

071605T4MCT

MECHATRONICS TECHNOLOGY LEVEL 5

ENG/OS/MC/CR/06/5

Operate Programmable Logic Control (PLC) Systems

July/August 2025



**TVET CURRICULUM DEVELOPMENT, ASSESSMENT AND CERTIFICATION
COUNCIL (TVET CDACC)**

PRACTICAL ASSESSMENT

INSTRUCTIONS TO ASSESSOR

1. Assess the candidate as the practical progresses observing the critical areas
2. You are required to mark the practical as the candidate perform the tasks
3. You are required to take video clips at critical points
4. Ensure the candidate has a name tag and registration code at the back and front

OBSERVATION CHECKLIST

Candidate's Name & Registration Code			
Assessor's Name & Registration Code			
Venue of Assessment			
Date of Assessment			
Items to be Evaluated: <i>Please award marks as appropriate. Give a brief comment on your observation.</i>	Marks Available	Marks Obtained	Comments
1. PPE was worn throughout: i. Safety boots; ii. Overall/Dust coat; iii. Electrical gloves. <i>(Award 1 mark each)</i>	3		
2. Proper LOTO procedure was followed beginning the task: i. LOTO tag was placed correctly on the power source; ii. Name was indicated clearly on the tag; iii. Date was accurately written on the tag; iv. Power supply was safely isolated before beginning any work. <i>(Award 1 mark each)</i>	4		
3. Selected the right tools for the installation task: i. Flat screw; ii. Phillip/Star screwdriver; iii. Crimping tool; iv. Wire stripper; v. Wire cutter.	5		

(Award 1 mark each)			
4. Pneumatic tools and air supplies were prepared: i. Piston; ii. DCV; iii. Gauge. (Award 1 mark each)	3		
5. Fitted the components on the installation board: i. Contactors; ii. Connectors and terminals; iii. Circuit breaker; iv. PLC; v. Siren alarm. (Award 1 mark each)	5		
6. Wired the PLC and Motor to power. (Award 2 marks each)	4		
7. Wired the following components to the I/O terminals according to the right sta i. Red indicators; ii. Green indicators; iii. Contactor coil; iv. Start push buttons; v. Stop push buttons; vi. Capacitive sensor; vii. Inductive sensor; viii. Siren alarm; ix. DCV solenoid. (Award 1 mark each)	9		
8. Connected the PLC to AC power source: i. Live; ii. Neutral; iii. Ground.	3		

<i>(Award 1 mark each)</i>			
9. Connected PLC input and output to DC power supply. <i>(Award 1 mark each)</i>	2		
10. Established PLC communication: i. Communication cable was connected to the correct PLC port; ii. PC successfully detected the PLC; iii. Software interface was opened without errors. <i>(Award 1 marks each)</i>	3		
11. Entered the PLC program correctly: i. Provided ladder program was entered without syntax errors; ii. Logic followed the correct stru shown in Figure 2; iii. Descriptive comments were ad iv. I/O addressing matched actual wiring; v. Program was compiled and downloaded without errors; vi. PLC was placed into RUN mode. <i>(Award 2 marks each)</i>	12		
12. Tested start button: i. Pressing Start initialized the system; ii. Green lamp turned ON. <i>(Award 1 marks each)</i>	2		
13. Tested with plastic object: i. Plastic object was correctly sensed by the capacitive sensor; ii. Motor continued running without interruption;	4		

iii. Cylinder remained in the retracted state; iv. Alarm stayed OFF. <i>(Award 1 marks each)</i>			
14. Tested with metallic object: i. Metal object was detected by inductive sensor; ii. Motor stopped to pause conveyor; iii. Solenoid valve actuated and cylinder extended; iv. Alarm sounded clearly and timely. <i>(Award 1 marks each)</i>	4		
15. Tested stop button: i. Pressing Stop halted the system <i>(Award 1 marks each)</i>	1		
16. Diagnosed and corrected identified faults: ii. Identified and corrected errors i iii. Identified and corrected sensor misalignment and incorrect configurations. <i>(Award 2 marks each)</i>	4		
17. Proper maintenance was done: i. All terminals were checked for looseness; ii. Cable ties and lugs were applied for neatness; iii. Air pressure levels and connections were inspected. <i>(Award 2 marks each)</i>	6		
GRAND TOTAL	74		

ASSESSMENT OUTCOME	
The candidate was found to be: Competent <input style="width: 50px; height: 25px; border: 1px solid black;" type="checkbox"/> Not yet Competent <input style="width: 50px; height: 25px; border: 1px solid black;" type="checkbox"/> <i>(Please tick as appropriate)</i> <i>(The candidate is competent if the candidate obtains at least 50%)</i>	
Feedback from the Candidate: 	
Feedback to the Candidate: 	
Candidate Signature 	Date:
Assessor's Signature 	Date

Appendix:

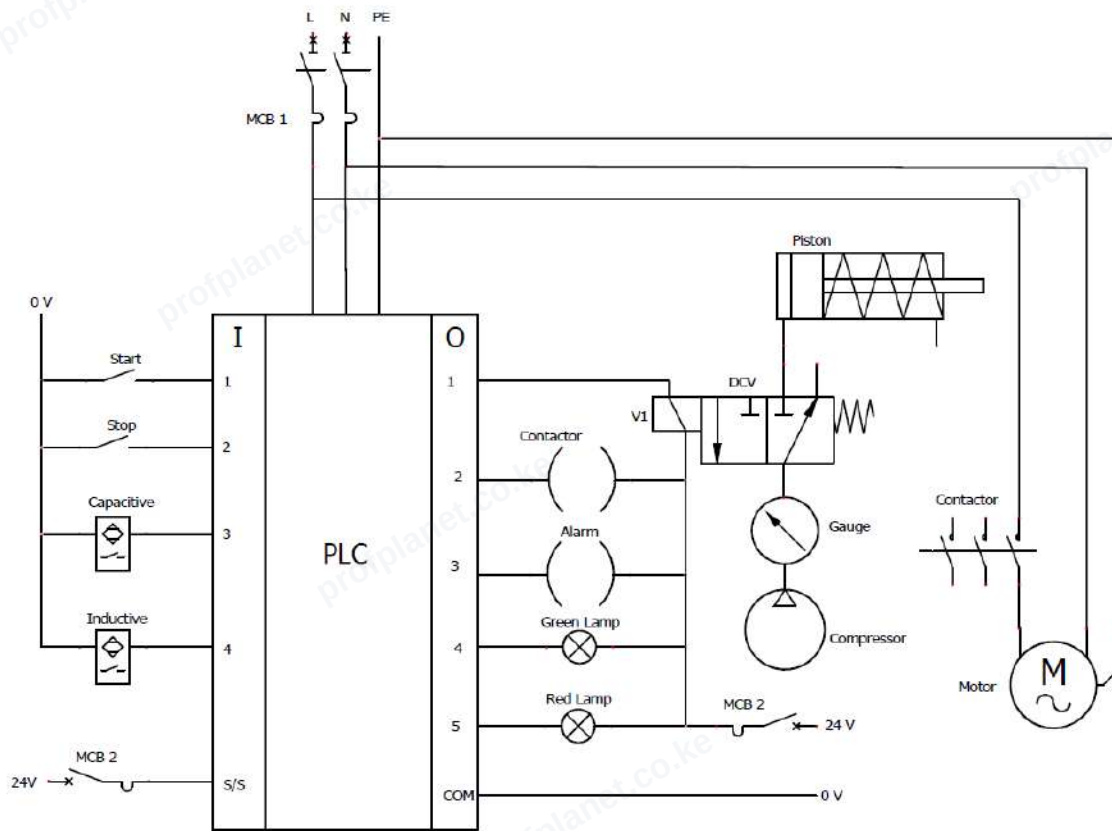


Figure 1: PLC and Pneumatic Wiring Circuit

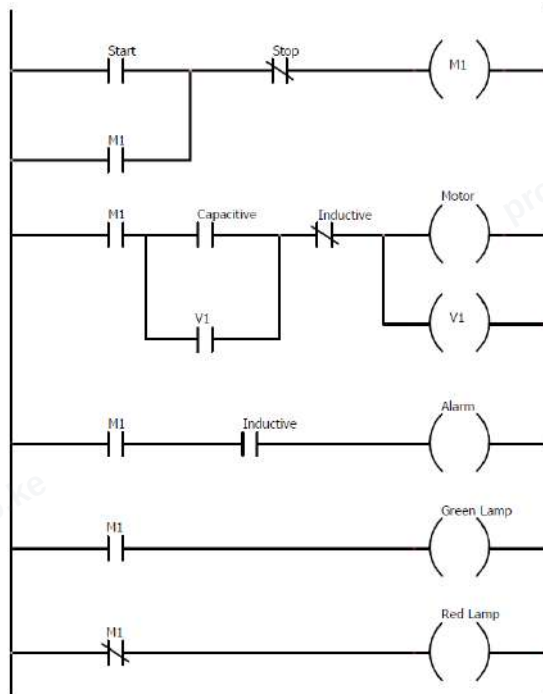


Figure 2: PLC Program