**

VIII Appendix **5**

IX References **5**

Part I
Introduction

Part II
Components

Part III
Construction

1 Hardware

1.1 Body

1.1.1 Chasis

1.1.2 Main Frame

1.1.3 Wings

1.1.4 Tail

1.1.5 Ailerons, Elevators and Rudder

1.1.6 Wheels

1.2 Power

1.2.1 Battery

1.2.2 Cables and Connectors

1.2.3 Electronic Speed Controller

1.2.4 5 V & 3.3 V Supplies

1.2.5 Charger

1.3 Motors

1.3.1 Main Power Motors

1.3.2 Servo Motors

1.4 Microcontrollers

1.4.1 NodeMCU

1.4.2 Arduino Mega

1.5 Sensors

1.5.1 Angle

1.5.2 Position

1.5.3 Voltage

1.5.4 Temperature

1.5.5 Pressure

1.5.6 Hudmity

1.5.7 Distance

1.5.8 Current