Sequential Automatic Control

ESD350

Ascenseur / Lift
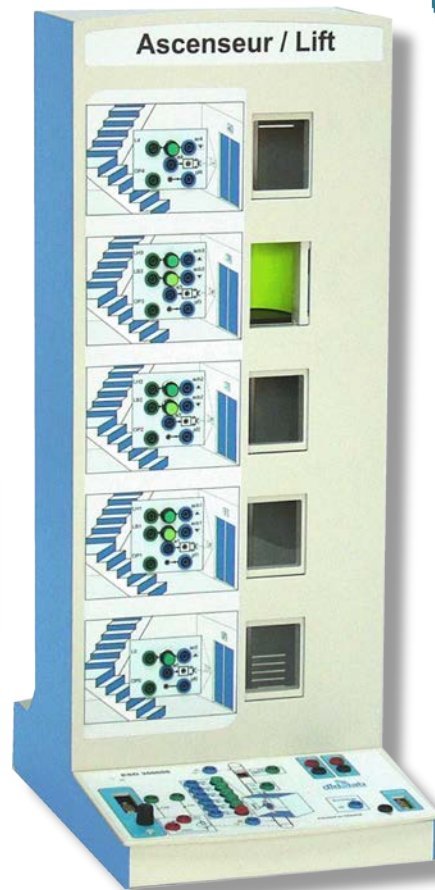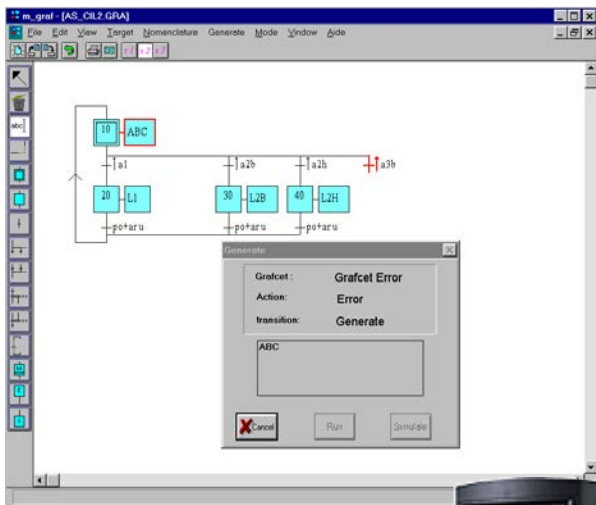
50 I/O 5 LEVELS LIFT MODEL

TECHNICAL DESCRIPTION

The ESD350 Unit is composed of :

• ESD 350 000 Mechanical part: 5 levels lift model, 50 ON/OFF inputs/outputs,

    27 OUTPUTS
- 8 cabin calls,
- 5 level detection with state display,
- 5 level calls ,
- 5 door opening detection,

    Safety devices (with LED display & buzzer)
- 1 emergency stop,
- 1 programmable extra loading detection,

    23 INPUTS
- 8 cabin call recording displays,
- 5 level call recording control (only by Mgraf control & CAN OPEN),
- 1 cabin up control,
- 1 cabin down control,
- 1 cabin light,

    2 motor voltage & current display.

    The lift model can be controlled by Mentorgraf via RS232 or USB connectors, by any external control system (sequential logic, PLC) via the 4 mm dual sockets (5 to 24 VAC/DC) or via one CAN Open battery, or PLC or 68332 target board.

• "Mentorgraf" Grafcet simulation & generation program, lift control,

• Manuals of Practical Works & accessories.

TOPICS

• GRAFCET control of automatic system by PLC or PC computer, with **Mentor Graf** program : counting & time delay control.

• Industrial computer science : sequential process control by Assembler or any advanced language.
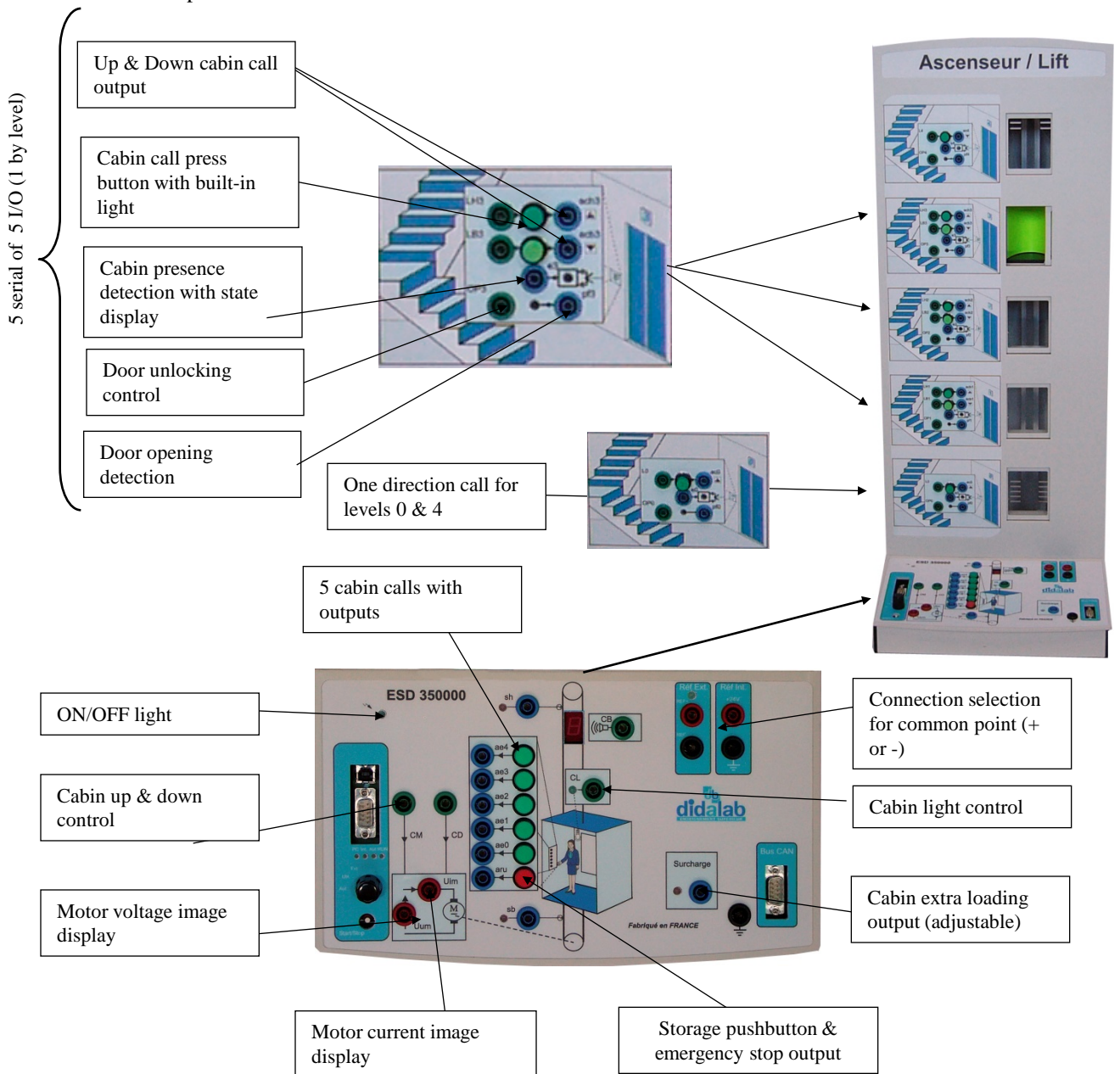
• System control by CAN Open stack.

The mechanical part is constituted of one plastic baseframe, including: the Power Supply, the mechanical devices & the interface electronic circuits. The cabin is driven by one DC Motor/gear & cranked belt.
3 safety devices are available, enabling to underscore the basis of a real system safety control:

• Both top & bottom levels detection circuits inhibit respectively the up & down controls in order to overcome any Grafcet programming error,

• One adjustable detection of the motor current enables the detection of any cabin extra loading (about 0.5 to 5 Kg),

• One emergency stop is available on the control panel. It represents « passenger distress call »,

• Both safety circuits (extra loading detection & emergency stop) inhibit the motor control by hardware function, one safety signal is also available on socket & in Grafcet variables.

DETAILS OF INPUTS / OUTPUTS

All inputs/outputs via Ø 4mm dual sockets are compatibles with PLC inputs/outputs (5 to 24 V DC / AC with common point connected either to + or to -.


Ascenseur / Lift

5 serial of 5 I/O (1 by level)

Up & Down cabin call output

Cabin call press button with built-in light

Cabin presence detection with state display

Door unlocking control

Door opening detection

One direction call for levels 0 & 4

5 cabin calls with outputs

ON/OFF light

Cabin up & down control

Motor voltage image display

Motor current image display

ESD 350000

Connection selection for common point (+ or -)

Cabin light control

Cabin extra loading output (adjustable)

Storage pushbutton & emergency stop output

CAN Open Interface

All inputs/outputs are available via a Slave **« CAN Open »** stack, as inputs/outputs generation module, enabling the lift model control via a Master CAN OPEN module (PLC, …).

One can bus with CAN Open stack enables the connection between all different devices of the lift model:

• 1 Motor control node,

• 1 Cabin control node,

• 5 nodes for the control of each level:

> ➢Level call,

> ➢Level presence,

> ➢Door control.
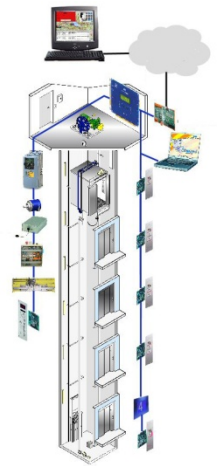
CAN Open Lift CIA DS 301

ESD 350 200, MENTOR _GRAF is an interpreter operating under Windows, it enables, through USB or RS232 l port, the control of different mechanical parts, such as the ESD 350 000 lift model.It has one editor, one generator & one GRAFCET simulator. It can control the targets following on graphic algorithm.
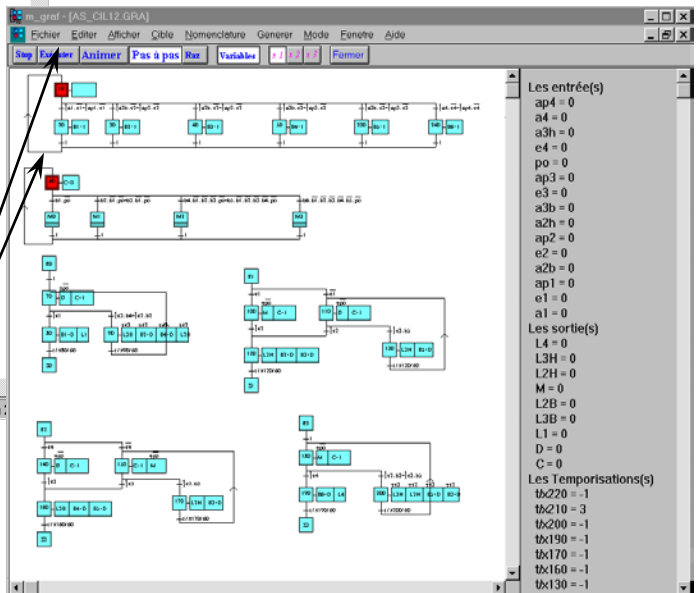
Description

• Editor   : Enabling the GRAFCET drawing with the basic tools, step, transition, AND& OR divergence/convergence, macro steps...

• Generator : converting the GRAFCET into executable code, checking of the syntax & coherence between target variables &used variables...

• Simulator : executing the GRAFCET in simulation, one "click" on the input variable enables the activation of the corresponding transition, the full graph can be checked before any test on the mechanical part.

• Interpreter : enabling the execution & the control following the modes : step by step, trace, quick.

Some characteristics :

- 256 steps, 256 transitions, 256 x 8 bits memories, macro steps, possibility of operating simultaneously several independent grafcets.
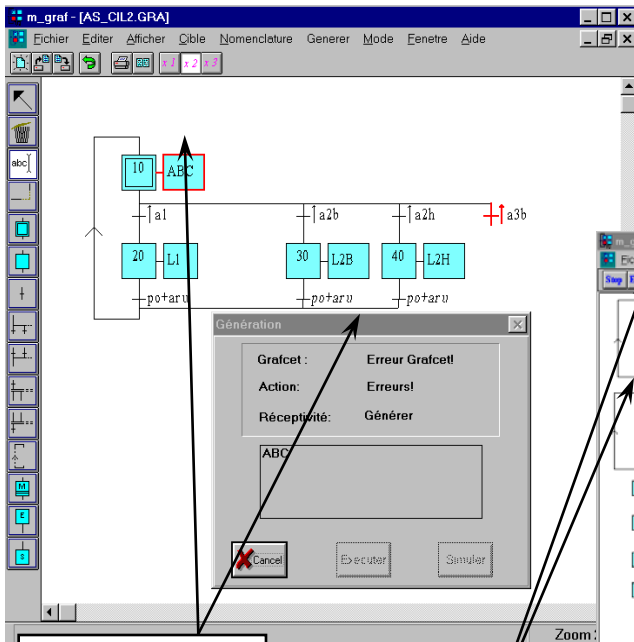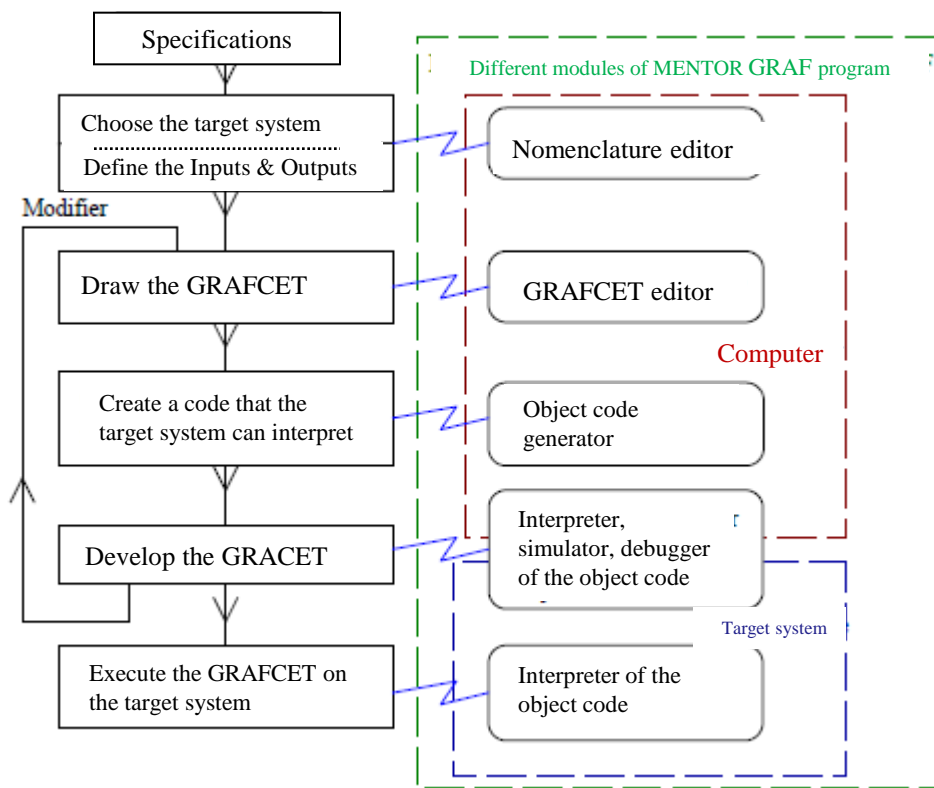
EDITION

OPERATION IN TRACE MODE

Generation report with indication of errors, grafcet, labels...

Active cells display

Specifications → Choose the target system / Define the Inputs & Outputs → Nomenclature editor

Modifier

Draw the GRAFCET → GRAFCET editor

Create a code that the target system can interpret → Object code generator

Computer

Develop the GRACET → Interpreter, simulator, debugger of the object code

Target system

Execute the GRAFCET on the target system → Interpreter of the object code

Different modules of MENTOR GRAF program

ESD 350 041 : Manual of Practicals « LIFT MODEL CONTROL BYGRAFCET »

Including: one course recall on Grafcet, one specifications book & one or two solutions proposed for every Practical Work.

Examples :

- TP 1 : Carrying out of one Up & Down cabin motion between levels 0 & 2,

- TP 2 : Improvement of Grafcet N°1 by par conditional action & time delay insertion,….

- TP 8 : Cabin moving on level call, light flashing at the destination level, emergency stop control & extra loading….

Standard configurations

ESD350C : Study of Grafcet automatic control "5 LEVELS LIFT MODEL, 50 ON/OFF I/O's » :		
Reference	Designation	Qty
ESD350000	5 levels lift model mechanical part, built-in power supply, 41 inputs/outputs, TTL compatible, PLC & PCcomputer, with : CAN OPEN stack, ESD350011 Technical Guide	1
ESD350100	MENTOR GRAF, GRAFCET edition & operation program,	1
ESD350041	Manual of Practical Works «Lift grafcet (Mentorgraf)control », source on CDROM	1
EGD000003	DB9/DB9 patch cord, F/F, X modem	1
EGD000009	« AB » TYPE USB serial lead	1

Packing list :   Net : 77 cm, 41 cm, 30 cm, weight : 8 kg,
Gross : 80 cm, 50 cm, 40 cm, weight : 11 kg.