

Elevator - PLC application

34-150-1

Introduction

Programmable Logic Controllers (PLCs) are used extensively in many manufacturing processes and control applications being readily programmed and reprogrammed when variations in the controlled process are required.

Description

The elevator provides a sophisticated application to illustrate the principles of PLC interfacing & control based on a real-life application. Starting with simple program sequences to control elevator speed, direction and floor arrival/departure, the student can progress to advanced floor request handling and continuous (analogue) control with acceleration profiling and compensation for varying car loads. The internal motor speed controller has both logic and analogue interfaces such that a basic PLC with minimal digital I/O can be used to implement control. More sophisticated control may be developed if analogue I/O is available.

The load-cell and motor position feedback signals are available to develop programs for continuous control. The load-cell indicates elevator car loading and a set of weights simulates varying numbers of car occupants. The position feedback signal allows for the development possibility of advanced control of the elevator car motion.



Features

- Fully working model of an elevator with four floors
- Floor sensing and visual indication of direction of travel
- Motorised elevator car door
- Normally "on" brake to hold car at desired floor
- Up/down call buttons on each floor
- Front panel manual switch for testing and debugging
- Integral motor servo controller
- Interfaces with most PLC Types
- Analogue outputs and inputs are also available
- Switchable faults

Curriculum Coverage

- Fundamentals of logic
- Basics of PLC Programming
- Developing ladder logic programs
- Basic and advanced sequence control

PLC Digital I/O Pack and Digital I/O Pack Pre-Wired Options

Programs are available for specific PLC configurations that are available as component parts or as complete pre-wired units. The following component parts are supported:-

Allen Bradley:- AB1766-L32BXB + AB1762-OW16 + AB1761-CBL-HM02.

Mitsubishi:- FX3U-16MT/DSS + FX2N-8EX-ES/UL + FX2N-16EYR-ES/UL + FX3U-USB-BD.

Siemens:- 6ES7 212-1AE31-0XB0 + 6ES7 223-1PL30-0XB0 + 6XV1 850-2GH10.

The PLC options include Digital I/O Pack or Digital I/O Pack pre-wired versions. The pack includes PLC hardware, PLC Programming software, Power supply and leads.

PLC Pre-Wired Boards

Available on a pre-wired board, with the appropriate PLC pack wired to multi-way connectors, enabling plug and play capability with the range of PLC applications.

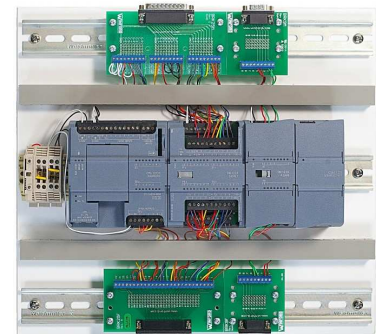
PLC Requirements 34-150-1 digital I/O

Inputs to PLC - 16, Outputs from PLC - 16

Ordering Information

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PLCs – essential, can use your own or purchase as follows:



Typical Pre-wired PLC Pack

	Digital I/O Pack	Digital I/O Pack Pre-Wired
Mitsubishi	34-020	34-020-1
Allen Bradley	34-040	34-040-1
Siemens	34-060	34-060-1



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