ELECTRIC AIRPLANE CONTROLLED WITH THE MOBILE APPLICATION

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I hereby declare that all information in this document has been obtained and presented in accordance with academic rules and ethical conduct. I also declare that, as required by these rules and conduct, I have fully cited and referenced all material and results that are not original to this work.

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ELECTRIC AIRPLANE CONTROLLED WITH THE MOBILE APPLICATION

Affirmed by Omar Hassan

Signature Date

Abstract

Dedication

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List of Abbreviations

A	Ampere
Ah	Ampere-hour
BEC	Battery Eliminatory Circuit
BLDC	Brushless DC
DC	Direct Current
ESC	Electronic Speed Controller
LED	Light Emitting Diode

S	Cells in series
V	Volt

Acknowledgements

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Part I
Introduction

Part II
Components

Photo	Name	Operating DC Voltage [V]	Current [A]	Description
	Active Buzzer	5	-	
	Antenna	-	-	
	Arduino Mega	5	0.1	
	Battery	11.1	100	LiPo, Turnigy, 3S, 5 Ah
	BME280 Sensor	5	-	
	Boost Converter	5-24	0.1	
	Capacitor	-	-	
	Charger	220 AC, 3.7	3x0.8	Balancing LiPo
	(current)			
	Diode	-	-	
	(dst dallas)			
	ESC	7.4-11.1	30	5 V BEC
	ESP Camera	3.3	0.1	
	Fan	5	0.1	
	(gps)			
	(gyro)			
	Inductor	-	-	
	IRF830 MOSFET	5	0.2	
	LED	3 (24)	0.02	
	LED Flash	12	0.2	
	Motor	0-11.1	10	Out-runner BLDC
	NodeMCU	3.3	0.1	
	Power Wire	400	50	
	Propeller	-	-	10x45
	Resistor	-	-	
	Servo Motor	5		
	(sismis)			
	Switch	400	40	
	Wire	400	5	
	XT60 Connector	400	100	

Part III
Construction

1 Hardware

1.1 Body

1.1.1 Chassis

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 Hudmidity

1.5.7 Distance

1.5.8 Current

1.5.9 Light

1.5.10 Camera

1.6 Communication

1.6.1 Serial

1.6.2 I^2C

2 Software