



SNS COLLEGE OF TECHNOLOGY

Coimbatore-35
An Autonomous Institution

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Grade Approved by AICTE, New Delhi & Affiliated to Anna University,
Chennai



DEPARTMENT OF AEROSPACE ENGINEERING

19ASZ301– ROBOTICS & AUTOMATION IN SPACE

III YEAR VI SEM

UNIT 4 –PLC, SCADA AND SENSORS IN AUTOMATION

**TOPIC - BASICS OF PLC PROGRAMMING AND SENSORS
IN ROBOTS**



INTRODUCTION TO PLC PROGRAMMING



PLC (Programmable Logic Controller):

- An industrial digital computer used for automation of electromechanical processes.

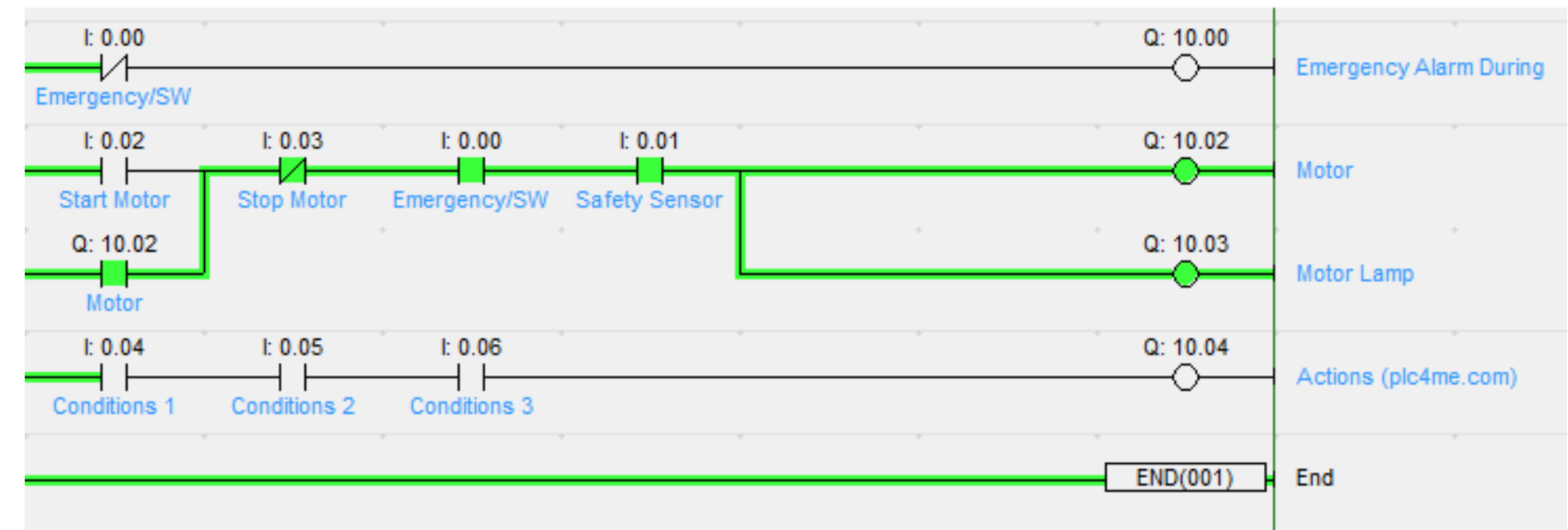
Why PLC in Robotics?

- Real-time decision-making
- Flexible reprogramming for different tasks
- Interfacing with various robot sensors & actuators

Common Programming Languages (as per IEC 61131-3):

- Ladder Logic (LD)
- Function Block Diagram (FBD)
- Structured Text (ST)
- Instruction List (IL)
- Sequential Function Charts (SFC)

LADDER Logic Basic





PLC PROGRAMMING – EXAMPLE LOGIC FOR ROBOT CONTROL



Step	Input	Logic	Output
1	Start button	Latching relay ON	Arm moves to pick point
2	Object detected	Timer delay	Gripper closes
3	Gripper feedback	Sequence continues	Arm moves to place point



SENSORS IN ROBOTICS – TYPES AND FUNCTIONS



Sensor Type	Function in Robotics	Example
Proximity Sensors	Detect object presence/absence	Inductive, capacitive
Infrared Sensors	Measure distance or object detection	Obstacle avoidance
Encoders	Monitor shaft rotation and position	Motor position feedback
Force/Torque Sensors	Measure applied force and moments	Grip control
Vision Sensors	Analyze visual data for inspection or navigation	Camera with image processor



Thank You