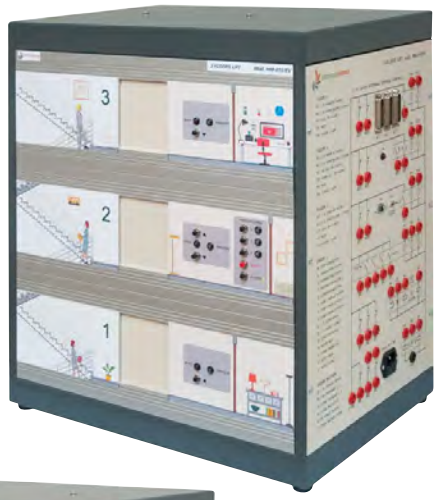
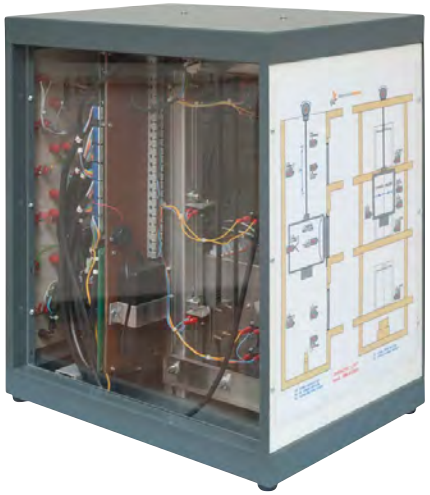
ADVANCED 3-FLOOR LIFT
Mod. HM-410/EV





The unit is a tabletop structure reproducing a 3-floor lift. As in real installations, several sensors and controls are used for the cabin motion & positioning and the doors opening, such as pushbuttons inside the cabin and at each floor.

The front of the unit includes 3 automatic floor doors, and the related call pushbuttons and pilot lamps indicating the cabin movement.
Both the floor and the cabin doors are controlled by electrical motors (with reversing gear for opening and closing); two limit switches are used in each case for these operations. The cabin door includes a photocell to inhibit the door closing when the users are passing through.
The cabin is driven by an electrical motor (with inversion); several limit switches are used for the cabin approaching and stop at each floor. Cabin safety over travel limit switches are also included.
The cabin is able to be controlled with two speeds: fast speed for the motion among floors, and slow speed for the floors approaching.
The cabin pushbuttons are placed in the front of the unit and include: three pushbuttons for the cabin movement between floors, a STOP pushbutton, and an emergency call (simulated by an electronic ringtone. Three spy lamps are included for floor indication (control device and cabin-signaling).

It is possible to manage the unit according to following modes:

- Stand-alone operation with internal microprocessor board;
- PLC control with 24 Vdc operating voltage and at least 20 digital inputs and 16 digital outputs; PLCs with less I/O cannot allow to develop all the functions.
- TTL circuits control with 5 Vdc operating voltage,
- Supervision with PC through USB port in LABVIEW environment.

TRAINING PROGRAM

The automation process with the 3-floor lift mod. HM-410/EV enables the theoretical analysis and the experiments on the following main exercises:

- Microswitches
- Relays
- ON/OFF drives of a DC motor
- Lift systems

TECHNICAL SPECIFICATIONS

- Treated and epoxy-painted steel structure reproducing a 3-floor lift.
- Insulating material side synoptic panel with 4mm-dia. safety terminals for the electrical connections to any PLC or control board; 25 pin-connectors for quick connection to our PLC training panel mod. PLC-V7/EV (not included).
- 3 automatic doors with opening/closing electrical motors.
- 1 automatic cabin door with opening/closing electrical motor and photocell for users' safety.
- 4 microswitches for doors closing control.
- 3 limit microswitches for cabin stop at each floors.
- 4 limit microswitches for the cabin floors approach.
- 2 microswitches for cabin over travel.
- Cabin motion with electrical motor controlled by relays UP/DOWN and speed-change.

Pushbuttons and limit switches refer to a common terminal with no electrical potential, the actuating/signaling devices accept input electrical signals in 5 to 24Vdc range.

Electrical elements available for PLC and interface boards connections with to 4mm-dia. safety terminals.

1st FLOOR
- Floor call pushbutton with NO contact
- 'On-service' signaling LED
- Limit switch for 'closed door' signaling
- Motor control for 1st floor door closing
- Motor control for 1st floor door opening

2nd FLOOR
- Floor call pushbutton with NO contact
- 'On-service' signaling LED
- Limit switch for 'closed door' signaling
- Motor control for 2nd floor door closing
- Motor control for 2nd floor door opening

3rd FLOOR
- Floor call pushbutton with NO contact
- 'On-service' signaling LED
- Limit switch for 'closed door' signaling
- Motor control for 3rd floor door closing
- Motor control for 3rd floor door opening

CABIN
- Pushbutton for motion to 1st floor, NO contact
- Pushbutton for motion to 2nd floor, NO contact
- Pushbutton for motion to 3rd floor, NO contact
- LED for signaling cabin at 1st floor
- LED for signaling cabin at 2nd floor
- LED for signaling cabin at 3rd floor
- STOP pushbutton with NC contact
- Emergency call pushbutton, NO contact
- Limit switch for 'closed door' signaling
- Cabin reflection photocell for users' safety
- Motor control for cabin door opening & closing

COMMON DEVICES
- Motor control for cabin upward / downward
- Motor control for cabin-motion first / second speed.
- Limit microswitch for cabin stop at 1st floor
- Limit microswitch for cabin stop at 2nd floor
- Limit microswitch for cabin stop at 3rd floor
- Limit microswitch for cabin low over travel stop
- Limit microswtich for cabin top over travel stop
- Limit microswitch for cabin approaching to 1st floor
- 2 limit microswitches for cabin approaching to 2nd floor
- Limit microswitch for cabin approaching to 3rd floor
- Eelectronic ringtone for emergency
- Mechanic characteristics:
  - Silk screen synoptic
  - Sheet steel structure painted
  - Plexiglas transparent panel
  - DC gear motor coupled to a system of pulleys with a belt for the cabin motion

A PLC (not included) is needed to control the process. Minimum requirements:
- 21 24 Vcc digital inputs
- 16 24 Vcc 0,5 A digital outputs

Suggested PLC:
- n° 1 PLC training panel mod. PLC-V7/EV with programming and simulation software mod. SW7/EV

Alternative:
- n° 1 PLC training panel mod. PLC-V6/EV

Power Supply:	230 Vca 50 Hz Single-phase (Other voltage and frequency under request)
Dimensions:	500 x 350 x 600 mm
Weight:	15 kg

INCLUDED

THEORETICAL-EXPERIMENTAL MANUAL WITH APPLICATION GUIDE

SET OF 35 1M-CABLES
With 4mm-diam. safety terminals

OPTIONAL

SUPERVISION AND CONTROL SOFTWARE IN LABVIEW ENVIRONMENT AND 2.0 USB CABLE A/B TYPE, MALE CONNECTOR