



FAKULTI TEKNOLOGI KEJURUTERAAN ELEKTRIK DAN ELEKTRONIK

**BVI 1112 TECHNOLOGY SKILL AND DEVELOPMENT IN ELECTRONIC
AUTOMATION I**

Technical Report & Commercial Offer

BIL	NO ID	NAME
1	VC23054	AHMAD SYAHIDUL AMIN BIN MOHAMAD AZNAL
2	VC23053	MUHAMMAD AMIRUL ADLY BIN MOHAMAD RASHIDI

TABLE OF CONTENTS

No	Contents	Pages
	<i>Front page</i>	i
	<i>Table of content</i>	ii
1.0	Introduction	1
	Objective	1
2.0	Technical proposal based on original design	2
	2.1 Electrical one-line diagram	2
	2.2 Schematic diagram	3
	2.3 2D equipment layout	7
	2.4 3D equipment layout	8
	2.5 PLC I/O list	9
	2.6 Conclusion	9
3.0	Commercial offer	10
	3.1 Quotation summary	10
	3.2 Bill of Material cost	10
	3.3 Consumable cost	13
	3.4 Training cost	14
4.0	Term and condition supply	15
5.0	Project execution plan	17
	5.1 Project organization chart	17
	5.2 Role and responsibility for the team	17
	5.3 Gantt chart (timeline)	19

1.0 Introduction

In industrial and automation, creating a diagram has always been an important task before we start doing the installation. Diagrams are essential for designing, implementing and maintaining industrial and automation systems. A pneumatic diagram usually represents the flow and control of a compressed air system, understanding the operations and troubleshooting. An electrical line diagram simplifies the electrical circuits with one line diagram. A schematic diagram provides a detailed view of electrical systems represented with component symbols and connection. The 2D and 3D equipment layouts are for planning and visualization of our system. Distribution Box I/O list document list out the input and output points of panels. PLC I/O list clarifies the input and output card including the field devices.

- **OBJECTIVE**

- i. Automate the process further and enhance its reliability
- ii. increase system flexibility and simplify maintenance
- iii. Optimize performance and efficiency by implementing PLC based Control
- iv. Deliver a technical and commercial proposal to ensure a clear project overview

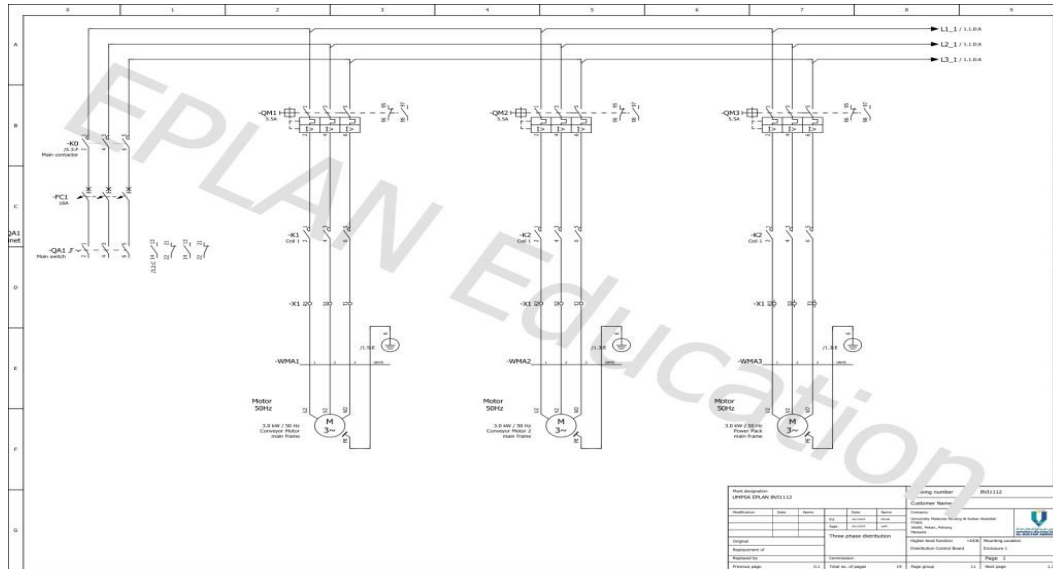
Electrical one-line diagram is for us to show the simple diagram rather than three phase distribution diagrams.



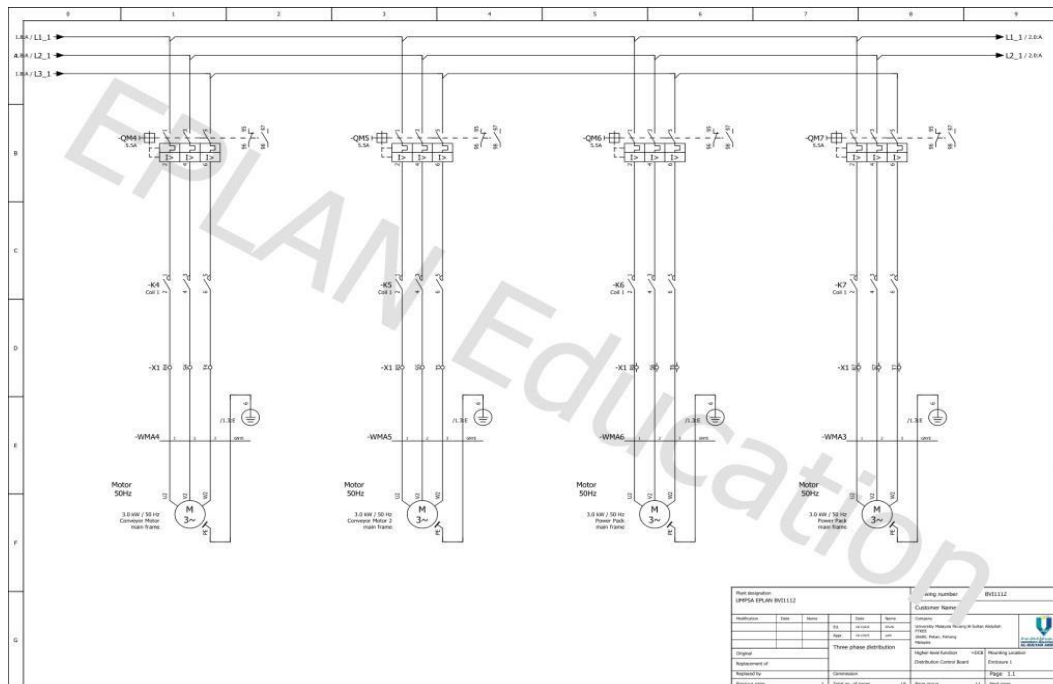
2.2 Schematic Diagram

Showing the detail of the electrical or electronic systems, showing how components interact and the connections.

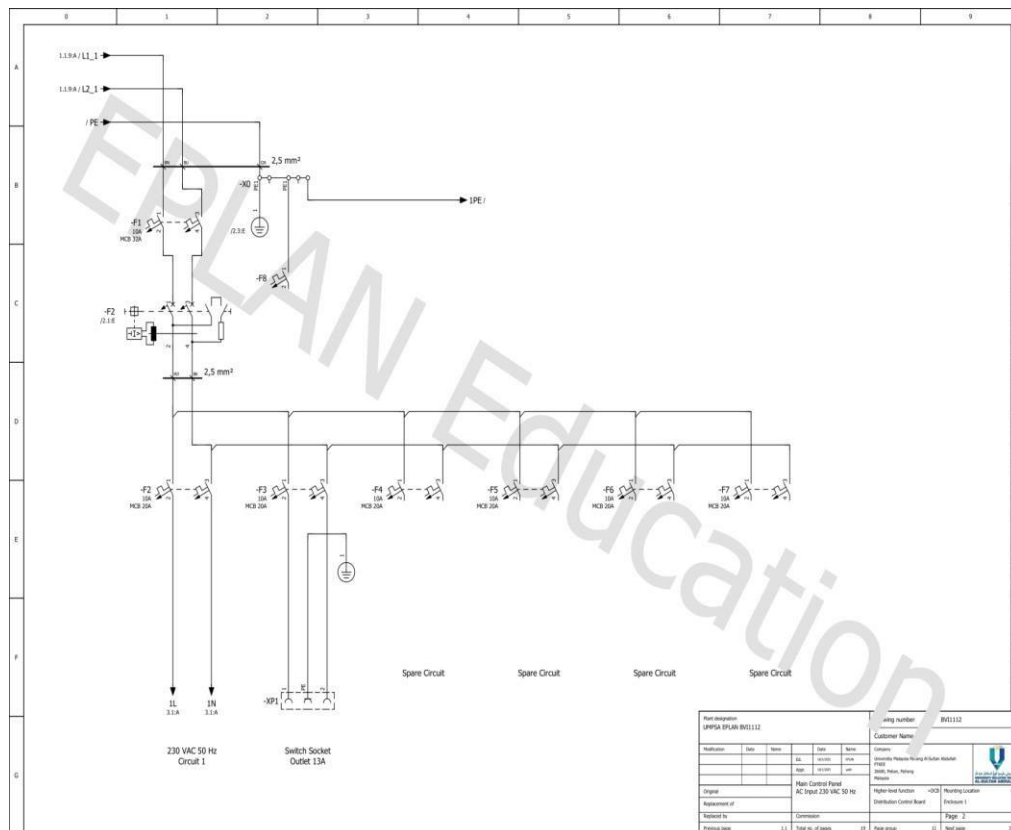
Three Phase Distribution 1



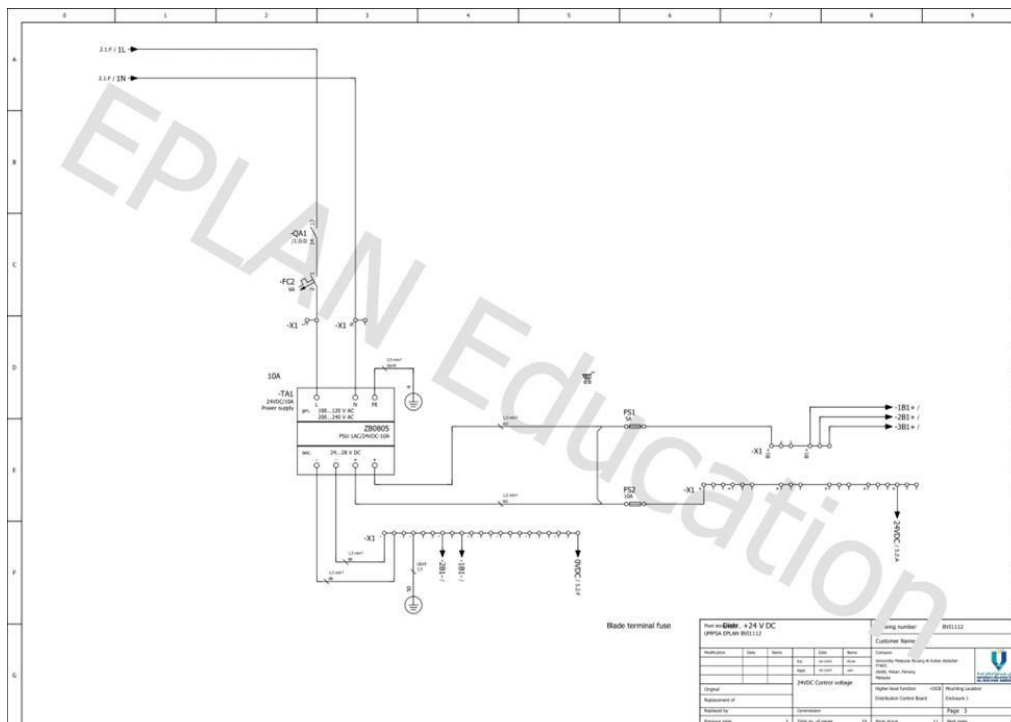
Three Phase Distribution 2



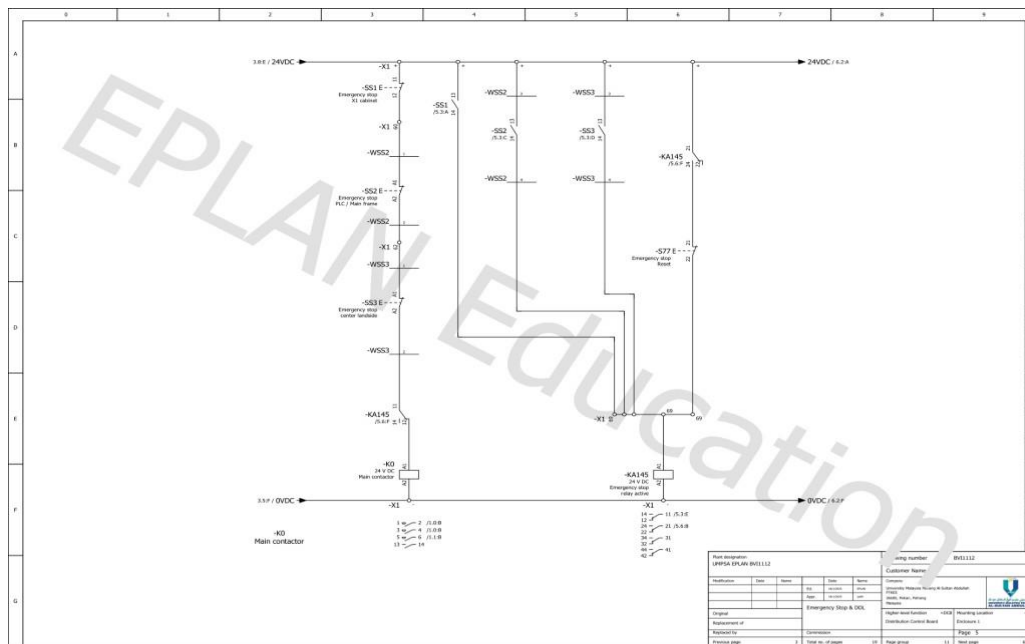
Main Control Panel AC



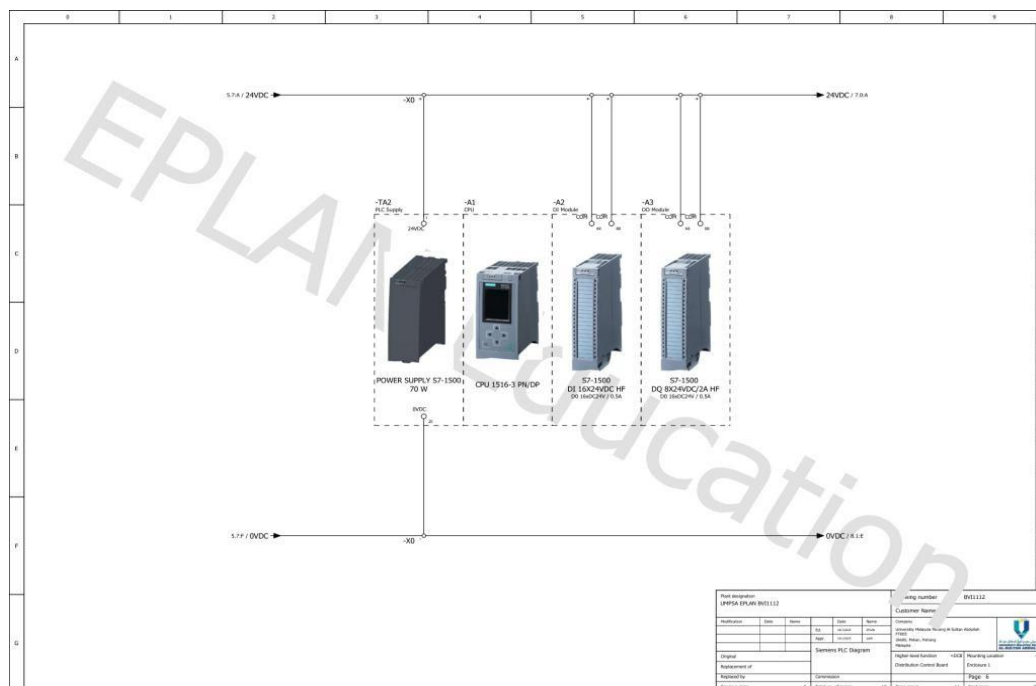
24V Main Control Voltage



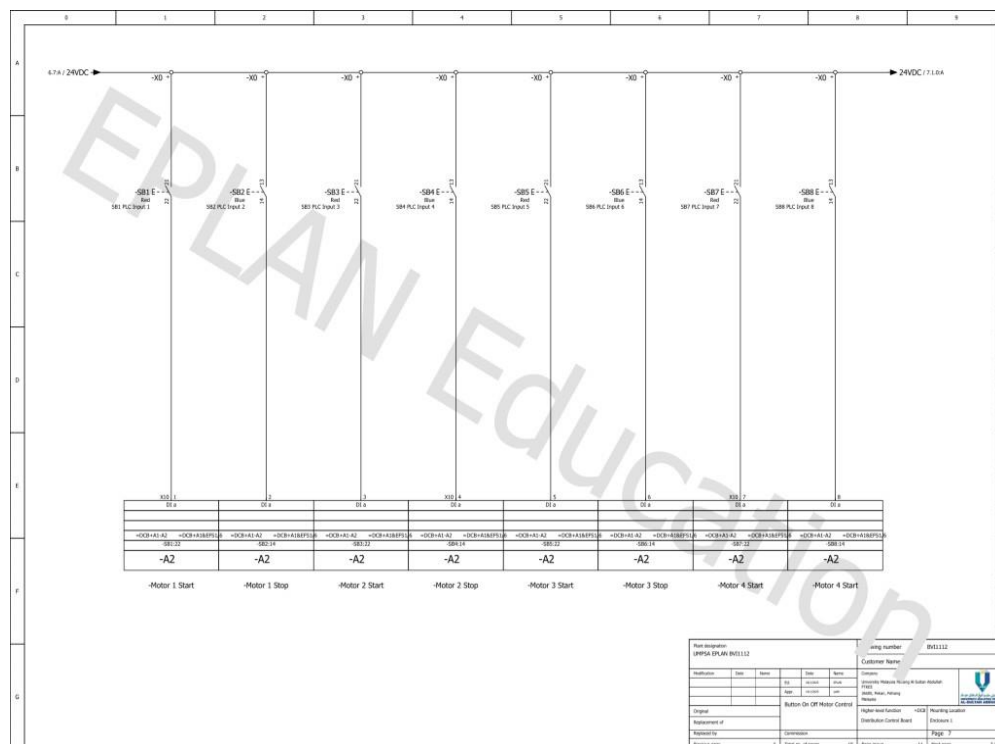
Emergency Stop Button



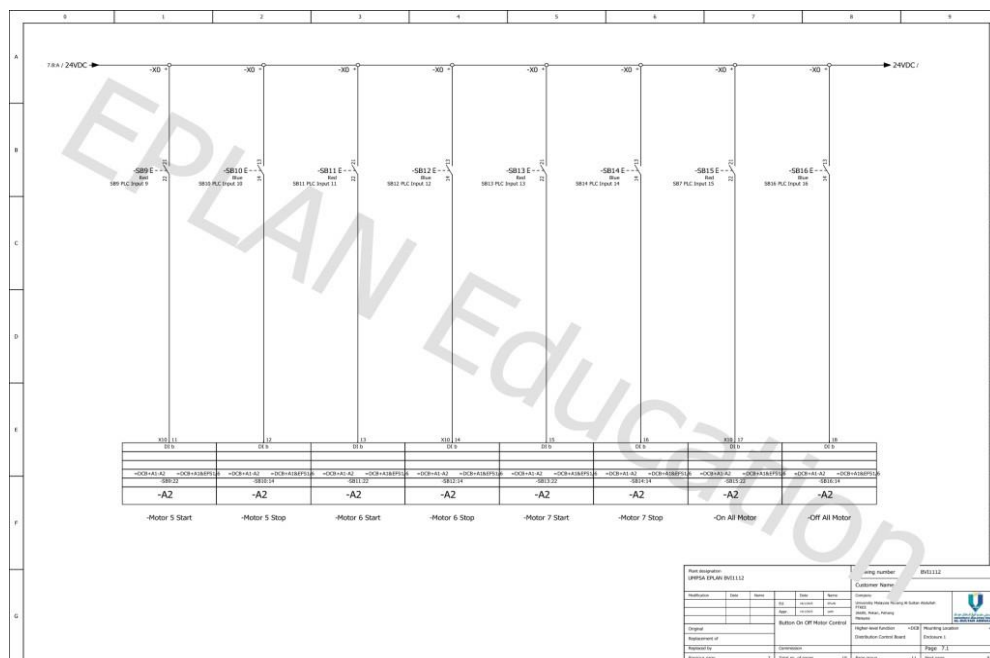
Siemens PLC Diagram



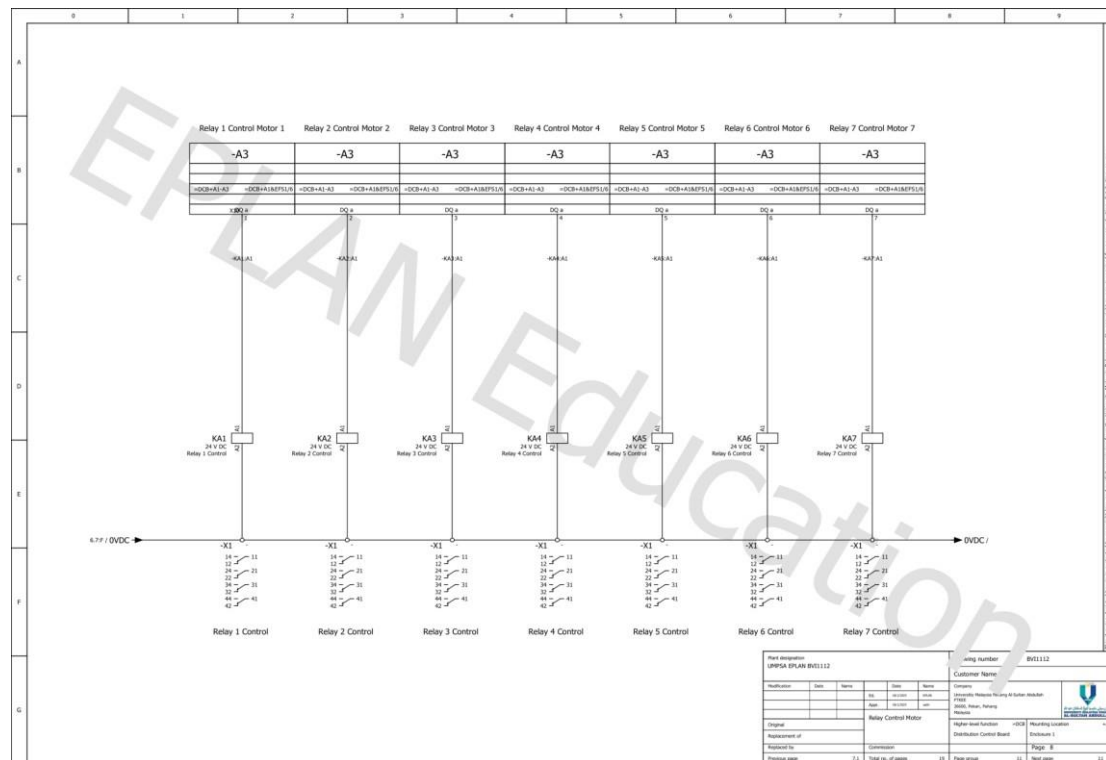
Button On Off Motor Control 1



Button On Off Motor Control 2

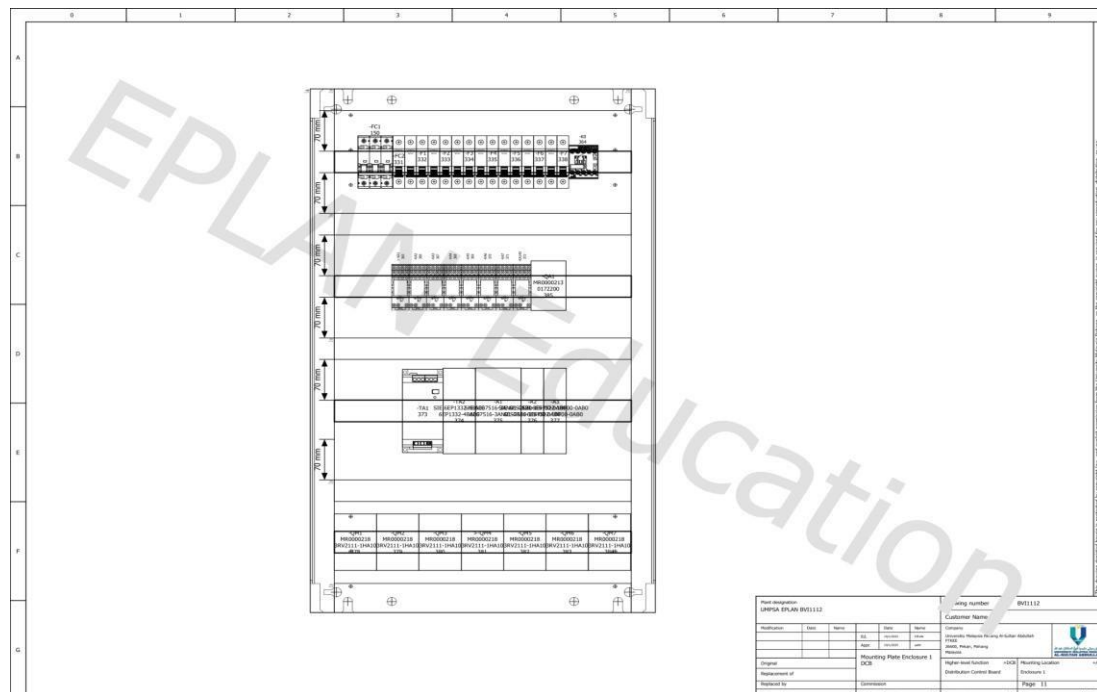


Relay Control Motor



2.3 2D Equipment Layout

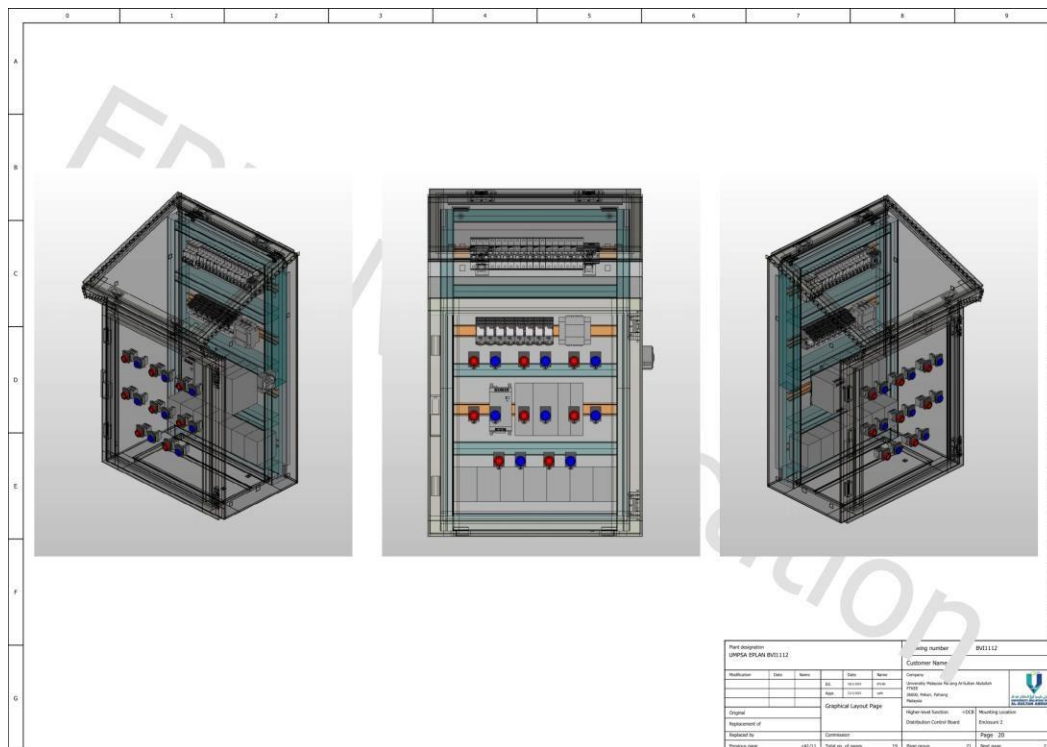
Plan the arrangement of the components to optimize the space utilization.



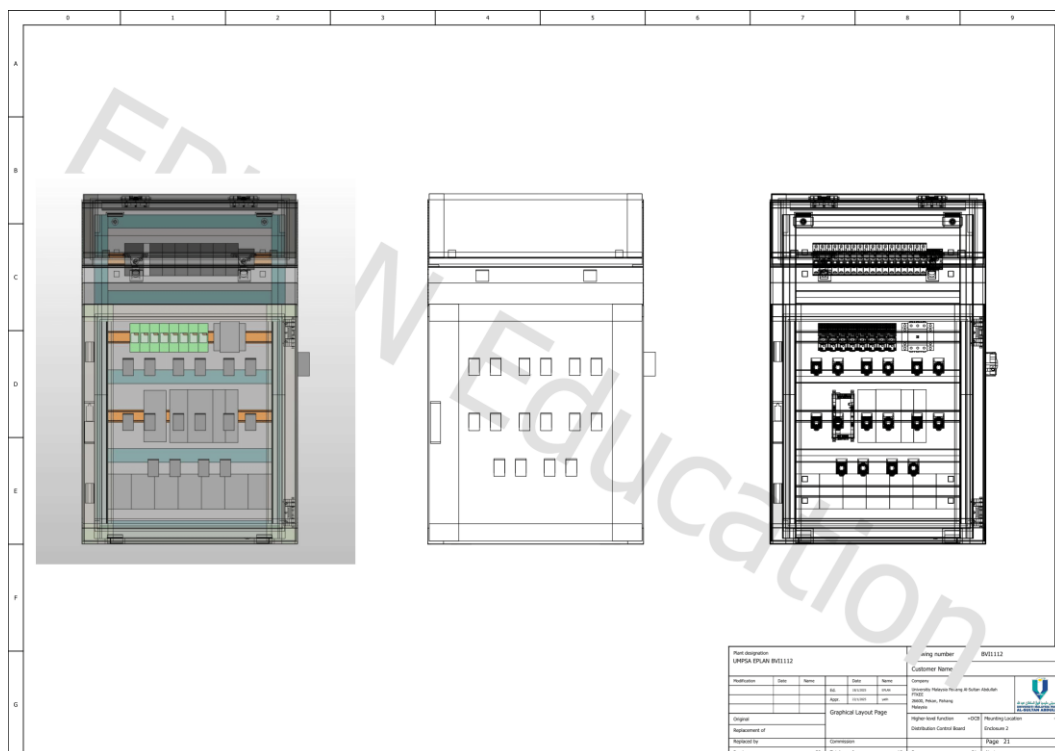
2.4 3D Equipment Layout

Users can see the visual representation of the whole system or panel.

Page View 1



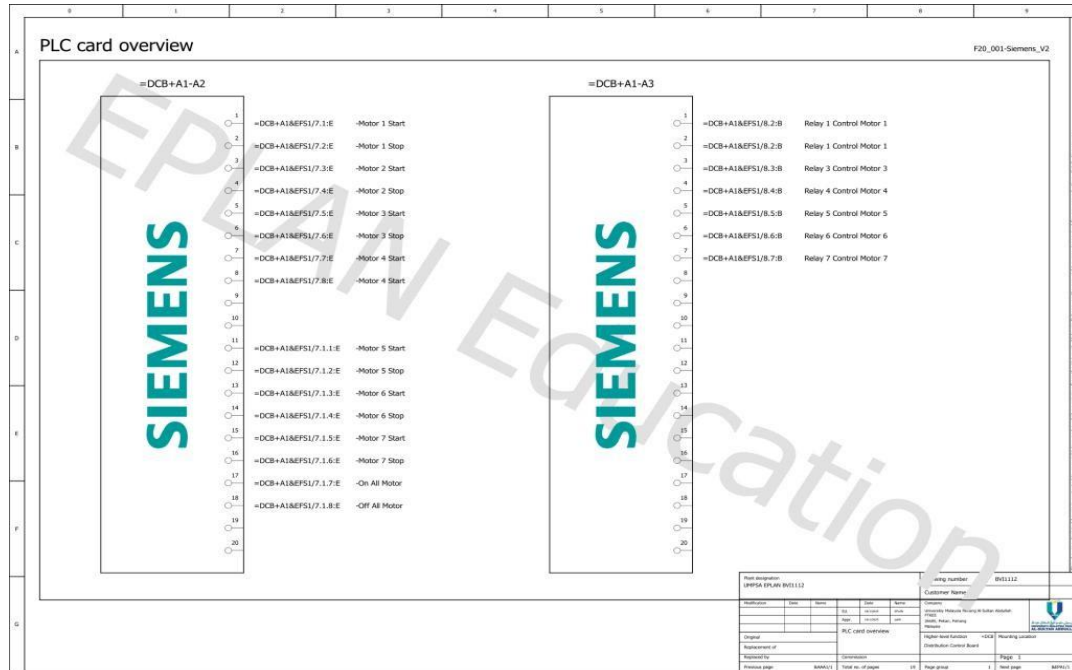
Page View 2



2.5 PLC I/O List

List out all the input or output devices that are used in assisting on commissioning and debugging the PLC system.

PLC I/O Card



2.6 Conclusion

To sum up, improving your ability to interpret diagrams is one of the highest value skills in industrial right not. It's done by applying what you learn in real-world situations with these standard symbols working through different types of diagrams. It's also created to automate the process further and enhance its reliability while increase system flexibility and simplify maintenance. It's also to optimize performance and efficiency by implementing PLC based control. Ensure a clear project overview by these technical and commercial proposal offer. Last but not least, regularly on practicing these skills will get you a better at analysing diagrams in real-life industrial environments.

3.0 Commercial Offer

3.1 Quotation Summary

This document provides a detailed breakdown of costs, terms, and project execution plans for the proposed project.

Category	Total cost
Bill of material (B.O.M)	RM 47,773.17
Labor cost	RM 18,400.00
Consumable cost	RM 1,015.00
Training cost	RM 14,300.00
Total cost	RM 81,488.17

3.2 Bill of Material cost (item model, brand, quantity, price per item, total cost).
(follow summarized part lists for more details)

Item Model	Model No	Brand	Quantity	Price per item	Total cost
SIMATIC S7-1500, CPU 1516-3 PN/DP	6ES7516-3AN01-0AB0	SIEMENS	1	RM 21,496.68	RM 21,496.68
POWER SUPPLY S7-1500 70 W	6EP1332-4BA00	SIEMENS	1	RM 1,425.04	RM 1,425.04
SIMATIC S7-1500, DIGITAL INPUT MODULE DI 16xDC 24V HF	6ES7521-1BH00-0AB0	SIEMENS	1	RM 1,854.19	RM 1,854.19
S7-1500 DQ 8X24VDC/2A HF	6ES7522-1BF00-0AB0	SIEMENS	1	RM 1,830.61	RM 1,830.61
JUNCTION BOX PULPET ASSY	TP6746.500	RITTAL	1	RM 4,575.18	RM 4,575.18
Phoenix Contact Terminal Block	3031733	Phoenix Contact	35	RM 14.59	RM 510.65

Alofee Cableduct 37.5x75 Black	PA037N	Canplast	8	RM 150.00	RM 1200.00
Alofee Cableduct 50x75 Black	PA057N	Canplast	1	RM 180.00	RM 180.00
PUR Control Cable PUR-JZ 4G1.5mm ²	22150	Helukabel	42m	RM 10.00	RM 420.00
Fuse Holder	3036372	Phoenix Contact	1	RM 30.00	RM 30.00
Fuse	33-051-41	Littelfuse	1	RM 10.00	RM 10.00
Terminal- Jumper For 2- Way	3030161	Phoenix Contact	20	RM 20.00	RM 400.00
Terminal- Jumper For 5- Way	3030190	Phoenix Contact	15	RM 25.00	RM 375.00
Thermal- Magnetic Circuit Breaker	3RV2111- 1HA10	SIEMENS	8	RM 780.00	RM 6,240.00
Main Circuit Breaker	5SY6 210-7	SIEMENS	7	RM 332.63	RM2,328.41
Circuit Breaker 16A, 3-Pole, C Curve	2115323	SIEMENS	1	RM 111.45	RM 111.45
Phoenix Terminal Jumper	3030190	Phoenix contact	15	RM 5.00	RM 75.00
Contactor	3Rt2016- 1BB41	SIEMENS	1	RM 488.49	RM 488.49
Relay Socket	2907521	Phoenix contact	8	RM 27.00	RM 216.00
Relay Retaining Bracket	2905984	Phoenix contact	8	RM 10.00	RM 80.00
Auxiliary Block	172179	Schneider Electric	5	RM 40.00	RM 200.00
Push Button Blue	XB4BA61	Schneider Electric	9	RM 79.30	RM 713.70
Push Button Red Flush	XB4BA42	Schneider Electric	8	RM 170.00	RM 1,360.00

Trigger Action Button Black	ZB5-AS52	Telemecanique (Telemec)	2	RM 20.00	RM 40.00
Auxiliary Block for Button	ZB5-AZ105	Telemecanique (Telemec)	4	RM 10.00	RM 40.00
Auxiliary Block for single contact block	ZBE-101	Telemecanique (Telemec)	3	RM 56.06	RM 168.18
Gland Nut (FOR GLAND M20)	52103020	Lappkabel	2	RM 5.00	RM 10.00
Gland Nut (M10)	52104312	Lappkabel	2	RM 7.50	RM 15.00
Gland Nut (M16x1.5)	12 58 11	Skintop	1	RM 17.60	RM 17.60
Rail DIN 35	0236400000	Weidmuller	4	RM 55.92	RM 223.68
Terminal 2.3mm ² (3-conductor grey)	3031720	Phoenix contact	35	RM 14.59	RM 510.65
Terminal 2.3mm ² (3-conductor blue)	3036275	Phoenix contact	8	RM 15.00	RM 120.00
Fuse holder	3036372	PXC	2	RM 30.00	RM 60.00
Fuse (5A Blade Fuse)	33-050-97	Littelfuse	1	RM 10.00	RM 10.00
Single relay	2903677	Phoenix contact	8	RM 25.00	RM 200.00
SEALING IP65	0172267	CAMDENBOSS	1	RM11.64	RM11.64
Lock handle grey 66x66mm	0174601	Baco	1	RM 3.00	RM 3.00
Legend holder	ZBZ35	Schneider Electric	2	RM 105.43	RM 210.86
Legend	1704673	Schneider Electric	2	RM 6.08	RM 12.16
Total material cost					RM 47,773.17

3.3 Breakdown of consumable cost.

Item	Brand	Quantity	Unit Price	Total cost
Electrical tape	3M	5	RM 10.00	RM 50.00
Heat Shrink Tubing	HellermannTyton	1 x 10 meter	RM 20.00	RM 200.00
Cable ties	Panduit	100	RM 5.00	RM 500.00
Labelling tape	Dymo	2	RM 30.00	RM 60.00
Screw and nuts	Bossard	100	RM 0.50	RM 50.00
Drill bits	Bosch	2	RM 25.00	RM 50.00
Wire ferrules	Weidmüller	100	RM 0.70	RM 70.00
Sand papers	Norton	5	RM 5.00	RM 25.00
Cleaning supplies	Isopropyl	1	RM 10.00	RM 10.00
Total consumable cost				RM 1,015.00

3.4 Training cost.

Training type	Trainer fee (RM)	Duration	Material cost	Total cost
System Operating Training	RM 300.00 per hour	8 hours per day	RM 700.00	RM 5,500.00
Maintenance Training	RM 300.00 per hour	8 hours per day	RM 700.00	RM 5,500.00
Safety Training	RM 350.00 per hour	8 hours per day	RM 500.00	RM 3,300.00
Total training cost				RM 14,300.00

4. Terms and Condition Supply

a. Delivery and Installation

- The Supplier shall deliver the PLC system within 11 weeks from the date of order confirmation.
- Installation, configuration, and testing will be performed as part of the scope.
- Delays caused by the Client, including the failure to provide access or approvals, may extend the delivery timeline.

b. Payment Terms

- The total cost of the supply is [amount], excluding applicable taxes and duties unless otherwise stated.
- Payment milestones are as follows:
 - I. 20% upon agreement signing.
 - II. 30% upon delivery of materials.
 - III. 50% upon successful commissioning and acceptance.
- Payments are due **within 7 days of invoicing**. Late payments will incur an interest charge of RM100/day.

d. Warranty

- The Supplier provides a warranty for a period of 8 months from the date of commissioning.
- The warranty covers manufacturing defects, installation faults, and system malfunctions under normal operating conditions.
- The warranty does not cover damages caused by improper handling, unauthorized modifications, or external factors beyond the Supplier's control.

e. Revisions and Changes

- Any changes to the project scope, specifications, or timeline must be requested in writing and may result in additional costs or adjusted timelines.

f. Confidentiality

- Both parties agree to keep all technical details, pricing, and other project-related information confidential and not disclose it to third parties without prior written consent.

g. Intellectual Property

- All deliverables, including PLC programming, remain the property of the Supplier until full payment is received.
- The Client has the right to use the programming and system exclusively for the specified process plant.

h. Liability and Indemnification

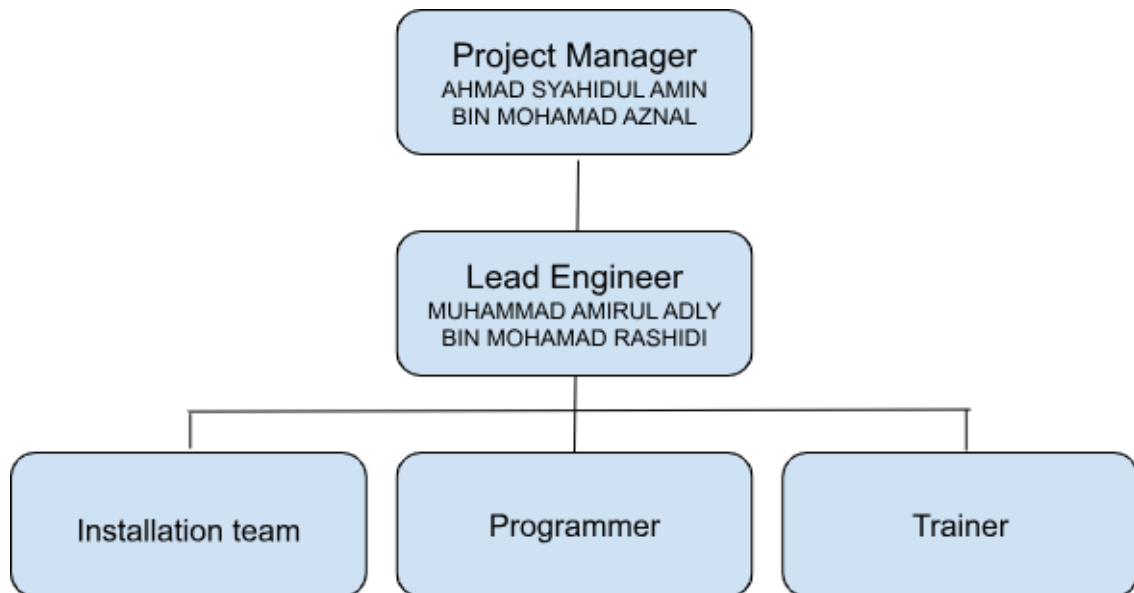
- The Supplier shall not be liable for indirect or consequential damages arising from the use or inability to use the supplied PLC system.
- The Client agrees to indemnify the Supplier against claims arising from improper use or unauthorized modifications.

i. Termination

- Either party may terminate the agreement with 5 days' written notice.
- Upon termination, the Client is responsible for paying for all work completed and materials delivered up to the termination date.

5. Project execution plan.

5.1 Project organization chart.



5.2 Role and responsibility for the team.

Role	Responsibility
Project Manager	Oversees project execution, timelines and budget.
Lead Engineer	Manage system design, configuration and testing.
Installation Team	Handle hardware setup and integration.
Programmer	Develop and test PLC programs.
Trainer	Conduct training sessions for the client team.

Key role:

- Project Manager
 - ❖ Develop projects plans and timelines.
 - ❖ Monitor progress and address issues.
 - ❖ Coordinates between team and stakeholders.
 - ❖ Approve project milestones.
- Lead Engineer
 - ❖ Design system architecture.
 - ❖ Oversee PLC programming and configuration.
 - ❖ Ensure compliance with standards.
 - ❖ Supervise hardware and software integration.
- Installation Team
 - ❖ Install PLC system (hardware and accessories).
 - ❖ Conduct cabling and electrical connections.
 - ❖ Verify proper connections installations via pre-commissioning checks.
- Programmer
 - ❖ Develop PLC software based on functional requirements.
 - ❖ Test and debug programs on-site.
 - ❖ Optimize programs performance.
 - ❖ Provide programming documentation.
- Trainer
 - ❖ Prepare training materials (manuals, slides, etc).
 - ❖ Conduct hands-on training sessions.
 - ❖ Address operational and troubleshooting skills.
 - ❖ Certify participants post-training.

5.3 Progress timeline with detailed breakdown on activity.

(follow gantt chart for more details)

Activity	Duration	Start date	Finish date	Milestone	Achievement status
Design approval	4 days	01 Jan 2025	5 Jan 2025	Design finalize	Achieved / Not achieved
Procure materials	4 days	6 Jan 2025	11 Jan 2025	Materials receives	Achieved / Not achieved
Install and test equipment	12 days	12 Jan 2025	24 Jan 2025	Installation complete	Achieved / Not achieved
Client handover	4 days	25 Jan 2025	29 Jan 2025	Training complete	Achieved / Not achieved

Summary:

- Start date: Begin 01 Jan 2025, aligned with the new year.
- Duration: Adjusted sequentially to ensure realistic progress.
- End date: Ends 29 Jan 2025, total of 4 weeks to finish the project.
- Milestone & activity: Tracks project progress for each activity.

6) Risk Assessment and Mitigation

- **Potential Risks:**

- Power failure during operation.
- Communication loss.
- Hardware overheating.

- **Mitigation Plans:**

- Install UPS for uninterrupted power.
- Implement redundancy in communication.
- Use temperature sensors for thermal monitoring.

Approved by: _____(sign here)

Name: SIR MOHAMAD RAHIMI BIN MOHAMED RODZI

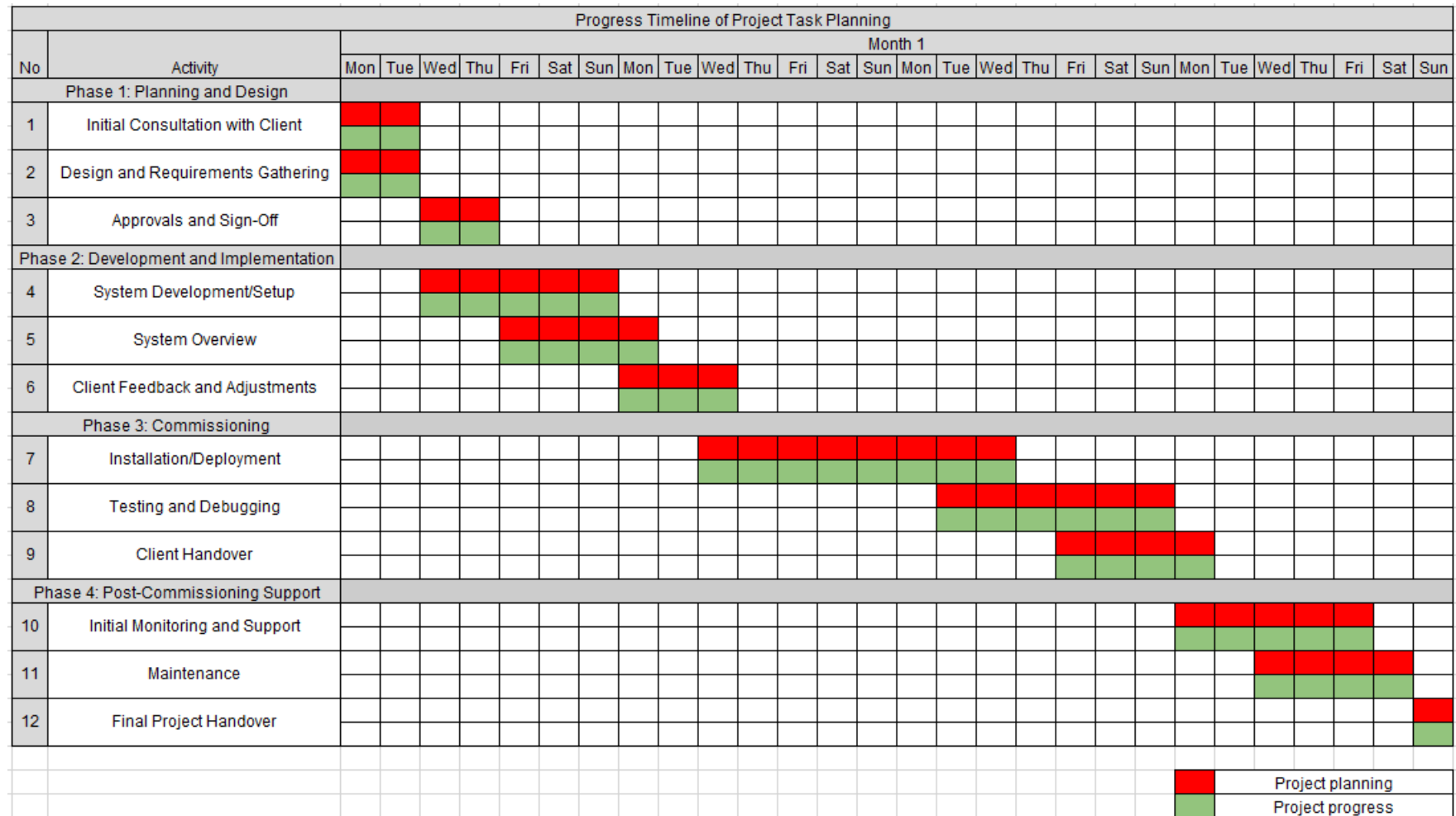
(Authorized person)

Designation: Chief Client Officer (CCO)

Date: [03 Dec 2024]

Company seal: (if applicable)

Gantt Chart Project Planning



Detailed Gantt Chart

Phase 1: Planning and design

- Initial consultation with client
 - Get a job or project from client about the whole project system overview
- Design and requirement gathering
 - Prepare a design or diagram of overview the project
- Approval and sign-off
 - Sign off approval about the clause, price, term and conditions and other related

Phase 2: Development and Implementation

- System development/setup
 - Prepare a complete diagram about the whole project.
- System overview
 - Check all the part number, items and all that are related with the diagram.
- Client feedback and adjustments
 - Ensure client satisfied with the diagram and once satisfied then will proceed to the next phase.
 - Client can request a change as long as in the period and do a win-win situation.

Phase 3: Commissioning

- Installation deployment
 - Engineer will start install the project and do the commissioning job.
- Testing and debugging
 - Quality checker will check the whole project before handover to the client
- Client handover
 - At this stage, engineer will demonstrate the project in front of the client

Phase 4: Post-Commissioning Support

- Initial monitoring and support
 - Do a regular monitoring like 2 times per week as long as the warranty are applicable.
- Maintenance
 - If there is any part that need to do a maintenance during the warranty period, client can request a free service maintenance without any charges.
- Final project handover
 - Handover the project to customer and once the customer satisfied with the project. The paid will be handed over.