Advanced Technological Institute

Colombo 15

Higher National Diploma in Engineering

Department of Electrical and Electronics Engineering

Project proposal of

SMART DISTRIBUTION BOARD

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Course : Electrical Engineering (Power)

OBJECTIVES

As a Individual project, I hope to design Smart Distribution Board.

This can be called an improved distribution board than the distribution board we usually use every day. This allows the electricity consumer to safely disconnect and restore the electricity supply to their premises at any time via a mobile phone application over the internet. It also displays the voltage, ampere, frequency flowing through it and can also obtain data about sag and harmonic. All this data is obtained through a serial monitor. This DB board sensitive fire and flood situations and that time indicate to the consumer through the consumer interface.

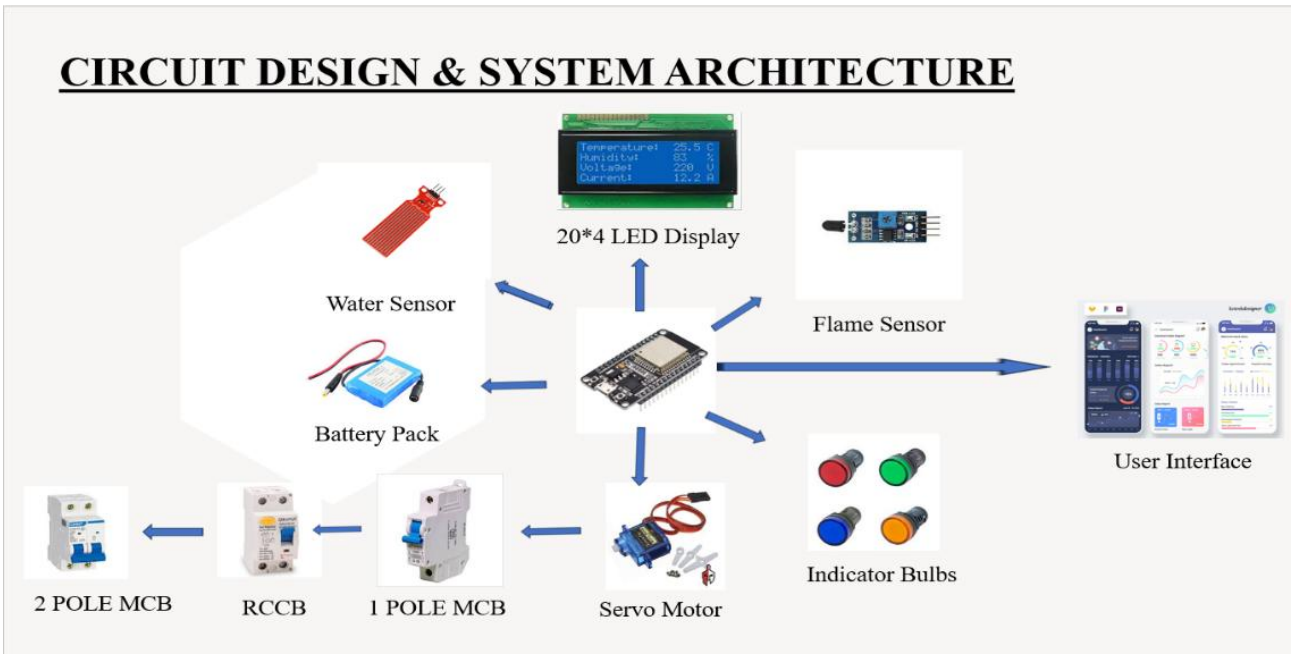
This system will use Sensors, Circuit breakers , Automatic circuit breakers, Distribution panel items and Esp 32 board ,the project seeks to improve efficiency, protectivity, and manage power consumption .

Here, I hope to perform this task maximum efficiency, avoiding human errors.

AIM

This project aims to improve efficiency, give quick response capabilities for emergency situations, remotely operate inaccessible places, take visually output about the voltage and current variations ,take a details about the sag and Harmonics.

CIRCUIT DESIGN & SYSTEM ARCHITECTURE



OBJECTIVES

- To Develop the distribution board working with remotely accessible.
- To calculate voltage ,ampere and frequency level flow through the DB board.
- To give Real Time updated data about Sag and Harmonic.
- To generate a history of the variation of voltage levels during a certain period of the day.
- Indicate Emergency Situations through the consumer interface.
- To make the consumer zone safer and more secure and to consume electricity economically.

METHODOLOGY

- Identify system requirements and technical specifications.
- Develop the system layout, component selection.
- Assemble the components and integrate hardware with software.
- Test the system's functionality, accuracy, and reliability.
- Install the system and assess its performance in a real-world environment.

PROJECT DESCRIPTION

The Smart Distribution Board consists of four main subsystems:

1. Remotely control current Brake down System:

For this, a smart brakes system that can be operated via Wi-Fi is being used, and this can be controlled from anywhere in the world via the internet.

2. Real time data monitoring system:

This Distribution board connected Mobile application and consumer can monitor real time voltage value, Ampere range Frequency Range ,about the sag and Harmonics.

3. Voltage and Current variation Characteristic monitoring system :

Voltage level and current variation real time update through the Wi-Fi and show the Characteristic curves in the serial monitor.

4. Low power level Indicating System:

Identify the low power levels and Indicate the Warning lamp to cutoff the breaker

5. Fire and Flood Detection and Informed the Consumer Immediately:

The water sensor connected to this system alerts the customer to prevent accidents caused by electrical leakage outside in the event of flooding inside the premises.

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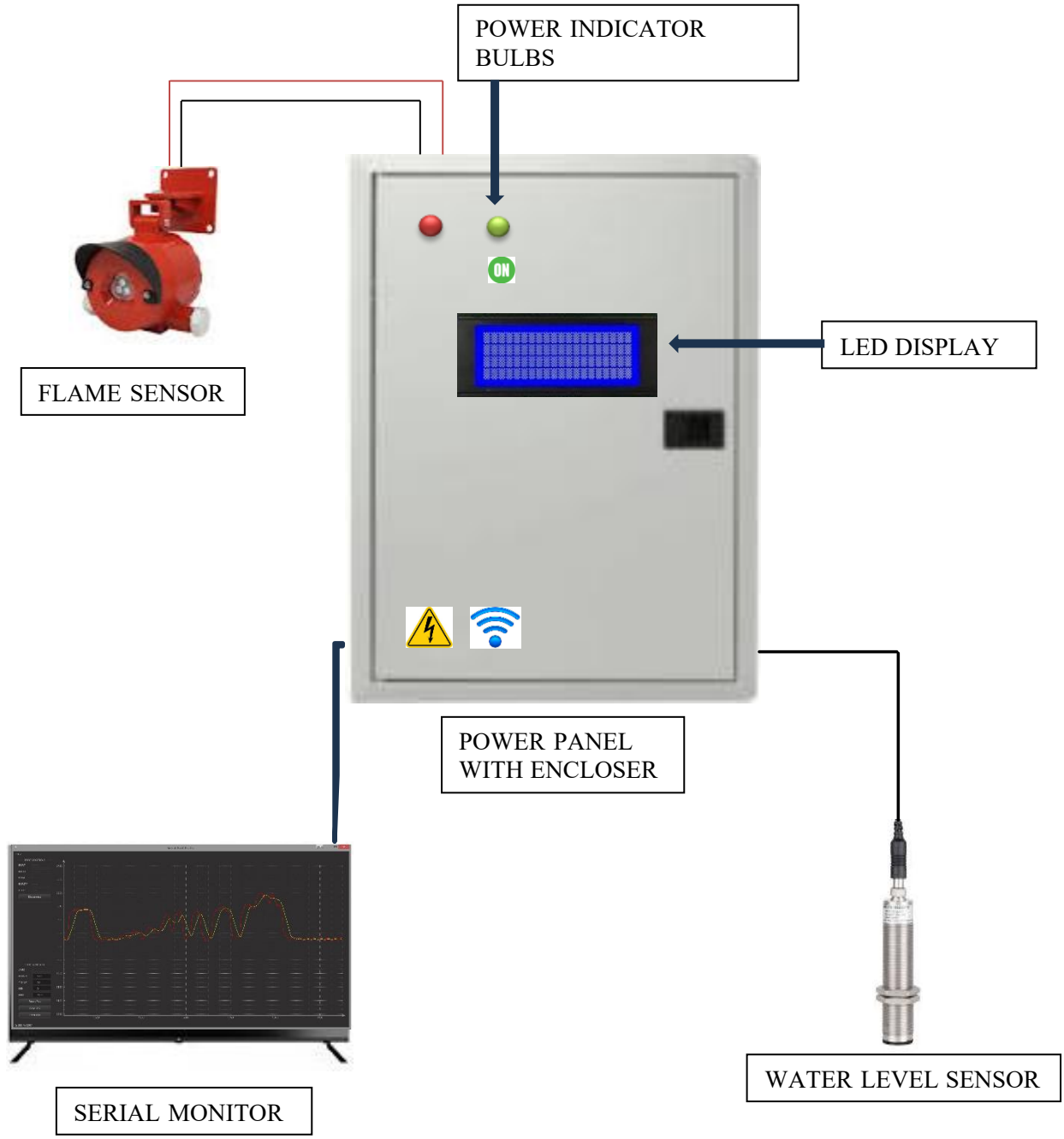
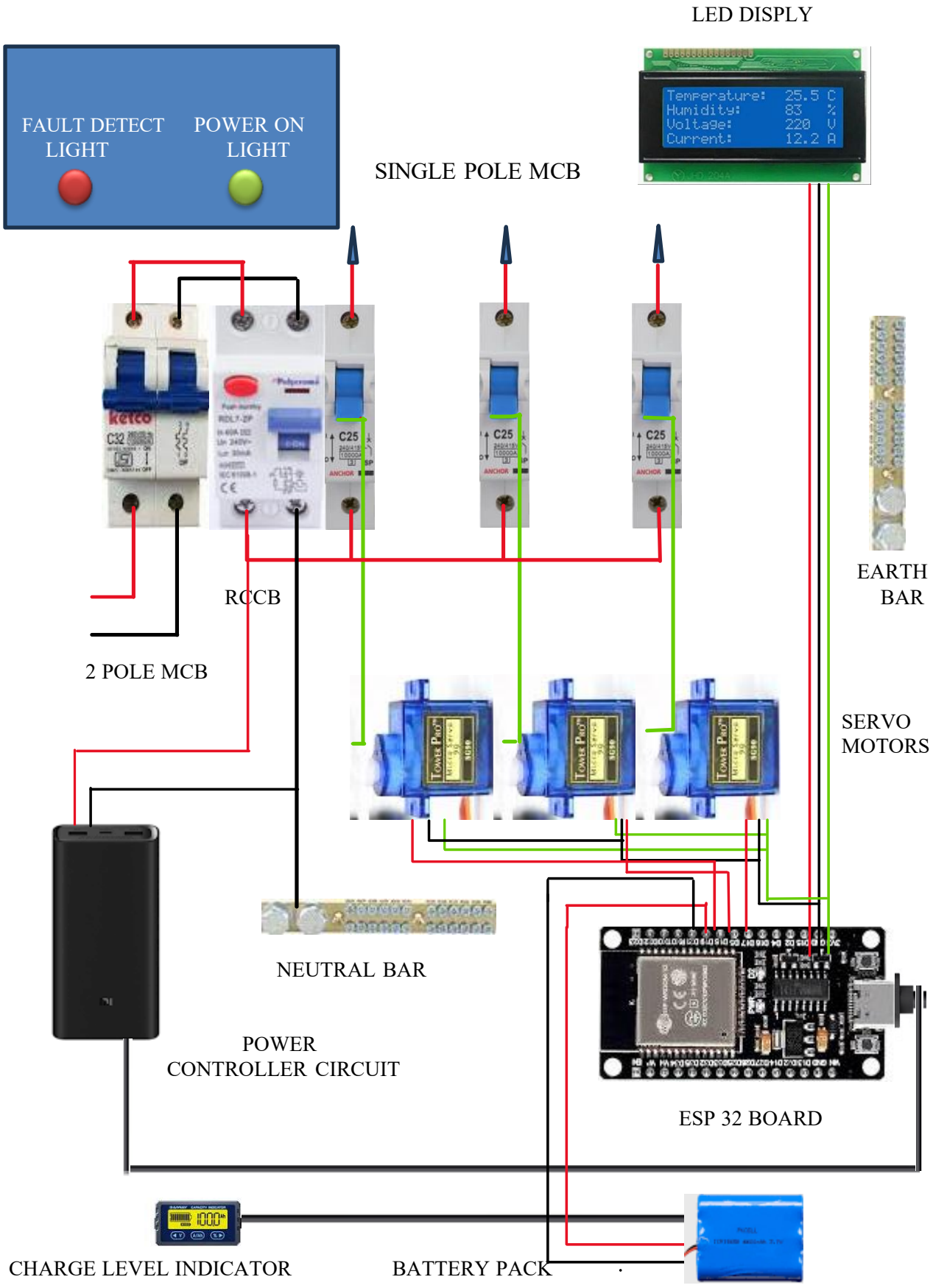
SMART DISTRIBUTION BOARD FINAL BUDJECT REPORT

ITEM	QNTY	PRICE
SNIDER DOUBLE POLE MCB	1	2500.00
RCCB	1	7500.00
SINGLE POLE MCB 16A ,20A	3	1250.00
ORANGE BULB 100W	2	400.00
MG995 SERVO MOTOR	3	3600.00
12V POWER SUPPLY	1	1200.00
SELING HOLDER	2	360.00
PLUG BASE ORANGE	1	900.00
SUNK BOX	1	100.00
TT WIRES 1M	5	500.00
JUMPER CABLE SET	5	750.00
VOLTAGE METER DISPLAY	1	150.00
ESP 32 MODULE	1	1200.00
1A FUSE WITH FUSE HODERS	3	210.00
SINGLE LINE BUS BAR	1	250.00
20*4 LED DISPLAY	1	750.00
230V INDICATOR BULB	4	440.00
BREAD BOARD	1	110.00
SOLDER 2M	1	140.00
20A CURRENT SENSOR	1	630.00
PZEM 004T MODULE	3	7250.00
I2C MODULE	1	140.00
DC JACK SOCKET	1	150.00
WIRE (BLUE &BROWN COLOUR) 1M	2	220.00
SCREW NAILS	20	100.00
EARTH CABLE 1M	3	540.00
CABLE TIE PACKET	1	150.00
DOOR WINDOOR CONNECTERS	2	400.00
DIN RAIL 2 FEET	1	500.00
CABLE LUG	20	100.00
DINRAIL END	8	480.00
BUCK CONVERTER	1	150.00
WIRING CLIP PACKET	1	60.00
DOOR MAGNET	1	80.00
LAKER PAINT	1	580.00
THINNER	1	180.00
WOODS		900.00
RPM 300GEAR MOTOR WITH COUPLING	1	1140.00
L298 MOTOR DRIVE	1	250.00
EARTH BAR	2	250.00
TOTAL		36560.00

COMPONENT PLACEMENT CHART



COMPONENT PLACEMENT CHART



PROJECT TIME LINE

TASK	Sap.				Octomber				November				December			
Identify system requirements and specifications.																
Study the literature (Research papers, Books, Website, etc…																
Components selection.																
Assembly and integration of hardware and software.																
Testing functionality and reliability.																
Installing and assessing real-world performance.																
Finalize the Project.																

PROJECT TITLE : SMART DISTRIBUTION BOARD

SUPERVISED BY : Mr.S.H.T.D.Chandrasena

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Date Supervisor Approval

HEAD OF DEPARTMENT : Eng. R.W.R. Jayasinghe

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Date Supervised Approval