

Course PLC Project # 4: Elevator Control System

An elevator is to stop at three floors in an automatic cycle. Design Ladder diagram to fulfill the following function description.

- *Function description*

The cycle begins at the first floor. Motor M 1 opens the elevator door until limit switch S3 is actuated. The door is closed after a preset time has passed. The elevator then stops at the second and third floors, and then goes back down to the second floor. The relevant door is opened at each floor and then closed again after a preset time has elapsed. The elevator then returns to the first floor, thus completing the cycle.

Initial state

The control system is in its initial state when

- the elevator has reached the first floor (limit switch S1 actuated) and
- all doors are closed (limit switches S2, S5 and S10 actuated).

Automatic operation

The automatic floor-to-floor cycle begins when the control system is in its initial state and the following start conditions are fulfilled:

- Key-operated momentary-contact switch SO is actuated
- Stop button S12 is not actuated and
- Return button S13 is not actuated.

When the elevator reaches the first floor at the end of the cycle, the next cycle begins automatically.

The elevator can be returned to its home position with pushbutton S13 after actuating Stop button S12.

